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Harvest and Exchange of Eulachon From the Chilkat and Chilkoot Rivers, Alaska

by

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Alaska Department of Fish and Game

Division of Subsistence



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Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft ³ /s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols

alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly-accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly-accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	\$, ¢
months (tables and figures)	first three letters (Jan, ..., Dec)
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	two-letter abbreviations (e.g., AK, WA)

Measures (fisheries)

fork length	FL
mideye-to-fork	MEF
mideye-to-tail-fork	METF
standard length	SL
total length	TL

Mathematics, statistics

<i>all standard mathematical signs, symbols and abbreviations</i>	
alternate hypothesis	H _A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2 , etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	log ₂ , etc.
minute (angular)	'
not significant	NS
null hypothesis	H _O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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AND CHILKOOT RIVERS, ALASKA**

by

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1988

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From the Chilkat and Chilkoot Rivers, Alaska**

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**Division of Subsistence
Alaska Department of Fish and Game
Juneau, Alaska**

December 1988



Trade in wild, renewable resources has a long history in Alaska. One such product which has been traditionally traded in southeast Alaska is the oil of the eulachon (*Thaleichthys pacificus*). In the 1980s, the most productive and well-known of Alaska's eulachon fisheries occurred each May on the Chilkat River just upstream from Haines. The Chilkat area is one of the few in Alaska where eulachon are numerous and dependable, and where families have maintained traditional skills in harvesting eulachon and processing its oil. Traditionally, their product has been in demand by Tlingit throughout southeast Alaska and in the southern Yukon. That demand has been filled through a variety of exchange mechanisms with a long history, including cash exchange. This report describes the Chilkat area, the local eulachon fishery there, and the nature and extent of traditional and contemporary exchanges of eulachon oil.

THE SETTING

The Chilkat River is part of the traditional territory of the Chilkat Tlingit who -- with their neighbors and allies on the Chilkoot River, the Chilkoot -- historically controlled the upper Lynn Canal and the mountain passes leading into the interior (de Laguna 1972:14).¹ The Chilkat harvested salmon, halibut, and other fish; moose, goat, bear, deer, and smaller mammals; and a variety of plants. Fierce defenders of their territory, the Chilkat monopolized trade between coastal and inland communities until the late 1800s. In 1885 Krause observed that, "besides hunting and fishing, the Tlingit devotes the greatest part of his energy to trade" (1956:126).

¹ These two Tlingit peoples often are referred to collectively as "Chilkat;" in this report the term will be used collectively to include both Chilkat and Chilkoot.

In 1879, the Chilkat allowed Presbyterian missionaries to settle at *Deishu* ("end of trail"), which the missionaries renamed "Haines." Introduced diseases and the Klondike gold rush eroded Chilkat authority over their lands. By the 1930s, three of the four major Chilkat settlements -- Yindastuki, Katkwaltu, and Chilkoot -- were abandoned; only Klukwan ("the eternal village") remained (Sackett 1979:29). The Chilkoot people settled in Haines but were far outnumbered there by non-Natives. Klukwan remained predominantly Chilkat.

In 1988, the Chilkat area was occupied by a diverse mix of immigrant Europeans and Americans, who lived in Haines or along the Haines Road, and Tlingit who lived in Haines, along the road, and in Klukwan. (See Figure 1) These two communities were quite different. Haines, with 1,151 residents in 1985 (Alaska Department of Labor 1987:64), was the southern terminus of the highway to Haines Junction in the Yukon Territory, and a northern terminus of the Alaska state ferry system. It was a diversified community, whose residents depended on tourism, commercial fishing, government, forestry, and subsistence. Klukwan, with 153 residents in 1985 (Alaska Department of Labor 1987:65) was located at 22-mile on the Haines Road. Klukwan was the center of Chilkat culture and influence; 86 percent of its residents were Alaska Native. Hunting, fishing, and gathering were important activities; subsistence salmon fishing families there reported an average harvest (of all wild resources) of 804.1 pounds per household in 1982 (Mills et al 1983:56). Klukwan had no store and opportunities for wage employment were few. Some Klukwan residents commuted to jobs in Haines; five participated in the commercial drift gill net salmon fishery in Lynn Canal (Mills 1982:7).

THE EULACHON FISHERY²

Each May millions of eulachon arrive to spawn in the coastal rivers of southeastern Alaska and western Canada: the Chilkat, Chilkoot, Stikine, Nass, Skeena, Kitimat, Bella Coola, Kimsquit, and others. Once called "salvation fish" because they provided welcome food at the end of the long winter (Stewart 1977:95), huge quantities were netted by Native residents of the coast. They were a quality table fish, broiled, barbecued, or fried. They were strung together, smoked, and dried. But they were most famous for their fine quality oil (Jacobs and Jacobs 1982:126). "Native people relished the flavour and used the oil extensively with their meals. Dried fish, roasted roots, and many other foods were dipped into it, and guests were served the oil in individual bowls, often handsomely carved" (Stewart 1977:150). The oil contains iodine and many necessary vitamins, making it an important traditional dietary supplement. In the 1980s, the oil was still highly regarded by Alaska Natives. "Hooligan grease" was a feature at potlatches, shared among relatives and close friends, and bartered or sold to others.

In the 1980s, about a dozen family groups from Haines and Klukwan maintained eulachon fishing sites along the lower Chilkat River, at four-mile, seven-mile, and nine-mile on the Haines Highway. Chilkoot people continued to fish in the neighboring Chilkoot River, although the development of a state recreation area, the construction of a state fish weir, and competition from sport fishing near the traditional village site have discouraged Chilkoot fishing there. The Chilkat area eulachon fishery, unlike many other southeast fisheries, has remained predominantly a Native activity. Most non-Natives find the rendered oil too strong to be palatable, and prefer eating other fish like salmon and halibut. Most people who fished for eulachon were residents of the Chilkat area, but

² This description of the eulachon fishery relies on Krause (1956:122), Mills (1982:8-10), and Stewart (1977:149-153), and interviews by Magdanz in 1988.

former residents or relatives would sometimes come from Juneau, Yakutat, Hoonah, or elsewhere to help their families (and share in the oil).

Eulachon arrived in the Chilkat River between mid- and late May. They were harvested using large dip nets, either from shore or from small boats. Some fish were smoked, dried, and prepared fresh by frying. But most were aged for one to two weeks in pits lined with plastic or in large wooden boxes. Then the aged fish were boiled for several hours in metal barrels. The oil separated, rose to the top, and was skimmed off. Making oil was hard work; hundreds of fish rendered into only a gallon of oil. Mills' Klukwan respondents in 1982 reported harvests of about nine gallons per household (1982:9); Magdanz' respondents in 1988 reported harvests of up to 30 gallons per family group (which could include several households).

The oil is stored in pint, quart, and gallon glass containers and consumed throughout the year with dried fish, seaweed, and berries. Some people store berries in oil, a very common practice in traditional times. Elder Tlingit, especially, relish eulachon oil. But one Haines resident said, "Hooligan oil is more than food. It is medicine. It's more than a vitamin pill. To me a vitamin doesn't have a whole lot of spiritual value. But eulachon does." Approximately half the people Magdanz interviewed in Haines reported medicinal uses of eulachon oil, either as a daily dietary supplement like castor oil ("a tablespoon in the morning") or as a potent tonic ("That's why you don't see Haines people with TB"). Thus eulachon oil is a valuable Native commodity in southeast Alaska, used as food, for food storage, and as medicine.

DISTRIBUTION AND EXCHANGE

Eulachon have always been available only to particular groups of people in a limited number of rivers along the Western coast. People who did not have direct access to eulachon obtained it through exchanges for other subsistence foods, for services, or for currency. These exchanges have a long history and continued in 1988.

Historical Tlingit Trade

Well before and long after Europeans arrived in southeast Alaska, the Tlingit traded widely with coastal and interior peoples. Tlingit traders traveled west across the Gulf of Alaska, to trade with Copper River Ahtna (de Laguna 1972:348). They traveled inland to the Yukon River (Krause 1956:135), to trade with Athapaskans, and used this route also to reach the Copper River (Hackenan 1988). Russians reported Chilkat Tlingit as far south as Fort Ross on the California coast (Hackenan 1988). The Chilkat, Chilkoot, and White passes played a central role in the early human occupation of the Chilkat area. They connected the people and resources of the North Pacific Ocean with the people and resources of the high interior plateau. "For centuries the southern Tutchone Indians of the Yukon and the Tlingit-speaking Chilkat of Alaska climbed these passes on foot to trade goods, to intermarry, and to fight" (Champagne-Aishihik Band 1988:5).

The Chilkat have been described as the most powerful and wealthy of the Tlingit (Sackett 1979:5). They had ample natural resources and controlled two of the major passes to the interior. The Chilkat obtained furs, caribou skin, leather armor, sinew, and lichen dye from Athapaskan Indians. From the Queen Charlotte Islands came dentalium, sharks' teeth, snail opercula, and mother of pearl. From

the Copper River came native copper, used for arrow points, lance points, daggers, and local currency (Krause 1956:127-128). In exchange for these goods, Chilkat provided dried fish, dried soap berries, dried mountain goat meat, and eulachon oil. Such items were light in weight relative to their value, and well preserved against the ardors of overland travel. Although the lists of Chilkat trade goods vary in different historical accounts, virtually every list includes eulachon oil. Eulachon oil was so significant to Chilkat trade that their trade routes became known as "grease trails" (de Laguna 1972:350).

Most aboriginal Tlingit trade was with relatives or trading partners who were "quasi-relatives." The Tlingit term for trading partner was interpreted by one of de Laguna's informants to mean "matched together" or "intimate friends, my own class, you know." Many exchanges were "gifts" in which the recipient was expected to "pay double price" later. "I was told of no trading which was not ceremonially conducted, as if it were an exchange of gifts" (de Laguna 1972:352-355). Thus trade did not always take the same form among Tlingit as among Europeans, and Tlingit did not trade simply to acquire goods.

It was not the accumulation of wealth in the form of luxury goods that brought prestige, but the ability to distribute it lavishly, to feast one's relatives and guest with exotic foods, to make handsome presents of imported objects to affinal kinsmen, and to pay lavishly at potlatches for ceremonial services. It was this manipulation of wealth that marked the aristocrat... Wealth was exchanged essentially between peers, not only on the grand occasions of potlatching, but at visits between affinal relatives and trade partners. In dealing with one's equals, one did not seek economic profit. Rather, one desired to prove one's worth by giving lavishly, in the hope that it would be recognized by an equivalent lavishness in return.

However, when dealing with low-class natives who could not be considered peers, it was possible to have strictly business dealings (from our point of view) -- to drive a shrew bargain or exact an exorbitant profit -- for these were not persons worth impressing with generosity because they could in no way contribute to one's prestige. (de Laguna 1972:357)

Although many exchanges were ceremonial gifts, Tlingit were keenly aware of and measured the value of goods in Tlingit currency, in particular plates hammered out

of Native copper called "coppers" (de Laguna 1972:353-354). One Sitka elder recalled for Magdanz a variety of items traditionally used to value trade goods:

There were certain things that were used as monetary units. Copper was a monetary unit. Dentalium shells were a monetary unit. California abalone shells (the large ones) used for head dresses... These were used to buy trade items. Our monetary system didn't stop at those items. Before slavery was outlawed, slaves were a monetary unit.

Indeed, a Yakutat woman described a native copper bracelet "worth one slave," and coppers themselves were valued in "slaves" (de Laguna 1972:353-354).

When European and American traders finally gained access to Chilkat territory late in the nineteenth century, they began supplying imported materials like tobacco, cloth, rifles, ammunition, and metal utensils. Tlingit traders continued to handle traditional Native items, like dried fish, seaweed, and eulachon oil. Potlatches remained an important exchange ceremony, and informal trade between individuals was common. In 1988, a Tlingit elder from Sitka described how his father used to harvest herring eggs on hemlock branches at Sitka, box them, and then travel to Angoon with a deck full of boxes:

We'd go over to Angoon... the whole village would come down. They'd be given the boxes. They'd say "Thank you."

Then later on, there'd be a knock [on the door of his father's house]. "John, here's two dollars, three dollars, five dollars, for gas."

Somebody would come in with a box, canned food, or crackers, or cookies. "This is for the children." Somebody would bring in a box of dried deer meat. Somebody would bring in a five-gallon can of smoked deer meat, stored in seal oil "for the children."

The brothers-in-law would come in and say, "John, here's five dollars for a shirt. I didn't buy a shirt, but here's five dollars for a shirt."

But none of them would say, "This is for the fish eggs." Up to this day, they do that.

Traditional Tlingit trade, then, ranged from ceremonial gift distribution to informal exchange to aggressive bargaining. Trade among Tlingit peers was likely to be ceremonial delayed, unbalanced reciprocity. Trade between Tlingits and others was likely to be negatively reciprocal. Coppers, shells, and slaves were used as currency to describe values and to exchange goods. Of all the Tlingit, the

Chilkat were well especially positioned for trade. From aboriginal days to the present, eulachon oil has been a major feature of Chilkat exchanges, be they ceremonies, barter, or sales.

Contemporary Trade

In the 1980s, when most traditional clothing, tools, and equipment had been replaced with manufactured goods readily available at stores or through the mail, traditional Native foods and raw materials once again had become the dominant exchange items. This section describes exchanges of eulachon oil, based on personal interviews with residents of Haines, Klukwan, and Sitka in August 1988. Of the ten families contacted in Haines and Klukwan, five were eulachon producers (about 40 percent of the 12 producing families). Sitka respondents described eulachon exchanges from the consumers' perspective. This section discusses the quantities exchanged, the types of transactions reported, the kinds of items exchanged for oil, the communities involved in the transactions, and some of the motivations for the exchanges.

All the producing families interviewed reported giving away eulachon oil, all reported bartering oil for other items, and four reported selling oil for cash at least occasionally. The quantities exchanged were small -- half a pint, a quart, seldom as much as a gallon per exchange.

Gifts of eulachon oil -- either from person to person or on ceremonial occasions -- usually were made in appreciation of past exchanges or in expectation of some future return:

We give a lot to the same people. In Hoonah, part of my family is there. They try to put up extra black seaweed. Whenever they see me or my wife, they give us some. We try to put up an extra amount of oil for the same reason... I have a brother in Sitka. He gets deer meat down there, which we don't get around here. We trade that way...

Such exchange relationships were perpetual, relatives were always sending food back and forth, in the expectation that food they sent in the form of oil would come back as herring eggs, seaweed, or whatever. Eulachon oil frequently was given away at potlatches, where gifts enhanced the prestige of the giver. Eulachon oil was also a welcome hospitality gift: "I usually take some grease everywhere I go."

All the eulachon-producing families reported barter, in which oil would be exchanged for another product. Among the commonly mentioned items received for oil were: black seaweed, red ribbon seaweed, herring eggs on hemlock bows, clams, and cockles. (See Table 1) Like eulachon oil, many of these items had cash values. Respondents did not generalize about relative values of subsistence products exchanged in barter. But many volunteered cash prices ("Seaweed runs \$150 a five-gallon can"), which apparently helped determine relative values in bartering.

All but one producer sold eulachon oil. The most commonly reported price for Chilkat oil was \$30 per quart; prices ranged from \$25 to \$75 per quart. The total quantities sold were small: "This year we sold one gallon, and a few quarts." One man said he would sell only to someone he knew would use the oil; another was willing to sell to a stranger. One said, explicitly, that he would not sell to his relatives. Others said they shared with, but did not sell to, relatives. One Klukwan man said that giving eulachon oil was a way of honoring that person, and it's just not something that he would sell. Eulachon oil, and other traditional foods, were sold at Alaska Native Brotherhood and Alaska Native Sisterhood conventions. People donated the food to the grand camp, which sold it to raise money.

Several mentioned having repeated exchanges with people other than relatives, though the relationships usually were not characterized as partnerships. "We don't have partners, but we have channels. We recognize a certain people whom we have given something. When we see him again, he remembers." In most

instances, the eulachon exchanges involve no middlemen; producers trade directly with the consumers. "Where ever we give it, that's where it stays until it's gone." But one Sitka man reported "three party deals:"

Sometimes, you barter twice. I know I've got a lot of friends in Haines. I'll probably get more hooligan than I can handle. So I barter the extra with some friends. A three party deal. I do that, especially because I know that a few friends of mine that have dried seaweed that are reluctant to sell or trade. But they have a tough time getting hooligan, so they'll come to see me. Like this lady, a good friend, everytime she sees me, she always gives me hooligan oil. But the problem is, I don't use hooligan oil. So when I get back, I find a couple friends who like hooligan oil, and come up with seal oil or something else.

Interestingly, several producing families reported using very little eulachon oil themselves. "Most of our hooligan oil is used for trade or barter or sharing. We use mostly seal oil in this house." One man reported he could strike a better deal bartering than buying subsistence foods. "It costs too much to buy seaweed, so we trade for it with Angoon or Hoonah." These families bartered for seaweed, herring roe, and shellfish, items which were hard to get in Haines.

Producers did not solicit customers; they waited for customers to come to them. "We don't make (the sale) public; We don't let people know we have it. It's just the smart ones who get it." Non-locals are most likely to barter or purchase oil: "Trading is always done with other communities. Only once in a while do we sell in Haines."

Clearly, exchange was a major feature of the Chilkat eulachon fishery. Summarized below are some general characteristics of the contemporary Chilkat area trade in eulachon oil:

- * Most producers kept for themselves only a portion of the oil they rendered.
- * Some producers distributed virtually all of their oil production to others.
- * Exchanges included personal gifts, ceremonial gifts, barter, and sales.

- * Quantities involved in individual exchanges were small (typically one quart).
- * Gifts were usually reciprocal, over time.
- * Oil was especially useful in bartering for non-local subsistence foods.
- * A majority of the producers interviewed were willing to sell eulachon oil.
- * Producers typically gave oil to relatives, but bartered or sold to friends, acquaintances and (rarely) strangers.
- * Producers developed regular and continuing relationships with consumers, bartering or selling oil year after year.
- * Producers usually bartered or sold to people from other communities, rather than to people from Haines or Klukwan.
- * Some oil changed hands several times before reaching the eventual consumer.

Why is Chilkat Eulachon Oil Traded?

There were a variety of reasons for the continuing trade in Chilkat eulachon oil. In the simplest terms, many people who wanted oil could not make it themselves and had no relatives or peers among the Chilkat who would give it to them. Their only choice was to exchange goods or cash for oil.

Cultural food preferences were important: "When I need it, I appreciate that [Native food is for sale]. I'm acculturated to it, and I have to have it."

The quality of the oil itself was an important factor in trade. "If you make a particularly good brand of hooligan oil, then people hear about it, and want to get hold of some also. Most people that make oil have their own recipes and their own customers. Not everybody makes oil the same way." Different batches of oil had different qualities; producers mentioned differences among Chilkat oils, and between Chilkat and Nass River oils. They said some people were knowledgeable

and selective about their oil, preferring the oil of one producer over that of another, or of one area over another.

Several people mentioned the effect of wage labor on the subsistence economy: "People who had wage jobs did not do so much subsistence hunting, and were still hungry for their own food. So instead of trading [i.e. bartering], they began buying." The preparation of many traditional foods takes much time: "I could probably do a real good job of drying fish, if I could set a month aside... I don't have the time, so I look to other people who have it, whether it's Kake or Hoonah or Angoon."

While trade allows non-Chilkat to obtain oil, trade also benefits the Chilkat. Said one elder in Haines: "I think it is important that trade continue, because there are things we can't get off the beach: clams, cockles, seaweed. So we get oil here, and we use that to trade with people further down south."

SUMMARY

The Chilkat eulachon oil trade is an interesting -- but by no means unique -- example of traditional wild resource exchange systems in Alaska. The eulachon oil trade has a long, continuous history among Chilkat Tlingit. The same cultural group produced the oil in 1988 as in the nineteenth century, using much the same methods in precisely the same locations. The exchange mechanisms -- personal gifts, ceremonial gifts, barter, and sales -- were quite similar. Although the grease trails and wooden canoes have been replaced by a highway, a railroad, airplanes, and ferries, the destinations of the oil remained the same.

Except for a general state regulation prohibiting the sale of subsistence fish (5 AAC 01.010), which has not been enforced in regards to eulachon, the fishery has never been regulated by the state. Under Tlingit property systems, particular

subsistence sites belonged to certain groups; the Chilkat eulachon sites belonged to the Chilkat. Such systems limited entry into fisheries and discouraged overharvesting.

~~As a preface to interviews in 1988, recent issues involving the trade of~~ subsistence-caught herring and salmon roe to Japanese markets were described to respondents. Most interviewed eulachon fishers and users in Haines, Klukwan, and Sitka were interested in the impacts that changing state regulations might have on their own trading activities. In Sitka, a Tlingit elder commented, "One of the things that impressed Europeans is our nature of being traders. We like to acquire things that are not available in our country. It's odd, that this is the thing that allowed the country to be settled, that the settlers would turn around and not allow us to trade anymore."

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