Subsistence Use in Southeastern Alaska

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The rainforest ecosystem of Southeastern Alaska (Southeast) is rich in wildlife, fish, and other renewable resources that are utilized by local hunters, fishermen, and gatherers in communities throughout Southeast. These subsistence harvests compose a significant portion of the food consumed by rural residents, and collectively represent one of the most fundamentally important uses of natural resources. The 17-million-acre (6.9-million-hectare) Tongass National Forest encompasses approximately 80% or more of the land area of Southeast, and a wide variety of subsistence activities take place in the Tongass. Glacier Bay National Park and Preserve occupies an additional 3.28 million acres (1.3 hectare) of federal land in the region. Only limited and largely ceremonial use of subsistence resources occurs within the National Park portion of Glacier Bay, although significant fishing and some hunting occur legally in the 58,406 acres (23,637 hectare) designated as a National Park Preserve. Because of the extensive area and the richness of the biological resources in the Tongass National Forest, the vast majority of subsistence harvests in Southeast occur there or on the immediately adjacent tidal lands.

Subsistence is identified in the 1980 Alaska National Interest Lands Conservation Act (ANILCA, Public Law 96-487) as a priority use of federal lands in Alaska. ANILCA defines subsistence as "the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools or transportation; for the making and selling of handicraft articles out of nonedible byproducts of fish and wildlife…; for barter, or sharing for personal or family consumption; and for customary trade." Significantly, ANILCA links subsistence to rural Alaska residency, without ethnic or other distinction. This inclusive definition fits the nature of subsistence harvests in Southeast, where Tlingit, Haida, Tsimpsian people, and residents who immigrated to Alaska all depend on direct personal and family harvests of the region's bounty.

In 1978, the State of Alaska passed its first subsistence statute (Alaska Statute 16.05.258), which gave "priority" to subsistence uses of fish and game resources over other uses, with all Alaska residents eligible to participate. In contrast, federal passage of Title VIII of ANILCA gave a subsistence priority to rural residents only. The conflict in subsistence eligibility rules led to two parallel sets of management regulations beginning in 1990 with the federal takeover of subsistence management on federal lands and marine mammals (Huntington 1992) and state management of state and private lands. The Alaska Department of Fish and Game (ADF&G) Title 05 Regulations outline the State of Alaska legal statutes for subsistence. Subsistence use includes the customary and traditional uses of fish and game in rural areas of Alaska (ADF&G undated). Complex and varied subsistence regulations continue to be a source of debate.

HISTORIC NATIVE SUBSISTENCE

Alaskans of many ancestries engage in subsistence. Because the Tlingit, Haida, and Tsimpsian people have the longest residencies in Southeast, the Native subsistence traditions are particularly rich and important aspects of subsistence in Southeast (Fig 1).

The Tsimpsian people are among the aboriginal inhabitants of northwestern British Columbia. Since 1887, Tsimpsian people have lived on Annette Island in southern Southeast (Annette Island School District

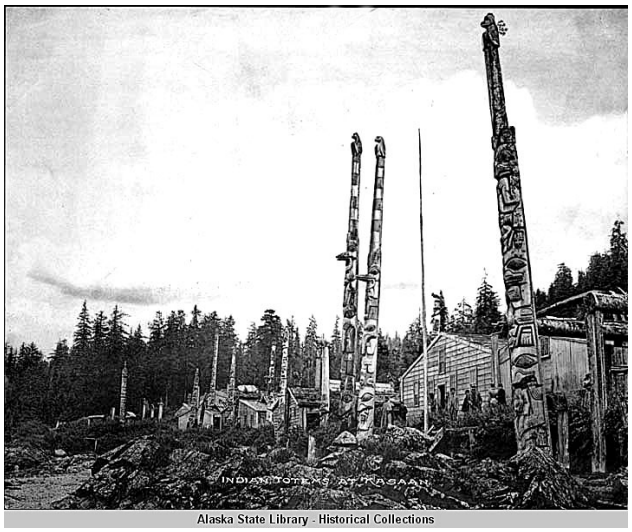

FIG 1. Historical photo of the Tlingit Village of Kasaan on southeast Prince of Wales Island. For thousands of years, the Native people of Southeast have depended on the abundance of natural resources to meet their subsistence and cultural needs. (Alaska State Library, Kasaan-04)

2005). The Annette Island Indian Reservation is one of only two such reservations in Alaska. The Haida Nation is centered on the Queen Charlotte Islands (Haida Gwaii) of northern British Columbia, and the northern or "Kaigani" Haida people have lived in Alaska on Prince of Wales Island since before European contact (McDonald 2001). A major portion of Southeast was the ancestral home of the Tlingit people, today the most numerous Native residents of the region. The intact remains of Tlingit fishing structures hewn from wood have been carbon-dated to more than 3,000 years ago on Admiralty Island, a testament to the traditions of Native subsistence in Southeast (Newton and Moss 1984).

Native ownership of important subsistence harvest places was documented by Moser (1899, 1902) and Emmons (1991) in the late nineteenth century. In 1947, Goldschmidt and Hass (1998) documented the land and resource ownership patterns of Native tribes and lineages throughout Southeast. Half a century later, the U.S. Forest Service (USFS 1997a) noted:

> Despite the introduction of technological innovations (such as modern boats) that would allow residents of Native communities to range much greater distances than in earlier periods, their use appears to be confined to locations generally conforming to traditional clan landownership boundaries.

Voluck (1999) noted, "The word *subsistence* often suggests poverty or bare survival, while the experience for Alaska Natives is a rich, vital and fulfilling way of life." He also wrote, "In addition to providing sustenance, subsistence gathering activities build a network of social relationships within the Native community."

Worl (2002) emphasized that subsistence has social, cultural, and economic aspects that function in an integrated way. Participation in subsistence is organized on the social basis of kinship. Voluck (1999) noted, "Native tribes held ownership to fish camps, streams, and bays according to traditional law, which is based on family and clan ownership."

Cultural aspects of subsistence feature cooperation in the harvest of resources and sharing of the food obtained through those harvests (ADF&G 1990a, 1990b). Sharing "generally begins with the initial distribution at hunting or fishing sites followed by a secondary distribution through extended kin networks and then ceremonial sharing," according to Worl (2002).

The ADF&G (1990a) explained, "Subsistence hunting, fishing and gathering are not solitary pursuits. Subsistence involves structured and predictable cooperation in the production, distribution, and exchange of wild foods. Most households in rural Alaska receive wild foods from a traditional network. Some—like the elderly—receive most of their wild foods from shared production."

FIG 2. Tlingit shore seining for salmon near Sitka, Alaska. (Alaska State Library, Sitka-Indians-31)

Recognition of a special relationship among people and the fish and wildlife they depend on and harvest is a central aspect of the Native subsistence tradition (Fig 2). According to Worl (2002): "These cultural values also serve to protect the animal population base and are the basis of the conservation ethic that has been attributed to traditional Native practices. In some ways, these ideologies and the accompanying practices can be compared to the effects of the concept of sustained yield harvests."

Voluck (1999) noted that in Southeast Native subsistence traditions, "Conservation and perpetuation of subsistence resources is part of the traditional subsistence way of life, and is mandated in traditional law and custom."

CONTEMPORARY SUBSISTENCE

Wolf (2005) emphasized the inherently local nature of subsistence in Alaska. Subsistence is most characteristically described as "a diverse set of localized systems of food production and distribution, representing relatively unique combinations of ecological, cultural, and economic factors. …there is not one subsistence tradition in Alaska, but a multitude of subsistence traditions linked to particular localities. The creators and principal users of these localized subsistence traditions are the long-term residents in the communities and areas where they occur."

Studies by the ADF&G (2001) show that subsistence harvests usually occur in traditional use areas accessible to community residents. These traditional and established subsistence harvest areas may be locations adjacent to a community or seasonal camps in more remote locales.

Successful subsistence harvests are a function of both abundance and accessibility. Success depends on high-quality fish and wildlife habitat that is capable of supporting abundant populations, and that is within safe and reliable travel distance from each community or village. In many cases, access for subsistence hunting, fishing, or gathering in Southeast is by small boats with limited capability to travel long distances in rough water. Therefore, good hunting and fishing areas near a community, with good anchorages and sheltered sea passages, are important for successful subsistence harvests.

The subsistence economy operates with a mix of cash and subsistence (Voluck 1999, Worl 2002, Wolfe 2004), in which income-generating work, such as commercial fishing, provides the cash needed for equipment (such as fishing nets, boats, and rifles) necessary to engage in subsistence harvests. The economic significance of subsistence to rural Southeast households is substantial.

Eighty-five percent of rural Southeast households harvest subsistence food (Kruse and Muth 1989). Annual wild food harvests by Southeast residents averaged 178 lb (81 kg) during the 1990s (ADF&G 2001), but this figure underestimates use in rural areas because urban Juneau (where annual wild food harvests were only 35 lb [16 kg]) was included in the sample. In contrast, annual per capita harvests of rural communities range from 200 lb (91 kg) to 400 lb (181 kg) (Wolfe 2004). Wild food harvests in the community of Edna Bay averaged more than 500 lb (227 kg) annually in the 1980s and 1990s (Kruse et al. 1998). Wild food provides 155% of the annual protein requirements of rural residents. Estimates of the cost of replacing the wild food harvested by rural Southeast residents with retail purchases of equivalent food run from $22 to $35 million annually (ADF&G 1998, 2001).

Among rural Southeast residents, 80% consume fish and nearly everyone consumes subsistence seafood. Nearly half of rural Southeast residents engage in the harvesting of game, and almost 80% use the meat and other products. In the 1980s, the annual harvest of deer in Southeast overall averaged approximately 13,000 deer (ADF&G 1998). Deer (Odocoileus hemionus) harvest levels vary substantially by rural community. Residents of the rural communities of Edna Bay, Port Alexander, Pelican, Tenakee Springs, Hoonah, and Angoon harvested an average of 250 lb (114 kg) per household in 1987 (Kruse et al 1988).

Many species of animals and plants are harvested for subsistence in Southeast. A study in Sitka identified the three species providing the greatest amount of food as Sitka black-tailed deer, sockeye salmon (*Oncorhynchus nerka*), and halibut (*Hippoglossus stenolepis*) (Wolfe 2004). Harvest of venison averaged more than 44 lb (20 kg) per year; sockeye and king (*O. tshawytscha*) salmon harvests per capita were 19.8 and 18.3 lb (9 and 8 kg), respectively. Sitka Sound boasts a large herring (*Clupea pallasii*) spawn in early spring, and herring roe is a prized subsistence food. Herring roe harvest per capita was nearly 15 lb (6.8 kg). Halibut harvests were almost 20 lb (9 kg) per year.

In the Tlingit villages of Angoon and Hoonah, fish represented about 55% of the annual subsistence

harvests of residents by weight. Other annual subsistence harvests reported for Angoon and Hoonah residents are land mammals, primarily deer, 27% and 16%, respectively; and marine mammals such as harbor seal (*Phoca vitulina*), 6–7 % in both communities (Wolfe and Walker 1987, Wolfe 2004).

Subsistence salmon harvests for the Southeast region are conservatively estimated at 65 million to 69 million fish. Sockeye salmon are the most important species and constitute more than 80% of the salmon caught. King salmon and silver salmon (*O. kisutch*) are also important for subsistence; however, there are few formal subsistence fisheries for these species, and king and silver salmon are obtained through participation in commercial and sport fisheries as well as incidentally when subsistence fishing for other species (ADF&G 2003).

Subsistence fishing for halibut has a long history in Southeast, as evidenced by the carved halibut hooks used by Native people for centuries. In 2003, a formal subsistence halibut fishery was authorized by the federal government, and an estimated 3,000 Southeast subsistence fishermen landed approximately 628,000 lb (285,455 kg) of halibut (ADF&G 2004).

FIG 3. Black-tailed deer are the most abundant big game species in Southeast and one of the most important resources for subsistence hunters in the region. (J. Schoen)

The special importance of deer, salmon, and halibut to rural communities and Native people is a consistent theme throughout Southeast (Fig 3, 4, 5). However, a large number of other species, some not so widely distributed, are also important. Moose (*Alces alces*) are hunted on the mainland, particularly in the large valleys carved by transboundary rivers such as the Taku and the Stikine. In the spring, eulachon (*Thaleichtys pacificus*) smelt, also called hooligan, swim up these large mainland rivers by the millions. Hooligan and their oil are prized foods in many Native families and villages. The towering cliffs and ridges alongside these great river valleys are habitat for mountain goats (*Oreamnos americanus*), whose fur is the source of fiber for the beautiful Chilkat and Ravens Tail blankets for which Tlingit weavers are famous.

FIG 4. Salmon—shown here cooking in a traditional method—have been a mainstay of the subsistence culture in Southeast for millennia. (John Schoen)

Black bears (*Ursus americanus*) and brown bears (*U. arctos*) are abundant in Southeast, with an unusual distribution. Both species inhabit the mainland forests, but they are segregated on the islands. Brown bears are found on Admiralty, Baranof, Chichagof, and adjacent northern islands, whereas black bears are found on the southern islands. Although the brown bear is hunted by sportsmen as a trophy animal, most subsistence hunting of bear for food focuses on the smaller black bear.

FIG 5. Halibut is a traditional subsistence food of Southeast residents. (John Schoen)

Among special delicacies, octopi (*Octopus dofleini*) are most abundant on the outer ocean coasts, as are abalone (*Haliotis kamtschatkana*). Bird eggs are gathered from rocky, ocean islands and near glaciers where seabirds congregate to breed. Dungeness (*Cancer magister*), tanner (*Chionoecetes spp.*), and king crab (*Paralithodes spp.*) are harvested from specific marine habitats.

In addition to animals, plant harvests are important. Various delicious berries are picked and preserved. Blueberries (*Vaccinium spp.*), huckleberries (*V. parvifolium*), nagoon berries (*Rubus arcticus*), high bush (*Virunum edule*) and low bush cranberries (*Oxycoccus Oxycoccos*), and currants (*Ribes spp.*) are some of the most popular berries. Kelp and seaweed are gathered and dried for use in cooking and special preparations. Rich in vitamins and minerals, they are also a wonderful seasoning. Spruce (*Picea sitchensis*) roots and red cedar (*Thuja plicata*) bark are gathered for basketry, and plants such as devil's club (*Oplopanax horridus*) are collected for their medicinal properties.

Deer, salmon, and halibut are cornerstones of subsistence harvests and diets, and other varied animal and plant species are harvested in specific places and seasons. Although a particular place or locality might be rich in a particular resource, most subsistence harvesters enjoy the benefits of a diverse diet of wild food through the sharing of food (ADF&G 1990b).

The sharing of wild food occurs in many ways. Family members may specialize in a particular harvest technique or species, and then share their respective products. In Native traditions, the potlatch is a ceremonial feast, marked by a sharing and gifting of food and other items. Trade of subsistence foods between relatives or friends in different villages and towns is widespread. One result of such exchanges is that subsistence provides nutritious variety of wild foods for small-community residents throughout Southeast. In many instances, subsistence is at the core of family, community, and culture (Voluck 1999, Worl 2002).

IMPLICATIONS FOR CONSERVATION AND SUSTAINABLE USE

Subsistence harvesting success is sensitive to deterioration or loss of fish and wildlife habitat, changes in the accessibility of subsistence use areas, and increased competition for resources. Research by Wolfe and Walker (1987) found that:

> Construction of roads and settlement entry into roaded areas produce changes associated with lower subsistence harvests, including increased competition for wild resources, increased habitat alteration, and changing community economic orientations… By recognizing the substantial contributions subsistence harvests make to the state's regional economies, economic development might be planned in ways that enhance, rather than erode, the state's rural subsistence base.

In Southeast, harvest of old-growth forest habitat is the most significant factor affecting the productivity of areas for subsistence game harvest. Old-growth forests have been found to be important for deer winter habitat (Leopold and Barrett 1972, Wallmo and Schoen 1980, Kirchhoff and Schoen 1987, Schoen and Kirchhoff 1990). Because natural deer mortality is highest in winter, the quality of winter habitat can be a limiting factor. A series of severe winters, with deep snows, could significantly reduce deer populations in areas where the most important forest habitat has been harvested. Fewer deer could lead to problems meeting demands and priorities for subsistence deer harvests.

For more details on the implications of timber harvest on deer habitat and populations, refer to Chapter 6.1.

Construction of roads poses risks to salmon migration, spawning, and rearing habitat in freshwater streams. Before 1954, Southeast had only a few, scattered roads. The Tongass now has more than 5,000 mi (8,000 km) of roads with new construction of more than 50 mi (80 km) a year on average, according to current plans (USFS 2003). This expansive road network poses a major challenge. Some roads need to be restored to minimize erosion damage to soils and salmon streams. Stream crossings need to be removed or improved to ensure they do not block salmon passage. A recent ADF&G stream inventory suggested 1/3 to 2/3 of stream crossings in Southeast need remedial work to ensure fish passage (Flanders and Cariello 2000). For more details on the implications of timber harvest on salmon habitat and populations, refer to Chapter 8.

Roads can also change access to established subsistence harvest areas, with complex results (Wolfe and Walker 1987). Easy access to important hunting and fishing areas might appear to be a benefit, but it can also result in increased competition for harvests from prime fish streams or wildlife habitat areas. In a few cases, large numbers of urban hunters could begin harvesting significant numbers of deer in places traditionally hunted only by relatively small numbers of rural residents using small boats. Possible impacts include displacement of subsistence hunters, reduced harvests by both subsistence and visiting hunters, and decline in deer populations.

During preparation of the 1997 revision of the *Tongass National Forest Land and Resource Management Plan* (TLMP) (USFS 1997b), the USFS cooperated with the ADF&G to develop a regionwide assessment of rural subsistence harvest patterns and the intensity for use of important places in the Tongass (Kruse et al. 1988, USFS 1997a). In comments on the TLMP, the State of Alaska identified the watersheds most important to local communities and rural residents for harvest of fish and game. The state called on the USFS to pay special attention to protection of important community and subsistence use areas (State of Alaska 1997). The ADF&G followed up in 1998 with an assessment of game and fish resources (ADF&G 1998). That study identified the watersheds with highest "community use values" and ranked watersheds for sensitivity to disturbance of traditional subsistence uses. The sensitivity of subsistence areas to disturbance was then mapped for each rural community in Southeast Alaska (ADF&G 1997a).

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