



United States  
Department of  
Agriculture

Forest Service

Pacific Northwest  
Research Station

Research Paper  
PNW-RP-540  
March 2002



# Constancy and Cover of Plants in the Petersburg and Wrangell Districts, Tongass National Forest and Associated Private and Other Public Lands, Southeast Alaska

Bert R. Mead



**Author**

**Bert R. Mead** is a research forester, Forestry Sciences Laboratory, 3301 C St., Suite 200, Anchorage, AK 99503-3954.

## Abstract

**Mead, Bert R. 2002.** Constancy and cover of plants in the Petersburg and Wrangell Districts, Tongass National Forest and associated private and other public lands, southeast Alaska. Res. Pap. PNW-RP-540. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 112 p.

This study provides a comprehensive and inclusive description and inventory of the vegetation within the Stikine area of southeast Alaska. Private and other public lands were included as well as Tongass National Forest lands contained in the Petersburg and Wrangell Ranger Districts. Previous inventories have concentrated almost exclusively on tree species within forest lands. There has been recent recognition, however, that forest management plans must incorporate detailed information on other vegetation and resources. During an information needs assessment, prior to the inventory, Tongass National Forest managers requested that data be collected on all plant species. This information would feed into vegetation databases to be used by forest managers for various purposes but would be collected by using the same method and in one format for the entire Tongass National Forest.

Constancy and foliar cover tables are presented for the Stikine area of the Tongass National Forest and adjacent private and other public lands of southeast Alaska. The methods used to estimate occurrence in the area are described and discussed. Average cover and constancy value for each sampled species of tree, shrub, grass, forb, lichen, and moss in 18 forest and 12 nonforest Alaska vegetation classification system level IV vegetation types is shown.

Vegetation classification was attempted by using the preliminary forest plant associations of the Stikine area of the Tongass National Forest. Only a small percentage of the plots fit neatly into this classification system. Because the plots were located systematically, many plots did not fall into average or typical plant-association series descriptions. We discovered that we could not obtain tree cover by species using the four 7.43-radius subplots, making the first-level branches of the plant association key borderline between several associations, and a correct placement was not possible.

**Keywords:** Alaska, southeast, foliar cover, species constancy, inventory, plant ecology, Stikine, Wrangell, Kake, Petersburg, Tongass, Zaremo, Kuiu, Kupreanof, Etolin, Cleveland Peninsula, temperate rain forest, Alaska vegetation classification system, species composition.

## Summary

Species foliar cover and constancy tables and charts are presented for the Stikine area of southeast Alaska. Percentage of occurrence for each sampled species of tree, shrub, grass, forb, lichen, and moss and species with average foliar cover greater than 3 percent are shown in line graphs of cover.

Species frequency listings and occurrence within different types add to existing knowledge about vegetation.

## Contents

1	<b>Introduction</b>
3	<b>Inventory Methods</b>
7	<b>Vegetation Classification System</b>
13	Horizontal-Vertical Plot Measurement
13	Error
14	<b>Results and Discussion</b>
14	Forested Vegetation Types
16	Nonforest Vegetation Types
21	<b>Conclusion</b>
22	<b>Acknowledgments</b>
22	<b>English Equivalents</b>
23	<b>Literature Cited</b>
25	<b>Appendixes</b>
25	<b>Appendix A: Species Constancy on Forest Vegetation Types</b>
47	<b>Appendix B: Species Constancy Tables for Nonforest Vegetation Types</b>
57	<b>Appendix C: Vegetation Type Tables of Cover, Frequency, and Constancy</b>
101	<b>Appendix D: Scientific Name and Authority, Frequency of Species Occurrence on Sampled Plots, and Common Name</b>

### List of Tables

Table 1—Alaska vegetation classification system

Table 2—Area of forest by vegetation type, Stikine area, Alaska

Table 3—Area of nonforest by vegetation type, Stikine area, Alaska

### Appendix A: Species Constancy on Forest Vegetation Types

Table 4—Constancy of **trees and shrubs** on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska

Table 5—Constancy of **forbs** on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska

Table 6—Constancy of **ferns, clubmosses, and horsetails** on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska

Table 7—Constancy of **grasses and grasslike species** on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska

Table 8—Constancy of **lichens** on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska

Table 9—Constancy of **mosses** on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska

Table 10—Constancy of **liverworts** on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska

Table 11—Constancy of **trees and shrubs** on open- and woodland-canopy forest and on dwarf tree vegetation types on the Stikine area in southeast Alaska

Table 12—Constancy of **forbs** on open- and woodland-canopy forest and on dwarf tree vegetation types on the Stikine area in southeast Alaska

Table 13—Constancy of **ferns, clubmosses, and horsetails** on open- and woodland-canopy forest and on dwarf tree vegetation types on the Stikine area in southeast Alaska

Table 14—Constancy of **grass and grasslike plants** on open- and woodland-canopy forest and on dwarf tree vegetation types on the Stikine area in southeast Alaska

Table 15—Constancy of **lichens** on open- and woodland-canopy forest and on dwarf tree vegetation types on the Stikine area in southeast Alaska

Table 16—Constancy of **mosses** on open- and woodland-canopy forest and on dwarf tree vegetation types on the Stikine area in southeast Alaska

Table 17—Constancy of **liverworts** on open- and woodland-canopy forest and on dwarf tree vegetation types on the Stikine area in southeast Alaska

#### **Appendix B: Species Constancy Tables for Nonforest Vegetation Types**

Table 18—Constancy of **trees and shrubs** on nonforest vegetation types on the Stikine area in southeast Alaska

Table 19—Constancy of **forbs** on nonforest vegetation types on the Stikine area in southeast Alaska

Table 20—Constancy of **ferns, clubmosses, and horsetails** on nonforest vegetation types on the Stikine area in southeast Alaska

Table 21—Constancy of **grasses and grasslike species** on nonforest vegetation types on the Stikine area in southeast Alaska

Table 22—Constancy of **lichens** on nonforest vegetation types in Stikine area in southeast Alaska

Table 23—Constancy of **mosses** on nonforest vegetation types in Stikine area in southeast Alaska

Table 24—Constancy of **liverworts** on nonforest vegetation types in Stikine area in southeast Alaska

#### **Appendix C: Vegetation Type Tables of Cover, Frequency, and Constancy**

Table 25—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1A03-*Picea sitchensis*/*Oplopanax horridus*-*Circaea alpina*

Table 26—Average foliar cover, standard deviation, and frequency of trees in AVCS level V 1A1B01-*Tsuga heterophylla*/*Vaccinium* spp.

Table 27—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1B02-*Tsuga heterophylla*/*Vaccinium* spp./*Dryopteris dilatata*

Table 28—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1B03-*Tsuga heterophylla*/*Vaccinium* spp.-*Oplopanax horridus*

Table 29—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1C02-*Picea sitchensis*-*Tsuga heterophylla*/*Vaccinium* spp.- *Menziesia ferruginea*

Table 30—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1C03-*Picea sitchensis*-(*Tsuga heterophylla*)/*Oplopanax horridus*

Table 31—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1C04-*Picea sitchensis*-(*Tsuga heterophylla*)/*Vaccinium* spp.-*Oplopanax horridus*

Table 32—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1C05-*Picea sitchensis*-(*Tsuga heterophylla*)/*Vaccinium* spp.

Table 33—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1C06-*Picea sitchensis*-(*Tsuga heterophylla*)/*Vaccinium* spp./*Lysichiton americanum*

Table 34—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1C07-*Tsuga heterophylla*-(*Picea sitchensis*)/*Vaccinium* spp./*Oplopanax horridus*

Table 35—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1C08-*Tsuga heterophylla*-(*Picea sitchensis*)/*Oplopanax horridus*/*Lysichiton americanum*

Table 36—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1D01-*Picea sitchensis*-*Tsuga heterophylla*/*Lysichiton americanum*/*Sphagnum* spp.

Table 37—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1D02-*Picea sitchensis*-*Tsuga heterophylla*/*Vaccinium* spp.-*Menziesia ferruginea*

Table 38—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1D04-*Picea sitchensis*-*Tsuga heterophylla*/*Vaccinium* spp./*Oplopanax horridus*

Table 39—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1D05-*Picea sitchensis*-*Tsuga heterophylla*/*Vaccinium* spp.

Table 40—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1D07-*Tsuga heterophylla*-(*Picea sitchensis*)/*Vaccinium* spp./*Oplopanax horridus*

Table 41—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1D08-*Tsuga heterophylla*-(*Picea sitchensis*)/*Vaccinium* spp./*Lysichiton americanum*

Table 42—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1E01-*Tsuga heterophylla*-*Chamaecyparis nootkatensis*/*Vaccinium* spp.

Table 43—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1E02-*Tsuga heterophylla*-*Chamaecyparis nootkatensis*/*Vaccinium* spp./*Lysichiton americanum*

Table 44—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1F01-*Tsuga mertensiana*/*Vaccinium* spp.

Table 45—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1G01-*Tsuga heterophylla*-*Thuja plicata*/*Vaccinium* spp.-*Lysichiton americanum*

Table 46—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1U01-*Tsuga heterophylla*-*Picea sitchensis*-(*Thuja plicata*)/*Vaccinium* spp./*Rhytidadelphus loreus*

Table 47—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1U03-*Tsuga heterophylla*-*Chamaecyparis nootkatensis*-*Tsuga mertensiana*-*Picea sitchensis*/ *Vaccinium* ssp./*Lysichiton americanum*

Table 48—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1U04-*Tsuga heterophylla*-*Chamaecyparis nootkatensis*-*Tsuga mertensiana*-*Picea sitchensis* / *Lysichiton americanum*

Table 49—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1U05-*Chamaecyparis nootkatensis*-*Tsuga mertensiana*-*Tsuga heterophylla*-*Picea sitchensis*-*Pinus contorta*/*Vaccinium* spp.

Table 50—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2A05-*Picea sitchensis*/*Rubus spectabilis*

Table 51—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2B06-*Picea sitchensis* -(*Tsuga heterophylla*)/*Vaccinium* spp./*Lysichiton americanum*

Table 52—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2B07-*Tsuga heterophylla* -(*Picea sitchensis*)/*Vaccinium* spp./*Oplopanax horridus*

Table 53—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2B08-*Tsuga heterophylla* -(*Picea sitchensis*)/*Vaccinium* spp./*Lysichiton americanum*

Table 54—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2B09-*Tsuga heterophylla* -(*Picea sitchensis*)/*Oplopanax horridus*/*Lysichiton americanum*

Table 55—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2C01-*Tsuga mertensiana*/*Vaccinium* spp.

Table 56—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2C02-*Tsuga mertensiana*/*Vaccinium* spp.-*Cassiope mertensiana*

Table 57—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2C03-*Tsuga mertensiana*/*Vaccinium* spp./*Cladothamnus pyrolaeiflorus*/*Fauria crista-galli*

Table 58—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2D01-*Tsuga heterophylla*-*Picea sitchensis*-(*Thuja plicata*)/*Vaccinium* spp./*Rhytidadelphus loreus*

Table 59—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2D03-*Tsuga heterophylla*-*Chamaecyparis nootkatensis*-*Tsuga mertensiana*-*Picea sitchensis*/ *Vaccinium* ssp./*Lysichiton americanum*

Table 60—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2D04-*Tsuga heterophylla*-*Chamaecyparis nootkatensis*-*Tsuga mertensiana*-*Picea sitchensis*/ *Lysichiton americanum*

Table 61—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2D05-*Chamaecyparis nootkatensis*-*Tsuga mertensiana*-*Tsuga heterophylla*-*Picea sitchensis*-*Pinus contorta*/*Vaccinium* spp.

Table 62—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2M01-*Tsuga heterophylla*/*Vaccinium* spp.

Table 63—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2P01-*Tsuga heterophylla*-*Chamaecyparis nootkatensis*/*Vaccinium* spp.

Table 64—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2P02-*Tsuga heterophylla*-*Chamaecyparis nootkatensis*/*Vaccinium* spp./*Lysichiton americanum*

Table 65—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2R01-*Tsuga heterophylla*-*Thuja plicata*/*Vaccinium* spp.-*Lysichiton americanum*

Table 66—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2W01-*Pinus contorta*/*Empetrum nigrum*

Table 67—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A3A01-*Pinus contorta*/*Empetrum nigrum*

Table 68—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A3Q02-*Tsuga mertensiana*/*Vaccinium* spp.-*Cassiope mertensiana*

Table 69—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A3Q03-*Tsuga mertensiana*/*Vaccinium* spp./*Cladothamnus pyrolaeiflorus*/*Fauria crista-galli*

#### **Appendix D: Scientific Name Authority, Frequency of Species Occurrence on Sampled Plots, and Common Name of Plant**

Table 70—Scientific name and authority, frequency of **fern, horsetail, and clubmoss** species occurrence on sampled plots, and common name

Table 71—Scientific name and authority, frequency of **forb** species occurrence on sampled plots, and common name

Table 72—Scientific name and authority, frequency of **grass and grasslike** species occurrence on sampled plots, and common name

Table 73—Scientific name and authority, frequency of **lichen** species occurrence on sampled plots, and common name

Table 74—Scientific name and authority, frequency of **liverwort species** occurrence on sampled plots, and common name

Table 75—Scientific name and authority, frequency of **moss** species occurrence on sampled plots, and common name

Table 76—Scientific name and authority, frequency of **shrub** species occurrence on sampled plots, and common name

Table 77—Scientific name and authority, frequency of **tree** species occurrence on sampled plots, and common name



## Introduction

The Forest Inventory and Analysis (FIA) Program of the USDA Forest Service, Pacific Northwest Research Station, has responsibility for measuring and evaluating resources in Alaska, California, Hawaii, Oregon, and Washington. The Alaska FIA unit has developed techniques that measure and characterize vegetation cover and distribution. Nonforest and marginal forest areas as well as heavily timbered vegetation types are sampled.

The Stikine area of the southeast Alaska inventory unit (fig. 1) lies between 55.46° and 57.25° N. latitude, and between 131.00° and 134.25° W. longitude. The Stikine area lies at about the same latitude as the northern part of the British Isles, the southern part of Sweden and Norway, and the Russian capital of Moscow. The Stikine area comprises what is now the Petersburg and Wrangell Ranger Districts of the Tongass National Forest, as well as private and other public lands occurring within this boundary. It is located in the central portion of the southeast Alaska panhandle, also known as the Alexander Archipelago. The panhandle stretches nearly 966 km along a narrow strip of mainland averaging 193 km wide. Sixty percent of the land area lies on the mainland, and the rest consists of islands lying immediately offshore. Portions of the panhandle are linked to major drainage systems that extend seaward from Canada. The Stikine area is connected to Canada by the portion of the Stikine River that emerges on the coast just north of Wrangell.

The Stikine area is bounded on the north by Frederick Sound, on the west by Chatham Strait, and on the south by Sumner Strait, Clarence Strait, and Ernest Sound. To the east it is bounded by the Canadian border on the mainland and extends from Cape Fanshaw in the north to Eaton Point on the Cleveland Peninsula in the south. It represents a diverse landscape of islands and continental mainland with elevations from sea level to just over 3048 m. The mainland is dissected by an intricate system of fjords formed by drainage courses that have been eroded and deepened by glaciers and currents. The seaways are deep, many over 122 m, and have rocky bottoms. Chatham Strait on the west boundary is a deep trench 6.4 to 24 km wide and over 320 km long.

Major islands in the inventory area include Kuiu, Kupreanof, Zarembo, Etolin, and Wrangell as well as many smaller islands. Kupreanof Island is largest with an area of 2807 km<sup>2</sup>. The islands are separated by a system of marine features such as sounds, straits, canals, narrows, and channels forming an extensive shoreline. Major towns in the area are Wrangell, Petersburg, and Kake.

The physiographic regions are complex, resulting from the collision of several plates with the North American continent. Although the islands look similar, most do not share a common origin. The Cleveland peninsula although attached to the mainland, is similar to the islands in appearance, origin, and topography.

The climate is maritime with cool summers, moderate winters, high humidity, high precipitation, considerable cloudiness, little freezing weather, and an average temperature of 4 °C. Although temperature is moderated by the ocean influence, precipitation and temperature gradients do occur.

Cool Pacific air masses release moisture as they are lifted over the mainland mountains. Precipitation generally increases with elevation on the windward side of mountains. Areas on the leeward side generally have considerably less precipitation. For example, Kake, situated on the northwest side of Kupreanof Island, lies in the lee of the mountains of Baranof Island and gets about 152 cm of precipitation; whereas Petersburg, 64 km away, on the north of Mitkof Island and closer to the mainland mountains, gets 267 cm of precipitation per year. Temperature extremes increase with distance

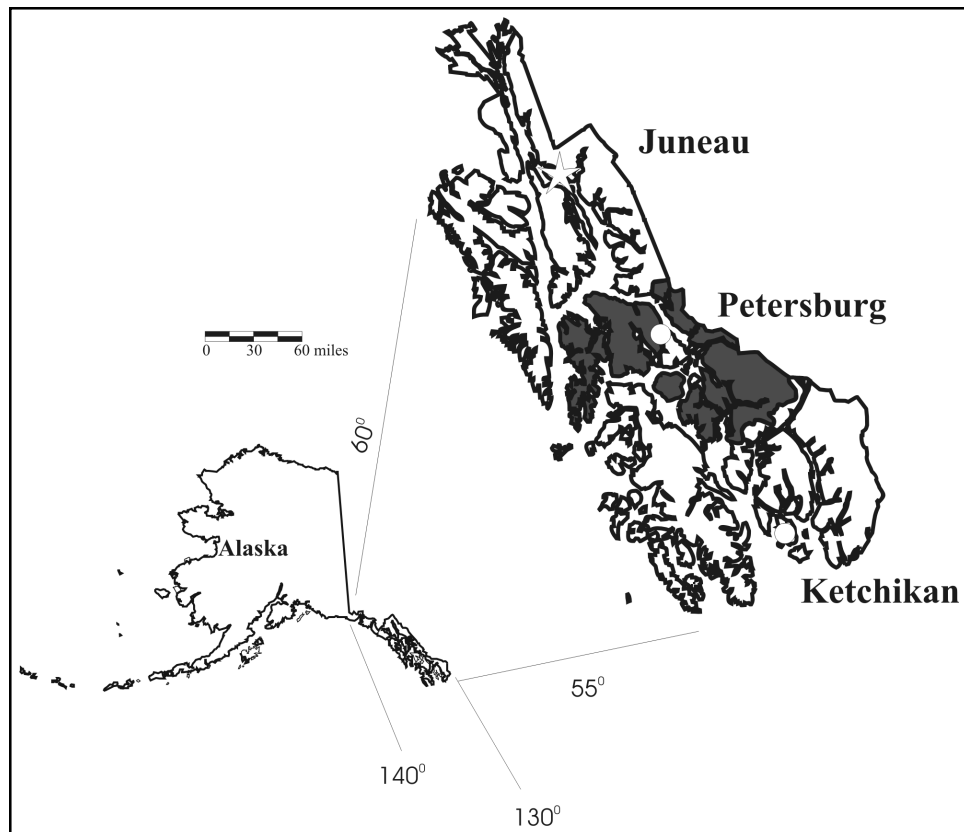


Figure 1—Location of the Stikine area, southeast Alaska unit within Alaska (shaded area).

from coastline and with elevation. Some mainland valleys are influenced by cold air washing down from glaciers and ice fields, in some cases lowering local temperatures by several degrees during the growing season. All these differences affect plant distribution and growth and account for much of the heterogeneity of plant communities in this area (Selkregg, circa 1976).

Climate and physiography of the region affect development of soils and plant communities in other ways. The area has undergone repeated glaciations, the most recent advance being about 10,000 years ago. Glaciers sculpted the land and removed soils down to bedrock. As they retreated, they deposited glacial till and flooded much of the recently exposed land near sea level. Poorly drained soils derived from compacted glacial till cover much of the land below 460 m, whereas those formed over exposed granite bedrock remain shallow and also poorly drained. Others, formed on soft limestone, are deeper and better drained. Islands and benches adjacent to the Stikine River benefit from the deposition of silt from interior winds blowing down the river during winter when sandbars and mudflats are exposed. The loess soils that have been deposited owe their high pH and lack of a deep organic layer to the yearly deposition of this wind-deposited silt. These soils are less acidic, with compatible vegetative communities, which are generally more productive. In other areas, the high precipitation and cool temperatures have slowed decomposition of organic matter, thereby making the soils more acidic. These sites are covered with a thick duff layer, high in organic matter and constantly moist. Such conditions severely limit the amount of nutrient available to plants on these sites, thereby lowering their productivity.

Wind is another major influence on vegetation patterns in this region. Wind acts in concert with root rot and mistletoe weakening of tree stems. As it uproots trees or breaks tree stems, it can create forest gaps. (Wittwer 2000). If larger areas are affected, it may create stands of even- or two-aged forests, if only part of the stand is destroyed. Stands that regenerate after major wind disturbance usually have more Sitka spruce (*Picea sitchensis* (Bong.) Carr.) than are found in old-growth stands. Wind disturbance usually occurs during fall and winter cyclonic storms that typically move along the north Pacific from west to east. Powerful southeast winds occur along the leading edge of these storms as the winds rotate in a counter-clockwise direction. These winds are often funneled up straits, and wind velocities are increased. Consequently, ridges with southeast exposure are more likely to experience catastrophic windthrow than are leeward slopes, north and east slopes. Local areas also are influenced considerably by winds funneling down drainages from the coastal mountains. Where such winds are of sufficient intensity, frequency, and coldness, they create exposed landscapes devoid of trees, such as the north end of Farm Island.

Undisturbed mature stands have a ragged appearance because they consist of trees of various ages, sizes, degrees of vigor, and trees with dead tops and gray snags intermixed with healthy tree crowns. Older trees contain considerable heart rot, and forest gaps from individual weakened and wind-thrown trees are quickly filled with younger tree seedlings.

Forests extend from sea level to about 800 m. Stands with greatest tree volume are generally near tidewater with stand heights and wood quality diminishing with increasing elevation. Interspersed among the forest stands are muskeg plant communities growing on deep organic soils and dominated by plants such as mosses, sedges, rushes, and ericaceous shrubs that tolerate saturated soils. Between the forests and muskegs, open forests grow on wet organic soils. These open stands of mixed conifers generally have grown slowly and are of poorer form than other forest types occurring in the area. They have a dense shrub layer with many species, thereby making them important food and cover areas for wildlife (Selkregg circa 1985). The other major group of plant communities is the alpine type that occurs above timberline (about 800 m). Heath shrubs, grasses, and low-growing forbs such as deer-cabbage (*Fauria crista-galli* (Menzies) Makino) dominate these types. Trees are occasional, stunted, and shrublike due to short, cool summers, extended snowpack, and strong winds. The landscape is a mix of old growth, wind disturbed even- and uneven-aged forests, open forest, muskegs, alpine, grass flats, etc.

We developed procedures to measure vegetation on both forested and nonforested land, with the major objective of recording plant species occurrence and composition in each plant community (Mead 1992). These data would provide information needed to classify forest plots within previously described plant associations. It also provided information to develop better descriptions for nonforest plant associations.

## Inventory Methods

The Stikine area inventory used the FIA mapped-plot survey design. Plot selection is based on a systematic grid with a spacing of 4.8 km, with a random start point. This grid spacing was determined by the number of plots needed to meet sampling error limits for area and volume for productive forest lands. We looked at the 1970s inventory data, which met inventory error objectives, and computed a grid spacing that gave sufficient numbers of plots on productive forest lands to meet error objectives. We selected this spacing before implementing the national system; however, it closely matches the national grid, which uses a 1/28 sampling the larger Forest Health Monitoring (FHM) hexagonal grid for forest inventory sampling.

The inventory design for southeast Alaska is a single-phase, unstratified, systematic grid sample. Ground plots are established at each grid intersection so no aerial photo or remote-sensed sample for stratification was conducted. Sampling intensity was chosen to meet sampling error guidelines of + 3 percent per 404 686 ha (1 million acres) for productive forest area and + 10 percent per 28 316 800 m<sup>3</sup> (1 billion cubic feet) for net volume based on sample variances from inventories conducted during the 1970s. LANDSAT imagery provided estimates of forest land area. The proportion of productive forest area within the forested area was provided by previous inventories. Using these pieces of information, we chose grid spacing that allows for the number of productive forest land plots to be at least equal to the number of productive forest land plots in previous inventories.

Ground plots are 1-ha circles (figs. 2, 3, and 4). Land cover-vegetation type is visually interpreted for each plot by using high-resolution orthophotoquads and high-resolution satellite imagery. Plots that are barren or covered with ice and snow are not visited on the ground. Ground plots are subsampled by a cluster of four, 7.3-m fixed-radius subplots. From the first centrally located subplot, three other subplots are located 36.6 m north, southeast, and southwest, respectively. Each subplot is mapped for land cover. Additional details of the mapped field plot design are contained in Scott and Bechtold (1995).

Each grid line is located by using orthophotos printed at a scale of 1:15840 or other available imagery. Plots were located at the intersections of grid lines. Some location error is present owing to inherent error in the maps and the difficulties of physically locating the plot at the exact coordinate. This locational error is assumed to be minimal and unbiased. The precise location is determined after the field plot is established by using geographic positioning system (GPS) hardware and postprocessing. This establishes an historical record of the precise location of the sample plot. At the time of the survey, it was not possible to obtain the exact coordinates while in the field.

Once the grid location is established as precisely as possible, that locus becomes the center of the first subplot to be measured. The plot area is sampled by using four 1/60-ha subplots with a 7.32-m radius (fig. 2). The initial subplot is at the center, and the remaining subplots are located at a distance of 36.58 m from the center of the initial subplot at azimuths of 360, 120, and 240 degrees. Subplots are used to collect data on trees with a diameter at breast height (d.b.h.) of 12.7 cm or greater. Each subplot also contains a 1/743-ha microplot with a radius of 2.07 m. Its center corresponds to the center of its subplot. The microplot is used to sample seedling trees (d.b.h. less than 2.54 cm) and sapling trees (d.b.h. is 2.54 to 12.69 cm). Broad categories of data collected in the field are location, condition, timber, other vegetation, soils, and downed wood. Other vegetation is measured on a horizontal-vertical (HV) vegetation plot with a plot radius of 5.64 m (1/100 ha). At the start of the inventory, we were locating HV plots within the first two subplots of each vegetation type; in subsequent years, we measured HV plots only in the first subplot of each vegetation type.

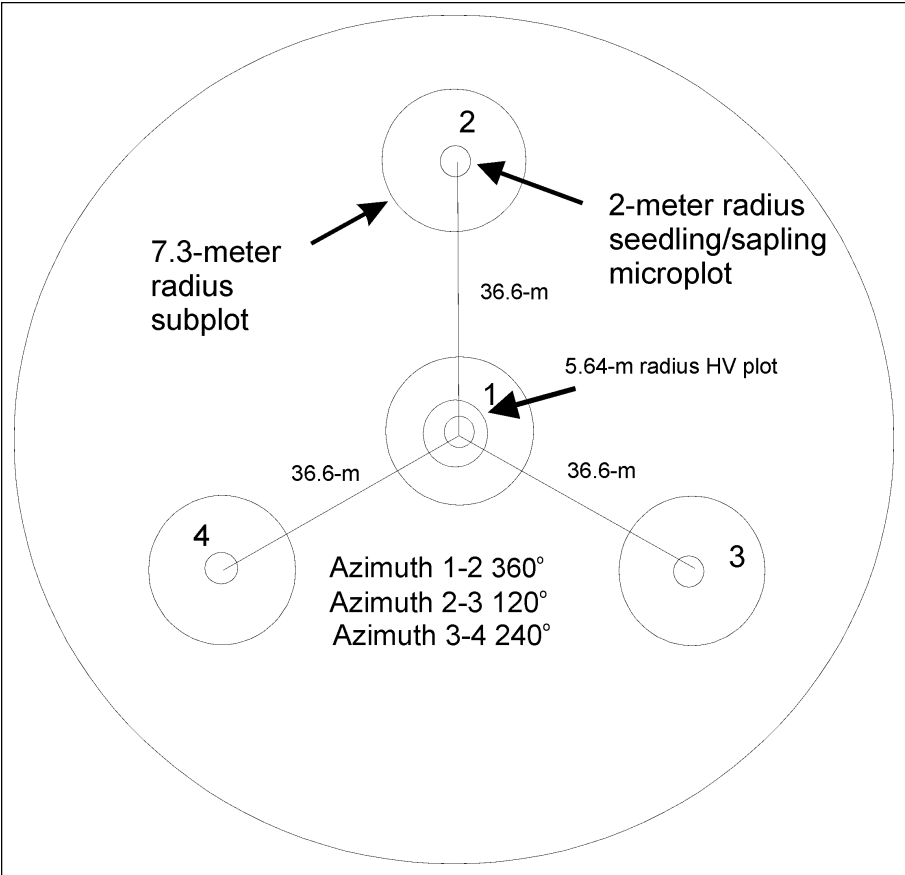


Figure 2—Layout of subplots within the 1-ha plot.



Figure 3—Jason Downing records data on a ground plot.



Figure 4—Sadie Rosenthal locates reference points on an aerial photograph.

Vegetation type changes are mapped on the subplots. If there are abrupt vegetation changes within the HV area, the HV plot is moved to the next subplot. This is done to sample the species composition associated with one vegetation type and to avoid sampling a mixture of two distinct types. Species cover and composition were developed from homogeneous plots, but area estimates were developed from all plots. Where plots were heterogeneous, they were mapped and area percentage in each vegetation type was computed. This allowed us to obtain an unbiased estimate of area by vegetation type and maintain the ability to describe vegetation by completely sampling within one classified type.

The three nested plots (subplot, microplot, and HV plot) are the source of plant and tree data presented in this report (fig. 5). Sampling started in June and was completed by early September over a 4-year period from 1995 to 1998 (van Hees 2001).

All plots were classified by using the Alaska vegetation classification system (AVCS) developed by Viereck and others (1992) (table 1). The data were compiled by using a ratio-of-means estimator as recommended by Zarnoch and Bechtold (2000). This produced area estimates by vegetation type.

The ratio-of-means estimator is defined as:

$$\hat{R} = \frac{\sum_{i=1}^n y_i}{\sum_{i=1}^n x_i} = \frac{\bar{y}}{\bar{x}},$$

where

$\hat{R}$  = ratio of means

$y_i$  = the variable of interest on plot  $i$ ,

$x_i$  = an auxiliary variable on plot  $i$  that is correlated with  $y_i$ , and

$n$  = number of plots selected from the population.

## Vegetation Classification System

The AVCS is a multilevel classification. The first level broadly classifies vegetation into forest, scrub, and herbaceous communities. The second level groups by lifeform or height class, depending on the first category. Level III uses foliar cover for all vegetation except herbaceous communities, which are classified at this level by dry, mesic, or wet sites. Vegetation on each 1-ha plot was type-mapped and classified down to level IV at the ground level. Level IV classification shows the major plant species in the community. Not enough plots were available in some categories to develop statistically significant estimates at level IV, so some types sampled are not shown in the tables. An abbreviated description of the classification system is given in table 1, and the area in each category is shown in tables 2 and 3. Ground plots were described down to level IV, a species descriptive level not shown in the following abbreviated outline. The abbreviated codes, used in the text and in the table appendices, match the classification key in Viereck and others (1992).



Figure 5—Remote plots were accessed by using a helicopter with landing pad on the inventory boat.



**Table 1—Alaska vegetation classification system**

<b>Level 1</b>	<b>Level II</b>	<b>Level III<sup>a</sup></b>	
Forest	Needleleaf	Closed	(60-100% canopy closure)
		Open	(25-59% canopy closure)
		Woodland	(10-24% canopy closure)
	Broadleaf	Closed	(60-100% canopy closure)
		Open	(25-59% canopy closure)
		Woodland	(10-24% canopy closure)
	Mixed	Closed	(60-100% canopy closure)
		Open	(25-59% canopy closure)
		Woodland	(10-24% canopy closure)
Scrub	Dwarf tree	Closed	(60-100% canopy closure)
		Open	(25- 59% canopy closure)
		Woodland	(10-24% canopy closure)
	Tall (> 1.5 m)	Closed	(75-100% canopy closure)
		Open	(25- 74% canopy closure)
	Low (0.2 m to 1.4 m)	Closed	(75-100% canopy closure)
Open		(25- 74% canopy closure)	
Herbaceous	Graminoid	Dry	
		Mesic	
		Wet	
	Forb	Dry	
		Mesic	
		Wet	
	Bryoid	Moss	
		Lichen	
	Aquatic	Fresh water	
		Brackish	
		Marine	

<sup>a</sup>Level III of dwarf scrub was modified for this inventory from dryas, ericaceous, and willow categories to closed and open categories because of remote sensing limitations in determining small shrub species on aerial photographs.

**Table 2—Area of forest by vegetation type, Stikine area, Alaska<sup>a</sup>**

Vegetation type	Type code	Area	Proportion
		<i>Thousands hectares</i>	<i>Percent</i>
Closed-canopy needleleaf forest:			
Sitka spruce	1A1A	18.28	0.59
Western hemlock	1A1B	331.94	10.69
Sitka spruce–western hemlock	1A1C	53.42	1.72
Western hemlock–Sitka spruce	1A1D	168.86	5.44
Western hemlock–Alaska cedar	1A1E	204.52	6.59
Mountain hemlock	1A1F	54.88	1.77
Western hemlock–western redcedar	1A1G	81.53	2.62
Mixed conifer	1A1U	202.00	6.51
Undescribed types	1A1X	1.57	.05
Open-canopy needleleaf forest:			
Sitka spruce	1A2A	6.27	.20
Western hemlock–Sitka spruce	1A2B	56.37	1.82
Mountain hemlock	1A2C	150.12	4.84
Mixed conifer	1A2D	276.25	8.90
Western hemlock	1A2M	31.36	1.01
Sitka spruce–western hemlock	1A2N	6.27	.20
Western hemlock–Alaska cedar	1A2P	54.88	1.77
Western hemlock–western redcedar	1A2R	12.54	.40
Lodgepole pine	1A2W	25.09	.81
Woodland-canopy needleleaf forest:			
Lodgepole pine	1A3A	62.21	2.00
Western hemlock	1A3M	20.16	.65
Western hemlock–Sitka spruce	1A3O	12.54	.40
Mountain hemlock	1A3Q	47.55	1.53
Western hemlock–western redcedar	1A3R	6.27	.20
Mixed conifer	1A3U	31.25	1.01
Closed-canopy broadleaf forest:			
Red alder	1B1A	3.14	.10
Open-canopy broadleaf forest:			
Red alder	1B2H	1.57	.05
Total, all forest vegetation types		1920.84	61.88

<sup>a</sup> Areas are for unreserved national forest lands only and do not include wilderness and other reserved lands. Private and other public lands are also not included in this table.

**Table 3—Area of nonforest by vegetation type, Stikine area, Alaska<sup>a</sup>**

Vegetation type	Type code	Area	Proportion
		<i>Thousand hectares</i>	<i>Percent</i>
Dwarf tree:			
Closed canopy—			
Mountain hemlock	2A1A	4.70	0.15
Open-canopy, dwarf tree—			
Mountain hemlock	2A2B	20.38	.66
Mixed conifer	2A2M	12.17	.39
Lodgepole pine	2A2P	8.09	.26
Woodland-canopy, dwarf tree—			
Lodgepole pine	2A3P	4.70	.15
Mountain hemlock	2A3Q	25.09	.81
Tall shrub types:			
Closed canopy—			
Scrub alder	2B1B	27.06	.87
Alder	2B1D	6.27	.20
Salmonberry	2B1G	1.57	.05
Scrub alder–salmonberry	2B1H	32.30	1.04
Salmonberry–blueberry	2B1I	6.27	.20
Open canopy—			
Alder	2B2B	12.47	.40
Salmonberry	2B2G	6.27	.20
Alder-salmonberry	2B2H	5.63	.18
Salmonberry-blueberry	2B2F	6.27	.20
Undescribed	2B2X	3.13	.10
Low shrub types:			
Closed canopy—			
Ericaceous shrub closed canopy	2C1D	6.27	.20
Copperbush-blueberry	2C2C	1.46	.05
Open canopy—			
Ericaceous shrub bog	2C2E	42.63	1.37
Copperbush-blueberry	2C2V	6.27	.20
Copperbush	2C2Y	10.98	.35
Dwarf shrub types:			
Vaccinium ericaceous tundra	2D2B	7.43	.24
Crowberry ericaceous tundra	2D2C	3.14	.10
Mountain heath ericaceous tundra	2D2D	10.98	.35
Cassiope ericaceous tundra	2D2E	28.22	.91
Undescribed	2X2X	6.27	.20
Undescribed2	2X2XX	31.36	1.01

**Table 3—Area of nonforest by vegetation type, Stikine area, Alaska<sup>a</sup> (continued)**

Vegetation type	Type code	Area	Proportion
		<i>Thousand hectares</i>	<i>Percent</i>
Herbaceous types:			
Fireweed	3B2B	3.14	.10
Wet sedge meadow tundra	3A3A	15.19	.49
Wet sedge-grass meadow tundra	3A3B	1.43	.05
Wet sedge-herb meadow tundra	3A3C	16.64	.54
Fresh sedge marsh	3A3D	24.21	.78
Subarctic lowland sedge-bog meadow	3A3J	1.57	.05
Subarctic lowland moss-bog meadow	3A3K	3.48	.11
Alpine herb-sedge (snowbed)	3B1B	6.27	.20
Alpine herbs	3B1C	6.27	.20
Mixed herbs	3B2A	22.73	.73
Ferns	3B2D	6.27	.20
Total, all nonforest vegetated types		444.32	14.31
Other, barren:			
Permanent ice and snow, snowfields, ice	7A1	206.96	6.67
Permanent ice and snow, glacier	7A2	313.58	10.10
Rock, felsenmeer (broken boulder field)	7B1	14.11	.45
Rock, bedrock outcrop	7B2	123.00	3.96
Rock, scree, talus slopes	7B3	39.20	1.26
Other, including bare soil and gullies	7B4	3.14	.10
Fluvial deposits	7D1	1.57	.05
Cultural, roads, paved areas, buildings, etc.	7F3	4.44	.14
Water:			
Noncensus streams	8A2	8.54	.28
Census lakes (greater than 8 ha)	8B1	20.92	.67
Noncensus lakes	8B2	3.14	.10
Total, barren and water		738.60	23.80
Subtotal, all nonforest lands		1183	38.12
Subtotal, forest lands (from table 2)		1921	61.88
Total, all types		3104	100.00

<sup>a</sup> Areas are for unreserved national forest lands only and do not include wilderness and other reserved lands. Private and other public lands are also not included in this table.

## Horizontal-Vertical Plot Measurement

A horizontal-vertical profile (HV plot) of vegetation structure was made at the first subplot in each vegetation type, and in the first year, at the first two subplots in each type. This included cover information on tree seedlings as well as other plants.

The horizontal-vertical profile plot (HV plot) has a circular fixed radius with an area of 0.01 ha (5.64-m radius). On these HV plots, the percentage of foliar cover in each natural layer of vegetation was estimated with procedures of Daubenmire (1959) but modified by using a continuous percentage rather than percentage of cover categories. In a typical vegetation type, several natural layers occur: ground cover, forbs and grasses, low shrubs, tall shrubs, and trees. The heights of these layers differ from bottomland to alpine sites. Because different vegetation types may lack one of the layers, field crews determined which layers were present. The heights of these natural layer breaks were measured and recorded, thereby allowing percentage of cover to be measured for all taxa in each layer. Layer heights varied for each plot, depending on site factors such as aspect and elevation, which influenced the natural layers present. Sometimes plants would extend over more than one layer with a different percentage of cover in each layer.

This method was more descriptive than simply measuring plant cover at predetermined height intervals or taking one height measurement for all shrubs or forbs, etc. It also was less labor intensive, and thus more cost-effective, than measuring height and cover on each plant. A universal predictor, such as plant cover, when used for all nontree vegetation, added speed and uniformity as well as cost savings. It also allowed us to use a larger plot size and capture a more complete description of all the vegetation present.

Because total cover for each species was not recorded directly, it had to be calculated from percentage of cover of the layer and from percentage of foliar occupancy of each species within each layer. Computed covers of species within each layer were then compared between layers to determine the maximum foliar cover of a species in any layer. This method of determining foliar cover could be somewhat different than if maximum foliar cover had been measured by species directly, regardless of cover in any layer, as it may overestimate or underestimate cover if there is considerable overlap or separation between layers. We believe major differences to be rare, however, because most of the cover for a particular species is usually contained in one layer.

In figure 6, cover occurs in two layers (shrub and tree). It comes from different sets of plants rather than the next height layer of the same set of plants. This method is ideally suited for description of vertical vegetation cover and gives a better profile of the three-dimensional cover of plants.

## Error

A minimum quality-evaluation was done by having a field supervisor visit a few sites and judge the number and height of layers as well as identify species and estimate percentage of cover. Major discrepancies were discussed with field-crew members in order to make estimates uniform. A complete remeasurement of the plot was not done, and sufficient numbers of plots were not revisited to enable us to quantify error bounds on the visual estimates. The distance between the remote plots, the logistics and costs involved in returning check crews via helicopter to these areas for remeasurement, was prohibitive.

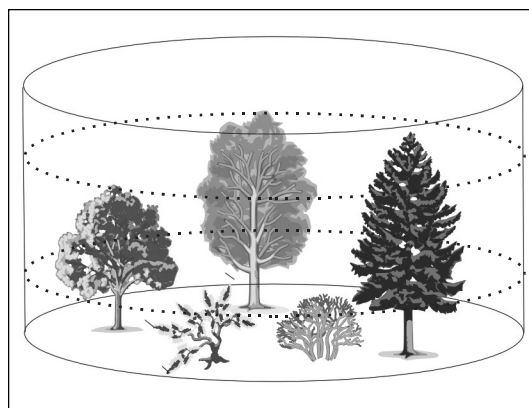


Figure 6—Three dimensional horizontal-vertical vegetation plot; dotted lines represent vegetation layers.

A more rigorous study of the repeatability and the components of variation associated with foliar cover estimates was conducted after the Stikine area, southeast Alaska inventory was completed. Repeat measurements were taken in one vegetation type of 20 plots remeasured three times by six different observers over one summer in south-central Alaska. Results indicated that the measurement component of variation exceeded that of the natural variation. The variation between observers and even for the same observer between plots was greater than the naturally occurring variation. This is likely due to the subjectivity of ocular estimates of foliar cover (van Hees and Mead 2000). We looked for measurement bias by individual observer but found no trend that a particular observer consistently estimated high or low. If we had, it may have been possible to make an adjustment of known bias. Such results indicate that caution should be taken with the data presented in the following tables. Error in any estimate could exceed 100 percent: a more precise estimate of nontree vegetation biomass could result from further measurement and study. Different techniques, probably more time consuming than those presented here, by using stem diameters, leaf measurements, stem counts, or other methods less subjective than ocular estimation of foliar cover might give more precise estimates. Currently, the demand for this type of data does not justify the more time-intensive techniques that would yield greater precision. Such techniques might be cost-effective, however, for specific local resource assessments where precise estimates are needed. The current study provides preliminary information on the species composition and relative biomass and prevalence among different structural components of each vegetative community.

## Results and Discussion

### Forested Vegetation Types

Analysis of forested vegetation types proceeded along two lines. First, we summarized cover and plant constancy in various classes of the AVCS (Viereck and others 1992). Cover is the highest foliar cover estimated for each plant species in any layer of the HV plot, averaged within a type among all HV plots measured. Constancy is the percentage of plots with a vegetation type on which the plant species occurred. A plant species occurring on all plots would have a 100-percent constancy.

Second, we followed a classification key to place plots within one of the described plant associations previously developed by the Forest Service for the Stikine area (Pawuk and Kissinger 1989). During the information needs assessment meetings, national forest representatives felt that the plant cover data would enable them to place plots appropriately into an association. This effort was only partially successful, as our plots were systematically placed and sampled ecotones and transitions as well as “typical stand conditions.” The original plant association guides were developed from plots in

stands where the vegetation conditions were homogeneous and edge effects, ecotones, windthrow, and sites exhibiting atypical vegetation patterns were avoided (Martin and others 1995). This effort also was hampered because placement in plant association series is dependent on tree species cover. This was not directly measured or estimated but computed from tallies of trees and average crown width measurements. By using crown width, a maximum area of crown was computed for each tree; these were added together by species and divided by the area of the plot to obtain a species cover. This is only an estimate because overlapping crowns cannot be accounted for in this way, and any inequality in the amount of crown cover coming from nontally trees on the edges of the plots, as opposed to tally tree crowns falling outside the plot area, could not be determined. For this classification, we assumed that these were equal and canceled each other out for total crown cover.

For forest cover overall, this is a reasonable assumption. It becomes more problematic when estimating individual tree species cover because there is a greater possibility of inequalities on plots with a mix of tree species. Mapping crown placement for each tree would have improved these estimates, but software to do this efficiently was not available at the time of this analysis. It would still be possible that the sample plots may not truly reflect the mix of species on that particular area.

A second attempt to place plots in the described plant associations was made by using the AVCS type as an indicator of the first level of the dichotomous key—the series level. Series describes the major tree species or combination of tree species. We then analyzed the understory plant species to place the plot in the correct association of the major series. This was not highly accurate because the definitions are not the same. This was particularly evident in the placement of mixed-conifer versus shore pine series plots. The Stikine plant association key automatically places any plot with 10 percent or greater cover in shore pine into the shore pine series. Many of these plots were classified as mixed conifer under the AVCS. Another area of discrepancy was in the Sitka spruce series, because only 15 percent cover in Sitka spruce was needed to place the plots into that series, whereas in the AVCS, a closed Sitka spruce forest classification requires that 35 to 60 percent of the cover is provided by Sitka spruce. The AVCS also includes many mixed-species types, particularly for western hemlock (*Tsuga heterophylla* (Raf.) Sarg.) and Sitka spruce mixes, whereas the Stikine Plant Association guide places plots in either a western hemlock series or a Sitka spruce series. The criteria for other western hemlock mixed types such as western hemlock-western redcedar (*Thuja plicata* Donn ex D. Don) or western hemlock-Alaska cedar (*Chamaecyparis nootkatensis* (D. Don) Spach) also differ greatly from the AVCS. Classification in the AVCS was done by matching a written type description. The only key provided simply placed plots in closed, open, woodland, broadleaf, coniferous, or mixed categories. Classification at lower levels consisted of reading the type descriptions and matching to the best fit.

Further difficulties were encountered because the plant association guide is not a strictly dichotomous key but often required several criteria be met. Some plots that did not meet all the criteria did not easily fall into a complementary category.

For these reasons, a comparison was made of the results of the two classification methods. (1) Plots were placed in a plant association series by using the AVCS system. Once in a series, the plant association key was followed primarily by examining cover of understory species and placed in an association. (2) The plant association series was determined by computing species cover for assignment to series, and the key followed for understory plant composition within the series.

As mentioned earlier, there was significant crossing over between mixed-conifer and shore pine series, as well as between Sitka spruce and western hemlock series. Furthermore, because the AVCS had mixed spruce-hemlock types, that category still relied on the plant association key to determine which series they fell into.

Final analysis for plant associations was done only for the plots that fell into matching plant associations based on the two methods for determining plant association series. This was roughly 43 percent of the forested plots (157/366). Descriptions of plant composition by plant association are done on only these 157 forested plots and are not presented in this paper.

Note the following when reviewing the appendix tables. Some major species in the type descriptions were not present on all sample points within that type, so their percentage of occurrence may be less than 100 percent. The type call was made on the larger area around the plot, and not all tree species were sampled on the 7.32-m radius tree plot. For example, in table 4, the type 1A1C is called closed-canopy Sitka spruce-western hemlock forest. Naming rules for a type specify that the most predominant tree species is listed first. However, Sitka spruce only has a constancy value of 88 percent because it did not occur on a few of the 7.32-m radius tree plots, but was predominant in the larger 1-ha circular area or mapped polygon.

Also, because the plots were systematically located, they did not represent ideal types, and the field crew had to choose the best-fit type description in the AVCS. In some cases where the type was described with a mix of three or four tree species, the sample measurement may not show cover and constancy for the lowest listed species, for example, in table 59 for 1A2D03, the type is called *Tsuga heterophylla-Chamaecyparis-Tsuga mertensiana-Picea sitchensis/Vaccinium spp./Lysichiton americanum*. In this type, *Picea sitchensis* was not sampled on the 1-ha circle, and yet this description was the “best fit.”

## **Nonforest Vegetation Types**

Nonforest plots were classified by using the AVCS developed by Viereck and others (1992) (figs. 7a and 7b). Summary statistics on average plant cover and species constancy are given in appendix tables for plots classified under the ACVS. The field determination of type was used, and no attempt was made to reclassify by computer algorithm. This was reasonable for nonforest as the types were discrete and usually quite distinct from one another.

When looking at the constancy value of some types, particularly the nonforest types with few plots, a rare plant species may have a “high” rate of constancy; the number of sample plots as well as the constancy value must be considered. For example in table 19, an introduced weed, *Chenopodium berlandieri* (L.) shows a constancy value of 20 percent, but it occurred on only one of the five plots sampled. In this case, there were not enough plots to say that this is a common plant in this type. What are “enough” plots? The sample was not designed to meet a specified sampling error on nonforest plots, so many of the less common types had few samples. A forest type with 70 or more plots will likely give a good description of which plants are most constant in the type. For nonforest plots with five or six samples, it will not, and can only be regarded as a preliminary list of plants that may occur. Given that almost exclusive emphasis in previous inventories has been given to productive forest stands and little description or inventory has been done on nonforest plots, this is an improvement in the understanding and description of these areas (figs. 8a and 8b).





Figure 7a—The nonforest type: sedge-marestail marsh.

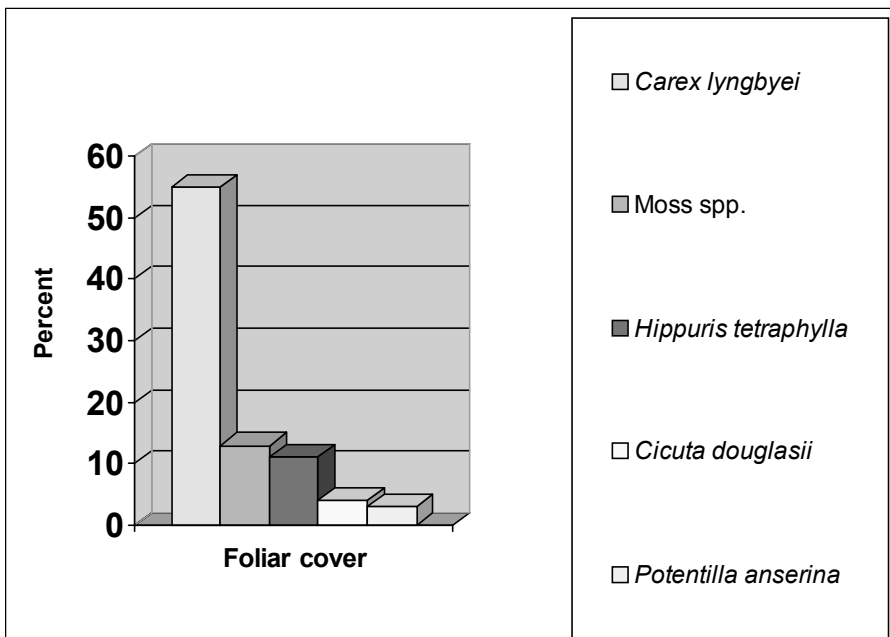


Figure 7b—Plants with cover values 3 percent or higher in sedge-marestail marsh nonforest.



Figure 8a—This low shrub copperbush and blueberry type was only sampled on one plot.

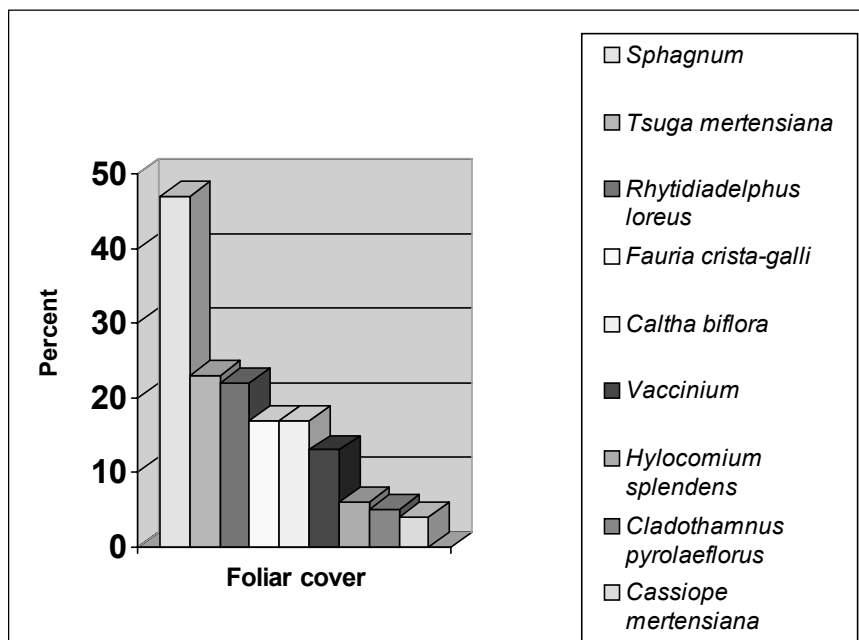


Figure 8b—Plants with cover values 3 percent or higher in copperbush-blueberry low-shrub nonforest.



Figure 9a—The differential species on this alpine plot is deer cabbage.

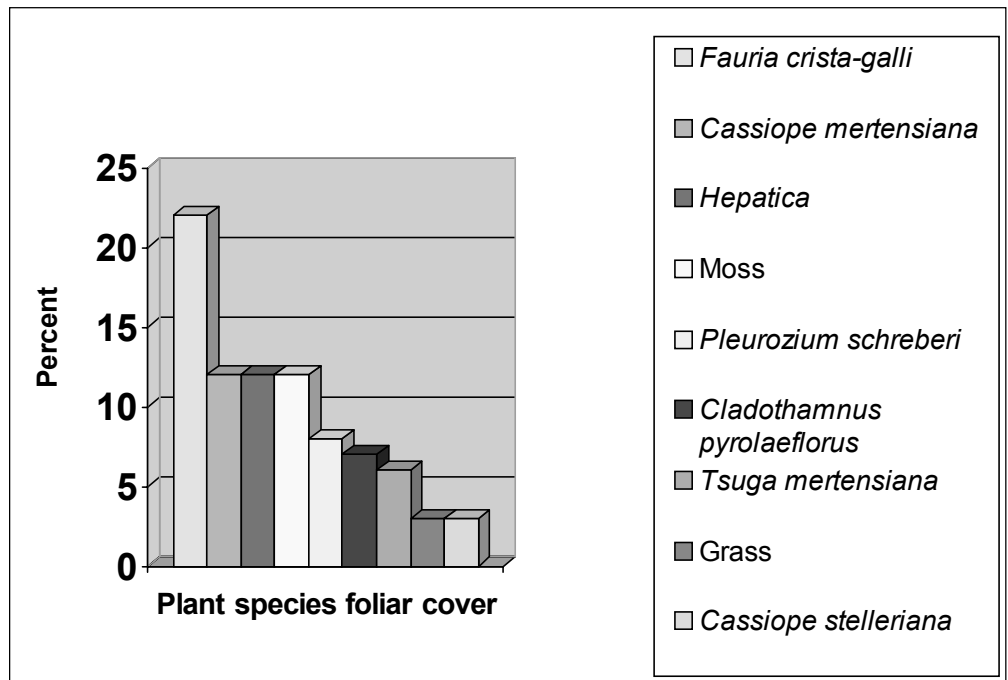


Figure 9b—Plants with cover values 3 percent or higher in deer cabbage herbaceous nonforest.



Figure 10—The differential species on this plot is the devil's club surrounding Joel Markis.

Additional nonforest types identified that were not included in Viereck and others (1992) include the closed and open tall shrub types; salmonberry, alder-salmonberry, salmonberry-blueberry; the closed low shrub type of copperbush-blueberry and the open low shrub type of copperbush, and copperbush-blueberry.

Among these, only the closed alder-salmonberry type tables, which were measured on 12 subplots, had sufficient observations to be included in the appendix tables. The shrub layer consisted of *Alnus sinuata* (Regel) Rydb., *Oplopanax horridus* (Smith) Miq., *Rubus spectabilis* Pursh, *Sambucus racemosa* L., and *Vaccinium* spp. Common associated forbs were *Aruncus dioicus* L., *Fauria crista-galli*, *Heuchera glabra* Willd., *Prenanthes alata* (Hook.) D. Dietr., *Sanguisorba* spp., *Streptopus* spp., *Tiarella trifoliata* L., *Valeriana sitchensis* Bong., *Veratrum viride* Ait., and *Viola* spp. The fern layer contained *Athyrium* spp., *Dryopteris dilatata* (Hoffm.) Gray, and *Gymnocarpium dryopteris* (L.) Newm. Grasses and sedges were *Calamagrostis* spp., *Agrostis* spp., and *Carex* spp. Mosses were *Dicranum* spp., *Mnium* spp., and *Rhytidiadelphus loreus* (Hewd.) Warmst.

Average cover and constancy values are presented in the appendix tables. Under the Braun-Blanquet approach to plant community classification, the combination of these values is useful in judging a species' value as a diagnostic species for community classification. Diagnostic species are of three types: character species, differential species, and constant companions. "Character species" show a clear preference for one type (or group of types), relative to one another, thus differentiating between them. In the AVCS, the character species are generally the tree overstory species. Others are considered "differential species" showing a clear preference for a subunit within a broad type. In the AVCS, these are understory plants identified at level 5, which are associated with soil or site characteristics (figs. 9 and 10). Still others might be called "constant companions" because they occur consistently in a community unit.

Part of the problem with any classification is that “there is a deep cleft between reality on one hand and syntaxonomic hierarchy on the other” (Øakland 1990). Even on a local scale, it is impossible to incorporate natural relations of vegetation species into a hierarchy. Compounding that problem, attempting to go from a local to a regional scale involves two major problems: the overlapping of associations along regional gradients and the lack of geographic consistency of species fidelity to an association. These describe some of the difficulties we had in this study using a random sampling of the vegetation and attempting a postclassification into types developed for distinct and idealized type conditions. Many plots occurred on transitional types or represented conditions far removed from the archetype condition.

## Conclusion

We obtained more inclusive species lists of the AVCS types and sampled areas that often fell in transitional areas between described types. The data also indicate some possible range extensions for many plants: *Lupinus polyphyllus* Lindl., *Valeriana capitata* L., *Salix myrtillofolia* Anderss., *Geocaulon lividum* (Richards.) Fern., *Platanthera unalaschcensis* (Spreng.) Kurtz, *Cornus suecica* L., *Smilacina racemosa* (L.) Desf., *Phyllodoce empetriformis* (Sm.) D. Don, *Ribes glandulosum* Grauer, and *Ribes lacustre* (Pers.) Poir.

We compared different ways of classifying plant communities using AVCS, the Stikine plant association guide with computed tree species covers, and the Stikine plant association guide with series determined by AVCS classification. Contrary to the initial assumption that tree species cover could be accurately represented through crown measurements taken on the subplot samples, that was not the case. The problem of determining the proper series from species-level tree cover on sample subplots, and the fact that the plant association guides are not applicable to ecotones, windthrows, transitions, or other atypical vegetation conditions, precluded classification of all our plots within described plant associations. Only 43 percent of the forest plots could be classified to a plant association.

Tables in the appendixes contain species composition data for seven forest types and one nonforest vegetation type not in Viereck and others (1992) of the AVCS. Six of these had less than 20 samples so the information provided is exploratory and not conclusive of all species or cover rankings. An additional eight nonforest vegetation types were observed but not included in the appendix tables due to insufficient samples. We have shown site indices associated on all the AVCS types shown in the appendix. This is information not previously available to forest managers.

We obtained a large sample ( $n = 71$ ) of one forest vegetation type not listed in Viereck and others (1992). This was for closed mixed-conifer forest, previously not considered a common type in southeast Alaska (although the open canopy mixed-conifer type is considered common). We estimate the closed-canopy type covers 6.5 percent of the unreserved Petersburg and Wrangell Ranger Districts of Tongass National Forest lands. Within these 71 subplots, western hemlock occurred on 96 percent, Alaska yellow-cedar on 89 percent, Sitka spruce and mountain hemlock (*Tsuga mertensiana* (Bong.) Carr.) on 77 percent, western redcedar on 35 percent, and lodgepole pine on 18 percent of all subplots.

Predominant shrubs were *Vaccinium* spp., *Menziesia ferruginea* (Smith), *Rubus pedatus* J.E. Smith, and *Ledum* spp. Common forbs included *Coptis* spp., *Cornus canadensis* L., *Lysichiton americanum* Hulten & St. John, *Streptopus roseus* Michx., *Fauria crista-galli*, *Listera cordata* (L.) R. Br., *Veratrum viride* Ait., *Lycopodium*

*clavatum* L., and *Tiarella trifoliata*. The most constant fern was *Blechnum spicant* L. Roth. Grasses and sedges were more prevalent than in most other closed forest types. Common lichens were *Alectoria* spp., *Cladonia* spp., and *Sphaerophorus* spp. The moss layer contained the highest constancy of *Sphagnum* spp. of any of the closed forest types. It also contained *Rhytidiadelphus loreus*, *Hylocomium splendens* (Hedw.) BSG., and *Dicranum* spp. as the most constant moss species. The type had the highest constancy for liverwort species of all the closed forest types.

Other surprises within previously described types of the AVCS were the constancy of the fern *Blechnum spicant* in the closed western hemlock and closed western hemlock-Sitka spruce types. Although not listed in Viereck and others (1992) as common forbs in many southeast types, *Streptopus* spp. and *Listera cordata* had a high constancy in many closed forest types. A major species addition for the open mountain hemlock types is *Veratrum viride*, where it had its highest constancy.

The relative ubiquitous occurrence and high constancy levels of the mosses *Dicranum* spp., *Hylocomium splendens*, *Rhytidiadelphus loreus*, and *Sphagnum* spp. support their omission from classifications as they do not seem to be differential species in southeast Alaska.

The vegetative resources in the Stikine Area are quite heterogeneous. Much of the area falls into types that have been poorly described or do not fit the ideal plant association descriptions. According to the criteria of the AVCS, about 62.5 percent of the Stikine area is forested, with 35.8 percent of the land area in closed needleleaf forest. Dwarf trees and krummholtz make up about 2.6 percent of the area. Twenty-four percent of the area is nonvegetated snowfields, rock, census water, or barren lands. The remainder (11 percent) is a combination of shrub and herbaceous vegetation types.

## Acknowledgments

We thank the following people for data collection, field supervision, and project management: Ken Anderson, Jen Baker, DeAnna Barbaria, Kent Barhau, Aaron Bergdahl, James Buck, Whitney Burgess, Doug Caldwell, Brian Charlton, Mike DeVaney, Kevin Dobelbower, Ian Doleman, Jason Downing, Jeannie Duran, Rhonda Ecker, Ed Ezzell, Perttu Finni, Jhan Haddeland, Brian Haley, Liza Haley, Bryan Hawkins, Seth Hazard, Albert J. Helgenberg, Corey Hendrickson, Jim Herbert, Keith Kanoti, Tristan Kelley, Daniel Kenney, Ray Koleser, Brad Kriekhaus, Christopher Krumm, Fred Larson, Teri Lysak, Anna Marshall, Mary Miller, Bill Murphy, Liba Pejchar, Frank Pendleton, David Pierce, Brandy Reed, Sadie Rosenthal, Julie Roller, John Saddler, David Sanderson, Chris Teutsch, Dave Thompson, Fred Thorsteinson, Lynn Voyles, Ken Winterberger, August Wright.

## English Equivalents

When you know:	Multiply by:	To find:
Centimeters (cm)	0.39	Inches
Meters (m)	3.28	Feet
Hectares (ha)	2.47	Acres
Kilograms per hectare (kg/ha)	0.89	Pounds per acre
Celsius (°C)	9/5 + 32	Fahrenheit

## Literature Cited

- Conrad, H.S., revised by Redfearn, P.L., Jr. 1979.** How to know the mosses and liverworts. [The pictured key nature series]. 2d ed. Dubuque, IA: Wm. C. Brown Company Publishers. 302 p.
- Crum, H. 1976.** Mosses of the Great Lakes region. Ann Arbor, MI: University of Michigan, University Herbarium. 404 p.
- Daubenmire, R. 1959.** A canopy-coverage method of vegetational analysis. *Northwest Science*. 33: 43-64.
- Hale, M.E. 1979.** How to know the lichens. [The pictured key nature series]. Dubuque, IA: Wm. C. Brown Company Publishers. 246 p.
- Hulten, E. 1974.** Flora of Alaska and neighboring territories. Stanford, CA: Stanford University Press. 1008 p.
- Martin, J.R.; Trull, S.J.; Brady, W.W. [and others]. 1995.** Forest plant association management guide, Chatham Area, Tongass National Forest. R10-TP-57. Juneau, AK: U.S. Department of Agriculture, Forest Service, Alaska Region. 293 p.
- Mead, B.R. 1992.** Methods for describing and comparing biomass distribution among selected Alaska vegetation types. In: Wood, Geoff; Turner, Brian, eds. Integrating forest information over space and time. Canberra, Australia: Anutech Pty. Ltd.: 358-366.
- Øakland, T. 1990.** Vegetational and ecological monitoring of boreal forests in Norway. I. Rausjømaarka in Akershus county, SE Norway. Oslo, Norway: Sommerfeltia. 10: 1-52
- Pawuk, W.H.; Kissinger, E.J. 1989.** Preliminary forest plant associations of the Stikine Area, Tongass National Forest. R10-TP-72. Juneau, AK: U.S. Department of Agriculture, Forest Service, Alaska Region. 126 p.
- Pojar, J.; MacKinnon, A., eds. 1994.** Plants of the Pacific Northwest coast: Washington, Oregon, British Columbia and Alaska. Vancouver, BC: Lone Pine Publishing. 527 p.
- Scott, C.T.; Bechtold, W.A. 1995.** Techniques and computations for mapping plot clusters that straddle stand boundaries. *Forest Science Monograph*. 31: 46-61.
- Selkregg, L. [Circa. 1976].** Alaska regional profiles: southeast region. Anchorage, AK: The University of Alaska, Arctic Environmental Information and Data Center. 313 p.
- van Hees, W.W.S. 2001.** Summary estimates of forest resources on unreserved lands of the Stikine inventory unit, Tongass National Forest, southeast Alaska, 1998. *Resour. Bull. PNW-RB-232*. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 8 p.
- van Hees, W.W.S.; Mead, B.R. 2000.** Ocular estimates of understory vegetation in a closed *Picea glauca/Betula papyrifera* forest. *Journal of Vegetation Science*. 11: 195-200.

- Viereck, L.A.; Dyrness, C.T.; Batten, A.R.; Wenzlick, K.J. 1992.** The Alaska vegetation classification. Gen. Tech. Rep. PNW-GTR-286. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 278 p.
- Viereck, L.A.; Little, E.L., Jr. 1972.** Alaska trees and shrubs. Agric. Handb. 410. Washington, DC: U.S. Department of Agriculture. 265 p.
- Vitt, D.H.; Marsh, J.E.; Bovey, R.B. 1988.** Mosses lichens and ferns of Northwest North America [A photographic field guide]. Vancouver, BC: Lone Pine Publishing. 296 p.
- Wittwer, D., comp. 2000.** Forest insect and disease conditions in Alaska-1999. R10-TP-82, Juneau, AK: U.S. Department of Agriculture, Forest Service, Alaska Region. 55 p.
- Zarnoch, S.J.; Bechtold, W.A. 2000.** Estimating mapped-plot forest attributes with ratios of means. Canadian Journal of Forest Research. 30: 688-697.



**Appendix A: Species Constancy on Forest Vegetation Types**

Tables 4 through 24 summarize species constancy in forest and nonforest level IV vegetation types. Tables 25 through 70 summarize species foliar cover, frequency, constancy, and site index in level V vegetation types. Tables 71 through 78 list the scientific naming authority for each species encountered and provide additional information on frequency of occurrence and the phytomass coefficient used for each species.

Genus names are used when the plant was not keyed to species; therefore, when a genus name occurs in a table without an attached species name, it may include several species, including some of the species that are identified separately elsewhere in the table.

**Table 4—Constancy of trees and shrubs on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A1A 6	1A1B 119	1A1C 25	1A1D 56	1A1E 71	1A1F 15	1A1G 22	1A1U 71	1A2B 22	1A2C 47
	<i>Percent</i>									
<i>Alnus rubra</i>	—	1	12	5	—	—	5	3	5	—
<i>Alnus sinuata</i>	67	1	—	5	—	7	5	4	14	13
<i>Andromeda polifolia</i>	—	—	—	—	—	—	—	1	—	—
<i>Cassiope mertensiana</i>	17	—	—	—	—	7	—	—	—	51
<i>Cassiope</i> spp.	—	—	—	—	—	—	—	—	—	2
<i>Cassiope stelleriana</i>	—	—	—	—	—	—	—	1	—	30
<i>Chamaecyparis nootkatensis</i>	17	26	8	7	93	20	41	89	18	26
<i>Cladothamnus pyrolaeiflorus</i>	—	1	—	2	10	7	5	13	—	43
<i>Empetrum nigrum</i>	—	—	—	—	3	7	—	7	—	19
<i>Gaultheria shallon</i>	—	—	—	—	—	—	23	6	—	—
<i>Kalmia polifolia</i>	—	—	—	—	1	—	—	8	—	9
<i>Ledum groenlandicum</i>	—	1	—	—	1	—	—	13	—	—
<i>Linnaea borealis</i>	—	3	—	2	28	—	27	51	5	—
<i>Luetkea pectinata</i>	—	—	—	—	—	—	—	—	—	36
<i>Malus fusca</i>	—	—	—	—	—	—	—	—	9	—
<i>Menziesia ferruginea</i>	—	86	72	73	97	80	95	99	82	74
<i>Oplopanax horridus</i>	50	48	80	70	23	20	32	21	59	34
<i>Phyllodoce aleutica</i>	—	—	—	—	1	—	—	4	—	—
<i>Phyllodoce glanduliflora</i>	—	—	—	—	—	—	—	—	—	4
<i>Phyllodoce</i> spp.	—	—	—	—	3	7	—	—	—	23
<i>Picea sitchensis</i>	100	66	88	86	72	87	73	77	100	53
<i>Pinus contorta</i>	—	—	—	—	3	—	5	18	—	—
<i>Ribes bracteosum</i>	—	1	20	4	—	7	5	—	27	4
<i>Ribes glandulosum</i>	—	—	—	7	—	—	—	—	—	—
<i>Ribes lacustre</i>	—	—	4	2	—	—	—	—	—	—
<i>Ribes laxiflorum</i>	—	—	—	—	—	—	5	—	—	4
<i>Ribes</i> spp.	33	3	—	2	—	—	—	—	5	4
<i>Rubus arcticus</i>	—	—	—	—	—	—	—	—	—	2

**Table 4—Constancy of trees and shrubs on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska (continued)**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A1A 6	1A1B 119	1A1C 25	1A1D 56	1A1E 71	1A1F 15	1A1G 22	1A1U 71	1A2B 22	1A2C 47
	<i>Percent</i>									
<i>Rubus chamaemorus</i>	—	—	—	—	3	7	—	4	5	—
<i>Rubus parviflorus</i>	—	—	—	—	—	—	—	—	9	2
<i>Rubus pedatus</i>	—	97	96	96	97	100	82	87	91	91
<i>Rubus spectabilis</i>	—	31	48	30	15	20	27	32	64	36
<i>Salix scouleriana</i>	17	—	—	—	—	—	—	—	—	—
<i>Sambucus racemosa</i>	—	3	8	—	—	—	5	—	—	2
<i>Sambucus</i> spp.	—	2	16	7	—	—	—	—	—	—
<i>Sorbus sitchensis</i>	—	1	—	4	—	7	—	—	—	26
<i>Sorbus</i> spp.	—	1	—	—	—	—	—	—	5	6
<i>Spiraea douglasii</i>	—	—	—	—	—	—	—	—	5	—
<i>Thuja plicata</i>	—	6	—	11	10	—	91	35	—	9
<i>Tsuga heterophylla</i>	83	100	96	100	100	60	100	96	100	38
<i>Tsuga mertensiana</i>	67	24	16	23	62	100	55	77	32	100
<i>Vaccinium alaskensis</i>	—	1	—	5	1	—	—	—	—	—
<i>Vaccinium caespitosum</i>	—	8	8	11	4	—	9	23	14	23
<i>Vaccinium ovalifolium</i>	—	1	4	—	—	—	9	—	—	2
<i>Vaccinium oxycoccus</i> var. <i>microcarpus</i>	—	—	—	—	—	—	—	1	5	—
<i>Vaccinium parvifolium</i>	—	29	16	29	39	—	45	39	36	—
<i>Vaccinium</i> spp.	67	97	88	93	99	100	91	100	100	98
<i>Vaccinium uliginosum</i>	—	—	—	—	—	—	—	1	—	6
<i>Vaccinium vitis-idaea</i>	—	3	—	5	10	7	5	37	27	—
<i>Viburnum edule</i>	—	—	—	—	—	—	—	4	5	—

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

- 1A1A = Closed-canopy (60-100% tree crown closure) Sitka spruce forest.
- 1A1B = Closed-canopy (60-100% tree crown closure) western hemlock forest.
- 1A1C = Closed-canopy (60-100% tree crown closure) Sitka spruce–western hemlock forest.
- 1A1D = Closed-canopy (60-100% tree crown closure) western hemlock–Sitka spruce forest.
- 1A1E = Closed-canopy (60-100% tree crown closure) western hemlock–Alaska-cedar forest.
- 1A1F = Closed-canopy (60-100% tree crown closure) mountain hemlock forest.
- 1A1G = Closed-canopy (60-100% tree crown closure) western hemlock–western redcedar forest.
- 1A1U = Closed-canopy (60-100% tree crown closure) mixed-conifer forest.
- 1A2B = Open-canopy (25-59% tree crown closure) western hemlock–Sitka spruce forest.
- 1A2C = Open-canopy (25-59% tree crown closure) mountain hemlock forest.

Source for vegetation types: Viereck and others 1992.

**Table 5—Constancy of forbs on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A1A 6	1A1B 119	1A1C 25	1A1D 56	1A1E 71	1A1F 15	1A1G 22	1A1U 71	1A2B 22	1A2C 47
	<i>Percent</i>									
<i>Aconitum delphiniifolium</i>	—	—	—	—	—	—	—	—	—	2
<i>Aquilegia formosa</i>	—	1	—	—	—	—	—	—	—	—
<i>Arnica latifolia</i>	—	—	—	—	—	—	—	—	—	2
<i>Aruncus dioicus</i>	33	1	—	4	—	—	9	—	—	—
<i>Aster</i> spp.	—	—	—	—	—	—	—	7	—	2
<i>Caltha biflora</i>	—	—	—	—	1	—	—	1	—	15
<i>Caltha leptosepala</i>	—	—	—	—	3	—	—	1	—	11
<i>Caltha</i> spp.	—	3	—	2	—	13	5	15	9	30
<i>Castilleja miniata</i>	—	—	—	—	—	7	—	—	—	—
<i>Circaea alpina</i>	33	4	8	9	—	—	—	—	14	—
<i>Claytonia sibirica</i>	—	—	—	—	—	—	—	—	—	2
<i>Clintonia uniflora</i>	17	29	—	16	23	7	14	18	5	—
Compositae family	—	—	—	—	1	—	—	1	—	2
<i>Coptis aspleniifolia</i>	—	71	72	63	85	60	77	92	77	64
<i>Coptis trifolia</i>	—	3	4	2	4	7	9	7	14	13
<i>Corallorrhiza</i> spp.	—	1	—	2	—	—	—	—	—	—
<i>Corallorrhiza trifida</i>	—	—	—	—	—	—	—	1	—	—
<i>Cornus canadensis</i>	17	93	84	96	94	67	91	94	86	47
<i>Cornus suecica</i>	—	—	—	—	7	—	—	7	5	9
<i>Dodecatheon jeffreyi</i>	—	—	4	—	—	—	—	3	—	—
<i>Dodecatheon</i> spp.	—	—	—	—	—	—	—	—	—	2
<i>Drosera rotundifolia</i>	—	—	—	—	—	—	—	6	—	—
<i>Epilobium anagallidifolium</i>	—	—	—	—	—	—	—	—	—	2
<i>Epilobium angustifolium</i>	—	—	—	—	—	—	5	—	—	—
<i>Epilobium ciliatum</i>	—	—	—	—	—	—	—	—	5	—
<i>Epilobium palustre</i>	—	—	—	—	—	—	—	—	—	4
<i>Epilobium</i> spp.	—	—	—	—	—	—	—	—	9	9
<i>Erigeron peregrinus</i>	—	—	—	—	—	—	5	—	—	9
<i>Erigeron</i> spp.	—	—	—	—	—	—	—	1	5	—
<i>Fauria crista-galli</i>	—	3	4	4	21	40	18	52	23	57
Forb spp.	—	3	4	4	3	7	5	7	5	13
<i>Galium kamtschaticum</i>	—	—	4	2	—	—	—	1	5	—
<i>Galium</i> spp.	—	1	4	—	—	—	—	1	5	4
<i>Galium triflorum</i>	—	1	—	2	—	—	—	—	9	—
<i>Gentiana douglasiana</i>	—	—	—	2	1	—	—	7	5	2
<i>Gentiana platypetala</i>	—	—	—	—	—	—	—	3	—	—
<i>Gentiana</i> spp.	—	—	—	—	—	—	—	—	—	2
<i>Geocaulon lividum</i>	—	—	—	—	—	—	—	1	—	—
<i>Geum calthifolium</i>	—	—	—	—	—	—	—	3	5	15
<i>Geum macrophyllum</i>	—	—	4	—	—	—	—	—	—	—

**Table 5—Constancy of forbs on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska (continued)**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A1A 6	1A1B 119	1A1C 25	1A1D 56	1A1E 71	1A1F 15	1A1G 22	1A1U 71	1A2B 22	1A2C 47
	<i>Percent</i>									
<i>Goodyera oblongifolia</i>	—	—	—	—	1	—	—	—	—	—
<i>Heracleum lanatum</i>	—	—	—	—	—	7	—	—	—	2
<i>Heuchera glabra</i>	17	1	—	4	—	—	—	—	9	—
<i>Hippuris montana</i>	—	—	—	—	—	—	—	—	—	9
<i>Hippuris</i> spp.	—	—	—	—	—	—	—	—	—	2
<i>Hippuris vulgaris</i>	—	—	—	—	1	—	—	—	—	2
<i>Leptarrhena pyrolifolia</i>	—	—	—	—	—	—	—	—	—	4
Liliaceae family	—	—	—	—	1	—	—	—	—	—
<i>Listera caurina</i>	—	3	—	—	23	—	18	10	—	—
<i>Listera cordata</i>	—	36	24	43	73	53	55	65	18	55
<i>Listera</i> spp.	—	—	—	—	—	—	5	—	5	—
<i>Lupinus nootkatensis</i>	17	—	—	—	—	—	—	—	—	—
<i>Lupinus polyphyllus</i>	—	—	—	—	—	7	—	—	—	—
<i>Lysichiton americanum</i>	—	40	52	32	48	47	55	80	64	17
<i>Maianthemum dilatatum</i>	—	30	20	32	20	20	27	23	73	2
<i>Menyanthes trifoliata</i>	—	—	—	—	—	—	—	—	5	—
<i>Mitella pentandra</i>	—	—	—	—	—	7	—	—	5	2
<i>Mitella</i> spp.	—	—	—	—	—	—	—	—	—	4
<i>Moneses uniflora</i>	17	19	8	21	4	—	5	10	14	—
<i>Monodrama hypopitius</i>	—	3	—	2	—	—	—	—	—	—
Mushroom spp.	83	42	40	55	49	20	36	38	41	34
Orchid spp.	—	1	—	2	—	—	—	—	—	—
<i>Orthilia secunda</i>	33	2	—	—	23	—	9	10	9	—
<i>Osmorhiza chilensis</i>	—	3	—	—	—	—	—	—	5	—
<i>Parnassia fimbriata</i>	—	—	—	—	—	—	—	4	—	6
<i>Parnassia</i> spp.	—	—	—	—	1	—	—	—	—	—
<i>Pinguicula vulgaris</i>	—	—	—	—	1	—	—	—	—	—
<i>Platanthera chorisiana</i>	—	—	—	—	—	—	—	1	—	—
<i>Platanthera dilatata</i>	—	—	—	2	—	—	—	4	5	—
<i>Platanthera</i> spp.	—	—	—	2	3	—	5	1	5	11
<i>Platanthera stricta</i>	—	—	—	—	1	—	—	7	9	4
<i>Platanthera unalaschcensis</i>	—	—	—	—	—	—	—	1	—	—
<i>Prenanthes alata</i>	17	12	16	13	13	20	27	20	32	4
<i>Pyrola</i> spp.	—	—	—	—	1	—	—	1	—	—
<i>Ranunculus occidentalis</i>	—	—	—	—	—	—	—	—	5	—
<i>Sanguisorba</i> spp.	—	1	—	—	1	—	—	7	9	6
<i>Sanguisorba stipulata</i>	—	—	—	—	—	—	—	1	5	2
<i>Saxifraga punctata</i>	—	—	—	—	—	—	—	—	—	2
<i>Saxifraga</i> spp.	—	—	4	—	—	7	—	1	—	4
<i>Senecio triangularis</i>	—	—	—	—	—	—	5	1	—	2

**Table 5—Constancy of forbs on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska (continued)**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A1A 6	1A1B 119	1A1C 25	1A1D 56	1A1E 71	1A1F 15	1A1G 22	1A1U 71	1A2B 22	1A2C 47
	<i>Percent</i>									
<i>Stellaria</i> spp.	—	—	—	—	—	—	—	—	—	2
<i>Streptopus amplexifolius</i>	50	41	52	48	42	47	45	41	45	36
<i>Streptopus roseus</i>	17	56	48	66	59	67	50	63	59	66
<i>Streptopus</i> spp.	—	6	—	2	1	—	—	1	—	—
<i>Streptopus streptopoides</i>	17	22	36	36	23	27	18	10	23	21
<i>Tiarella</i> spp.	—	—	—	—	—	7	—	—	—	2
<i>Tiarella trifoliata</i>	33	47	60	63	42	33	68	44	59	49
<i>Tiarella trifoliata</i> var. <i>trifoliata</i>	—	3	4	4	1	7	5	7	—	—
<i>Tiarella trifoliata</i> var. <i>unifoliata</i>	—	—	—	—	—	—	—	—	—	4
<i>Tofieldia glutinosa</i>	—	—	—	2	—	—	—	—	—	4
<i>Tolmiea menziesii</i>	—	1	—	—	—	—	—	1	—	—
<i>Trientalis europaea</i>	—	1	—	—	—	—	5	7	14	2
<i>Valeriana capitata</i>	—	2	—	4	1	—	—	4	—	9
<i>Valeriana sitchensis</i>	—	1	—	—	—	—	—	1	9	11
<i>Veratrum viride</i>	—	4	8	11	27	40	36	46	32	68
<i>Viola glabella</i>	—	7	8	4	—	7	5	3	9	6
<i>Viola langsdorfii</i>	—	—	—	4	—	—	—	—	—	2
<i>Viola</i> spp.	—	5	8	7	4	—	14	13	36	11

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

- 1A1A = Closed-canopy (60-100% tree crown closure) Sitka spruce forest.
- 1A1B = Closed-canopy (60-100% tree crown closure) western hemlock forest.
- 1A1C = Closed-canopy (60-100% tree crown closure) Sitka spruce–western hemlock forest.
- 1A1D = Closed-canopy (60-100% tree crown closure) western hemlock–Sitka spruce forest.
- 1A1E = Closed-canopy (60-100% tree crown closure) western hemlock–Alaska-cedar forest.
- 1A1F = Closed-canopy (60-100% tree crown closure) mountain hemlock forest.
- 1A1G = Closed-canopy (60-100% tree crown closure) western hemlock–western redcedar forest.
- 1A1U = Closed-canopy (60-100% tree crown closure) mixed-conifer forest.
- 1A2B = Open-canopy (25-59% tree crown closure) western hemlock–Sitka spruce forest.
- 1A2C = Open-canopy (25-59% tree crown closure) mountain hemlock forest.

Source for vegetation types: Viereck and others 1992.

**Table 6—Constancy of ferns, clubmosses, and horsetails on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A1A 6	1A1B 119	1A1C 25	1A1D 56	1A1E 71	1A1F 15	1A1G 22	1A1U 71	1A2B 22	1A2C 47
	<i>Percent</i>									
<i>Adiantum aleuticum</i>	—	7	4	2	—	—	9	1	—	—
<i>Athyrium filix-femina</i>	17	30	44	32	11	20	18	30	41	34
<i>Athyrium</i> spp.	17	6	16	7	3	—	5	7	14	—
<i>Blechnum spicant</i>	—	66	48	71	85	53	86	86	45	79
<i>Cystopteris fragilis</i>	—	1	—	—	—	—	—	—	—	—
<i>Dryopteris dilatata</i>	50	61	68	82	18	53	36	11	36	38
<i>Equisetum arvense</i>	—	—	—	2	1	—	5	1	—	—
<i>Equisetum</i> spp.	—	—	—	2	—	—	—	1	14	2
Fern spp.	—	1	—	—	—	—	—	—	—	—
<i>Gymnocarpium dryopteris</i>	33	60	92	70	39	33	73	35	68	36
<i>Lycopodium annotinum</i>	17	18	12	18	46	7	41	51	18	15
<i>Lycopodium clavatum</i>	—	2	—	—	10	—	14	11	5	—
<i>Lycopodium selago</i>	17	2	4	7	7	—	—	11	—	11
<i>Lycopodium</i> spp.	—	7	4	5	14	13	5	8	—	9
<i>Polypodium glycyrrhiza</i>	33	9	4	11	8	—	9	6	5	—
<i>Polypodium</i> spp.	17	1	8	5	6	—	9	1	—	—
<i>Polystichum braunii</i>	—	—	—	—	—	—	—	1	—	2
<i>Polystichum munitum</i>	—	2	8	4	—	—	9	—	—	—
<i>Polystichum</i> spp.	—	1	—	—	—	—	—	—	—	—
<i>Pteridium aquilinum</i>	—	—	—	—	—	7	—	6	9	—
<i>Selaginella</i> spp.	—	—	—	—	1	—	—	4	—	—
<i>Thelypteris limbosperma</i>	17	1	12	13	6	—	—	1	14	11
<i>Thelypteris phegopteris</i>	33	13	24	29	14	—	32	11	36	11
<i>Thelypteris</i> spp.	—	2	8	4	—	—	—	6	5	—
<i>Woodsia</i> spp.	—	1	—	—	—	—	—	—	—	—

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

- 1A1A = Closed-canopy (60-100% tree crown closure) Sitka spruce forest.
- 1A1B = Closed-canopy (60-100% tree crown closure) western hemlock forest.
- 1A1C = Closed-canopy (60-100% tree crown closure) Sitka spruce–western hemlock forest.
- 1A1D = Closed-canopy (60-100% tree crown closure) western hemlock–Sitka spruce forest.
- 1A1E = Closed-canopy (60-100% tree crown closure) western hemlock–Alaska-cedar forest.
- 1A1F = Closed-canopy (60-100% tree crown closure) mountain hemlock forest.
- 1A1G = Closed-canopy (60-100% tree crown closure) western hemlock–western redcedar forest.
- 1A1U = Closed-canopy (60-100% tree crown closure) mixed-conifer forest.
- 1A2B = Open-canopy (25-59% tree crown closure) western hemlock–Sitka spruce forest.
- 1A2C = Open-canopy (25-59% tree crown closure) mountain hemlock forest.

Source for vegetation types: Viereck and others 1992.

**Table 7—Constancy of grasses and grasslike species on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A1A 6	1A1B 119	1A1C 25	1A1D 56	1A1E 71	1A1F 15	1A1G 22	1A1U 71	1A2B 22	1A2C 47
	<i>Percent</i>									
<i>Agrostis aequivallis</i>	—	—	—	—	1	—	—	—	—	—
<i>Agrostis</i> spp.	—	—	—	—	—	—	—	3	—	2
<i>Calamagrostis canadensis</i>	—	—	—	4	1	—	—	1	5	2
<i>Calamagrostis nutkaensis</i>	—	—	—	—	—	—	—	—	9	—
<i>Calamagrostis</i> spp.	—	—	12	—	4	—	9	3	14	4
<i>Carex anthoxantha</i>	—	—	—	—	—	—	—	—	—	4
<i>Carex macrochaeta</i>	—	—	—	—	—	—	—	—	—	2
<i>Carex magellanica</i>	—	—	—	—	—	—	—	3	—	—
<i>Carex nigricans</i>	—	—	—	—	—	—	—	—	—	6
<i>Carex pauciflora</i>	—	1	—	—	—	—	—	—	—	2
<i>Carex pluriflora</i>	—	—	—	—	—	—	—	1	—	2
<i>Carex sitchensis</i>	—	—	—	—	—	—	—	3	—	—
<i>Carex</i> spp.	—	10	12	16	14	7	23	41	45	49
<i>Carex viridula</i>	—	—	—	—	—	—	—	1	—	—
<i>Eriophorum angustifolium</i>	—	—	—	—	3	—	—	1	—	9
<i>Eriophorum</i> spp.	—	—	—	—	—	—	—	—	—	2
Grass spp.	17	3	12	5	14	—	5	23	18	28
<i>Luzula parviflora</i>	—	—	4	—	—	—	—	—	5	—
<i>Vahlodea atropurpurea</i>	—	—	—	—	—	—	—	—	—	9

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

- 1A1A = Closed-canopy (60-100% tree crown closure) Sitka spruce forest.
- 1A1B = Closed-canopy (60-100% tree crown closure) western hemlock forest.
- 1A1C = Closed-canopy (60-100% tree crown closure) Sitka spruce–western hemlock forest.
- 1A1D = Closed-canopy (60-100% tree crown closure) western hemlock–Sitka spruce forest.
- 1A1E = Closed-canopy (60-100% tree crown closure) western hemlock–Alaska-cedar forest.
- 1A1F = Closed-canopy (60-100% tree crown closure) mountain hemlock forest.
- 1A1G = Closed-canopy (60-100% tree crown closure) western hemlock–western redcedar forest.
- 1A1U = Closed-canopy (60-100% tree crown closure) mixed-conifer forest.
- 1A2B = Open-canopy (25-59% tree crown closure) western hemlock–Sitka spruce forest.
- 1A2C = Open-canopy (25-59% tree crown closure) mountain hemlock forest.

Source for vegetation types: Viereck and others 1992.

**Table 8—Constancy of lichens on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A1A 6	1A1B 119	1A1C 25	1A1D 56	1A1E 71	1A1F 15	1A1G 22	1A1U 71	1A2B 22	1A2C 47
	<i>Percent</i>									
<i>Alectoria</i> spp.	—	32	36	29	37	73	23	25	45	62
<i>Bryoria</i> spp.	—	3	4	4	7	7	5	7	14	15
<i>Cladina rangiferina</i>	—	—	—	—	3	—	—	6	—	6
<i>Cladina</i> spp.	17	6	—	11	4	—	9	4	5	21
<i>Cladonia bellidiflora</i>	—	—	—	5	—	—	—	—	—	—
<i>Cladonia coccifera</i>	—	—	—	—	—	—	—	—	—	2
<i>Cladonia gracilis</i>	—	—	—	—	—	—	—	4	—	—
<i>Cladonia macilenta</i>	—	—	4	2	3	7	—	3	—	2
<i>Cladonia</i> spp.	—	26	12	30	27	13	36	48	50	32
<i>Cladonia squamosa</i>	17	—	—	—	—	7	—	—	—	—
<i>Hypogymnia</i> spp.	—	9	8	20	14	13	9	14	5	21
<i>Hypogymnia duplicata</i>	—	1	—	2	—	13	—	6	—	4
<i>Icmadophila ericetorum</i>	—	7	—	11	3	7	5	4	—	—
<i>Icmadophila</i> spp.	—	1	—	2	—	—	—	3	—	—
<i>Lepraria</i> spp.	—	8	—	13	3	—	9	15	9	—
<i>Lichen</i> spp.	83	76	68	84	80	93	82	92	77	79
<i>Lobaria linita</i>	—	2	—	—	—	—	—	—	—	—
<i>Lobaria oregana</i>	17	5	—	2	—	—	—	—	—	2
<i>Lobaria pulmonaria</i>	33	6	—	2	6	13	—	1	—	—
<i>Lobaria</i> spp.	—	31	16	38	38	73	41	15	32	53
<i>Nephroma</i> spp.	—	1	—	—	—	—	—	—	—	9
<i>Parmelia</i> spp.	—	1	—	—	3	—	—	1	—	—
<i>Peltigera britannica</i>	33	—	4	4	—	—	—	1	5	—
<i>Peltigera canina</i>	—	1	—	—	—	—	—	—	—	—
<i>Peltigera neopolydactyla</i>	17	3	4	11	6	7	5	11	9	4
<i>Peltigera</i> spp.	—	23	8	25	18	27	27	11	23	32
<i>Pilophoron aciculare</i>	—	—	—	2	1	—	—	—	—	—
<i>Platismatia norvegica</i>	—	—	—	—	—	7	—	—	—	—
<i>Platismatia</i> spp.	—	3	4	5	3	—	—	8	—	—
<i>Sphaerophorus globosus</i>	33	9	—	—	7	7	18	3	—	6
<i>Sphaerophorus</i> spp.	—	13	4	13	8	7	14	21	27	11
<i>Usnea</i> spp.	—	2	—	2	—	—	—	3	5	2

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

- 1A1A = Closed-canopy (60-100% tree crown closure) Sitka spruce forest.
- 1A1B = Closed-canopy (60-100% tree crown closure) western hemlock forest.
- 1A1C = Closed-canopy (60-100% tree crown closure) Sitka spruce–western hemlock forest.
- 1A1D = Closed-canopy (60-100% tree crown closure) western hemlock–Sitka spruce forest.
- 1A1E = Closed-canopy (60-100% tree crown closure) western hemlock–Alaska-cedar forest.
- 1A1F = Closed-canopy (60-100% tree crown closure) mountain hemlock forest.
- 1A1G = Closed-canopy (60-100% tree crown closure) western hemlock–western redcedar forest.
- 1A1U = Closed-canopy (60-100% tree crown closure) mixed-conifer forest.
- 1A2B = Open-canopy (25-59% tree crown closure) western hemlock–Sitka spruce forest.
- 1A2C = Open-canopy (25-59% tree crown closure) mountain hemlock forest.

Source for vegetation types: Viereck and others 1992.



**Table 9—Constancy of mosses on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A1A 6	1A1B 119	1A1C 25	1A1D 56	1A1E 71	1A1F 15	1A1G 22	1A1U 71	1A2B 22	1A2C 47
	<i>Percent</i>									
<i>Antitrichia curtispindula</i>	—	—	4	4	—	7	—	1	—	—
<i>Aulacomnium</i> spp.	—	7	8	7	24	13	18	15	14	19
<i>Bartramia pomiformis</i>	—	—	—	—	—	—	—	1	—	—
<i>Brachythecium</i> spp.	—	—	—	—	1	—	—	—	—	2
<i>Claopodium crispifolium</i>	—	—	—	—	—	—	—	3	—	—
<i>Climacium dendroides</i>	—	1	8	—	1	—	5	4	—	—
<i>Dichodontium pellucidum</i>	—	—	—	—	—	—	—	1	—	—
<i>Dicranum fuscescens</i>	—	21	—	20	11	—	14	27	23	—
<i>Dicranum scoparium</i>	—	5	—	7	1	—	18	8	—	2
<i>Dicranum</i> spp.	50	57	40	38	69	93	59	51	36	66
<i>Eurhynchium oreganum</i>	—	1	4	2	1	—	—	1	—	2
<i>Homalothecium fulgescens</i>	—	1	—	—	—	—	—	—	—	—
<i>Hookeria lucens</i>	—	1	—	—	1	—	—	4	—	—
<i>Hylocomium</i> spp.	—	1	—	7	14	7	—	3	9	—
<i>Hylocomium splendens</i>	100	98	96	86	86	87	95	96	86	74
<i>Hypnum circinale</i>	—	3	—	2	8	—	5	3	14	6
<i>Hypnum</i> spp.	—	10	—	13	4	—	14	21	9	—
<i>Hypnum subimponens</i>	—	—	—	—	—	—	9	—	—	—
<i>Isoetecium myosuroides</i>	17	5	4	7	3	—	5	1	9	—
<i>Leucolepis acanthoneuron</i>	—	1	—	—	—	—	—	—	5	—
<i>Leucolepis</i> spp.	—	—	4	—	—	—	—	3	—	—
<i>Metaneckera menziesii</i>	—	1	—	—	—	—	—	—	—	—
<i>Mnium</i> spp.	17	35	28	38	30	13	32	23	14	17
Moss spp.	100	87	84	93	89	100	100	97	86	91
<i>Neckera douglasii</i>	—	1	—	—	1	—	—	1	—	—
<i>Plagiomnium</i> spp.	—	—	—	2	—	—	9	4	5	—
<i>Plagiothecium</i> spp.	—	6	4	11	4	20	5	8	—	—
<i>Plagiothecium undulatum</i>	33	12	8	29	3	—	14	18	14	4
<i>Pleurozium schreberi</i>	—	2	—	—	—	7	—	3	9	19
<i>Pogonatum contortum</i>	—	—	—	4	—	—	—	1	—	—
<i>Polytrichum commune</i>	—	6	4	7	7	—	—	3	5	2
<i>Polytrichum juniperium</i>	—	2	4	—	1	13	—	1	—	2
<i>Polytrichum</i> spp.	17	24	36	30	8	13	27	11	23	19
<i>Ptilium crista-castrensis</i>	33	3	4	2	4	7	9	1	—	2
<i>Ptilium</i> spp.	—	—	—	—	—	—	—	1	—	—
<i>R(h)acomitrium</i> spp.	—	—	—	2	—	—	—	—	—	—
<i>Rhizomnium glabrescens</i>	—	20	12	21	30	27	14	27	18	26
<i>Rhizomnium</i> spp.	—	6	12	13	1	7	5	8	9	—

**Table 9—Constancy of mosses on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska (continued)**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A1A 6	1A1B 119	1A1C 25	1A1D 56	1A1E 71	1A1F 15	1A1G 22	1A1U 71	1A2B 22	1A2C 47
	<i>Percent</i>									
<i>Rhytidiadelphus loreus</i>	100	98	100	98	99	100	91	99	86	87
<i>Rhytidiadelphus</i> spp.	—	1	—	2	1	—	9	—	9	6
<i>Rhytidiadelphus triquetrus</i>	—	1	4	—	7	—	5	8	—	2
<i>Sphagnum capillifolium</i>	—	5	16	—	4	—	—	4	—	4
<i>Sphagnum girgensohnii</i>	—	5	8	14	14	—	—	7	—	—
<i>Sphagnum</i> spp.	—	67	52	55	70	80	77	85	64	57
<i>Sphagnum squarrosum</i>	—	—	—	—	—	—	—	3	—	2
<i>Tortella tortuosa</i>	—	—	—	—	—	—	9	13	5	—
<i>Ulota</i> spp.	—	—	—	—	1	—	—	—	—	—

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

- 1A1A = Closed-canopy (60-100% tree crown closure) Sitka spruce forest.
- 1A1B = Closed-canopy (60-100% tree crown closure) western hemlock forest.
- 1A1C = Closed-canopy (60-100% tree crown closure) Sitka spruce–western hemlock forest.
- 1A1D = Closed-canopy (60-100% tree crown closure) western hemlock–Sitka spruce forest.
- 1A1E = Closed-canopy (60-100% tree crown closure) western hemlock–Alaska-cedar forest.
- 1A1F = Closed-canopy (60-100% tree crown closure) mountain hemlock forest.
- 1A1G = Closed-canopy (60-100% tree crown closure) western hemlock–western redcedar forest.
- 1A1U = Closed-canopy (60-100% tree crown closure) mixed-conifer forest.
- 1A2B = Open-canopy (25-59% tree crown closure) western hemlock–Sitka spruce forest.
- 1A2C = Open-canopy (25-59% tree crown closure) mountain hemlock forest.

Source for vegetation types: Viereck and others 1992.

**Table 10—Constancy of liverworts on closed- and open-canopy forest vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A1A 6	1A1B 119	1A1C 25	1A1D 56	1A1E 71	1A1F 15	1A1G 22	1A1U 71	1A2B 22	1A2C 47
	<i>Percent</i>									
<i>Conocephalum</i> spp.	—	10	8	13	1	—	9	8	23	4
Liverwort spp.	83	86	76	91	79	93	86	94	86	83
<i>Herbertus aduncus</i>	—	3	—	—	1	—	9	3	—	2
<i>Lepidozia</i> spp.	—	6	4	5	3	7	18	7	5	4
<i>Marchantia polymorpha</i>	—	—	—	2	—	—	—	—	—	—
<i>Mylia</i> spp.	—	—	—	—	3	—	9	7	—	9
<i>Pellia</i> spp.	—	13	24	14	17	13	23	24	18	19
<i>Plagiochila</i> spp.	—	3	—	—	3	—	9	13	—	4
<i>Porella</i> spp.	—	—	—	—	4	—	—	7	—	—
<i>Scapania</i> spp.	17	35	4	20	24	27	59	23	18	19

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

1A1A = Closed-canopy (60-100% tree crown closure) Sitka spruce forest.

1A1B = Closed-canopy (60-100% tree crown closure) western hemlock forest.

1A1C = Closed-canopy (60-100% tree crown closure) Sitka spruce–western hemlock forest.

1A1D = Closed-canopy (60-100% tree crown closure) western hemlock–Sitka spruce forest.

1A1E = Closed-canopy (60-100% tree crown closure) western hemlock–Alaska-cedar forest.

1A1F = Closed-canopy (60-100% tree crown closure) mountain hemlock forest.

1A1G = Closed-canopy (60-100% tree crown closure) western hemlock–western redcedar forest.

1A1U = Closed-canopy (60-100% tree crown closure) mixed-conifer forest.

1A2B = Open-canopy (25-59% tree crown closure) western hemlock–Sitka spruce forest.

1A2C = Open-canopy (25-59% tree crown closure) mountain hemlock forest.

Source for vegetation types: Viereck and others 1992.

**Table 11—Constancy of trees and shrubs on open- and woodland-canopy forest, and on dwarf tree vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A2D 93	1A2M 14	1A2P 18	1A2W 9	1A3A 23	1A3M 5	1A3Q 12	1A3U 13	2A2B 6	2A3Q 8
	<i>Percent</i>									
<i>Alnus rubra</i>	1	—	—	11	—	—	—	—	—	—
<i>Alnus sinuata</i>	2	7	—	—	—	—	—	—	—	13
<i>Alnus</i> spp.	1	—	—	—	—	—	—	—	—	—
<i>Andromeda polifolia</i>	4	—	—	—	48	—	—	15	—	—
<i>Artemisia</i> spp.	—	—	—	—	—	—	—	—	33	—
<i>Cassiope mertensiana</i>	10	—	—	—	—	—	100	38	83	88
<i>Cassiope</i> spp.	—	—	6	—	—	—	—	—	—	—
<i>Cassiope stelleriana</i>	10	—	17	—	4	—	42	38	33	50
<i>Chamaecyparis nootkatensis</i>	91	21	94	44	70	—	—	92	83	38
<i>Cladothamnus pyrolaeiflorus</i>	29	7	33	—	—	—	58	38	67	63
<i>Empetrum nigrum</i>	46	7	22	89	96	—	17	100	67	50
<i>Gaultheria shallon</i>	2	—	—	—	—	—	—	—	—	—
<i>Juniperus communis</i>	1	—	—	11	57	—	—	—	—	—
<i>Kalmia polifolia</i>	41	7	22	56	100	—	25	92	17	38
<i>Ledum groenlandicum</i>	53	7	22	100	100	20	—	69	—	13
<i>Linnaea borealis</i>	39	14	33	33	9	—	—	23	—	—
<i>Loiseleuria procumbens</i>	—	—	—	—	4	—	—	—	33	13
<i>Luetkea pectinata</i>	2	—	6	—	4	—	100	15	33	88
<i>Malus fusca</i>	1	—	—	11	—	—	—	—	—	—
<i>Malus</i> spp.	1	—	—	—	—	—	—	—	—	—
<i>Menziesia ferruginea</i>	89	93	100	89	22	60	58	77	33	25
<i>Myrica gale</i>	1	—	—	—	—	—	—	—	—	—
<i>Oplopanax horridus</i>	4	14	6	—	—	—	—	—	—	—
<i>Phyllodoce aleutica</i>	6	—	—	—	—	—	17	8	50	—
<i>Phyllodoce empetriformis</i>	2	—	—	—	—	—	—	—	—	—
<i>Phyllodoce glanduliflora</i>	3	—	—	—	—	—	—	8	—	13
<i>Phyllodoce</i> spp.	5	—	22	—	—	—	25	46	33	25
<i>Picea sitchensis</i>	61	71	83	22	—	100	8	8	33	13
<i>Pinus contorta</i>	48	7	22	100	100	20	—	69	17	25
<i>Ribes</i> spp.	—	—	—	—	—	20	—	—	—	—
<i>Rubus arcticus</i>	1	—	—	—	9	—	—	—	—	—
<i>Rubus chamaemorus</i>	19	7	—	11	26	—	—	23	17	—
<i>Rubus parviflorus</i>	—	—	—	11	—	—	—	—	—	—
<i>Rubus pedatus</i>	62	86	89	33	4	100	58	23	33	50
<i>Rubus spectabilis</i>	13	29	28	—	—	20	—	—	—	—
<i>Salix myrtillofolia</i>	3	—	—	—	—	—	—	—	—	—
<i>Salix</i> spp.	—	—	—	—	4	—	—	—	—	—
<i>Sorbus sitchensis</i>	1	—	6	—	—	—	50	—	33	25

**Table 11—Constancy of trees and shrubs on open- and woodland-canopy forest, and on dwarf tree vegetation types on the Stikine area in southeast Alaska (continued)**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A2D 93	1A2M 14	1A2P 18	1A2W 9	1A3A 23	1A3M 5	1A3Q 12	1A3U 13	2A2B 6	2A3Q 8
	<i>Percent</i>									
<i>Sorbus</i> spp.	—	—	—	—	—	—	17	15	—	13
<i>Spiraea</i> spp.	—	—	—	—	—	—	—	—	17	—
<i>Thuja plicata</i>	11	—	—	11	9	—	—	—	—	—
<i>Tsuga heterophylla</i>	85	100	94	78	30	100	8	62	17	38
<i>Tsuga mertensiana</i>	86	50	100	89	39	100	100	92	83	88
<i>Vaccinium alaskensis</i>	—	—	17	11	—	—	—	—	—	—
<i>Vaccinium caespitosum</i>	24	7	6	33	30	20	58	62	17	75
<i>Vaccinium ovalifolium</i>	1	—	—	—	4	—	—	—	—	—
<i>Vaccinium oxycoccus</i> var. <i>microcarpus</i>	22	7	6	56	78	—	8	38	17	—
<i>Vaccinium parvifolium</i>	27	29	11	22	—	—	—	8	—	—
<i>Vaccinium</i> spp.	95	100	83	56	17	100	83	77	67	75
<i>Vaccinium uliginosum</i>	19	—	6	22	57	20	17	69	50	50
<i>Vaccinium vitis-idaea</i>	62	14	39	100	61	—	—	54	—	13
<i>Viburnum edule</i>	3	—	—	—	—	—	—	—	—	—

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

1A2D = Open-canopy (25-59% tree crown closure) mixed-conifer forest.

1A2M = Open-canopy (25-59% tree crown closure) western hemlock forest.

1A2P = Open-canopy (25-59% tree crown closure) western hemlock-Alaska cedar forest.

1A2W = Open-canopy (25-59% tree crown closure) lodgepole pine forest.

1A3A = Woodland canopy (10-24% tree crown closure) lodgepole pine forest.

1A3M = Woodland canopy (10-24% tree crown closure) western hemlock forest.

1A3Q = Woodland canopy (10-24% tree crown closure) mountain hemlock forest.

1A3U = Woodland canopy (10-24% tree crown closure) mixed-conifer forest.

2A2B = Open-canopy (10-24% tree crown closure) mountain-hemlock dwarf-tree forest.

2A3Q = Woodland canopy (25-59% tree crown closure) dwarf-tree mountain hemlock forest.

Source for vegetation types: Viereck and others 1992.

**Table 12—Constancy of forbs on open- and woodland-canopy forest and on dwarf tree vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A2D 93	1A2M 14	1A2P 18	1A2W 9	1A3A 23	1A3M 5	1A3Q 12	1A3U 13	2A2B 6	2A3Q 8
	<i>Percent</i>									
<i>Agoseris</i> spp.	—	—	—	11	4	—	—	—	—	—
<i>Apargidium boreale</i>	1	—	—	—	—	—	—	—	—	—
<i>Arnica latifolia</i>	—	—	—	—	—	—	17	—	—	—
<i>Arnica</i> spp.	—	—	—	—	—	—	—	—	—	13
<i>Aruncus dioicus</i>	—	7	—	—	—	—	—	—	—	—
<i>Aster</i> spp.	1	—	11	—	—	—	8	23	17	13
<i>Caltha biflora</i>	3	—	—	—	—	—	8	—	—	—
<i>Caltha</i> spp.	13	—	22	—	—	—	8	—	—	—
Caryophyllaceae family	—	—	—	—	—	—	8	—	—	—
<i>Castilleja parviflora</i>	—	—	—	—	—	—	8	—	—	—
<i>Circaea alpina</i>	—	7	—	—	—	—	—	—	—	—
<i>Clintonia uniflora</i>	1	7	11	—	—	40	—	—	—	—
Compositae family	1	—	—	—	4	—	—	—	—	—
<i>Coptis aspleniifolia</i>	87	64	100	67	17	80	42	77	17	25
<i>Coptis trifolia</i>	40	21	28	44	57	20	8	62	17	13
<i>Corallorrhiza trifida</i>	—	—	—	—	9	—	—	—	—	—
<i>Cornus canadensis</i>	91	79	100	100	65	100	42	77	50	50
<i>Cornus suecica</i>	13	14	6	11	22	40	—	23	33	—
<i>Dodecatheon jeffreyi</i>	1	—	11	—	—	—	17	8	—	13
<i>Dodecatheon</i> spp.	3	—	—	11	17	—	—	23	—	25
<i>Drosera anglica</i>	1	—	—	—	9	—	—	—	—	—
<i>Drosera rotundifolia</i>	22	7	11	44	61	—	—	54	17	25
<i>Epilobium ciliatum</i>	—	—	—	—	—	—	8	—	—	—
<i>Epilobium palustre</i>	—	—	—	—	—	—	—	—	—	13
<i>Erigeron peregrinus</i>	8	—	—	—	—	—	42	23	33	25
<i>Erigeron</i> spp.	—	—	6	11	4	—	—	—	—	13
<i>Fauria crista-galli</i>	76	14	83	100	78	—	100	100	100	100
Forb spp.	8	—	11	22	9	20	—	—	—	38
<i>Fritillaria camschatcensis</i>	1	—	—	—	—	—	—	—	—	—
<i>Galium kamtschaticum</i>	—	7	6	—	—	—	—	—	—	—
<i>Galium</i> spp.	2	—	—	—	—	—	—	—	—	13
<i>Gentiana douglasiana</i>	24	7	11	56	78	—	8	77	—	25
<i>Gentiana platypetala</i>	—	—	—	—	—	—	8	—	17	—
<i>Gentiana</i> spp.	—	—	—	—	9	—	—	—	—	—
<i>Geocaulon lividum</i>	3	—	—	—	—	—	—	—	—	—
<i>Geum calthifolium</i>	8	—	17	—	17	—	17	46	33	63
<i>Geum</i> spp.	3	—	—	—	4	—	—	8	—	13
<i>Goodyera oblongifolia</i>	1	—	—	—	—	—	—	—	—	—
<i>Heuchera glabra</i>	—	—	—	—	—	—	—	—	—	13
<i>Hippuris montana</i>	—	—	—	—	—	—	50	—	—	38

**Table 12—Constancy of forbs on open- and woodland-canopy forest and on dwarf tree vegetation types on the Stikine area in southeast Alaska (continued)**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A2D 93	1A2M 14	1A2P 18	1A2W 9	1A3A 23	1A3M 5	1A3Q 12	1A3U 13	2A2B 6	2A3Q 8
	<i>Percent</i>									
<i>Leptarrhena pyrolifolia</i>	—	—	—	—	—	—	17	—	—	25
Liliaceae family	—	—	—	—	—	20	—	—	—	—
<i>Listera caurina</i>	4	—	6	—	—	—	—	—	—	—
<i>Listera cordata</i>	32	29	56	—	—	—	58	8	33	25
<i>Lysichiton americanum</i>	67	79	78	78	35	60	—	38	33	13
<i>Maianthemum dilatatum</i>	22	43	22	33	9	60	—	—	—	—
<i>Menyanthes trifoliata</i>	1	—	—	—	13	—	—	—	—	—
<i>Mitella</i> spp.	1	—	—	—	—	—	—	—	—	25
<i>Moneses uniflora</i>	5	—	6	—	—	—	—	—	—	—
Mushroom spp.	27	36	44	11	17	20	8	31	—	25
<i>Orthilia secunda</i>	6	7	6	—	—	—	—	—	—	—
<i>Parnassia fimbriata</i>	2	—	—	—	—	—	—	—	—	25
<i>Parnassia</i> spp.	—	—	—	—	—	—	8	—	—	—
<i>Pedicularis ornithorhyncha</i>	—	—	—	—	—	—	25	—	—	50
<i>Pedicularis</i> spp.	—	—	—	—	4	—	8	—	—	—
<i>Petasites frigidus</i>	—	—	—	—	—	—	8	—	—	13
<i>Pinguicula vulgaris</i>	2	—	11	—	9	—	17	15	—	—
<i>Platanthera (Piperia)</i>										
<i>unalaschcensis</i>	2	—	11	—	—	—	—	—	—	—
<i>Platanthera dilatata</i>	4	—	—	11	13	—	—	8	—	—
<i>Platanthera hyperborea</i>	1	—	—	—	—	—	—	—	—	—
<i>Platanthera</i> spp.	8	7	6	11	9	—	—	15	—	—
<i>Platanthera stricta</i>	3	—	—	—	9	—	—	—	—	—
<i>Prenanthes alata</i>	5	7	—	—	—	—	—	—	—	—
<i>Pyrola</i> spp.	1	—	11	—	—	—	—	—	—	—
<i>Ranunculus cooleyae</i>	—	—	—	—	—	—	—	—	—	13
<i>Ranunculus eschscholtzii</i>	—	—	—	—	—	—	—	—	—	25
<i>Sanguisorba menziesii</i>	—	—	—	—	—	—	—	8	—	—
<i>Sanguisorba officinalis</i>	3	—	—	—	17	—	—	8	—	—
<i>Sanguisorba</i> spp.	16	—	11	56	43	20	—	31	17	25
<i>Sanguisorba stipulata</i>	5	—	—	11	35	—	—	—	—	—
<i>Saxifraga lyallii</i>	—	—	—	—	—	—	8	—	—	25
<i>Saxifraga</i> spp.	1	7	—	—	—	—	—	—	—	—
<i>Senecio triangularis</i>	1	—	—	—	—	—	—	—	—	—
<i>Spiranthes romanzoffiana</i>	1	—	—	—	—	—	—	—	—	—
<i>Streptopus amplexifolius</i>	24	29	33	—	—	20	8	8	—	—
<i>Streptopus roseus</i>	39	50	44	—	—	40	58	8	17	25
<i>Streptopus</i> spp.	2	—	6	—	—	—	—	—	—	—
<i>Streptopus streptopoides</i>	5	14	11	—	—	—	—	—	—	—

**Table 12—Constancy of forbs on open- and woodland-canopy forest and on dwarf tree vegetation types on the Stikine area in southeast Alaska (continued)**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A2D 93	1A2M 14	1A2P 18	1A2W 9	1A3A 23	1A3M 5	1A3Q 12	1A3U 13	2A2B 6	2A3Q 8
	<i>Percent</i>									
<i>Tiarella trifoliata</i>	14	29	22	11	—	—	8	—	—	—
<i>Tiarella trifoliata</i> var. <i>trifoliata</i>	1	—	—	—	—	—	—	—	—	—
<i>Tiarella trifoliata</i> var. <i>unifoliata</i>	—	7	—	—	—	—	—	—	—	—
<i>Tofieldia glutinosa</i>	3	—	11	11	30	—	—	15	—	—
<i>Tofieldia</i> spp.	—	—	—	—	9	—	—	—	—	—
<i>Trientalis europaea</i>	20	7	17	11	39	—	—	8	17	—
<i>Valeriana capitata</i>	8	—	—	—	4	20	—	15	33	13
<i>Valeriana sitchensis</i>	1	—	—	—	—	—	17	—	—	25
<i>Veratrum viride</i>	40	14	72	22	—	—	42	31	17	25
<i>Viola glabella</i>	1	—	—	—	—	—	—	—	—	—
<i>Viola</i> spp.	8	21	11	—	4	—	—	—	—	—

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

1A2D = Open-canopy (25-59% tree crown closure) mixed-conifer forest.

1A2M = Open-canopy (25-59% tree crown closure) western hemlock forest.

1A2P = Open-canopy (25-59% tree crown closure) western hemlock-Alaska cedar forest.

1A2W = Open-canopy (25-59% tree crown closure) lodgepole pine forest.

1A3A = Woodland canopy (10-24% tree crown closure) lodgepole pine forest.

1A3M = Woodland canopy (10-24% tree crown closure) western hemlock forest.

1A3Q = Woodland canopy (10-24% tree crown closure) mountain hemlock forest.

1A3U = Woodland canopy (10-24% tree crown closure) mixed-conifer forest.

2A2B = Open-canopy (10-24% tree crown closure) mountain hemlock dwarf-tree forest.

2A3Q = Woodland canopy (25-59% tree crown closure) dwarf-tree mountain hemlock forest.

Source for vegetation types: Viereck and others 1992.



**Table 13—Constancy of ferns, clubmosses, and horsetails on open- and woodland-canopy forest and on dwarf tree vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A2D 93	1A2M 14	1A2P 18	1A2W 9	1A3A 23	1A3M 5	1A3Q 12	1A3U 13	2A2B 6	2A3Q 8
	<i>Percent</i>									
<i>Adiantum aleuticum</i>	—	7	—	—	—	—	—	—	—	—
<i>Athyrium filix-femina</i>	10	29	17	11	—	—	17	—	—	—
<i>Athyrium</i> spp.	3	7	—	—	—	20	—	—	—	—
<i>Blechnum spicant</i>	53	36	67	33	17	80	25	38	50	50
<i>Dryopteris dilatata</i>	1	29	11	—	—	60	8	—	—	13
<i>Equisetum arvense</i>	—	—	11	—	—	—	—	—	—	—
<i>Equisetum</i> spp.	3	7	—	22	—	—	—	—	—	—
Fern spp.	—	—	—	—	—	—	—	—	—	25
<i>Gymnocarpium dryopteris</i>	5	7	11	—	—	—	—	—	—	—
<i>Lycopodium alpinum</i>	—	—	—	—	13	—	—	—	—	—
<i>Lycopodium annotinum</i>	52	29	50	33	4	—	—	38	—	38
<i>Lycopodium clavatum</i>	12	7	28	11	17	—	8	8	—	—
<i>Lycopodium complanatum</i>	—	—	—	—	—	—	—	—	17	—
<i>Lycopodium selago</i>	6	—	—	—	9	—	—	23	17	—
<i>Lycopodium sitchense</i>	—	—	—	—	—	—	—	8	—	13
<i>Lycopodium</i> spp.	11	—	22	22	22	—	8	23	50	13
<i>Polypodium glycyrrhiza</i>	16	—	6	—	—	40	—	—	—	—
<i>Polypodium</i> spp.	1	—	6	—	—	—	—	—	—	—
<i>Polystichum braunii</i>	1	—	6	—	—	—	—	—	—	—
<i>Polystichum munitum</i>	—	7	—	—	—	—	—	—	—	—
<i>Pteridium aquilinum</i>	4	7	—	22	9	20	—	—	—	—
<i>Selaginella</i> spp.	1	—	—	—	—	—	—	—	—	13
<i>Thelypteris limbosperma</i>	—	—	17	—	—	—	—	—	—	—
<i>Thelypteris phegopteris</i>	2	14	6	—	—	—	—	—	—	—

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

1A2D = Open-canopy (25-59% tree crown closure) mixed-conifer forest.

1A2M = Open-canopy (25-59% tree crown closure) western hemlock forest.

1A2P = Open-canopy (25-59% tree crown closure) western hemlock-Alaska cedar forest.

1A2W = Open-canopy (25-59% tree crown closure) lodgepole pine forest.

1A3A = Woodland canopy (10-24% tree crown closure) lodgepole pine forest.

1A3M = Woodland canopy (10-24% tree crown closure) western hemlock forest.

1A3Q = Woodland canopy (10-24% tree crown closure) mountain hemlock forest.

1A3U = Woodland canopy (10-24% tree crown closure) mixed-conifer forest.

2A2B = Open-canopy (10-24% tree crown closure) mountain hemlock dwarf-tree forest.

2A3Q = Woodland canopy (25-59% tree crown closure) dwarf-tree mountain hemlock forest.

Source for vegetation types: Viereck and others 1992.

**Table 14—Constancy of grass and grasslike plants on open- and woodland-canopy forest and on dwarf tree vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A2D 93	1A2M 14	1A2P 18	1A2W 9	1A3A 23	1A3M 5	1A3Q 12	1A3U 13	2A2B 6	2A3Q 8
	<i>Percent</i>									
<i>Agrostis aequivalvis</i>	2	—	—	—	—	—	—	15	—	—
<i>Agrostis</i> spp.	2	7	—	11	17	—	—	8	—	—
<i>Calamagrostis canadensis</i>	3	—	22	11	—	—	—	—	17	—
<i>Calamagrostis nutkaensis</i>	—	—	—	11	—	—	—	—	—	—
<i>Calamagrostis</i> spp.	4	14	11	33	9	—	17	8	—	—
<i>Carex anthoxanthea</i>	—	—	—	22	—	—	—	8	—	—
<i>Carex canescens</i>	—	7	—	—	—	—	—	—	—	—
<i>Carex livida</i>	2	—	—	—	17	—	—	—	—	—
<i>Carex macrochaeta</i>	2	—	—	—	—	—	—	—	—	—
<i>Carex mertensii</i>	1	—	—	—	4	—	—	—	—	—
<i>Carex nigricans</i>	—	—	—	—	—	—	33	—	—	13
<i>Carex pauciflora</i>	9	7	—	22	22	—	—	8	—	—
<i>Carex pluriflora</i>	10	7	—	22	22	—	—	8	—	—
<i>Carex podocarpa</i>	1	—	—	—	—	—	—	—	—	—
<i>Carex sitchensis</i>	14	—	11	22	35	—	—	—	—	—
<i>Carex</i> spp.	55	7	61	56	70	—	58	62	83	75
<i>Carex stylosa</i>	—	—	—	—	—	—	8	—	—	—
<i>Deschampsia</i> spp.	—	—	—	—	—	—	8	—	—	—
<i>Eriophorum angustifolium</i>	8	7	—	—	17	—	33	31	—	—
<i>Eriophorum</i> spp.	6	7	—	11	26	—	—	—	—	—
Grass spp.	37	21	22	22	39	—	8	46	17	50
<i>Juncus oreganus</i>	—	—	—	—	4	—	—	—	—	—
<i>Juncus</i> spp.	—	—	—	11	13	—	—	—	—	—
<i>Luzula multiflora</i>	—	7	—	—	—	—	—	—	—	—
<i>Luzula</i> spp.	—	—	—	—	—	—	17	—	—	13
<i>Phleum commutatum</i>	1	—	—	—	—	—	—	—	—	—
<i>Rhynchospora alba</i>	1	—	—	—	26	—	—	—	—	—
<i>Trichophorum caespitosum</i>	10	—	—	11	52	—	8	38	—	13
<i>Vahlodea atropurpurea</i>	—	—	—	22	—	—	17	—	—	—

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

- 1A2D = Open-canopy (25-59% tree crown closure) mixed-conifer forest.
- 1A2M = Open-canopy (25-59% tree crown closure) western hemlock forest.
- 1A2P = Open-canopy (25-59% tree crown closure) western hemlock-Alaska cedar forest.
- 1A2W = Open-canopy (25-59% tree crown closure) lodgepole pine forest.
- 1A3A = Woodland canopy (10-24% tree crown closure) lodgepole pine forest.
- 1A3M = Woodland canopy (10-24% tree crown closure) western hemlock forest.
- 1A3Q = Woodland canopy (10-24% tree crown closure) mountain hemlock forest.
- 1A3U = Woodland canopy (10-24% tree crown closure) mixed-conifer forest.
- 2A2B = Open-canopy (10-24% tree crown closure) mountain hemlock dwarf-tree forest.
- 2A3Q = Woodland canopy (25-59% tree crown closure) dwarf-tree mountain hemlock forest.

Source for vegetation types: Viereck and others 1992.

**Table 15—Constancy of lichens on open- and woodland-canopy forest and on dwarf tree vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A2D 93	1A2M 14	1A2P 18	1A2W 9	1A3A 23	1A3M 5	1A3Q 12	1A3U 13	2A2B 6	2A3Q 8
	<i>Percent</i>									
<i>Alectoria</i> spp.	59	36	56	67	74	40	58	69	17	25
<i>Bryoria</i> spp.	19	14	39	44	39	—	25	—	—	—
<i>Cetraria islandica</i>	—	—	—	—	—	—	—	—	33	—
<i>Cetraria</i> spp.	—	—	—	—	4	—	—	—	—	—
<i>Cladina portentosa</i>	4	—	—	—	4	—	—	15	33	—
<i>Cladina rangiferina</i>	8	—	—	44	9	—	25	15	17	13
<i>Cladina</i> spp.	19	7	22	11	61	—	42	38	33	63
<i>Cladonia bellidiflora</i>	1	—	—	—	—	—	—	—	—	—
<i>Cladonia gracilis</i>	5	7	—	—	4	—	—	—	17	—
<i>Cladonia macilenta</i>	—	—	—	—	—	—	—	—	33	—
<i>Cladonia</i> spp.	42	57	39	56	48	20	83	31	50	13
<i>Hypogymnia</i> spp.	16	14	22	11	26	—	25	8	—	—
<i>Hypogymnia duplicata</i>	5	14	11	—	—	20	—	—	17	—
<i>Icmadophila ericetorum</i>	2	—	11	11	—	—	—	—	—	—
<i>Lepraria</i> spp.	4	—	11	—	—	—	—	8	—	—
<i>Lichen</i> spp.	82	71	83	78	65	60	67	92	33	100
<i>Lobaria oregana</i>	2	7	—	—	—	—	—	—	17	—
<i>Lobaria pulmonaria</i>	5	—	—	—	—	—	8	—	—	—
<i>Lobaria</i> spp.	9	43	6	—	—	60	58	—	17	13
<i>Nephroma</i> spp.	1	—	—	—	—	—	8	—	—	—
<i>Parmelia</i> spp.	1	7	—	—	—	—	—	—	—	—
<i>Peltigera aphthosa</i>	—	—	—	—	—	—	—	—	17	—
<i>Peltigera britannica</i>	5	7	6	—	—	—	8	—	—	—
<i>Peltigera neopolydactyla</i>	4	14	6	—	—	20	33	—	—	—
<i>Peltigera</i> spp.	10	21	17	—	—	—	25	15	—	25
<i>Platismatia</i> spp.	1	—	—	—	—	20	—	—	—	—
<i>Siphula ceratites</i>	1	—	—	—	17	—	—	—	33	—
<i>Sphaerophorus globosus</i>	5	—	—	11	4	—	—	8	—	—
<i>Sphaerophorus</i> spp.	19	14	11	11	4	40	—	15	—	—
<i>Stereocaulon paschale</i>	1	—	—	—	—	—	—	—	—	—
<i>Stereocaulon</i> spp.	—	—	—	—	—	—	—	—	33	—
<i>Thamnolia</i> spp.	—	—	—	—	—	—	—	—	17	—
<i>Umbilicaria</i> spp.	—	—	—	—	—	—	—	—	17	—
<i>Usnea</i> spp.	1	7	—	11	—	—	—	—	—	—

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

- 1A2D = Open-canopy (25-59% tree crown closure) mixed-conifer forest.
- 1A2M = Open-canopy (25-59% tree crown closure) western hemlock forest.
- 1A2P = Open-canopy (25-59% tree crown closure) western hemlock–Alaska cedar forest.
- 1A2W = Open-canopy (25-59% tree crown closure) lodgepole pine forest.
- 1A3A = Woodland canopy (10-24% tree crown closure) lodgepole pine forest.
- 1A3M = Woodland canopy (10-24% tree crown closure) western hemlock forest.
- 1A3Q = Woodland canopy (10-24% tree crown closure) mountain hemlock forest.
- 1A3U = Woodland canopy (10-24% tree crown closure) mixed-conifer forest.
- 2A2B = Open-canopy (10-24% tree crown closure) mountain-hemlock dwarf-tree forest.
- 2A3Q = Woodland canopy (25-59% tree crown closure) dwarf-tree mountain hemlock forest.

Source for vegetation types: Viereck and others 1992.

**Table 16—Constancy of mosses on open- and woodland-canopy forest and on dwarf tree vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A2D 93	1A2M 14	1A2P 18	1A2W 9	1A3A 23	1A3M 5	1A3Q 12	1A3U 13	2A2B 6	2A3Q 8
	<i>Percent</i>									
<i>Andreaea rupestris</i>	—	—	—	—	—	—	8	—	—	—
<i>Antitrichia curtipendula</i>	2	—	—	—	—	—	—	—	—	—
<i>Aulacomnium palustre</i>	4	—	—	—	9	—	—	8	—	—
<i>Aulacomnium</i> spp.	15	36	22	—	13	—	33	8	33	—
<i>Brachythecium</i> spp.	—	—	—	—	4	—	—	—	—	—
<i>Bryum</i> spp.	—	—	—	—	—	—	8	—	17	—
<i>Dicranum fuscescens</i>	19	—	17	11	22	40	—	15	—	—
<i>Dicranum scoparium</i>	6	—	—	—	9	—	—	—	—	—
<i>Dicranum</i> spp.	41	57	61	33	26	40	33	23	67	—
<i>Eurhynchium oregonum</i>	1	—	11	—	—	—	—	—	—	—
<i>Eurhynchium</i> spp.	—	7	—	11	—	—	8	—	—	—
<i>Hookeria lucens</i>	1	—	—	—	—	—	—	—	—	—
<i>Hylocomium</i> spp.	3	7	6	—	9	—	—	—	—	—
<i>Hylocomium splendens</i>	96	86	94	89	30	100	33	85	17	38
<i>Hypnum circinale</i>	5	14	6	—	—	—	—	—	—	—
<i>Hypnum</i> spp.	10	—	11	—	4	—	—	8	—	—
<i>Hypnum subimponens</i>	2	—	—	—	—	—	—	—	—	—
<i>Isothecium myosuroides</i>	2	—	6	—	—	—	—	—	—	—
<i>Mnium</i> spp.	2	21	33	—	—	—	—	8	—	—
Moss spp.	89	86	78	56	70	40	100	85	100	100
<i>Plagiothecium</i> spp.	2	7	11	—	—	—	—	8	—	—
<i>Plagiothecium undulatum</i>	8	—	17	11	4	—	—	—	—	—
<i>Pleurozium schreberi</i>	22	7	—	56	61	—	25	38	33	13
<i>Polytrichum juniperium</i>	—	14	—	—	—	—	—	—	—	—
<i>Polytrichum</i> spp.	4	7	6	11	13	40	8	—	—	13
<i>Ptilium crista-castrensis</i>	15	7	—	33	4	—	8	15	—	—
<i>Ptilium</i> spp.	10	—	6	11	17	—	—	—	—	—
<i>R(h)acomitrium</i> spp.	9	—	6	—	39	—	25	8	—	25
<i>Rhacomitrium lanuginosum</i>	—	—	—	—	4	—	—	8	—	—
<i>Rhizomnium glabrescens</i>	12	21	—	—	—	—	17	—	17	—
<i>Rhizomnium</i> spp.	3	—	—	—	—	—	—	—	—	—
<i>Rhytidiadelphus loreus</i>	97	100	100	56	26	100	58	62	67	50
<i>Rhytidiadelphus</i> spp.	1	7	6	—	9	—	—	—	—	—

**Table 16—Constancy of mosses on open- and woodland-canopy forest and on dwarf tree vegetation types on the Stikine area in southeast Alaska (continued)**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A2D 93	1A2M 14	1A2P 18	1A2W 9	1A3A 23	1A3M 5	1A3Q 12	1A3U 13	2A2B 6	2A3Q 8
	<i>Percent</i>									
<i>Rhytidiadelphus triquetrus</i>	6	—	17	—	—	—	8	—	—	—
<i>Rhytidiopsis robusta</i>	1	—	—	—	—	—	17	—	—	—
<i>Sphagnum angustifolium</i>	1	—	—	—	—	—	—	—	—	—
<i>Sphagnum capillifolium</i>	4	—	11	—	—	—	—	—	—	—
<i>Sphagnum girgensohnii</i>	1	—	—	—	—	—	—	—	—	—
<i>Sphagnum papillosum</i>	—	—	—	—	—	—	—	—	17	—
<i>Sphagnum</i> spp.	96	100	89	100	96	60	50	92	33	38
<i>Tortella tortuosa</i>	2	—	6	—	—	—	—	—	—	—

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

1A2D = Open-canopy (25-59% tree crown closure) mixed-conifer forest.

1A2M = Open-canopy (25-59% tree crown closure) western hemlock forest.

1A2P = Open-canopy (25-59% tree crown closure) western hemlock-Alaska cedar forest.

1A2W = Open-canopy (25-59% tree crown closure) lodgepole pine forest.

1A3A = Woodland canopy (10-24% tree crown closure) lodgepole pine forest.

1A3M = Woodland canopy (10-24% tree crown closure) western hemlock forest.

1A3Q = Woodland canopy (10-24% tree crown closure) mountain hemlock forest.

1A3U = Woodland canopy (10-24% tree crown closure) mixed-conifer forest.

2A2B = Open-canopy (10-24% tree crown closure) mountain-hemlock dwarf-tree forest.

2A3Q = Woodland canopy (25-59% tree crown closure) dwarf-tree mountain hemlock forest.

Source for vegetation types: Viereck and others 1992.

**Table 17—Constancy of liverworts on open- and woodland-canopy forest and on dwarf tree vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	1A2D 93	1A2M 14	1A2P 18	1A2W 9	1A3A 23	1A3M 5	1A3Q 12	1A3U 13	2A2B 6	2A3Q 8
	<i>Percent</i>									
<i>Bazzania tricrenata</i>	1	—	—	—	—	—	—	—	—	—
<i>Conocephalum</i> spp.	1	14	—	—	—	—	—	—	—	—
<i>Frullania</i> spp.	3	—	—	—	—	—	—	—	—	—
Liverwort spp.	78	79	89	56	52	40	92	77	83	88
<i>Herbertus aduncus</i>	1	14	—	—	—	—	—	—	—	—
<i>Lepidozia</i> spp.	—	—	—	—	—	—	8	—	—	—
<i>Marchantia polymorpha</i>	1	7	—	—	—	—	—	—	—	—
<i>Mylia</i> spp.	5	—	17	—	4	—	25	8	—	—
<i>Pellia</i> spp.	8	7	11	11	—	—	17	—	17	13
<i>Plagiochila</i> sp.	4	—	—	—	—	—	—	—	—	—
<i>Scapania</i> spp.	17	21	—	—	—	—	8	—	—	—

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

- 1A2D = Open-canopy (25-59% tree crown closure) mixed-conifer forest.
- 1A2M = Open-canopy (25-59% tree crown closure) western hemlock forest.
- 1A2P = Open-canopy (25-59% tree crown closure) western hemlock-Alaska cedar forest.
- 1A2W = Open-canopy (25-59% tree crown closure) lodgepole pine forest.
- 1A3A = Woodland canopy (10-24% tree crown closure) lodgepole pine forest.
- 1A3M = Woodland canopy (10-24% tree crown closure) western hemlock forest.
- 1A3Q = Woodland canopy (10-24% tree crown closure) mountain hemlock forest.
- 1A3U = Woodland canopy (10-24% tree crown closure) mixed-conifer forest.
- 2A2B = Open-canopy (10-24% tree crown closure) mountain hemlock dwarf-tree forest.
- 2A3Q = Woodland canopy (25-59% tree crown closure) dwarf-tree mountain hemlock forest.

Source for vegetation types: Viereck and others 1992.

**Appendix B: Species Constancy Tables for Nonforest Vegetation Types**

**Table 18—Constancy of trees and shrubs on nonforest vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	2B1B 10	2B1H 12	2B2B 6	2C2E 13	2D2D 5	2D2E 7	3A3A 5	3A3C 7	3A3D 8	3B2A 9
	<i>Percent</i>									
<i>Abies lasiocarpa</i>	—	—	17	—	—	—	—	—	—	—
<i>Alnus sinuata</i>	80	83	100	—	—	—	—	—	—	11
<i>Alnus</i> spp.	10	8	—	—	—	—	—	—	—	—
<i>Andromeda polifolia</i>	—	—	—	77	—	—	20	29	38	33
<i>Anemone parviflora</i>	—	8	—	—	—	—	—	—	—	—
<i>Artemisia arctica</i>	—	—	—	—	—	—	—	—	—	11
<i>Artemisia</i> spp.	10	—	—	—	—	—	—	—	—	—
<i>Cassiope mertensiana</i>	10	—	—	—	100	86	20	14	—	22
<i>Cassiope</i> spp.	—	—	17	—	—	—	—	—	—	—
<i>Cassiope stelleriana</i>	—	—	—	—	80	57	—	—	—	22
<i>Chamaecyparis nootkatensis</i>	—	—	17	46	—	—	20	43	25	11
<i>Cladothamnus pyrolaeiflorus</i>	40	17	33	8	60	29	—	14	—	33
<i>Empetrum nigrum</i>	—	—	—	100	—	—	40	57	50	33
<i>Juniperus communis</i>	—	—	—	54	—	—	20	29	38	22
<i>Kalmia polifolia</i>	—	—	—	100	—	—	40	57	75	44
<i>Ledum groenlandicum</i>	—	—	—	100	—	—	60	71	88	33
<i>Loiseleuria procumbens</i>	—	—	—	—	—	14	—	—	—	—
<i>Luetkea pectinata</i>	20	—	17	—	100	100	—	14	—	22
<i>Menziesia ferruginea</i>	10	8	67	15	—	—	20	14	25	11
<i>Oplopanax horridus</i>	100	67	33	—	—	—	—	—	—	—
<i>Phyllodoce aleutica</i>	—	—	—	—	40	—	—	—	—	22
<i>Phyllodoce</i> spp.	—	—	—	—	40	—	—	—	—	—
<i>Picea sitchensis</i>	10	8	50	8	20	—	20	43	25	—
<i>Pinus contorta</i>	—	—	—	100	—	—	40	71	50	33
<i>Ribes bracteosum</i>	20	17	—	—	—	—	—	—	—	—
<i>Ribes lacustre</i>	10	—	—	—	—	—	—	—	—	—
<i>Ribes</i> spp.	—	—	33	—	—	—	—	—	13	—
<i>Rubus arcticus</i>	—	—	—	—	—	—	—	14	25	—
<i>Rubus chamaemorus</i>	—	—	—	54	—	—	20	—	13	11
<i>Rubus pedatus</i>	—	8	—	—	20	14	—	—	13	—
<i>Rubus spectabilis</i>	100	100	83	—	—	29	—	—	13	11
<i>Salix myrtillofolia</i>	—	—	—	31	20	—	—	—	—	—
<i>Salix sitchensis</i>	20	25	—	—	—	—	—	—	—	—
<i>Sambucus racemosa</i>	30	17	17	—	—	—	—	—	—	—
<i>Sambucus</i> spp.	20	25	—	—	—	—	—	—	—	—
<i>Sorbus sitchensis</i>	20	17	—	—	—	—	—	—	—	—

**Table 18—Constancy of trees and shrubs on nonforest vegetation types on the Stikine area in southeast Alaska (continued)**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	2B1B 10	2B1H 12	2B2B 6	2C2E 13	2D2D 5	2D2E 7	3A3A 5	3A3C 7	3A3D 8	3B2A 9
	<i>Percent</i>									
<i>Sorbus</i> spp.	—	—	—	—	20	14	—	14	—	—
<i>Spiraea douglasii</i>	—	—	—	—	—	—	—	—	13	—
<i>Thuja plicata</i>	—	—	17	—	—	—	—	—	—	—
<i>Tsuga heterophylla</i>	10	8	33	38	—	—	20	14	13	—
<i>Tsuga mertensiana</i>	20	17	33	38	80	57	40	43	25	33
<i>Vaccinium caespitosum</i>	—	—	—	38	20	—	20	14	25	44
<i>Vaccinium oxycoccus</i> var. <i>microcarpus</i>	—	—	—	92	—	—	80	43	38	44
<i>Vaccinium</i> spp.	60	25	67	8	80	57	—	43	63	—
<i>Vaccinium uliginosum</i>	—	—	—	92	40	—	40	57	63	56
<i>Vaccinium vitis-idaea</i>	10	—	17	38	—	—	20	14	25	—
<i>Viburnum edule</i>	—	—	—	—	—	—	—	—	25	—

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

2B1B = Closed tall shrub alder.

2B1H = Closed tall shrub alder-salmonberry.

2B2B = Open tall shrub alder.

2C2E = Open-low shrub ericaceous shrub bog.

2D2D = Ericaceous dwarf-shrub mountain-heath tundra.

2D2E = Ericaceous dwarf-shrub cassiope tundra.

3A3A = Wet sedge meadow tundra.

3A3C = Wet sedge-herb meadow tundra.

3A3D = Fresh sedge marsh herbaceous.

3B2A = Mixed herbs herbaceous.

Source for vegetation types: Viereck and others 1992.



**Table 19—Constancy of forbs on nonforest vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	2B1B 10	2B1H 12	2B2B 6	2C2E 13	2D2D 5	2D2E 7	3A3A 5	3A3C 7	3A3D 8	3B2A 9
	<i>Percent</i>									
<i>Achillea borealis</i>	10	—	17	—	—	—	—	—	—	11
<i>Aconitum delphiniifolium</i>	10	17	—	—	—	—	—	—	—	—
<i>Angelica</i> spp.	10	—	—	—	—	—	—	—	—	—
<i>Apargidium boreale</i>	—	—	—	31	—	—	—	14	—	—
<i>Aquilegia formosa</i>	10	—	17	—	—	—	—	—	—	11
<i>Arnica amplexicaulis</i>	10	—	17	—	—	—	—	—	—	—
<i>Aruncus dioicus</i>	50	25	50	—	—	14	—	—	—	11
<i>Aster</i> spp.	10	—	17	—	—	14	—	14	—	22
<i>Boschniakia rossica</i>	10	—	—	—	—	—	—	—	—	—
<i>Caltha biflora</i>	—	—	—	—	—	—	—	—	—	22
<i>Caltha leptosepala</i>	—	—	—	—	—	—	—	14	—	—
<i>Caltha</i> spp.	10	—	—	—	—	—	—	—	—	—
<i>Cardamine oligosperma</i>	—	—	—	—	—	—	—	—	—	22
<i>Cardamine</i> spp.	—	—	17	—	—	—	—	—	—	—
<i>Cardamine umbellata</i>	10	—	—	—	—	—	—	—	—	—
<i>Castilleja miniata</i>	—	—	—	—	—	—	—	—	—	11
<i>Castilleja</i> spp.	—	—	17	—	—	—	—	—	—	—
<i>Chenopodium berlandieri</i>	—	—	—	—	—	—	20	—	—	—
<i>Circaea alpina</i>	20	—	33	—	—	—	—	—	—	—
<i>Claytonia sibirica</i>	—	8	—	—	—	14	—	—	—	11
<i>Claytonia</i> spp.	10	—	—	—	—	—	—	—	—	—
Compositae family	—	—	—	8	—	—	20	—	—	—
<i>Coptis aspleniifolia</i>	—	—	—	31	—	—	20	29	—	22
<i>Coptis trifolia</i>	—	—	—	92	—	—	40	71	38	22
<i>Cornus canadensis</i>	—	17	17	77	—	—	40	57	25	33
<i>Cornus stolonifera</i>	—	—	—	—	—	—	—	—	13	—
<i>Cornus suecica</i>	—	—	—	23	—	—	—	14	38	—
<i>Corydalis</i> spp.	—	8	—	—	—	—	—	—	—	—
<i>Dodecatheon jeffreyi</i>	—	—	—	—	—	—	20	29	—	11
<i>Dodecatheon pulchellum</i>	—	—	—	15	—	—	—	—	—	—
<i>Dodecatheon</i> spp.	—	—	—	15	—	—	20	14	—	22
<i>Drosera anglica</i>	—	—	—	8	—	—	—	—	13	—
<i>Drosera rotundifolia</i>	—	—	—	31	—	—	40	57	38	33
<i>Epilobium angustifolium</i>	—	—	—	—	—	—	—	—	—	11
<i>Epilobium ciliatum</i>	—	17	33	—	—	14	—	—	—	22
<i>Epilobium latifolium</i>	—	8	17	—	—	—	—	—	—	—
<i>Epilobium</i> spp.	—	—	—	—	20	—	—	—	—	—
<i>Erigeron peregrinus</i>	—	—	33	—	—	—	—	14	—	33
<i>Erigeron</i> spp.	—	8	—	—	40	—	—	—	—	11
<i>Fauria crista-galli</i>	30	25	17	69	100	43	40	86	75	78
Forb spp.	20	33	17	15	20	43	—	—	—	—
<i>Galium</i> spp.	—	—	17	—	—	—	—	—	—	—
<i>Galium triflorum</i>	10	—	17	—	—	—	—	—	—	11

**Table 19—Constancy of forbs on nonforest vegetation types on the Stikine area in southeast Alaska (continued)**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	2B1B 10	2B1H 12	2B2B 6	2C2E 13	2D2D 5	2D2E 7	3A3A 5	3A3C 7	3A3D 8	3B2A 9
	<i>Percent</i>									
<i>Gentiana douglasiana</i>	—	—	—	62	—	—	40	71	25	44
<i>Gentiana platypetala</i>	—	—	—	—	40	—	—	14	—	22
<i>Geranium erianthum</i>	—	17	—	—	—	—	—	14	—	—
<i>Geranium</i> spp.	10	—	—	—	—	—	—	—	—	11
<i>Geum calthifolium</i>	—	—	—	31	20	—	20	29	—	33
<i>Geum</i> spp.	—	—	—	—	—	—	20	—	—	11
<i>Heracleum lanatum</i>	10	—	—	—	—	—	—	—	—	22
<i>Heracleum</i> spp.	—	17	—	—	—	—	—	—	—	—
<i>Heuchera glabra</i>	30	25	50	—	—	—	—	—	—	—
<i>Hieracium</i> spp.	—	—	17	—	—	—	—	—	—	—
<i>Hippuris montana</i>	—	—	—	—	60	14	—	—	—	—
<i>Leptarrhena pyrolifolia</i>	—	—	—	—	20	29	—	14	—	—
<i>Listera cordata</i>	—	—	—	—	20	71	—	—	—	—
<i>Listera</i> spp.	—	17	—	—	—	—	—	—	—	—
<i>Lupinus nootkatensis</i>	—	—	—	—	—	—	—	—	—	22
<i>Lysichiton americanum</i>	—	8	—	38	—	—	20	43	38	22
<i>Maianthemum dilatatum</i>	20	—	—	15	—	—	—	—	38	—
<i>Menyanthes trifoliata</i>	—	—	—	23	—	—	—	43	13	22
<i>Mimulus guttatus</i>	—	—	17	—	—	—	—	—	—	11
<i>Mitella pentandra</i>	10	8	—	—	—	14	—	—	—	—
<i>Mitella</i> spp.	20	—	—	—	—	—	—	—	—	—
Mushroom spp.	10	42	67	31	20	14	—	—	13	—
<i>Nuphar polysepalum</i>	—	—	—	8	—	—	—	—	—	—
<i>Osmorhiza chilensis</i>	—	8	—	—	—	—	—	—	—	—
<i>Osmorhiza purpurea</i>	—	—	—	—	—	—	—	—	—	11
<i>Oxyria digyna</i>	—	8	—	—	—	—	—	—	—	—
<i>Parnassia fimbriata</i>	—	—	33	—	20	14	—	14	—	—
<i>Parnassia</i> spp.	10	—	—	—	—	—	—	—	—	—
<i>Pedicularis parviflora</i>	—	—	—	—	—	—	—	14	—	—
<i>Pedicularis</i> spp.	—	—	—	—	20	—	—	—	—	—
<i>Petasites frigidus</i>	—	8	—	—	20	14	—	—	—	11
<i>Pinguicula vulgaris</i>	—	—	—	—	—	—	20	43	25	—
<i>Platanthera dilatata</i>	—	—	—	—	—	—	—	29	—	33
<i>Platanthera</i> spp.	—	—	—	23	—	—	—	29	—	—
<i>Platanthera stricta</i>	—	—	17	8	—	—	—	—	—	11
<i>Polygonum persicaria</i>	—	—	—	—	—	—	—	14	—	—
<i>Potentilla anserina</i>	—	—	—	—	—	—	20	—	—	—
<i>Prenanthes alata</i>	60	33	17	—	—	14	—	—	—	11
<i>Prunella vulgaris</i>	10	—	—	—	—	—	—	—	—	—
<i>Ranunculus</i> spp.	—	17	—	—	—	—	—	—	—	33
<i>Sanguisorba menziesii</i>	—	—	—	15	—	—	—	—	—	—
<i>Sanguisorba officinalis</i>	—	—	—	—	—	—	—	14	—	11
<i>Sanguisorba</i> spp.	20	25	33	31	20	—	60	86	88	44

**Table 19—Constancy of forbs on nonforest vegetation types on the Stikine area in southeast Alaska (continued)**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	2B1B 10	2B1H 12	2B2B 6	2C2E 13	2D2D 5	2D2E 7	3A3A 5	3A3C 7	3A3D 8	3B2A 9
	<i>Percent</i>									
<i>Sanguisorba stipulata</i>	—	8	—	54	—	14	—	—	—	22
<i>Saxifraga ferruginea</i>	—	17	17	—	—	—	—	—	—	—
<i>Saxifraga lyallii</i>	20	8	—	—	—	—	—	—	—	11
<i>Saxifraga punctata</i>	—	—	17	—	—	—	—	—	—	—
<i>Saxifraga</i> spp.	20	8	50	—	—	57	—	—	—	—
<i>Saxifraga tolmiei</i>	—	—	—	—	—	29	—	—	—	—
<i>Senecio triangularis</i>	20	17	—	—	—	—	—	14	—	11
<i>Sibbaldia procumbens</i>	—	—	17	—	—	—	—	—	—	—
<i>Spiranthes romanzoffiana</i>	—	—	—	8	—	—	—	—	—	—
<i>Stellaria crispera</i>	—	—	—	—	—	—	—	—	—	11
<i>Stellaria</i> spp.	10	—	—	—	—	—	—	—	—	—
<i>Streptopus amplexifolius</i>	50	42	—	—	—	—	—	—	—	11
<i>Streptopus roseus</i>	40	25	33	—	40	14	—	14	—	11
<i>Streptopus</i> spp.	—	17	—	—	—	14	—	—	—	—
<i>Streptopus streptopoides</i>	40	—	—	—	—	—	—	—	—	—
<i>Tellima grandiflora</i>	—	—	—	—	—	—	—	—	—	11
<i>Tiarella</i> spp.	10	—	—	—	—	—	—	—	—	—
<i>Tiarella trifoliata</i>	70	25	17	—	—	14	—	—	—	—
<i>Tiarella trifoliata</i> var. <i>unifoliata</i>	10	17	—	—	—	14	—	—	—	—
<i>Tofieldia glutinosa</i>	—	—	—	38	—	—	—	71	25	22
<i>Tofieldia</i> spp.	—	—	—	—	—	—	20	—	—	—
<i>Trientalis europaea</i>	—	—	—	54	—	—	20	29	13	11
<i>Utricularia minor</i>	—	—	—	—	—	—	—	—	—	11
<i>Valeriana capitata</i>	—	—	—	—	—	14	—	—	—	11
<i>Valeriana sitchensis</i>	30	42	17	—	40	14	—	14	—	22
<i>Valeriana</i> spp.	—	8	—	—	—	—	—	—	—	—
<i>Veratrum viride</i>	60	50	—	8	20	29	20	14	—	44
<i>Veronica</i> spp.	—	8	—	—	—	—	—	—	—	—
<i>Veronica wormskjoldii</i>	—	—	17	—	—	—	—	—	—	—
<i>Viola glabella</i>	10	17	—	—	—	—	—	—	—	11
<i>Viola</i> spp.	50	50	33	15	20	14	20	—	—	11

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

2B1B = Closed tall shrub alder.

2B1H = Closed tall shrub alder-salmonberry.

2B2B = Open tall shrub alder.

2C2E = Open-low shrub ericaceous shrub bog.

2D2D = Ericaceous dwarf-shrub mountain-heath tundra.

2D2E = Ericaceous dwarf-shrub cassiope tundra.

3A3A = Wet sedge meadow tundra.

3A3C = Wet sedge-herb meadow tundra.

3A3D = Fresh sedge marsh herbaceous.

3B2A = Mixed herbs herbaceous.

Source for vegetation types: Viereck and others 1992.

**Table 20—Constancy of ferns, clubmosses, and horsetails on nonforest vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	2B1B 10	2B1H 12	2B2B 6	2C2E 13	2D2D 5	2D2E 7	3A3A 5	3A3C 7	3A3D 8	3B2A 9
	<i>Percent</i>									
<i>Adiantum aleuticum</i>	20	—	—	—	—	—	—	—	—	—
<i>Athyrium filix-femina</i>	60	75	83	—	—	29	—	—	25	44
<i>Athyrium</i> spp.	20	17	—	—	—	—	—	—	—	—
<i>Blechnum spicant</i>	—	8	—	8	20	29	—	14	13	11
<i>Botrychium</i> spp.	—	—	—	—	—	—	—	14	—	—
<i>Cryptogramma acrostichoides</i>	—	—	—	—	20	—	—	—	—	—
<i>Cryptogramma</i> spp.	—	8	17	—	20	—	—	—	—	—
<i>Cystopteris fragilis</i>	—	—	—	—	20	—	—	—	—	—
<i>Dryopteris dilatata</i>	60	67	67	—	—	43	—	—	13	—
<i>Equisetum arvense</i>	—	—	—	—	—	—	—	—	—	22
<i>Equisetum fluviatile</i>	—	—	—	—	—	—	—	—	—	11
<i>Equisetum</i> spp.	—	—	—	—	—	—	—	14	13	—
Fern spp.	—	8	—	—	—	—	—	—	—	—
<i>Gymnocarpium dryopteris</i>	60	50	33	—	—	—	—	—	—	—
<i>Lycopodium alpinum</i>	—	—	—	—	20	14	—	—	—	11
<i>Lycopodium annotinum</i>	10	—	—	15	—	—	20	29	25	11
<i>Lycopodium clavatum</i>	—	—	—	—	—	—	20	—	—	—
<i>Lycopodium selago</i>	—	—	—	8	20	14	20	—	—	—
<i>Lycopodium sitchense</i>	—	—	—	—	20	—	—	—	—	—
<i>Lycopodium</i> spp.	20	—	—	—	—	29	—	14	—	—
<i>Polystichum braunii</i>	20	17	—	—	—	—	—	—	—	—
<i>Thelypteris limbosperma</i>	—	—	—	—	—	—	—	—	—	11
<i>Thelypteris phegopteris</i>	50	25	33	—	—	—	—	—	13	—
<i>Woodsia</i> spp.	—	—	—	—	20	—	—	—	—	—

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

2B1B = Closed tall shrub alder.

2B1H = Closed tall shrub alder-salmonberry.

2B2B = Open tall shrub alder.

2C2E = Open-low shrub ericaceous shrub bog.

2D2D = Ericaceous dwarf-shrub mountain-heath tundra.

2D2E = Ericaceous dwarf-shrub cassiope tundra.

3A3A = Wet sedge meadow tundra.

3A3C = Wet sedge-herb meadow tundra.

3A3D = Fresh sedge marsh herbaceous.

3B2A = Mixed herbs herbaceous.

Source for vegetation types: Viereck and others 1992.

**Table 21—Constancy of grasses and grasslike species on nonforest vegetation types on the Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	2B1B 10	2B1H 12	2B2B 6	2C2E 13	2D2D 5	2D2E 7	3A3A 5	3A3C 7	3A3D 8	3B2A 9
	Percent									
<i>Agrostis aequivalvis</i>	—	—	—	—	—	—	—	—	—	22
<i>Agrostis</i> spp.	—	25	—	—	—	—	20	—	—	—
<i>Calamagrostis canadensis</i>	—	25	—	—	—	—	—	—	25	11
<i>Calamagrostis</i> spp.	10	—	17	15	—	—	—	29	—	—
<i>Carex aquatilis</i>	—	—	—	—	—	—	—	43	25	—
<i>Carex livida</i>	—	—	—	23	—	—	—	—	—	—
<i>Carex lyngbyei</i>	—	—	—	—	—	—	20	—	—	—
<i>Carex macrochaeta</i>	—	8	—	—	—	—	—	—	—	—
<i>Carex mertensii</i>	—	8	—	—	—	14	—	—	—	—
<i>Carex pauciflora</i>	—	—	—	—	—	—	—	14	—	11
<i>Carex pluriflora</i>	—	—	—	8	—	—	20	—	—	11
<i>Carex rostrata</i>	—	—	—	—	—	—	—	—	13	—
<i>Carex sitchensis</i>	—	—	—	46	—	—	—	—	25	—
<i>Carex</i> spp.	20	50	33	85	40	29	100	100	50	67
<i>Eriophorum angustifolium</i>	—	—	—	38	—	—	20	—	—	—
<i>Eriophorum</i> spp.	—	—	—	46	—	—	20	—	—	11
Grass spp.	40	25	67	8	40	71	20	57	38	44
<i>Hordeum brachyantherum</i>	—	—	—	—	—	—	20	—	—	—
<i>Juncus</i> spp.	—	—	—	—	—	—	—	14	—	11
<i>Luzula</i> spp.	10	—	17	—	—	14	—	—	—	22
<i>Phleum commutatum</i>	—	—	—	—	—	—	—	—	—	22
<i>Poa</i> spp.	—	—	—	23	—	—	—	—	—	—
<i>Rhynchospora alba</i>	—	—	—	23	—	—	—	—	—	—
<i>Trichophorum caespitosum</i>	—	—	—	—	—	—	20	57	25	33
<i>Trisetum cernuum</i>	—	—	—	—	—	—	—	14	—	—
<i>Vahlodea atropurpurea</i>	—	—	—	—	—	14	—	—	—	—

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

- 2B1B = Closed tall shrub alder.
- 2B1H = Closed tall shrub alder-salmonberry.
- 2B2B = Open tall shrub alder.
- 2C2E = Open-low shrub ericaceous shrub bog.
- 2D2D = Ericaceous dwarf-shrub mountain-heath tundra.
- 2D2E = Ericaceous dwarf-shrub cassiope tundra.
- 3A3A = Wet sedge meadow tundra.
- 3A3C = Wet sedge-herb meadow tundra.
- 3A3D = Fresh sedge marsh herbaceous.
- 3B2A = Mixed herbs herbaceous.

Source for vegetation types: Viereck and others 1992.

**Table 22—Constancy of lichens on nonforest vegetation types in Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	2B1B 10	2B1H 12	2B2B 6	2C2E 13	2D2D 5	2D2E 7	3A3A 5	3A3C 7	3A3D 8	3B2A 9
	<i>Percent</i>									
<i>Alectoria</i> spp.	—	—	—	69	—	—	20	100	38	33
<i>Bryoria</i> spp.	—	—	—	23	—	—	—	—	13	11
<i>Cetraria islandica</i>	—	—	—	—	20	—	—	—	—	—
<i>Cladina rangiferina</i>	—	—	—	69	40	14	40	43	—	11
<i>Cladina</i> spp.	—	—	17	23	20	29	—	29	38	33
<i>Cladina stellaris</i>	—	—	—	—	—	—	—	—	13	—
<i>Cladonia bellidiflora</i>	—	—	—	—	—	14	—	—	—	—
<i>Cladonia gracilis</i>	—	—	—	—	—	—	—	14	—	—
<i>Cladonia</i> spp.	20	17	67	8	40	71	60	14	13	22
<i>Cladonia squamosa</i>	10	—	—	—	—	14	—	—	—	—
<i>Hypogymnia</i> spp.	—	—	—	31	—	—	—	43	—	11
Lichen spp.	80	42	83	46	80	86	40	86	75	33
<i>Lobaria</i> spp.	40	17	33	—	—	29	—	—	—	—
<i>Nephroma resupinatum</i>	10	—	—	—	—	—	—	—	—	—
<i>Peltigera britannica</i>	10	—	—	—	20	14	—	—	—	—
<i>Peltigera neopolydactyla</i>	—	8	—	—	—	—	—	—	—	—
<i>Peltigera</i> spp.	30	8	33	—	—	43	—	14	—	—
<i>Platismatia herrei</i>	—	—	—	38	—	—	—	—	—	—
<i>Platismatia</i> spp.	—	—	—	—	—	—	—	—	13	—
<i>Solorina crocea</i>	—	—	—	—	—	14	—	—	—	—
<i>Sphaerophorus</i> spp.	—	—	—	15	—	—	—	—	13	—
<i>Stereocaulon alpinum</i>	—	—	17	—	—	—	—	—	—	—
<i>Stereocaulon</i> spp.	—	—	—	—	—	29	—	—	—	—
<i>Thamnolia</i> spp.	—	—	—	—	—	14	—	—	—	—
<i>Thamnolia subuliformis</i>	—	—	—	23	—	—	—	—	—	—
<i>Usnea</i> spp.	—	—	—	—	—	—	—	—	25	—

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

2B1B = Closed tall shrub alder.

2B1H = Closed tall shrub alder-salmonberry.

2B2B = Open tall shrub alder.

2C2E = Open-low shrub ericaceous shrub bog.

2D2D = Ericaceous dwarf-shrub mountain-heath tundra.

2D2E = Ericaceous dwarf-shrub cassiope tundra.

3A3A = Wet sedge meadow tundra.

3A3C = Wet sedge-herb meadow tundra.

3A3D = Fresh sedge marsh herbaceous.

3B2A = Mixed herbs herbaceous.

Source for vegetation types: Viereck and others 1992.

**Table 23—Constancy of mosses on nonforest vegetation types in Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	2B1B 10	2B1H 12	2B2B 6	2C2E 13	2D2D 5	2D2E 7	3A3A 5	3A3C 7	3A3D 8	3B2A 9
	<i>Percent</i>									
<i>Andreaea</i> spp.	—	—	—	—	—	14	—	—	—	11
<i>Aulacomnium</i> spp.	—	—	—	23	20	—	—	29	—	22
<i>Conocephalum</i> spp.	—	8	—	—	—	—	—	—	—	11
<i>Dicranum fuscescens</i>	—	—	—	—	—	—	20	—	13	—
<i>Dicranum</i> spp.	30	25	17	23	60	57	40	—	13	11
<i>Hookeria lucens</i>	—	17	—	—	—	—	—	—	—	—
<i>Hylocomium</i> spp.	—	—	—	—	—	14	—	—	—	—
<i>Hylocomium splendens</i>	—	8	17	31	—	14	20	43	13	11
<i>Hypnum</i> spp.	—	—	—	—	—	—	—	—	13	—
<i>Mnium</i> spp.	60	25	50	—	—	14	—	—	—	—
Moss spp.	90	100	100	77	100	100	80	86	88	78
<i>Oligotrichum parallelum</i>	—	—	—	—	—	14	—	—	—	—
<i>Plagiochila</i> spp.	10	—	—	—	—	14	—	—	—	—
<i>Plagiomnium</i> spp.	10	—	—	—	—	—	—	—	—	—
<i>Plagiothecium</i> spp.	—	8	—	—	—	—	—	—	—	—
<i>Pleurozium schreberi</i>	10	—	—	69	40	14	40	43	38	33
<i>Pogonatum alpinum</i>	—	—	17	—	—	—	—	—	—	—
<i>Polytrichum commune</i>	—	17	—	—	—	—	—	—	—	—
<i>Polytrichum</i> spp.	40	8	33	23	—	—	20	—	—	—
<i>Ptilium crista-castrensis</i>	—	—	—	8	—	—	—	—	—	—
<i>Racomitrium</i> spp.	—	—	—	38	—	—	60	29	—	—
<i>Racomitrium lanuginosum</i>	—	—	—	—	—	—	—	—	13	11
<i>Rhizomnium</i> spp.	10	—	—	—	—	—	20	—	—	—
<i>Rhytidiadelphus loreus</i>	70	25	50	8	40	29	20	29	25	—
<i>Rhytidiadelphus</i> spp.	—	—	—	—	—	—	—	—	13	11
<i>Sphagnum angustifolium</i>	—	—	—	—	—	—	—	—	—	22
<i>Sphagnum capillifolium</i>	—	—	—	—	—	—	—	—	—	33
<i>Sphagnum girgensohnii</i>	—	—	—	—	—	—	—	—	—	11
<i>Sphagnum lindbergii</i>	—	—	—	—	—	—	—	—	—	11
<i>Sphagnum papillosum</i>	—	—	—	—	—	—	—	—	—	33
<i>Sphagnum</i> spp.	20	8	17	100	—	14	80	100	88	22
<i>Tortella fragilis</i>	—	—	—	—	—	14	—	—	—	—

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

- 2B1B = Closed tall shrub alder.
- 2B1H = Closed tall shrub alder-salmonberry.
- 2B2B = Open tall shrub alder.
- 2C2E = Open-low shrub ericaceous shrub bog.
- 2D2D = Ericaceous dwarf-shrub mountain-heath tundra.
- 2D2E = Ericaceous dwarf-shrub cassiope tundra.
- 3A3A = Wet sedge meadow tundra.
- 3A3C = Wet sedge-herb meadow tundra.
- 3A3D = Fresh sedge marsh herbaceous.
- 3B2A = Mixed herbs herbaceous.

Source for vegetation types: Viereck and others 1992.

**Table 24—Constancy of liverworts on nonforest vegetation types in Stikine area in southeast Alaska**

Species	Plots in types on which plant species occurred, by vegetation type code <sup>a</sup> and number of plots									
	2B1B 10	2B1H 12	2B2B 6	2C2E 13	2D2D 5	2D2E 7	3A3A 5	3A3C 7	3A3D 8	3B2A 9
	<i>Percent</i>									
<i>Barbilophozia</i> spp.	20	—	—	—	—	—	—	—	—	—
<i>Conocephalum</i> spp.	—	8	—	—	—	—	—	—	—	11
<i>Liverwort</i> spp.	80	42	100	23	80	86	20	43	38	33
<i>Lepidozia</i> spp.	—	—	—	—	—	—	20	—	—	—
<i>Marchantia polymorpha</i>	—	—	—	—	—	14	—	—	—	—
<i>Orthocaulis floerkei</i>	—	—	—	—	—	14	—	—	—	—
<i>Pellia</i> spp.	—	8	17	—	—	14	—	—	—	—
<i>Plagiochila</i> spp.	10	—	—	—	—	14	—	—	—	—
<i>Scapania</i> spp.	—	8	—	—	—	—	—	—	13	—

— = plant was not sampled in this vegetation type.

<sup>a</sup> Vegetation type code:

2B1B = Closed tall shrub alder.

2B1H = Closed tall shrub alder-salmonberry.

2B2B = Open tall shrub alder.

2C2E = Open-low shrub ericaceous shrub bog.

2D2D = Ericaceous dwarf-shrub mountain-heath tundra.

2D2E = Ericaceous dwarf-shrub cassiope tundra.

3A3A = Wet sedge meadow tundra.

3A3C = Wet sedge-herb meadow tundra.

3A3D = Fresh sedge marsh herbaceous.

3B2A = Mixed herbs herbaceous.

Source for vegetation types: Viereck and others 1992.



**Appendix C: Vegetation  
Type Tables of Cover,  
Frequency, and  
Constancy**

**Table 25—Average foliar cover, standard deviation, and frequency of plants in  
AVCS level V 1A1A03-*Picea sitchensis*/*Oplopanax horridus*-*Circaea alpina*<sup>a</sup>**

<b>Plant</b>	<b>Average cover</b>	<b>Standard deviation</b>	<b>Min. cover</b>	<b>Max. cover</b>	<b>Frequency</b>	<b>Constancy</b>
<i>Percent</i>						
Coniferous trees:						
<i>Picea sitchensis</i>	45	15	34	55	2	100
Shrubs:						
<i>Oplopanax horridus</i>	28	24	11	45	2	100
Forbs/ferns/horsetails:						
<i>Aruncus dioicus</i>	4	6	0	8	2	100
<i>Circaea alpina</i>	5	1	4	6	2	100
<i>Dryopteris dilatata</i>	18	2	16	19	2	100
<i>Thelypteris phegopteris</i>	9	2	8	11	2	100
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	18	11	10	25	2	100
Moss spp.	43	39	15	70	2	100
<i>Rhytidiadelphus loreus</i>	32	31	10	54	2	100

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **88**

Spruce site index: **88**

Number of points: **2**

**Table 26—Average foliar cover, standard deviation, and frequency of trees in AVCS level V 1A1B01-*Tsuga heterophylla*/*Vaccinium* spp.<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	12	13	0	51	26	28
<i>Picea sitchensis</i>	11	17	0	72	65	70
<i>Thuja plicata</i>	26	41	0	96	5	5
<i>Tsuga mertensiana</i>	21	27	1	132	27	29
<i>Tsuga heterophylla</i>	100	74	19	441	93	100
Dead wood:						
Downed wood	5	5	1	30	89	96
Shrubs:						
<i>Menziesia ferruginea</i>	9	10	0	54	80	86
<i>Rubus pedatus</i>	5	5	0	27	93	100
<i>Vaccinium</i> spp.	29	19	0	70	93	100
<i>Vaccinium parvifolium</i>	4	7	0	30	22	24
Forbs/ferns/horsetails:						
<i>Blechnum spicant</i>	3	4	0	20	63	68
<i>Circaea alpina</i>	4	5	1	11	4	4
<i>Coptis asplenifolia</i>	5	5	0	21	74	80
<i>Cornus canadensis</i>	4	3	0	23	87	94
<i>Lysichiton americanum</i>	4	6	0	32	43	46
<i>Streptopus</i> spp.	5	4	1	9	3	3
Mosses/clubmosses:						
<i>Dicranum</i> spp.	3	3	1	15	54	58
<i>Hylocomium splendens</i>	22	17	1	70	91	98
<i>Mnium</i> spp.	5	4	1	15	30	32
Moss spp.	4	4	0	26	81	87
<i>Plagiochila</i> spp.	6	5	1	10	3	3
<i>Plagiothecium</i> spp.	3	2	1	5	4	4
<i>Rhizomnium</i> spp.	4	3	1	8	7	8
<i>Rhytidiadelphus loreus</i>	25	16	2	73	91	98
<i>Sphagnum girgensohnii</i>	9	11	1	30	6	6
<i>Sphagnum capillifolium</i>	25	27	1	50	4	4
<i>Sphagnum</i> spp.	17	17	1	83	71	76
Liverworts:						
Liverwort spp.	4	5	0	22	81	87
<i>Pellia</i> spp.	4	2	1	6	12	13

<sup>a</sup> Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **76**  
 Spruce site index: **87**  
 Number of points: **93**

**Table 27—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1B02-*Tsuga heterophylla*/Vaccinium spp./*Dryopteris dilatata*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Picea sitchensis</i>	24	31	0	72	5	56
<i>Tsuga mertensiana</i>	11	6	8	15	2	22
<i>Tsuga heterophylla</i>	91	41	45	174	9	100
Dead wood:						
Downed wood	6	5	1	15	8	89
Shrubs:						
<i>Menziesia ferruginea</i>	3	5	0	16	8	89
<i>Oplopanax horridus</i>	3	4	0	8	3	33
<i>Rubus pedatus</i>	6	7	1	21	9	100
<i>Vaccinium parvifolium</i>	6	11	0	23	4	44
Vaccinium spp.	10	9	1	30	8	89
Forbs/ferns/horsetails:						
<i>Dryopteris dilatata</i>	7	6	1	18	8	89
<i>Polystichum munitum</i>	4	3	1	6	2	22
Mosses/clubmosses:						
<i>Conocephalum</i> spp.	3	3	1	5	2	22
<i>Dicranum fuscescens</i>	7	9	1	20	4	44
<i>Hylocomium splendens</i>	10	8	2	23	9	100
Moss spp.	3	5	0	14	8	89
<i>Polytrichum</i> spp.	4	5	1	12	4	44
<i>Rhizomnium glabrescens</i>	9	6	3	15	3	33
<i>Rhytidadelphus loreus</i>	26	17	5	58	9	100
<i>Sphagnum</i> spp.	12	12	1	33	6	67
Liverworts:						
<i>Lepidozia</i> spp.	3	3	1	5	2	22

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **83**

Spruce site index: **124**

Number of points: **9**

**Table 28—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1B03-*Tsuga heterophylla*/*Vaccinium* spp.-*Oplopanax horridus*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	26	23	1	75	9	38
<i>Picea sitchensis</i>	8	12	0	39	15	63
<i>Tsuga heterophylla</i>	106	71	24	296	24	100
Dead wood:						
Downed wood	6	4	1	18	23	96
Shrubs:						
<i>Menziesia ferruginea</i>	5	5	0	15	20	83
<i>Oplopanax horridus</i>	5	4	0	14	22	92
<i>Rubus pedatus</i>	5	4	0	12	21	88
<i>Vaccinium</i> spp.	16	17	1	66	21	88
Forbs/ferns/horsetails:						
<i>Athyrium filix-femina</i>	4	9	0	30	10	42
<i>Blechnum spicant</i>	5	6	0	20	18	75
<i>Cornus canadensis</i>	3	2	0	8	23	96
<i>Dryopteris dilatata</i>	4	5	0	18	16	67
<i>Tiarella trifoliata</i>	4	4	0	12	18	75
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	18	12	1	44	23	96
<i>Mnium</i> spp.	5	4	1	15	10	42
Moss spp.	6	5	0	15	22	92
<i>Polytrichum juniperium</i>	9	8	3	15	2	8
<i>Rhytidiadelphus loreus</i>	28	14	6	60	23	96
<i>Sphagnum</i> spp.	8	10	1	24	9	38
Liverworts:						
Liverwort spp.	4	3	1	11	21	88

<sup>a</sup> Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **91**  
 Spruce site index: **99**  
 Number of points: **24**

**Table 29—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1C02-*Picea sitchensis*-*Tsuga heterophylla*/*Vaccinium* spp.-*Menziesia ferruginea*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Picea sitchensis</i>	16	26	0	62	5	100
<i>Tsuga heterophylla</i>	97	78	20	215	5	100
Dead wood:						
Downed wood	8	7	3	20	5	100
Shrubs:						
<i>Menziesia ferruginea</i>	13	15	3	38	5	100
<i>Vaccinium</i> spp.	27	19	5	57	5	100
Forbs/ferns/horsetails:						
<i>Cornus canadensis</i>	4	3	1	8	5	100
<i>Lysichiton americanum</i>	5	3	1	8	4	80
Mosses/clubmosses:						
<i>Dicranum</i> spp.	3	0	3	3	2	40
<i>Hylocomium splendens</i>	22	11	7	35	5	100
Moss spp.	6	3	3	11	5	100
<i>Rhytidiadelphus loreus</i>	14	9	2	20	5	100
<i>Sphagnum</i> spp.	21	20	9	55	5	100
Liverworts:						
Liverwort spp.	8	2	6	11	5	100

<sup>a</sup> Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **89**  
 Spruce site index: **101**  
 Number of points: **5**

**Table 30—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1C03-*Picea sitchensis*-(*Tsuga heterophylla*)/*Oplopanax horridus*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Picea sitchensis</i>	36	31	8	75	5	83
<i>Tsuga heterophylla</i>	170	49	126	231	5	83
Dead wood:						
Downed wood	4	4	1	11	5	83
Shrubs:						
<i>Menziesia ferruginea</i>	7	4	3	11	4	67
<i>Oplopanax horridus</i>	5	5	2	14	5	83
<i>Ribes bracteosum</i>	10	13	1	19	2	33
<i>Rubus spectabilis</i>	5	7	1	15	4	67
<i>Rubus pedatus</i>	4	2	1	7	6	100
<i>Vaccinium</i> spp.	25	20	5	57	5	83
Forbs/ferns/horsetails:						
<i>Cornus canadensis</i>	9	6	0	18	6	100
<i>Gymnocarpium dryopteris</i>	5	4	1	13	5	83
<i>Lysichiton americanum</i>	17	13	4	32	4	67
<i>Tiarella trifoliata</i>	5	5	2	12	4	67
Mosses/clubmosses:						
<i>Dicranum</i> spp.	3	0	3	3	2	33
<i>Hylocomium splendens</i>	15	9	7	30	5	83
Moss spp.	5	2	3	8	5	83
<i>Rhytidiadelphus loreus</i>	22	19	2	51	6	100
<i>Sphagnum</i> spp.	22	29	2	55	3	50
Liverworts:						
Liverwort spp.	9	2	6	11	4	67

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **93**  
 Spruce site index: **116**  
 Number of points: **6**

**Table 31—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1C04-*Picea sitchensis*-(*Tsuga heterophylla*)/*Vaccinium* spp.-*Oplopanax horridus*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees						
<i>Picea sitchensis</i>	12	16	0	41	7	88
<i>Tsuga heterophylla</i>	69	79	6	251	8	100
<i>Tsuga mertensiana</i>	16	11	8	28	3	38
Deciduous trees:						
<i>Alnus rubra</i>	48	67	1	95	2	25
Dead wood:						
Downed wood	6	7	1	20	8	100
Shrubs:						
<i>Oplopanax horridus</i>	14	11	3	32	8	100
<i>Ribes bracteosum</i>	5	3	3	7	2	25
<i>Rubus pedatus</i>	4	4	1	13	7	88
<i>Rubus spectabilis</i>	22	22	6	38	2	25
<i>Sambucus</i> spp.	3	3	1	6	3	38
<i>Vaccinium</i> spp.	29	33	1	71	6	75
Forbs/ferns/horsetails:						
<i>Athyrium filix-femina</i>	3	5	0	10	4	50
<i>Coptis aspleniifolia</i>	8	14	1	32	5	63
<i>Dryopteris dilatata</i>	8	7	1	23	7	88
<i>Tiarella trifoliata</i>	6	8	1	20	6	75
Mosses/clubmosses:						
<i>Climacium dendroides</i>	18	18	5	30	2	25
<i>Hylocomium splendens</i>	14	12	1	30	8	100
Moss spp.	10	13	1	32	5	63
<i>Rhizomnium glabrescens</i>	14	8	8	20	2	25
<i>Rhytidadelphus loreus</i>	29	25	5	83	8	100
<i>Sphagnum girgensohnii</i>	10	0	10	10	2	25
<i>Sphagnum</i> spp.	19	20	2	47	4	50
Liverworts:						
Liverwort spp.	3	2	1	6	5	63
<i>Pellia</i> spp.	3	1	2	4	3	38

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **107**

Spruce site index: **127**

Number of points: **8**

**Table 32—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1C05-*Picea sitchensis*-(*Tsuga heterophylla*)/*Vaccinium* spp.<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Picea sitchensis</i>	13	17	1	25	2	100
<i>Tsuga heterophylla</i>	34	17	22	46	2	100
Dead wood:						
Downed wood	11	5	8	14	2	100
Shrubs:						
<i>Menziesia ferruginea</i>	4	3	2	6	2	100
<i>Oplopanax horridus</i>	6	3	4	8	2	100
<i>Rubus pedatus</i>	4	0	4	4	2	100
<i>Vaccinium</i> spp.	18	23	2	35	2	100
Forbs/ferns/horsetails:						
<i>Athyrium filix-femina</i>	5	7	0	10	2	100
<i>Dryopteris dilatata</i>	5	2	3	6	2	100
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	28	4	25	30	2	100
Moss spp.	7	0	7	7	2	100
<i>Rhytidiadelphus loreus</i>	38	4	35	40	2	100
<i>Sphagnum</i> spp.	6	6	2	10	2	100
Liverworts:						
Liverwort spp.	4	3	2	6	2	100

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **77**  
 Spruce site index: **94**  
 Number of points: **2**



**Table 33—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1C06-*Picea sitchensis*-(*Tsuga heterophylla*)/*Vaccinium* spp./*Lysichiton americanum*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Picea sitchensis</i>	9	11	1	16	2	100
<i>Tsuga heterophylla</i>	66	40	38	94	2	100
Dead wood:						
Downed wood	8	2	6	9	2	100
Shrubs:						
<i>Vaccinium</i> spp.	24	20	9	38	2	100
Forbs/ferns/horsetails:						
<i>Lysichiton americanum</i>	12	17	1	24	2	100
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	11	10	4	18	2	100
Moss spp.	4	2	2	5	2	100
<i>Rhizomnium</i> spp.	4	4	1	6	2	100
<i>Rhytidiadelphus loreus</i>	13	9	6	19	2	100
<i>Sphagnum capillifolium</i>	37	30	15	58	2	100
Liverworts:						
Liverwort spp.	5	0	5	5	2	100
<i>Pellia</i> spp.	4	2	2	5	2	100

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **53**  
 Number of points: **2**

**Table 34—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1C07-*Tsuga heterophylla*-(*Picea sitchensis*)/*Vaccinium* spp./*Oplopanax horridus*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Tsuga heterophylla</i>	54	33	30	77	2	100
Dead wood:						
Downed wood	4	2	2	5	2	100
Shrubs:						
<i>Oplopanax horridus</i>	6	4	3	8	2	100
<i>Rubus pedatus</i>	3	3	1	5	2	100
<i>Vaccinium</i> spp.	14	5	10	18	2	100
Forbs/ferns/horsetails:						
<i>Lysichiton americanum</i>	5	3	3	6	2	100
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	19	6	15	23	2	100
<i>Mnium</i> spp.	3	3	1	5	2	100
Moss spp.	9	1	9	10	2	100
<i>Rhytidiadelphus loreus</i>	23	18	10	35	2	100
<i>Sphagnum</i> spp.	6	6	1	10	2	100
Liverworts:						
Liverwort spp.	6	6	1	10	2	100

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:  
Average site index: **83**  
Spruce site index: **92**  
Number of points: **2**

**Table 35—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1C08-*Tsuga heterophylla*-(*Picea sitchensis*)/*Oplopanax horridus*/*Lysichiton americanum*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Tsuga heterophylla</i>	54	33	30	77	2	100
Dead wood:						
Downed wood	4	2	2	5	2	100
Shrubs:						
<i>Oplopanax horridus</i>	6	4	3	8	2	100
<i>Rubus pedatus</i>	3	3	1	5	2	100
<i>Vaccinium</i> spp.	14	5	10	18	2	100
Forbs/ferns/horsetails:						
<i>Lysichiton americanum</i>	5	3	3	6	2	100
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	19	6	15	23	2	100
<i>Mnium</i> spp.	3	3	1	5	2	100
Moss spp.	9	1	9	10	2	100
<i>Rhytidiadelphus loreus</i>	23	18	10	35	2	100
<i>Sphagnum</i> spp.	6	6	1	10	2	100
Liverworts:						
Liverwort spp.	6	6	1	10	2	100

<sup>a</sup> Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:  
Average site index: **79**  
Number of points: **2**

**Table 36—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1D01-*Picea sitchensis*-*Tsuga heterophylla*/*Lysichiton americanum*/*Sphagnum* spp.<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees						
<i>Picea sitchensis</i>	10	10	1	22	5	83
<i>Thuja plicata</i>	35	20	15	56	3	50
<i>Tsuga heterophylla</i>	119	68	18	202	6	100
Dead wood:						
Downed wood	5	4	1	11	6	100
Shrubs:						
<i>Menziesia ferruginea</i>	10	5	6	17	4	67
<i>Oplopanax horridus</i>	10	16	1	39	5	83
<i>Rubus pedatus</i>	5	6	0	14	6	100
<i>Vaccinium</i> spp.	33	8	25	40	4	67
Forbs/ferns/horsetails:						
<i>Circaea alpina</i>	4	4	1	6	2	33
<i>Cornus canadensis</i>	3	3	1	8	6	100
<i>Polystichum munitum</i>	7	5	3	10	2	33
<i>Thelypteris phegopteris</i>	11	15	1	22	2	33
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	21	15	5	48	6	100
<i>Rhytidiadelphus loreus</i>	49	17	25	65	6	100
<i>Sphagnum</i> spp.	5	4	2	10	4	67

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **94**  
 Spruce site index: **118**  
 Number of points: **6**

**Table 37—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1D02-*Picea sitchensis*-*Tsuga heterophylla*/*Vaccinium* spp.-*Menziesia ferruginea*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Picea sitchensis</i>	22	19	0	51	7	100
<i>Tsuga heterophylla</i>	97	59	0	167	7	100
<i>Tsuga mertensiana</i>	4	3	1	6	2	29
Dead wood:						
Downed wood	5	4	1	10	7	100
Shrubs:						
<i>Alnus sinuata</i>	16	19	3	38	3	43
<i>Menziesia ferruginea</i>	8	15	0	41	7	100
<i>Oplopanax horridus</i>	5	10	1	24	5	71
<i>Rubus spectabilis</i>	5	7	0	10	2	29
<i>Vaccinium</i> spp.	18	20	2	48	6	86
Forbs/ferns/horsetails:						
<i>Cornus canadensis</i>	10	19	0	43	5	71
<i>Dryopteris dilatata</i>	5	6	0	16	7	100
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	6	7	1	20	6	86
<i>Mnium</i> spp.	3	5	1	10	4	57
Moss spp.	7	6	1	15	7	100
<i>Rhytidiadelphus loreus</i>	25	19	1	58	7	100
Liverworts:						
<i>Lepidozia</i> spp.	5	5	1	10	3	43

<sup>a</sup> Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **76**  
 Spruce site index: **94**  
 Number of points: **7**

**Table 38—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1D04-*Picea sitchensis*-*Tsuga heterophylla*/*Vaccinium* spp./*Oplopanax horridus*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Picea sitchensis</i>	39	47	3	92	3	75
<i>Tsuga heterophylla</i>	64	62	30	157	4	100
Dead wood:						
Downed wood	6	3	3	10	4	100
Shrubs:						
<i>Oplopanax horridus</i>	5	4	0	11	4	100
<i>Rubus spectabilis</i>	9	12	0	17	2	50
<i>Vaccinium</i> spp.	11	13	1	30	4	100
Forbs/ferns/horsetails:						
<i>Athyrium</i> spp.	4	5	0	7	2	50
<i>Lysichiton americanum</i>	5	4	2	8	2	50
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	11	12	2	25	3	75
<i>Mnium</i> spp.	5	3	3	8	3	75
<i>Plagiothecium undulatum</i>	4	1	3	4	2	50
<i>Rhytidiadelphus loreus</i>	17	11	5	30	4	100
<i>Sphagnum</i> spp.	23	25	5	40	2	50
Liverworts:						
Liverwort spp.	8	6	1	15	4	100

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **73**  
Number of points: **4**

**Table 39—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1D05-*Picea sitchensis*-*Tsuga heterophylla*/*Vaccinium* spp.<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Picea sitchensis</i>	14	15	1	43	6	75
<i>Thuja plicata</i>	56	76	2	110	2	25
<i>Tsuga heterophylla</i>	83	48	35	171	8	100
<i>Tsuga mertensiana</i>	23	17	1	45	5	63
Dead wood:						
Downed wood	8	6	2	21	8	100
Shrubs:						
<i>Menziesia ferruginea</i>	4	2	3	6	4	50
<i>Rubus pedatus</i>	5	2	2	8	8	100
<i>Vaccinium</i> spp.	37	20	11	67	8	100
Forbs/ferns/horsetails:						
<i>Blechnum spicant</i>	5	4	1	14	8	100
<i>Coptis asplenifolia</i>	6	7	1	19	6	75
<i>Cornus canadensis</i>	3	2	1	8	8	100
<i>Streptopus roseus</i>	7	7	1	19	6	75
<i>Thelypteris phegopteris</i>	5	5	1	8	2	25
Mosses/clubmosses:						
<i>Dicranum scoparium</i>	8	4	5	10	2	25
<i>Hylocomium splendens</i>	20	19	1	50	6	75
Moss spp.	6	3	2	10	8	100
<i>Rhizomnium</i> spp.	11	9	2	20	3	38
<i>Rhytidiadelphus loreus</i>	25	17	10	61	8	100
<i>Sphagnum</i> spp.	10	5	3	15	4	50
Liverworts:						
Liverwort spp.	7	8	1	18	7	88

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **82**  
 Spruce site index: **106**  
 Number of points: **8**

**Table 40—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1D07-*Tsuga heterophylla*-(*Picea sitchensis*)/*Vaccinium* spp./*Oplopanax horridus*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees						
<i>Picea sitchensis</i>	12	16	0	55	16	84
<i>Tsuga heterophylla</i>	99	75	7	264	19	100
Dead wood:						
Downed wood	7	4	1	15	19	100
Shrubs:						
<i>Menziesia ferruginea</i>	5	5	0	18	12	63
<i>Oplopanax horridus</i>	5	5	0	15	17	89
<i>Rubus pedatus</i>	4	3	1	14	19	100
<i>Vaccinium</i> spp.	21	20	2	63	19	100
Forbs/ferns/horsetails:						
<i>Athyrium</i> spp.	3	3	1	6	2	11
<i>Blechnum spicant</i>	3	3	0	11	16	84
<i>Clintonia uniflora</i>	3	3	1	7	5	26
<i>Coptis aspleniifolia</i>	3	3	0	11	15	79
<i>Thelypteris phegopteris</i>	3	4	1	10	4	21
<i>Thelypteris limbosperma</i>	3	3	1	6	3	16
Mosses/clubmosses:						
<i>Dicranum fuscescens</i>	4	5	1	10	3	16
<i>Hylocomium splendens</i>	13	11	1	38	17	89
<i>Mnium</i> spp.	5	7	1	20	8	42
Moss spp.	7	5	1	15	17	89
<i>Polytrichum</i> spp.	3	4	1	13	8	42
<i>Rhizomnium</i> spp.	4	2	2	5	2	11
<i>Rhytidiadelphus loreus</i>	22	13	2	54	19	100
<i>Sphagnum girgensohnii</i>	6	5	1	11	4	21
<i>Sphagnum</i> spp.	18	16	2	52	12	63
Liverworts:						
Liverwort spp.	5	5	0	18	19	100
<i>Pellia</i> spp.	3	1	2	4	2	11

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **84**  
 Spruce site index: **94**  
 Number of points: **19**



**Table 41—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1D08-*Tsuga heterophylla*-(*Picea sitchensis*)/*Vaccinium* spp./*Lysichiton americanum*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Picea sitchensis</i>	15	17	0	59	12	100
<i>Tsuga heterophylla</i>	105	97	28	311	12	100
<i>Tsuga mertensiana</i>	31	48	0	102	4	33
Dead wood:						
Downed wood	4	2	1	10	12	100
Stumps	3	3	1	10	8	67
Shrubs:						
<i>Menziesia ferruginea</i>	5	5	0	15	11	92
<i>Rubus pedatus</i>	3	3	1	9	12	100
<i>Vaccinium alaskensis</i>	35	7	30	41	2	17
<i>Vaccinium parvifolium</i>	4	3	1	9	5	42
<i>Vaccinium</i> spp.	28	25	8	74	10	83
Forbs/ferns/horsetails:						
<i>Blechnum spicant</i>	4	5	0	14	10	83
<i>Cornus canadensis</i>	3	2	0	7	12	100
<i>Lysichiton americanum</i>	5	5	1	18	10	83
<i>Veratrum viride</i>	5	6	1	9	2	17
Grass/grasslike:						
<i>Calamagrostis canadensis</i>	14	6	9	18	2	17
<i>Carex</i> spp.	3	3	1	7	4	33
Mosses/clubmosses:						
<i>Conocephalum</i> spp.	7	10	1	18	3	25
<i>Hylocomium</i> spp.	18	1	17	18	2	17
<i>Hylocomium splendens</i>	18	13	2	37	10	83
<i>Mnium</i> spp.	5	3	2	10	6	50
Moss spp.	4	4	0	15	10	83
<i>Rhizomnium glabrescens</i>	4	3	1	7	4	33
<i>Rhytidiadelphus loreus</i>	22	8	5	30	12	100
<i>Sphagnum</i> spp.	12	11	5	40	9	75
Liverworts:						
Liverwort spp.	5	5	1	15	12	100
<i>Pellia</i> spp.	6	5	2	15	5	42

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **81**  
 Spruce site index: **104**  
 Number of points: **12**

**Table 42—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1E01-*Tsuga heterophylla*-*Chamaecyparis nootkatensis*/*Vaccinium* spp.<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	33	24	0	101	52	93
<i>Picea sitchensis</i>	11	22	0	114	38	68
<i>Thuja plicata</i>	55	78	1	227	7	13
<i>Tsuga heterophylla</i>	99	80	9	452	55	98
<i>Tsuga mertensiana</i>	19	18	0	71	31	55
Dead wood:						
Downed wood	5	4	1	18	54	96
Shrubs:						
<i>Cladothamnus pyrolaeiflorus</i>	4	4	1	13	8	14
<i>Empetrum nigrum</i>	4	4	0	8	4	7
<i>Menziesia ferruginea</i>	7	6	0	21	54	96
<i>Phyllodoce</i> spp.	4	2	3	6	3	5
<i>Vaccinium vitis-idaea</i>	5	6	0	15	5	9
<i>Vaccinium</i> spp.	27	20	1	89	54	96
Forbs/ferns/horsetails:						
<i>Coptis asplenifolia</i>	3	4	0	19	46	82
<i>Cornus canadensis</i>	5	5	0	23	53	95
<i>Fauria crista-galli</i>	6	8	0	29	14	25
<i>Maianthemum dilatatum</i>	4	5	0	13	7	13
<i>Sanguisorba officinalis</i>	4	3	1	6	2	4
<i>Thelypteris phegopteris</i>	4	7	0	21	9	16
<i>Viola</i> spp.	3	2	2	5	2	4
Grass/grasslike:						
<i>Carex pauciflora</i>	7	9	1	14	2	4
<i>Eriophorum angustifolium</i>	3	0	3	3	2	4
<i>Trichophorum caespitosum</i>	14	7	9	19	2	4
Mosses/clubmosses:						
<i>Dicranum fuscescens</i>	4	4	1	10	8	14
<i>Hylocomium splendens</i>	23	14	3	75	51	91
<i>Hylocomium</i> spp.	33	18	10	52	5	9
<i>Isoetecium myosuroides</i>	3	3	1	5	2	4
<i>Mnium</i> spp.	3	3	0	10	13	23
Moss spp.	4	4	0	18	48	86
<i>Plagiothecium undulatum</i>	3	3	1	5	2	4
<i>Pleurozium schreberi</i>	29	38	2	56	2	4
<i>Ptilium crista-castrensis</i>	7	4	3	10	4	7
<i>Rhizomnium glabrescens</i>	3	3	1	10	15	27
<i>Rhytidiadelphus loreus</i>	27	20	2	83	54	96
<i>Sphagnum capillifolium</i>	10	8	1	15	3	5
<i>Sphagnum</i> spp.	17	16	1	61	36	64
<i>Sphagnum girgensohnii</i>	10	10	1	25	10	18
Liverworts:						
Liverwort spp.	4	4	1	15	44	79

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **60**  
 Spruce site index: **78**  
 Number of points: **56**

**Table 43—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1E02-*Tsuga heterophylla*-*Chamaecyparis nootkatensis*/*Vaccinium* spp./*Lysichiton americanum*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	52	45	0	149	17	89
<i>Picea sitchensis</i>	17	32	0	114	15	79
<i>Tsuga mertensiana</i>	23	22	1	73	17	89
<i>Tsuga heterophylla</i>	123	88	35	319	19	100
Dead wood:						
Downed wood	4	3	1	10	19	100
Shrubs:						
<i>Menziesia ferruginea</i>	7	8	2	30	19	100
<i>Vaccinium</i> spp.	32	19	5	64	18	95
Forbs/ferns/horsetails:						
<i>Coptis asplenifolia</i>	4	5	0	18	18	95
<i>Cornus canadensis</i>	6	6	1	27	18	95
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	40	15	10	68	13	68
<i>Hylocomium</i> spp.	24	8	10	33	6	32
<i>Mnium</i> spp.	4	4	1	15	10	53
<i>Rhytidiadelphus loreus</i>	14	10	2	30	19	100
<i>Rhytidiadelphus triquetrus</i>	4	3	2	6	2	11
<i>Sphagnum</i> spp.	18	17	1	55	18	95
Liverworts:						
Liverwort spp.	3	3	0	10	16	84

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **54**  
 Spruce site index: **79**  
 Number of points: **19**

**Table 44—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1F01-*Tsuga mertensiana*/*Vaccinium* spp.<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	6	4	2	10	4	20
<i>Picea sitchensis</i>	18	30	0	123	16	80
<i>Tsuga heterophylla</i>	32	17	6	54	11	55
<i>Tsuga mertensiana</i>	97	61	3	245	18	90
Shrubs:						
<i>Alnus sinuata</i>	44	32	17	74	4	20
<i>Menziesia ferruginea</i>	10	8	1	30	15	75
<i>Rubus spectabilis</i>	18	22	1	59	6	30
<i>Rubus pedatus</i>	8	5	2	21	17	85
<i>Vaccinium</i> spp.	30	19	1	58	20	100
Forbs/ferns/horsetails:						
<i>Athyrium filix-femina</i>	6	5	1	12	5	25
<i>Blechnum spicant</i>	3	3	1	10	10	50
<i>Caltha</i> spp.	5	2	3	8	3	15
<i>Coptis aspleniifolia</i>	7	4	1	13	9	45
<i>Cornus canadensis</i>	6	4	1	14	12	60
<i>Dryopteris dilatata</i>	4	8	0	29	12	60
<i>Fauria crista-galli</i>	3	5	0	12	8	40
<i>Lysichiton americanum</i>	4	3	0	7	8	40
<i>Maianthemum dilatatum</i>	5	4	1	8	3	15
<i>Streptopus roseus</i>	3	3	1	9	14	70
Grass/grasslike:						
<i>Carex</i> spp.	11	20	1	41	4	20
Mosses/clubmosses:						
<i>Aulacomnium</i> spp.	5	3	3	7	2	10
<i>Dicranum</i> spp.	4	5	1	20	16	80
<i>Hylocomium splendens</i>	13	13	3	50	15	75
<i>Mnium</i> spp.	6	5	2	9	2	10
Moss spp.	4	3	1	12	20	100
<i>Polytrichum</i> spp.	3	1	2	4	2	10
<i>Rhizomnium glabrescens</i>	4	2	2	6	4	20
<i>Rhytidiadelphus loreus</i>	29	21	5	63	17	85
<i>Sphagnum</i> spp.	23	19	1	53	16	80
Liverworts:						
Liverwort spp.	4	3	1	10	18	90

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **53**  
 Spruce site index: **73**  
 Number of points: **20**

**Table 45—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1G01-*Tsuga heterophylla*-*Thuja plicata*/*Vaccinium* spp.-*Lysichiton americanum*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	15	17	0	39	7	54
<i>Picea sitchensis</i>	10	12	1	30	9	69
<i>Thuja plicata</i>	40	32	1	91	11	85
<i>Tsuga heterophylla</i>	100	69	3	214	13	100
<i>Tsuga mertensiana</i>	37	62	1	211	11	85
Dead wood:						
Downed wood	3	2	1	8	13	100
Shrubs:						
<i>Gaultheria shallon</i>	5	10	0	24	5	38
<i>Menziesia ferruginea</i>	6	3	1	13	13	100
<i>Vaccinium</i> spp.	18	16	0	46	11	85
Forbs/ferns/horsetails:						
<i>Athyrium filix-femina</i>	3	0	3	3	2	15
<i>Cornus canadensis</i>	6	4	1	12	13	100
<i>Lysichiton americanum</i>	4	3	1	9	11	85
Mosses/clubmosses:						
<i>Hlocomium splendens</i>	30	20	10	69	12	92
<i>Mnium</i> spp.	4	3	2	8	5	38
<i>Rhytidiadelphus</i> spp.	6	3	4	8	2	15
<i>Rhytidiadelphus loreus</i>	22	14	5	50	11	85
<i>Sphagnum</i> spp.	15	14	2	50	13	100
Liverworts:						
Liverwort spp.	4	5	0	15	12	92
<i>Pellia</i> spp.	6	2	4	8	4	31

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **64**  
 Spruce site index: **70**  
 Number of points: **13**

**Table 46—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1U01-*Tsuga heterophylla*-*Picea sitchensis*-(*Thuja plicata*)/*Vaccinium* spp./*Rhytiadelphus loreus*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	24	20	0	63	11	79
<i>Picea sitchensis</i>	12	18	0	59	12	86
<i>Thuja plicata</i>	27	27	3	76	6	43
<i>Tsuga heterophylla</i>	54	34	7	110	12	86
<i>Tsuga mertensiana</i>	14	14	1	48	10	71
Dead wood:						
Downed wood	4	2	1	6	13	93
Shrubs:						
<i>Menziesia ferruginea</i>	5	3	0	12	13	93
<i>Oplopanax horridus</i>	5	5	1	11	6	43
<i>Vaccinium</i> spp.	16	13	2	41	14	100
Forbs/ferns/horsetails:						
<i>Caltha</i> spp.	8	6	4	14	3	21
<i>Coptis aspleniifolia</i>	4	4	1	14	14	100
<i>Cornus suecica</i>	7	6	3	15	3	21
Grass/grasslike:						
<i>Carex</i> spp.	23	27	2	54	3	21
Mosses/clubmosses:						
<i>Dicranum</i> spp.	9	12	3	31	5	36
<i>Hylocomium</i> spp.	27	2	25	28	2	14
<i>Hylocomium splendens</i>	16	8	8	28	11	79
<i>Leucolepis</i> spp.	5	3	3	7	2	14
<i>Mnium</i> spp.	6	8	1	15	3	21
Moss spp.	6	8	0	30	14	100
<i>Rhizomnium glabrescens</i>	4	3	1	8	6	43
<i>Rhytiadelphus loreus</i>	30	17	6	53	13	93
<i>Sphagnum girgensohnii</i>	4	2	2	5	2	14
<i>Sphagnum</i> spp.	11	14	1	49	11	79
Liverworts:						
Liverwort spp.	5	5	1	15	14	100
<i>Scapania</i> spp.	4	3	2	6	2	14

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **64**  
 Spruce site index: **96**  
 Number of points: **14**

**Table 47—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1U03-*Tsuga heterophylla*-*Chamaecyparis nootkatensis*-*Tsuga mertensiana*-*Picea sitchensis*/*Vaccinium* spp./*Lysichiton americanum*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	23	21	1	75	23	85
<i>Picea sitchensis</i>	6	8	0	30	23	85
<i>Pinus contorta</i>	12	20	1	35	3	11
<i>Thuja plicata</i>	33	44	0	128	10	37
<i>Tsuga heterophylla</i>	68	71	1	303	27	100
<i>Tsuga mertensiana</i>	23	36	0	158	18	67
Dead wood:						
Downed wood	6	4	1	15	27	100
Shrubs:						
<i>Ledum groenlandicum</i>	12	6	7	16	2	7
<i>Menziesia ferruginea</i>	7	5	1	19	27	100
<i>Vaccinium</i> spp.	17	12	2	40	27	100
Forbs/ferns/horsetails:						
<i>Cornus canadensis</i>	5	3	0	14	27	100
<i>Lysichiton americanum</i>	7	8	0	41	27	100
<i>Pteridium aquilinum</i>	5	0	5	6	2	7
Grass/grasslike:						
<i>Calamagrostis</i> spp.	3	3	1	5	2	7
Mosses/clubmosses:						
<i>Dicranum fuscescens</i>	4	3	1	6	3	11
<i>Hylocomium splendens</i>	20	9	5	40	27	100
<i>Mnium</i> spp.	6	6	1	15	9	33
Moss spp.	3	2	1	10	25	93
<i>Rhizomnium glabrescens</i>	7	5	4	15	5	19
<i>Rhizomnium</i> spp.	6	6	1	12	3	11
<i>Rhytidiadelphus loreus</i>	17	14	2	57	27	100
<i>Sphagnum capillifolium</i>	20	16	7	37	3	11
<i>Sphagnum</i> spp.	22	18	1	59	24	89
<i>Sphagnum squarrosum</i>	3	3	1	5	2	7
Liverworts:						
Liverwort spp.	6	7	0	25	26	96
<i>Pellia</i> spp.	4	2	3	8	7	26

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **53**  
 Spruce site index: **62**  
 Number of points: **27**

**Table 48—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1U04-*Tsuga heterophylla*-*Chamaecyparis nootkatensis*-*Tsuga mertensiana*-*Picea sitchensis*/*Lysichiton americanum*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	28	18	1	58	8	100
<i>Pinus contorta</i>	14	6	8	19	3	38
<i>Thuja plicata</i>	14	13	0	32	4	50
<i>Tsuga heterophylla</i>	51	54	1	144	8	100
<i>Tsuga mertensiana</i>	14	14	2	41	8	100
Dead wood:						
Downed wood	3	2	1	8	7	88
Shrubs:						
<i>Ledum groenlandicum</i>	11	15	0	22	2	25
<i>Menziesia ferruginea</i>	5	4	1	12	8	100
<i>Vaccinium</i> spp.	20	24	1	56	7	88
Forbs/ferns/horsetails:						
<i>Blechnum spicant</i>	3	4	0	11	7	88
<i>Cornus canadensis</i>	6	3	1	11	8	100
<i>Fauria crista-galli</i>	5	6	0	16	7	88
<i>Lysichiton americanum</i>	6	3	3	13	7	88
Grass/grasslike:						
Grass spp.	9	15	0	32	4	50
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	22	22	4	64	8	100
<i>Rhytidiadelphus loreus</i>	13	7	5	22	7	88
<i>Sphagnum</i> spp.	36	23	2	66	8	100

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **52**  
 Spruce site index: **98**  
 Number of points: **8**



**Table 49—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A1U05-*Chamaecyparis nootkatensis*-*Tsuga mertensiana*-*Tsuga heterophylla*-*Picea sitchensis*- *Pinus contorta*/*Vaccinium* spp.<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	39	26	10	95	20	95
<i>Picea sitchensis</i>	4	6	0	23	14	67
<i>Pinus contorta</i>	9	6	1	20	9	43
<i>Thuja plicata</i>	18	10	8	31	5	24
<i>Tsuga mertensiana</i>	17	11	1	40	18	86
<i>Tsuga heterophylla</i>	44	42	1	146	21	100
Dead wood:						
Downed wood	4	3	1	15	21	100
Shrubs:						
<i>Gaultheria shallon</i>	25	19	1	48	4	19
<i>Menziesia ferruginea</i>	6	5	1	21	21	100
<i>Rubus pedatus</i>	3	3	0	8	15	71
<i>Vaccinium</i> spp.	19	16	1	56	21	100
Forbs/ferns/horsetails:						
<i>Athyrium filix-femina</i>	5	8	0	14	3	14
<i>Blechnum spicant</i>	5	5	1	19	16	76
<i>Caltha</i> spp.	15	4	12	17	2	10
<i>Coptis aspleniifolia</i>	4	3	0	10	19	90
<i>Cornus canadensis</i>	4	3	0	10	21	100
<i>Fauria crista-galli</i>	6	8	1	23	13	62
<i>Lysichiton americanum</i>	4	4	1	13	14	67
Grass/grasslike:						
<i>Carex</i> spp.	4	5	1	13	6	29
<i>Carex sitchensis</i>	13	17	1	26	2	10
Mosses/clubmosses:						
<i>Dicranum</i> spp.	3	2	1	5	9	43
<i>Hylocomium splendens</i>	26	15	5	55	21	100
<i>Rhizomnium glabrescens</i>	8	4	3	14	7	33
<i>Rhytidiadelphus triquetrus</i>	6	6	1	10	2	10
<i>Rhytidiadelphus loreus</i>	17	12	2	40	21	100
<i>Sphagnum</i> spp.	18	16	1	51	18	86
<i>Sphagnum girgensohnii</i>	6	4	2	10	3	14
Liverworts:						
Liverwort spp.	4	5	1	15	19	90
<i>Pellia</i> spp.	4	3	1	10	6	29

<sup>a</sup> Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **49**  
 Spruce site index: **70**  
 Number of points: **21**

**Table 50—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2A05-*Picea sitchensis*/*Rubus spectabilis*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Picea sitchensis</i>	140	75	87	193	2	100
<i>Tsuga heterophylla</i>	24	34	0	48	2	100
Shrubs:						
<i>Rubus spectabilis</i>	46	12	37	54	2	100
Mosses/clubmosses:						
Moss spp.	8	4	5	10	2	100

<sup>a</sup> Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **41**  
 Spruce site index: **41**  
 Number of points: **2**

**Table 51—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2B06-*Picea sitchensis*-(*Tsuga heterophylla*)/*Vaccinium* spp./*Lysichiton americanum*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	16	11	8	24	2	100
<i>Picea sitchensis</i>	10	8	5	15	2	100
<i>Tsuga heterophylla</i>	39	30	18	61	2	100
Shrubs:						
<i>Menziesia ferruginea</i>	19	3	17	22	2	100
<i>Vaccinium</i> spp.	23	20	9	37	2	100
Forbs/ferns/horsetails:						
<i>Coptis asplenifolia</i>	4	3	2	6	2	100
<i>Cornus canadensis</i>	21	10	14	28	2	100
<i>Lysichiton americanum</i>	10	1	9	10	2	100
Grass/grasslike:						
<i>Carex</i> spp.	3	4	1	6	2	100
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	43	39	15	70	2	100
<i>Rhytidiadelphus loreus</i>	8	6	3	12	2	100
<i>Sphagnum</i> spp.	40	47	7	73	2	100

<sup>a</sup> Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **81**  
 Spruce site index: **86**  
 Number of points: **2**

**Table 52—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2B07-*Tsuga heterophylla*-(*Picea sitchensis*)/*Vaccinium* spp./*Oplopanax horridus*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Picea sitchensis</i>	10	1	9	11	2	100
<i>Tsuga heterophylla</i>	17	12	8	25	2	100
Shrubs:						
<i>Menziesia ferruginea</i>	9	6	5	13	2	100
<i>Oplopanax horridus</i>	11	11	4	19	2	100
<i>Rubus pedatus</i>	13	0	13	13	2	100
<i>Rubus parviflorus</i>	3	0	3	4	2	100
<i>Vaccinium</i> spp.	20	20	6	34	2	100
Forbs/ferns/horsetails:						
<i>Coptis asplenifolia</i>	12	9	5	18	2	100
<i>Cornus canadensis</i>	15	2	13	16	2	100
<i>Maianthemum dilatatum</i>	8	0	7	8	2	100
<i>Pteridium aquilinum</i>	15	18	2	28	2	100
<i>Streptopus roseus</i>	4	2	2	5	2	100
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	31	1	30	32	2	100
Moss spp.	4	0	4	4	2	100

<sup>a</sup> Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **85**  
 Spruce site index: **92**  
 Number of points: **2**

**Table 53—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2B08-*Tsuga heterophylla*-(*Picea sitchensis*)/*Vaccinium* spp./*Lysichiton americanum*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Picea sitchensis</i>	19	27	0	59	4	100
<i>Tsuga mertensiana</i>	14	0	14	15	3	75
<i>Tsuga heterophylla</i>	63	60	17	149	4	100
Shrubs:						
<i>Menziesia ferruginea</i>	5	3	1	7	4	100
<i>Rubus pedatus</i>	4	3	2	9	4	100
<i>Vaccinium</i> spp.	25	12	11	37	4	100
Forbs/ferns/horsetails:						
<i>Coptis aspleniifolia</i>	10	12	2	24	3	75
<i>Cornus canadensis</i>	3	2	1	6	4	100
<i>Lysichiton americanum</i>	4	1	3	4	2	50
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	17	15	2	37	4	100
<i>Rhytidiadelphus loreus</i>	17	11	5	30	4	100
<i>Sphagnum</i> spp.	27	19	7	44	3	75
Liverworts:						
Liverwort spp.	3	2	1	5	4	100

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **75**  
 Spruce site index: **82**  
 Number of points: **4**

**Table 54—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2B09-*Tsuga heterophylla*-(*Picea sitchensis*)/*Oplopanax horridus*/*Lysichiton americanum*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Picea sitchensis</i>	56	55	17	95	2	100
<i>Tsuga heterophylla</i>	324	322	97	552	2	100
Dead wood:						
Downed wood	9	1	8	10	2	100
Shrubs:						
<i>Oplopanax horridus</i>	11	8	5	17	2	100
<i>Rubus pedatus</i>	3	1	2	4	2	100
<i>Vaccinium</i> spp.	9	3	6	11	2	100
Forbs/ferns/horsetails:						
<i>Athyrium filix-femina</i>	4	4	2	7	2	100
<i>Coptis asplenifolia</i>	3	3	1	5	2	100
<i>Dryopteris dilatata</i>	3	2	2	5	2	100
<i>Gymnocarpium dryopteris</i>	7	3	5	10	2	100
<i>Lysichiton americanum</i>	9	4	7	12	2	100
<i>Tiarella trifoliata</i>	9	1	8	10	2	100
Mosses/clubmosses:						
Moss spp.	7	1	6	7	2	100
<i>Rhizomnium</i> spp.	9	1	8	9	2	100
<i>Rhytidiadelphus loreus</i>	12	12	3	20	2	100
<i>Sphagnum</i> spp.	10	3	8	12	2	100
Liverworts:						
Liverwort spp.	14	5	10	17	2	100
<i>Pellia</i> spp.	11	1	10	12	2	100

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:  
Average site index: **107**  
Spruce site index: **119**

**Table 55—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2C01-*Tsuga mertensiana*/*Vaccinium* spp.<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	6	6	1	13	3	16
<i>Picea sitchensis</i>	10	11	1	36	12	63
<i>Tsuga mertensiana</i>	51	41	2	147	18	95
<i>Tsuga heterophylla</i>	15	36	1	123	11	58
Shrubs:						
<i>Alnus sinuata</i>	5	4	1	11	5	26
<i>Oplopanax horridus</i>	4	5	0	17	11	58
<i>Rubus spectabilis</i>	4	5	0	15	10	53
<i>Rubus pedatus</i>	4	4	1	18	18	95
<i>Vaccinium</i> spp.	29	22	3	71	17	89
Forbs/ferns/horsetails:						
<i>Athyrium filix-femina</i>	6	4	1	11	9	47
<i>Caltha biflora</i>	28	21	5	48	3	16
<i>Caltha</i> spp.	6	4	2	13	8	42
<i>Lysichiton americanum</i>	3	3	1	7	6	32
Grass/grasslike:						
<i>Carex</i> spp.	7	8	0	20	7	37
Mosses/clubmosses:						
<i>Conocephalum</i> spp.	3	3	1	5	2	11
<i>Dicranum</i> spp.	5	8	1	23	14	74
<i>Hylocomium splendens</i>	4	5	1	15	13	68
Moss spp.	8	12	1	41	15	79
<i>Pleurozium schreberi</i>	13	4	10	15	2	11
<i>Rhytidiadelphus loreus</i>	24	22	1	64	17	89
<i>Sphagnum</i> spp.	28	31	1	76	10	53
Liverworts:						
Liverwort spp.	6	7	1	27	13	68
<i>Pellia</i> spp.	8	7	1	15	3	16

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **50**  
 Number of points: **19**

**Table 56—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2C02-Tsuga mertensiana/Vaccinium spp.-Cassiope mertensiana<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	18	16	2	35	5	45
<i>Picea sitchensis</i>	3	6	1	20	9	82
<i>Tsuga mertensiana</i>	27	31	1	115	11	100
Shrubs:						
<i>Cassiope stelleriana</i>	4	5	0	14	7	64
<i>Cassiope mertensiana</i>	7	5	1	16	10	91
<i>Cladothamnus pyrolaeiflorus</i>	6	4	2	10	4	36
<i>Empetrum nigrum</i>	9	7	2	18	6	55
<i>Menziesia ferruginea</i>	3	3	1	8	7	64
<i>Phyllodoce</i> spp.	8	7	1	16	5	45
<i>Rubus spectabilis</i>	36	51	1	72	2	18
<i>Vaccinium</i> spp.	8	7	1	24	10	91
<i>Vaccinium caespitosum</i>	6	8	1	22	6	55
Forbs/ferns/horsetails:						
<i>Coptis aspleniifolia</i>	3	3	0	7	10	91
<i>Cornus suecica</i>	3	2	1	5	3	27
<i>Fauria crista-galli</i>	8	9	3	30	8	73
Grass/grasslike:						
<i>Carex</i> spp.	3	3	0	8	8	73
<i>Eriophorum angustifolium</i>	14	20	0	29	2	18
Mosses/clubmosses:						
<i>Aulacomnium</i> spp.	4	3	2	6	2	18
<i>Dicranum</i> spp.	5	7	1	15	7	64
<i>Hylocomium splendens</i>	6	5	2	19	9	82
Moss spp.	10	10	3	30	11	100
<i>Pleurozium schreberi</i>	8	7	2	16	5	45
<i>Ptilium</i> spp.	4	2	2	5	2	18
<i>R(h)acomitrium</i> spp.	10	0	10	10	2	18
<i>Rhytidadelphus loreus</i>	14	12	3	39	9	82
<i>Sphagnum</i> spp.	22	18	4	50	10	91
Liverworts:						
Liverwort spp.	9	7	2	22	10	91

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **34**

Number of points: **11**

**Table 57—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2C03-*Tsuga mertensiana*/*Vaccinium* spp./*Cladothamnus pyrolaeiflorus*/*Fauria crista-galli*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	17	19	0	56	8	44
<i>Thuja plicata</i>	3	2	2	5	2	11
<i>Tsuga mertensiana</i>	129	364	6	1584	18	100
<i>Tsuga heterophylla</i>	31	55	1	156	8	44
Shrubs:						
<i>Cassiope mertensiana</i>	8	8	0	29	13	72
<i>Cladothamnus pyrolaeiflorus</i>	12	11	1	38	16	89
<i>Luetkea pectinata</i>	3	3	0	9	11	61
<i>Oplopanax horridus</i>	3	0	3	4	2	11
<i>Rubus spectabilis</i>	9	6	3	15	3	17
<i>Sorbus sitchensis</i>	3	3	1	6	4	22
<i>Vaccinium</i> spp.	18	13	3	46	18	100
Forbs/ferns/horsetails:						
<i>Blechnum spicant</i>	3	4	0	15	17	94
<i>Caltha</i> spp.	6	8	0	18	6	33
<i>Caltha leptosepala</i>	11	4	8	14	2	11
<i>Coptis aspleniifolia</i>	3	2	1	7	11	61
<i>Fauria crista-galli</i>	14	12	0	37	13	72
Grass/grasslike:						
<i>Carex</i> spp.	3	4	1	13	10	56
Mosses/clubmosses:						
<i>Aulacomnium</i> spp.	23	11	15	30	2	11
<i>Dicranum</i> spp.	3	2	1	8	10	56
<i>Hylocomium splendens</i>	17	14	4	49	14	78
Moss spp.	7	5	1	20	17	94
<i>Plagiochila</i> spp.	9	4	6	12	2	11
<i>Pleurozium schreberi</i>	52	15	41	62	2	11
<i>Rhytidiadelphus</i> spp.	22	9	15	28	2	11
<i>Rhytidiadelphus loreus</i>	23	18	3	60	16	89
<i>Sphagnum capillifolium</i>	11	13	2	20	2	11
<i>Sphagnum</i> spp.	18	13	2	43	10	56
Liverworts:						
Liverwort spp.	7	7	1	25	15	83
<i>Mylia</i> spp.	9	2	7	10	2	11
<i>Pellia</i> spp.	15	11	5	30	4	22
<i>Scapania</i> spp.	5	1	4	6	3	17

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **37**  
 Number of points: **18**



**Table 58—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2D01-*Tsuga heterophylla*-*Picea sitchensis*-(*Thuja plicata*)/*Vaccinium* spp./*Rhytidiadelphus loreus*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	40	43	9	109	5	56
<i>Picea sitchensis</i>	7	7	0	19	7	78
<i>Pinus contorta</i>	10	8	0	15	3	33
<i>Thuja plicata</i>	6	11	0	23	4	44
<i>Tsuga heterophylla</i>	23	23	1	60	9	100
<i>Tsuga mertensiana</i>	24	20	4	58	7	78
Dead wood:						
Downed wood	3	3	1	8	9	100
Shrubs:						
<i>Cladothamnus pyrolaeiflorus</i>	4	3	0	7	4	44
<i>Ledum groenlandicum</i>	13	29	0	73	6	67
<i>Menziesia ferruginea</i>	9	15	1	44	8	89
<i>Vaccinium vitis-idaea</i>	5	7	0	15	7	78
<i>Vaccinium</i> spp.	23	28	2	85	9	100
Forbs/ferns/horsetails:						
<i>Coptis asplenifolia</i>	4	6	0	20	9	100
<i>Cornus suecica</i>	3	2	2	5	3	33
<i>Cornus canadensis</i>	7	9	3	26	7	78
<i>Fauria crista-galli</i>	3	2	0	6	6	67
<i>Lysichiton americanum</i>	4	3	1	11	7	78
Grass/grasslike:						
<i>Carex sitchensis</i>	15	10	6	26	3	33
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	30	14	10	51	9	100
<i>Pleurozium schreberi</i>	27	27	8	46	2	22
<i>Rhizomnium glabrescens</i>	5	6	1	15	5	56
<i>Rhytidiadelphus loreus</i>	9	7	1	20	9	100
<i>Sphagnum</i> spp.	12	13	2	43	9	100
Liverworts:						
Liverwort spp.	4	4	0	10	8	89

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **50**  
 Spruce site index: **56**  
 Number of points: **9**

**Table 59—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2D03-*Tsuga heterophylla*-*Chamaecyparis nootkatensis*-*Tsuga mertensiana*-*Picea sitchensis*/*Vaccinium* spp./*Lysichiton americanum*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	28	24	1	77	12	100
<i>Tsuga mertensiana</i>	24	17	6	61	10	83
<i>Tsuga heterophylla</i>	63	70	4	189	11	92
Dead wood:						
Downed wood	3	3	1	10	12	100
Shrubs:						
<i>Cassiope mertensiana</i>	7	1	6	8	2	17
<i>Cladothamnus pyrolaeiflorus</i>	9	13	1	28	4	33
<i>Menziesia ferruginea</i>	9	6	2	22	12	100
<i>Rubus pedatus</i>	3	3	1	9	12	100
<i>Vaccinium caespitosum</i>	3	4	1	6	2	17
<i>Vaccinium</i> spp.	33	21	8	68	12	100
Forbs/ferns/horsetails:						
<i>Coptis aspleniifolia</i>	3	3	1	11	12	100
<i>Cornus canadensis</i>	8	7	1	19	12	100
<i>Fauria crista-galli</i>	7	14	1	40	7	58
<i>Lysichiton americanum</i>	5	3	1	8	7	58
<i>Maianthemum dilatatum</i>	4	4	1	9	4	33
<i>Streptopus roseus</i>	3	4	1	11	8	67
Grass/grasslike:						
<i>Carex</i> spp.	5	4	1	9	5	42
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	31	19	1	60	12	100
Moss spp.	3	2	1	7	10	83
<i>Rhytidiadelphus loreus</i>	13	9	1	30	12	100
<i>Sphagnum</i> spp.	28	33	3	86	10	83
Liverworts:						
Liverwort spp.	3	3	1	8	8	67

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **47**  
 Spruce site index: **69**  
 Number of points: **12**

**Table 60—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2D04-*Tsuga heterophylla*-*Chamaecyparis nootkatensis*-*Tsuga mertensiana*-*Picea sitchensis*/*Lysichiton americanum*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	50	82	1	388	22	100
<i>Picea sitchensis</i>	6	8	0	27	16	73
<i>Pinus contorta</i>	9	8	0	28	11	50
<i>Tsuga heterophylla</i>	25	36	2	152	18	82
<i>Tsuga mertensiana</i>	19	19	4	87	21	95
Dead wood:						
Downed wood	3	3	1	15	21	95
Shrubs:						
<i>Menziesia ferruginea</i>	4	4	0	16	19	86
<i>Oplopanax horridus</i>	5	6	1	9	2	9
<i>Vaccinium</i> spp.	10	17	0	71	21	95
Forbs/ferns/horsetails:						
<i>Caltha biflora</i>	10	0	9	10	2	9
<i>Cornus canadensis</i>	5	5	0	17	17	77
<i>Fauria crista-galli</i>	8	8	2	35	17	77
<i>Lysichiton americanum</i>	8	6	1	24	19	86
Grass/grasslike:						
<i>Carex</i> spp.	5	8	0	36	19	86
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	16	12	1	48	21	95
<i>Pleurozium schreberi</i>	5	2	3	8	4	18
<i>Ptilium</i> spp.	12	10	1	28	5	23
<i>Rhizomnium glabrescens</i>	4	5	0	15	6	27
<i>Rhytidiadelphus triquetrus</i>	4	5	1	10	3	14
<i>Rhytidiadelphus loreus</i>	8	8	1	31	21	95
<i>Sphagnum</i> spp.	43	25	5	84	22	100
Liverworts:						
Liverwort spp.	5	4	0	15	18	82
<i>Pellia</i> spp.	3	2	1	5	3	14

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **46**  
 Spruce site index: **73**  
 Number of points: **22**

**Table 61—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2D05-*Chamaecyparis nootkatensis*-*Tsuga mertensiana*-*Tsuga heterophylla*-*Picea sitchensis*-*Pinus contorta*/*Vaccinium* spp.<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	29	20	0	80	48	94
<i>Picea sitchensis</i>	6	12	0	49	25	49
<i>Pinus contorta</i>	13	13	0	39	31	61
<i>Thuja plicata</i>	11	10	1	25	5	10
<i>Tsuga heterophylla</i>	21	20	0	87	43	84
<i>Tsuga mertensiana</i>	14	16	0	73	42	82
Shrubs:						
<i>Cladothamnus pyrolaeiflorus</i>	6	6	0	19	10	20
<i>Empetrum nigrum</i>	4	4	0	17	27	53
<i>Ledum groenlandicum</i>	3	5	0	25	34	67
<i>Menziesia ferruginea</i>	7	7	0	39	45	88
<i>Oplopanax horridus</i>	7	4	4	9	2	4
<i>Phyllodoce glanduliflora</i>	3	2	2	6	3	6
<i>Vaccinium uliginosum</i>	3	4	0	17	14	27
<i>Vaccinium</i> spp.	14	15	0	68	46	90
Forbs/ferns/horsetails:						
<i>Caltha</i> spp.	9	8	1	16	4	8
<i>Cornus canadensis</i>	5	6	0	33	47	92
<i>Fauria crista-galli</i>	8	9	0	35	37	73
<i>Lysichiton americanum</i>	4	5	0	24	33	65
Grass/grasslike:						
<i>Carex</i> spp.	3	3	0	12	26	51
<i>Carex pluriflora</i>	3	4	0	10	5	10
<i>Carex sitchensis</i>	10	13	1	38	7	14
<i>Eriophorum angustifolium</i>	16	25	1	66	6	12
<i>Trichophorum caespitosum</i>	3	2	2	6	6	12
Mosses/clubmosses:						
<i>Aulacomnium palustre</i>	8	10	1	15	2	4
<i>Aulacomnium</i> spp.	4	7	0	20	7	14
<i>Hylocomium</i> spp.	25	14	15	35	2	4
<i>Hylocomium splendens</i>	19	18	1	80	48	94
Moss spp.	7	14	0	75	45	88
<i>Pleurozium schreberi</i>	11	10	2	35	11	22
<i>Ptilium</i> spp.	6	6	1	10	2	4
<i>Ptilium crista-castrensis</i>	6	6	1	20	10	20
<i>R(h)acomitrium</i> spp.	22	24	1	50	4	8
<i>Rhytidiadelphus triquetrus</i>	4	3	1	8	4	8
<i>Rhytidiadelphus loreus</i>	12	13	1	45	47	92
<i>Sphagnum capillifolium</i>	26	34	3	65	3	6
<i>Sphagnum</i> spp.	32	27	1	85	48	94
Liverworts:						
Liverwort spp.	4	4	0	15	43	84

<sup>a</sup> Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **41**  
 Spruce site index: **47**  
 Number of points: **51**

**Table 62—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2M01-*Tsuga heterophylla*/*Vaccinium* spp.<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	15	12	7	23	2	20
<i>Picea sitchensis</i>	6	5	1	13	7	70
<i>Tsuga heterophylla</i>	69	49	1	139	10	100
<i>Tsuga mertensiana</i>	7	7	1	16	4	40
Dead wood:						
Downed wood	3	2	1	7	10	100
Shrubs:						
<i>Menziesia ferruginea</i>	13	12	0	41	10	100
<i>Vaccinium</i> spp.	29	23	1	64	10	100
Forbs/ferns/horsetails:						
<i>Coptis aspleniifolia</i>	3	2	1	6	6	60
<i>Cornus canadensis</i>	5	4	1	11	8	80
<i>Lysichiton americanum</i>	5	5	1	15	10	100
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	29	21	3	65	10	100
<i>Rhytidiadelphus loreus</i>	10	7	0	20	10	100
<i>Sphagnum</i> spp.	30	23	1	73	10	100

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **61**  
 Spruce site index: **75**  
 Number of points: **10**

**Table 63—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2P01-*Tsuga heterophylla*-*Chamaecyparis nootkatensis*/*Vaccinium* spp.<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	46	31	16	97	8	100
<i>Picea sitchensis</i>	5	9	0	24	6	75
<i>Pinus contorta</i>	10	13	1	19	2	25
<i>Tsuga mertensiana</i>	26	23	6	71	8	100
<i>Tsuga heterophylla</i>	36	37	0	86	7	88
Shrubs:						
<i>Cladothamnus pyrolaeiflorus</i>	6	4	2	10	3	38
<i>Empetrum nigrum</i>	12	11	5	20	2	25
<i>Linnaea borealis</i>	3	1	2	4	2	25
<i>Menziesia ferruginea</i>	9	13	1	40	8	100
<i>Vaccinium</i> spp.	14	8	6	27	7	88
<i>Vaccinium vitis-idaea</i>	6	2	5	8	2	25
Forbs/ferns/horsetails:						
<i>Blechnum spicant</i>	5	3	1	10	5	63
<i>Caltha</i> spp.	12	3	9	15	4	50
<i>Coptis aspleniifolia</i>	4	3	1	10	8	100
<i>Cornus canadensis</i>	6	4	3	14	8	100
<i>Fauria crista-galli</i>	5	4	1	10	7	88
<i>Lysichiton americanum</i>	4	4	0	11	5	63
<i>Tiarella trifoliata</i>	5	0	5	5	2	25
Grass/grasslike:						
<i>Carex</i> spp.	15	13	0	31	5	63
Mosses/clubmosses:						
<i>Eurhynchium oreganum</i>	5	0	5	5	2	25
<i>Hylocomium splendens</i>	13	16	2	41	7	88
Moss spp.	8	6	2	16	7	88
<i>Rhytidiadelphus triquetrus</i>	5	5	2	10	3	38
<i>Rhytidiadelphus loreus</i>	14	12	2	40	8	100
<i>Sphagnum</i> spp.	30	23	5	75	8	100
Liverworts:						
Liverwort spp.	10	9	1	23	8	100

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **48**

Number of points: **8**

**Table 64—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2P02-*Tsuga heterophylla*-*Chamaecyparis nootkatensis*/*Vaccinium* spp./*Lysichiton americanum*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	38	29	5	93	9	90
<i>Picea sitchensis</i>	9	11	0	31	9	90
<i>Pinus contorta</i>	9	12	1	18	2	20
<i>Tsuga heterophylla</i>	30	34	1	118	10	100
<i>Tsuga mertensiana</i>	38	34	9	120	10	100
Dead wood:						
Downed wood	3	3	1	7	9	90
Shrubs:						
<i>Cladothamnus pyrolaeiflorus</i>	10	12	2	23	3	30
<i>Linnaea borealis</i>	3	3	0	7	4	40
<i>Menziesia ferruginea</i>	7	6	2	23	10	100
<i>Rubus pedatus</i>	4	4	0	12	10	100
<i>Vaccinium alaskensis</i>	18	6	14	23	2	20
<i>Vaccinium</i> spp.	21	17	2	49	8	80
Forbs/ferns/horsetails:						
<i>Blechnum spicant</i>	3	3	0	9	7	70
<i>Coptis aspleniifolia</i>	4	3	1	9	10	100
<i>Cornus canadensis</i>	8	6	1	18	10	100
<i>Lysichiton americanum</i>	8	5	3	18	9	90
Grass/grasslike:						
<i>Calamagrostis canadensis</i>	4	5	1	9	3	30
<i>Carex</i> spp.	7	9	1	26	6	60
<i>Carex sitchensis</i>	14	17	2	26	2	20
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	17	19	5	63	10	100
<i>Mnium</i> spp.	4	2	1	5	3	30
<i>Rhytidiadelphus loreus</i>	12	7	3	23	10	100
<i>Sphagnum</i> spp.	29	21	2	61	8	80
<i>Sphagnum capillifolium</i>	54	34	30	78	2	20
Liverworts:						
Liverwort spp.	11	13	1	35	8	80
<i>Pellia</i> spp.	9	6	5	13	2	20

<sup>a</sup> Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **44**

Number of points: **10**

**Table 65—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2R01-*Tsuga heterophylla*-*Thuja plicata*/*Vaccinium* spp.-*Lysichiton americanum*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Thuja plicata</i>	41	35	10	88	4	100
<i>Tsuga heterophylla</i>	57	46	9	99	4	100
Dead wood:						
Downed wood	4	2	2	6	4	100
Shrubs:						
<i>Menziesia ferruginea</i>	13	15	4	36	4	100
<i>Vaccinium</i> spp.	5	3	2	9	4	100
Forbs/ferns/horsetails:						
<i>Lysichiton americanum</i>	3	1	3	5	3	75
<i>Veratrum viride</i>	8	6	4	12	2	50
Mosses/clubmosses:						
<i>Hylocomium splendens</i>	37	6	30	43	4	100
Moss spp.	5	5	1	10	3	75
<i>Rhytidiadelphus loreus</i>	30	9	20	40	4	100
<i>Sphagnum</i> spp.	8	6	1	16	4	100

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **58**  
Number of points: **4**



**Table 66—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A2W01-*Pinus contorta*/*Empetrum nigrum*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	12	15	3	33	4	44
<i>Picea sitchensis</i>	5	6	1	9	2	22
<i>Pinus contorta</i>	32	38	9	125	9	100
<i>Tsuga heterophylla</i>	7	8	1	23	7	78
Shrubs:						
<i>Empetrum nigrum</i>	6	4	1	14	8	89
<i>Ledum groenlandicum</i>	13	16	2	41	9	100
<i>Linnaea borealis</i>	4	3	1	7	3	33
<i>Menziesia ferruginea</i>	3	3	1	8	8	89
<i>Vaccinium</i> spp.	4	2	1	8	6	67
<i>Vaccinium vitis-idaea</i>	4	2	0	7	8	89
<i>Vaccinium uliginosum</i>	14	9	8	20	2	22
Forbs/ferns/horsetails:						
<i>Coptis aspleniifolia</i>	4	5	0	11	6	67
<i>Cornus suecica</i>	9	10	2	15	2	22
<i>Cornus canadensis</i>	8	5	2	17	8	89
<i>Fauria crista-galli</i>	8	5	1	14	8	89
<i>Lysichiton americanum</i>	5	5	1	14	6	67
Grass/grasslike:						
<i>Calamagrostis</i> spp.	4	4	1	9	3	33
<i>Carex pluriflora</i>	6	5	3	10	2	22
<i>Carex sitchensis</i>	26	10	19	34	2	22
<i>Carex anthoxanthea</i>	12	3	10	14	2	22
<i>Carex</i> spp.	10	16	2	38	5	56
<i>Carex pauciflora</i>	6	5	3	10	2	22
<i>Grass</i> spp.	5	7	1	10	2	22
<i>Vahlodea atropurpurea</i>	5	3	3	8	2	22
Mosses/clubmosses:						
<i>Dicranum</i> spp.	3	4	1	8	3	33
<i>Hylocomium splendens</i>	15	12	5	35	7	78
Moss spp.	8	8	0	20	5	56
<i>Pleurozium schreberi</i>	6	5	1	12	5	56
<i>Rhytidiadelphus loreus</i>	5	4	1	10	5	56
<i>Sphagnum</i> spp.	56	19	15	78	9	100

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **35**  
 Number of points: **9**

**Table 67—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A3A01-*Pinus contorta*/*Empetrum nigrum*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	9	10	0	35	12	60
<i>Juniperus communis</i>	3	3	0	9	11	55
<i>Pinus contorta</i>	10	6	2	21	19	95
<i>Thuja plicata</i>	3	3	1	5	2	10
<i>Tsuga mertensiana</i>	8	15	0	42	7	35
<i>Tsuga heterophylla</i>	4	8	0	20	6	30
Shrubs:						
<i>Empetrum nigrum</i>	6	7	0	24	20	100
<i>Menziesia ferruginea</i>	5	7	0	18	5	25
<i>Rubus chamaemorus</i>	3	3	0	8	7	35
<i>Vaccinium</i> spp.	5	5	1	10	4	20
Forbs/ferns/horsetails:						
<i>Fauria crista-galli</i>	5	4	0	12	15	75
<i>Sanguisorba officinalis</i>	10	7	5	18	3	15
Grass/grasslike:						
<i>Carex</i> spp.	6	6	0	20	12	60
<i>Carex pluriflora</i>	11	9	0	20	4	20
<i>Eriophorum angustifolium</i>	27	23	0	40	3	15
<i>Trichophorum caespitosum</i>	14	7	2	25	11	55
Mosses/clubmosses:						
<i>Aulacomnium</i> spp.	9	12	1	22	3	15
<i>Hylocomium splendens</i>	3	2	1	6	4	20
<i>Hylocomium</i> spp.	16	21	1	31	2	10
Moss spp.	8	8	1	23	15	75
<i>Pleurozium schreberi</i>	7	9	2	30	12	60
<i>R(h)acomitrium</i> spp.	25	22	2	63	7	35
<i>Rhytidiadelphus loreus</i>	4	5	1	14	6	30
<i>Sphagnum</i> spp.	54	23	15	92	19	95

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **27**  
 Number of points: **20**

**Table 68—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A3Q02-*Tsuga mertensiana*/*Vaccinium* spp. -*Cassiope mertensiana*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Chamaecyparis nootkatensis</i>	7	1	6	7	2	33
<i>Tsuga mertensiana</i>	11	14	2	39	6	100
Shrubs:						
<i>Cassiope mertensiana</i>	5	4	2	12	6	100
<i>Luetkea pectinata</i>	6	10	0	23	5	83
<i>Vaccinium</i> spp.	4	5	1	11	4	67
Forbs/ferns/horsetails:						
<i>Coptis aspleniifolia</i>	4	6	0	13	4	67
<i>Dodecatheon jeffreyi</i>	7	6	2	11	2	33
<i>Fauria crista-galli</i>	26	30	1	76	6	100
Grass/grasslike:						
<i>Carex</i> spp.	4	2	1	8	6	100
<i>Eriophorum angustifolium</i>	37	47	4	70	2	33
Mosses/clubmosses:						
<i>Aulacomnium</i> spp.	10	13	1	25	3	50
<i>Hylocomium splendens</i>	3	3	1	5	2	33
Moss spp.	16	18	2	52	6	100
<i>R(h)acomitrium</i> spp.	9	4	6	12	2	33
<i>Rhytidiadelphus loreus</i>	18	26	2	57	4	67
<i>Sphagnum</i> spp.	22	16	5	39	4	67
Liverworts:						
Liverwort spp.	23	9	12	37	5	83
<i>Mylia</i> spp.	8	10	1	15	2	33

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **33**  
 Number of points: **6**

**Table 69—Average foliar cover, standard deviation, and frequency of plants in AVCS level V 1A3Q03-*Tsuga mertensiana*/*Vaccinium* spp./*Cladothamnus pyrolaeiflorus*/*Fauria crista-galli*<sup>a</sup>**

Plant	Average cover	Standard deviation	Min. cover	Max. cover	Frequency	Constancy
<i>Percent</i>						
Coniferous trees:						
<i>Tsuga mertensiana</i>	25	33	3	89	6	100
Shrubs:						
<i>Cassiope mertensiana</i>	15	6	8	25	6	100
<i>Cladothamnus pyrolaeiflorus</i>	4	3	1	10	6	100
<i>Luetkea pectinata</i>	6	6	1	14	6	100
<i>Rubus pedatus</i>	11	5	5	15	3	50
<i>Vaccinium</i> spp.	16	13	1	35	6	100
<i>Vaccinium caespitosum</i>	3	2	1	5	3	50
Forbs/ferns/horsetails:						
<i>Fauria crista-galli</i>	32	20	13	69	6	100
<i>Hippuris montana</i>	4	3	1	7	3	50
Grass/grasslike:						
<i>Eriophorum angustifolium</i>	4	4	1	8	2	33
Mosses/clubmosses:						
<i>Aulacomnium</i> spp.	4	1	3	4	2	33
<i>Dicranum</i> spp.	4	5	1	9	3	50
<i>Hylocomium splendens</i>	3	0	3	3	2	33
Moss spp.	14	14	2	34	6	100
<i>Pleurozium schreberi</i>	27	44	1	78	3	50
<i>Rhytidiadelphus loreus</i>	19	14	8	35	3	50
<i>Sphagnum</i> spp.	18	12	5	28	3	50
Liverworts:						
Liverwort spp.	15	23	0	60	6	100

<sup>a</sup>Plants with more than 2.9 percent cover that had more than one occurrence in a plant association:

Average site index: **34**  
 Spruce site index: **48**  
 Number of points: **6**

**Appendix D: Scientific Name and Authority, Frequency of Occurrence on Sampled Plots, and Common Name**

**Table 70—Scientific name and authority, frequency of fern, horsetail, and clubmoss species occurrence on sampled plots, and common name**

Scientific name	Frequency	Common name
<i>Adiantum aleuticum</i> (Rupr.) Paris	17	Aleutian maidenhair
<i>Athyrium filix-femina</i> (L.) Roth	196	Lady fern
<i>Athyrium</i> Roth	41	Lady fern genus
<i>Blechnum spicant</i> (L.) Roth	457	Deer fern
<i>Botrychium</i> L.	1	Moonwort genus
<i>Cryptogramma acrostichoides</i> R. Br.	1	Parsley fern
<i>Cryptogramma</i> R. Br.	6	Cryptogramma genus
<i>Cystopteris fragilis</i> (L.) Bernh.	3	Fragile fern
<i>Dryopteris dilatata</i> (Hoffm.) Gray	253	Spinulose shield-fern
<i>Equisetum arvense</i> L.	9	Meadow horsetail
<i>Equisetum fluviatile</i> L. ampl. Ehrh.	1	Swamp horsetail
<i>Equisetum</i> L.	20	Horsetail genus
Fern	6	Unknown fern
<i>Gymnocarpium dryopteris</i> (L.) Newm.	288	Oak-fern
<i>Lycopodium alpinum</i> (L.) Rothm.	8	Alpine clubmoss
<i>Lycopodium annotinum</i> L.	223	Stiff clubmoss
<i>Lycopodium clavatum</i> L.	49	Running clubmoss
<i>Lycopodium complanatum</i> L.	1	Ground cedar
<i>Lycopodium selago</i> L.	44	Fir clubmoss
<i>Lycopodium sitchense</i> Rupr.	3	Sitka ground pine
<i>Lycopodium</i> L.	72	Clubmoss genus
<i>Polypodium glycyrrhiza</i> D.C. Eat.	55	Licorice fern
<i>Polypodium</i> L.	16	Licorice fern
<i>Polystichum braunii</i> (Spenn.) Fee	8	Prickly shield-fern
<i>Polystichum lonchitis</i> (L.) Roth	1	Holly fern
<i>Polystichum munitum</i> (Kaulf.) Presl	9	Dagger fern
<i>Polystichum</i> Roth	1	Polystichum fern genus
<i>Pteridium aquilinum</i> (L.) Kuhn	18	Bracken fern
<i>Selaginella</i> Beauv.	6	Spike moss genus
<i>Thelypteris limbosperma</i> (All.) Fuchs	34	Mountain wood fern
<i>Thelypteris phegopteris</i> (L.) Slosson	99	Beech fern
<i>Thelypteris</i> Schmidel	14	Wood fern
<i>Woodsia</i> R. Br.	2	Woodsia genus

— = no common name.

Source of scientific names: Hulten 1974.

**Table 71—Scientific name and authority, frequency of forb species occurrence on sampled plots, and common name**

Scientific name	Frequency	Common name
<i>Achillea borealis</i> Bong.	4	Common yarrow
<i>Aconitum delphiniifolium</i> DC.	6	Monkshood
<i>Actaea rubra</i> (Ait.) Willd.	1	Baneberry
<i>Agoseris</i> Raf.	2	Agoseris
<i>Anemone narcissiflora</i> L. anemone	2	Narcissus flowered
<i>Angelica</i> L.	2	Wild celery
<i>Apargidium boreale</i> (Bong.) Torr. & Gray	6	Apargidium forb
Apiaceae family	1	Unidentified Carrot family
<i>Aquilegia formosa</i> Fisch.	4	White columbine
<i>Arnica amplexicaulis</i> Nutt.	2	Clasping arnica
<i>Arnica latifolia</i> Bong.	3	Mountain arnica
<i>Arnica</i> L.	2	Arnica genus
<i>Aruncus dioicus</i>	26	Goatsbeard
<i>Aster</i> L.	27	Aster genus
<i>Boschniakia rossica</i> (Cham. & Schlecht.) Fedtsch.	1	Ground cone
<i>Caltha biflora</i> DC.	20	Broadleaf marsh marigold
<i>Caltha leptosepala</i> DC.	11	Mountain marsh marigold
<i>Caltha</i> L.	57	Marsh marigold genus
<i>Cardamine oligosperma</i> Nutt.	2	Few-seeded bittercress
<i>Cardamine</i> L.	1	Bittercress genus
<i>Cardamine umbellata</i> Greene	1	Umbel bittercress
Caryophyllaceae family	1	Unidentified Pink family
<i>Castilleja miniata</i> Dougl.	2	Scarlet paintbrush
<i>Castilleja parviflora</i> Bong.	3	Mountain paintbrush
<i>Castilleja</i> . Mutes	2	Indian paintbrush sedge
<i>Chenopodium berlandieri</i> Moq.	1	Pit seed goosefoot
<i>Cicuta douglasii</i> (DC.) Coult. & Rose	2	Water hemlock
<i>Circaea alpina</i> L.	25	Enchanted nightshade
<i>Claytonia sibirica</i> L.	7	Siberian spring beauty
<i>Claytonia</i> L.	1	Spring beauty
<i>Clintonia uniflora</i> (Schult.) Kunth	89	Single-flower clintonia
Compositae family	7	Aster-daisy family
<i>Coptis aspleniifolia</i> Salisb.	517	Fern leaf goldthread
<i>Coptis trifolia</i> (L.) Salisb.	137	Three-leaved goldthread
<i>Corallorrhiza</i> Chatelain	2	Coral root genus
<i>Corallorrhiza trifida</i> Chatelain	3	Early coral root
<i>Cornus canadensis</i> L.	624	Bunchberry
<i>Cornus suecica</i> L.	58	Swedish cornel
<i>Corydalis</i> Vent.	1	Corydalis genus
<i>Dodecatheon jeffreyi</i> Van Houtte	19	Jeffrey's shooting-star
<i>Dodecatheon pulchellum</i> (Raf.) Merr.	2	Pretty shooting-star
<i>Dodecatheon</i> L.	23	Shooting-star genus
<i>Drosera anglica</i> Huds.	5	Long-leaf sundew
<i>Drosera rotundifolia</i> L.	83	Round leaf sundew
<i>Epilobium anagallidifolium</i> Lam.	2	Alpine willow herb
<i>Epilobium angustifolium</i> L.	7	Common fireweed

**Table 71—Scientific name and authority, frequency of forb species occurrence on sampled plots, and common name (continued)**

Scientific name	Frequency	Common name
<i>Epilobium ciliatum</i> Raf.	11	Purple-leaved willow-herb
<i>Epilobium latifolium</i> L.	2	Dwarf fireweed
<i>Epilobium palustre</i> L.	4	Swamp willow-herb
<i>Epilobium</i> L.	11	Willow-herb genus
<i>Erigeron peregrinus</i> (Pursh) Greene	36	Coastal fleabane
<i>Erigeron</i> L.	14	Fleabane genus
<i>Fauria crista-galli</i> (Menzies) Makino	332	Deer cabbage
Forb	61	Unknown forb
<i>Fritillaria camschatcensis</i> (L.) Ker-Gawl.	1	Chocolate lilly
<i>Galium aparine</i> L.	2	Cleavers
<i>Galium kamtschaticum</i> Steller	6	Northern wild licorice
<i>Galium</i> L.	10	Bedstraw genus
<i>Galium trifidum</i> L.	1	Small bedstraw
<i>Galium triflorum</i> Michx.	8	Sweet bedstraw
<i>Gentiana douglasiana</i> Bong.	95	Swamp gentian
<i>Gentiana platypetala</i> Griseb.	11	Broad-leaved gentian
<i>Gentiana</i> L.	4	Gentian genus
<i>Geocaulon lividum</i> (Richards.) Fern.	4	Northern commandra
<i>Geranium erianthum</i> DC.	3	Northern geranium
<i>Geranium</i> L.	2	Geranium genus
<i>Geum calthifolium</i> Menzies	63	Caltha-leaved avens
<i>Geum macrophyllum</i> Willd.	1	Large-leaf avens
<i>Geum</i> L. (Avens)	9	Avens
<i>Glaux maritima</i> (Mill.) Willd.	1	Sea milkwort
<i>Goodyera oblongifolia</i> Raf.	2	Rattlesnake plantain
<i>Heracleum lanatum</i> Michx.	7	Cow parsnip
<i>Heracleum</i> L.	2	Cow parsnip
<i>Heuchera glabra</i> Willd.	22	Alpine heuchera
<i>Hieracium gracile</i> Hook.	1	Slender hawkweed
<i>Hieracium</i> L.	1	Hawkweed genus
<i>Hippuris montana</i> Ledeb.	22	Mountain marestalk
<i>Hippuris</i> L.	1	Marestalk genus
<i>Hippuris tetraphylla</i> L. f.	2	Four-leaf marestalk
<i>Hippuris vulgaris</i> L.	2	Common marestalk
<i>Leptarrhena pyrolifolia</i> (D.Don) Ser.	15	Leather leaf saxifrage
Liliaceae family	2	Liliaceae family
<i>Listera caurina</i> Piper	37	Western twayblade
<i>Listera cordata</i> (L.) R. Br.	293	Heart twayblade
<i>Listera</i> R. Br.	4	Twayblade genus
<i>Lupinus nootkatensis</i> Donn	5	Nootka lupine
<i>Lupinus polyphyllus</i> Lindl.	1	Large leaf lupine
<i>Lysichiton americanum</i> Hult. & St. John	361	Yellow skunk cabbage
<i>Maianthemum dilatatum</i> (How.) Nels. & Macbr.	175	Deerberry
<i>Menyanthes trifoliata</i> L.	15	Buckbean
<i>Mimulus guttatus</i> DC.	2	Yellow monkey-flower
<i>Mitella pentandra</i> Hook.	7	Alpine mitrewort

**Table 71—Scientific name and authority, frequency of forb species occurrence on sampled plots, and common name (continued)**

Scientific name	Frequency	Common name
<i>Mitella</i> L.	9	Mitrewort genus
<i>Moneses uniflora</i> (L.) Gray	58	Single delight
<i>Monotropa hypopitius</i> L.	5	Indian pipe
<i>Montia fontana</i> L.	2	“Blinks, Water chickweed”
Mushroom	277	Unknown mushroom
<i>Nuphar polysepalum</i> Sm.	1	Yellow pond Lilly
Orchid	2	Orchid family
<i>Orthilia secunda</i> (L.) House	42	Side bells
<i>Osmorhiza chilensis</i> Hook. & Arm.	6	Chile sweet cicely
<i>Osmorhiza purpurea</i> (Coul. & Rose) Suksd.	2	Sitka sweet cicely
<i>Oxyria digyna</i> (L.) Hill	2	Mountain sorrel
<i>Parnassia fimbriata</i> Konig	18	Fringed grass-of-parnassus
<i>Parnassia palustris</i> L.	2	Northern grass-of-arnassus
<i>Parnassia</i> L.	4	Grass-of-parnassus genus
<i>Pedicularis ornithorhyncha</i> Benth.	12	Bird’s beak lousewort
<i>Pedicularis parviflora</i> J. E. Sm.	1	Small-flowered lousewort
<i>Pedicularis</i> L.	3	Lousewort genus
<i>Petasites frigidus</i> (L.) Franch.	9	Arctic sweet-coltsfoot
<i>Pinguicula vulgaris</i> L.	19	Common butterwort
<i>Platanthera chorisiana</i> (Cham.) Rchb.	1	Choirs bog orchid
<i>Platanthera dilatata</i> (Pursh) Lindl.	23	White bog orchid
<i>Platanthera hyperborea</i> (L.) Lindl.	1	Northern bog orchid
<i>Platanthera</i> L. C. Rich.	33	Bog orchid
<i>Platanthera stricta</i> Lindl.	21	Slender bog orchid
<i>Platanthera unalaschcensis</i> (Spreng.) Kurtz	7	Alaska bog orchid
<i>Polygonum persicaria</i> L.	1	Lady’s thumb
<i>Potentilla anserina</i> L.	3	Silverweed
<i>Prenanthes alata</i> (Hook.) Dietr.	98	Rattlesnake root
<i>Prunella vulgaris</i> L.	1	Heal-all
<i>Pyrola</i> L.	5	Wintergreen genus
<i>Ranunculus cooleyae</i> Vasey & Rose	1	Cooley buttercup
<i>Ranunculus eschscholtzii</i> Schecht.	2	Eschscholtz buttercup
<i>Ranunculus occidentalis</i> Nutt.	2	Western buttercup
<i>Ranunculus</i> L.	5	Buttercup
<i>Sanguisorba menziesii</i> Rydb.	4	Menzies burnet
<i>Sanguisorba officinalis</i> L.	13	European great burnet
<i>Sanguisorba</i> L.	96	Burnet genus
<i>Sanguisorba stipulata</i> Raf.	31	Sitka burnet
<i>Saxifraga ferruginea</i> Graham	4	Alaska saxifrage
<i>Saxifraga lyallii</i> Engler	8	Red-stem saxifrage
<i>Saxifraga punctata</i> (D. Don) Hulten	3	Cordate-leaved saxifrage
<i>Saxifraga</i> L.	24	Saxifrage genus



**Table 71—Scientific name and authority, frequency of forb species occurrence on sampled plots, and common name (continued)**

Scientific name	Frequency	Common name
<i>Saxifraga tolmiei</i> Torr. & Gray	2	Alpine saxifrage
<i>Sedum integrifolium</i> (Raf.) A. Nels.	1	Entire leaf stone cup
<i>Senecio triangularis</i> Hook.	15	Arrow-leaf groundsel
<i>Sibbaldia procumbens</i> L.	1	Sibbaldia
<i>Smilacina racemosa</i> (L.) Desf.	1	False solomon-seal
<i>Spiranthes romanzoffiana</i> Cham.	2	Lady's tresses
<i>Stellaria crispa</i> Cham. & Schlecht.	2	Crisp starwort
<i>Stellaria</i> L.	3	Chickweed genus
<i>Streptopus amplexifolius</i> (L.) DC.	257	Cucumber-root twisted-stalk
<i>Streptopus roseus</i> Michx.	371	Simple-stem twisted-stalk
<i>Streptopus</i> Michx.	17	Twisted-stalk nettle
<i>Streptopus streptopoides</i> (Ledeb.) Fyre & Rigg	118	Kruhsea
<i>Tellima grandiflora</i> (Pursh) Dougl.	2	Fringe cups
<i>Tiarella</i> L.	4	Foam flower genus
<i>Tiarella trifoliata</i> L.	284	Three-leaved foamflower
<i>Tiarella trifoliata</i> var. <i>trifoliata</i> L.	15	Three-leaved foamflower
<i>Tiarella trifoliata</i> var. <i>unifoliata</i> L.	8	Three-leaved foamflower
<i>Tofieldia glutinosa</i> (Michx.) Pers.	37	Sticky tofieldia
<i>Tofieldia</i> Huds.	3	False Asphodel genus
<i>Tolmiea menziesii</i> (Pursh) Torr. & Gray	2	Youth-on-age
<i>Trientalis europaea</i> L.	65	Starflower
<i>Urtica dioica</i> L.	2	Stinging nettle
<i>Utricularia minor</i> L.	1	Lesser bladderwort
<i>Valeriana capitata</i> L.	33	Capitate valerian
<i>Valeriana sitchensis</i> Bong.	37	Sitka valerian
<i>Valeriana</i> L.	1	Valerian genus
<i>Veratrum viride</i> Ait.	223	False hellebore
<i>Veronica</i> L.	1	Speedwell genus
<i>Veronica wormskjoldii</i> Roem. & Schult.	2	Alpine speedwell
<i>Vicia americana</i> Muhl.	2	American vetch
<i>Viola glabella</i> Nutt.	29	Stream violet
<i>Viola langsдорffii</i> Fisch.	4	Alaska violet
<i>Viola</i> L.	78	Violet genus

— = no common name.

Source of scientific names: Hulten 1974, Pojar and Mackinnon 1994.

**Table 72—Scientific name and authority, frequency of grass and grasslike species occurrence on sampled plots, and common name**

Scientific name	Frequency	Common name
<i>Agrostis aequivallis</i> (Trin.) Scribn. & Merr.	8	Northern bentgrass
<i>Agrostis</i> L.	16	Bentgrass
<i>Calamagrostis canadensis</i> (Michx.) Beauv.	25	Bluejoint grass
<i>Calamagrostis nutkaensis</i> (Presl) Steud.	3	Pacific reed grass
<i>Calamagrostis</i> Adans.	37	Reed bentgrass genus
<i>Carex anthoxanthea</i> Presl	6	Carex sedge
<i>Carex aquatilis</i> Wahlenb.	5	Water sedge
<i>Carex canescens</i> L.	1	Silvery sedge
<i>Carex livida</i> (Wahlenb.) Willd.	11	Livid sedge
<i>Carex lyngbyei</i> Hornem.	3	Lyngbye sedge
<i>Carex macrochaeta</i> C. A. Mey.	5	Long-awn sedge
<i>Carex magellanica</i> Lam.	2	Bog sedge
<i>Carex mertensii</i> Prescott	4	Mertens sedge
<i>Carex nigricans</i> C. A. Mey.	9	Blackish sedge
<i>Carex pauciflora</i> Lightf.	23	Star sedge
<i>Carex pluriflora</i> Hult.	30	Many-flower sedge
<i>Carex podocarpa</i> C. B. Clarke	1	Short-stalked sedge
<i>Carex rostrata</i> Stokes	1	Beaked sedge
<i>Carex sitchensis</i> Prescott	38	Sitka sedge
<i>Carex</i> L.	300	Sedge genus
<i>Carex stylosa</i> C. A. Mey.	1	Variiegated sedge
<i>Carex viridula</i> (Michx.) Hult.	1	Oederi sedge
<i>Danthonia intermedia</i> Vasey	1	Timber oat grass
<i>Deschampsia</i> Beauv.	1	Hair grass genus
<i>Eriophorum angustifolium</i> Honck.	37	Narrow-leaf cotton grass
<i>Eriophorum</i> L.	24	Cotton grass genus
Grass	174	unknown grass
<i>Hordeum brachyantherum</i> Nevski	1	Meadow barley
<i>Juncus oreganus</i> S. Wats.	1	Oregon rush
<i>Juncus</i> L.	7	Rush genus
<i>Luzula Arcata</i> (Wahlenb.) Sw.	2	Alpine woodrush
<i>Luzula multiflora</i> (Retz.) Lej.	1	Field woodrush
<i>Luzula parviflora</i> (Ehrh.) Desv.	3	Small flowered woodrush
<i>Luzula</i> DC.	11	Woodrush genus
<i>Phleum commutatum</i> Gandoger	4	Mountain timothy
<i>Poa</i> L.	5	Bluegrass genus
<i>Rhynchospora alba</i> (L.) M. Vahl	10	Beak rush
<i>Trichophorum caespitosum</i> (L.) Hartm.	46	Tufted clubrush
<i>Triglochin maritimum</i> L.	2	Maritime arrow grass
<i>Trisetum cernuum</i> Trin.	1	Nodding oat grass
<i>Vahlodea atropurpurea</i> (Wahlenb.) E. Fries	13	Mountain hair grass

Source of scientific names: Hulten 1974.

**Table 73—Scientific name and authority, frequency of lichen species occurrence on sampled plots, and common name**

Scientific name	Frequency	Common name
<i>Acarospora chlorophana</i> (Ach.) Mass.	2	Foliose yellow-green lichen
<i>Alectoria</i> Ach.	320	Alectoria lichen
<i>Bryoria fuscescens</i> (Gyelnik) Brodo & D. Hawksw.	1	Arboreal lichen
<i>Bryoria</i> Brodo & Hawksw.	81	Arboreal lichen
<i>Cetraria islandica</i> (L.) Ach.	5	Island lichen
<i>Cetraria</i> Ach.	1	Cetraria lichen genus
<i>Cladina portentosa</i> (Dufour) Follm.	9	Reindeer lichen
<i>Cladina rangiferina</i> (L.) Harm.	53	Reindeer lichen
<i>Cladina</i> (Nyl.) Nyl.	115	Cladina lichen
<i>Cladina stellaris</i> (Opiz) Brodo	1	Stellaris lichen
<i>Cladonia bellidiflora</i> (Ach.) Schaer.	5	Red-cap cladonia lichen
<i>Cladonia coccifera</i> (L.) Willd.	1	Cladonia lichen
<i>Cladonia gracilis</i> (L.) Willd.	15	Cladonia
<i>Cladonia macilenta</i> Hoffm.	12	Cladonia lichen
<i>Cladonia</i> P. Browne	277	Cladonia lichen
<i>Cladonia squamosa</i> (Scop.) Hoffm.	4	Squamose cladonia lichen
<i>Hypogymnia</i> (Nyl.) Nyl	101	Hypogymnia lichen genus
<i>Hypogymnia duplicata</i> (Sm. ex Ach.) Rass.	22	Ticker tape lichen
<i>Icmadophila ericetorum</i> (L.) Zahlbr.	26	Crustose lichen
<i>Icmadophila</i> Trevisan	5	Crustose lichen
<i>Lepraria</i> Ach.	41	Dust lichen - crustose type
Lichen	625	Unknown lichen
<i>Lobaria linita</i> (Ach.) Rabh.	2	Felty lobaria lichen
<i>Lobaria oregana</i> (Mull. Arg.) Hale	13	Oregana lobaria lichen
<i>Lobaria pulmonaria</i> (L.) Hoffm.	24	Lobaria lichen
<i>Lobaria</i> Schreber	197	Lobaria lichen genus
<i>Nephroma resupinatum</i> (L.) Ach.	1	Lettuce lichen
<i>Nephroma</i> Ach.	7	Nephroma lichen genus
<i>Parmelia</i> Ach.	6	Parmelia lichen genus
<i>Peltigera aphthosa</i> (L.) Willd.	2	Veined lichen
<i>Peltigera britannica</i> (Gyelnik) Holt.-Hartw. & Tonsb.	19	British felt lichen
<i>Peltigera canina</i> (L.) Willd.	1	Canina veined lichen
<i>Peltigera neopolydactyla</i> (Gyelnik) Gyelnik	48	Felt lichen
<i>Peltigera</i> Willd.	129	Veined lichen genus
<i>Pilophoron aciculare</i> (Ach.) Nyl.	3	Pilophoron lichen
<i>Platismatia glauca</i> (L.) Culb. & C. Culb.	1	Rag bag lichen
<i>Platismatia herrei</i> (Imsh.) Culb. & C. Culb.	5	Tattered rag lichen
<i>Platismatia norvegica</i> (Lynge) Culb. & C. Culb.	1	Laundered bag lichen
<i>Platismatia</i> Culb. & C. Culb.	19	Rag lichen
<i>Pseudephebe pubescens</i> (L.) Choisy	2	Liverwort

**Table 73—Scientific name and authority, frequency of lichen species occurrence on sampled plots, and common name (continued)**

Scientific name	Frequency	Common name
<i>Siphula ceratites</i> (Wahlenb.) Fr.	8	Siphula lichen
<i>Solorina crocea</i> (L.) Ach.	1	Solorina lichen
<i>Sphaerophorus globosus</i> (Huds.) Vainio	39	Tree/rock lichen
<i>Sphaerophorus</i> Pers.	92	Tree/rock lichen
<i>Stereocaulon alpinum</i> Lavres ex Funck.	1	Alpine Stereocaulon lichen
<i>Stereocaulon paschale</i> (L.) Hoffm.	1	Blue sandy lichen
<i>Stereocaulon</i> Hoffm.	5	Stereocaulon lichen
<i>Thamnolia</i> Ach. ex Schaerer	2	Thamnolia genus
<i>Thamnolia subuliformis</i> (Ehrh.) Culb.	5	White worm lichen
<i>Umbilicaria</i> (Lightf.) Schrader	3	Umbilicate
<i>Usnea</i> Dill. ex Adans.	13	Usnea lichen genus

- = no common name.

Source of scientific names: Hale 1979, Vitt et al. 1988.

**Table 74—Scientific name and authority, frequency of liverwort species occurrence on sampled plots, and common name**

Scientific name	Frequency	Common name
<i>Barbilophozia</i> Loeske	2	Maple liverwort
<i>Bazzania tricrenata</i> (Wahlenb.) Lindb.	1	Three-toothed whip liverwort
<i>Conocephalum</i> (L.) Dum.	46	Conocephalum liverwort
<i>Frullania</i> Raddi	3	Hanging millipede liverwort
Liverwort	629	Liverwort spp.
<i>Herbertus aduncus</i> (Dicks.) S. Gray	13	Scissor-leaf liverwort
<i>Lepidozia</i> (Dumort.) Dumort. nom. cons.	32	Little hands liverwort
<i>Marchantia polymorpha</i>	4	Liverwort
<i>Mylia</i> Gary nom. cons.	27	Hard scale liverwort
<i>Orthocaulis floerkei</i>	1	Snow-mat liverwort
<i>Pellia</i> Raddi nom. cons.	98	Ring pellia liverwort
<i>Plagiochila</i> (Dumort.) Dumort. nom. cons.	26	Cedar shake liverwort
<i>Porella</i> L.	9	Tree ruffle liverworts
<i>Scapania</i> (Dumort.) Dumort. nom. cons.	143	Yellow ladle liverwort

Source of scientific names: Conrad and Redfearn 1979, Pojar and MacKinnon 1994.

**Table 75—Scientific name and authority, frequency of moss species occurrence on sampled plots, and common name**

Scientific name	Frequency	Common name
<i>Andreaea rupestris</i> Hedw.	1	Black rock Moss
<i>Andreaea</i> Hedw.	2	Moss
<i>Antitrichia curtipendula</i> (Hedw.) Brid.	7	Hanging moss
<i>Aulacomnium palustre</i> (Hedw.) Schwaegr.	7	Ribbed bog moss
<i>Aulacomnium</i> Schwaegr.	116	Bog moss genus
<i>Bartramia pomiformis</i> Hedw.	1	Apple moss
<i>Brachythecium</i> BSG	3	Brachythecium moss genus
<i>Bryum</i> Hedw.	2	Bryum moss genus
<i>Claopodium crispifolium</i> (Hook.) Ren. & Card.	2	Rough moss
<i>Climacium dendroides</i> (Hedw.) Web. & Mohr	9	Northern tree moss
<i>Dichodontium pellucidum</i> (Hedw.) Schimp.	1	Wet rock moss
<i>Dichodontium</i>	1	Wet rock moss
<i>Dicranum fuscescens</i> Turn.	112	Fuscescens dicranum moss
<i>Dicranum scoparium</i> Hedw.	33	Broom grass
<i>Dicranum</i> Hedw.	374	Dicranum moss genus
<i>Eurhynchium oregonum</i> (Sull.) Jaeg. & Saureb.	10	Oregon beaked moss
<i>Eurhynchium</i> B.S.G.	5	Wiry moss
<i>Heterocladium dimorphum</i> (Brid.) B.S.G.	2	Tangle moss
<i>Homalothecium fulgescens</i>	1	Yellow moss
<i>Hookeria lucens</i> (Hedw.) Sm.	8	Hookina
<i>Hylocomium</i> BSG	29	Feathermoss genus
<i>Hylocomium splendens</i> (Hedw.) BSG	628	Splendor hylocomium moss
<i>Hypnum circinale</i> Hook.	28	Hypnum moss
<i>Hypnum</i> Hedw.	57	Hypnum moss genus
<i>Hypnum subimponens</i> Lesq.	4	Hypnum moss
<i>Isothecium myosuroides</i> Brid.	22	Cattail moss
<i>Leucolepis acanthoneuron</i>	2	Menzies' tree moss
<i>Leucolepis</i>	3	Tree moss
<i>Metaneckera menziesii</i> (Hook. in Drumm.) Steere	1	Menzies' neckera moss
<i>Mnium</i> Hedw., nom. cons.	161	Mnium moss genus
Moss	717	Unknown moss
<i>Neckera douglasii</i> Hook.	3	Douglas' neckera
<i>Oligotrichum parallelum</i> (Mitt) Kindb.	1	Large hair moss
<i>Plagiomnium</i> T. Kop.	10	Badge moss
<i>Plagiothecium</i> BSG	34	Channel Island moss
<i>Plagiothecium undulatum</i> (Hedw.) Schimp. in B.S.G.	71	moss
<i>Pleurozium schreberi</i> (Brid.) Mitt.	102	Schreber's moss

**Table 75—Scientific name and authority, frequency of moss species occurrence on sampled plots, and common name (continued)**

Scientific name	Frequency	Common name
<i>Pogonatum alpinum</i> (Hedw.) Roehl.	1	Haircap moss
<i>Pogonatum contortum</i> (Brid.) Lesq.	3	Haircap moss
<i>Polytrichum commune</i> Hedw.	24	Hair-cap moss
<i>Polytrichum juniperium</i> Hedw.	14	Juniper moss
<i>Polytrichum</i> Hedw.	124	Polytrichum moss genus
<i>Ptilium crista-castrensis</i> (Hedw.) De Not.	42	Knight's plume moss
<i>Ptilium</i> De Not.	16	Plume moss genus
<i>R(h)acomitrium</i> Brid.	41	Moss
<i>Rhacomitrium lanuginosum</i> (Hedw.) Brid.	8	Lanugine rhacomitrium
<i>Rhizomnium glabrescens</i>	124	Rhizomnium moss
<i>Rhizomnium</i> (Broth.) T. Kop.	33	Rhizomnium moss
<i>Rhytidiadelphus loreus</i> (Hedw.) Warnst.	668	Rhytidiadelphus moss
<i>Rhytidiadelphus</i> (Lindb. ex Limpr.) Warnst.	18	Rhytidiadelphus moss
<i>Rhytidiadelphus triquetrus</i> (Hedw.) Warnst.	27	Shaggy moss
<i>Rhytidiopsis robusta</i> (Hedw.) Broth.	4	Pipe cleaner moss
<i>Sphagnum angustifolium</i> (C. Jens. ex Russ.) C. Jens. in Tolf	3	Sphagnum moss
<i>Sphagnum capillifolium</i>	28	Sphagnum moss
<i>Sphagnum girgensohnii</i> Russ.	33	Sphagnum moss
<i>Sphagnum lindbergii</i>	2	Sphagnum moss
<i>Sphagnum papillosum</i> Lindb.	5	Sphagnum moss
<i>Sphagnum</i> L.	554	Sphagnum moss genus
<i>Sphagnum squarrosum</i> Crome	3	Squarrose sphagnum
<i>Tortella fragilis</i> (Drumm.) Limpr.	1	Moss
<i>Tortella tortuosa</i> (Hedw.) Limpr.	15	Moss
<i>Ulota</i> Mohr	1	Twisted ulota moss

- = no common name.

Source of scientific names, Crum 1976, Pojar and Mackinnon 1994, Vitt and others 1988.

**Table 76—Scientific name and authority, frequency of shrub species occurrence on sampled plots, and common name**

Scientific name	Frequency	Common name
<i>Alnus sinuata</i> (Reg.) Rydb.	65	Sitka alder
<i>Alnus</i> Mill.	4	Alder genus
<i>Andromeda polifolia</i> L.	43	Bog rosemary
<i>Anemone parviflora</i> Michx.	1	Northern anemone
<i>Artemisia arctica</i> Less.	2	Arctic wormwood
<i>Artemisia</i> L.	3	Sagebrush genus
<i>Cassiope mertensiana</i> (Bong.) D. Don	99	Mertens cassiope
<i>Cassiope</i> D. Don	5	Cassiope genus
<i>Cassiope stelleriana</i> (Pall.) DC.	70	Alaska moss heath
<i>Cladothamnus pyrolaeiflorus</i> Bong.	131	Copperbush
<i>Cornus stolonifera</i> Michx.	1	Red osier dogwood
<i>Empetrum nigrum</i> L.	163	Black crowberry
<i>Gaultheria shallon</i> Pursh	12	Salal
<i>Juniperus communis</i> L.	31	Common mountain juniper
<i>Kalmia polifolia</i> Wang.	146	Bog laurel
<i>Ledum groenlandicum</i> Oeder	151	Labrador tea
<i>Linnaea borealis</i> L.	130	Twin flower
<i>Loiseleuria procumbens</i> (L.) Desv.	7	Alpine azalea
<i>Luetkea pectinata</i> (Pursh) Kuntze	79	Luetkea
<i>Malus fusca</i> (Raf.) Schneid.	5	Oregon crabapple
<i>Malus</i> P. Mill.	1	Crabapple
<i>Menziesia ferruginea</i> Sm.	593	Rusty menziesia
<i>Myrica gale</i> L.	1	Sweet gale
<i>Oplopanax horridus</i> (Sm.) Miq.	235	Devil's club
<i>Phyllodoce aleutica</i> (Spreng.) Heller	26	Aleutian mountain-heather
<i>Phyllodoce empetriformis</i> (Sm.) D. Don	2	Pink mountain heather
<i>Phyllodoce glanduliflora</i> (Hook.) Coville	7	yellow mountain-heath
<i>Phyllodoce</i> L.	46	Mountain heather genus
<i>Ribes bracteosum</i> Dougl.	27	Stink currant
<i>Ribes glandulosum</i> Grauer	4	Skunk currant
<i>Ribes lacustre</i> (Pers.) Poir	3	Swamp goose currant
<i>Ribes laxiflorum</i> Pursh	5	Trailing black currant
<i>Ribes</i> L.	13	Currant genus
<i>Rubus arcticus</i> L.	8	Nagoon berry
<i>Rubus chamaemorus</i> L.	52	Cloudberry
<i>Rubus parviflorus</i> Nutt.	7	Thimbleberry
<i>Rubus pedatus</i> Sm.	565	Five-leaf bramble
<i>Rubus spectabilis</i> Pursh	225	Salmonberry
<i>Salix myrtillifolia</i> Anderss.	12	Low blueberry willow
<i>Salix scouleriana</i> Barratt	1	Scouler willow
<i>Salix sitchensis</i> Sanson	7	Sitka willow
<i>Salix</i> L.	4	Willow genus
<i>Sambucus racemosa</i> L.	37	Red elderberry

**Table 76—Scientific name and authority, frequency of shrub species occurrence on sampled plots, and common name (continued)**

Scientific name	Frequency	Common name
Shrub	1	Unknown shrub
<i>Sorbus sitchensis</i> Roem.	35	Sitka mountain ash
<i>Sorbus</i> S.F. Gray	14	Mountain ash genus
<i>Spiraea douglasii</i> Hook.	2	Douglas spirea
<i>Spiraea</i> L.	1	Spirea genus
<i>Vaccinium alaskensis</i> Howell	9	Alaska blueberry
<i>Vaccinium caespitosum</i> Michx.	138	Dwarf blueberry
<i>Vaccinium ovalifolium</i> Sm.	7	Early blueberry
<i>Vaccinium oxycoccus</i> var. <i>microcarpus</i> (Turcz.) Fedtsch. & Flerov.	88	Bog cranberry
<i>Vaccinium parvifolium</i> Sm.	172	Red huckleberry
<i>Vaccinium</i> L.	680	Blueberry genus
<i>Vaccinium uliginosum</i> L.	104	Bog blueberry
<i>Vaccinium vitis-idaea</i> L.	167	Lowbush cranberry
<i>Viburnum edule</i> (Michx.) Raf.	10	Highbush cranberry

Source of scientific names: Hulten 1974, Viereck and Little 1972.

**Table 77—Scientific name and authority, frequency of tree species occurrence on sampled plots, and common name**

Scientific name	Frequency	Common name
<i>Abies lasiocarpa</i> (Hook.) Nutt.	3	Subalpine fir
<i>Alnus rubra</i> Bong.	13	Red alder
<i>Chamaecyparis nootkatensis</i> (D. Don) Spach	298	Yellow cedar
<i>Picea sitchensis</i> (Bong.) Carr.	394	Sitka spruce
<i>Pinus contorta</i> Dougl. ex Loud.	129	Lodgepole pine
<i>Thuja plicata</i> Donn ex D. Don	62	Western redcedar
<i>Tsuga heterophylla</i> (Raf.) Sarg.	562	Western hemlock
<i>Tsuga mertensiana</i> (Bong.) Carr.	496	Mountain hemlock

Source of scientific names: Viereck and Little 1972.



This page has been left blank intentionally.  
Document continues on next page.

This page has been left blank intentionally.  
Document continues on next page.

The **Forest Service** of the U.S. Department of Agriculture is dedicated to the principle of multiple use management of the Nation's forest resources for sustained yields of wood, water, forage, wildlife, and recreation. Through forestry research, cooperation with the States and private forest owners, and management of the National Forests and National Grasslands, it strives—as directed by Congress—to provide increasingly greater service to a growing Nation.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

#### **Pacific Northwest Research Station**

<b>Web site</b>	<a href="http://www.fs.fed.us/pnw">http://www.fs.fed.us/pnw</a>
<b>Telephone</b>	(503) 808-2592
<b>Publication requests</b>	(503) 808-2138
<b>FAX</b>	(503) 808-2130
<b>E-mail</b>	<a href="mailto:desmith@fs.fed.us">desmith@fs.fed.us</a>
<b>Mailing address</b>	Publications Distribution Pacific Northwest Research Station P.O. Box 3890 Portland, OR 97208-3890

---

U.S. Department of Agriculture  
Pacific Northwest Research Station  
333 S.W. First Avenue  
P.O. Box 3890  
Portland, OR 97208-3890

---

Official Business  
Penalty for Private Use, \$300