

**THE SUBSISTENCE HOOLIGAN FISHERY
OF THE CHILKAT AND CHILKOOT RIVERS**

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ABSTRACT

This report presents the findings of an ethnographic study of the subsistence hooligan fishery of the Chilkat and Chilkoot rivers in southeast Alaska. Research was initiated to address local concern over perceived low hooligan stocks and potential impacts of Haines airport construction on Chilkat River hooligan subsistence fishing. The study, which took place in 1990 and 1991, had two primary goals. The first was to document contemporary fishing patterns on the rivers, including cultural context and traditional knowledge, timing of harvest, means and methods of harvest and processing, locations of harvest and processing, organization of labor, and exchange and distribution patterns. A second purpose was to examine conditions that lead to changes in the fishery, particularly in harvest and processing locations over time, as access to traditional hooligan camps declined and strength of the stocks and migration patterns fluctuated.

The study found that the contemporary hooligan fishery was conducted primarily by the Chilkat (*Jilkáat*) and Chilkoot (*Lkoot*) Tlingits of Klukwan and Haines. They fished largely in order to produce oil for distribution and exchange. The fishery was grounded in Tlingit cultural mythology and world view. Locations of fishing and processing were organized by clan affiliation. In addition, certain adaptations have occurred. People have adopted new tools of production and organized labor to fit contemporary family and household structures. Geographic adjustments have been made to accommodate reduced processing areas as well. Local participants have had to shift processing to fewer site locations as development and privatization of land have increased in the area over the 20th century.

In practice, the fishery primarily is regulated by local rules developed by the Tlingit harvesters, rather than by external state or federal regulations. The success of these local management rules in the midst of state and federal management programs is due in part to the cultural cohesion of the participants, and to the presence of a single use (subsistence), rather than multiple uses (such as commercial and recreational uses) of the Chilkat and Chilkoot hooligan stocks.

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INTRODUCTION

Hooligan (*Thaleichthys pacificus*) are an anadromous smelt that migrate in great numbers to spawn in large mainland rivers from Oregon to the Bering Sea. It is a particularly oily fish, harvested by certain Northwest Coast Indians on major rivers primarily for the purpose of rendering oil for use in regional trade networks. The Tlingit of the Chilkat and Chilkoot rivers in northern Southeast Alaska harvest hooligan (*saak*) and produce oil (*saak eexl*), following distinctive harvest and processing patterns of culturally-based origin. Hooligan are present in both rivers during spring spawning migrations and are harvested for eating fresh, freezing, smoking, jarring, and especially for rendering into edible oil.

The purpose of the research was to provide a description of the contemporary Chilkat and Chilkoot river hooligan fishery. This report examines the contemporary fishery in its historic, cultural, and social context. The first section provides an overview of the study area, of Northwest Coast use of hooligan, and of the management system within which Chilkat and Chilkoot river hooligan harvest takes place. The second part includes a literature review of biological research on hooligan, followed by a description of traditional Tlingit knowledge of hooligan ecology and management of the fishery. Following are three sections on hooligan harvest and processing methods and uses. The next section discusses some aspects of social organization of harvesting and processing. The final section describes exchange and distribution patterns of hooligan and its products. The summary section highlights the conditions leading to changes in hooligan harvest and use over the past 100 years, and points out the cultural continuity within the fishery over time.

Research upon which this report is based began in 1990 in response to local concern over perceived decline in hooligan stocks in recent years on both rivers and over possible impact to the Chilkat River hooligan run because of modifications to the Haines airport. The airport is located adjacent to the Chilkat River just downstream from one of the main hooligan harvest sites used by local residents. In 1989, the Alaska Department of Transportation and Public

Facilities (ADOT&PF) proposed expanding the Haines airport to include an adjacent runway in the Chilkat riverbed. The Haines Alaska Native Brotherhood Camp #5 registered concern through letters to the Division of Subsistence, the ADOT&PF, and to their state representative's office explaining the importance of the hooligan run. In April 1990, local interests organized a workshop to publically recognize the cultural basis of the hooligan fishery. Elders and other hooligan harvesters from Haines and Klukwan participated; representatives from the Division of Subsistence and from ADOT&PF were invited as well. Airport construction ensued during the fall and winter of 1990 and 1991.

The present research expands upon previous Division of Subsistence studies in the Haines and Klukwan area. In 1982 and 1983, staff documented the salmon and hooligan subsistence fisheries of residents of Haines and Klukwan (Mills 1982; Mills *et al.* 1984). The Tongass Resource Use Cooperative Study in 1988 documented baseline harvest levels and participation for Haines and Klukwan residents for the year 1987. In 1988 the Division of Subsistence described exchange patterns of hooligan oil from the Chilkat and Chilkoot rivers (Magdanz 1988).

Methodology

This report is a qualitative analysis based on observations of harvesting and processing activities, interviews with knowledgeable residents, information from Alaska Department of Fish and Game (ADF&G) staff, and review of ethnohistoric and scientific literature. Research began with an invitation to Division of Subsistence from local organizers to participate in a workshop on traditional hooligan use. One purpose of the workshop, held in Haines on May 1-3, 1990, was to inform state agencies and the local public of the importance of the hooligan run to subsistence users. Informal approval was subsequently given to the Division of Subsistence to conduct research during harvest and processing activities. An Interim Report was written and distributed to local respondents in June 1990 (Betts 1990). In April 1991, local officials and

respondents agreed that another period of data collection during harvest and processing activities should take place during the 1991 fishery.

Field data collection involved several days of observations and interviews during each of two harvest and processing seasons (May 1990 and May 1991) and numerous telephone calls to check data and fill information gaps. In 1990, field research was conducted over six days (May 4, 5, and 9 for harvest activities, and May 17-19 for oil processing). In 1991, research was conducted during three days of harvesting (May 7-9) and four days of oil processing (May 20-23). Most research took place on the Chilkat River, with one day each observing harvests and processing on the Chilkoot River. Informal observations of harvesting and processing took place in 1992 and 1993, as did many conversations with respondents from the 1990-91 study period to add and clarify information.

During the 1991 season, 26 out of 43 known harvesting households (60 percent) were observed in dipnetting activities. Those not observed fishing were identified through conversations with harvesters. Seven out of 17 oil processing groups, most of which were comprised of more than one household, were visited as well. Four of the seven processing groups observed in 1991 had been previously visited in 1990, and an additional two households were observed in 1990 that were not seen in 1991. Formal interviews were conducted with several respondents knowledgeable about historical and cultural aspects of the fishery.

Harvest levels were not recorded for all harvesters. However, the quantity of hooligan used to produce oil was recorded for three groups in 1990. These data were re-analyzed and verified with one of the groups in 1991. Oil production levels reported below should be understood to reflect the selected case examples, as systematic sampling of all production groups was not undertaken.

REGIONAL OVERVIEW

The Chilkat and Chilkoot Rivers

The Chilkat and Chilkoot rivers flow into the marine waters of Lynn Canal in Southeast Alaska (Fig. 1). The Chilkat River flows southeast from its glacial source across the Canadian border for some 40 miles. The river is turbid, and in its final four miles it becomes heavily braided, with shifting channels and exposed tide flats. Two major channels flow along both shores of the river from four to seven miles from the river mouth, while from seven to nine miles the riverbed narrows and one major channel flows along the northern shore. In the four to nine-mile section the riverbed is characterized by wide sand flats and forested islands. Periods of high water during late spring and summer often cover sandbars. Numerous lakes, tributaries, and channels along the course of the river support spawning beds for chinook, chum, coho, pink, and sockeye salmon, Dolly Varden, Pacific sandlance, and hooligan. The Chilkat River supports one of the larger hooligan runs in southeast Alaska. Hooligan migrate into the lower nine miles of the river.

The Chilkoot River is also home to a spawning run of hooligan. It flows parallel to the Chilkat River, separated from it by about 10 miles and a small mountain range. The Chilkoot River is also of glacial origin, but in contrast to the Chilkat, it becomes clearer and single-channeled in its lower portion as it flows out of its own lake for about a mile before entering salt water. This lower mile of the riverbed is boulder-strewn and swift. Local fishers note that hooligan spawn in this section of the river. The Chilkoot River also supports chum, coho, pink, and sockeye salmon spawning runs. A Department of Fish and Game salmon management weir, in place since 1976, spans the river roughly a half mile up from the mouth. The weir is not operated during the hooligan run.

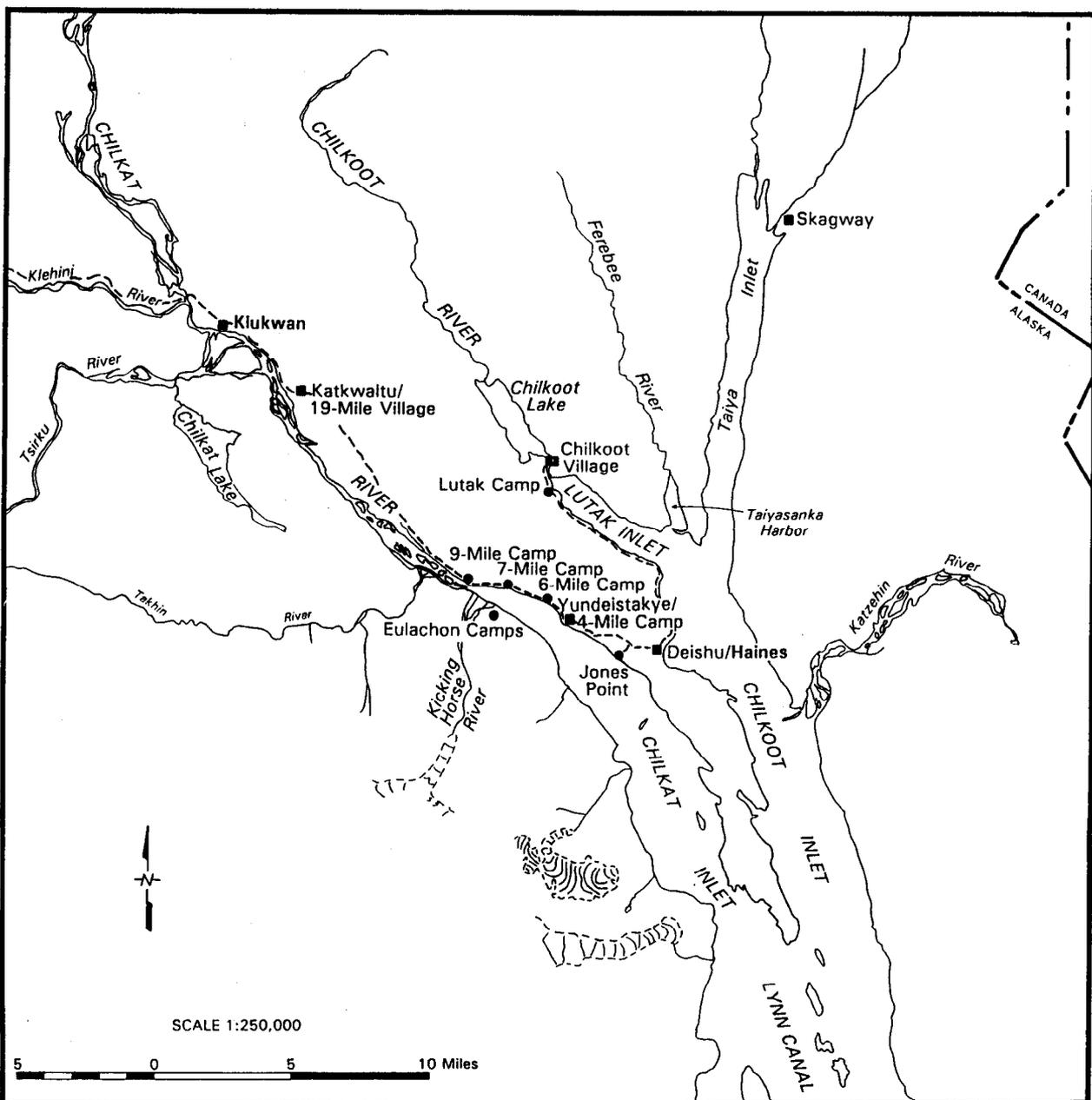
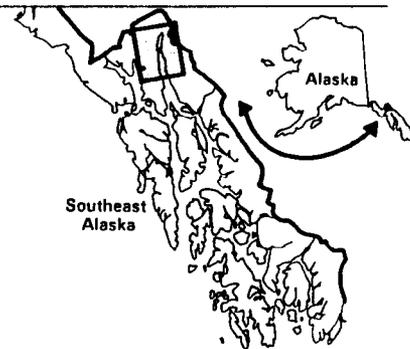


Figure 1. Location of Eulachon Harvest and Processing Camps on the Chilkat and Chilkoot Rivers, Southeast Alaska.

This map depicts locations of traditional eulachon harvest and processing sites on the Chilkat and Chilkoot Rivers. Data are based on interviews with Haines and Klukwan eulachon harvesters and other community residents in 1990 and 1991. The map shows eulachon camps used during the lifetime of respondents. Additional eulachon camps may exist, since camp sites may change over time, and previously occupied camps may have gone unrecorded. In addition to mapped sites, eulachon were also harvested at other locations throughout the lower Chilkat and Chilkoot rivers. Harvest locations in a given year depended on river conditions and on natural variability in the eulachon migrations.

For further information, see: Chilkat and Chilkoot Rivers Subsistence Eulachon Fishery by Martha F. Betts, Division of Subsistence Technical Paper No. 213.



VICINITY MAPS

STATE OF ALASKA
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 Subsistence Division





Figure 2. The lower Chilkat River, 1990.

Northwest Coast Harvest of Hooligan

Historically, hooligan were harvested by several Northwest Coast Indian groups whose territories contained hooligan spawning rivers. Hooligan were harvested on the Columbia, Squamish, and Fraser rivers, Knight Inlet, and Bella Coola, Kitimat, Skeena, Nass, Stikine, Chilkat, and Alsek rivers (listed south to north) by members of the Chinookan, Coast Salish, Kwakiutl, Bella Coola, Bella Bella, Haisla, Tsimshian, and Tlingit groups (Collison 1941; Sturtevant and Suttles 1990). Other Northwest Coast groups also claimed access to these hooligan runs through matrilineal and marriage relationships (Codere 1990; Halpin and Seguin 1990). Some groups traveled hundreds of miles by water or land to harvest and process

hooligan. Many Indian groups without direct access to harvest areas obtained dried hooligan or hooligan oil through trade networks. The Haida and Nootka, for example, who lived on outer island areas away from the large mainland hooligan rivers, and Kwakiutl without claim to Knight Inlet hooligan grounds, traded such resources as dried herring roe, dried halibut, seaweed, and canoes with the Tsimshian of the Nass River or with the Kwakiutl on Knight Inlet, British Columbia, to obtain hooligan (Blackman 1990; Codere 1990).

Hooligan were harvested in great quantity for oil. Edible oils in general were an important dietary item for Northwest Coast Indians. Historically, all groups rendered oil from a variety of resources, including bear, shark, hooligan, herring, mountain goat, sablefish, salmon, seal, and whale (Niblack 1970 [1890]; Sturtevant and Suttles 1990; Stewart 1977). Suttles (1990) notes that the hooligan from the Nass, Skeena, and Knight Inlet areas and northward were harvested primarily for oil, while more southerly stocks produced insignificant amounts of oil. On the lower Columbia River, for example, hooligan were primarily dried for trade, while whale blubber and salmon were rendered for oil (Silverstein 1990). The most detailed historical documentation of Northwest Coast Indian hooligan harvesting describes that of the Kwakiutl of Knight Inlet and the Tsimshian of the Nass River (Sturtevant and Suttles 1990).

The Chilkat and Chilkoot Tlingit

The Chilkat (*Jilkaat*) and Chilkoot (*Lkoot*) Tlingit¹ live in the upper Lynn Canal watershed close to the northern extent of the Tlingit region. The use areas for the Chilkat and Chilkoot Tlingit documented in 1946 include waters and associated lands of both shores of Lynn Canal north from Berners Bay and the Endicott River (Goldschmidt and Haas 1946) (Fig. 1).

¹ The spellings *Jilkaat* and *Lkoot* were provided by a local Tlingit respondent; Jeff Leer of the Alaska Native Language Center, Fairbanks, concurred. One elder respondent noted that English pronunciation had transformed distinctly different Tlingit words into almost identical sounds, spelled in English as Chilkat and Chilkoot to reflect that similarity. With due respect to the Tlingit language, the English spellings will be used throughout this report to conform with common usage.

Historic and ethnographic sources have attributed the entire area to the Chilkat *kwaan*,² that is, grouping both Chilkoot and Chilkat territory as one (de Laguna 1972; Emmons 1991; Krause 1970 [1885]; Lipps 1936; Niblack 1970 [1890]; Olson 1967; Petroff 1882; Porter 1893; Swanton 1908). Emmons (1991) describes the Chilkoot as a branch of the Chilkat *kwaan*, and Swanton (1908) lists Chilkoot as a town subsumed within the Chilkat *kwaan*. However, contemporary respondents, as well as a summary of testimony made during land claims hearings in 1946 (Goldschmidt and Haas 1946), recognized *kwaan* status for both groups. Demarcation between *kwaans* was not clear in the 1946 testimony, and was not exclusionary between them for purposes of subsistence harvesting (Goldschmidt and Haas 1946). The late Austin Hammond Sr., an elder Chilkoot, reported that the boundary between the Chilkoot territory and Chilkat territory on the Chilkat River lies just above the Chilkoot village of Katkwaltu at 19 Mile on the north bank. Goldschmidt and Haas (1946) add that the territorial division between the two groups on the south side of the Chilkat River lies below the mouth of the Kicking Horse River on the south bank. The Chilkat Tlingit region was upriver from that boundary, including tributaries and land up to the inland divide between Tlingit and Athapaskan groups; the Chilkoot Tlingit territory comprised the lower Chilkat River, the Chilkoot River and lands up to the inland divide, Lutak and Taiya Inlets, and Lynn Canal as far south as the mouth of the Endicott River and Berners Bay.

Several Chilkat and Chilkoot villages and camps were located along both major rivers. Prior to a smallpox epidemic in 1836, a Chilkat village was located at the mouth of the Kicking Horse River. By the late 19th century the village of Klukwan at 22-Mile on the Chilkat River was the remaining Chilkat Tlingit village. The major Chilkoot Tlingit villages of the late 19th century included the village of Katkwaltu (also referred to as Kluktu) at 19-Mile on the Chilkat River, destroyed by a mud slide in 1890; the village of *Yandeistakye* at 4-Mile on the Chilkat River, to which survivors of the mud slide moved; the camp *Deishu* at the isthmus of the Chilkat

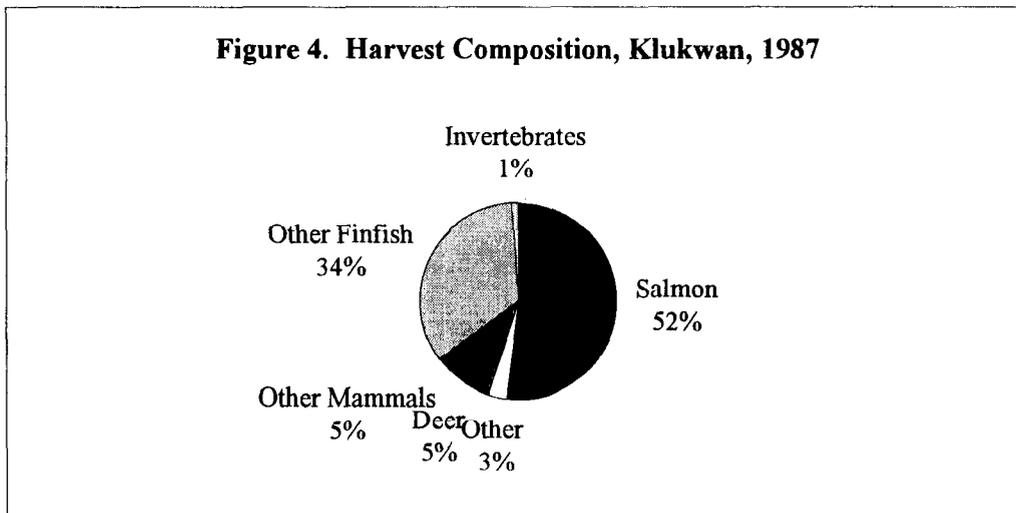
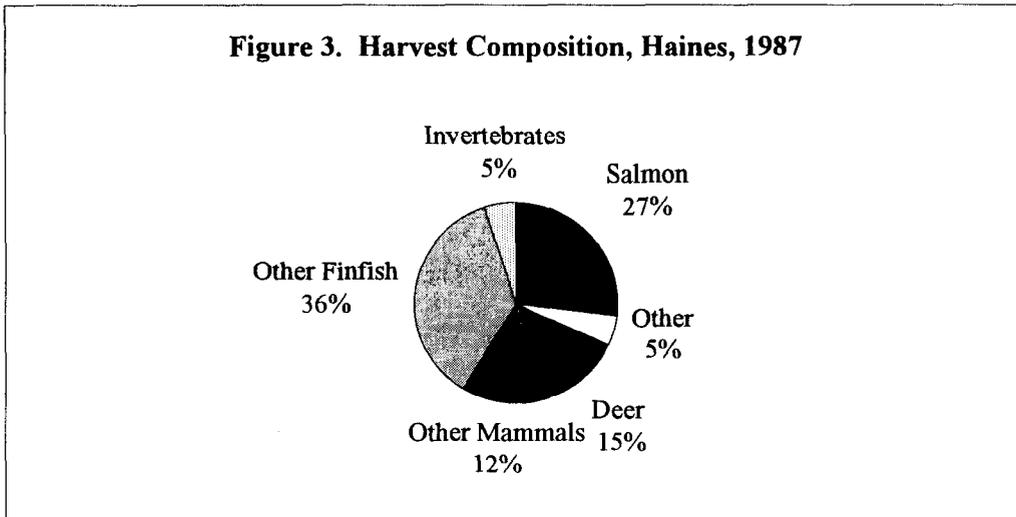
2 A Tlingit *kwaan* is a group of "one or more clans...which have come together accidentally through migration or through continued intermarriage, and have combined for mutual protection and for social and economic advantages, and supplement each other upon all family and ceremonial occasions" (Emmons 1991:22).

Peninsula between the Chilkat and Chilkoot rivers; a village and a fishcamp on the Chilkoot River; and summer camps at Skagway. The Chilkoot River enters Chilkoot Inlet about eight miles north of Haines. Haines, the contemporary residence of the Chilkoot Tlingit, grew at *Deishu*, facing Chilkoot Inlet, where a mission was established in 1880. In addition, seasonal camps were used in the area in the late 1800s and early 20th century, including several on both banks of the Chilkat River as well as on Lutak Inlet and the Chilkoot River. Many continue to be used at the present time, including the former smokehouse area of the village at *Yandeistakye*, the fish camp on the Chilkoot River, and 6 and 7-Mile camps on the Chilkat River. Other settlement sites were acknowledged but not commonly used during the 20th century, either because of inefficient access or having been usurped by development interests of the state or newer Haines residents. After about the 1920s and 1930s, the Chilkat and Chilkoot people lived primarily in Klukwan and Haines. *Yandeistakye* had a few remaining inhabitants until about 1950, and there were occupied houses between the villages. Many non-Native newcomers have settled in residences along the highway or in Haines in recent years. Several Klukwan residents have moved to Haines during the last century for its proximity to health care or employment, but many continue to participate in subsistence and clan house activities in Klukwan.

Currently, the Haines Highway leads from Haines to Klukwan and on to the U.S./Canadian border and interior Canada and Alaska. Between Haines and Klukwan the highway follows the north bank of the Chilkat River, skirting around Klukwan and crossing the Chilkat River about a mile above Klukwan. It follows the Klehini River from the bridge to the U.S. border.

Klukwan has remained primarily a Tlingit village, with an estimated population of 133 in 1988, approximately 82 percent of whom were Native (Alaska Department of Fish and Game 1992). Its major economic involvement in recent years is with the logging industry. Haines' population was an estimated 1,623 in 1988, 91 percent of which was non-Native (Alaska Department of Fish and Game 1992). The highway population is comprised primarily of newer, non-Native households (Mills *et al.* 1984). The economy of Haines includes tourist, logging, and

commercial fishing industries. Both communities have mixed subsistence-cash economies. Households participate in a variety of resource use activities throughout a yearly cycle to supply a significant part of the local food supply: about 170 pounds per capita in 1983, and 239 pounds per capita in 1987 in Klukwan, and 126 pounds per capita in 1983, and 104 pounds per capita in 1987 in Haines (Figs. 3 and 4) (Alaska Department of Fish and Game 1992; Mills *et al.* 1984).



Klukwan and Haines have long local cultural traditions involving the use of wild resources (Mills *et al.* 1984). Salmon and other fish comprise the largest category of resources

harvested in both Haines and Klukwan. Shellfish is used in smaller amounts, as local beaches are relatively few. Local deer and moose populations tend to be small, so hunting provides a small part of the local food consumed. Harvest of seal provides an important source of meat and oil. Local fisheries have been widely used by a range of interests over the years. Commercial salmon fisheries in Lynn Canal have existed since the 1880s. Tlingit residents of both Haines and Klukwan historically have been employed as fishers or workers in the salmon canneries located in Chilkat Inlet. In recent years, a local salmon gillnet fleet has been active. The sport fishing charter boat industry has grown in the area, as has rod and reel fishing both by local and non-local residents from shore or private boats.

Hooligan is one local fish resource used by Klukwan and Haines residents. Currently, the Chilkoot and Chilkat rivers stocks provide most of the local harvest of hooligan. Other rivers emptying into Lynn Canal have or have had hooligan runs as well, including the Taiya River near Skagway, the Ferebee at Taiyasanka Harbor, and the Berners and Lace rivers flowing into Berners Bay. The Taiya run is reported to be small (Bishop 1982). The Berners Bay runs are at the edge of the traditional territories of the Chilkat and Chilkoot Tlingit of Haines and Klukwan, and they generally do not harvest resources there. Historically among the Chilkat and Chilkoot Tlingit, hooligan was a primary source of edible oil. Hooligan were also smoked and dried. The oil was consumed with dried foods, and was used as a preserving medium, a ceremonial item, and a medicine. Its trade was tightly controlled to other coastal groups and to inland groups along established routes, which became known as grease trails after historic contact (Collison 1941; Krause 1970 [1885]). The contemporary pattern of production and distribution is described below.

BIOLOGY AND MANAGEMENT

Hooligan migrate from the sea into coastal rivers to spawn in spring. Hooligan spawn as far north as the Eastern Bering Sea and Pribilof Islands (Franzel and Nelson 1981). Hooligan

populations on the Columbia and Fraser rivers sustain commercial harvests, and sport or subsistence harvests occur on several runs throughout the area (Smith and Saalfeld 1955). In Southeast Alaska, the Alesk, Chickamin, Chilkat, Chilkoot, Situk, Stikine, Taku, and Unuk rivers host the largest hooligan runs. The Lynn Canal watershed contains several small hooligan runs, including migrations in the Eagle, Berners, Lace, and Taiya rivers, as well as the Chilkoot and Chilkat runs. Subsistence and sport harvests occur on several of the hooligan runs of Southeast Alaska.

On the Stikine River (see Franzel and Nelson 1981) spawning age for the majority of hooligan was found to be three years. Spawning occurred at night in eight-foot water on a substrate of coarse sand or pea gravel. The onset of the spawning season was associated with water temperature. In the Stikine River in 1981 spawning occurred in early April and lasted three to four weeks.

Bishop *et al.* (1989) found that the Chilkat River hooligan migrated, spawned, and died within the lower eight miles of the river in 1989, although a spawning substrate of coarse sand or pea gravel was present to about 10-Mile. They suggested that hooligan spawned in deep channels, off points of land where concentrated subsistence harvest took place. Their 1989 observations of harvest locations suggested that at least some of the major harvest sites on the Chilkat River were located near spawning aggregations. Suggested spawning locations included spots just above Jones Point, 4-Mile, and 8-Mile, and probable locations on the south bank of the river. Bishop *et al.* (1989) concluded that exact spawning locations have probably varied somewhat over time with natural river course changes. They pointed out that observed increases of hooligan on the south side of the river in recent years could be due to gradually shifting channels.

Ocean tides influenced the Chilkat River up to the 4-Mile point. Hooligan entered the river channels, after milling at the mouth, on a seasonal high tide. The run peaked during the subsequent few days, and hooligan were found in greatest concentration in the lower four miles of the river during daily high tides. Hooligan abundance above four miles was not associated

with tides. Bishop *et al.* (1989) suggested that hooligan migrated in both main river channels above the 4-Mile point. They noted that, while historically hooligan reportedly migrated up to 9-Mile in the Chilkat River, in recent years hooligan have spawned at or below 8-Mile. They suggested that such shorter migration distance may be due to low overall run strength.

The Alaska Board of Fisheries in conjunction with the ADF&G has not established seasons or bag limits nor required subsistence permits for the hooligan fishery on the Chilkat and Chilkoot rivers. Hooligan may be fished with any gear type allowed under general subsistence provisions, and are commonly harvested with dip nets. Technically, hooligan also may be fished with rod and reel under sport fishing regulations, for which a sport fishing license is required. However, rod and reel is an inefficient harvest method for hooligan and is not generally used. Non-Alaska residents are legally required to obtain a sport fish license and to use rod and reel gear, as they do not qualify as subsistence users under current Alaska statute.

The Division of Commercial Fisheries in southeast Alaska has no specific management plan regarding the subsistence hooligan fisheries in southeast Alaska. The division has not conducted biological research on hooligan in southeast Alaska because there has been little commercial interest in the fishery.

TRADITIONAL KNOWLEDGE ABOUT CHILKAT AND CHILKOOT RIVER HOOLIGAN

Legendary Knowledge

The primary harvesters of hooligan in northern Southeast Alaska are the Chilkat and Chilkoot Tlingit of Haines and Klukwan. They have used hooligan, or *saak*, for untold centuries. For them, hooligan not only provided food, but also medical, social, and spiritual well-being. The use of hooligan is deeply embedded in Tlingit culture. According to Tlingit culture and mythology, human, animal, and spiritual worlds are linked; the natural is permeated by the

supernatural (de Laguna 1972; Oswalt 1988). One woman stated, "I believe you have to talk to everything that's around, and then they'll hear us; they hear what you're talking about" (Lillian Hammond 1990). Another explained, "Real sensitive, hooligan family. They can see long distance, they can see the people who are bad and who are not... Everything is alive, even trees, flowers" (Daisy Philips 1990). Traditional Tlingit culture recognized the ties between human culture and society and the natural world. In an earlier era, Tlingit shamans were believed to be able to communicate with and sometimes influence animal spirits and other forces of nature. More commonly, as indicated in the above quotes, direct communication between men and other beings was possible for anyone. Women, for example, spoke to bear-spirits while berry picking, to ask them to stay away and share the berry patch. Moral obligations remained equally important for both human and non-human beings. As one respondent explains, referring to all subsistence resources, "It's coming to us; we have to take care of it" (Austin Hammond Sr. 1990).

Currently, migrating hooligan are said to have personal qualities. The personality of hooligan is defined by happiness, contentment, and sensitivity to their surroundings. Tlingit sense of taboo, *Ligaas* (see de Laguna 1972) guides stewardship over the hooligan. There are rules of behavior during the hooligan harvest activities to ensure the continued strength of the run. There are practical prohibitions, such as harvesting only after the run had proceeded a certain distance upriver, although not all contemporary harvesters observe this prohibition. There are restrictions on throwing rocks into the river; jumping into or swimming in the river; splashing, wearing bright colors, and making loud noises; allowing garbage, dishwater, pots and pans, dogs, even hands or feet in the water. In addition, there are rules concerning the tidiness and cleanliness of the fishing and processing sites, and the exclusion of menstruating women from harvesting. Adherence to such rules showed respect for the hooligan people.

Historically, it is reported that chief's wives went from tent to tent locating menstruants and warning them to stay away from the river. Children were given tasks like hauling water and gathering wood to keep them constructively occupied and involved. Since hooligan were

thought to perceive and react to human emotions and attitudes, feuds and sorrows were to be set aside during the hooligan harvest. It was advised that harvesters and others present should be happy and greet the fish as they arrive. A harvester's attitude was said to affect his catch level, and a pleasant atmosphere in general was said to ensure continuance of the run. Conversely, unusual behavior of the hooligan run, such as early arrival to the spawning river, was believed to foreshadow an unfortunate event, such as an earthquake, illness, bad seasonal weather, or low harvests.

Not everyone follows these rules, either historically or today. Tlingit elders reflect on times when rules had been broken, and on the effects they believe such indiscretion have had on the strength or presence of the hooligan run. For example, hooligan were said to have disappeared from the Chilkat River for five years following highway construction in the 1940s. The perceived decline in the late 1980s in stocks of both rivers was attributed to specific examples of rule-breaking and general lack of adherence to many of the rules. Some saw a decrease over time in the knowledge and interest of harvesters in the cultural elements of the fishery. One respondent summarized: "And they talked with us, our grandmother, our grandfather: *if you don't listen, our food is going to disappear*. Now it's come to pass" (Richard King 1990).

Tlingit culture is rich with oral tradition. Expert story tellers possess the knowledge of the clans, property, geography, resources, and man's position in the universe. It is through the many myths and legends of oral tradition, in part, that Tlingit culture is explicated. These legends explain, justify, and teach. Two stories, told in English, were offered by respondents as a means of teaching about the importance of hooligan. The stories are abbreviated from versions that would be given in the Tlingit language.

The first story explains how hooligan came to inhabit the Chilkat and Chilkoot rivers. It tells of success for the shaman who knew how to correctly capture and transport the parent hooligan to the Chilkat River. The story shows why hooligan exist in the Chilkat and Chilkoot rivers: they are there at the request of people, for peoples' use, by the power of a 'spirit man' to

bring them from the Nass River and introduce them to new home waters. It was told by Joe Hotch of Klukwan in 1990.

A woman from Nass River was married to one of our men here in the village. The first year she spent here, springtime came and she said, "Gee, I wish I was eating those hooligans in Nass River," and there was no hooligans here in Chilkat or Chilkoot River. And her husband says, "Well, maybe next year we'll work on it." So she explained what time of year the hooligans appear in Nass River. So even a month before then this man she was married to got a spirit man, and got his nephews, and took them down, travelled to the Nass River; not just a days' trip, it must have taken them a long time to get there. So they got there just in time and the hooligans were arriving at the Nass River, and they got their supply to bring home. So the spirit man says "Well, we're gonna tow one home." So he got a tendon off an animal here and got ready to tow that one hooligan up there. He tied it around the head, and they towed it up there. And this is how our people understand how our hooligans arrived on the Chilkat and Chilkoot, through the spirit man; and we were just blessed at that time to have such people to meet our needs.

The second story explains why hooligan are so important to Tlingit people. It identifies daylight, introduced to the world by Raven, as the source of the hooligans' spiritual power, and emphasizes the depth of that power, that hooligan are as essential to survival as is daylight itself. In this sense, hooligan feed both body and soul. The story also warns of dangers involved in fishing for hooligan because of this power, which can drain the strength of a person who enters the water during the run, and result in their drowning: as related in the story below, "hooligan's going to take it [a person's spirit] down, he's going to die". As in the story above, the Nass River was again the source of hooligan. And as in many Tlingit myths, Raven moves between the human and animal worlds, manipulating situations for his own benefit and in effect creating aspects of the natural world. In the following story Raven releases daylight to a previously dark world as a trick to obtain hooligan for himself. More complete versions of this narrative have been told as "Raven and the Theft of Daylight" (cf., de Laguna 1972), with the emphasis on the creation of stars, moon, sun, and daylight. Themes of stories commonly vary slightly according to the story teller (de Laguna 1972). The following version brings forth hooligan in particular, as

the herald of daylight and springtime foods. It was told by Austin Hammond Sr. of Haines, in 1990, and represents just a portion of the longer narrative, as he indicates in the introduction.

So this Raven, what he did, for all of our people, not only Tlingit, anybody who needs it all over the world. The Raven knows where all the boxes are: at Nass River, there was a building there. On each corner there was a box there. So this story, it's a true story, what our Tlingit are telling each other. I'm just going to start talking about just the daylight.

It was dark, that was the last box he got, the daylight. And then when they were playing with it on top, where they staying in that house, where the smoke goes out, in Tlingit we call "*Gaan Yéili*," where the smoke goes out. Soon as he sees it open, he fly with that box, the daylight. The old lady was sitting there. "I know that was a raven," that old lady will say. Then he stopped walking with it. Where they're catching that hooligan, everyone, that sandy beach they got, put the dip net and running with it: "*H-o-o-o-o-o-o-o-o-o*," that's the way it sounds, the voice, and the hooligan likes it. The voice, they're happy, so they keep moving toward to them.

But the Raven asked for some. "Give me some of your hooligan." Nobody even listened to him. Keep catching that hooligan. When he keep asking, he says. "If you don't give me some hooligan I'm going to break daylight on you." Some people talking: *Gootx Naas Shagi Yátk'u*.. "where is that Nass child from?" That river they call Nass. So he keep asking, he didn't open. "No, don't give him any." Then he pulled it, the box half way, the daylight came up. Everybody started yelling...*ahhh*...run behind the trees, some of them running up. Then he pull it back again. And that hooligans just thick there. And he keep asking, he keep asking for some. Nobody give them any. That's why he opened that box. Ok. You could say it, "You asked for it." He opened it. Everything running up the woods, like brown bear, fox, whatever goes up to the trees. Some sea lion, seal, killer whale, fish, they're jumping in the water. And that hooligan, in that daylight, that's the reason why they got more spirit. They're in that daylight.

That's why our Tlingit be careful when we're using it. That's why we try and tell the people: *don't swim, don't jump in the water*. If they fall in the water, come to his neck, come out, took his clothes off, put it on the stump, put dry clothes on. He's not going to get his clothes again, the one who put it on the stump. Leave it there. If you don't do that, the spirit, the fish gonna take it, hooligans going to take it down: he's going to die. And the women not supposed to catch hooligan. Why? The monthly period, that's the reason why. They can't catch it, can't go in the water. Right now, we jump in the water. That's why it's getting less. We don't know it. The fish knows it, our people don't know it. They can't listen to us to tell them, that's why it's that way. That's why you can't jump into that hooligan, while they're in the river, without clothes.

Empirical Knowledge

Two major sources of Tlingit knowledge about hooligan are oral tradition and empirical observation. According to Tlingit elders, there is considerable knowledge about hooligan

contained in oral traditions told as stories. In 1990, to illustrate how oral tradition reflects empirical knowledge, Austin Hammond Sr. told a story of Raven introducing the marine species to man. From incidents in the story he drew conclusions about the seasonal movements of resources, and sequence of harvest activities. For example, king salmon migrates to inshore waters in the spring following herring, needlefish, and hooligan. Brown bears emerge from hibernation when seaweed ripens, and when terrestrial plants bloom and bumble bees become active. The knowledge transmitted in oral tradition reflects empirical observations, informally guiding observations and in turn validating the legends. Local knowledge about the hooligan runs seems to support some of the scientific findings discussed in the previous section, but not all. Local knowledge that is supportive of biologists' observations includes the general timing of migration, the relationship between the extent of migration upriver and the type of substrate, predominance of males in the early part of the run, and lack of redd construction. Local knowledge also supports a relationship between the effect of annual run strength and the extent of the upriver migration, that stronger runs migrate to the full upriver extent of the spawning habitat, while weaker runs spawn closer to the mouth of the river. Local harvesters believe, however, that the hooligan spawn in shallow water, along sand bars where gulls prey on them, rather than in the deep channels identified in the scientific literature.

Hooligan are understood by local residents to migrate annually from salt water into the Chilkat and Chilkoot rivers to spawn, arriving as a small run in February, and en masse most commonly in mid-May. According to local respondents, color and markings differentiate Chilkat and Chilkoot stocks. Chilkat River hooligan are darker, with black back and blue sides; the Chilkoot stock is more silvery, with spots. The Chilkat River stock arrives some days before a run appears at the Chilkoot River. Shoals of hooligan arrive at the heads of the inlets before moving into the fresh water river channels. They arrive during the same season that seals pup, sea gulls lay eggs, and black seaweed ripens. The hooligan arrive just after the migrating needlefish or pinfish (Pacific sandlance, *Ammodytes hexapterus*) and directly precede the first migrating king salmon. Dolly Varden "trout" typically follow the hooligan upriver. The arrival

of the hooligan runs are indicated by the presence of predators and scavengers, such as killer whales, seals, sea lions, ducks, eagles, and sea gulls in Chilkat Inlet, in the vicinity of Pyramid Island near the mouth of the Chilkat River, and in Lutak Inlet near the mouth of the Chilkoot River. The hooligan shoals in the inlets are generally not harvested by local residents, who confine harvesting to use of dip nets in-river after the run has advanced.

Local harvesters observe the presence of the February hooligan run by watching gulls and eagles congregating on the lower river. They note that the beginning of the spring hooligan run usually corresponds with high tides in early May. Bishop *et al.* (1989) observed that the relatively early run in 1989 corresponded with high tides of 18-20 feet and noted that local fishermen had predicted that timing. In 1990, the hooligan arrived two weeks prior to the highest tides. Respondents' interpretation of what was considered to be an unusually early run was that it was simply an indication that the fish are influenced by various unknown ecological factors. The 1991 run moved up the Chilkat River some days prior to the highest tides of May, while the Chilkoot River stock began its migration as the high tides occurred. In addition, in the lower reaches of the rivers where the outflow is tidally influenced, the appearance of schools of fish coincided roughly with the tide stages. Following a high tide, hooligan were said to arrive in great numbers. One harvester related that he had dipped unproductively for three hours after the peak high tide, when suddenly hooligan began to arrive, and he was able to fill a tarp lined pickup truck bed in an hour or so. Several harvesters reported similar irregular patterns. The presence of hooligan in a given dipping spot was variable; schools of fish seemed to arrive in "waves."

According to local respondents, the initial part of the hooligan run consists of males, arriving ahead of females in order to prepare spawning grounds, clearing the gravel of sediments. The male hooligan or, according to some respondents, the needlefish, were referred to as the "cleanup committee." They were said to return downriver, and upon meeting the female hooligan, tell them "your place is ready." Males were identified by their rough skin and generally larger size than the smoother, smaller females.

Respondents reported that hooligan migrate and spawn no further upstream than roughly 9-Mile, after which they "roll back" (*kuxwuiawatl*) to salt water. Respondents also report that the spent hooligan do not die in the river but migrate slowly back to sea. There were various opinions regarding spawning locations. One respondent thought that the fish spawned only around 9-Mile; other respondents thought the spawning may be occurring in various locations from 4 to 9-Mile. Presence of sea gulls and eagles was given as the main indicator of the upriver progress of the hooligan migration. By 1990 and 1991, sea gulls congregated by the thousands on sand bars, wheeling and diving for the fish in channels. According to respondents, the rolling back fish are primarily found in mid-channel, while the spawning females bury eggs into the sandy gravels of the shallows, where they are subject to bird predation.

Fishermen made predictions about the strength of a season's run in part by noting the size of the individual fish. If the fish were large, the run would be strong and last longer. Small fish indicated a brief run. One respondent also noted that if the general run advanced as far as 6-Mile, then it would likely continue further upriver to spawn. Such observations indicate, as the respondent noted, that run strength varied from year to year.

HARVEST METHODS

Historic Harvest Methods

Two ethnographers of the late 19th and early 20th century described the harvesting of hooligan on the Chilkat River (Krause 1970 [1885]; Oberg 1973). In addition, photographs taken of the fishery in the late 1800s and early 1900s portray harvesting (Shotridge ca. 1910; Maynard [1894], in Halpin and Seguin 1990). Krause (1970 [1885]) documented a February hooligan run present in the 1880s, harvested for immediate consumption. A local respondent reported that in

the early 1900s they used that run of hooligan for feeding commercial fur-bearing animals also.

In Krause's words:

"Since by this time the winter's supply is beginning to grow short, the coming of the "ssag" is jubilantly welcomed and young and old hasten to catch the tasty fish during its brief ascent. The use of this fish which is never too plentiful is only immediate. Two months later, from the end of April to the middle of May, the same fish appears again but in great numbers, also the individual fish is larger and fatter. Now the fishing takes on greater proportions..." (Krause 1970 [1885]:122).

The second run, in late April or May, was harvested by means of dip nets, basket traps, and fishhooks, the latter two means similar to those used for salmon fishing but smaller and lighter (Krause 1970 [1885]). The conical traps were made of strong and pliable fir twigs. Traps were secured with hand-held poles and removed periodically to empty. Small gaff hooks were also used, lashed to long wooden poles. Dip nets were made from wooden poles lashed together into a V-shape or from forked tree branches. Nets for the frames were sewn from sinew during winter by women. Both trap and dip net harvest methods suggest efficiency with respect to the local conditions: fishers employed mobile means of harvest for use in the wide, shifting, and turbid channels of the Chilkat River, where the exact location of the hooligan runs was unpredictable from year to year. The short duration of the hooligan run required short, intensive harvest efforts. For individual or small group use, particularly from canoes in the swift current, dip nets were efficient in large schools of migrating fish or concentrations of rolling back fish. Two full "brailers" were said to fill a canoe.

Basket traps ceased to be used in the late 19th century, and light twine replaced sinew on the dip nets during the 20th century. One respondent, who was a child in the 1930s, remembers pulling apart threads from flour sacks for his grandmother, who wove mesh for dip nets and sold them for small amounts of cash. The mesh at this time was woven larger than the later

manufactured nets. The larger hand-woven mesh reportedly allowed the net to move faster and more quietly through the water than contemporary nets. Oberg (1973) reports that nets were made with draw strings at the base for releasing the catch. Hand made nets were still owned and



Figure 5. Harvesting hooligan on the Chilkat River, early 1900s. (Photo courtesy of Sheldon Museum, Haines)

used by some in 1990, although light weight aluminum dip nets have been available since the mid 1970s. According to respondents, as metal hoops for dip nets became available, they replaced wooden frames. Wooden poles continued to be used until aluminum poles with light cotton or nylon web became available locally in the 1970s. In the 1990s some fishermen used dip nets with strong wooden poles for deeper or faster water.

During the early and mid 20th century, fishing by dip net ("dipping" or "brailing") was done both from shore and from canoes. Respondents reported that traditionally, elders initiated the harvest on the Chilkat River. Scouts were sent by clan leaders to watch for the arrival of the run. Harvesting began either two days after the beginning of the run or when the first fish of the run had advanced to 7-Mile, indicating that the first arrivals had accomplished their preparation of the spawning areas. Fishing at a given spot would last only two or three days, after which it was said the migrating fish were disturbed and avoided the area, swimming farther out in the river channel. The period of time in which the fish were harvested in the Chilkat River was said to last from two to five days. Shore-based fishermen stood either on the bank, on small docks, in canoes tied to shore, or in shallow water. They swept the net in a side to side down-current motion, targeting those schools of fish actively migrating upstream or recently spawned. Sweeping against the current was sometimes done for catching the fish rolling back down river after spawning.

The rolling-back fish were traditionally harvested after the first of the migrating run had reached 7-Mile on the Chilkat River. As the fish began rolling back down river, harvesters took canoes to mid-stream. They poled across the river in search of aggregations of fish, drifting and poling downstream until encountering schools, and then holding still among a school of fish. Canoe fishing was also meant to target fish in either upstream or downstream movements, pointing the canoe one way or the other, holding the dip net out from the bow of the canoe, and sweeping it inwards to bring up the fish. In another technique, the tines of the forked frame of the net were planted into the substrate, downstream of the canoe. The fisherman bounced in the canoe as he pushed down on the handle; he pulled the net up quickly when the canoe drifted

close to it. Bouncing on the canoe herded the fish towards the net. Fishing was undertaken day and night once the hooligan were rolling back, depending upon the quantity of fish desired and the number of fishermen available to work with each other.

According to respondents, wooden dugout canoes continued to be made by in northern Southeast throughout the 1930s and declined during the 1940s. Wooden plank skiffs were acquired as canoe building decreased but were found to be too cumbersome and not easily maneuvered on the river. It was said that an experienced canoeist could cross the river in an hour, while crossing in the "oar boats" took half a day. When aluminum canoes became available, fishermen experimented with them but found them to be too unstable for hooligan fishing. The Haines highway was constructed in 1943, and automobiles came into use. As the use of dugout canoes ceased, the fishery became increasingly shore-based.

Harvest Locations

During the early 20th century, migrating hooligan were harvested from shore adjacent to several campsites between 2-Mile (Jones Point) and 9-Mile. There were camps at 4, 6, 7, and 9-Mile (the latter referred to as 8-Mile by some) along the river, as well as across the river at the mouth of the Kicking Horse River and at the mouth of the Chilkoot River at the head of Lutak Inlet. Jones Point, known as a king salmon camp, was also used to spot hooligan advancing into the river. Hooligan were harvested and processed there as well. During this century, over several days of fishing, harvesters generally followed the advancing run upriver from Jones Point to 9-Mile. To transport the harvest back upriver to campsites, fishers sailed, poled, or lined canoes to their respective camps. Chilkat River harvesters also launched canoes from Haines and fished both in Lutak Inlet in the vicinity of the Chilkoot River mouth, and in the Chilkoot River.

Traditionally, members of Tlingit house groups worked together to harvest and process resources.³ According to respondents, by the 20th century, labor units were primarily extended families, camping side by side with other families at the processing camps. They moved to the camps to harvest and process hooligan, and some families maintained hooligan pits and cooking sites for generations at the same camp. Harvesting from shore generally took place at the camp, although individual families moved between camps to relieve overcrowding or to increase production. Some families maintained hooligan pits, or rights to pits, at more than one camp. Mobility was an important feature of harvesting, as river channels changed and the presence of hooligan at given locales varied in accordance with those changes. The productivity of a given camp fluctuated over the years with the strength of the hooligan run there.

Contemporary Harvest Methods

The subsistence hooligan fishery on the Chilkat River in 1990 and 1991 was primarily a dip net fishery conducted from shore. Fishing was accomplished by dipping a long-handled net close to the river bottom, moving it downstream slightly faster than the current, and lifting it quickly. Dip nets used during the study year had aluminum handles and hoops, with a web of either cotton or nylon. Harvesters stood on shore or a few feet out from the bank and dipped in long sweeps from side to side, beginning upstream. Alders that lined the banks had been cleared in places; in others, fishermen ducked beneath branches to approach dipping spots. Fishers stood still while dipping, pausing momentarily between dips to let the fish school up again. Fish were flipped from nets into five-gallon buckets, round washtubs on the bank, or into skiffs tied to shore. Occasionally a second person helped to empty the net.

³ The Tlingit social system organizes people such that everyone belongs to one of two moieties (Raven or Eagle), one clan within the moiety, and one house group within the clan. The clan comprises matrilineal descendants of one mythical ancestor; the house group includes those of a particular lineage segment of the clan. Everyone also belongs to a *kwaan*, a geographic and social grouping centered around a permanent village, and named after the village or a major river or bay in the area.

In addition to dip nets, some harvesters used a Hawaiian throw net. The throw net consisted of a circular net, weighted around the circumference. It was tossed into the river in such a manner that it opened and surrounded schooling hooligan. The net was hauled in with an attached cord, turned inside out, and picked or shaken. The throw net was regarded by some Tlingit fishers as an innovation lacking the status of a traditional gear type, and one which caused too much splashing and required too much handling.

Dipping was generally done in moderate current. Fishers wore knee-high rubberized boots, hip waders, or chest waders, and stood a few feet out from shore, going as deep as they could without losing footing. Fishers also had to be able to bring up the net through the current fast enough to prevent fish from escaping. In the turbid Chilkat River, fishers located productive concentrations by feel and intuition. With reference to schools of hooligan arriving in "waves," respondents reported that the fish would suddenly appear in a formerly empty spot, after which harvest might be productive for hours. The best spots were characterized by moderate current just below eddies; fishers commented that submerged boulders also tended to reveal schools of fish on their downstream sides.

Full buckets were emptied into washtubs, into 30 gallon rubberized garbage cans, or directly into pickup truck beds. The tubs and cans were loaded into cars or trucks and driven to a processing site to ferment the fish before rendering oil. Fishers emptied harvested hooligan into dug-out pits or upright wooden bins. The pits were lined with lumber or plastic. The fish were left to ferment for 7 to 10 days, depending on weather. In 1991, the ground remained relatively cold in late May and some processors left their fish fermenting a day or two longer than usual. Processors reported that they rendered greater quantities from well-decomposed fish; on the other hand, over-fermenting would ruin the flavor of the oil. Fish not intended for oil-rendering were set aside after harvesting for smoking, salting, or freezing.

In 1990 and 1991, fishing took place at any hour, with the exception of some hours at low tides or during bad weather. Some fishing groups set up tarps or tents, built fires for warmth and cooking, and used Coleman or camper stoves for cooking. People made numerous trips to

harvest locations from Haines or Klukwan throughout the harvest period. Many were alternating harvest activities with job and family schedules.



Figure 6. Paul Philips dipnetting for hooligan on the Chilkat River, 1990.

Locations and Characteristics of Harvest Sites

On the Chilkat River in 1990, hooligan were harvested from shoreline areas between roughly 4-Mile and 8-Mile, and fishing was not undertaken at either the 9-Mile site or Jones Point. In 1991, fishing took place between 4-Mile and 7-Mile. During both years, fishing groups were primarily concentrated at the 4-Mile and 6-Mile sites, although fishers harvested at other productive points along the river between 4-Mile and 8-Mile. Jones Point has been used intermittently in recent years. The operation (and closure) of a sawmill there during the 1980s reportedly prevented fishing on the point for some years, as did the presence of a movie set on

the fishing site in 1990. Respondents report that the upriver sites at 8-Mile and 9-Mile have not been productive in recent years, due to difficult riverbank and channel conditions.

The 4-Mile fishing area is situated on a small spit below which the river channel sweeps away from the shoreline towards the center of the riverbed (see Fig. 2). The fishing sites at 6-Mile and 7-Mile were likewise situated on large partially forested spits extending into the river bed from the highway; these broader embankment areas accommodate parking and camping space. In addition to the established fishing sites, fishers harvested along the river bank wherever footing and proper water conditions permitted.

Some productive fishing spots were characterized by steep banks swift current, which necessitated standing in the river, wearing chest waders, and tying off to shore for safety. Even in shallower water, harvesters hesitated to walk out into the riverbed very far, to avoid sinking into soft spots. Some harvesters have waded across shallow portions of the river to harvest, pulling a small skiff to hold the catch and using it for support on the soft substrate. Occasionally harvesters walked across broad dry sand flats and through underbrush to approach good dipping sites; they carried buckets of fish back to the roadside to transport to fermenting pits elsewhere.

Fishers attempted to locate productive dipping spots and retain them for their own use until they were finished harvesting. Some groups set up campfires and tarps in the same spots in 1990 and 1991. There were four harvest groups at 4-Mile who established dipping spots for themselves at that site and processed their oil at the adjacent campsite. Others harvesting at 4-Mile were more transient, finding unused spots for short periods of time. At the 6-Mile site, harvesters were predominantly those who processed in Klukwan but also included one group who processed at 4-Mile, as well as some non-local Tlingit and non-Natives. In general, at least some members of every group moved from their established fishing sites during low harvest periods to test the waters at other sites up and down river, generally going upriver as the run progressed. When the Chilkoot River run appeared a few days after the Chilkat run had been in progress, many harvesters turned their efforts to the Chilkoot. Several others waited to fish until the run had arrived on the Chilkoot.

The Chilkoot River fishery is also a dip net fishery but of a different quality than that of the Chilkat River. On the Chilkoot River, the hooligan are visible in the clear water from the mouth to the upriver extent of the run. The road from Haines to the Chilkoot River along Lutak Inlet extends to Chilkoot Lake following the south (near) bank of the river. A bridge at the mouth and the ADF&G salmon weir afford access to the far shore. Hooligan dipping takes place all along both riverbanks, from under the bridge at the mouth up to the Chilkoot Culture Camp, a summer camp for teaching children traditional culture operated by the Chilkoot Tlingit. Spawning is said to take place directly upriver from the camp, in a sandy substrate. Fishing was also concentrated just above the bridge at the mouth of the river, and on the lower side of the salmon weir. Observations in 1990 and 1991 indicated that more fishing took place below the weir than above it, although some harvesters worked among the boulders upstream of the weir, and harvesting took place at the Culture Camp as well.

Fishers stood either in the waters of the Chilkoot River, on planks used as platforms, on the salmon weir, or on shore, and dipped into visible schools of fish. They moved to different spots when a targeted school had dispersed. Schools of fish were sought particularly on the downstream side of large boulders. Some fishers used nets with handmade wooden handles, which could withstand the strong Chilkoot River current. Aluminum handles on manufactured nets occasionally broke in the current.

Several harvesters reported a preference for fishing on the Chilkoot River. In one case, a harvester reported catching approximately equal amounts of hooligan on each river, but the Chilkoot portion of the catch required less time. Others noted that the visibility of the Chilkoot waters increased their enjoyment of the harvest, if not the actual harvest. When the Chilkoot run appeared, many Chilkat River harvesters went to check the Chilkoot run's characteristics and strength, and began to turn their efforts to the Chilkoot; however, harvesting continued on the Chilkat by some. Some harvesters also waited until the appearance of hooligan on the Chilkoot River before beginning to harvest at all.

Run Timing and Harvest Schedule, 1990 and 1991

Information on the timing and duration of the hooligan run in 1990 is based on harvesters' observations and activities. For 1991, timing information also included records of incidental hooligan catches at two research fishwheels operated by the Alaska Department of Fish and Game located at 8-Mile and 9-Mile on the Chilkat River. In 1990, harvesters first noticed hooligan at 4-Mile on the Chilkat River on May 1. Some fishers began harvesting on May 1 or 2. Others waited until the afternoon of May 3, when the hooligan had reached 7-Mile. The latter fishing date was chosen by some because of the traditional practice of allowing the run to reach 7-Mile before commencing harvest. Harvesters watched for gull activity near the mouth of the river, and test-dipped at 4-Mile to assess the presence of hooligan. During the harvest, productivity varied markedly both between harvest spots and from one hour to the next.

Harvests at the 4-Mile site decreased on May 4 and became unproductive by May 5 in 1990. Fishers at 4-Mile observing gull activity on the river saw concentrations indicating that the run was still present on the far side of the river. Fishing continued for another two or three days upriver at 6, 7, and 8-Mile. The two-to-three day fishing period which occurred at each site area was expected. One fisherman explained that the fish are disturbed by the fishing activity after two or three days and skirt out into the river channel to continue migration. Harvesters consequently moved upriver as their catches declined at 4-Mile, to 6, 7, and 8-Mile sites. The last of the Chilkat River harvest took place on May 7. The Chilkoot River run reportedly arrived on May 6; fishing began on May 7, peaked on May 8, and decreased and ended on May 9. Fishing activity was concentrated within a three day period, peaking on the second day. Occasional hooligan are noted days or weeks after the primary harvest period. For example, a respondent casting for trout on the Chilkat River on May 17 caught a hooligan.

In 1991, hooligan were first caught on the Chilkat River at 4-Mile on May 6. Intensive harvesting began at 4-Mile and 6-Mile on May 7 and had declined by May 10. A few harvesters continued on the Chilkat River until May 16. Harvesters began on the Chilkoot River May 9,

continuing until May 16. Comments from harvesters indicated that the 1991 run was stronger than that of 1990. As the run came in strongly on the Chilkoot River May 9, many Chilkat River harvesters moved to the Chilkoot; others had waited for the Chilkoot River run and began fishing there when it appeared.

Additional information about the run timing in 1991 is available from ADF&G fishwheel records. In 1991, the ADF&G operated fishwheels on the Chilkat River at 8-Mile and 9-Mile as part of a chinook salmon research program. The fishwheels caught hooligan from May 7 (when the 8-Mile wheel began operating) to June 17. An estimated several hundred hooligan were retrieved from the fishwheel live boxes on May 11 and distributed to harvesters fishing at 6-Mile (Bob Johnson, pers. comm., 1994). Hooligan fishwheel catch levels declined until May 13, after which small numbers (1 to 14) were recorded almost daily until June 9 in the 8-Mile wheel, and June 17 in the 9-Mile wheel. Peak fishwheel catches at 8-Mile (May 11-13) appear to coincide with peak harvest activity downriver (May 7-10).

Household Participation

Harvest and processing of hooligan was a specialized undertaking, accomplished primarily by Tlingit family groups from Haines and Klukwan, and including relatives from Skagway, Angoon, and other regional communities. Participants were those who had acquired the necessary equipment and knew or were learning the techniques and skills of the fishery. Basically, harvesting required only the use of a dip net, boots (or waders), and time. Harvesters included age groups from teens to 80s; inexperienced dipnetters worked alongside accomplished harvesters. Harvesting was predominantly undertaken by men. Some people found that job commitments preempted or reduced their hooligan activities. In the earlier part of the century this was also true, as for example, some were not able to spend time in the hooligan fishery because they were preparing for commercial salmon fishing in April and May.

In 1991, researcher observations indicated that members from at least 43 households participated in harvesting, including 21 households from Haines, 13 from Klukwan, 4 from Juneau, and 5 groups (households not delineated) of harvesters from Canada (Table 1). Additional harvesters may be unaccounted for. One cooperative extended family group was counted among the 34 local households as one household, because household breakdown for that group was undocumented.

Table 1. Number of Households Harvesting Hooligan for Oil Production and/or Other Uses, 1991.

Community of Origin	Oil and Other Uses	Other Uses Only	Total
Haines	17	4	21 (9.5%) ⁴
Klukwan	12	1	13 (33.0%) ⁴
Non-local	3	1	4
Canadian	0	5	5
Total	31	12	43

A majority of harvesting households (31 of 43, or 72 percent) fished in order to obtain large quantities for rendering oil (Table 1). Of the 34 local households, all but 5 were fishing to render oil; many oil producers were also planning to smoke or freeze part of their catch. Three of the four non-local harvesting households were fishing or processing with local relatives for oil production. The Canadian groups and one of the non-local households were fishing only to obtain fresh hooligan, and not to render oil. Each of the Canadian groups harvested independently from local households, although at least two of them had established kinship relationships with a local user. At least three local households who were not fishing to render oil were planning to process their catch by smoking, expecting at a later date to trade the smoked

⁴ These percentages refer to households in each community, based on the 1988 Tongass Resource Use Cooperative Study (TRUCS) census. Number of occupied households recorded during the 1988 TRUCS research in the Haines road-connected area was 652; there were 39 in Klukwan.

fish for hooligan oil and other wild resources, both locally and with residents of other communities.

Both harvesting and processing of hooligan involved much cooperative effort between different households. Cooperative efforts took various forms, primarily involving either the sharing of equipment or contributions of the catch by numerous harvesters to single fermenting pits for oil rendering. There were 17 oil processing groups in 1991, to which 31 households contributed fish.⁵ The 17 groups shared 12 cooking sites and equipment. Others who gave hooligan to a processor also helped with rendering. Some harvesting groups consisted of extended families, with more than one household contributing fish to the same pit and all working together to process the oil. Other extended family groups used the same processing vat but kept their fish separate. They processed oil separately or with varying levels of mutual assistance.

PROCESSING METHODS

Historic Methods of Rendering Oil

In 1990 and 1991, the rendering of hooligan oil was a time consuming process. Respondents stated that historically, processing oil took even more time. Harvested fish were deposited in pits dug into the ground at campsites and allowed to ferment for 10-14 days. The pits were lined with gunny sacks held in place with lumber; dry grass was spread in the bottom of the pits to keep the fish clean and well drained. A-framed canvas tent covers kept rain off the pits. Descriptions of the historic oil rendering process vary in detail between Chilkat, Nass, and Skeena rivers (Emmons 1991; Goldschmidt and Haas 1946; Jones 1914; Krause 1970 [1885]; Horwood 1990; Niblack 1970 [1890]; Oberg 1973; People of 'Ksan 1980; Sackett 1979; Stewart

⁵ This number (17) is only coincidentally the same number as appears in Table 1 for number of households (17) from Haines harvesting for oil production.

1977; The Alaskan 1886). On the Nass River in the late 1800s, for example, fish were cooked in large wooden boxes, and fresh water was channeled from the river to the processing sites via extensive aqueducts. On the Chilkat River, fish were cooked in wooden canoes on the river bank, and water was hauled in buckets. The following description of the historical rendering process is based on information from local respondents, as well as on Krause (1970 [1885]) and Niblack (1970 [1890]). The above literature sources reflect the time period of the 1880s, while local respondents spoke primarily of the early 20th century.

During the 1880s to early 20th century in the Chilkat-Chilkoot area, medium sized canoes were placed by the riverbank buried in sand for stability and filled with fresh water and fish. Cobbles were heated in fires, lifted out with tongs, and placed in the canoes until the water boiled. As the rocks cooled, they were replaced to keep the water and fish simmering for several hours. Carved wooden seive-like ladles were used to retrieve the stones from the simmering mash. The stones were washed off with warm water on racks over the canoe and reheated in the fires.

Fish oil was released in this cooking process, rising to the surface where it was pushed to one end of the canoe with a piece of bark, and skimmed off with a cedar bark ladle. Skimming oil was also done with clam shells or carved wooden scoops (Stewart 1977). Oil was ladled into large square wooden boxes, allowed to stand, and then ladled again into smaller containers. The remaining fish mash was cooled and pushed through woven baskets to further strain oil. One batch of fish cooked this way in a medium sized canoe reportedly rendered 5 to 6 gallons of oil. This was also done on the Nass River. The fish mash was pressed through pliable baskets placed on slats over wooden boxes (Halpin and Seguin 1990; Stewart 1977). A lever was used to press a flat stone onto the basket, squeezing out remaining oil.

On the Chilkat River, dugout canoes were the cauldrons used to cook the fish for rendering oil. Canoe builders would fall cottonwood trees in early spring in time to have canoes sufficiently ready for oil processing. As the fish cooked in the hollow of the canoe, its oil saturated the wood, enhancing the waterproof quality of the canoe. The canoes used were

medium sized hunting and fishing canoes, built to carry about three persons. Jones (1914) reports that Tlingits used canoes for cooking hooligan oil during his years of observations (1890s through 1914), even while iron cooking pots were available and were used for rendering oil from herring.

Contemporary Methods of Rendering Oil

By the 1940s large steel vats (approximately 4x4x6 feet) replaced canoes for cooking the oil. In recent years, oil producers have ordered sheet metal and had the pieces welded together locally. Some bought large oil drums (new) from an oil company. One processor used two halves of a 55 gallon oil drum welded end to end. The vats were set into earth berms built up from or cut into the riverbank, with room underneath for fire pits. Fires were built directly under them to heat the water, so that processors no longer needed to heat rocks. Fire pits were accessible from the front (facing the river), and the fire was carefully controlled by dampening or removing logs as needed. Large iron pots were brought into use by some processors to gently simmer the skimmed oil a second time, rendering a purer batch.

The big vats were equipped with drains, which allowed remaining water and fish mash to empty directly into the river. Some processors have made a practice of collecting the mash for adding to garden compost. Others claimed this attracted dogs, and most continued to follow the traditional cycle, returning the fish parts to the river. In any case, emptying the vat of the mash before cooking another batch has become less time consuming than with canoes. On the other hand, the steel vats needed scrubbing between each cooking to rid the sides of fish parts inevitably stuck from the direct heat of the cooking fire. And even though processors built stove pipe into the cooking apparatus, smoke seeped out around the edges of the vats. One respondent reported that rocks heated the water in a canoe more quickly than the fires of the contemporary method, although the effort involved in heating rocks was greater than that necessary for direct

heat under the vat. Other respondents reported that the former process was more labor intensive than the contemporary method.



Figure 7. Plank-lined hooligan fermenting pit, with Austin Hammond Jr. shoveling hooligan for cooking, Chilkat River, 1990.

Each season, processors began by clearing campsites, scrubbing and cleaning vats, digging fire pits, and hauling wood. Some processors preferred to cut cottonwood for firewood,

because of its even-heating qualities; others used scrap lumber or other available firewood. They placed the vats on the riverbank within several feet of the edge, more or less at ground level or on slightly raised earth and stone berms. Vats were supported by sand-filled buckets or scrapped automobile radiators. Processors dug fire pits underneath, accessible from the riverbank. At the 4-Mile camp, processors pumped river water into the vats with small gas pumps. Klukwan processors used hoses to fill vats with city water.



Figure 8. David Andrews, Chauncey Jacobs rendering hooligan oil, Chilkat River, 1990.

The water in the vat reached a rolling boil after about two hours of heating, at which point processors doused the fire and pulled out logs from underneath. They shoveled fish out of pits into wheelbarrows or tubs, and emptied it into the vats to gently simmer for approximately



Figure 9. Daisy Philips and granddaughter skimming hooligan oil, Chilkat River, 1990.



Figure 10. Family and friends working with Marilyn Wilson, Chilkat River, 1990.

three hours to raise the oil to the surface. A slow simmer was maintained by constant attendance to the fire. During the initial simmering period, processors used a peeled pole or wooden oar to stir the fish; they scooped up fish with the oar, and gently knocking it on the edge of the vat, loosened the meat from bones and broke large pieces. This was done to release the oil from the fish. When they finished stirring, processors left the mixture to settle. The length of time allowed for settling varied from several minutes to up to roughly three hours, depending on the desired flavor of the final product. As the oil rose to the surface, processors dropped small cupfuls of cold water into visible clumps or air bubbles, to further raise the oil and keep the vat cool. After the mixture settled, they skimmed oil to one side of the vat with wooden boards, and then ladled off standing oil into clean buckets. They scooped up the remaining fish mash with long-handled strainers, drained its oil and liquid over the vat, and discarded the rest into the river. A second settling and skimming was done and, when completed, the vat was drained by opening a valve and the contents were channeled into the river by means of sheet metal or boards. The vat was rinsed out, cleaned, and filled for the next cooking.

Oil was left in the buckets to settle before ladling and funnelling into jars; some processors left the oil to settle for as long as a week before final jarring. A variation on the method was to skim the oil very soon after completing stirring, without a long settling period or a second rendering. It was ladled into large iron pots and allowed to settle over a very slow fire before final skimming into jars. Oil rendering lasted for two or three days, depending upon the quantity of fish harvested and number of batches cooked. At the end of the season, vats were scrubbed and turned over, camps were cleaned and equipment stored for next years' use.

Quantity of Hooligan Used to Render Oil

Historic sources describe harvest levels and quantity of oil produced in terms of number of canoe loads and tons of fish. Krause (1970 [1885]) reported that in 1882, 8 to 12 canoe loads of hooligan per "man in the Chilkat territory" were harvested, each producing five or six gallons

of oil. Thirty-five years later, Shotridge (1917) declared that among the Chilkat, oil was put up in greater quantities in former years before it was replaced by lard and bacon grease. Nevertheless, he reported in 1917 that each participating household harvested 4 to 12 tons of hooligan (four canoe loads of a ton each filled a pit, of which each household had from one to three). Oil was stored in wooden boxes of 15 to 20 gallon capacity (Porter 1893), and two decades later in five gallon cans or boxes (Jones 1914).

Prior to the present study, two contemporary sources of quantitative subsistence hooligan harvest and distribution data existed for Haines and Klukwan residents. The Division of Subsistence administered a harvest survey for the year 1983 in each community and for residences along the highway between Haines and Klukwan (Mills *et al.* 1984). In addition, resource harvest and use for Haines and Klukwan residents were documented for the year 1987, as part of a region-wide research project documenting resource use for residents of 30 communities in southeast Alaska (Tongass Resource Use Cooperative Study (TRUCS) 1988). Hooligan harvests expanded from random samples of households (1983) and stratified random samples (1987) are presented in Table 2.

Table 2. Harvest and Distribution of Hooligan by Residents of Haines and Klukwan, 1983 and 1987.

	Total Pounds Harvested	Pounds Harvested Per Capita	Percent of Households Harvesting	Percent of Households Giving ⁶	Percent of Households Receiving ⁶
Haines 1983	11,992	6.3	23.1	6.8	6.1
Klukwan 1983	1,199	7.7	42.4	12.1	24.2
Haines 1987	4,782	3.0	13.7	8.1	12.5
Klukwan 1987	7,104	53.4	55.4	38.6	50.3

⁶ Refers to fresh hooligan.

Table 2 shows that in 1983 an estimated 13,191 pounds of hooligan were harvested by Haines and Klukwan residents. In 1987, an estimated 11,886 pounds were harvested. The productivity of the two communities was reversed between the two years: Haines harvests fall from 11,992 pounds (1983) to 4,782 pounds (1987), while Klukwan's harvests increased from 1,199 pounds (1983) to 7,104 pounds (1987). The estimates for Haines may be subject to sampling bias, because of the relatively smaller proportion of Tlingit households in Haines, so that a random draw of households may underselect hooligan harvesters more so than in a community like Klukwan. However, the combined harvests of the two communities in 1983 and 1987 were similar (a decrease of about 1,300 pounds in 1987, or about ten percent). This harvest level variation may reflect residential mobility, decreased run strength or harvest needs.

Because harvest surveys were not systematically undertaken during 1990 or 1991 field research, harvest data comparable to the earlier Division of Subsistence surveys are not available. However, quantities of hooligan used in making oil were estimated for the 1990 and 1991 seasons with the help of one processing group, counting the number of units of fish used per batch of oil. There are numerous reasons for a wide variation in the amount of oil rendered in a given batch, such as the length of fermenting time for the fish; oil content of the catch, which is said to be greater if there is greater egg content; cooking time (boil too long and the oil sinks to the bottom); the proportion of fish to water in the batch. The following case examples of oil production levels are presented to indicate the level of effort required to produce oil, and a general range of quantities of oil produced.

Local units of measure of harvested hooligan during the 1990-91 seasons included 5-gallon buckets, round galvanized or rubberized washtubs, and wheelbarrow loads. In 1991, one respondent counted the number of fresh hooligan in one 5-gallon bucket (number of drying hooligan in his smokehouse, which had come from one full bucket). A 5-gallon bucket held 360 hooligan. Using a conversion factor of 2 ounces per fish (Ray Staska, pers. comm. 1990), this is about 45 pounds of hooligan. By this measure, 1 gallon of fish is equal to about 72 fish or 9 pounds.

To figure gallons of hooligan used to make oil, the respondent shoveled ripe fish into buckets (the fermented hooligan was generally shoveled into wheelbarrows without counting shovels or buckets). There is some shrinkage of the fermented fish in pits, which the respondent estimated to be about one-eighth. The respondent filled buckets to within 3 or 4 inches of the top to account for shrinkage. In this example, four and a half 5-gallon buckets were used to fill one wheelbarrow, and four wheelbarrow loads filled the vat for one cooking. Thus, about 90 gallons of hooligan (6,480 fish, or 810 pounds) were used in this cooking. Eight gallons of oil were rendered from that cooked sample. In that case, it took about 101 pounds of raw fish to produce one gallon of oil. A different batch by the same group yielded 10 gallons of oil from 100 gallons of fish. Both of these examples were said to be large batches; 10 gallons of oil from one cooking was unusual. In 1990, another respondent estimated putting up 2.5 washtubs, or 30 gallons, of fish for freezing, which she roughly estimated would otherwise amount to approximately 2 gallons of oil (15 gallons of fish, yielding 1 gallon of oil). Table 3 summarizes the conversion factors and quantities of hooligan used to produce oil in the above three examples.

Table 3. Quantities of Whole Hooligan Used to Render Oil, 1990-1991.

	Number of Whole Hooligan	Gallons of Whole Hooligan	Pounds of Whole Hooligan	Gallons of Oil Rendered	Pounds Whole Hooligan per Gallons Oil
Case 1 1991	6,480	90	810	8	101
Case 2 1991	7,200	100	900	10	90
Case 3 1990	2,160	30	270	2	135

Variations in the amount of oil rendered per cooking, as noted above, were said to result from fermentation time and gender of the fish. Female fish were reportedly richer in oil, and fish

that had fermented longer (the last batch, harvested first and cooked last) tended to yield more oil. For example, the group described above commented that they seemed to have caught more females than in previous recent years and had rendered more oil per cooking than in 1990.

In addition, variation in harvest level between households and from year to year is said to be great, and dependent on several factors. During the 1990 and 1991 study years, the amount of fish filling pits or bins varied among processors, as did the size of the cooking vats. The size of extended families, frequency of use of oil, needs for distribution and exchange, and needs for ceremonial occasions were cited as reasons for harvesting more or less hooligan. Access to harvest and processing equipment and labor needs also conditioned participation and harvest levels. Households gauged their desired harvest level each year, depending on projected circumstances for the coming year. One respondent pointed out the care taken not to harvest more fish and produce more oil than they thought they could use during the year. Harvest for the season came to a halt as a rule when each group had accumulated the harvest level they needed or were able to process, even when the fish were still present and harvestable. In some cases, harvesters did not fulfill their needs even while continuing to harvest as long as possible.

USE OF HOOLIGAN OIL

Historically hooligan oil was used primarily for eating with other foods, but also for preserving certain berries, roots, herbs, and salmon eggs. It was commonly mixed with fresh berries. It was also consumed at feasts (Niblack 1970 [1890]; Oberg 1973; Stewart 1977).

In 1990 and 1991, processors dipped crackers, raw vegetables, dry fish, or meat into the fresh oil while it was still cooking in the vats. Pieces of hooligan meat were scooped up and eaten from cooking vats. One processing group served fresh hooligan oil accompanied by an array of other wild or fresh foods, including smoked seal, smoked salmon, and raw fruits and vegetables. Throughout the year, the oil generally was eaten as a condiment with foods. It was

added to boiled fish and meat, and spread or dipped with a variety of foods. Herring eggs, other fish eggs, boiled fish, and black seaweed were often eaten with hooligan oil. It was used for frying red sea ribbons in early summer. Year-old oil was whipped and mixed with cranberries, or cranberries and coho or sockeye salmon eggs. The aged oil was preferred, as it tended to whip more easily than freshly rendered oil.

Oil was also taken orally for such ailments as arthritis, tuberculosis, or cancer. Some people took a spoonful daily as a dietary supplement. Hooligan oil is notable for its high vitamin A content (over 4,000 IU per 100 grams). Smoked hooligan is also high in Vitamin A (4,000 IU per 100 grams), as well as high in iron (12mg per 100 grams) and fat (25 gm per 100 grams) (Drury 1985; Hooper 1985). In addition to edible or medicinal purposes, the oil also served other functions. Tradition maintains that it has value as a barometer, as an indicator of both weather changes as well as social or personal events. For example, fishermen used to keep some oil in their boats, for an increasingly milky appearance predicted stormy weather. A reddish cast to rendered oil would portend a family or personal disaster. Fish parts remaining after oil was processed were sometimes hauled away for use as garden fertilizer; more often it was discarded into the river, where it was believed to contribute nutrients. According to one respondent, "Our grandfathers say, *'Put every little thing that you think has to go back into the water'....Put it [hooligan] back to the water, that's his hole. That's the way they were putting it all back into the water....Put it [fish scraps] back in the river: that's where they belong; that's your food"* (Richard King, 1990).

Other Methods of Hooligan Preparation

In addition to its use as a source of oil, hooligan were welcomed as a source of fresh food in springtime. Contemporary users boiled, baked, or fried fresh hooligan. Historically, hooligan were dried on racks alongside rendering vats (Hakkinen 1979; Stewart 1977). Photographs of hooligan drying racks on the Nass River in 1884 appear similar in size to the extensive Yupik

herring racks of Yukon Delta communities (Pete 1984). In 1990 and 1991, some families also smoked and dried hooligan within their salmon smokehouses. Some hooligan was smoked immediately, while others were frozen and later thawed for smoking along with the sockeye harvest in July. One respondent retained several buckets of the larger fish of her harvest for smoking. She gutted and slit the fish from tail to gills, leaving the head intact; she also left some of the fish whole. She strung the fish through the gills in a row on pointed sticks, or hung them in bunches, for about five days of smoking. She also jarred some of her harvest as sardines. Female hooligan were dried both with eggs intact as well as cleaned of the roe. The eggs were eaten separately, primarily by elders. The dry fish were said to keep for months when thoroughly dried, although users commonly froze them. Dried hooligan were eaten "like candy," and smoked, jarred hooligan were eaten "like sardines."

Hooligan salting was done by layering fresh fish in five gallon buckets. Rock salt or table salt was spread between the layers, and the buckets were sealed. Throughout winter months, salted fish were prepared for eating by rinsing several minutes and then boiling. Whole frozen hooligan were commonly boiled.

HOOLIGAN CAMPS

Historically, Tlingits moved to seasonal camps to harvest resources. Specific seasonal settlement patterns varied among Tlingit groups depending upon local resource availability. Some groups dispersed from established winter villages to spring camps for such resources as halibut, sea gull eggs, herring eggs, seaweed, and hooligan (Langdon 1989; Oberg 1973). Most groups used summer and fall camps to obtain a supply of salmon and berries.

For the Chilkat and Chilkoot Tlingit, *saak* (hooligan people) were greeted, harvested, and processed at *saak aani*, or "hooligan camps." On the Chilkat and Chilkoot rivers, hooligan camps were located adjacent to the hooligan spawning grounds along the lower reaches of the

rivers. These were seasonal camps, some of which doubled as salmon fish camps. Referred to also as "tent camps," the early 20th century Chilkat and Chilkoot Tlingit hooligan camps were located along the lower reaches of both the Chilkat and Chilkoot rivers. On the Chilkat River, four camps were situated along the north shore at 2, 4, 7, and 9-Mile, and on the south shore one or more were upstream from the mouth of the Kicking Horse River. As with harvest locations, hooligan camps of the 1920s and 1930s extended along the shoreline quite some distance between these milepost landmarks, so that today people refer to camping at 8-Mile as well. On the Chilkoot River there were two hooligan camps, one on the lower Chilkoot River and one in Lutak Inlet just downstream from the mouth of the Chilkoot River.

In the early part of the century, families set up tents at camps for three or four weeks to harvest and process hooligan. The number of people using a given camp fluctuated over time with the shifting of river channels and presence of hooligan at each site. The larger camps at any given time were those with the best harvest characteristics, producing the highest harvest levels, and accommodating the largest camping areas. Individuals spent varying amounts of time at the camps during those weeks. Some who helped with harvest and processing traveled daily from Klukwan or Haines by canoe. When hooligan oil rendering was finished for the season, many families moved on to Chilkat Inlet to work in the canneries and commercial fisheries for the summer.

The use of camps for hooligan harvest and processing has continued throughout the 20th century and into the 1990s. However, three camps have been altered by highway construction and other effects of development so as to be unsuited for oil processing (2-Mile, 9-Mile, and Lutak Inlet camp). Access two to others has become inconvenient in recent years and they have fallen into disuse for oil processing (south shore of the Chilkat River and Taiyasanka Harbor). However, after completion of highway construction, local oil processors reconstructed and have since maintained two traditional sites on the Chilkat River (4-Mile and 7-Mile). Also, the traditional village site on the Chilkoot River was restored as the Chilkoot Culture Camp in the

early 1980s and re-established as a hooligan processing camp. Klukwan processors also have created new sites for rendering hooligan oil in Klukwan village.

In general, highway construction marked a turning point in the way camps were used for rendering hooligan oil. Increased use of automobiles allowed for quick access to camps from Haines or Klukwan and overnight camping waned. Fish were hauled to camps by car or truck. Decline in use of dugout canoes reduced river access to sites, particularly to those on the south shore of the river. When the highway bisected camps at 4, 7, and 9-Mile, many Klukwan residents moved oil rendering operations to camps in Klukwan along the riverbank. Other residents, primarily from Haines, reconstructed the 4-Mile and 7-Mile sites.

Several additional changes took place during the middle of the 20th century which influenced the use of camps for rendering oil. Elder respondents reported a general decline in participation in the hooligan fishery during the late 1940s and 1950s, although some families remained active. In some cases, when an elder member of a family using a particular camp died, the camp fell into temporary disuse. During the early 1960s the fishery was revitalized as former participants began again to harvest and render oil and to teach younger residents. Two camps (Jones Point, Lutak) were affected by Haines community expansion and consequent land status changes. Overall, changes in the patterns of harvest and processing of hooligan represent ongoing adjustments to new technology and life styles, balancing efficiency and cultural meaning. The following paragraphs offer an account of each of the traditional hooligan camps.

Jones Point

Jones Point, a flat spit near the mouth of the Chilkat River, considered locally as 2-Mile, was used for scouting the first hooligan of the year. According to respondents, local residents maintained a tent camp there during the early part of the 20th century. Hooligan harvesting commenced at Jones Point after the first part of the run reached the 7-Mile camp. Designated scouts and "chiefs" would track the progress of the hooligan run and announce the opening of harvesting. People also fished for king salmon at the mouth of the Chilkat River in April and

May, while spawned hooligan were processed at the camp. The use of Jones Point village as a hooligan camp reportedly declined when a sawmill was established there in 1940. The sawmill discontinued production at that location in 1975. Local users have continued to fish for hooligan there, some using skiffs with oars or outboards to dip their nets out in Pyramid Harbor at the mouth of the Chilkat River, but have not revived full use of the camp. Some respondents noted increasingly early hooligan fishing there by some harvesters, in spite of traditional rules dictating a waiting period. Harvesting at Jones Point has continued occasionally over recent years. During the 1990 season, however, residents reported being turned away by guards for the Walt Disney movie set *White Fang*, located on the Point.

4-Mile and 7-Mile

The Chilkat and Chilkoot people had long maintained a foot path from *Deishu* (Haines) to Klukwan. This was upgraded for vehicle use by the U.S. government from *Deishu* to the 7-Mile fishcamp between 1904 and 1914 (Sackett 1978). Non-Native settlement along the roadway increased during those years. Local Tlingit resistance to extending the road beyond 7-Mile halted its construction at the edge of a camp there. In 1915, in response to perceived encroachment on land and subsistence resources, the Chilkat and Chilkoot Tlingit were granted executive order reserve status of lands at 4-Mile (*Yandeistakye*) and 7-Mile. The Chilkat Fisheries Reserve (7-Mile) and Yendistucky Reserve (4-Mile) provided for exclusive Native use of the hooligan and salmon fisheries there (Price 1990). The Alaska Native Claims Settlement Act of 1971 generally revoked executive order reserves, but local Chilkat Tlingit believe that there may be mitigating circumstances for the reserve at 7-Mile. It was in these two areas that Chilkat River hooligan camps had been maintained into the 1990s.

Historically at *Yandeistakye* (now the site of the current Haines airport), hooligan pits and cooking sites were situated along the river below the village, and primarily around an upriver bend behind the *Yandeistakye* village. The upriver section was known as *Nan ah ah* (Emmons 1916), or Smokehouse Village (Sackett 1979). Until the 1930s, *Yandeistakye* was occupied year

round by several Chilkoot families. As residents moved into Haines or Klukwan during the early 20th century, the village continued to be used as a seasonal camp. When the 1942 construction of the Haines highway ran through the middle of the camp, the hooligan pits at the *Yandeistakye* campsites were reportedly destroyed. Smokehouses and the canoe landing area of the downstream aspect of the village were covered by the new highway (Sackett 1979). The Haines airport was constructed on the river's edge at the front of the former village, below the highway, in about 1950. Following highway construction, the pits at the camp on the upriver bank were dug out again and that part of the camp remained in use. According to respondents, this hooligan camp has seen intermittent periods of non-use since the 1930s, most notably during the mid 1950s when a general decline in hooligan harvest occurred, but has been in continuous use since the early 1960s.

In 1991, each processing camp contained fermenting pits (below ground), bins (above ground), fire pits for the rendering process, food cook fire areas, and wooden sheds and shelters. The 4-Mile hooligan camp was located a few hundred yards upriver from the harvest area at the 4-Mile highway turnout, situated along the narrow bank below the highway. Within the campsite there were discreet camping and processing spots associated with different families.

6-Mile

Historically, a hooligan camp is said to have existed at 6-Mile, although elder respondents have only used the site for harvesting and not rendering. Sackett (1979) reported no evidence of hooligan pits there. Prior to highway construction, the 6-Mile area had been established as a private farm which marketed strawberries locally and continued to do so for many years after completion of the highway. While use of the 6-Mile and 9-Mile camps declined during the mid-20th century for oil rendering purposes, they continued to be important harvest locations.

9-Mile

The hooligan camps at 7-Mile and 9-Mile on the Chilkat River in the 1930s and early 1940s comprised large campsites with productive fishing channels close by. The 9-Mile camp was known for the availability of large round cobbles used for heating the oil rendering water. Highway construction in 1942 reportedly destroyed the camping areas and hooligan pits at both sites. The pits and camping area were restored at the 7-Mile site, and oil processing has continued there. The 9-Mile camp, however, with less available ground, has not been used for hooligan processing since highway construction and subsequent private property development occurred. Local Tlingit do not believe that highway development has rendered the destroyed campsites abandoned and discarded. On the contrary, the hooligan camp at 9-Mile, for example, used or unused, remains part of the traditional territory of subsistence harvesting.

Kicking Horse River Site

On the other side of the Chilkat River, a camp near the former Chilkat village above the mouth of the Kicking Horse River was used for hooligan processing (Emmons 1916). Remains of hooligan pits at the village site have been documented (Sackett 1979). In addition, respondents recall use of two camps near the old village site up to two miles above the mouth of the river by at least two families during the 1930s and 1940s. Respondents noted that use of the sites on the far shore for processing oil declined with a decrease in canoe transportation after highway construction. Contemporary harvesters occasionally crossed the river to harvest hooligan but no longer used the camps for rendering oil. Bear were reportedly problems at the far shore sites. Also, work and family commitments made it hard to remain at a distant, less accessible camp for the length of time required for hooligan processing.

Lutak Site

On the Chilkoot River, a camp was located at the head of Lutak Inlet, near the mouth of Shakuseyi Creek. A seasonal village existed there in the early 1900s until around 1940.

Referred to as Lutak, this campsite was not used after the 1940s with the death of an elder and dispersal of family members. By the 1960s private property and home sites had taken its place.

Chilkoot Culture Camp

Another hooligan camp was located on the Chilkoot River below the salmon fishcamp of the late 1800s Chilkoot Village. Hooligan had been processed down river from this salmon camp in a less rocky area, more conducive for excavating fermenting pits, and closer to the main harvest area. In the 1980s and 1990s a local family used hooligan pits and produced oil at the Chilkoot Culture Camp, the site of the former salmon fishcamp.

Taiyasanka Harbor

A seasonal village was present until around 1910 at Taiyasanka Harbor, where hooligan were processed (Goldschmidt and Haas 1946; Sackett 1978). An elder respondent reported that two houses were there and used by Chilkoot people during the hooligan harvest. This indicates the presence of a Ferebee River hooligan stock. People constructed hooligan pits at the village and rendered oil. In 1990 and 1991 this camp was no longer in use.

Camp Tenure

The use of hooligan camps was governed by important principles of Tlingit social structure and organization. It is well documented that Tlingit clans or house groups owned rights, in respective *kwaan* territories, to certain hunting and berrying areas, salmon streams, sealing rocks, house sites in villages, and passes into the interior (de Laguna 1990, 1983; 1972; Goldschmidt and Haas 1946; Emmons 1991; Langdon 1989; Oberg 1973; Olson 1967; Swanton 1908). Theories have been developed to describe the relationship of property ownership to resource management. Oberg (1973) and Langdon (1989) have suggested that ownership served to allocate scarce and highly valued resources, such as the relatively few sockeye streams within

a *kwaan* territory. Harvest pressure on small streams or special areas was eased by clan or house group divisions. Oberg (1973) suggests that on large mainland rivers such as the Chilkat River, where all five salmon species migrated throughout much of the year, ownership of fishing sites was confined to specific locations along the river, rather than to the whole river or large sections of it (Goldschmidt and Haas 1946; Oberg 1973).

According to the ethnographic literature, under traditional ownership rules, rights to use resource sites were held by male clan or house members, along with their wives, unmarried daughters, and small sons (the members of a house who generally worked together) (de Laguna 1972, 1983; Langdon 1989). Access to resource sites was expanded through affinal and paternal connections to the owner clan. Although there are disagreements in the literature concerning actual management of resource use sites, de Laguna (1972, 1983) ascribes authority to grant permission to non-clan members to harvest resources, as well as to direct the timing of harvest, to a ranking house elder, termed a *yitsadi* ("keeper of the house"). Men related to the owner clan (or house) as husbands of female clan members and as *yadi* (designating the father's clan), would ask permission of the ranking clan head to use a site, and this permission could not be denied without repercussions.

For the Chilkat and Chilkoot Tlingit, matrilineal clans claimed ownership of lands in the upper Chilkat and Chilkoot river valleys and waters of the Chilkat watershed and upper Lynn Canal on which resource harvest and processing took place, including hooligan camps (Emmons 1916; Goldschmidt and Haas 1946). Since at least the 1880s, the *Yandeistakye* camp at 4-Mile was recognized as the property of the Raven *Luqaa.xádi* (sockeye) clan of the Chilkoot people. The village of *Yandeistakye* itself was primarily a *Luqaa.xádi* settlement, having four *Luqaa.xádi* houses, two of the *Shangukeidi*, and one of *Kaagwantaan* at about 1900 (Olson 1967). As documented in the 1940s, the 7-Mile and 9-Mile camps were owned by the Raven *Gaanaxtedi*, primarily of Klukwan, having been transferred to them from the *Luqaa.xádi* at an earlier time (Goldschmidt and Haas 1946). The camp above the mouth of the Kicking Horse River was

owned by the Chilkat *Kaagwantaan* (Emmons 1916). Lutak and Chilkoot River camps were claimed by the Chilkoot *Luqaa.xádi*.

Observations during the 1990 and 1991 study period suggest that clan ownership continues to play a part in the harvest and production of hooligan at the 4-Mile camp. People who were connected to the *Luqaa.xádi* clan had established and were using processing sites at the *Yandeistakye* camp; they also began their harvesting at *Yandeistakye*, although, like others, moved upriver to test for more productive spots as the run progressed, and harvested the Chilkoot River stock as well. In 1990 and 1991 there were four family campsites in use at 4-Mile. Each of the four campsite owners were connected to the *Luqaa.xádi* clan either as male members of the clan (two) or through affinal and paternal ties (two). Three claimed social ties extending back for several generations to the camp. Thus, all camp owners were tied to the *Luqaa.xádi* in 1990 and 1991.

In addition to the camp owners, other processors were using the four campsites at 4-Mile, either by helping at the processing site or using the equipment after the owner was through. The processors had gained access to the site through special relationship with each of the four campsite owners. One such invited guest was a family friend, an elder member of the *Yandeistakye Kaagwantaan*. Also there by invitation was the family of a clan sister to the wife of the *Luqaa.xádi* owner. A total of eight fermenting pits and five cooking vats were used there by the four owning groups and their guests or relations. In one case, a new user had followed the traditional custom to gain access by formally asking permission of the ranking *Luqaa.xádi* elder to occupy the area and cook hooligan oil.

Those who processed oil at the 4-Mile camp were the also primary harvesters there. There was little space left for additional harvesters, although some also made use of the banks and shallow shoreline spots at 4-Mile for harvesting. Most harvesting occurred at the 6-Mile site, which had no processing camps and covered a larger stretch of the river.

The presence at the 4-Mile camp of *Luqaa.xádi* men and their families or people connected to that clan, and at the Chilkoot River processing site of a *Luqaa.xádi* man and his

helpers suggest a contemporary economic function of local clans. That is, clan association appears to facilitate access to the hooligan fishery, at least at one major harvesting site at 4-Mile.

Several respondents were asked about the importance of clan ties at 4-Mile. There were differences of opinion among the users at 4-Mile concerning the need to establish clan relationships to gain access to use of the site. Some acknowledged the importance of clan ownership, such as the woman mentioned above who specifically asked permission of the ranking *Luqaa.xádi* elder. Others denied that clan relationship was the deciding factor in establishing use there. Some allowed that "anyone could use this area, not just the sockeye" (*Luqaa.xádi*), or that one did not have to ask permission. One processor's stated reason for establishing a cooking site at the camp was friendship with other users there as well as the camp's former reservation status. These statements seem to indicate that the operative criteria for use of the campsite employed by some users have more to do with friendship or a well established family presence than with clan ties. In fact, principles of friendship and duration of use do not have to be mutually exclusive of clan principles. Individuals may provide friendship as the explanation for their association with people at 4-Mile, while at the same time, clan principles may operate in ownership of facilities at the 4-Mile site.

Clearly, the role of clan membership has changed over the past century. Community or *kwaan* territory as a whole has become a more dominant form of association among Tlingit groups in Southeast during the 20th century, as clans have amalgamated in villages and as travel to seasonal fishcamps has declined. Land claims investigations in 1946 (Goldschmidt and Haas 1946) reference statements to this effect, and respondents in Haines and Klukwan also reported an agreement by elders about mid-century to consider the whole Chilkat valley and upper Lynn Canal as one territory to be used by all clans equally, as a response to declining territory in the face of local development and decreasing land available for resource use. Nevertheless, although they may have changed, clan principles still appear as important for hooligan fishing at certain traditional sites, even though other principles operate as well to organize people in the activity.

Organization of Labor

In 1990 and 1991, the work involved in harvesting and processing hooligan was generally divided between men and women. With some exceptions, men fished and undertook the heavier tasks, such as brushing out the fishing and processing areas in the spring, hauling and shoveling the hooligan, cutting wood and building fires. Men also stirred the cooking hooligan with oars or long poles. Again with some exceptions, women directed the cooking process, judging the timing of each segment: when the water was ready to add hooligan, when the hooligan had been stirred enough, and when the oil was ready for skimming. Women directed adjustments to the fire, noting that the vat was too hot and boiling too hard, or that it was time to douse the fire completely. If men were helping an elderly woman at cooking, they would be listening and acting on her observations. Women also were in charge of storage and distribution of the oil. Men generally cleaned out the vat and refilled it for the next round. Small children were incorporated into the procedures by carrying and fetching for adults.

Historically, women reportedly sewed the web for nets from sinew or cotton threads, while men constructed dip net frames. Children performed simpler tasks such as collecting wood and rocks for heating, carrying buckets of water and hooligan, and cleaning buckets. Respondents reported that during the 1930s and 1940s production groups were generally comprised of nuclear or slightly extended families. However, several production groups camped together and helped each other. Finished oil was produced and retained by each family group.

During the 1990 fishery, labor and equipment were shared between the family groups at 4-Mile. Individuals moved among the processing sites to help, learn, and visit. Family members and friends who were not directly involved in the fishery gathered for meals and visited at the camp during the cooking process. Fresh hooligan oil and other wild foods were eaten at this time.

During the 1990 and 1991 fisheries, each processing group drew members from several households. Ages of participating members ranged from the teens to the 80s; children under ten

were also present. Processing groups generally consisted of older adults from a core household, their adult children, their childrens' spouses and grandchildren.⁷ People with limited time or access to equipment commonly joined one or more processing groups, in order to help with the labor and therefore obtain some oil. A variation of the core household group comprised two unrelated older adults and their household members who divided labor, equipment, and the finished oil between them.

EXCHANGE AND DISTRIBUTION

Extensive local trade of hooligan and hooligan oil by Tlingits was documented by 19th century observers (Krause 1970 [1885]; Niblack 1970 [1890]; Porter 1893).⁸ Trade of dried hooligan or hooligan oil ranged "up and down the coast" primarily originating from the Nass, Skeena, and Stikine rivers, according to one observer in the late 19th century (Niblack 1970 [1890]). Along the Northwest Coast, local groups commonly specialized in producing particular products for trade with other groups. For example, from southern coastal groups the Chilkat and Chilkoot obtained red cedar canoes, baskets, dentalium, mother-of-pearl, and shark's teeth; from inland Canada came skins, furs, sinew, and lichens for dyes (Krause 1970 [1885]). The Chilkat and Chilkoot offered woven dance blankets, hooligan oil, and dried hooligan (Krause 1970 [1885]; Niblack 1970 [1890]).

7 This is a common arrangement of households for pooling labor and equipment, described for communities elsewhere in Alaska (Wolfe 1987). Subsistence production groups commonly include a mature core household of experienced household heads with an older pool of labor (teenagers and young adults) and complete equipment holdings; in addition, the group includes young households (children of the mature household and their families) with a smaller labor pool (perhaps young children) and incomplete equipment holdings, who contribute labor under the direction of the core household. The members of the group share the subsistence products.

8 In some legal contexts the distinction between trade and barter is important. *Customary trade* in Section 803 of the Alaska National Interest Lands Conservation Act (ANILCA), though not defined, probably refers to exchanges for cash which are not large scale commercial enterprises. *Barter* is the exchange of resources for other resources or non-edible items other than cash. Ethnographic and historical sources commonly refer to exchanges between Euro-Americans and Natives, and between Native groups, as *trade*, irrespective of the items involved in the exchange. In the present discussion, I use the historical word *trade* for historic exchange patterns. For contemporary exchange, I use the word *distribution* to refer to the partitioning of resources within a family group, and *barter* or *sell* to refer to exchange for other goods or cash.

Early British fur traders found that the Nass River was a central location for coastal Native trade, prompting the Hudson Bay Company to build Fort Simpson there in 1831 (Arndt *et al.* 1987). Native trade networks were known at that time to extend into the interior along the major rivers, including the Asek, Chilkat, Chilkoot, Stikine, and Taku. British fur traders commonly obtained furs from the Canadian interior through Tlingit intermediaries. The Chilkat and Chilkoot Tlingit maintained their own interior trade routes, trading with Canadian and interior Alaskan Athapaskans (Krause 1970 [1885]; Oberg 1973; Swanton 1909). In 1880 the American Northwest Trading Company opened a post at Chilkoot, although the local Tlingit prevented them from trading directly with the interior peoples.

During the late 19th century, Chilkat and Chilkoot Tlingit took Hudson Bay blankets, cooking pots, guns, ammunition, matches, and other Western items on expeditions to the Canadian interior over traditional trail systems, some of which, particularly one from the Nass to the Skeena River, became known to observers as "grease trails" because of the historic commerce in fish oils and seal oil (Collison 1941; de Laguna 1983; Krause 1970 [1885]; McClellan 1975; Oberg 1973). Chilkat blankets, baskets, hooligan products, and seaweed were included among the Western goods that constituted trade items to the interior. Krause (1970 [1885]) reports that the Chilkat and Chilkoot Tlingit traded hooligan oil for seaweed from Tlingits on the coast, which they then took to the interior to trade. Among the Inland Tlingit, Tagish, and Southern Tutchone these goods were traded for furs, skins, and lichens; the skins and lichens the Chilkat Tlingit used as clothing and dye, and the furs to trade again to the American or British traders stationed on the coast.

It is important to note that the introduction of western goods did not halt the production and exchange of Native foods. Oberg (1973) documented that hooligan oil, dried hooligan, and cranberries preserved in hooligan oil remained among the coastal Tlingit trade items of the 1930s. At that time, trade of hooligan products brought in a wide range of food items, such as "dried venison, seal oil, dried halibut, dried king salmon, dried herring, dried algae, clams, mussels, sea urchins, preserved herring spawn, and numerous other sea products" to Chilkat and

Chilkoot people (Oberg 1973). Non-food items included "cedar bark for the Chilkat blanket, yew wood for bows, boxes, and batons, [and] water tight baskets of cedar bark" (Oberg 1973).

Haines and Klukwan hooligan harvesters reported that they exchanged hooligan products primarily for other food items, especially those unavailable in the Chilkat and Chilkoot area or those which were inaccessible to the harvester for various reasons. Respondents reported that virtually any wild food might be obtained for hooligan oil. Wild foods listed by respondents included black seaweed, chitons, clams, cockles, crab, herring eggs, salmonberries, bear, deer, moose, seal meat, seal oil, halibut, king salmon, sockeye salmon, and dried salmon. Hooligan was also exchanged for canned and packaged food. Smoked hooligan, fresh hooligan, hooligan oil, and smoked Dolly Varden, caught during the hooligan run, were traded. Most exchange of hooligan products was said to take place soon after processing. In addition to food, hooligan was exchanged for beads, bead work, fur pelts, moose hide, cedar for carving, and handcrafts. Labor was also exchanged for hooligan oil, in the sense that "you'd let people help [with harvest and processing] if you knew they wanted some oil." Helpers always received some oil. Those harvesters who did not process oil themselves but gave their catch to an oil processor, generally also received oil in return.

Magdanz (1988) reports that quantities of oil exchanged from the Chilkat area, per transaction, were relatively small, from a half-pint to a quart, and rarely a gallon at a time. Respondents in 1990 and 1991 reported that amounts produced and exchanged historically were larger than they are today. Oberg (1973) notes that the value of oil decreased during occasional years of very large runs on all major rivers, such that larger quantities of oil had to be given for smaller returns. Scarcity in other years raised the exchange value.

Contemporary distribution and exchange of hooligan oil as well as fresh, frozen, and dried hooligan occurred in several ways. Many respondents said they distributed most of their harvest, keeping only a small proportion for their own consumption. All respondents said they distributed hooligan products among family members, and many also exchanged hooligan beyond what they considered immediate family. Contemporary producers stated that most of

their hooligan products were distributed and bartered for other resources within a large kin group. A small portion of the yearly production was sold for cash. The following paragraphs classify types of distribution and exchange, and examine the social networks involved in each.

One type of exchange was distribution to kinsmen, that is, giving away hooligan within the extended family and to other close relatives, often living elsewhere than Haines or Klukwan. Generally the senior female of the producing group took charge of the distribution of the oil this way. Often grown children with their own households who had helped with the fishery received a larger quantity than those who did not help. Children or elder relatives living away from Haines or Klukwan received oil if they wanted it. This distribution was generally non-reciprocal. The gift of oil was essentially a provisioning of food to family members and represented a general commitment by the parent household to dependents and other relatives. Distribution occurred through sharing oil at meals in the core household as well. For at least one family group, distribution of oil took place primarily in this way, through sharing at meals. In this case, members in several households came together for meals that included hooligan oil stored by one household.

A second type of exchange involved giving hooligan in return for other foods, but without negotiating values (that is, not bartering). This included both immediate exchanges as well as delayed returns. For example, hooligan oil or smoked fish was given to relatives in other communities who offered their local products in return. The parties did not generally discuss the quantities involved, but accepted each offering as given, because, as one respondent stated, generosity and good will were more important than equality. Data suggest that the social network operating in such exchanges included mostly a kin group beyond the local or immediate extended family; types of recipients named by respondents included clan and tribal "siblings," aunts and uncles, other relatives in the opposite moiety, and various relatives "way down the line." One important relationship included in this type of exchange and characterized by a give-and-take of rights and obligations was that of the *ax kaani*, or brother-in-law (less commonly sister-in-law). For a man to share with a brother-in-law is one of the social obligations inherent

in the Tlingit system (Olson 1967). A respondent reported that generous amounts of hooligan oil were given when an *ax kaani* announced his hunger for it, and further noted that distribution of resources to, as well as other reciprocal obligations with, in-laws was a dominant part of contemporary social life.

Another formalized aspect of this obligatory sharing involved donations of hooligan oil for various ceremonial occasions. Hooligan oil and smoked hooligan were set aside for potlatches, to be included among those foods offered as gifts to members of the opposite moiety. Quantities varied widely, depending on availability.

A third type of exchange documented for the contemporary hooligan fishery involved barter when exchange values were negotiated by both parties. For some contemporary harvesters, hooligan oil brought a certain price in the form of other resources, goods, and occasionally services. Barter primarily took place with residents of other communities to obtain resources unavailable locally, and where the oil producer did not have kinship relationships to draw on. Relative values were negotiated based on, in part, the cost of production. Chilkat and Chilkoot processors valued their time and labor involved in producing hooligan oil. As one respondent said, they might "haggle for three days" while visiting in another community. The social network participating in such exchange was broad, including relatives as well as friends and acquaintances. One respondent who harvested with his parents used his portion of the oil to barter for other wild food resources. In this case, he retained his mother-in-law in another village as his negotiator, giving her some of the oil in exchange for her finder-services.

Historical trading partnerships existed between Tlingit and inland Southern Tutchone, Tagish, and Inland Tlingit peoples (McClellan 1975). These relationships endured over several years, involving inter-community clan-mates operating within a broad range of social circumstances. Contemporary harvesters have also continued to barter hooligan oil with interior Canadian relatives and acquaintances.

During 1991 and 1992 research, respondents reported little or no sale of oil, compared to amounts produced and used for other types of exchange. Hooligan oil was occasionally sold in

pint or quart jars. Sale of fresh hooligan was relatively less common also; one example observed during the 1991 harvest season involved an elderly non-Native woman buying a gallon bag of fresh hooligan from a harvester for one dollar. However, hooligan oil was donated to Native or other local organizations for the purpose of raising money. For example, some residents have given oil to the Salvation Army, which collects the money earned from its sale as a donation. The donation of oil, in turn, constituted a tithe for the giver. People also gave oil to Alaska Native Brotherhood and Sisterhood grand camps to sell at conventions as fundraisers.

All types of distribution and exchange served to parcel out hooligan products to people in a wider sphere of communities, including residents of other Southeast communities, Anchorage, Seattle and other lower 48 cities as well as Atlin, Champagne, Teslin, and Whitehorse, in Canada. Fresh hooligan and oil were shipped by air as well as carried when traveling. Harvesters' distant kinship connections extended to virtually every Native and larger community in Southeast as well as the larger cities. Local Tlingit traveled extensively throughout Southeast and into Canada for dancing and other ceremonial activities, as well as Alaska Native Brotherhood and Sisterhood conventions. Respondents reported carrying along jars of hooligan oil to use as hospitality gifts should the need arise. Travel and participation in regional activities have been vehicles for exchange of food, including hooligan products, both in community meals as well as through gifts and barter exchanges.

SUMMARY

The hooligan fishery on the Chilkat and Chilkoot rivers has a long history and tradition of use among the Tlingit residents of the area. Tlingit mythology accounts for the origin and spiritual nature of hooligan. Customary rules based on traditional beliefs about hooligan have influenced Tlingit harvest and processing methods for generations. Adherence to the rules ensures a good relationship between people, hooligan, and good harvests. Hooligan are caught

mainly for rendering oil, which continues to be widely used among Tlingits and other Northwest Coast Indian groups.

Developments within the local hooligan fishery during the 20th century reveals a pattern of continuity and change. Many technical adjustments have been adapted to harvest and processing patterns. Construction of the modern highway in 1942 along the Chilkat River and of the road from Haines to the Chilkoot River brought destruction to some harvest and processing sites and easier access to remaining sites. The new highway also resulted in discontinuance of the tent camps used during the fishery in the early part of the century. Abandoning the use of canoes meant more shorebased fishing with smaller nets. Canoes as oil rendering vessels were replaced by metal vats, and the use of open cook fires instead of heated rocks streamlined rendering activity.

The basic process of harvesting hooligan and rendering oil has changed little over the years. The contemporary fishery is undertaken primarily by Native Tlingit residents of Haines and Klukwan. In 1990 and 1991, the fish were scooped out of the river, piled in pits to ferment, and cooked slowly in vats under knowledgeable direction. Extended families comprising several households provided the members of basic processing groups, as they had in the memories of elder respondents. A range of knowledge, skill levels, and experience was represented among participants. Each group supplied its own labor and equipment. Younger household members participated in both harvesting and processing, learning the skills by observation, practice, and direction from elders. Also, visitors frequented the contemporary rendering camps, and meals were shared. As in the past, the contemporary fishery was highly specialized. Not everyone in the community took part. In practice, a relatively small segment of the local population conducted the fishery. Those who did, produced oil with a wider distribution in mind.

Hooligan are harvested for oil in only a few locations in Southeast Alaska, the primary one being the Chilkat River. Exchange or distribution of oil is one of the goals of harvesters in producing oil. Much of the oil is produced for distribution and exchange with members of other

communities. Distribution to non-harvesting family members is widespread as well. Distribution of hooligan oil overall includes both generalized and balanced reciprocity.

Historic sources and respondents indicated that harvest levels (both of individual harvesting groups and for the area as a whole) were larger in the first half of the century than during the last 50 years. There are probably many reasons for this, but two in particular were suggested by respondents. Historically, larger nets were fished from mid-river, as harvesters followed schools of migrating hooligan as well as the rolling-back fish. The mid-river nets were said to have brought up larger quantities of fish than with the newer and smaller dip nets used from shore. Shorebased fishing limited contemporary harvesters to the schools of fish that travel in shoreline channels. Secondly, respondents considered the strength of hooligan runs to be weaker, overall, in recent years than formerly. Initial highway and airport construction as well as divergence from customary rules at times over the years were cited by respondents as reasons for perceived declines in the stock.

The cultural basis of the fishery has continued throughout the century; many traditional beliefs and values surrounding the fishery, having passed from generation to generation, remain in place. Hooligan oil is considered healthful because hooligan are endowed with particular spiritual qualities. Its exchange value is great. It is given as a gift of respect in potlatches and in return for hospitality. Modern harvest and processing equipment is conscientiously applied in ways that are intended to respect traditional rules about cleanliness, level of noise, and lack of disturbances at the fishing grounds. One's attitude about harvesting is believed to be important to one's success. The hooligan season is a time to put aside personal feuds and celebrate the new spring harvest. Certain technological changes over the years have specifically been discouraged, because to do so would defy traditional beliefs about the relationship of humans to hooligan. Motorized boats on the river or in the inlets during the hooligan run with the use of drift nets, for example, and use of harvest methods that necessitated splashing in the river, or over-handling of the nets, are frowned upon and are generally not undertaken.

Processing of hooligan oil traditionally has occurred at clan-owned camps along the Chilkat and Chilkoot rivers. Historically, persons rendering oil at a given camp were commonly related in some way to the owning clan. While some of the campsites were destroyed by highway construction, three remained in use during the 1990 and 1991 study period. The processors at two of the camps were either members of the current owning clan, or had ties to the clan. In addition to clan links, other factors may also be influencing tenure, such as the scarcity of contemporary campsites and emphasis on nuclear families.

Within the regulatory structure created by the Alaska Board of Fisheries, management of hooligan fishing rests with local users as it has for generations. The Alaska Board of Fisheries in 1989 officially recognized the customary and traditional subsistence use of hooligan for residents of Haines and Klukwan. There were no permit requirements or harvest regulations dealing with seasons, bag limits, or locations. Timing of harvest, use of gear, and particular harvest locations during the study period were determined by customary use patterns. Household harvest levels were governed by a combination of resource availability, household need, and production groups' access to labor, equipment, and time. Principles of Tlingit social organization continued to influence harvest and use patterns. The current level of control that local fishers have over the local fishery may be tested, however, should other user groups arise in the future.

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