FINAL 2008 WILDLIFE STUDIES REPORT

BLUE LAKE PROJECT (FERC NO. 2230) EXPANSION

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EXECUTIVE SUMMARY

Recent energy requirement forecasts conducted by the City and Borough of Sitka Electric Department ("City") have indicated that, in order to assure continued delivery of low cost electrical power, it must expand its electrical generating base. To meet these needs, the City is examining 1) installing new generating turbines and powerhouse near the existing Blue Lake Hydroelectric Project (FERC No. 2230) powerhouse; and 2) raising the height of Project dam by as much as 83 feet. In this summary and the following report, these actions are called the "Blue Lake Expansion" or simply "Expansion". The Expansion-related actions will require an amendment to the existing FERC license for which the City must conduct specified studies. This report fulfills one element of the FERC amendment application requirements.

The dam raise component of this proposal would significantly affect Blue Lake's inundation area with potential effects on wildlife resources in the affected areas. Of particular concern are effects on mountain goats, small mammals and certain bird species.

Studies conducted in 2008 by the author were designed to document existing resources in the potentially-inundated areas and to assess which resources might be most affected by the dam raise.

The 2008 studies evaluated wildlife in several categories, e.g., large mammals, small mammals, raptors, etc. and noted in each category if there were species of special concern. Also noted were species which had not been observed in the earlier studies conducted in 2004 and 2005 for the Blue Lake Project relicensing.

SPECIES COMPARISON with EARLIER STUDIES

The 2008 field surveys encountered seven species which had not been observed in the earlier relicensing studies. These included Blue-winged Teal, Golden-crowned Sparrow, Greater Scaup, Lincoln's Sparrow, Orange-crowned Warbler, Osprey, and Pine Grosbeak. None of these species however were unexpected; all are either common in the adjacent area or in the case of the Osprey, accidental or migratory, through adjacent areas.

LARGE MAMMALS

No potentially-affected large mammals are listed as species of special concern. Populations of mountain goats, Sitka black tailed deer and brown bear in the Project area are considered healthy

Mountain Goats

The 2008 surveys found mountain goats commonly utilizing the slopes above the Blue Lake and Blue Lake Creek valley with no goats observed in the lower elevations during the summer and fall survey period. Use of lower elevations for overwintering habitat could not be documented because the area was not accessible during the spring or winter of 2009.

Among large mammals, mountain goats are the species most likely to be impacted by the Expansion. This species is highly valued by hunters with significant portions of the hunting effort near Sitka occurring in areas accessed almost exclusively by boats launched at the end of the Blue Lake Access Road. The road's steep grades, switchbacks and limited turnaround space currently restrict boat launching. Any additional goat hunting effort due to eased boat launching might lead to higher goat hunting pressure and kill. Actual effects on goat hunting will await decisions on lake access and hunting pressure which may change due to the Expansion. ADF&G may need to more intensively manage this area for goat hunting through some form of harvest or access restriction.

The Expansion may also affect goats due to inundation of areas in Blue Lake Creek Valley in which goats are thought to winter. More studies may be necessary to determine the extent and location of alternate wintering habitat which might replace potentially inundated areas. Also, male goats probably use upper Blue Lake Creek Valley as a travel corridor during the breeding season. Inundation in the lower elevations might affect access to these travel corridors and to breeding areas.

Sitka Black-tailed Deer

While few Sitka black-tailed deer were observed during the surveys, pellet counts and other methods suggested healthy populations of deer in the Blue Lake watershed, relative to available habitat. The primary limiting factor for deer in the study area was deemed to be lack of preferred habitat. Because hunting pressure for deer in the Blue Lake basin is less than that in other areas near Sitka, access-related impacts are considered less likely than for goats. As with goats, it is difficult to predict effects of habitat loss on deer, but the potentially-inundated area is not considered ideal deer habitat and populations there are currently low.

Brown Bears

Five brown bears were observed in the area of the field survey, indicating low populations of bears in the watershed. As with deer, bear hunting in the Blue Lake watershed is less than in other areas accessible from Sitka, and access-related impacts are of less concern than those for goats. Bears do not use the inundation area for overwintering, preferring den sites at higher elevations. Inundation-related impact potentials are considered low.

SMALL MAMMALS

No small mammal species are listed as species of special concern. One small mammal sub-species, the Sitka Root Vole is listed as level 2 (imperiled). Populations of this species, above the subspecies level, are listed as "secure." Sitka Root Vole populations on Baranof Island are very cyclical and are typically restricted to muskeg and alpine tundra habitats. No voles were captured during the small mammal trapping of 2004 or 2009 although one dead vole was found in the study area, floating in Blue Lake, likely washed downstream from their typical habitat at higher elevations. Since only 4.2% (13.5 acres) of the inundation area is their preferred habitat (muskeg), the effect on voles should be minimal.

FURBEARERS

Among potentially-affected furbearers, the marten is the most likely affected because of habitat losses due to inundation. Marten habitat preference for old-growth forest is well documented (Flynn et al. 2004, Suring et al. 1993). More specifically, high volume old-growth stands below 1500 feet in elevation is defined as "high-value marten habitat" (USFS 2008). Old-growth forest provides necessary snow intercept, denning sites, protection from predation and inclement weather, and access to prey.

Approximately 32% of the project area is considered high-value marten habitat, which would be a 20% reduction within the watershed. Actual marten densities are believed to be moderate to low due to low level of preferred food (voles) and no access to salmon streams. Also, limited access to the area by trappers reduces the recreational value of this species.

One furbearer sub-species, the Baranof Island Ermine, is listed as level 3 (vulnerable). Ermine population levels fluctuate greatly in response to prey populations (primarily voles) and locally the population is typically low with an occasional year of moderate abundance (pers. comm. with trappers).

RAPTORS

Queen Charlotte Goshawk

Although the Queen Charlotte Goshawk has a global rank of G5T2 and a sub national rank of S2, no goshawks have been observed in or adjacent to the study area during field observations or goshawk surveys. The closest recorded nest was in 2009, approximately 3 miles away in Indian River valley. The USFS protocol of surveying for 2 years is not complete and will be continued in the 2010 field season.

Osprey

The Osprey has a ranking for breeding populations of "imperiled" but is not known to breed in the study area or adjacent areas, is essentially an "accidental" or "migratory" bird in southeast Alaska, and was only observed a few times in the study area in 2009. Also, since the Osprey feeds exclusively on fish, there is a low concern for this species due to this project.

Small Owls

There are several small owl species that occur in the study area. Recently, studies have been done to add to the sparse information of owls in southeast Alaska (Kissling and Lewis 2005). Although the Western Screech Owl has a sub national rank of "imperiled," it is quite common in the Sitka area and within the study area, especially when compared to other areas of Southeast Alaska. One theory for this is the absence of Barred Owls, *Strix varia*, which is a known predator on the smaller owls (Michelle Kissling, pers. comm.). The Northern Saw-whet and Northern Pygmy owls both have sub national rankings of "vulnerable." Both of these species are rarely observed in the study area. The loss of approximately 210 acres of medium to high

volume forest could reduce the carrying capacity of these owl species or displace them to adjacent forested areas.

WATERFOWL

Harlequin Duck

The Harlequin Duck is the only species of waterfowl in the Northern Hemisphere to breed in turbulent, mountainous streams and also one of the few waterfowl species to have a high site fidelity to the breeding area (Smith et al. 2000). For the summers of 2004 (Bovee 2005, 2006) and 2009, one breeding pair of harlequins was observed to successfully breed and rear young in Blue Lake Creek. The project would inundate this area and most likely prevent one brood from occurring unless the breeding pair displaces to the upper reach above the upper barrier falls. It is not known at this time whether the upper reach is already being used by other harlequins.

Marbled Murrelet

Although Marbled Murrelets are a threatened species in some Pacific Northwest states, their populations are healthy in southeast Alaska. They are the only seabird that nests inland in forested areas, preferring large old-growth trees with mossy branches.

Marbled Murrelets were observed 3 different times in 2008, with a total of 6 birds seen (Table 12). Land based survey sites have been attempted for audio counts but have not been successful due to time constraints and background noise from waterfalls. This is something that should be continued in 2010 field season.

Ring-Necked Duck

The ring-necked duck is classified as imperiled for nonbreeding (S2N) and vulnerable for breeding (S3B). No evidence was found of this waterfowl breeding in the study area and it appears to be using the lake as a resting area during spring or fall migrations.

Trumpeter Swan

The Trumpeter Swan is a common winter and migratory bird in southeast Alaska. It is often seen in wintering in the lakes near Sitka, including Blue Lake, but does not breed in the area. Its conservation rank is “vulnerable” for nonbreeding (S3N). Trumpeter Swans use Blue Lake for resting and feeding along the eastern shoreline (see Figure 7). The amount of available shoreline for waterfowl activity should not change substantially by this project.

SONGBIRDS

Four additional species of songbirds were observed in 2008, as compared to earlier studies. Although songbird habitat will be lost, no songbird populations are considered at risk due to Expansion-related actions.

INTRODUCTION AND BACKGROUND

The City and Borough of Sitka Electric Department ("City") recently received a new license for the Blue Lake hydroelectric Project (FERC No. 2230, "Project") from the Federal Energy Regulatory Commission (FERC). During the relicensing process, the City's ongoing energy forecasts indicated that, in order to assure continued delivery of low cost electrical power in the face of rising energy needs in Sitka, it must expand its electrical generating base.

Among other alternatives, the City is examining 1) installing new generating turbines and powerhouse near the existing Blue Lake Project powerhouse; and 2) raising the height of Project dam by as much as 83 feet. Collectively, these actions are called the "Blue Lake Expansion" or simply "Expansion" in this report. The Expansion-related actions will require that the Project's FERC license, reauthorized in 2008, be amended. To obtain the amendment, the City must conduct specified studies supporting the formal application. This report fulfills one element of the FERC amendment application requirements.

The dam raise component of this proposal would significantly affect Blue Lake's inundation area with potential effects on wildlife and botanical resources in the area. Based on discussion of wildlife issues with state and federal resource agencies, the dam raise might affect mountain goats, deer, brown bear, small mammals and several species of birds. While wildlife studies were performed for the relicensing process in 2004-2006, those studies did not include areas which might be inundated or otherwise affected by the dam raise. The 2008 studies addressed impact issues related to construction and operation of the expanded project.

Studies were conducted according to a study plan, discussed below, which resulted from consultation with Alaska state and federal resources agencies. **Revisions were made in this final December 2009 report in response to resource agency comments. Revised text is marked in bold italic typeface and referenced in the Consultation section at the end of the report.**

OBJECTIVE

The primary objective of the 2008 wildlife studies was to determine existing wildlife resources in areas potentially-affected by the Blue Lake Expansion. This baseline information would be useful in determining impacts of the Expansion, particularly with regard to expected changes in water level and Blue Lake recreational access.

STUDY COMPONENTS

Generally, Expansion-related wildlife studies were conducted through: 1) field surveys conducted in the Blue Lake area of potential effect; and 2) review of existing literature and information, including the relicensing-related studies. The information review considered all wildlife accounts within the "Project Area", defined to include the Blue Lake basin and areas in or to which potentially-affected wildlife might migrate or otherwise travel.

FIELD SURVEY METHODS

Field surveys were conducted primarily in the Blue Lake basin, as described below. All field surveys relative to the Expansion were conducted during 2008. In this report, all units are English. Elevations are relative to mean low sea level and are denoted by the term "El", as in El 425 or El 342.

SURVEY AREA

Overall Blue Lake Survey Area

Wildlife field surveys were conducted at various levels of intensity within the Blue Lake watershed, with particular emphasis on the Blue Lake Creek Area in which the inundation would affect the greatest land area.

The survey area included lands between the present Blue Lake high water mark and an elevation line extending approximately 200 feet lateral of the proposed Expansion-related high water mark at El 425 (Figure 1). Surveys in these areas, because of extreme access difficulties due to vegetation and topography, were limited in most cases to observations from a boat on Blue Lake, and to limited foot surveys into accessible areas.

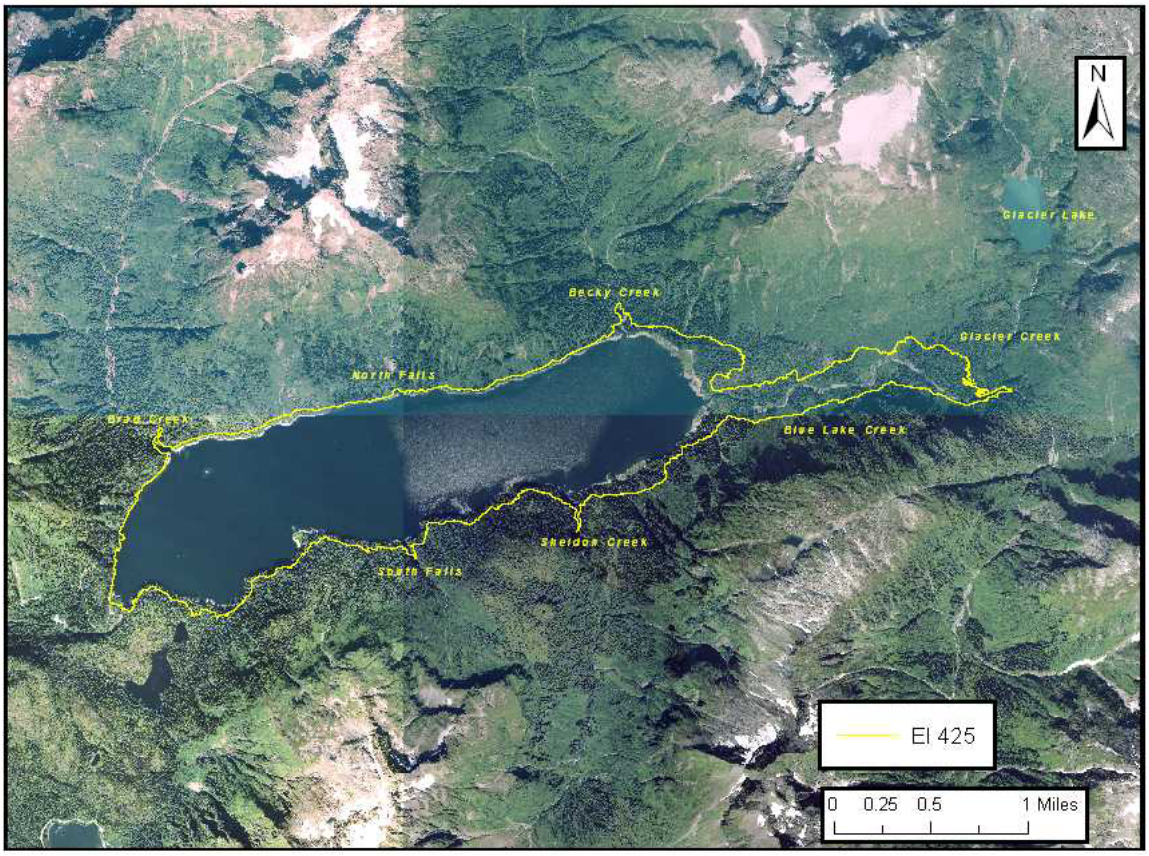

Figure 1. Blue Lake Inundation Area, El 425

The Blue Lake Inundation Area also included the valleys of several inflow tributaries. These tributary valleys were generally quite steep and rocky and provided limited access into their small watersheds and will not be inundated significantly. The tributary sub-basins included:

Brad Creek;
Becky Creek;
Sheldon Creek; and
South Falls.

Blue Lake Creek Inundation Area

Blue Lake Creek is Blue Lake's major inflow tributary, flowing in an essentially east-west direction for 5.5 miles from its headwaters to its confluence with Blue Lake (Figure 2).

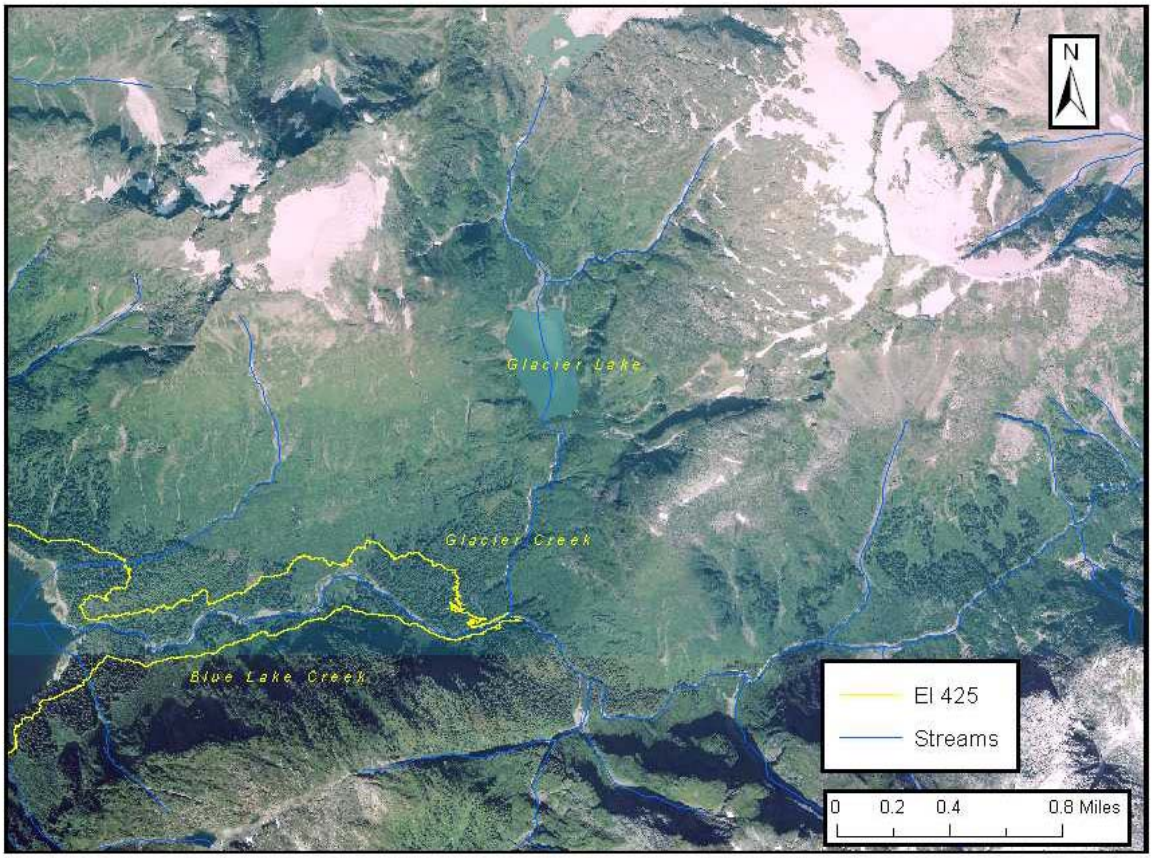

Figure 2. Blue Lake Creek, El 425, and Tributaries

Blue Lake Creek's primary tributary is Glacier Creek, which joins Blue Lake Creek approximately 2 miles upstream. The Blue Lake Creek study area included all potentially-inundated lands, an area of approximately 430 acres, and an area extending approximately 200 feet laterally from the high-water mark of El 425 (Figure 3). Field surveys in the Blue Lake Creek drainage were more intensive than those along the Blue Lake shoreline or in other tributary sub-basins.

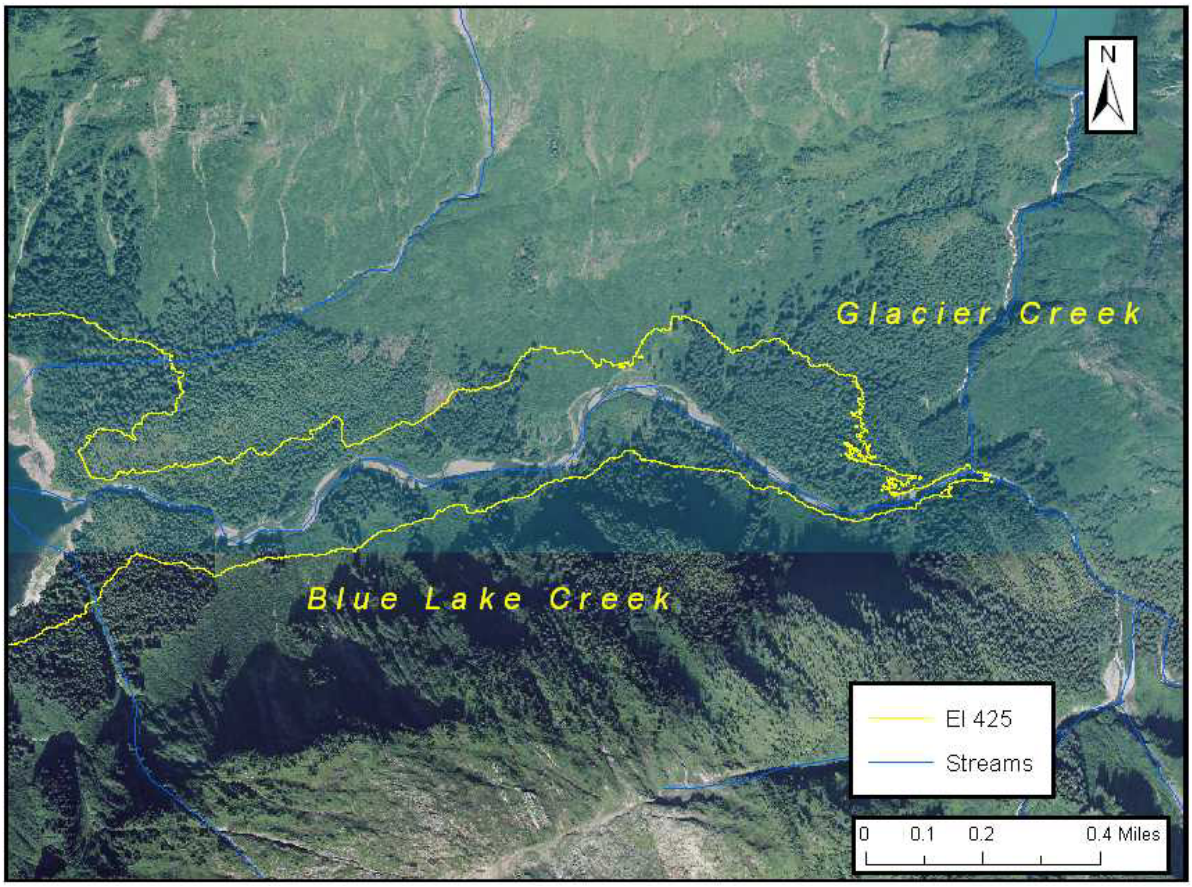

Figure 3. Blue Lake Creek, El 425, and Glacier Creek

FIELD SURVEY TECHNIQUES AND TIME PERIODS

Nine survey methods were employed within the study area. To the extent possible, we used study methods routinely employed by local and regional agencies so data comparisons, as well as data compilation, were possible. Table 1 shows the field techniques used and their time periods.

Table 1. 2008 Field Techniques and Time Periods.

Field Technique	2008 Time Period
General Wildlife Observations	Spring, summer, winter
Goat Specific Observations	Spring, summer, winter
Deer Pellet Transect Surveys	Spring, Summer
Deer Winter Range Assessment	Summer, winter
Small Mammal Surveys	Spring, summer
Marbled Murrelet Audio-Visual Survey	Spring, summer
Goshawk Broadcast Surveys	Spring, summer
Owl Broadcast Surveys	Summer
Songbird Breeding Survey	Summer

General Wildlife Observations

General wildlife observations were recorded in field journals at any time in the field, which included travel within study area, species specific surveys, assisting other studies and personnel, and logistic work on the project. All wildlife sign was recorded, including visual sightings, behavior, numbers of individuals, sex and age (when possible), scat, tracks, browse, nests, and habitat. Birds were often identified by calls. Locations were noted in a field journal or on maps and, when appropriate, for observations such as bird nests and bear beds, GPS coordinates were included. Other data recorded included weather, human sign and activity, and level of neighboring water body. Repeat counts and observations were minimized by keeping track of which direction animals were traveling and how many were in the group. Observations of key interest species were recorded into a Geographical Information System (GIS) and analyzed to determine distribution and relative abundance of wildlife species and their spatial and temporal use patterns.

Goat Specific Observations

Although observations of mountain goats were recorded any time they were visible, we also focused on recording goat locations, behavior, and when possible, age and sex. This was done from strategic locations along the lake shore, usually when a field camp was set up. Observations were made with binoculars and a 50x spotting scope and recorded in field journals and maps. This information was transferred into a GIS and analyzed.

Deer Pellet Transect Surveys

To assess winter range use by deer, standard ADF&G pellet transect methods were used (Kirchhoff and Pitcher 1988). This consisted of performing 20 meter transects run perpendicular from shoreline and continued to 200' beyond inundation zone, counting pellet groups along transects and averaging the total. The data allows for general trend data and relative deer abundance on a coarse scale only. Absolute deer numbers cannot be determined by this method. Kirchhoff and Pitcher (1998) recommended 4 general qualitative categories for pellet group densities (Table 2).

Table 2. General Qualitative Categories for Mean Pellet Group Densities.

General Qualitative Category	Mean Pellet Group Density
low	0.51-1.0
moderate	1.01-2.0
high	2.01-3.0
extremely high	>3.0

Deer Winter Range Assessment

Deer winter range was assessed using standard procedures by ADF&G and USFS in Southeast Alaska (Kirchhoff and Hanley 1992). This method assigns a numerical score to stands based on the abundance of high-quality forage and where snowpack is low. Equipment required for the

assessment included compass, clinometer, altimeter, cruising gauge, data forms, field maps, aerial photos, and forest plant association key.

Each sample site was assigned a site ID number. Latitude and longitude, volume class, and plant association was recorded. The actual assessment included two main sections, forage and snow conditions, with each section having numerical scores of various parameters (Table 3). Forage parameters included shrubs cover and height, forbs, overstory canopy percent, and high value species. Snow condition parameters included elevation, distance from coast, snow interception, snow melt (slope multiplied by aspect) and shading. Subtotals were then calculated for each section along with a total score for the site.

Table 3. Deer Winter Range Assessment Parameters.

Forage	Snow condition
Shrubs cover and height	Elevation
Forbs	Distance from coast
Overstory canopy %	Snow interception
High value species	Snow melt (slope x aspect)
	Shading

Small Mammal Surveys

Small mammals were collected using Victor snap traps, Sherman live traps, and pit-fall traps. Traps were set in a variety of habitats and locations to maximize the variety of species caught and baited with peanut butter and oats mixture. Trap sites were flagged and locations were marked on a map. Traps were typically set for one to two nights and checked daily.

Data collected included: trap number, date and time set and checked, latitude and longitude, trap type, habitat, microhabitat, elevation, weather, species and sex caught. Live animals were dispatched and all animals were placed in separate Ziploc bags with the above data labeled on bag. Specimens were frozen and then shipped to University of Alaska Museum of the North, Mammals Collection, Fairbanks for species identification confirmation, other pertinent information, and deposition into their museum collection.

Marbled Murrelet Audio-Visual Survey

Marbled murrelet audio-visual stations were established and the ADF&G standard technique was used. This consists of arriving at the station at least one hour before dawn and listening/watching for 30 minutes for murrelets passing through area (ADF&G).

Goshawk Broadcast Surveys

Broadcast acoustical surveys were used to survey for goshawks (Barton 1992, Woodbridge and Hargis 2006) and were often performed in conjunction with other field surveys. The survey consisted of a broadcast call, point sampling technique which included the following:

1. Aerial photos and habitat GIS layers were used to select high quality goshawk habitat.

2. Transects were established 250 m apart with sample stations every 200 m, alternating the stations by 100 m on adjacent transects in order to increase coverage. (The exception to this is the transect along the lake shore; this consisted of one transect paralleling the shoreline 50 m out with stations every 200 meters.)
3. Calling equipment consisted of mp3 player connected to a NiteLite 15 watt speaker and amplifier, producing 80-110 dB output, 1 meter from speaker.
4. Adult alarm calls were used during the nestling period, late May to early July and other times during the year. Juvenile begging (wail) calls were used during the fledgling dependency period, early July to mid-August.
5. Calling was conducted from ½ hour before sunrise up to ½ hour after sunset.
6. On the arrival at each calling station, at least one minute was allowed for listening for any calls. Broadcasting began at 60 degrees from the transect line for 30 seconds, then listening and watching for 30 seconds. This was repeated 5 more times, rotating 120 degrees between each broadcast, resulting in a total of 6 calls over 6 minutes.
7. Surveying during times of heavy rain or winds exceeding 15 mph were avoided.
8. Data recorded included station number, location description, latitude/longitude, date, time, habitat, responses to call, direction and distance of responses, visual sightings, age and sex of birds, behavior, and other birds in area.

Owl Broadcast Surveys

The method for surveying owls was a modified protocol for "presence/not detected" sampling which was based on methods from Southeast Alaska Owl Network (Kissling and Lewis 2005) and Inventory Methods for Raptors (RIC 2001). Because of the broad list of potential owls in the Sitka area, priority was placed on owls most likely to be present. Owls with abundance ratings of occasional or rare had a priority of one and were included in all call survey stations. Those with abundance ratings of uncommon, very rare or accidental had a priority of two and were included in every other station (Table 4).

Table 4. Owl Species, Expected Abundance and Survey Priority, Blue Lake Expansion Project, 2008

Owl species (by size)	Abundance	Priority
Northern Pygmy Owl	Occasional	1
Northern Saw-whet owl	Rare	1
Western Screech Owl	Rare	1
Boreal Owl	Accidental/Very Rare	2
Short-eared Owl	Uncommon	2
Long-eared Owl	Accidental	2
Northern Hawk Owl	Very Rare	2
Barred Owl	Occasional	1
Great Horned Owl	Rare	1
Snowy Owl	Very Rare	2
Great Grey Owl	Accidental	2

Owl survey stations were located in areas with: a) low ambient noise, b) low traffic levels, and c) at least 25% forest within 500 m of the station. Distance between stations was approximately ½ mile.

Surveys were conducted half an hour after sunset until midnight. Data collection included: location, habitat, time, temperature, cloud cover, precipitation, snow cover, moon phase, wind conditions, and noise level.

Broadcast calls were played for owl species based on the table above. Calling equipment consisted of mp3 player connected to a NiteLite 15 watt speaker and amplifier, producing 100-110 dB output, one meter from speaker.

The order of calling was always from smallest to largest owl, since some species of larger owls are known to prey on smaller owls and their calls may influence response by smaller owls. For each species, the broadcast series consisted of three calls (20 seconds each) followed by a 30 second listening period. The first recording was broadcast at 60° from the transect line (i.e. direction of travel on road, trail, etc.), the second at 180° from the transect line, and the third at 300° from the transect line. After each series of calls, the observer listened and watched for five minutes.

Data collected for each owl response included detection number, species and time; estimated distance to nearest 50 m, and direction. The procedure was repeated for each owl species at each station.

Songbird Breeding Surveys

The survey method used for forest songbirds was based on the standard Breeding Bird Survey by USGS, Patuxent Wildlife Research Center (Sauer et al. 2005). Specific methods used by the Sitka National Historical Park were employed, which included the following steps:

1. Establish transects through representative habitats in the study area with count stations approximately every ½ mile.
2. Conduct surveys from 8 June until 30 June and begin ½ hour before sunrise and continue until 0900. Record location, point number, vegetation type, date, time, temperature, wind speed and direction, and sky condition.
3. Record weather conditions prior to and at the end of each survey.
4. Once the point center is located, listen and record all birds seen or heard for 10 minutes. Additionally, the 10 minute survey period will be broken into 3 minute, 5 minute, and 10 minute periods.

INFORMATION REVIEW

Available information from the following sources, among others, was compiled and analyzed:

- Wildlife studies conducted as part of the Project relicensing. These included field surveys, conducted in both the Sawmill Creek and Blue Lake areas in 2004 and 2005 (Bovee 2005, 2006);

- Alaska Natural Heritage Program (ANHP) (Zoology 2009) and NatureServe (NS) (NatureServe 2009) species lists ranking species according to their population status and sensitivity;
- Alaska Department of Fish and Game (ADF&G) harvest reports for brown bears, mountain goats, marten, and river otter;
- Sitka Tribe of Alaska harvest data; and
- USFS vegetation GIS layers for habitat quantification.

Using data from local agencies, reports, field studies, and ANHP and NS ranks, tables indicating relative abundance, residency, and ranks were included for each major animal group and are described in Table 5.

Table 5. Descriptions and Abbreviations for Relative Abundance, Residency, and Ranks

Abbreviation	Description
Relative Abundance in Study Area	
A	Abundant - present almost everywhere in large numbers
C	Common - present almost everywhere or commonly observed in area
U	Uncommon – present almost everywhere but in low numbers and not commonly observed
R	Rare - Present locally and in very small numbers
V	Very rare - only a few scattered records
Ac	Accidental - Occasional visitor, no permanent population
Un	Unknown - Confirmed sightings, insufficient data to estimate population
Residency in Study Area	
R	Resident
B	Breeder - known or thought to breed in study area
M	Migratory - latitudinal and/or altitudinal
Alaska Natural Heritage Program Tracking List	
1	Critically imperiled
2	Imperiled
3	Vulnerable
4	Apparently secure
5	Demonstrably widespread, abundant, and secure.
G	Global
S	Subnational
B	Status refers to breeding population
N	Status refers to nonbreeding population

RESULTS

FIELD SURVEYS

General Wildlife Observations

In 2008, there were 26 days spent in the field doing general observations, species specific surveys, assisting other studies and personnel, and logistic work on the project (Table 6). During these times wildlife observations were recorded in field journals, in addition to the species specific surveys. Over 170 observations of key interest species were recorded into a GIS in order to determine distribution and relative abundance of wildlife species and their spatial and temporal use patterns.

Table 6. Wildlife Study Survey Date, Area, and Type, Blue Lake Expansion Project, 2008

Survey Date	Areas Surveyed	Survey Type
April 20, 2008	Blue Lake	Kayak survey
May 10-11, 2008	Blue Lake	Boat survey Goat observation Pellet transect
May 25-26, 2008	Blue Lake Creek	Foot survey Goat observation Owl survey Boat survey
June 3, 2008	Blue Lake	Pellet transect
June 6, 2008	Blue Lake	Pellet transect Goshawk survey
June 20-21, 2008	Blue Lake	Owl survey Goat observation Goshawk survey Pellet transects Murrelet survey
June 24-25, 2008	Blue Lake	Pellet transect Songbird survey Goshawk survey
June 30-July 2, 2008	Blue Lake	Pellet transect Goshawk survey Murrelet survey Goat observation Songbird survey
July 16, 2008	Blue Lake Creek	Foot survey
July 22, 2008	Blue Lake Creek	Foot survey
August 4, 2008	Blue Lake Creek	Foot survey Goshawk survey
August 5, 2008	Blue Lake Creek	Foot survey Goshawk survey
August 31, 2008	Blue Lake Creek	Foot survey

		Goshawk survey Deer winter range assessment
September 6-7, 2008	Blue Lake Creek	Small mammal trapping
September 20, 2008	Blue Lake Creek	Deer winter range assessment

Figure 4 shows areas of use by various wildlife species based on general wildlife observations. This section will present observations of species without specific surveys, such as Brown bear, waterfowl, shorebirds, and raptors (other than goshawk and owls). Species with specific survey techniques will be covered individually later in the report.

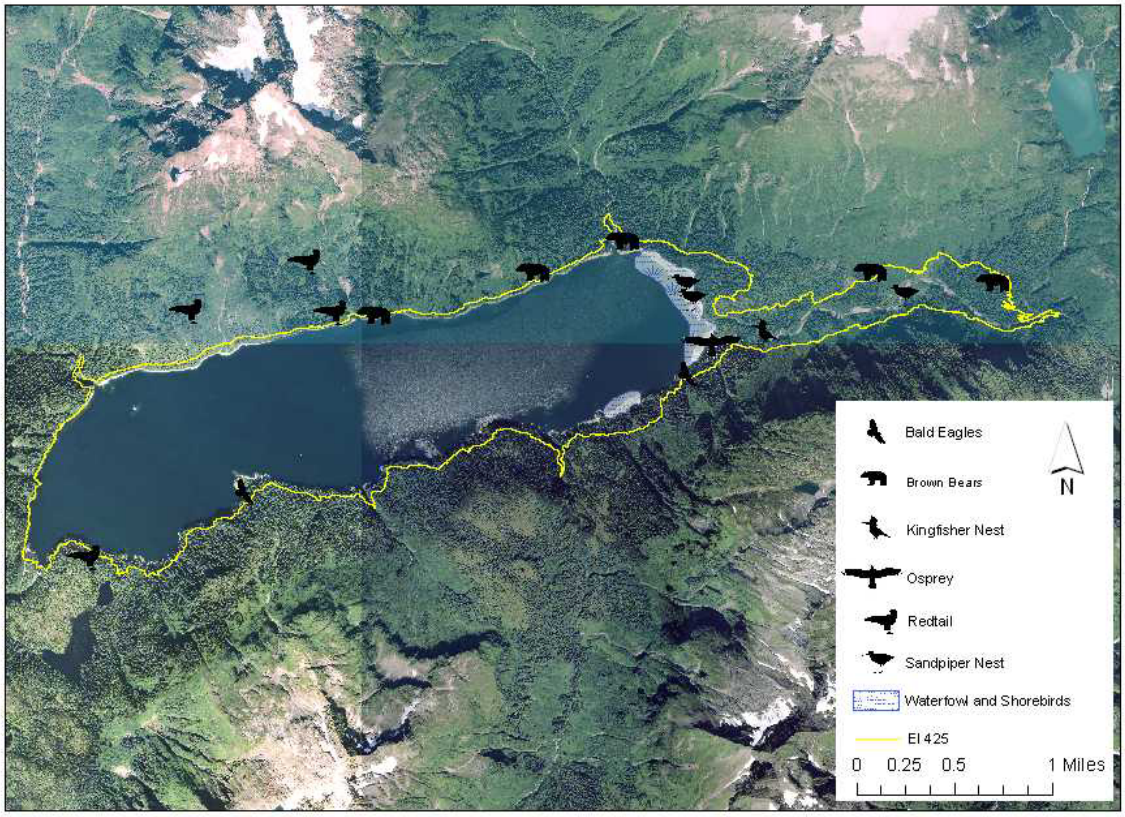

Figure 4. Key Areas for Brown Bears, Raptors, Waterfowl and Shorebirds, Blue Lake Expansion Project, 2008

Brown Bear

There were at least 5 different Brown Bears observed in the study area based on a total of 14 visual observations or sign (See Figure 4). A sow with 2 yearling cubs were observed on 3 occasions and a sow with 1 yearling cub was observed once in same area, presumably the same sow. Based on body size, track size, and behavior, one adult bear, approximately 3 to 5 years old was observed visually or by tracks on 4 occasions. One bear was found dead with a large wound in the back and was most likely shot illegally. Samples and measurements of the bear were provided to ADF&G.

Waterfowl and Shorebirds

The east end of Blue Lake is a littoral zone of varying size and importance to waterfowl and shorebirds, depending on water level (See Figure 4). The rest of the lake and shoreline were used as well by these birds but to a much lesser degree. Upland muskegs were often used by waterfowl. A total of 19 waterfowl and shorebird species were observed during the 2008 wildlife surveys (Table 7). Based on observations of nests and/or young, 6 bird species are known to nest in the study area (Residency = B, Table 7)

Table 7. Waterfowl and Their Relative Abundance, Residency, and Conservation Rank, Blue Lake Expansion Project, 2008

Common Name	Scientific Name	Relative Abundance	Residency	2008 Global (G) and Subnational (S) Rank	
				G	S
American Dipper	*Cinclus mexicanus*	C	R	5	5
Barrow's Goldeneye	*Bucephala islandica*	U	R	5	5
Belted Kingfisher	*Megaceryle alcyon*	C	R, B	5	5
Blue-winged Teal	*Anas discors*	VR	M	5	4B
Bufflehead	*Bucephala albeola*	U	R	5	5
Canada Goose	*Branta canadensis*	C	R, B	5	5
Common Loon	*Gavia immer*	U	R	5	5B, 4N
Common Merganser	*Mergus merganser*	C	R, B	5	5
Glaucous-winged Gull	*Larus glaucescens*	U	R	5	5
Harlequin Duck	*Histrionicus histrionicus*	C/R	R, B	4	4
Herring Gull	*Larus argentatus*	U	R	5	5
Mallard	*Anas platyrhynchos*	C	R, B	5	5
Marbled Murrelet	*Brachyramphus marmoratus*	U	R	3,4	3
Mew Gull	*Larus canus*	C	R	5	5
Ring-necked Duck	*Aythya collaris*	U	M	5	2N, 3B
Greater Scaup	*Aythya marila*	U	R	5	5B, 5N
Spotted Sandpiper	*Actitis macularius*	C	R, B	5	5
Trumpeter Swan	*Cygnus buccinator*	C	R	4	3N, 4B
Wilson's Snipe	*Gallinago delicata*	R	R	5	5B

No nest of American Dippers was found but adults and juveniles were often seen along Blue Lake Creek and occasionally at other tributaries. An active Belted Kingfisher nest was found 0.25 mile up Blue Lake Creek (See Figure 4). Juveniles of Canada Geese, Common Mergansers, Harlequin Ducks, and Mallards were observed in the east end of the lake, along the lake shoreline, and/or along Blue Lake Creek. Three Spotted Sandpiper nests were found and chicks from each nest were observed (Figure 4).

Raptors (other than goshawks and owls)

Three species of raptors were observed in the study area, not including goshawks and owls, which will be covered separately later in this report (Table 8). Figure 4 shows key locations of these raptors. One or two mature Bald Eagles, *Haliaeetus leucocephalus*, were often seen at a point of land in the southwestern area of the lake (See Figure 4). This suggested a nest nearby, but none was found and no juveniles were observed in the area. One other common location Bald Eagles were observed was at the outlet of Blue Lake Creek (See Figure 4). An Osprey, *Pandion haliaetus*, was observed on a few occasions at the Blue Lake Creek outlet. This species is considered an "accidental" or occasional visitor in the Sitka area. One or two Red-tailed Hawks, *Buteo jamaicensis*, were observed 8 times, mostly in the central to western area of the lake, flying above the upper slopes (See Figure 4).

Table 8. Raptors (other than goshawks and owls) and Their Relative Abundance, Residency, and Conservation Rank, Blue Lake Expansion Project, 2008

Common Name	Scientific Name	Relative Abundance	Residency	2008 Global (G) and Subnational (S) Rank	
				G	S
Bald Eagle	*Haliaeetus leucocephalus*	C	R	5	5
Osprey	*Pandion haliaetus*	Ac	M	5	3, 4B
Red-tailed Hawk	*Buteo jamaicensis*	R	M	5	4, 5B

Furbearers

Six species of furbearers occur in the study area and are listed in

Table 9. The American Marten, *Martes americana*, was the most common, with sign being found throughout most of the study area, with higher frequency in the Blue Lake Creek valley. Tracks of the American Mink, *Neovison vison*, were only seen on a few occasions along the lake shore and Blue Lake Creek. Mink are more likely a transient species, occasionally coming up river via Sawmill Creek from the marine coastal areas. Tracks and/or scats of Ermine, *Mustela erminea*, were observed on only 4 occasions, but would easily be missed due to their small size. It is assumed they are of the subspecies, *M. e. initis*, but genetic analysis of hair samples or voucher specimens would be needed to verify this (Dawson et al. 2007). Tracks of North American River Otter, *Lontra canadensis*, were only observed in the Sawmill Creek area but often do occur up watersheds on Baranof Island and presumably would occasionally occur in the study area. Red Squirrels, *Tamiasciurus hudsonicus*, were transplanted to Baranof Island in 1930 to provide an additional food source for transplanted marten (Burris and McKnight 1973). The importance of this role of red squirrels is questionable yet they are certainly the most ubiquitous mammal on Baranof Island, including the Blue Lake Study area.

Table 9. Furbearers and Their Relative Abundance, Residency, and Conservation Rank, Blue Lake Expansion Project, 2008

Common Name	Scientific Name	Relative Abundance	Residency	2008 Global (G) and Subnational (S) Rank	
				G	S
American Marten[1]	*Martes americana*	C	R, B	5	5
American Mink	*Neovison vison*	U	R	5	5
Baranof Island Ermine	*Mustela erminea initis*	R	R, B	3	3
Ermine	*Mustela erminea*	V	R, B	5	5
North American River Otter	*Lontra canadensis*	R	R	5	5
Red Squirrel[1]	*Tamiasciurus hudsonicus*	A	R, B	5	5

[1] Transplanted to Baranof Island

Goat Specific Observations

Goat observations were recorded at any time while in the field whether focused observations on goats or other survey work or traveling in the study area. A total of 80 observations of goats were recorded into a GIS and data included date, time, location, and when possible age (adult, yearling, juvenile), sex, and behavior. Locations were analyzed for seasonal patterns and 2 distinct areas resulted. Figure 5 shows goat locations broken down by 2 seasons, summer (June to October) and winter (November to May). These results are based on 80 visual observations for 19 days from 20 April 2008 to 21 March 2009. The goats followed typical patterns for goats in southeast Alaska, wintering in lower elevation forested areas with escape terrain and summering in higher, alpine areas.

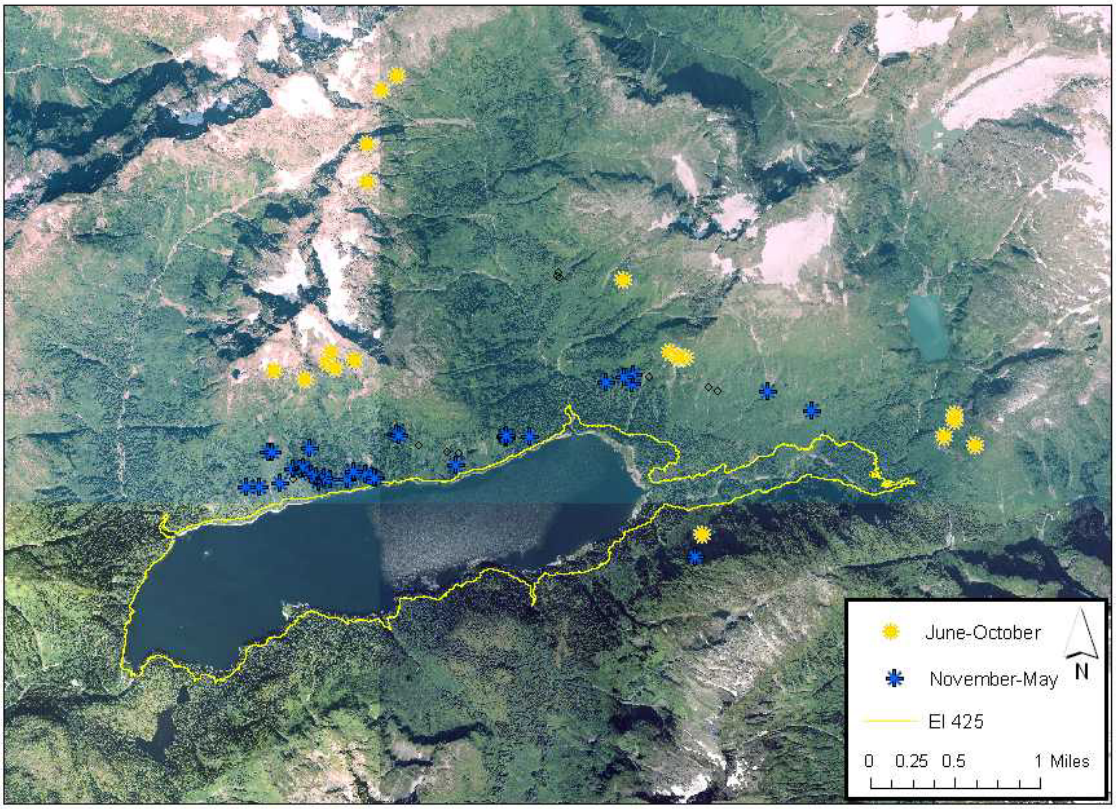

Figure 5. Goat Locations by Summer and Winter, Blue Lake Expansion Project, 2008

Deer Pellet Transect Surveys

Eleven deer pellet transect surveys were completed in summer 2008 along the shore of Blue Lake (Figure 6). Mean pellet group numbers per transect ranged from 0.43 to 5.71, with an overall mean of 2.75 (Table 10). Using Kirchhoff's categories, each transect was categorized, resulting in 4 transects in the Extremely high category, 3 High, 2 Moderate, 2 Low, and the overall mean at the High level (Table 10, See Figure 6).

Table 10. Deer Pellet Transect #, Mean Pellet Group, and Category, Blue Lake Expansion Project, 2008

Transect #	Mean PG	Category
1	3.64	Extremely high
2	2.26	High
3	5.00	Extremely high
4	2.83	High
5	1.00	Low
6	0.43	Low
7	1.96	Moderate
8	2.63	High
9	5.71	Extremely high
10	4.00	Extremely high

11	1.45	Moderate
Overall Mean	2.75	High

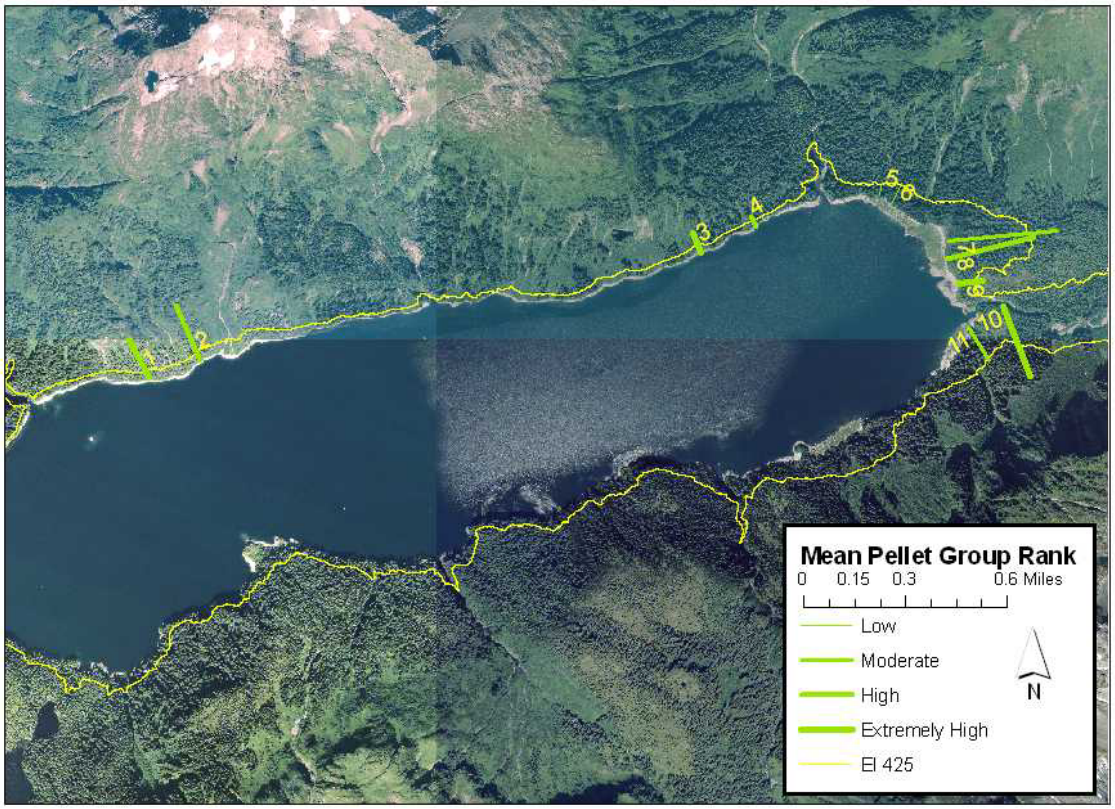

Figure 6. Deer Pellet Transects and Mean Pellet Group Category, Blue Lake Expansion Project, 2008

Deer Winter Range Assessment

Blue Lake Creek valley was the focus for the 24 Deer Winter Range Assessments (Figure 7). Forage or Snow subtotals less than 15 are considered marginal habitat (Kirchhoff and Hanley). There were 4 sites with marginal habitat for the forage subtotal and none for snow subtotal. There were 3 high quality sites in the inundation zone along the lower reach of Blue Lake Creek.

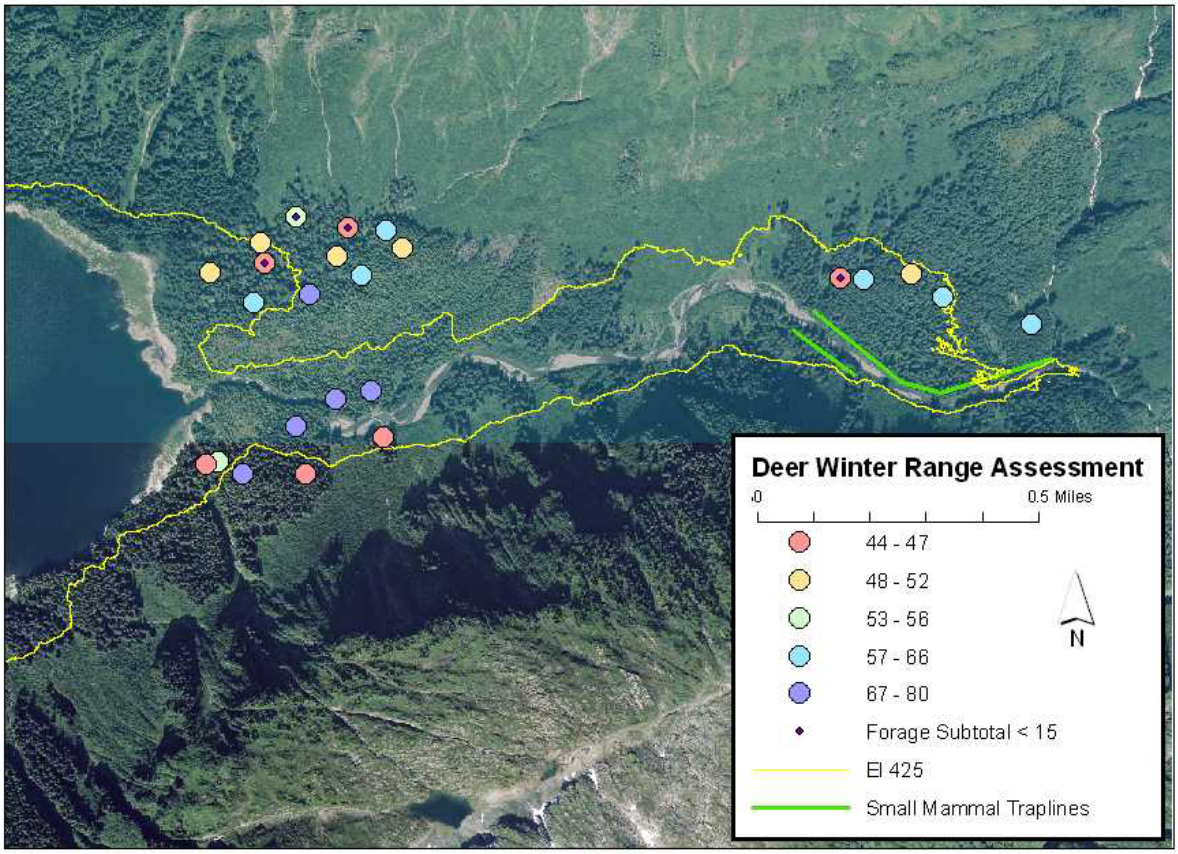

Figure 7. Deer Winter Range Assessment Sites and Small Mammal Traplines, Blue Lake Expansion Project, 2008

Small Mammal Surveys

Four species of small mammals occur in the study area based on field observations and small mammal trapping (

Table 11). Due to a late start in the field season and higher priority surveys, only one night of small mammal trapping was completed in summer 2008 and was in the upper Blue Lake Creek area. Out of 58 traps set, 2 Northwestern Deer Mouse, *Peromyscus keeni*, were caught, for an average of 7.83/100 TN. Shrews were observed on 3 occasions during other studies and assumed to be Cinereus Shrews, *Sorex cinereus*. One vole was found floating in the lake and is probably a Sitka Root Vole, *Microtus oeconomus sitkensis*. All small mammals collected will be sent to the museum at the University of Alaska, Fairbanks, for species verification and cataloging. Bats are another small mammal present in the study area and are commonly observed at night feeding above the lakes surface. No bats were captured or collected but are assumed to be Little Brown Myotis, *Myotis lucifugus*.

Table 11. Small Mammals and Their Relative Abundance, Residency, and Conservation Rank, Blue Lake Expansion Project, 2008

Common Name	Scientific Name	Relative Abundance	Residency	2008 Global (G) and Subnational (S) Rank	
				G	S
Cinereus Shrew	*Sorex cinereus*	U	R, B	5	5
Little Brown Myotis	*Myotis lucifugus*	U	R, B	5	4
Northwestern Deer Mouse	*Peromyscus keeni*	C	R, B	5	4
Root vole	*Microtus oeconomus*	V	R, B	5	5
Sitka root vole	*Microtus oeconomus sitkensis*	V	R, B	2	2

Marbled Murrelet Surveys

Three stations for audio/visual counts were established for Marbled Murrelets, *Brachyramphus marmoratus* (Figure 8). As with the small mammal trapping, heavy snowfall caused a late start to the field season, and only 1 survey at each station was completed. Of the 3 stations, only MAMU-2 is useful due to background noise of waterfalls and rivers at other stations. No murrelets were detected during these surveys; however, some were seen at other times on the west end of the lake (See Figure 8). A total of 6 Marbled Murrelets were seen on 3 separate occasions (
Table 12).

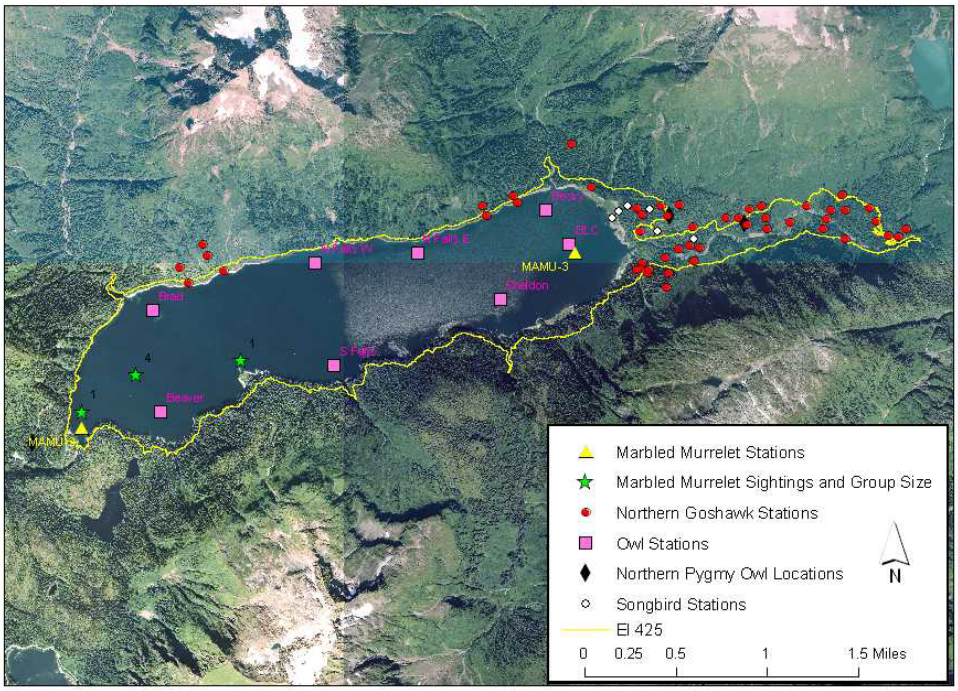

Figure 8. Stations and Sightings for Marbled Murrelet, Northern Goshawk, Owls, and Songbirds, Blue Lake Expansion Project, 2008

Table 12. Marbled Murrelet Sightings, Blue Lake Expansion Project, 2008

Date	Group Size	Comments
27 June 2008	1	Winter plumage
16 July 2008	1	Winter plumage
1 August 2008	4	3 mature, 1 immature

Goshawk Broadcast Surveys

A total of 52 stations, over a period of 9 days, were sampled for Northern Goshawks, *Accipiter gentilis* (Table 13, See Figure 8). Effort was concentrated in the Blue Lake Creek valley due to its larger area of inundation. No goshawks responded to broadcast calls and no goshawks were observed at anytime in the Blue Lake study area. ***Although 2009 goshawk surveys were not included in the above summary, no responses were detected during 2009. More surveys will be completed in 2010.***

Table 13. Northern Goshawk Survey Dates and Number of Stations, Blue Lake Expansion Project, 2008

Date	# Stations
3 June 2008	3
6 June 2008	4
21 June 2008	3
24 June 2008	5
25 June 2008	2
30 June 2008	1
4 August 2008	8
5 August 2008	14
31 August 2008	12

Owl Broadcast Surveys

During the Blue Lake Relicense wildlife studies (Bovee 2005), 8 owl broadcast stations were established in Blue Lake (See Figure 8). These same stations were used on 25 May 2008 and 20 June 2008, with no owls responding. Northern Pygmy Owls, *Glaucidium gnoma*, were observed on 3 occasions (See Figure), twice in the Blue Lake Creek valley and once west of the dam. Western Screech owls, *Megascops kennicottii*, were commonly heard during the relicense study (Bovee 2005) and were heard several times in the Blue Lake Creek area during the summer 2008. They are also fairly common in the Sitka area. Using the relicense study and observations in summer 2008, a species list, their relative abundance, residency, and conservation rank was summarized (Table 14).

Table 14. Owls and Their Relative Abundance, Residency, and Conservation Rank, Blue Lake Expansion Project, 2008

Common Name	Scientific Name	Relative Abundance	Residency	2008 Global (G) and Subnational (S) Rank	
				G	S
Northern Saw-whet Owl	*Aegolius acadicus*	V	R	5	4
Northern Pygmy Owl	*Glaucidium gnoma*	V	R	5	3
Western Screech Owl	*Megascops kennicottii*	C	R, B	5	2

Songbird Breeding Surveys

Due to a late start in the season, only one transect with 6 stations was completed (See Figure). Data from this transect, along with general field observations, were used to generate a species list, their relative abundance, residency, and conservation status (Table 15).

Table 15. Song and Forest Birds and Their Relative Abundance, Residency, and Conservation Rankings, Blue Lake Expansion Project, 2008

Common Name	Scientific Name	Relative Abundance	Residency	2008 Global (G) and Subnational (S) Rank	
				G	S
American Robin	*Turdus migratorius*	U	M	5	5
Brown Creeper	*Certhia americana*	U	R, B	5	4
Cedar Waxwing	*Bombycilla cedrorum*	V	M	5	3B
Chestnut-backed Chickadee	*Poecile rufescens*	C	R, B	5	5
Common Raven	*Corvus corax*	A	R, B	5	5
Common Redpoll	*Carduelis flammea*	V	M	5	5
Dark-eyed Junco	*Junco hyemalis*	C	R, B	5	5
Fox Sparrow	*Passerella iliaca*	C	M, B	5	5
Golden-crowned Kinglet	*Regulus satrapa*	U	R	5	4, 5
Golden-crowned Sparrow	*Zonotrichia atricapilla*	R	M	5	5B
Hermit Thrush	*Catharus guttatus*	A	M, B	5	5
Lincoln's Sparrow	*Melospiza lincolnii*	C	B	5	5B
Northern Flicker	*Colaptes auratus*	U	R	5	5
Northwestern Crow	*Corvus caurinus*	C	R	5	5
Orange-crowned Warbler	*Vermivora celata*	C	M, B	5	5
Pacific-slope Flycatcher	*Empidonax difficilis*	C	B	5	4
Pine Grosbeak	*Pinicola enucleator*	R	M	5	5
Pine Siskin	*Carduelis pinus*	U	R, B	5	4, 5

Ptarmigan (Rock &/or Willow)	*Lagopus sp.*	R	M	5	5
Red-breasted Sapsucker	*Sphyrapicus ruber*	U	R, B	5	5
Rufous Hummingbird	*Selasphorus rufus*	C	M, B	5	4
Song Sparrow	*Melospiza melodia*	C	M, B	5	5
Sooty Grouse	*Dendragapus fuliginosus*	VR	R	5	5
Steller's Jay	*Cyanocitta stelleri*	U	R	5	5
Swainson's Thrush	*Catharus ustulatus*	A	M, B	5	5
Townsend's Warbler	*Dendroica townsendi*	C	M, B	5	4
Tree Swallow	*Tachycineta bicolor*	A	M, B	5	5B
Varied Thrush	*Ixoreus naevius*	C	M, B	5	5
Wilson's Warbler	*Wilsonia pusilla*	C	M, B	5	5
Winter Wren	*Troglodytes troglodytes*	C	R, B	5	5
Yellow Warbler	*Dendroica petechia*	C	M	5	5B
Yellow-rumped Warbler	*Dendroica coronata*	R	M	5	5

EXISTING INFORMATION

Species Lists and Ranks

Using data from local agencies, reports, and field studies, we compiled a list of species present in the study area and grouped them (see above sections). Seventy-one wildlife species were noted in the study area. ANHP and NS ranks indicating relative abundance, residency, and ranks, as described in Table 5 were also included for each species.

Of the 71 species listed, none is threatened or endangered but several are listed below the level of 4 (apparently secure) (Table 16). One subspecies of ermine, Baranof Island Ermine, *Mustela erminea initis*, has an S designation of level 3 (vulnerable). Its population levels fluctuate greatly locally but this pattern has not significantly changed in the recent history (pers. comm. with trappers). The subspecies Sitka Root Vole, *Microtus oeconomus sitkensis*, has a rank of 2 (imperiled) for both global and subnational status. Similar to the ermine populations, the vole populations fluctuate greatly from year to year. Both the Ermine and Root Vole, at the species level, have global and subnational ranks of 5 (abundant, secure). The Osprey, *Pandion haliaetus*, has an S2B rank for Alaska; however it is considered an "accidental" or occasional visitor in the Sitka area. Although the Western Screech Owl, *Megascops kennicottii*, is also ranked at the S2 level it is quite common in the study area. Both the Northern Saw-whet Owl, *Aegolius acadicus*, and the Northern Pygmy owl, *Glaucidium gnoma*, have a rank of 3 and are rarely observed in the study area. The Cedar Waxwing has only been observed in the Sawmill Creek area and has a rank of S3. The Marbled Murrelet, *Brachyramphus marmoratus*, has G3,4 and S2,3 ranks. This species is listed as Threatened in California, Oregon, and Washington but in Alaska, it is listed as Species of Concern. The Ring-necked Duck, *Aythya collaris*, has a

subnational rank of 2N, 3B. The Trumpeter Swan, *Cygnus buccinator*, is ranked at the Subnational 3N for nonbreeding (N) and 4B for breeding populations in Alaska.

Table 16. Species with Conservation Status Ranks of 3 or less, Blue Lake Expansion Project, 2008

Common Name	Scientific Name	Relative Abundance	Residency	2008 Global (G) and Subnational (S) Rank	
				G	S
Baranof Island Ermine	*Mustela erminea initis*	V	R, B	3	3
Ermine	*Mustela erminea*	V	R, B	5	5
Sitka Root Vole	*Microtus oeconomus*	V	R, B	2	2
Root vole	*Microtus oeconomus*	V	R, B	5	5
Osprey	*Pandion haliaetus*	Ac	M	5	2B
Northern Saw-whet	*Aegolius acadicus*	V	R	5	3
Northern Pygmy Owl	*Glaucidium gnoma*	V	R	5	3
Western Screech Owl	*Megascops kennicottii*	C	R, B	5	2
Cedar Waxwing	*Bombycilla cedrorum*	R	M	5	3
Marbled Murrelet	*Brachyramphus*	U	R	3, 4	2, 3
Ring-necked Duck	*Aythya collaris*	U	M	5	2N, 3B
Trumpeter Swan	*Cygnus buccinator*	C	R	4	3N, 4B

ADF&G Harvest Records

Harvest records were obtained from the ADF&G for mountain goats, brown bears, river otter and marten for the Blue Lake watershed, which is subunit 0204 in Unit 4 (Figure 8).

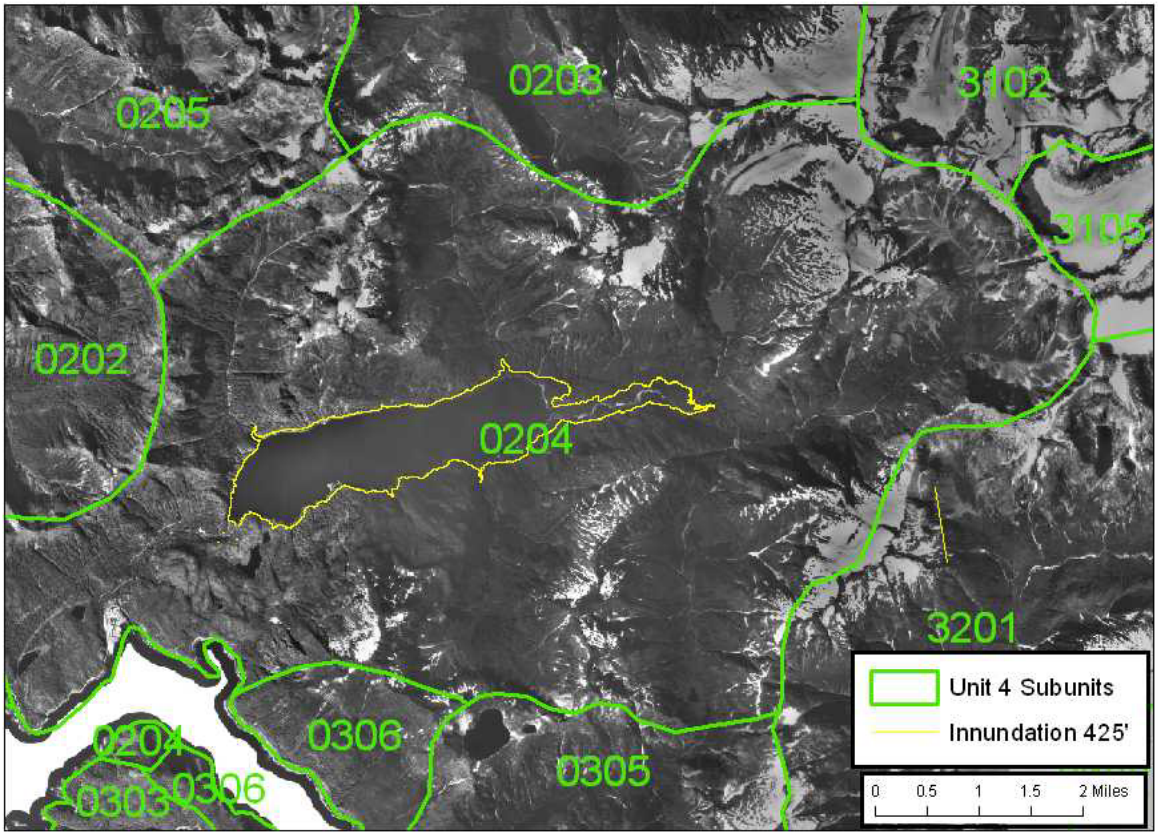

Figure 8. ADF&G Unit 4 Subunit Areas Showing Blue Lake Watershed (0204) and Adjacent Watersheds

These records are summarized in Table 17. This data is for the entire watershed so they would include animals not necessarily taken via the lake and also would not include unreported, illegal, or attempted harvests, or animals that may use the watershed but were harvested outside the watershed

Table 17. ADF&G Harvest Records for Blue Lake Watershed

Species	Record Years	Total Harvest for Record Years		
		Blue Lake (% Total Harvest)	Blue Lake and Adjacent Subunits (% Total Harvest)	Total for Unit 4
Mountain Goats	1976-2008	327 (20%)	885 (55%)	1591
Brown Bear	1996-2007	1 (n/a)	n/a	1587
River Otter	1977-2006	23 (n/a)	n/a	4555
Marten	1996-2007	107 (n/a)	n/a	13,945

Mountain Goats

Mountain goats were established on Baranof Island in 1923 with 18 animals from Tracy Arm (Mooney 2008). Hunting began in 1949 and currently there is a one goat bag limit with a

registration permit. Harvest numbers in 1976-2008 ranged between 28 to 75 goats per year (Figure 9). The Blue Lake subunit constitutes a significant percent of goats harvested, with an average of 20% of the Unit 4 harvest. Since summer, winter, and breeding ranges overlap into adjacent subunits, their harvest numbers were combined which resulted in an average 55% of the harvest for unit 4 in this central core area of Baranof Island. The actual percentage of goats harvested in the Blue Lake watershed is probably between 20 to 50% of the overall harvest.

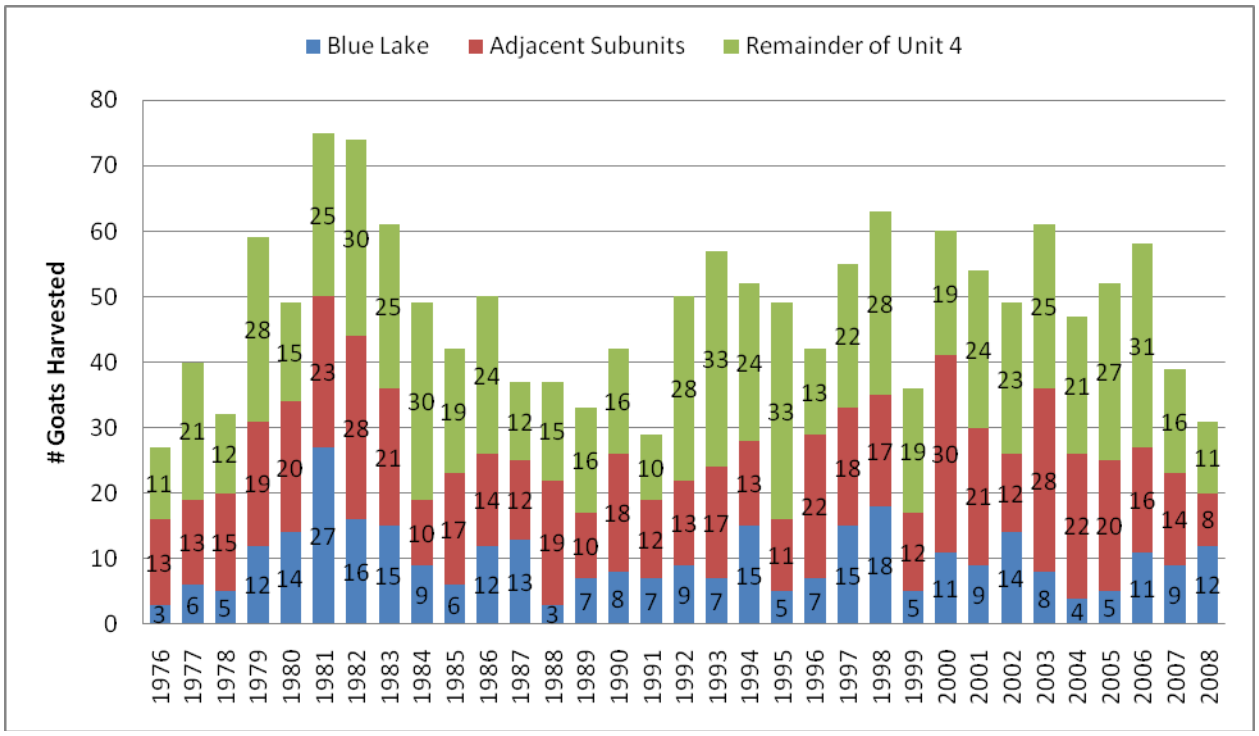

Figure 9. Goat Harvest for Blue Lake, Adjacent Subunits, Remainder of Unit, and Unit 4 Total, 1976-2008

Figure 10 shows historical harvest of goats in Unit 4, by subunit and demonstrates the importance of the central part of the island to goat harvest, which includes the Blue Lake watershed.

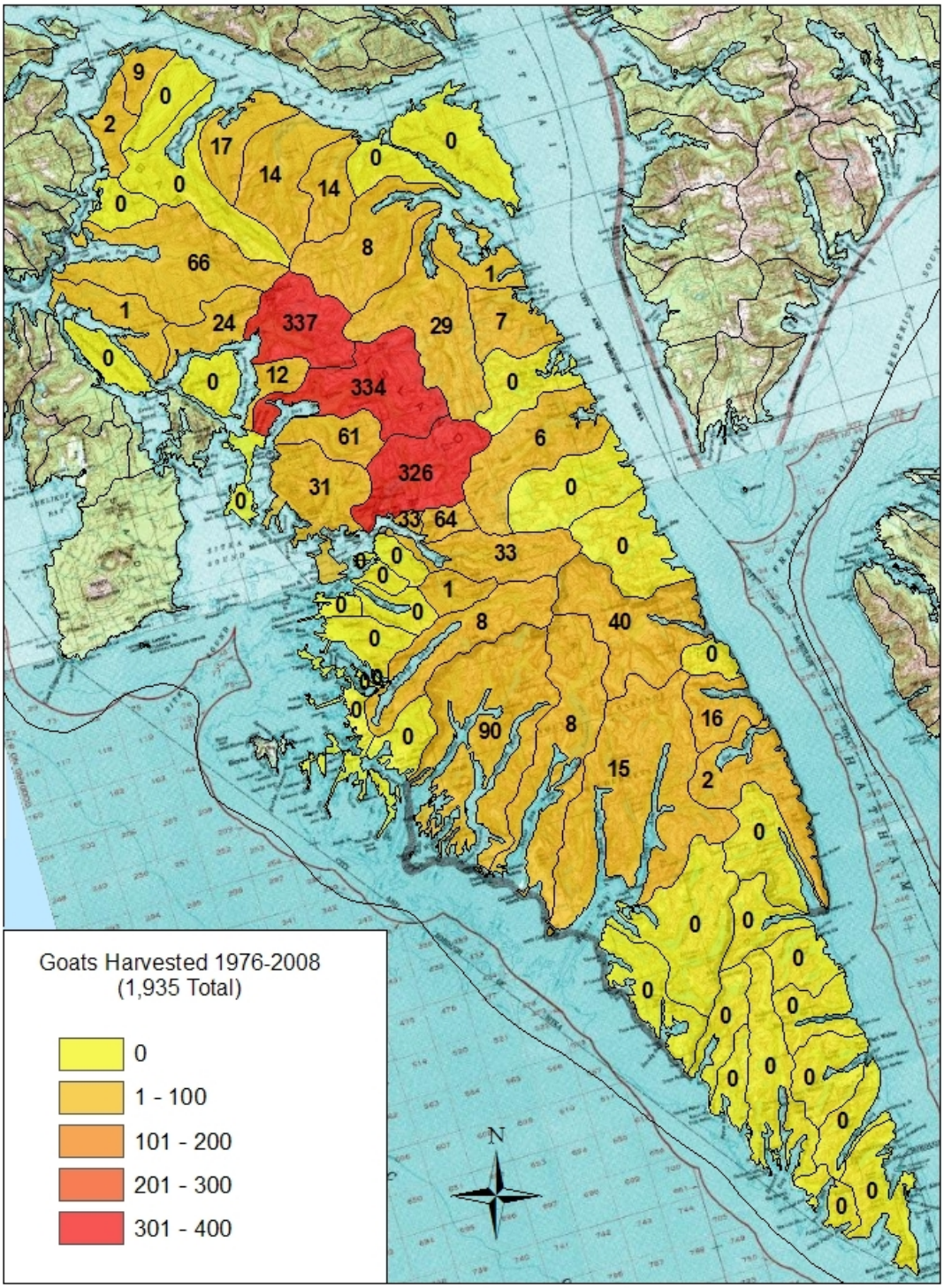

Figure 10. Baranof Island Historic Goat Harvest 1976-2008 (ADF&G unpublished data)

The Sitka Tribe of Alaska has been allowed a spring harvest of 3 goats since March 2004 for subsistence and traditional use (Mooney 2008). There is no record of goats harvested in the Blue lake area under this program.

Brown Bear

Records indicated that only one brown bear was harvested in the study area from 1996-2007 as compared to 1587 for Unit 4 (Table 17).

River Otter

Harvest data for river otter from 1977-2006 show 23 harvested, which is very small compared to the 4555 harvested for Unit 4 (Table 17). Many of these 23 harvested were most likely taken outside the study area along the marine coastline and not in the Blue Lake area, since otter density is higher there and trapper access to Blue Lake is often limited due to road closure.

American Marten

Marten were transplanted to Baranof Island in 1934 (Burris and McKnight 1973). From 1996-2007, 107 marten were harvested in the Blue Lake area, compared to 13,945 for Unit 4 (Table 17 and Figure 11). As with the river otter harvest, most of the marten taken from this subunit were likely taken outside the study area along the coastline, due to higher marten density and easier trapper access.

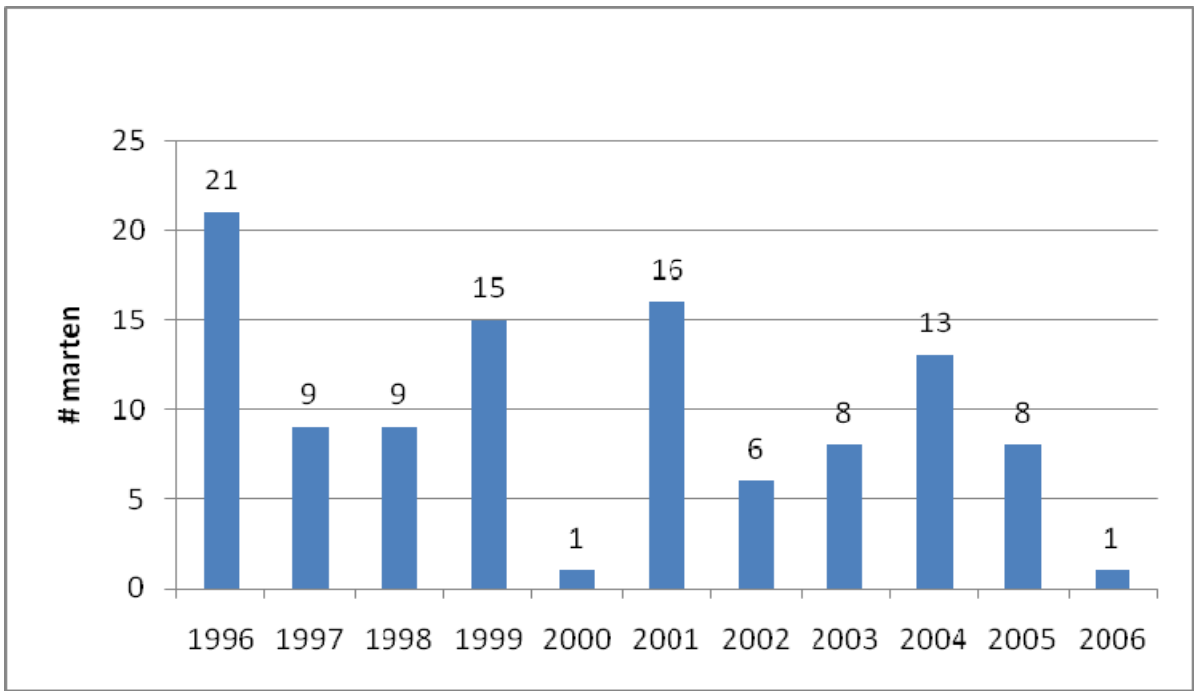

Figure 11. Marten harvest in Blue Lake subunit, 1996-2007

Deer

Deer harvest data is available for larger areas but is not broken down by watershed. From personal communication with hunters, the study area is important for a few hunters but the

majority of deer harvest in Unit 4 is in other areas of easier access and higher deer density. Most hunting pressure in the Blue Lake area is for mountain goats.

USFS Vegetation Quantification

Using GIS vegetation layers produced by USFS, habitat types for the study area and entire watershed were compiled and quantified (Table 18).

Table 18. Acres by Habitat Type for Entire Watershed, Inundation Area, and Percent Reduction

	Watershed		Inundation		%
Habitat Types	**Acres**	**%**	**Acres**	**%**	**Reduction**
High Volume Spruce-Hemlock	505.1	2.2	102.7	32.3	20.3
Medium Volume Spruce-Hemlock	1201.3	5.3	109.0	34.3	9.1
Low Volume Spruce-Hemlock	277.3	1.2	12.0	3.8	4.3
Muskeg	201.9	0.9	13.5	4.2	6.7
Alder	179.5	0.8	8.8	2.8	4.9
Grassland	5.9	0.0	5.9	1.9	100.0
Recurrent slide zone	4149.9	18.3	28.2	8.9	0.7
Alpine, Rock, and Ice/Snowfield	16101.2	71.2	36.0	11.3	0.2
Road or Powerline corridor	6.2	0.0	2.1	0.6	33.3
Total	22628.3		318.1		

The greatest impact to loss of wildlife habitat would be the 20.3% reduction in High Volume Spruce-Hemlock forest. This habitat is thought to consist of Highly Productive Old Growth (HPOG). The 9.1%reduction of Medium Volume Spruce-Hemlock would consist most likely of Productive Old Growth (POG). However, in both of these habitat types, the value to wildlife is reduced due to the lack of south facing aspect, absence of salmon streams, and great distance to the ocean.

CONSULTATION

Comments on the draft wildlife report were received from USFS dated October 2, 2009, and are addressed in Table 19, and through text changes noted in the Table.

Table 19. Reviewer Comments on Draft 2008 Blue Lake Wildlife Studies Report

Comment Number	Comment Summary	Response and Report Location
USFS 1	Goshawks—none found during 2008 surveys but there is no information on the results of 2009 surveys in the report.	No goshawks were detected in 2009 surveys. See p. 23, Goshawk section.
USFS 2	It would be valuable to provide the percentage of the Visual Comparison Unit (VCU) with	POG and HPOG is identified and referred to Table 18. See p. 31, USFS Vegetation Quantification section.

	Productive Old Growth (POG) and Highly Productive Old Growth (HPOG) habitat that will be lost due to the project expansion.	

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