United States
Department of
Agriculture

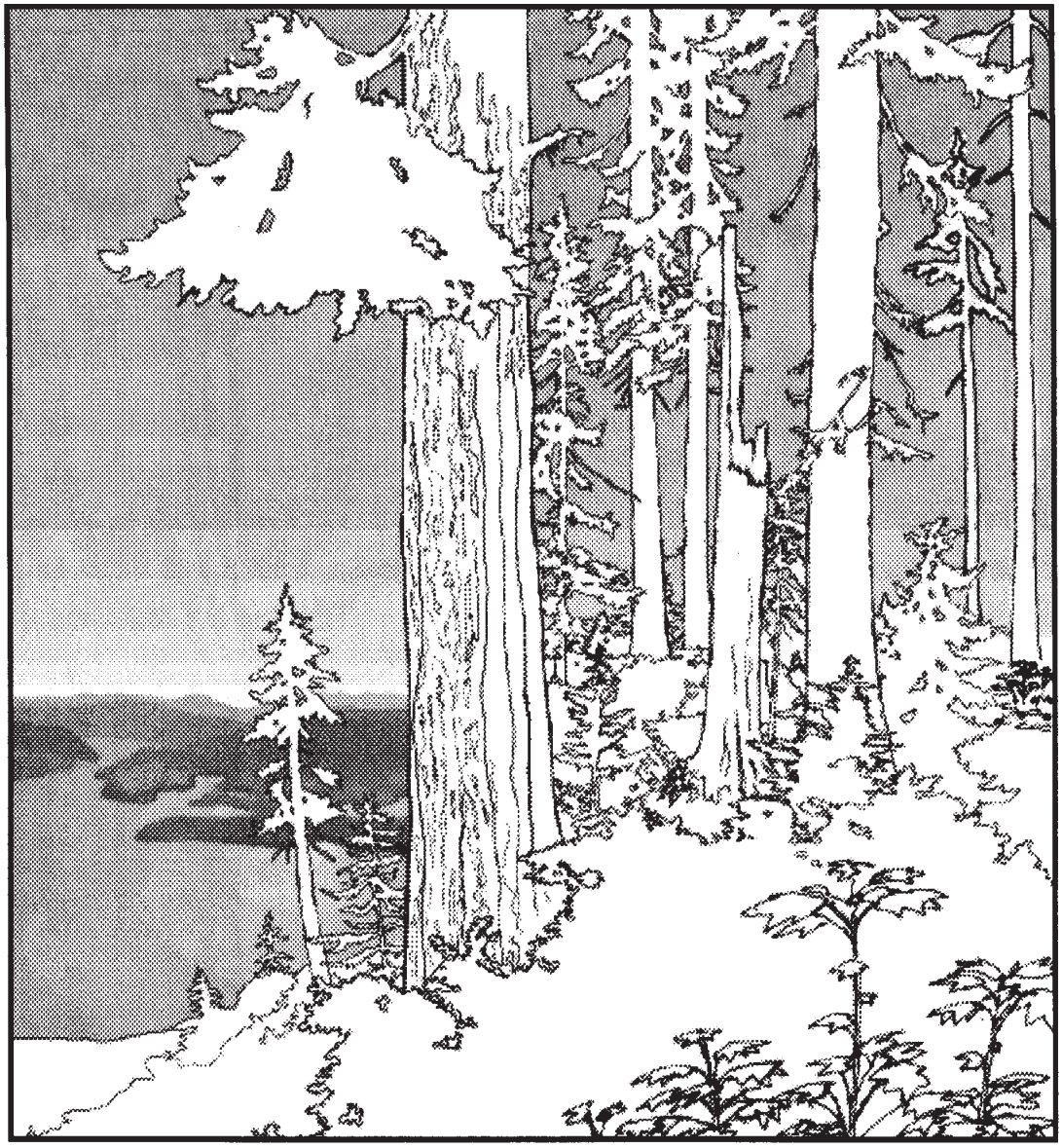
Forest Service

Pacific Northwest
Research Station

General Technical
Report
PNW-GTR-417
April 1998

Economies in Transition: An Assessment of Trends Relevant to Management of the Tongass National Forest

Stewart D. Allen, Guy Robertson, Julie Schaefers



Authors

STEWART D. ALLEN is a research social scientist, Pacific Northwest Research Station, Forestry Sciences Laboratory, 2770 Sherwood Lane, Juneau, AK 99801; GUY ROBERTSON is an economist, Pacific Northwest Research Station, Forestry Sciences Laboratory, 3200 SW Jefferson Way, Corvallis, OR 97331; and JULIE SCHAEFERS is an economist, Alaska Region, P.O. Box 21628, Juneau, AK 99802.

Conservation and Resource Assessments for the Tongass Land Management Plan Management Plan Revision

Charles G. Shaw III, Technical Coordinator

Economies in Transition: An Assessment of Trends Relevant to Management of the Tongass National Forest.

Stewart D. Allen, Guy Robertson, and Julie Schaefers

Published by:
U.S. Department of Agriculture
Forest Service
Pacific Northwest Research Station
Portland, Oregon
General Technical Report PNW-GTR-417
April 1998

Abstract

Allen, Stewart D.; Robertson, Guy; Schaefers, Julie. 1998. Economies in transition: an assessment of trends relevant to management of the Tongass National Forest. Gen. Tech. Rep. PNW-GTR-417. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 101 p. (Shaw, Charles G., III, tech. coord.; Conservation and resource assessments for the Tongass land management plan revision).

This assessment focuses on the regional and community economies of southeast Alaska. A mixed economy composed of subsistence harvest and cash income characterizes the economies of most of the region's rural communities. Although the share of natural resource-based sectors relative to total employment has remained fairly consistent over the past 10 years, the mix of industries within that share is shifting, with substantial declines in the wood products sector and substantial increases in the recreation-tourism sector. Regional trends are reflected very differently across boroughs, and even more so across the many small communities of southeast Alaska; analysis at diverse scales was needed to accurately portray economic and social conditions and trends.

Keywords: Tongass National Forest, southeast Alaska, economic trends, employment, subsistence, communities.

Contents

Introduction

The USDA Forest Service has adopted ecosystem management as the strategy by which to manage the National Forests, including the Tongass National Forest in southeast Alaska. Humans are an integral part of ecosystems, so our social and economic systems are components of overall ecosystem functioning and integrity. Conditions of sociocultural and economic systems must be evaluated side by side with biological and physical systems. This will lead to a better understanding of how human and nonhuman ecosystem components interact and affect each other. This is especially needed for southeast Alaska, because of the many ways people depend on natural resources for food, employment, recreation, health, and cultural survival, and the effects of these uses on ecosystems.

This assessment describes one portion of the complex human-environment story: the economies of southeast Alaska. It focuses on conditions and trends relevant to understanding management of the Tongass National Forest and the Forest's relation to both regional and local economies. The social and economic systems of southeast Alaska are subject to many of the same forces affecting rural areas nationwide, but the Tongass plays a central role as manager of the vast majority (over 80 percent) of the land in southeast Alaska.

Because the focus of this report is on regional and local economies, it should not be considered a complete assessment of social and economic conditions and trends in southeast Alaska, or as an indication that characteristics not discussed are less important to southeast Alaska residents or to management of the Tongass. Reports on other aspects of the human ecosystem will be published under the long-term social research program currently being developed by the Pacific Northwest Research Station. It also should be understood that the purpose here is to describe existing economic conditions and recent trends, and not to forecast the future. Additional social and economic information and impact assessment is provided in the final environmental impact statement for the Tongass Land Management Plan (USDA Forest Service 1997). This report documents economic conditions and trends present during the writing of the final environmental impact statement (EIS) on the Tongass National Forest Land Management Plan (USDA Forest Service 1997). Future reports will provide updates on those trends.

The following section describes some methodological considerations, including the important issue of scale of analysis. The third section is a brief summary of historic settlement and the current population of southeast Alaska. The fourth section provides an overview of trends at the regional level, which includes all of southeast Alaska. The fifth section describes information available at the subregional level—in this case, boroughs and census areas in southeast Alaska (the functional equivalent of counties elsewhere in the United States). The sixth section describes economic conditions and trends for communities and groups of communities. The final section contains conclusions about the economic status of southeast Alaskans and implications for management of the Tongass.

Methodology

The issue of scale or level of analysis is as important for socioeconomic analyses as it is for biological or physical analyses. It is important, for example, to begin with an overview of conditions at the regional scale. The entire region has a number of characteristics that distinguish it markedly from other portions of the United States, such as its climate and topography, sparse population, lack of road access, strong dependence on natural resources for cultural, social, psychological, and economic benefits,

and the lack of political units common in other parts of the country (i.e., counties). Similarly, some economic trends are best understood at the regional level because they have effects throughout southeast Alaska. Regional-level analyses also allow comparison between conditions and trends in southeast Alaska and those present nationwide or Alaska-wide.

Assessing conditions at only the regional level misses the many distinctions present at the next main political unit of analysis: borough or census area level (because large portions of southeast Alaska have not incorporated into boroughs). These units are widely recognized by all Federal agencies and most state agencies as county equivalents for Alaska. Southeast Alaska's boroughs and census areas, as shown below, differ in their social and economic structure and diversity and in the emphasis on natural resources used. Southeast Alaska contains five boroughs: the city-boroughs of Juneau, Sitka, and Yakutat; and Ketchikan Gateway and Haines, which have independent, incorporated communities within their boundaries. The remaining unorganized area is divided into three census areas for enumeration by the U.S. Bureau of the Census: Skagway-Hoonah-Angoon; Wrangell-Petersburg; and Prince of Wales-Outer Ketchikan.

The next primary unit of analysis and understanding is communities within boroughs or census areas. Each of southeast Alaska's communities, whether the few classified as urban (population of 2,500 or greater) or the majority, which are rural and in some cases very small, has a unique set of social and economic characteristics and qualities that contribute to quality of life for the residents. Very different communities may occur within the same borough.

Some of the data desirable for describing community economies are either unavailable (the state does not collect employment and income data at very small scales, and some information is viewed as proprietary and not released) or available infrequently (only collected every 10 years during the U.S. census). A recent change in state policy, however, has made available data for groups of communities (discussed in greater detail in "Community Conditions and Trends"). These data, available only since July 1, 1996, provide a much better understanding of local distinctions. Table 1 shows how these various levels of analysis fit together.

It is also possible, and for many purposes desirable, to discuss other units of measure in social and economic assessments. "Communities of interest," for example, is a term used to describe like-minded groups of people who form a social unit regardless of their place of residence, such as the timber community or the environmental community. These subgroups can be differentially affected by public policy changes, even if a community as a whole is doing well. Other social units include clans, families, and individuals. Another subgroup, but a spatially defined one, is logging camps—mobile yet independent settlements that sometimes become formal communities. Communities of interest and other possible subgroupings are not the focus of this report but are occasionally mentioned where appropriate.

The data referenced come from many sources. Employment, income, and revenue statistics were drawn primarily from the Alaska Department of Labor and Department of Community and Regional Affairs, with additional analysis by the Forest Service, and from the U.S. Bureau of the Census and Bureau of Economic Analysis. For each industry, numerous estimation techniques were used, each containing underlying assumptions and subject to various degrees of error. Where appropriate, these assumptions are stated and the nature of associated interpretation discussed.

Table 1—Boroughs and census areas, community groups, and communities of southeast Alaska

Boroughs and census areas	Community groups	Communities
City and Borough of Juneau	Juneau	Auke Bay, Berners Bay, Douglas, Dupont, Fritz Cove, Hawk Inlet, Juneau, Lemon Creek, Lena Cove, Lynn Canal, Mendenhall Valley, North Douglas, Salmon Creek, Snettisham, Switzer Creek, Taku Harbor, Taku Lodge, Tee Harbor, Thane, and West Juneau.
Ketchikan Gateway Borough	Ketchikan City	Carlanna, Charcoal Point, Clover Pass, Herring Cove, Ketchikan, Mountain Point, Mud Bay, North Tongass Highway, Peninsula Point, Pennock Island, Point Higgins, Refuge Cove, Saxman, Shoreline Drive, Thomas Basin, Totem Bight, Upper Nickeyville, Wacker, and Ward Cove.
	Revillaggigedo	Fire Cove, Gedney Pass, George Inlet, Gravina Island, Guard Island, Hassler Pass, Loring, Neets Bay, Princess Bay, Shoal Cove, and Twin Peaks.
Haines Borough	Haines	Eldred Rock, Excursion Inlet, Haines, Letnikof Cove, Moose Valley, Mosquito Lake, Pleasant Camp, Porcupine, Port Chilkoot, and Saint James Bay.
Sitka Borough	Baranof	Baranof, Big Port Walter, Chatham, Corner Bay, False Island, Lake Eva, Little Port Walter, Port Armstrong, Port Conclusion, Rodman Bay, Saook Bay, Todd, and Warm Spring Bay.
	Sitka	Biorka Island, Chichagof, Cobol, Deep Bay, Goddard, Halibut Point, Jamestown Bay, Japonski Island (Mt. Edgecumbe), Katlian Bay, Klag Bay, Nakwasina Cove, Redfish Cape, Saint John Baptist Bay, Schulze Cove, Sitka, and Sitka Logging Camp.
Yakutat Borough	Yakutat	Situk and Yakutat.
Skagway-Hoonah-Angoon	Chatham Strait	Angoon, Catherine Island, Cube Cove, Hanus Bay, Tenakee Springs, Tyee, and Whitewater Bay.
	Gustavus	Bartlett Cove, Cape Spencer, and Gustavus (Strawberry Point).
	North Chichagof	Elfin Cove, Gull Cove, Hoonah, Idaho Inlet, Lisianski, Pelican, Port Althorp, Port Frederick, and Yakobi Island.
	Stephens Passage	Cape Fanshaw, Five Fingers, Freshwater Bay, Funter Bay, Hobart Bay, Point Retreat, Port Houghton, Sawyers Landing, Sumdum, and Windham Bay.
	Skagway	Clifton and Skagway.
Prince of Wales-Outer Ketchikan	Central POW[a]	Craig, Hollis, and Klawock.
	Southeast POW	Bokan Mountain, Campbell, Dall Island, Dora Bay, Kendrick Bay, Klakas Inlet, Rose Inlet, Twelvemile Arm, View Cove, and Waterfall.
	Hydaburg	Hydaburg.

Table 1—Boroughs and census areas, community groups, and communities of southeast Alaska (continued)

Boroughs and census areas	Community groups	Communities
	North POW	Cape Pole, Coal Bay, Coffman Cove, Edna Bay, El Capitan, Kasaan, Labouchere Bay, Little Naukati Bay, Naukati Bay, Noyes Island, Point Baker, Port Alice, Port Protection, Ratz Harbor, Red Bay, Salt Chuck, Shakan, Steamboat Bay, Thorne Bay, Thorne Island, Tokeen, Tuxekan, Warren Cove, and Whale Pass.
	Metlakatla	Annette, Mary Island, and Metlakatla.
	Hyder	Hidden Inlet, Hyder, Smeaton Bay, Tongass, and Tree Point.
	Cleveland Peninsula	Bell Island, Meyers Chuck, Union Bay, and Yes Bay.
Wrangell-Petersburg	Kake	Kake.
	Kuiu Island	Alvin Bay, Cape Decision, Coronation Island, Duncan Canal, Fairway Island, Hamilton Bay, Kah Sheets Bay, Port Alexander, Rowan Bay, Saginaw Bay, Security Bay, Tebenkof Bay, and Washington Bay.
	Petersburg	Kupreanof, Mitkof Island, Petersburg, Scow Bay, and Vank Island.
	Thomas Bay	Thomas Bay.
	Wrangell City	Wrangell.
	Wrangell Island	Bradfield River, Burnette Inlet, Deer Island, Ernest Sound, Etolin Island, Kakwan Point, Roosevelt Harbor, Saint John Harbor, Tyler Logging Camp, and Zarembo Island.

[a] POW = Prince of Wales Island.
Source: Alaska Department of Labor 1995.

Overview of Historical Development and Current Population

This section begins with a brief summary of the history of southeast Alaska's primary resource-dependent industries. The purpose is to provide a context for understanding and interpreting changes occurring in southeast Alaska economies today, at both regional and community scales. State and Federal policies, critical to population and development of southeast Alaska, continue to shape the behavior of natural resource-based industries.

Southeast Alaska's contemporary society is influenced by many cultures. The abundant resources of the forest and water have provided for the physical and cultural livelihood of local peoples for thousands of years. The earliest known people to inhabit the area, the Tlingit, adapted well to the coastal environment, developing a rich culture that still thrives through the changes brought by European peoples. Native corporations operating today are a major economic force in southeast Alaska (McDowell Group 1997).

In the 1700s, the Russians began exploration in Alaska.[1] The fur trade, primarily in sea otter (*Enhydra lutris*) pelts, was the main force driving colonization. Sitka, established as Russian headquarters, was a city by the early 1860s, complete with sawmills, a shipyard, a foundry, numerous support industries, and a thriving harbor. When most of the sea otter population was depleted, the fur industry declined and Russia lost interest in her North American colony; Alaska was sold to the United States in 1867 (Seward's Folly).

As American colonization continued, new industries developed. In the late 1800s, commercial fishing, including salting and canning, became an important part of the economy of southeast Alaska. The first American shore-based salmon saltery operated in 1868 on Klawock Island, where a salmon cannery opened 10 years later. By the start of the 20th century, one-third of the million cases of salmon processed in Alaska came from the southeast. Concerns about the sustainability of harvest rates led to policy mandating artificial propagation; the largest hatchery in the world began operation in 1901 at Heckman Lake. Mild-curing started soon thereafter, with Germany as the principal market. Many communities sprang up around the fishing industry. In the early 1900s, Port Alexander's harbor was filled with up to 1,000 fishing boats, and the community swelled with many businesses. Later, floating fish traps greatly increased catch rates, until they were outlawed at the time of statehood (1959). Many canneries closed, but the fishing boat industry flourished. Commercial salmon fisheries in southeast Alaska became limited entry in the mid 1970s and early 1980s; this system limited the number of commercial permits available and established rules for allocating them.

The discovery of gold brought thousands of miners to the area, many of whom were then followed by their families. Kowee, a chief of the Auk Tlingits, is credited with showing Joe Juneau and Richard Harris to their finding at Juneau in 1880. The Treadwell Mine across the channel in Douglas, one of the largest mining complexes in the world, began operation in 1885 and continued until 1917, employing an average of 700 to 750 workers annually and up to 2,000 in peak years. Discovery of gold in the Klondike led to establishment of Skagway as a gateway to the gold fields. By 1920, the Alaska-Juneau mine was the largest bar-grade gold mine in the world, processing a peak of 12,000 tons of ore per day and employing 1,000. In the 1920s and 1930s, the Great Depression brought a decline in mining employment. The gold mines, not considered critical to the war effort, were closed by Federal order during World War II. Afterwards, rising labor costs and fixed gold prices prevented most Alaska mines from reopening for some time.

The region's timber resources were used by the earliest inhabitants for shelter, heat, utility, and cultural purposes. The Russians also harvested timber for building ships and structures, but commercial timber harvest did not develop until the 1900s. In the early part of the 20th century, small sawmills were operating in a few communities and served local markets. Alaska's first pulp mill opened in 1921 south of Juneau, but closed after 3 years as a result of poor market conditions. The Alaska Spruce Log program was headquartered at Edna Bay, where 250 newcomers were housed. The program operated from 1942 to 1944 to produce lumber for airplanes needed for the

[1] Much of the following history is adapted from Roppel (1983).

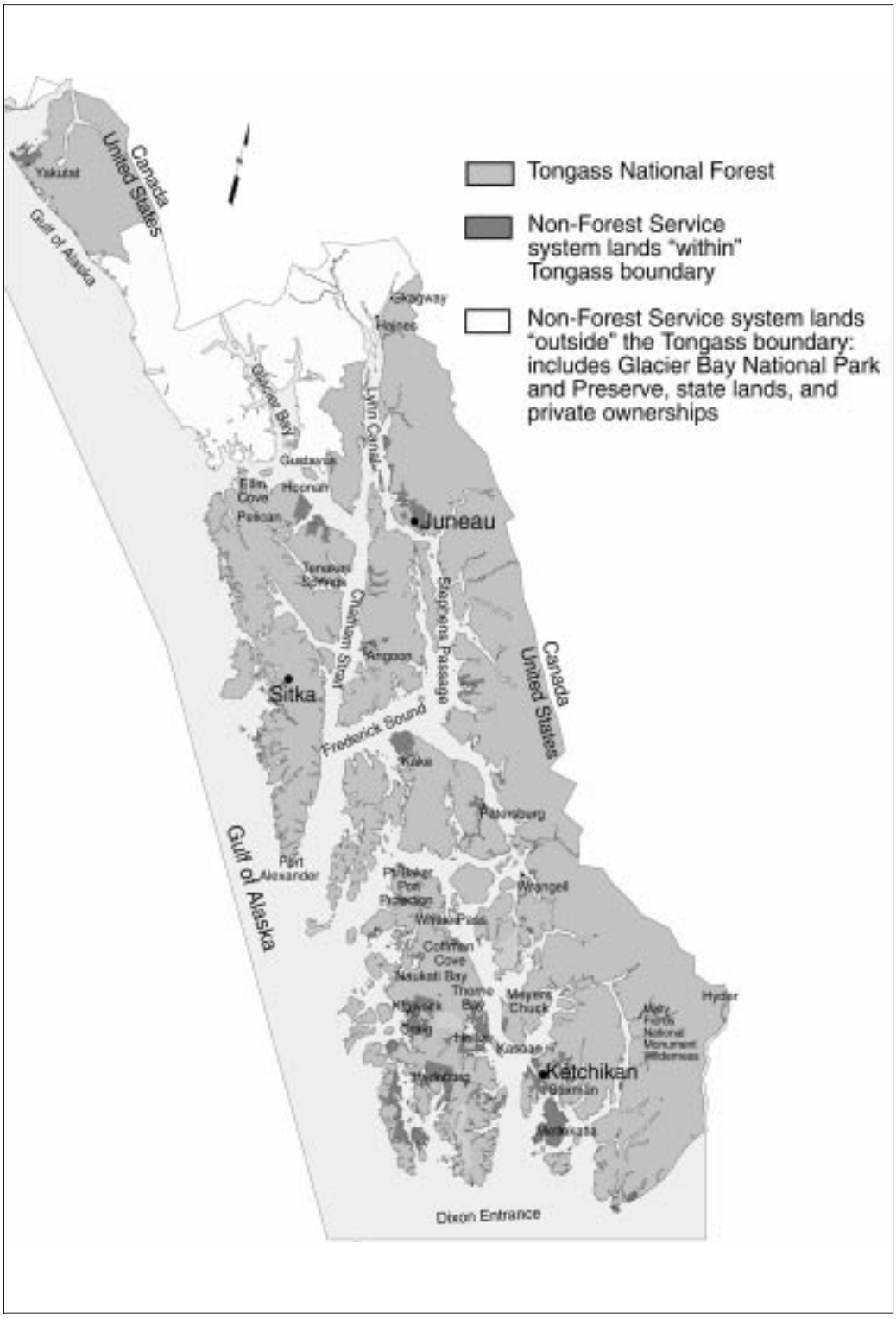


Figure 1–Major communities and land ownership of southeast Alaska.

war. It was not until the mid-20th century, though, when two large pulp mills opened in Ketchikan and Sitka, that the timber industry became a major social and economic factor in southeast Alaska. The Ketchikan Pulp Company mill was completed in 1954, and the Alaska Lumber and Pulp Company mill near Sitka opened in 1959. Long-term contracts guaranteed a supply of timber from Federal lands to these large southeast Alaska mills. Closure of the mills in 1994 (Sitka) and 1997 (Ketchikan) led to social, economic, and political effects that continue to reverberate throughout southeast Alaska.

The tourism industry in southeast Alaska began in the 1870s with visits by John Muir and others who wrote of the land's magnificence. Transportation developed to bring freight and workers was used by travelers to see the region's sights. Steamships brought 5,000 travelers to the region in 1890, and completion of the White Pass and Yukon Railroad in 1900 attracted tourists as well as gold miners. Air passenger service between Juneau, Ketchikan, and Seattle began in 1940 with Pan American Airways' Sikorsky flying boat, which could carry 32 passengers. By 1951, just after the Alaska Highway opened to the public, southeast Alaska visitation increased to about 50,000. Recent years have seen southeast Alaska attract industrial-scale tourism, and the Inside Passage is Alaska's most frequently visited attraction.

Today, land ownership in southeast Alaska is dominated by the Tongass National Forest, which comprises over 80 percent of the land base (17 of 21 million acres). An additional 15 percent, is Federal land managed by the National Park Service, most of which is in Glacier Bay National Park and Preserve. The next largest ownership is by Native corporations, which own just over 500,000 acres, followed by the state with 180,000 acres, boroughs and communities with 53,000 acres, and other private lands with 11,000 acres. Given this distribution, it is not difficult to imagine the pervasive effects that Tongass management has on the people of southeast Alaska.

Southeast Alaska (fig. 1) contains about 12 percent of Alaska's population and 6 percent of its land base. Presently, about 74,000 people live in the towns, communities, and villages of Alaska's southeastern panhandle, mostly on islands or along the narrow strip of coastline (Alaska Department of Labor 1995). As of 1995, only 5 of southeast Alaska's 32 primary communities were considered urban by the U.S. Bureau of the Census definition as having a population of 2,500 or greater. Together, these cities account for 71 percent of the total regional population. Three—Juneau, Ketchikan and Sitka—rank within the top five urban areas in the state; only Anchorage and Fairbanks are larger in population. At 29,500, Juneau alone accounts for almost 40 percent of southeast Alaska's population.

The region's remoteness is reflected in a population density of around 2 persons per square mile, compared to the U.S. average of over 70 persons per square mile. Southeast Alaska consists of a narrow strip of mainland and a chain of hundreds of islands known as the Alexander Archipelago. Most locations are accessible only by boat or plane, and landing strips or seaplane facilities are available in virtually all communities. Ferries owned and operated by the state's Alaska Marine Highway System transport people and vehicles between several ports in southeast Alaska, Prince Rupert, BC, and Bellingham, WA. Haines and Skagway, at the northern end of the interisland waterway, and Hyder at the southern end, offer the only road access to the interior and south-central Alaska via the Alaska Highway, and Canada via the Cassiar Highway.

Table 2—Population characteristics compared for the United States and Alaska, 1990 and 1995

Census area and year	Population					Median age	Males	Persons per household	Education attainment (25 years and older)	
	Total	Caucasian	Native	Black	Asian and Pacific Islander				High school or higher	Bachelor degree or higher
		Percent				*Years*	*Percent*	*No.*	*Percent*	
United States, 1990	248,709,873	83.9	0.8	12.3	3.0	32.8	48.7	2.6	75.2	20.3
Alaska:										
1990	550,043	76.5	15.7	4.2	3.7	29.2	52.7	2.8	86.6	23.0
1995	603,453	75.7	15.7	4.4	4.2	30.0	52.0	NA	NA	NA
Southeast region:										
1990	68,989	77.5	18.7	0.6	3.2	31.1	52.4	NA	NA	NA
1995	74,668	77.8	18.0	.8	3.4	33.1	51.8	NA	NA	NA
Haines Borough:										
1990	2,117	85.8	13.3	0	0.8	34.2	53.2	2.6	78.5	17.6
1995	2,295	86.5	12.9	.1	.5	36.5	50.9	NA	NA	NA
City & Borough of Juneau:										
1990	26,751	81.4	13.1	1.1	4.4	31.7	50.8	2.6	89.9	30.7
1995	28,757	82.2	11.9	1.2	4.7	32.6	50.6	NA	NA	NA
Ketchikan Gateway Borough:										
1990	13,828	82.2	13.8	.4	3.6	31.5	52.3	2.7	85.4	20.2
1995	14,773	83.4	11.9	.5	4.3	33.6	52.0	NA	NA	NA
Prince of Wales-Outer Ketchikan:										
1990	6,278	61.7	37.7	.1	.5	30.2	56.5	2.9	77.5	11.4
1995	6,755	59.7	39.9	0	.3	31.8	54.8	NA	NA	NA
Sitka Borough:										
1990	8,588	74.6	21.0	.5	3.9	30.4	52.5	2.8	87.0	21.4
1995	8,891	74.6	20.1	1.1	4.2	32.9	51.2	NA	NA	NA
Skagway-Hoonah-Angoon:										
1990	3,680	62.0	37.2	.2	.7	31.2	55.1	3.0	79.3	15.8
1995	3,733	62.2	37.5	0	.3	34.4	53.0	NA	NA	NA
Wrangell-Petersburg:										
1990	7,042	79.0	19.5	.2	1.3	31.6	53.5	2.8	81.0	19.8
1995	7,198	79.9	18.6	.3	1.3	34.2	53.0	NA	NA	NA
Yakutat Borough:										
1990	705	54.2	44.3	.1	1.4	30.3	54.6	[a]	[a]	[a]
1995	767	40.8	55.8	.1	3.2	31.6	54.3	NA	NA	NA

NA = not available.

[a] Yakutat Borough was delineated in 1992, for these 1990 census figures, it is included in the Skagway-Hoonah-Angoon Census Area.

Sources: Alaska Department of Labor 1995; U.S. Department of Commerce, Bureau of the Census 1990, 1996.

Between 1980 and 1990, southeast Alaska's population increased at about 2.5 percent annually, from just under 54,000 to nearly 69,000 (Alaska Department of Labor 1991); this was a slightly lower rate of increase than that of Alaska as a whole (3 percent annually). The largest rate of change within the southeast was in the Prince of Wales-Outer Ketchikan Census Area (5 percent increase annually) and the smallest was in the Sitka Borough (1 percent annually).

Population change is comprised of two components: natural increase (births minus deaths), which tends to be a fairly stable component; and net migration (inmigration, which is the number of people moving into an area, minus outmigration, the number of people leaving), which can fluctuate more rapidly. Between 1980 and 1990, about 38 percent of southeast Alaska's population increase was due to net migration, compared to about 35 percent of the statewide increase. The pattern differed across southeast Alaska; in Sitka Borough and the Wrangell-Petersburg Census Area, net migration was negative (more people moved away than moved in), while population growth due to net migration far outpaced natural increases in the Skagway-Yakutat-Angoon Census Area and Prince of Wales-Outer Ketchikan Census Area.

Between 1990 and 1996, southeast Alaska's population continued to grow, but at a slower rate (about 1.4 percent annually, compared to the statewide average of 1.9) than in the 1980s (table 2). Growth rates were more uniform at the subregional level. For example, Prince of Wales-Outer Ketchikan increases slowed to just under 2 percent annually, although this remained the highest rate except for Yakutat Borough (incorporated in September 1992), which grew at nearly 2.5 percent annually. Data on migration trends for 1990-96 are not yet available.

The racial mixture of Alaska's population remained fairly constant between 1990 and 1995, with a small decrease in the Caucasian share and small increases in the Black, and Asian and Pacific Islander populations (table 2). The greatest difference between southeast Alaska and the Nation is the proportion of Natives. At the start of the 20th century, Native and non-Native populations were about equal in southeast Alaska, and by the 1950s non-Native outnumbered Natives by about a 2:1 ratio. Today, Alaska's Natives comprise nearly 16 percent of the population statewide and 18 percent of southeast Alaska, much larger than the approximately 1 percent proportion nationwide.

Alaska has the second youngest population in the United States and the lowest overall percentage of females of any state. In line with national trends, Alaska's median age increased from 29.2 in 1990 to 30 in 1995. Southeast Alaska also reflects this trend, with the median age increasing from 31.1 in 1990 to 33.1 in 1995. The median age in Haines Borough of 36.5 was the highest in Alaska in 1995. The region's male-to-female ratio also moved closer toward an even split between 1990 and 1995. Areas such as Prince of Wales-Outer Ketchikan Census Area and Yakutat Borough, which have concentrations of jobs traditionally held by males (in logging and fishing camps), have populations of more than 50 percent male. Table 2 also shows that a higher proportion of the Alaskan population 25 years and older completed high school or higher education compared to the proportion in the entire United States. The boroughs of southeast Alaska follow this trend, with the largest population of people having higher educations living in the City and Borough of Juneau.

Demographic information can describe some aspects of a region's population but not its values and lifestyles. Southeast Alaska is a unique and special place to the people who live there. Insight into the values and challenges shared by residents was gained in a recent series of informal meetings held by representatives of the Henry P. Kendall Foundation in five communities. Findings from those meetings, published in a report called "Listening to Communities in Southeast Alaska" (Smith 1996), were laced with references to "human dignity, fairness, community/place/home, the economy, inclusiveness/participation, long-term vision, and land and water." Excerpts demonstrate the range of values held by southeast Alaska residents:

> Southeast Alaskans cherish their place, their closeness to the land, water, mountains, and wildlife—their lifestyles. Personal use of forest and marine resources is considered by many to be a vital component of local culture, lifestyle, and family provisioning [p. 1].
>
> Southeast Alaskan communities seem to prefer a diverse local economy, one that is not dominated by a single corporate employer, native or non-native. Nearly every community is experiencing changes in its leading economic sectors [p. 2].
>
> Many residents want to protect the forest lands, wildlife, and fisheries in the areas surrounding their own city or village. This (apparently growing) sense of economic and life-style territoriality is expressed in comments about logging, hunting, fishing, and tourism [p. 3].
>
> Commercial fishermen express concern over habitat destruction in the Tongass, but they seem more interested in issues like access, market prices, and restrictions imposed to protect Columbia River salmon runs [p. 4].
>
> Several communities are facing the same issues on their own. Examples include tourism planning and passenger (user) levies, solid waste disposal, municipal water, and all of the challenges and problems associated with investments in new woods products facilities [p. 5].
>
> There is growing frustration in rural communities/villages among residents who believe they cannot influence decisions in corporations and governmental agencies which control the use of surrounding forests. Some people think that communities need to find a way to develop a vision of their future and then deliver that message to institutions that dominate their local economies. There is presently said to be no institution capable of bringing people together to search for an acceptable medium to long-term strategy for Tongass management [p. 3].

Table 3—Southeast Alaska economic overview, 1985 to 1994

Variable	1985	1994	1985-94 change	SE Alaska growth rate	U.S. growth rate
			– – – – – – *Percent* – – – – –		
Total personal income (million 1995$)[a]	1,745	1,911	9.0	1.2	2.0
Population	62,800	72,700	16.0	1.6	1.0
Average annual employment[b]	39,113	47,352	21.0	2.1	1.5
Per capita personal income (1995$):	28,327	26,372	-6.9	-.3	.9
As percentage of U.S. average	138.0	118.0	—	—	—
S-W diversity index:[c]					
Southeast Alaska borough average	46.0	55.0[d]	—	—	—
U.S. county average	54.0	60.0[d]	—	—	—
Average earnings per job (1995$/year)	36,975	31,674	-14.0	-1.5	.4
Per capita unearned income (1995$):	6,741	7,482	11.0	1.1	1.2
As percentage of total per capita income	24.0	29.0	18.0	—	—
Southeast Alaska unemployment rate (percent)	10.2	8.2	—	—	—
U.S. unemployment rate (percent)	7.2	6.2	—	—	—

— = not applicable.

[a] All dollar figures are in 1995 dollars, adjusted for inflation by using the U.S. producer price index.

[b] Employment is full- and part-time annual equivalent and does not include proprietors and self-employed.

[c] S-W = Shannon and Weaver (1949). This measure of economic diversity was calculated by using Bureau of Economic Analysis regional economic information system data. This measure is not equivalent to those presented in subsequent portions of this analysis.

[d] Estimate for 1990.

Source: U.S. Bureau of Economic Analysis 1996.

Regional Conditions and Trends

Table 3 displays several key economic statistics reflecting the current state of the regional economy and its development since 1985.[2] Certain of these measures display a healthy and dynamic economy. For example, at 2.1-percent annual growth, job creation in southeast Alaska exceeded the national average by about 40 percent.This growth was matched by growth in the region's total population. Taken together, these statistics indicated a regional economy positioned to weather negative effects and take advantage of positive effects arising from forest policy, as well as other sources. Recent analyses predict continued growth in employment, but at a slower pace of less than 1 percent for 1996-97, and about 1 percent for 1997-98 (Tromble 1997).

[2] The choice of 1985 as a base year for comparison is problematic because it was a low year of timber industry employment, but it is acceptable in terms of summary statistics for the total regional economy. The growth rates shown in table 3 are calculated from annual data and so are not as susceptible to the choice of initial and final years, although the end points affect the calculations. Year-by-year trends and other periods are examined elsewhere in this paper.

Other statistics shown in table 3, however, indicate a more complex situation. The regional unemployment rate, for example, is well above the national average and has remained so since at least 1975. This indicates that higher unemployment is a structural feature of the region's economy; the "natural" rate of unemployment for southeast Alaska is higher than the national average.[3] The unemployment rate seems to be tracking the national average more closely in recent years, perhaps the result of increased economic diversification and opportunity in the region.

Given the relative youth of the region's population, the seasonal nature of much resource-related employment, and the mixed cash-subsistence economy, it is not surprising that southeast Alaska residents find themselves between jobs more frequently or for longer periods do than other U.S. citizens. Many southeast Alaska residents may be willing to accept economic hardship or uncertainty to remain because of the unique lifestyles still possible. The Alaska Public Survey (Alves 1979) found that southeast Alaska residents (and other Alaskans) rated "being close to a wilderness environment" and "living near the water and recreation opportunities" as more important than "long term economic opportunities" as reasons for moving to or remaining in the region (although recent migrants cited "a challenging job" more frequently than did long-time residents).

A measure of economic diversity, the Shannon-Weaver (S-W) diversity index (Attaran 1986, Shannon and Weaver 1949) is provided in table 3.[4] Economic diversity, a goal of many communities historically dependent on a single industry (or even a single company) for a large proportion of employment, correlates with other positive economic indicators (Ashton and Pickens 1995, Forest Ecosystem Management Assessment Team [FEMAT] 1993). The index is best viewed as a relative measure used to compare communities within a region or one region to another. It does not measure the strength or size of an economy and thus should be used in conjunction with other economic indicators.

The S-W index for southeast Alaska boroughs and census areas indicated that these areas tend to fall well below national averages in terms of economic diversification. Over 90 percent of all U.S. counties reported a higher diversity index than the southeast Alaska average in 1985 (calculated by using a standard deviation of 0.06 for all U.S. counties). In 1990, 83 percent of U. S. counties scored higher than the southeast Alaska average (standard deviation of 0.05), indicating that the region's economy

---

[3] The official unemployment rate does not include people not covered by unemployment insurance, such as self-employed individuals or fishers. This definition also excludes people who have made no attempt to find work recently, such as discouraged workers or people who do not want to work. In other words, the official unemployment rate does not represent the actual number of people currently not employed, especially in rural areas (Boucher 1996).

[4] This analysis measures the percentage of employment within an industry sector relative to the total. If employment is evenly distributed across all industry sectors, the S-W index will yield a maximum score (100 percent). In economies with substantial concentration in a single sector, the S-W score will be relatively low.

has diversified but is still significantly less so than the national average. Economic diversity is highly correlated with population density. Most of the communities of southeast Alaska are characterized by low populations (relative to towns and cities in the lower 48 States) and a high degree of isolation, and thus are unable to support the specialized industries found in a more diversified economy.

Total personal income in southeast Alaska presents an ambiguous picture. It increased at an annual rate of 1.2 percent from 1985 to 1994, but this rate is 38 percent below the national average. When combined with a growing population, the net result is an actual decline in per capita personal income for the region. Residents of southeast Alaska still earn more, on average, than the general U.S. population, but the difference has fallen from 138 percent of the national average in 1985 to just 118 percent in 1994. A decline in average real wages is the primary cause of decreasing per capita income. Real average earnings per job have declined at an annual rate of 1.5 percent, falling from $36,975 in 1985 to $31,674 in 1994. When the higher cost of living faced by consumers in southeast Alaska is taken into account, it is hard to argue that residents of the region are economically better off than other U.S. residents.

Table 3 also reports changes in unearned income, such as transfer payments and returns on investments, an increasingly important component of personal income in local economies throughout the United States. Unearned income can be viewed as equivalent to basic industries; because the source of these payments lies outside the region, they represent new money coming into the region and therefore have an associated multiplier effect. Between 1985 and 1994, real per capita unearned income increased at an average of 1.1 percent annually, a rate roughly equivalent to the national average of 1.2 percent (U.S. Bureau of Economic Analysis 1996). In 1994, unearned income comprised 29 percent of total income in southeast Alaska, compared to 33 percent of income nationwide. Sources of transfer payments for southeast Alaska residents include income maintenance (4 percent of unearned income; this includes food stamps, aid to families with dependent children, and other assistance programs); unemployment insurance (3 percent); dividends, interest, and rent (47 percent of unearned income); and retirement and other (46 percent): these proportions were comparable to national proportions.

Residents of Alaska also receive transfer payments from the state that are not common in the lower 48. The State of Alaska, which no longer has a state income tax, pays each resident an annual sum under the Permanent Fund Dividend Program based on investments made from state oil revenues. The average payment over the 15 years of the program has been $796, ranging from a low in 1984 of $331 per person, to a high in 1996 of $1,131 per person. Alaska residents who were 65 years or older before 1996 are eligible for further state assistance in the form of longevity bonus payments. The latter program pays a monthly amount to residents 65 or older to encourage them to remain in Alaska during retirement. The program no longer accepts new applicants as of December 1996, but all who qualify will continue to receive payments for the rest of their lives or until they move out of Alaska. For those who qualified in 1990 or earlier, the bonus is $250 per month, dropping to $100 per month for those qualifying in 1996. This same population also qualifies to live in a “pioneer home,” a state-operated, full care facility, with payment based on individual income.

Table 4—Southeast Alaska employment by sector, 1985 to 1995

Sector[a]	Employment		Share of total		1985-95 change	1995 share relative to U.S.
	1985	1995	1985	1995		
	Annual equivalent		*Percent*			
Agricultural production	0	0	0	0	—	—
Mining	44	189	1	1	333	-16
Construction	1,665	1,620	6	5	-3	-10
Total manufacturing	3,234	4,027	11	11	25	-14
Retail trade	4,182	6,098	14	17	46	2
Wholesale trade	370	507	1	1	37	-70
Financial, insurance, real estate	1,112	1,311	4	4	18	-50
Services	4,389	6,496	15	18	48	-38
Transportation and public utilities	2,032	2,771	7	8	36	64
Agriculture, forestry, fishing services	162	282	1	1	75	-35
Federal Government	2,075	1,939	7	6	-7	46
Other government	9,898	10,182	34	29	3	157
Total[b]	29,162	35,422	—	—	21	—

— = not applicable.

[a] Sectors defined according to Standard Industry Classification Manual, 1987:

Agricultural production includes farms, orchards, greenhouses, and nurseries primarily engaged in the production of crops, plants, vines, and trees (excluding forestry operations).

Mining includes the extraction of minerals occurring naturally, quarrying, well operations, milling, preparation at the mine site, and exploration and development of mineral properties.

Construction includes new work, additions, alterations, reconstruction, installations, and repairs of structures.

Total manufacturing includes the processing of materials (products of agriculture, forestry fishing, mining, and quarrying) into new products. Examples include food, textiles, lumber, wood products, furniture, paper, machinery, and appliances.

Retail trade includes selling goods for personal or household consumption and rendering services incidental to the sale of the goods. Examples include groceries, hardware, drug store, and other specialty stores.

Wholesale trade includes selling goods to retailers or other wholesalers. Wholesalers maintain inventories of goods, extend credit; physically assemble, sort, and grade goods in large lots, break bulk goods into smaller lots and advertise.

Finance, insurance, and real estate includes business that operate in the fields of finance, insurance, and real estate, such as banks, investment companies, insurance agents and brokers; real estate buyers, sellers, and developers.

Services includes businesses engaged in providing a wide variety of services for individuals, business, government, and other organizations. Examples include hotels; health, legal, engineering, and professional services; and educational institutions.

Transportation and public utilities includes passenger and freight transportation, communications services, electricity, gas, steam, water and sanitary services and all establishments of the United States Postal Service.

Agricultural, forestry, and fishing services includes businesses engaged in agricultural production, forestry, commercial fishing, hunting and trapping, and related services.

Federal and other government includes all Federal, state, and local government employees involved in executive, legislative, judicial, administrative and regulatory activities.

[b] Employment is full- and part-time annual equivalent and excludes proprietors and self-employed. Source: Alaska Department of Labor 1996. U.S. Bureau of Economic Analysis 1996.

Another type of income unique to Alaska, but not supplied by the state, comes from Native corporation activities. The Alaska Native Claims Settlement Act of 1971 (ANCSA; U.S. Laws, Statutes 1971) extinguished aboriginal claims to Alaska in return for about $1 billion and 44 million acres of land. Under ANCSA, the land and money were distributed to 13 regional Native corporations, which distributed about half the money to village corporations and shareholders. Sealaska was established as the regional corporation in southeast Alaska, along with two urban corporations and 10 village corporations. A recent report (McDowell Group 1997) estimated that southeast Alaska's ANCSA corporations accounted for more than 1 out of 10 private sector jobs in southeast Alaska (through direct and indirect employment combined). The corporations distributed about $47 million in dividends in 1996, $27 million to southeast Alaska residents; during the past 5 years, dividends averaged $22,000 per shareholder. The report also documented the corporations' support of scholarships, social service organizations, cultural heritage groups, and nonprofit agencies.

Southeast Alaska employment by sector is shown in table 4. Services and retail trade have contributed a growing share of the region's total employment, increasing from 29 percent of total employment in 1985 to 36 percent in 1995. Nonetheless, the share of retail employment is currently quite close to the national average and services are still largely underrepresented. Jobs in these sectors have by no means been replacing jobs in the manufacturing sector, where a 2.2-percent annual growth rate is evident and the share of southeast Alaska total employment has remained stable at about 11 percent. Declines in share are concentrated in the government sector where growth in employment has been limited. Recent forecasts suggest that growth through 1998 could be strongest in mining and construction sectors, while declines are expected to continue in the manufacturing, forest products, and state government sectors (Tromble 1997). Other sectors are expected to remain stable or show slight increases.

Table 4 displays industrial sector employment shares relative to the U.S. average. Wholesale trade, F.I.R.E. (finance, insurance, and real estate), and services are largely underrepresented in southeast Alaska, reflecting the lack of economies of scale in the region and the propensity to import these goods and services from the lower 48 States. Manufacturing is also underrepresented, but to a lesser extent. This is the result of certain basic industries (primarily wood products and commercial fishing) partially offsetting a less developed manufacturing base. Government and transportation, on the other hand, far exceed their representation in the U.S. economy at large. In the first instance, the location of the state capital in Juneau is a primary determinant, but relatively higher proportions of government employment also are present in the other communities of southeast Alaska. The high share of transportation arises, for the most part, from the importance of air and water traffic in a region lacking an interconnected road system.

Table 4, and much other employment data reported by the Alaska Department of Labor (ADOL) and other relevant agencies, includes only nonagricultural wage and salary (NAWS) employment, which excludes self-employed individuals and thus omits a substantial proportion of regional total employment; sufficiently detailed statistics on total employment are generally unavailable. In 1994, the difference between total and NAWS employment (with salmon harvesting included) was estimated at 10,289 jobs, with NAWS jobs accounting for 78 percent of total regional employment. This percentage is substantially lower than the U.S. average of 85 percent, indicating that southeast Alaska residents are more apt to be self-employed. Several reasons may underlie this tendency. First, much of the tourism industry is comprised of small businesses in which self-employed proprietors account for a large share of total employment. Second, because halibut, crab, and other nonsalmon fishing are not included in our estimates, they are counted in the self-employed category. Third, logging often employs a large number of independent contractors, although this practice is not as prevalent in southeast Alaska as in the lower 48 States.

This snapshot of the regional economy describes both strengths and weaknesses relative to the whole of the United States. Growth in employment opportunities is higher than in much of the rest of the country, but so is growth in the local population. When combined with the fact that much of the new job creation has occurred in lower paid retail and service sectors, the result is a steady erosion in average wages and per capita income. Nonetheless, current per capita income is still significantly higher than the national average, and much of the new job creation in the region is occurring in locally underrepresented industries. Were the regional economy to grow at its recent pace, it might eventually more closely resemble that of the United States at large. This could mean a further diminution of per capita income, but also increased economic diversification and resiliency and a decline in unemployment rates to levels more closely matching the rest of the country. Projections of lower growth rates for the upcoming year (1998) suggest uncertainty regarding these results.

Tongass National Forest-Related Regional Economy

The Tongass National Forest supplies southeast Alaska (and the Nation) with resources ranging from traditional commodities, such as salmon and timber, to more intangible goods and services such as recreational opportunities and scenery. Industries based on natural resources comprise a comparatively large proportion of the regional economy. Consequently, policy decisions affecting the potential supply of certain outputs (such as timber or recreational opportunities) have relatively large impacts. At the same time, forces outside the control of the Forest Service also influence the system, such as world market prices, national and international competition for providing products and services, demographic trends and consumer preferences, and trends in climate that affect natural resource conditions.

One example of this influence is evident in timber policies. In recent years, the Tongass has accounted for slightly less than half of the total regional timber harvest, with harvests from private lands accounting for nearly all the rest. Private land harvests are an important determinant of logging employment. Local mills have been unsuccessful, however, in bidding for logs that have instead gone to the export market, so an overwhelming majority of saw-log quality timber from private lands is exported in raw-log form. This leaves the Forest Service as the sole supplier of logs to local mills and creates an ambiguous policy picture; mill owners have identified certain aspects of Forest policy as a barrier to their further development (and survival), yet have relied on other aspects of Federal policy for their existence.

There also is a complex relation between the Tongass and the tourism industry. The National Forest provides most, but by no means all, of the recreational and tourism opportunities and amenities on which the industry relies; however, the majority of southeast Alaska tourists arrive on cruise ships and have the Inside Passage as their destination. Forest Service policies provide much of the scenery and habitat for wildlife that are viewed or hunted and contribute to the fish that are caught by tourists, but it is difficult to determine at what point a change in policy would cause a change in tourist behavior. Similarly, salmon populations and thereby the salmon fishing and processing industries depend on numerous factors. The importance of Tongass management is recognized, but the specific percentage of contribution can only be estimated. The Tongass obviously plays a central role in the fortunes of southeast Alaska's resource-dependent industries but, as these examples illustrate, it is not their sole determinant.

Management of the Tongass also contributes greatly to the subsistence lifestyles and mixed economy of rural southeast Alaska. It is beyond the scope of this paper to thoroughly describe subsistence and its economic, psychological, social, and cultural benefits, but the economy of southeast Alaska cannot be described without understanding subsistence. Rural Alaska communities generally have integrated three-sector economies composed of public, private, and subsistence sectors (Glass and others 1995). The public sector provides substantial employment opportunities in local, state, and Federal government and many types of services. It also spurs local employment through capital investment, and provides transfer payments, some of which are unique to Alaska. The private sector provides jobs, investment opportunities, and marketed goods and services. The subsistence sector provides natural resources that supplement income, often substantially. The three sectors interact in many ways, so it is difficult to separate the contributions of each sector to social and economic well-being and the quality of life in rural Alaska (Glass and others 1995).[5]

This section describes employment and income for the region's natural resource-related industries because they are most likely to be directly affected by policy decisions on management of the Tongass National Forest. These include wood products, seafood harvesting and processing, recreation and tourism, and mining.[6] An overview of subsistence and its role in the mixed economy of rural southeast Alaska is included.

The primary statistical source for natural resource employment data is ADOL, which publishes employment figures based on unemployment insurance contribution reports filed by state employers, as well as other sources. In these data, recreation and tourism is not reported as a separate industry. Employment within this sector is distributed across various industry categories, particularly the service sector. For this paper, recreation and tourism jobs were derived by using the impact analysis for planning (IMPLAN) regional-level input-output model developed by the Forest Service (Taylor and others 1993). For the recreation and tourism industry, as well as for commercial fishing, the methodologies used are further described in the industry-specific subsections below.

---

[5] Subsistence will be the subject of future publications following collection of more up-to-date information on patterns of subsistence harvest in southeast Alaska (begun early in 1997 by the Alaska Department of Fish and Game).

[6] Mining is not addressed in equivalent detail because new development is less directly linked to Forest Service policy.

Table 5—Southeast Alaska employment and income multipliers, 1995

Industry	Employment and income multipliers
Wood products	1.73
Mining	1.74
Salmon harvesting	1.42
Seafood processing	1.92
Recreation and tourism	1.32
Hunting	1.40
Sport fishing	1.44

Source: Morse 1992.

The employment and income IMPLAN-generated multipliers[7] used to derive total employment levels are shown in table 5. Employment and income multipliers for the resource-dependent industries averaged around 1.5, with a low of 1.32 for recreation and a high of 1.92 for fish processing. The high figure for fish processing reflects the dependence of the industry on local fish harvesting as a major input. Relative to multipliers estimated for other states, these are low, but this is not surprising given that a higher percentage of goods and services purchased by local firms and individuals are imported from Seattle and elsewhere (Hoover and Giarratani 1984).

Figure 2 shows the distribution of direct employment in southeast Alaska by major economic sector. These numbers, and all subsequent employment figures, are expressed in annual equivalent employment (equivalent to 1 year of full-time or part-time employment). Out of just over 37,000 jobs, 23 percent were in resource-dependent industries. Estimates of total (i.e., direct, indirect, and induced) employment from the resource-dependent sector were not made because of double-counting concerns, but the share of total employment attributable to the resource-dependent industries would be significantly higher. Due to a rapid increase in recreation and tourism-related employment, direct employment in the resource-dependent industries has risen about 9 percent since 1985. Total southeast Alaska employment, on the other hand, increased by about 21 percent during the same period.

[7] Economic activity within one industry generates activity in others as firms purchase services and materials as inputs ("indirect" effects) and employees spend their earnings within the local economy ("induced" effects). Each industry has a unique multiplier representing its impact on the regional economy given its particular distribution of local purchases and payments. The total employment generated by an industry is the product of direct employment and the multiplier.

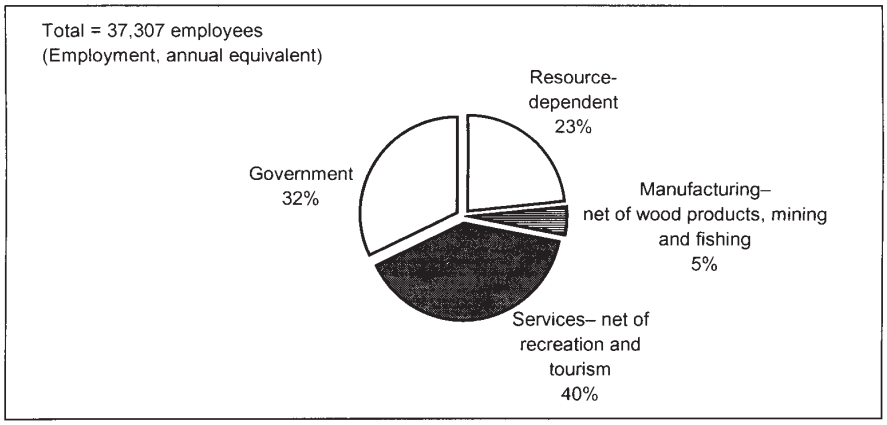


Figure 2–Distribution of 1995 southeast Alaska direct employment by major sector. Resource-dependent industries include paper and wood products, mining, salmon harvesting and seafood processing, and recreation and tourism. All employment figures are standardized to annual equivalent and include an estimate of those self-employed in salmon harvesting. Sources: Alaska Commercial Fisheries Entry Commission 1996, Alaska Department of Labor 1996a, USDA Forest Service 1996b.

The differential rates of growth in resource-dependent jobs and total employment has been reflected in a recent gradual decline in the share of resource-dependent industries in southeast Alaska's total employment mix (fig. 3). The 23-percent share of resource-dependent employment in 1995, however, is still higher than the 22 percent recorded in 1984, a low year for timber employment. Direct employment shares of the various resource-dependent industries within the resource sector total are displayed in figure 4. Salmon harvesting and fish processing together account for 40 percent of the total, followed by recreation and tourism (including hunting and sportfishing; 34 percent), wood products (24 percent), and mining (2 percent). The distribution of total employment (using the multipliers mentioned above) differs due to the multipliers attached to each industry. While the share of total employment related to recreation and tourism declines due to its relatively small multiplier, the total share of wood products employment increases. Relative changes in share for the salmon harvesting and processing sector total employment are ambiguous; the complementary nature of the sector's two industries means that indirect effects from each cannot be summed to estimate a total. Income shares also differ among the industries because jobs in wood products and mining pay more.

The average annual earnings shown in table 6 roughly correspond to the wage rate for each industry (expressed in annual equivalents). Mining, followed by wood products, occupies the high end; these two industries are, respectively, 100 percent and 48 percent higher than the average for the region. Estimates for tourism and recreation also are slightly higher than the regional average. At $26,074, seafood processing provides the lowest annual wage of the five industries (profits to fishing permit holders are not included in the fish harvesting earnings, and the earning figures do not reflect total income of fishing industry participants).

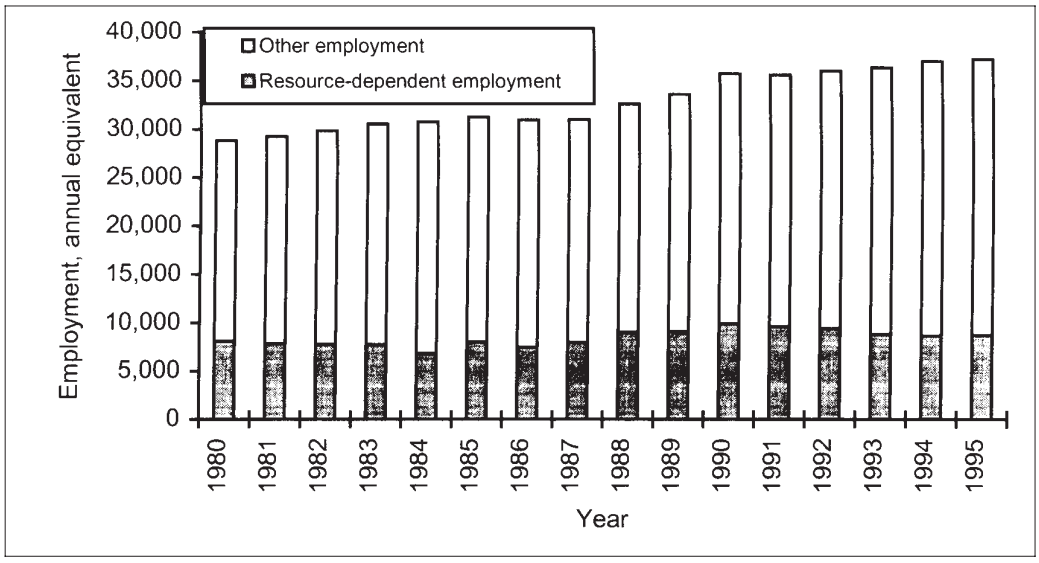


Figure 3–Total and resource-dependent employment in southeast Alaska, 1980-94. Resource-dependent industries include paper and wood products, mining, salmon harvesting and seafood processing, and recreation and tourism. All employment figures are standardized to annual equivalent and include an estimate of those self-employed in salmon harvesting. Sources: Alaska Commercial Fisheries Entry Commission 1996, Alaska Department of Labor 1996s USDA Forest Service 1996b.

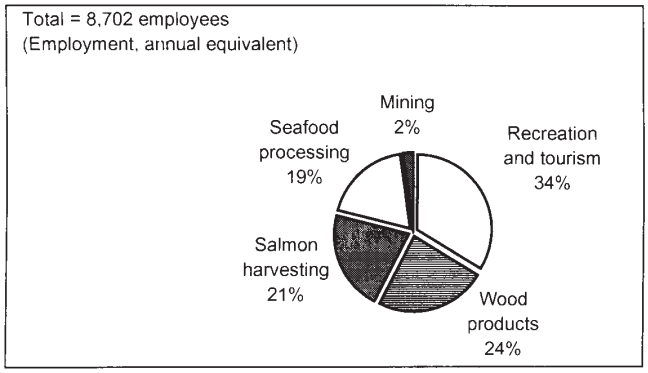


Figure 4–Distribution of 1995 southeast Alaska direct employment within resource-dependent industries. Resource-dependent industries include paper and wood products, mining, salmon harvesting and seafood processing, and recreation and tourism. All employment figures are standardized to annual equivalent and include an estimate of those self-employed in salmon harvesting. Sources: Alaska Commercial Fisheries Entry Commission 1996, Alaska Department of Labor 1996a, Morse 1992, USDA Forest Service 1996b.

Table 6—Southeast Alaska 1995 employment and earnings for resource-dependent industries

Industry	Individuals employed				Employee earnings[a]			
	1995 direct employment	Change 1985-95	SE AK total	1995 total employment	1995 direct earnings	SE AK total	1995 average annual earnings	1995 total earnings
	Annual equivalent	*– – Percent – –*		*Annual equivalent*	*Million 1995$*	*Percent*	*1995$*	*Million 1995$*
Wood products	2,070	2	6	3,584	92	8	44,542	160
Mining	189	-10	1	329	12	1	60,971	20
Recreation and tourism[b]	2,941	22	8	3,888	93	8	31,773	124
Salmon harvesting	1,855	-4	5	2,634	49	4	26,418	70
Seafood processing	1,648	14	4	3,164	43	4	26,074	83
Total, resource-dependent	8,703	9	23	[c]	289	25	33,224	[c]
Southeast Alaska total	37,307	21	100	37,307	1,153	100	30,914	1,153

[a] All dollar figures are in 1995 dollars, adjusted for inflation by using the U.S. producer price index.

[b] Recreation and tourism employment and earnings estimated from 1990 levels (derived from USDA Forest Service, Alaska Region, IMPLAN model [Morse 1992]) by using historical recreation use on the Tongass as an index.

[c] Total resource-dependent employment and income is omitted because of inability to sum resident and nonresident recreation and tourism measures.

Sources: Alaska Commercial Fisheries Entry Commission 1995, Alaska Department of Labor 1996a, Morse 1992.

Although not included in table 6, the proportion of Federal Government employment comprised by the Forest Service (and other resource management agencies) also could be considered resource dependent. Forest Service employment within a community might be considered a basic industry, because the salaries come from outside the region. In 1995, Forest Service employment accounted for at least 45 percent of the Federal Government employment in southeast Alaska, although the level of employment has been declining. Government wages are a steady source of income, tend to be above average, and in Alaska, include a 25-percent, tax-free cost-of-living adjustment. Employees are concentrated in communities with Regional, Forest, and District offices. The Ketchikan Administrative Area has the most employees (full-time equivalents [FTEs]) with offices in Ketchikan, Thorne Bay, and Craig. The Chatham Administrative Area has offices in Juneau, Sitka, Hoonah, and Yakutat. The Stikine Administrative Area, with the smallest workforce, has offices in Petersburg and Wrangell. The Regional Office, which currently employs about 200 FTEs, is in Juneau.

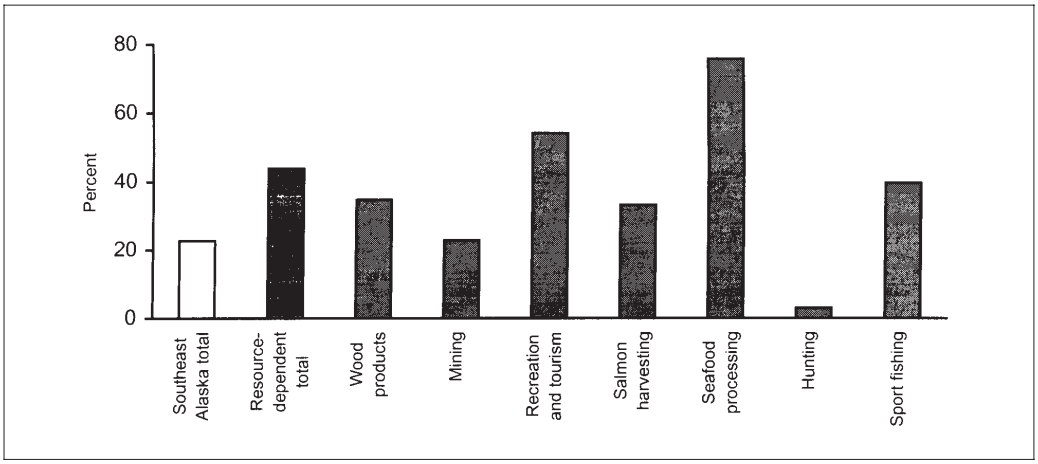


Figure 5–Nonresident share of direct employment in southeast Alaska, 1994. All employment figures are standardized to annual equivalent and include an estimate of those self-employed in salmon harvesting. Sources: Alaska Commercial Fisheries Entry Commission 1996, Alaska Department of Labor 1996b, USDA Forest Service 1996b.

Two other characteristics of employment are relevant to southeast Alaska: nonresident share and seasonal variation. Nonresident shares for southeast Alaska total employment and direct employment in the resource-dependent industries are shown in figure 5. Nonresident shares help to indicate how much of the benefits generated by an industry are likely to leave the region. At 44 percent, the share of nonresidents in the resource sector is about twice that for all industries within the region. This results mostly from the high proportion of nonresidents working in the seafood processing sector and the recreation and tourism sector. Other sectors, particularly mining, are substantially lower but, with the exception of hunting-related employment, all are higher than the regional average.

Subsectors within these broad categories may differ. Within the wood products sector statewide, employment in lumber and wood manufacturing has had a much higher proportion of nonresident employment than has the pulp industry (Hadland 1996). Alaska Pulp Corporation, for example, employed just 18 percent nonresidents in 1994 (Alaska Department of Labor 1996b).

The seasonality of employment is another factor in southeast Alaska, where the difference between levels of employment in summer and winter is quite pronounced. Figure 6 shows one measure designed to capture seasonal variation (monthly statistics were not available for many of the resource-dependent industries discussed). A pattern similar to that of nonresident employment is apparent, with seafood processing showing an extremely high degree of seasonal variation (salmon harvesting can be assumed to display comparable but somewhat smaller figures due to increased preparation time). Although not reported here, it is safe to assume that tourism and recreation shows a high degree of seasonal variability; cruise ships, the travel method for a majority of southeast Alaska tourists, operate only from May through September. With the exception of pulp mills, the mining and wood products industries also show a higher variation in seasonality than the regional average.

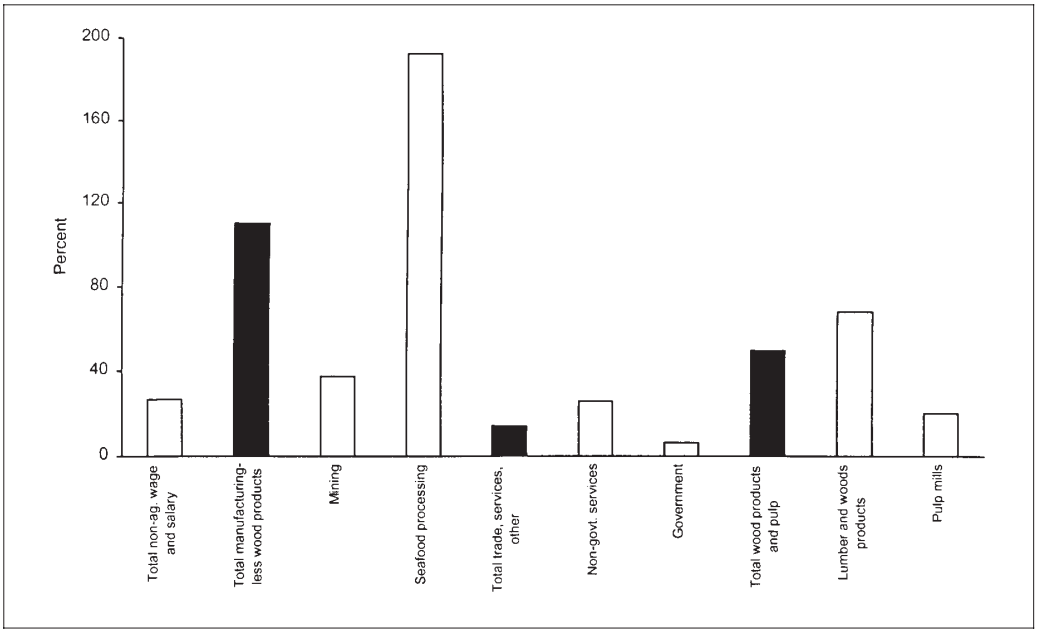


Figure 6–Average seasonal variation in southeast Alaska employment, 1990-94. The difference between summer maximum and winter minimum is divided by the annual average employment. The 1990-94 employment is a weighted average of employment variation in each year, proprietors and those self employed are excluded. Sources: Alaska Department of Labor 1996a, USDA Forest Service 1996b.

The following sections contain detailed descriptions of each of the industries comprising the Tongass-related sector. The sources of the statistics discussed above are provided, along with trend data showing their changes since 1982. Each industry is analyzed separately, but they likely interact in both direct and indirect ways. Development in any industry, for example, provides at least some benefit to other industries through the provision of funds for transportation and other public infrastructure as well as enhancing local economies of scale. It is beyond the scope of this assessment to analyze the interactions among industries, and the extent to which they are complementary, competitive, or exclusive. It would not be sufficient, for example, to simply correlate employment trends among the industries over time, for this would not determine causation. Additional research is needed to better understand the interrelations among resource-related (and other) industries in southeast Alaska.

Wood products—The forests of southeast Alaska consist mainly of western hemlock-Sitka spruce types (*Tsuga heterophylla* (Raf.) Sarg.-*Picea sitchensis* (Bong.) Carr.) found in the temperate rain forest lying along the coast from Oregon to south-central Alaska. In the Tongass, these stands comprise nearly all the timberlands, with the remaining 2 percent occupied by western redcedar (*Thuja plicata* Donn ex D. Don), Alaska-cedar (*Chamaecyparis nootkatensis* (D. Don) Spach), and cottonwood (*Populus* spp.). As of 1991, the 17 million acres of the Tongass National Forest included 7 million acres of nonforest land, 4.2 million acres withdrawn from timber production, 2.4 million acres not capable of growing commercial timber, and almost 1 million acres physically unsuited for timber harvest. An additional 250,000 acres

were made unavailable to harvest between 1991 and 1996 because of policy changes, new information, and ownership adjustments, leaving about 2.3 million acres tentatively suitable for timber production (USDA Forest Service 1996b). This does not mean that all these lands will be harvested; that will be decided through ongoing management processes.

Southeast Alaska's wood products mix has included dissolving pulp, logs, cants, dimension lumber, wood chips, and a small but growing volume of specialty products. Overall, most of southeast Alaska's pulp production and a substantial majority of its lumber has been shipped overseas, with some 30 nations represented among the purchasers. Until the 1997 closure of the Ketchikan Pulp Company mill at Ward's Cove near Ketchikan, dissolving wood pulp constituted a major (if not the major) wood product export for the region. Exclusive of Canada-U.S. trade, Alaska accounts for about 8 percent of the softwood logs moving into Pacific Rim markets and about 4 percent of the softwood lumber.

The vast majority of the region's harvests come from two ownerships: the Tongass National Forest and Native corporations. On average, over the 1983-to-1995 period, these two ownerships accounted for 45 and 52 percent, respectively, of total harvests, with private harvests exceeding those from the Tongass National Forest by an average of 14 percent. Consequently, the Tongass cannot be seen as the sole driving force in the region's timber economy. Future levels in Native corporation harvests should be incorporated into predictions regarding evolution of the wood products industry, or at least that of the logging sector.

Timber from the Tongass National Forest and from Native corporation lands flows into essentially different markets. While Sitka spruce and western hemlock saw logs (the region's mainstay species) from the Tongass must be processed locally (in response to law reflecting concern for keeping timber jobs in Alaska), Native corporations face no such constraint, and sell a majority of their timber as raw-log exports because of the higher prices paid by that market. Consequently, changes in Native corporation harvests are reflected primarily in changes in log exports.

Figure 7 shows southeast Alaska harvests by owner since 1983. Harvest levels range from about 600 million board feet (MMBF) in 1983, to peak levels of just under 1,000 MMBF in 1989 and 1990, and then to a period low of 497 MMBF in 1995. This pattern is similar to that in the Pacific Northwest, where a global recession in the wood products industry depressed output in the early to mid 1980s. This was followed by a boom and then subsequent declines in harvests, in spite of rising prices, due to supply constraints. The variability is striking but not that unusual in industries prone to cycles.

As is clear from trends in recent harvest levels, timber supply on Native corporation lands is declining. It is widely assumed that Native corporation harvests will continue to decline, stabilizing at a level of around 100 MMBF at the start of the 21st century (Brooks and Haynes 1994). Under this assumption, continued declines in forest sector employment and revenue, particularly in logging and log export-related services, are inevitable unless harvests from the Tongass make up the approximate 100 MMBF difference between 1994 Native corporation harvests and the predicted equilibrium level. Future reductions in the availability of timber from private suppliers in southeast Alaska may increase pressure to harvest timber from the Tongass National Forest.

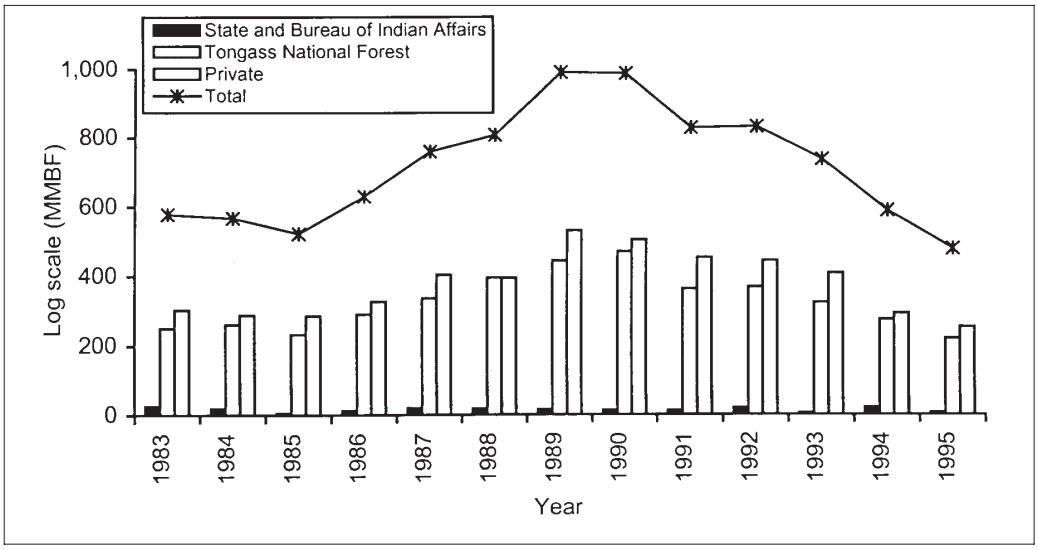


Figure 7–Southeast Alaska total timber harvest by ownership, fiscal years 1983-95. Source: USDA Forest Service 1996b.

Total volumes of wood products produced in southeast Alaska are shown in figure 8.[8] For comparability, all production units have been converted to round-wood equivalents (MMBF log scale); roundwood is defined as the amount of raw material input needed to produce the reported volume of output. Comprising 43 percent of total production in the 1981-95 period, log exports were, on average, the largest component of southeast Alaska's production by volume. At 36 percent, pulp production was the second largest component of production and has been far more stable than log exports. On average, 19 percent of Native corporation harvests have been used in pulp production. Similarly, an average of 17 percent of Tongass National Forest logs were classified as utility grade and more likely to be used for pulp. This does not necessarily indicate the amount of timber dedicated to pulp production, because lower grade saw logs also were chipped for pulp and some utility grade logs were sawn, depending on market conditions.

Lumber is the smallest component of total production (19 percent), although sawmill residuals from lumber also have constituted a major source of chips for pulp. In 1994, for example, mill residues supplied an estimated 102,000 tons of chips to the regional market, or about one quarter of southeast Alaska's 429,000 tons of total chip supply. Logs chipped by sawmills provided another 67,000 tons. These data highlight the complementary relation between lumber production and local chip markets.

[8] The primary source for this figure was fiscal year export volumes for the State of Alaska as reported by the USDA Forest Service (1996a). Calendar year data on exports by port were used to estimate southeast Alaska's share in total state exports, and these shares were used to scale the fiscal year data. The resulting figures represent an estimate of southeast Alaska's exports based on state totals. Total volumes were obtained by adding estimates for domestic shipments derived from export shares (Brooks and Haynes 1994). In the final step, roundwood equivalents were produced by using conversion factors, also given in Brooks and Haynes (1994).

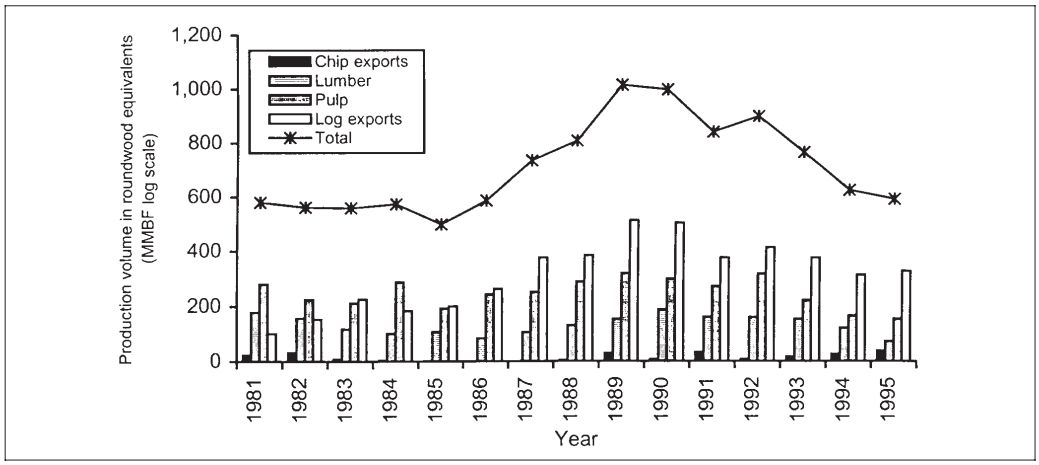


Figure 8–Volume of southeast Alaska production in roundwood equivalents, fiscal years 1981-95. Domestic shipments and conversions to roundwood equivalent were derived by using export shares and conversion factors reported in Brooks and Haynes (1994). Source: USDA Forest Service 1996b.

Louisiana Pacific, the parent company, closed the Ketchikan Pulp Corporation mill in March 1997, citing market conditions and declining Federal timber supplies; nearly 500 jobs were lost in the industry. Harvest of sufficient timber volume to supply southeast Alaska sawmill capacity would continue to provide a proportionate volume of lower grade logs and chips suitable for pulping or alternative processing. It is not yet known what alternative market (or policy direction) will develop for this product.

Employment generated by the wood products sector follows the pattern of production, with generally depressed levels in the early 1980s followed by a peak in 1990 and subsequent decline, but the variation is somewhat less than in the harvest or production statistics (fig. 9). Lags in employment response to decreases in production are common, and further declines in employment levels can be expected even if 1995 harvest levels are maintained. On average, over the 1981-95 period, logging employment accounted for about half of total sector direct employment. Pulp production and sawmills accounted for 31 and 17 percent, respectively. Both sawmill and pulp mill employment declined dramatically following closure of the Alaska Pulp Corporation's (APC) pulp mill in Sitka and sawmill in Wrangell. In total, the industry has lost 1,540 jobs since 1990 and is projected (in 1996) to fall below the period low of 1,947 jobs that occured in 1985.

Although the types of technologies employed in logging and sawmilling are influential in the long run, production volumes of wood products are the primary determinant of employment levels in the wood products sector in the near to medium term. Figure 10 shows the annual equivalent employment levels associated with production in the logging, sawmilling, and pulp sectors, per million board-foot lengths (MMbf ls; roundwood equivalent). Although year-to-year variation is evident, the data show that the physical productivity of labor has remained relatively constant. At an average of 2 employees per MMbf ls, the logging sector constitutes the initial link in the production chain. The lumber and pulp sectors employed, respectively, 3.5 and 3.3 people on average per roundwood equivalent of end product output. Consequently, lumber or

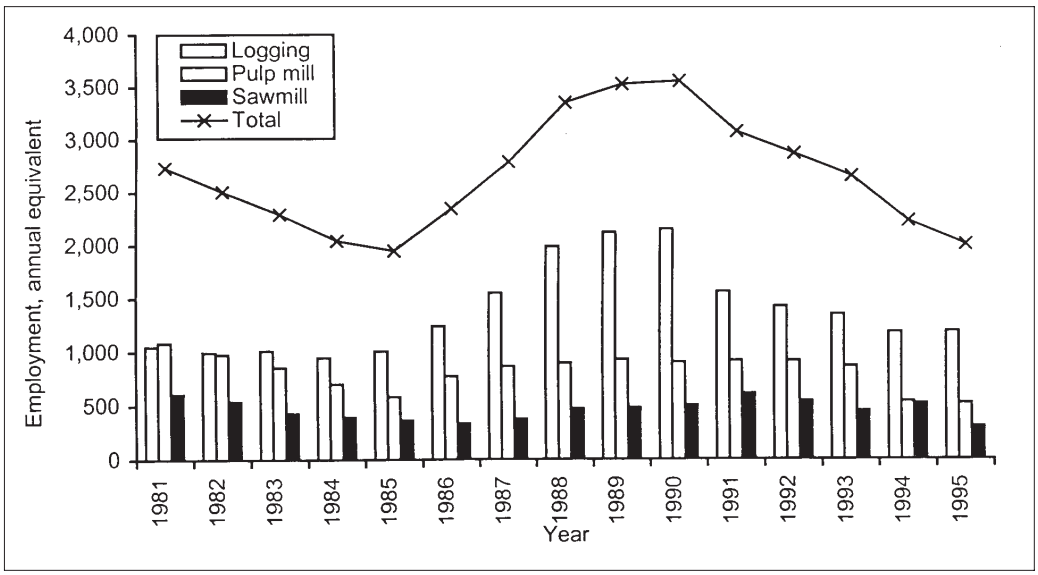


Figure 9–Southeast Alaska wood products sector direct employment by type, fiscal years 1991-95. Source: USDA Forest Service 1996b.

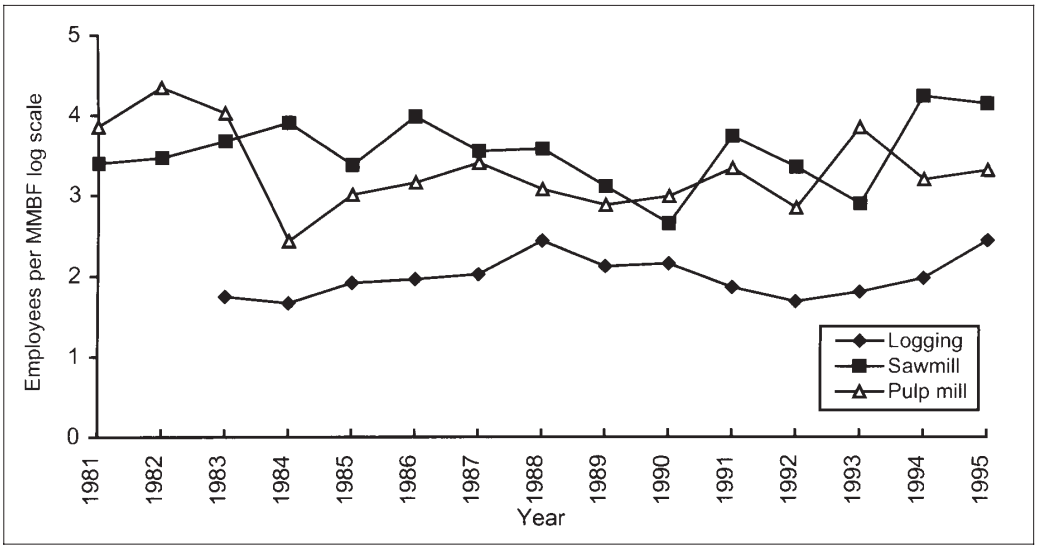


Figure 10–Average annual employment per wood product output in southeast Alaska, 1981-95. Sources: Alaska Department of Labor 1996a, USDA Forest Service 1996b.

pulp exporting employed about 5.5 persons in the logging and processing sectors. Additional employment is generated in a number of other related sectors (such as shipping and handling). Reliable estimates of these numbers were not made for this assessment but they would be included in the 1.72 multiplier for the wood products sector.

Both the direct link between employment and output shown in figure 10 and the indirect links assumed in the multiplier are more robust at the regional level where the law of averages more generally applies. At local levels, on the other hand, large deviations from average levels can be expected. This deviation is especially apparent with sawmills; mill openings and closures result in abrupt changes in employment rather than the smooth fluctuations implied in the regional average-jobs-per-volume estimates.

Commercial fishing and seafood processing—Fish and aquatic resources of the Tongass National Forest provide major subsistence, commercial and sport fisheries, as well as traditional and cultural values. The Forest includes about 45,000 miles of known streams, and 20,900 lakes and ponds. Anadromous fish habitat includes 10,800 stream miles and 4,100 lakes and ponds. Most of the Forest's streams and rivers empty into bays or estuaries, which are important during some life stages of anadromous species as well as for many saltwater species. These aquatic systems of the Tongass provide spawning and rearing habitats for the majority of fish produced in southeast Alaska.

Commercial fish harvest has fluctuated over the years, averaging 50 million fish annually in the late 1930s, but declining to 20 million in 1950 and then to 6 million in 1975. Since 1975, however, the trend is upwards, with 60 million fish caught in southeast Alaska in 1985, a record 76 million in 1994, and new records since. Fluctuations in commercial harvest trends are partly attributable to changes in ocean productivity. The productivity of marine waters in the Gulf of Alaska, and the survival of salmon are both highly variable and cyclic. Since the mid-1970s, favorable ocean currents have resulted in high productivity and, consequently, high marine survival of salmon (Anadromous Fish Habitat Assessment Team 1995). Releases of hatchery juvenile salmon also have increased substantially, from 20 million in 1980 to 500 million in 1991.

Although the profitability of the seafood industry in southeast Alaska continuously changes, it remains a major component of the regional economy. Employment in seafood processing is reported in ADOL employment statistics, but commercial fishing is not. We relied on a methodology developed by McDowell Group (1989) to estimate employment in salmon fishing.[9] This technique has been applied only to the salmon fishery, and the employment numbers reported here are for salmon only. The salmon fishery constitutes about 75 percent of the region's total catch (halibut, crab and herring constitute about 25 percent by value). Statistics available for the seafood processing industry, however, do not allow for an easy distinction between salmon processors and other firms, so the entire industry is represented in our tables and figures.

---

[9] This technique uses the yearly number of fishing permits issued and the average amount of time spent in fishing and preparation per fishing entry. Earnings figures are estimated by dividing up net revenues among captains and employees in the fishery. Because profits to captains are not included, this allows for comparability with ADOL figures and helps to explain extremely low yearly earnings estimates. This method yields a best approximation of the economic activity attributed directly to commercial salmon fishing but may be subject to a substantial degree of error. Despite this, employment trends are accurately reflected.

Taken together, commercial salmon fishing and seafood processing formed the region's largest private industry in 1994. At an estimated 3,500 average annual employees in 1994, combined direct employment in the salmon fishing and seafood processing industries exceeded that in wood products by 61 percent and that in recreation and tourism by 28 percent. Components of the seafood industry are spread throughout the region with a significant presence in virtually every community. Sitka leads southeast ports in the number of permits, and Petersburg residents lead the region in catch and gross earnings. Sport fishing also has made substantial progress as an economic force, with saltwater charter fishing service providers increasing substantially in recent years to over 700 in 1994. Ketchikan, Sitka, and Juneau are the three largest centers of activity, but Prince of Wales Island, Petersburg, Wrangell, and other, smaller communities show increases as well.

Most fresh and frozen Alaska salmon is sold in the United States and Japan with lesser amounts sold in Europe, primarily France and the United Kingdom. Canned salmon is sold primarily in the United States; other markets include the United Kingdom, other European nations, Australia, and Canada. World fish consumption far exceeds the productive capability of the Tongass National Forest, and any changes in commercial fish production attributable to forest management will not have a significant effect on market prices except possibly for specific species such as king salmon. Alaska's seafood industry is subject to wide price fluctuations as a consequence of changes in the international market for seafood products of all types.

Despite overall growth in Alaska's salmon production and worldwide increases in consumption, Alaska's market share of global salmon supply (estimated at 31 percent in 1990) has been falling. The loss of market share is not a function of poor stocks or low supply, but a consequence of the growing acceptability of farmed fish as a source of fresh salmon. Seafood processing, another vital component of southeast Alaska's economy, also has undergone fundamental changes, including the increased use of floating fish processing facilities and a trend toward freezing rather than canning salmon.

Value and volume measures of salmon harvest for southeast Alaska are shown in figure 11. In spite of extreme variation from year to year, harvest levels show a definite upward trend since 1980. Gross revenues (in 1994 constant dollars), on the other hand, display no consistent trend. Divergence of volume and value, most pronounced in the 1990s, is likely the result of falling prices for Alaska wild salmon as the industry faces changing preferences in some markets, recession in major markets, and increasing competition with farmed salmon.

In contrast to revenue and catch levels, employment in both salmon fishing and, to a lesser extent, seafood processing is remarkably stable (fig. 12). A generally increasing catch using the same work force has, on average, allowed fisherman to maintain real incomes in spite of falling prices. Alongside the high degree of seasonality and nonresident participation in salmon fishing and processing, the extreme variation in yearly income stands out. Nonetheless, the relative size and stability of employment in the industry identifies fishing and processing as an extremely important element in southeast Alaska's regional economy. The success of the industry in increasing markets, developing new products, and increasing the overall consumption of Alaska salmon will determine the size of the industry in the future.

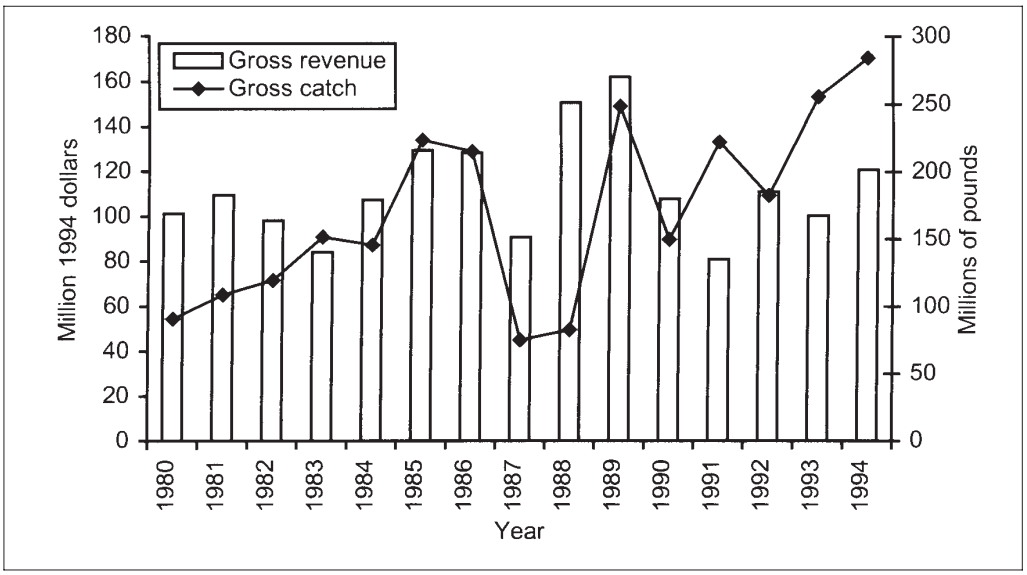


Figure 11–Salmon harvest gross earnings and catch in southeast Alaska, 1980-94. Gross earnings to commercial fishers are ex-vessel values in 1994 dollars, adjusted for inflation by using the U.S. producer price index. Source: Alaska Commercial Fisheries Entry Commission 1996.

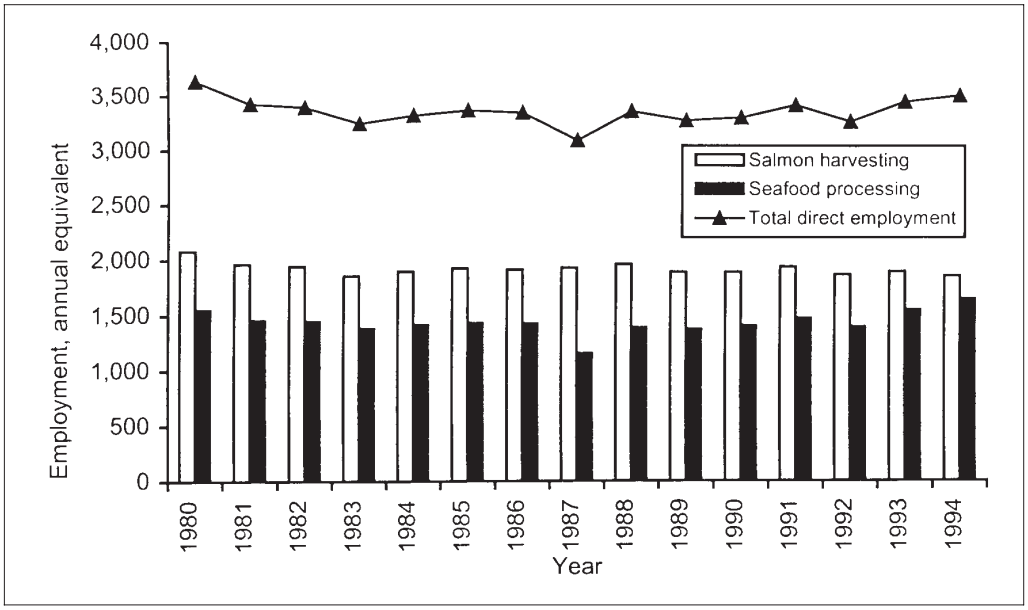


Figure 12–Southeast Alaska direct salmon harvesting and seafood processing employment, 1980-94. Salmon harvesting employment was derived by using average crew size and number of permits fished (McDowell Group, 1989). Source: Alaska Commercial Fisheries Entry Commission 1996, Alaska Department of Labor 1996a.

Several assumptions were used to relate the salmon fishing and seafood processing industries back to the Tongass National Forest. For example, it was assumed that 80 percent of southeast Alaska salmon originate within the Tongass, so 80 percent of the salmon fishing industry is dependent on the National Forest.[10] The dependence of fish processing employment on the Tongass was derived similarly with the added assumption that salmon represented 60 percent (by volume) of the total processed catch. The result was an estimate that 48 percent of employment in the seafood processing industry relies on the productivity of Tongass National Forest salmon streams.

The Forest Service and cooperators have invested substantial amounts of money in fisheries enhancement projects over the past 15 years, developing 176 projects that contribute an estimated 17 million pounds of fish to annual harvest levels. However, much of the future of the fishing and seafood processing industry in southeast Alaska will continue to depend on conditions outside the National Forest, such as offshore harvest levels and changes in ocean currents. Should these cycles continue as they have in the past, conflicts among commercial, sport, and subsistence uses of fisheries may increase in times of scarcity, especially for specific species and fishing locations. The interrelations are complex; commercial fisheries, for example, can both support and disrupt subsistence fishing systems (Betts and Wolfe 1992).

Recreation and tourism—Southeast Alaska possesses a unique combination of features, including inland waterways with over 11,000 miles of shoreline, mountains, fjords, glaciers, and large or unusual fish and wildlife populations. These physical and biological resources, coupled with recreational access and facilities, provide opportunities for a wide range of outdoor recreation experiences.

Most recreation and tourism attractions in the Tongass National Forest and much of the associated use occur in remote, largely undeveloped areas. Although most of southeast Alaska is available for public recreation, the limited road system, steep terrain, wetlands, ice fields, glaciers, and heavy vegetation confine most recreation activities to accessible shorelines, river and stream bottoms, and around the many lakes. The marine interface where the land meets the sea tends to be the setting most sought for recreation.

The focus of this section is on nonresidents who visit southeast Alaska, because this portion of the recreation-tourism economy brings new dollars into the region (and would therefore be considered a basic industry). Residents, too, highly value recreational opportunities of the Forest, and cite recreation as a major contributor to their quality of life (Alves 1979). An even more specific focus is on nonresidents who visit the region for pleasure-vacation travel (as opposed to business and other types of travel; McDowell Group 1993a) because this portion of visitation is most likely to be linked either directly or indirectly to recreation and scenery in the Tongass.

The Inside Passage was Alaska's most frequently visited attraction in summer 1993; it was visited by over 370,000 people, or 73 percent of the state's pleasure-vacation visitors (McDowell Group 1993a). Among visitors to southeast Alaska, casual walking, photography, wildlife viewing, and bird watching were the most frequently undertaken

[10] Based on research conducted by the USDA Forest Service, Alaska Region. Salmon return and harvest rates within southeast Alaska were compared and distributed by ownership. Adjustments were made by species based on habitat requirements.

outdoor activities (in descending order). Of the available sightseeing opportunities, city tours, native cultural presentations, Alaska shows, day cruises, and flightseeing were the most popular (in descending order). The most popular activity of all, however, was shopping.

Tourists (nonresident pleasure visitors) can be categorized broadly as package visitors (traveling as part of an organized group; e.g., cruise ship clients) or independent visitors traveling on their own (but who also use outfitters and commercial services). In summer 1993 (the most recent year for which comprehensive data are available), 68 percent of southeast Alaska visitors bought a packaged trip in advance for their Alaska trip, a percentage much higher than among visitors to other Alaska regions (McDowell Group 1993a).

Over half (53 percent) of the 1993 pleasure-vacation summer visitors entered southeast Alaska by cruise ship; 27 percent flew on domestic airlines, 14 percent arrived in personal vehicles, and 5 percent came by the state ferry system. Visitors to southeast Alaska spent an average of 9 days in Alaska, 5 in the southeast region and 4 elsewhere; the most frequently visited other places were Anchorage, Fairbanks, and Denali. Not surprisingly, 62 percent of southeast Alaska pleasure-vacation visitors reported using cruise ships as lodging, although 17 percent stayed at hotels and 11 percent used a recreational vehicle or stayed at a campground.

One-third of the summer 1993 pleasure-vacation visitors said they were likely to return within the next 5 years, a percentage comparable to visitors to other regions with the exception of southwest Alaska visitors, nearly 75 percent of whom planned to return (most were regular fishing clients).

Table 7 shows trends in visitation for the 1989-94 period. Although the trends clearly point to increased visits for all travel modes and the two sites listed, the most distinct trend is in the cruise ship market, which has exhibited dramatic increases almost annually. A closer look at this market reveals some differences between it and other markets (McDowell Group 1993b). All cruise ship visits take place from May through September, resulting in concentrations of use at select points based on where cruise ships dock. Nearly all the people who entered Alaska on a cruise ship were pleasure-vacation visitors on a package trip. They have made the fewest previous visits to Alaska compared to people using other travel modes, and most came from the west (26 percent) or south (26 percent). Cruise ship visitors were older, with an average age of 55, were comprised of more women than men, and were equally likely to be employed or retired. Trends suggest that the average age of cruise ship visitors has dropped from 59 in 1985, and that visits from the Western United States are decreasing and visits from the south are increasing. Recent projections estimate a growth rate of about 4 percent annually for the cruise ship market in the short term (Alaska Visitor Association 1992), but visitation is expected to be near a plateau and recent rapid expansion may not continue. The rate of visits by independent travelers also seems to be flattening out.

For the 12-month period from May 1993 to April 1994, just over 1 million nonresidents visited Alaska. They spent a total of about $1.6 billion associated with their trip away from home, and about $700 million in Alaska (McDowell Group 1994). Vacation-pleasure visitors accounted for 70 percent of total expenditures and was the fastest growing market, with 73 percent more visitors coming to the state than did in 1989-90.

Table 7—Southeast Alaska visitation trends, 1980-94

Year	Juneau cruise ship passenger	SE Alaska state ferry passenger	Juneau airline departures	Juneau ice field tour passenger	Mendenhall Glacier visitor
1980	86,815	276,000	155,699	NA	NA
1981	83,566	282,000	156,257	NA	NA
1982	87,358	300,000	150,871	NA	NA
1983	99,706	307,782	167,302	NA	NA
1984	118,781	311,459	168,685	NA	NA
1985	137,000	313,147	163,837	12,925	94,072
1986	164,400	296,070[a]	156,667	17,553	110,229
1987	202,000	326,644	157,952	22,152	119,577
1988	198,870[b]	344,209	167,314	25,018	110,000
1989	193,983[b]	343,100[c]	176,429	27,326	184,452
1990	237,070	363,122	183,677	34,765	188,000
1991	248,428	368,780	190,244	41,887	145,482
1992	269,000	372,680	236,824	45,638	160,000
1993	306,600	342,613[d]	200,066	53,600	210,000
1994	372,923	347,998	229,820	62,449	265,000

NA = not available

[a] 2 vessels (1 trip per week) on the route to Seattle reduced total traffic.

[b] Bankruptcy of a large company reduced total passengers these years.

[c] Threat of strike reduced passengers late in season.

[d] Ferry Taku out of service in May and June reduced total passengers.

Sources: Alaska Marine Highway System 1995, Juneau Airport Manager's Office 1995, Juneau Convention and Visitors Bureau 1995, USDA Forest Service 1995.

About $160 million, almost one-fourth of the instate total, was spent in southeast Alaska, nearly all during the summer months. Statewide, instate expenditures included tours and recreation (26 percent of the total), lodging (22 percent), transportation (18 percent), food and beverage (14 percent), and gifts and souvenirs (12 percent).

Economic activity in the tourism industry (including sport fishing and hunting) now accounts for an estimated 2,941 jobs in the region (direct employment only).[11] This constitutes about 7 percent of southeast Alaska total 1995 employment and is the second largest level among the region's resource-dependent industries. Much of the employment resulting from tourism is in relatively low-paying jobs such as hotels and

[11] Estimating recreation-tourism related employment is complicated by the fact that expenditures are widely distributed across various industries. For example, in addition to making purchases from souvenir shops, outfitters, and guides, tourists may spend a large portion of their money in local restaurants, grocery stores, and other establishments where local residents also spend their money. As a result, there is no easy way to determine a precise level of employment for the industry.

other lodging places or eating and drinking places, but other components include the relatively high-paying transportation industry, which in 1991 provided 27 percent of the total visitor industry employment and 42 percent of the total annual payroll of $141 million (McDowell Group 1991).

Economic benefits from the tourism industry also accrue directly to state government. For the state as a whole, the tourism industry generated about $52 million in direct revenues through nonresident visitor spending (the bulk attributable to the Alaska Marine Highway System and nonresident fishing and hunting permits and tags), taxes and fees from the visitor industry business (primarily through corporate income tax and aviation fuel taxes), Alaska Division of Tourism receipts, the Alaska Railroad, and international airport system (McDowell Group 1992).

A substantial proportion of recreation and tourism activity, however, does not occur directly in the Tongass National Forest. The Tongass National Forest and associated public perceptions of its undisturbed character play an important role in attracting out-of-state visitors to southeast Alaska, who, in turn, generate jobs and income through activities not directly related to the Tongass. The Tongass provides the scenic backdrop for recreational activities such as float plane and helicopter tours, as well as commercial and noncommercial boating. Although these activities may not require stepping onto Forest lands, they clearly involve resources located within the Tongass. Possible impacts to tourism and recreational uses are acknowledged in Forest Service management of visual resources along major waterways, and on visual quality objectives designed to maintain the overall attractiveness of the Forest.

The following discussion and employment analyses focus on activities occurring directly in the Tongass. This likely understates the Forest's contribution to overall tourism and recreation employment, but the scientific basis for allocating proportions of the total industry to the Tongass has not yet been developed.

A recent inventory identified 1,436 recreation places—specific geographic areas with recreational values—located in the Tongass (USDA Forest Service 1997). Of these, about 80 percent were outside designated wilderness areas. Just under half were within 15 to 30 miles of a community (this distance was defined as a home range, accessible by a community road system or for day trips via a small boat). Just over 40 percent of the places were defined as marine recreation opportunities consisting of water areas and adjacent lands accessible by boat or plane. Sixty-one percent of the recreation places in the Tongass were deemed important for tourism, either as a destination or as a scenic backdrop for popular activities such as photography, wildlife viewing, flightseeing, and hiking.

General recreation use and tourism related to the Tongass has more than doubled in the last 10 years. The Forest Service's Recreation Information System (RIM) database is a yearly estimate of the number of recreation visitor days (RVDs) occurring in the Forest. Use estimates from RIM were the basis for future use projections, without consideration of constraints related to capacity. Figure 13 displays the RIM use data from 1984 through 1995, future trends as predicted directly from past use, and the amount of use likely to occur given the constraint of existing capacity. Given these trends and estimates, the Forest is expected to be able to provide sufficient opportunities for all types of recreation except for semiprimitive motorized opportunities (USDA Forest Service 1997). These opportunities, characterized by motorized access (usually float plane or motorboat) into relatively remote, undeveloped areas, are becoming

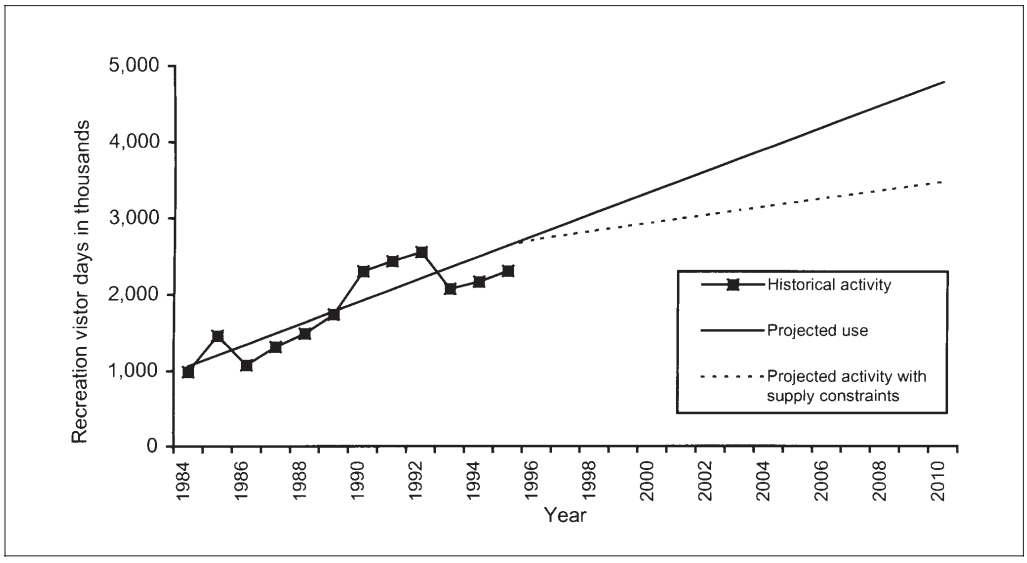


Figure 13–Historical and projected recreation visitor days, Tongass National Forest, 1984-2010. Source: USDA Forest Service 1996b.

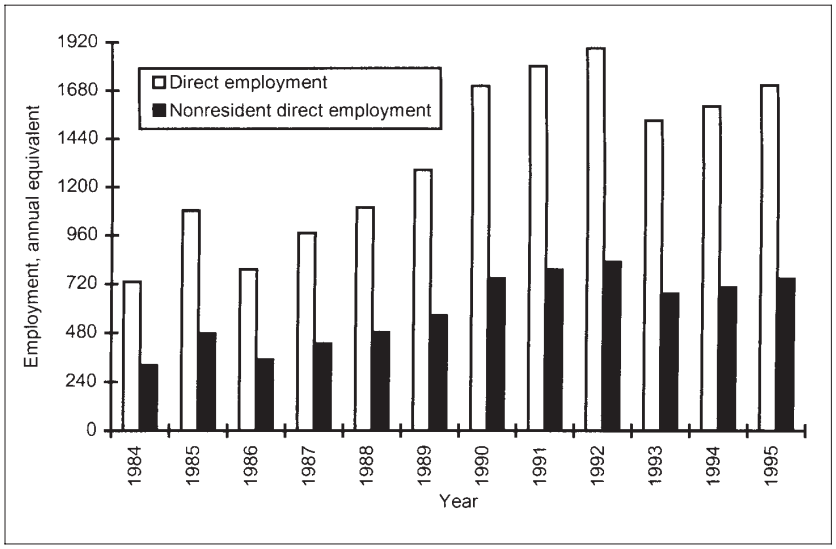


Figure 14–Tongass National Forest-related direct employment in recreation and tourism, 1984-95. Employment is annual equivalent and includes proprietors and those self-employed. Source: USDA Forest Service 1996b, Morse 1992

more popular. Other types of settings in the Tongass, including primitive and semi-primitive areas without motorized access, and the more developed roaded and rural settings, are not likely to be limiting factors on recreation in the Tongass for the near future.

Tongass-related direct employment estimates were derived by multiplying jobs per RVD[12] (estimated to be 0.00074) by historical use levels (fig. 14). We used a regional input-output economic model to derive an estimate of the average levels of employment generated by a unit of recreation-tourism activity in the Tongass. There is considerable room for error in this process, and the estimates should be taken as an approximation of the true value. Unlike a traded commodity, such as timber, there is no direct way to integrate supply and demand to yield a level of consumption or market value for recreational experiences on public lands. Trends illustrated by this measure should be relatively accurate nonetheless, assuming that the rate of jobs per RVD is relatively stable in the short run.

In addition to the "Direct Employment" category, figure 14 shows a "From Nonresident" employment category that refers to jobs generated by expenditures from out-of-region visitors and is comparable to an export industry bringing new money into the region. Nonresident visitors to the Tongass National Forest account for an estimated 44 percent of total use (based on Forest Service RIM database), so nonresident-generated employment estimates are considerably less than those for direct employment.

Mining and mineral development—Mineral exploration and mining have been a part of life in southeast Alaska for over 120 years, with various mineral deposit types and mineral resources occurring within the boundaries of the Tongass National Forest. Locatable minerals[13] of the Tongass include gold, silver, copper, molybdenum, iron, nickel, lead, zinc, limestone, and marble. Today, due to the most favorable metal prices since the mid-1980s, the mining industry is exploring new areas for potential mineral deposits and is revisiting historic mining areas with modern exploration techniques. Thirteen identified mineral deposits in the Tongass seem economically viable under today's market conditions. In 1990, the U.S. Bureau of Mines estimated the gross value of identified mineral resources within the boundaries of the Tongass National Forest as $47.4 billion (1995 dollars). Highest among the individual minerals were molybdenum ($18.4 billion) and iron ($16.2 billion), with gold third ($2.89 billion).

In 1995, 196 workers were directly employed by the mining industry, down from a recent peak of 342 employees in 1991 (fig. 15), and a scant fraction of levels earlier in the 20th century when mining was the dominant source of employment in southeast Alaska. Mining-related indirect employment in 1995 was estimated at 145 workers, yielding a total of 341 jobs generated in southeast Alaska by the mining industry. At over $60,000 per year, employee earnings are twice the regional average. In 1995, direct employee earnings for the industry were $11.7 million (in 1995 dollars) and total earnings $20.4 million.

---

[12] The USDA Forest Service Alaska Region developed estimates of employment generated per RVD by using the IMPLAN model. The actual estimate was 1,352 RVDs per job. Miernyk (1965) provides a good introduction for those interested in a general description of input-output modeling.

[13] A locatable mineral is any mineral that is valuable in the usual economic sense or has a property giving it distinct and special value.

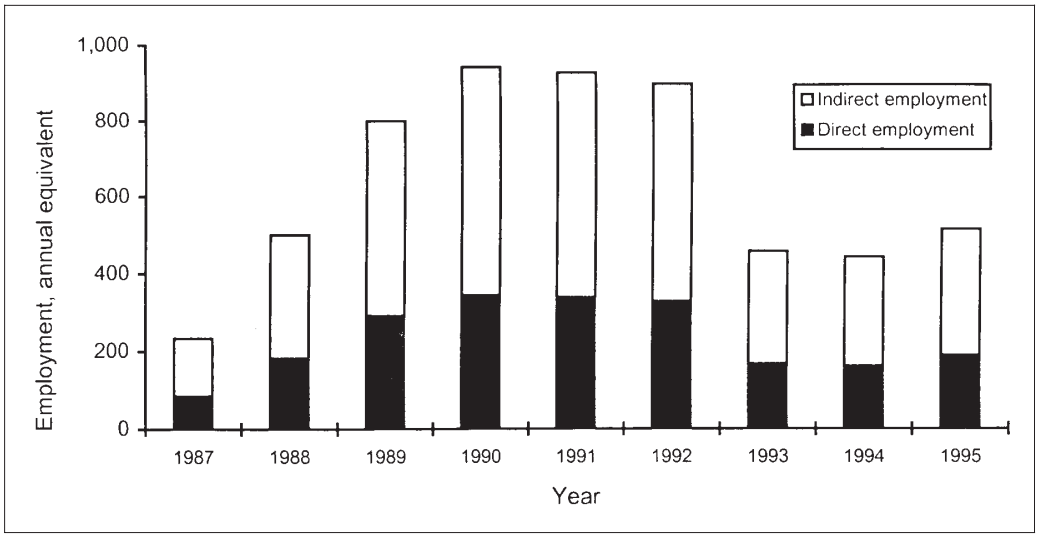


Figure 15–Southeast Alaska direct and indirect mining employment, 1987-95. Employment is annual equivalent and excludes proprietors and those self-employed. Source: Alaska Department of Labor 1996a.

Mining development activities are primarily at the Greens Creek silver, lead, and zinc mine on Admiralty Island, the Quartz Hill molybdenum site in Misty Fiords, and the Kensington gold mine north of Juneau.[14]

The Greens Creek project is a major metals mine containing silver, gold, zinc, and lead on the northwest end of Admiralty Island about 18 miles from Juneau. At its peak in 1990-91, this mine employed about 265 workers with an estimated payroll of $14.1 million (1995 dollars), making it the Juneau area's largest private employer.

The Kensington property, within the boundaries of the City and Borough of Juneau about 45 miles north of Juneau on Lynn Canal, is mostly on National Forest System lands. Coeur Alaska, a division of Coeur d'Alene Mines, is planning a 4,000-ton-per-day operation over a projected mine life of 12 years. Once in full operation, the Kensington Mine could employ 340 workers, with an annual payroll of about $20.7 million (1995 dollars). The company currently is seeking permits and approval to proceed.

The Quartz Hill molybdenum deposit in Misty Fiords National Monument, discovered in 1974, is considered one of the largest such deposits in the world, containing as much as 10 percent of the world's known reserves. The mine could produce 80,000 tons of ore per day, through an open pit mine operation, and employ 850 to 900 people. Expected life of the mine is predicted to be at least 70 years.

[14] Echo Bay Mines, Ltd., of Edmonton, AB, initially sought to obtain permits to operate the Alaska-Juneau (AJ) mine, anticipating production of 350,000 ounces of gold annually for a minimum projected life of 13 years and employing 450 workers earning about $27 million in annual payroll. Early in January 1997, the company announced it would not pursue development of the mine because of economic considerations.

Exploration investments in southeast Alaska in 1995 totaled about $12 million, the most spent in any of the state's seven regions of mineral activity (Bundtzen and others, no date). This amount dropped to about $7 million in 1996 (Swainbank and others 1997). These amounts are lower than those spent between 1988 and 1991, which averaged over $20 million per year, but higher than the early 1980s of about $3 million per year. In general, the short- to medium-term prospects for southeast Alaska's mining industry seem good, but much will depend on environmental concerns and whether prices for precious metals and other minerals can support Alaska's high costs of exploration, development, and production.

Subsistence

As mentioned in the "Introduction," this report does not attempt to define or cover the full range of social, cultural, economic, and other meanings and benefits of subsistence, or to detail the harvest levels or species in southeast Alaska. This section will provide a brief overview of subsistence activities within the context of economic conditions.

A variety of cultural, popular, and sociological definitions and interpretations of subsistence are possible, but Section 803 of the Alaska National Interest Lands Conservation Act (ANILCA; U.S. Public Laws, Statutes 1980) defines subsistence use:

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

ANILCA provided for "the continuation of the opportunity for subsistence uses by rural residents of Alaska, including both Natives and non-Natives, on the public lands." It also stated that "customary and traditional" subsistence uses of the renewable resources "shall be the priority consumptive uses of all such resources on the public lands of Alaska."

The opportunity to participate in subsistence activities reinforces a variety of cultural and related values in both Native and non-Native communities. Distribution of fish and wildlife, for example, contributes to the cohesion of kinship groups and to community cohesion through sharing of resources derived through harvest activities. Subsistence resources provide the foundation for Native culture, from the totemic basis of clan divisions, to norms governing the distribution of wealth in potlatch ceremonies, and reinforcement of basic values of respect for the earth and its resources. Participating in subsistence activities contributes to the self-reliance, independence, and ability to provide for oneself, values that are important reasons why many people move to or remain in southeast Alaska (Alves 1979).

Noncommercial harvest of fish, animals, and plants is especially important in the context of southeast Alaska's highly seasonal and cyclical resource-based employment and the high prices of commercial products in the retail sector. Commercial enterprise, trade, and money have been part of subsistence economies ever since the commercial fur trade with European markets began about 300 years ago (Wolfe 1989).

A mixed subsistence-market economy, in which subsistence harvests and cash income are complementary, characterizes the economies of most of the region's rural communities. Families live by combining harvest of wild resources with income from employment. For example, cash income frequently supports purchase of fuel and equipment that are part of subsistence harvest technology; the same equipment may be used for commercial activities such as fishing. In fact, the same activity can produce resources for both commercial and subsistence use: Glass and others (1995) report that, in rural Alaska in 1987, between 12 and 28 percent of salmon used for personal consumption was removed from commercial catches.

Although subsistence plays a prominent role in the economy and social well-being of rural communities, it is a hidden portion of the economy, not revealed by measures of economic growth, employment, or income (Wolfe and Walker 1987). Before the early 1980s, the amounts of wild fish and game used by communities had not been systematically measured despite the acknowledged social, cultural, and economic importance. Initial studies suggested that subsistence harvest was especially critical to rural communities, with harvest levels increasing with distance from urban centers:

> The combination of subsistence and commercial wage activities provides the economic basis for the way of life so highly valued in rural communities....In rural communities there is a great desire to maintain this part of a region's economy in the face of new economic changes primarily developing from the urban population centers [Wolfe and Walker 1987: 68].

Subsistence activity is substantial; 30 percent of rural southeast Alaska households obtain 50 percent or more of their meat from subsistence activity. About 40 percent of all households get at least a quarter of their food from subsistence harvest activities, and 85 percent of rural southeast households harvest subsistence food (Kruse and Frazier 1988, Kruse and Muth 1990). In 1987, 51 percent of all households reported harvesting more than 80 pounds of edible subsistence product per capita, and a quarter of all households harvested more than 250 pounds per capita. A diversity of food sources is commonly used; more than half of all households (61 percent) harvested at least four different types of fish, wildlife, and plant resources in 1987. One in ten households harvested more than 10 different types of resources.

The use of subsistence resources in southeast Alaska cannot be explained simply in terms of household harvest and consumption (Muth 1989). Most subsistence harvesters give away at least part of their harvest. In 1987, one-third of all households in rural southeast Alaska gave away at least four different types of resources. Native households and lower income, non-Native households are most likely to give away or receive resources (Kruse and Muth 1990).

There is little question that subsistence has economic value. Researchers have taken various approaches to estimating these values, typically using replacement costs. For all of rural Alaska, the per capita cash value of subsistence foods equals almost half of the per capita income (Wolfe and Bosworth 1994). In Hoonah, for example, the annual replacement value of all harvested foods was between $3,141 and $5,497 (1985 dollars), a sizable amount "for an isolated community with few employment opportunities" (Tainter 1996). Assigning a dollar value to subsistence foods does not imply the existence of a subsistence economy separate from a cash economy (Nakazawa and Goldman 1991); as discussed, subsistence hunting, fishing, and gathering activities constitute part of a mixed subsistence-market economy.

One use of economic estimates has been to compare effects of alternative management strategies on subsistence activities. To compare the economic effects of alternative methods of managing subsistence, Nakazawa and Goldman (1991) multiplied pounds per capita consumption of land animals by the cost per pound of red meat in the region by the number of eligible subsistence users. Because the different management strategies led to different numbers of people who would be defined as subsistence users, this approach provided one way of differentiating effects of the alternatives. Glass and others (1995) point out that the presence of a mixed-sector economy has the potential to greatly complicate socioeconomic impact assessments conducted by state and Federal resource management agencies. A similar statement could be made about economic activity in general; the pervasive role of subsistence in the lifestyles of southeast Alaska rural residents complicates traditional discussions about regional and local economies.

Subregional Conditions and Trends

A common problem encountered in analysis of the southeast Alaska economy is that Juneau dominates regional statistics. As a result, trends in employment or income sometimes more closely represent developments in Juneau than changes elsewhere. Analyzing certain economic statistics at the borough level clarifies subregional differences obscured at the regional level.

The boroughs and census areas of southeast Alaska (referred to collectively in this section as “boroughs”) display large differences in their economic structure and development (U.S. Bureau of Economic Analysis 1996). Table 8 displays population, income, and employment measures for southeast Alaska boroughs since 1985. In general, trends are similar for each borough, but there are large differences in magnitudes. For example, population growth in the Prince of Wales and Outer Ketchikan Borough and in the “northern complex” (an aggregate of the Skagway-Hoonah-Angoon Census Area and Yakutat Borough) is considerably higher than the regional average. Change in employment levels is positive for all boroughs, but ranges from 50 percent for the northern complex to just 12 percent for Juneau.

Real per capita income is a measure that includes trends in population and employment levels and in wages earned per job. Real per capita income has dropped the greatest amount in Prince of Wales and Outer Ketchikan Borough as a result of a sharp rise in population (which exceeds the increase in job growth), and a 23-percent decline in average earnings per job. The absolute level of per capita income is also considerably lower, indicating that, on average, Prince of Wales and Outer Ketchikan Borough residents receive 35 percent less income than the regional average. In contrast, Ketchikan Gateway Borough and the northern complex both experienced gains in real per capita income in this period due mostly to the rapid creation of new jobs in both boroughs.

The Shannon-Weaver diversity index, derived for each borough by using ADOL employment data, provides a measure of local economy diversity. To allow easy comparison, the index was constructed so that the borough displaying the greatest diversity was recorded as 100 percent, with other boroughs reported as a percentage of this maximum. In addition to demonstrating positive growth in per capita income, Ketchikan Gateway (the principle trade center for the southern portions of southeast Alaska) and the northern complex also exhibit the highest relative diversity rating. Haines Borough shows the lowest rating, but this is expected because it has by far

Table 8—Summary economic statistics for southeast Alaska boroughs, 1985-94

Area	Population		Real per capita income[a]		Total employment[b]		S-W diversity index[c]	
	1994	1985-94 change	1994	1985-94 change	1994	1985-94 change	1995	1985-94 change
	Thousands	*Percent*	*1995 $*	*Percent*	*Jobs*	*– – – – Percent – – – –*		
Northern boroughs:								
Haines Borough	2.2	10	26,755	-5.6	1,582	25.1	84	13
City and Borough of Juneau	28.8	17	28,055	-13.5	19,456	11.6	92	11
Sitka Borough	8.8	10	24,285	-2.1	5,669	22.8	95	5
Northern complex[d]	4.5	25	23,370	4.9	2,846	50.2	100	10
Southern boroughs:								
Ketchikan Gateway Borough	14.4	8	29,941	10.5	10,472	35.5	100	5
Prince of Wales-Outer Ketchikan	6.9	35	17,113	-16.0	2,985	34.4	90	16
Wrangell-Petersburg	7.2	16	25,682	-12.0	4,342	13.0	98	0
Total	72.8	16	26,372	-6.9	47,352	21.1	94	8

[a] All dollar figures are in 1995 dollars, adjusted for inflation by using the U.S. producer price index.

[b] Employment is full- and part-time annual equivalent and includes proprietors and self-employed.

[c] S-W = Shannon-Weaver (1949) diversity index based on Alaska Department of Labor employment by industry. This index is normalized to the maximum index reported by any borough in a given reporting year.

[d] Aggregate of Skagway-Hoonah-Angoon Census Area and Yakutat Borough.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

the fewest jobs, and the index is sensitive to the size of the economy. Juneau, on the other hand, also exhibits a relatively low index rating in spite of its size and role as a regional trade center, the result of high employment concentrations in government and a lack of manufacturing jobs.

Taken together, these economic statistics show a mixed picture of economic developments in the boroughs of southeast Alaska. With the highest per capita income, employment growth and diversity score, Ketchikan Gateway Borough demonstrates the strongest economic performance. The Northern Complex also exhibited dynamic performance over the last decade, but its per capita income is significantly lower than the regional average and, at 11 percent, its average unemployment rate is significantly higher (it also should be remembered that the northern complex does not comprise a geographically contiguous set). With by far the lowest per capita income and next to lowest diversity score, Prince of Wales and Outer Ketchikan Borough seems to be relatively weak from an economic standpoint, but this conclusion must be tempered by its higher population growth rate, gains in economic diversity, and higher rate of new job creation than other boroughs.

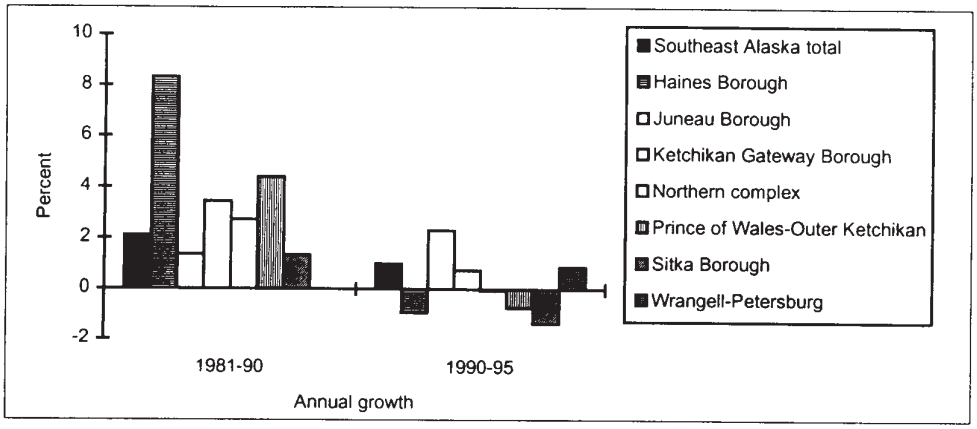


Figure 16–Southeast Alaska annual growth in all nonagricultural wage and salary employment by borough (1981-90 and 1990-95). Employment is annual equivalent and excludes proprietors and those self employed. Source: Alaska Department of Labor 1996a.

Table 9—Southeast Alaska nonagricultural wage and salary employment by borough, 1990-95

	Total employment[a]		Wood products industry			Seafood processing			Lodging, restaurant, and recreation[b]		
Borough	1995 jobs	1990-95 change	1995 jobs	1990-95 change	Local total	1995 jobs	1990-95 change	Local total	1995 jobs	1990-95 change	Local total
	Annual equivalent	*Percent*	*Annual equivalent*	*– Percent –*		*Annual equivalent*	*– Percent –*		*Annual equivalent*	*– Percent –*	
Northern boroughs:											
Haines	791	-17	10	-935	1.3	90	9	11.3	131	30	16.5
Juneau	15,775	12	80	—	0.5	59	139	0.4	1,505	29	9.5
Sitka	3,816	-7	52	-88	1.4	227	-18	6.0	390	8	10.2
North complex[c]	2,118	-2	322	-1	15.2	217	-6	10.2	423	102	19.9
Southern boroughs:											
Ketchikan Gateway	7,939	1	1,029	-28	12.9	405	-9	5.1	647	-4	8.2
Prince of Wales-Outer Ketchikan	2,190	-1	490	-30	22.4	76	193	3.5	220	53	10.1
Wrangell-Petersburg	2,658	0	84	-81	3.2	513	60	19.3	174	-16	6.6
Total	35,287	4	2,067	-41	5.9	1,587	13	4.5	3,490	22	9.9

— = not applicable.

[a] Employment is full- and part-time annual equivalent and excludes proprietors and self-employed.

[b] This measure does not directly reflect recreation- and tourism-related employment but is included as an indicator of trends and relative concentration of recreation and tourism-dependent jobs.

[c] Aggregate of Skagway-Hoonah-Angoon Census Area and Yakutat Borough.

Source: Alaska Department of Labor 1996a.

As noted in “Regional Conditions and Trends,” the choice of a base year for comparison is difficult; relatively low timber employment was recorded in 1985, and 1990 was one of the highest years on record. In addition, using the 1985-94 period for analyzing data can have the effect of obscuring changes or trends occurring within this decade span. For these reasons, a longer period was selected for analysis; it was divided into two sections to allow comparison of recent trends with previous ones.

Figure 16 shows annual growth in NAWS employment for 1981-90 and for 1990-95. During the 1981-90 period, much of southeast Alaska saw strong employment growth, with many boroughs expanding at rates above the national average of 2 percent annually. Other boroughs, notably Wrangell-Petersburg, experienced much slower growth, although all growth estimates for this period were positive. The 1990-94 period reveals a markedly different situation. With the exception of Juneau, all boroughs demonstrated slower growth in this later period, and employment in four of the seven boroughs actually declined. Due to the dominance of Juneau in the regional economy (and regional statistics), average growth for the entire region remained positive, but less than half of the 1981-90 average. In short, at least when viewed in terms of total NAWS employment growth, southeast Alaska’s regional economy seems far less robust in the 1990s than in the previous decade, largely the result of decreases in timber employment.

Tongass-Related Industries

The 41-percent decline in total regional wood products industry employment (including logging) is reflected in sharp declines in wood products industry employment at the borough level for all boroughs (table 9). In particular, mill closures in Sitka, Haines, and Wrangell have resulted in over an 80-percent decline in wood products industry employment since 1990 in each of these boroughs. Logging employment declined from 2,144 to 1,177 (-45 percent) between 1990 and 1994, and sawmill and pulp mill employment declined from 1,399 to 1,048 (-25 percent).[15]

In contrast to the wood products industry, employment in lodging, restaurants and recreation-related services has demonstrated strong gains since 1990. The contrast between losses in wood products industry employment versus gains in recreation-related employment is consistent with overall trends discussed in the regional economic section, but there is considerable variation across boroughs. Certain boroughs (and, by extension, the communities they encompass) have benefited much more from the expansion of the tourist-related economy than others. The northern complex, for example, saw a doubling of wage and salary employment in this category, with nearly 20 percent of employment there accounted for by lodging, restaurants, and recreation-related services. The Wrangell-Petersburg Census Area, on the other hand, saw a substantial fall in employment in this category, and the share of total employment is only 7 percent.

Subregional differences also are evident in the salmon fishing and seafood processing sector (table 9). The most jobs are in Wrangell-Petersburg, followed by Ketchikan Gateway Borough, but Sitka and the northern complex contribute substantial proportions of regional employment. The industry contributes more than 10 percent of local employment to three of the boroughs, and is declining in none. Juneau has the fewest seafood processing jobs of any borough, despite having by far the greatest population.

---

[15] These declines become even more pronounced given the recent closure of the pulp mill in Ketchikan and the loss of an additional 500 jobs in the industry.

Table 9 also indicates a distinction between northern and southern boroughs. As of 1995, boroughs in the northern portion of southeast Alaska were far less dependent on the wood products industry for their employment base. The northern complex held 464 wood products industry jobs, or 22 percent of the regional total, almost all in logging. The vast majority of timber employment and all the jobs in wood products processing arising from harvests on the Tongass National Forest are concentrated in the southern boroughs, particularly Ketchikan Gateway Borough and Prince of Wales and Outer Ketchikan Borough. Recreation and tourism employment, by contrast, shows higher concentrations in the north, accounting for 70 percent of the regional total in this category. Growth in employment in this area also has been more pronounced in the north, with the northern complex showing relatively strong growth in this category since 1990. Seafood processing, a factor throughout southeast Alaska, is concentrated in the southern boroughs, where the highest growth rates also are present.

At least at this level of aggregation, it is evident that the northern and southern boroughs likely have different interests in how the Tongass National Forest is managed. At lower levels of aggregation, the story becomes more complex, with certain boroughs or communities of the north demonstrating extremely high concentrations in logging employment, and others in the south demonstrating no wood products industry employment at all.

Growth rates in NAWS employment similar to those shown in figure 16 are displayed for southeast Alaska total employment (excluding wood products employment) in figure 17. In this analysis, regional employment growth appears stronger in the 1990s and generally matches 1981-90 patterns at the borough level with a few notable exceptions. Average growth for the entire region is slightly higher for the latter period owing to the influence of Juneau on aggregate statistics.

Timber employment has a strong influence on overall regional economic performance; changes in employment in this sector are clearly evident in the stagnant or even declining total employment levels for the entire region. Second, and in contrast to the first, the failure of trends in other employment to mirror those in the wood products sector suggests that local economic sectors have a degree of independence. In other words, substantial declines in one sector, even if considered a basic industry, do not necessarily cause declines of similar magnitude in other sectors. Research, especially at subregional levels, is needed on the interrelations among the resource-related and other sectors of the southeast Alaska economy.

Community Conditions and Trends

The previous sections of this report concentrated on economic conditions at the regional and subregional levels of analysis by showing some of the differences that emerge as the area studied becomes smaller. At the community scale, the story becomes even more diverse. People usually are most concerned about conditions and trends at the community level, because that is where the effects of social and economic trends are felt daily. This is especially true in the remote, isolated communities of southeast Alaska. As by far the dominant land management agency in southeast Alaska, responsible for managing over 80 percent of the land area, the Forest Service has a pervasive influence on the quality of life in southeast Alaska rural communities (Alves 1979).

Community is a concept with multiple dimensions and definitions, from the common notion of a village or town, to a “community of interest”—people who may not live in the same town but are linked by a common stake, profession, interest, activity, or set

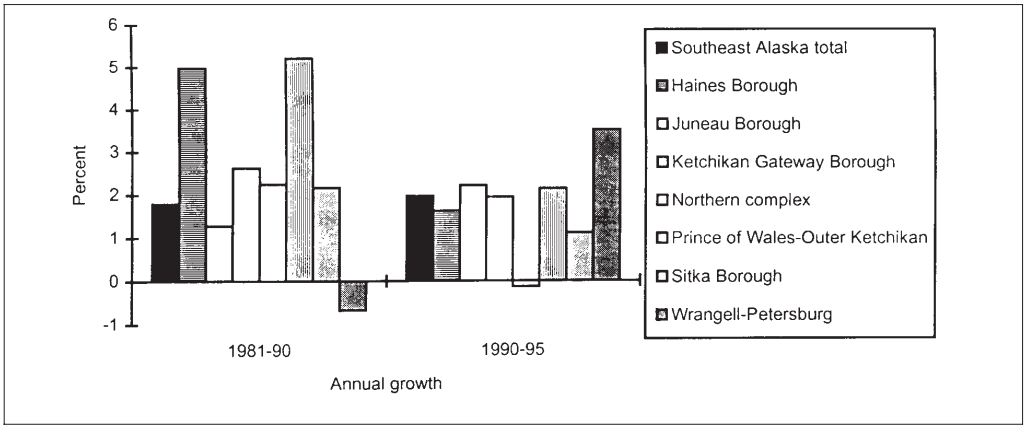


Figure 17–Southeast Alaska annual growth in nonagricultural wage and salary employment (excluding the wood products sector) by borough (1981-90, and 1990-95). Employment is annual equivalent and excludes proprietors and those self-employed. Source: Alaska Department of Labor 1996a.

of values. This section uses the geographic-political definition of community—towns and villages. The revised supplement to the Tongass land and resource management plan (RSDEIS; USDA Forest Service 1996b) identifies 32 southeast Alaska communities with a state land selection base.[16] Table 10, a display of several statistics by community, demonstrates the diversity in population, income, use of subsistence resources, and other socioeconomic characteristics.

As was the case at the regional and subregional levels of analysis, this assessment focuses on conditions most relevant to (and affected by) management of the Tongass. We begin by providing a context for trends affecting small, rural communities throughout Alaska and the resulting fiscal conditions and challenges. An examination of second-class cities[17] in the late 1980s suggested that operating revenues declined significantly; per capita revenues declined 20 percent and expenditures 28 percent from 1985 to 1989 (Alaska Department of Community and Regional Affairs 1992). Although actual funding levels tended to increase, they did not keep pace with inflation. Cities cut budgets in nearly every area of administration and service provision, and many communities found it difficult to operate and maintain public facilities and infrastructure. State revenue sharing and municipal assistance programs decreased by nearly one-third during the same period. An issue raised in the report was the ability of these strapped communities to respond to new initiatives transferring additional responsibilities to local government. Only two of the cities sampled for the study

[16] Logging camps are communities, and contribute to the social fabric of southeast Alaska. By their nature, they tend to be mobile, to lack a dedicated land base, and to not be defined as towns (although many communities, such as Thorne Bay, Hollis, Naukati Bay, Coffman Cove, and Whale Pass, began as logging camps). As a result, little quantitative state or local data are available on logging camps except for specific studies not repeated over time; however, logging camp employment is included in this report.

[17] The state has several classes of cities; second class is the minimum form of municipal government in Alaska. The 115 (out of a total of 160) second-class cities are mostly very small towns or villages having several hundred or fewer residents.

Table 10—Southeast Alaska community statistics, 1990 and 1995

Community	Population 1995	Population 1990	Natives, 1990	Median household Income, 1990	Households below poverty line, 1990	Median subsistence use, 1987[a]	Revenues/ capita, 1995[b]	Expeditures/ capita, 1995[b]
			Percent	*Dollars*	*Percent*	*Pounds*	– – – – *Dollars* – – – –	
Angoon	594	636	82	32,083	22	242	629	586
Coffman Cove	249	186	7	44,063	5	186	977	594
Craig	1,907	1,260	23	47,250	4	185	3,477	3,242
Edna Bay	86	75	0	12,250	64	517	NA	NA
Elfin Cove	43	57	2	43,125	7	264	NA	NA
Gustavus	318	258	4	41,538	4	257	NA	NA
Haines Borough	2,295	2,117	13	36,048	9	104	1,998	1,941
Hollis	112	111	3	31,250	15	164	NA	NA
Hoonah	878	795	67	36,442	4	404	6,209	5,093
Hydaburg	400	384	89	20,139	26	337	5,118	5,980
Hyder	129	99	1	23,750	14	401	NA	NA
Juneau, City and Borough	28,757	26,751	13	47,924	6	NA	4,403	3,944
Kake	700	700	73	35,875	7	159	7,229	5,605
Kasaan	41	54	54	46,667	0	186	4,121	1,571
Ketchikan City	8,635	8,263	14	45,172	4	NA	2,258	2,092
Klawock	745	722	54	39,583	8	830[c]	5,905	5,871
Metlakatla	1,523	1,407	84	37,143	10	71	NA	NA
Meyers Chuck	35	37	11	16,250	33	414	NA	NA
Naukati Bay	148	96	1	43,333	5	NA	NA	NA
Pelican	201	222	29	27,083	14	355	6,454	6,636
Petersburg	3,309	3,207	10	49,318	4	200	5,091	4,532
Point Baker	58	39	0	12,083	NA	344	NA	NA
Port Alexander	96	119	3	20,625	18	306	384	325
Port Protection	60	62	2	10,000	46	311	NA	NA
Saxman	386	369	77	30,481	6	89	1,924	1,611
Sitka	8,891	8,588	21	43,337	5	146	4,734	3,959
Skagway	771	692	6	37,500	4	52	4,695	2,954
Tenakee Springs	106	94	10	18,125	11	250	1,992	1,616
Thorne Bay	631	581	1	39,688	5	97	2,143	1,649
Whale Pass	87	75	3	49,583	14	186	NA	NA
Wrangell	2,703	2,479	20	37,538	6	164	4,332	3,962
Yakutat	767	705	55	36,875	11	398	6,843	6,666

NA = not available.

[a] This is the 1987 per capita household subsistence harvest of edible pounds as reported by the Alaska Department of Fish and Game. The species of fish, marine invertebrates, game, and plants harvested differ by community.

[b] The revenues and expenditures are reported in 1995 dollars. Unincorporated communities are not required to provide revenue and expenditure data to the State of Alaska. In many cases, these communities do not provide services or collect revenues.

[c] This figure represents Klawock's mean household subsistence harvest in edible pounds; per capita harvest information was unavailable.

Sources: Alaska Department of Community and Regional Affairs 1996. Alaska Department of Labor 1996a; U.S. Department of Commerce, Bureau of the Census 1990; Wolfe and Bosworth 1994.

were in southeast Alaska, and the time period was the late 1980s, but the same trends are of concern today, with funds provided through state revenue sharing programs continuing to decline (Walters 1997).

Figure 18 displays per capita revenues and expenditures for southeast Alaska communities for which data existed in 1995. The magnitude of the differences among communities is the most notable finding, but it is not correct to conclude that higher revenues and expenditures lead to better social or economic well-being. Each community has a unique set of services and administrative structure. Electricity, for example, may be provided by local governments in some communities but by a private company in others; particularly wealthy communities may undertake more service provision on their own than will most other communties. It is also likely that residents in some communities may not desire some types of services, so the lack of city-provided services or infrastructure is not always a negative effect on the quality of life of residents.

Comparison of per capita revenues and expenditures over time within communities may provide a better illustration (than the above) of community fiscal conditions. Appendix 2 contains trend information for 21 communities (or boroughs) for which this information is available, along with trends in population. Generally upward trends in revenues are present in seven communities, generally downward trends in six, and fairly stable trends in eight. This pattern does not suggest a widespread, continuous decline in revenues, but more indepth analysis is needed before firm conclusions can be reached. Regardless, the fiscal conditions of communities is a continuing concern for residents.

The communities of southeast Alaska are characterized by a relatively high degree of geographic isolation, but their economies are not autonomous. Local businesses and residents often rely on external sources for large proportions of purchased goods and services. Consequently, southeast Alaska communities have relatively strong links with larger regional trade centers (Juneau and, to a lesser extent, Ketchikan, Sitka, or locations in Canada), and with suppliers of wholesale and retail goods in the lower 48 States, particularly those shipping from Seattle. An important result of this is that the multiplier effects emanating from changes in local economic activity will often be felt elsewhere, further up the trade hierarchy in places such as Juneau.

Economic structure and diversity in this section are not described for each individual community. The smallest unit of analysis used by ADOL is groups of communities, which are subareas of boroughs and census areas. Some of the community groups represent individual communities, and some include several communities within the boundary (refer to table 1 for a complete description). Information at the community group scale provides a more detailed picture of local employment patterns than previously available data as a result of changes in policy effective July 1, 1996, regarding release of employment data. Before that date, public release of employment data was more restricted based on number of employees and percentage of employment provided, and in most instances at smaller geographic levels, requirements were not met.[18] The concern was that releasing information at very small scales would identify

[18] Similar concerns extend to other types of employment and income information as well. For example, the state releases information about proportions of resident and nonresident employees only for Alaska firms employing 20 or more people.

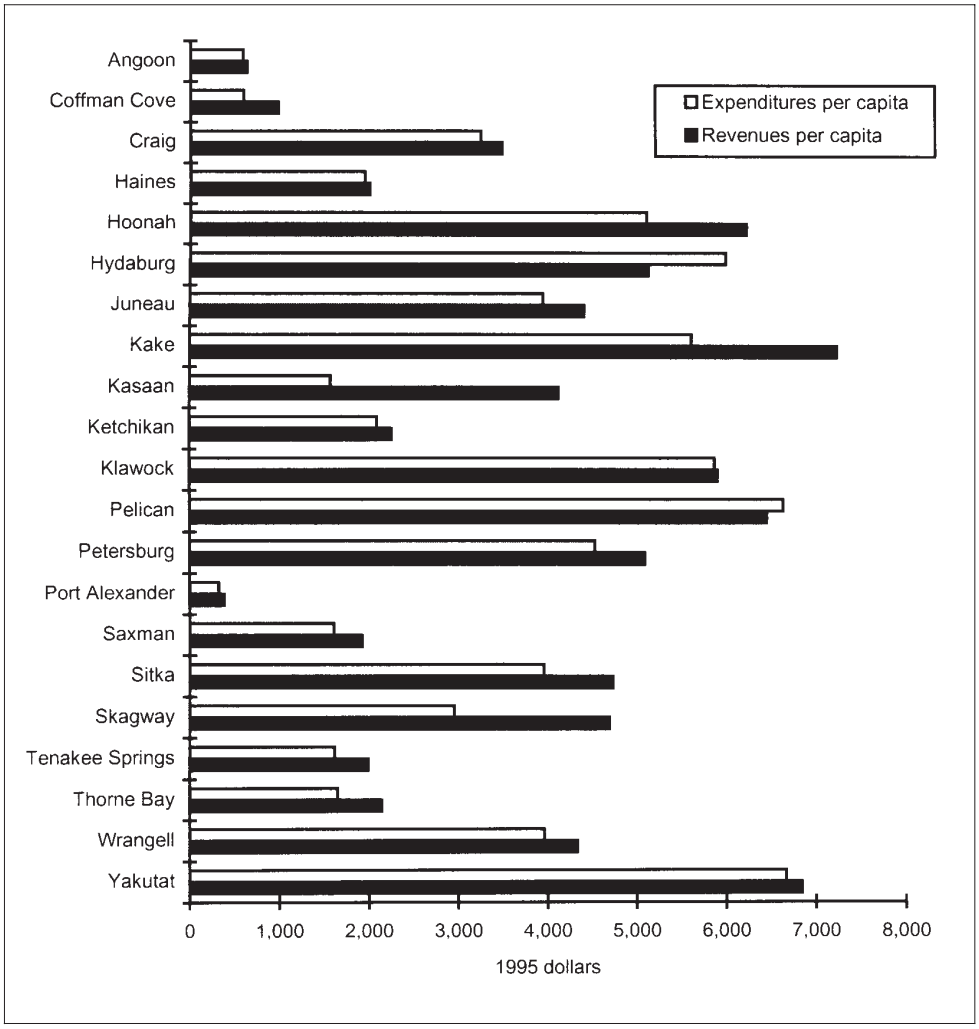


Figure 18–Southeast Alaska community per capita revenues and expenditures, 1995. Unincorporated communities were not included in this analysis as they are not required to report this information to the state. All dollar figures are in 1995 dollars. Source: Alaska Department of Community and Regional Affairs 1996.

employment and income information specific to a single business or company. Consequently, community group information was not available when the RSDEIS was written.

At the community group level of disaggregation, there is a much greater potential for substantial errors in the data. Changes in reporting jurisdictions or industry definitions can result in large and abrupt changes in reported employment for a given community or industry even with no underlying change in actual employment patterns. In addition, employers may not report as accurately at this level.

Summary statistics for the ADOL community groups (appendix 1) show the relative proportion of employment in each major economic sector. These data demonstrate the widespread role of the government sector, as well as the difference in proportions of employment that could be directly affected by Forest Service policies and actions. A reader interested in evaluating a specific community group may use appendix 1 to learn more and make comparisons with other community groups.

Average annual growth in total employment for each of the ADOL community group for the 1981-90 and 1990-95 periods is further shown in figure 19 (the smallest community groups were omitted from this analysis because the extremely large rates of change reflect problems of scale). One of the most striking characteristics is the extremely high variation in the rate of job creation (or loss) experienced by the different community groups. The highest positive or negative changes are concentrated in groups with the smallest total employment numbers. A rapid reversal in rates is evident for some community groups. Employment in Yakutat, for example, increased at an annual rate of 14 percent in 1990-95 in contrast to a 2-percent annual rate of decline in the 1981-90 period. Many of the other community groups showed similar reversals, with the most pronounced occurring in the smaller community groups.

These data highlight an important aspect of community level impacts: the most severe impacts (relative to total local employment) are often experienced in smaller communities, where even a few job losses may be a large proportion of total employment. Conversely, the addition of a new firm or business can lead to sizable increases. Smaller communities often exhibit higher concentrations of employment in a single industry, such as logging camps or communities based on resorts or concentrations of fishing lodges.

Larger communities, in which the absolute level of variation is considerably less, also demonstrated very different trends in overall employment growth or decline in recent years. Population size is highly correlated with the number of businesses in a community ($r=0.77$, $p=0.005$), with the current economic diversity ($r=0.74$, $p=0.002$), and with the number of jobs ($r=0.96$, $p=0.00$) of the corresponding ADOL community group. Median family income is more strongly associated with economic diversity ($r=0.66$, $p=0.006$) than with population size ($r=0.38$, $p=0.03$), highlighting the benefits of economic diversity.

Tongass-Related Industries

Employment at the community-group level in the three resource-dependent industries most likely to be affected by management of the Tongass National Forest is shown in table 11, again highlighting the great diversity present across southeast Alaska. In the 23 community groups, 10 have 1 percent or less employment in the wood products industry, 12 have 1 percent or less employment in seafood processing, and six have 1 percent or less employment in a combined category of lodging, restaurants, and recreational and entertainment services. Very few community groups have significant proportions of employment in all three categories.

Wood products—The wood products-related employment as a share of total local employment is shown in table 11 for all ADOL community groups. Extremely high concentrations are found in groups containing logging camps, such as the Baranof, Kuiu Island, Revillagigedo, and North Prince of Wales community groups. A loss of timber jobs could eliminate a substantial proportion of total employment within these community groups, and because of their impermanence, small size, and relative lack of social and institutional infrastructure, they would not be well positioned to withstand such impacts.

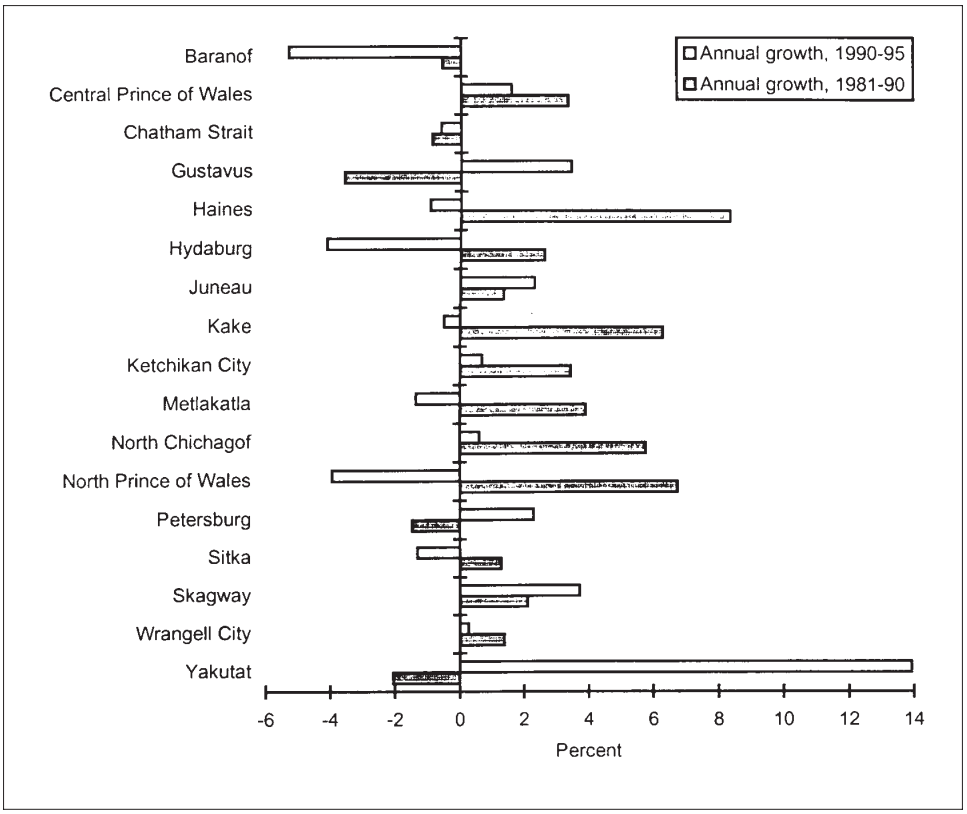


Figure 19–Annual growth in nonagricultural wage and salary employment for southeast Alaska's larger community groups, 1981-90 and 1990-95. Communities are listed in descending order of size. Employment is annual equivalent and excludes proprietors and those self-employed. Source: Alaska Department of Labor 1996a.

Table 11—Summary of southeast Alaska employment statistics, by industry, for Alaska Department of Labor community groups, 1990-95

Community group	Borough or census area	Wage and salary[a]		Wood products			Seafood processing			Lodging, restaurant, and recreation[b]		
		1995 jobs	1990-95 change	1995 jobs	1990-95 change	Local total	1995 jobs	1990-95 change	Local total	1995 jobs	1990-95 change	Local total
		Annual equivalent	*Percent*	*Annual equivalent*	*– Percent –*		*Annual equivalent*	*– Percent –*		*Annual equivalent*	*– Percent –*	
Baranof	Sitka Borough	51	-4	39	-17	75	0	—	0	0	—	0
Central POW[c]	POW-OK[d]	1,059	9	137	-56	13	42	155	4	123	24	12
Chatham Strait	Northern complex	324	-2	112	26	34	0	—	0	21	10	7
Cleveland Pen.	POW-OK	14	-38	0	—	0	0	—	0	14	-38	100
Gustavus	Northern complex	159	29	0	—	0	4	130	2	97	65	61
Haines	Haines Borough	791	-11	10	-93	1	90	9	11	131	30	17
Hyder	POW-OK	21	-33	0	—	0	0	—	0	8	-12	37
Hydaburg	POW-OK	61	-20	0	—	0	0	—	0	0	—	0
Juneau	Juneau Borough	15,775	12	80	—	1	59	139	0	1,505	29	10
Kake	Wrang-Peters[e]	282	-1	47	-62	17	0	—	0	0	—	0
Ketchikan City	Kt-Gt-Wy[f]	7,911	1	1,006	-30	13	405	-9	5	647	-4	8
Kuiu Island	Wrang-Peters	9	-90	4	-95	45	0	—	0	0	—	0
Metlakatla	POW-OK	550	-7	96	-17	17	31	—	6	20	136	4
North POW	POW-OK	447	-12	257	-4	57	4	-63	1	19	220	4
North Chichagof	Northern complex	565	-5	139	0	25	139	-40	25	33	10	6
Petersburg	Wrang-Peters	1,555	12	12	-83	1	430	65	28	100	-23	6
Revillagigedo	Kt-Gt-Wy	28	—	23	—	84	0	—	0	0	—	0
Sitka	Sitka Borough	3,765	-7	14	-97	0	227	-18	6	390	8	10
Skagway	Northern complex	602	10	0	—	0	0	—	0	211	190	35
Southeast POW	POW-OK	39	369	0	—	0	0	—	0	38	—	97
Stephens Pass.	Northern complex	48	-86	3	-95	6	2	200	5	0	—	0
Wrangell City	Wrang-Peters	813	-8	21	-87	3	83	38	10	74	-4	9
Yakutat	Northern complex	419	93	68	86	16	72	—	17	61	114	14

— = not applicable.

[a] Employment is full- and part-time annual equivalent and excludes proprietors and self-employed.

[b] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentration of recreation- and tourism-dependent employment.

[c] POW = Prince of Wales Island.

[d] POW-OK = Prince of Wales-Outer Ketchikan Census Area.

[e] Wrang-Peters = Wrangell-Petersburg Census Area.

[f] Kt-Gt-Wy = Ketchikan Gateway Borough.

Source: Alaska Department of Labor 1996a.

Lower yet still substantial concentrations of wood products industry-related employment are found in and around more established communities, including the Chatham Strait and North Chichagof community groups, where timber employment shares exceed 20 percent of total nonagricultural wage and salary employment. These areas also are at risk of negative social and economic impacts if the trend in decreasing timber industry employment continues.

Larger communities that contain wood processing facilities also can rely heavily on the wood products industry for employment. Ketchikan is the principal example of this type of community, but this characterization could have been equally applied to Sitka, Wrangell, or Haines before their mill closures. Due to their size and general level of economic development, these communities are characterized by a much more developed local economy, with wood products industry employment constituting a smaller share of total employment.

As noted above, changes in timber-related employment have not been evenly distributed across the communities of southeast Alaska. In particular, the opening or closing of wood products processing facilities, such as pulp mills or sawmills, has large and abrupt impacts on local employment and earnings levels. The 1990s have witnessed closures of large mills in Haines (1991), Sitka (1993), Wrangell (1994), and Ketchikan (1997).

Table 12 displays yearly levels in total employment, wood products employment (logging included), and other employment for Haines, Sitka, and Wrangell since 1990. The direct impact of mill closures is evident in the elimination of virtually all wood products-related employment in each community. These impacts also can be seen in a substantial reduction in total employment, ranging from 7 percent in Sitka to 11 percent in Haines over the 1990-95 period, compared to a 4-percent increase in total NAWS salary employment in southeast Alaska for the same period. Earnings figures were not available at this level of detail, but it is safe to assume that impacts to earnings are even greater because earnings in the wood products industries are significantly higher than the regional average.

Indirect impacts (i.e., declines in employment in other sectors generated by the reduction in wood products employment) are far less evident than direct impacts, with each community showing a positive increase in other employment since 1990. Increases in Sitka (3 percent) and Haines (4 percent), however, are substantially less than the regional average increase of 10 percent in nonwood-products related employment. Though the evidence is not conclusive, mill closures seem to have had a substantial dampening effect on growth in other employment categories.

At 10 percent, growth in other employment in Wrangell matches the regional average, but much of the indirect impact of the mill closure may not yet be present or may have been partially mitigated through state and Federal programs. In 1995, other employment saw a 3-percent decline, reversing a strong growth trend since 1991. In Sitka, and especially Wrangell, the total impact from mill closures probably has not had time to work its way through the entire economy, as unemployment benefits and outmigration of unemployed workers may continue for several years after the initial job loss.

Table 12—Wood products and total nonagricultural wage and salary employment in Haines, Sitka, and Wrangell, 1990-95[a]

Employment	1990	1991	1992	1993	1994	1995	1990-95 change
	- - - - - - -	*Annual equivalent*			- - - - - -	*Percent*	
Haines:							
Wood products	141	60	9	34	28	10	-93
Other employment	750	761	678	803	811	781	4
Total	891	821	688	836	839	791	-11
Sitka:							
Wood products	404	407	412	343	25	14	-97
Other employment	3,653	3,477	3,482	3,667	3,709	3,751	3
Total	4,057	3,884	3,895	4,011	3,734	3,765	-7
Wrangell:							
Wood products	162	196	224	272	234	21	-87
Other employment	721	716	744	771	819	792	10
Total	883	912	968	1,043	1,053	813	-8
Southeast Alaska:							
Wood products	3,543	3,069	2,863	2,650	2,225	2,002	-43
Other employment	32,241	32,574	33,190	33,775	34,838	35,305	10
Total	35,784	35,643	36,053	36,425	37,063	37,307	4

[a] Nonagricultural wage and salary employment, annual equivalent excludes proprietors and self-employed.
Source: Alaska Department of Labor 1996a.

Due to the relatively high wages, the taxes paid, and the charitable activities they engage in, the contribution of larger mills (and other industries) to the local economy may be underestimated by employment statistics alone. At the community scale, large employers cease to become just statistics of employment and are seen as members of the community that provide benefits for local residents related to the standard of living, transportation, and public services (McDowell Group 1995).

Commercial fishing and seafood processing—As shown by the regional- and borough-level analyses, commercial fishing is another extremely important component of southeast Alaska's economy, but there are no reliable statistics available on employment numbers at the community level. The ADOL nonagricultural wage and salary statistics used in this report do measure employees of seafood processing firms; the numbers are reported in table 11.

Our understanding of the links between forest management practices and anadromous fish populations, and thereby commercial fishing employment, is tenuous. The best we can do is identify communities having the most at stake in commercial fishing. Relatively large concentrations of seafood processing employment are encountered in Haines, Hoonah, Petersburg, Wrangell, and Yakutat. Fish processing constitutes 27 percent of the total wage and salary employment in Petersburg, with a peak monthly employment of just over 900 workers; in addition, it is an industry where, statewide, more nonresidents are employed than in any other industry, yet Wrangell-Petersburg and Ketchikan have higher percentages of Alaska residents employed in the industry compared to other portions of the state (Fried 1996). Attempts are being made to reduce the extreme seasonal variation in employment in the industry. A dried fish plant is scheduled to open in Kake, with financing provided from the city's share of a congressional fund created to help southeast Alaska communities replace jobs lost in the timber industry.

Recreation and tourism—With the exception of larger hotels and resorts, recreation and tourism-related economic activity often involves small operators who are augmenting other small businesses that serve the needs of local residents. As such, tourism provides opportunities for small-scale entrepreneurs. On the downside, wages in this sector are usually less than those in wood products manufacturing, and the work is seasonal. As shown in the analysis of the regional economy, recreation and tourism has become a major source of growth for the economy of southeast Alaska. This is reflected by rapid growth at the local level (see table 11).

As was the case of wood products industry employment, the highest concentrations of recreation and tourism-related employment are in those community groups with small, specialized operations, such as Cleveland Peninsula and Southeast Prince of Wales, where concentrations are 100 percent and 97 percent, respectively. Other community groups with larger total employment levels, such as Gustavus and Skagway, also display relatively high concentrations of employment in the recreation and tourism sectors.

To the degree that recreation and tourism-related employment in these localities relies on specific natural locations within the Tongass National Forest, their economic well-being may be affected by Forest planning decisions. The decision of a cruise ship company to dock or not dock in a community also can have a profound effect on the local economy. More importantly, perhaps, is the fact that local environmental amenities may be an important factor in decisions made to move to a certain community by retirees, telecommuters, or other individuals whose incomes are not tied to local firms. In the long term, local amenities may be an important factor in the ability of communities to thrive in a changing economy.

Forest Receipts and Payments to State

Another way that Forest Service activities affect communities is through revenue sharing, which transfers money to the state for local roads and schools. These funds are then distributed to the communities of southeast Alaska to augment public school and public road budgets. Twenty-five percent of all revenue received by the Tongass National Forest is paid to the State of Alaska. In fiscal year 1996, the amount was about $7.6 million, or about 11 percent of the total $67 million made available to communities through four primary state and Federal revenue-sharing programs (Alaska

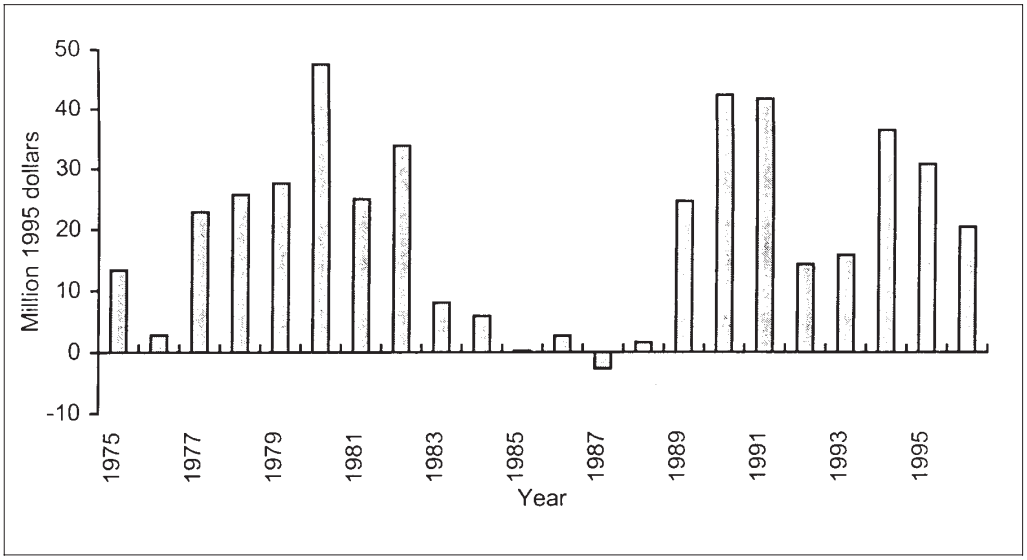


Figure 20–Total Tongass National Forest receipts in real 1995 dollars, fiscal years 1975-96. All dollar figures are in 1995 dollars, adjusted for inflation by using the U.S. producer price index. Source: USDA Forest Service 1996b.

Department of Community and Regional Affairs, no date). Despite comprising just 11 percent of this total, Federal payments have gained importance to communities in recent years because, as mentioned above, state revenue sharing has steadily declined since the early 1980s.

The Tongass contributes nearly all the Federal revenue sharing under the 25-percent fund because nearly all timber harvest (the principal source of revenue) occurs there; the Chugach National Forest contributes less than 1 percent of the total. Total receipts for the Tongass National Forest are shown in figure 20. The most striking aspect of the chart is the extreme variation in revenues received by the Forest. The 1980-95 average income was over $20 million, but yearly income over that period ranged from about $46 million in 1980 to -$2.6 million in 1987.[19] Later peaks occurred in the boom years of 1990 and 1991, but 1994 also posted one of the highest revenue years on record in spite of declining timber harvest volumes. Payments to Alaska boroughs (25 percent of the total revenue) varied directly with revenues except for 1987, when negative forest revenues resulted in zero payment to the boroughs. Average payments to the State of Alaska were $5 million over the 1980-95 period.

Total forest revenues consist of forest receipts, actual cash payments received by the National Forest, and capital improvements, capital goods received by the Forest usually in lieu of payment—the bulk of which are roads. Since 1980, forest receipts have comprised, on average, about 15 percent of total Forest revenues; capital improvements, on the other hand, constitute over 84 percent and thus are the driving force behind revenues and subsequent payments to the State of Alaska.

[19] Tongass receipts in FY 1987 were negative due to a comptroller decision to retroactively implement the emergency rate redeterminations for short-term sales. Without the reduction, Tongass receipts would have been positive by $2.1 million. As a result of the negative receipt, no payments to the State of Alaska were made in that year.

Almost 90 percent of forest receipts are comprised of revenues from timber sales, so decreases in harvest levels can result in substantial drops in these Federal revenue sharing payments. Other revenue sources within this category are recreational user fees, payments for power line rights-of-way, fees paid by mineral developers, and other land use fees. At 80 percent of total capital improvements, purchaser road credits is the largest revenue source both within this category and within total Forest revenue. These credits are road construction expenditures undertaken primarily by logging firms that are then reimbursed by the National Forest in reduced cash payments for timber. The roads and related facilities remaining after harvest is completed are the property of the Federal Government. Other capital improvements include investments in forest stand regeneration and improvements or other silvicultural activities, which are aimed at either augmenting the future sale value of forest stands or meeting other Tongass objectives.

Incorporated boroughs receive payments based on the acres of Federal land within the borough boundary. Historically, 100 percent of the payments to boroughs have been spent on public schools. Table 13 shows how payments for schools over the past 5 years have been distributed across boroughs and the amounts per student. The 1995-96 range was quite broad, with per-student funding ranging from $117 per student in Ketchikan Borough to $3,219 per student in Yakutat Borough. Boroughs with large amounts of Federal land and small population, such as Yakutat, receive more payment per student than those having larger populations, such as Juneau.

Unincorporated areas receive funds based on miles of public roads and public school enrollment, with 25 percent of their funding going to roads and the other 75 percent to schools. Several of the smaller communities are a part of a public school contract with each community's funding going to the organization as a whole. Table 13 displays enrollment and the per-student payments made from 1991 through 1996. Basing the allocation in part on student enrollment has the obvious effect of equalizing the payments per student.

Community Resiliency

The preceding discussion described employment and economic diversity as key components of communities, consistent with the purpose and narrow focus of this assessment. Any discussion of communities would be incomplete, however, without mention of some other variables that affect the economic and social well-being of residents, and the community's ability to adapt to changing conditions. Researchers have used the term "community resiliency" (Harris and others 1996) or "community capacity" (FEMAT 1993) to describe a community's ability to weather significant changes. These terms resemble the earlier concept of community stability that, although defined in many different ways, had some common elements: "Community stability is best defined as a process of orderly change...the prosperity, adaptability, and cohesiveness of people living in a common functional geographic area and their ability to absorb and cope with change" (Society of American Foresters 1989).

Some of the factors judged important for small, rural communities in the Pacific Northwest include community infrastructure, the presence of amenities, social cohesion and effective community leadership, and economic diversity (Harris and others 1996). Although information such as population size can be used as a rough proxy for resiliency (generally, larger communities tend to be more resilient than smaller ones), this is not always the case, and population size and economic diversity are not the only important determinants of community vitality and resiliency. The presence of adequate infrastructure to accommodate existing residents and future growth also is a key consideration, as is the relative level of social cohesion and strength of local leadership.

Table 13—Southeast Alaska public school enrollment and Tongass National Forest 25 percent fund payment per student, school years 1991-95

Enrollment and expenditure by school district[a]	School year				
	91-92	92-93	93-94	94-95	95-96
Incorporated boroughs:[b]					
Haines Borough—					
School enrollment	450	434	400	414	439
Expenditure per student (1995$)[c]	1,254	446	535	1,188	949
City and Borough of Juneau—					
School enrollment	5,199	5,448	5,408	5,372	5,531
Expenditure per student (1995$)	196	64	71	172	141
Ketchikan Gateway Borough—					
School enrollment	2,797	2,799	2,886	2,873	2,890
Expenditure per student (1995$)	164	56	60	139	117
Sitka Borough—					
School enrollment	1,837	1,887	1,903	1,828	1,802
Expenditure per student (1995$)	607	203	223	532	455
Yakutat Borough—					
School enrollment	130	133	149	163	173
Expenditure per student (1995$)	1,405	1,945	1,921	4,034	3,219
Unincorporated areas:[d]					
Chatham schools—[e]					
School enrollment	378	357	336	335	342
Expenditure per student (1995$)	1,388	431	474	1,062	900
Southeast Island schools—[f]					
School enrollment	427	416	430	381	369
Expenditure per student (1995$)	1,437	443	469	1,094	865
Annette Island School—					
School enrollment	416	411	388	406	420
Expenditure per student (1995$)	1,421	433	512	1,129	965
Craig—					
School enrollment	305	355	367	385	427
Expenditure per student (1995$)	1,437	443	488	1,123	906
Hoonah—					
School enrollment	239	268	259	262	273
Expenditure per student (1995$)	1,371	443	503	1,081	915
Hydaburg—					
School enrollment	120	119	109	110	103
Expenditure per student (1995$)	1,383	429	489	1,067	921
Kake—					
School enrollment	181	178	175	184	193
Expenditure per student (1995$)	1,426	439	488	1,097	903

Table 13—Southeast Alaska public school enrollment and Tongass National Forest 25 percent fund payment per student, school years 1991-95 (continued)

Enrollment and expenditure by school district[a]	School year				
	91-92	92-93	93-94	94-95	95-96
Klawock—					
School enrollment	207	200	202	193	212
Expenditure per student (1995$)	1,427	445	507	1,170	948
Pelican—					
School enrollment	46	44	45	47	35
Expenditure per student (1995$)	1,392	466	487	1,042	997
Petersburg—					
School enrollment	702	703	698	757	754
Expenditure per student (1995$)	1,395	443	497	1,094	912
Skagway—					
School enrollment	160	172	143	128	134
Expenditure per student (1995$)	1,264	392	489	1,085	894
Wrangell—					
School enrollment	527	521	500	573	550
Expenditure per student (1995$)	1,399	439	528	1,080	921

[a] Enrollment is taken each year on October 1.

[b] Incorporated boroughs receive a share of National Forest income proportional to the area of the National Forest located within its boundaries.

[c] All dollar figures are in 1995 dollars, adjusted for inflation by using the U.S. producer price index.

[d] Unincorporated boroughs receive a share of National Forest income proportional to the number of children in average daily membership of the city school district or regional educational attendance area.

[e] Chatham schools include Angoon, Cube Cove, Elfin Cove, Gustavus, Hobart Bay, Klukwan, and Tenakee Springs.

[f] Southeast Island schools include Coffman Cove, Edna Bay, Hollis, Kasaan, Meyers Chuck, Naukati Bay, Port Alexander, Port Protection, Thorne Bay, and Whale Pass.

Sources: Alaska Department of Community and Regional Affairs 1996, Alaska Department of Education 1996.

The importance of the human capital factor cannot be overstated. There are many examples of communities lacking economic diversity, population, and amenities that have weathered storms because they have refused to give up. Humans are highly adaptable and have a variety of mechanisms to cope with change. At the community level, one indicator of this ability is the presence of planning and leadership functions and abilities. Successful prior completion of action plans, community visioning processes, economic development plans, and similar products can reflect a community's resiliency.

Analyses have not been conducted regarding the resiliency of southeast Alaska communities, and we do not know how well information gained elsewhere applies to understanding southeast Alaska communities. The unique mixed economy of rural Alaska communities, for example, is one central distinction. In this absence, we can explore resiliency by taking a closer look at three communities that have experienced rapid changes, all due to mill closures: Haines, Sitka, and Wrangell.

The sawmill in Haines, which employed 135 people, closed in May 1991. Following mill closure, sales receipts dropped off, and population and school enrollment decreased. Employment in other sectors, such as lodging, restaurants, and recreation, also showed abrupt declines. In subsequent years, school enrollment increased (although not quite to premill-closure levels), and population levels remained fairly steady, as have housing prices.

Sitka lost its largest employer when the APC pulp mill closed in September 1993. Many individuals and families suffered greatly, and for some this continues today. This was not just a major loss in employment, but in income; the mill jobs, on average, paid 84 percent more than other wage jobs in Sitka (Lane 1994). Employment in construction, wholesale trade, and transportation industries declined as well when the mill closed. School enrollment showed a decrease in the two subsequent years, as did population, which remains below the 1993 level. Housing prices have continued to increase and rental prices, although fluctuating, have not dropped; vacancy rates remain slightly higher than in 1993.

A State of Alaska report (Tromble 1996) notes that, "Only strong, fortuitously timed growth in other industries cushioned the community from the full blow of the mill closure. So far, Sitka has weathered its loss surprisingly well." The Kendall Foundation report (Smith 1996; described in " Regional Conditions and Trends") also states that, "The city of Sitka has survived the closing of the Alaska Pulp Corporation mill and community indicators, on balance, seem positive....Sitka benefits from having several year-round institutional payrolls." The city continues to work through this and other changes, from both social and economic perspectives, and the long-term effects of mill closure are uncertain.

Another case study is provided by Wrangell, where the APC sawmill, which employed 225 people and accounted for 23 percent of the wage and salary jobs and 30 percent of Wrangell's payroll wages (Boucher 1994), closed at the end of 1994. The impact of losing its largest employer spiraled through Wrangell, with declines in wholesale trade, transportation, service, and financial-insurance-real estate sectors. City sales tax revenues fell 12 percent from the first quarter of 1994 to the first quarter of 1995, compared to previous annual increases of about 4 percent (Tromble and Boucher 1995). School enrollment decreased and rental vacancy rates have increased substantially. In addition, some types of impacts do not occur for 1 to 2 years due to transition programs, payments, unemployment insurance, and other mechanisms, so additional socioeconomic effects may well occur.

Lacking the population size and economic diversity of a community like Sitka, Wrangell faces a tougher struggle in reestablishing a local economy. The city's Overall Economic Development Plan (City of Wrangell 1996) contains a number of economic goals—many defined prior to mill closure—that could help rebuild the economy and lessen the likelihood of similar devastating events in the future. They include diversifying the economy so that it is not dependent on a single employer or industry, encouraging year-round and long-term employment, enhancing the quality of life for existing residents, encouraging new businesses, and strengthening the educational system.

These goals and others identified by community leaders and residents are likely to be achieved given Wrangell's sizable share (about $32 million over 4 years) of the $110 million being distributed to southeast Alaska communities through the Southeast Alaska Economic Fund (under the Balanced Budget Down Payment Act of 1996 [U.S. Public Laws, Statutes, etc.; Public Law 104-134]). Congress designed this fund to provide immediate assistance to timber-dependent communities in southeast Alaska because of recent drops in timber harvest on the Tongass.

The evidence suggests that mill closures have had a strong and lasting impact on these communities. At the same time, it is also evident that, at least in the case of Sitka and Haines, other sectors within these communities have continued to grow despite the loss in wood products employment. Short-term effects may not be the same as long-term ones; a community's resiliency and leadership can contribute to mitigating the effects of economic blows, and it is clear that impacts must be viewed in the context of a dynamic economy. Given a continued favorable economic climate in the region, it is likely that non-wood products-related employment in these communities will continue to expand, and growth rates may eventually match those of other communities in the region. Additional exploration of the resiliency of southeast Alaska communities could benefit community development efforts and management of the Tongass.

Conclusions

This section summarizes key findings and addresses some of the management considerations flowing from the analyses in this report. Similar to the other TLMP-generated assessments, this is done through a series of questions. It also incorporates suggestions for additional research to provide public land managers and stakeholders with a better understanding of social and economic trends and their relation to management of the Tongass National Forest.

The reader is reminded that this paper has taken a generally narrow view of the socioeconomic dimensions of the Tongass, concentrating mostly on relatively direct measures of economic activity and demographics. This does not mean that other aspects, such as lifestyles, environmental amenities, and existence values are not important. On the contrary, they are extremely important and constitute a major resource enjoyed primarily by the residents of southeast Alaska and other stakeholders. A major challenge in the future will be to develop measures for these aspects that, while unavoidably imprecise, will accurately measure general trends and can be easily collected and updated.

1. What broad economic trends should public land managers be aware of as they implement ecosystem management in the Tongass National Forest?

The various indicators of economic conditions discussed here do not present a unified, consistent picture of southeast Alaska's economy. The region is experiencing annual growth in employment that exceeds the national level, but the rate is slowing relative to past years. Total personal income, although rising, is not increasing as much as the national average, and per capita personal income is declining, due primarily to a steady annual drop in real average earnings per job. Although southeast Alaska residents earn more (on average) than the U.S. population, the difference has decreased over the last 10 years.

The seasonality of many jobs leads to unemployment rates that fluctuate widely by month, and the proportion of nonresidents working in many natural resource-based occupations means that much income does not stay in Alaska. Economic diversity—the balance of employment among various industries and one measure of economic health—is generally lower in southeast Alaska than in other parts of the country. The uniqueness of southeast Alaska in terms of population density, lack of a developed road system, role of subsistence, reliance on natural resources, and other characteristics make direct comparisons with the U.S. economy difficult and, sometimes, not very meaningful.

The analyses found major differences in economic structure and performance among southeast Alaska's boroughs and census areas, in such measures as growth in per-capita income, economic diversity, proportion of employment in resource-dependent industries, and population growth. Northern boroughs, for example, are less reliant on the wood products industry for their employment base and contain higher proportions of employment in recreation and tourism. As would be expected, differences become more pronounced at the community level. It is difficult to generalize at this scale; the limited number and unique characteristics of each community make aggregation problematic.

Communities and community groups differ in many of the same ways that boroughs do, only the differences tend to be more extreme. For example, community groups as well as boroughs have tended to show slower rates of employment growth in the 1990s than they did in the 1980s, but some groups of communities show the opposite trend. Communities differ greatly in the proportion of employment derived from the wood products, tourism, and fishing industries. This was reflected in the message a group of mayors brought to Washington, DC, in 1997: "the Southeast contingent did not discuss timber harvest levels, because each community has different views" (Mills 1997).

As a result, social and economic conditions and trends need to be studied and understood at multiple scales. Similarly, analysis of effects of changes in public land management and other policies need to be assessed at multiple scales to avoid a "one size fits all" discussion of impacts that will not measure effects on anyone.

2. What are trends in employment for the region's primary natural resource-based industries (wood products, fish harvesting and seafood processing, recreation and tourism, and mining)?

The share of natural resource-based sectors relative to other employment sectors has remained fairly constant recently, but the mix of industries within that share is shifting. Employment in the wood products industry has declined 41 percent since 1990, with a loss of nearly 1,500 jobs, the largest drop in any of the resource-dependent (or other) industries. The recent declines in timber harvest on both private and Tongass National Forest lands are expected to continue, posing further risk to the industry. In turn, communities that rely on wood products, through logging, sawmill operations, or pulp mills, have lost a major employer, with social and economic effects that ripple through the community.

The long-term effects on southeast Alaska communities are unknown, but it should be clear that the industries and communities dependent on them are most at risk in the short term from further reductions. Related effects could include decreasing revenues to communities from taxes, decreasing real estate prices, increasing utility costs, increasing school costs per student, and decreasing school funding from state and Federal funds based on number of students. Impact estimates must take into account that economies are dynamic; one cannot talk about job loss without considering job growth. The attraction of southeast Alaska's amenities may become a draw not just for tourists, but for residents not linked to specific locations by employment, as is already happening in other parts of the United States. The $110 million being distributed to southeast Alaska communities through the Southeast Alaska Economic Fund of 1996 is being used to mitigate the effects of reduced timber harvests, as are various other programs, such as the Interagency Southeast Alaska Community Economic Revitalization Team (SEACERT).

The level of employment in fishing and seafood processing exhibits more stability, although shifts among permit holders may have distributive effects. Links with management of the Tongass are more difficult to determine, but communities with concentrations of fishing activity, such as Petersburg or Pelican, are sensitive, especially over the long term, to changes in management of the Tongass. The degree of protection of habitat for species that use Tongass streams and rivers is probably the key variable within Forest Service control; as noted in the fisheries section of the revised supplement to the draft environmental impact statement on Tongass land management plan revision (USDA Forest Service 1996b), many other factors significantly contribute to employment in the fishing industry.

The tourism industry is the fastest growing of the natural resource industries, and continued growth is expected. On the whole, impacts to the recreation and tourism industry can be expected to be far more diffuse than those for wood products. The recreation and tourism industry is characterized by smaller firms, so the closure of a single firm represents a much smaller proportion of the total local employment than would a sawmill. Recreation and tourism-related employment is more evenly distributed among the communities of southeast Alaska, with all the larger community groups showing an employment concentration of more than 5 percent in the lodging, restaurant, and recreation services sectors. Consequently, any policy decision decreasing the overall attractiveness of the region to outside visitors would most likely be felt (to various degrees) throughout the region. For employment in the recreation industry, the ability of the Forest Service to meet projected use levels for semiprimitive motorized recreation opportunities may be another key variable.

Communities that have specialized in recreation and tourism may be just as susceptible to developments beyond their control (such as changes in the docking locations of cruise ships) as are communities that have specialized in timber; for example, Sitka expects a 29-percent drop in cruise passengers as one company shifts more of its stops to Skagway (Tromble 1997). Different portions of the economy should not be viewed as substitutable; growth in one sector may not compensate for declines in another.

Although not dealt with in detail in this paper, subsistence is another use that is both directly and indirectly affected by management of the Tongass. Subsistence is a substantial component of the rural economy of southeast Alaska, and may contribute substantially to the resiliency of rural communities. Timber harvest and other land uses affect the quality and quantity of habitat available for many species. Road construction can increase access for subsistence, sport, and commercial users, as well as affect habitat. Regulations proposed by state and Federal wildlife managers that determine subsistence users' limits, harvest methods, and seasons take into account conditions created through Tongass management. The continuous updating of subsistence harvest information at the community scale by the Alaska Department of Fish and Game may help to answer some of the questions relating subsistence use to management of the Tongass, but additional ethnographic studies would complement this harvest information.

Future long-term research to explore relations between ecosystem conditions and opportunities in the Tongass and the health and resiliency of southeast Alaska communities is needed to provide a better baseline for assessing risk and possible socioeconomic effects of forest management. Information on how management of the forest affects tourism and fishing opportunities and employment would supplement the better knowledge available for the timber industry. Links among the industries and a better understanding of how impacts in one resource-dependent sector affect those in another would complement those studies. Additional study is needed on how well the "Lodging, Restaurant, and Recreation" sector actually represents the recreation and tourism industry.

3. How well equipped are the communities of southeast Alaska to successfully deal with the social, economic, and environmental changes facing them? Do communities differ in this capacity?

Analysis of key statistics at the borough and local levels indicates a high degree of variance in economic performance among different communities and different periods. This variance is not surprising given the small size and lack diversity of many southeast Alaska communities and is to be expected, especially in timber-dependent communities where global market swings and forest management decisions will largely dictate local developments in the timber economy. Few southeast Alaska communities demonstrate a high level of economic diversity; even the largest city, Juneau, depends greatly on a single sector—government—for employment. The effects of a major change (such as moving the capital) would likely have as abrupt an effect on Juneau as would closing the mill in a mill town.

In either case, reliance on a single industry may lead to greater instability and lower resilience to change over the long term. For certain of the larger communities (notably Juneau, Sitka, and Ketchikan), a reasonably diverse economy in conjunction with a developed physical and social infrastructure should allow for a reasonable degree of economic stability. Most communities that have vision statements, overall economic development plans, and similar documents have formally recognized the merits of economic diversity and are working toward this goal. In other, smaller, communities the opportunity to grow and diversify may be more limited, although subsistence activities play a large role in maintaining quality of life.

Additional research on the characteristics of communities and their relation to community resiliency should be undertaken. We do not know if models of resiliency developed elsewhere are equally applicable to southeast Alaska, but similar methodologies (Harris and others 1996, for example) could be applied to test such hypotheses. An important component of such techniques is combining information about communities, such as population, location, access, infrastructure, and economic diversity (Force and others 1995), with perceptions from local leaders and residents about the adequacy of existing conditions and the quality of life in their community. The community self-assessment workshops used in the interior Columbia basin study (Harris and others 1996) worked well to obtain this type of information. In addition, surveys of southeast Alaska residents on their beliefs, attitudes, and opinions regarding natural resources and public land management would provide Forest managers and stakeholders with baseline information that could then be used to track the acceptability and benefits associated with project activities and Forest plan revisions (Stankey and Clark 1992).

4. One of the criticisms received by the Tongass Land Management Planning team was the lack of a community-by-community description of the number of jobs lost or created (and related economic and social impacts) under each alternative. What are the problems associated with this type of impact analysis and how can they be overcome?

There are several reasons why it is problematic to assess the effects of a programmatic plan on employment in individual communities. First, the analysis must be based on available trend data, which is limited to community groups rather than communities. Another reason is that Forest Service activities provide economic opportunities to the private sector; how that sector and various industries respond depends on

many variables in addition to Forest Service management. Complex social and economic forces have great influence on community economics—many of which, such as corporate decisions, may be outside the control of community residents.

Another problem in analyzing community-specific employment effects is that Forest plans are programmatic, meaning that they establish direction and allowable activities for broad land areas, rather than schedule specific activities on specific units of land. The associated lack of specificity is a common source of frustration to local residents, who want to know exactly how they and the places they care about will be affected. Even though many outputs of forest management, such as scheduled timber harvest, generally translate into social and economic activity, such as employment in the timber industry, it can be difficult to predict which communities will benefit the most from that activity. Communities may even compete with each other in some instances. Communities that rely on a given resource-related industry would be expected to be the first to benefit or lose from significant changes in planned output levels affecting that industry.

Another factor questioning the accuracy of predicting specific impacts at the community scale is that people and businesses have proven themselves highly adaptable. Community resiliency can be both an intervening and a dependent variable; a resilient community can weather effects better than a less resilient one, but resiliency itself also can be affected. A systematic study of the resiliency of southeast Alaska communities has not been conducted, but would be very helpful in assessing effects at both the project and Forest levels.

Given these considerations, it is more accurate to identify areas of concern for which the risks of effects from a given alternative are higher or lower than it is to state certainties; to do the latter would be presumptuous, as though people are incapable of responding to change. It is also critical to remember that impact assessment must be viewed in the context of dynamic economies, so it is inappropriate to assume a static approach that reduces employment in one sector while ignoring growth or interactions with other sectors.

Sufficient information is available at the community or community group level for decision makers to be able to describe the primary risks inherent under each management alternative at the community scale. Such an effort ideally would include a systematic effort to identify the perceptions of community residents regarding likely impacts to their community. In the absence of this, public comments could be used as a proxy for community concerns, although this should not be viewed as a substitute for more valid, reliable methods of data collection. Over the next few years, Forest Service social scientists and economists (working with local, state, private, and other Federal scientists, stakeholders, and managers) will seek improved ways to translate forest policy and management changes into impacts on communities.

5. The wood products sector has experienced the greatest decline of all economic sectors in the 1990s. What are the implications of closure of the last pulp mill in southeast Alaska for the wood products industry?

Mill closures, especially the recent closure of the KPC mill in Ketchikan, exert a strong and continuing influence on the economic viability of logging firms and the remaining mills in the region, as well as on the profitability of the timber sale program. In one sense, the mill closures mean less competition for raw materials among remaining

processors and thus could benefit their operations. Closure of the KPC mill eliminated the region's major market outlet for mill residues, the sale of which constituted an important part of sawmill revenues, especially in peak years for pulp and wood chip prices.

The KPC mill also consumed a large quantity of lower grade logs. Historically, slightly over half of all timber harvested on the Tongass was used in the production of wood chips and pulp. In addition to utility grade logs, large proportions of number 3 and 4 saw logs and even a small proportion of number 2 saw logs were chipped and pulped rather than sawn. With the closure of the pulp mill, one of the major challenges for local sawmills is either to increase their efficiency in log use (and thereby minimize the generation of residues) or find new markets for their residues and reject materials. For the forest sector in general, the major challenge will be to find suitable markets for the large volumes of lower grade material that are interspersed with the relatively smaller volumes of higher valued saw logs. Private timber owners can either export these materials or leave them in the woods, while National Forest timber harvested must be removed and processed locally.

A number of different possibilities for processing lower grade material as well as value-added processing of higher grades have been examined by government and private industry, but all such proposals must overcome the high cost of labor and other inputs prevalent in southeast Alaska. Successful projects need to identify feasible products that rely on the specific characteristics of southeast Alaska timber, rather than attempt to compete directly with other, lower cost, regions and countries in the production of commodity goods. The production of music board from Sitka spruce is a good example of using high-value materials; market niches for lower value materials will continue to be explored. Ending of the long-term contracts also should open the market for smaller companies and entrepreneurs who position themselves to take advantage of industry changes.

From the standpoint of the timber industry, another need is to establish a stable timber supply. Current uncertainty related to the Tongass planning process and the possibility of litigation on current and future sales has purportedly dampened the enthusiasm of local lenders to provide capital for wood products operations. Completion of the plan revision may eliminate much of this uncertainty regarding future supply. Nevertheless, it must be recognized that the plan does not constitute a guarantee, and that individual firms are expected, and even required, to compete in the purchase of timber for harvest and processing. The Tongass is not the only source of timber in the region. Private ownerships provide roughly half of the total harvest volumes, another consideration for southeast Alaska mills.

6. What strategies seem to have the greatest potential for addressing ongoing socioeconomic concerns regarding management of the Tongass?

Past experience suggests that once a land management plan is signed, the issues debated during its development do not go away. Many of the debates over resource allocation are grounded in differences in human values—values that tend to endure over time. Recognizing that controversy will continue during implementation and providing a way for it to be dealt with constructively over time (instead of again and again, project by project) through an existing or new institution is one effective way to

channel this debate to productive ends. A suggested component of this institutional arrangement is an ongoing mechanism for local resident involvement. Processes such as ecosystem analysis at the watershed scale (Regional Ecosystem Office 1995) have been used in the Pacific Northwest to solicit local knowledge for use in resource inventories.

In southeast Alaska, the proposed collaborative stewardship strategy, an attempt to coordinate ongoing activities much more closely with individual communities in southeast Alaska, could go a long way toward meshing local economic concerns and needs with forest management. Another strategy would be to enact a social and economic monitoring plan that measures, at the community and larger scales, social and economic indicators that reflect community health and resiliency and have meaning for community residents (Richardson 1993). The adaptive approach of ecosystem management provides mechanisms for adjusting management as new socioeconomic and biophysical information is collected.

Acknowledgments

The authors thank the following for their reviews of draft versions of this report: Kristen Tromble, Alaska Department of Labor; Richard Haynes and Terry Shaw, Pacific Northwest Research Station; and the Northwest Scientific Association (for coordinating peer reviews).

References

Alaska Commercial Fisheries Entry Commission. 1995. Summary data on limited fisheries, permit holders, and permit fee schedules. Juneau, AK.

Alaska Department of Community and Regional Affairs. 1992. Local government revenues and expenditures in smaller rural Alaskan communities, 1985-1989. Juneau, AK.

Alaska Department of Community and Regional Affairs. 1996. DCRA community database. Juneau, AK.

A**laska Department of Community and Regional Affairs. [No date].** Community financial assistance FY 96 annual report. Juneau, AK.

Alaska Department of Education. 1996. Public school enrollments. Juneau, AK: Office of Data Management.

Alaska Department of Labor, Research and Analysis. 1991. Alaska population overview, 1991 estimates. Juneau, AK.

Alaska Department of Labor, Research and Analysis. 1995. Alaska population overview, 1995 estimates. Juneau, AK.

Alaska Department of Labor, Research and Analysis. 1996a. Employment and income databases. Juneau, AK.

Alaska Department of Labor, Research and Analysis. 1996b. Residency analysis of Alaska's workers by firm—1994. Juneau, AK. 75 p.

Alaska Marine Highway System. 1995. Personal communication. 1591 Glacier, Juneau, AK 99801.

Alaska Visitor Association. 1992. Destination Alaska: strategies for the visitor industry. Juneau, AK.

Alves, W. 1979. Residents and resources: findings of the Alaska public survey on the importance of natural resources to the quality of life in southeast Alaska: a report for the USDA Forest Service, Region 10. Anchorage, AK: Institute of Social and Economic Research, University of Alaska.

Anadromous Fish Habitat Assessment Team. 1995. Report to Congress: anadromous fish habitat assessment. R10-MB-279. Juneau, AK: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station; Alaska Region. [Irregular pagination].

Ashton, P.G.; Pickens, J.B. 1995. Employment diversity and economic performance in small, resource-dependent communities near western National Forests. Society and Natural Resources. 8: 231-241.

Attaran, M. 1986. Industrial diversity and economic performance in U.S. areas. Annals of Regional Science. 20(2): 44-55.

Betts, M.F.; Wolfe, R.J. 1992. Commercialization of fisheries and the subsistence economies of the Alaska Tlingit. Society and Natural Resources. 5: 277-295.

Boucher, J. 1994. Low August jobless rate belies winter worries. Alaska Economic Trends. 14(11): 9-12.

Boucher, J. 1996. April jobless rate drops to 7.5%. Alaska Economic Trends. 16(7): 17-20.

Brooks, D.; Haynes, R. 1994. Timber products output and timber harvests in Alaska: projections for 1992-2010. Gen. Tech. Rep. PNW-GTR-334. Portland OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.

Bundtzen, T.K.; Swainbank, R.C.; Clough, A.H. [and others]. [No date]. Alaska's mineral industry 1995. Spec. Rep. 50. Juneau, AK: State of Alaska, Division of Geological and Geophysical Surveys.

City of Wrangell. 1996. Overall economic development plan. Wrangell, AK.

Force, J. E.; Fosdeck, D.; Machlis, G.E. 1995. Monitoring social indicators for ecosystem management. [Place of publication unknown]: [Publisher unknown]; report submitted to Interior Columbia Basin Ecosystem Management Project, Order # 43-0E00-5-5269.

Forest Ecosystem Management Assessment Team [FEMAT]. 1993. Forest ecosystem management: an ecological, economic, and social assessment. Portland, OR: U.S. Department of Agriculture; U.S. Department of the Interior [and others]. [Irregular pagination].

Fried, N. 1996. Alaska seafood processing—a growing job source? Alaska Economic Trends. 16(3): 1-8.

Glass, R.J.; Muth, R.M.; More, T.A.; Kruse, J. 1995. Assessing developmental impacts on subsistence fishing: complications attributable to a mixed economic system. Society and Natural Resources. 8: 431-442.

Hadland, J. 1996. Nonresidents working in Alaska—1994. Juneau, AK: [Publisher unknown]; report prepared by Alaska Department of Labor, Research and Analysis Section. 22 p.

Harris, C.; Brown, G.; McLaughlin, B. 1996. Rural communities in the inland Northwest. Moscow, ID: University of Idaho, College of Forestry, Wildlife, and Range Sciences; final report parts 1 and 2; submitted to the Interior Columbia Basin Ecosystem Management Project, Walla Walla, WA. 340 p.

Hoover, E. M.; Giarratani, F. 1984. An introduction to regional economics. New York: Alfred A. Knopf. 444 p.

Juneau Airport Manager's Office. 1995. Personal communication. City and Borough of Juneau, 155 S. Seward St., Juneau, AK.

Juneau Convention and Visitors Bureau. 1995. Personal communication. 369 S. Franklin, Juneau, AK 99801.

Kruse, J.; Frazier, R. 1988. Reports to the communities of southeast Alaska: Tongass resource use cooperative survey. Anchorage, AK: Institute of Social and Economic Research, University of Alaska–Anchorage. One report per community.

Kruse, J.A.; Muth, R.M. 1990. Subsistence use of renewable resources by rural southeast Alaska residents. [Place of publication unknown]: U.S. Department of Agriculture, Forest Service; University of Alaska–Anchorage; final report under U.S. Department of Agriculture, Forest Service–University of Alaska cooperative agreement PNW 88-553. 160 p.

Lane, T. 1994. City and Borough of Sitka. Alaska Economic Trends. 14(3): 5-8.

McDowell Group. 1989. Alaska seafood industry study—a technical report: an economic profile of the seafood industry in Alaska. Juneau, AK.

McDowell Group. 1991. Alaska's visitor industry: an economic profile. Juneau, AK; report prepared for Alaska Division of Tourism, Department of Commerce and Economic Development.

McDowell Group. 1992. Direct revenues to the State of Alaska from the visitor industry. Juneau, AK; report prepared for the Alaska Visitors Association.

McDowell Group. 1993a. Alaska's visitor patterns, opinions, and planning. Juneau, AK; report prepared for Alaska Division of Tourism, Department of Commerce and Economic Development.

McDowell Group. 1993b. Alaska visitor arrivals. Juneau, AK; report prepared for Alaska Division of Tourism, Department of Commerce and Economic Development.

McDowell Group. 1994. Alaska visitor expenditures fall/winter 1993-94. Juneau, AK; report prepared for Alaska Division of Tourism, Department of Commerce and Economic Development.

McDowell Group. 1995. The timber industry's role in the economy of southeast Alaska. Juneau, AK; report prepared for the Alaska Forest Association.

McDowell Group. 1997. 25 years of progress: the economic impact of ANCSA corporations on southeast Alaska. Juneau, AK; report prepared for Sealaska Corporation, July 1997, 48 p.

Miernyk, W.H. 1965. The elements of input-output analysis. New York: Random House. 156 p.

Mills, B. 1997. Mayors return from D.C. Juneau Empire. March 26: 1. Juneau, AK.

Morse, Kathleen. 1992. Personal communication. Results of 1992 IMPLAN analysis. Regional economist, U.S. Department of Agriculture, Forest Service, Alaska Region, Box 21628, Juneau, AK 99802-1628.

Muth, R.M. 1989. Community stability as a social structure: the role of subsistence uses of natural resources in southeast Alaska. In: Lee, R.G.; Field, D.R.; Burch, W.R., Jr., eds. Community and forestry: continuities in the sociology of natural resources. Boulder, CO: Westview Press. 400 p.

Nakazawa, Anthony; Goldman, George. 1991. Subsistence on Federal public lands in Alaska: some economic impacts of four management alternatives. Arctic Issues Digest. Fairbanks: University of Alaska—Fairbanks; October: 2-7.

Regional Ecosystem Office. 1995. Ecosystem analysis at the watershed scale: Federal guide for watershed analysis. Version 2.2, rev. Aug. 1995. Portland, OR: [Publisher unknown]. Available from: Regional Ecosystem Office, P.O. Box 3623, Portland, OR 97208.

Richardson, C.W. 1993. An analysis of the socioeconomic effects of Bureau of Land Management resource management plans in western Oregon. Seattle, WA: Institute for Resources in Society, University of Washington; report prepared for U.S. Department of the Interior, Bureau of Land Management, Oregon State Office, Portland, OR. 171 p.

Roppel, P. 1983. Southeast Alaska—a pictorial history. Norfolk/Virginia Beach, VA: The Donning Company.

Shannon, C.E; Weaver, W. 1949. The mathematical theory of communication. Urbana, IL: The University of Illinois Press.

Smith, T.M. 1996. Letter dated June 3 to Phil Janik, Regional Forester, USDA Forest Service, Alaska Region. On file with: Regional Forester's Office, U.S. Department of Agriculture, Forest Service, Alaska Region, P.O. Box 21628, Juneau, AK, 99802.

Society of American Foresters. 1989. Report of the Society of American Foresters national task force on community stability. Resour. Pol. Ser. Bethesda, MD.

Stankey, G.H.; Clark, R.N. 1992. Social aspects of new perspectives in forestry: a problem analysis. Pinchot Institute for Conservation Monograph Series. Milford, PA: Grey Towers Press.

Swainbank, R.C.; Bundtzen, T.K.; Clough, A.H.; Henning, M.W. 1997. Alaska's mineral industry 1996: a summary. Inf. Circ. 42. Juneau, AK: State of Alaska, Division of Geological and Geophysical Surveys.

Tainter, Joseph A. 1996. Cultural conflict and sustainable development: managing subsistence hunting in Alaska. Paper presented at annual conference of the International Boreal Forest Research Association; 1996 Aug. 19-23; St. Petersburg, Russia. 11 p.

Taylor, C.; Winter, S; Alward, G; Siverts, E.. 1993. Micro IMPLAN user's guide. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station.

Tromble, K. 1996. Timber debate burns through southeast. Alaska Economic Trends 16(9): 17, 20.

Tromble, K. 1997. Will mining rescue southeast's economy? Alaska Economic Trends. 17(5): 15-20.

Tromble, K.; Boucher, J. 1995. The city of Wrangell. Alaska Economic Trends. 15(8): 5-8.

U.S. Bureau of Economic Analysis. 1996. Regional economic information system, 1969-94. [Place of publication unknown].

U.S. Department of Commerce, Bureau of the Census. 1990. 1990 census of population, social, and economic characteristics of Alaska. Washington, DC.

U.S. Department of Commerce, Bureau of the Census. 1996. Statistical abstract of the United States: 1996. Washington, DC.

U.S. Department of Agriculture, Forest Service. 1995. Mendenhall Glacier visitor center counts. On file with: Juneau Ranger District, 8465 Old Dairy Rd., Juneau, AK, 99801.

U.S. Department of Agriculture, Forest Service. 1996a. Timber supply and demand, 1995. Report to Congress, ANILCA Section 706(a). Juneau, AK: Alaska Region.

U.S. Department of Agriculture, Forest Service. 1996b. Tongass land management plan revision revised supplement to the draft environmental impact statement. R10-MB-314a. Juneau, AK: Alaska Region.

U.S. Department of Agriculture, Forest Service. 1997. Tongass land management plan revision final environmental impact statement. R10-MB-338b. Juneau, AK: Alaska Region.

U.S. Laws, Statutes, etc.; Public Law 92-203. Alaska Native Claims Settlement Act [ANCSA] of 1971. Act of Dec. 18, 1971. 85 Stat. 688 (codified as amended at 43 USC 1601-1628) .

U.S. Laws, Statutes, etc.; Public Law 96-487. Alaska National Interest Lands Conservation Act [ANILCA] of 1980. Act of Dec. 2, 1980. 16 U.S.C. 3210.

U.S. Laws, Statutes, etc.; Public Law 104-134. Omnibus Consolidated Rescissions and Appropriations Act of 1996. Act of April 26, 1996. 110 Stat. 1321-182.

Walters, L. 1997. Personal communication. Research analyst, Alaska Department of Community and Regional Affairs, 150 3d St., Juneau, AK 99801.

Wolfe, Robert. 1989. Myths: What have you heard? Alaska Fish and Game. 21(6): 16-19.

Wolfe, Robert G.; Bosworth, Robert G. 1994. Subsistence in Alaska: 1994 update. Report on file: Alaska Department of Fish and Game, Division of Subsistence, 1255 W. 8th St., Juneau, AK 99801.

Wolfe, Robert G.; Walker, Robert J. 1987. Subsistence economies in Alaska: productivity, geography, and development impacts. Arctic Anthropology. 24(2): 56-81.

Appendix 1: Employment by Sector and Community Group

Table 14—Baranof community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*		*Percent*	
Mining	0	0	0	0	—	—
Construction	0	0	0	0	—	—
Total manufacturing	46	87	39	75	-17	563
Retail trade	0	0	0	0	—	—
Wholesale trade	0	0	0	0	—	—
Financial, insurance, and real estate	0	0	0	0	—	—
Services	0	0	0	0	—	—
Transportation and public utilities	0	0	0	0	—	—
Agriculture, forestry, and fish services	7	13	13	25	82	3116
Federal Government	0	0	0	0	—	—
Other government	0	0	0	0	—	—
Total[b]	53	100	51	100	-4	—
TLMP relevant sectors:						
Logging	46	87	39	75	-17	1990
Sawmills	0	0	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	0	0	0	0	—	—
Lodging, restaurant, and recreation[c]	0	0	0	0	—	—

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 15—Central Prince of Wales community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*	- - - - - -	*Percent* – – – – – –	
Mining	0	0	0	0	—	—
Construction	47	5	68	6	44	41
Total manufacturing	329	34	180	17	-45	50
Retail trade	151	16	205	19	36	13
Wholesale trade	8	1	12	1	43	-22
Financial, insurance, and real estate	39	4	35	3	-9	-9
Services	104	11	114	11	10	-41
Transportation and public utilities	69	7	138	13	99	66
Agriculture, forestry, and fish services	5	0	0	0	—	—
Federal Government	32	3	45	4	40	-22
Other government	186	19	261	25	40	-15
Total[b]	970	100	1,059	100	9	—
TLMP relevant sectors:						
Logging	312	32	117	11	-63	206
Sawmills	0	0	20	2	—	143
Pulp mills	0	0	0	0	—	—
Seafood processing	17	2	42	4	155	-12
Lodging, restaurant, and recreation[c]	99	10	123	12	24	17

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 16—Chatham Strait community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*		*Percent*	
Mining	0	0	0	0	—	—
Construction	0	0	0	0	—	—
Total manufacturing	100	30	112	34	12	202
Retail trade	23	7	23	7	0	-58
Wholesale trade	0	0	0	0	—	—
Financial, insurance, and real estate	19	6	21	6	13	74
Services	27	8	28	9	2	-53
Transportation and public utilities	2	1	5	2	150	-79
Agriculture, forestry, and fish services	0	0	0	0	—-	—
Federal Government	9	3	3	1	-66	-84
Other government	151	46	133	41	-12	42
Total[b]	331	100	324	100	-2	—
TLMP relevant sectors:						
Logging	89	27	112	34	26	854
Sawmills	0	0	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	0	0	0	0	—	—
Lodging, restaurant, and recreation[c]	19	6	21	7	10	-34

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 17—Cleveland Peninsula community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*	- - - - - -	*Percent*	– – – – – –
Mining	0	0	0	0	—	—
Construction	0	0	0	0	—	—
Total manufacturing	0	0	0	0	—	—
Retail trade	0	0	0	0	—	—
Wholesale trade	0	0	0	0	—	—
Financial, insurance, and real estate	0	0	0	0	—	—
Services	22	100	14	100	-38	447
Transportation and public utilities	0	0	0	0	—	—
Agriculture, forestry,and fish services	0	0	0	0	—	—
Federal Government	0	0	0	0	—	—
Other government	0	0	0	0	—	—
Total[b]	22	100	14	100	-38	—
TLMP relevant sectors:						
Logging	0	0	0	0	—	—
Sawmills	0	0	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	0	0	0	0	—	—
Lodging, restaurant, and recreation[c]	22	100	14	100	-38	911

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 18—Gustavus community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*		*Percent*	
Mining	0	0	0	0	—	—
Construction	3	3	3	2	0	-56
Total manufacturing	2	1	4	2	130	-79
Retail trade	6	5	9	6	64	-66
Wholesale trade	9	7	0	0	—	—
Financial, insurance, and real estate	0	0	0	0	—	—
Services	59	48	96	60	62	229
Transportation and public utilities	7	6	18	11	148	42
Agriculture, forestry, and fish services	0	0	0	0	—	—
Federal Government	37	30	27	17	-27	210
Other government	0	0	2	1	—	-96
Total[b]	123	100	159	100	29	—
TLMP relevant sectors:						
Logging	0	0	0	0	—	—
Sawmills	0	0	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	2	1	4	2	130	-46
Lodging, restaurant, and recreation[c]	59	48	97	61	65	519

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 19—Haines community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*	- - - - - -	*Percent* – – – – – –	
Mining	0	0	0	0	—	—
Construction	39	4	57	7	47	59
Total manufacturing	225	25	105	13	-54	16
Retail trade	163	18	159	20	-2	17
Wholesale trade	5	1	1	0	-90	-95
Financial, insurance, and real estate	17	2	17	2	-3	-42
Services	101	11	143	18	42	-1
Transportation and public utilities	169	19	149	19	-12	139
Agriculture, forestry, and fish services	0	0	0	0	—	—
Federal Government	9	1	11	1	26	-74
Other government	163	18	150	19	-8	-34
Total[b]	891	100	791	100	-11	—
TLMP relevant sectors:						
Logging	0	0	10	1	100	-64
Sawmills	140	16	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	82	9	90	11	9	152
Lodging, restaurant, and recreation[c]	101	11	131	17	30	67

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 20—Hydaburg community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*		*Percent*	
Mining	0	0	0	0	—	—
Construction	0	0	0	0	—	—
Total manufacturing	0	0	0	0	—	—
Retail trade	7	9	9	14	30	-19
Wholesale trade	0	0	0	0	—	—
Financial, insurance, and real estate	14	19	9	14	-39	290
Services	4	5	4	6	0	-69
Transportation and public utilities	10	13	4	6	-61	-22
Agriculture, forestry, and fish services	0	0	0	0	—	—
Federal Government	0	0	0	0	—	—
Other government	42	55	37	60	-12	108
Total[b]	76	100	61	100	-20	—
TLMP relevant sectors:						
Logging	0	0	0	0	—	—
Sawmills	0	0	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	0	0	0	0	—	—
Lodging, restaurant, and recreation[c]	0	0	0	0	—	—

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 21—Hyder community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*	- - - - - -	*Percent* – – – – – –	
Mining	3	8	0	0	—	—
Construction	0	0	0	0	—	—
Total manufacturing	0	0	0	0	—	—
Retail trade	4	11	7	33	95	93
Wholesale trade	0	0	0	0	—	—
Financial, insurance, and real estate	0	0	0	0	—	—
Services	14	46	13	64	-8	250
Transportation and public utilities	8	27	0	0	—	—
Agriculture, forestry, and fish services	0	0	0	0	—	—
Federal Government	2	7	1	3	-72	-49
Other government	0	0	0	0	—	—
Total[b]	31	100	21	100	-33	—
TLMP relevant sectors:						
Logging	0	0	0	0	—	—
Sawmills	0	0	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	0	0	0	0	—	—
Lodging, restaurant, and recreation[c]	9	28	8	37	-12	275

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 22—Juneau community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*		*Percent*	
Mining	72	1	187	1	158	122
Construction	410	3	626	4	53	-13
Total manufacturing	145	1	325	2	124	-82
Retail trade	2,041	14	2,735	17	34	1
Wholesale trade	194	1	180	1	-7	-18
Financial, insurance, and real estate	494	3	673	4	36	16
Services	2,323	16	3,010	19	30	4
Transportation and public utilities	910	6	1,072	7	18	-13
Agriculture, forestry, and fish services	59	0	74	0	27	-39
Federal Government	1,406	10	908	6	-35	5
Other government	6,081	43	5,985	38	-2	32
Total[b]	14,133	100	15,775	100	12	—
TLMP relevant sectors:						
Logging	0	0	80	1	—	-86
Sawmills	0	0	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	25	0	59	0	139	-92
Lodging, restaurant, and recreation[c]	1,170	8	1,505	10	29	-4

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 23—Kake community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*	- - - - - - -	*Percent* – – – – –	
Mining	0	0	0	0	—	—
Construction	3	1	0	0	—	—
Total manufacturing	123	43	47	17	-62	46
Retail trade	25	9	17	6	-31	-65
Wholesale trade	2	1	0	0	—	—
Financial, insurance, and real estate	17	6	85	30	400	722
Services	16	5	18	6	17	-65
Transportation and public utilities	7	2	14	5	102	-37
Agriculture, forestry, and fish services	20	7	16	6	-19	654
Federal Government	2	1	2	1	-8	-87
Other government	69	24	82	29	18	1
Total[b]	284	100	282	100	-1	—
TLMP relevant sectors:						
Logging	123	43	47	17	-62	361
Sawmills	0	0	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	0	0	0	0	—	—
Lodging, restaurant, and recreation[c]	0	0	0	0	—	—

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 24—Ketchikan City community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*		*Percent*	
Mining	1	0	1	0	113	-97
Construction	317	4	431	5	36	20
Total manufacturing	1,936	25	1,483	19	-23	65
Retail trade	1,166	15	1,389	18	19	2
Wholesale trade	270	3	224	3	-17	102
Financial, insurance, and real estate	290	4	319	4	10	9
Services	1,375	18	1,428	18	4	-1
Transportation and public utilities	638	8	766	10	20	23
Agriculture, forestry, and fish services	29	0	87	1	200	44
Federal Government	288	4	300	4	4	-31
Other government	1,518	19	1,483	19	-2	-35
Total[b]	7,827	100	7,911	100	1	—
TLMP relevant sectors:						
Logging	829	11	375	5	-55	31
Sawmills	98	1	126	2	28	103
Pulp mills	501	6	505	6	1	334
Seafood processing	442	6	405	5	-9	14
Lodging, restaurant, and recreation[c]	678	9	647	8	-4	-17

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 25—Kuiu Island community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*	- - - - - -	*Percent* – – – – – –	
Mining	0	0	0	0	—	—
Construction	0	0	0	0	—	—
Total manufacturing	77	91	4	45	-95	298
Retail trade	0	0	0	0	—	—
Wholesale trade	0	0	1	10	—	644
Financial, insurance, and real estate	0	0	0	0	—	—
Services	0	0	0	0	—	—
Transportation and public utilities	0	0	0	0	—	—
Agriculture, forestry, and fish services	1	1	0	0	—	—
Federal Government	0	0	0	0	—	—
Other government	7	8	4	44	-43	54
Total[b]	85	100	9	100	-90	—
TLMP relevant sectors:						
Logging	77	91	4	45	-95	1,156
Sawmills	0	0	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	0	0	0	0	—	—
Lodging, restaurant, and recreation[c]	0	0	0	0	—	—

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 26—Metlakatla community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*		*Percent*	
Mining	0	0	0	0	—	—
Construction	8	1	0	0	—	—
Total manufacturing	116	20	127	23	9	102
Retail trade	53	9	52	10	-2	-45
Wholesale trade	0	0	0	0	—	—
Financial, insurance, and real estate	4	1	5	1	18	-76
Services	6	1	7	1	15	-93
Transportation and public utilities	57	10	24	4	-59	-45
Agriculture, forestry, and fish services	0	0	0	0	—	—
Federal Government	24	4	10	2	-60	-69
Other government	321	54	326	59	2	106
Total[b]	590	100	550	100	-7	—
TLMP relevant sectors:						
Logging	16	3	0	0	—	—
Sawmills	100	17	96	17	-4	2,129
Pulp mills	0	0	0	0	—	—
Seafood processing	0	0	31	6	100	25
Lodging, restaurant, and recreation[c]	8	1	20	4	136	-64

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 27—North Chichagof community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*	- - - - - -	*Percent* – – – – – –	
Mining	0	0	0	0	—	—
Construction	0	0	0	0	—	—
Total manufacturing	368	62	277	49	-25	331
Retail trade	34	6	75	13	119	-23
Wholesale trade	4	1	5	1	17	-41
Financial, insurance, and real estate	23	4	0	0	—	—
Services	18	3	26	5	46	-75
Transportation and public utilities	24	4	45	8	89	1
Agriculture, forestry, and fish services	2	0	0	0	—	—
Federal Government	29	5	20	4	-30	-36
Other government	92	15	117	21	27	-28
Total[b]	594	99	565	100	-5	—
TLMP relevant sectors:						
Logging	139	23	139	25	0	580
Sawmills	0	0	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	229	38	139	25	-40	445
Lodging, restaurant, and recreation[c]	30	5	33	6	10	-42

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 28—North Prince of Wales community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*		*Percent*	
Mining	0	0	0	0	—	—
Construction	20	4	15	3	-21	-24
Total manufacturing	280	55	262	59	-6	416
Retail trade	22	4	22	5	-1	-72
Wholesale trade	5	1	0	0	—	—
Financial, insurance, and real estate	6	1	1	0	-83	-94
Services	32	6	23	5	-27	-72
Transportation and public utilities	44	9	5	1	-89	-86
Agriculture, forestry, and fish services	5	1	12	3	157	251
Federal Government	65	13	64	14	-1	162
Other government	33	6	42	9	27	-67
Total[b]	510	100	447	100	-12	—
TLMP relevant sectors:						
Logging	245	48	243	54	-1	1,409
Sawmills	24	5	14	3	-43	286
Pulp mills	0	0	0	0	—	—
Seafood processing	9	2	4	1	-63	-83
Lodging, restaurant, and recreation[c]	6	1	19	4	220	-58

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 29—Petersburg community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*	- - - - - -	*Percent* – – – – –	
Mining	0	0	0	0	—	—
Construction	30	2	60	4	99	-16
Total manufacturing	351	25	467	30	33	163
Retail trade	231	17	263	17	14	-2
Wholesale trade	4	0	8	1	98	-64
Financial, insurance, and real estate	29	2	25	2	-14	-57
Services	192	14	166	11	-14	-42
Transportation and public utilities	60	4	67	4	12	-45
Agriculture, forestry, and fish services	20	1	17	1	-12	45
Federal Government	147	11	144	9	-2	68
Other government	330	24	339	22	3	-25
Total[b]	1,394	100	1,555	100	12	—
TLMP relevant sectors:						
Logging	70	5	12	1	-83	-78
Sawmills	0	0	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	260	19	430	28	65	514
Lodging, restaurant, and recreation[c]	130	9	100	6	-23	-35

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 30—Revillagigedo community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*		*Percent*	
Mining	0	0	0	0	—	—
Construction	0	0	0	0	—	—
Total manufacturing	0	0	23	84	—	635
Retail trade	0	0	0	0	—	—
Wholesale trade	0	0	0	0	—	—
Financial, insurance, and real estate	0	0	0	0	—	—
Services	0	0	0	0	—	—
Transportation and public utilities	0	0	5	16	—	109
Agriculture, forestry, and fish services	0	0	0	0	—	—
Federal Government	0	0	0	0	—	—
Other government	0	0	0	0	—	—
Total[b]	0	100	28	100	—	—
TLMP relevant sectors:						
Logging	0	0	23	84	—	2,220
Sawmills	0	0	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	0	0	0	0	—	—
Lodging, restaurant, and recreation[c]	0	0	0	0	—	—

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 31—Sitka community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*	- - - - - -	*Percent* – – – – – –	
Mining	0	0	0	0	—	—
Construction	236	6	225	6	-5	31
Total manufacturing	702	17	286	8	-59	-33
Retail trade	612	15	721	19	18	12
Wholesale trade	76	2	57	2	-25	9
Financial, insurance, and real estate	77	2	79	2	3	-43
Services	997	25	1,026	27	3	49
Transportation and public utilities	295	7	261	7	-12	-12
Agriculture, forestry, and fish services	39	1	32	1	-18	9
Federal Government	259	6	265	7	2	28
Other government	764	19	813	22	6	-25
Total[b]	4,057	100	3,765	100	-7	—
TLMP relevant sectors:						
Logging	2	0	0	0	—	—
Sawmills	0	0	0	0	—	—
Pulp mills	402	10	14	0	-97	-75
Seafood processing	278	7	227	6	-18	34
Lodging, restaurant, and recreation[c]	360	9	390	10	8	5

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 32—Skagway community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*		*Percent*	
Mining	0	0	0	0	—	—
Construction	0	0	29	5	—	6
Total manufacturing	4	1	14	2	280	-79
Retail trade	102	20	173	29	70	67
Wholesale trade	1	0	0	0	—	—
Financial, insurance, and real estate	7	1	8	1	5	-66
Services	76	15	168	28	122	53
Transportation and public utilities	175	34	62	10	-64	32
Agriculture, forestry, and fish services	1	0	0	0	—	—
Federal Government	35	7	57	10	65	74
Other government	108	21	90	15	-17	-48
Total[b]	509	100	602	100	18	—
TLMP relevant sectors:						
Logging	0	0	0	0	—	—
Sawmills	0	0	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	0	0	0	0	—	—
Lodging, restaurant, and recreation[c]	73	14	211	35	190	254

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 33—Southeast Prince of Wales community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*	- - - - - -	*Percent* – – – – –	
Mining	0	0	0	0	—	—
Construction	0	0	0	0	—	—
Total manufacturing	0	0	0	0	—	—
Retail trade	0	0	0	0	—	—
Wholesale trade	1	12	1	3	0	84
Financial, insurance, and real estate	0	0	0	0	—	—
Services	0	0	38	97	—	433
Transportation and public utilities	7	88	0	0	—	—
Agriculture, forestry, and fish services	0	0	0	0	—	—
Federal Government	0	0	0	0	—	—
Other government	0	0	0	0	—	—
Total[b]	8	100	39	100	369	—
TLMP relevant sectors:						
Logging	0	0	0	0	—	—
Sawmills	0	0	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	0	0	0	0	—	—
Lodging, restaurant, and recreation[c]	0	0	38	97	—	885

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 34—Stephens Passage community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*		*Percent*	
Mining	268	80	0	0	—	—
Construction	0	0	26	54	—	1,094
Total manufacturing	62	18	5	11	-92	-5
Retail trade	0	0	0	0	—	—
Wholesale trade	0	0	0	0	—	—
Financial, insurance, and real estate	0	0	0	0	—	—
Services	0	0	0	0	—	—
Transportation and public utilities	0	0	15	32	—	306
Agriculture, forestry, and fish services	4	1	0	0	—	—
Federal Government	0	0	0	0	—	—
Other government	0	0	1	3	—	-90
Total[b]	333	100	48	100	-86	—
TLMP relevant sectors:						
Logging	61	18	3	6	-95	70
Sawmills	0	0	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	1	0	2	5	200	5
Lodging, restaurant, and recreation[c]	0	0	0	0	—	—

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 35—Wrangell City community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*	- - - - - - -	*Percent* – – – – – –	
Mining	0	0	0	0	—	—
Construction	17	2	53	7	206	43
Total manufacturing	239	27	117	14	-51	27
Retail trade	153	17	162	20	6	16
Wholesale trade	6	1	4	1	-29	-63
Financial, insurance, and real estate	18	2	13	2	-26	-56
Services	73	8	66	8	-10	-56
Transportation and public utilities	118	13	83	10	-30	30
Agriculture, forestry, and fish services	13	1	19	2	53	209
Federal Government	49	6	57	7	16	27
Other government	197	22	239	29	21	2
Total[b]	883	100	813	100	-8	—
TLMP relevant sectors:						
Logging	0	0	1	0	—	-98
Sawmills	162	18	21	3	-87	225
Pulp mills	0	0	0	0	—	—
Seafood processing	60	7	83	10	38	127
Lodging, restaurant, and recreation[c]	77	9	74	9	-4	-8

— = not applicable.

[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

Table 36—Yakutat community group employment by sector, 1990-95

Sector	1990 employment		1995 employment		1990-95 change	Share of SE Alaska total[a]
	No. of jobs	*Percent*	*No. of jobs*		*Percent*	
Mining	0	0	0	0	—	—
Construction	5	2	14	3	202	-28
Total manufacturing	45	21	140	33	213	194
Retail trade	30	14	39	9	31	-46
Wholesale trade	0	0	1	0	—	-90
Financial, insurance, and real estate	8	4	14	3	67	-12
Services	6	12	73	17	179	-5
Transportation and public utilities	28	13	36	9	28	10
Agriculture, forestry, and fish services	1	0	0	0	—	—
Federal Government	20	9	26	6	30	11
Other government	55	25	77	18	41	-36
Total[b]	217	100	419	100	93	—
TLMP relevant sectors:						
Logging	37	17	68	16	86	353
Sawmills	0	0	0	0	—	—
Pulp mills	0	0	0	0	—	—
Seafood processing	0	0	72	17	—	282
Lodging, restaurant, and recreation[c]	28	13	61	14	114	46

— = not applicable.

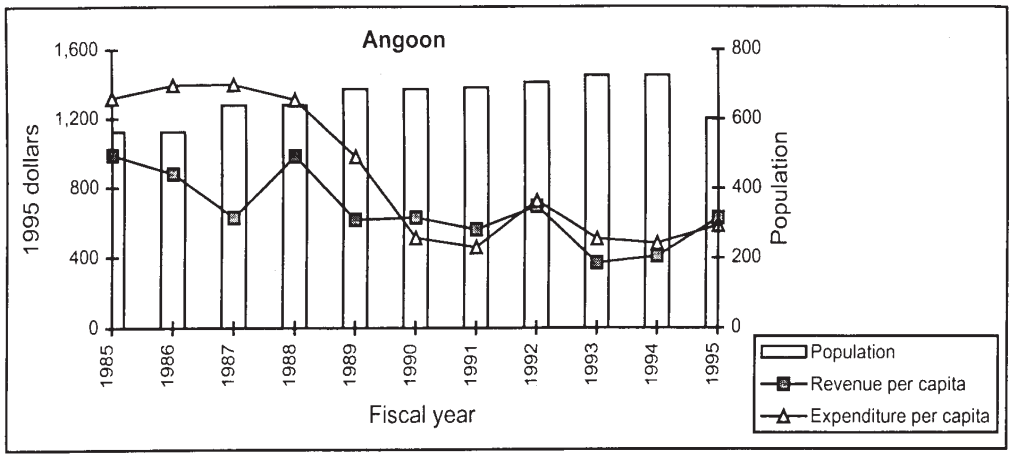
[a] Share relative to southeast Alaska total employment.

[b] Full- and part-time employment. Excludes proprietors and self-employed.

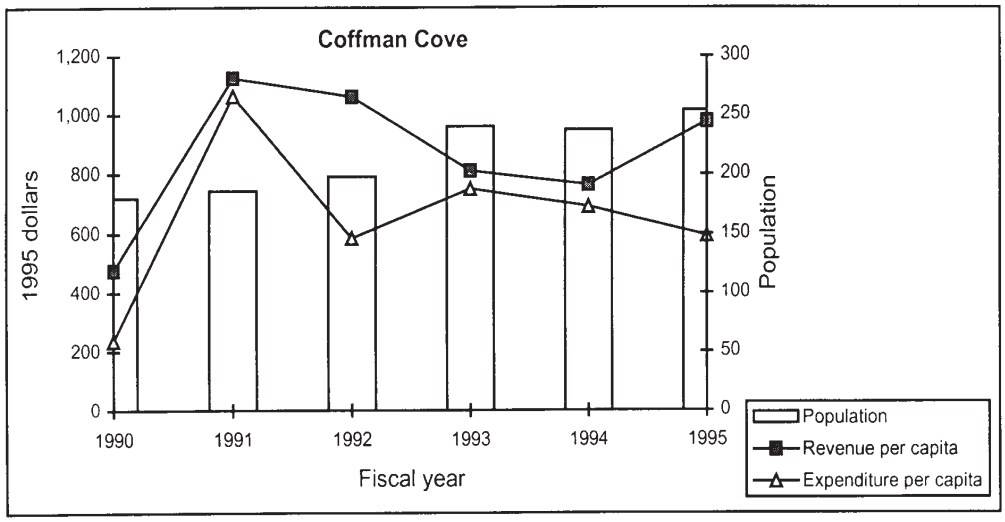
[c] This measure does not directly reflect recreation- and tourism-related employment, but is included as an indicator of trends and relative concentrations of recreation- and tourism-dependent employment.

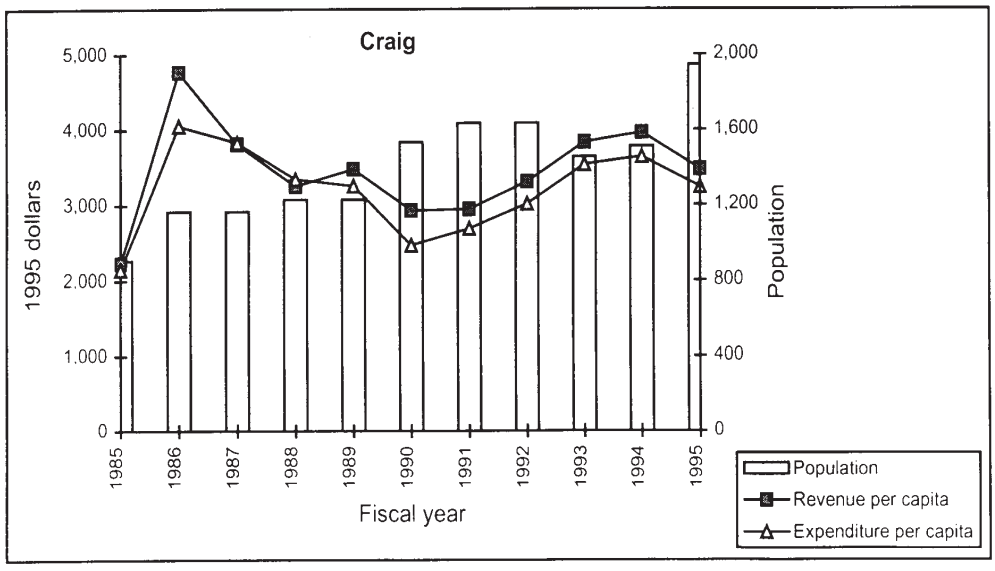
Sources: Alaska Department of Labor 1996a, U.S. Bureau of Economic Analysis 1996.

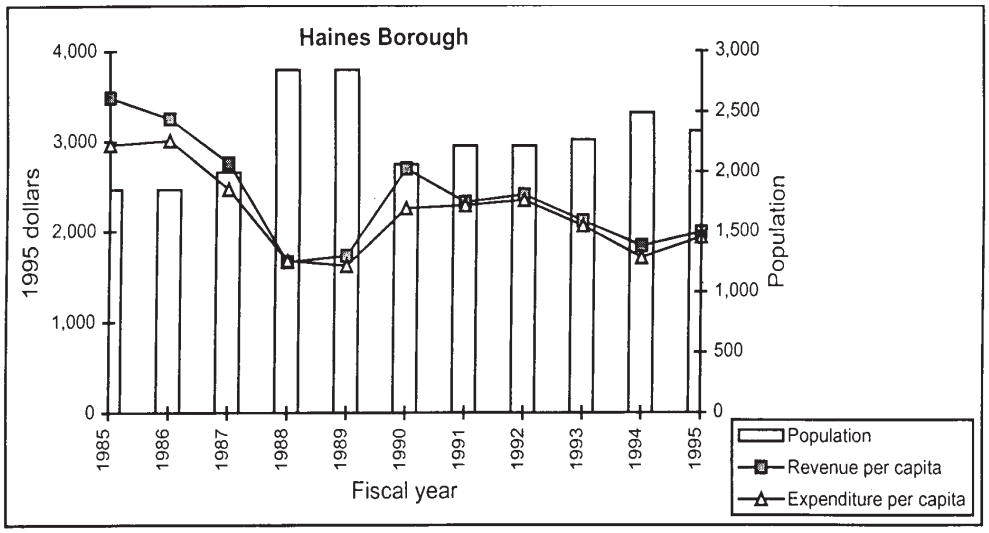
Appendix 2: Per Capita Revenues and Expenditures by Community

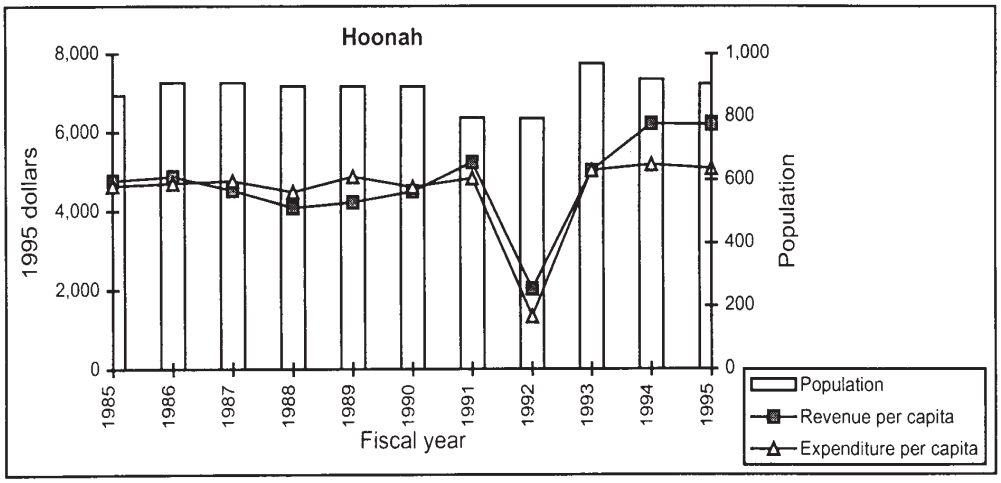


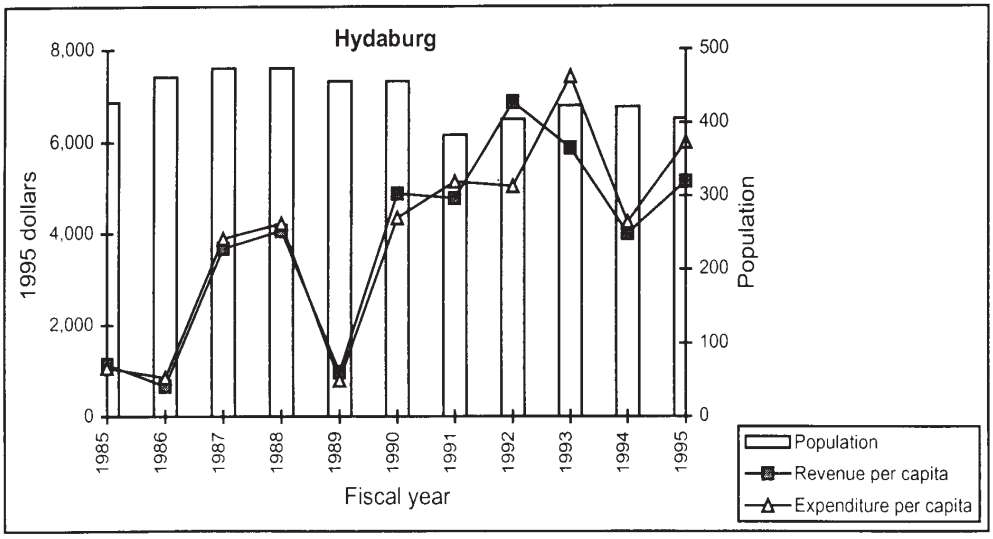
Source: Alaska Department of Community and Regional Affairs, 1996.

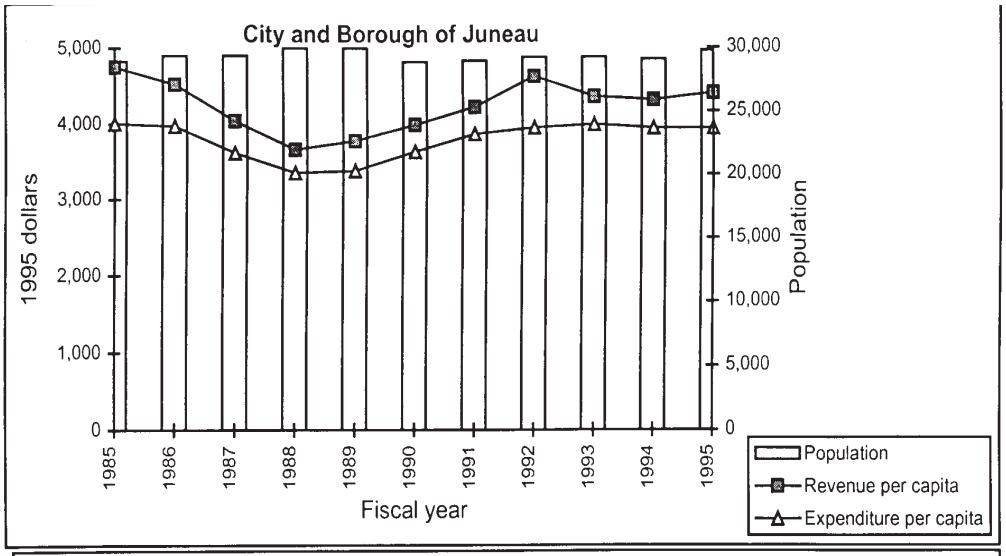


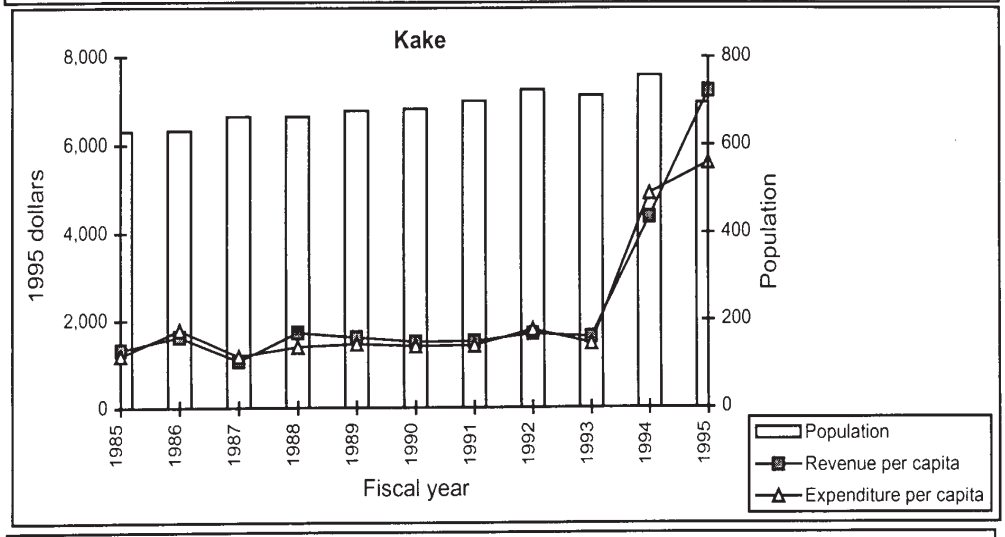


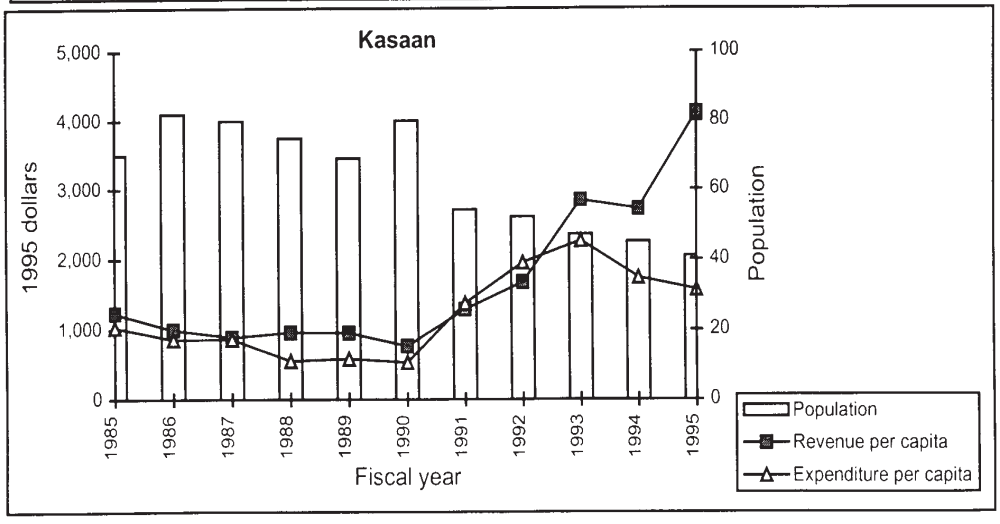

Haines Borough
1995 dollars
Population
Fiscal year
4,000
3,000
2,000
1,000
0
3,000
2,500
2,000
1,500
1,000
500
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Population
Revenue per capita
Expenditure per capita

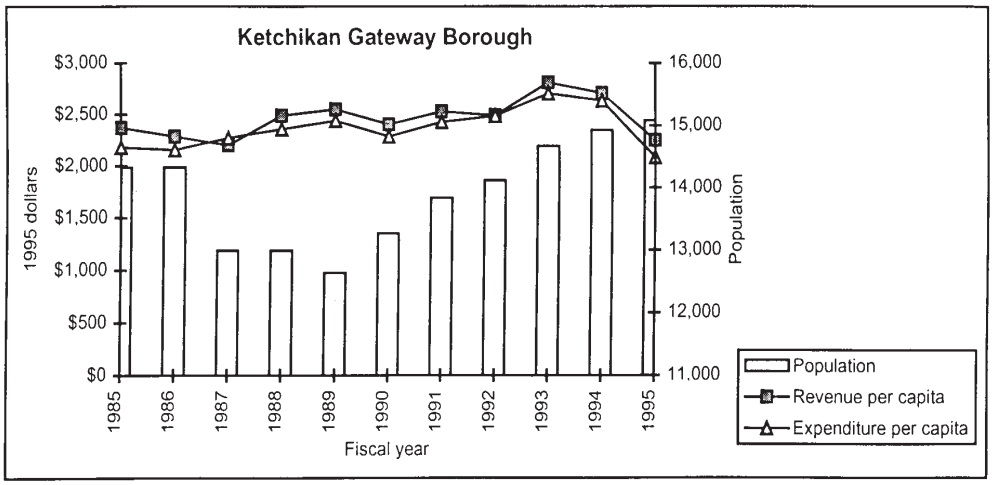

Hoonah
1995 dollars
Population
Fiscal year
8,000
6,000
4,000
2,000
0
1,000
800
600
400
200
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Population
Revenue per capita
Expenditure per capita

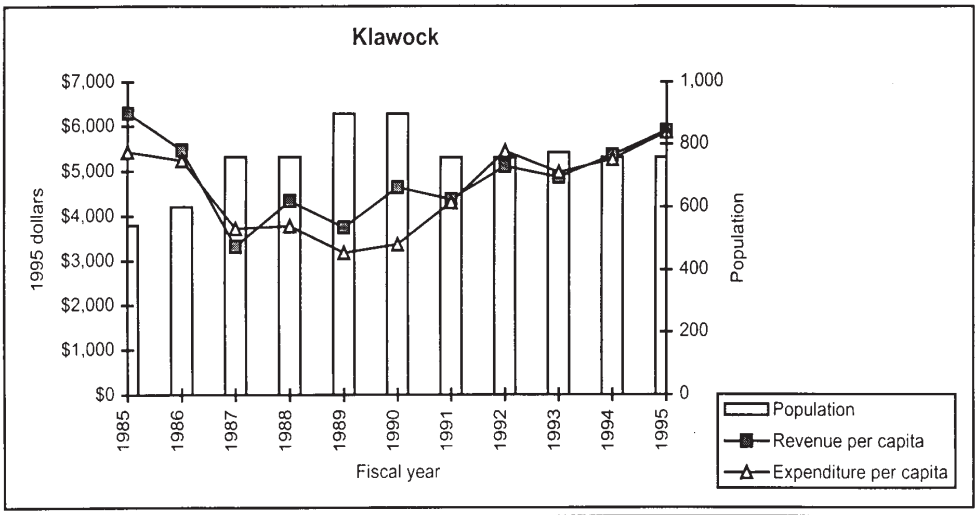

Hydaburg
1995 dollars
Population
Fiscal year
8,000
6,000
4,000
2,000
0
500
400
300
200
100
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Population
Revenue per capita
Expenditure per capita

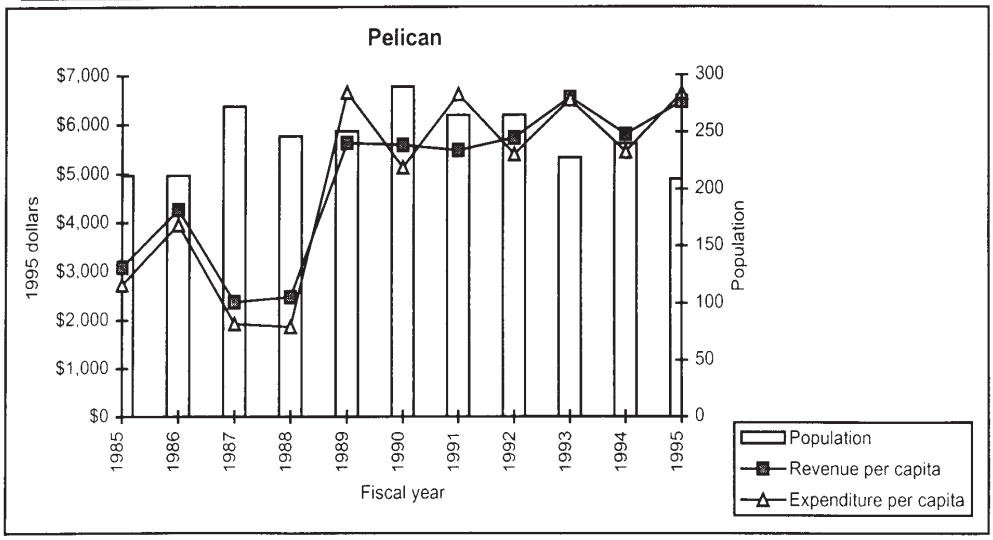

City and Borough of Juneau
1995 dollars
Population
Fiscal year
5,000
4,000
3,000
2,000
1,000
0
30,000
25,000
20,000
15,000
10,000
5,000
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Population
Revenue per capita
Expenditure per capita

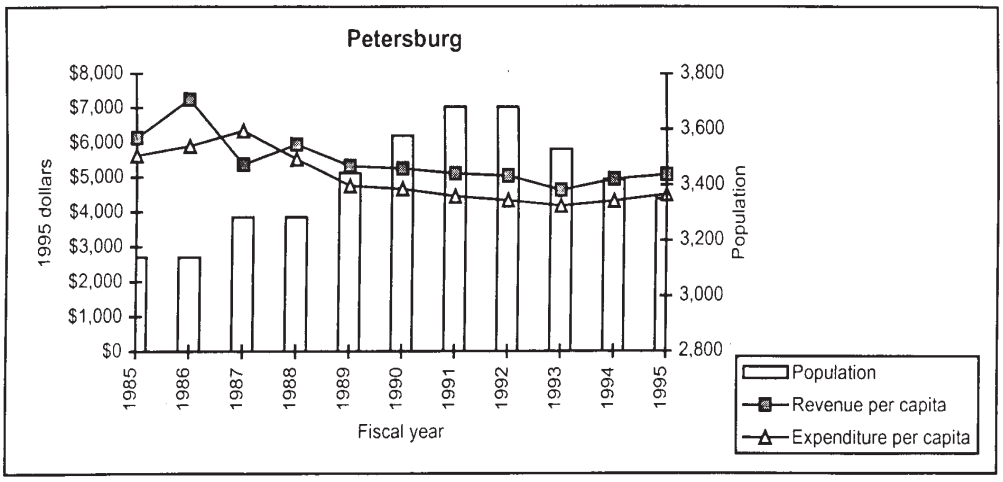

Kake
1995 dollars
Population
Fiscal year
8,000
6,000
4,000
2,000
0
800
600
400
200
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Population
Revenue per capita
Expenditure per capita

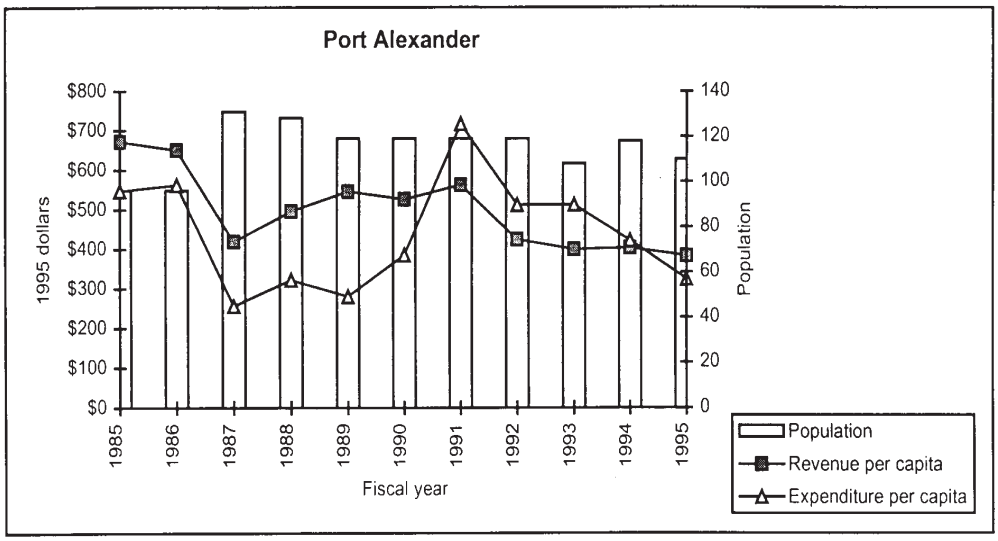

Kasaan
1995 dollars
Population
Fiscal year
5,000
4,000
3,000
2,000
1,000
0
100
80
60
40
20
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Population
Revenue per capita
Expenditure per capita

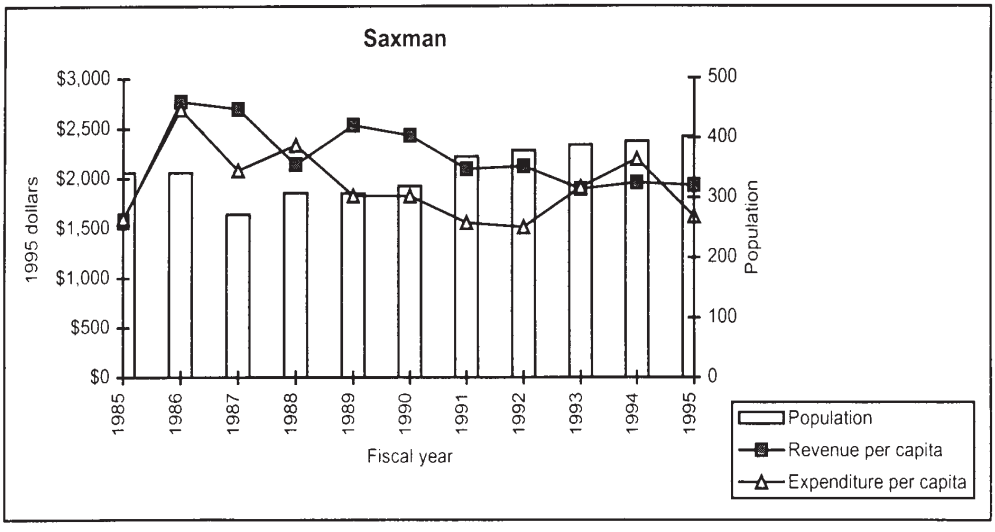

Ketchikan Gateway Borough
$3,000
$2,500
$2,000
$1,500
$1,000
$500
$0
1995 dollars
16,000
15,000
14,000
13,000
12,000
11,000
Population
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Fiscal year
Population
Revenue per capita
Expenditure per capita

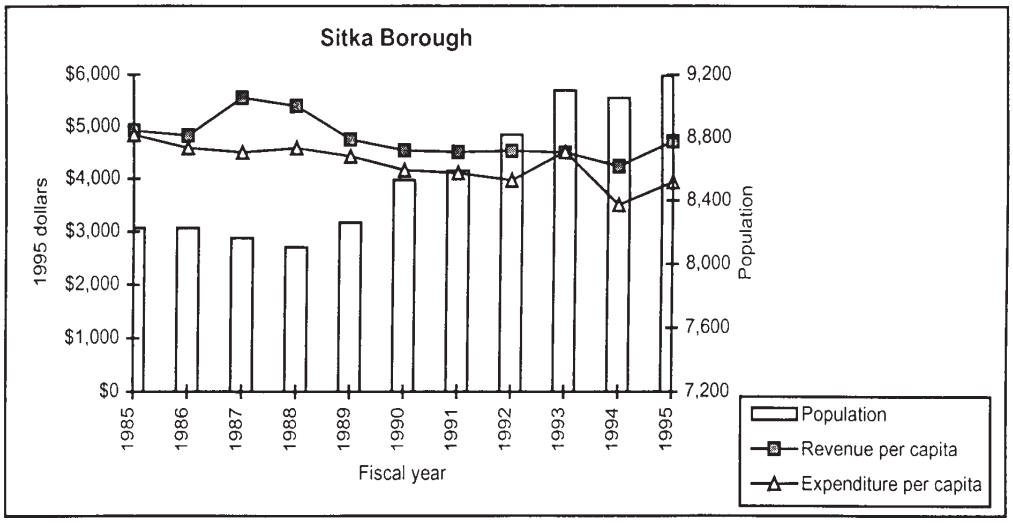

Klawock
$7,000
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$0
1995 dollars
1,000
800
600
400
200
0
Population
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Fiscal year
Population
Revenue per capita
Expenditure per capita

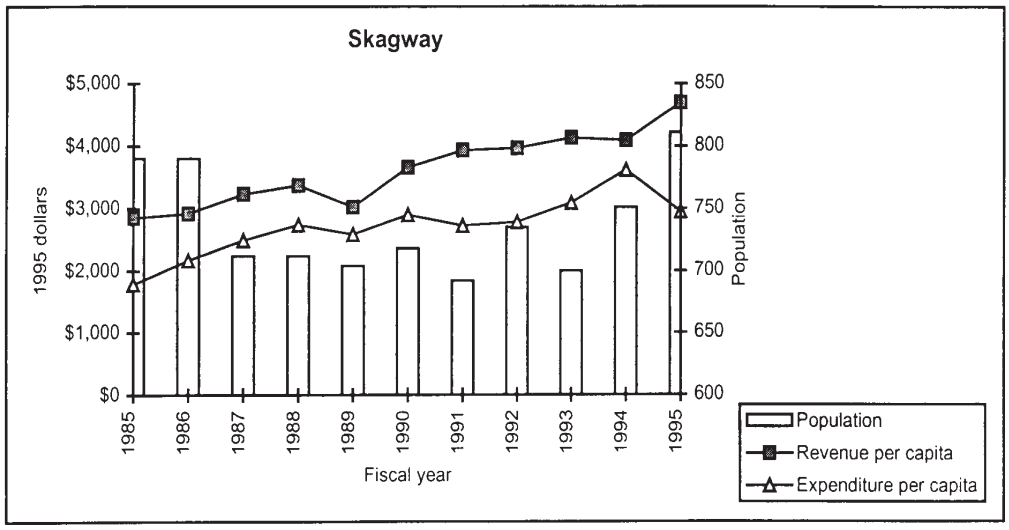

Pelican
$7,000
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$0
1995 dollars
300
250
200
150
100
50
0
Population
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Fiscal year
Population
Revenue per capita
Expenditure per capita

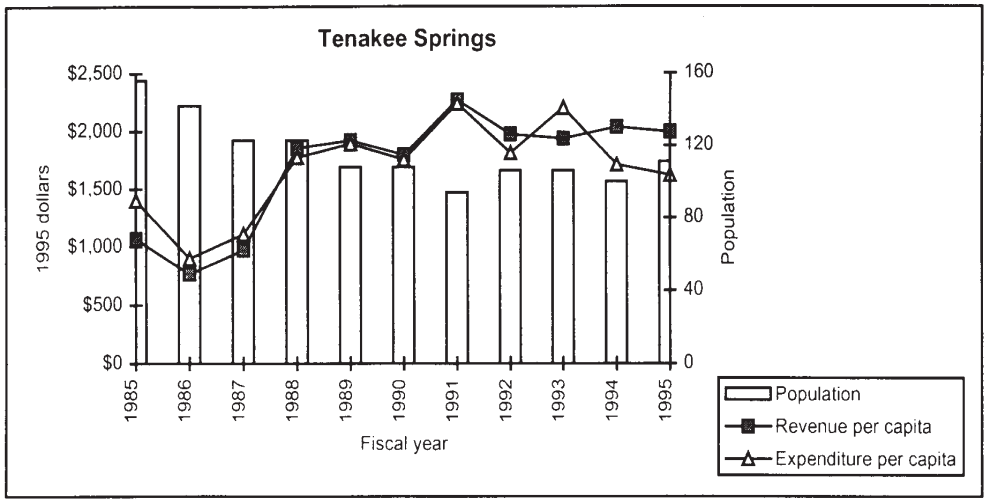

Petersburg
$8,000
$7,000
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$0
1995 dollars
3,800
3,600
3,400
3,200
3,000
2,800
Population
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Fiscal year
Population
Revenue per capita
Expenditure per capita

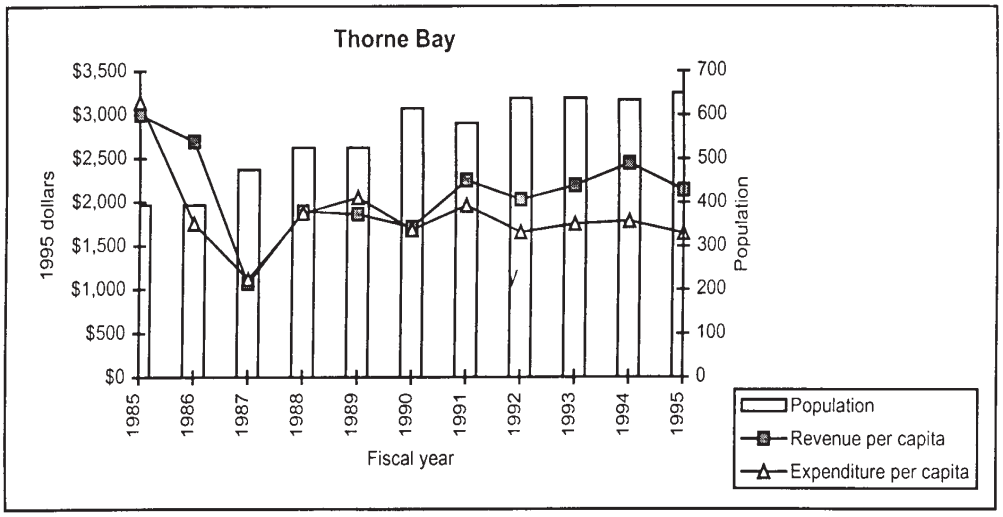

Port Alexander
$800
$700
$600
$500
$400
$300
$200
$100
$0
1995 dollars
140
120
100
80
60
40
20
0
Population
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Fiscal year
Population
Revenue per capita
Expenditure per capita

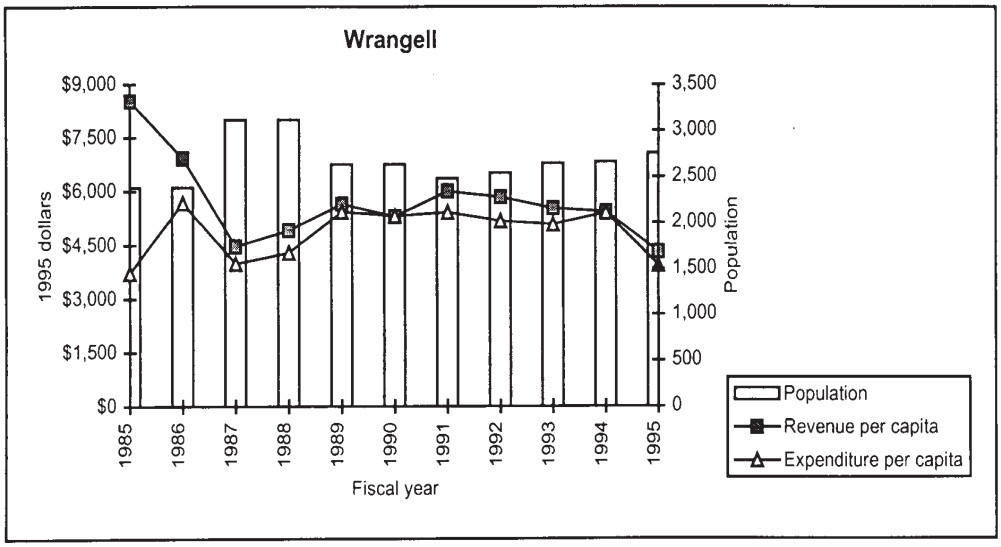

Saxman
$3,000
$2,500
$2,000
$1,500
$1,000
$500
$0
1995 dollars
500
400
300
200
100
0
Population
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Fiscal year
Population
Revenue per capita
Expenditure per capita

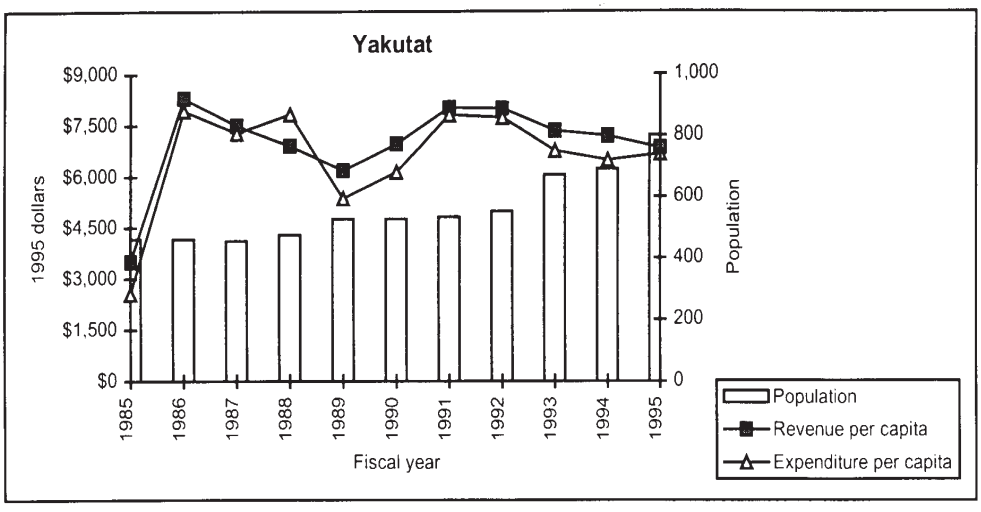

Sitka Borough
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$0
1995 dollars
9,200
8,800
8,400
8,000
7,600
7,200
Population
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Fiscal year
Population
Revenue per capita
Expenditure per capita


Skagway
$5,000
$4,000
$3,000
$2,000
$1,000
$0
1995 dollars
850
800
750
700
650
600
Population
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Fiscal year
Population
Revenue per capita
Expenditure per capita


Tenakee Springs
$2,500
$2,000
$1,500
$1,000
$500
$0
1995 dollars
160
120
80
40
0
Population
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Fiscal year
Population
Revenue per capita
Expenditure per capita


Thorne Bay
$3,500
$3,000
$2,500
$2,000
$1,500
$1,000
$500
$0
1995 dollars
700
600
500
400
300
200
100
0
Population
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Fiscal year
Population
Revenue per capita
Expenditure per capita


Wrangell
$9,000
$7,500
$6,000
$4,500
$3,000
$1,500
$0
1995 dollars
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Population
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Fiscal year
Population
Revenue per capita
Expenditure per capita


Yakutat
$9,000
$7,500
$6,000
$4,500
$3,000
$1,500
$0
1995 dollars
1,000
800
600
400
200
0
Population
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
Fiscal year
Population
Revenue per capita
Expenditure per capita

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

Allen, Stewart D.; Robertson, Guy; Schaefers, Julie. 1998. Economies in transition: an assessment of trends relevant to management of the Tongass National Forest. Gen. Tech. Rep. PNW-GTR-417. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 101 p. (Shaw, Charles G., III, tech. coord.; Conservation and resource assessments for the Tongass land management plan revision).

This assessment focuses on the regional and community economies of southeast Alaska. A mixed economy composed of subsistence harvest and cash income characterizes the economies of most of the region's rural communities. Although the share of natural resource-based sectors relative to total employment has remained fairly consistent over the past 10 years, the mix of industries within that share is shifting, with substantial declines in the wood products sector and substantial increases in the recreation-tourism sector. Regional trends are reflected very differently across boroughs, and even more so across the many small communities of southeast Alaska; analysis at diverse scales was needed to accurately portray economic and social conditions and trends.

Keywords: Tongass National Forest, southeast Alaska, economic trends, employment, subsistence, communities.

Pacific Northwest Research Station
333 S.W. First Avenue
P.O. Box 3890
Portland, Oregon 97208-3890

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

do NOT detach label