This section explains the purpose of this project. It also identifies Forest Plan direction and laws guiding land management activities on Woewodski Island.

About this project

A landscape assessment studies the ecological, social and economic conditions, trends, problems and risks of a specific geographic area. Assessments evaluate the current conditions of an area and its resources, including historical use, ecosystem function, vegetation structure and possible management opportunities.

An island-wide assessment of Woewodski was begun for two reasons. One reason was to look at relationships between ecological processes and forest management of the island. When planning watershed enhancements, trail construction, timber sales, or recreation projects, we focus on small project areas in one to three year timeframes. As resource development proceeds, it becomes increasingly important to understand how the projects “fit” together and to anticipate their cumulative effects. By looking ahead, considering public comments and evaluating the ecological processes across the island, the Forest Service will have a better understanding of what projects to plan and how to prepare informed decisions on those projects.

Secondly, the Tongass National Forest has a ten-year plan that describes ecological processes and resource development plans across the Tongass; however, the Tongass Land and Resource Management Plan (Forest Plan) is very broad. This assessment evaluates in more detail how to apply the Forest Plan to Woewodski Island.

This landscape assessment does not directly result in any decisions. Therefore, it does not require National Environmental Policy Act (NEPA) review and is not subject to appeal. Rather, this assessment provides the informational context for proposing ways to achieve long-term goals of land management on Woewodski Island. It results in a list of opportunities for possible projects intended to balance a variety of land and resource uses. Some of these proposed projects would still require further environmental analysis, public review and decision-making mandated by NEPA. Initiation and timing of projects would depend on many factors, including funding.

Land Use Designations on Woewodski Island

Land Use Designations (LUDs) function similar to zoning regulations. They allow for certain types of activities to occur. The 1997 Tongass Land and Resource Management Plan (Forest Plan) identifies Woewodski Island within LUDs that allow development. The island is predominately located within Scenic Viewshed LUD (8,995 acres) with isolated areas identified as Modified Landscape (total 1,273 acres) (see Map 2). These LUDs provide for a mix of resource activities, including timber harvest, mineral development, recreation, wildlife habitat and viewing, fisheries enhancement and scenic enjoyment.

Forest Plan Direction

The Forest Plan contains goals, objectives, standards and guidelines, and other direction which are followed in planning and designing projects on the Forest. A summary of the direction most pertinent to Woewodski Island follows.

Heritage

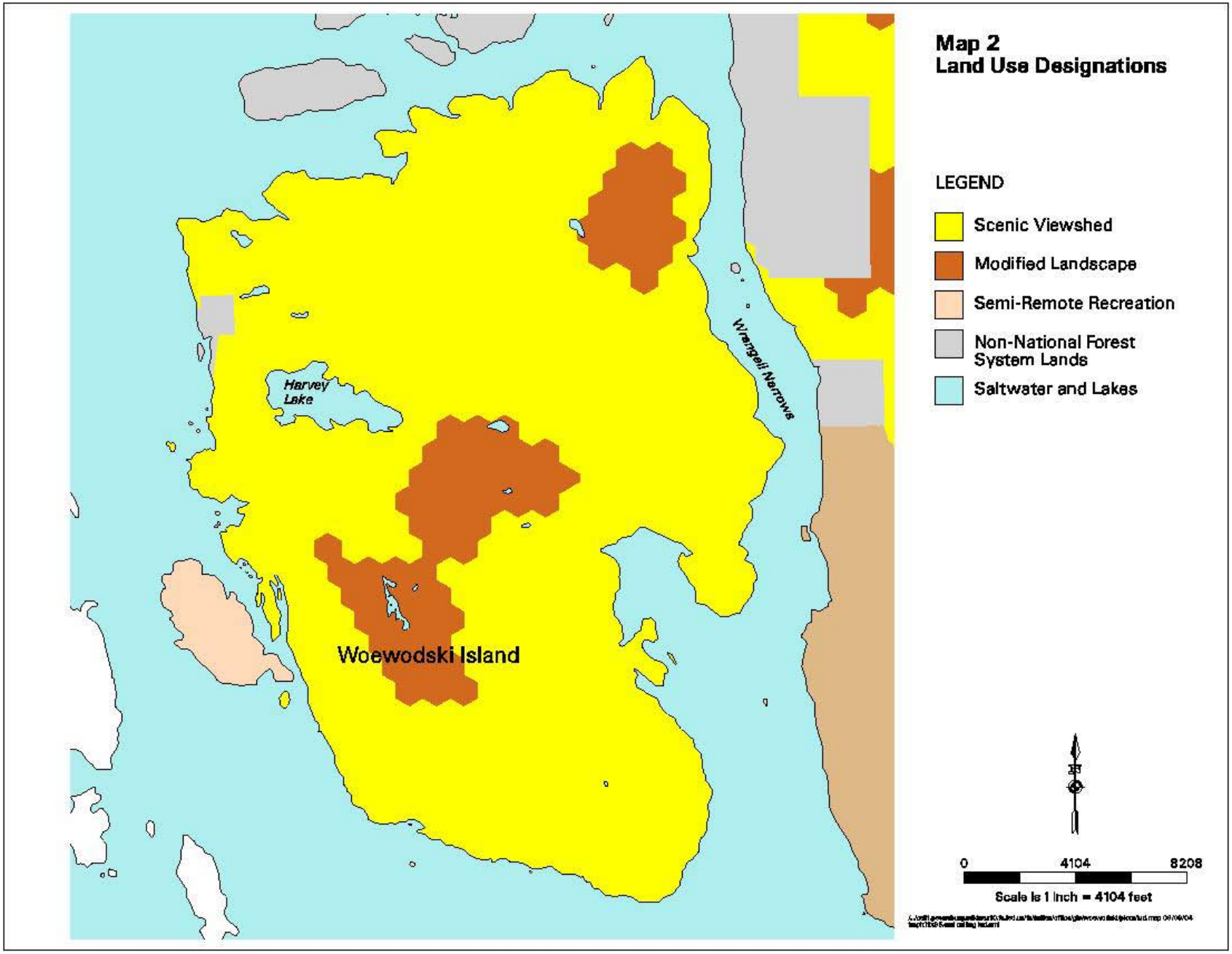
Woewodski Island has a varied and rich history, from prehistoric Indian sites to early historic period mining to contemporary recreating, hunting and mining activities. The Forest Plan directs the management of heritage resources on both Forest-wide and project specific levels to comply with federal regulations (Forest Plan 4-14). Archaeological research and surveys identify, evaluate, preserve and protect Heritage Resources and identify opportunities for interpretation, public education and recreation (Forest Plan 4-15).

Minerals

The Forest Plan provides for the exploration and development of mineral resources. It incorporates rights granted to prospectors and claimants under the General Mining Law of 1872, **ANILCA** and the National Forest Mining Regulations (36 CFR 228), and permits reasonable access to mining claims in accordance with the provisions of an approved plan of operations (Forest Plan 1997:4-33).

The Forest Service works to make minerals available for development while minimizing adverse impacts of mining activities on other resources.

ANILCA: Alaska National Interest Lands Conservation Act, Public Law 96-487. December 2, 1980. 96th Congress.


Map 2
Land Use Designations
LEGEND
Scenic Viewshed
Modified Landscape
Semi-Remote Recreation
Non-National Forest System Lands
Saltwater and Lakes
Harvey Lake
Wrangell Narrows
Woewodski Island
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Scale is 1 inch = 4104 feet

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Recreation Opportunity Spectrum (ROS): provides a framework for stratifying and defining classes of outdoor recreation environments, activities and experience opportunities. There are six ROS classes: Primitive, Semi-primitive Non-motorized, Semi-primitive Motorized, Roaded Natural, Rural and Urban.

The Forest Service works with claimants to develop a plan of operations that meets environmental standards, minimizes adverse effects and provides mitigation measures for impacts to surface resources.

The Forest Service protects surface resources by disclosing impacts of the proposed mining operations in a site-specific environmental document. Only those activities that are reasonably necessary for the proposed operation and ensure the plan of operations provides for the prompt reclamation of disturbed areas are approved (Forest Plan 1997:3-89).

Recreation and Tourism

The Forest Plan provides for a broad spectrum of outdoor recreation and tourism opportunities consistent with the objectives of the Land Use Designation. Recreation classes may change depending on the type of Forest Service projects that occur within the various LUDs. In Scenic Viewshed LUD areas, management activities should avoid change to inventoried Recreation Places where possible or unless analysis indicates a need to provide a different recreation opportunity. In locations where approved activities occur, the recreation setting may change to the Semi-primitive Motorized, Roaded Natural and Roaded Modified **ROS** classes.

The Modified Landscape LUD manages a designated area for the existing recreation setting and opportunities until approved activities and practices change the ROS setting. Recreation and tourism use will be managed in a manner that is compatible with timber harvest objectives. In locations where approved activities change the recreation setting(s), the Forest Service will manage the new setting(s) with the appropriate ROS guidelines (generally Roaded Modified).

The Forest Plan directs maintenance of recreation opportunities along existing trail corridors by minimizing road crossings and clearing directly adjacent to the trail. Impacts to areas directly adjacent to developed recreation and tourism facilities (such as cabins and campgrounds) will be minimized through scheduling and location of project activities.

Finally, in areas identified as inventoried Recreation Places, the existing ROS setting will be maintained where possible. When approved activities nearby may result in a change to the ROS setting, impacts will be minimized

so they maintain a Roaded Natural or more natural ROS setting.

Scenery

The Forest Plan recognizes the importance of maintaining scenic quality in its allocation of the Scenic Viewshed LUD for portions of Woewodski Island seen from saltwater. In areas visible to forest visitors, recreationists and others from frequent travel routes and use areas, a natural-appearing landscape will be maintained. Those areas topographically screened from view may be modified to a greater degree. Projects such as timber harvest would weigh the scenic value as a primary environmental consideration. Within the Scenic Viewshed setting, timber removal would typically affect only a minor percentage of the seen area. This would be accomplished by incorporating partial harvest methods and small openings in the landscape design. (Forest Plan, 3-126 and 3-135)

Vegetation and Timber

The Forest Plan identifies Scenic Viewsheds and Modified Landscape LUDs as suitable forested land available for harvest and includes these lands in the Allowable Sale Quantity. Silvicultural activities must emphasize visual quality objectives in their design and implementation. The Forest Plan offers specific guidelines for timber harvest within the Scenic and Modified Landscape LUDs (Forest Plan, 3-126 and 3-135). These guidelines provide for varying harvest methods and unit sizes to reduce the effects upon scenery (Forest Plan, 4-76). The potential for managing timber on Woewodski Island is dependent on high market values and the resolution of resource conflicts (Forest Plan FEIS, C-38).

Transportation

The Forest Plan transportation goal is to develop and manage roads and utility systems to support resource management activities, and recognize the potential for future development of major transportation and utility systems (Forest Plan 2-5). The Modified Landscape LUD transportation guidelines specify that when developing and managing transportation systems, special emphasis be given to maintaining fish and wildlife habitat values. The guidelines also seek to avoid road crossings on existing trails or locating roads parallel to trails (Forest Plan 3-143). Scenic Viewshed LUD transportation guidelines give special emphasis to visual quality objectives

and maintaining fish and wildlife habitat values (Forest Plan 3-134).

Soils and Wetlands

In accordance to the Forest Plan, land use activities will be planned and conducted to avoid adverse impacts to soil and water resources, such as accelerated surface erosion or siltation of fish habitat (Forest Plan 4-83).

Aquatic Resources

The Forest Plan directs the inventory, analysis, protection and improvement of soil, water and riparian resources. Forest-wide standards and guidelines prescribe general and specific procedures for the protection of stream channels during planning and implementation of timber sales, road building, mining, recreation and special uses projects.

General direction for soil and water resources includes avoiding irreversible or serious and adverse effects on soil and water resources. Water quality and quantity will be maintained to protect the state-designated beneficial uses. Best Management Practices (BMPs) will be applied to all land-disturbing activities. Both ground and surface water rights, including in-stream flow needs and developed recreation sites, will be reserved. (Forest Plan, 4-83 to 4-85)

General direction for riparian resources and associated stream channels includes the maintenance of riparian areas in mostly natural conditions. Riparian Management Areas and management prescriptions based on stream value classes for fish habitat and stream channel types will be defined. (Forest Plan 4-53 to 4-73)

Fisheries

Forest Plan directs the maintenance or restoration of the natural range and frequency of aquatic habitat conditions to sustain the diversity and production of fish and other freshwater organisms (Forest Plan 2-2 and 4-9). Areas designated as Scenic Viewshed will meet the visual quality objectives in the design and construction of fish habitat improvements and aquaculture facilities (Forest Plan 3-129). Areas designated as Modified Landscape will follow the Forest-wide standards and guidelines for fish (Forest Plan 4-8).

Wildlife/Biodiversity

The Forest Plan provides for the abundance and distribution of habitats, especially old-growth forest, to sustain viable wildlife populations in the

planning area. Habitat management aims to support wildlife populations for sport, subsistence and recreational activities. An average of 75 structural wildlife habitat improvement projects are to be designed and implemented annually across the Forest (Forest Plan 2-5). Sufficient habitat to preclude the need for listing species under the Endangered Species Act due to national forest conditions will be provided (Forest Plan 2-2).

Subsistence

One of the Forest Plan goals and objectives is to provide rural residents, both Native Alaskan and non-Native, the opportunity to participate in the harvest of subsistence resources (Forest Plan 2-1). Forest standards and guidelines were crafted to maintain the abundance and distribution of subsistence resources necessary to meet subsistence needs and demands (Forest Plan 4-87). Impacts to subsistence uses of fish and wildlife resources will be considered when managing forest activities. Subsistence uses of fish and wildlife take priority if resources are restricted for other purposes.

Laws Directing Resource Management on National Forests

Multiple-Use Sustained Yield Act of 1960

This act establishes the uses of National Forest land for outdoor recreation, range, timber, watershed, wildlife and fish purposes. The Forest Service is directed to develop and administer the renewable surface resources for **multiple use** and **sustained yield**.

National Environmental Policy Act of 1969

This act establishes regulations and procedures for Federal agencies to consider the environmental impacts of their actions. Documents such as environmental impact statements are prepared before projects are approved.

National Forest Management Act of 1976

This act amended the Forest and Rangelands Renewable Resource Planning Act of 1974 by requiring land management plans, adding more detailed policy regarding timber management and increasing public

Multiple Use: making the best use of land for some or all resources or related services.

Sustained Yield: achievement and maintenance of regular uses of resources without impairment of land productivity.

Native Allotment Act of 1906, as amended: Allowed an Alaskan Native or Eskimo to receive up to 160 acres of vacant and unappropriated land from the United States. The applicant had to show use and occupancy of the land prior to the land being appropriated.

participation in Forest Service decision-making.

Roadless Conservation Rule

The Roadless Area Conservation Rule (Roadless Rule, 36 CFR 294.10 January 12, 2001) generally prohibits timber harvesting and road building in roadless areas. The Roadless Rule has been the subject of several lawsuits. Effective January 29, 2004, actions on the Tongass National Forest are not subject to the prohibitions set out in the roadless rule against timber harvest and road construction in inventoried roadless areas.

Woewodski Island is an inventoried roadless area (#218) and was evaluated for Wilderness suitability in the 2003 Tongass Land Management Plan Revision Final Supplemental Environmental Impact Statement (Forest Plan SEIS). The No Action Alternative was selected in February 2003 and Forest management continues under the 1997 Forest Plan ROD with no further recommendations for wilderness.

Non-National Forest Lands

No State of Alaska land selections or Native Claims Settlement Act land selections occurred within the landscape assessment area. No **Native allotment** applications are pending within the landscape assessment area.

Approximately 38.74 acres of Woewodski Island is non-National Forest land under private ownership. This private land has been developed and contains cabin and outhouse facilities. Forest Plan direction does not apply to these lands. However, to be meaningful, an island-wide ecosystem assessment must include a look at all land uses on the island.

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Landscape Patterns

The Beecher Pass Cabin was originally built on Fair Island in 1966. Following the State of Alaska land selection of Fair Island in 1979, the cabin was moved to Woewodski Island.

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This section provides an overview of the physical, biological and social processes and interactions that shape Woewodski Island. It describes the island's general use trends and natural features.

In this assessment, both documented place names and those created for organizational and reporting purposes are used. The Forest Service invites you to share your local knowledge and provide the correct colloquial names of sites, streams, lakes, etc. on Woewodski Island.

Human Uses

Woewodski is a small island (by Alaskan standards) of approximately 10,362 acres, located about 17 miles south of Petersburg and 24 miles northwest of Wrangell, Alaska. There are no permanent communities established on the island; however, there are two privately owned cabins used mainly for recreation. One of the cabins is on private land, and the other cabin is under a special use permit. The Forest Service also has two cabins on the island. The Harvey Lake Cabin is located by Harvey Lake, and the Beecher Pass Cabin is located on the northern shoreline. Both cabins are available to the public by reservation.

Woewodski is viewed from four water travel routes: the Wrangell Narrows, Beecher Pass, Sumner Strait and Duncan Canal. Permanent residences and summer cabins are located along the Wrangell Narrows, Beecher Pass and the east shore of Duncan Canal.

Woewodski Island supports many uses including economic, social, subsistence and recreational activities. Sport hunting, trapping and fishing also draw users to the island. People use the Forest Service recreation cabins and frequent Harvey Lake Trail on day trips. Occasionally, small tour ships anchor near the trailhead and passengers go ashore to follow the trail to the lake.

Mineral explorations and mining color Woewodski's history. The interest in mineral development continues today.

Nearby Communities

Residents of nearby communities use Woewodski Island in varying degrees. Past surveys have indicated the highest use is by residents of Petersburg and Beecher Pass. However, public scoping for this and past projects shows an interest in the management of the island by people from nearly all nearby residential areas (see Map 3).

Petersburg

Petersburg is located on the northern tip of Mitkof Island across the Wrangell Narrows and north of Woewodski Island. It has a population of approximately 3,200 people.

Commercial fishing and seafood processing have been Petersburg's main economic sector for 100 years. The second largest employer is government. Other economic sectors include retail trade, construction, timber and tourism.

Beecher Pass

Beecher Pass is an area of State of Alaska selection lands on the southern tip of Lindenberg Peninsula on Kupreanof Island. Most of these parcels have been auctioned off to private citizens and remain unorganized within the borough of Southeast Alaska. The majority of landowners have recreational cabins, although there may be a few permanent residents. Several islands in Beecher Pass remain owned by the State of Alaska.

Wrangell

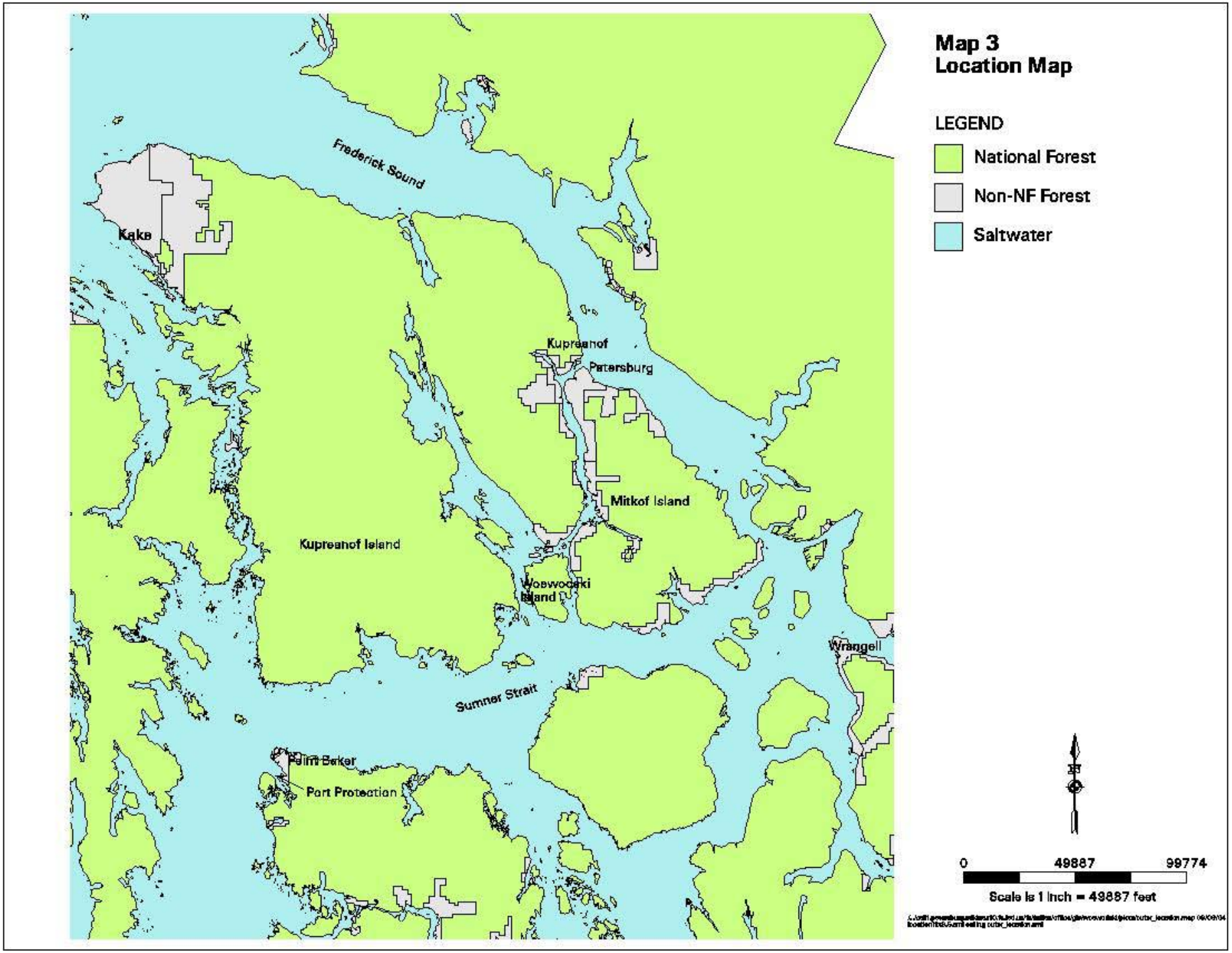
Wrangell is located on the northern tip of Wrangell Island, southeast of Woewodski Island. Its population is approximately 2,300.

Wrangell's economy is based on commercial fishing, fish processing and timber harvest and processing. Tourism is a growing aspect of the local economy. Although Wrangell offers a deep-water port, the city has mainly catered to the smaller cruise ships. Stikine River sport fishing attracts independent travelers.

Kake

Kake is located on northwest Kupreanof Island, along Keku Strait. Kake supports a current population of about 710 individuals and has traditionally been an Alaska Native community. Tlingit Indians built villages and fishing camps in the Kake area in the early 1700s. During the 1800s, these villages were consolidated at the present site of Kake.

Kake's major economic sectors are commercial fishing, seafood processing and government services. Employment is highly seasonal. A timber industry began in 1968 and has been an important contributor to the economy of Kake until recently. Kake's forest products industry has relied upon the harvest of nearby timber resources from both private and, to a lesser degree, National Forest lands.


Map 3
Location Map
LEGEND
National Forest
Non-NF Forest
Saltwater
Frederick Sound
Kake
Kupreanof
Petersburg
Mitkof Island
Kupreanof Island
Woewodski Island
Wrangell
Sumner Strait
Point Baker
Port Protection
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Scale is 1 inch = 49887 feet

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Kupreanof

The City of Kupreanof is located on the east side of Kupreanof Island across the Wrangell Narrows from Petersburg. It was incorporated as a Second Class City in 1975. The population is about 23 and most are economically tied to Petersburg for employment, goods and schooling.

Point Baker

Point Baker is located on the northern tip of Prince of Wales Island, just south of Kupreanof Island. It has a current population of about 35. Point Baker is not an incorporated city, nor is it within a local government jurisdiction. Point Baker is unroaded and is accessible only by water.

Commercial fishing at Point Baker began in the early 1900s when a floating fish packer moored in the area. Fishing remains the primary source of income, mostly in the form of hand trolling and gillnetting. A few retail and service businesses meet the basic needs of residents and visiting commercial fishermen. Point Baker has one of the highest per capita subsistence harvests in Southeast Alaska.

Port Protection

Port Protection, population of approximately 60, is another small fishing community on the northern tip of Prince of Wales Island. Like Point Baker, it is an unincorporated city. Port Protection is unroaded; however, a short skiff ride will access the Forest Service Road system.

Port Protection is characterized by a seasonal cash economy based on gillnet and troll fisheries, and by a subsistence way of life.

Geology and Soils

Woewodski Island lies near the eastern edge of the Alexander Terrane, a block of interbedded marine volcanic and sedimentary rocks that began forming close to the equator more than 200 million years ago. At that time, the supercontinent Pangaea was beginning to break up. The breakup initiated relative movements between continental and oceanic plates that eventually led to subduction of oceanic plates along the western edge of the American continents.

In some places, as in Alaska, the upper parts of the oceanic plates were scraped off as the lower parts sank underneath the continental margins. These so-called “accreted terranes” make up most of Southeast Alaska. Accretion of the Alexander Terrane occurred between

144 million years ago and 120 million years ago, during the early Cretaceous period (Conner and O'Haire, 1988).

The majority of Woewodski Island is made up of late Triassic (about 210 million years ago) marine volcanic and sedimentary rocks of the Hyd Group (see Map 4). Most of these rocks have been altered from a low to moderate degree through regional and **contact metamorphism**, and ongoing tectonic displacements. **Lithologies** include: black slate, **greenstone**, basaltic tuff (rock formed from basaltic volcanic ash and rock fragments), limestone, felsic (rhyolitic) tuffs and tuff **breccia** (Robinson, 2002).

About 15-20 percent of the island is made up of Cretaceous **plutonic rocks** identified as hornblende **diorite**. A few small Mesozoic **gabbro** intrusions are also mapped on the island (Still et al., 2002 and Karl et al., 1999). The northwest-trending Duncan Canal Fault Zone cuts through the middle of the island.

Hyd Group rocks in Southeast Alaska, including those on Woewodski Island, host numerous Kuroko-type volcanogenic massive sulfide (VMS) deposits, a type of base and precious metal ore deposit that forms on the sea floor (Seal et al., 2002). These rocks are part of a 375-mile long northwest-trending belt that runs the entire length of Southeast Alaska. This belt includes the Greens Creek VMS deposit on northern Admiralty Island (Still et al., 2002). Geochemical and isotopic studies suggest that the Woewodski Island and Greens Creek host rocks, and the mineralization within them, are equivalent in age and origin (Robinson, 2002).

Kuroko-type VMS deposits are important sources of copper, zinc, lead, silver and gold worldwide (Iizasa et al., 1999). The depositional environment is believed to be an oceanic island arc. The process that forms these deposits can still be observed today in certain "hot spots" on the sea floor. Submarine volcanoes eject a near-magmatic fluid, rich in dissolved metals, up toward the ocean floor. When the fluids encounter cold sea water, the dissolved metals combine with sulfur to form minerals that fall out of the water column and coat the sea floor. These minerals, called **sulfides**, may contain iron, lead, copper, or zinc. They are deposited in a zoned pattern, depending on their solubility, with the most insoluble metals deposited closest to the fluid source

Contact metamorphism: changes in preexisting rocks or chemical activity deep within the earth's crust due primarily to heat from an igneous intrusion

Lithology: the character of a rock formation or of the rock found in a geological area or stratum

Greenstone: metamorphic rock formed from mild regional metamorphism of ferromagnesian igneous rocks (basalt and gabbro)

Breccia: rock made up of angular fragments of other rocks

Plutonic Rock: rock formed directly from magma that cooled slowly at considerable depth beneath the earth's surface, allowing mineral crystals to grow to visible size

Diorite: a medium- to coarse-grained plutonic rock, gray to dark gray, occassionally greenish to brownish gray

Gabbro: a dark-gray, coarse-grained plutonic rock that cools slowly at depth from magma that is more fluid than granite magma

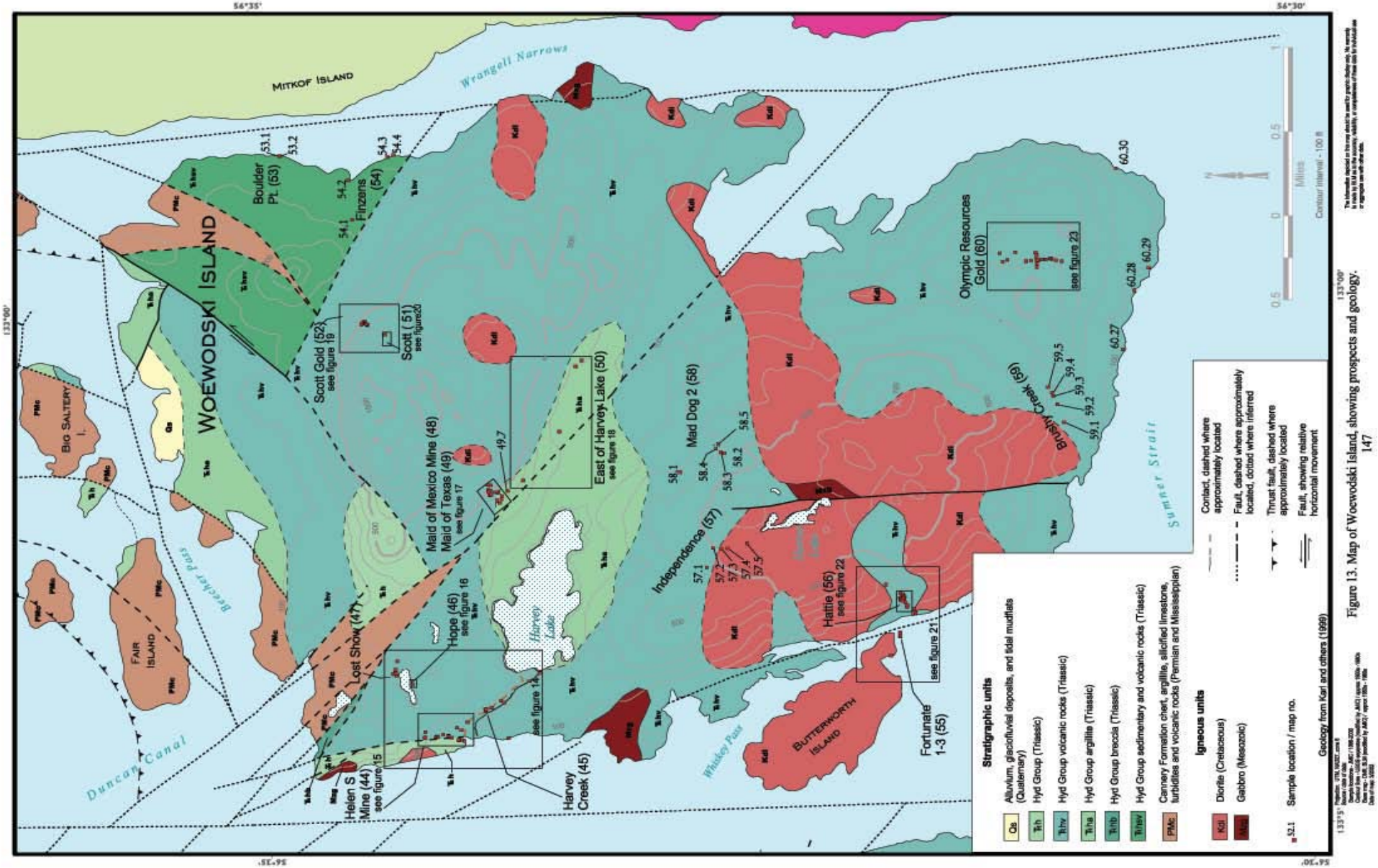

Figure 13. Map of Woewodski Island, showing prospects and geology.
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Map 4 Geology of Woewodski Island. This map was created by the Bureau of Land Management for Technical Report 51: Mineral Assessment of the Stikine Area, Central Southeast Alaska.

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Sulfides: a group of minerals in which sulfur is in combination with one or more metals

Magma: molten rock material beneath the solid crust of the earth that solidifies to form igneous rocks at or below the earth's surface

(Mavrogenes, 2002). Sulfide minerals on Woewodski Island include pyrite (FeS_2), sphalerite (ZnS), chalcopyrite ($CuFeS_2$), pyrrhotite ($Fe_{1-x}S$) and galena (PbS) (Still et al., 2002).

Barite lenses and precious metals such as silver and gold are also associated with VMS deposits. On Woewodski Island, silver and gold are found both in free form in veins and disseminated in sulfide-bearing deposits. The distribution of barite on the island is limited, although the nearby Castle Island barite lens in Duncan Canal (most of which has been mined) is hosted in the same group of rocks, and is probably related to the Woewodski Island deposits. A massive sulfide deposit on the south end of nearby Butterworth Island is the only massive sulfide in the Duncan Canal area known to contain significant gold and silver (Still, et al., 2002).

The hornblende diorite mapped on the island is associated with a second wave of mineralization that occurred during the Cretaceous period. Dioritic **magma** entered the earth's crust and cooled slowly at depth, but in close enough proximity to the existing metal-rich Triassic rocks to cause them to melt or partially melt and recrystallize along cracks or fissures near the contact. This process, called contact metamorphism, resulted in the formation of gold-bearing quartz veins in and around the contact zones.

Robinson (2002) describes a third mineralization event on the island that is less well understood. This platinum-lead-gold mineralization is associated with intrusive Cretaceous gabbro tentatively located on the north side of Brushy Creek. Three other small gabbro intrusions are mapped along the shoreline. These could presumably host similar mineralizations.

See Appendix A for a listing of the mineral deposits found in mining claims on Woewodski Island.

Vegetation

The vegetation on Woewodski Island is a mosaic of mostly old-growth temperate rainforest and wetland plants, much like the rest of Southeast Alaska. Some tree stands on slopes with a southern exposure have experienced blowdown. Small areas of natural second-growth forest have developed in these stands. Areas of previous harvest associated with mining activities support second-growth spruce and hemlock stands, some of which are nearly a century old. See the photos below and across.

This picture shows the stamp mill at Maid of Mexico during operations in the 1930s. Notice the cleared area for the mill and log cabin. This historical picture was provided by Jean Tudor and Pat Roppel.

This picture was taken during a Forest Service archaeological survey of the Maid of Mexico mining site in the early 1980s. Notice the tree regeneration around the log cabin.

The forest consists of approximately 85 percent western hemlock and lesser amounts of Sitka spruce, mountain hemlock, Alaska yellow-cedar and western redcedar. Most of the forest consists of a mix of tree sizes and ages, including some dead trees. Woewodski is part of the northern-most limit of the geographic range of western redcedar. Alder is prevalent on slopes that have experienced mass slope failures and other areas with heavy disturbance.

Dense understory plants grow where enough sunlight can penetrate the forest canopy. Understory plants include devil's club, rusty menziesia, skunk cabbage, salmonberry, bunchberry and several species of blueberries. The most productive forests develop on well-drained sites.

The Woewodski Island landscape is interwoven with large expanses of muskeg that occur mostly on level, low elevation terrain. Muskeg vegetation is a mixture of sedges, deer cabbage, sphagnum mosses and low-profile shrubs including Labrador tea and bog laurel. Stunted, slow-growing shore pine grows on less saturated muskeg areas. Very small ponds dapple most muskegs.

The elevation of Woewodski is relatively low, ranging from sea level to about

1,100 feet on the northern ridge, with an average elevation of about 500 feet. Consequently, subalpine or alpine vegetation is relatively rare.

Climate and Hydrology

The regional climate is strongly influenced by a nearly constant procession of storms originating from a semi-permanent low pressure system called the Aleutian Low (USDA Forest Service, 2001). Maritime air masses originating over the warm waters of the Pacific Ocean transport moisture to the islands and coastal mountain ranges of the Alexander Archipelago. The movement of moist air masses over topographic boundaries results in heavy precipitation and strong winds. Extreme floods in Southeast Alaska result from rainstorms occurring in the fall and winter (Jones and Fahl, 1994). Average total precipitation in nearby Petersburg, Alaska is 105 inches per year. Snow accumulations can vary widely from year to year, especially at lower elevations where warm temperatures and winter rains can result in a transient snow pack. Petersburg receives an average total snowfall of 107 inches per year. The average minimum temperature is 20.9° F for the month of January and the average maximum temperatures is 63.6° F for the month of July (Western Regional Climate Center).

Wildlife and Biodiversity

Some of the most common large mammals on Woewodski Island are the Sitka black-tail deer, Alexander Archipelago wolf, moose and black bear. There have also been unconfirmed sightings of elk on the island and neighboring Mitkof Island. Black bear and moose occur in very low numbers. Important furbearers, such as the river otter, beaver, mink, marten and ermine are also found on the island.

Surveys pertaining directly to **endemic** mammals have not been conducted on Woewodski Island. It is unknown if any rare endemic terrestrial mammals inhabit the island.

Most bird species common to Southeast Alaska can be found on Woewodski Island. The island is located in the center of a major wintering and molting area for waterfowl and seabirds. Its lakes and many ponds serve as important resting and feeding areas for migrating birds and waterfowl.

Raptor sightings on Woewodski Island include Queen Charlotte Goshawk,

Endemic: restricted to a particular locality. For example, a particular species or subspecies may occur on only one or a very few islands.

Northern Harrier, Sharp-shinned Hawk and Merlin. According to the latest *Petersburg Ranger District Bald Eagle Nest Tree Atlas*, there are thirteen bald eagle nest trees on Woewodski Island. There are no known osprey nests; however, unconfirmed sightings in the vicinity of Harvey Lake have been reported.

Blue grouse, brown creepers and hairy woodpeckers have been sighted on the island. Concentrations of marbled murrelets have also been observed; however no comprehensive murrelet surveys have been conducted.

An adult boreal toad was observed recently on the island. The population status of amphibian and reptilian species living on Woewodski Island is unknown.

Marine mammals known to inhabit the waters adjacent to Woewodski Island are the humpback whale, Pacific white-sided dolphin, killer whale, harbor porpoise, Stellar sea lion and harbor seal. The humpback whale, an endangered species, doesn't typically enter shallow waters surrounding the island, but harbor seals and porpoises are commonly observed.

Fisheries

Numerous small fish-bearing streams have been identified on Woewodski Island. Cutthroat trout and Dolly Varden char can be found in most of the streams as well as some coho salmon.

Most of the freshwater fishing opportunity centers on Harvey Lake due to the easy access created by the Harvey Lake Trail. However, Woewodski Island contains several small freshwater lakes and ponds, totaling approximately 203 acres.

The marine waters surrounding Woewodski Island are very productive. The Duncan Canal/Kah Sheets area provides very important habitat for shrimp, crab, waterfowl and sockeye salmon. Beecher Pass provides important commercial, sport and subsistence fishing, and recreational use. The Wrangell Narrows is used for commercial and sport trolling for king salmon. Also, the island's surrounding waters are used for Dungeness crab fishing.

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Resource Information

Remnants of the old the stamp mill from the Helen S mining era.

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This section explains the existing resource conditions on Woewodski Island. Extensive fieldwork and surveys were conducted during the summer of 2002 for this project.

Past Analysis

In the early 1980s, the Petersburg Ranger District began analyzing Woewodski Island for timber development. Through the NEPA process, the Whiskey Timber Sale Environmental Analysis was produced. Public comment and resource issues indicated the need for an Environmental Impact Statement. The Woewodski Island EIS was begun; however, the project was cancelled by the District Ranger in May of 1989 due to other pressing priorities.

Current/Planned Projects

Currently, there are no ongoing projects on Woewodski Island. We are in the process of developing a proposal to replace the Harvey Lake Cabin. The Capital Investment Proposal, a Forest Service funding allocation process, includes new cabin construction to accommodate more overnight visitors. The cabin and outhouse facilities would both be designed to accommodate users with physical handicaps. If the proposal is funded, the proposed project would be planned and reviewed according to the NEPA process. The projected timeline of this proposal is three to five years.

NEPA analysis for a proposed timber harvest on Woewodski Island is scheduled for completion in 2006. Timber harvest occurring on Woewodski Island must meet the requirements of Scenic Viewshed or Modified Landscape land use designations (LUDs). These LUDs allow timber harvest but place restrictions on their visibility.

Heritage

Heritage Resource Program

Heritage Program goals include identifying, evaluating, preserving and protecting the heritage resources that exist on National Forest Systems land. In addition, Forest Plan standards and guidelines make heritage resources available for recreational, scenic, scientific, educational, conservation and historic uses in accordance with historic preservation laws. Due to the sacred and nonrenewable nature of some sites, site-specific heritage information is not always released to the general public.

Archaeology sites are protected under Federal laws and regulations. It is unlawful to remove or disturb artifacts from a site. If you should find a site, you are encouraged to contact a Forest Service archaeologist. The Forest Service is interested in your local knowledge and appreciates your participation.

Historic Preservation Management

Legislation, regulations and guidelines are used to implement historic preservation policies and requirements under the National Historic Preservation Act. All project proposals within any of the Forest Plan Land Use Designations require inventory, evaluation, assessment, monitoring and protection of heritage resources. The State Historic Preservation Officer reviews and comments on all heritage work required under NEPA. The Forest Plan also addresses the need for heritage resource inventory, evaluation, protection and interpretation across the Forest regardless of LUD or project proposal. This provides opportunities for educational and outreach projects to meet noncompliance heritage program goals.

Woewodski Island Archaeological Sites

Numerous archaeological surveys have been conducted on Woewodski Island over the past few decades. Most of the work was associated with proposed Forest Service activities, including trail and cabin construction, special use permitting for mineral exploration and extraction, and timber sale preparation such as harvest assessment and road and log transfer facility (LTF) proposals. Between 1981 and 2002, twelve cultural resource surveys of various sizes and intent helped record past island use. In the summer of 2002, Forest Service archaeologists revisited some of the

Heritage Resource: an historic or traditional cultural property, an ancient or historically significant object that possesses integrity of location, or an area where historic properties abound like the historic district of a town or city.

Historic Property: a property that is either historic or prehistoric and has significance in American history, architecture, archaeology, engineering or culture.

Traditional Cultural Property: an historic property whose significance is derived from the role the property plays in a community's historically rooted beliefs, customs and practices.

previous survey areas and known sites, plus investigated some new terrain. Standard archeological survey techniques, which include archived research, pedestrian survey and ground penetrating sampling, were used. The total 2002 survey covered about 110 acres. Most of the work was concentrated along the shoreline where archaeological sites tend to be concentrated. Lake shorelines and stream banks were also surveyed.

Woewodski Island's rich and varied cultural past is reflected in the archaeological remains found buried in sediments hundreds to thousands of years old. Table 1 lists the island's known archaeological sites, including those discovered in 2002. Site types include prehistoric period camps and fish weirs or traps, historical mining sites, cabins and a control station.

Table 1. Archaeological Sites on Woewodski Island.

Site Number	Type	Age
PET-151	Trappers Cabin	1930s
PET-166	Hattie Camp	1900
PET-237	Maid of Mexico	1914
PET-248	Helen S and Olympic Mining Residences	1902
PET-249	Fish Trap	Prehistoric
PET-259	Control Station	1940s
PET-503	Fish Weir	*3,510 BP
PET-506	Camp	Prehistoric
PET-507	Camp	Prehistoric
PET-508	Camp	Prehistoric
PET-509	Camp	Prehistoric
Site 6	Cabin	1900s

*BP = years Before Present

Prehistory

Woewodski Island lies within the traditional territorial boundaries of the Wrangell or Stikine Tlingit. The Stikine territory is very large, extending from the Cleveland Peninsula north to Cape Fanshaw, southwest across the east half of Kupreanof Island and south across Sumner Strait to include Red Bay and Thorne Bay on Prince of Wales Island. All of Etolin, Mitkof, Wrangell and Zarembo Islands, and some territory up the Stikine River are included (Goldschmidt and Haas 1946:73). Woewodski Island is relatively small and is nestled among larger islands with more diverse landscapes. It does not have features like large productive fish streams, broad sandy beaches or deep protected bays that often drew permanent and seasonal Native settlement. Evidence of prehistoric occupation is, however, present and

appears to represent several thousand years of use.

Prehistoric Camps and Fish Traps

Two basic site types were discovered by archaeological survey and through tips from informed citizens. The most common prehistoric sites on the island are campsites, often synonymous with **shell middens**. Shells will survive for thousands of years in the soils typical to Southeast Alaska. Bits of charcoal and bone are preserved among the shells and together they can tell us about the different foods people ate, the age and duration of a site occupation and the prehistoric ecology of the area.

The camps on Woewodski appear relatively small and might represent use of a more temporary nature for a small group of people. The sites may have accommodated family groups intent on harvesting a certain species at a particular time of the year. The island might also have provided a good stopping place in route to larger and more established camps or settlements.

Fish traps and **weirs** are the second most common sites in the area. A couple were found on the tide flats around the island and more are reportedly in Beecher Pass. Traps and weirs, which function differently, are made of sharpened bough or sapling stakes that were driven into tide flat or stream sediments with hammers or rocks. Each stake was sharpened at one end with a stone adze and hammered deep into the sediments. Traps and weirs were configured in different shapes and sizes and functioned either independently or as a part of a larger complex. Sometimes sticks and branches were interwoven among the vertical stakes to form tighter barriers.

These sites are usually recognize by finding small nubs of wood protruding from tide flat sediments or stream buffers and banks. The nubs are what is left of long stakes that would have extended several feet above the sediments.

Preservation is remarkable in tide flat sediments because often little or no air can reach the buried organic material. A stake was collected for radiocarbon analysis from one of the Woewodski sites. The stake is around 3,510 years old, suggesting a long history of prehistoric use of the island.

Since stream channels and tide sediments shift, sites are revisited periodically to record portions that are newly exposed. It is important for the casual observer to leave stakes in

Shell Midden: a buried heap of bivalve shells, charcoal and bones that were tossed aside after harvest and meal preparation.

Fish Traps: a series of stakes positioned to form an entrapment.

Fish Weirs: stakes aligned like a fence to form a barrier across a stream channel.

place, for once they are removed they will deteriorate rapidly and are of no value scientifically.

History

Historic Period Mining

Most of Woewodski Island's historic period sites are associated with early 20th century mining. Those noticeable on today's landscape were small gold mines, namely the Hattie, the Helen S at Smith's Camp and the Maid of Mexico. The Hattie was staked by J. W. Range in 1900. Wrangell prospector, Charles Smith, staked the Helen S in 1902. Both mines were a collection of claims eventually owned by the Olympic Mining Company of Washington state.

Hattie Camp became a substantial community and was officially renamed "Woedsky" when a post office was established in December 1901 (Roppel, 2001). Soon the mining settlement

ER Butterworth was president of the Olympic Mining Company. The small island to the west of Woewodski Island is named for him.

Viola Range was the first postmaster of Woedsky Post Office.

Picture of Hattie Camp in full operation. Historical picture provided by Jean Tudor and Pat Roppel.

included a company store, a cold storage, residences, mine related structures and a wharf connected to the mine by a 1000-foot long tramway. The mine structures consisted of a 360-foot tunnel and a shaft sunk to 135 feet (Wright and Wright, 1908).

Work continued at Hattie Camp for a few years but company officials were not pleased with the results. By December 1907, the post office was closed and in 1911, the buildings at the camp burned. Reportedly no ore was actually mined from the Hattie lode (Berg and Cobb, 1967).

Operations at the Helen S mine began under the guidance of Edward E. Harvey, the Olympic Mining Company vice-president and general manager (Roppel, 2001). Harvey believed the Helen S had more potential than the Hattie, and set up Smith's Camp in 1903. The camp consisted of residences, storage facilities, a corduroy road, additional camp-related structures and a wharf. Mine features included a twenty stamp mill and compressor plant, two shafts, and 650 feet of drifts and crosscuts (Wright and Wright, 1908). According to Roppel (2001), a twenty stamp mill was an enormous investment for unproven ground and only two other mines in Southeast had larger mills at that time. Nevertheless, Harvey erected the mill sometime during 1903 and early 1904.

Ore milled at Helen S. was reported to average $3.66 in gold per ton, which was too low for profitable extraction. The mine workings operated periodically through 1907 and a small amount of work was done in 1915. Sometime shortly thereafter, the mill at Smith's Camp was dismantled (Berg and Cobb, 1967).

The Maid of Mexico mine was another Edward Harvey enterprise. He acquired the mining rights from Charles Smith who originally staked the claim in 1910. In 1914, Harvey deeded the rights to the Maid of Mexico Mining Company, a company he and his brother owned with several other partners. Harvey's company excavated some tunnel and a shaft for ventilation but made no attempt to put the mine into production (Roppel, 2001).

Over the next 25 years, the rights to the Maid of Mexico were leased and improvements were made. Crosscut **adits** and **drifts** were excavated to expose the ore-bearing veins (Chapin, 1916). A drag stone mill was constructed to pulverize the ore and over a mile of corduroy trail was laid between the workings and the beach

Harvey Lake was originally called Spear Lake after Frank W. Spear, who was the secretary for the Olympic Mining Company. The name changed when Edward Harvey became the company's vice-president and general manager.

Adit: a nearly horizontal passage from the surface in a mine.

Drift: a nearly horizontal mine passageway driven on or parallel to the course of vein or rock stratum. A small crosscut in a mine connecting two larger tunnels.

(Roppel, 2001). At one point during operation, horse and cart were used to transport coarse ore from the mine to the beach (Roppel, 2001). The ore was hauled by horse and sled to Harvey Lake, transported by boat across the lake and then carried by cart to the beach.

In 1931, a ten stamp mill was delivered to the site. Additional mine related structures built throughout the years included a bunkhouse, a cookhouse, log cabins, a powder house and a blacksmith shop (Roberts, 1984). Total production probably did not exceed 100 ounces each of gold and silver. Aside from some contemporary interest, the last reported activity at the mine was in 1939 (Berg and Cobb, 1967).

Edward Harvey's residence on Woewodski Island. Historical picture provided by Jean Tudor and Pat Roppel.

Other Historic Period Sites

The dilapidated remains of abandoned cabins can be found along the Woewodski shoreline. These cabins were generally simple and small, and often served as temporary shelters for trappers and hunters. Various advertisements in the Alaska Sportsman magazine suggest plenty of reasons for the many cabins that dotted the coast. A 1938 article indicates, “wolves bring a [$]20.00 bounty” (Alaska Sportsman, 1938). Classified advertisements read “CASH PAID for good specimens of eagles, hawks and other predatory birds” or “WANTED, golden eagle tails, wings, bear skulls and hides” (Alaska Sportsman, 1940).

In the first half of the 20th century, Alaska pelt prices were high enough to entice many to the trapping business. In 1943, the Maas-Steffen Co. of New York had been purchasing Alaska furs for 25 years. The company claimed “Furs will be very high this year, in fact so high the O.P.A. is expected to set a ceiling price on them” (Alaska Sportsman, 1943).

Aside from cabins, trap line evidence can be found on old spruce and hemlock trees that grow along the coast. Trappers would, and still do, chop a small shelf into the side of a tree for placement of a mink or marten trap set as seen in the photograph on this page of a spruce in Alexander Bay.

Another Woewodski Island historic site is the Deception Point Control Station. The U. S. Coast Guard operated the Control Station under a special use agreement with the Forest Service during World War II. The overall mission of this facility and staff was to monitor vessel traffic in the Wrangell Narrows. A Forest Service Special Use Permit was issued in March 1943 for the station.

According to a 1944 condition report, improvements to the area included barracks, a control tower, a float and trails. By summer 1946, the property had been vandalized. A letter from the Coast Guard to the Forest Service indicates that unauthorized persons had removed windows, doors, lumber and hardware from the property. Soon after, the Forest Service sold the remainder of the improvements to the Reid Brothers of Petersburg (USDA Forest Service, 2003).

In a 1985 interview with Mr. Jimmie Stafford, he recalled visiting the site every couple of weeks for inspection during the war. He said that all ships were expected to use signal lights to communicate with the Guardsmen. The Coast Guard signalmen would challenge the boat and the captain would reply

A shelf chopped into the side of a spruce for a marten trap set.

with a name and call letters. The information would be checked against existing records before the vessel was allowed to pass (Roberts, 1985).

Minerals

History

Mineral exploration and mining activity on Woewodski Island began around the turn of the twentieth century. Exploration waned between the 1940s and 1960s, only to increase in the 1970s. Currently there is a renewed interest in the island's mineral potential. Records indicate that gold was and remains the primary mineral of interest. For details regarding the island's historic period mining sites refer to the previous Heritage Resource section.

Mining Rights

The General Mining Law of 1872, as amended, grants every United States citizen the right to prospect and explore public domain lands open to mineral entry. Prospecting simply means exploring mineral-bearing grounds.

Remains of the twenty stamp mill brought to the Helen S mine in the early 1900s by the Olympic Mining Company.

Patented Claim: ownership of surface and mineral rights of the claim found to be valid are transferred to the claimant (creates private land)

Plan of Operations: describes how the claimant proposes to develop the mineral deposit; subject to NEPA and management agency approval

Core Drilling: exploratory drilling that produces a rock core that enables the prospector to identify subsurface rock types and determine mineralization at specific points

Soil and Rock Sampling: a process of mineral exploration in which surface material is collected for analysis

Geophysical Surveying: the art and science of inferring the distribution of subsurface physical properties, such as geological characteristics, using measurements taken at or above the surface.

Exploration methods might include surface reconnaissance, non-mechanized drilling, or panning.

After a prospector has conducted exploration work, he or she may locate a claim in an area believed to contain a valuable mineral. Claim staking means to define surface boundaries to mineral rights. A valid claim entitles the holder to develop the minerals. Claimants must pay an annual maintenance fee of $100 per claim to hold a claim on public land. A staked claim remains public land but the mineral rights are held privately.

Once a claim is staked, the claimant can submit an Exploration Plan. The Exploration Plan outlines the sampling methods used to study the sought after deposits. These methods often mean mechanized drilling or coring.

Once a claimed mineral deposit is determined to be economically recoverable, and at least $500 of development work has been performed, the claim holder may file a patent application to obtain title to surface and mineral rights. A **patented claim** is no longer public property.

Mining refers to underground excavation to remove mineral resources. Some open-pit workings are also considered mines. A **Plan of Operations** must be submitted to the federal agency that manages the public lands for approval prior to mining.

Recent/Current Exploration Activity

Recent and current exploration projects on Woewodski Island by mining claimants include subsurface **core drilling**, **soil and rock sampling**, and **geophysical surveys**. Access to the mining claims is by helicopter or by foot. There are currently no roads on the island.

Core drilling involves the use of a small portable drilling rig with a footprint of about 6 x 9 feet. The drill is typically transported to the general location of the drill sites by helicopter and then moved from site to site with a winch. Drilling depth is up to approximately 500 feet. Water is pumped from nearby streams or ponds into the drill hole to lubricate and cool the drill head.

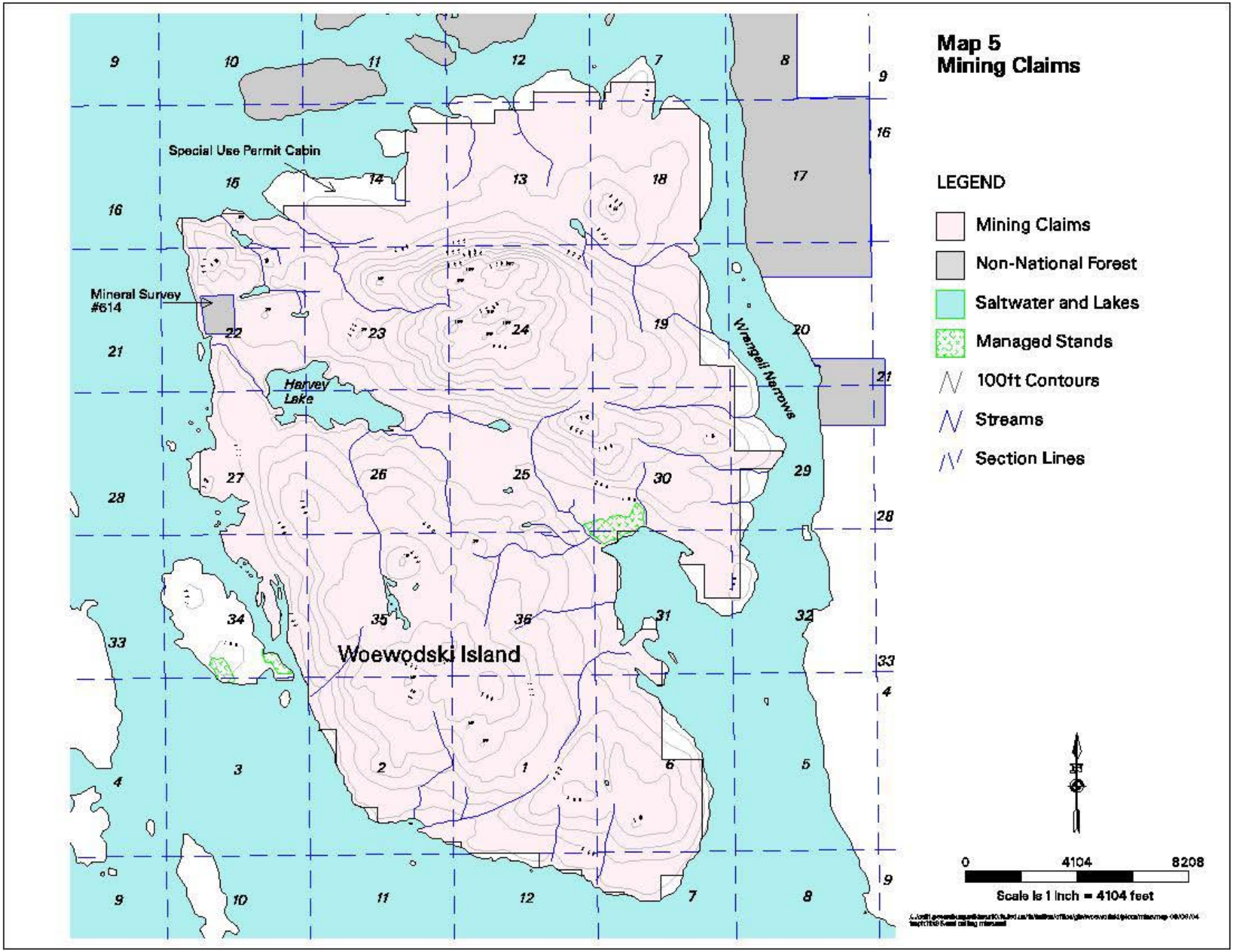
Soil and rock samples are obtained by hand from digging shallow holes or trenches and collecting surface material from naturally occurring exposed rocks, soil and stream sediment. Material obtained from core drilling and rock and soil sampling are removed from the field for analysis.

One method of geophysical surveying makes use of radio signals from very low frequency transmitters placed on the ground to measure conductivity and resistivity of underlying mineralized bodies and layers.

In 2002, the Bureau of Land Management (BLM) completed a mineral assessment project that included an examination of several locations on Woewodski Island. Surface samples revealed that several of the sites showed sufficient mineralization to warrant additional exploration. The results of this exploration work has increased the interest in the development potential for minerals such as gold, zinc, lead, silver and copper.

Current Mining Claims

The BLM Mining Claim Report shows that as of June 17, 2003, a total of 489 mining claims are located on Woewodski Island. This indicates that approximately 94% of the island is currently covered by mining claims (see Map 5).


Map 5
Mining Claims
LEGEND
Mining Claims
Non-National Forest
Saltwater and Lakes
Managed Stands
100ft Contours
Streams
Section Lines
Special Use Permit Cabin
Mineral Survey #614
Harvey Lake
Wrangell Narrows
Woewodski Island
0
4104
8208
Scale is 1 inch = 4104 feet

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Recreation and Tourism

Woewodski Island is about 17 water miles from Petersburg. The route through the Wrangell Narrows is a fairly protected, safe waterway for small boats. The island is an easily accessible recreation destination for Petersburg residents.

Recreation use on Woewodski Island is mostly concentrated along the shoreline and in the vicinity of the two Forest Service public recreation cabins at Beecher Pass and Harvey Lake. Harvey Lake is accessible by trail or floatplane. The half-mile Harvey Lake Trail begins at saltwater and ends at the west end of Harvey Lake. Attractions and developments at the Harvey Lake Cabin include a sand beach, rowboat with oars, picnic table, fire pit and grill.

The Beecher Pass cabin is located on the northwestern tip of Woewodski Island opposite Fair Island. It primarily serves as an overnight stop or staging area for hunting and fishing in Duncan Canal.

Beecher Pass is used as a major travel artery for boaters traveling from Petersburg to Duncan Canal. Several private residences and recreation cabins are accessed by this travel route. The Beecher Pass waterway and its surrounding islands have been designated as a marine park by the Division of Parks and Recreation in the State of Alaska. The State plans to manage these areas to protect their traditional and aesthetic values. Long-range plans may include the installation of marine park facilities on selected tidelands. The islands affected by State designation comprise approximately 742 acres.

There is one private cabin, under a Special Use Permit, located on the north side of Woewodski. It is a recreational cabin, not a year round residence.

The Whiskey Pass area that separates the western shore of Woewodski Island from Butterworth Island is frequently used by small boats. Beachcombing and other day use activities occur on Woewodski Island in this general vicinity. In the winter, some cross country skiing takes place on the island.

The eastern shore of Woewodski Island is also important from a visual quality standpoint. The Wrangell Narrows serve as a major north/south ferry transportation route.

Recreation Opportunity Spectrum (ROS)

To describe, identify and quantify recreation settings, the Forest Service uses the Recreation Opportunity Spectrum (ROS). The ROS categorizes areas by their activities, remoteness, access and experiences in a spectrum of classes from Primitive to Urban (see Map 6).

Woewodski Island has three ROS classes: Semi-primitive Non-motorized (61%), Semi-primitive Motorized (22%), and Roaded Natural (17%) (see Table 2). No areas on Woewodski Island were classified as primitive because potential areas considered lacked sufficient distance from the sights and sounds of human activity.

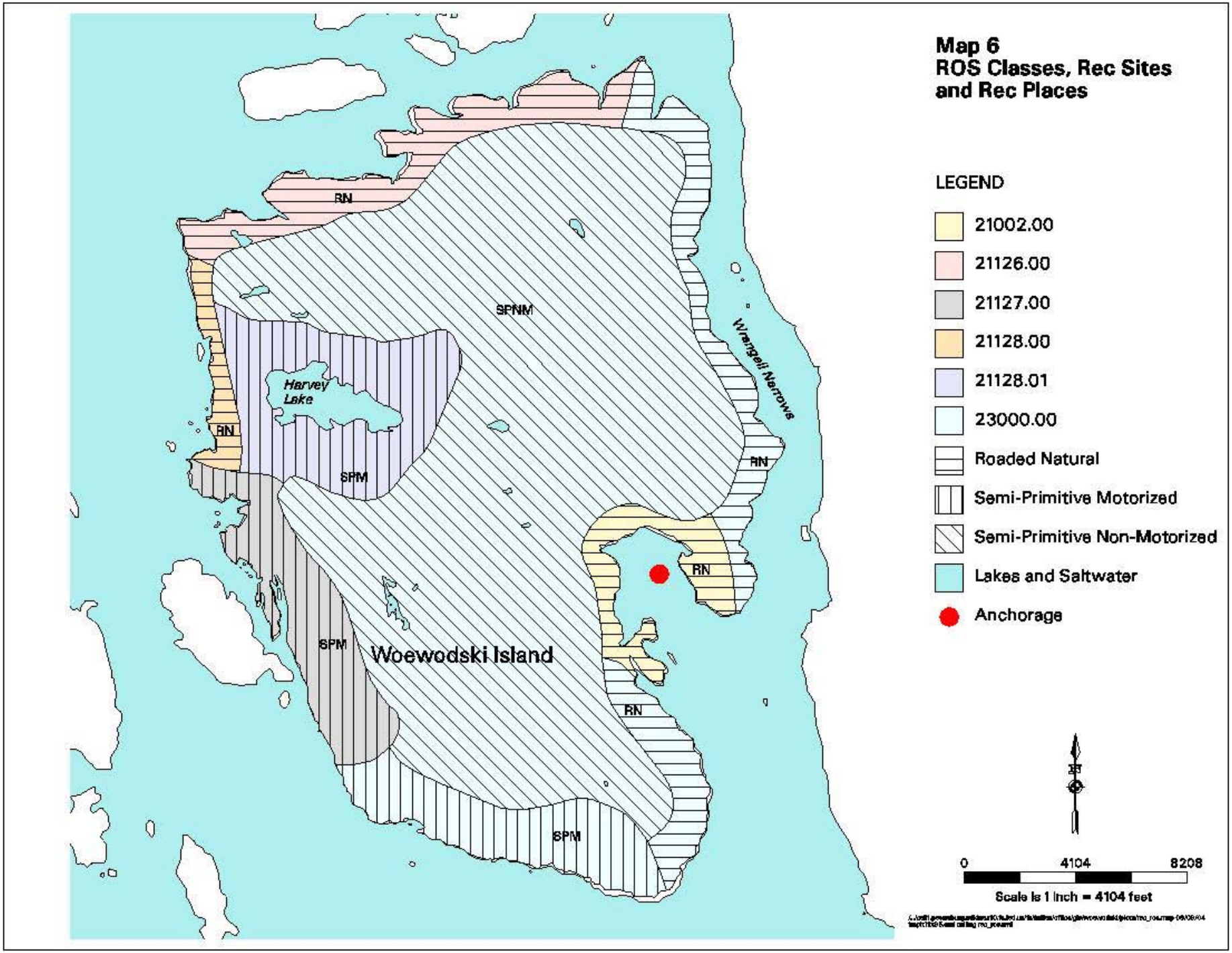
Semi-primitive Non-motorized areas are natural or natural-appearing environments generally greater than 2,500 acres in size and generally located at least ½ mile but less than three miles from all roads and other motorized travel routes. Concentration of users is low (generally less than 10 group encounters per day), but there is often evidence of other users. There is a high probability of experiencing solitude, freedom, closeness to nature, tranquility, self-reliance, challenge and risk. No roads are present in the area. Most of Woewodski Island is classified as Semi-primitive Non-motorized.

Semi-primitive Motorized areas are also natural or natural-appearing environments generally greater than 2,500 acres in size, but may be smaller if contiguous with Primitive or Semi-Primitive Non-motorized classes. They are generally located within ½ mile of primitive roads and over ½ mile away from more developed roads and other motorized travel routes. Concentration of users is low (generally less than 10 group encounters per day), but there is often evidence of other users. There is a moderate probability of experiencing solitude, closeness to nature and tranquility along with a high degree of self-reliance, challenge and risk in using motorized equipment. Local roads may be present, and there may be extensive boat traffic along saltwater shorelines.

On Woewodski Island, the area surrounding Harvey Lake is classified as Semi-primitive Motorized because of float planes landing in the lake and motor boat use on the lake. The southwestern and southern shoreline of Woewodski is also classified as Semi-primitive Motorized because of the small boat traffic in the area.

Table 2. Acres of ROS Class on Woewodski Island.

ROS Class	Acres
Semi-primitive Non-motorized	6286
Semi-primitive Motorized	2256
Roaded Natural	1820
Total Acres	10362


Map 6
ROS Classes, Rec Sites
and Rec Places
LEGEND
21002.00
21126.00
21127.00
21128.00
21128.01
23000.00
Roaded Natural
Semi-Primitive Motorized
Semi-Primitive Non-Motorized
Lakes and Saltwater
Anchorage
RN
SPNM
SPM
Harvey Lake
Wrangell Narrows
Woewodski Island
0
4104
8208
Scale is 1 inch = 4104 feet

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Recreation Places: specific areas identified by the Forest Plan that have one or more physical characteristics which are particularly attractive to people for recreation activities; activities can be dispersed throughout the recreation place or be concentrated at a specific recreation site.

Recreation Site: a specific site and/or facility found within a Recreation Place, such as a boat anchorage or developed facility like a trailhead or recreation cabin

Roaded Natural areas are predominantly natural environments with moderate exposure to the sights and sounds of humans. This includes areas less than ½ mile from roads open to public travel, waterways, major power lines and within resource modification areas.

On Woewodski, the shorelines on the northwestern, northern and eastern sides of the island are classified as Roaded Natural, which suggests more development and less solitude than Semi-primitive Motorized. In this case, less solitude means more contact with others in boats along the shoreline. These boats include small private recreation boats, commercial fishing vessels, small cruise ships and Alaska State ferries. There are also a number of people who regularly boat past Woewodski to access permanent and summer residences in Beecher Pass and Duncan Canal.

Recreation Places and Sites

Since the majority of the Tongass National Forest is undeveloped, it is primarily used for dispersed recreation activities. Woewodski recreation users mainly view scenery and wildlife, boat, fish, beachcomb, hike or hunt on the island.

There are five **Recreation Places** on Woewodski Island (see Map 6):

- Harvey Lake, Harvey Lake Trail and Forest Service cabin (21128.01)
- Harvey Lake trailhead and adjacent shoreline (21128.00)
- Beecher Pass Forest Service cabin and private special use cabin area (21126.00)
- Alexander Bay (21002.00)
- Waterfowl hunting area on west coast shoreline across from Butterworth Island (21127.00)

There are three **Recreation Sites** on Woewodski Island. These include the two Forest Service public recreation cabins and the boat anchorage in Alexander Bay.

All the Recreation Places and Sites on Woewodski Island are in Modified Landscape or Scenic Viewshed LUDs. The Forest Plan direction for Recreation Places in these LUDs is to seek to maintain the existing ROS class. When approved activities nearby may result in a change to the ROS class, the impacts should be minimized so that a Roaded Natural or other more natural ROS class is maintained.

Existing Recreation Facilities

The existing public recreation facilities on Woewodski include two Forest Service public recreation cabins and one developed trail to Harvey Lake.

The Forest Service conducts annual inventories and inspections of the recreation facilities on Woewodski Island. Maintenance and repairs are scheduled as needed.

The Harvey Lake area with the recreation cabin, boat and picnic area, and trail leading to it from saltwater is the most developed area on the island. The cabin does not get a lot of use compared to some others on the Petersburg Ranger District. Some people are hesitant to anchor or long line a boat half a mile away from the cabin where they cannot check it regularly with the changing tides and weather conditions. In 2002, it was reserved for about 20 nights. The cabin guest register records very positive visitor experiences at the cabin and some fall and winter use as well as summer use.

A trail to Harvey Lake was first cleared in the late 1920s. Edward Harvey leased the Maid of Mexico Mine on the north side of the lake to Leo Haider. Access to the mine from Duncan Canal was needed. Haider hand-carried or used a tractor to haul supplies and equipment up the trail to the west end of the lake, then boated or sledded loads across the lake to the mine.

In a 1930 letter, Harvey asked the Forest Service to construct a permanent trail from Duncan Canal to the lake. By that time, Harvey Lake had become a popular place for Petersburg and Wrangell residents to swim and picnic. They enjoyed the warm water and sandy beach, and the raft and springboard built by Mr. Harvey. The Forest Service reconstructed the trail the following year, in 1931.

The Harvey Lake Trail is approximately ½ mile long and gains about 100 feet in elevation from saltwater to the lake. It is rated Trail Class 3 in a system where Class 1 is the least developed and most difficult to hike and Class 5 is the most developed and easiest to hike. This moderately easy trail passes through Sitka spruce and western hemlock forest before reaching Harvey Lake. It receives day use that is hard to quantify outside of outfitter/guide use, which is controlled by Forest Service permit. The trail was recently reconstructed in 2000 and a May 2003 trail condition survey shows it to be in good condition.

The Beecher Pass cabin receives more use than Harvey Lake cabin, most likely because of its saltwater access and proximity to Duncan Canal. In 2002, the cabin was reserved for about 60 nights.

The experience people seek at the two cabins is somewhat different. The Harvey Lake cabin offers hiking, lake and lakeshore activities, while the Beecher Pass cabin is saltwater based with boat access to many places in Beecher Pass and Duncan Canal.

Outfitter/Guides

Since 1994, three different outfitter/guides have used Woewodski Island for their business operations. One outfitter has taken groups to hike on the Harvey Lake Trail in the years 1994, 1995, 2000 and 2001. The groups

Harvey Lake Cabin is available for public reservation. Developments at the lake include a sand beach, rowboat with oars, picnic table, fire pit and grill.

ranged in size from 32 to 66 people, with the average size of 54 people. Each group spent 1.5 to 3 hours in the area. In the four years of use, groups hiked on the trail on 17 separate occasions. Most of the use was in 1994 and 2001.

In 2001 and 2002, another outfitter/guide took a group of 8-9 clients to hike and enjoy the scenery on Harvey Lake Trail. This guide took one group each year.

A kayak outfitter used the south end and southeast part of Woewodski during 1996 (6 times) and 1999 (twice) for overnight camping and replenishing water. The group sizes were most often 7-8 with one group of 15 and one group of 12.

Scenery

Many people value the natural appearing scenery of Woewodski Island. The scenic condition is an important characteristic that contributes to the quality of recreational experiences and physical settings found on the island.

During 2002, visibility of Woewodski Island from Visual Priority Travel Routes and Use Areas was verified and corrections made to the visual resource inventory. Photographs were taken of the island from key viewpoints.

Woewodski's Scenic Environment

The Woewodski Island landscape is characterized by rounded landforms with several more dominant ridgelines. The island appears mostly forested, broken by occasional creek mouths vegetated with brighter green sedges and grasses. A considerable amount of muskeg is found within the island interior, which does not appear evident from outside viewing. The shoreline character is somewhat diverse with smaller island fragmentation occurring in the area of Butterworth Island. Only a few bays and inlets exist. The most significant of which is Alexander Bay located near the southern entrance of the Wrangell Narrows.

The island receives high use from Petersburg residents and visitors and is viewed extensively from all surrounding water locations. The Forest Plan has identified these waterways as Visual Priority Travel Routes from which scenic quality is to be emphasized.

Located to the east of Woewodski Island, the Wrangell Narrows serves as passage for the Alaska Marine Highway. The island is situated at one of the narrowest stretches of the marine highway, providing close observation viewing opportunities for passengers.

To the north and west of Woewodski Island, Beecher Pass affords access to Duncan Canal and the numerous private cabins located on the southern end of the Lindenberg Peninsula on Kupreanof Island. Recreational boaters and commercial fishing vessels are the primary users of Duncan Canal, which is also the route to the many Forest Service cabins in the area. Beecher Pass is also an Alaska State Marine Park, designated by the State to provide sanctuary for wildlife and marine animals.

Sumner Strait, located to the south of the island, is less protected from the

weather and mostly traveled by commercial fishing vessels, ferries and tour ships.

The Forest Service cabins at Beecher Pass and Harvey Lake, and the Harvey Lake Trail are also considered areas of scenic importance.

Most of Woewodski Island is inventoried in scenic terms as a Type II **Existing Visual Condition**, where changes in the landscape are not evident to most people. In areas where development has occurred, such as cabins, trails and some locations of past and current mining activity, the change in the landscape is noticed by most people but does not detract from the natural setting.

Existing Visual Condition (EVC): The level of scenic quality existing at the present time. Classified as six condition types (I-VI) representing changes in the landscape from ecologically undisturbed to excessive visual alteration, a glaring contrast to the natural appearance.

Windthrow: the act of trees being uprooted by the wind.

Vegetation and Timber

The Petersburg Ranger District Integrated Resource Inventory (IRI) program spent most of the 2002 field season collecting information on Woewodski Island resources. One of the objectives was to collect forest stand characteristics. These field measurements are used to verify information determined by past aerial photograph interpretation.

The vegetation on Woewodski Island consists of coastal temperate rainforest species in a mosaic pattern of forests, muskegs and savannah-like forested wetlands. The forest has a complex structure with many canopy layers. The dominant tree species is western hemlock with varying amounts of Sitka spruce and Alaska yellow-cedar, depending on the fertility and drainage of the site.

Sitka spruce favors more nutrient-rich and well-drained sites. Western redcedar is found throughout the southern parts of the island but is nearing its range limit on the north end of the island. The lesser-drained sites are sparsely forested wetlands interspersed with muskegs. Shore pine and mountain hemlock populate these forests, along with yellow-cedar and western hemlock. Mountain hemlock is also found at higher elevations.

There are a large variety of understory and muskeg plants. Many species of blueberry occur below the canopy, intermixed with rusty menziesia, copperbush and devil's club. Various species of ferns, lichens and deciduous plants grow in wet micro-sites. Much of the groundcover consists of a thick pad of moss over a layer of organic soil.

Forest Disturbances

Windthrow

Wind is the primary cause of natural disturbance in these forest stands. Wind can blow down individual trees or acres at a time. Storms, with strong winds from the south and southeast, occur in the fall and winter. Consequently, the south end of Woewodski Island has large expanses of wind disturbance; however, evidence of windthrow is found interspersed across the island. These windblown stands are younger and more even-aged than the older uneven-aged stands found on the northerly wind-protected areas.

Decay

Dwarf mistletoe is common on the island. This parasite occurs primarily in

western hemlock, causing defect and a loss of vigor in some mature stands.

Alaska yellow-cedar trees are dying on Woewodski Island as well as throughout the Tongass National Forest. The cause of this decline is not clearly understood and is currently being researched. Death of the trees is usually associated with saturated soil in muskeg conditions. Dead cedar can be salvaged for many years because the wood decomposition is very slow.

Black-headed Budworm

The black-headed budworm is one of the most destructive forest insects in Southeast Alaska. These defoliators reduce tree growth and increase mortality in the tops of trees. Repeated infestations may kill the trees after several years. Western hemlock is the preferred species with occasional attacks on Sitka spruce. Numerous outbreaks have occurred on Woewodski Island with no significant mortality.

Managing Forest Vegetation

The Forest Service is responsible for the management of forest vegetation for multiple use and sustained yield. LUDs provide further guidance and distribution of resource uses.

An example of a windthrown stand on Woewodski Island.

Forest vegetation is managed for many uses. Diverse habitats provide for wildlife species from small birds and mammals to large carnivores. Various plant species thrive under different tree canopy conditions. Wildlife and plant diversity provide for recreation and scenic enjoyment.

The Forest Service also monitors forest health, including insect and disease activity, and maintains the ability to put out forest fires.

Suitable Forest Lands: those forest lands for which technology is available that will ensure timber production without irreversible resource damage to soils, productivity, or watershed conditions; and for which there is reasonable assurance that such lands can be adequately restocked (young tree grown); and for which there is management direction that indicates that timber production is an appropriate use of that area.

Timber Management

Previous Timber Harvest

Logging has been limited on Woewodski Island. Approximately 50 acres of timber was harvested in Alexander Bay in the early 1930s. Timber harvest also occurred in association with early twentieth century mining.

Under the Alaska Region's Free-Use Program, local residents have harvested small groups of trees close to the shoreline for personal use. Generally, free-use harvest along Woewodski Island's shoreline is light or nonexistent; however, from 1983 to1984 approximately 227 thousand board feet (mbf) was harvested. This use increase can be attributed to the sale and residential development of state lands on nearby Kupreanof and Mitkof islands.

National Forest Lands Suitable and Available for Harvest on Woewodski Island

One goal of the Forest Plan is to manage the timber resource for production of sawtimber and other wood products from suitable forest lands made available for timber harvest, on an even-flow, long-term sustained yield basis and in an economically efficient manner (Forest Plan Part I, page 2-4). To do this, a plan that lists scheduled timber sales for a period of at least three years, and more often ten years, is maintained. The approximate amount and location of timber planned for harvest is determined in the Timber Sale Schedule, which is reviewed and updated at least annually. The actual amount of timber to be offered from the Tongass depends on market demand and program funding levels. It is also subject to the influence of economic cycles, catastrophic events, community dependency, resource needs and management direction.

Timber harvest is scheduled for Woewodski Island according to the amount of **suitable forest lands**. Approximately 70 million board feet of sawtimber is estimated to be within the suitable areas on Woewodski. This volume contributes to the Forest's Allowable Sale Quantity calculation (ASQ). The ASQ is set in the Forest Plan as the amount of timber that can be harvested from the Tongass National Forest.

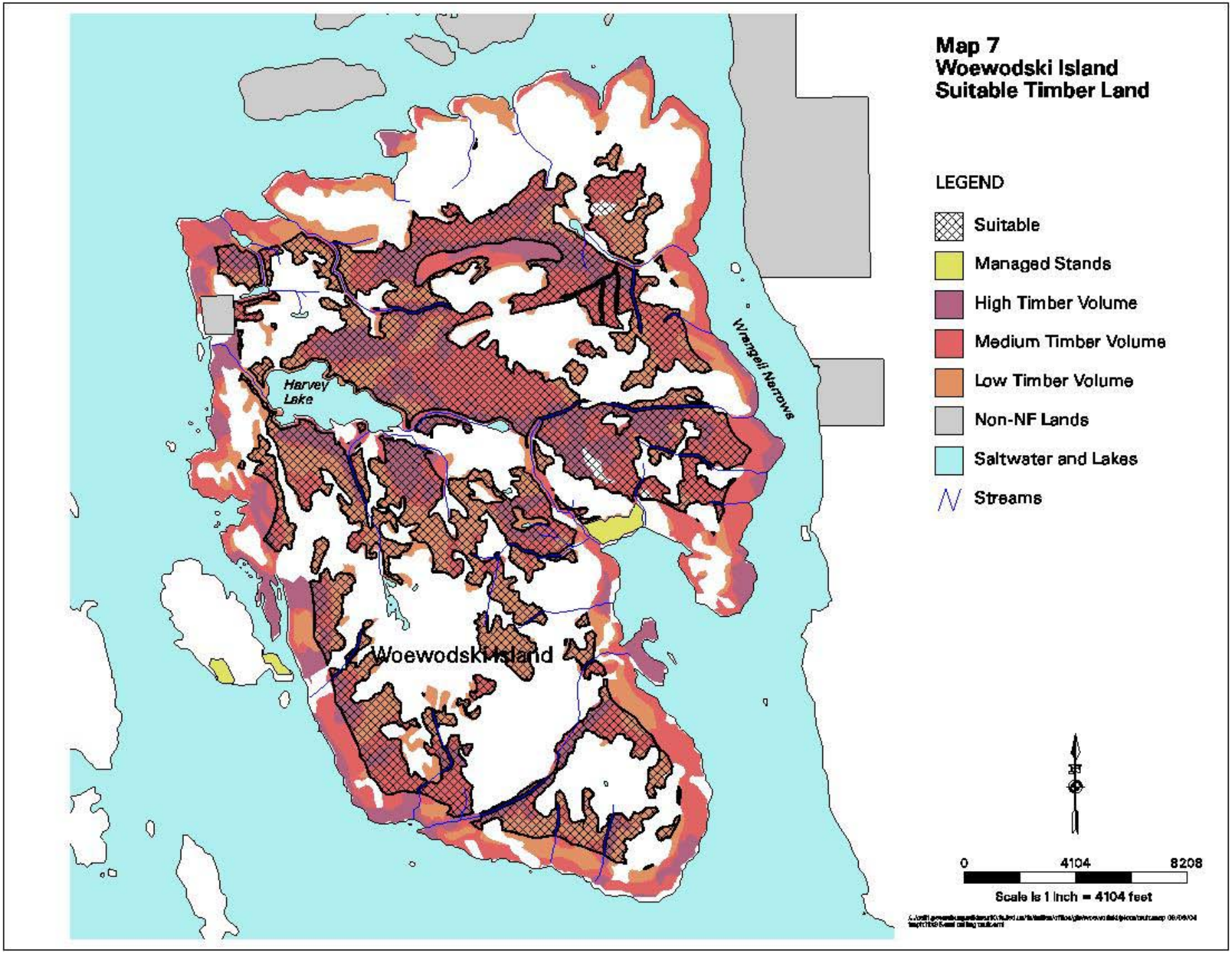
Woewodski Island is approximately 10,362 total acres. According to current inventories, roughly 33 percent of the island, or 3,396 acres, is classified as suitable for timber harvest as defined in the Forest Plan (see Map 7). Of these 3,396 acres suitable for harvest, 2,991

acres are within the land use designation (LUD) for Scenic Viewshed and 405 acres are within a Modified Landscape LUD. The goal of these LUDs includes harvesting timber while maintaining the island's scenic qualities. Guidelines for specific visual mitigation measures appropriate to timber management are provided in the Forest Plan (3-142).

The amount of timber harvest planned for Woewodski Island is affected by the absence of roads and a log transfer facility (LTF). Areas that are not roaded generally have a larger initial timber harvest to offset the associated high costs of road and LTF construction. Proposed helicopter logging also necessitates large sales to account for the higher cost of this logging method. If a road system were developed on Woewodski Island, more opportunity would exist for future small sales.

Further analysis of Woewodski Island is required before it can be determined if there is an opportunity to provide economically viable timber sale offerings.

This area is representative of trees in a stand exclusion stage.


Map 7
Woewodski Island
Suitable Timber Land
LEGEND
Suitable
Managed Stands
High Timber Volume
Medium Timber Volume
Low Timber Volume
Non-NF Lands
Saltwater and Lakes
Streams
Harvey Lake
Wrangell Narrows
Woewodski Island
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Transportation

Transportation in Southeast Alaska

Classified Roads: roads developed and operated for long-term land resource management purposes

Arterial Roads: serve large land areas and usually connect to a public highway

Collector Roads: serve smaller areas and connect to either arterial roads or public highways

Local Roads: terminal road that may connect with another type of road

Unclassified Roads: temporary roads built for one-time access and then decommissioned

There are three principal types of travel in Southeast Alaska: air, water and ground. Historically, marine transportation has been the major method of moving freight and passengers. Air service has developed to provide rapid transportation to areas. On the Tongass National Forest, a roaded transportation system has developed largely in support of timber harvesting.

Forest Service roads are constructed to provide access to National Forest lands. They fall into two categories: classified and unclassified. **Classified roads** are broken down into **arterial**, **collector** and **local** categories. Classified roads are managed through a system of maintenance levels, depending on intended use and suitability for various types of vehicles. These range from Level 1 (closed) to Level 5 (suitable for passenger cars). **Unclassified roads** are built for one time access to an area and then decommissioned.

Except at a few administrative sites and campgrounds, most classified and unclassified roads are single lane and constructed of blasted quarry rock. Typical collector and local roads are 14 feet wide with rough gravel surface. Higher standard arterial roads are normally 16 feet wide, may have a smooth gravel surface and are designed for speeds of up to 30 miles per hour. Travel speed on lower standard roads is often controlled more by surface roughness than by horizontal alignment or road gradient.

In Southeast Alaska, land and water routes are used to transport resources to processing facilities. Log transfer facilities (LTF) move resources from land to water and vice versa. Most LTFs consist of a bulkhead between the road end and the ocean edge. The bulkhead allows barge and boat access for transfer and transport of the resources via water.

Woewodski Island and Transportation

Woewodski Island is a small, unroaded island, approximately four or five miles across in most any direction. If future resource development projects are considered, road building and LTF construction would most likely be initiated.

Planning initiated under the Woewodski Island EIS (1985) identified five possible LTF locations. Three sites were in Duncan Canal on the west side of Woewodski Island and a fourth site was just south of Alexander Bay. The fifth and favored LTF location was at a bight along the Wrangell Narrows just north of Alexander Bay on the east side of the island.

Any road system developed on Woewodski would be located and designed using Forest Plan standards and guidelines. These give specifications regarding fish streams, wetlands, beach fringe and steep slopes. As with all proposed projects, environmental review would be required before any transportation system construction.

Soil and Wetlands

Soils

Mineral Soils: soils consisting predominately of, and having its properties determined by, mineral matter (i.e. sand, salt, clay)

Organic Soils: soils that contain a high percentage (greater than 15%) of organic matter, such as decayed plant material, throughout the soil depth

Soil Productivity: inherent capacity of a soil to support the growth of specific plants or plant communities

Soils are a fundamental part of the forest. They evolve with vegetation and climate, and form the foundation of the forest ecosystem. The soil's integrity and stability determine the long-term productivity of the forest. The region's cool growing season temperatures and abundant rainfall greatly influence soil characteristics. Under these conditions, organic matter decomposes slowly and tends to accumulate. Soils are formed in either mineral materials (sand, silt, clay) or organic matter such as decayed plant material. The soils on Woewodski Island are a mosaic of organic and mineral soils.

Mineral Soils

Mineral soils originate from deposits of weathered bedrock, glacial till, alluvium and colluvium. These soils have a potential for landslides when they occur on steep slopes. The soil surface typically consists of partially decomposed organic material. Soil depths range from less than 20 inches to more than 20 feet. Drainage ranges from well to very poor. These soils typically support a hemlock or hemlock-spruce vegetation series. Sites that drain poorly often support a mixed-conifer or western redcedar series.

Organic Soils

Organic soils, common and widely distributed on Woewodski Island, are often found on glacial deposits on relatively flat valley bottoms. Organic deposits range from about three inches to over 40 feet in depth. Forested organic soils range from well to very poorly drained. In Southeast Alaska, they typically support a mixed conifer, western hemlock-yellow cedar, western hemlock-redcedar, or shore pine vegetation series. Non-forested organic soils are usually poorly or very poorly drained. These soils support muskeg or alpine meadow communities.

Soil Productivity

Soil productivity affects many other forest resources. Tree growth, wildlife, fish habitat and recreation opportunities are all influenced by soil quality. Soil drainage and soil depth have a major influence on soil productivity in Southeast Alaska. In general, poorly drained or shallow soils are lower in productivity than deeper, well-drained soils.

Wetlands

Wetlands are those sites that remain water-saturated long enough for certain wetland plant species, such as skunk cabbage or sphagnum moss, to dominate and for certain soil characteristics to develop.

Wetlands are valued for their physical, chemical and biological functions. Physical functions include moderating flooding and soil temperature, reducing runoff and sedimentation, providing wildlife and plant habitat, and helping to sustain stream flow during dry periods. Chemical functions may include nutrient storage, pH moderation and carbon storage. Biological functions include habitat for terrestrial, aquatic and marine plants and animals.

Wetland Types on Woewodski Island

Muskegs are made up of raised bogs on gentle slopes. The bogs are dominated by sphagnum moss with a wide variety of other plants adapted to very wet, acidic, organic soils. They contain some stunted lodgepole pine and hemlock trees less than 15 feet high.

These wetlands function as areas for recharge of groundwater and streams, and for deposition and storage of sediment and nutrients. They are a valuable source of biological and vegetative diversity. Muskegs are most commonly found in broad valley bottoms, on rounded hilltops and on rolling lowlands.

There are about 887 acres of muskeg on Woewodski Island.

Sedge Fens are characterized by a diverse community of sedges dominated by tall sedges such as Sitka sedge, a variety of forbs and occasional stunted trees, usually spruce or hemlock. Soils are deep organic muck, often with some thin layers of alluvial mineral soil material. They occur in landscapes that receive some runoff from adjacent slopes, resulting in a somewhat richer nutrient status than bogs.

These wetlands function as areas for recharge of groundwater and streams, deposition and storage of sediment and nutrients, and for waterfowl and terrestrial wildlife (including black bear, mink, river otter and beaver) habitat. Many sedge fens contain beaver ponds that often provide high quality waterfowl and salmon rearing habitat.

There are about 121 acres of sedge fen on Woewodski Island.

Forested Wetlands include a number of forested plant communities with hemlock, cedar, or mixed conifer

Wetlands: areas frequently saturated by water and support vegetation typically adapted for life in saturated soil: bogs, swamps, marshes or similar areas.

Fen: a tract of low, wet ground containing sedge peat, relatively rich in mineral salts, alkaline in reaction and characterized by slowly flowing water.

overstories, and ground cover consisting largely of skunk cabbage. Forested wetlands are on poorly or very poorly drained hydric mineral or organic soils. They are most common on broad glacial valley bottoms and on gently sloping hill slopes or benches.

These wetlands function as recharge areas for groundwater and streams, and for deposition of sediment and nutrients. They also produce commercial forest products.

There are about 3,730 acres of forested wetlands on Woewodski Island.

Muskeg/Forested Wetlands are comprised of small patches of muskegs and forested wetlands arranged in a mosaic pattern on the landscape. These areas have vegetative properties of each of the respective components but function somewhat differently in respect to habitats due to their small size and spatial arrangement.

There are about 1,363 acres of muskeg/forested wetlands on Woewodski Island.

Forested Wetland/Upland Mosaics are forested non-wetland ecosystems inlaid with small patches of forested wetland. The forested wetland portion is typically on concave positions in these gently sloping or rolling landscapes.

Forested wetland/upland mosaics comprise only about 59 acres on Woewodski Island.

Aquatic Resources

Drainage Patterns

Woewodski has an elevation ranging between sea level and 1,100 feet. Due to the small size of the island and the low relief, watersheds are small and topographic divides between watersheds are poorly defined. Hydrologic storage is limited by a transient snow pack and thin soils; however, approximately 203 acres of lakes and an abundance of wetlands add to the storage capacity of the small watersheds (Table 3). Stream discharge is predominantly controlled by rainfall events, with peak discharges occurring during fall and winter storms.

The Tongass defines stream channels according to the Channel Type User Guide (Forest Service, 1992). Channel types are divided into fluvial process groups, which classify streams by watershed runoff, landform relief, geology, and glacial or tidal influences on erosion and deposits of debris. Fluvial process groups include high-gradient (steep) channels controlled by bedrock with thin, patchy **alluvium**; low-gradient palustrine (marshy) channels, often influenced by beaver activity; and proportionally few moderate gradient or low gradient flood plain and estuarine (tidal river) channels (see Table 4). Individual fluvial process groups are defined in the Glossary.

Each fluvial process group is further broken down into individual channel type classifications. The classifications are defined by physical characteristics of a stream, such as slope, width, pattern, bank incision and containment, and the surrounding plant life.

Stream Channel Condition

In general, stream channels on Woewodski Island are in nearly natural conditions. Some streams have been modified by timber harvest associated with past mining activities. Below-natural wood loading in parts of Harvey Creek may have resulted from clearing of trails and construction of mining structures in the first part of the twentieth century. Historic mining has not included any known **placer mining**, which would have disturbed stream channels. Beavers on Woewodski Island actively modify stream channels by maintaining dams and ponds that provide habitat for fish, including over-wintering coho salmon.

Table 3. Total acreage for lakes and wetlands on Woewodski Island.

Landscape feature	Area (acres)
Lakes	203
Wetlands	6,161

Table 4. Lengths of stream s and lakes by fluvial process group on Woewodski Island.

Fluvial Process Group	Miles
Flood Plain	0.93
Moderate gradient, mixed control	2.88
Moderate gradient, contained	0.42
High gradient, contained	13.74
Estuarine	0.2
Palustrine	3.77
Alluvial fan	0.17
Glacial Outwash	0
Large Contained	0
Lake	2.66
Total	24.77

Alluvium: clay, silt, sand, gravel or similar loose material deposited by running water.

Placer Mining: the obtaining of minerals from placers (alluvial, marine or glacial deposits) by washing or dredging.

Aquifer: a water-bearing bed or stratum of permeable rock, sand or gravel capable of yielding considerable quantities of water to wells or springs.

Groundwater and Surface Water Interactions

Streams, lakes, ponds and wetlands exchange water with underground **aquifers**. The drainage patterns that define natural groundwater and surface water interactions are controlled by a host of physical factors, including surface topography, underlying geologic stratigraphy and aquifer characteristics. Hydraulic gradients control the direction of flow between surface water bodies and underground aquifers. Drawdown of the water table from activities such as well pumping or excavations may alter recharge rates for streams and lakes. It is not known how historic excavation of mine shafts on Woewodski may have altered surface water and groundwater interactions.

Water Quality

Water quality refers to the concentration of dissolved solids and gases, suspended solids, hydrogen ions, pathogenic organisms and heat in a given quantity of water. Little is known about the concentrations of these constituents in the surface water and groundwater of Woewodski Island. Mineral measurements indicate the natural occurrence of significant mineralization on parts of Woewodski Island, which may affect mineral concentrations within groundwater and surface water (Beardslee, 2003).

Potential sources of human-generated pollutants are few and associated with public and private cabins, and historic and current mining activities. Potential pollutants include human waste, fuel and fine sediments. To date, there have been no known cases of water contamination or degradation on Woewodski Island and none of the streams are listed as impaired.

There is a need to gather data on the quality of surface water and groundwater on Woewodski Island for current water quality and future planning purposes. Important water quality parameters to measure include pH, dissolved oxygen, total dissolved solids (TDS), turbidity, temperature and dissolved metal concentrations. A water quality assessment for Woewodski Island would involve developing a sampling scheme, sample collection, laboratory testing and reporting.

Protected Water Use Classes

The Alaska Water Quality Standards (18 AAC 70) identify water use classes and criteria to protect them (18AAC 70.020). Where waters are classified for more than one use class, the most stringent

criteria for all included use classes applies (18AAC 70.040(1)). The Alaska State Water Quality Standards also include an Antidegradation Policy (18AAC 70.015) that states, “(1) existing water uses and the level of water quality necessary to protect existing uses must be maintained and protected.”

Protected water use classes for fresh water on Woewodski Island include drinking water supply, water recreation, and growth and propagation of wildlife and other aquatic life.

Water Rights

In Alaska, **water rights** are administrated by the Alaska Department of Natural Resources, Division of Mining, Land & Water, Water Resources Section. Water rights are granted both for water diversions and for in-stream uses. Water rights for in-stream uses allocate water necessary for activities such as fish spawning or recreation, and keep later water users from appropriating water that may affect the in-stream activity. Private individuals, organizations and government agencies may apply for water rights, including those for in-stream use.

The Forest Service owns two separate water rights for drinking water supplies at the recreation cabins located at Harvey Lake and Beecher Pass. The water rights are for drinking water use from Harvey Lake and an unnamed stream located in the SE ¼ of the SW ¼ section of 15, Township 61, Range 79 East, Copper River Meridian. Cabin users are expected to treat water by filtering before drinking.

Water Right: a legal right granted by the state to use surface or ground water for a specific use.

Anadromous Fish: fish that mature and spend much of their adult life in the ocean, returning to inland waters to spawn.

Adfluvial Fish: species or populations of fish that do not go to sea, but live in lakes and enter streams to spawn.

Resident Fish: Fish that are not migratory and complete their entire life cycle in fresh water.

Fisheries

Woewodski Island is a low relief island with extensive muskegs and small watersheds. The island supports a small sports fishery that has had minimal inventories in the past.

The Alaska Department of Fish and Game (ADF&G) is required to specify the various rivers, lakes and streams or parts of them that are important for the spawning, rearing or migration of anadromous fishes. This information is recorded in *The Catalog of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes*. Two streams on Woewodski Island, Lode Creek (ADF&G # 106-44-44) and Harvey Creek (ADF&G # 106-43-05), are cataloged by ADF&G.

Field reconnaissance was conducted in the summer of 2002 to test Woewodski Island streams for fish using visual and electroshock methods (Johnson, 2003). Many additional small streams that contain important fish habitat were discovered. See “Woewodski Island Inventory” for details regarding this work.

Stream Value Classes

Stream channels on the Tongass are classified according to stream value classes that indicate levels of habitat use by fish populations (FSH 2090.21).

Class I - Streams and lakes with **anadromous** or **adfluvial** fish or fish habitat; or high quality **resident** fish waters, or habitat above fish migration barriers known to be reasonable enhancement opportunities for anadromous fish.

Class II - Streams and lakes with resident fish or fish habitat and generally steep (6-25 percent or higher) gradient (can also include streams with a 0-6 percent gradient) where no anadromous fish occur, and otherwise not meeting Class I criteria.

Class III – Perennial and intermittent streams that have no fish populations or fish habitat, but have sufficient flow or sediment and debris transport to directly influence downstream water quality or fish habitat capability. For streams less than 30% gradient, special attention is needed to determine if resident fish are present.

Class IV - Other intermittent, ephemeral and small perennial channels with insufficient flow or sediment transport capabilities to have immediate influence

on downstream water quality or fish habitat capability. Class IV streams do not have the characteristics of Class I, II or III streams, and have a bankfull width of at least 0.3 meters (one foot).

Non-streams - Rills and other watercourses, generally intermittent and less than one foot in bankfull width, little or no incision into the surrounding hillslope, and with little or no evidence of scour.

Nearly 25 miles of stream have been classified on Woewodski Island (see Table 5). The island also has approximately 203 acres of freshwater lakes and ponds.

Table 5. Stream Classes includimg lakes on Woewodski Island.

Fish populations	Miles of stream by Class[1]			
	I	II	III	IV
Anadromous and resident	8.77	7.37	6.35	2.28

[1]Miles of stream reflects the best information available from aerial photos and field reconnaissance.

Woewodski Island Inventory

The following is a summary of the fish bearing streams and lakes on Woewodski Island. There are several small non-fish bearing streams on the east and south side of the island that are not included in this summary (see Map 8).

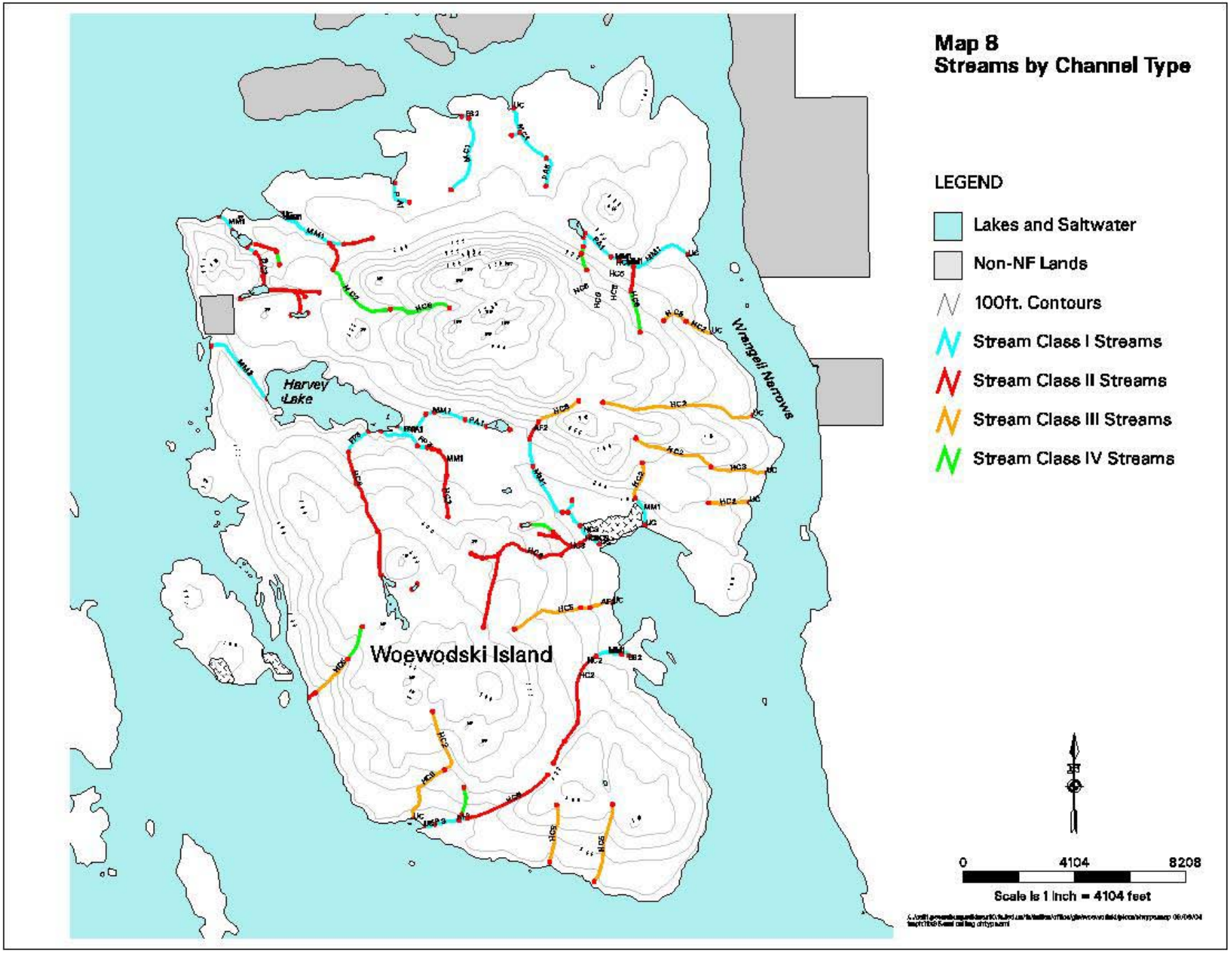
Many of the small lakes and ponds on the Woewodski Island are formed by beaver activity. These systems provide important fish habitat.

Most of the freshwater fishing opportunity on the island is centered on Harvey Lake due to the easy access by the Harvey Lake Trail. The Harvey Lake System is on the northwest portion of the island, approximately one mile south of Beecher Pass. This system is the most important and productive fishery on the island. It consists of the outlet stream Harvey Creek, Harvey Lake and three inlet streams with the associated Wolf, Cloudberry and Harry's Lakes.

Harvey Creek has pink and coho salmon. Pink salmon use the lower end of the creek and are not known to make it up to the lake.

Harvey Lake is approximately 100-acres and provides quality habitat for coho salmon, cutthroat trout and Dolly Varden char.

Wolf Lake is a 7-acre lake that supports coho salmon. The inlet stream provides


Map 8
Streams by Channel Type
LEGEND
Lakes and Saltwater
Non-NF Lands
100ft. Contours
Stream Class I Streams
Stream Class II Streams
Stream Class III Streams
Stream Class IV Streams
Harvey Lake
Wrangell Narrows
Woewodski Island
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Scale is 1 inch = 4104 feet

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quality spawning habitat and the lake provides good winter rearing habitat.

Cloudberry Pond is approximately one-acre and supports Dolly Varden char and cutthroat trout. A cascade barrier is present in the stream between Cloudberry Pond and Harvey Lake. Coho salmon are found downstream of the barrier.

Harry's Lake is 12 acres and contains cutthroat trout. A cascade barrier is present in the stream connecting Harry's Lake and Harvey Lake. Coho salmon are found downstream of the barrier to Harvey Lake.

The Beecher Pass Cabin Lake System is on the northwest tip of the island. The system includes three lakes (an unnamed lake, Lost Lake and Amber Lake) with connecting streams. All three lakes were formed by beaver activity. This system provides a small amount of coho salmon spawning habitat and excellent winter rearing habitat. There is

Lost Lake was formed by beaver activity and is a part of the Beecher Pass Cabin Lake System.

a barrier to anadromous fish between the first lake from Beecher Pass and Lost Lake. Both Lost Lake and Amber Lake contain cutthroat trout.

Approximately one-quarter mile from the Beecher Pass Cabin is an unnamed Class I creek containing coho salmon. The upper reaches of this creek contain cutthroat trout and Dolly Varden char.

In the northeast section of the island, across Beecher Pass from Big Saltery Island, are three unnamed streams that contain important winter habitat for coho salmon.

Lode Creek is located on the northeast shore of the island, about 1.5 miles north of Pt. Lockwood on Mitkof Island. The creek flows southeasterly out of a seven-acre beaver pond. This system is relatively small but provides excellent habitat for coho salmon. A tributary of Lode Creek contains Dolly Varden char and cutthroat trout.

Alexander Creek is located in the northwest corner of Alexander Bay, approximately 0.75 miles from Deception Point. There are two main tributaries; one flows from the north and one flows from the west. The northern tributary has historic timber harvest and lacks large wood in the channel. It has excellent coho spawning habitat with limited side channel rearing habitat. The western tributary is too steep for anadromous fish but it provides excellent resident fish habitat for cutthroat trout and Dolly Varden char.

An unnamed stream runs into the first cove south of Alexander Bay. The lower section of the stream is Class I. One thousand feet up this stream, a series of cascades create a barrier to fish habitat. Cutthroat trout and Dolly Varden char are found above the barrier. There are numerous miners' trails located in the upper portion of the stream, which may be sources of sediment. This could be a concern for the quality of fish habitat.

A stream located in the southwest corner of the island, locally called Brushy Creek, flows from a muskeg. This stream supports a small run of coho salmon, Dolly Varden char and cutthroat trout. This creek is lined with miners' trails and is the site of some mining activity. The deeply incised downstream left bank is extremely susceptibly to erosion.

The lower fifty feet of Krause's Creek is Class I and contains coho salmon. Above this section, the stream becomes Class IV.

Marine Habitat

Woewodski is surrounded by very productive marine waters. To the north is the Crystal Lake King Salmon Hatchery. To the west is Duncan Canal/Kah Sheets area. It provides important habitat for shrimp, crab, waterfowl and sockeye salmon. This area along with Beecher Pass provides important commercial, sport and subsistence fishing and recreational use. The Wrangell Narrows is used for commercial and sport trolling of king salmon. Also, there is use of the entire area for Dungeness crab fishing.

Wildlife and Biodiversity

Southeast Alaska's wildlife species are well represented on this relatively small 10,362-acre island. The island's lakes, along with numerous ponds, inlets and a large amount of beach fringe contribute to its habitat diversity. Waterfowl especially benefit from the abundance of wetlands and ponds dispersed throughout the island.

Woewodski Island acts as an important stepping stone for the dispersal of wildlife species from the mainland to the outer coastal islands such as Kuiu Island. Moose are an example of a species that have recently become established in this manner. In the fall of 2003, a bull moose was observed swimming from the western shore of Woewodski Island to the western shore of Duncan Canal on Kupreanof Island. Some species located on Mitkof Island are just beginning to colonize Woewodski and Kupreanof Islands, and may include the northern flying squirrel and wolverine (SEIS, 2003 and Doerr, 1994).

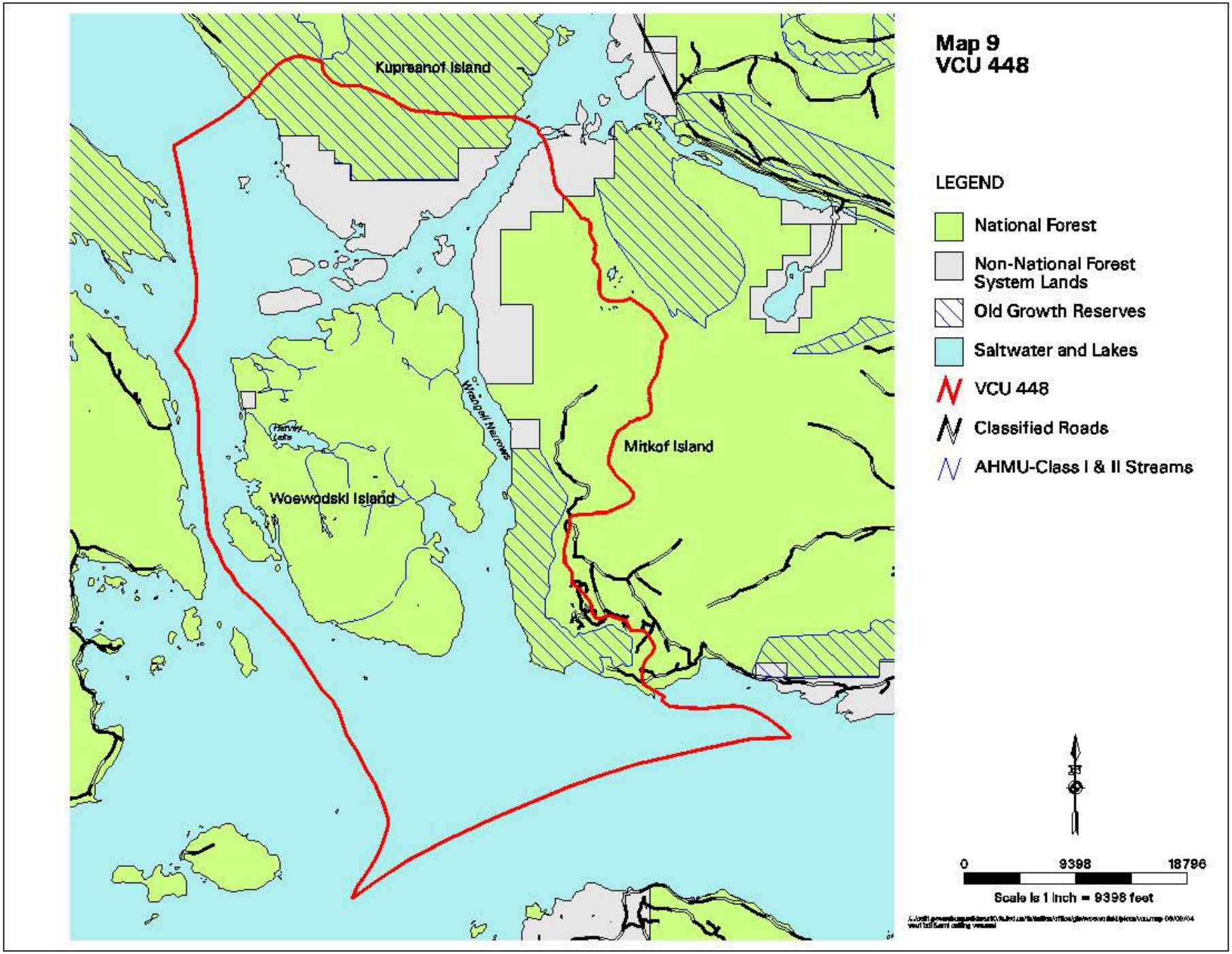
Woewodski Island makes up 40 percent of Value Comparison Unit (VCU) 448. VCUs are Forest Service physical delineations generally designed to encompass an easily recognizable watershed divide. Each VCU includes an old-growth reserve. VCU 448 is unique since it includes portions of Kupreanof, Mitkof and Woewodski Islands. Woewodski Island makes up 40 percent of this VCU. The small old-growth reserve for VCU 448 is located on Mitkof Island (see Map 9).

Current and Past Habitat Conditions on Woewodski Island

Information on wildlife resources was collected in the summer and fall of 2002 by the Petersburg Ranger District IRI crew and district wildlife biologists. This information was used to supplement past information and improve past wildlife resource descriptions on Woewodski Island.

The specific objectives of these field investigations were to measure forest stand characteristics, identify the presence and nesting activity of the northern goshawk and other raptors, survey for the presence of spotted frogs and record incidental observations related to wildlife that may inhabit the island.

Field measurements of forest stand characteristics become important since this data is used to verify information


Kupreanof Island
Mitkof Island
Woewodski Island
Wrangell Narrows
Harvey Lake
Map 9
VCU 448
LEGEND
National Forest
Non-National Forest System Lands
Old Growth Reserves
Saltwater and Lakes
VCU 448
Classified Roads
AHMU-Class I & II Streams
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Scale is 1 inch = 9398 feet

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determined by past aerial photo interpretation. This information is used to adjust estimates of forest volume strata for more accurate modeling of suitable wildlife habitats, as determined by the habitat capability models.

Forested Areas

Overall, human activity has modified less than one percent of the total acres on Woewodski Island. The old-growth habitat areas that have been modified by human activity include non-national forest land located in the northwestern part of the island and the two units of timber harvest (totaling 48 acres) in Alexander Bay.

Woewodski Island is vulnerable to a high level of wind disturbance, evident in the amount of windthrow across the island. Specific areas of wind disturbance include the upper slopes directly north of Harvey Lake and the beach fringe areas on the southern end of the island.

Wind events cause breakage and uprooting, exposing mineral soils. Churned soils allow for different vegetation types to grow, thus changing the habitat composition and affecting the wildlife species in the given area.

A common outcome of windthrow events is partial loss of overstory trees resulting in additional woody debris and the creation of standing snags. Woody debris on the forest floor provides unique habitat for a variety of small endemic mammals. Snags provide habitat for a variety of cavity nesting birds.

In some rare cases, wind events cause complete overstory destruction. This may be the case in the area located on the southern tip of Woewodski and Butterworth Islands. This area is unique because localized strong wind events, probably coming from the Stikine River, cause larger areas of trees to blow down. These strong storms occur frequently enough that these areas may not ever obtain old-growth characteristics.

Wetlands Areas

Muskeg on Woewodski Island is comprised of stunted mountain hemlock and lodgepole pine with low-growing shrubs, such as Labrador-tea or forbs, sedges and grass species. It also contains many small ponds, which provide habitat for beaver and amphibians and feeding areas for great blue herons and migrating waterfowl.

A fen is a type of wetland that has a diverse community dominated by tall sedges with a variety of forbs and

stunted trees. Fens are unique because they receive runoff from adjacent slopes that result in a richer nutrient status than typical wetland areas. Many fens contain beaver ponds that provide high quality habitat for waterfowl and young salmon.

Lakes and ponds with adjacent marshes make up the majority of the **lacustrine** habitat on Woewodski Island. These areas provide feeding, nesting and rearing habitat for waterfowl, loons, grebes, great blue herons, shorebirds and raptors.

Old-Growth Habitat on Woewodski Island

Old-growth forest in Southeast Alaska is structurally complex and provides unique habitat for many species of plants and animals. These forests have broken, multi-layered canopies through which sunlight penetrates to the forest floor. Wind, water and disease act as the driving forces behind forest dynamics. Landscapes exposed to prevailing winds create a range from single-aged stands to structurally diverse multi-aged stands.

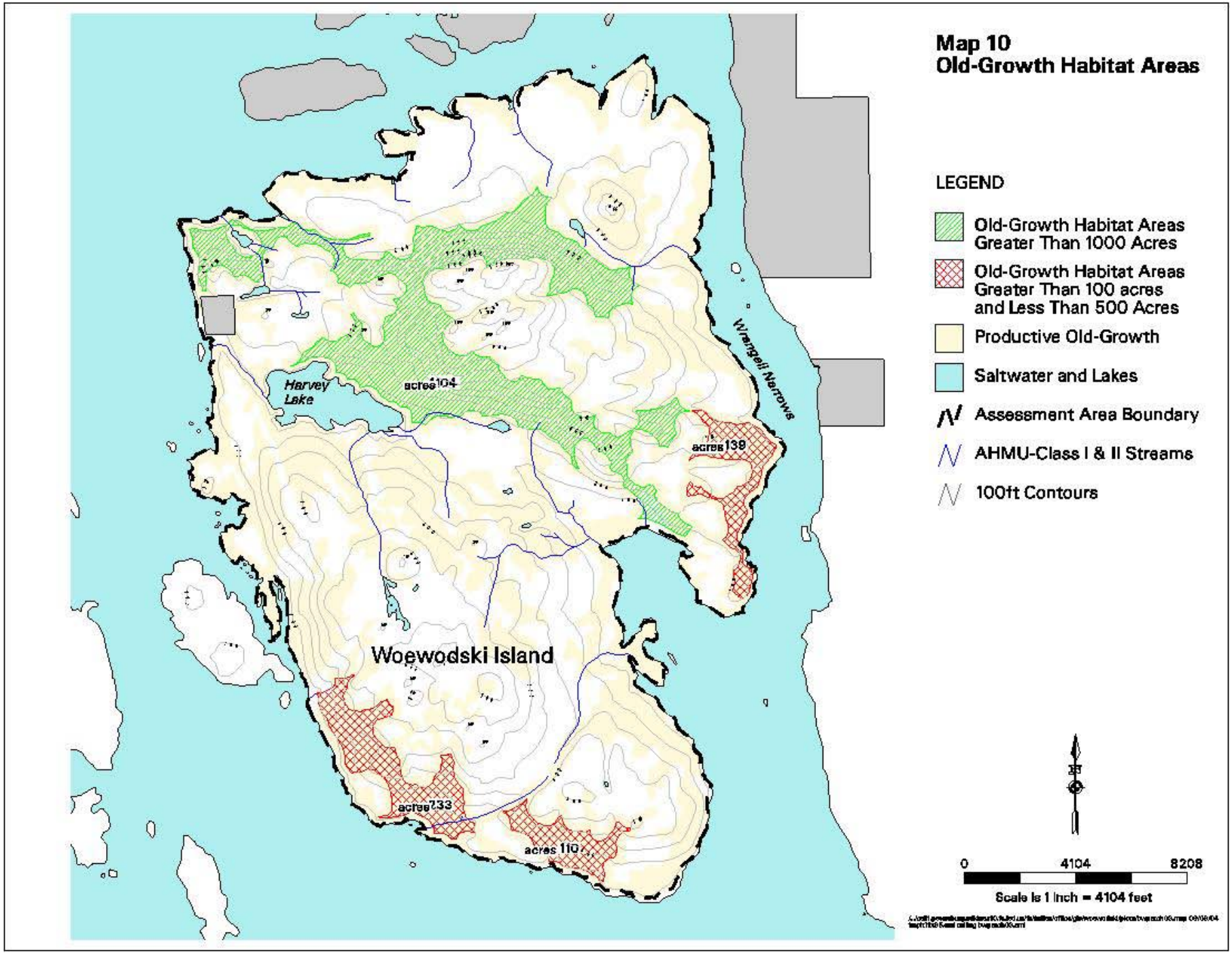
Characterizing Old-Growth Habitat

Old-growth can be divided into two classes: productive old-growth and unproductive old-growth. The distinction is based on the ability of an area to grow trees of a certain size deemed "commercial forest." The Forest Plan defines productive old-growth as an area capable of producing at least 20 cubic feet of fiber per acre per year, or having greater than 8,000 board feet per acre.

The Tongass National Forest contains approximately 5 million acres of productive forest (30 percent of the Forest) and 3.6 million acres of unproductive forest (FEIS 3-18). Woewodski Island contains approximately 5,711 acres of productive old-growth habitat, representing about 55 percent of the island and contributing 58 percent of the productive old-growth in VCU 448.

The trees growing in old-growth forests exhibit wide ranges of diameters, heights and stand structure characteristics. Productive forest is divided into three classes: high, medium and low volume strata (see Table 6).

Lacustrine: of, related to, formed in, living in, or growing in lakes.


Map 10
Old-Growth Habitat Areas
LEGEND
Old-Growth Habitat Areas Greater Than 1000 Acres
Old-Growth Habitat Areas Greater Than 100 acres and Less Than 500 Acres
Productive Old-Growth
Saltwater and Lakes
Assessment Area Boundary
AHMU-Class I & II Streams
100ft Contours
Harvey Lake
acres 104
acres 139
Wrangell Narrows
Woewodski Island
acres 733
acres 110
0
4104
8208
Scale is 1 inch = 4104 feet

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High Volume Strata Old-growth Forest

Western hemlock and/or Sitka Spruce dominate most of high volume strata forest. Stands are typically uneven-aged with small gaps in the overhead canopy. Understory production is moderate; however, snow interception is high, making forage for deer more readily available during winter. Blueberry and huckleberry are the dominant shrubs. Herb cover is 20-30 percent, and fern cover is 15-30 percent.

These habitat areas are important to old-growth associated wildlife species for many reasons. High volume old-growth forests provide good thermal cover for wildlife in the winter. Also, the stands usually contain a lot of diseased trees that become important nesting habitat for birds such as the brown creeper, goshawk and marbled murrelet.

Woewodski Island contains 1,402 acres of high volume strata. The island contributes 35 percent of the total high volume strata to VCU 448.

Medium Volume Strata Old-growth Forest

Western hemlock and/or Sitka spruce dominate medium volume strata stands, but cedar can be a significant component. The stands are uneven-aged, with numerous gaps in the overhead canopy. The more open canopy results in a thicker understory and less snow interception. Huckleberry is more abundant on these sites while ferns are less common. Winter thermal cover for wildlife is moderate.

Woewodski Island contains 2,393 acres of medium volume strata. Most of these stands reside in the southern region of

Table 6. Volume Strata on Woewodski Island.

Woewodski Island **10,362 Acres** **VCU #448** **25,272 Acres**	**Acres on Woewodski Island**	**Percent of Volume Strata**	**Acres in VCU 448**	**Percent of Volume Strata Woewodski contributes to VCU 448**
High Volume	1402	26	4056	35
Medium Volume	2393	42	3580	67
Low Volume	1916	32	2160	89
Total	**5,711**	**100**	**9,796**	

the island. Woewodski contributes 67 percent of the total medium volume strata to VCU 448.

Low Volume Strata Old-growth Forest

Western hemlock and cedar dominate low volume strata stands. The production of forbs and ferns tends to be low due to the tall brushy thickets of blueberry and rusty menziesia found in these stands. Lichens are relatively abundant. Thermal cover for wildlife is poor.

There are 1,916 acres of low volume strata on Woewodski Island. The island contributes 89 percent of this strata type to VCU 448.

Interior Old–growth Habitat Areas

Another method used to define old-growth habitat is by interior old-growth, or old-growth core areas. Interior old-growth excludes the portions of the perimeter of old-growth patches that may show edge effects, such as windthrow, or are adjacent to non-forested habitat such as muskegs. The four largest and most important interior old-growth habitat areas on Woewodski Island are listed in Table 7 and shown on Map 10.

These four habitat areas make up only 15 percent of Woewodski Island's land area but contribute 25 percent of deer winter habitat and 27 percent of the marten **habitat capability** (see Table 7).

Habitat Capability: the long-term potential of an area to be able to support animals.

Table 7. Important Interior Old-growth Habitat Areas on Woewodski Island.

Size (acres)	Location	Attributes	Habitat Capability	
			Deer	Marten
1104	Northern half of the Island, connects with Alexander Cove area.	High degree of windthrow in the southern half of this area. Contains the largest amount of high volume strata on the island. Wolf den is located in this patch. Historical goshawk nest is also located here.	113	4
233	Southwest portion of the island, south of Harry's Lake, within ½ mile of coast.	This area is below 500 feet in elevation.	23	1
139	Eastern part of the island, northwest of Alexander Bay.	This area is nearly connected to the 1104-acre area. Goshawk and Merlin sightings in this area.	11	0
110	Southern tip of the island, ¼ mile from coast.	High degree of windthrow. This area is below 500 feet in elevation.	7	1
	Total			
1586			154	6

Old-growth Associated Wildlife Species

Some of the old-growth wildlife species on Woewodski Island include deer, marten, goshawk, marbled murrelet, brown creeper, hairy woodpecker, red squirrel and blue grouse. Sitka black-tailed deer may only require the use of old-growth habitat at very critical times during harsh winters for protection from the elements and predators (mainly wolves). Birds, like the hairy woodpecker, may use these areas for nesting habitat, primarily due to the availability of snags and soft wood to form a nest cavity.

Old-growth areas are assessed by applying Habitat Capability Modeling (HCM) to deer and marten (see Maps 11 and 12). These two species are commonly used to give comparisons of the relative quality of old-growth habitat as it relates to potential wildlife use. It is assumed that the old-growth habitat requirements suggested as important for deer and marten are also important for other old-growth associated species.

Model results for Woewodski Island and VCU 448 were compared to determine the island's relative quality and quantity of habitat. It was found that Woewodski Island comprises 48 percent of the winter habitat capability for deer and 52 percent of the habitat capability for marten in VCU 448 (see Table 8).

Table 8. Habitat Capability Comparison between VCU 448 and Woewodski Island.

	VCU 448	Woewodski Island
Total Land Acres	25,905	10,362
Marten Habitat Capability (number of animals the area could potentially support)	42	22
Deer Habitat Capability (number of animals the area could potentially support)	1301	626

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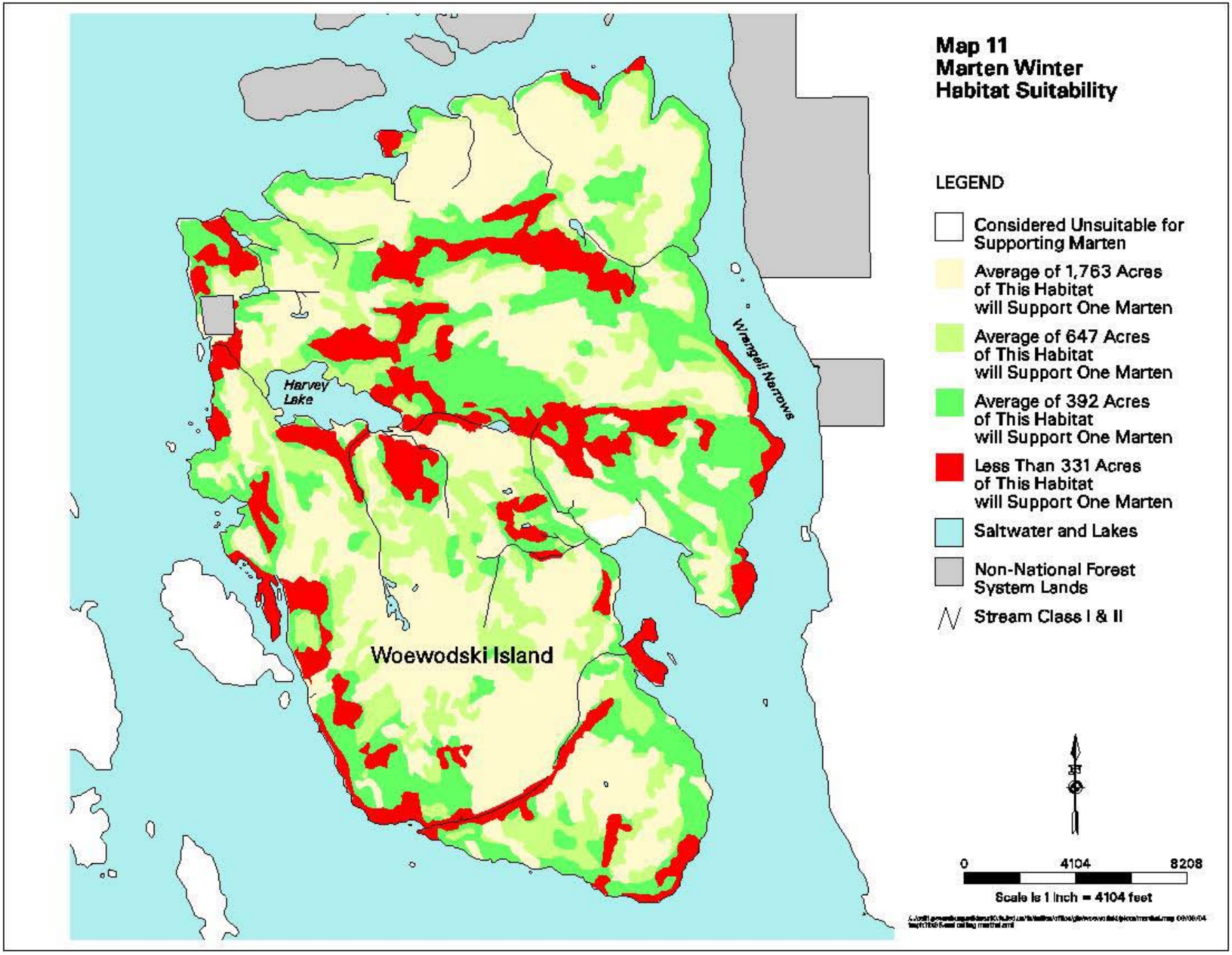
Map 11
Marten Winter
Habitat Suitability
LEGEND
Considered Unsuitable for Supporting Marten
Average of 1,763 Acres of This Habitat will Support One Marten
Average of 647 Acres of This Habitat will Support One Marten
Average of 392 Acres of This Habitat will Support One Marten
Less Than 331 Acres of This Habitat will Support One Marten
Saltwater and Lakes
Non-National Forest System Lands
Stream Class I & II
Harvey Lake
Wrangell Narrows
Woewodski Island
0
4104
8208
Scale is 1 inch = 4104 feet

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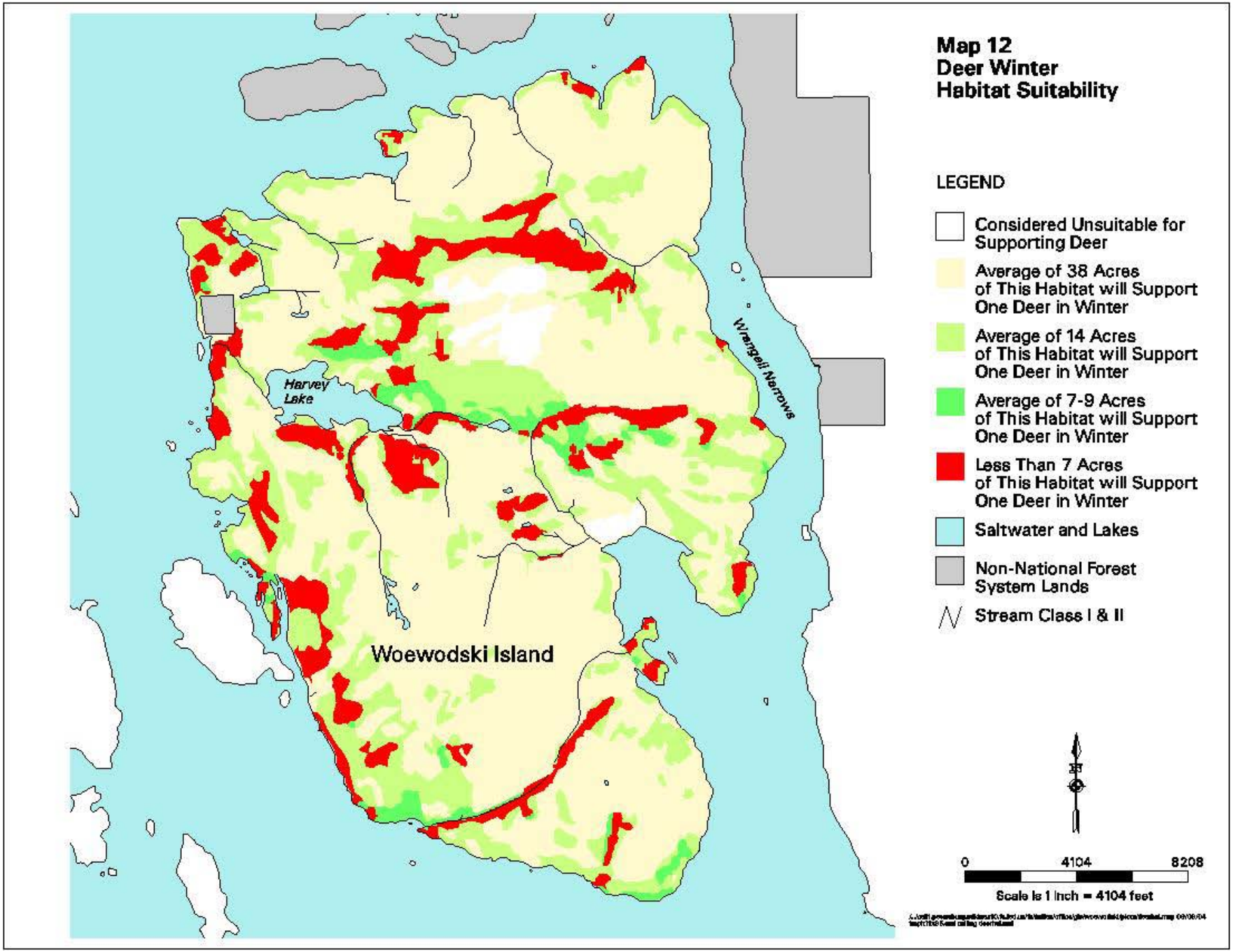
Map 12
Deer Winter
Habitat Suitability
LEGEND
Considered Unsuitable for Supporting Deer
Average of 38 Acres of This Habitat will Support One Deer in Winter
Average of 14 Acres of This Habitat will Support One Deer in Winter
Average of 7-9 Acres of This Habitat will Support One Deer in Winter
Less Than 7 Acres of This Habitat will Support One Deer in Winter
Saltwater and Lakes
Non-National Forest System Lands
Stream Class I & II
Harvey Lake
Wrangell Narrows
Woewodski Island
0
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Scale is 1 inch = 4104 feet

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Mammals on Woewodski Island

Marine Mammals

Nearly one third of the mammalian species found in Southeast Alaska are marine mammals. Marine mammals known to inhabit the waters adjacent to Woewodski Island are the humpback whale, Pacific white-sided dolphin, killer whale, harbor porpoise, Dall's porpoise, Stellar sea lion and harbor seal. The humpback whale, an endangered species, does not typically enter shallow waters surrounding this island, but harbor seals and porpoises are commonly observed.

Deer

Sitka black-tailed deer are the most important wildlife species taken as a subsistence resource in Southeast Alaska. Deer are indigenous to the coastal regions of Southeast Alaska and northwestern British Columbia. Sitka black-tailed deer use a variety of habitat types but can be restricted during the winter months to areas where snow pack is relatively low. Deer can expend an unusual amount of energy moving and foraging through deep snow. Deep snow also greatly increases their susceptibility to predation by wolves.

In areas where snow accumulates, winter habitat for deer corresponds to low elevation, old-growth forest. Trees that have well developed branches deflect snow away from the base of the tree. These limbs can hold a tremendous amount of snow before breaking. This means relatively less snow present on the ground, providing more accessible forage and greater mobility for deer in the winter. Other factors that may determine the amount of snow accumulation is the slope aspect, elevation and micro-climate of the specific area.

Historically, Woewodski Island produced high deer populations and was a popular hunting destination (Sandburg, 1984); however, in the late 1960s and early 1970s the deer population on Kupreanof, Mitkof and surrounding islands decreased sharply due to heavy snow accumulation during successive winters. In 1980, the Alaska Department of Fish & Game started receiving reports of deer sightings on Woewodski Island and in the winter of 1980-81, it was verified that deer were once again present on the island. Currently the deer population on Woewodski Island is affected by wolf predation. This could explain why deer sightings are not as common as expected with such a high level of winter habitat capability.

Moose

During the early twentieth century, moose migrated down the major river systems from Canada into Southeast Alaska. One of these major systems included the Stikine River. The moose population for Southeast Alaska is estimated to be approximately 2,530 animals, with 75 percent of them residing in the Tongass National Forest (FEIS 1997, p 358).

Moose are present on Woewodski Island in very low numbers. Only two moose have been harvested from the island since 1990 (see Table 9). Beginning in 2003, hunters are able to take an additional legal bull moose during the open hunting season for **subsistence use**. It is not known at this time what impact this new regulation will have on the small population of moose on Woewodski Island.

Past timber harvest on the island, although minimal, may have had a positive effect on moose due to the increase of forage production associated with the first years after harvest. However, this area is now 70 years old and the understory plants have been lost due to trees growing up over them. In the absence of high protein forage such as cottonwood and willow, it is unlikely that Woewodski Island will support many moose (Franzel, 1985).

Elk

Three attempts were made in 1937, 1963 and 1964 to introduce elk into Southeast Alaska. Each attempt failed. In 1987, fifty elk from Oregon were released on Etolin Island, located approximately 20 miles southeast of Woewodski Island. By 1993, elk had increased in numbers and had spread to Zarembo Island, located seven miles from Woewodski Island.

There have been unconfirmed sightings of elk as far south as the Cleveland Peninsula, as far north as Kake and on Woewodski Island and neighboring Mitkof Island. Elk are strong swimmers and with the proximity of Zarembo Island, it is only a matter of time until elk are confirmed residents of Mitkof and Woewodski islands. Habitat relationships between elk and other native wildlife species in Southeast Alaska are currently unknown.

Black Bear

Black bear are present throughout the mainland and on the islands south of Frederick Sound. Few black bear reside on Woewodski Island. Low population numbers could be attributed to the lack of large runs of anadromous fish. Bear

Subsistence Use: the customary and traditional uses by rural Alaska residents of wild renewable resources for direct, personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption; for barter or sharing for personal or family consumption and for customary trade.

hunting is of low intensity on the island. Hunters who use the Beecher Pass cabin located on Woewodski Island normally travel to hunt more productive black bear areas in Duncan Canal. The Alaska Department of Fish and Game reports one black bear taken from Woewodski Island since 1990.

Wolves

The wolf in Southeast Alaska is known as the Alexander Archipelago wolf. It inhabits the mainland and the islands south of Frederick Sound. A number of wolves live on Woewodski Island and sightings are common.

Fifty-four wolves have been trapped on Woewodski Island since 1990, according to Alaska Department of Fish and Game trapping reports (2003). Ten of these wolves were taken in 1996 (see Table 9). One wolf den site has been located on Woewodski Island.

Wolves use a variety of habitats and can affect prey populations. Wolves' prey base includes deer, moose, beaver and salmon. On Mitkof and Kupreanof Islands, wolves depend heavily on deer and it is presumed that this is also the case on Woewodski Island. Wolf and deer rely on similar habitats.

The winter habitat capability of deer on Woewodski Island is 626 animals, using the current interagency winter habitat capability model (see Table 8). This figure only represents the potential habitat capability to support deer, not the actual number of deer present on the island.

Person *et al*. (1996) addressed the complex issue of sustaining wolf populations while meeting human subsistence and sport deer harvest demands in Southeast Alaska. A recommendation was made that 17 deer/square mile, using the current deer habitat capability model, would meet these needs over broad areas. The appropriate scale was determined to be a combination of Wildlife Analysis Areas (WAAs) or the biogeographic province.

Woewodski Island makes up WAA 2008. The current deer habitat capability of Woewodski Island is 39 deer/square mile. This figure is over double the recommendation suggested by Person *et al.* (1996) and shows Woewodski Island has the habitat capability of sustaining wolf populations.

Marten

Ongoing marten research in Southeast Alaska is being conducted by the Alaska Department of Fish and Game by Rodney W. Flynn and Thomas V. Schumacher (2003). The Forest Service

and the University of Wyoming are cooperators in this study.

The marten is identified as a management indicator species (MIS) on the Tongass National Forest. Twenty-six marten have been trapped on Woewodski Island since 1990. Woewodski Island is part (1%) of the Kupreanof/Mitkof Islands **Biogeographic Province**. This province has been identified as having a higher risk of maintaining features of forest stand structure important to marten habitat on the Forest. Specific Marten Standards and Guidelines from the Forest Plan would apply to timber harvest units containing high value marten habitat. High value marten habitat is defined as high volume forests below 1,500 feet in elevation.

Marten are closely associated with old-growth habitat. They were one of the major species used to establish the overall design of the old-growth habitat conservation strategy used on the Forest. The most current habitat capability model was used to identify important habitat areas (see Table 8 and Map 11).

The availability of prey, mostly small mammals such as voles and mice, may determine the number of marten in a specific area. During years of low small-mammal prey abundance, a decline in marten population numbers was shown. This cause and effect relationship is difficult to determine because other relationships, such as trapping pressure over time, migration and emigration patterns, and the dependence on other prey items, also play a role in population trends.

Marten that have salmon streams as part of their home ranges may be able to switch to salmon during years of low small-mammal abundance. Preliminary indications show marten that are able to switch their feeding habits in the same year had better body condition when compared to marten that do not or were unable to make the switch to other prey items.

Areas differ in the number and species of small mammals that marten utilize as prey species. A large diversity of small mammals with stable population numbers in a specific area may reflect a similar trend in marten populations due to predator/prey relationships. However, the population size and number of larger animals such as deer and moose should not be discounted. The remains of these larger animals may also prove to be an abundant food resource for marten in years when there are low numbers of preferred prey species.

Biogeographic Province: used to establish basic ecosystem divisions according to similar species composition, historical events (such as glaciation), climatic conditions and physiographic characteristics.

Marten are closely associated with old-growth habitat and have been identified as a management indicator species.

Midden Sites: places where squirrels store collected food.

Surveys of endemic small mammal populations on Woewodski Island would provide information on the diet of the island's marten. This information in turn could be used to see if marten on Woewodski Island switch to salmon in times of low small mammal abundance.

Red Squirrel

Mixed old-growth Sitka-spruce and hemlock stands provide what is considered to be the best habitat for red squirrels in Southeast Alaska. These stands provide cones, which account for the majority of the squirrel's diet. Squirrels also eat mushrooms, seeds, fleshy fruits, insects and eggs.

The suitability of red squirrel habitat is a function of **midden sites**, food abundance and nest availability. Old-growth habitat usually provides an ample amount of cones, downed logs for middens and snags for nest sites. Although they prefer tree cavities as nest sites, they will use underground and external tree nests if cavities are unavailable. Red squirrels are very territorial and defend their nest areas

Table 9. Selected wildlife species harvested on Woewodski Island from 1990 to 2003.

	Black Bear	Moose	Wolf	Beaver	Otter	Marten
1990	0	0	1	0	0	0
1991	1	0	7	3	2	0
	0	0	2	0	4	3
	0	0	0	0	6	0
	0	0	6	0	5	3
	0	0	0	0	4	2
	0	0	10	0	5	6
	0	1	2	0	5	2
	0	0	1	0	0	4
	0	1	8	0	4	1
	0	0	8	0	4	5
	0	0	5	0	0	0
	0	0	4	0	6	0
	0	0	0	0	1	0
	1	**2**	**54**	**3**	**46**	**26**

Source: Alaska Department of Fish and Game

and middens, ranging in size from ½ to 8 acres.

Recent studies have been conducted by Bakker (2000) near Petersburg on the movement patterns and corridor use by red squirrels in fragmented habitats. Preliminary results of this study indicate that there are trade-offs made between a lower predation risk of moving through old-growth and an increased predation risk by spending time moving through unfamiliar open territory. Squirrels seem to choose movement pathways that permit rapid travel, favoring routes with low slope, few obstacles and the use of downed logs to travel on. Squirrels also tend to stay close to trees, which they use as immediate refuges from predators.

Bakker's (2000) initial insights help to provide an understanding of the way in which small mammals such as the red squirrel may use interconnected old-growth areas in fragmented habitats.

Ten red squirrels were observed during 2002 field survey activities on Woewodski Island.

Endemic Mammals

An objective of the Forest Plan standards and guidelines is to maintain viable populations of endemic terrestrial mammals and to understand the habitat relationships of rare or endemic terrestrial mammals. Some endemic mammals in Southeast Alaska may represent unique isolated populations. Surveys specifically for endemic mammals have not been conducted on Woewodski Island. It is not known if any rare endemic terrestrial mammals inhabit the island.

Birds

Most bird species common to Southeast Alaska can be found on Woewodski Island. The lakes and many ponds serve as important resting and feeding areas for migrating birds and waterfowl. The island is located in the center of a major wintering and molting area for waterfowl and seabirds. A species list with all of the types of birds observed on Woewodski Island is listed in Appendix B, Table B-1.

Bald Eagle

The Forest Plan protects nearly all of the bald eagle beach fringe and riparian nesting habitat areas. Protection measures also include the formation of a management zone around each bald eagle nest tree. The size of this zone is a 330-foot radius centered over each nest tree. Management activities are restricted within these zones. These areas are maintained even if the nest

becomes inactive. According to the latest *Petersburg Ranger District Bald Eagle Nest Tree Atlas,* there are currently thirteen bald eagle nest trees located on Woewodski Island.

Osprey

Ospreys are rare migrants and breeders in Southeast Alaska and are considered a sensitive species on the Tongass National Forest. The nests are usually in a large tree in the immediate vicinity of water. No known nests occur on Woewodski Island; however, unconfirmed sightings in the vicinity of Harvey Lake have been reported.

Queen Charlotte Goshawk

The Queen Charlotte Goshawk is a widely distributed migrant and breeder in Southeast Alaska, and is considered a sensitive species on the Forest. Goshawks prefer productive old-growth habitat for nesting and roosting sites, and for the protective cover that this habitat provides against some predators, such as the red-tailed hawk, great horned owl and the bald eagle. Goshawks are exceptionally well adapted for hunting underneath the dense tree canopies of old-growth forests.

Several factors limit goshawk populations. One important factor is the availability of food. Fluctuations in prey populations, such as blue grouse and red squirrels, can cause food limitations in certain years or seasons. The link among major prey species and the habitat they require is recognized by the Forest Service as a key element for goshawk conservation in Southeast Alaska (Iverson et. al. 1996). The availability of nesting and roosting sites, and the interactions of predation and competition also influence goshawk populations (Lewis, 2001).

A total of 28 hours were spent surveying Woewodski Island for raptors in the spring and summer of 2002. Adult goshawks were observed at a nest site near Alexander Cove in May of 2002. This nest was later determined to be abandoned, as it was found inactive in June and July of that year (Weaver, 2002). This nest site remained inactive in 2003. In July 2004, a new active nest was located in the vicinity of the 2002 nest site. Goshawks were also sighted at the southern and northern tips of the island but no nest structures were found.

Other raptor sightings on Woewodski Island include the Northern Harrier, Sharp-shinned Hawk and Merlin. See Map 13 for the general location of these raptor sightings on Woewodski Island.

Marbled Murrelet

The marbled murrelet is a member of the alcid family, which is a group of seabirds that comes to shore only to breed. Murrelets concentrate offshore from old-growth habitat areas during the breeding season. They then fly back to nesting habitat located inland, where they are detected almost exclusively in forests that have old-growth characteristics.

Concentrations of marbled murrelets have been observed feeding directly north of Woewodski Island in the Beecher Pass area and directly off the southern end of the island in Sumner Straight. There have been no marbled murrelet-specific nest site surveys conducted on the island and no nests have been discovered incidentally. Excellent marbled murrelet nesting habitat, especially in the largest old-growth areas located in the northern part of the island, may be present.

Blue Grouse

Blue grouse occur throughout Southeast Alaska and have been observed on Woewodski Island. They spend most of the winter feeding on the needles of conifer trees. When the snow melts in the spring, they begin to forage on the ground and move into old-growth forest breeding habitat.

Studies conducted by Doerr et al. (1984) show that male blue grouse display a strong preference for western hemlock and western hemlock–Sitka spruce old-growth habitat over early successional forest in the breeding season. This type of habitat is considered to be optimum habitat for blue grouse in Southeast Alaska and can be found on Woewodski Island.

Brown Creeper

The preferred habitat of the brown creeper is composed of mature forests consisting of western hemlock-Sitka spruce stands. Nests are located between the bark and trunk of dead or dying trees, while foraging occurs primarily on large live trees. Optimal habitat is believed to occur when patches of preferred habitat are greater than 15 acres in size. There are 15 such patches located on Woewodski Island, totaling 2,097 acres.

Hairy Woodpecker

The hairy woodpecker is an uncommon, permanent resident in Southeast Alaska. It is primarily a cavity excavator, using mature old-growth habitat with a high snag component. Habitat areas that are influenced by saltwater are

important ecological zones for the hairy woodpecker. Optimal habitat is believed to occur when patches of preferred habitat are greater than 500 acres in size. Woewodski Island has this optimal habitat.

Hairy woodpeckers are difficult to monitor because of their low densities, cryptic behavior, seasonal movements and large year-to-year fluctuations in populations. Hairy woodpeckers have been observed on Woewodski Island.

Reptiles and Amphibians

Six species of amphibians and two reptilian species are known to occur in Southeast Alaska. Observations of amphibians during field activities were infrequent. A live adult boreal toad was seen in September of 2003. No reptilian species were seen, and none are specifically known to occur in this area. The population status of amphibian and reptilian species located on Woewodski Island is not known.

A winter wren's nest found in a root wad on Woewodski Island.

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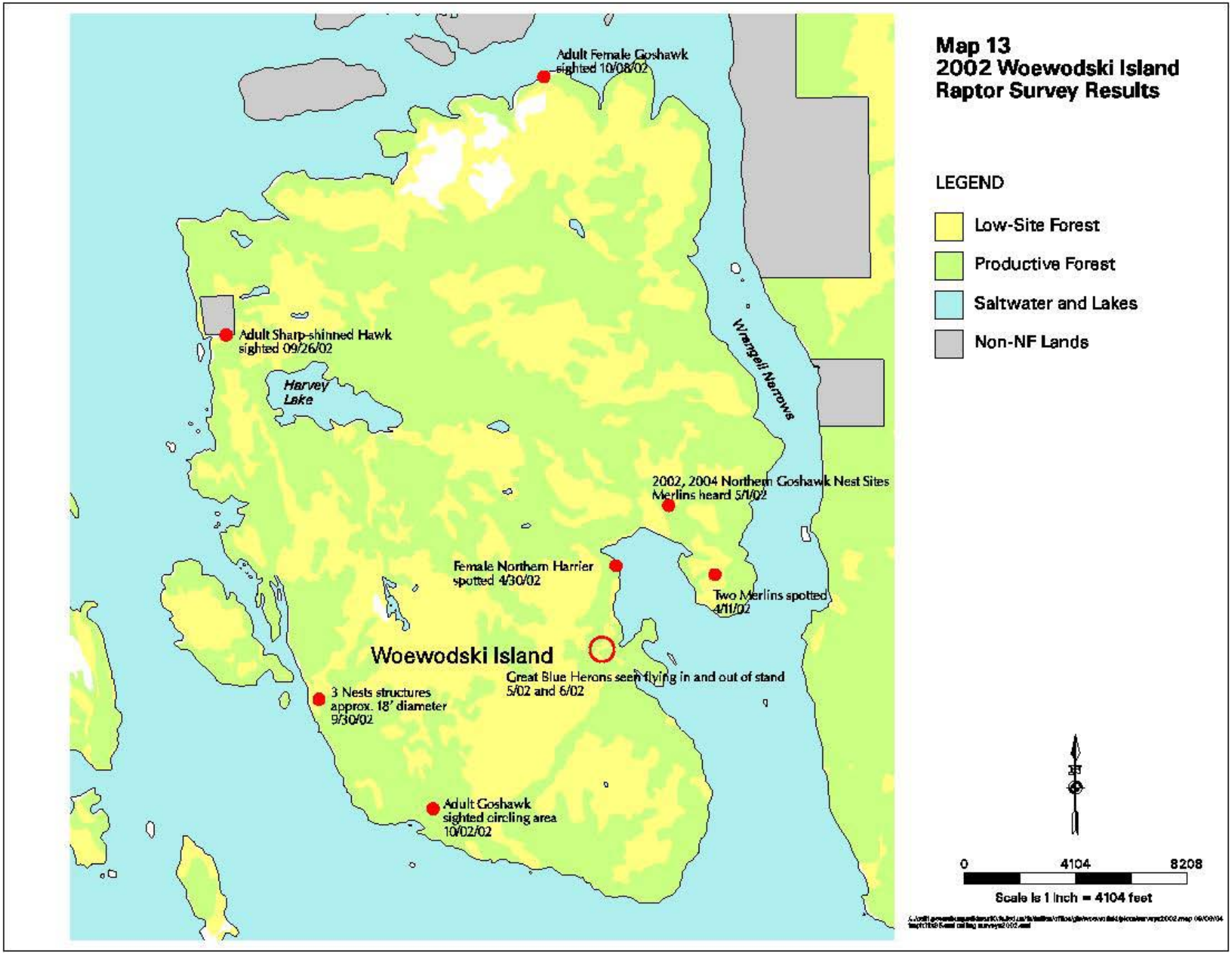
Map 13
2002 Woewodski Island
Raptor Survey Results
LEGEND
Low-Site Forest
Productive Forest
Saltwater and Lakes
Non-NF Lands
Adult Female Goshawk
sighted 10/08/02
Adult Sharp-shinned Hawk
sighted 09/26/02
Harvey
Lake
Wrangell Narrows
2002, 2004 Northern Goshawk Nest Sites
Merlins heard 5/1/02
Female Northern Harrier
spotted 4/30/02
Two Merlins spotted
4/11/02
Woewodski Island
Great Blue Herons seen flying in and out of stand
5/02 and 6/02
3 Nests structures
approx. 18' diameter
9/30/02
Adult Goshawk
sighted circling area
10/02/02
0
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Scale is 1 inch = 4104 feet

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Subsistence

Congress recognized the importance of subsistence resource gathering to the rural communities of Alaska with the passage of the Alaska National Interest Lands Conservation Act (ANILCA) in 1980. ANILCA defines subsistence as, “The customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools or transportation; for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption; and for customary trade.”

ANILCA provides for the continuation of the opportunity for subsistence uses by rural residents of Alaska on federal lands. It also legislates that customary and traditional uses of renewable resources shall be the priority consumptive uses of all such resources on the public lands of Alaska.

Juneau and Ketchikan are the only communities in Southeast Alaska that are considered to be non-rural.

Section 810 of ANILCA requires the USDA Forest Service, having jurisdiction over some of the public lands in Alaska, to analyze the potential effects of proposed land use activities on subsistence uses and needs. This analysis may include a public hearing in which citizens are invited to provide testimony of subsistence use and concerns in a given area.

Importance of Deer as a Subsistence Resource

Many different types of resources, including salmon, halibut and deer, are used for subsistence. Crab, shrimp, berries and wood are also important subsistence resources.

The Alaska Department of Fish and Game conducted an extensive survey in 1987, the Tongass Resource Use Cooperative Survey (TRUCS), which recorded resource use in Southeast Alaska. Sixty-one percent of households harvested at least four different types of fish, wildlife and/or plant resources in 1987. Ten different types of subsistence resources were harvested in 20 percent of households. Eighty-five percent of all households in rural Southeast Alaska harvest at least some subsistence resources (Kruse and Muth 1990).

Numerous studies have recognized and documented the importance of deer as a subsistence resource to Southeast

Alaska residents. Deer constitute 21 percent of the total pounds of subsistence resources harvested by rural Southeast Alaskans in 1987. That year, an estimated 11,500 deer were harvested by 3,000 households, which represents 928,000 pounds of deer that was consumed, shared or traded (Kruse and Muth 1990).

Deer harvest levels vary substantially by community. Petersburg averaged 150 pounds of deer per household. This figure represents a low household average of deer (the most being an average of 250 pounds in some Southeast Alaska communities). However, Petersburg, along with Sitka and Wrangell, account for 60 percent of the total number of rural households in the Southeast Alaska region (Kruse and Muth 1990).

Rural residents of Petersburg and the surrounding communities can harvest one antlered deer from Mitkof, Woewodski or Butterworth Island from October 15 to October 31.

Fishing

An estimated 180 visitor days per year are spent sport fishing in freshwater for coho salmon, cutthroat trout and Dolly Varden Char on Woewodski Island. Most of this use is centered around Harvey Lake (USDA Forest Service, 1988).

Offshore sport fishing accounts for approximately 300 visitor days each year. This includes shrimp, halibut, crab and salmon. An estimated 100-300 cohos are harvested annually along the shoreline from Harvey Lake to the northwest tip of the island and at the mouth of the Wrangell Narrows.

Trapping and Hunting

Historically, Woewodski Island produced high deer populations and was a popular hunting destination. In the late 1960's and early 1970's, the deer population on Kupreanof, Mitkof and surrounding islands decreased significantly due to heavy snow accumulation during successive winters. Hunting for deer was closed on Woewodski Island in 1974. In 1980, the Alaska Department of Fish and Game started receiving reports of deer sightings on Woewodski Island. In the winter of 1980-81, it was verified that deer were once again present on the island.

During a period in the late 1950's and 1960's when deer populations were considered to be relatively high throughout Southeast Alaska, an estimated annual harvest of 14 deer

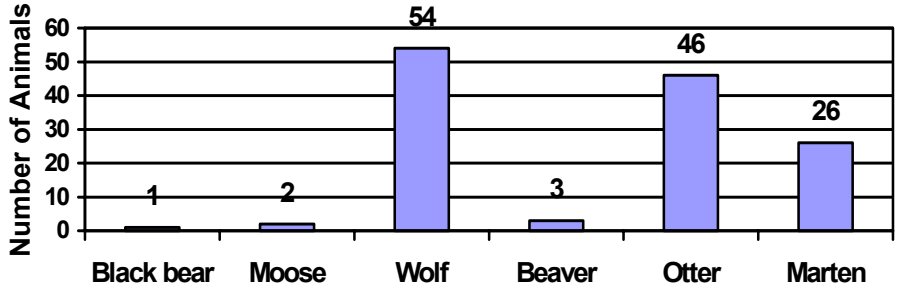
was taken from Woewodski Island. Forest Service biologists estimated that in 1988 the number of deer harvested would be around 25 animals annually (USDA Forest Service, 1988).

Most of the trapping efforts on Woewodski Island are concentrated along the beaches and the shoreline of Harvey Lake. Marten and wolf trapping may occur in the interior areas of the island. In 1988, biologists estimated that 5-10 marten, 5 otter, 10-20 mink, 5 beaver and less than one wolf were taken annually on the island. It was estimated that 60 visitor days were spent trapping and 50 visitor days were spent hunting waterfowl annually on or near Woewodski Island (USDA Forest Service, 1988).

Chart 1 indicates the number of animals reported by trappers and hunters on Woewodski Island between 1990 and 2003 (Alaska Department of Fish and Game, 2003). The assumption made is that all of the trapping or hunting activity on this island is by rural residents of Alaska and is recognized as subsistence use of wildlife resources.

Wolf, otter and marten make up a substantial number of animals trapped or hunted on Woewodski Island. An exceptional number of wolves have been taken in the last twelve years. The habitat capability of Woewodksi Island alone should not be able to support such a high number of wolves as suggested by the trapping records. The most plausible explanation is that the ¼

Chart 1. Selected Wildlife Species taken on Woewoski Island from 1990-2003.



mile water separation between Woewodski Island and surrounding Mitkof and Kupreanof islands does not limit wolf and deer movement between islands.

This agrees with research that has shown that if islands are in close proximity to each other (less than ½ mile) then deer and wolf populations do not act independently and the islands do not act as a barrier to travel (USDA Forest Service, 1988).

Data taken from the Petersburg Ranger District indicate that one of the four wolves trapped and fitted with a radio collar near Woewodski Island in the Kah Sheets Bay area was later trapped near Bluff Lake on the north end of Revillagigedo Island near Ketchikan (Ith, 2002). This represents a distance of over 100 miles with numerous islands separated by distances far exceeding ½ mile. This suggests that even larger island separation, far beyond ½ mile, may not pose a barrier to travel for wolves.

Free Use Timber

The *Draft Woewodski Island Environmental Impact Statement* (USDA Forest Service, 1987) estimated 19 thousand board feet has been removed as free-use timber on Woewodski Island. The internal document, *Woewodski Island Final Environmental Impact Statement* (USDA Forest Service,1988), revised this information based on public comments to the DEIS. Further research showed that the Forest Service issued 40 permits for free use wood, totaling an estimated 227 thousand board feet, from Woewodski Island between 1983 and 1984. The majority of this wood was harvested from along the north shore of the island and was used for the construction of homes along Wrangell Narrows and Beecher Pass (USDA Forest Service, 1988).

Currently there is very little free use activity on Woewodski Island. There has been one free use permit issued in the past five years (Streuli, 2003).

Other Subsistence Resources

Shellfish such as Butter Clams are occasionally harvested in the Beecher Pass area. The amount of seaweed, medicinal plants, mushrooms and berries harvested on Woewodski Island is unknown.

Public Comments

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Public Involvement

The Woewodski Island Landscape Assessment began in November 2002 with a letter of direction from the District Ranger. In February 2003, a scoping letter was sent out to the public, explaining what a landscape assessment is, providing some general information about the island and inviting public comment on the land management of Woewodski Island.

Open houses were also part of the public involvement plan. In December 2002, a Forest Service open house was held in Kake. The Woewodski Island Landscape Assessment was one of numerous projects discussed at that open house. On February 26, 2003 an open house was held in Petersburg, Alaska. This open house was advertised in the local *Petersburg Pilot*, on KFSK radio and across the cable scanner. Ten people participated in this open house.

Past Comments

During this landscape assessment process, past comments were considered. These comments were received under the previous Forest Plan, which designated Woewodski Island under less restrictive guidelines for development than the current 1997 Forest Plan designation. The comments were made in response to public scoping for the Whiskey Timber Sale EA and ensuing Woewodski Island EIS. The majority of the comments expressed intense opposition to the proposed timber harvest and concerns about its possible adverse impacts to various resources, especially subsistence and scenery. Other comments were in favor of economical resource development on the island, such as timber harvest and mining.

The proposed timber harvest on Woewodski Island was canceled before the Final Environmental Impact Statement was released. No Record of Decision was issued on the proposed project. The planning records for all past analysis, including past public comments, reside on the Petersburg Ranger District in Petersburg, Alaska.

Landscape Assessment Comments

Twenty-three public comments were received during the scoping period for this project. The following summarizes these public comments and the responses.

Heritage Comments

People voiced the desire to document and preserve Woewodski's history and archaeological sites.

Forest Service archaeologists have identified a variety of archaeology sites through numerous surveys of Woewodski Island between 1981 and 2002. All known archaeology sites will be protected in accordance with Federal regulations, including the National Historic Preservation Act of 1966. Future projects on Woewodski may spur additional project-specific archaeological surveys.

A summary of the island's archaeological resources is presented in this landscape assessment. Archaeological site-specific information is maintained and housed in databases administered by the State Historic Preservation Officer in Anchorage.

People suggested the Forest Service develop trails and interpretation of Woewodski Island's early mining history.

Future projects proposed in this landscape assessment include different mediums for mining interpretation, including trail signs, flyers and brochures.

The public expressed concern over possible future resource development and ensuing possible adverse impacts to heritage resources.

Woewodski Island's archaeology sites will be protected regardless of future management activities.

Mining Comments

Some people indicated they desired resource development to take priority over all other resources.

Management of National Forests is governed by several laws. The Multiple-Use Sustained Yield Act of 1960 directs the Forest Service to develop and administer renewable surface resources for multiple use and sustained yield. Multiple use refers to making the best use of land for some or all resources or related services. Specific to mineral resources, the Forest Plan assures prospectors and claimants their rights granted under the General Mining Law of 1872, ANILCA and the National Forest Mining Regulations (36 CFR 228).

Other people expressed the desire to limit or restrict resource development, in particular, logging and/or mining.

The 1997 Forest Plan identifies Woewodski Island within development land use designations (LUDs). Specifically, the island is predominately located within the Scenic Viewshed LUD with isolated areas identified as Modified Landscape LUD. These LUDs provide for a mix of resource activities, including timber harvest, mineral development, recreation, wildlife habitat and viewing, fisheries enhancements and scenic enjoyment. Specific to mineral resource development, the Forest Plan assures prospectors and claimants their rights granted under the General Mining Law of 1872, ANILCA and National Forest Mining Regulations (36 CFR 228).

Some people expressed concerns over possible future resource development impacts on other resources.

Mineral exploration is occurring on Woewodski Island. An Exploration Plan has been filed by one claimant and approved by the Petersburg Ranger District for current exploration activities. Before any mining activities (or mineral development) can occur, a claimant must file a Plan of Operation with the Forest Service. In accordance with environmental review procedures, the Forest Service would then conduct an environmental analysis of the submitted plan and disclose any possible resource impacts and/or mitigation measures.

Recreation Comments

People suggested we develop trails and interpretation of Woewodski Island's early mining history.

The Possible Opportunities section captures these suggestions along with the possible projects recommended for archaeology.

Some people indicated the island is an important aspect of the area's ecotourism.

This is recognized and will be considered when proposing any new activities on the island. Outfitter/guides who use the island and surrounding waters would be solicited for their comments and ideas.

People commented that Woewodski Island provides a highly valued recreation opportunity, as well as being one of the few roadless recreational opportunities on the Tongass. They felt this opportunity should be protected and were against any future attempt to develop

motorized recreational opportunities on the island.

If any new activity were proposed, like road construction, the existing recreation values and opportunities would be considered and analyzed for effects. Under the Forest Plan, road construction is allowed on Woewodski Island and may be proposed as part of a possible future project.

Currently, more than 90 percent of the Tongass National Forest is still wild, unroaded and undeveloped. In addition to the 508 million acres of designated wilderness, the Forest Plan provides another 7.4 million acres in LUDS that will be retained in a natural condition that could provide roadless recreation activities.

People suggested encouraging non-motorized recreational opportunities such as hiking and cross-country skiing on the island.

Non-motorized recreational activities such as those mentioned are presently allowed and do take place on Woewodski Island. The island has one developed trail but no developed cross-country trails or routes. Skiers usually find their own routes in the backcountry. A few new trails are suggested in the Possible Opportunities section.

A few people commented that logging roads are good for recreation because they are used by hunters and others for access to recreational activities.

The Forest Service recognizes the need for both motorized and non-motorized recreation opportunities on the District. Some people want mostly unroaded experiences and others want mostly roaded experiences. The Forest Service tries to provide a range of recreation opportunities; however, not every experience is available in every place. Under the Forest Plan, road construction is allowed on the island and may be proposed as part of a possible project in the future.

Some people stated that the need to focus on maintaining current developed recreation opportunities and limit all new development, including developed recreation sites.

In light of recent declining recreation funding, a higher priority is being placed on maintaining current facilities over building new facilities that will also need maintenance. This trend appears to be

continuing. Based on Forest Plan direction, development opportunities are allowed on Woewodski Island. Some new projects, such as trails and recreation improvements, are suggested in the Possible Opportunities section and may be considered in the future. However, no large recreational developments, such as new cabins sites, are currently anticipated.

People suggested improving boat access to the trailhead and improving the swimming area at Harvey Lake.

Several specific ideas for improvements like these are included in the Possible Opportunities section.

A concern was expressed that access to most parts of the island is a challenge. Access includes only one developed trail, which is not suitable for all levels of hikers.

Some additional trail opportunities are identified in this document. Trails are rated for visitors based on the hiking difficulty of the trail. The current Harvey Lake Trail is rated as Class 3, which is considered moderately easy but is not considered barrier-free or suitable for wheelchairs or hikers with limited mobility. Other future opportunities may include a transportation system, which if pursued could increase access to and on the island.

Some people questioned the accuracy of recreational use numbers for the island and suggested a sign-in box at the Harvey Lake trailhead.

A sign-in box has been incorporated as a possible future opportunity on Woewodski Island.

Scenic Comments

People indicated they were concerned about how possible future development would impact Woewodski Island's viewsheds. They expressed a desire to protect the island's scenic values.

The Forest Plan goals and objectives for Woewodski Island are to maintain a high degree of scenic quality. Future activities would recognize scenic values as a major consideration in development and modify practices accordingly. Viewsheds will be maintained in a natural appearing condition from popular travel routes and use areas.

Some people linked the scenic condition of Woewodski Island to the

real estate value of surrounding private land.

Any future development would consider the scenic condition of the island from surrounding private land.

Vegetation/Timber Comments

Some people were in favor of timber harvest and indicated the Forest Service should make economic resource development opportunities available. They felt these development opportunities should take priority over all other resources.

The island is predominately located within the Scenic Viewshed LUD (8,995 acres) with isolated areas identified as Modified Landscape LUD (total 1,273 acres). Both LUDs allow for timber harvest, but do so under the condition that scenic values are maintained in their current conditions. The Forest Plan provides standards and guidelines for timber harvest within these LUDs. These standards and guidelines restrict timber harvest by limiting the location and size of harvest units and the associated infrastructure. Most of Woewodski's commercially valuable stands of timber are viewed extensively from all surrounding water locations, and therefore are difficult to feasibly manage for timber under current market conditions.

Many people were against any timber harvest on Woewodski Island.

The Forest Plan sets forth in detail the direction for managing land and resources of the Tongass National Forest. Specific activities that can occur in an area are determined by the land use designation an area is in. Woewodski Island is predominately located within the Scenic Viewshed LUD with isolated areas identified as Modified Landscape. Both LUDs allow for development of resources, including timber harvest.

Transportation Comments

Many people said they wanted to keep Woewodski roadless.

Woewodski Island has been identified under the Forest Plan as a development land use designation (LUD). The island is comprised of two LUDs, Modified Landscape and Scenic Viewshed. Both of these LUDs allow road building.

Some people were concerned that development of a Log Transfer

Facility (LTF) would disrupt the commercial crab fishing in the area.

The 1985 LTF environmental assessment of Woewodski Island took into account the effects of the LTF on the commercial crab fishing in the area. If future activities include the development of an LTF, most likely a new environmental assessment of the LTF project would be done and the effects on the commercial crab fishing in the area would be considered.

Other people commented they would like to see Woewodski developed with a road system and an LTF.

Woewodski is designated for possible development. The island is presently being extensively studied for mineral potential. A road system and an LTF would aid in this development. Other possible future activities could include the development of a road system and LTF on the island; however, an environmental analysis would be required before any road or LTF construction.

Some people voiced concerns over transportation systems (locations, costs, impacts) linked to possible future resource development.

The development of a transportation system for resources such as recreation or timber may or may not happen, depending upon future direction and management activities on Woewodski Island. If a transportation system were proposed, the necessary enviornmental analysis would be completed.

A transportation system for the development of the mining industry would be controlled by the U.S. Mining Law of 1872. This law takes precedence over the regulations that guide the development regulations of the other resources on the island. This does not preclude the necessary environmental protection during the construction of the road system.

There were suggestions for improvements to boat access and a boat tie up at the trailhead to Harvey Lake Cabin.

The Possible Opportunities listed for this landscape assessment have incorporated this recreation opportunity suggestion for Woewodski Island. Presently, boats have to accommodate the tides and anchor out on the mud flats at the trailhead to Harvey Lake. This opportunity, if pursued as a proposed project, would require an

environmental assessment to determine its feasibility.

Soils and Wetlands Comments

During the scoping process for this project, we received no public comments specifically addressing soils and wetlands.

Aquatic Resources Comments

A concern about current water quality of lakes and streams was expressed.

The Forest Service has not done any water quality analysis on Woewodski Island. There are some who believe that the lakes and streams there may contain naturally high levels of minerals. If resource development projects are proposed, such as mining or timber harvest, the environmental analysis for the project will include an appropriate characterization of water quality.

Fisheries Comments

Some people expressed concerns about possible future resource development impacts on fish, freshwater fish habitat, marine life and marine habitat. They stressed the importance of the economic dependence on the aquatic resources surrounding Woewodski Island.

The Forest Plan objective is to maintain or restore the natural range and frequency of aquatic habitat conditions on the Tongass National Forest in order to sustain the diversity and production of fish and other organisms. The Forest Plan encourages the exploration, development and extraction of locatable and leasable minerals and energy resources. However, all mining operations must have a Plan of Operations and an environmental analysis with proper documentation that adequately mitigates any adverse impacts. The mitigation measures are designed to maintain habitats, to the maximum extent feasible, of anadromous fish and other food fish, and maintain the present and continued productivity of such habitats when they are affected by mining activities. Best Management Practices (BMPs) will be applied to any future resource development to maintain water quality.

A concern about current water quality of lakes and streams was

expressed. **(Also addressed under Hydrology Comments)**

The Forest Service has not done any water quality analysis on Woewodski Island. There are some who believe that the lakes and streams there may contain naturally high levels of minerals. If resource development projects are proposed, such as mining or timber harvest, the environmental analysis for the project will include an appropriate characterization of water quality.

A few people suggested limiting fishing opportunity on and around the island. More people expressed the desire to protect fishing opportunities on and around Woewodski Island.

The Forest Service does not regulate sport or commercial fishing opportunities on or around the island. Fishing is regulated by the State of Alaska. The Forest Service will minimize impacts to fish habitat by applying the Forest Plan standards and guidelines for protecting fish, riparian areas, soil and water. These incorporate BMPs.

Wildlife/Biodiversity Comments

Public comments ranged from the desire to protect subsistence and sport hunting opportunities on the island, to tightly controlling and regulating hunting and trapping activities to eliminating hunting and trapping from the island completely.

In 1990, the Federal Government assumed responsibility for the management of the subsistence taking of wildlife on federal public lands in Alaska. The Alaska National Interest Lands Conservation Act of 1980 requires that subsistence opportunities have a priority over other users to take wildlife on federal public lands. Healthy wildlife populations are currently managed to provide subsistence opportunities in the future. It is essential that populations are conserved for subsistence use.

The State of Alaska has a public process for setting sport hunting, trapping and State subsistence regulations. The Federal government has the same process for Federal subsistence regulations. If a concern develops over wildlife management or issues related to subsistence or sport

hunting, individuals are encouraged to work this established process to make changes. This process is outlined on page 32 of the *Alaska Hunting Regulations No. 44* or page 3 of the *Subsistence Management Regulations for the Harvest of Wildlife on Federal Public Lands in Alaska* (2004).

Some people suggested Woewodski Island be designated as a habitat reserve.

The old-growth habitat conservation strategy developed for the Tongass National Forest has two basic components, which are described in detail in Appendix N of the Forest Plan. The first is a forest reserve network that protects the integrity of old-growth habitat by using a system of large, medium and small old-growth reserves. These are identified in the Forest Plan as Old-Growth Habitat LUD's. The second is management of "matrix" lands, or those lands located in between dedicated reserve areas. These are land areas with LUD allocations where commercial timber harvest may occur, such as the Scenic Viewshed and Modified Landscape LUD's on Woewodski Island. In these areas, some of the components of the old-growth ecosystem are maintained by standards and guidelines that protect important specific areas.

Large, medium and small old-growth habitat reserves have been designed for the Tongass National Forest as part of the Forest Plan Revision process.

Large reserves provide a contiguous landscape of approximately 40,000 acres. The nearest large OGR is the Petersburg Creek/Duncan Salt Chuck Wilderness to the north on Kupreanof Island.

Medium reserves provide a continuous landscape of approximately 10,000 acres. The nearest medium OGR is located north of Beecher Pass on the southern end of the Lindenburg Peninsula.

Small reserves form a contiguous landscape of 16 percent of the area of each value comparison unit (VCU). Fifty percent of that area shall be productive old-growth. In VCU 448, the small OGR is presently located on Mitkof Island north of Point Alexander.

Woewodski Island contains 10,362 acres, which fits the medium OGR category well. Adjustment of the present medium OGR would require an amendment to the Forest Plan. Typically the large and medium OGR's

are set until the next revision of the Forest Plan.

Varying levels of local site information were used to design the small old-growth habitat reserves in the Forest Plan. As a consequence, alternative locations for the placement of the small old-growth reserves are considered during project alternative development. The present location of the small OGR in VCU 448 was the result of a collaborative analysis with the Alaska Department of Fish and Game during the Woodpecker project in 2000 and 2001.

As a response to this comment, Woewodski Island was looked at for potential areas that could be considered for a small old-growth reserve. An area was identified using the criteria found in Appendix K of the Forest Plan, concentrating on site-specific factors that meet wildlife habitat objectives. A simple comparison was then made to the existing small OGR in VCU 448 located on Mitkof Island. The results of this comparison are found in Appendix B in Table B-2.

The existing small OGR located in VCU 448 and the area identified on Woewodski Island are very comparable in deer winter habitat capability. The area on Woewodski has additional important wildlife site-specific factors that may make it a candidate as a small OGR option in this VCU in the future.

Some people expressed concerns about impacts to wildlife and wildlife habitat by possible future logging activities.

If future management activities, in accordance with the ten-year schedule, propose a timber harvest on Woewodski Island, an environmental analysis would be conducted which would consider the impacts to wildlife and wildlife habitat. The impacts and any mitigation measures or designs would be disclosed in either an Environmental Assessment or an Environmental Impact Statement.

A concern was expressed over the apparent lack of small birds in most areas of Woewodski Island.

A list of birds observed on the island is shown in Appendix B, Table B-1. Many of the birds identified on the list are representative species on the Forest. The list of birds identified does not support the assumption that there is an apparent lack of small birds on the island. However, intensive inventories to establish bird population have not been conducted.

Subsistence

Protect subsistence and sport hunting opportunities on the island. Tightly control and regulate trapping and hunting. These activities should be eliminated. **(Also addressed under Wildlife)**

In 1990, the Federal Government assumed responsibility for the management of the subsistence taking of wildlife on federal public lands in Alaska. The Alaska National Interest Lands Conservation Act of 1980 requires that subsistence opportunities have a priority over other users to take wildlife on federal public lands. Healthy wildlife populations are currently managed to provide subsistence opportunities in the future. It is essential that populations are conserved for subsistence use.

The State of Alaska has a public process for setting sport hunting, trapping, and state subsistence regulations. The Federal Government has the same process for Federal subsistence regulations. If a concern develops over wildlife management or issues related to subsistence or sport hunting, individuals are encouraged to work through the established process to make changes. This process is outlined on page 32 of the *Alaska Hunting Regulations No. 44* or page 3 of the *Subsistence Management Regulations for the Harvest of Wildlife on Federal Public Lands in Alaska* (2004).

Possible Opportunities

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One of the objectives for this landscape analysis was to come up with a list of possible future opportunities for each resource. The following list incorporates suggestions received from public comments. Some of these proposed projects would still require further environmental analysis, public review and decision-making mandated by NEPA. Initiation and timing of any projects would depend on many factors, including funding.

Heritage

- Interpretative flyer, brochure or sign regarding Woewodski Island mining history.
- Compilation of oral histories recording past island use.
- Passport in Time volunteer project recording ancient fish traps.

Minerals

Mining activities are conducted by claimants. The Forest Service approves exploration plans and/or plans of operations but does not actively, as an agency, mine any mineral deposits on national lands.

- Build trails and interpretation of the early mining activities around Whiskey Pass and Harvey Lake watershed.

Recreation and Tourism

- Remove trees at Harvey Lake that shade the beach; use the wood for firewood at the cabin.
- Anchor a swimming float offshore of the swimming beach at Harvey Lake. It would help separate swimmers from the leeches that concentrate in the shallow water where the water lilies grow.
- Engineer a system at the Harvey Lake Trailhead so skiffs stay floating at all tide stages.
- Install a sign-in box at the Harvey Lake Trailhead to more accurately assess the level of use.
- Build trails and interpretation of the early mining activities around Whiskey Pass and Harvey Lake watershed.
- Extend the Harvey Lake trail to continue all the way around Harvey Lake.
- Explore possibility of building a trail from the Beecher Pass Cabin to Harvey Lake.

Scenery

- Prepare vegetative management plans for Beecher Pass Cabin, Harvey Lake Cabin and Harvey Lake Trail to improve appearance and functional condition of these facilities.
- Prepare a design strategy to assist in achieving the Forest Plan desired future condition objectives for Woewodski Island viewsheds.
- Mitigate visual impacts to scenery associated with potential mining development.

Timber and Vegetation

- Prepare an environmental impact statement to analyze offering a medium or large timber sale.
- If a road-system is developed in conjunction with a medium or large timber sale, analyze for potential small timber sales.
- Provide opportunities for the value-added wood industry by offering very small individual tree sales.
- Continue administering free-use on Woewodski Island.

Transportation

- Construct a dock and boat tie up for small boats to access the trailhead to Harvey Lake.
- Install a swim float for use at the Harvey Lake cabin to access deeper water away from the leeches.

Soils and Wetlands

Most soils projects are related to past or present management activities. Due to the limited management activities that have occurred on Woewodski, there are currently no suggestions for future soils projects.

Aquatic Resources

- Gather baseline surface water quality data.
- Characterize groundwater flow patterns and quality.
- Secure water rights for the protection of in-stream flows in fish-bearing streams.

Fisheries

- Study the potential for introduction of sockeye to Harvey Lake.
- Monitor water quality.
- Construct and maintain one trail on the south end of the island away

from the streams (like Brushy Creek, which is lined with miners trails and claims that are causing erosion in the streambanks) to minimize sedimentation.

- Study the practicality of providing fish passage at the barriers above Harvey Lake.

Wildlife and Biodiversity

- Consider the location of a small old-growth reserve on Woewodski Island for VCU 448 in future project analysis.
- Protect and conserve important old growth areas defined by this assessment and past assessments related to timber harvest proposals to promote future subsistence and sport harvest of deer. The 1,104 acre interior old-growth habitat area contains the highest marten and deer habitat capability on the island. Verify the importance of these specific areas with field studies.
- Follow Forest Plan standards and guidelines for protection of the historical goshawk and other raptor nesting and foraging areas. Protect the wolf den found on this island.
- Identify the great blue heron rookery located near Alexander Bay using field studies. Protect this area according to the existing Forest Plan standards and guidelines.
- Conduct breeding bird surveys on this island and compare results to the surveys on Mitkof Island to determine if there is a lack of songbirds on Woewodski Island.
- Continue the coordination with the Alaska Department of Fish and Game to conduct deer pellet group counts. These surveys can be used to determine trends in the deer population on Woewodski Island.
- Conduct surveys for endemic mammals on Woewodski Island. Use this information to examine the theory that this island may act as an important dispersal area and is able to support marten populations.

Subsistence

- Consider the Woewodski Small Old-Growth Reserve design created as part of this assessment as a viable option when developing new planning proposals in VCU 448 to protect subsistence and wildlife resources.
- Protect and conserve important old-growth areas defined by this assessment to promote future subsistence and sport harvest of deer.
- Continue the coordination with the Alaska Department of Fish and Game to conduct deer pellet group counts to determine trends in the deer population on Woewodski Island.
- Habitat relationships between deer and wolf populations and travel routes used on Woewodski Island are poorly understood. Suggest continued monitoring of trapping use and initiation of a telemetry study similar to the ongoing study on Heceta Island.
- Survey the population of Petersburg and surrounding communities which include Kupreanof, Beecher Pass, and the residents of Duncan Canal to obtain accurate subsistence use figures on Woewodski Island.