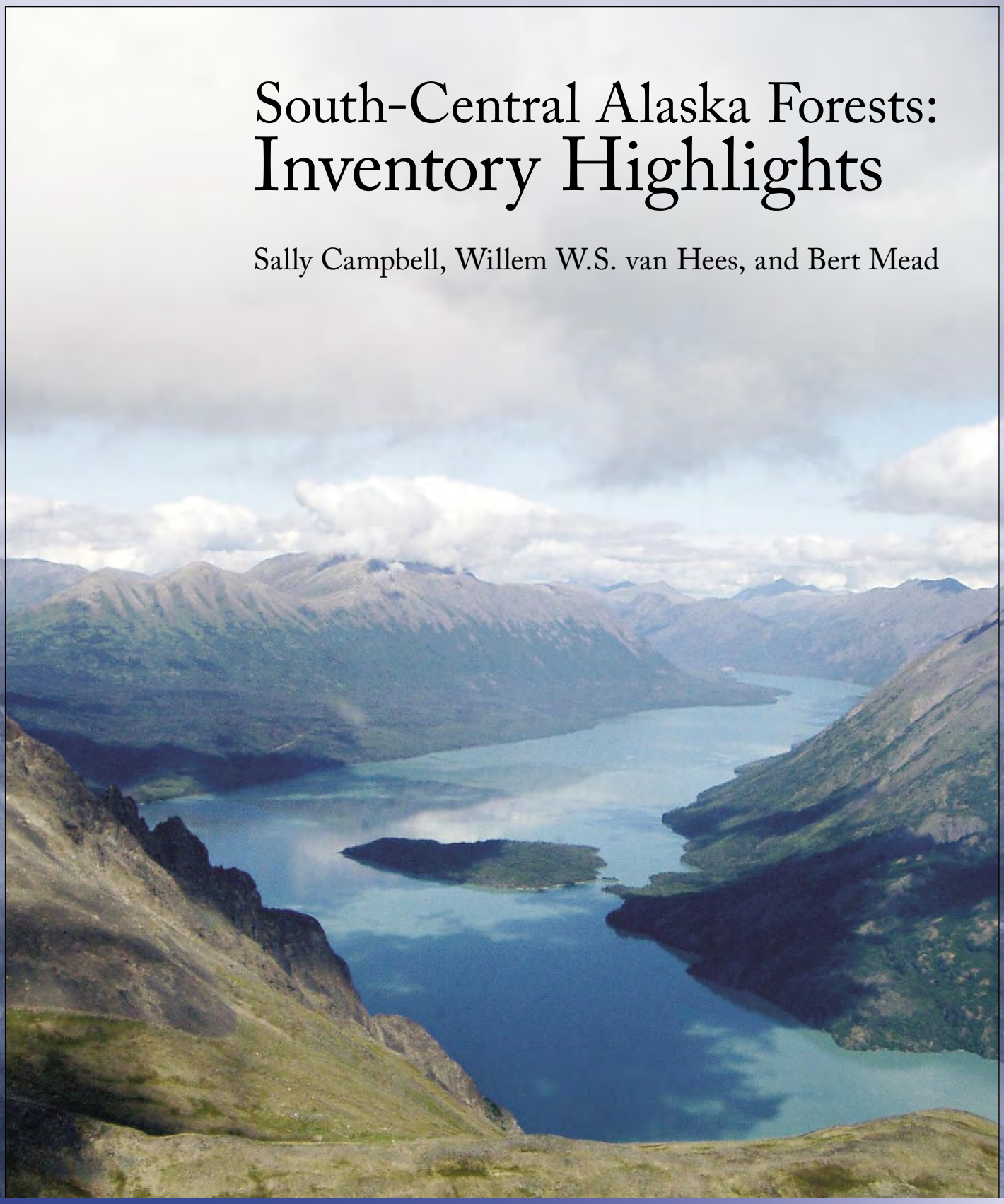
South-Central Alaska Forests: Inventory Highlights

Sally Campbell, Willem W.S. van Hees, and Bert Mead

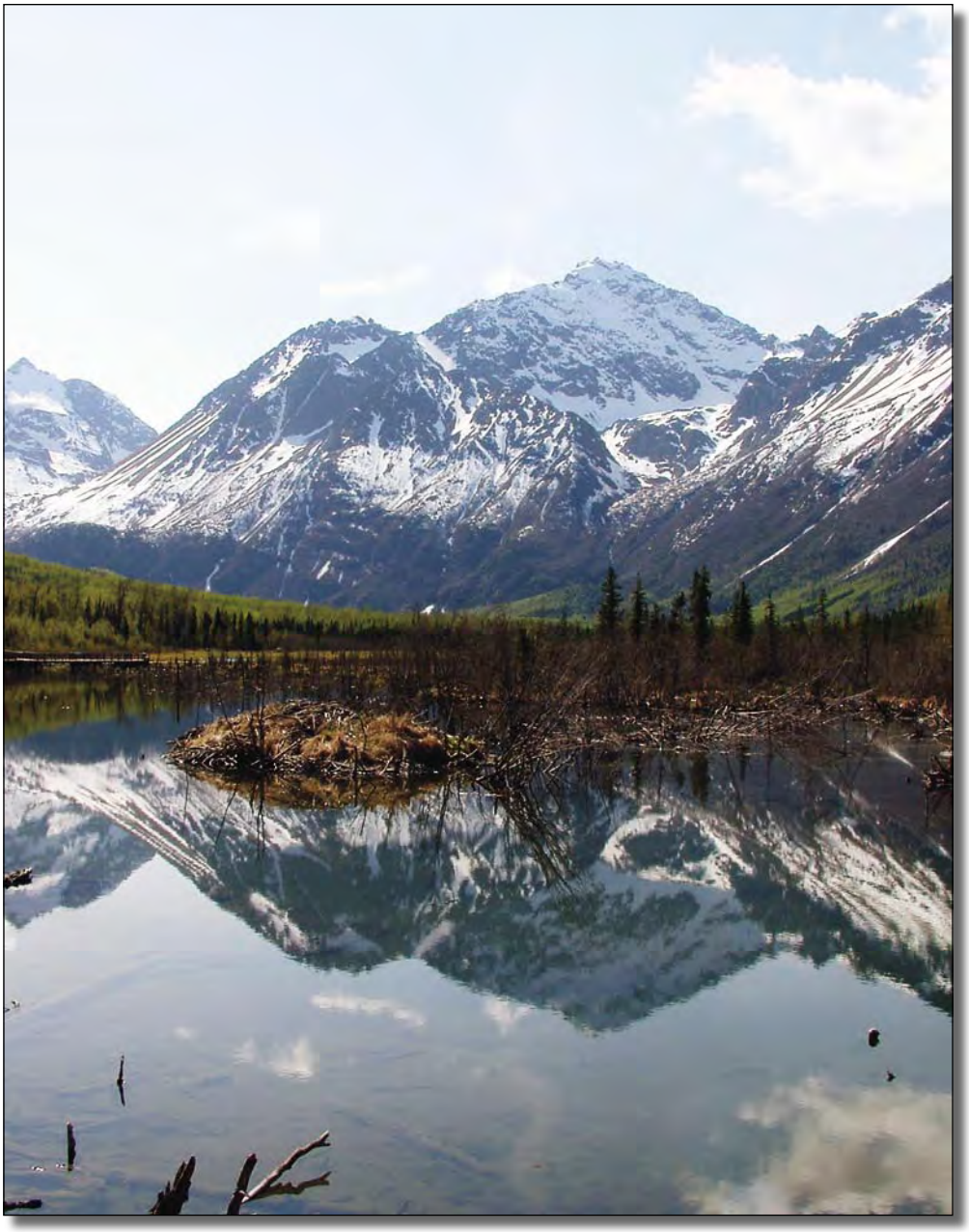


General Technical Report
PNW-GTR-652
September 2005

USDA United States Department of Agriculture

Forest Service

PNW Pacific Northwest Research Station

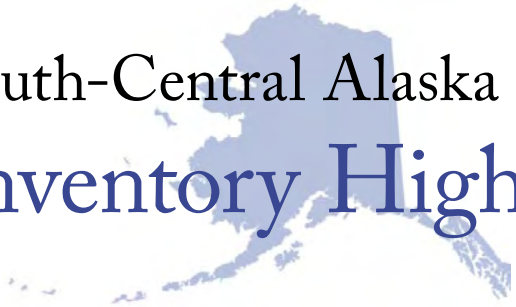


Olaf Kuegler

Authors

Sally Campbell is a biological scientist, Forestry Sciences Laboratory, 620 SW Main Street, Suite 400, Portland, OR 97205; **Willem W.S. van Hees** and **Bert Mead** are research foresters, Forestry Sciences Laboratory, 3301 C Street, Suite 200, Anchorage, AK 99503.

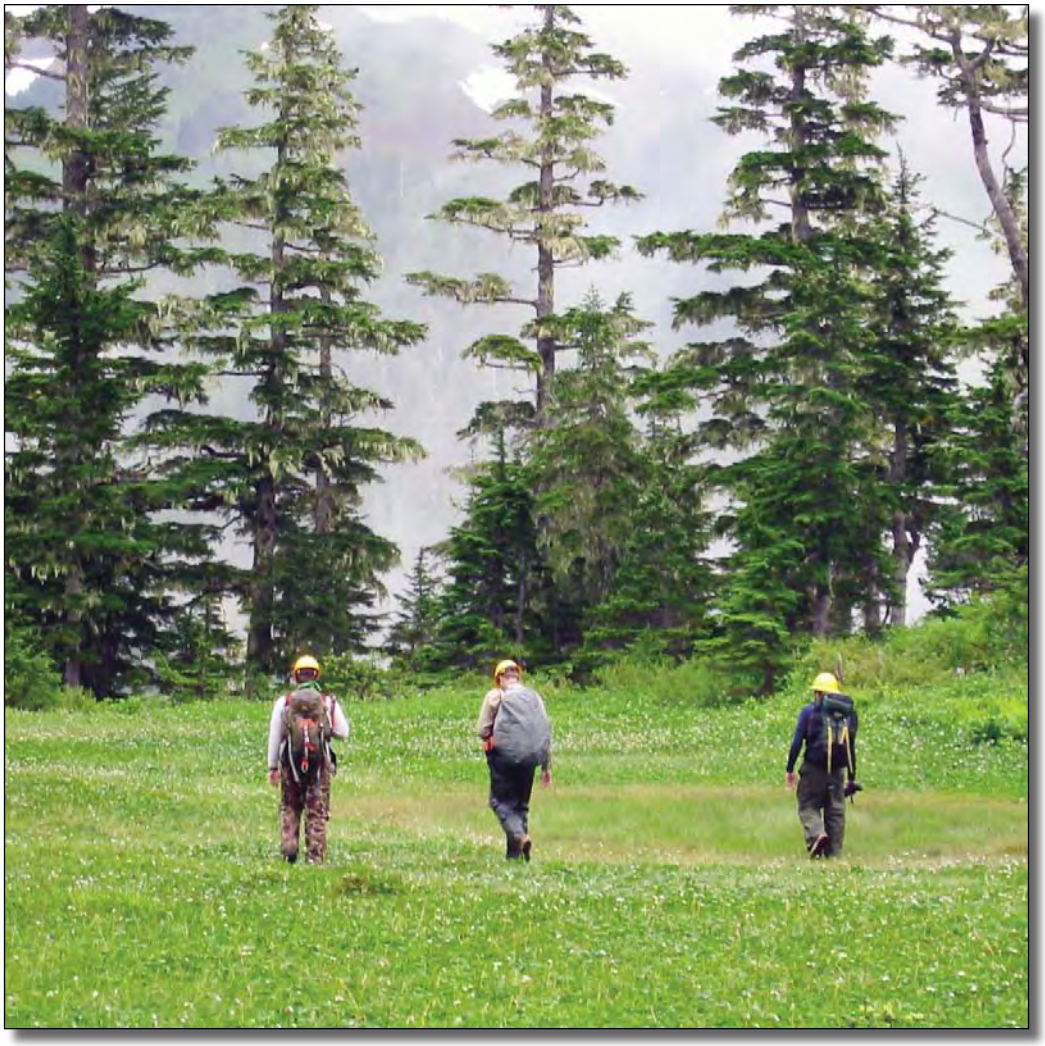
Cover photo: Kenai Lake. *Photo by Stacy Allen*.



South-Central Alaska Forests: Inventory Highlights

Sally Campbell, Willem W.S. van Hees, and Bert Mead

U.S. Department of Agriculture, Forest Service
Pacific Northwest Research Station
Portland, OR
General Technical Report PNW-GTR-652
September 2005



Ray Koleser

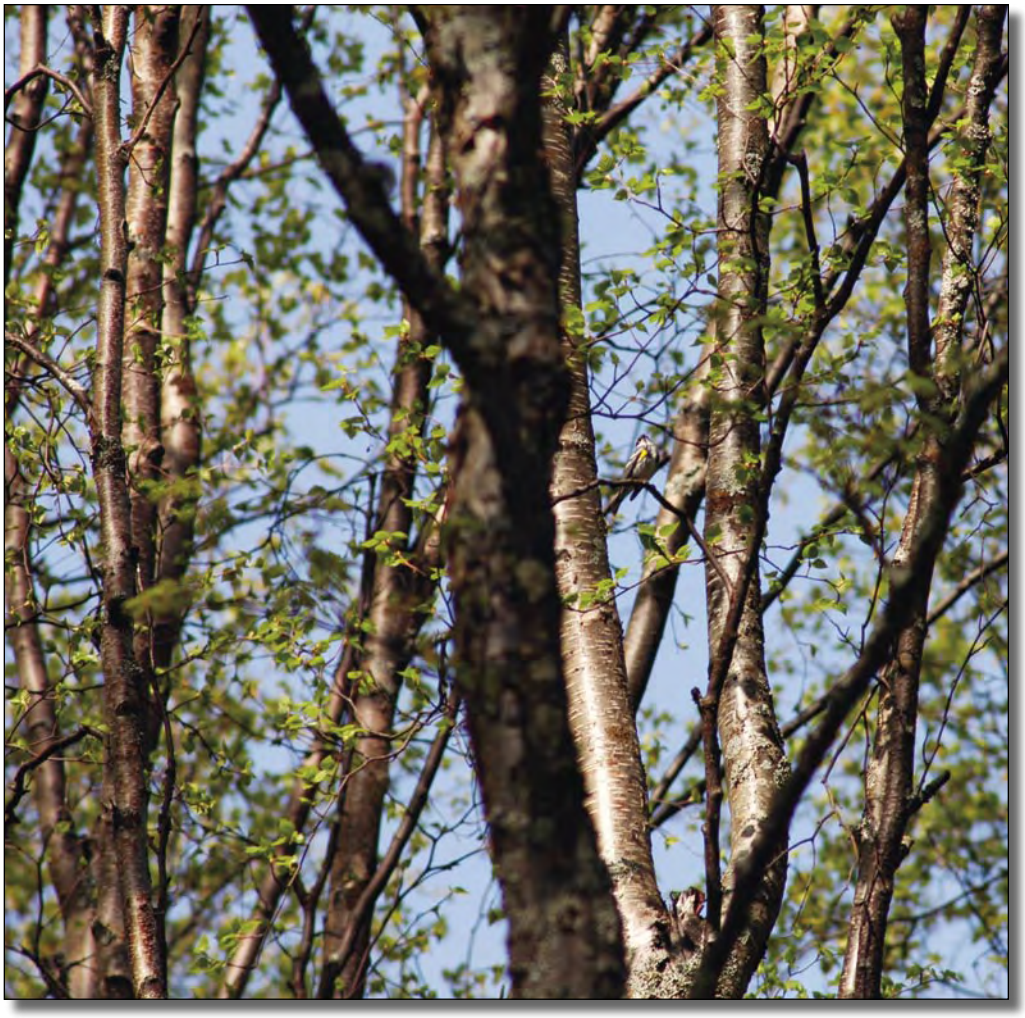
FIA crew hiking into plot, Bering Glacier.

Abstract

Campbell, Sally; van Hees, Willem W.S.; Mead, Bert. 2005. South-central Alaska forests: inventory highlights. Gen. Tech. Rep. PNW-GTR-652. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 28 p.

This publication presents highlights of a recent south-central Alaska inventory conducted by the Pacific Northwest Research Station Forest Inventory and Analysis Program (USDA Forest Service). South-central Alaska has about 18.5 million acres, of which one-fifth (4 million acres) is forested. Species diversity is greatest in closed and open Sitka spruce forests, spruce woodlands, closed tall alder shrub type, and low shrub willow type. Of the forest land, 1.9 million acres are classified as timberland (unreserved productive forest land). About 1.3 million acres of forest land are reserved from harvest; these reserved forest acres are primarily on the Kenai National Wildlife Refuge, national parks, and the Chugach National Forest. The volume of timber on timberland was estimated at 5,087 million cubic feet; the plurality of volume—44 percent—is on state and local government lands with the remaining volume primarily on private lands (28 percent) and national forests (23 percent). Fifty-seven percent of timberland acres and 93 percent of the growing-stock volume is in sawtimber stands, with Sitka spruce forest type predominating. Most timberland in south-central Alaska is of relatively low productivity, producing less than 50 cubic feet per acre per year. For timberland acres on state and private lands, average annual mortality and harvest exceeded average annual growth.

Keywords: Inventory, south-central Alaska, Kenai Peninsula, timberland, forest land.



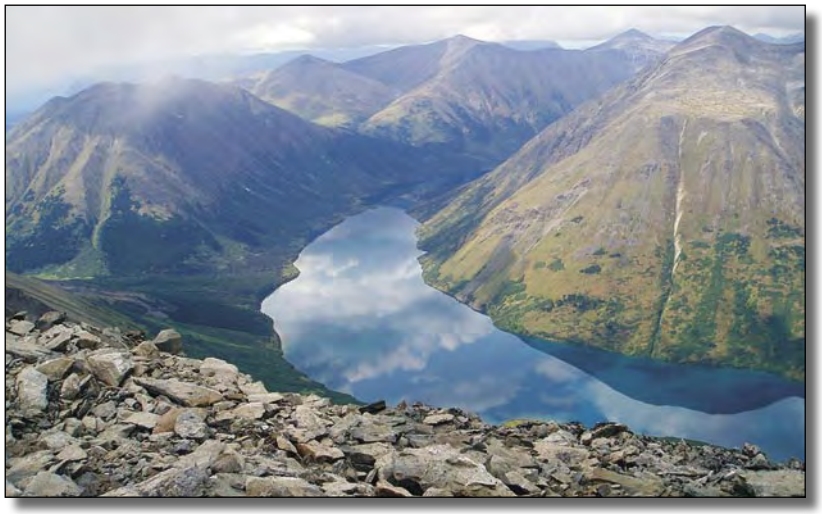
Karen Waddell

White birch, south-central Alaska.

Introduction

AN INVENTORY OF THE FOREST RESOURCES in south-central Alaska was conducted by the Pacific Northwest Research Station Forest Inventory and Analysis Program (USDA Forest Service) from 2000 to 2003 (fig. 1). A more detailed presentation of the data has been published (van Hees 2005b). The Kenai Peninsula was also inventoried in 1987 and 2000 to assess spruce bark beetle (*Dendroctonus rufipennis* Kirby) impacts (Schulz 2003; van Hees 2004, 2005a). Here we summarize a portion of the information from these reports, focusing on some of the forestry issues in south-central Alaska:

- What types of vegetation are present?
- How much of south-central Alaska is forest and who owns it?
- What forest land is protected from harvest?
- How much timber is available for harvest?
- How much of the forest is sawtimber and where is it?
- How productive is the timberland?
- What is the rate of growth, mortality, and harvest?
- What is the impact of the spruce bark beetle on Kenai Peninsula forests?
  - Spruce growth and mortality
  - Spruce regeneration
  - Fuel levels



Ray Koleser

Crescent Lake, Kenai Peninsula.

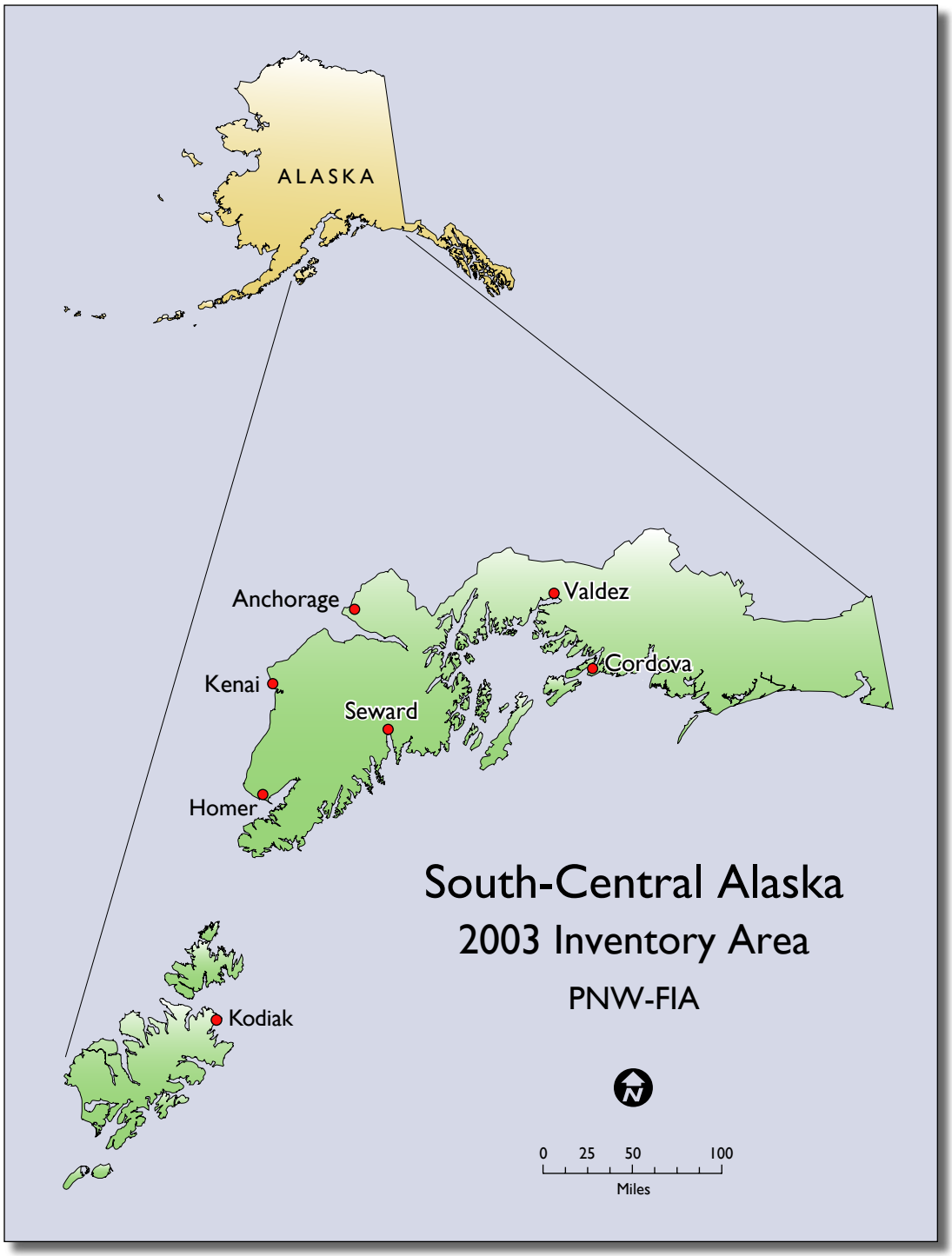


Figure 1—South-central Alaska inventory area, 2003. Source: USDA Forest Service, Pacific Northwest Research Station, Forest Inventory and Analysis, 2005.

Inventory Methods

The method used to inventory forest resources in south-central coastal Alaska was a single-phase, unstratified systematic-grid sample with grid spacing of 3 miles. Ground plots were established at each grid intersection. Sampling intensity was chosen to meet sampling error guidelines of ±3 percent per million acres for productive forest area and ±10 percent per billion cubic feet for net volume (actual sampling errors are 3.4 percent for forest land area, 5 percent for timberland area, and 8.4 percent for net volume on timberland).

Connie Hubbard

FIA crew member, Ray Koleser, on plot.

Land cover was visually interpreted for each plot by using high-resolution orthophotoquads and high-resolution satellite imagery. Plots that were barren or covered with ice and snow were not visited on the ground. On national forest lands, all vegetated plots were ground visited; on other lands, only forested plots were visited. Ground plots were subsampled by using a cluster of four, 24-foot fixed-radius subplots. From the first centrally located subplot, three other subplots were located 120 feet north, southeast, and southwest, respectively. Each subplot was mapped for land cover. Field plot design is detailed in Scott and Bechtold (1995).

Walter Foss

FIA crew member, Connie Hubbard, recording plant data amid grass and downed wood, Kenai Peninsula.

Trees, if present, were sampled at each of the four subplots. Seedlings and saplings also were sampled, but with a 6.8-foot fixed-radius microplot at each subplot. A horizontal-vertical characterization (HV plot) of vegetation structure was made at the first point in each vegetation type. The HV plot had an 18.5-foot radius. Data collection procedures are described in USDA Forest Service (2000–2003.)

In all, 2,891 plots were located within south-central Alaska. About one-fourth (782) of the locations had some forested land cover whether productive, nonproductive, or inaccessible forest; of these, 439 had some productive forest on them.

Inventories were conducted in 1987 and 2000 on the Kenai Peninsula to assess spruce beetle impacts on the forest. These inventories used a two-phase stratified sample design. Ground plots were sampled with a five-point cluster of subplots. Inventory procedures, including down wood and regeneration measurements, are described in Schulz (2003), van Hees (2004), and van Hees (2005a).

Continue to remainder of report