

Appendix E

Biological Evaluations For Plants and Wildlife

Appendix E

Table of Contents

Biological Evaluation for Plants.....	1
Biological Evaluation for Wildlife.....	20

BIOLOGICAL EVALUATION FOR PLANTS

For the

Central Kupreanof Timber Harvest FEIS

July 2009

Petersburg Ranger District
Tongass National Forest

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Appendix E

INTRODUCTION

The proposed Central Kupreanof Timber Sale is located in the central part of Kupreanof Island on the Petersburg Ranger District of the Tongass National Forest. It is approximately 14 miles from Kake, Alaska, and connected by the existing Kake road system. The project area includes lands within Value Comparison Units (VCUs) 426, 427.1, 429, 436 and 438, an area of approximately 152,517 acres.

Plant surveys were conducted within areas of proposed timber harvest and new road construction and a few areas outside of proposed units. The surveys concentrated on high probability areas with sensitive plant habitat. The purpose of a Biological Evaluation is to analyze the possible effects of the proposed activities on threatened, endangered, proposed, and sensitive plants.

PROJECT DESCRIPTION

The Central Kupreanof Timber Sale EIS proposes three alternatives for timber harvest and road construction plus a no-action alternative (Table 1). The existing Log Transfer Facility (LTF) at Hamilton Bay is the proposed site for log transport. Proposed new roads in the area range from 2.2 to 31.2 miles, depending on the alternative. These will all be closed when the timber sale is complete. In addition, 2.6 to 9.1 miles of road are proposed for reconstruction.

Table 1. Central Kupreanof Proposed Harvest and Road Construction by Alternative

	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Acres in units proposed for harvest	0 ac	2,505 ac	3,647 ac	1,327 ac
Proposed new road miles (incl. temp.)	0 mi	11.2 mi	31.2 mi	2.2 mi
Proposed miles of road reconstruction	0 mi.	2.9 mi	9.1 mi	2.6 mi
Muskeg/Forested wetland mosaic and Forested wetland acres proposed for harvest	0 ac	188 ac	324 ac	109 ac
Proposed miles of new and reconstructed roads crossing wetlands	0 mi	0.6 mi (~2.9 acres)	1.9 mi (~9.2 acres)	0.4 mi (~1.9 acres)

In addition to the timber harvest activities proposed, each action alternative includes project opportunities that are suitable for potential stewardship contracting opportunities. The following projects are proposed in the project area.

Fisheries/Hydrology

The Road Analysis Process (RAP), updated with this project, recommends road management objectives for the Kake Road System. Ultimate storage/closure of these roads and these fisheries/hydrology projects will depend on the analysis and decisions made in the District Access and Travel Management Plan. Implementation of the recommended road management objectives will result in the removal of 19 culverts that do not meet fish passage standards.

Recreation

Maintain the four recreational hiking trails in the area: Cathedral Falls (0.5 mi.), Goose Lake (0.75 mi.),

Hamilton Creek (1.0 mi.), and Big John Bay (1.75 mi.). The total length of all trails combined is about four miles. The work could include annual brushing, condition surveys and replacement of gravel as needed. Structure work on the trails could also be included depending on the extent and difficulty of the work. Gravel for trail maintenance in the past has been obtained locally in Kake.

Conduct annual maintenance for the Big John Bay Cabin including preparing it for occupancy in the spring and winterizing it at the end of the season. In addition, deferred maintenance and repairs could also be considered for this project. The cabin can be accessed by hiking the 1.75-mile trail off Road 45001 or by boating to Big John Bay.

Invasives

Hand-pull a small population of spotted knapweed located on Road 6337. Work could involve up to a half-day of work annually for at least five years and possibly monitoring and/or hand-pulling beyond that depending on how well the plants respond to the treatment. Proper disposal of the pulled weeds would be specified as part of the project design, most likely burning in a controlled manner. Other roadside weed populations could also be included, but this is currently the highest priority invasive plant within the project area.

Silviculture/Wildlife

Currently, there are approximately 325 acres of precommercial thinning to accomplish in second-growth stands that could potentially be done under a stewardship contract on the Kake road system. These stands are approximately 25 years old and an individual prescription will be written for each stand to identify species and spacing of the leave trees. These prescriptions will consider future timber production and wildlife habitat improvement in their design. There is the possibility of using the cut material for some type of product if the contractor is interested.

Transportation

There are approximately 114 miles of Forest Service System roads in the Kake road system, which encompasses the Central Kupreanof EIS project area. Of those 114 miles of roads there are approximately 94 miles of open roads that need maintenance to remain open. This maintenance generally includes brush cutting, blading of the road surface, ditching and cleaning of culverts to keep proper drainage. Of the 94 miles of open road there are approximately 38 miles of mainline roads (6040, 6328, 6314, 6314S) that take first priority for maintenance.

Petersburg Ranger District historically has approximately \$70,000 per year to spend on road maintenance in Kake. On the average it costs \$2,000 per mile to maintain roads, which equates to 35 miles of road per year that can be done in Kake. Generally, two thirds of the mainline roads are done and the remaining portion is spent on selected side roads.

SENSITIVE PLANTS

The only plant federally listed or proposed by the U.S. Fish and Wildlife Service in Alaska is *Polystichum aleuticum* C. Christensen, which is endangered. It is only known from Adak Island and is not expected to occur in the project area.

The Regional Forester's sensitive species list was undergoing revision during the analysis for the Central Kupreanof project. The Regional Forester signed the revised list on February 2, 2009. The revised list

Appendix E

does not include several plants analyzed in the biological evaluation for this project. The following plants were analyzed but are no longer designated as sensitive: *Glyceria leptostachya*, *Hymenophyllum wrightii*, and *Poa laxiflora*. The two sensitive species found in the Central Kupreanof area, Wright filmy fern (*Hymenophyllum wrightii*), and Davy mannagrass (*Glyceria leptostachya*), have been removed from the 2009 Alaska Region Sensitive Species List. Furthermore, 11 rare plants are newly designated as sensitive in the 2009 list revision. None of the newly added species were found in the project area. Only one species on the revised list has been documented on the Petersburg Ranger District. The lichen *Lobaria amplissima* has been found on trees on windswept, exposed beaches on south Mitkof Island and Tebenkof Bay on Kuiu Island. Due to the project's advanced stage when the list was approved and signed, the Central Kupreanof project surveys and following analysis were based on the 2002 list. The difference would be fewer effects to sensitive species in the area with the revision since none of the new species were found in the project area. The 2002 and 2009 sensitive species lists can be found in Appendix A.

On the 2002 Sensitive Species List, nineteen vascular plants are designated as Sensitive in the Alaska Region (Appendix A). Recent studies of these plants resulted in taxonomic revisions of six of them. Based on the work of taxonomic authorities, these six plants are now included in more broadly distributed or abundant taxa. Because of this they no longer warrant status as being Sensitive Species and will be removed from the list, which is undergoing revision. The six taxa and brief description of their taxonomic status are shown here:

- 1) *Arnica lessingii* ssp. *norbergii* is not recognized by Wolf (2006) in the *Flora of North America* (he recognizes no subspecies within *Arnica lessingii*);
- 2) *Carex lenticularis* var. *dolia* now includes the somewhat more common *C. enanderi* (Standley *et al.*, 2002);
- 3) *Draba kananaski* is considered to be a synonym for the more common *D. juvenilis* (Al-Shehbaz *et al.*, in press);
- 4) *Platanthera gracilis* is considered to be a synonym for *P. stricta* (Sheviak, 2002) although they differ somewhat;
- 5) *Puccinellia glabra* and
- 6) *Puccinellia kamtschatica* are both considered to be synonyms for the widespread *P. nutkaensis* (Davis & Consaul, 2007).

Because of their abundance and taxonomic status, these taxa will not be analyzed further in this Biological Evaluation.

Three of the above species were suspected to occur on the Petersburg Ranger District: *Carex lenticularis*, *Platanthera gracilis*, and *Puccinellia kamtschatica*. Now, the following nine sensitive plants are known or suspected to occur on the Petersburg Ranger District of the Tongass National Forest:

Edible thistle (<i>Cirsium edule</i>)	suspected
Davy mannagrass (<i>Glyceria leptostachya</i>)	known
Wright filmy fern (<i>Hymenophyllum wrightii</i>)	known
Truncate quillwort (<i>Isoetes truncata</i>)	suspected
Calder lovage (<i>Ligusticum calderi</i>)	suspected
Loose-flowered bluegrass (<i>Poa laxiflora</i>)	known
Unalaska mist-maid (<i>Romanzoffia unalaschensis</i>)	suspected

Queen Charlotte butterweed (*Senecio moresbiensis*) suspected
 Circumpolar starwort (*Stellaria ruscifolia* ssp. *aleutica*) suspected

PRE-FIELD REVIEW OF EXISTING INFORMATION

A pre-field review of existing information concerning the plants listed above was conducted for the project area. This review included the Regional Forester's Sensitive Species List, Alaska Natural Heritage Program (AKNHP) data base records, and botanical literature (some titles are listed in the references section of this report).

PLANTS KNOWN. There were no previously documented sightings of sensitive plants in the project area. The nearest documented sightings were:

Species: <i>Poa laxiflora</i>	Location: Totem Bay, Kupreanof Island (Approx. 7 miles from project area)
<i>Glyceria leptostachya</i>	Location: North Mitkof Island (Approx. 13 miles from project area)
<i>Hymenophyllum wrightii</i>	Location: North Mitkof Island (Approx. 13 miles from project area)

PLANTS SUSPECTED. The following general habitats (or plant communities) occur in the project area: **coniferous forest, forest edge, seeps, wet areas, stream banks, and riparian areas**

The sensitive plants from the 2002 List shown below are suspected to occur in the project area since the area contains appropriate habitat and/or is within the known or suspected range of the plants.

Loose-flowered bluegrass (*Poa laxiflora*)

Found in moist lowland woods, open-forested meadows, upper beaches, and along streams.

Wright's filmy fern (*Hymenophyllum wrightii*)

Found at the base of trees, on downed logs, and rock outcrops in damp humid woods.

Davy mannagrass (*Glyceria leptostachya*)

Found in wet areas, usually along streams, ponds, and lake margins. Roots are often submerged.

Unalaska mist-maid (*Romanzoffia unalascensis*)

Found on rock outcrops, along stream banks, beach terraces, and open rocky areas.

Appendix E

The following species were not analyzed further for the reasons stated:

Truncate quillwort (*Isoetes truncata*)

Found immersed in shallow freshwater pools or ponds. These habitats will not be disturbed with the proposed activities.

Calder lovage (*Ligusticum calderi*)

Found in alpine habitats and margins of subalpine and mixed conifer stands, on limestone substrate. These habitats will not be disturbed with the proposed activities.

Queen Charlotte butterweed (*Senecio moresbiensis*)

Found in alpine and subalpine habitats with open, rocky, or boggy slopes, grassy talus slopes, or rocky heaths, usually on limestone substrate. These habitats will not be disturbed with the proposed activities.

Circumpolar starwort (*Stellaria ruscifolia* ssp. *aleutica*)

Found on moist gravelly sites and along creeks in mountains. These habitats will not be disturbed with the proposed activities.

Edible thistle (*Cirsium edule*)

Found on forest edges, stream banks and dry meadows. In Southeast Alaska, it has only been found on the mainland on the Ketchikan/Misty Fjords District. It is suspected to occur on the Wrangell and Petersburg Districts because they also include mainland habitat. Since Kupreanof Island and the project area are nearly 20 miles from the nearest mainland and over a hundred miles from the known occurrences, this species is unlikely to occur in the project area and is not being analyzed further.

FIELD SURVEY FOR SENSITIVE PLANTS

Sensitive plant surveys of Level 3 intensity were conducted for the project area (see Appendix B for definitions of plant survey intensity levels). Detailed maps showing the exact route that the botanist traveled on the ground are on file at the Petersburg Ranger District. Daily plant survey forms, completed according to protocol for the Alaska Region, are also on file at the Petersburg Ranger District. Survey data and sensitive plant locations will be entered into the Natural Resource Information System (NRIS) database by December 1, 2008.

The following sensitive plants from the 2002 list were located during the 2006 and 2007 surveys: Wright filmy fern (*Hymenophyllum wrightii*) and Davy mannagrass (*Glyceria leptostachya*). **See Appendix D for a complete plant list for the project area.**

Date(s) of survey(s): June 14-19, July 26-31, and August 26, 2006; June 18-19, July 26-29, and August 14-15, 2007

Project surveyed by: Mary Clemens, Forester, Petersburg Ranger District and Joni Johnson, Ecologist, Tongass National Forest

The plant surveys took place at the appropriate time of year to identify sensitive plants known or suspected in the project area.

EFFECTS

Determination of risks to populations of sensitive plants takes into account: size, density, vigor, habitat requirements, location of the population, and consequence of adverse effect on the species as a whole within its range and within the National Forest.

Effects Common to All Action Alternatives

Trail Maintenance and Cabin Maintenance

There would be no effects to threatened, endangered, sensitive, or rare plants from the proposed stewardship project of maintaining the four area trails and Big John Bay cabin.

Invasive Plant Control

There would be no effects to threatened, endangered, sensitive or rare plants from the proposed invasive plant control stewardship project.

Fisheries/Hydrology

There would be no effects to threatened or endangered plants from the proposed fisheries/hydrology stewardship project of pulling culverts on fish streams on closed roads. While no known populations of sensitive or rare plants would be affected, correcting or pulling culverts has the potential to affect unknown populations and habitat at stream crossings.

Silviculture/Wildlife

There would be no effects to threatened, endangered, sensitive or rare plants from the proposed silviculture stewardship project of pre-commercial thinning second-growth stands.

Transportation

The proposed transportation stewardship project of maintaining the Kake area roads would not adversely affect any known threatened, endangered, sensitive or rare plants in the project area. One sensitive plant species, Davy manna grass (*Glyceria leptostachya*), is sometimes found in roadside ditches and could be affected by ditch maintenance. However, this species thrives in disturbed areas, so increased disturbance could actually enhance its habitat and populations. Also, this species is more abundant on the Tongass than once thought, so it was dropped from the 2009 Sensitive Plant List.

Microsales

The proposed Microsale areas along NFS roads 6030, 6040, 6314, 6314S, 6326, 6328, 6334, 6336, 6339 and 6367 may adversely impact unknown individual sensitive plants but would not likely result in a loss of viability in the planning area, nor cause a trend toward federal listing for any species.

Direct Effects

Known and unknown sensitive plants may be destroyed and habitat lost in road corridors due to trampling by workers, machinery, and deposition of road materials, Plants may be destroyed in timber

Appendix E

harvest units due to trampling by workers, trees falling on the plants, trees dragged over the plants during removal or slash deposited on the plants. Plants may also be destroyed from operation of shovel yarding equipment, and habitat alteration from soil compaction.

Specifically, the proposed timber harvest activities would have direct effects on the sensitive species of *Hymenophyllum wrightii* (2002 List). Populations of *Hymenophyllum wrightii* were found in nine proposed units and in three locations outside proposed units. Fourteen known populations would not be protected with the proposed alternatives 2 and 3 and three known populations would be protected with the proposed alternatives because they occur in riparian buffer zones or in a unit no longer being considered for harvest. In Alternative 4, one more population would be protected by the changed shape of Unit 310 (thirteen affected populations).

Since this small, inconspicuous gametophyte is being found more and more often on the Tongass, including many sightings on the Petersburg Ranger District, it was removed from the 2009 Alaska Sensitive Species List. Considering the increased sightings, habitat protection and removal from the list, it is not likely that destroying 14 populations would affect the viability of the species on the Tongass.

The proposed activities (timber harvest and road building) would have direct effects on the habitat or individuals of the fern *Hymenophyllum wrightii*, by removing old logs from the forest floor, and crushing and churning the soils and decomposing wood that occurs under old stumps and logs. This fern is known to occur in damp, humid forests and wet, rock outcrops. Approximately 31,622 acres of the 152,517 acres within the project area are considered to have productive forests suitable and available for timber harvest. These acres are also potential habitat for *Hymenophyllum wrightii*. Depending on the Alternative, timber harvest could affect from 1,327 to 3,647 acres of spruce/hemlock old-growth forest habitat known to contain the preferred habitat for this tiny fern. This equates to approximately 4.2 percent to 11.5 percent of the potential *Hymenophyllum wrightii* habitat in the project area that is suitable for timber harvest.

An additional 12,884 acres of productive forest in the project area are not suitable for timber harvest because of steep slopes or because they are within riparian or beach buffers or old-growth reserves that do not permit commercial timber harvest. These areas are additional potential habitat for *Hymenophyllum wrightii* that are not at risk of timber harvest.

The timber harvest activities, including associated road construction and reconstruction, would also likely affect some undetected sensitive plants, especially *Hymenophyllum wrightii*, since timber is harvested in its forest habitat. More *Hymenophyllum wrightii* populations are also likely to occur in areas where no harvest is proposed since most surveys were concentrated in proposed units and only limited surveys were done in non-harvest areas.

One population of Davy mannagrass (*Glyceria leptostachya*) on the 2002 List was found on the north shore of Kluane Lake east of Unit 254. The population is not within a proposed unit and would not be directly affected by timber harvest or road construction activities.

Approximately 103,400 acres of the project area (excluding state and private lands) contain non-productive forest habitats and non-forest habitats such as muskeg and alpine. The other three suspected sensitive plants in this project area occur in habitats that would generally not be considered productive

forest, or are in buffer zones with limited disturbance from timber harvesting. However, to access harvest units, each action alternative proposes some road construction through wetlands. Alternative 2 proposes 0.6 miles, Alternative 3 proposes 1.9 miles, and Alternative 4 proposed 0.4 miles. With less than two miles crossing wetlands, the effects to the habitats of these species would be minimal within the project area.

Indirect Effects

Indirect effects on these species in other locations as a result of timber harvest and road construction are essentially undocumented at this time. However, changes in the habitat condition may have some indirect effects such as soils moisture changes, light regime changes and increased susceptibility to disturbances (human and natural). Some of the possible changes include increased groundwater hydrology due to decreased levels of evapotranspiration after harvest; alterations due to possible sedimentation caused by landslides or windthrow as a result of timber harvest or roading activities; increased competition from native or non-native species that may establish as a result of road building activities and other disturbance; impacts caused by changes in the light regime as a result of canopy removal; and increased disturbance caused by humans who may access these area for recreation or subsistence use.

Specifically, indirect effects to the habitat or individuals of the suspected *Hymenophyllum wrightii* (HYWR) due to the proposed activities include the increase in solar radiation and changes in the humidity levels of the microhabitats where HYWR grows. It has mainly been found under old growth tree stumps, on decomposing wood, and on soil in dark damp places on the forest floor. Harvesting activities would remove the forest overstory and crush the associated shrubs, thus increasing the chance of gametophyte desiccation and mortality. Eventually, the stumps of felled trees would lose their water-holding capacity because the bark would decompose and fall off at a very rapid rate compared to in the forest, and the increased light would initiate the growth of other species in the stump such as mosses and lichens that are adapted to higher light regimes and can out compete the gametophyte.

Known and previously unknown populations of sensitive plants adjacent to and in the project area could be indirectly affected by the introduction of invasive plants due to increased human activities, which compete with native plants in disturbed habitats. See the Risk Assessment for Invasive Plants for the Central Kupreanof Timber Harvest EIS (Clemens 2008).

Cumulative Effects

The area being considered for cumulative effects is the Tongass National Forest since most of the known and suspected plants on the Petersburg District have ranges extending across the forest. The viability of a species on the forest is often related to the number of occurrences found across the forest and the likelihood that those populations could be affected by activities.

On the Tongass, approximately 500,000 acres have been harvested out of approximately 5,600,000 acres of productive forest. This means about 9% of the potential habitat for *H. wrightii* has been harvested. But not all of the remaining productive forest on the Tongass allows timber harvest. Wilderness areas, semi-remote and remote recreation LUDs, old-growth reserves, and wild rivers do not allow commercial timber harvest. Also, areas with slopes over 72% on unstable soils and areas within riparian, beach and estuary buffers are considered unsuitable for timber harvest. The cumulative impact of management

Appendix E

activities upon *Hymenophyllum wrightii* population viability may be moderated through the maintenance of potential habitat in these areas of productive forest that are unsuitable for timber harvest.

Timber harvest and road building on the Tongass have the potential to negatively affect the greatest amount of *H. wrightii* habitat, but they are not the only activities that could affect the habitat. Trails, recreation cabins, developed recreation sites, mineral activities, and dispersed hiking all contribute to negatively affecting the potential habitat. Currently on the Tongass, however, these other activities affect productive forest land to a much lesser degree.

Davy mannagrass is sometimes found in roadside ditches and could be affected by proposed roadwork activities. However, this species thrives in disturbed areas, so increased disturbance could actually enhance its habitat and populations.

The other three suspected sensitive plants in the project area generally occur in habitats not considered productive forest (such as muskeg and alpine), or in buffer zones where timber harvest is restricted such as streamsides, lakeshores, and beach fringe. Therefore, the effects to the habitats of these species would be minimal across the Forest. Although there is anticipated road construction through additional wetlands with implementation of the Forest Plan, the locations of all new roads are analyzed to minimize impacts to soils, water and associated resources in accordance with BMPs. Road locations will be completed to avoid wetlands whenever practicable.

Since there would be no direct or indirect effects in Alternative 1, there would be no cumulative effects in Alternative 1. For Alternatives 2, 3, and 4, the Catalog of Events was referenced. The following cumulative effects may impact sensitive species or their habitat within the project area; road and trail construction, road storage or decommissioning, gravel extraction, timber harvest, and recreation. While individual populations and areas of potential habitat may be impacted by the proposed activities within the project area and across the Forest, cumulatively, the effects would not likely to lead to federal listing of any species.

As more sensitive plant surveys are conducted and more potential habitats surveyed, specialists are learning better methods on how to look for these plants. With this increasing knowledge, more plants are being found. Across the Tongass National Forest, from just the surveys concentrated in areas of proposed activities, approximately 86 populations of *Hymenophyllum wrightii* have been found, seventeen populations in the Central Kupreanof proposed activity area alone. As stated earlier, the regional sensitive plant species list was revised and *Hymenophyllum wrightii* and *Glyceria leptostachya* were removed from the list due to the recent findings of abundant populations across the Forest.

Risk Assessment

A risk assessment for each sensitive plant known or suspected in the project area must be conducted since only Level 3 (limited focus) surveys for plants were done. The level of consequence and level of likelihood are determined for each plant from the evaluation of direct, indirect and cumulative effects of the proposed project on sensitive plant populations. Levels of consequence and levels of likelihood are described in Appendix C. A risk assessment considers two factors: 1) the consequences of adverse (or beneficial) effects on the population, and 2) the likelihood or probability that these effects will occur.

Alternative 1 (No Action) – The consequences of adverse impacts to the four sensitive plants in this analysis due to project activities are none. The likelihood of adverse effects is none.

Alternatives 2, 3, and 4

Poa laxiflora

P. laxiflora has been found in over 30 locations on the Petersburg Ranger District, mainly forest/beach edge habitats and beach meadow. The habitat for this taxon is largely protected on the Tongass National Forest through riparian and beach buffers. The consequences of adverse impacts to this species are **low** because numerous other populations of *Poa laxiflora* have been found on the forest with most of the occurrences in beach fringe, which is protected from timber harvest. The likelihood of adverse impacts is **low** because its preferred habitat along streams and beaches is not likely to be affected by the proposed activities because of riparian and beach buffers. No populations were found during surveys within the project area.

Hymenophyllum wrightii

H. wrightii is found in older forest habitats and was found at two locations on Mitkof Island in the 1960s on the Petersburg Ranger District and one location on Baranof Island on the Sitka Ranger District. In 2006, increased expertise in identification led to documenting over 68 new sightings, including several new populations on Mitkof and Kupreanof islands. The jump in documented sightings in 2006 and since suggests that this tiny fern has largely been overlooked in the past and may be more common than once thought. The miniscule plant (gametophyte) is found in moist shaded areas on the undersides of downed logs and at the base of trees. It was documented in the Central Kupreanof project area in 17 locations. The consequences of adverse impacts to this species are low because of the increased number of known sightings on the Petersburg Ranger District and other locations on the Tongass. The likelihood of adverse effects of the known populations of this species is high because timber harvest would affect up to 14 populations in Alternatives 2, 3, and 4 and also affect preferred habitat in those alternatives.

Glyceria leptostachya

G. leptostachya is a perennial grass occurring principally in disturbed wet areas within southeastern Alaska. Sightings in recently disturbed wet areas suggest that this plant is a pioneer species. Primary habitat for this species includes lakeshores and stream banks, swamps, wet meadows and standing or slow moving shallow water. The consequences of adverse impacts to this sensitive plant due to project activities are none because this plant has demonstrated the ability to colonize newly disturbed wet areas if in the project area vicinity. This is based on evidence indicating that the occurrence of this plant on the forest is more abundant than previously thought. The likelihood of adverse effects of the known populations of this species is low because the one known population was found on a lake shore outside of any unit. Also, while road maintenance or reconstruction may impact the ditches and associated wet habitats, this disturbance to its population could have beneficial effects to populations. Some seeds and plants would survive any ditch or wetland habitat disturbance and re-colonize the area with time. Negative cumulative effects are unlikely because multiple populations occur across the forest.

Romanzoffia unalaschcensis

R. unalaschcensis has been found on the Sitka and Thorne Bay Ranger Districts. It is suspected to occur on the Petersburg District. It is found on rock outcrops, along stream banks, beach terraces, and open rocky areas. The consequences of adverse impacts to this species are moderate to high since there are

Appendix E

few documented sightings on the forest. The likelihood of adverse impacts is none because the potential habitat would not be affected with the proposed activities. No plants were found during surveys within the project area.

Determination

Based on the rationale described above, the alternative courses of action will result in the following impacts on the known and suspected sensitive plants:

Alternative 1 (No Action) – No impact to any sensitive plant species.

Alternatives 2, 3, and 4 – For *Hymenophyllum wrightii* Alternatives 2, 3, and 4 would impact some individual plants and habitat, but would not likely contribute to a trend toward federal listing or cause a loss of viability to the species because: several known populations in the project area would not be affected; the species is being found in increasing numbers across the forest; and many of the documented sightings on the Tongass are in areas of low risk of being affected by activities such as beach buffers and wilderness.

For the other three sensitive plants analyzed (*Poa laxiflora*, *Glyceria leptostachya*, and *Romanzoffia unalaschcensis*) these alternatives may impact individuals or habitat but are not likely to contribute to a trend toward federal listing or cause a loss of viability to the population or species, as generally the potential habitat for these species are not considered productive forest (such as muskeg and alpine), or in buffer zones where timber harvest is restricted such as stream sides, lakeshores, and beach fringe. Also, only minimal road construction (up to about two miles) is proposed crossing wetlands.

Determinations are per the May 15, 1992, letter of direction from the WO.

Additional Management Recommendations

If any previously undiscovered sensitive plants are encountered at any time prior to or during implementation of this project, protect the population and avoid any disturbance in the area containing the population (and similar habitats in that vicinity). The District or Forest Botanist/Ecologist should be notified immediately to evaluate the population and recommend avoidance or mitigation measures.

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Appendix E

Appendix A.

Alaska Region Sensitive Plants, June 2002.

<i>Aphragmus eschscholtzianus</i>	Eschscholtz's little nightmare
<i>Arnica lessingii</i> ssp. <i>norbergii</i>	Norberg arnica
<i>Botrychium tunux</i>	Moonwort fern, no common name
<i>Botrychium yaaxudakeit</i>	Moonwort fern, no common name
<i>Carex lenticularis</i> var. <i>dolia</i>	Goose-grass sedge
<i>Cirsium edule</i>	Edible thistle
<i>Draba kanaanaskis</i>	Tundra whitlow-grass
<i>Glyceria leptostachya</i>	Davy mannagrass
<i>Hymenophyllum wrightii</i>	Wright filmy fern
<i>Isoetes truncata</i>	Truncate quillwort
<i>Ligusticum calderi</i>	Calder lovage
<i>Papaver alboroseum</i>	Pale poppy
<i>Platanthera gracilis</i>	Bog orchid
<i>Poa laxiflora</i>	Loose-flowered bluegrass
<i>Puccinellia glabra</i>	Smooth alkali grass
<i>Puccinellia kamtschatica</i>	Kamchatka alkali grass
<i>Romanzoffia unalaschcensis</i>	Unalaska mist-maid
<i>Senecio moresbiensis</i>	Queen Charlotte butterweed
<i>Stellaria ruscifolia</i> ssp. <i>aleutica</i>	Circumpolar starwort

Alaska Region Sensitive Plants, February 2009

<i>Aphragmus eschscholtzianus</i>	Eschscholtz's little nightmare
<i>Botrychium spathulatum</i>	Spatulate moonwort
<i>Botrychium tunux</i>	Moonwort fern, no common name
<i>Botrychium yaaxudakeit</i>	Moonwort fern, no common name
<i>Cirsium edule</i> var. <i>macounii</i>	Edible thistle
<i>Cochlearia sessifolia</i>	Sessileleaf scurvygrass
<i>Cypripedium guttatum</i>	Spotted lady's slipper
<i>Cypripedium montanum</i>	Mountain lady's slipper
<i>Cypripedium parviflorum</i> var. <i>pubescens</i>	Large yellow lady's slipper
<i>Ligusticum calderi</i>	Calder lovage
<i>Lobaria amplissima</i>	Lichen, no common name
<i>Papaver alboroseum</i>	Pale poppy
<i>Piperia unalascensis</i>	Alaska rein orchid
<i>Platanthera orbiculata</i>	Lesser round-leaved orchid
<i>Polystichum kruckebergii</i>	Kruckeberg's swordfern
<i>Romanzoffia unalaschcensis</i>	Unalaska mist-maid
<i>Sidalcea hendersonii</i>	Henderson's checkermallow
<i>Tanacetum bipinnatum</i> subsp. <i>huronense</i>	Dune tansy

Appendix B.

Survey intensity level for plants.

LEVEL 1 = “FIELD CHECK”

The surveyor gives the area a quick “once-over” but does not walk completely through the project area. The entire project area has not been examined.

LEVEL 2 = “CURSORY”

The surveyor gives the area a “once-over” by walking through the project area. The entire project area has not been examined.

LEVEL 3 = “LIMITED FOCUS”

The surveyor closely examines one or more habitat-specific locations within the project area, but does not look at the rest of the area.

LEVEL 4 = “GENERAL”

The surveyor gives the area a closer look by walking through the project area and walking around the perimeter of the area or by walking more than once through the area. Most of the project area is examined.

LEVEL 5 = “INTUITIVE CONTROLLED”

The surveyor has closer look by conducting a complete examination of specific areas of the project after walking through the project area and perimeter or by walking more than once through the area.

LEVEL 6 = “COMPLETE”

The surveyor has walked throughout the survey area until nearly all of the area has been examined.

Appendix E

Appendix C.

Criteria for Risk Assessment.

Factor 1. Consequence of Adverse Effect From a Particular Activity

LOW: None, or questionable adverse effect on habitat or population.
No cumulative effects expected.

MODERATE: Possible adverse effects in habitat or on population.
Cumulative effects possible.

HIGH: Obvious adverse effects on habitat or population.
Cumulative effects probable.

Factor 2. Likelihood of Adverse Effect from a Particular Activity

NONE: Activity will not affect habitat or population.
(no further risk assessment needed).

LOW: Activity controllable by seasonal or spatial restrictions.
and not likely to affect habitat or populations.

MODERATE: Activity not completely controllable or intense administration of project needed
to prevent adverse effects on habitat or population. Adverse effects may occur.

HIGH: Activity not controllable and adverse effects on habitat or populations likely
to occur.

This process serves only to document the rationale for arriving at conclusions as per WO letter dated May 12, 1992

Appendix D. Central Kupreanof Species List from Surveys in 2006 and 2007Trees

Alnus rubra
Chamaecyparis nootkatensis
Picea sitchensis
Pinus contorta
Thuja plicata
Tsuga heterophylla
Tsuga mertensiana

Tall Shrubs

Alnus sinuata
Cladothamnus pyrolaeiflorus
Cornus stolonifera
Malus diversifolia
Menziesia ferruginea
Oplopanax horridus
Ribes bracteosum
Ribes lacustre
Ribes laxiflorum
Rubus parviflorus
Rubus spectabilis
Sambucus racemosa
Salix sitchensis
Spiraea douglasii
Vaccinium ovalifolium
Vaccinium parvifolium
Viburnum edule

Low Shrubs

Andromeda polifolia
Empetrum nigrum
Kalmia polifolia
Ledum groenlandicum
Linnaea borealis
Rubus arcticus ssp stellatus
Rubus chamaemorus
Rubus pedatus
Vaccinium caespitosum
Vaccinium oxycoccos
Vaccinium uliginosum
Vaccinium vitis-idaea

Forbs

Achillea millifolium
Aconitum delphinifolium
Actaea rubra
Aquilegia formosa
Arnica amplexicaulis
Aruncus sylvester
Caltha biflora
Caltha palustris
Circaea alpina
Claytonia sibirica
Clintonia uniflora
*Conioselinum pacificum**
Coptis asplenifolia
Coptis trifolia
Cornus canadensis
Cornus suecica
Dodecatheon jeffreyi

Appendix E

Drosera rotundifolia
Epilobium angustifolium
Epilobium latifolium
Epilobium spp
Equisetum arvense
Erigeron peregrinus
Fauria crista-galli
Fritillaria camschatcensis
Galium kamtchaticum
Galium trifidum
Galium triflorum
Gentiana douglasiana
Gentiana platypetala
Geum calthifolium
Geum macrophyllum
Goodyera oblongifolia
Heuchera glabra
Hypopitys monotropa
*Ligustichum scoticum**
Listera caurina
Listera convallarioides
Listera cordata
Lysichiton americanum
Malaxis paludosa
Maianthemum dilatatum
Menyanthes trifoliata
Microseris borealis
Mitella pentandra
Moneses uniflora
Nuphar polysepalum
Oenanthe sarmentosa
Osmorhiza chilensis
Osmorhiza purpurea
Parnassia fimbriata
Parnassia spp.
Pinguicula vulgaris
*Plantago major**
Platanthera unalaschcensis - Hamilton Trail
Platanthera dilatata
Platanthera saccata
*Potentilla anserine pacifica**
Potentilla palustris
Prenanthes alata
Pyrola secunda
*Ranunculus pacificus**
Ranunculus uncinatus
*Rumex occidentalis**
Sanguisorba menziesii
Sanguisorba spp.
Stellaria calycantha
Streptopus amplexifolius
Streptopus roseus
Streptopus streptopoides
Tellima grandiflora
Tiarella trifoliata
Tolfieldia glutinosa
Trientalis europaea
Valeriana sitchensis
Veratrum viride
*Vicia gigantea**
Viola adunca
Viola glabella
Viola langsdorffii
Viola spp.

Sedges

Carex aquatilis
Carex echinata
Carex laeviculmis
*Carex lyngbyei**
Carex macloviana
Carex mertensii
Carex paucifolia
Carex pluriflora
Carex sitchensis
Eriophorum angustifolium
Scirpus microcarpus
Scirpus caespitosus

Rushes

Juncus ensifolius
Luzula parviflora

Grasses

Agrostis aequivalvis
*Deschampsia caespitosa**
Elymus glaucus
Elymus hirsutus
Glyceria leptostachya
Trisetum cernuum

Ferns

Adiantum pedatum
Asplenium trichomanes - Unit 208
Asplenium viride
Athyrium filix-femina
Blechnum spicant
Cystopteris fragilis
Dryopteris austriaca
Gymnocarpium dryopteris
Hymenophyllum wrightii
Polypodium glycyrrhiza
Polystichum braunii
Pteridium aquilinum
Thelypteris limbosperma
Thelypteris phegopteris

Clubmosses

Lycopodium annotinum
Lycopodium clavatum
Lycopodium inundatum
Lycopodium selago

Liverworts

Conosephalum conicum

Lichens

Alectoria sarmentosa
Bryoria spp.
Cladonia rangiferina
Cladonia bellidiflora
Hypogymnia duplicata
Icmadolphia ericetorum

*Beach species, found on Hamilton Bay Trail and Big John Bay Trail outside project area.

Biological Evaluation
For The
Central Kupreanof Timber Harvest Project

USFWS, reference #71440-SL-2009-0026

Petersburg Ranger District
Tongass National Forest

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TABLE OF CONTENTS

Biological Evaluation for the **Central Kupreanof Timber Harvest Project**, Petersburg Ranger District, Tongass National Forest

J:\fsfiles\office\prd\ptimber\Central_Kupreanof_EIS\03-16) Resources\04) Wildlife\A) Resource Report

I. INTRODUCTION	3
II. PROJECT DESCRIPTION	3
III. THREATENED, ENDANGERED, CANDIDATE AND PROPOSED SPECIES	4
SPECIES NOT ADDRESSED IN DETAIL	7
Effects Analysis	8
Affected Environment	8
HUMPBACK WHALE	8
STELLER SEA LION	10
YELLOW-BILLED LOON	12
Determinations	122
IV. SENSITIVE SPECIES	133
Affected Environment	144
KITTLITZ'S MURRELET	144
Effects Analysis	15
NORTHERN/QUEEN CHARLOTTE GOSHAWK	166
ALEUTIAN TERN	188
BLACK OYSTERCATCHER	20
Determinations	21
VI. REFERENCES	222

Appendix E

I. INTRODUCTION

Biological Evaluations (BE) provide a process to review all Forest Service planned, funded, executed or permitted programs and activities for possible effects on threatened, endangered, proposed or sensitive species (TEPS) (Forest Service Manual 2672.4). BEs are intended to help ensure that Forest Service actions do not contribute to a loss of viability or any native or desired non-native plant or animal species or contribute to trends toward Federal listing of any species. They provide a process and standard to ensure that TEPS species receive full consideration in the decision-making process (FSM 2672.41).

The effects analysis in the BE is required to address any direct, indirect, and cumulative effects of an action on threatened or endangered species or their critical habitat (50 Code of Federal Regulations [CFR] 402.02) and on sensitive species or their habitat (FSM 2672.42). This BE also complies with Section 7 of the Endangered Species Act (ESA), which requires all Federal Agencies, in consultation with the U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS), to insure that their actions are not likely to jeopardize the continued existence of threatened, endangered or proposed species or adversely modify their habitat.

Current management direction on desired conditions for Threatened, Endangered, Proposed and Sensitive species on the Tongass National Forest can be found in the following documents:

- Forest Service Manual and Handbooks (FSM/H 2670/2609)
- National Forest Management Act (NFMA)
- Endangered Species Act (ESA)
- National Environmental Policy Act (NEPA)
- Tongass National Forest Land and Resource Management Plan (referred to as the Forest Plan) (USDA 2008a)
- Species specific recovery plans that establish population goals for recovery of those species
- Regional Forester policy and management direction (i.e., Sensitive Species List)

The Forest is organized into Land Use Designations (LUD) for management purposes. Each LUD has specific goals, objectives, desired conditions and management prescriptions which are discussed in Chapter 3 of the Forest Plan. LUDs within the project area include: Timber Production (approximately 72%), Old-growth Habitat (approximately 12%), Semi-remote Recreation (approximately 10%), Modified Landscape (approximately 5%), and Special Interest Area (<1%), Remote Recreation and Wilderness (<1%) (DEIS Vol. A, pp. 1-7 through 1-8, Dec. 2008).

The Forest Plan provides specific information on how TEPS species will be managed. Forest-wide desired conditions and goals for fish and wildlife are included in Chapter 2 of the Forest Plan. The Forest Plan standards and guidelines for TEPS species provide the direction for species management within the project area (USDA 2008a, pp. 4-14, 4-89 through 4-100). The direction is incorporated by reference.

II. PROJECT DESCRIPTION

The Petersburg Ranger District of the Tongass National Forest, Alaska Region (Region 10), of the USDA Forest Service, is proposing the Central Kupreanof Timber Harvest Project. The project is located centrally on the western portion of Kupreanof Island, approximately 30 air miles northwest

of Petersburg. The northern end of the project area begins about 9 miles southeast of the Community of Kake and will utilize the Kake road system. The project area contains portions of the Castle, Rocky Pass, North Kupreanof, and South Kupreanof Inventoried Roadless Areas. Approximately 123,297 acres of inventoried roadless area are included within the project area boundary (DEIS Vol. A, pp. 1-4, Dec. 2008).

There are four alternatives for the Central Kupreanof Timber Harvest Project. These alternatives range from “No-Action” which is the current existing status of the project area, which includes no new construction of roads and no timber volume harvested, action alternatives which may harvest up to approximately 70.2 MMBF (sawlog and utility) from 3,647 acres, 25.1 miles of new NFS road constructed, 9.1 miles of reconstructed road, and 6.1 miles of temporary road constructed.

The Central Kupreanof Timber Harvest Project includes approximately 152,517 acres, and its boundaries follow the boundary of value comparison units (VCUs) 429, 438, 426, 436, and 427.1 (DEIS Vol. A, p. 1-4, Dec. 2008). The project includes seven Land Use Designations (LUDs) – Timber Production, Old-growth Habitat, Semi-remote Recreation, Modified Landscape, Special Interest Area, Remote Recreation and Wilderness. The interdisciplinary team has identified several projects within the project area that could serve as stewardship opportunities alongside the timber harvest proposal, including trail maintenances, pre-commercial thinning opportunities (both for silvicultural and wildlife purposes), fisheries and hydrology opportunities, and road maintenance activities (DEIS Vol. A, p. 1-2, Dec. 2008).

The purpose of this project is to: (1) Manage the timber resource for the production of sawtimber and other wood products from suitable lands made available for timber harvest on an even-flow, long-term sustained yield basis, and in an economically efficient manner; (2) Seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber and the market demand for the planning cycle; (3) Provide for a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska (DEIS Vol. A, pp. 1-2 and 1-3, Dec. 2008).

III. THREATENED, ENDANGERED, CANDIDATE AND PROPOSED SPECIES

In compliance with the Forest Plan and ESA, species that are listed as threatened, endangered, candidate or proposed in this area were identified. Federally listed threatened and endangered species are those plant and animal species formally listed by the Fish and Wildlife Service or National Marine Fisheries Service under authority of the Endangered Species Act of 1973, as amended. An endangered species is defined as one that is in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as one that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Petitioned species are species that are actively being considered for listing.

The FWS and NMFS Internet web sites were consulted, for the preparation of this document because they provide occurrence and habitat information. An email correspondence from Katharine Savage (NMFS) to Chuck Parsley (USDA FS) was also obtained for clarification of current listed species recognized by NMFS.

The FWS list of threatened, endangered, candidate and proposed species for all of Alaska is shown in Table 1 (USDI 2007a). The Kittlitz’s murrelet is a candidate species that is covered in the Forest Service Sensitive Species listing, further on in the document, and will not be covered here.

Appendix E

These species listed in Table 1 are not known to occur in southeast Alaska or on the Tongass National Forest, therefore they are not known to occur in or around the analysis area per information from (<http://alaska.fws.gov/fisheries/endangered/listing.htm>) and informal consultation with the FWS (Steve Brockmann, 13 February 2009, and reference number #71440-2009-SL-0026). A Section 7 Consultation with the US Fish and Wildlife Service will occur prior to the initiation of this project (if needed). These species (listed below) will not be addressed further in this Biological Evaluation.

Table 1. Threatened, endangered, candidate and proposed species managed by the FWS and location description throughout Alaska (USDI 2009a).

Common Name	Scientific Name	ESA Status	Location Description
Eskimo Curlew	<i>Numenius borealis</i>	Endangered	Occurred in the arctic and is assumed to no longer occur in Alaska (USDI 2007a and 2006a).
Short-tailed Albatross	<i>Phoebastria albatrus</i>	Endangered	Occupies coastal waters in the Gulf of Alaska and the Aleutian Islands (USDI 2001).
Spectacled Eider	<i>Somateria fischeri</i>	Threatened	Occupies coastal waters in northern and western Alaska (USDI 1999 and 2007b).
Polar Bear	<i>Ursus maritimus</i>	Proposed	Lives only in the Northern Hemisphere (USDI 2006b, p. 1).
Steller's Eider	<i>Polysticta stelleri</i>	Threatened	Occurs in northern and western Alaska (USDI 1999 and 2007b).
Steller Sea Lion (Eastern AK DPS)*	<i>Eumetopias jubatus</i>	Threatened	Includes sea lions born on rookeries from CA north through Southeast Alaska (NMFS 2008).
Steller Sea Lion (Western AK DPS)*	<i>Eumetopias jubatus</i>	Endangered	Includes sea lions born on rookeries from Prince William Sound westward (NMFS 2009).
Northern sea otter (SW Alaska Population)	<i>Enhydra lutris kenyoni</i>	Threatened	The FWS listed only the sea otter populations in southwest Alaska as threatened (USDI 2005, pp. 5-6).
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	Endangered	Species is "known to occur" in Alaska (USDI 2009a).
Bowhead whale	<i>Balaena mysticetus</i>	Endangered	Species is "known to occur" in Alaska (USDI 2009a).
Finback whale	<i>Balaenoptera physalus</i>	Endangered	Species is "known to occur" in Alaska (USDI 2009a).
Humpback whale	<i>Megaptera novaeangliae</i>	Endangered	Species is "known to occur" in Alaska (USDI 2009a).
Yellow-billed Loon	<i>Gavia adamsii</i>	Candidate	Nest near freshwater lakes in the arctic tundra and winter along the Alaskan coast to the Puget Sound (USDI 2009b).

* DPS = Distinct population segment.

The list of Alaska threatened, endangered, and proposed species from the NMFS is shown in Table 2. Occurrence information was obtained from an email correspondence from Katharine Savage, NMFS, on 12 February 2009. A Section 7 Consultation will occur with the NMFS prior to initiation of this project (if needed).

Table 2. Summary of NMFS (email correspondence 12 February 2009) listed threatened, endangered, proposed & candidate species for the Central Kupreanof Timber Harvest Project area and Alaska (NMFS 2009).

Common Name	Scientific Name	Status
Steller sea lion (Eastern DPS)*	<i>Eumetopias jubatus</i>	Threatened
Steller sea lion (Western DPS)*	<i>Eumetopias jubatus</i>	Endangered
Blue whale	<i>Balaenoptera musculus</i>	Endangered
Bowhead whale	<i>Balaena mysticetus</i>	Endangered
Fin whale	<i>Balaenoptera physalus</i>	Endangered
Humpback whale	<i>Megaptera novaengliae</i>	Endangered
North Pacific Right Whale	<i>Eubalaena japonica</i>	Endangered
Sei whale	<i>Balaenoptera borealis</i>	Endangered
Sperm whale	<i>Physeter macrocephalus</i>	Endangered
Beluga whale (Cook Inlet DPS)*	<i>Delphinapterus leucas</i>	Endangered
Spotted seal	<i>Phoca largha</i>	Candidate
Bearded seal	<i>Erignathus barbatus</i>	Candidate
Ringed seal	<i>Phoca hispida</i>	Candidate
Green sea turtle	<i>Chelonia mydas</i>	Threatened
Loggerhead turtle	<i>Caretta caretta</i>	Threatened
Olive ridley turtle	<i>Lepidochelys olivacea</i>	Threatened
Leatherback turtle	<i>Dermochelys coriacea</i>	Endangered
Pacific herring (Lynn Canal DPS)*	<i>Clupea pallasii</i>	Candidate
Puget Sound Chinook salmon	<i>Oncorhynchus tshawytscha</i>	Threatened
Lower Columbia River Salmon	<i>Oncorhynchus tshawytscha</i>	Threatened
Upper Columbia River Salmon	<i>Oncorhynchus tshawytscha</i>	Endangered
Upper Willamette River Salmon	<i>Oncorhynchus tshawytscha</i>	Threatened
Snake River Spring/Summer Salmon	<i>Oncorhynchus tshawytscha</i>	Threatened

Appendix E

Snake River Fall Salmon	<i>Oncorhynchus tshawytscha</i>	Threatened
Snake River Sockeye Salmon	<i>Oncorhynchus nerka</i>	Endangered
Upper Columbia River Steelhead	<i>Oncorhynchus mykiss</i>	Endangered
Middle Columbia River Steelhead	<i>Oncorhynchus mykiss</i>	Threatened
Lower Columbia River Steelhead	<i>Oncorhynchus mykiss</i>	Threatened
Upper Willamette River Steelhead	<i>Oncorhynchus mykiss</i>	Threatened
Snake River Basin Steelhead	<i>Oncorhynchus mykiss</i>	Threatened

* DPS = Distinct population segment.

SPECIES NOT ADDRESSED IN DETAIL

Blue, right, finback, sei beluga, and sperm whales are generally found in off-shore (pelagic) marine waters of the Bering Sea, Chukchi Sea, Cook Inlet, North Pacific Ocean and/or Gulf of Alaska (NMFS 1998a, NMFS 1998b, and NMFS 1991a). No critical habitat has been designated for these species in Alaskan waters. Bowhead whales are distributed in seasonally ice-covered waters of the Arctic and near-Arctic, generally north of 54°N and south of 75°N in the western Arctic Basin. The majority of the Western Arctic stock migrates annually from wintering areas in the northern Bering Sea, through the Chukchi Sea in the spring, to the Beaufort Sea where they spend much of the summer before returning again to the Bering Sea in the fall to overwinter. No critical habitat has been designated for this species in Alaskan waters (Shelden and Rugh 1995). These species generally are not known to occur in the project area. These species do not occur in habitats likely to be affected by this project. Therefore, no effects to these species are expected and they will not be discussed further in this document.

The spotted, bearded, and ringed seals that are listed in Alaska occur further north than the Petersburg Ranger District, in the Bering Sea and the Chukchi Sea (NMFS 2009), therefore are not impacted by our project area, and will not be discussed further in this document.

The green, leather back, olive ridley and loggerhead sea turtles occur in the Gulf of Alaska and some species are found as far west as the Aleutian Islands. Adults are highly migratory, but the details and locations of migrations are largely unknown. These turtle species have been documented to occur in Southeast Alaska (NMFS 2009), but those sightings are considered incidental and the species are not common to the Central Kupreanof Timber Harvest Project area. These turtle species are suspected to be uncommon in Alaska marine waters and critical habitat has not been designated in Alaskan waters (NMFS 2007 and NMFS and FWS 1998). Leatherback, Green, Olive Ridley and Loggerhead turtles have not been documented in or around the salt waters of the Central Kupreanof Timber Harvest project area, and they are not known to occur in habitats likely to be affected by this project. Therefore, no effects to these species are expected and they will not be discussed further in this document.

The Pacific Herring DPS is thought to be in the Lynn Canal area and it will be several months before the final delineation is made so we expect no effect to the Pacific herring, resulting from the Central Kupreanof Timber Harvest Project (NFMA 2009).

None of the stocks of Pacific salmon or steelhead known to originate from freshwater habitat in Alaska are listed under the Endangered Species Act. However, some individuals of the listed species originating from freshwaters in the lower 48 states occur in Alaskan outside waters. No critical habitat has been designated for these species in Alaskan water (USDA 2008b, p. F-7). None of the listed stocks of salmon or steelhead are known to originate in Alaskan streams. However, many species and stocks are listed that originated from freshwater habitats in Washington, Idaho, Oregon, and California. Some of the listed species migrate into marine waters off the coast of Alaska. While distribution of these stocks is primarily in outer coastal waters some are occasionally present in the inner waters of Southeast Alaska and they may feed on prey resources originating within marine and estuarine waters of the Tongass National Forest (USDA 2008b, p. F-7). Critical habitat has not been designated for these species in Alaskan waters, therefore, no effect to these species is expected and they will not be discussed further in this document.

General Forest Plan direction for threatened and endangered species applies (USDA 2008a, p. 4-98 through 4-100).

Effects Analysis

The analysis area was analyzed and a determination was made to assess the direct, indirect, and cumulative effects of the proposed project on proposed, endangered, and threatened species or critical habitat (50 CFR 402.14, FSM 2671.44) (Table 3). There will be no impact to the Eskimo curlew, polar bear, Northern sea otter, short-tailed albatross, spectacled eider, and Steller's eider listed by the FWS and the blue whale, bowhead whale, fin whale, green sea turtle, leatherback sea turtle, olive ridley sea turtle, loggerhead sea turtle, North Pacific right whale, sei whale, sperm whale, or the Pacific herring listed by the NMFS have not been documented to occur in southeast Alaska, or on the Tongass National Forest, or in habitats likely to be affected by the Central Kupreanof Timber Harvest Project or they are not listed as threatened, endangered, or proposed in southeast Alaska. Therefore, there should be no direct, indirect or cumulative effects to these species and they will not be addressed further in this document.

Affected Environment

The NMFS and FWS listed wildlife species that may occur within the waters surrounding the project area include the endangered humpback whale (*Megaptera novaeangilae*) and the threatened Steller sea lion (*Eumetopias jubatus*). This Biological Evaluation will address the Humpback whale and Steller Sea Lion in further detail.

HUMPBACK WHALE

The NMFS listed the humpback whale as a threatened species because of over-exploitation from commercial whaling (NMFS 1991, p.15). Primary objectives of humpback whale recovery include maintaining and enhancing habitat and rescuing human related mortality, injury, and disturbance.

Humpback whales are the most abundant of the seven species of endangered whales that occur in southeast Alaska waters. They are common in the inside waters of the Alexander Archipelago and are regularly sighted in the Inside Passage and coastal waters of the southeast Alaska panhandle from Yakutat Bay south to Queen Charlotte Sound. The local distribution of humpbacks in Southeast Alaska appears to be correlated with the density and seasonal availability of prey, particularly

Appendix E

herring (*Clupea harengus*) and euphausiids (NMFS 1991, p. 18). Humpback whales feed in southeast Alaskan panhandle waters from about May through December, although some have been seen every month of the year. Peak numbers of whales are usually found in near shore waters during late August and September, but substantial numbers usually remain until early winter (NMFS 1991).

Important feeding areas include Glacier Bay and adjacent portions of Icy Strait, Stephens Passage/Frederick Sound, Seymour Canal, and Sitka Sound. Glacier Bay and Icy Strait appear to be important feeding areas early in the season, when whales prey heavily on herring and other small, schooling fishes. Frederick Sound is important later in summer, when whales feed on swarming euphausiids. During autumn and early winter, humpbacks move out of the Sound to areas where herring are abundant, particularly Seymour Canal. Other areas of southeast Alaska may also be important for humpbacks and need to be evaluated. These include: Cape Fairweather, Lynn Canal, Sumner Strait, Dixon Entrance, the west coast of Prince of Wales Island, and offshore banks such as the Fairweather Grounds (NMFS 1991b). The NMFS has not designated critical habitats for this species in Alaskan waters. Humpback whales are known to use the waters of Frederick Sound and Chatham Strait, areas already having high commercial vessel use; slow-moving barge traffic should not increase the disturbance of these animals.

Specific Forest Plan direction for humpback whale is given on pages 4-98 to 4-99 (USDA 2008a).

Direct and Indirect Effects

The implementation of the Central Kupreanof Timber Harvest Project will have no direct effects to the Humpback whale or its habitat because it will occur on the upland, away from such habitat. Generally there is limited potential to directly affect whales with the operation of an LTF/MAF (log transfer facility/marine access facility).

Two potential indirect effects of LTF/MAFs and other docking facilities and associated activities have been identified: 1) effects on whale prey species, and 2) disturbances of whales by boat traffic associated with LTF/MAFs. Tugs would maintain relatively constant speeds and directions during towing. Constant speed and direction elicit less avoidance behavior from whales than other types of boating activity. Towing routes are generally well-established, and adverse effects from barge towing have not been documented.

Humpback whales may inhabit shallow coastal areas where they are increasingly exposed to human activity. Recovery plans for the humpback whale (NMFS 1991b, p. 25) identified potential human induced factors that could affect individual reproductive success, alter survival, and/or limit the availability of habitat for these species. Recreational boating activity would vary between seasons and years, and no permit logging camps are anticipated, however a floating camp may occur. It is estimated that most recreation boating would occur within a few miles of the site, few trips would be made over 10 miles, and activity greater than 30 miles from a site would be negligible. This boating would involve frequent changes in speed and direction and may include some small amount of whale pursuit, if the whales are within sight of the camp or an occupied boat. The effect of such recreational activity on whales would depend on many factors such as size of the bay, depth of the waters in the bay, number of boats, individual behavior responses of the whales, etc. We do not anticipate any change in recreational boating patterns because no new camps are planned as a result of this project. All Forest-wide Standards and guidelines (S&Gs) will be implemented during the operation of this LTF/MAF and all operators will be required to comply with these S&Gs.

National Forest management activities that could have an effect on habitats or populations of this species generally fall into the categories of direct disturbance, acoustic disturbance, and habitat degradation (including effects to prey species). These effects are generally associated with the development and use of marine access facilities (MAFs), also referred to as log transfer facilities (LTFs), increase marine activities, and activities that alter stream habitat that flows into marine environments. The proposed action would have negligible direct, indirect or cumulative effects to the humpback whale, because activities would not increase marine activities or alter habitat that could affect streams or the marine environment.

The Central Kupreanof project area will use the existing road system and the existing Little Hamilton LTF/MAF for all alternatives. Located outside of the project area at the end of NFS Road 6000, the Little Hamilton LTF/MAF is the only LTF/MAF that can be used for this project. The transfer of harvested timber requires that logs be hauled directly to mills by trucks, or removed from trucks, transferred to salt water or barges at the Little Hamilton LTF/MAF, then towed to a mill. The intent of this Biological Evaluation was to analyze the Little Hamilton LTF/MAF as if it were fully permitted for activity including barging and raft/watering logs. Barge traffic will increase due to this project, but the waters of Fredrick Sound and Chatham Strait are high commercial vessel traffic areas and humpback whales are known to use these waters. Slow-moving barge traffic should not increase the disturbance of these animals. No land camp is proposed in the project area and appropriate permits would need to be acquired by the operator for use of a floating camp (DEIS Vol. A, pp. 3-13 and 3-39-3 through 41, Dec. 2008).

Cumulative Effects

No cumulative effects are anticipated because of the operation of the Central Kupreanof Timber Harvest Project or raft/barge and recreational boating traffic increases that may be caused by the sale activities.

STELLER SEA LION

NMFS recognizes two distinct population segments (DPS) of Steller sea lions. The eastern DPS includes sea lions born on rookeries from California north through Southeast Alaska; the western DPS includes those animals born on rookeries from Prince William Sound westward. The regulatory division between DPSs is Cape Suckling (144° west longitude) in the northeast Gulf of Alaska. However, frequent movement is seen across this boundary by animals from both populations, particularly juvenile animals (NMFS 2008, p. I-3). Due to persistent decline, the western DPS was reclassified as threatened, found at <http://www.nmfs.noaa.gov/pr/pdfs/recovery/stellersealion.pdf>.

The Western Alaska DPS (distinct population segment) does not occur in the Central Kupreanof Timber Harvest Project area and will not be discussed further.

Steller sea lion habitat includes marine and terrestrial areas. Adult Steller sea lions congregate at rookeries; a site where breeding occurs and sea lions may haulout during the non-breeding period. Rookeries are generally located on relatively remote islands, often in exposed areas that are not easily accessed by humans or mammalian predators. The breeding season generally extends from late May to early July (NMFS 2008, p. I-2). During fall and winter many sea lions disperse from rookeries and congregate at “haulout” areas. Rookery and haulout locations are specific and use of these sites changes little from year to year. Rocks, reefs, beaches, breakwaters, navigational aids, floating docks and sea ice may also be used as haulouts. Life history and population information is

Appendix E

contained in the Recovery Plan (NMFS 2008) and is incorporated by reference.

Critical habitat for Steller sea lions was designated by NMFS in 1993 (50 CFR 226). Three rookeries and 11 haulouts were designated as critical habitat in Southeast Alaska. Since this designation, two additional sites, Graves Rocks and Bialy Rocks, appear to have developed into rookeries (NMFS 2008, p. I-14). Steller sea lion critical habitat includes a 20 nautical mile buffer and three large offshore foraging areas (see <http://alaskafisheries.noaa.gov/protectedresources/stellers/habitat.htm>). A known haul-out occurs on the Sukoi Islands off Kupreanof Island near the Five-mile Creek drainage near Petersburg, Alaska. They also occur on small islands at the mouth of Keku Strait and on small islands to the north of the project. These areas will not be impacted by this project.

Specific Forest Plan direction for Steller sea lion is given on pages 4-93 and 4-98 to 4-99 (USDA 2008a).

Direct and Indirect Effects

Southeast Alaska populations have not declined as much as other populations. Harassment or displacement of sea lions from preferred habitats by human activities such as boating, recreation, aircraft, log transfer facilities, log raft towing, etc. is a concern with regard to long term conservation of the sea lion in Southeast Alaska. Forest-wide S&Gs direct the forest Service to prevent and/or reduce potential harassment of sea lions and other marine mammals due to activities carried out by or under the jurisdiction of the Forest Service.

Steller sea lions may inhabit shallow coastal areas where they are increasingly exposed to human activity. Recovery plans for Steller sea lion (NMFS 2008) identified potential human induced factors that could affect individual reproductive success, alter survival, and/or limit the availability of habitat for these species. National Forest management activities that could have an effect on habitats or populations of this species generally fall into the categories of direct disturbance, acoustic disturbance, and habitat degradation (including effects to prey species). These effects are generally associated with the development and use of marine access facilities (MAFs), also referred to as log transfer facilities (LTFs), increase marine activities, and activities that alter stream habitat that flows into marine environments. The proposed action would have negligible direct, indirect or cumulative effects to the Steller sea lion, because activities would not increase marine activities or alter habitat that could affect streams or the marine environment. A known haul-out occurs on the Sukoi Islands off Kupreanof Island near the Five-mile Creek drainage near Petersburg, Alaska. They also occur on small islands at the mouth of Keku Strait and on small islands to the north of the project. These areas will not be impacted by this project.

Cumulative Effects

Cumulative effects are not anticipated because of the operation of this project, or barging, recreational boat traffic or other human activities that may be caused by the Central Kupreanof Timber Harvest project.

All Forest-wide Standards and guidelines (S&Gs) will be implemented during the operation of this LTF/MAF and all operators will be required to comply with these S&Gs.

YELLOW-BILLED LOON

The yellow-billed loon is the largest of the loon species. They nest near freshwater lakes in the arctic tundra of Alaska on the Arctic Coastal Plain, northwestern Alaska and Saint Lawrence Island, and in portions of Canada and Russia. Winter range includes the coastal waters of southern Alaska from the Aleutian Islands to Puget Sounds and portions of Asia, Norway and potentially Great Britain (USDI 2009b).

Yellow-billed loons nest exclusively in coastal and inland low-lying tundra associated with permanent lakes. Lakes are generally larger in size (33 acres), greater than six feet deep, are often connected to streams and must be fish-bearing. Important lake features include clear water, dependable water levels, and shoreline vegetation. Nests are constructed of mud or peat and are located on islands, hummocks, peninsulas or along low shorelines within three feet (one meter) of the water (USDI 2009b).

The FWS developed a conservation agreement to protect yellow-loons in 2006. The yellow-billed loon was designated as a candidate species throughout its range and petitioned for listing as a threatened or endangered species in March 2009 (Federal Register 2009).

Although yellow-billed loon nest areas have not been identified on the Tongass NF, loons may be observed along the Pacific coast while migrating to winter habitat. General Forest Plan direction for seabirds and shorebird habitats apply to this species (USDA FS 2008a, pp. 4-93 to 94) and direction for the protection of beach, estuary and riparian habitats maintain some habitat for this species.

Direct and Indirect Effects

Although yellow-billed loon nest areas have not been identified on the Tongass NF, loons may be observed along the Pacific coast while migrating to winter habitat. General Forest Plan direction for seabirds and shorebird habitats apply to this species (USDA FS 2008a, pp. 4-93 to 94) and direction for the protection of beach, estuary and riparian habitats maintain some habitat for this species. Depending upon weather, the Central Kupreanof Timber Harvest project is likely to have reduced or no activity during times when loons may be present.

Cumulative Effects

No cumulative effects are anticipated because of the operation of the Central Kupreanof Timber Harvest project or raft/barge and recreational boating traffic increases that may be caused by the sale activities.

All Forest-wide Standards and guidelines (S&Gs) will be implemented during the operation of this LTF/MAF and all operators will be required to comply with these S&Gs.

Determinations

A determination was made to assess the effects of the project on threatened, endangered, candidate and proposed species or their critical habitat (50 CFR 402.14, FSM 2671.44). Based on the physical and biological requirements of the humpback whale and Steller sea lion and considering the potential effects from implementing the proposed action, it is my opinion that the locations of LTF/MAFs and the harvest of timber scheduled by this proposed action will not adversely affect the listed species or their habitats.

Appendix E

I therefore request, that a “no effect” determination be rendered in regard to the humpback whale, Steller sea lion, and yellow-billed loon for the Central Kupreanof Timber Harvest Project. This action is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat in the project area. All project activities would be conducted in a manner consistent with the ESA and regulations.

Table 3. Summary of FWS and NMFS listed T & E species and determinations for the Central Kupreanof Timber Harvest Project.

Species	Status	Determination¹
Humpback whale	Endangered	No Effect
Leatherback sea turtle	Endangered	No Effect—not known to occur within the project area
Steller sea lion	Threatened	No Effect.
Yellow-billed Loon	Candidate	No Effect.
Snake River Sockeye Salmon	Endangered	No Effect—not known to occur within the project area
Upper Columbia R. spring Chinook salmon	Endangered	No Effect—not known to occur within the project area
Puget Sound Chinook salmon	Threatened	No Effect—not known to occur within the project area
Lower Columbia R. Chinook salmon	Threatened	No Effect—not known to occur within the project area
Upper Willamette R Chinook salmon	Threatened	No Effect—not known to occur within the project area
Snake River spring/summer Chinook salmon	Threatened	No Effect—not known to occur within the project area
Snake River fall Chinook Salmon	Threatened	No Effect—not known to occur within the project area
Upper Columbia R. steelhead	Endangered	No Effect—not known to occur within the project area
Middle Columbia R. steelhead	Threatened	No Effect—not known to occur within the project area
Lower Columbia R. steelhead	Threatened	No Effect—not known to occur within the project area
Upper Willamette R. steelhead	Threatened	No Effect—not known to occur within the project area
Snake R. Basin steelhead	Threatened	No Effect—not known to occur within the project area

1 - Possible determinations for T&E species and Designated Critical Habitat: “no effect”, “not likely to adversely affect”, or “likely to adversely affect”. Possible determinations for Proposed Species and Proposed Critical Habitat: “no effect”, “not likely to jeopardize proposed species, or adversely modify proposed critical habitat”, or “likely to jeopardize proposed species, or adversely modify proposed critical habitat”.

IV. SENSITIVE SPECIES

Sensitive species are those plant and animal species identified by the Regional Forester for which population viability is a concern on NFS lands within the region. This is evidenced by a significant current or predicted downward trend in population numbers, density, or habitat capability that will reduce a species’ existing distribution (FSM 2670.5). The Forest Service Manual states that viable

populations and habitat of these species will be maintained and distributed throughout their geographic range on NFS lands (FSM 2670.22). As part of the NEPA process, Forest Service impacts to these species will be minimized or avoided (FSM 2670.32). The BE should identify all sensitive species known or suspected to occur in the analysis area or all sensitive species that the project potentially effects (FSM 2672.42).

The Alaska Region Sensitive Species List was last updated in 2009 (Table 4) (FSM 2600 Supplement No.: R-10 2600-2009-1). The Regional Sensitive Species List continues to be revised as new information dictates (USDA 2009).

Table 4. Alaska Region (R10) listed sensitive species.

Common Name	Scientific Name
Kittlitz's murrelet	<i>Brachyramphus brevirostris</i>
Queen Charlotte goshawk	<i>Accipiter gentilis laingi</i>
Aleutian Tern	<i>Sterna aleutica</i>
Black oystercatcher	<i>Haematopus bachmani</i>

* Based on our Alaska Region and National Forest System policy, USFWS and NMFS Candidate species are considered and treated as FS Sensitive, analyzed as such per Regional Forester letter to Forest Supervisors, February 5, 2009 (USDA 2009).

Affected Environment

The Alaska Region (10) listed sensitive species that may occur within the Central Kupreanof Timber Harvest Project are the Kittlitz's murrelet, Queen Charlotte/Northern goshawk, Aleutian tern, and the Black oystercatcher. This Biological Evaluation will address these four species in further detail.

KITTLITZ'S MURRELET

On May 9, 2001, the Secretary of the Interior was petitioned to list the Kittlitz's murrelet as endangered with concurrent designation of critical habitat under the ESA. Petitioners cited dramatic reductions in population size over the past decade and declining habitat quality as reasons for the requested listing. The species was officially designated a candidate species (warranted, but precluded) on May 4, 2004. A candidate species is a species for which the FWS has sufficient information to support a proposal to list as endangered or threatened, but for which preparation and publication of a proposal is precluded by higher priority listing actions. The Kittlitz's murrelet has been designated as a sensitive species, added to the R10 sensitive species list. Current Forest Plan direction for sensitive species applies (USDA 2009).

Kittlitz's murrelet is a small diving seabird that is closely associated with glacial habitats along the Alaska mainland coast. The only North American population occurs in Alaskan waters from Point Lay south to the northern portions of Southeast Alaska (Endicott and Tracey Arm). The largest breeding populations are believed to be in Glacier Bay National Park and Preserve, Prince William Sound, Kenai Fjords, and Icy Bay (Kendall and Agler 1998). The Kittlitz's murrelet population has shown a significant decline in Prince William Sound, Glacier Bay and in the Malaspina Forelands (USDI 2006c). The Prince William Sound population has shown an 18 percent per year decline and an 84 percent decline from 1989 to 2000. The Glacier Bay population declined approximately 80 percent between 1991 and 2000. In the Malaspina Forelands the population has declined at least 38 percent (5 percent per year) but possibly up to 75 percent between 1992 and 2002 (USDI 2002).

Appendix E

Major threats to this species are global warming, which is correlated with a loss of suitable habitat (glacial melt) and reduction in prey availability due to warming sea temperatures. Human activity in the marine environment, particularly vessel traffic and fishing operations, are additional threats. Speculated causes for Kittlitz's murrelet decline include: glacial recession, oil pollution, gillnet mortality, and availability of preferred forage fish (Kuletz et al. 2003; Piatt and Anderson 1996). Increased disturbance from helicopter tours and cruise ships may also be a factor.

They have been seen as far south as Frederick Sound, Snow Passage and Sea Otter Sound (Day et al. 1999). During the breeding season they congregate near tidewater glaciers and offshore of remnant high-elevation glaciers. Breeding sites are usually chosen in the vicinity of glaciers and cirques in high elevation alpine areas with little or no vegetative cover (van Vilet 1993). When present, vegetation is primarily composed of lichens and mosses (Day et al. 1983). The species generally nests within 0.2 to 47 miles inland and a short distance below peaks or ridges on coastal cliffs, and on barren ground, rock ledges, or talus above timberline (Day et al. 1983). During winter and spring, the marine distribution of Kittlitz's murrelet is farther offshore in the Alaska coastal Current and mid-shelf region (USDI 2006c).

Nesting habitat includes unvegetated scree fields, coastal cliffs, barren ground, rock ledges and talus above timberline in coastal mountains in the vicinity of glaciers, cirques near glaciers or recently glaciated areas (Day et al. 1999).

Prey consists of fish (Pacific sand lance (*Ammodytes hexapterus*), Pacific herring (*Clupea pallasii*), capelin (*Mallotus villosus*), Pacific sandfish (*Trichodon trichodon*), euphausiids, amphipods and small crustacean (Day et al. 1999). They forage extensively near outflow from glaciers, both tidewater and retreated glaciers with turbid glacial streams, primarily within 656 ft (200m) from shore (Day et al. 1999).

Kittlitz's murrelet is known to occur on the oceanic glaciers that occur on the Petersburg Ranger District. These glacial outwashes are within landscapes that fall outside normal land disturbance projects and we do not expect Forest Service activities to affect these areas. This habitat is found on the mainland portions of the Petersburg Ranger District and potentially in the marine waters surrounding Kupreanof Island. It is made up of active glacial terrains and boundary range icefields (Nowacki et al. 2001). The majority of these ecological subsection areas are managed as natural settings, within wilderness or national monuments. The main areas are the Le Conte, Patterson and Baird Glaciers. There is no known habitat for Kittlitz's murrelet in the Central Kupreanof Timber Harvest project area.

Due to the Kittlitz's murrelets' association with glacial habitat, this species occupies areas outside of, and is not known to occur in the Central Kupreanof Timber Harvest project area. Kittlitz's murrelet will not be discussed further in this document.

General Forest Plan direction for sensitive species applies (USDA 2008a, p. 4-99 through 4-100).

Effects Analysis

The Central Kupreanof Timber Harvest Project area was analyzed to assess the direct, indirect, and cumulative effects of the proposed project on sensitive species and/or their critical habitats (50 CFR 402.14, FSM 2671.44). The Northern/Queen Charlotte goshawk, Aleutian tern, and Black

oystercatcher will be included in the effects analysis of sensitive species in this Biological Evaluation.

NORTHERN/QUEEN CHARLOTTE GOSHAWK

The northern goshawk is identified as a species of concern throughout its range and is identified as a sensitive species by the Alaska Region of the USFS. In an effort to evaluate the status, population, and habitat ecology of the northern goshawk on the Tongass National Forest, the Alaska Department of Fish and Game (ADF&G) and the Forest Service (FS) conducted a goshawk study from 1991 to 1999. A total of 63 nesting sites in Southeast Alaska were documented as a result of this study. A “nest site” is defined as the portion of a goshawk pair’s home range that contains all active and inactive nests. Of 47 nest trees (trees that include a nest), 53 percent were in Sitka spruce, 43 percent were in western hemlock, and 4 percent were in yellow cedar (ADGF 2006).

Productive old growth (POG) forest is an important component of goshawk habitat in southeast Alaska. POG forest is characterized as an old growth forest type that generally includes older and/or larger trees with a dense canopy and a diverse understory. The goshawk is a wide-ranging forest raptor that occupies old-growth forest habitat in Southeast Alaska. Of 661 radio relocations of goshawks in Southeast Alaska, over 90 percent were in habitat classified as volume class 4, defined as 8,000 to 20,000 board feet of timber or greater. It is defined as volume strata low, medium, and high in the GIS database (USDA 2008a, p. 7-29). Volume strata use timber volume, soil, and slope information to assess POG forest. Goshawks select POG forest types at all scales (nest tree, nest site, post-fledging areas). However, non-productive forest types and second-growth stands are also used by goshawks for movement and foraging (ADGF 2006). Sixty-eight percent were in habitats classified as volume class 5, defined as 20,001 to 30,000 board feet of timber (USDA 2008a, p. 3-262 through 3-265) or greater (Titus et al. 1994, p. 4). Suitable nest site habitat consists of large trees with a dense canopy and generally an open under-story averaging 12 to 37 acres in size (Flatten et al. 2001). Although goshawks prefer to place their nests in mature to old growth forest types, they will nest in younger forest or in smaller patches of trees, and forage in young forest as well as along edges and in openings (Boyce et al. 2006). Although there is some documented use of second growth in southeast Alaska, for the most part goshawks are associated with older forests. Of 18 nest trees, 83 percent were located in old-growth stands, and 17 percent were in second growth trees greater than 90 years of age (Titus et al. 1994, p. 4). Goshawk nest sites generally occur far from openings, in stands more than 600 feet wide, on slopes of less than 60 percent, and near the toe of a slope or on a bench. On average, nest trees occur at 423 feet elevation but generally do not occur above 1,100 feet (USDA 2008b pp. D-22 through D-25; Titus et al. 1994, p. 5).

Foraging areas comprise the largest percentage of the goshawk’s home range. Foraging habitat is characterized by forested stands with a greater diversity of age classes and structural characteristics (e.g., snags, woody debris) than nesting areas (Reynolds et al. 1992, p. 16). Breeding season home range size is strongly dependent upon the quality of foraging habitat and prey availability. In Southeast Alaska, prey remains were dominated by a few key species including Steller’s jays (*Cyanocitta stelleri*), grouse (*Dendragapus* spp.), varied thrush (*Ixoreus naevius*), red squirrel (*Tamiasciurus hudsonicus*) and woodpeckers (Picidae) (Titus et al. 1994, p. 6). In prey-rich areas blue grouse and red squirrel are the dominant prey items taken (ADGF 2006). Lewis (2001) found that red squirrels account for 19 percent of the prey deliveries to goshawk nests in prey-rich areas. On islands where blue grouse and red squirrels are not present, spruce grouse, Steller’s jays, and ptarmigan are the dominant prey items taken. Small mammals make up a small portion of the overall diet.

Appendix E

Forest Plan standards and guidelines require the maintenance of an area of not less than 100 acres of POG, if it exists, generally centered over the nest tree or probable nest tree. Continuous disturbances likely to result in nest abandonment within the surrounding 600 feet of the nest are not permitted from March 15 to August 15.

The FWS completed a review and determined that the subspecies' populations in British Columbia (B.C.) and Alaska each constitute distinct population segments (DPS) of the Queen Charlotte goshawk. Based on difference in forest management with substantially greater existing and anticipated habitat loss in B.C. than in Alaska, the FWS determined that the B.C. DPS would be listed as threatened or endangered but the Alaska DPS would not be listed (Federal Register 2007).

Adult home ranges on the Tongass are some of the largest recorded for the species; averaging 9,640 acres for females and 10,625 acres for males during the nesting season, and 29,160 acres for females and 29,400 acres for males outside the nesting season (ADFG 2006).

The Petersburg Ranger District has five known northern goshawk nest sites in the Central Kupreanof Project Area, including a new one found in the 2006 survey season, named Wishbone. In the 2 consecutive years 2006/2007, the Central Kupreanof Timber Harvest Project Area was surveyed for northern goshawk nesting activity. The survey time totaled approximately 262 hours. Of these hours, approximately 62 were spent surveying known nesting sites and 200 were spent surveying potential timber sale project areas. A new goshawk site was discovered on Kupreanof Island adjacent to Tunehean creek, in addition to the Big John Creek and Irish Lake nest sites, previously known within the Central Kupreanof Timber Harvest Project. This new goshawk nest site, found in the southern end of the project area, was named the Wishbone nest site—because of the wishbone shape of the creek. Several other observations of goshawks were made in the area, but none were indicative of nesting behavior. The existing nest site, Big John Creek, was active in the 2006 season with two goshawk fledglings observed there. The Big John Creek goshawk nest had not shown signs of activity since 1993. Since its discovery 16 years ago, it has been surveyed all but 3 seasons (1996, 2001, and 2004).

Methods for conducting these surveys included broadcast calls and valley watches. This was done in the 2 consecutive years (2006/2007) field seasons. Broadcast call surveys were completed using a goshawk alarm call and juvenile begging calls amplified on a speakerphone. Calls were played at three intervals of 30 seconds with 15-second pauses between each. After the series of calls were completed, there was a one-minute pause before moving to the next station. Broadcast stations were completed every 400 feet along each transect. Valley watches were completed by recording any goshawk sightings from a stationary viewpoint over the survey area. Sites were selected for surveys based on availability of potential quality habitat and sites that were in units proposed for the Central Kupreanof Project. Known goshawk nest sites in the project area include Irish Lake, Big John Creek, and the new Wishbone nest. Data was recorded using a Garmin GPS unit, time, notes on available habitat, weather, other species observed, and if there were northern goshawk or other responses to the broadcast calls.

The General Forest Plan direction includes a conservation strategy for goshawks that includes a system of reserves (Old Growth Habitat Reserves and other non-development LUD) and direction for managing the matrix between reserves (USDA 2008a, pp. 4-99 and 4-100). The primary focus of the matrix direction is to preserve nesting habitat around confirmed and probable nests. Information regarding survey methods, time, and results is from field surveys and spreadsheets from the 2

consecutive monitoring years of 2006 and 2007.

Eighty-one percent of the confirmed and probable nest sites in Southeast Alaska are south of Frederick Sound. The Regional Forester added this species to the Sensitive Species List in 1994, and the 2009 revision reflects the same listing (USDA 2009).

Direct and Indirect Effects

Direct effects to goshawks can result from disturbances that adversely affect individuals or their young. Indirect and cumulative effects result from the reduction of perching and foraging habitat and potential nesting habitat or the reduction in long-term productivity.

The Central Kupreanof Timber Harvest Project provides for a range of action alternatives regarding the reduction of POG within the WAA. There is approximately 268,611 acres of POG in the WAA. The alternatives range from no harvest to the potential harvest of approximately 3,568 acres of POG within the WAA. This reduction in habitat is not considered significant, as it is only approximately a 1.3 percent change and is not expected to affect wildlife populations (DEIS Vol. A, p. 3-82, Dec. 2008).

Timber harvest resulting in conversion of POG forest to young-growth, has contributed to a decline in goshawk habitat. In the contiguous United States, such habitat change is believed to reduce the number of breeding goshawks by degrading the structural character of forests used for nesting and foraging. However, it is still unclear how goshawk populations respond to habitat modifications because study of effects across a gradient of harvest intensity is lacking (Boyce et al. 2006).

Cumulative Effects

The proposed activity would have negligible direct, indirect or cumulative effect to goshawks because activities would not occur within nest buffers or within 600 feet of nest sites, or during applicable closures from March 15 through August 15.

The S&Gs applied to the management activities described in the Central Kupreanof DEIS will meet those requirements of the Forest Plan. Known goshawk nest sites are protected by a least a 100-acre buffer surrounding the nest and consisting of productive old growth (POG) habitat. The prescribed goshawk nest site buffer for each nest site meets the S&Gs from the Forest Plan.

No cumulative effects are expected to the goshawk by implementation of the Central Kupreanof Timber Harvest project. There would be a maximum of 1.3% of the POG harvested and maximum reduction of 28.3% cumulatively in the WAA; this reduction in habitat is insignificant and is not expected to affect wildlife populations. Individual goshawks may be affected by the project, but it will not cause a trend to federal listing or a loss of viability.

ALEUTIAN TERN

The Aleutian Tern (*Sterna aleutica*) is a coastal, colonial nesting seabird of Alaska and eastern Siberia. Discovered in 1868 on Kodiak Island, this species has been little studied to date. The terns range is coastal areas of southern and western Alaska. Breeding colonies often shift year to year, especially in the Northern Bering and Chukchi seas. Breeding colonies have been located along coast of Chukchi Sea as far north as Kasegaluk Lagoon, on Seward Peninsula, Yukon-Kuskokwim River Delta, along Alaska Peninsula, in scattered locations in the Aleutian Islands, on the Kodiak

Appendix E

Archipelago, on Kenai Peninsula, Copper River delta, and along the Gulf of Alaska as far east as Dry Bay. Aleutian terns may breed farther south and east at Lituya Bay and Glacier Bay (North 1997).

On its breeding grounds, this tern frequently associates with Arctic Terns (*Sterna paradisaea*) in North America. Its distribution, abundance, breeding phenology, and habitat use are fairly well known, but its behaviors are not well described (North 1997).

Colonies in North America are generally located between 51°20'N and 69°50'N latitude. Colonies are coastal in North America, up to 3.2 km inland in sub-Arctic and boreal regions. Colonies are usually located on flat vegetated islands, dwarf-shrub tundra, grass and sedge meadows, sandy spits and islands (usually on inner side of barrier islands, in lagoon systems, or river estuaries), and freshwater marshes (North 1997).

Usually forages in shallow water, including tidal “rips”, along rivers, and over inshore marine waters, but not in freshwater lakes along outer Alaska Peninsula. The Aleutian tern forages in near-shore marine waters, up to 11 km offshore from Seward Peninsula, and pelagic waters >50 km offshore from other colonies, but, the species reportedly forages nearly exclusively over bays and fjords. One flock observed foraging in Prince William Sound where the muddy Copper River water and clear marine water meet (North 1997).

Some causes for Aleutian tern mortality include: [scarcely] shooting and trapping, [historically] pesticides and other contaminants; ingestion of plastics, lead, and other toxins, degradation of habitat, disturbance at nest and roost sites, and occasionally human research impacts at roost sites (North 1997). Data from studies of the Aleutian Tern Working Group recently reviewed the species status, natural history, uses, and threats and concluded that data suggests suspected causes of natural and human-induced population decline causes (FSM 2600 Supplement No.: R-10 2600-2009-1).

Population viability concerns have been raised due to reduced size or disappearance of colonies in Kodiak, Prince William Sound, Yakutat, and Icy Bay. The largest colonies on record exist or existed on the Cordova and Yakutat Ranger Districts. An estimated population in the Cordova area of greater than 2,400 individuals in 1980 may be less than 400 now. Whereas some of the colonies are in remote sites, others exist in areas where Forest Service permitting can cause or relieve site perturbations (FSM 2600 Supplement No.: R-10 2600-2009-1).

The LTF/MAF area in the Central Kupreanof Timber Harvest project is an area in the project that occurs at the beach and could potentially have Aleutian tern habitat. The area is approximately 0.71 acres of the entire project, the rest of the activity will occur upland and away from any prospective habitat areas for the Aleutian tern. The project also includes land adjacent to Duncan Canal; however the activities will be upland and will not be impacting the beach areas. The direction from the Forest Supervisor on a new “Alaska Region Sensitive Species List, for immediate use” was distributed on February 5, 2009, therefore, this direction is not specifically reflected in the 2008 Forest Plan, however general direction for sensitive species applies.

General Forest Plan direction for sensitive species and Seabird Rookeries and Shorebirds can be found on pages 4-92 through 4-100.

Direct and Indirect Effects

The LTF/MAF area, at Little Hamilton Bay, in the Central Kupreanof Timber Harvest project, is the

area in the project that occurs at the beach and could potentially have Black oystercatcher habitat. This is an existing LTF/MAF, so there will be no construction disturbance. Barge, tug, and recreational boat traffic as a result of the project activity will increase human presence in the area, but there is no known documentation of occurrence of the Black oystercatcher or critical habitat for the species in LTF/MAF area of the Central Kupreanof Timber Harvest Project. The LTF/MAF area is approximately 0.71 acres of the entire project, the rest of the activity will occur upland and away from any prospective habitat areas for the Aleutian tern. The project also includes land adjacent to Duncan Canal, however the activities will be upland and will not be impacting the beach areas, due to the fact that there is not an LTF/MAF in Duncan Canal and therefore will not cause barge or boat traffic as a result. All Forest-wide Standards and guidelines (S&Gs) will be implemented during the operation of this LTF/MAF and all operators will be required to comply with these S&Gs.

Cumulative Effects

The proposed activity for the Central Kupreanof Timber Harvest Project will have negligible effects to the Black oystercatcher and the associated habitat for the species. No impacts to either species should occur because of the limited amount of habitat available within this project.

BLACK OYSTERCATCHER

The Black Oystercatcher (*Haematopus bachmani*) is an eye-catching, with orange bill and coal black plumage, a member of the rocky inter-tidal communities along the west coast of North America. Completely dependent on marine shorelines for its food and nesting, this is a monogamous, long-lived bird (Andres, B. A. and G. A. Falxa, 1995). In Prince William Sound, AK, nesting pairs distributed along shorelines as follows: exposed rocky shores 10%, exposed wave-cut platforms 21%, mixed sand and gravel beaches 21%, gravel beaches 30%, sheltered rocky shores 15%, and sheltered tidal flats 3%. Pairs distributed fairly equitably between rocky (45%) and gravelly (55%) shorelines (Andres, B. A. and G. A. Falxa, 1995).

Breeding pairs establish well-defined feeding and nesting territories and generally occupy the same areas year after year, usually along low-sloping gravel or rocky shorelines where inter-tidal prey species are abundant. Pairs nest just above the high-tide line and use the inter-tidal zone to feed themselves and their chicks and their reproductive rates are slow. Rocky shores exposed to surf action and on sheltered gravel, cobble, or sandy shores and mudflats of bays and sounds are extremely important to microhabitat foraging. Access to foraging habitat is almost exclusively dependent on tides changes and surf action, with most feeding done during low tide. They feed on inter-tidal marine invertebrates, including molluscs (bivalves, limpets, whelks, and chitons—generally numerous in areas of rocky substrates); but also crabs, sea urchins, isopods, and barnacles. Sea mussels are taken as prey in Southeast Alaska. Oysters, contrary to the name of the bird, are not typically a part of the diet (Andres, B. A. and G. A. Falxa, 1995). Black Oystercatchers have been known to congregate in the winter months in Prince William Sound where mussel beds are dense; prey does not however vary greatly with seasonal changes.

Black Oystercatchers have a small global population (estimates of 8,500 – 11,000 individuals) with distribution from the Aleutian Islands down the Pacific Coast to Baja California. Over half, (65%) of the population of Black oystercatchers breeds in Alaska. Populations were affected by the 1989 Exxon Valdez oil spill in Prince William Sound, recovery has been slow, and oil still lingers in nesting areas. Aggregations usually number <100 birds, but have been known to reach 350 birds on Kodiak Island and 600 birds in the Glacier Bay area. The highest recorded breeding densities in

Appendix E

Alaska (and British Columbia and Washington) occur on non-forested islands dominated by shell or gravel beaches. Nesting densities in Glacier Bay were 10 times higher on sparsely vegetated islands than on heavily vegetated islands (Andres, B. A. and G. A. Falxa, 1995).

Chick survival is low due to several natural and human-induced factors; including snow conditions, timing, prey availability, nest predation, and human use. Data indicates extensive overlap between nesting territories and remote shoreline campsites. Viability of this species remains a concern and populations in some areas have dramatically declined, due to unknown causes (from 48 pairs to 2 pairs in Sitka Sound), and there is high overlap between nest sites and areas permitted for recreational use (e.g., Prince William Sound) (FSM 2600 Supplement No.: R-10 2600-2009-1). Retreat of glaciers, which expose gravel moraines, and uplifting events of earthquakes create new nesting habitat in Alaska (Andres, B. A. and G. A. Falxa, 1995).

The LTF/MAF area in the Central Kupreanof Timber Harvest project is an area in the project that occurs at the beach and could potentially have Aleutian tern habitat. The area is approximately 0.71 acres of the entire project, the rest of the activity will occur upland and away from any prospective habitat areas for the Aleutian tern. The project also includes land adjacent to Duncan Canal; however the activities will be upland and will not be impacting the beach areas. The direction from the Forest Supervisor on a new “Alaska Region Sensitive Species List, for immediate use” was distributed on February 5, 2009, therefore, this direction is not specifically reflected in the 2008 Forest Plan, however general direction for sensitive species applies.

General Forest Plan direction for sensitive species and Seabird Rookeries and Shorebirds can be found on pages 4-92 through 4-100.

Direct and Indirect Effects

The LTF/MAF area, at Little Hamilton Bay, in the Central Kupreanof Timber Harvest project is the area in the project that occurs at the beach and could potentially have Black oystercatcher habitat. This is an existing LTF/MAF, so there will be no construction disturbance. Barge, tug, and recreational boat traffic as a result of the project activity will increase human presence in the area, but there is no known documentation of occurrence of the Black oystercatcher or critical habitat for the species in LTF/MAF area of the Central Kupreanof Timber Harvest Project. The LTF/MAF area is approximately 0.71 acres of the entire project, the rest of the activity will occur upland and away from any prospective habitat areas for the Aleutian tern. The project also includes land adjacent to Duncan Canal, however the activities will be upland and will not be impacting the beach areas, due to the fact that there is not an LTF/MAF in Duncan Canal and therefore will not cause barge or boat traffic as a result. All Forest-wide Standards and guidelines (S&Gs) will be implemented during the operation of this LTF/MAF and all operators will be required to comply with these S&Gs.

Cumulative Effects

The proposed activity for the Central Kupreanof Timber Harvest Project will have negligible effects to the Aleutian tern and the associated habitat for the species. No impacts to either species should occur because of the limited amount of habitat available within this project.

Determinations

Table 5 displays a summary of determinations for fish and wildlife species listed as sensitive in Region 10. Determinations were based on current forest direction (Bosch 2004). The proposed

action for the Central Kupreanof Timber Harvest Project may impact individual goshawks but is not likely to cause a trend toward federal listing or a loss of viability. This proposed action will not detrimentally impact any suitable habitat or cause disturbance to Kittlitz's murrelet, Aleutian Tern, or Black Oystercatcher. It is my determination that the Proposed Action Alternatives for the Central Kupreanof Timber Harvest Project may impact individual goshawks and I expect no impacts to the Kittlitz's murrelet, Aleutian Tern, and Black Oystercatcher.

Table 5. Summary of determinations for sensitive species for the Central Kupreanof Project.

Common Name	Scientific Name	Determination ¹
Kittlitz's murrelet	<i>Brachyramphus brevirostris</i>	No Impact; not known to occur in project area
Northern goshawk	<i>Accipiter gentilis laingi</i>	May impact individuals but not likely to cause a trend to federal listing or a loss of viability
Aleutian Tern	<i>Sterna aleutica</i>	No Impact; not known to occur in project area
Black oystercatcher	<i>Haematopus bachmani</i>	No Impact; not known to occur in project area

1 – Potential determinations for Sensitive Species: "no impacts", "beneficial impacts", "may impact individuals but not likely to cause a trend to federal listing or a loss of viability", or "likely to result in a trend to federal listing or a loss of viability" (Bosch 2004).

Additional Management Measures

If any previously undiscovered endangered, threatened or sensitive species are encountered at any point in time prior to or during the implementation of this project, a District Biologist would be consulted and appropriate measures would be enacted.

The Forest Plan contains a comprehensive conservation strategy, using a system of Old Growth LUDs designed to provide old growth habitats in combination with other non-development LUDs to maintain viable populations of native and desired non-native fish and wildlife species and subspecies that may be associated with old growth forests (USDA 2008b, p. 3-174 through 3-175). This strategy, in addition to the implementation of Forest Plan standards and guidelines, was developed to maintain species viability. The application of the Forest Plan standards and guidelines is integral to protecting and providing habitat to maintain viable fish and wildlife populations.

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