# Status of the Tongass National Forest 2007

Alaska National Interest Lands Conservation Act
Section 706(b) Report to Congress
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## *Preface*

This report is prepared in accordance with Section 706(b) of the Alaska National Interest Lands Conservation Act (ANILCA), which directs the Secretary of Agriculture every 2 years to review and report to Congress on the status of the Tongass National Forest in Southeast Alaska. This report was prepared by Dr. Susan J. Alexander, Alaska Regional Economist.

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**Summary: Status of the Tongass National Forest, 2007**

The objective of this report is to characterize the status of Forest resources and resource-dependent industries since the enactment of the Alaska National Interest Lands Conservation Act (ANILCA; Public Law 96-487) in 1980. ANILCA designated over 5.4 million acres of wilderness in the Tongass National Forest in southeast Alaska. With other non-development Land Use Designations (LUDs) established in the 2008 Tongass Forest Plan Amendment, including Wilderness and LUD II, approximately 79 percent of the total acreage of the Tongass National Forest is designated "non-development" as of 2008.

- In the last 15 years, timber harvests and wood products employment have declined dramatically in southeast Alaska, in conjunction with closure of the major regional pulp and saw mills and termination of the long-term timber contracts by 1997. Evidence suggests that a substantial proportion of regional product is now being shipped to domestic markets. Local producers are exploring product differentiation and specialty marketing opportunities.

- Low ex-vessel prices and overcapitalization of the commercial fleet reduced profit margins in the Alaskan salmon industry in recent years. Fishing employment declined an estimated 12 percent from 1990 until the early 2000s, but gross earnings and number of permit holders both increased from 2002 through 2006. While several seafood processors have ceased operations in the region, salmon hatcheries have become the largest agricultural industry in Alaska. Nineteen hatcheries operated in southeast Alaska in 2007 to supplement wild fish stocks, providing "common property" fish for commercial fisheries and a growing sport-fishing/guide industry. Seafood processing wages have seen a steady increase from 2002 through 2005.

- The dramatic growth of tourism into the Tongass National Forest and southeast Alaska region has been supported largely by increases in cruise ship activity in the Inside Passage. Most visitors travel to the region for scenery and recreation, particularly salt-water fishing and nature viewing. "Southeast" is the most visited destination in Alaska, and despite lagging national trends in travel expenditures, stability and future growth in Alaska tourism is expected.

**Purpose**

This document fulfills the ninth, tenth, eleventh, and twelfth required biennial reports prepared to keep Congress informed about the status of the Tongass National Forest. The latest report was completed for 1999. In an effort to bring the reports up to date with the most recently available data, this report includes information through 2007, if available. A 2005 report was reviewed as required by statute; this report is the same, other than minor edits to make it more current. One of the most common remarks in the reviews of the 2005 report was that it was not up to date. Section 706(b) of the ANILCA, as amended, specifies the following reporting requirements:

1. the timber harvest levels in the Tongass National Forest since the enactment of this Act;

2. the impact of wilderness designation on the timber, fishing, and tourism industries in southeast Alaska;
3. measures instituted by the Forest Service to protect the fish and wildlife in the Tongass National Forest;
4. the status of the small business set aside program in the Tongass National Forest; and
5. the impact of timber management on subsistence resources, wildlife, and fisheries habitats.

This report fulfills the above obligations specified by ANILCA and addresses additional topics of concern that are relevant to both forest management, regional social, and economic issues. In recent years, the region of southeast Alaska has experienced considerable transition, as the proportions of total economic activity attributed to tourism and recreation have increased dramatically, while revenues from forestry have declined. Arguably, the designation of Wilderness Areas has divergent effects on various sectors of local and regional economies. For example, Wilderness Areas might influence growth in the tourism sector through provision of scenic opportunities. Limitations to development associated with Wilderness Areas also influence availability of commercially valuable timber or minerals. This report summarizes the best available information in order to understand the role of Wilderness Areas in the recent past and future of the Tongass National Forest and southeast Alaska region.

**Background Information**

The 2008 Final Environmental Impact Statement Record of Decision of the 2008 Tongass Land Management Plan Amendment (USDA 2008a) summarizes a comprehensive source of information compiled for the Tongass National Forest. The annual "Timber Supply and Demand" reports (required by 706(a) of ANILCA) also provide detailed information. Annual monitoring and evaluation reports for the Tongass National Forest, such as USDA 2007, provide valuable information about Tongass National Forest resources and management activities. The Alaska Department of Labor and Workforce Development (ADL&WD 2008) provides information on employment, wages, and workforce and business characteristics for Alaska.

Other sources that provide information helpful in assessing the timber, fishing, and tourism industries in Southeast Alaska include numerous publications by the USDA Forest Service Pacific Northwest Research Station. Allan et al. (1998) focused on the regional and community economies of Southeast Alaska. They found that while the share of natural resource-based sectors relative to total employment remained consistent from the late 1980s to the late 1990s, the wood products sector declined substantially, while the recreation-tourism sector increased considerably.

These trends expressed themselves very differently in various boroughs. Brooks and Haynes (1997) provided projections of Alaska timber products output, the derived demand for raw material, and timber harvest by owner. Papers presented at a workshop on Alaska value-added products were published in a 2000 report edited by Laufenberg and Brady. Donovan et al. (2003) found that wide-ranging opportunities exist for a variety of wood products that utilize character-marked and lower grades of lumber, and material from dead-standing trees. Robertson (2003) examined the economic base hypothesis, a theory that holds that changes in export-

derived employment and income (termed "basic" employment) are positively related to changes in other local employment and income serving the demand of residents and nearby firms (termed "nonbasic" employment). Robertson was testing the statistical validity of the use of what are commonly known as indirect employment coefficients, for local communities. Although he concluded that export-related activity did not cause changes in economic activity at the local level for an average community, he did find statistically significant differences among communities in their response to shocks in export-related activity (such as the closure of a sawmill). Mazza (2003) examined hunter demand for deer on Prince of Wales Island. She found that overall hunter demand for deer on the island has not changed significantly in 10 years, although demand has increased in five communities that experienced declines in household income between 1989 and 1999. Kruger (2005) summarized findings from studies of traditional ecological knowledge, subsistence use of natural resources, tourism, and social acceptability of alternative timber harvest practices. Most of the studies point to a need for further research. Crone (2005) pointed out that the contribution of the Tongass National Forest to the regional economy has become more complex and difficult to quantify.

Southeast Alaska's economic well-being is closely tied to resource-dependent industries, including fishing, forestry, mining, and tourism. Over the last decade, a year of job growth in the Southeast Alaska economy has often been followed by a year of job losses. A relatively good year for fishing and a good summer visitor season created small economic gains in the region in 2005 (Gilbertson 2006). The region has experienced 3 years of consecutive job growth from 2005 through 2007, and the projection for 2008 is for slow-to-moderate job growth (Shanks 2008).

Estimated sales of Southeast Alaska wood products in historic export markets, particularly Asia, are lower than they were in the 1980s and 1990s, but have stabilized in the past few years. Sales of manufactured products to domestic markets have comprised about 72 percent of all sales since 2000, on average. The wood products industry in Southeast Alaska has changed considerably in the past decade, shifting from large corporate manufacturers to family-owned sawmills and independent logging businesses. There could be a high demand for forest products in Asia in the near future, but Pacific Rim buyers may be unable to compete with domestic markets (Brackley et al. 2006a). Haynes et al. (2007) found that since 1994, the value of U.S. forest product exports has been in gradual decline, while the value of imports has steadily increased. This means that U.S. domestic markets have been competing well enough in global markets that not only have exports from the U.S decreased, but the U.S. is also importing more wood.

Hansen (2006) states that U.S. companies have historically jumped into the export market when the domestic market is down, and shifted back to the U.S. market when the domestic market improves. Until very recently, the U.S. domestic market has been attractive with high housing starts and strong prices in many forest product categories. Haynes et al. (2007) state that U.S. demand for forest products is varied and large, averaging 71.4 cubic feet per person per year. This per capita consumption of wood products in the U.S. has been relatively constant for 50 years. Total U.S. forest products consumption is projected to continue to rise as the population increases. U.S. imports of wood products are projected to rise at a somewhat faster rate than domestic wood supply. By 2010, Haynes et al. (2007) project that imports will constitute more than one-quarter of the total of all wood products consumed and exported in the U.S. (a measure

of U.S. production and consumption). Economic globalization throughout wood products manufacturing is contributing to a global realignment of growth in raw material demands. In addition to this realignment of where manufacturing takes place, sheer population growth will drive increases in wood products demand both in the U.S. and worldwide. Ince et al. (2007) state that countries such as China are emerging in the 21st century as growth leaders in wood raw material and industrial wood product demand.

Brackley and Haynes (2008) cite a study by Stevens and Brooks (2003) suggesting that southeast Alaska producers are at a competitive disadvantage relative to producers in Canada and the rest of the U.S. However, as they state, the Stevens and Brooks (2003) study "focused on Alaska competing in integrated commodity markets, which are dominated by dimension lumber used in residential construction (i.e., 2 by 4, 2 by 6, 2 by 8, etc). This view, in light of the capacity studies (Kilborn et al. 2004; Brackley et al. 2006b), is now outdated since it does not recognize the extent to which southeast Alaska producers have transitioned to compete in the high quality domestic markets since 2000."

Brackley and Haynes (2008) did find that from 1975 to 2005, logging, manufacturing, and transportation costs averaged roughly $149 per thousand board feet higher in southeast Alaska than in the Pacific Northwest; limiting the ability of Alaskan producers to compete in the lower value commodity markets. However, current production levels and shipments in southeast Alaska "demonstrate how the industry has transitioned to operate in current markets…where they focus on higher value markets." Past studies have compared southeast Alaska to other western regions, often to the disadvantage of southeast Alaska industry. New data is showing that Alaska mills are moving into markets in which they have a competitive advantage, despite differences in mill type. All of these studies and sources of information increase our understanding of the communities, economies, and the resources of Southeast Alaska.

## Wilderness and Industries of the Tongass National Forest and Southeast Alaska

The following sections address the progress of Tongass National Forest-related industries—timber, fisheries, and tourism—since the passage of ANILCA in 1980. Each sector's description is followed by discussion of how Wilderness Areas created by the Act may have influenced (and may potentially influence) economic trends in southeast Alaska.

### *Timber*

As outlined in Timber Supply and Demand reports (U.S. Forest Service 2010a and 2010b), with the closure of the region's two pulp mills in the 1990s and numerous closures of sawmill facilities, wood processing capacity in Southeast Alaska declined considerably from its peak. Demand for Southeast Alaska wood products in historic export markets, particularly Asia, has fallen. However, softwood lumber foreign exports from Alaska increased from 2003 to 2005, and although the volume shipped dropped slightly in 2006, the value doubled from 2005 prices. Volume of foreign exports of Sitka spruce lumber, the only species reported in Anchorage customs district data, dropped again in 2007, but the average price in 2007 was at a record high. Shipments of finished products milled in Southeast Alaska to domestic markets are becoming more significant, and constitute the majority of the market. On the supply side, the cost of

preparing stumpage for sale and delivering it to mills has increased due to increased costs (such as fuel), changing inventory, decreased size of sales, legal and procedural challenges to Federal timber sales, and more constraints on harvest activity in the interest of environmental protection. The uncertainty surrounding Tongass National Forest sale quantities has substantially increased the risk faced by potential purchasers and investors in local processing capacity.

The supply of timber from the Tongass National Forest is determined by two main factors. The first factor is the volume of timber offered for sale by the Forest Service. This is estimated annually, using procedures that were developed by the Alaska Region of the Forest Service with the aim of adjusting volume offered to meet projected demand (Morse 2000). Long-term demand estimates were re-calculated by the U.S. Forest Service Pacific Northwest Research Station in 2006 (Brackley et al. 2006a; Brackley and Haynes 2008). The basic procedure of calculating needed annual offerings as outlined by Morse (2000) did not change. The second factor affecting timber supply is the cost of harvesting and delivering wood to its respective intermediate markets: mills in the case of locally processed material, and ports in the case of log exports.

Tongass National Forest timber offered, sold (or "released" on long-term contract) and harvested on an annual basis since 1981 is shown in Fig. 1. Sale amounts can exceed offer amounts in a given year; this occurs when an offer is finalized near the end of a fiscal year, but not actually sold (or released) until the following fiscal year.

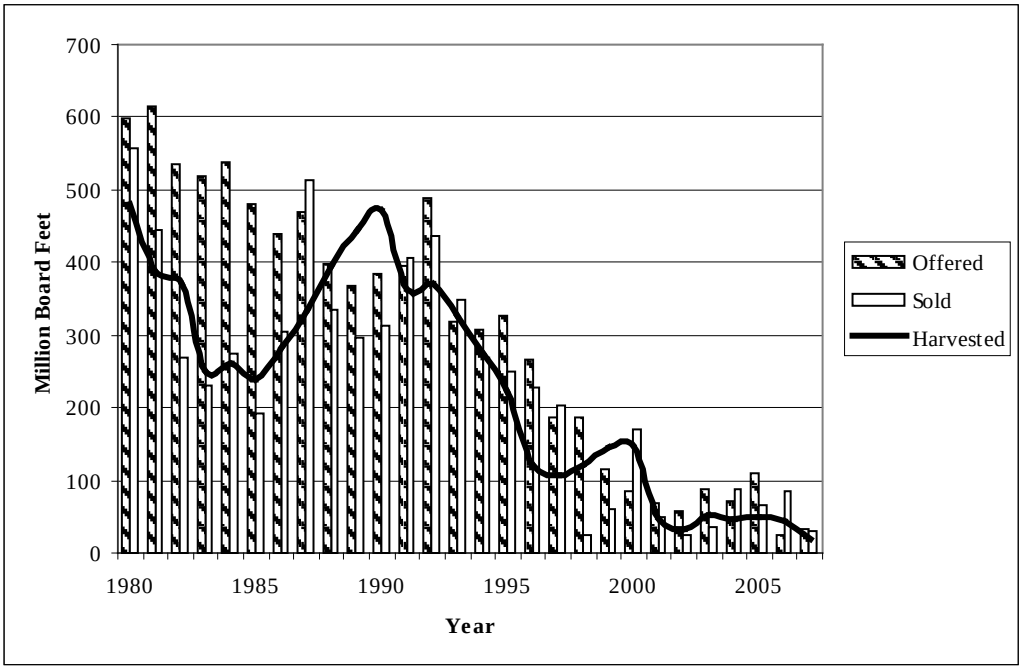


**Figure 1**. Timber offered, sold, and harvested from the Tongass National Forest, 1980-2007 (fiscal years, million board feet (MMBF)).

After a sale has been awarded, the bidder usually has around 3 to 5 years in which to harvest the sale volume. The sum total of awarded volume yet to be harvested is termed "volume under contract," and this constitutes a pool of timber from which contract holders may draw, depending

on market conditions and their business plans. An objective of the Tongass National Forest timber sale program is the maintenance of a timber flow so that the volume under contract can be replenished in an orderly and continuous fashion. Starting in 1999, Congress appropriated additional timber "pipeline" funds so that the Tongass National Forest can prepare additional timber for sale, in an effort to supply enough volume in a timely manner so the timber industry in Southeast Alaska can reach, and maintain, a 3-year supply of timber volume under contract.

From 1987 until 1992, markets improved, and Tongass National Forest timber offerings were modified to better respond to market conditions, although a time lag continued to exist between sales and harvests. Since 1992, a decline in profitability has continued to the present, driving down offers, sales and harvests. In 2002, on the Tongass National Forest, an injunction was placed on permitting timber harvest and road building in inventoried roadless areas, which included the signing of decision documents for timber sales in inventoried roadless areas (Sierra Club v. Rey, J00-0009CV (JKS)). Although the injunction ended in spring 2003, the effects lasted throughout the rest of the calendar year. Volume under contract in 2003 dropped to 193 MMBF from 230 MMBF of available volume in 2002. In 2002, an additional 65 MMBF was under injunction and so unavailable for harvest. Volume under contract continued to decline in 2004 to 78 MMBF, but rose to 83 MMBF in 2005, 111 MMBF in 2006, and 114 MMBF in 2007. The decline in volume under contract in 2004 and 2005 from levels in previous years was largely due to cancelled timber sales.

In 2004, Section 339 of the Department of the Interior and Related Agencies Appropriations Act for fiscal year (FY) 2004, Public Law No. 108-108, provided that the Secretary of Agriculture may cancel, with the consent of the timber purchaser, a number of timber sale contracts on the Tongass National Forest awarded between October 1, 1995, and January 1, 2002. A given sale could be cancelled provided that the Secretary determined, at the Secretary's sole discretion, that the sale would result in a financial loss to the purchaser, and the costs to the government of seeking a legal remedy against the purchaser would likely exceed the cost of terminating the contract. By the end of FY 2005, a total of 17 sales on the Tongass National Forest were cancelled, a total volume of approximately 122 MMBF. It is the intent of the Tongass National Forest to reconfigure cancelled timber sales and re-offer that portion of the volume that is economically viable.

To evaluate the status of the timber flow, Morse (2000) established that it is important to assess the ratio of contract volume to harvest. This ratio can indicate how many years of supply (volume under contract) mills have compared to what they are sawing (i.e., harvest). During the 1981-1995 time period, historical ratios of volume under contract to harvest for the independent sale program (in other words, not including volume in the long-term contracts associated with the pulp mills in Ketchikan and Sitka) ranged from 1.0 to 3.4 with an average of 1.8 (Morse 2000). The ratio of contract volume to harvest peaked in 2002 at 6.8, but dropped closer to the 3-year supply objective in 2003. In 2004 and 2005 the ratio dropped to 1.7, and increased to 2.6 in 2006. In 2007, the ratio rose to 6.1, reflecting poor wood market conditions in 2007. If manufacturers were to harvest at 2007 rates, they would have 6 years worth of timber under contract, but harvest levels in 2007 are low because domestic wood products markets were weak.

Since enactment of ANILCA in 1980, approximately 5.7 billion board feet of timber have been harvested from the Tongass National Forest. As a rule, well-stocked stands of young timber have regenerated on clearcut sites with a minimum of management. Assuming the maximum allowable level of timber harvest under the 1997 Forest Plan and the 2008 Forest Plan Amendment of 267 MMBF occurred, there would be an annual harvest of about 8,250 acres. A sum of 24,707 acres have been harvested in the Tongass National Forest from 1998 to 2007, since implementation of the 1997 revised forest plan and the 2008 plan amendment. This is about 2,470 acres annually, less than one-third the maximum rate allowed in the 1997 Forest Plan or the 2008 Forest Plan Amendment. About 78 percent of the acres harvested since 1998 have been clear-cut harvest prescriptions (U.S. Forest Service 2008c). The majority of harvest has been in the Central Prince of Wales, Wrangell Narrows, and the Zimovia Strait areas of the Forest. The acres harvested in the last 7 years equate to less than one percent of the Tongass National Forest in these areas.

From the standpoint of the region's communities, timber sector employment is one of the most relevant indicators of the problems faced by the industry (Figure 2). Total sector employment fell from a high of 3,543 average annual employees in Southeast Alaska in the wood products industry (logging, pulp and paper, and sawmilling) in 1990 to 402 in 2007. Tongass National Forest-related employment in logging and sawmilling (there is essentially no employment in pulp and paper any longer in Southeast Alaska) has declined from 409 in 2001 to 114 in 2007. Through 2002, we could assume that virtually all sawmill employment came from harvests from National Forest lands. However, data from Kilborn et al. (2004), Brackley et al. (2006 b), Parrent 2006 and 2007, and Kilborn 2008 show that the Tongass National Forest contributed 73 percent of wood sawn in Southeast Alaska in 2002, 59 percent in 2003, 64 percent in 2004, 65 percent in 2005, 62 percent in 2006, and 53 percent in 2007. Alaska's lands have become an important source of logs processed by local sawmills in Southeast.

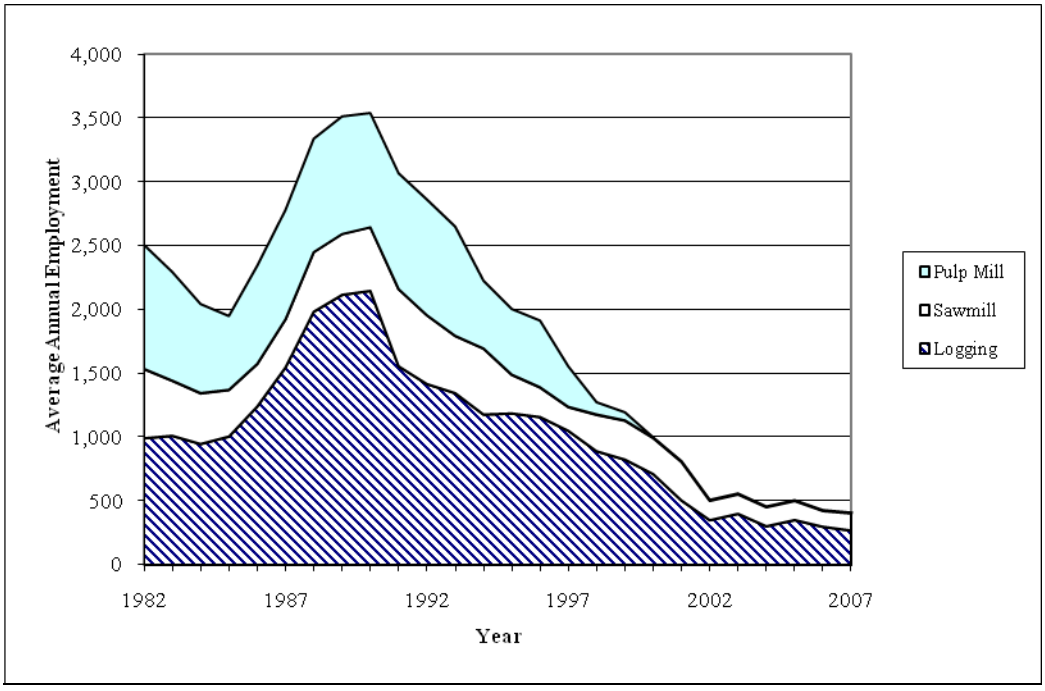


**Figure 2**. Southeast Alaska wood products employment; 1982-2007.

*Role of ANILCA in Timber Trends*

ANILCA designated 5.4 million acres of wilderness in the Tongass National Forest and was amended in 1990 by the Tongass Timber Reform Act (TTRA; Public Law 101-626), which added 296,080 acres of Wilderness and another 727,765 acres of Land Use Designation (LUD) II lands, which are managed in a roadless state to maintain "wildland characteristics." LUD II lands are less restrictive on access and activities than wilderness, although Tongass National Forest Wilderness Areas are unique because of special provisions allowing subsistence and recreation safety.

Wilderness, Monument, LUD II, and other "Natural Setting" LUDs comprise approximately 13.3 million acres, over 79 percent of the total acreage of the Tongass National Forest. These lands are either explicitly restricted from resource development or managed as roadless, and many areas are not suitable for timber-related development (i.e. rock and ice, scrub forest). Development LUD lands comprise 3.4 million acres. While wilderness designation removed some forested lands with commercial type timber stands from timber development, it is unlikely that ANILCA-mandated actions have contributed in a significant way to the decline in the timber sector in southeast Alaska.

Increased costs and reductions in prices have been the primary causes of decline in the timber industry in the region. The structure of costs and prices can make it difficult for the Forest Service to design timber sales that will appraise positive, as required by law. In the past, most Tongass National Forest manufactured products that were exported went to Japan, but this has changed markedly in the last decade. Asian exports have sharply reduced, and more products are being shipped south to the continental U.S. for remanufacture. Tongass National Forest round log exports (primarily Alaska yellow-cedar) are still dominated by Japan, although the value of this trade has declined by more than 50 percent since 1998.

Operators in southeast Alaska face higher costs than their competitors in Canada and the continental U.S., due to the remoteness of the area, severity of the terrain, and the lack of road connection with the mainland. Tongass National Forest timber does not comprise a significant portion of the markets it supplies, so exporters are "price takers" and must constantly adjust to price fluctuations. Market prices for all timber species have declined significantly over the last several years. These conditions have reduced the profitability of the region's remaining sawmills, which operated at close to or less than 10 percent of the total available capacity for the past several years. This is due in part to declines in market prices and other demand characteristics and partly to difficulty in buying timber sales that are designed with today's markets and manufacturing capacity in mind. The Tongass National Forest, like other National Forests, designs timber sales years in advance of actual sales, and must meet many environmental constraints. Although wood from the Alaska Department of Natural Resources (DNR) is processed locally unless there is no local market, Native Corporation, Mental Health Trust, and University timber, can be, and almost always is, exported in raw log form.

Some stakeholders have argued that uncertainty surrounding Federal land use policy has negatively affected investment in the Southeast Alaska wood products industry (see USDA 2003,

p.3-255). Mason et al. (2004) found that the greatest influences on the probability of a timber sale being successfully sold are tied to end markets, which are inherently difficult to predict, rather than factors directly tied to the Forest Service. ANILCA, as amended by TTRA, removed 1.7 million acres of productive forest lands from development consideration, yet the Tongass National Forest has roughly twice this amount of timber-producing lands outside wilderness. Low prices, high operating costs, and downstream market uncertainty have played a large role in driving the recent downward trends in the region's timber industry.

***Commercial and Sport Fisheries***

National Forests in Alaska provide habitat for an average (1998-2007) annual commercial harvest of 62.4 million fish, with an average (1998-2007) dockside value of $84.9 million (values adjusted to 2007 dollars). Fish harvest reporting areas adjacent to National Forest system lands were used to calculate fish production from the Alaska Region of the Forest Service, taking into account proportion of the land base in an area where salmon spawn and rear, and hatchery production. Three of the eleven fishing areas in Alaska are adjacent to National Forest System lands. Of the total number of fish harvested from these areas, southeast, Prince William Sound, and Cook Inlet, 56 percent are estimated to be spawned and/or reared within Forest Service land management boundaries. When 11 fishing areas are taken into account, salmon spawned and/or reared within Forest Service land management boundaries account for 53 percent of the catch (Don Martin, Alaska Region Fish & Aquatic Program Leader, pers. comm., Oct. 2008).

Declines in Pacific salmon wholesale prices in the early 2000s led to smaller profit margins in the commercial industry, as an influx of farm-raised Atlantic salmon (aquaculture) into the marketplace lowered salmon prices. The overcapitalization of fisheries—where investment in boats and equipment often exceeds revenues generated by harvesting fish at current prices—was also problematic.

The number of people holding monitored fishing permits declined by about 39 percent from 1990 to 2003. In December 2002, Wards Cove Packing Company declared its exit from the Alaskan commercial salmon industry. While two major facilities near Ketchikan have been adopted by other companies, loss of seafood processing jobs was significant. The prices fishermen receive fell from record highs in 1998 to record lows in 2002. As fish prices collapsed, the value of fishermen's investments in vessels and gear also fell. This loss of equity, the equivalent of retirement accounts for self-employed fishermen, has affected Alaska's economy for years (Gilbertsen 2003; ADL&WD 2008). However, since 2002, fishing and seafood processing wages have steadily increased. In 2004, good catches kept seafood processing busy, and processing employment contributed to a 7.4 percent over-the-year increase of 100 jobs in this industry (Gilbertson 2004). Almost 4 billion pounds of fish were commercially harvested in 2004, generating close to $1 billion in gross earnings, more than 6,700 direct jobs, and significantly contributed to the core economy for much of coastal Alaska (Patton and Robinson 2006). Gross earnings and number of permit holders both increased from 2002 through 2006. Seafood processing wages have increased from 2002 through 2005 (ADL&WD 2008). In 2007, 22 percent of commercial salmon harvest value was attributed to hatchery production, and sport anglers statewide harvested an estimated 345,564 hatchery-produced fish (White 2008).

Fortunately, Pacific salmon stocks are by all accounts healthy and reliable in southeast Alaska. These salmon stocks are managed expertly and have been maintained over many decades despite periods of high demand and commercial harvest. Hatcheries provide "insurance" populations to help buffer against the interannual variation in fish returns that are both unavoidable and difficult to predict. Fishing vessels and canneries provide important seasonal employment for several communities, although many employed in Alaskan fisheries are not year-round state residents.

Most sport fishing in Southeast Alaska (about 80 percent in 2001) takes place in salt water. The remaining 20 percent occurs in fresh water. The total time spent by sports anglers in marine waters more than doubled from 1980 to 2001, from about 200,000 angler-days in 1980 to about 409,000 in 2001. Fresh water angling showed the same trend, increasing from about 50,000 angler-days in 1980 to about 98,000 in 2001. Most of the increases in sport fishing are due to increasing numbers of nonresident anglers fishing in Southeast Alaska. The number of nonresident anglers has steadily increased since 1990, to about 80,000 in 2001, while resident sport-fisher numbers declined since 1990 to a level of about 28,000 participants in 2001 (Holmes et al. 2003). However, by 2004, resident participation in sport fishing in southeast Alaska rose to 31,838, while nonresident participation rose to 129,796 (Jennings et al. 2007). The number of sport fishing licenses sold for both residents and nonresidents fell somewhat from 2005 to 2007, but sales revenues increased (ADF&G 2008a). Wilderness, LUD II, and other "natural setting" LUDs include many recreation places important for fishing, and development LUDs include recreation places important for fishing as well as access.

*Role of ANILCA in Fisheries Trends*

The designation of Wilderness acreage in the Tongass National Forest has created no measurable impact on Pacific salmon markets. Both Wilderness areas and non-Wilderness are protective of fish habitat and the forest ecosystem processes that provide support for stable salmon populations from year to year. Variation in the oceanic environment and the composition of mixed-stock commercial harvests makes it extremely difficult to quantify the influence of land management practices on salmon populations. Isolating the specific effects of wilderness designation on fish ecology is not possible, particularly for such large populations spread over a vast region. Systematic analysis of land management effects at smaller spatial scales, such as watersheds or larger drainages, could be more useful.

In Wilderness Areas, activities that can degrade aquatic habitat are mostly prohibited. Human-related disturbances to streams and riparian corridors are thought to be minimal in wilderness areas and similarly low in LUD II and other non-development LUD areas. Over the long term, the protection of terrestrial and aquatic habitats in Wilderness Areas will contribute to maintenance of salmon populations, with general benefits to the fishing industry.

*Hatcheries*

The salmon enhancement program managed by the Alaska Department of Fish and Game (ADF&G) oversees all state and private rehabilitation and fish hatchery projects in Alaska. Detailed information on hatcheries is available at the ADF&G Web site, at

http://www.cf.adfg.state.ak.us/ (2008b). Nineteen hatcheries operate in southeast Alaska; most of them are located in the Juneau, Sitka, and Ketchikan areas. Pink and chum salmon are the major species produced. In general, the enhancement program has grown steadily since 1975 and has stabilized in recent years. Most hatcheries are private, non-profit corporations that produce salmonid species targeted for commercial fisheries. The hatcheries are permitted a cost recovery harvest of adult fish to recoup operating expenses, and the remaining stock become part of the common property (public) fishery.

Of all the fish caught statewide in 2007 by commercial salmon harvesters, 19 percent were enhancement program produced fish. The estimated ex-vessel value of hatchery program fish was over $64 million. Sport fishermen caught an estimated 345,564 hatchery-produced fish in 2007 (White 2008). Hatcheries are considered to be the largest agricultural industry in Alaska, providing hundreds of seasonal and full-time jobs. Hatcheries help to boost fish returns and may buffer against the cumulative negative effects of over-harvesting and the potential effects of resource development activities on watersheds crucial for salmonid production. The 1997 Tongass Forest Plan and the 2008 Tongass Forest Plan Amendment were designed to minimize the potential effects of resource-related activities on the Tongass. The degree to which hatchery stocks have replaced natural stocks depleted by human activities, both direct (harvesting) and indirect (habitat degradation), is unknown.

***Tourism***

Growth in the tourism industry has been dramatic since passage of ANILCA. Trends in total visitor arrivals into Alaska have steadily increased since 1993. From the summer of 2006 through spring of 2007, there were an estimated 1,881,000 visitors to Alaska, or three visitors for every year-round Alaska state resident. Visitor arrivals to Alaska were the reverse of declining national travel trends in 2001 and 2002; increases in Alaska visitation were due in large part to increasing cruise ship arrivals. In 2007, cruise ships brought 1,029,800 visitors to Alaska, touring through the southeast region encompassed by the Tongass National Forest and often northward to Prince William Sound. Eighty-two percent of visitors in 2007 classified their trip purpose as “vacation and pleasure”—these figures have steadily increased since 1993, while most other trip purposes have remained relatively stable (Northern Economics 2003; McDowell 2007a). Cruise ship visitation to southeast Alaska has began to flatten out as of 2005, due to ship size, scheduling conflicts, limited harbor infrastructure, and market demand (Juneau Convention and Visitors Bureau 2006). However, cruise passenger volume statewide increased by 7.3 percent from 2006 to 2007 (McDowell 2007b).

The proportion of all Alaska visitors arriving in the southeast Alaska region, including the Tongass National Forest, increased from 60 percent to 84 percent between 1993 and 2001 (Northern Economics 2002). Based on this data, southeast remained the most visited destination in Alaska. The current structure of visitation to Alaska is similar to 2001, so this trend is probably still true. The apparent popularity of Southeast Alaska is due in large part to growth in cruise ship arrivals and the fact that cruises invariably pass through the Inside Passage both to and from other Alaskan destinations. Geographic positioning aside, the Tongass National Forest and surrounding environs are highly rated by visitors for scenic beauty, wildlife viewing, sport fishing and other activities.

Details on recreation and tourism on the Tongass National Forest are available starting on page 3-365 of the Tongass Land and Resource Management Plan Amendment (USDA 2008b).

*Role of ANILCA in Tourism Trends*

Protection afforded by Wilderness lands in conjunction with other LUD II and non-development LUDs maintains much of the Tongass National Forest in the scenic condition that attracts many visitors to the region. In addition, lands within development LUDs have incorporated specific protections for scenery in areas important for recreation users. These areas provide unparalleled opportunities for wildlife viewing, photography, light recreation, and seclusion. Wilderness accounts for 46 percent of the total acreage of the Tongass National Forest identified as important tourism and recreation areas, although many tourism-related developments are limited or prohibited from wilderness lands (USDA 2003; USDA 2008b). Lodges, docking facilities, and roads are not allowed, which may limit access and utility for visitors. Yet, most of the recent growth in tourism has been due to cruise ship passengers who are mostly attracted to scenery, not direct recreational use of wilderness lands. From 1999 to 2007, approximately 25 percent of all special-use permits issued in the northern half of the Tongass National Forest were for areas within ANILCA wilderness (USDA Forest Service 2002; special use permit data analysis). In 1993, the Inside Passage was the top-ranked attraction for summer visitors (McDowell Group 1993). Misty Fjords and Admiralty Island National Monument Wilderness lands, comprising most of the total Tongass National Forest wilderness acreage, are both viewable from the Inside Passage sailing route. During the tourist season, there are daily sightseeing trips from Juneau to the Tracy Arm-Fords Terror Wilderness. Pack Creek on Admiralty Island is a popular brown bear viewing destination. Wilderness lands also include vast remote and scenic areas viewable by aircraft.

**Management Efforts to Protect Fish, Wildlife, and Subsistence Resources**

The Tongass National Forest Plan (USDA 1997; USDA 2008d) includes a comprehensive conservation strategy to provide the necessary landscape and habitat characteristics for biological communities and target species. Planners used the best available scientific information to develop this strategy, which revolved around habitat protection through a reserve system (mostly old-growth forest) and other considerations for specific species found in the Tongass National Forest. Maintenance of large continuous tracts of old-growth forest sought to maintain the abundance and diversity of habitat types in the Tongass National Forest necessary to sustain viable populations of fish and wildlife for continued subsistence, sport, and commercial use.

Reserves include ANILCA wilderness areas, LUD II lands, and other non-development LUDs. Habitat conservation area lands include over 80 percent of the commercial size old-growth on the Tongass National Forest. Each watershed in the Tongass National Forest has at least one habitat conservation area, and larger habitat conservation areas are distributed evenly across the Forest.

On development lands, the 1997 Forest Plan (USDA 1997) and the 2008 Plan Amendment (USDA 2008d) strengthened fish and wildlife habitat protection measures, reaffirming the stream habitat buffers provided in the Tongass Timber Reform Act of 1990. Minimum 1000-foot beach and estuary buffer zones were established throughout the Tongass National Forest. An important

benefit of the beach buffer zone establishment is the protection of over-wintering habitat for deer during hard winters. Assessments and monitoring related to the 1997 Forest Plan found that further efforts were required to address past problems, particularly related to fish passage through pre-1997 road culverts. Efforts to address the fish passage concerns are being implemented across the Forest. Forest-wide and project-level measures have implemented stream buffer requirements, providing a moderate to high level of protection for intermittent, headwater, and anadromous fish streams.

*Evaluating the "conservation strategy" of the 1997 Forest Plan and the 2008 Forest Plan Amendment*

While fish and wildlife measures in the 1997 Forest Plan have been implemented for a decade, overall evaluation is difficult for a number of reasons. The conservation strategy was designed specifically with the assumption that the Allowable Sale Quantity (ASQ) of Tongass National Forest timber would be 267 MMBF annually. As this report shows, Tongass National Forest harvests have never exceeded 200 MMBF since 1997 and have steadily declined to a fraction of this amount. As a result, it is difficult to isolate the singular effects of the delineated reserve system when the ASQ has not been realized since 1997. Second, the availability of suitable habitat is the main proxy for predicting and understanding species population trends. While this is not an unreasonable theory, it has not been widely demonstrated on the Tongass National Forest. Lastly, 10 years is too short a period to evaluate the response of biological populations to land management practices at this large a scale.

Overall, monitoring has indicated no unexpected downward trends in species populations since implementation of the 1997 Forest Plan. The most current issue for managers is Sitka black-tailed deer. As harvested stands regenerated, wildlife managers expected a reduction in suitable winter habitat for deer to result in decreased population size. A series of mild winters over the last decade, combined with Forest Service efforts to thin dense thickets of regenerated trees, may reduce the possibility that deer populations will decline significantly.

Competition for available deer between urban hunters from Ketchikan and Federally-qualified rural subsistence hunters has been of high interest on Prince of Wales Island in the southern Tongass National Forest. Subsistence hunters have testified that they have had difficulty meeting their need for deer. Prince of Wales Island has received relatively high levels of timber harvest in the past, has a developed road system, and is easily reached by ferry on a daily basis from Ketchikan. The Forest Service has supported the Southeast Regional Advisory Council's effort to engage stakeholders in development of a deer management plan for Prince of Wales and adjacent islands.

*Subsistence and ANILCA wilderness*

Title VIII of ANILCA establishes the priority of subsistence rights with regard to resource consumption and land use practices in Alaska. Wilderness areas in the Tongass National Forest can allow very limited access-related developments. Based on information compiled from 19 rural communities in southeast Alaska (ADF&G 1998), wilderness lands are not preferentially used for subsistence throughout the Forest, mainly because most wilderness lands are not close

to subsistence communities. Most subsistence activities occur on "development" lands, where access is provided by roads, off-road vehicle trails, boat moorings, and other infrastructure. Based on the ADF&G analysis, most wilderness areas are not part of the subsistence use areas deemed "most sensitive to disturbance" by users. By definition, these areas " most sensitive to disturbance" are not only "sensitive" but also frequently and reliably used for subsistence harvests. While not heavily used, wilderness lands provide source populations of important subsistence wildlife species, and, as mentioned earlier, include several important salmon-producing watersheds in the Tongass National Forest.

**Status of the Small Business Set-Aside Program in the Tongass National Forest**

Prior to ANILCA, the Forest Service and the Small Business Administration carried on a small business "set-aside" program to provide Tongass National Forest timber to small businesses in the region. These small firms (with less than 500 employees) were given a preferential right to bid on short-term offerings (which require harvest within 10 years); the original goal was to offer 80-100 MMBF annually to small business. Further measures in TTRA (Public Law 101-626, Sec. 105) and inter-agency agreements eventually raised the goal for "set-aside" to half of the total timber offered per year. Currently, sales to small businesses dramatically exceed that target amount (in proportion of total offers), although the absolute amount of timber harvested in the last 3 years has been well below the Tongass National Forest ASQ. While there are currently no large business purchasers in Southeast Alaska, the set-aside program remains at half of the timber offered per year in order to leave the opportunity open for large business purchasers to enter the market.

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