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**The Sharing, Distribution, and Exchange of Wild  
Resources in Alaska: A Compendium of Materials  
Presented to the Alaska Board of Fisheries**

by

**Robert J. Wolfe**

and

**James Magdanz**

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1993

Alaska Department of Fish and Game

Division of Subsistence



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<b>Weights and measures (metric)</b>		<b>General</b>		<b>Mathematics, statistics</b>	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly-accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	$H_A$
gram	g			base of natural logarithm	e
hectare	ha			catch per unit effort	CPUE
kilogram	kg	all commonly-accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	coefficient of variation	CV
kilometer	km			confidence interval	CI
liter	L	at	@	correlation coefficient (multiple)	R
meter	m	compass directions:		correlation coefficient (simple)	r
milliliter	mL	east	E	covariance	cov
millimeter	mm	north	N	degree (angular)	$^\circ$
		south	S	degrees of freedom	df
<b>Weights and measures (English)</b>		west	W	expected value	E
cubic feet per second	ft <sup>3</sup> /s	copyright	©	greater than	>
foot	ft	corporate suffixes:		greater than or equal to	≥
gallon	gal	Company	Co.	harvest per unit effort	HPUE
inch	in	Corporation	Corp.	less than	<
mile	mi	Incorporated	Inc.	less than or equal to	≤
nautical mile	nmi	Limited	Ltd.	logarithm (natural)	ln
ounce	oz	District of Columbia	D.C.	logarithm (base 10)	log
pound	lb	et alii (and others)	et al.	logarithm (specify base)	log <sub>2</sub> , etc.
quart	qt	et cetera (and so forth)	etc.	minute (angular)	'
yard	yd	exempli gratia (for example)	e.g.	not significant	NS
		Federal Information Code	FIC	null hypothesis	$H_0$
<b>Time and temperature</b>		id est (that is)	i.e.	percent	%
day	d	latitude or longitude	lat. or long.	probability	P
degrees Celsius	°C	monetary symbols (U.S.)	\$, ¢	probability of a type I error (rejection of the null hypothesis when true)	$\alpha$
degrees Fahrenheit	°F	months (tables and figures)	first three letters (Jan.,...,Dec)	probability of a type II error (acceptance of the null hypothesis when false)	$\beta$
degrees kelvin	K	registered trademark	®	second (angular)	"
hour	h	trademark	™	standard deviation	SD
minute	min	United States (adjective)	U.S.	standard error	SE
second	s	United States of America (noun)	USA	variance	
		U.S.C.	United States Code	population	Var
<b>Physics and chemistry</b>		U.S. state	two-letter abbreviations (e.g., AK, WA)	sample	var
<i>all atomic symbols</i>					
alternating current	AC	<b>Measures (fisheries)</b>			
ampere	A	fork length	FL		
calorie	cal	mid-eye-to-fork	MEF		
direct current	DC	mid-eye-to-tail-fork	METF		
hertz	Hz	standard length	SL		
horsepower	hp	total length	TL		
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

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PRESENTED TO THE ALASKA BOARD OF FISHERIES**

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Robert J. Wolfe, James Magdanz  
Alaska Department of Fish and Game, Division of Subsistence, Juneau

Alaska Department of Fish and Game  
Division of Subsistence  
1255 West 8th Street, Juneau, AK 99802-5526

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*Robert J. Wolfe, James Magdanz  
Alaska Department of Fish and Game, Division of Subsistence,  
1255 West 8th Street, Juneau, AK 99802-5526, USA*

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**THE SHARING, DISTRIBUTION, AND EXCHANGE  
OF WILD RESOURCES IN ALASKA**

Robert J. Wolfe and James Magdanz

A compendium of materials presented to  
the Alaska Board of Fisheries

Division of Subsistence  
Alaska Department of Fish and Game

January 1993

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## INTRODUCTION

This report is a compendium of materials dealing with the sharing, distribution, and exchange of wild resources in Alaska, prepared for the Alaska Board of Fisheries. The materials are designed to provide a general background for the Board as they deliberate regulations regarding the "customary trade" of herring roe on substrate in southeast Alaska.

This report is organized in several sections, each dealing with a particular topic or case example. This introductory section presents some examples of resource sharing and exchange by region. The next five sections present case examples of types of exchange in specific Alaska areas: eulachon oil, seal oil, herring eggs, caribou antlers, and salmon roe. The last two sections present more discussions about exchange in subsistence-cash economies. Collectively, it is hoped that these materials provide a general background on distribution and exchange of wild resources in Alaska.

Sharing, distribution, and trade of subsistence-caught fish and game in Alaska are regulated by the Boards of Fisheries and Game and various federal agencies. Table 1 summarizes some of the state and federal regulations pertaining to the sharing, distribution and exchange of subsistence-caught resources. Under the Alaska state subsistence law, "the customary trade, barter, and sharing for personal or family consumption" are listed as types of subsistence uses (AS 16.05.940(31)). "Customary trade" means "the noncommercial exchange, for minimal amounts of cash, as restricted by the appropriate board, of fish or game resources; the terms of this paragraph do not restrict money sales of furs and furbearers" (AS16.05.940(37)).

There are a number of different ways that wild resources are shared, distributed, and exchanged in Alaska. Some of these are listed in Table 3, including delayed reciprocity, redistribution, barter, non-commercial exchanges involving money, and commercial sale (see Table 3). Except for the sale of commercial fish and of furs, the state does not monitor the extent of these types of transactions. However, it is known that certain types are relatively common (such as delayed reciprocity) while others are not common (such as the store sale of subsistence-caught resources).

In 1985, the Division of Subsistence sent a query to its field staff, asking for their personal assessments of the frequency of these types of transactions in their regions. Staff also were asked to provide examples of items involved in sharing and exchange. Responses were received from staff in several regions: southcentral, southwest (Alaska Peninsula), southwest (Nushagak-Togiak), western, interior, and northwest arctic. The results of these personal assessments are summarized in Tables 2-4. It is important to note that staff assessments are not based on systematic surveys, but are based on qualitative personal observations. As general assessments, these observations provide some information on certain aspects of sharing, distribution, and exchange in particular regions of the state.

**Table 1.**  
**Types of Subsistence Exchanges**  
**Allowed in Alaska by Statute and Regulation (1)**

RESOURCE	MANAGING AGENCY	SHARE	BARTER	TRADE (CASH SALE) (2)
Finfish, shellfish	ADF&G, USFWS (3)	Yes	Yes	No (4)
Big Game (meat, antlers)	ADF&G, USFWS (3)			
Bear		Yes (5)	No (6)	No (6)
Caribou		Yes (5)	No (6,7)	No (6)
Deer		Yes (5)	No (6)	No (6)
Mountain Goat		Yes (5)	No (6)	No (6)
Moose		Yes (5)	No (6)	No (6)
Dall Sheep		Yes (5)	No (6)	No (6)
Small Game (meat)	ADF&G, USFWS (3)			
Grouse		Yes (5)	No (6)	No
Hares, Rabbits		Yes (5)	Yes (5)	Yes (5)
Ptarmigan		Yes (5)	No (6)	No
Fur Bearers	ADF&G, USFWS (3)	Yes (8)	Yes (8)	Yes (8)
Marine Mammals	USFWS, NOAA	Yes	Yes	Yes (9)
Migratory Birds	USFWS			
Ducks, Geese, Cranes		Yes (10)	No	No
Auks, Murres, etc.		Yes (10,11)	Yes (11)	No
Unclassified Game	ADF&G, USFWS (3)	Yes	Yes	Yes

(1) AS 16.05.940 provides that customary trade, barter, or sharing for personal or family consumption are subsistence uses. ANILCA provides that barter, sharing for personal or family consumption, and customary trade are subsistence uses (15 USC 3133 Definitions).

(2) "Customary trade" means the limited noncommercial exchange, for minimal amounts of cash, of fish or game resources; this does not restrict money sales of furs and furbearers (AS 16.05.940).

(3) USFWS has authority to manage subsistence uses on federal public lands in Alaska.

(4) Subsistence-caught fish may not be sold (AS 16.05.930, 5 AAC 01.010).

(5) If asked, both the giver and receiver must sign a statement with the names and addresses of people who gave or received game, when and where it was taken, and what parts were shared (5 AAC 92.135).

(6) Traditional barter of fish and game is allowed by AS 16.05.930(e), but it is not defined. Other types of barter or sale of game meat, skulls, horns or antlers are prohibited, unless the antlers and horns are naturally shed or permanently removed from the skull (5 AAC 92.200).

(7) Caribou meat may be bartered in GMUs 22-26, but it may not leave these units (5 AAC 92.200).

(8) Beaver, land otter, lynx, wolf, and wolverine (in all units), and marten (in units 1-5) must be sealed before they may be shared, bartered, or sold (5 AAC 92.200).

(9) Any edible portion of marine mammals may be sold in Native villages and towns in Alaska, or for Native consumption (16 USC 1371.50; CFR 216.23).

(10) Shared waterfowl must have a tag attached, signed by the hunter, stating his address, the number of birds of each species taken, and the date taken (50 CFR 20.40).

(11) Eskimos and Indians may take at any season auks, auklets, guillemots, murres, and puffins, but the birds and eggs cannot be sold.

Table 2 summarizes department staff assessments of the relative frequencies of types of exchanges of wild resources in their region. It is interesting to note that staff in most regions assessed that barter "occasionally occurs or is of limited scope". Staff in most regions assessed that non-commercial exchanges involving money also "occasionally occurs or is of limited scope". These two types (barter and non-commercial exchanges involving money) were less frequent than the other types of sharing or exchange, with the exception of store sale of subsistence-caught wild resources, which was the least common transaction in all regions (except in the northwest arctic, where sea mammal products are frequently found for sale in stores).

Table 4 summarizes the department staff's examples of items involved in sharing, distribution, and exchange in their regions. The table also provides some additional comments provided by the staff.

Table 2.  
 Department Staff Assessments of the  
 Frequency of Types of Exchange  
 of Wild Resources in Select Alaska Areas  
 (Based on a Query Conducted in 1985)

- 1 = Very Frequently Occurs  
 2 = Frequently Occurs  
 3 = Occasionally Occurs (Or Of Limited Scope)  
 4 = Rarely Occurs  
 5 = Does Not Occur  
 6 = No Documentation

TYPES OF EXCHANGE**	SMALL COMMUNITIES IN THE REGION					
	South- central	Southwest (Alaska Peninsula)	Southwest (Nushagak- Togiak)	Western	Interior	Northwest Arctic
Generalized Reciprocity	1	1	1	1	1,2	1
Delayed Reciprocity	4	1	2	1	1,2	1
Redistribution	3	3	2	1	2,3	2
Division Among Cooperative Workgroups	1	1	1	1	1,2	1
Ceremonial Giving	2	1	1	1	1,2	1
Barter	4	3	3	3	2,3,4	3
Non-commercial Exchanges Involving Money	5	3	3	3	3	3
Mercantile Fur Sales	3	2	2	2	1,2	2
Cottage Craft Sales	3	2	2	1	1,2	1
Commercial Sale of Wild Resources (Excl. Furs)	1	1	1	1	2,3,4	2
Store Sale of Subsistence-Caught Wild Resources	5	6	5	4	Varies	1

\*\*See definitions and examples in Tables 3 and 4

TYPES OF EXCHANGE**	REGIONAL CENTERS-TOWNS IN THE REGION					
	South- central (Cordova- Homer)	Southwest (Alaska Peninsula)	Southwest Dillingham	Western	Interior	Northwest Arctic
Generalized Reciprocity	3	*	1	*	2,3	1
Delayed Reciprocity	6	*	2	*	2,3	2
Redistribution	5	*	3	*	3,4	6
Division Among Cooperative Workgroups	1	*	1	*	2,3	1
Ceremonial Giving	4	*	1	*	2,3,4	1
Barter	3	*	3	*	4,5,6	3
Non-commercial Exchanges Involving Money	5	*	3	*	3,4	3
Mercantile Fur Sales	3	*	3	*	2,3,4,5	2
Cottage Craft Sales	4	*	2	*	2,3	1
Commercial Sale of Wild Resources (Exc. Furs)	1	*	1	*	3,4,5	2
Store Sale of Subsistence-Caught Wild Resources	5	*	3	*	4,5	1

\*\*See definitions and examples in Tables 3 and 4

### Table 3. Types of Distribution and Exchange

Generalized Reciprocity. This is the sharing of harvested resources from one person to others without an expectation on the part of the giver or obligation on the part of the receiver of something returned in compensation. Sharing like this commonly occurs between relatives and between close friends.

Delayed Reciprocity. This is giving of harvested resources from one person to another without reciprocal compensation, but where the receiver gives back at later dates (sometimes over years) other goods, services, or money. Delayed reciprocity can be "balanced", where the goods or services exchanged over time are of approximate equal value. It can be "unbalanced", where the largest volume of resources flows in one direction.

Redistribution. This occurs where wild resources are given by the harvester to a centralized person or location (like a food cache), from which the resources are then redistributed at some later date, typically by a person other than the harvester.

Division Among Cooperative Workgroups. This is the division of a harvest between members of a cooperative production workgroup (such as a hunting party or hunting crew), commonly in the field and following conventional rules (such as a shares system).

Ceremonial Giving. This is the giving or sharing of wild resources in a ceremonial context, such as potlatches, song fests, first fruit observances, Slavi, religious rituals, and so forth.

Barter. This is the immediate exchange of one good for another good, not involving money.

Non-commercial Exchanges Involving Money. This is the immediate exchange of wild resources for money outside the context of a store, commercially-licensed buyer, or other mercantile facility. The exchanges are typically of relatively limited volume and between individuals with personal relations.

Mercantile Fur Sales. This is the sale of furs to a trader, storekeeper, or other merchant, in exchange for money, the extinction of a running credit line, or additional credit on goods (such as a grubstake).

Cottage Craft Sales. This is the sale of craft items using materials from wild resources, by the craftsperson to another person, store, commercial buyer, or other mercantile facility.

Commercial Sale of Wild Resources (Excluding Furs). This is the sale of unprocessed wild resources (raw fish, fish eggs, etc.) by a harvester to a commercial buyer (such as a middleman broker, company, or store) for later processing, transportation, and sale on markets which are typically outside the harvest area. Transactions tend to be high volume, subject to reporting requirements and taxation, and controlled through licensing and other government regulation.

Store Sale of Subsistence-Caught Wild Resources. This is the sale of subsistence-caught wild resources as a raw or processed product by a store to another person. Transactions usually involve money or credit and commonly occur within the context of an impersonal market where buyer and seller do not necessarily know the other personally.

**TABLE 4**  
**Examples of Items Distributed and Exchanged**  
**(Based on Department Staff Assessments**  
**From a Query Conducted in 1985)**

**Generalized Reciprocity and Delayed Reciprocity**

**Southcentral.** Examples include moose, caribou, salmon, clams, seal, and halibut.

**Southwest (Iliamna-Alaska Peninsula).** Examples of items include salmon (bundles of dried fish, buckets of salted fish, strips of smoke fish), caribou, moose, seal oil, bear fat (limited harvest but widely shared among users), waterfowl (groups of men seem to harvest and distribute), and halibut (mainly in Pacific side communities, often taken off commercial vessels).

**Southwest (Nushagak-Togiak-Dillingham).** Examples include fish, moose, caribou, berries (gallons), and marine mammal products. Nearly all resources are exchanged in all villages and in Dillingham, depending upon what has been harvested. The quantities vary.

**Interior.** Examples include moose, caribou, fresh salmon, dried salmon, whitefish, burbot, pike, waterfowl, berries, muskrat, black bear, beaver, and other small game. Northway residents share whitefish and ducks and the use of muskrat harvest areas with Copper Basin residents who allow them to fish for salmon at their fishcamps. Caribou harvested by Arctic Village residents is shared with relatives, elderly persons, and unrelated individuals in other subregional communities. In return, Arctic Village residents may receive salmon, moose, lumber made from birch, and garden produce.

**Northwest Arctic.** Examples include salmon, caribou, moose, whales, seals, waterfowl, and "everything else" that people hunt, fish, and gather.

**Redistribution**

**Southcentral.** Examples include salmon, moose, and gull eggs (in Port Graham).

**Southwest (Iliamna-Alaska Peninsula).** Examples of items include salmon, caribou, and moose. The best example is smoked, dried, or salted salmon or meat being stored in the cache of the female head of the extended family, and used by other family members as needed.

**Southwest (Nushagak-Togiak-Dillingham).** Examples include fish, moose, caribou, berries, and marine mammal products. This often occurs among kin-based workgroups, with the senior female member storing foods in her cache or freezer.

**Interior.** Examples include fresh salmon, dried salmon, whitefish, moose, and waterfowl. For instance, in Tanacross, salmon stored in a parent's freezer were later distributed to other households. Along the Upper Koyukuk, ducks harvested by young men may be turned over to a mother or older sister to use and distribute to other households. Also, moose meat and salmon may be stored for general use by members of the extended family.

**Northwest Arctic.** Examples include bowhead whale, walrus, dried salmon, dried caribou, and moose. The villages that hunt bowhead whales have complex and well-documented systems of distribution. Dried salmon is sometimes stored by the elders of an extended family and redistributed to others in the family as needed. Churches play a role in redistribution in some communities, such as the "Sick and Poor Committee" in Ambler.

**Division Among Cooperative Workgroups**

**Southcentral.** Examples include salmon, moose, and caribou.

**Southwest (Iliamna-Alaska Peninsula).** Examples include salmon, caribou, and moose. With salmon, work groups tend to split immediately after harvesting, after processing, or during the course of the year.

**TABLE 4 (Continued)**  
**Examples of Items Distributed and Exchanged**

**Southwest (Nushagak-Togiak-Dillingham).** Examples include moose, caribou, salmon, seal, and other marine mammals. When men hunt together, meat is shared equally when hunters are from different households.

**Interior.** Examples include moose, caribou, salmon, whitefish, waterfowl, and beaver. This is a common practice throughout Interior Alaska. The nature of the division may vary, depending upon the contributions made by each member of the cooperative workgroup and their level of need for a resource.

**Northwest Arctic.** Examples include whale, walrus, salmon, caribou moose, fish, crab, and seal. Division among workgroups occur very frequently among some groups of Nome, Kotzebue, and Barrow and is a central feature of production.

### **Ceremonial Giving**

**Southcentral.** Examples include moose, salmon, caribou, shellfish, and berries.

**Southwest (Iliamna-Alaska Peninsula).** Examples include salmon, berries, caribou, and moose. These are all resources that appear regularly at Slavi, weddings, namedays, birthdays, and funerals. This occurs all around the region where Russian Orthodoxy is practiced, from Lake Iliamna through Perryville. Potlatches are held in Nondalton, in addition to Russian Orthodox activities, such as on the anniversary of someone's death, where local resources were given to relatives.

**Southwest (Nushagak-Togiak-Dillingham).** All "Native Foods" are involved, especially fish, caribou, moose, and berries, and other food, as available. Occasions include Slavi, birthdays, and name days when feasts are provided and all village residents are invited to eat.

**Interior.** Examples include moose, bear, waterfowl, salmon, caribou, small game, berries, and other fish. This is common throughout Interior Alaska. Ceremonial giving most often occurs in conjunction with potlatches and religious activities. The Nulato and Kaltag stick dance and Koyukon bear parties are additional examples.

**Northwest Arctic.** Examples include whale, walrus, salmon, caribou, moose, fish crab, and seal. Ceremonial distribution occurs at funerals, at weddings, and at common holidays like Christmas and Thanksgiving. Young boys often give away their first moose, seal, or other game.

### **Barter**

**Southcentral.** Examples include shellfish, salmon products, halibut, and moose.

**Southwest (Iliamna-Alaska Peninsula).** Examples include caribou, moose, smelt, whitefish, and spawned-out salmon. All these resources have been reported as being traded to obtain resources not locally or readily available. It has been mainly with households of other villages, such as caribou from Port Heiden being traded with relatives from Naknek for smelt.

**Southwest (Nushagak-Togiak-Dillingham).** Examples include marine mammals and products, especially seal oil from Togiak and Twin Hills to villages along the Nushagak, Dillingham, and Aleknagik, depending on their success and opportunities to harvest marine mammals. Berries will be exchanged among villages, including some in the Kuskokwim region, such as salmon berries given for black berries. Unit sizes are gallons or 5-gallon buckets. Spawned-out salmon (red fish) from Togiak, Manokotak, and Aleknagik are exchanged for smoked salmon from the Nushagak River villages.

**TABLE 4 (Continued)**  
**Examples of Items Distributed and Exchanged**

**Interior.** Examples include king salmon (strips, dried, fresh), berries, caribou (dried), moose (dried), and tanned hides or furs. Nikolai residents exchange salmon to Telida residents for whitefish. Northway and Tanacross residents give freshly harvested Copper River salmon to other households in the community in exchange for muskrat, ducks, berries, or moose meat. In the Upper Tanana, garden produce is exchanged for untanned moose hides; salmon is exchanged for muskrats and waterfowl. On the Yukon Flats, dried caribou is exchanged for salmon. Barter often occurs as delayed reciprocity and may involve the exchange of resources not readily available to the recipient.

**Northwest Arctic.** Examples include ivory, salmon, and furs. Barter of a wild resource for a non-local resource (like groceries) occurs more frequently than one wild resource for another wild resource.

### **Non-commercial Exchanges Involving Money**

**Southcentral.** Examples include marine mammal products in Anchorage, and perhaps smoked salmon in Anchorage. The volume is extremely low to non-existent (except for berries) in villages and towns. In Anchorage, the products sold are mostly seal oil, fat, meat, and other marine mammal products (whale). The volume is apparently relatively low.

**Southwest (Iliamna-Alaska Peninsula).** Examples include smoked salmon, dried salmon, and berries. It has been reported that there is some fish available for purchase, but that it is not generally circulated on the open market. Generally, one has to be a relative or a close friend who would like the particular item and for some reason did not acquire the product themselves. Limited supply seems available. Berries, cranberries, and huckleberries are occasionally advertised or solicited through the Post Office bulletin board or KDLG (Dillingham) radio station. The berries which are sold would seem to be very minimal at this point. They are mainly from the Iliamna region (Kokhanok).

**Southwest (Nushagak-Togiak-Dillingham).** Examples include berries, especially huckleberries (\$12 per gallon), smoked fish strips (\$16 per pound, although this is rare because people usually can get it from relatives and can't ask for money; also, it is lots of work and too little is available to sell), salmon berries (\$40 per gallon from the Kuskokwim), and king salmon blankets (\$15 per blanket from Eek to Dillingham; however, this is a "reluctant sale", the preference is to give them away through some other arrangement). Products are usually bought from outside the kinship network. To our knowledge, there are no subsistence resources sold in any great volume.

**Interior.** Examples include raw moose hides, dried and fresh salmon, firewood, berries, lower quality furs, and beaver carcasses. Except for firewood, the harvest of these are not done with the primary intent of sale, and often with no intent of sale. Such decisions to sell are often made sometime after the harvest and depends upon who is requesting to purchase, how much the "seller" has for their own use, how much the buyer wants, and other things. Beaver carcasses are sold to dog mushers, especially during the Iditarod, but also sometimes sold to people who really desire it. Dried salmon strips which are sold are a "specialty" food which are produced in small quantities compared to the entire amount of salmon that is dried. "Split fish", the lowest grade salmon which are cut for feeding to dogs, are occasionally sold by some.

**Northwest Arctic.** Examples include caribou skins, seal skins, and firewood. Smoked salmon is occasionally exchanged for money in some places. Raw seal skins are sometimes exchanged for money among Natives.

**TABLE 4 (Continued)**  
**Examples of Items Distributed and Exchanged**

**Mercantile Fur Exchange**

**Southcentral.** Examples include marten (especially from the Skwentna area), beaver, fox, and land otter.

**Southwest (Iliamna-Alaska Peninsula).** Examples include beaver, red fox, mink, and lynx.

**Southwest (Nushagak-Togiak-Dillingham).** Examples include beaver, fox, and otter.

**Interior.** Examples include marten, lynx, fox, wolf, muskrat, and wolverine.

**Northwest Arctic.** Examples include lynx, beaver, wolf, wolverine (often kept for local use), fox, muskrat, and marten.

**Cottage Craft Sales**

**Southcentral.** Examples of materials used in products include furs, antlers, hide, and porcupine quills. Items include earring, necklaces, moose hide sippers, vests, pendants, and wallets with beadwork.

**Southwest (Iliamna-Alaska Peninsula).** Examples include beaver hats and fox hats. Cottage craft sales often take place at winter carnivals around the Lake Iliamna region. Other sources are at sport lodges on Lake Clark and at Iliamna. One curio shop in King Salmon buys from local residents, but mainly from other areas in western Alaska. The cannery stores often carry items made by villagers during the summer, but again most often from western Alaska (baskets, ulu, jewelry, etc.)

**Southwest (Nushagak-Togiak-Dillingham).** Examples include grass baskets, skin sewing (hats, mittens, mukluks, parkas, etc.), ivory carvings, and jewelry (porcupine quills). Products are sold annually at Beaver Round-Up, and also in village stores, Dillingham stores, and the Dillingham Senior Center.

**Interior.** Examples include fur trim on gloves and mittens, marten hats, beaver hats, caribou or moose hide mukluks, bone tools, moccasins, slippers, porcupine quill earrings, dogsleds, snowshoes, drums, birch bark baskets, and cradleboards.

**Northwest Arctic.** Examples include ivory, seal skin, baleen, wolf ruffs and mittens, polar bear ruffs, caribou skin masks and mukluks, squirrel, hare skins, and birch bark baskets. Some village stores will accept handicrafts (sewn slippers, carvings) in exchange for groceries and supplies. Both stores on St. Lawrence Island, for example, will take ivory in trade.

**Commercial Sale of Wild Resources (Excluding Furs)**

**Southcentral.** Examples include salmon, halibut, crab, and herring. Berries are sold by groups like the Alaska Wild Berry Products in Homer.

**Southwest (Iliamna-Alaska Peninsula).** Examples include salmon and crab. Salmon is the major economic factor in the entire Bristol Bay region, as well as the Chignik area and all the way down the Alaska Peninsula. Crab is of less economic importance in the Chignik and Bristol Bay areas, but historically important in the Dutch Harbor-Unalaska area.

**Southwest (Nushagak-Togiak-Dillingham).** Examples include salmon (all communities are involved), herring (primarily Togiak, Twin Hills, and Manokotak), and some reindeer (from one Togiak resident from the herd on Hagemeister Island).

**Interior.** Examples include salmon, salmon roe, and whitefish.

**Northwest Arctic.** Examples include salmon, sheefish, herring, whitefish, and crab.

TABLE 4 (Continued)  
Examples of Items Distributed and Exchanged

**Store Sale of Subsistence-Caught Wild Resources**

**Southcentral.** In small communities, no wild food products are sold. In Anchorage, there is one store which over the past 27 years has sold marine mammal meat, blubber, and especially oil. The store also sells whitefish, sheefish, beaver meat, crab, and salmon products, but these may be from commercial catches.

**Southwest (Iliamna-Alaska Peninsula).** There are no subsistence food products sold in regional stores of which I am aware.

**Southwest (Nushagak-Togiak-Dillingham).** We have not seen wild resource products sold in village stores.

**Interior.** Examples include smoked salmon strips (\$12-\$20/lb) and birch "punk"; however, the volume is small.

**Northwest Arctic.** Examples include king crab (\$6-\$10/crab), ivory (\$25/lb), seal oil (\$10/quart), whitefish (\$.90/lb) and chum salmon (\$6.50/fish). The volume is small. Some stores in Kotzebue and Nome always have some wild resources in the freezer case: seal oil (almost always), local commercially-caught salmon (frequently), trout (occasionally), crab (occasionally), bowhead or belukha muktuk (frequently), salmon eggs (occasionally), dried salmon (occasionally), and seal meat in oil (occasionally). Ivory is frequently available in the raw in village stores for sale between Natives. In some locations, where there are no commercial fisheries for salmon, herring, whitefish, or other species, people sell these things to a village store, and the store resells them to local people. King crab are not available in all Norton Sound locations and are frequently sold in villages and in Nome. This was especially true when Nome and villages east were suffering from a crab drought several years ago and Diomedea was having good success. Some resources, like Dolly Varden, burbot, and northern pike, which are not generally subject to commercial fishing anywhere in the arctic, are frequently available in village and town stores.

## **SECTION I**

### **CASE EXAMPLE OF DISTRIBUTION AND EXCHANGE: EULACHON (HOOLIGAN) OIL**

This section describes the harvest and exchange of eulachon (hooligan) oil in southeast Alaska ("The Harvest and Exchange of Eulachon Oil From the Chilkat and Chilkoot Rivers" by James Magdanz). This report was originally presented to the Board of Fisheries in December 1988.

As shown in this report, the trade of eulachon oil has a long and continuous history in southeast Alaska up to the present. It is an example of a speciality food item used primarily by Tlingit and Haida families in Alaska. The size of the user group appears to place certain limits on demand and supply. The annual harvest of eulachon for oil in southeast apparently has not made significant biological impacts on eulachon fish population levels, although extensive biological research on Alaska eulachon has not been done.

Since this report, additional research on the subsistence eulachon fishery has been conducted by the Division of Subsistence in cooperation with the communities of Haines and Klukwan. The findings will be published in the forthcoming report, "The Subsistence Hooligan Fishery of the Chilkat and Chilkoot Rivers," by Martha F. Betts, Technical Paper No. 213, Division of Subsistence, Alaska Department of Fish and Game.

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

**By James Magdanz**

**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).<sup>1</sup> 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).

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<sup>1</sup> 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 FISHERY<sup>2</sup>

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

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<sup>2</sup> 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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## **SECTION II**

### **CASE EXAMPLE OF DISTRIBUTION AND EXCHANGE: SEAL OIL**

This section describes the harvest and exchange of seal oil in western and northwest Alaska ("The Production and Exchange of Seal Oil in Alaska," by James Magdanz and Robert J. Wolfe). This report was originally presented to the Board of Fisheries in December 1988.

As with the case example of eulachon oil described in Section 2, the sharing and exchange of seal oil have long histories in Alaska. Like eulachon oil, seal oil is a food item used primarily by Alaska Natives, and this appears to establish certain limits on demand and supply. The federal government has the legal authority to regulate the trade of sea mammal products under the provisions of the Marine Mammal Protection Act. Current regulations allow for the nonwasteful harvest of marine mammals by Alaska Natives only. Regulations also allow for the sale of food products from marine mammals in Native villages and towns in Alaska. Food products from marine mammals can be found for sale in certain stores in places like Bethel, Kotzebue, and Anchorage. However, most families obtain seal oil through other arrangements than store purchases. The sharing and exchange of seal oil under this current management regime apparently has not resulted in significant biological impacts on seal population levels.

**THE PRODUCTION AND EXCHANGE OF SEAL OIL  
IN ALASKA**

**By James Magdanz and Robert J. Wolfe**

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

**December 1988**

Most rural coastal communities in Alaska use seal oil as part of the community diet, from Klawock in southeast Alaska, Port Graham on Cook Inlet, to Kaktovik on the north slope. Seal oil also is used by many inland Alaska communities, some of them hundreds of miles from the coastal waters and seal hunting locations. Historically, most communities have obtained seal oil in two ways: directly by hunting, or indirectly through networks of sharing, barter, and trade. This report briefly describes this traditional trade of seal oil as it occurred in Alaska during the 1980s.

## PRODUCTION AND USES

Seal oil can be made from the blubber of any of the five seal species found in Alaskan waters. The Inuit generally prefer oil made from the bearded seal *Erignathus barbatus*, but oil also is commonly used from the ringed seal *Phoca hispida* and the spotted seal *Phoca largha*. In southcentral and southeast Alaska, the harbor seal *Phoca vitulina* is primarily used for seal oil.

The techniques for making seal oil differ somewhat between regions. Among the Inuit and Yup'ik, seal blubber usually is cut into fist-sized chunks or narrow strips and placed in skin, plastic, or glass containers. The oil gradually separates from the solids in the blubber, floating to the top. Among the Tlingit and Haida, seal blubber is commonly stirred in a pot over a low flame to render the oil, after which it is stored in containers. The quality of the oil varies from species to species, from season to season, and from producer to producer. A single adult bearded seal yields up to 20 gallons of oil; the smaller ringed and spotted seals produce about 4-5 gallons.

Seal oil is a high quality food, providing a major source of calories (as fat) to the rural diet. In many Inuit and Yup'ik households, seal oil is used with virtually every meal. People pour a few tablespoons on a plate and dip dried fish, dried meat, or breads into the oil. Seal oil is regularly added to stews and soups of wild fish and game. Seal oil is commonly used to store other subsistence products, such as partially-dried fish, "black meat" (dried meat of the bearded seal), and greens (such as the Inupiat *sura*, fresh shoots of the willow). Seal oil is also used as an ingredient in a variety of traditional medicinal preparations.

### DISTRIBUTION AND EXCHANGE

Since passage of the Marine Mammal Protection Act of 1972, only Alaska Natives may harvest marine mammals. Seals may be harvested for subsistence uses or for the creation of authentic handicrafts. The MMPA also allows any edible portion of marine mammals harvested by Alaska Natives to be sold in Native villages or towns in Alaska or for Native consumption.<sup>1</sup> This regulation provides for the traditional trade in marine mammal products such as belukha muktuk, bowhead muktuk, and seal oil.

During the nineteenth century, seal oil was among the commodities available at coastal trade fairs in western Alaska (such as at Port Clarence and *Sisualik*). People from coastal and inland communities regularly traveled to the trade fairs with furs, dried meat, and other products. The trade of seal oil commonly occurred at these fairs. Seal oil also was traded when families encountered one another while traveling or camping (Burch 1988).

---

<sup>1</sup> The U.S. Fish and Wildlife Service considers "Native village or town," to mean "any town in Alaska" (Webb 1988).

Table 1

SOURCES OF SEAL OIL FOR  
FIFTEEN MOUNTAIN VILLAGE HOUSEHOLDS

<u>No.</u>	<u>Place Hunted</u>	<u>Place Received From</u>	<u>Relationship</u>	<u>Gift or Trade</u>
1	—	Emmonak	Wife's Sister's Son	Gift
	—	Emmonak	Wife's Mother's Brother's Daughter's Son	Trade
2	Hooper Bay	—	—	—
	—	Hooper Bay	Not determined	Trade
3	Kotlik	—	—	—
	—	Scammon Bay	Wife's Parallel Female Cousin	Gift
4	Main River	—	—	—
5	Middle Mouth	—	—	—
6	—	Mt. Village	Friends	Trade
7	Scammon Bay	—	—	—
8	Kotlik	—	—	—
9	—	Chevak	Friends	Gift
	—	Chevak	Friends	Trade
10	Middle Mouth	—	—	—
11	—	Mt. Village	"People in town"	Gift
12	—	Kotlik	Eluk, "second or third cousins"	Gift
	—	Mt. Village	Wife's Adopted Sister's Son	Gift
13	—	Mt. Village	"Neighbors"	Gift
14	Middle Mouth	—	—	—
	—	Scammon Bay	Not determined	—
15	Main River	—	—	—

From Wolfe 1981:223

Currently, the exchange system for seal oil operates primarily between families, rather than trade fairs. Seal oil, usually in quarts and gallons, though occasionally five gallons or more, exchanges hands through a variety of ways -- as gifts, as bartered items, or as traded goods. For instance, to illustrate the ways of obtaining seal oil at Mountain Village, a Yup'ik community 97 miles inland along the Yukon River, a sample of 15 interviewed households were asked where and how they received seal oil in 1980, the previous year (Wolfe 1981:219, 222-224). All 15 households procured seal oil in some manner, as summarized in Table 1. Nine households had members who traveled to the coast to hunt seals. Nine households received seal oil procured by someone else, four from persons in Mountain Village and the rest from coastal communities (one from Emmonak, one from Kotlik, two from Scammon Bay, one from Chevak, and one from Hooper Bay). Seven transactions were described as "gifts." Four transactions were described as "trade," meaning purchasing with money. The givers or traders were described as either "relative," "friend," or "neighbor."

This example illustrates the variety of channels through which seal oil is obtained by inland communities along the Yukon River. Some coastal hunters serve as regular suppliers of seal oil to relatives and friends upriver. Most exchanges occur after fall seal hunting. As one coastal hunter reported, seal oil is commonly "swapped" for "upriver things", like wolf skins, wolverine skins, moose meat, and even groceries. Seal oil is commonly sold for money as well. The price of the seal oil increases with distance from the coast, in 1980 ranging from \$30 to \$70 for 5 gallons, the quantity derived from one whole carcass of a spotted or ringed seal. Moose meat is a major item traded downriver for seal oil. One resident of Sheldon Point on the coast said he regularly brought seal oil upriver to "distant relatives" at St. Mary's, Pilot Station, and Russian Mission. The previous year he distributed four whole spotted seals and several jars of seal oil among

them as gifts brought to their homes. An Alakanuk man reported he always brought seal oil upriver while moose hunting in fall, which he gave to the persons he bought boat fuel from at St. Mary's.

Exchanges also occur between the Norton Sound communities of Elim, Koyuk, and Unalakleet, and the Yukon River community of Kaltag. In one reported instance, Kaltag residents requested seal oil from Unalakleet, and two Unalakleet residents chartered an airplane, planning to pay for the charter with their seal oil sales. Reportedly, their asking price was too high for some Kaltag residents, and they were unable to sell all their oil. Kaltag residents also have scheduled potlaches, and invite Unalakleet residents to come with seal oil. Kaltag residents commonly provide king salmon in exchange for the oil.

Seal oil often is available for purchase on demand in stores in regional centers like Kotzebue, Nome, Bethel, and Barrow. Hanson's Trading Company in Kotzebue, the Nome Alaska Commercial Company, U.S. Mercantile in Nome, and the Bethel Alaska Commercial Company frequently have seal oil available. Prices reported for seal oil have ranged from \$3.75 to \$12.00 a quart during the mid-1980s. At least one store in Anchorage also offers seal oil for sale. Shishmaref is reknowned in northwest Alaska for the quality of its seal oil. Shishmaref is a common supplier of seal oil sold in Kotzebue, Nome, and Anchorage stores. "People like that seal oil," one meat department manager said. "If you open a can, you can tell the difference."

## SUMMARY

Seal oil is one of the most commonly exchanged wild foods in Alaska in the 1980s. Under the Marine Mammal Protection Act only Natives may harvest seals, but anyone may purchase seal oil in Native towns in Alaska. The greatest volume

of seal oil exchanges occur as sharing among relatives, but substantial quantities also are bartered for other goods or sold for cash. The current trade in seal oil is a continuation of traditional trade system that dates to before historic contact. The Division of Subsistence has been studying the barter and trade in seal in 1988 and 1989, and will be publishing a more complete report on customary trade of wild resources in 1989.

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### SECTION III

#### CASE EXAMPLE OF DISTRIBUTION AND EXCHANGE: HERRING ROE IN SITKA SOUND

This section describes the harvest and exchange of herring roe on substrate harvested from Sitka Sound in southeast Alaska ("The Subsistence Harvest of Herring Eggs in Sitka Sound, 1989", by Robert F. Schroeder and Matthew Kookesh). This report was originally published as part of the Division of Subsistence technical paper series in 1990.

As with the case examples of eulachon oil and seal oil (presented in Sections 2 and 3), the sharing and exchange of herring roe on substrate have long histories in southeast Alaska. Herring roe in the Sitka area are harvested on three main types of substrate (hemlock branches, hair seaweed, and macrocystis kelp), the majority being roe on hemlock. The report describes this use pattern as it occurred in spring 1989.

Like the cases of eulachon oil and seal oil, herring roe on hemlock and herring roe on hair seaweed are food products primarily used by Alaska Natives in southeast Alaska. By contrast, herring roe on kelp has a commercial market in eastern Asia as well as being consumed by Alaska Natives and other southeast residents. The exchange of the commercial product alongside the subsistence product complicates management of the herring fishery. It provides opportunity for the leakage of subsistence-caught roe on kelp into commercial channels. The Alaska Board of Fisheries has the authority to regulate the commercial and subsistence herring fisheries.

The case report illustrates that the subsistence harvest of herring roe on hemlock in the Sitka Sound area was a fairly specialized activity in 1989. Up to several thousand pounds of subsistence product each were collected by a relatively modest number of harvesters. The roe on hemlock was then widely distributed through non-commercial channels throughout southeast Alaska communities, with some of the product traveling as far as Anchorage, Portland, and Seattle.

**The Subsistence Harvest of Herring Eggs  
in Sitka Sound, 1989**

**Technical Report Number 173**

**Robert F. Schroeder  
Matthew Kookesh  
Division of Subsistence  
Alaska Department of Fish and Game  
Juneau, Alaska**

**January, 1990**

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## I. INTRODUCTION

This report documents the non-commercial harvest of Pacific herring (*Clupea harengus*) eggs on western hemlock branches, on hair seaweed (*Desmarestia viridis* sp.), and on macrocystis kelp (*Macrocystis integrifolia*) that took place in the Sitka area in April and May, 1989. Field observation of the harvest and interviews with elders and key harvesters supplied most of the information presented in this report. Additional information was available from historical documents describing herring roe harvest in Sitka Sound. Some quantitative data were available from earlier research conducted by the Alaska Department of Fish and Game (ADF&G) Division of Subsistence in Sitka and in other communities that use this resource and from permit files kept by ADF&G.

In prior Division of Subsistence community studies conducted in Angoon in 1985, Hoonah in 1986-88, Haines in 1983, Kake in 1986, Sitka in 1983, and Tenakee Springs in 1983, we found that harvest and receipt of herring eggs from Sitka Sound was part of the seasonal round of subsistence activities (Gmelch and Gmelch 1983, Mills et al 1983, Leghorn and Kookesh 1987, Mills and Firman 1986, Firman 1989, George and Bosworth 1988, Schroeder and Kookesh 1990). The Tongass Resource Use Cooperative Study (TRUCS), conducted in 1988, provided a current measurement of the level of herring egg harvest in all major communities in southeast Alaska. This information is summarized in this report.

These earlier studies provided harvest levels and gave an indication of the importance of the Sitka Sound herring eggs harvest to many southeast communities. The goal of the research reported here was to describe how the subsistence herring egg fishery takes place and to examine the distribution and exchange of herring eggs from Sitka Sound to other communities. This study was designed to complement existing studies by providing a description of the 1989 Sitka Sound subsistence herring egg harvest.

The following sections of this report describe the methodology followed in the field study, the historic herring egg fishery in Sitka Sound, contemporary patterns of harvesting, harvest estimates from other studies, and directions for further research.

## II. METHODOLOGY

The research design for this project was prepared in early April, 1989, and circulated for comment to Sitka area ADF&G biologists, Fish and Game Advisory Council members, and to other Sitka community members. The research design identified key questions to be answered in the research and the primary research tasks to be undertaken. The main research tasks were:

1. Review of existing information and literature;
2. Contact with ADF&G staff, Sitka Community Association, Sitka Fish and Game Advisory Committee, and other individuals concerned with the herring egg harvest;
3. Develop of research questions and interview schedule;
4. Identify known very active harvesters from key informants and interview selected high harvesters;
5. Interview clan elders about historic patterns of harvesting;
6. Record distribution of eggs from selected high harvesters;
7. Record shipment of eggs by common carriers to other SE locations;
8. Identify communities known to have sent people or boats to harvest eggs in Sitka; and
9. Participant observation of harvest and processing of eggs on branches and eggs on hair seaweed.

Most field work on this project was done by Matthew Kookesh in late April and early May, 1989, during the period of active harvesting.

### III. THE HISTORIC HERRING EGG FISHERY IN SITKA SOUND

According to elders we interviewed, Sitka was considered the herring egg capital of the northern portion of southeast Alaska before the colonial period began. Although herring spawn was collected elsewhere in the northern part of southeast Alaska<sup>1</sup>, the harvest in Sitka Sound was particularly valued.

The sheer abundance of spawn and the length of the spawning period has made the Sitka Sound harvest special both in the historic and contemporary period. Numerous informants spoke of the whole of Sitka Sound being white with spawn during their childhoods and told of unattached eggs washing up with the tide two or more feet deep on shore<sup>2</sup>. The whole area would be pervaded with the smell of spawn. We also heard that, in times of high herring abundance, herring were frequently stranded or beached in large numbers after being frightened by seals, sea lions, or other predators; beached herring were a spring food source for birds and furbearers. Herring generally have spawned in Sitka Sound over a period of two or more weeks; informants report that spawn in other parts of northern southeast has usually been of shorter duration. Since it is difficult to predict exactly when herring will spawn, harvesters have had a much better chance of getting a good quality product in the quantity that they need from the longer spawning period in Sitka.

In this early historical period members of many communities would come to Sitka during the spawning period to harvest eggs for their own use or for trade. We were told that people coming to

1. Herring spawn near Angoon and Hoonah was sometimes harvested. Local herring spawn figure importantly in a story from Hoonah. After Huna Tlingit were forced from Glacier Bay by the ice advance, they were camped near the present location of Hoonah. Food was in very short supply. Some young men came back to the camp after unsuccessfully foraging for food and told the elders that the sea bottom close to shore was white near Long Island. Elders sent them back after telling them to pull sticks through the white bottom. The young men did this and returned with canoes full of thick herring spawn. Hoonah residents report that, since a log transfer facility was built on this site, the amount of herring spawning has declined and that egg harvesting has become infrequent. Auke Bay and areas near Klawock were other areas where herring eggs were commonly harvested. Herring have not spawned in Auke Bay in abundance in recent times.
2. We examined beaches near Sitka following the 1989 spawn and found small quantities of unattached eggs washed ashore, well under one inch in depth. In years when there are storms during the spawning period, more eggs may wash up. The ADF&G management biologist in Sitka has seen three feet of eggs on beaches after storms (DeJong, 1989).

Sitka for the harvest usually had clan ties with Sitka clans. To start off the welcome of the out-of-town guests, the Sitka Tlingit had a herring festival. The out-of-town guests would send a runner in to let the host know that they were coming. The guests would stop at the site of old Sitka and prepare for the festivities by donning robes, crests, and other clan emblems. One elder reported, *When people are coming for herring we went into the water waist deep to steady the canoes and carried the women ashore.*

Some elders recalled that visiting clan members would stay at island camps near Sitka that were used by local branches of that clan. Informants agreed that the Sitka Sound herring egg harvest was open to members of other communities who were free to harvest eggs where and in whatever quantity they wished. One elder told us, *my grandfather will not slap my hand if I reach into his bowl,* meaning that clan relatives have customary rights to use foods in another clan members area.

Written records corroborate the oral history and document the history of herring spawn harvest by Tlingits living in the Sitka Sound area or coming from home communities for the harvest. Marchand visited Sitka as part of his 1790-92 voyage (Fleurieu, 1969) and wrote

*The principle food of the natives of Tchinkitanay (Sitka Tlingit) is fish, fresh or smoked, the dried spawn of fish, of which they make a sort of cake<sup>3</sup>, and the flesh of the animals that they kill.*

Captain Richard Cleveland visited Sitka Sound on a trading voyage in 1799. He mentioned two groups of Indians present in the sound on April 2.

*The following morning, the natives came soon after daylight and began without hesitation to dispose of these furs to us,.....Our linguist recognized them to be the Hoodsnahoo tribe (Kootznahoo Inlet or Angoon Tlingit), who had come thus early to the coast to get a supply of the spawn of a certain fish (herring) which constitutes their principal food in the spring of the*

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3. We have no recent references to use of a pressed cake of herring eggs.

*year. As this tribe had attacked the cutter last year, alone, we thought it not improbable that, now that they were united with the Norfolk Sound tribe {refers to Tlingit in Sitka Sound}, they might determine to make another attempt (DeArmond, 1978).*

Rezanov wrote that over a thousand Kolosh (Tlingit Indians) had come to Sitka Sound and were present for the herring egg harvest on Mar 22, 1806 (Pierce, 1972). Khlebnikov, who spent much time in Sitka during his work in North America as a manager for the Russian America Company from 1817 through 1832, wrote

*The Kolosh {Tlingit} of Sitka begin preparing food in February when the herring come in. They do not preserve this fish because it molds and spoils easily; but they do preserve the roe. The Kolosh know when the herring spawn, and prepare a wicker container, tie it, and submerge it with stones in the water near the shore. The released roe settle on the wicker, which is then taken from the water and dried in sun or just in the air. When the roe is dry, they remove it from the wicker and keep it to use..... In addition to fish, raspberries are preserved and eaten with herring roe, thus making a tolkuska<sup>4</sup> (Klebnikov 1976, orig. 1861).*

Indians continued to come to Sitka Sound for this harvest despite the recent war with the Russians at Sitka. Krause (1979, orig. 1885), in writing of events in Sitka in the early 1800s, reported that

*From 1821 to 1826 Murawief administered the {Russian} colonies.....In the spring .....about one thousand people assembled there {Sitka Sound mainland} and perhaps as many again on the neighboring islands to gather the eggs<sup>5</sup>.*

---

4. Other sources do not mention the use of wicker or baskets for use as deposition strata.

5. Tlingits continued return to Sitka Sound for herring egg harvest even after the war with Baranof. Many Sitka Tlingit lived in Peril Strait near Sitkoh Bay in the decades immediately following the war (Thornton 1989; Price 1989).

Krause arrived on a field trip to Sitka on April 25, 1882 and reported:

*Everywhere along the beach I see fisheggs {herring eggs} being dried on strings hung up between poles. Some fisheggs are spread on rocks and cloths (McCaffrey 1981, orig. 1881-82).*

One informant told us that Father Duncan, founder of Metlakatla, recorded 20,000 people in Sitka for a herring festival, sometime in the late 1800s. This estimate is probably exaggerated, but it does indicate that many people from other communities in southeast came to Sitka Sound for the harvest. Moser (1899) described the herring egg harvest in southeast as follows:

*In April the herring come to the shores in countless numbers to spawn, depositing their eggs in the sea grass, rockweed, and on the bushes hanging in the water. At this time the Indians plant hemlock twigs at the low-water mark, where they become covered with spawn, after which they are gathered in canoe loads. The spawn is heaped upon the twigs, to which it adheres in grapelike clusters, which are sometimes called "Alaska grapes," and is consumed by the natives in large quantities, either fresh or dried, and cooked as occasion demands, and for winter use. Usually it is eaten with rancid oil, which is the sauce that goes with all their delicacies, even the berries.*

The Tlingit language has a developed vocabulary for herring harvest, trade, and barter of resources shown in Table 1. This reflects the importance of subsistence harvest of herring eggs.

TABLE 1. Tlingit nomenclature related to herring egg harvest and trade<sup>6</sup>.

---

Hemlock = <i>yan</i>
Young hemlock = <i>tukl'</i>
Hemlock = <i>haaw</i> (for herring eggs)
Macrocystis kelp = <i>daaw</i>
Hair Kelp = <i>ne</i>
Yellow seaweed = <i>tayeidi</i>
Herring = <i>yaaw</i>
Herring oil = <i>yaaw eexi</i>
Herring rake = <i>xidalaa, xitlaa</i>
Herring eggs are generally referred to as <i>haaw</i> , <i>daaw</i> , or <i>ne</i> depending on whether the substratum used for egg collection is hemlock branches, macrocystis kelp, or hair seaweed respectively.

#### Types of Exchange

*aat yax* = exchange, general.

*aa daa seix* = fair exchange. What ever you feel is fair exchange. If a person feels it is not fair he says:

*aat dei akwstaak* = I will add this much more on top of it.

*aa yeen dax* = Split right in half such as a catch of fish between two partners. Elders said that Tlingits were always fair to each other in order to always protect good will.

*ku kaa.u* = I will buy. This type of exchange came in with the use of money in transactions.

*at wu hoon* = Selling, this type of exchange also came in with the use of money in transactions.

*aa wu.xa* = A certain relative can come and take part of your harvest without asking for a share. It is just understood. He just takes his share.

*du kaanix di gee du* = (material things from a relative) A *love gift* is prompted by the receiver and involves unequal exchange. For example, the receiver will give you less than the value in return, and you have to accept. Usually when a food gift is given, it is received with the understanding that it shall be repaid with fair exchange. If the gift is not repaid then no other food gift will be given until the debt is paid.

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#### Historic Harvest Methods

At least two types of western hemlock were recognized by informants- smooth and scored bark. The type with smooth bark was preferred as a collecting strata for herring eggs to the variety with scored or indented bark. Eggs deposited on the second variety tend to pick up dirt and plant material from the variegated bark. Both branches and small trees were cut. Trees and branches with full foliage have been preferred since they provide more strata for egg deposition. For this reason trees

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<sup>6</sup>Transcription of Tlingit words follows the system proposed by Naish and Story as closely as possible. Spelling for some terms were supplied by elder Tlingit speakers we interviewed and may differ slightly from the Naish and Story system for writing Tlingit (Davis, 1976).

on the forest edge or recent regrowth have been preferred for herring egg harvest. Trees and branches were usually cut and placed in the water in advance of herring spawn.

Hemlock branches and small trees were set just slightly outside the intertidal zone in areas where herring were known to spawn. Strata were weighted with rocks or other heavy objects so that they would hang vertically in the water column with the weighted end on the bottom. Branches and trees were set individually and in skates. Sets were made from canoes and directly from the beach. Since spawn might not appear at a particular location, harvesters tended to set branches in a number of locations. Hemlock sets were checked regularly for presence of spawn. When spawn was thick enough, hemlock sets were cut into manageable pieces and brought ashore by canoe for processing. Branches with thin spawn, branches with spawn that has become sandy from unsettled weather, and branches with over-ripe spawn were left *in situ* to hatch<sup>7</sup>.

Herring eggs on macrocystis kelp and on hair seaweed were generally harvested from naturally occurring beds. Of these two, eggs on hair seaweed, *ne*, was preferred, possibly because of its abundance, ease in processing, and the neutral taste of this strata<sup>8</sup>. *Ne* grows in the intertidal zone. If presence of good spawn coincides with large tides, *ne* can be gathered by hand or with a short rake. Under other tidal conditions, a long rake or a grapple was used to reach submerged *ne*. As with *haaw*, *ne* was brought ashore by canoe for processing.

Eggs on macrocystis kelp were harvested from canoe. Less was said about use of this strata than about *haaw* and *ne*<sup>9</sup>. We heard some reports that macrocystis kelp was occasionally cut from a

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7. Because spawn can develop on hemlock branches, excess sets of hemlock do not damage the resource.

8. Other Native groups may prefer other strata for deposition.

9. Some interesting speculations can be made about the ecological relationships among sea otter, sea urchins, and macrocystis kelp. Perhaps low sea otter populations allow large sea urchin populations which keep macrocystis kelp grazed down.

During the recent historic period sea otter populations have been low, so use of macrocystis kelp as a strata for herring eggs might also be depressed.

kelp bed and transported to a spawning area where it was then set as a strata. This probably took place occasionally, but it was not a major characteristic of harvest.

Other strata have occasionally been used for herring egg collection. Informants told us they sometimes used a rockweed, *Fucus distichus*, called *te tayeidi*<sup>10</sup> for a stratum. We also learned of a *Japanese set* in which blueberry bushes are used as a stratum. Informants recall that this item was sold to Japan at one time<sup>11</sup>.

From our interviews with elders we believe that most Sitka Tlingit clan houses participated in the herring harvest in the historic period. Given how highly prized herring eggs have been as both a food and a trade item and the methods of harvest and preservation used, harvest levels were probably substantial. A traditional household unit included all persons living in a clan house and may have totalled 50 persons or more<sup>12</sup>. A household planning a potlatch or payoff party may well have planned to harvest enough eggs to feed hundreds of guests over a number of days<sup>13</sup>. A household actively engaged in traditional trade and exchange would likely dry large quantities of herring eggs for this purpose<sup>14</sup>. Based on these uses for herring eggs and interviews with elders, we can roughly estimate that a harvesting household may have taken from 500 to 10,000 lbs of herring eggs, depending on household size, anticipation of coming potlatches and payoff parties, and involvement in inter-village trade and exchange of eggs.

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10. Literally "hanging from a rock". Eggs deposited on this strata are harvested commercially in the Togiak area and sold in Japan (Immamura, 1989).

11. We have no information on this sale or the quantities of herring eggs sold. Informants stated that sale was banned because of possible damage to blueberry bushes, known to be eaten by deer. Some informants saw sets of blueberry bushes in the 1989 harvesting season. They thought that some illegal sale of eggs on berry branches may be taking place, since they did not know of use of herring eggs on blueberry bushes by southeast Alaska residents.

12. Tlingit families traditionally lived in clan houses with large numbers of related people living under one roof. A clan household was typically made up of matrilineally related nuclear households.

13. Potlatches or payoff parties are traditional Tlingit celebratory feasts in which a clan of one moiety honors or "pays off" a clan of the other moiety. These may associated with death rites, house building, or other life cycle events. Large quantities of special food is gathered and prepared for feeding guests and for distribution as gifts. Preparation for a payoff party was an expressed purpose of part of the Angoon herring egg harvest in Sitka Sound in 1989.

14. Dried eggs were needed for exchange with trading partners and for more loosely structured trade. Sitka Tlingit traded well into interior communities in what are now British Columbia and Yukon Territory.

### Historic Preservation and Utilization Methods

Historically, herring egg laden hemlock branches, hair seaweed, and macrocystis kelp were taken to preservation areas for processing. In the precontact and early contact period, air drying of herring eggs was the preservation method used. Because they were close to harvesting areas and usually had good winds for drying eggs, the islands in Sitka Sound were used by all the Sitka clans and visiting relatives from around southeast Alaska. The islands were known as ideal drying areas because the wind would blow through the trees without obstruction. Egg laden hemlock branches, hair seaweed, and macrocystis kelp were hung on tree branches to air dry. Children would take the branches and climb up the tree and tie off the eggs to the overhanging tree branches<sup>15</sup>. Ne was also dried on rope strung for that purpose. Swanton (1905b) described this preservation method,

*When covered with eggs, these boughs were lifted into the canoe, carried ashore, and placed to dry on the branches of a tree which had been stripped of its smaller twigs. To raise them into place there was employed a large wooden hook taken from a tree where a branch comes off, and it was thjen a comparatively simple matter, but after they were dried the eggs became very brittle and had to be handled with care. Hemlock boughs are said to be used in preference to others because they leave no peculiar taste.*

Respondents remember seeing whole trees white with drying eggs, and some problems occurred with the seagulls landing by the eggs<sup>16</sup>. Herring eggs took about four days to dry, depending on the weather. Dried eggs were stored in boxes for trade and local consumption. Traditional bent wood boxes were originally used for this purpose. Later on, use of fish packing boxes became common.

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15. A number of elders now in their 70s recall doing this as children.

16. These herring egg drying trees can still be seen around Sitka and are marked by long trimmed branches parallel to the ground. Trees were trimmed to be good for drying.

Fresh herring eggs on all strata were eaten after being rinsed in sea water to remove sperm or milt<sup>17</sup>, briefly blanched in boiling water, and dipped in seal oil. Dried *haaw* were reconstituted by soaking in salt water. The reconstituted *haaw* were then cooked and eaten as the fresh product. Dried *ne* was sometimes eaten without soaking. Some specialty food items may have been made by pounding dried eggs (Petrov, 1880). In addition to being a prized subsistence food in daily diet, both fresh and dried herring eggs were needed for potlatches and other important feasts.

According to our elder informants, preservation methods began to change with the arrival of fish-buying schooners in the 1880s. Schooners salted fish, and Tlingits experimented with salting herring eggs. Fresh eggs were kept in heavy brine for three days, and then drained and packed with dry salt. The dry salt would pull even more liquid out of the eggs. Eggs were reconstituted by soaking to remove the salt.

The opening of the cold storage in Sitka in about 1915 led to further change in preservation for some households. The cold storage rented out freezer space, some of which was used for storing of herring eggs. People started to get home freezers in the 1940s and began to use them to store eggs. Freezing has become the most common preservation method today, although we were told that some people continue to dry or salt small quantities of eggs.

The use of camps on islands for harvesting and drying of herring eggs declined over time. We were told that Tlingit use of many of the islands in Sitka Sound was eliminated or restricted when fox farms were established early in this century. Later on, power boats made it possible for harvesters to return to locations closer to home for herring egg processing. As freezing supplanted drying as the preferred method of preservation, island camps, with their good drying conditions, were no longer necessary or generally used.

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17. Some respondents living on the east side of town complained that it has been difficult to get clean sea water on the east side of Sitka due to industrial pollution. Herring eggs are presently harvested well away from the pulp mill which is located close to Herring Cove in Silver Bay.

### Historic Trade and Exchange

Extensive trade networks existed in southeast Alaska before the Russian period. Herring eggs, sea otter pelts, and fur seal pelts were some of the items available to Sitka Tlingits that were widely traded. This strictly indigenous trading network enlarged during the historic period as Tlingit became middlemen between Russian traders and tribes in the interior of Canada. Later on they were middlemen trading between American independent traders and Hudson Bay Company trading posts on the Canadian coast and interior Indians.

Sitka traded with members of other tribes for specialized foods such as soap berries, hooligan oil, dried hooligan, nagoon berries, high bush cranberries, dried seaweed, and mountain goat meat, and prized raw materials and craft products such as mountain goat fleece, sheep horns, horn ladles, wolverine fur, dyes for Chilkat blankets, baskets, copper, and other items. Elders told us that dried herring eggs were traded as far as the Yukon Territory. They were gifts to the Asek, Klukwan, Stikine, and Taku tribes that required gifts for passage into interior Alaska and Canada. Trade took place both with members of other tribes coming to Sitka and members of Sitka clans going to other areas.

Sitka traders frequently had trading partners in other communities with whom they had regular exchanges over the years. With a trading partner, payment or exchange of other items for those received would not be expected to take place immediately. While some of the trade and exchange was carried on through a system of direct barter, economies of southeast Alaska also used other currencies throughout the 1800s or earlier. At time of contact, sea otter and fur seal pelts, seal and hooligan oil, dried salmon sides and strips, dried herring eggs, and other indigenous trade items were probably cross-valued, meaning that the value of one item could be expressed in terms of the quantity of another item. Blankets, rifles, bullets, buttons, and beads became an introduced currency early in the 1800s and, along with furs, were used as a medium of exchange. Cash was well established

in the late 1800s. Traditional trade and exchange of subsistence herring eggs included these currencies and cash.

Based on interviews with elders and our review of the literature on Tlingit society (cf. de Laguna 1960, 1972; Krause 1979; Landon 1977; Oberg 1980; Swanton 1908, 1909) most trade and exchange in traditional Tlingit society was reciprocal, that is, the giver almost always expected payment in kind or in currency in return for the gift<sup>18</sup>.

Elders we interviewed thought that trade in herring eggs was a very important part of the traditional subsistence seasonal round when they were growing up and in the preceding historical period. Based on the importance elder informants placed on herring egg harvest and on trade and exchange of dried eggs with other communities, we would estimate that a substantial portion of the total herring egg harvest in Sitka Sound was traded to or exchanged with other communities<sup>19</sup>.

Along with changes in preservation methods, changes in transportation systems in southeast Alaska have altered the way trade in herring eggs takes place. Before other methods of preservation and transport were available, herring eggs for trade were dried and then transported in water proof packing in dugout canoes. Although some change may have occurred with use of sailing vessels for transport, bigger changes took place with increase in motorized vessel traffic in southeast with commercial fishing boats, barge lines, and other commercial carriers moving herring eggs for trade in the early part of this century. With the availability of much faster means of transportation and a shift to freezing as a preferred preservation method, fresh herring eggs have become the main item that is traded and bartered. Eggs are used fresh or frozen by the recipient. These are transported by fishing

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18. An elder explained how his household sent eggs to Yakutat and received hooligan. He said that he would stop sending the eggs to Yakutat if he did not get hooligan or other products in exchange. In anthropological terms, this type of "balanced reciprocity" can be contrasted with other non-reciprocal forms of distribution and exchange found in other hunting and gathering societies. In contrast with some hunter gatherer societies where non-reciprocal sharing is the norm, Tlingit society may be based more on a "pay as you go" principle.

19. Note that, while we know that large quantities of eggs were harvested by both local and non-local Tlingits for both their own consumption and for trade, we have no quantitative measures for the historical period.

boat and Alaska State ferries, but, increasingly, the bulk of eggs traded and bartered move by air freight between Sitka and other communities.

### Change in Harvesting

Elders were consistent in noting that the strength of herring spawn had declined drastically in their lifetimes<sup>20</sup>. We were told that the spawn was almost always good until about 1935 when sardine boats started taking loads of herring to salteries located in Washington Bay, Port Conclusion, Port Alexander, and Killisnoo<sup>21</sup>. Herring population was reportedly reduced until about 1940. They also noted that age class of herring taken commercially has gone down a great deal in recent years. No one spoke of a year when it was impossible to harvest herring eggs in Sitka Sound, although there was reference to a time of *two winters* when summer did not arrive and spawn was poor<sup>22</sup>. The regularity of the Sitka Sound herring spawn contrasts with spawn near Angoon, Hoonah, and other southeast communities that does not consistently appear in quantity from year to year.

### Cultural Context

The Kiksadi, one of the main Sitka Tlingit clans, have songs, dances, stories, and an oral history that include reference to herring, herring eggs, and Herring Rock. Herring Rock, located across from the Sitka Pioneer Home and presently covered by the Sheffield Hotel, was an important landmark in Tlingit Sitka before the coming of the Russians and continued to be a focal point for

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20. Commercial harvest of herring began in 1882 with a herring reduction plant at Killisnoo. In the peak year of 1929, 3,120,307 gal. of herring oil and 23,872,093 lbs of herring meal were produced at reduction plants. Stock depletion resulted in fishing restrictions in 1939 (Huizer, 1952).

21. Mr. Herman Kitka collected fur seals near Sitka as part of U.S. Fish and Wildlife research in the 1940s and has seal pelts and a seal skin coat from that time. Fur seal migration takes them close to Sitka. The seals were feeding on herring. Herman believes that decline in herring has caused a decline in fur seal abundance. We do not know of hunting of fur seals by Sitka Natives in recent times.

22. This occurred before our oldest informants were born and may well have been the cold summer following the eruption of Krakatoa in 1883.

traditional celebrations, including a herring festival held prior to the herring egg harvest<sup>23</sup>. Nine clans were present or represented in the Sitka herring egg harvest festivities. The nine clan houses in Sitka are the Shark, Halibut, Murrelet, Brown Bear, Thunderbird, Eagle, Land Otter, Eagles Nest and the Wolf houses. People coming to Sitka to harvest herring eggs were recognized by their Tlingit name or names and their membership in the Eagle or Raven moiety.

A Kiksadi settlement was located just to the north of Herring Rock at the time of the arrival of Russian traders. Kiksadi women are entitled to use a herring emblem on blankets and other regalia, and Kiksadi have a dance and accompanying song that points to the importance of herring, herring eggs, and Herring Rock to their clan<sup>24</sup>.

According to one story, herring come to Sitka Sound in February to look over the bays and inlets. They then leave until they return to spawn in March and April. Another story tells of the dire consequences of fishing in the dark. A man was fishing for herring off Herring Rock well into the night. He did not notice any physical changes taking place to his body as he fished but, by dawn, he had been transformed into an owl. The owl then flew off and landed in trees near the 1988 location of the community college. Informants interpreted this story, which said that you would turn into an owl if you fished past sunset, as the first regulation to prevent over harvesting of herring in Sitka Sound<sup>25,26</sup>.

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23.The herring festival was probably held close to Herring Rock. According to Mark Jacobs Jr., Herring Rock had a pool where herring were stranded at low tide.

24.Herring Rock has been "emblematic" for Sitka Kiksadi and has been tied to their position as the first clan to settle in the Sitka area. Some controversies exist concerning Herring Rock and use of the symbol that stem from relations between the Kiksadi and the clans of the Kagwantaan and from the resolution of the war with Wrangell.

25.Cultural myth may often be used to encode a behavioral prescription, and the story of the man who turned into an owl provides an easy mnemonic for a harvesting rule.

26.Swanton (1905a) recorded the following, summarized Skidegate Haida text concerning herring egg harvest.

"Raven went to the dance house of the Herring People, and when he opened the door to look at them dancing, his mustache was covered with herring spawn. This spawn tasted bad, and Raven became disgusted and threw his mustache away. It grew into a seaweed [Raven's mustache in Haida]. Raven then pushed a hemlock bough into the house and drew it out. It was covered with thick, good-tasting spawn. This is why hemlock boughs are used to collect herring spawn today, in preference to Raven's mustache." (quoted in Turner, 1982)

#### IV. CURRENT PATTERNS OF HARVESTING

##### Timing of Harvest

Seal, sea lion, and the sea gull feeding activity are indicators for the subsistence harvester that the herring have arrived to Sitka Sound. Regular monitoring of the traditional herring spawn areas is necessary to anticipate when the herring will spawn. Active harvesters drive out on Halibut Point road to check for spawn daily or use skiffs to cruise the islands in Sitka Sound looking for schooled herring close to the beach. In recent years the ADF&G has monitored the herring roe percent as part of its management of the commercial herring roe fishery in Sitka Sound. Subsistence users follow ADF&G herring roe percent estimates. When the roe count reaches about 10 percent the herring are ready to spawn. In most years Sitka herring spawn in April. In the current year, however, first herring spawn appeared on March 26<sup>27</sup>.

One elder said that a late spring, like the one experienced in 1989, results in an early herring spawn. Locations of herring spawn also changed in 1989. The location of spawn used for subsistence shifted from southern Sitka Sound to as far north as Katlian Bay. Three Entrance Bay and Pirates Cove, areas used for macrocystis harvest, did not receive any spawn in 1989; this limited harvest on this stratum. Apart from these changes, the locations where herring eggs were harvested for subsistence in 1989 appear to be basically the same ones that were used historically. Figure 1 show areas most commonly used for herring egg on hemlock and hair seaweed, and herring egg harvest on macrocystis respectively<sup>28</sup>. Herring are known to spawn in other areas accessible to Sitka residents. Katlian Bay and Nakwasina Sound and other areas receive some use as well. These secondary areas

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27.Data on timing of spawn are from Bob Dejong, ADF&G management biologist in Sitka and from interviews with active harvesters.

28.Some Sitka harvesters may use additional areas for herring egg on macrocystis harvests.

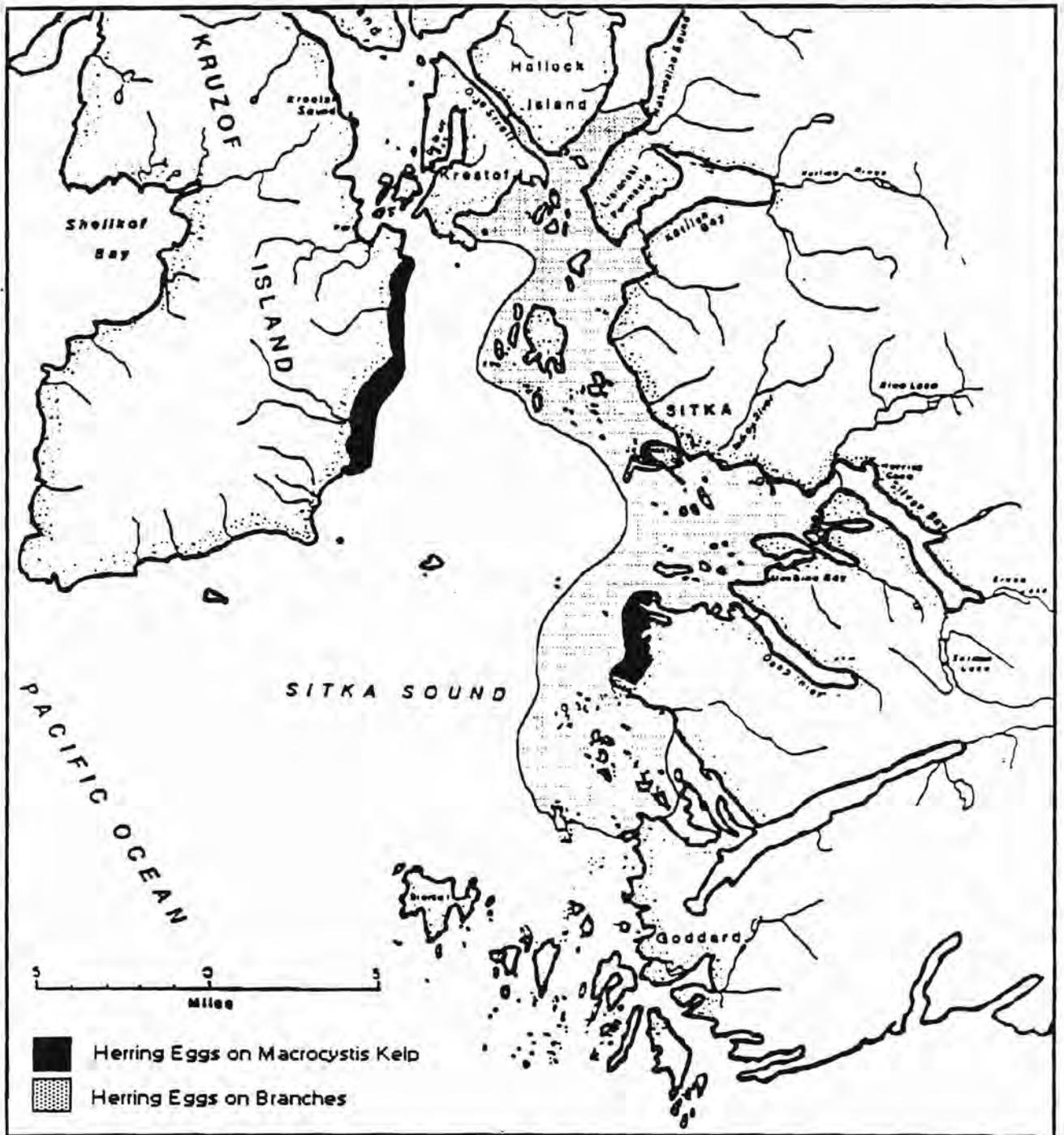


Figure 1. Areas Used for Harvest of Herring Eggs on Branches and on Kelp

are held in reserve by Sitka subsistence users and may be used should harvest in Sitka Sound become unproductive.

### **Selection and Placement of Hemlock Branches and Trees**

Sitka's most active harvesters, those who supply many people with herring eggs, set 60 to 80 small hemlock trees about 15 to 20 feet long in sets of 2 to 10 trees. In contrast, less active harvesters may set a small number of hemlock branches in one or two sets. Branches are much easier to handle. Egg laden trees can be so heavy that harvest from a small skiff is difficult. The most active harvesters prepare well in advance so that they are able to have their sets in place at the optimal time and place. Less active harvesters may wait until herring are spawning to begin their preparations.

Young hemlock trees are selected for use as herring egg strata. Elder informants told us that there are two type of young hemlock. The first type has small ridges running parallel on the tree. The second and preferred tree is a smooth round tree. This was confirmed by active harvesters who told us that they do not harvest the tree with the ridges because they have moss growing in the ridges. The harvesters do not like moss peeling off on the eggs when they are cooked therefore round hemlocks are the preferred tree. Trees with full branches are preferred because they provide more area for egg deposition<sup>29</sup>. Informants told us that they used to be able to cut trees right at the spawning beaches, but that they currently have to go further afield to find good trees. Trees are cut along the Sitka road system and transported by skiff to harvest sites. They are also cut from areas closer to the shoreline and spawning sites, particularly by the most active harvesters. Some harvesters go to more isolated areas in Sitka Sound for good trees. Trees are cut and trimmed with chainsaws, handsaws, and axes.

High harvesters told us that they were putting out more sets in recent years and modified the way they make their sets. They have come to anticipate that some of their sets will be stolen and put in

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29. One of the most active harvesters regularly cut trees growing in clear-cut areas because they had full branches.

enough sets to cover this expected loss<sup>30</sup>. As much as possible, subsistence harvesters hide their set locations so that they will not be found by others. Harvesters stopped using buoys to mark their sets and stopped using heavy rope to tie their trees or branches together. When they used heavy rope, seine boats were able to use their blocks and winches to hoist whole sets on deck. Tying off sets to the beach was also discontinued because the shore line would also be covered with spawn and show as a thick white line running to the beach from the set. Harvesters are able to find their hidden sets by remembering shore features.

The hemlock trees and branches are usually set such that they will just be submerged at low tide. Sets we observed were in water from about 10 to 30 feet deep<sup>31</sup>. Rocks or construction bricks were tied to the butt end of trees and bunches of branches with pieces of web or seine twine. The trees or branches were set such that they would float perpendicular in the water. Trees in skates were tied together with heavy twine or pieces of ground line and separated about 20 feet from one another. The most active harvesters try to get their sets in the water before spawning occurs and have found that good deposition of eggs will not occur if sets are made after the water is milky.

Subsistence harvesters think that herring spawn best at mean low water, however, the spawn fluctuates with the flood and ebb tides. One respondent said that he has noticed that herring usually start spawning at small tides. Herring trees and branches are left to soak for 2-4 days after the spawn has begun, depending on the amount of spawn in an area.

**This year saw an early false spawn in some areas. A false spawn occurs where male herring are releasing sperm with very few females releasing eggs. When this happens, subsistence harvesters may pull their sets and move them to another area. Although it is possible to wait for another herring**

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30. Sitka harvesters believe that out of town seine boats are responsible for most of the theft. We were told that one Juneau boat was seen pulling egg laden hemlock branches in the 1989 season.

31. A limited amount of direct observation was done with very active harvesters. Less active or less experienced harvesters may use other methods.

spawn to set on top of the thin false spawn, the resulting subsistence product will not be high quality; the inner herring eggs from the false spawn will mature under the fresh new eggs. Matured herring eggs start turning brown and small eyes become visible. When the color of eggs has changed from white to brown the eggs are of lower quality for eating. When eyes have formed they are no longer used. The preferred quality eggs are white, deposited about an inch thick on the branches.

In addition to the setting methods described above, some branches are set directly from the beach at low tide. We also noted that about three branches were set from the float at Sandy Cove. We also heard reports that blueberry bushes, wire mesh screen, cheese cloth, and plastic tarp were occasionally used as deposition strata.

#### Harvesting Herring Eggs on Hemlock Branches

Small skiffs and runabouts are the most common vessels used by Sitka residents for harvesting herring eggs. We saw 14 to 18 foot aluminum skiffs with small outboards, open Boston Whalers of various sizes, and 23 foot cabin cruisers and other similar small vessels being used for herring egg harvest.

Harvesters using sunken and unmarked sets get in the vicinity of their set by locating shore landmarks. They then drag a grappling hook through the water to snag either the egg laden branches or the ground line connecting individual trees. The roe covered trees and branches that have been snagged are then pulled to the skiff. Although smaller branches may then be pulled directly into a skiff, branches and trees are more commonly cut into manageable pieces before they are loaded. Based on our observations, a fully laden tree can hold more than 1000 lbs of quality eggs, much more than can be handled in a small skiff. The cut branches are placed in plastic totes, pails, and garbage cans or loaded directly into the harvesting skiff. Before the eggs are put in the boat they are usually dipped 2-3 time to

rinse both the milt or sperm and to wash out any sand or foreign matter from the branches. Sand or other material lowers the quality of the herring eggs, and they stay fresh longer if milt is washed out.

If trees and branches are thickly covered with spawn, the harvesting vessel can be quickly filled to capacity. Eggs are brought home for processing and distribution. While harvesters of small amounts of eggs may carry them up from any docking location, high harvesters prefer docks with loading ramps that facilitate transfer of eggs to the bed of a pickup. One enterprising harvester loaded eggs directly from his 17 foot Boston Whaler to the lined bed of his pick-up. A boat load of eggs, estimated at 1000 to 1500 lbs, could be quickly loaded in this way.

In addition to having sets stolen or ruined by false spawn, sets may not be harvested for other reasons. Spawn might be too thin in a particular location, resulting in a low quality subsistence product. Rough weather might wash sand and debris into the eggs. Because of weather or other reasons the harvester may not be able to get back to his sets until eggs have developed. Trees and branches also may also be left in the water because the harvester has fulfilled his or her subsistence needs. The eggs left in the water are thought to develop normally.

#### Harvesting Herring Eggs on Hair Seaweed

Harvestable hair seaweed grows just below lowest low water. A subsistence harvester wanting this product pays attention to where this seaweed grows and whether or not the area usually receives a good herring spawn. When minus tides coincide with good spawn deposition, as they did in 1989, *ne* (herring eggs on hair seaweed) can be harvested in quantity by hand by a person wearing waders or rubber boots. This variety of seaweed breaks off easily, especially when thickly covered with herring eggs. *Ne* can quickly be gathered by the arm load. At higher tides, *ne* is gathered with rakes and grappling hooks. *Ne* beds can be extremely productive under good conditions. In 1989 we observed

the harvest by hand of about 500 lbs of *ne* by two people from a 10 foot by 10 foot area in about 20 minutes at a minus tide. As with *haaw* or herring eggs on branches, *ne* are taken home for processing.

### Harvesting Herring Eggs on *Macrocystis* Kelp

Egg covered fronds of *macrocystis* kelp are selected by subsistence harvesters from kelp beds where herring have spawned. Fronds are pulled into the harvesting vessel by hand or with a rake or grapple and cut into containers for transport<sup>32</sup>. Based on interview reports, 1989 was a poor year for harvest of herring eggs on *macrocystis* kelp. A number of our informants stated that they usually harvested on this strata, but did not find good spawn in their usual harvest locations. We were not able to observe this harvest.

In terms of overall harvest of herring eggs, eggs on *macrocystis* kelp is harvested by fewer subsistence users and in much smaller quantity than *ne* and *haaw*<sup>33</sup>. Figure 1 shows harvesting locations for herring eggs on *macrocystis* kelp<sup>34</sup>. The main productive *macrocystis* harvesting area is located south southwest of Sitka at Three Entrance Bay and Pirates Cove; some herring eggs on kelp are also taken north of the airport at Whiting Harbor. In some years herring spawn near kelp beds west of Sitka across Sitka Sound, bordering Kruzof Island, and these areas are used for harvesting. Reaching the main productive area requires crossing open water and entail both more exposure to seas and weather and more time and cost than the areas where *ne* and *haaw* are harvested. Informants indicated that larger skiffs or boats were needed to safely harvest in these areas. This difficulty of access may be a factor that limits harvest.

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32. Occasionally some subsistence users may cut kelp and move it to spawning areas. We did not hear of anyone doing this in the 1989 season.

33. Kelp beds in the vicinity of Sitka may still be recovering from possible excessive harvesting of commercial roe on kelp some years ago.

34. Some Sitka residents may use areas in addition to those shown for harvest of this subsistence product.

Harvest of herring roe on macrocystis kelp is regulated by permits are issued from the Sitka ADF&G office. Permits allow an individual to take 32 lbs of egg covered kelp or a household to take 158 lbs. Selected state regulations covering subsistence and personal use herring egg harvesting are reproduced in Appendix 1. The regulatory permit limits placed on harvest of macrocystis may restrict both the total annual harvest and participation in harvest on this strata to some extent. Informants told us that, when they did harvest macrocystis, they harvested in quantity, much as with *ne* and *haaw*. With these latter two items, ability to transport and process the subsistence food is more of a limiting factor than regulatory limits or difficulty of harvest. We were told that, when herring eggs on kelp are gathered in abundance, this subsistence food was distributed to those who did not harvest it themselves.

Herring roe on macrocystis was not frequently mentioned in our interviews with elders concerning early herring egg harvesting practices and few informants referred to the Tlingit word *daaw* (macrocystis kelp) as an important herring egg stratum. This indicates that harvest on *daaw* has been of less importance in Sitka Sound than harvest on the other two strata for some time.

Permits for harvesting herring roe on kelp have been required since 1979. Note that most herring eggs harvested in Sitka Sound are taken as *ne* or *haaw* rather than as eggs on kelp. The permitted harvest amount of roe on kelp has been limited to eliminate illegal sale of this food item. We were told that subsistence harvesters gathering eggs on kelp for themselves and for barter and trade did not always observe the permit limits. For this reason permit data should be seen as providing an indication of the level of interest in this type of harvest rather than an actual measurement.

Table two shows the harvest for 1987 though 1989<sup>35</sup>. Table three shows the number of subsistence permits issued for harvest of herring eggs on macrocystis kelp by community and year for 1979 though 1989. Based on these data, harvest of from 3,900 to 8,800 lbs per year of herring eggs on

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35. For all of these years Alaska residents from any Alaskan community were eligible for permits. New Board of Fisheries regulations defining subsistence and personal use (see Appendix 1) will take effect for the 1990 season.

macrocystis kelp have been reported in recent years, with between 62 and 75 percent of permits issued to Sitka residents. The number of permits issued rose from 26 in 1981 to 127 in 1988, and reported harvest level rose from 192 lbs in 1981 to a high of 8827 lbs in 1987. Part of this change may reflect better understanding of and compliance with permit requirements than a rise in demand for this subsistence food. Good spawn on kelp was not available in 1989; this is reflected in the low number of permits issued for 1989 and the sharply decreased harvest level over previous years.

TABLE 2. Macrocyctis harvesting permits issued by community for Sitka Sound area, 1987 through 1989.

Community	1987	1988	1989
Anchorage		1	
Angoon		1	
Craig	6	2	1
Hydaburg	4	1	1
Juneau	8	5	3
Kake	2	8	2
Kasaan			1
Ketchikan	8	2	3
Kotzebue			1
Petersburg	2	4	4
Seattle	4	6	1
Sitka	60	89	52
Wrangell	2	8	1
Other	1		
Total permits	97	127	70

Source: ADF&G, Sitka. Data files.

TABLE 3. Herring spawn on kelp subsistence harvests, 1979-88, Sitka Sound<sup>36</sup>.

Year	Permits Issued	Permits Returned	Total Pounds Harvested
1979	21	10	137
1980	19	13	145
1981	26	19	192
1982	36	25	886
1983	69	48	1991
1984	50	40	1281
1985	71	45	3963
1986	90	82	3929
1987	97	59	8827
1988	127	77	6146
1989	70	53	962

Source: ADF&G, 1989a and ADF&G records in Sitka.

#### Preparing, Preserving, and Packing Herring Eggs

Food preparation follows the traditional cooking methods. Herring roe, both *ne* and *haaw*, is dipped in boiling water once or twice. Eggs become unpalatable if they are cooked too long. Overcooked eggs turn dull white, and they become quite rubbery in texture and lose their flavor. Properly cooked bunches of eggs are barely warmed and retain some translucence. Cooked roe is eaten with seal oil or hooligan oil. Soy sauce, butter, mayonnaise, honey, vinegar, salt and pepper are also used. Herring roe may also be eaten fresh or uncooked.

Preservation starts as soon as possible after harvest. Although some eggs are dried or salted, freezing is the most common method of home preservation. *Haaw* are cut into suitable pieces and placed in ziplock bags for freezing. *Ne* is treated similarly. Some people are experimenting with vacuum packing as new method for preservation. Frozen eggs can be used until the next year's harvest, although quality declines as with other frozen products.

<sup>36</sup>Total harvest expanded from harvests reported on returned permits to include estimate of the non-reported harvest.

Eggs harvested for customary trade and barter are shipped out of town fresh, with *haaw* predominating. Eggs are shipped out of town by Alaska Airlines, local air taxis, private boats and Alaska Marine Highway. Usually eggs are packed in large boxes with liners to protect from leakage. Alaska Airlines requires and other carriers encourage people to use standard seafood shipping boxes with liners, and Alaska Airlines has a special shipping rate for seafood packed this way. The boxes with liners cost \$4.50. Smaller quantities may be sent in five gallon food buckets or other packages.

### High Harvesters

Based on subsistence survey data for the 1987 harvest year, a relatively small number of households in Sitka account for a large portion of the total harvest of herring eggs taken for subsistence use<sup>37</sup>. Field work in 1989 confirmed the earlier survey results. Through interviews with ADF&G staff and Sitka residents and examination of shipping records, we found that about 20 households fall into the high harvesting group. For our purposes a *high harvester* was a household that was known to supply many households with herring eggs. Although systematic measurement was not attempted in 1989, we estimate that households in this group harvested about 300 lbs of eggs or more. We also found all of the identified high harvesters were Alaska Native residents of Sitka. While there is non-Native participation in this fishery, non-Natives are not known to harvest in quantity or to participate as major suppliers of herring eggs to non-harvesting households.

We also observed harvest of herring eggs by other households and saw small beach sets of hemlock branches in areas easily accessible to the Sitka road system. In terms of quantity harvested, however, this is not the major mode of harvest activity, although many Sitka residents harvest herring eggs near the road system. Survey data discussing participation in harvest and use of herring eggs are discussed below.

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<sup>37</sup>Division of Subsistence data and that from the Tongass Resource Cooperative Study are reported below.

### Distribution and Exchange

A number of high harvesters assisted us by providing detailed descriptions of their harvesting, trade, and barter of herring eggs during the 1989 season. Except among the closest of family members, fairly direct reciprocity is expected in the exchange of herring eggs. This often takes the form of barter where a different, similarly valued, subsistence food is returned for herring eggs received. When the receiver has nothing to offer in return for herring eggs, cash may be the medium of exchange with the receiver paying the giver some amount to cover the expenses and time involved in harvesting, packing, and sending this highly prized food. The case descriptions reproduced below provide a indications of how widely herring eggs are distributed. They are written in the words of the high harvesters.

#### **Harvester A**

You have to be knowledgeable about herring egg harvest locations. Most of the time the herring have a spawning pattern. If you know the pattern, then you can anticipate the spawn. You can lay the trees in an area that has not spawned, or you can lay them when the spawning begins because you know the pattern. This year the pattern changed a bit, and we lost some sets by anticipating the spawn. There was a false spawn, and we got excited because **the herring** appeared to have changed the timing of the spawn. Usually they spawn in April, **but this year they started on March 26.**

**In the past,** I used to set one or two trees and watch the spawn fill the trees. On one occasion I came home and told my family that the eggs were thick on our branches. I cut off one branch and brought it home to eat. I left the rest for the harvest when I got off work. I went back the next day to check my branches, and they were gone. The buoy and line were gone.

Because of this I stopped using buoys and started setting more trees. I started anchoring the trees to a rock up to the high tide line so that I can pick up my set at any time. Some times I would tie to a rock or a tree. Tying off to the beach still didn't stop people from stealing my branches. When the herring spawned on the branches, they would also spawn on my anchor line. So at low tide, you would see a streak of white herring roe up to where my anchor line was tied off. This let the poachers know exactly where my branches were in the water. I always knew when a big seiner (seine boat) stole my branches. They would take a whole set of eight trees and hoist it on their deck. We stopped using heavy line to tie off our trees. This prevented seiners from lifting our trees out of the water with power gear.

The X boys caught the Y (boat name) from Juneau stealing their trees. Z caught a couple of guys stealing his branches from the beach. They pulled them in from mean low tide and started breaking branches from the tree.

Today, my family sets 60-80 trees. We anchor with bricks rather than with rocks. Six to eight trees are tied together like a halibut set. My two boys and a friend help in cutting the trees. The average tree is about 7 feet long. I try to pick a tree with young branches. Most of the trees are round with no grooves. If a tree has grooves, then there is a good chance of moss or fuzz on the trees. We don't like to eat eggs with the hemlock growth stuck to the eggs, especially if it peels off with the cooked eggs.

We don't anchor the set to any rock, buoy, or to the beach. We try to hide the set as much as possible. When the set sinks in the spawn, it is pretty hard to see. Only we know where it is. We have to check the set at low tide to make sure that it is at the low water level, since that is where the herring spawn. Sets usually stick out at low water until the herring start

spawning on the branches. Then they sink and become inconspicuous. Some years the trees are dry and harder to sink.

To retrieve our sets, we use a grappling hook. We know roughly where a set is, so we start throwing the hook to the area, hook the trees, and slowly pull it in so that we don't break the twine. We usually try to leave our branches in the spawn for three days. After we pull a set up to the boat, we start clipping the thick branches off the tree. We used to use an axe and a saw to cut branches, but we switched to a garden scissors to snip off the branches. We throw the sparse branches back so that the eggs can hatch. We dip the branches in the water a couple of times to wash out the sperm and sand.

Herring eggs can sit outside for two days without spoiling, but we usually let them sit overnight at the longest. We give a lot away before they begin to spoil. We have friends that come and help themselves to hundreds of pounds of eggs.

We gather *ne* only if people request it. We use a grappling hook with a pole attached. *Ne* is usually at the low water mark. *Macrocystis* is also received the same way. We averaged about 2000 lbs of *ne* per trip last year.

This year we set 63 trees and lost 12 trees to false spawn. In 1989, we averaged about 700 lbs per harvesting trip and made eight trips. Our total harvest was about 5600 lbs. We made daily trips from March 27 through March 31 to set trees. We made two harvesting trips on April 1 and one each from April 2 through April 7; on our last trip on April 10 we brought back only 75 lbs. In addition to other expenses we used about 25 gal. of gas for the truck and about 50 gal for the boat.

A lot of people get herring eggs from us.

This harvester's distribution is shown in Table 4.

TABLE 4. Harvester A Herring Egg Distribution.

Place	Amount (lbs)	No. of families
Angoon	905	12 families and 2 payoff parties
Haines/Klukwan	500	7 families
Hoonah	350	3 families
Juneau	750	8 families
Kake	550	8 families
Kasaan	100	1 family
Portland	150	3 families
Seattle	150	2 families
Sitka	850	17 families
Skagway	100	2 families
Yakutat	400	4 families

Cockles, clams, fresh salmon, and fresh and dried halibut from families in Angoon, fresh sockeye from families in Klukwan, seaweed and seal oil from families in Sitka, strawberries from families in Portland, and raspberries from families in Seattle are some of the things we receive in return for herring eggs.

Harvester A's equipment list for the 1989 harvest included:

- 17 Boston Whaler with 70 HP motor
- 13' Boston Whaler with 13 HP motor
- pickup truck
- car
- chainsaw
- 6, 30 gal. garbage containers
- 7, 10 gal. garbage containers
- 12, 5 gal. pails
- 1, 30 gal. fish box
- 1, 20 gal. fish box
- 67 shipping boxes
- 5 boxes garbage bags
- 10 boxes ziplock bags
- 3 weed cutters
- grappling hook
- small herring seine

twine and rope  
bricks  
3 tarps.

### Harvester B

This person set 16 trees in 1989. This was less than usual because of the early spawn. The harvester reported that kelp harvest was poor this year. Harvester B used a 16' Lund skiff with a 30 HP motor and estimated expenses at about \$200.

This harvester's distribution is shown in Table 5.

TABLE 5. Harvester B Herring Egg Distribution.

Place	Amount (lbs)	No. of families
Anchorage	50	1 family
Fairbanks	150	3 families
Ketchikan	200	4 families
Kotzebue	150	3 families
Sitka	50	1 family
Wrangell	100	2 families

In addition this person gave about 600 lbs to a relative who came to Sitka on a fishing boat. This person harvested a total of about 1300 lbs with a primary distribution to 15 households.

## Harvester C

My brother taught me how to harvest herring eggs. When we first started out we used big trees, but we found out that they got too heavy to pull up after the herring spawned on them. We also used to use rocks to anchor trees, but we switched to small red bricks.

I cut trees ahead of time so that all the work is stretched over time. I set trees and branches according to how much the boat can pack and how much herring eggs I can use in one day.

I spend a lot of time driving out the highway and running on my boat to check the spawn. This year we had a false spawn. We usually lose some branches when there is a new spawn on top of an old spawn. The eggs start turning brown underneath the new spawn.

It is a matter of pride to send people good eggs. You have to send the best. If eggs are too thick then eggs cook on the outside and not on the inside. Some people like them like that. I try to get eggs that are just right for cooking all the way through with one or two dippings into boiling water.

I run out to check my branches to make sure no one is stealing them and to make sure they are not up on the beach. I prefer my branches to be below mean low water so that no one can get them from the beach at low tide. This is also where the herring spawn.

The patterns of the herring spawn have changed in the last two years. They have moved up toward Katlian Bay and are not spawning in the south by Three Entrance Bay.

This year I set 60 trees in eight sets of about seven trees per set. I had about \$500 of expenses before the season started.

Harvester C fished from a 17 Boston Whaler and was active almost every day over a three week period. Harvester C reported primary distribution is shown in Table 6.

TABLE 6. Harvester C Herring Egg Distribution.

Place	Amount (lbs)
Angoon	500
Hoonah	650
Juneau	1642
Kake	1050
Ketchikan	250
Klukwan	50
Sitka	500
Yakutat	50

This amounted to about 4,700 lbs of herring eggs.

#### Harvester D

My husband used to do the harvesting, but his time is taken up in his work. His uncle taught me how to set branches and harvest eggs. The uncle used a buoy to anchor his branches, but I stopped this practice so that I don't advertise my branches. I used to set trees, but a seiner stole my set. Now I just set small branches and spread them out.

I made about seven trips using a small Boston Whaler or small aluminum skiff and harvested eight sets of branches and lost 6 to the false spawn. I harvested about 1300 lbs of *ne* and 1350 lbs of *haaw*.

Egg distribution is shown in Table 7.

TABLE 7. Harvester D Herring Egg Distribution.

Place	Amount (lbs)	No. of families
Juneau	200	unknown
Metlakatla	150	unknown
Sitka	unknown	15 families
Sitka	unknown	senior citizens at Double O
Sitka	unknown	senior citizens at elderly housing
Sitka	unknown	students of Sitka Native Education Program
Sitka	unknown	students at Sheldon Jackson College
Sitka	unknown	students at Mt. Edgecumbe
Sitka	unknown	students in a third grade class
Sitka	unknown	students in a Sitka pre-school

#### Harvester E

This person set 12 trees at Katlian Bay using a 19' aluminum skiff with a 90 HP motor. He noted some people use herring eggs on rock kelp for garden fertilizer<sup>38</sup>. He reported primary distribution of about 1000 lbs of eggs, as shown in Table 8.

38. Tlingit elders thought that Natives would not use herring eggs for this purpose.

TABLE 8. Harvester E Herring Egg Distribution.

Place	Amount (lbs)
Angoon	300
Clarks Point	50
Juneau	100
Kake	150
Sitka	300
Yakutat	120

### Shipments

Alaska Airlines and Bellair kept records of shipments of herring eggs made during the 1989 season. Estimates of the amounts shipped by Alaska State ferries are from researcher observations and interviews. According to these records and observations, Alaska Airline shipped about 23,000 pounds, Bellair shipped 3,607 pounds, and about 4,000 pounds of herring eggs left on Alaska State ferries. We also found that private boats from Angoon took 900 pounds, and that two boats from Kake, one boat from Hoonah, and one boat from Ketchikan all harvested eggs in Sitka Sound. An additional boat from Ketchikan took back approximately 600 lbs received from a Sitka harvester<sup>39</sup>. Table 9 summarizes known 1989 shipments of herring eggs, accounting for about 39,600 lbs of herring eggs sent to other communities.

<sup>39</sup>.This listing is indicative rather than exhaustive since we undoubtedly did not observe or hear of all the boats that took eggs from Sitka in 1989.

TABLE 9. Known Shipment of Herring Eggs, 1989<sup>40</sup>.

Mode of Shipment or Carrier	Amount (lbs)	Destination
Alaska Airlines <sup>41</sup>	2300	Anchorage
	370	Haines
	200	Hoonah
	250	Hydaburg
	6800	Juneau
	2500	Ketchikan
	185	Klawock
	2300	Metlakatla
	??	Nome
	200	Petersburg
	??	Portland
	2500	Seattle
	??	Thorne Bay
	500	Wrangell
1200	Yakutat	
6000	Unknown	
Bellair	1035	Angoon
	2546	Kake
	26	Pelican
Alaska State Ferries	1200	Angoon
	500	Hoonah
	650	Juneau
	400	Kake
	300	Ketchikan
	150	Other
Private boats <sup>42</sup>	900	Angoon
	2000	Hoonah
	4000	Kake
	600	Ketchikan
<b>Total</b>	<b>39612</b>	

40. Air carrier figures are for freight shipped and do not include accompanied baggage.

41. Known destinations account for about 17000 lbs of eggs; Alaska Airlines was not able to provide us with destination data for the other 6000 lbs; these are listed as "unknown" for this reason.

42. The estimate for private boats for Angoon and Ketchikan are based on interview data. Other estimates are based on size of the vessels used only and are approximate.

This total does not include eggs taken from Sitka as baggage on passenger flights, eggs that may be sent later in frozen state, shipments by other air carriers, unknown harvest or transport by the commercial seine fleet, and harvesting by other private boats than the ones we noted<sup>43</sup>. Adding in a factor for eggs that were transported away from Sitka by these means, we would estimate that about 50,000 lbs of eggs harvested in the Sitka area were used in other communities in 1989.

### Customary Trade

The legal context for customary trade is set by state and federal law and Joint Board of Fisheries and Game regulatory procedures. All three recognize that subsistence items are widely bartered, exchanged, and traded from areas where they are harvested to areas where they are consumed or used. The legal context attempts to preserve existing patterns of customary trade, while preventing general commercialization of subsistence harvests. In discussions leading to the passage of ANILCA, the U. S. Senate Committee on Energy and Natural Resources discussed customary trade in its report to the full Senate:

*The Committee does not intend that "customary trade" be construed to permit the establishment of significant commercial enterprises under the guise of "subsistence uses." The Committee expects the Secretary and the State to closely monitor the "customary trade" component of the definition and promulgate regulations consistent with the intent of the subsistence title. (Senate Report No. 413, 96th Congress, 2nd Session, 234)*

ANILCA included trade as a part of subsistence, defined barter, but did not expand on its definition of trade.

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<sup>43</sup>For example, one reviewer reported sending 150 lbs of eggs to Kotzebue and 100 lbs to Fairbanks.

*As use in this Act, the term "subsistence uses" means the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of nonedible byproducts of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade.*

*(2) "Barter" means the exchange of fish or wildlife or their parts, taken for subsistence uses--*

*(A) for other fish or game or their parts; or*

*(B) for other food or for nonedible items other than money if the exchange is of a limited and noncommercial nature. (16 USA 3113)*

The wording of state law follows the ANILCA wording for subsistence, defines barter as in ANILCA, and also does not provide a further definition of customary trade.

The Joint Board criteria number seven deals with customary trade and states:

*(7) a use pattern in which the hunting or fishing effort or the products of that effort are distributed or shared among others within a definable community of persons, including customary trade, barter, sharing, and gift-giving; customary trade may include limited exchanges for cash, but does not include significant commercial enterprises; a community may include specific villages or towns, with a preponderance of subsistence users, and encompasses individuals, families, or groups who in fact meet the criteria described in this subsection. (emphasis added) (5 AAC 99.010(b))*

Under these laws and regulatory standards customary trade, including limited exchanges for cash, is a recognized subsistence use of fish and wildlife harvested for subsistence. The Board of

Fisheries determined that residents of Sitka have subsistence use of herring eggs (see Appendix 1); customary trade is part of their subsistence uses<sup>44</sup>.

The previous section documents known shipments of herring eggs from Sitka to other locations, and the high harvester case notes describe how this distribution takes place. For some harvesters, customary trade includes a cash payment for eggs. Based on our field interviews, a shipping box of eggs sent out of town weighing about 50 lbs cost about \$50 in the 1989 season, with the receiver paying for freight charges. In Sitka, households picking up herring eggs from high harvesters usually pay \$10 to \$20 for the 50 to 100 lbs of eggs they take. Herring eggs are not weighed, and there is no fixed price per pound in these local transactions. Cash payments are generally understood to compensate the harvester for the costs incurred in harvesting and processing the herring eggs.

Some of the characteristics of customary trade we noted in our field interviews are briefly discussed below to distinguish this trade from general commerce.

1. The buyer and seller engaging in customary trade for cash were found to have other ties with each other of long duration. Buyer and seller were typically related by Tlingit or western kinship, were trading partners, or were friends who had worked or gone to school together. Their relationship involved much more than the simple exchange of herring eggs for cash. Often the herring egg supplier appeared to feel obligated to supply people with eggs. In fact, no seller would supply eggs to someone he did not know well.

We heard of no case where herring eggs were supplied on order to an unfamiliar buyer<sup>45</sup>.

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44. Board of Fisheries regulation 5 AAC 01.010 METHODS, MEANS AND GENERAL RESTRICTIONS part (d) states It is unlawful to buy or sell subsistence-taken fish, their parts, or their eggs, unless otherwise specified in this chapter (emphasis added). No regulations have been enacted to date that specifically authorize sale of herring eggs harvested under subsistence regulations in Sitka Sound. As of this writing, no provisions specifically authorizing any customary trade of fish, fish parts, or fish eggs for cash have been enacted by the Board of Fishery for any part of Alaska.

45. Social scientists sometimes consider these to be "multi-plex" relationships in which there are many interwoven ties between people. In the "simplex" relationship of general commercial trade, the act of buying and selling is the only thing that joins the buyer and seller.

2. Herring eggs on hemlock branches and on hair kelp have no general commercial market but are traded almost exclusively within the Tlingit, Haida, and Tsimshian communities. We found no indication that customary trade was resulting in movement of eggs to commercial markets either in the United States or abroad.
3. Relatively small amounts of cash change hands in herring eggs transactions. We estimate the maximum return to any one trader in 1989 was well under \$3,000 gross, and under \$2,000 net after accounting for gas and other supplies but not for equipment and time<sup>46</sup>. No one makes a living from herring egg sales. All traders were found to be gainfully employed and to support their families with other earnings.
4. Relatively small quantities of herring eggs were traded to any individual. A receiver or buyer would typically get one or two shipping boxes of eggs.
5. Herring eggs are highly prized traditional foods and may be a required item for potlatches and death celebrations. Cash purchase might occur for these activities.
6. Herring egg harvesters highly value their reputation as skilled harvesters and their social position as suppliers of high quality herring eggs to friends, relatives, and trading partners. Reputation and social standing appear to provide more motivation than cash payments. Cash payments alone do not provide sufficient compensation for the amount of time, work, and equipment required to harvest and process quantities of herring eggs.
7. Harvesters did not maintain specialized harvesting or processing equipment or use a business location for their customary trade. A commercial business in herring eggs would likely capitalize in equipment to maximize profits.
8. No middle men are involved in the herring egg trade.
9. Herring egg harvesting is done by families or friends. No hired labor or payment for work done is made.

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46. Figuring in cost of boats, motors, trailers, tools, and other equipment used for herring egg harvest would make customary trade for cash at best a break-even activity.

10. No special shipping arrangements are made for herring eggs. Traders use regular flights and ferry service and pay regular freight rates.
11. Herring eggs on hemlock branches and on hair seaweed have no market price. Sale is made at a price set by the seller before harvesting takes place. This price does not appear to vary with supply of and demand for herring eggs during the harvesting period as would be predicted for a market commodity.
12. Contemporary trade in herring eggs from Sitka Sound is a direct outgrowth of earlier trading patterns for this subsistence food. Oral and written historical sources prove that trade in herring eggs has been a feature of Sitka's subsistence economy since the late 1700s. Trade in this subsistence product has probably taken place from the time of early Tlingit inhabitation of Sitka Sound, at least 800 years ago.
13. We did not find evidence that levels of herring egg harvest changed in response to pricing or market forces<sup>47</sup>. In economic terms, both the supply of and demand for eggs appear to be inelastic and to be set by social and cultural values rather than by cost, profit, or loss considerations.

#### Harvest Quantities Based on Household Surveys

Division of Subsistence field studies have documented herring egg use in many of the communities where research has been conducted. In addition to recording harvest levels for Sitka (Gmelch and Gmelch, 1983), division research found use of Sitka Sound herring eggs in Angoon (George and Bosworth, 1988), Hoonah (Schroeder and Kookesh, 1989), Kake (Firman, 1989), Tenakee Springs (Leghorn and Kookesh, 1987), Haines (Mills et al, 1984), and Yakutat (Mills and Firman, 1986)<sup>48</sup>.

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<sup>47</sup>.Harvesters do not to increase or decrease their take of herring eggs based on the price of eggs. Persons receiving eggs do not increase or decrease their consumption according to price.

<sup>48</sup>.Harvest and use levels of herring eggs were lumped with other marine invertebrates in these last two studies.

The 1983 study (Gmelch and Gmelch, 1983) showed the most common trade items by Sitka residents are herring eggs, seaweed, and halibut. The report also stated that the most common items received for trade good were eulachon or hooligan oil, seal oil, seaweed and dry fish. Herring eggs were collected by 24 percent of the 139 households in the sample. Of harvesters, 62 percent were Alaska Native households and 11 percent were non-Native households. The average harvest per household of harvesters was 14 gallons. At about 5 lbs/gal, this is equivalent to 70 lbs. The mean harvest for the entire sample was 3 gallons or about 15 lbs. One household reported sending 600 pounds of eggs to a relative out of town. Of the 33 harvesting households, 28 harvesters gave herring eggs to other households. Of the entire sample 34 households received herring eggs from community members<sup>49</sup>.

According to a 1985 study (George and Bosworth, 1988), 15.8 percent of Angoon households harvested herring eggs in 1985. Fifty percent of Angoon households received herring eggs, and 10 percent gave herring eggs. Angoon has close ties to Sitka, and Angoon residents obtain most of the herring eggs they use from Sitka Sound. The Division of Subsistence found that Hoonah residents used an estimated 10,318 lbs of herring eggs in 1986 (Schroeder and Kookesh, 1989). They harvested only 4,800 lbs of this total use; other herring eggs were received through traditional systems of exchange, including barter and trade. Hoonah was found to rely on Sitka Sound for most of the herring eggs used.

Studies in Kake (Firman, 1989) found that 4.3 percent harvested herring eggs and 37.1 percent used herring eggs in 1986. Households harvested an average of 3.1 lbs per household per year and used an average of 7.7 lbs. Kake residents harvest herring eggs in Sitka Sound and receive eggs from that area as well. In the Tenakee Springs study (Leghorn and Kookesh, 1987) 21 percent of households used herring eggs and 21 percent received herring eggs from others. One household harvested herring

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49. This random sample may have not included high harvesters because of luck-of-the-draw.

eggs in 1984 and took 55 lbs of eggs. Tenakee Springs residents were found to harvest herring eggs in or receive herring eggs from Sitka Sound.

#### **1987 Subsistence Survey, Tongass Resource Use Cooperative Study**

In 1988 the Division of Subsistence participated in the Tongass Resource Use Cooperative Study (TRUCS), in cooperation with the Institute of Social and Economic Research (ISER) at University of Alaska, Anchorage, and the U.S. Forest Service. Household surveys of the harvest and use of fish and game were done in 30 Southeast Alaska communities. The survey work was undertaken in 1988 and documented harvests that took place in 1987. Interviewers completed surveys with 1465 southeast households. Depending on community size, either straight random sampling or stratified random sampling was employed<sup>50</sup>. Except for Sitka where telephone interviewing was done, all interviews were conducted face-to-face. Data entry and analysis were conducted by ISER and Division of Subsistence<sup>51</sup>.

This field research asked respondents the amount of herring eggs their household harvested and whether they received herring eggs from others in 1987. This second question was not asked of Sitka households<sup>52</sup>. Interviewers also collected data on household ethnicity. Analysis of these data provide an indication of harvest levels, participation in harvest, and receipt of herring eggs from others.

Figure 2 presents mean herring egg harvest per household by community for 1987. Residents of Craig, Hydaburg, Klawock, and Sitka, communities with very productive herring spawning areas, harvest substantial quantities of herring eggs. Residents of Angoon, Hoonah, Kasaan, Metlakatla,

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50. The sampling strategy was designed to optimize accuracy of harvest information.

51. Reports from this study are available from ISER or U.S. Forest Service and may be inspected at Division of Subsistence, ADF&G, Douglas.

52. For this reason we are unable to present quantitative data showing percent of Sitka households receiving herring eggs.

Pelican, Saxman, and Tenakee Springs harvest some herring eggs, either relying on small localized herring spawn areas or by going to Sitka or the Craig-Klawock area during the harvesting

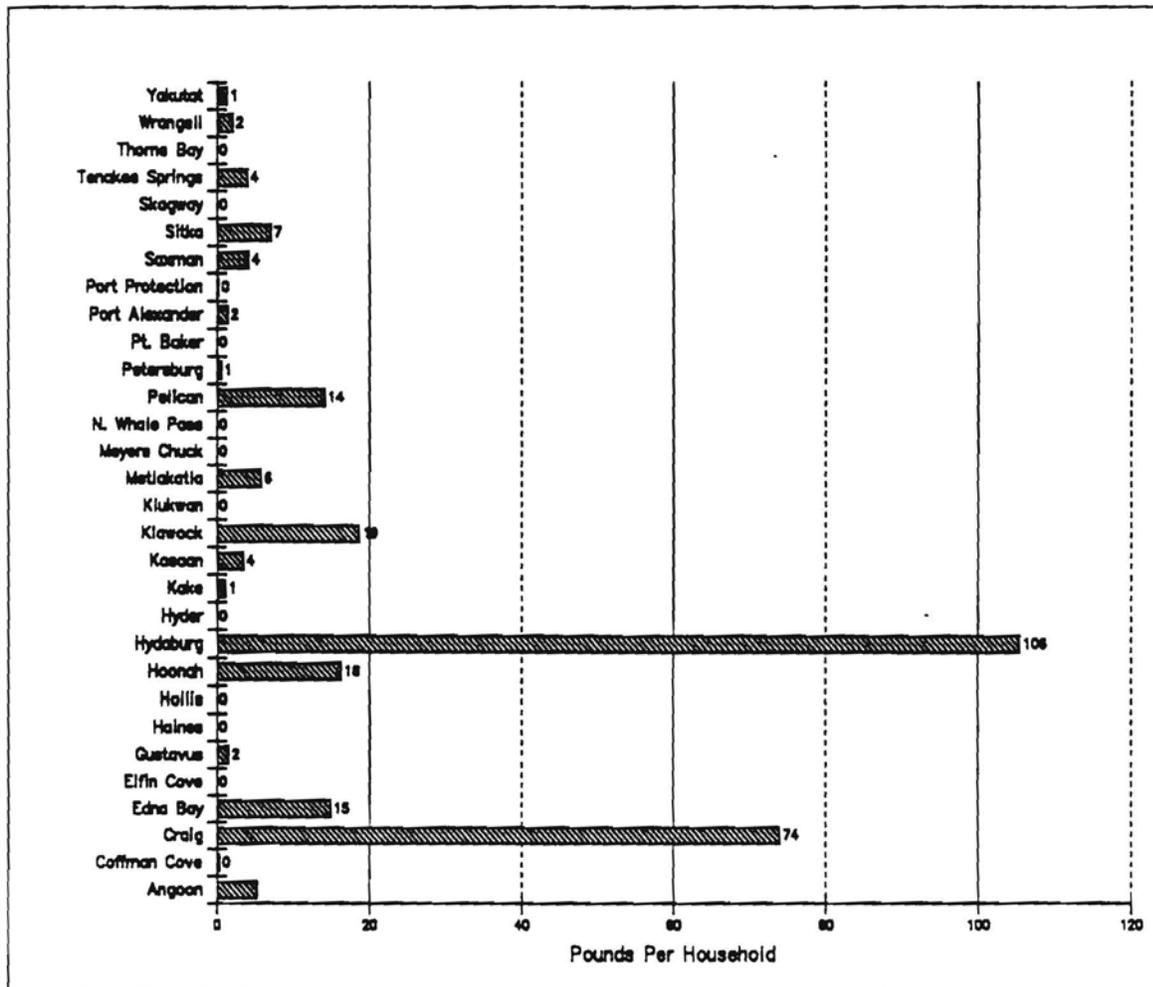


Fig. 2. Herring Egg Harvest in 30 Southeast Communities, 1987

period. Some residents of Edna Bay, Gustavus, Kake, Petersburg, Port Alexander, Wrangell, and Yakutat also harvest some herring eggs, although overall quantities are low. Surveyed residents of other southeast communities did not report any harvest of herring eggs in the 1987 baseline year<sup>53</sup>.

53. Some harvesting of herring eggs could have been done by households that were not included among the households sampled in the TRUCS survey.

Figure 3 shows the percent of households harvesting herring eggs by community and ethnicity. In most communities a much higher percentage of Alaska Native households harvest eggs than white households. Customary and traditional harvesting of herring eggs by Tlingit and Haida families in southeast accounts for almost all the harvesting taking place. In contrast to harvest of salmon, deer, and many other fish and wildlife species, harvest and distribution of herring eggs continues to take place primarily within the Alaska Native families. Non-Native use of this resource does take place; however, the levels of harvest and participation are much lower than by the Alaska Natives.

Figure 4 shows the percent of households receiving herring eggs by community and ethnicity. In most communities with substantial Alaska Native populations, a large majority of Alaska Native households receive eggs from others. Note that a substantial minority of non-Native households also receive some eggs in many communities<sup>54</sup>.

In all communities the number of households that actually harvest herring eggs is much lower than the proportion of households that shares in the harvest. This is true both within and across communities. For example, Figure 3 shows that three percent of all Yakutat households and five percent of Yakutat Alaska Native households harvested herring eggs in 1987. Figure 4 shows that 46 percent of all households, 12 percent of non-Native households, and 67 percent of Alaska Native households received herring eggs in that community.

Other communities show a similar pattern indicating that herring eggs are widely distributed from harvest communities to receiver communities through customary trade and barter.

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<sup>54</sup>Data from Gustavus, Port Protection, and other communities with very small Alaska Native populations may reflect harvest and use of eggs by a very small number of Alaska Native families and may not be statistically reliable.

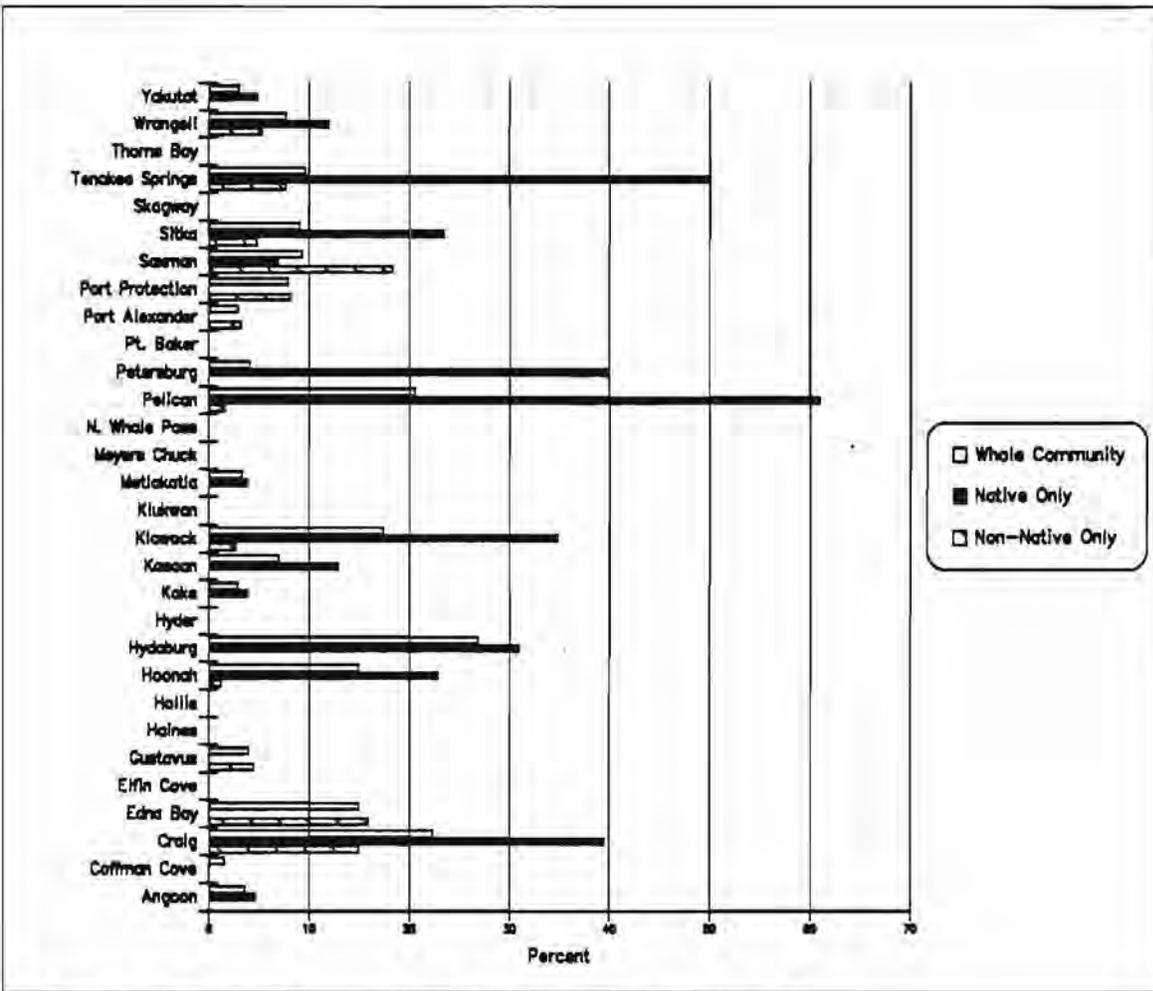


Fig. 3. Percent of Households Harvesting Herring Eggs by Ethnicity of Household, 1987

Figures 5, 6, and 7 show percent of households harvesting and percent receiving by community. Figure 5 shows these data for all households in each community; Figures 6 and 7 examine Alaska Native and non-Native patterns.

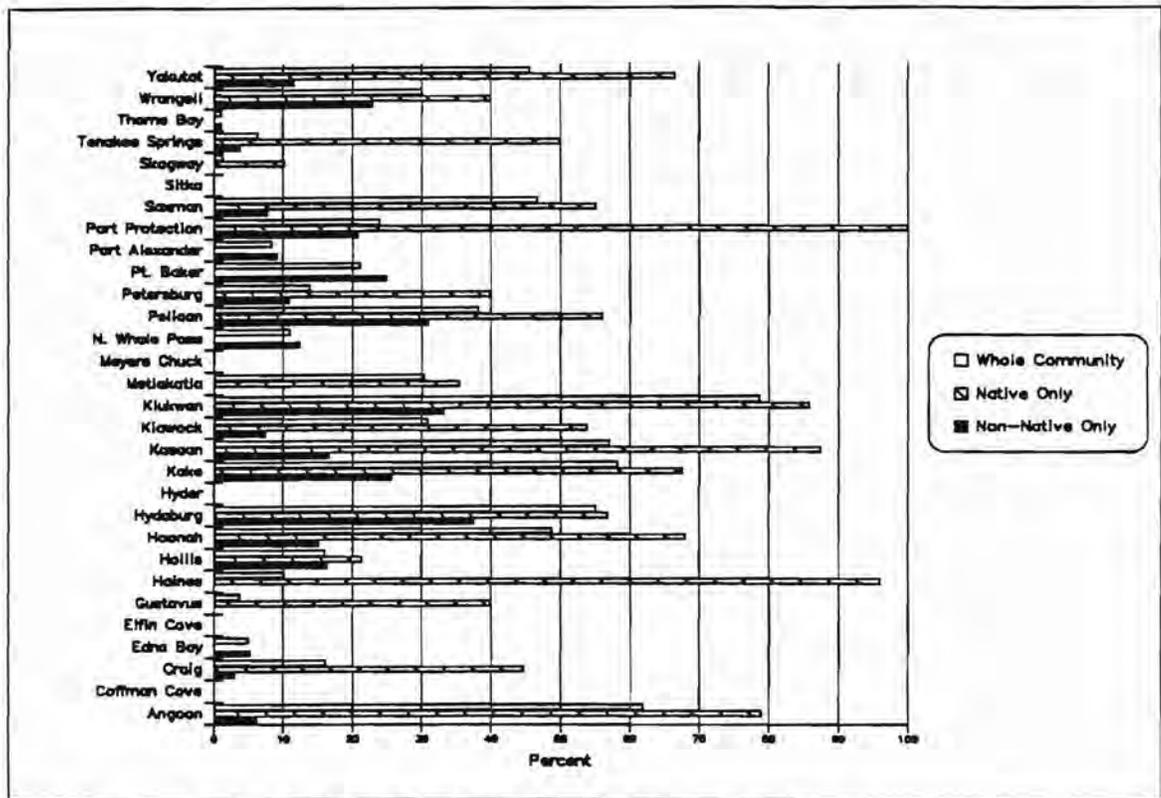


Fig. 4. Percent of Households Receiving Herring Eggs by Ethnicity of Household, 1987

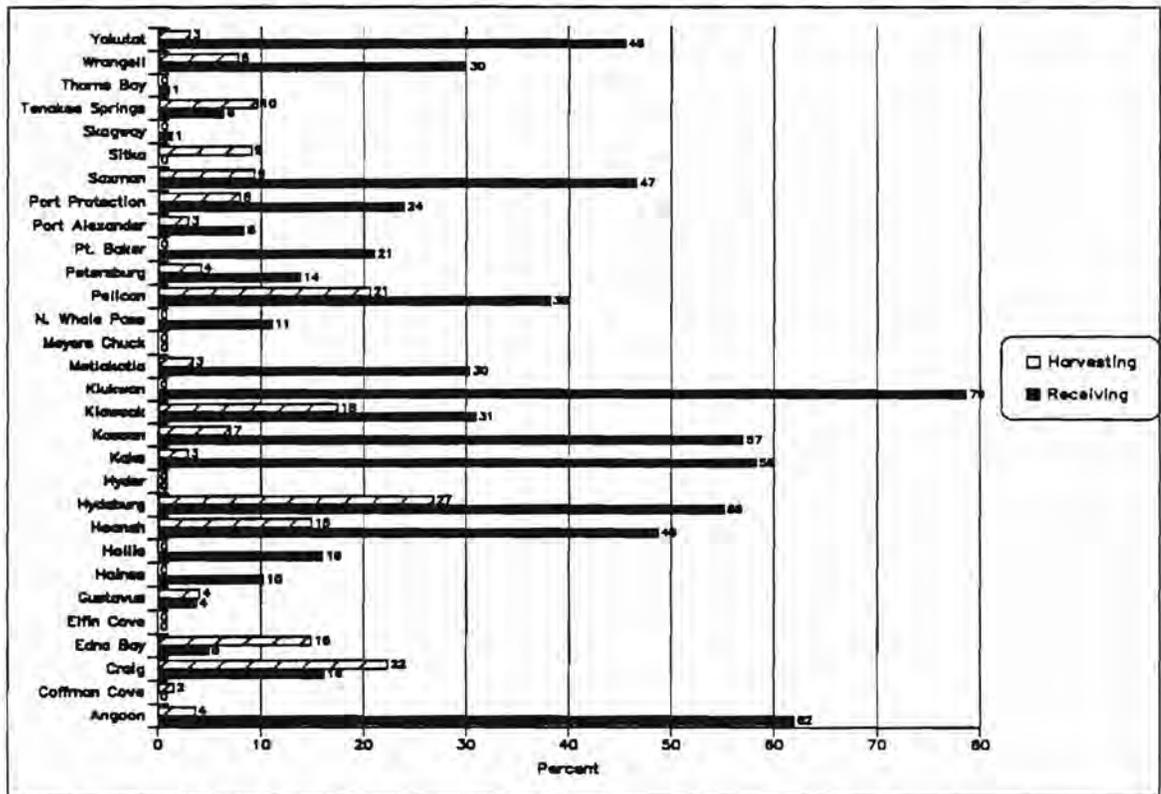


Fig. 5. Percent of Households Harvesting and Receiving Herring Eggs by Community, 1987

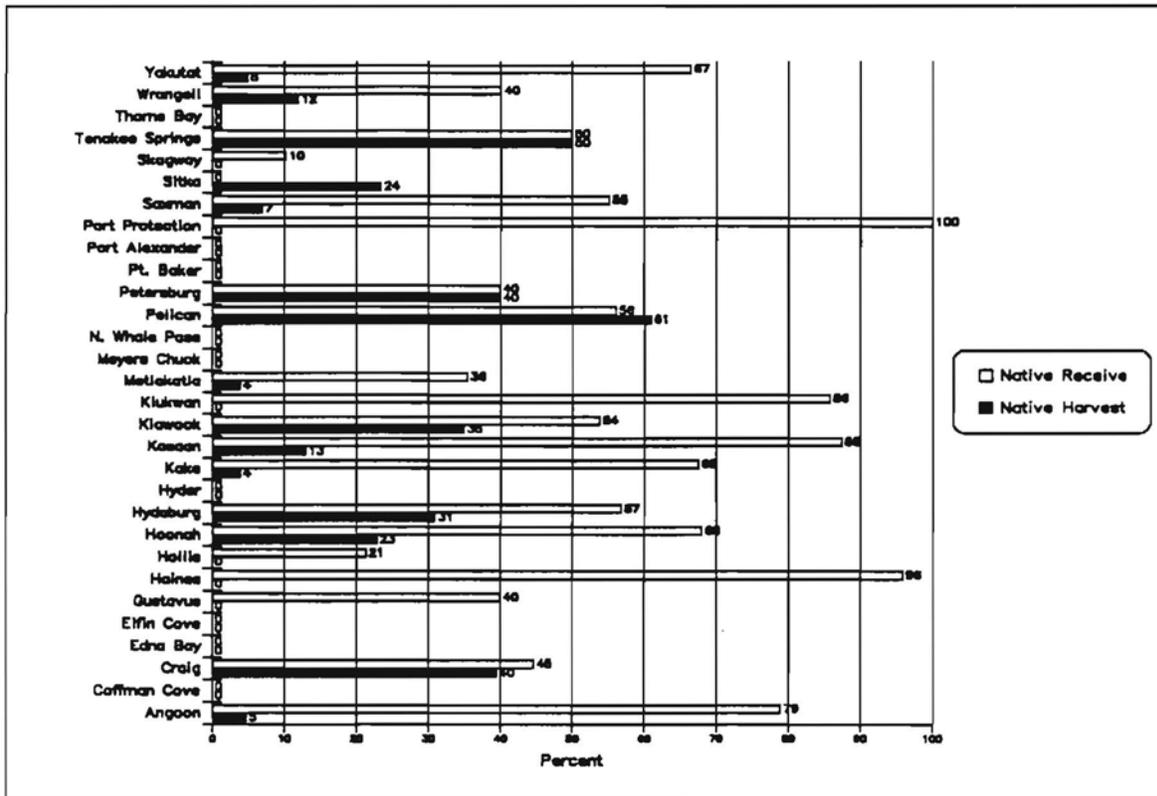


Fig. 6. Percent of Native Households Harvesting and Receiving Herring Eggs by Community, 1987

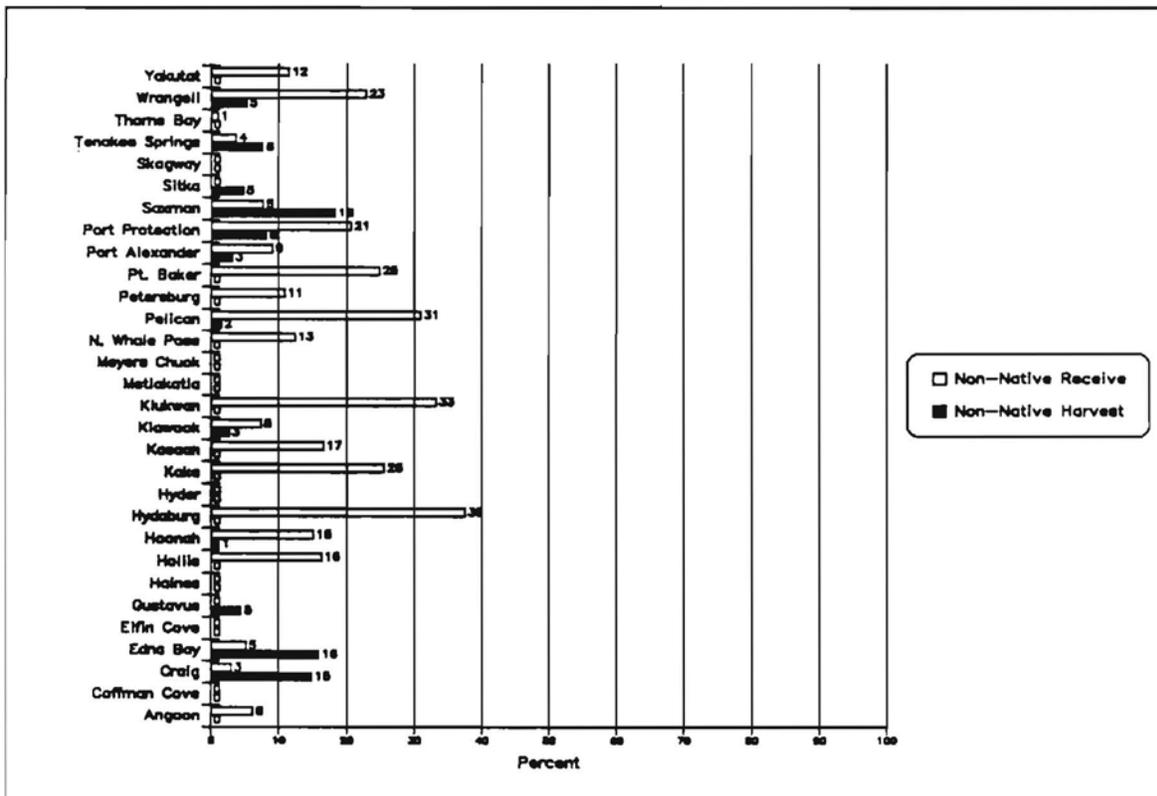


Fig. 7. Percent of Non-Native Households Harvesting and Receiving Herring Eggs by Community, 1987

These three graphs show that a relatively small number of households actually harvest herring eggs, even in the communities known for good herring spawn. In Craig, Hydaburg, and Klawock, for example, 22 percent, 27 percent, and 18 percent, respectively, of all households reported actually harvested herring eggs in 1987, (Fig. 5). This harvesting pattern persists when we examine data for Alaska Native households in Figure 6, although rates of harvest participation are slightly higher. Figure 7 shows very low rates of harvest participation for non-native households in most communities.

Figure 8 depicts reported harvest level for active Alaska Native and active white households for 1987. The harvest level of households that actively participate in this fishery is much higher than the mean harvest level for communities as a whole. Highest harvests were computed for Craig, Hydaburg, and Metlakatla active Alaska Native households with a mean of 547, 392, and 173 lbs per active household. Numerous other communities showed harvest levels for active households of over 100 lbs per household<sup>55</sup>.

In examining the Sitka data from the 1988 survey we find that mean reported herring egg harvest was seven lbs per household for Sitka. About 24 percent of Alaska Native households, 5 percent of non-Native households, or 9 percent of all households in Sitka reported harvesting herring eggs in 1987. Alaska Native households that did harvest herring eggs took about 109 lbs per household in 1987; non-Native households that did harvest took about 29 lbs per household<sup>56</sup>.

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55. In examining the distribution of responses in these surveys, we found that high harvesting families were under-represented in these samples. Harvest of herring eggs is inherently "lumpy", meaning that a small number of harvesters bring in large quantities of eggs and distribute them to others. In looking at the 1988 data we found that very few high harvesters of herring eggs were included in the random samples. This has probably lead us to underestimate the overall magnitude of harvest.

56. Standard deviations and confidence intervals for the TRUCS data presented were high because of the sampling size and sampling frame, limited participation in harvest, and the extremely wide range of harvest levels reported between households.

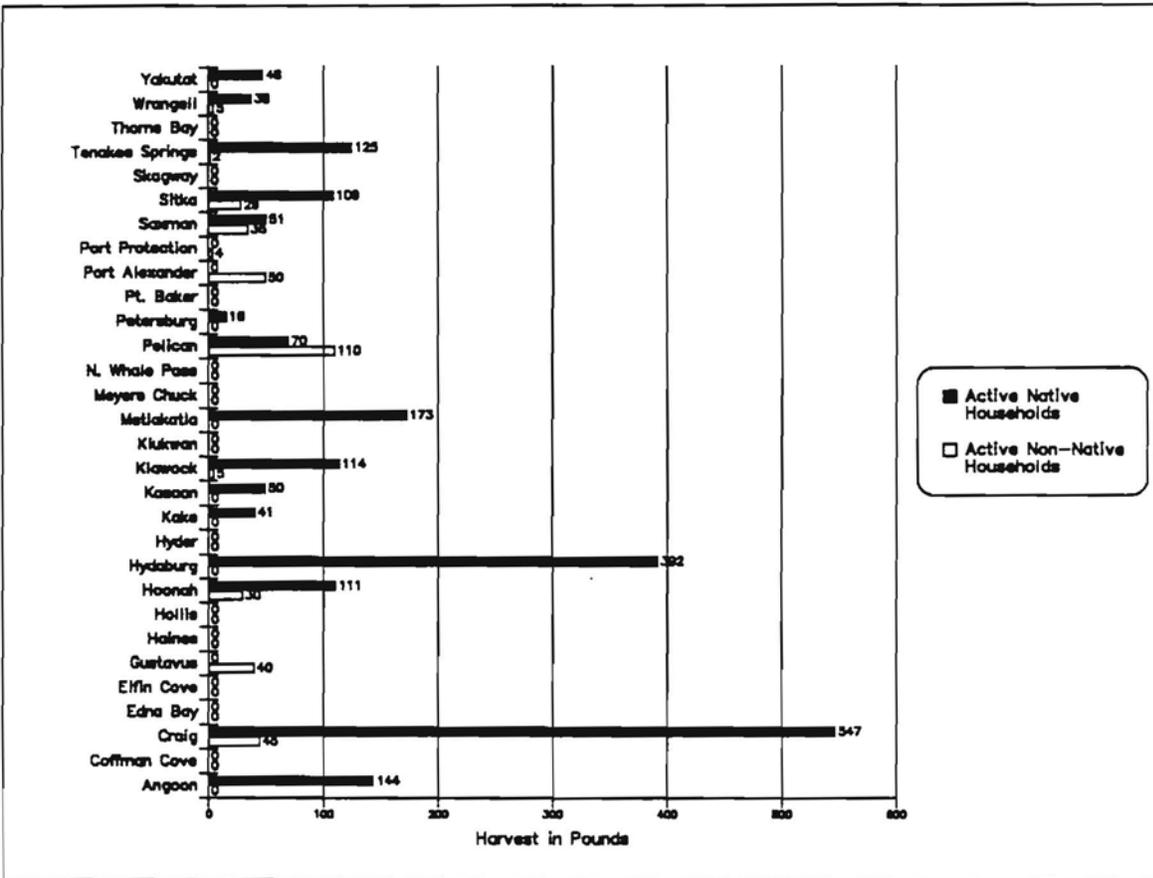


Fig. 8. Mean Herring Egg Harvest per Household by Community, Active Harvesters Only, 1987

### Total Harvest of Herring Eggs in Sitka Sound

TRUCS data presented above show an approximate mean harvest of 7 lbs per household for Sitka for 1987 and the 1985 Division of Subsistence data show about 15 lbs per household. Sitka has slightly less than 3,000 households<sup>57</sup>. Simple expansion of the survey data would indicate a total harvest between 21,000 and 45,000 lbs for those years. Our current research shows that more than this quantity were shipped from Sitka during the 1989 season. This indicates that earlier estimates derived from the random surveys are probably low due to either under sampling of the few high harvesters in Sitka or under-reporting by survey respondents. We have no means to precisely determine what the total harvest may have been in 1989. If the portion of the harvest used locally in Sitka was the same as that sent out for trade and barter, the total harvest would be about 100,000 lbs. The researchers believe it

<sup>57</sup>When the TRUCS survey was conducted in February and March 1988, Sitka had 2,872 household.

would be safe to assume that the total subsistence harvest in Sitka Sound by all harvesters would lie between 80,000 lbs and 120,000 lbs in 1989, including the estimated 50,000 lbs of herring eggs used outside the community of Sitka<sup>58,59</sup>.

## V. DISCUSSION AND FURTHER RESEARCH

This report reviews the history of the subsistence harvest of herring eggs in Sitka Sound, describes the methods and means used for harvesting, the extent of distribution and exchange of this product through local and non-local trade and barter, and provides order-of-magnitude estimates of total harvest. A few questions remain to be discussed.

One significant finding of this research was that almost all herring egg harvesting, receiving, and distribution was within the Alaska Native community. In this respect herring eggs are similar to a few other resources that are predominantly or almost exclusively used and traded within the Alaska Native community, including sea urchins, chitons, spruce cambium, seals, and sea gull eggs. Hemlock branches and hair seaweed were the primary deposition strata used by harvesters, with less use being made of macrocystis kelp. There are no developed commercial markets for the *ne* and *haaw* that are the main subsistence products<sup>60</sup>.

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58. This estimated assumes that Sitka's Alaska Native households harvested an average of 30 to 60 lbs per household and Sitka's non-Native households harvested an average 5 to 10 lbs per household.  $((30 \text{ to } 60) \cdot 750) + ((5 \text{ to } 10) \cdot 2250) = (22500 \text{ to } 45000) + (11250 \text{ to } 22500) = 33750 \text{ to } 67500$ .

59. Assuming a 10 percent roe content, this harvest level implies subsistence harvest of herring eggs from a maximum of 800,000 to 1,200,000 lbs or 400 to 600 tones of spawning herring. The actual biomass needed to produce the subsistence harvest amount would be much less, since eggs hydrate after being released by the female herring. By means of comparison, the commercial sac roe fishery in Sitka Sound had harvested 11,831 tones of herring in 1989, the highest harvest ever recorded (ADF&G, 1989b). Herring caught in the sac roe fishery are permanently removed from the ecological system: the free spawning herring that produce the subsistence harvest do not die after spawning but will spawn for a number of years. Alaska herring mature at three or four years; herring 12 years old are common, and individuals 17 years old have been recorded (Huizer 1952).

60. Developed commercial markets selling mainly to Japan and other east Asian countries exist for "daaw" or eggs on macrocystis and sac roe.

Partly because it remains a Alaska Native cultural pattern, the distribution and exchange of herring eggs throughout southeast Alaska and reaching to points north and south follow traditional trading patterns. In an earlier era Tlingits traded and exchanged dried eggs carried by canoe with kinsmen and trading partners using the currency of the day. At the present time eggs also go to kinsmen and modern trading partners with other subsistence foods, other items, and cash received in return. This customary trade is fundamentally non-commercial in nature.

The present research confirms that subsistence herring egg harvesting is a specialized activity with relatively few community members harvesting most of the product and distributing it to others. In this respect, this harvest resembles certain other subsistence harvests such as harvest of marine mammals which are also commonly harvested by a small number of hunters who then share the kill with others. High harvesters were found to utilize over 5000 lbs of herring eggs.

There are several reasons why a small number of households harvest most of the eggs used. Successful harvesting of herring eggs requires specialized knowledge, focused time and attention over a two or three week period, and the freedom to drop everything when the unpredictable spawn begins. A successful harvester also must have the skiff and other resources necessary for this harvest. When these conditions are met, however, the harvester is prepared to harvest in bulk<sup>61</sup>.

This season's field research was aimed at providing background information on the herring egg fishery in Sitka Sound and a description of how the contemporary fishery takes place. In the course of this research we found that herring eggs and their exchange continue to figure importantly in Tlingit society and culture and have much more than a dietary value. We have noted harvest and preservation of herring eggs for later use in potlatches, payoff parties, mortuary feasts, and other cultural occasions. We also became aware that the distribution, trade, and exchange of herring eggs has an importance in

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61.Specialization in harvest may follow clan and lineage lines in Sitka. Further research would be needed to understand this concentrated harvest.

its own right. Both within and between communities this movement of herring eggs appears to provide an opportunity to fulfill social obligations and maintain cultural values. In future work we will focus on the system of distribution, trade, and exchange of herring eggs and its relationship to Tlingit social and cultural values.

**APPENDIX 1. SUBSISTENCE AND PERSONAL USE REGULATIONS FOR HERRING AND  
HERRING EGGS**

A number of Board of Fisheries regulations pertain specifically to the subsistence and personal use Sitka Sound herring egg fishery and participation in the fishery by residents of southeast communities. These regulations 1) determine which communities have subsistence use of herring eggs in Sitka Sound and 2) establish management procedures for subsistence and personal use herring egg harvest and 3) set individual and household bag limits for harvest of eggs on macrocystis kelp. The regulations are:

**Article 14. 5 AAC 01.715.**

**LIMITATIONS ON PARTICIPATION IN SUBSISTENCE FINFISH FISHERIES.**

(a) finfish may be taken for subsistence purposes only as provided in this section.

(f), Sitka: Only those residents of the City and Borough of Sitka domiciled in drainages which empty into section 13-b north of the latitude of Dorothy Narrows, except those domiciled in the U.S. Coast Guard base on Japonski Island, may take,

(1) herring and herring spawn in waters of 13-b north of the latitude of Apid Cape.

**Article 01. 5 AAC 77.001**

**PERSONAL USE FISHERY.**

The intent of the regulation is to allow a personal use fishery so that an individual can still fulfill his personal use needs for fish under subsistence fishing regulation; the states's subsistence priority law changed the definition of subsistence in a manner that now precludes some individuals (communities) from participating in customary and traditional subsistence fisheries and efficiently harvesting fish for their personal use.

**5 AAC 77.672**

**PERSONAL USE HERRING FISHERY.**

In the personal use taking of herring and herring spawn

(1) herring may be taken any time;

(2) herring and herring spawn may be taken by gear listed in 5 AAC 01.010;

(3) there is no annual possession limit for herring or for herring spawn which is not on kelp;

(4) Herring spawn on kelp may only be taken under authority of a personal use fishing permit; when issuing a personal use permit for the taking of spawn on kelp, The department may specify on the permit the times and locations for harvesting and the species of kelp which may be taken; the annual possession limit for herring spawn on kelp is 32 pounds for an individual or 158 pounds for a household of two or more persons; the department may, in its discretion, issue an additional permit for taking spawn on kelp above the annual possession limit if harvestable surpluses of herring spawn on kelp are available.

**5 AAC 01.730**

**SUBSISTENCE FISHING PERMITS.**

(A) Salmon, trout, char and herring spawn on kelp may be taken only under authority of a subsistence fishing permit.

(G) When issuing a herring spawn on kelp subsistence permit, the department may specify on the permit the times locations for harvesting and the species of kelp that may be taken. The annual possession limit for herring spawn on kelp is 32 pounds for an individual or 158 pounds for a household of two or more persons. The department will, in its discretion, issue an additional permit for herring spawn on kelp above the annual possession limit if harvestable surpluses of herring spawn on kelp are available.

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## **SECTION IV**

### **CASE EXAMPLE OF DISTRIBUTION AND EXCHANGE: WILD CARIBOU ANTLERS IN NORTHWEST ALASKA**

This section describes the case example of trade of wild caribou antlers in northwest Alaska ("Trade in Wild Antlers in Northwest Alaska," by James Magdanz and Hannah Loon). This report was originally presented to the Alaska Board of Game in 1990.

The report describes the development of a new trade in northwest Alaska. Buyers of deer antler for the Korean market, which had been expanding over the past two decades, entered northwest Alaska during the late 1980s to purchase wild caribou antlers. Previously, most antlers from subsistence-caught caribou were left in the field by hunters, with only a small number being used in craft items. Hunters responded to new trade opportunities and started to sell caribou antlers. This sale was allowed under state regulations at that time.

In 1989, the Arctic Regional Subsistence Council requested that the Board of Game prohibit the sale of wild antlers in their area, concerned that there was the potential of hunting for antler sales which might result in the waste of caribou meat. In response to this request, the Board of Game passed regulations which prohibited the sale of fresh caribou antlers in Game Management Unit 23, unless the antlers were naturally shed or substantially changed by being made into handicrafts. The report describes the details of this case example of exchange.

**TRADE IN WILD ANTLERS  
IN NORTHWEST ALASKA**  
**A REPORT TO ALASKA BOARD OF GAME**

By James Magdanz and Hannah Loon

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

October 1990

## INTRODUCTION

Alaska game regulations allow the sale of naturally shed antlers and of antlers that have been permanently removed from the skull of game animals (5 AAC 92.200(b)(3)). Until recently the primary application of this regulation had been to allow for traditional crafts using antler (e.g. sheep horn carving), while prohibiting the sale of mounted trophies. Sale of non-trophy antlers is also allowed by other states, for example, Montana, Idaho, Wyoming, and New Mexico. The primary market for western states' antlers is Oriental medicine rather than traditional crafts. In Alaska, antler brokers have been purchasing velvet reindeer antlers for the Oriental market for at least two decades. But until 1989 they had been buying little if any hard wild antler.

Beginning in fall of 1989, antler brokers expanded their efforts to encompass caribou and moose antler from Alaska. A small number of local buyers in rural Alaska began purchasing large quantities of wild antler, usually offering \$2.00 per pound for fresh antler and \$1.00 per pound for old or shed antlers. Buyers found eager sellers in a number of communities which lay along major caribou migration corridors, particularly in northwest Alaska where caribou is the main stable food for Inupiaq communities. A few individual sales reportedly exceeded \$1,000, one reportedly reached \$2,000. The average individual sale, according to several brokers and local buyers, were between \$100 and \$200. The apparent sudden demand for wild antler prompted concern by regional leadership. The Arctic Regional Council requested that the State of Alaska and the U.S. Fish and Wildlife Service prohibit the sale of wild antlers, expressing concern over the potential for wanton waste. The U.S. Fish and Wildlife Service deferred to the state (U.S. Fish and Wildlife Service 1990). A proposal (number 43) to prohibit the sale of caribou antler was included in the October 1990 agenda of the Alaska Board of Game. The Board has visited the

antler and horn issue at least once before, in Spring 1987 (proposal 247 regarding sheep horn), and decided not to prohibit the trade.

This report examines trade in wild antler in northwest Alaska. The staff conducted personal and telephone interviews with a number of northwest elders, hunters, and community leaders, two Alaska exporters, two Alaska brokers, two local buyers, a former University of Alaska reindeer biologist, and two law enforcement agents during fall 1989 and fall 1990.<sup>1</sup> Researchers also observed harvesting activities in northwest Alaska villages in 1989 and 1990. The exporters, brokers, local buyers and local sellers alike had vested interests in continuing the antler trade, and were more willing to discuss the advantages than the disadvantages of the trade. There were no requirements for reporting antler sales, thus it was impossible to accurately determine the annual volume of trade. The authors relied on estimates from the exporters and brokers.

This report describes customary and traditional uses of antler, the international antler market, and the contemporary market for wild antler. It discusses several management issues surrounding the trade in wild antler. This report focuses on northwest Alaska, in particular on communities along the Kobuk and Noatak rivers where trading has been active. The caribou involved in northwest trade were all from the Western Arctic Herd. Trade also occurred in Anaktuvuk Pass, Arctic Village, Venetie, and Old Crow in the Yukon Territory of Canada. The

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<sup>1</sup> The following definitions were used to categorize participants in the antler trade. "Producers" were rural Alaska hunters and scavengers who harvested or found wild antler and offered it for sale in relatively small quantities. "Local buyers" were individuals in communities who bought antler from producers, stockpiled several thousand pounds, and then sold their inventory to brokers and exporters. "Brokers" were individuals who bought from local buyers and to a lesser extent from individuals, then resold to exporters and carvers. "Exporters" were individuals in companies that bought from local buyers and brokers, and shipped container loads of antler to Korea. Unlike local buyers and most brokers, exporters' business consisted mostly of velvet reindeer antler. The exporters were Korean themselves or associated with Koreans, a necessary requirement in dealing with the international market.

trade described for northwest Alaska was believed to be similar to trade in these other areas.

### CUSTOMARY AND TRADITIONAL USES OF ANTLER

Antlers have a variety of uses in traditional Alaska Native cultures. Northwest Alaska Inupiat Eskimo use antlers for net sinkers, for spoons, for tool handles, and for carving. Antler sometimes serves as a kind of ivory substitute when ivory is scarce or in areas where ivory is not available. There is at least one documented instance of customary trade in caribou antler from the 1920s, between the people of Noatak (*Noatagmiut*) and coastal Inupiat.

"Then their chief means of support was the caribou, which furnished food, skins for clothing and for kayak covers, bone for knives, scrapers, spear points, and arrow points, *horn for spoons*, and sinew for thread. These products were traded for sealskins and seal oil, as well as for blubber and oil of whale." (Curtis 1930:194 emphasis added)

Other trade likely occurred, perhaps including net sinkers as well as spoons. This trade was part of a centuries-old exchange system which moved many goods between inland and coastal dwellers, culminating in an annual summer trade fair in Kotzebue.

In 1990, caribou antler was not widely traded among local residents, probably because caribou were ubiquitous. The Western Arctic Herd probably numbered in excess of 350,000 animals (Dau, pers. comm. 1990). The caribou were widely dispersed and available to virtually all northwest Alaska communities.

### THE INTERNATIONAL ANTLER MARKET

Korean demand for deer antler has supported a lucrative international market for at least two decades. This trade has involved shed elk antler from the

western United States, cropped Alaska and Soviet reindeer antler, and red stag from New Zealand and China. The consumers of antler products lived primarily in China, Japan, and Korea. Much smaller quantities were reportedly sold in Oriental subcommunities in the United States. The popular notion in Alaska seemed to be that antler were considered an aphrodisiac. Several sources disagreed. They said antler was a traditional medicine in these countries. It was sold as a powder, sliced into wafers to steep in hot water like tea, and sold in lengths not unlike sausage. Mixed with certain herbs, it was believed to improve circulation by "cleaning out the veins." This reduced the risk of heart attacks and contributed to a longer life. One exporter suggested that in older people the improved circulation "got the blood where it hadn't been for a long time" and this accounted for antlers' reputation as an aphrodisiac.

One exporter estimated that Alaska supplied about five percent of the world's antler. About 25 percent of that, or one percent of the world total, was wild Alaska antler. This exporter shipped 80,000 to 100,000 pounds of reindeer and caribou antler annually. In a recent year, he estimated 30,000 pounds was reindeer antler in velvet, 25,000 pounds was hard reindeer antler, and 25,000 pounds was hard caribou antler.<sup>2</sup> An Alaska broker estimated that four or five other Alaska brokers were operating in 1990, each handling about 10,000 pounds of wild antler. Thus total annual wild antler volume from Alaska could be as high as 65,000 to 75,000 pounds. If the average rack were eight pounds, this would mean 8,000 to 9,000 caribou were involved. If the 1989 trade did involve about 50 percent new and 50 percent old antler, then the total caribou harvest related to antler trade in Alaska would be 4,000 to 5,000 animals, or about 20 percent of the total Alaska caribou

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<sup>2</sup> The maximum amount an exporter can legally export without reporting the shipment to the U.S. Fish and Wildlife service is 25,000 dollars.

harvest.<sup>3</sup> In 1989 the Alaska caribou harvest was estimated to be 24,000<sup>4</sup> (Alaska Department of Fish and Game 1990:8).

The principal world suppliers of antler were New Zealand, China, and more recently the Soviet Union. North American elk and red stag deer provided the most desirable antlers. The brokers and exporters all agreed that Soviet perestroika has recently made available new supplies of high quality reindeer antler. One said:

The Soviet Union is desperately seeking hard currency. They are dumping gold, and everything else including antler, on the world market. The Soviets are selling (hard reindeer) antler for \$9.00 a kilo, and that's about half what caribou antler were bringing. In the last three months, the price for hard caribou antler has dropped 15 to 20 percent. We have a million animals in Alaska, the Soviet Union has three million reindeer alone.

Exporters and brokers were unanimous in the opinion that the world and Alaska markets had softened considerably since 1989. Several said some local buyers were stuck with several thousand pounds of 1990 antlers. They were being offered little more from exporters and brokers than they had paid hunters and scavengers in the field. One broker said that in 1989, he was advanced money to purchase antlers. He said:

Until this summer (1989), the top elk price was \$5.50 to \$6.50 a pound. Then all of a sudden it jumped up to \$10. There are literally just dozens of Koreans scouring the country to buy antlers. I deal directly with a Korean. He got ahold of me. We agreed on a price. I told him I could get so many pounds of antlers. He said OK.

In 1990, not only did this same broker finance his own operation, he was having trouble selling his stock. In 1990, exporters were not advancing cash, nor even paying cash in some cases, but merely promising future payment.

Jim Dau is a former University of Alaska biologist who worked with the reindeer industry during the late 1970s and 1980s and now is the assistant area

<sup>3</sup> In 1990, the proportion of new to old antler probably changed. Much less old antler was available.

<sup>4</sup> Harvest reporting is known to be incomplete, especially in northwest Alaska. The actual harvest may be considerably higher.

biologist in the Kotzebue office of the Department of Fish and Game. Dau said he had been aware of standing orders for hard antler at \$2.00 a pound for years. But most reindeer herders, used to the premium prices paid for velvet antler, never bothered with hard antler. Beginning in January every year and continuing until corralling in June, reindeer herders received telephone calls from exporters willing to buy antlers and offering to pay cash, occasionally as much as \$100,000. New exporters showed up every year.

One wildlife agent stated that he understood several cartel-like organizations control the importation of antler into Korea. He added that Korean demand set the price and that the Korean market was controlled "by a few individuals," whose origins were in the former Korean black market when antler trade was illegal.

#### **THE CONTEMPORARY NORTHWEST ALASKA ANTLER MARKET**

In the fall of 1989 at least three different individuals began actively soliciting caribou antler along the Kobuk and Noatak rivers. Arriving by boat from Kotzebue or by airplane from Fairbanks, they paid cash on the spot. Fresh antler usually brought \$2.00 per pound; old antler \$1.00. A fresh large bull caribou rack was worth about \$20.00. The local buyers sawed the antler into more manageable pieces and sold it to antler brokers and exporters in Kotzebue, Fairbanks, Anchorage, and southern cities. The exporters sold the antler to Korea importers.

Before 1989, most caribou hunters in northwest Alaska left their antlers in the field, because meat was the principal motivation for hunting. Hides and antler were by-products of the hunt and supply exceeded demand from sewers and carvers. As a result of minimal salvage by hunter and natural shedding by the caribou, thousands of antlers could be found along the Kobuk and Noatak rivers. After 1989, meat still remained the principal motivation for caribou hunting in northwest

Alaska, but very few hunters were leaving antlers in the field. All the easily accessible old antlers had been scavenged and sold. There were numerous reports of antlers being stolen from camps and caches, allegedly by young people seeking quick cash. In Ambler, petty antler theft was reported to be rampant during 1989 and 1990.

The authors attempted to discover the reason for the sudden surge in demand for wild antler in 1989. Brokers and exporters offered several theories: relaxation of Korean import quotas, new Korean import duties that favored mixed shipments of old and velvet antlers over shipments of only velvet antlers, and a shrinking supply as a result of radiation contamination of Finnish antlers by the Chernobyl disaster.<sup>5</sup>

The high wholesale price in 1989 may have been a market anomaly. While wholesale prices did rise dramatically, by fall 1990 prices had declined to previous levels. If the Soviet reindeer were to remain on the market, they would exert a downward price on Alaska antler products. But a market in which all product is funnelled through a few foreign individuals must be considered unpredictable.

## MANAGEMENT ISSUES

The surge in local demand for caribou antler in northwest Alaska raised several wildlife management issues. Principal among them was the incentive for wanton waste and the sustained yield of the Western Arctic Caribou Herd. A secondary issue was whether the legal antler trade overlaid and obscured an illegal

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<sup>5</sup> This was an example of the mis-information typical of the antler trade. Reindeer antler from Scandinavia have never been significant in the international market. There were strict animal cruelty regulations and strong public sentiment against harvesting velvet antlers in Scandinavian countries. Virtually all hard antler in Scandinavia is sold to Scandinavian craftsmen (Dau, pers. comm. 1990).

trade in other animal parts like bear claws and gall bladders. A tertiary issue was the loss of income to hunters and scavengers, Alaska carvers, local buyers, Alaska brokers, and Alaska exporters who relied on the antler trade.

## **Waste**

Sources disagreed on the issue of waste. In September, 1990, the Division of Wildlife Protection was investigating one case of waste in northwest Alaska, involving nine caribou at Onion Portage. In October 1989, the U.S. Fish and Wildlife Service was investigating one exporter believed to be under-reporting his exports. In 1989, several individuals reported that antler were stolen from camps and caches. No antler-trade-related violations were being prosecuted in northwest Alaska in 1990. However, it was very difficult to collect enough admissible evidence to prosecute and low number of violations may understate the actual amount of waste, if it exists. During the winter of 1989-90, when it was possible to search on the tundra as well as along the rivers, the Kotzebue office of the Department of Fish and Game received numerous reports of "piles of caribou" left in the field.

A common occurrence is that waste is generally attributable to the nearest community. Northwest regional leaders, the Arctic Regional Council and, in particular, the Kotzebue Fish and Game Advisory Committee were concerned that even a few cases of waste would blemish Native hunters' reputation. Village hunters and elders contacted in fall 1990 all said they were worried about the potential for waste, motivated by the antler market. A few believed that subsistence harvests of any kind should not be sold for cash.

By 1989, most of the easily accessible old antler had been removed from northwest Alaska communities, camps, and the country, and sold. Thus, old antler likely will comprise a smaller portion of the trade in the future. This reduction in

supply could lead to increases in price and additional incentive to kill caribou for antlers.

Most sources believed that, at the community level in Alaska, antler-trade-related waste was not yet a major problem in 1989 and 1990. A possible exception was Ambler, where about half a dozen unidentified young hunters were alleged to be "head-hunting." Ambler is near Onion Portage, where tens of thousands of caribou cross the Kobuk River. One wildlife agent, two local buyers, and several hunters noted that waste occurred before the antler trade developed. Inupiat had high standards for the quality of their wild foods. Some Inupiat hunters were reluctant to use caribou that appeared to be diseased, disease which was not apparent when the animal was shot. When evidence of disease was discovered during butchering, they abandoned the carcass in the field. Late in the fall, when bull caribou enter the rut, some hunters also abandon "stink bulls." In the past, abandoned carcasses usually had antlers, since 1989 most did not. But that did not mean they were killed for their antlers.

The brokers and exporters believed that 1990 prices were not high enough to encourage waste. One said:

I just don't think that the value of these caribou antlers is enough to shoot 10 or 15 caribou at a whack. Even the most cold-hearted hunter would not slaughter that many animals. If the penalties are stiff enough, enforcement is decent, and you make a few good cases, it's not going to be a problem.

Regional leaders disagreed. Enforcement is difficult. Cash is scarce in rural communities. When someone is out of stove oil or gasoline, the incentive to sell antler could be considerable.

While hard antler were selling for about \$5.00 a pound wholesale, velvet antlers were worth about \$50 a pound in 1990. But one exporter said that his company was not interested in wild velvet, and a broker agreed. The brokers and exporters want to buy large quantities. Velvet has to be harvested at a particular

time. Once harvested, it must be refrigerated or frozen within hours and remain preserved throughout the market. The logistics of harvesting quality velvet, preserving it, and transporting it discouraged trade in wild velvet.

Some local IRA councils and individual local leaders were actively discouraging waste, through informal conversation with hunters, hand-written posters in village stores, and CB broadcasts. In Kiana, the traditional council posted a notice which read:

Subsistence is a hunting priority. Residents must comply with NANA land use policies and the Department of Fish and Game regulations. Wasting of caribou will be reported to proper authorities.

Kiana did report one case to the state in September 1990. One local buyer thought the attention actually might reduce waste below pre-1989 levels, by bringing attention to the waste already occurring.

Although harvest reports are not yet available, the staff believes that the Western Arctic Caribou harvest in 1990 will be larger than in 1989, for two reasons. First, the migration this year has brought larger caribou groups closer to communities than in 1989. Groups of 15,000-20,000 were reported within a few miles of Kiana and Ambler. Second, young hunters (including teenagers) were reported to be harvesting more caribou than normal because of the antler market. They were salvaging the meat, and local diets may be rich in caribou during the winter. The bag limit in northwest Alaska was five caribou a day; moderate harvest increases did not pose a threat to the Western Arctic Herd.

The issue, then, was whether the potential for waste -- rather than current level waste (which is undocumented)-- warrants restrictions on antler sales. Proposal 43 emphasized the potential for waste.

## **Western Arctic Herd Management**

Since the mid 1970s, the Western Arctic caribou population has doubled and redoubled. Caribou populations are cyclical; the Western Arctic Herd is certain to decline again in the future. At 1990 populations levels, high harvest and consequent large supplies of antler did not jeopardize the sustained yield of the herd. But there is concern that when the herd declines the antler trade will encourage excessively high harvests when conservation is required. People accustomed to the extra income will be reluctant to give it up.

## **Other Illegal Trade Activities**

Wildlife managers and protection officers were concerned that the legitimate antler trade overlaid and obscured illegitimate trade in other animal parts. In Korea, bear claws, caribou penises, and in particular bear gall bladders were in demand. Bear gall bladders brought up to \$700 each in rural Alaska. Agency staff worried that the common interest of the Korean buyers in antlers and other parts extended down through the market to rural Alaska producers.

The Inupiat do not use bear gall bladders (Georgette and Loon 1989:38-40). There was no tradition of use and apparently very little, if any, salvage of gall bladders from bear killed by Inupiat in northwest Alaska. But brokers and local buyers agreed that aggressive buyers and willing sellers existed. As with the waste issue, one local antler buyer suggested that rural Alaska buyers help control illegal trade:

I probably have dealt with 10 to 12 different people (brokers). In one instance, there was a question if I could get things like you're talking about. There have been probably 12 to 15 people in the village who have approached me asking me if I will buy these things from them. They have the stuff to sell. The transactions could take place. But they need somebody like me in the middle. Why should I get involved with it? It's nothing but trouble and I've got a business here.

He thought that non-local buyers arriving by air were more likely to buy illegal wildlife parts along with antlers, because they could be difficult to identify and locate after the sale. Banning the export of wild antler from Alaska would curtail wild trade, but permit carving and reindeer antler sales.

### **Loss of Income as a Result of Prohibition**

Hunters who were concerned about the potential for waste nonetheless welcomed the additional "gas money" provided by the trade. Every hunter contacted in 1990 mentioned this. One broker characterized the Alaska trade as "a cottage industry." A commercial fisherman and antler carver, he estimated that the antler trade contributed about 25 percent of his annual income. It provided local people with a few hundred dollars to pay for gas and ammunition, money that was especially significant for low income families. One Noatak hunter, whose relatives were involved in the trade, said:

This is good for people, especially since commercial fishing was poor in Kotzebue. In Noatak, selling of antlers did not appear to hurt anything as long as people bring in the meat. Of course, subsistence hunters know it's bad if they are hunting the caribou just for the antlers.

A Kiana man said, "It's OK to make \$70 to \$80 for a few sets of antlers. But selling of antlers may encourage people to hunt caribou for horns. If they do dispose of the carcass, it is bad."

Carvers also were concerned about the potential loss of income. This is less an issue in northwest Alaska, where caribou are abundant and ivory is the principal carving medium, than in Southcentral and Southeast Alaska. Carvers were concerned that a broad prohibition on sale of antler and horn would cost them substantial income. One southcentral antler broker said:

If they outlawed the buying and selling of hard antler, you would hurt a lot of local people. It would be catastrophic for some families. It's not a huge volume, but I probably supply 10 or 15 different individuals

with the material they need to make a portion of their income (15 to 20 percent).

There are five carvers in southcentral who do sheep horn<sup>6</sup> in a fairly large way, and I am sure there are some more in southeast. I know one man who probably makes 90 percent of his income from the carving of horn and antlers.

The carving industry adds considerable value to antler and horn. Sheep horns worth \$100 raw bring \$400 when carved. If the wild antler trade were to be regulated, carvers hope that provisions would be made for the relatively small quantities of horn they use.

### SUMMARY

The sudden demand for wild antler and the locally mysterious market mechanisms prompted legitimate concerns in northwest Alaska. The Arctic Regional Council opted for a conservative approach to protect both the caribou and hunters' reputations. Adverse publicity could result from a single incident. Local hunters were equally concerned about waste, however they welcomed the additional income. Compelling evidence of increased waste or increased trade in illegal parts did not exist in early fall 1990. But the potential for waste increases after the demand for meat has been met and bulls enter the rut. Most reports of waste in 1989 came after freeze-up.

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<sup>6</sup> This broker said his sheep horn came principally from scavenging in the Alaska Range. He dealt with 75 to 100 horns a year, some of which he carved and sold himself, and some of which he sold to other carvers for \$50 to \$100 a horn. He said few hunters were willing to sell sheep horns. He scavenged about half his horn each year, and bought the rest from a few other scavengers.

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## SECTION V

### CASE EXAMPLE OF DISTRIBUTION AND EXCHANGE: SALMON ROE ALONG THE MIDDLE YUKON RIVER

This section describes the case example of trade of salmon roe from subsistence-caught fish along the middle Yukon River ("The Subsistence Fall Chum Fishery of Yukon River Districts 5A and 5B, and the Sale of Roe", by Robert J. Wolfe and Martha Case). This report was originally presented to the Alaska Board of Fisheries in 1988.

This case example deals with the issue of customary trade. In 1988, the Board of Fisheries had to decide if the sale of fall chum roe from subsistence-caught fish in Yukon Subdistricts 5A and 5B was an example of customary trade recognized in state and federal statute. After looking at the characteristics of the trade, the Board of Fisheries determined that the sale of salmon roe bound for Japanese markets was not customary trade. The practice was determined to be an illegal commercial sale of a subsistence product.

This question goes back to at least 1974, when the state passed regulations which allowed the sale of salmon roe obtained as an unavoidable by-product of legal subsistence fishing in the Arctic-Yukon-Kuskokwim region. This regulatory experiment lasted three years. The Board of Fisheries repealed the regulations in 1977, based on reports that some fishermen had increased their harvests of subsistence salmon in order to sell the roe, resulting in unused salmon carcasses. In 1987, the issue came up again in Districts 5A and 5B, as described in the report, and was litigated in Tanana Fish and Game Association v. Alaska. In November 1992, the Alaska Superior Court ruled in favor of the state, upholding the Board's determination that the sale of roe from subsistence-caught salmon in Yukon Districts 5A and 5B was not customary trade.

**The Subsistence Fall Chum Fishery of Yukon River  
Districts 5A and 5B, and the Sale of Roe**

Robert J. Wolfe and Martha Case

Report to the Alaska Board of Fisheries  
Division of Subsistence  
Alaska Department of Fish and Game  
Juneau, Alaska

December 1988

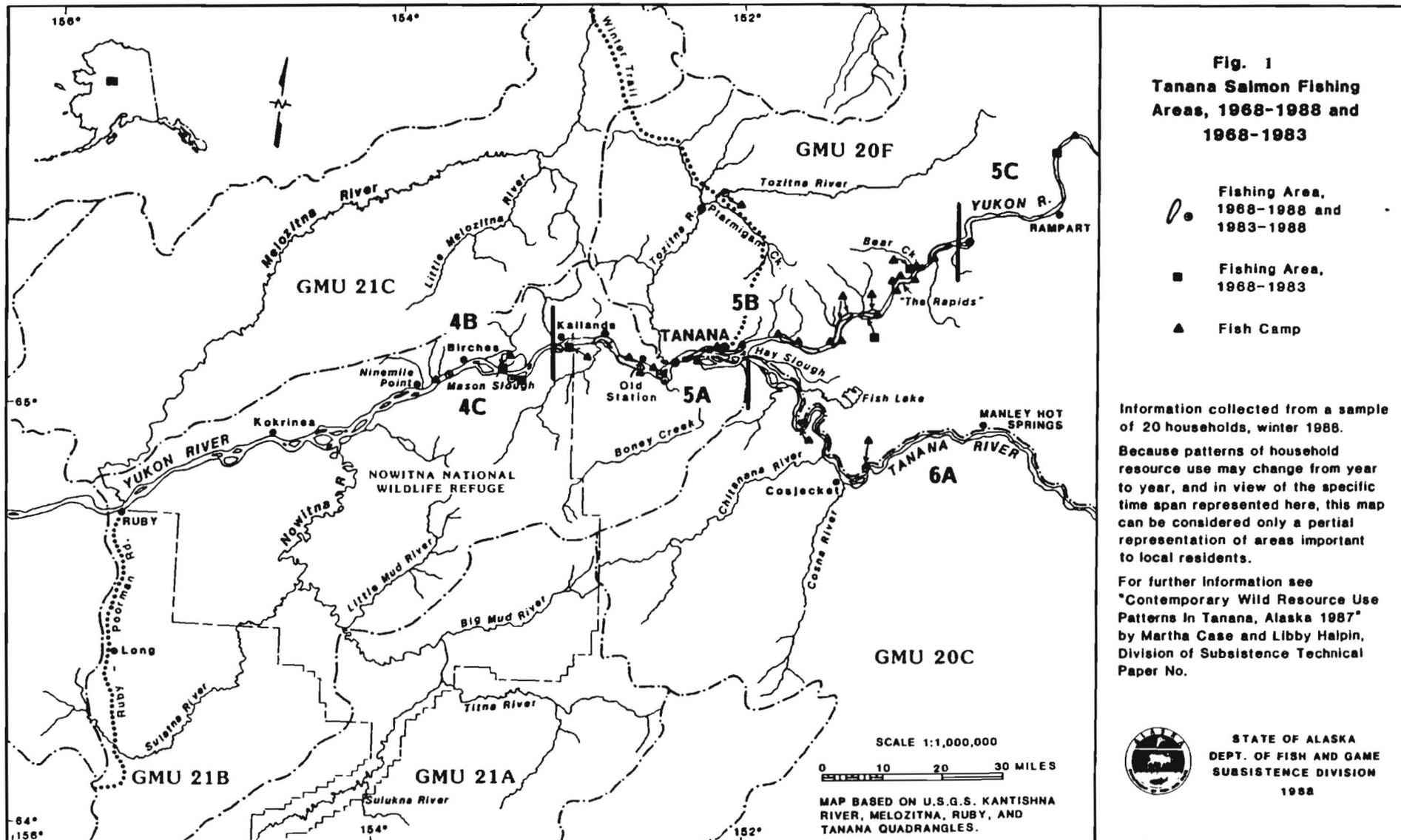
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This report describes the subsistence fall chum salmon fishery of Yukon River Districts 5A and 5B. It provides background information for the Alaska Board of Fisheries regarding a proposal to allow the sale of roe from subsistence salmon in 5A and 5B (see Appendix). The report describes the subsistence fall chum fishery in terms of (1) number of participants, (2) locations of fishing effort, (3) methods of harvest, (4) harvest levels, and (5) disposition of the catch. The report also discusses the potential effects of the roe proposal on subsistence fishing practices and the economy of the area.

Information for this report derives from subsistence studies and subsistence salmon harvest calendars in the Tanana area (Case and Halpin 1988; Walker and Brown 1988). Except where otherwise noted, information about fishing at Tanana derive from household interviews as reported in Case and Halpin (1988). The primary source of information on the sale of subsistence roe in the Yukon and Kuskokwim Districts from 1974-77 is Alaska Department of Fish and Game (1977).

#### The Subsistence Salmon Fishery of Districts 5A and 5B

Districts 5A and 5B comprise an 85 mile portion of the middle Yukon River, including the confluence of the Yukon and Tanana rivers and the area called the Rampart rapids (Fig. 1, from Case and Halpin 1988). Tanana, the only community in the area (5A), had an estimated 1987 population of 373 people in 128 households with an additional 13 residents in the elders' residential group home (Case and Halpin 1988). Neighboring communities are Manley Hot Springs in 6A (88 people) and Rampart in 5C (59 people) (1985 populations from Alaska Department of Labor 1987).



### Participants and Fishing Camps

In 1987, almost all subsistence salmon fishing in 5A and 5B was conducted by residents of Tanana (Fig. 1). A few Tanana households also fished in 4B, 4C, 5C, and 6A. Of the estimated 128 households in Tanana, 91 households (71 percent) participated in salmon fishing in 1987. There were 26 Tanana fishing camps located in 5A and 5B, 2 fishing camps each in 4B and 6A, and 1 fishing camp in 5C (Fig. 1). Whereas most households used a single fishing camp during a season, single camps frequently were used by several households, and single households occasionally used several camps during a season. Of the 373 people censused in 1987, 220 (59.0 percent) reported harvesting salmon in 1987.

A few households from Rampart and Manley Hot Springs also fished in 5B according to Tanana respondents, although the precise numbers and frequency of use were not ascertained. Historically for over a hundred years, there has been traditional use of 5B by Rampart as well as Tanana families in the area called the Rapids, a good subsistence and commercial fall chum location about 10-20 miles long equidistant from Tanana and Rampart (Fig. 1). Currently, the approximately 12 salmon fishing families in Rampart primarily fished in 5C. A few Manley Hot Springs households also fished in 5B, using the Rapids area, interspersed among Tanana households.

### Harvest Levels and Methods

Four types of salmon are taken for subsistence use in 5A and 5B: king, summer chum, fall chum, and coho. Salmon are harvested with fishwheels and set gill nets. Fishwheels are especially efficient for harvesting summer chum, fall chum, and coho, which commonly run near the banks. Set nets are the most efficient gear for taking king salmon, and also catch chum and coho. The

subsistence fishing effort in 5A and 5B occurs over several months, from about mid-June when the first king and summer chum arrive through September and occasionally October, ending with fall chum and coho. Most subsistence fishing effort occurs when fish runs are large and weather conditions are good for drying. At these times, fish are efficiently caught and preserved without spoilage. The commercial fishery also affects the timing of subsistence effort. During the commercial season, subsistence fishing by regulation must conform to the commercial fishing openings, generally two 48-hour periods a week. The commercial season lasts until subdistrict quotas are met (2,400-2,800 kings and 0-18,000 fall chum and coho, 5A, 5B, 5C combined). The commercial king season generally last about 2-3 weeks and the fall chum season about 1-2 weeks. The commercial fall chum fishery was not opened in 1987, and was opened in 1988 for two 24-hour periods in late August.

In 1987, Tanana residents harvested about 41,825 fall chum for subsistence according to catch calendar return estimates (Table 1) (Walker and Brown 1988). The subsistence fall chum harvests from 1977-87 reported by Tanana residents on catch calendars are shown in Table 1. Reported subsistence fall chum harvests have ranged from 10,282 fish (1977) to 42,690 fish (1984). Five-year averages of 28,130 fall chum (1978-1982) and 37,261 fall chum (1983-87) indicate an increase in subsistence fall chum harvests over the past decade at Tanana. This increase may be due to increasing numbers of consumers, including people and dogs. Tanana's population has increased from 120 people in 1970 to 373 people in 1988. The number of dogs owned by fishing families grew from 138 in 1970 to 535 in 1988 (Walker and Brown 1988).

### Disposition of the Fall Chum Harvest

Historically, fall chum taken for subsistence have been used as food for people and dogs by residents of the Yukon River districts. Fall chum are dried and smoked for human use within the Yukon River region. Historically, the total demand for subsistence fish has been primarily set by the population living in the Yukon River drainage, which has used it for human food and dog food. Dried salmon rarely was exchanged outside the Yukon River drainage. Families harvested and processed salmon sufficient to satisfy local demand, after which fishing ceased. The state has never imposed harvest quotas or limits on the number of subsistence salmon caught in 5A and 5B because the local demand has been relatively self-limiting and well below harvestable surpluses. A portion of the subsistence salmon harvest in 5A and 5B is dried for consumption by dogs, which are used in subsistence activities described below. Historically, dried salmon for dogs (and people) has been shared and traded between households in the Yukon River region. The volume of the trade in dried salmon was greatest between about 1870 to the middle 1920s, to supply the needs of a large number of miners, trappers, and territorial mail carriers who operated large dog teams in the region (Wolfe 1979:137-144). Although its volume has decreased since then, the local trade of dried salmon has continued into the present at relatively lower levels.

In addition to these subsistence uses of salmon, a small commercial fishery for whole salmon in 5A and 5B has been established by the state. Commercial sale of Yukon River chum salmon to outside markets was legal during 1918-21 and from 1961 to the present (Wolfe 1984). Whole salmon are purchased from permitted commercial fishers for sale to export markets outside Alaska. An export market for Yukon River salmon roe developed during the mid-1960s and early 1970s. For a brief period from 1974-77, it was legal to sell salmon roe incidentally obtained as

TABLE 1. SUBSISTENCE FALL CHUM HARVESTS  
BY TANANA RESIDENTS, 1977-87

<u>Year</u>	<u>Harvest</u>
1987	41,825
1986	32,049
1985	28,113
1984	42,690
1983	41,630
1982	31,470
1981	30,820
1980	32,834
1979	32,842
1978	12,682
1977	10,282

Five-year Averages	
1983-87	37,261
1978-82	28,130

Source: Subsistence Catch Calendars (Walker and Brown 1988)

an unavoidable by-product of subsistence fishing in 5A and 5B (Alaska Department of Fish and Game 1977). During that time, an average of 88 fishermen from Tanana, Rampart, and Stevens Village sold an average of 1,740 lbs of king roe and 12,800 lbs of chum roe at a value of \$19,821 annually, or about \$225 per fishermen (Alaska Department of Fish and Game 1977:Appendix IV).

Currently, the carcasses of the subsistence fall chum harvest are preserved for use as food for people and dogs in 5A and 5B. In 1987, 21 percent of the fall chum harvest was processed for consumption by people, and 79 percent of the fall chum harvest was processed for dog food (Case and Halpin 1988). The roe of subsistence fall chum currently is not commonly used by people or dogs. Although there is a demand for roe on export markets, because of regulations prohibiting the sale of roe from subsistence salmon, the roe currently cannot be legally sold to commercial buyers. Consequently, most salmon roe from the subsistence fishery is currently an unutilized by-product from the fishery.

In the upper Yukon, Koyukuk, and Porcupine river areas, communities maintain significant numbers of dogs, reflective of the relative importance of dogs to the region. Tanana is part of this pattern. There were about 535 dogs in Tanana in 1988, about 1.39 dogs per person (Walker and Brown 1988). Among communities in the Yukon-Koyukuk-Porcupine drainage, Tanana ranked 5th in terms of dogs per person, and 1st in terms of total number of dogs. Dogs historically have been used for a number of tasks in Tanana. Trappers use dogs for trapping activities, along with snowmachines, as elsewhere in the arctic and subarctic. In 1987, 35 households (27 percent) trapped, and of trapping households, 63 percent used dogs for checking traplines. Dogs also are used for hauling wood, water, and other supplies, which is also typical of other communities in the region like Minto and Stevens Village. These are common practices for

households at the community which do not trap, as well as households at trapping camps. Dogs also are used to guard fishcamps, drying fish, and cached fish against bear predation, which is a considerable problem in the area. Dogs also are bred and traded as pups or as trained sled dogs to local residents and to dog racers living in other communities.

### Potential Effects of Roe Proposal (Fishery Proposal 2)

Fishery Proposal 2 proposes to establish a program for the sale of roe from subsistence-caught fall chum in 5A and 5B. This section assesses potential effects of this proposal on the subsistence fishery, in regards to (1) number of participants, (2) level of harvests (3) timing of harvests, and (4) economic returns to participants.

#### Number of Participants

The proposed program would allow the sale of roe by permit. Initially, permits would be issued only to persons who have engaged in subsistence fishing in one or both subdistricts during two of the preceding five seasons. After 1989, permits would be issued to persons who have subsistence fished in one or both subdistricts during two preceding seasons. Based on these criteria, it is likely that most permits would be issued to residents of Tanana the first few years, as currently most fishing effort in 5A and 5B has been by Tanana residents, as described above.

Estimating the number of participants in the program is difficult. According to the recent survey, 59 percent of Tanana residents reported fishing in 1987 (about 220 people, or 1.72 people per household), so based on 1987 fishing effort about 220 Tanana residents would qualify for permits. However, it is

unlikely that all potential participants would apply for permits. Between 1974-77 when subsistence roe sales were legal, the number of individual fishermen selling roe from Tanana, Rampart, and Stevens Village combined were 69 (1974), 75 (1975), 83 (1976), and 126 (1977) (Alaska Department of Fish and Game 1977:Appendix IV). This indicates that only a portion of potentially eligible persons actually sold roe, and also indicates that the number of participants was increasing at the time the program ended. In addition to Tanana residents, there were a few residents from Manley Hot Springs and Rampart who also fished in 5A and 5B in 1987. These few also might qualify the first year.

One possible effect of a legalized roe sale in 5A and 5B might be an increase in subsistence fishing participants in 5A and 5B. The extent of such an increase is difficult to assess. It is possible that new fishers might appear among Tanana residents. It is also possible that fishers from other subdistricts might begin to subsistence fish in 5A and 5B in response to the added value of subsistence fish relative to other subdistricts. Potential new fishers might come from the neighboring communities of Rampart (with 59 people and about 12 fishing families) and Manley Hot Springs (with 88 people). This potential change in the amount of harvest effort, along with changes in the timing of harvest effort, might have certain effects on competition for subsistence fishing sites, discussed further below.

### Level of Harvest

In terms of level of harvest, the proposal provides that the Board of Fisheries establish a quota for the sale of salmon roe for each subdistrict. A quota is designed to prevent an increase in subsistence harvest over traditional harvest levels which might occur because of the market value of roe from subsistence fish. As discussed above, subsistence harvest levels normally are established by local,

self-regulating factors, especially the principle of "production for local use." As subsistence fishers and processors are producing food for local use, harvesting ends once local, self-limiting food requirements are met. The legalized sale of roe will provide an opportunity for fishers to produce roe for sale on outside markets. The external market demand for roe is larger than the local demand for subsistence fish. Because of this, the potential is there for an expanded subsistence harvest greater than the normal subsistence cut-off point, if fishers respond to the market incentive.

Special management efforts (such as a roe quota and in-season monitoring of roe sales) will be required in 5A and 5B to keep subsistence harvests from increasing over time solely in response to roe sale opportunities. Historically these measures have been necessary for the Yukon River commercial fishery, for Yukon River fishermen have been very responsive to market incentives and have increased their fish harvests to meet commercial quotas at whatever level they have been set (Wolfe 1984). As Tanana fishers are similarly situated, being subsistence fishers and part-time commercial fishers in a cash-poor regional economy, it is expected that they will respond similarly to market opportunities. If a quota system is established, it is expected that subsistence fish harvest levels at least will match the roe quota.

#### Timing of Harvests

The quota on subsistence roe sales may change the timing of the subsistence harvest. There will be incentive for individual fishers to harvest subsistence fish early in the season, before the roe quota has been met, because the roe from fish harvested after the quota cannot be sold. This may cause subsistence effort to peak earlier than current peaks which are primarily a function of run strength and drying conditions, as discussed above. This shift to an earlier harvest was one

apparent result of legalized roe sales along the Kuskokwim River during 1974-77 (Alaska Department of Fish and Game 1977:23).

One potential result to increased fishing effort early in the season (or due to increased numbers of participants) may be additional competition for limited subsistence fishing sites and fishwheels in 5A and 5B at times during the season. Currently there already are reports from Tanana respondents that the commercial salmon fishery (for whole fish) results in crowding of fishing sites by commercial fishers and subsistence fishers during commercial openings. This reported conflict over sites may increase if the roe fishery leads to additional subsistence fishermen and gear.

#### Economic Returns to Participants

The proposal provides that permitted fishers be restricted to a quota of 1,000 lbs of roe. This provision would tend to spread the economic returns of the roe fishery among a larger group of fishers than a program without individual limits. Assuming a value of \$2-\$3 per lb for roe, the gross earnings to a permitted fisherman selling the quota would be \$2,000-\$3,000. The total value of the roe fishery would depend upon the subdistrict quotas established by the Board of Fisheries. Fall chum harvests by Tanana residents have ranged between 28,113 and 42,690 fish during the past five years (1983-87), so roe is available from 14,057 to 21,345 female fish (assuming a 50:50 sex ratio), worth estimated total ex-vessel values of about \$28,113-\$42,171 to \$42,690-\$64,035 (assuming a pound of roe per female and \$2-\$3 per lb). Assuming a conservative 50-100 permits, this translates to mean earnings of as low as \$281 per permit to as high as \$1,281 per permit. As mentioned above, an average of 88 fishers in the Tanana area sold an average of 165 lbs of roe for \$225 during 1974-77 when roe sales were legal (roe sold for about \$1.36 per lb) (Alaska Department of Fish and Game 1977).

Tanana has a mixed, subsistence-cash economy typical of many rural Alaska communities. Whereas the subsistence sector is relatively productive, the commercial and wage sectors of the economy are relatively limited and monetary earnings are relatively low compared with urban Alaska. Monetary incomes in Tanana are about 58-59 percent of those in Anchorage: mean taxable incomes per income tax return in Tanana were \$13,943 (1982) and \$13,416 (1981) compared with Anchorage \$23,590 (1982) and \$23,043 (1981) (Alaska Department of Revenue 1985). In 1987, about 81.7 percent of the mean household income derived from wage employment, and 18.3 percent from commercial fishing or trapping. Because sources of monetary income are relatively limited, a few thousand dollars additional income can represent a substantial increase to a household's yearly earnings.

#### Summary

In summary, most subsistence fishing in 1987 in 5A and 5B was conducted by residents from the community of Tanana. In 1987, 91 households and 220 people from Tanana directly participated in the subsistence salmon fishery. Subsistence fall chum harvests at Tanana have ranged from 10,282 fish (1977) to 42,690 fish (1984), with a recent five-year average of 28,130 fall chum (1983-87). A few Manley Hot Springs households also fish in 5B. Rampart households historically have fished in 5B, but currently fish in 5C. Historically and currently, fall chum have been caught and dried for several subsistence uses in 5A and 5B: food for people, dog food, and small scale local trade of dried fish for people and dogs. The sale of subsistence roe was legal from 1974-77 in the Yukon and Kuskokwim river drainage.

The proposal to legalize fall chum roe sales in 5A and 5B may have several possible results. Most participants in the initial years probably would be from

Tanana residents, with a few fishers from Manley Hot Springs and Rampart. In subsequent years, more participation by residents from Manley Hot Springs and Rampart may occur. Possible effects on subsistence fishing may include earlier timing of subsistence fall chum harvests, more fishermen and fishing effort in 5A and 5B during the early subsistence fall chum season, and greater competition for certain fishing areas among fishers. The program may provide additional income to individual fishermen, ranging from several hundred to several thousand dollars per year. Special management efforts (such as a roe quota and in-season monitoring of roe sales) will be required to keep subsistence harvests from increasing in response to roe sale opportunities.

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## APPENDIX. FISHERIES PROPOSAL 2

Proposal 2. 5 AAC 01.2xxx. NEW SECTION. 4. Establish a program for sale of subsistence salmon roe in Subdistrict 5A and 5B, Fall Chum, as follows:

(1) A quota for the sale of subsistence salmon roe from Fall Chum salmon will be established for each subdistrict based on the actual subsistence harvest of Fall Chum in 1987, so that there will be a subsistence roe sale quota for 5A and another for 5B.

(2) In addition, each individual subsistence fisherman in subdistricts 5A and 5B who desires to sell roe from subsistence caught Fall Chum will not be allowed to sell more than 1,000 pounds of roe.

(3) Subsistence Fall Chum roe sales will not be allowed before August 15.

(4) Subsistence fishermen desiring to sell subsistence roe will be required to apply for and obtain a subsistence roe sale permit from ADF&G yearly. Permits will be issued for the 1988 and 1989 Fall Chum seasons to each fisherman who has fished as a subsistence user in either subdistrict 5A or 5B, or both, during at least two of the preceding five seasons. After the 1989 season, roe sale permits will be issued only to those who have engaged in subsistence fishing in one or both subdistricts during both of the preceding seasons.

(5) Subsistence roe sales will be closed by emergency order whenever the quota for each subdistrict has been reached.

Proposed by: Attorney for Tanana Fish and Game Association.

## SECTION VI

### MODES OF EXCHANGE IN NORTHWEST ALASKA

This section provides a discussion of traditional distribution and exchange systems in northwest Alaska ("Modes of Exchange in Northwest Alaska", by Ernest S. Burch, Jr). The report is by a researcher from the Smithsonian Institute, and was published in final form in Tim Ingold, David Riches, and James Woodburn (eds.) Hunters and Gatherers, v. 2: Property, Power, and Ideology, St. Martins Press, New York, p. 95-109, 1988.

Using traditional Inupiat terms, the report discusses types of distribution and exchange in northwest Alaska. The report shows that there are a large variety of Inupiat terms to describe the distribution and exchange of items. The large number of terms indicate the complexity of traditional subsistence economies. There appear to be several Inupiat terms dealing with modes of trade.

In Tim Ingold, David Riches and James Woodburn, eds.  
Hunters and Gatherers 2: Property, Power  
and Ideology, pp. 95-109. New York: Berg  
Publishers Ltd.

With best regards,  
Ernest

## 5. Modes of exchange in north-west Alaska

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*Ernest S. Burch, Jr.*

### Introduction

That hunters 'share' is part of the received wisdom of anthropology. Although a few authors (e.g. Gould 1982) have suggested that modifications of this view are in order, I believe it fair to say that most students of the subject would accept without objection Dowling's (1968: 503) assertion that, among hunters, 'generosity is almost universally valued, inculcated in the young, and sanctioned by myth and tradition'. This view was echoed by Service (1979: 18), who stated that 'sharing is an expectation of the moral order and a rule of etiquette, as well as the keynote of the value system. A man shares simply because it is the right thing to do'. The clear impression conveyed by these and the many similar statements in the literature is that generalized reciprocity (Sahlins 1965: 147) is not only present in all hunter-gatherer societies, but that it is virtually the only form of material exchange that takes place in such societies.

During the course of field research among the north-west Alaskan Eskimos over a period of some twenty-five years I heard many statements about sharing and generosity almost identical to those cited above.<sup>1</sup> But I also heard — in interviews conducted in English — about 'buying' and 'selling', 'stealing', 'borrowing', 'inheriting' and several other ways in which goods were transferred from one person or group to another. When I investigated just how these words were expressed in the native language and what their referents were in terms of actual behavior, it became clear that the social reality of exchange was much more complex than the ideology would lead one to suspect. Not only that, it was evident that there were many contexts in which 'sharing' and 'generosity' had no place at all, even in the ideology. In this chapter I summarize the results of this research.

<sup>1</sup> The research on which this chapter is based was conducted over the period from 1960 to 1986. It included extensive archival research and fifteen field trips varying in length from one week to ten months. For the past twenty years most of my research has focused on the reconstruction of native life as it was in the nineteenth century. I wish to thank David Damas, June Helm and Lawrence Kaplan for comments on an early draft of this chapter.

### The study population

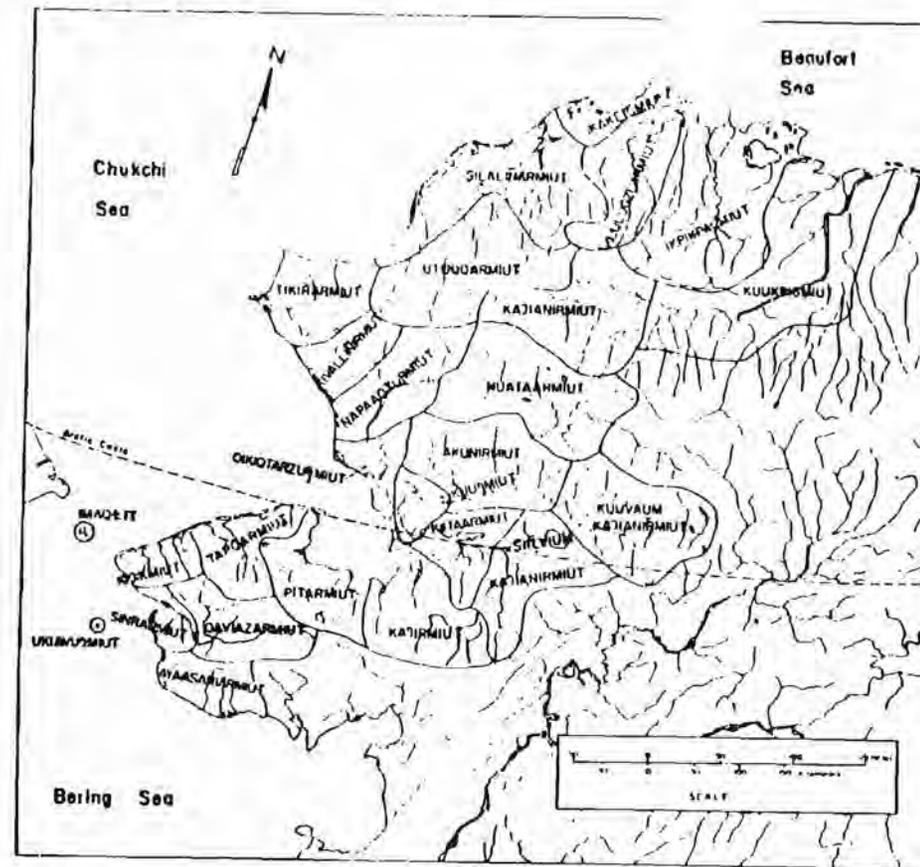
The north-west Alaskan Eskimos live between Bering Strait and the Canadian border; in the early and mid-nineteenth century their eastern boundary was farther west, near the mouth of the Colville river. These boundaries coincide with the Inuit Eskimo language group in Alaska (Woodbury 1984: 56). The ethnography and social history of this region have been summarized by Burch (1980: 1984), Hall (1984), Ray (1984) and Spencer (1984). The present analysis focuses on the 'traditional period', defined as the time from the first direct contact with Europeans in 1816 (or perhaps slightly earlier) to 1881, when a series of disasters precipitated a number of major changes in native life. Many of the specific phenomena described here still exist in north-west Alaska, but they have been altered to varying degrees in the new context, and the contemporary system as a whole differs significantly from the one described here.

The traditional north-west Alaskan Eskimos were organized in terms of twenty-six different social entities of the type referred to by Ray (1967; 1975: 103ff.) as 'tribes', and by Burch (1980) as 'societies'. Informants born prior to about 1885 referred to them in English as 'nations' or 'countries'. The specific societies that existed in north-west Alaska in the early nineteenth century are shown in Map 5.1.

Each society differed from its neighbors with respect to several characteristics. These include at least the following: identification as a separate unit by a societal name; ownership of a discrete territory; an ideology of distinctiveness; a high (80 percent or more) level of endogamy; association with a distinctive subdialect of the Inuit language; and the details of a number of individually minor but cumulatively significant features, such as clothing styles, taboos, annual cycles of movements, and burial customs. Populations ranged between about 175 and 1400 with an average around 450.

North-west Alaskan Eskimo societies were generally similar to one another in their general structure, but they were also adapted to the special circumstances of the different territories. The subsistence base consisted of marine mammals, fish, caribou and a variety of plant products, the precise combination of which varied from one society to another. In general, the people of north-west Alaska were able to exploit a much larger and more diverse set of fish resources than any Eskimo population in Canada and Greenland, and they also had access to a larger and more diverse set of plant resources. These two factors contributed to a higher material standard of living generally than was to be found among the 'typical' Eskimos of the central and eastern Arctic.

North-west Alaskan Eskimo societies were 'segmental' in the sense specified by Service (1970: 70) as being comprised of equal and similar



Map 5.1: North-west Alaska showing societal boundaries within the Inuit language area, early nineteenth century.

component groups. The component groups in this case were large extended families, about which more is said below. The several families that comprised a single society were connected to one another through a network of kinship and other ties. There were no offices, or councils or other governmental-type organizations to mediate relations between and among different families.

### Types of property

There are many ways to classify property. For present purposes, I find it useful to categorize that of the north-west Alaskan Eskimos according to ownership. Five different types of property may be distinguished on this basis: societal, local family, domestic family, conjugal family and individual.

*Societal property*

There was only one type of societal property in north-west Alaska, and that was land; specifically, the territories outlined in Map 5.1. The boundaries between territories were precisely defined, and they were known to every adult.

Ownership of a given territory originally may have been usufruct, in the sense of 'ownership which emerges, with the full support of custom, as a result of constant use' by the members of the society concerned (Pearson 1985: 266). But by the beginning of the nineteenth century the criterion of use was no longer relevant. The members of each society owned all of the land within its borders, whether they used it or not. The members of many societies also used land belonging to other societies at certain times of year, and under certain conditions, without asserting any claim of ownership to it.

Recently there has been some discussion (see Cashd in 1983: 49ff.; Hill *et al.* 1983; Rosenberg 1978: 12ff.) about human territoriality in general, and about boundary defense in particular. There seems to be a basic disagreement between, on the one hand, those who insist that perimeters must be actively defended for ownership to be established, and, on the other hand, those who impose less demanding requirements. I include myself among the latter, not for theoretical reasons but because simple empirical observation shows it to be the only tenable position.

A useful model for most north-west Alaskan Eskimo societies is the border between Canada and the United States. Everyone knows, more or less, where it is, despite the fact that it is poorly demarcated in most areas. It is actively defended, if at all, at only a few select crossing points. But there is no doubt that to cross the border without following certain procedures is an offense that, if discovered, is certain to be met with force by the country being entered. And there is no doubt at all that Canada and the United States are separate, territory-owning societies.

Similarly, in north-west Alaska, societal borders were not demarcated at all, although many followed natural boundaries, such as the divide of a range of hills or mountains. They could be crossed peacefully, not at certain places, but at certain times of year or under specific circumstances, following customs that had been worked out over the centuries. To cross them under any other conditions was a threat that, if discovered, was certain to be met with force. The penalty for trespass was harsh: individuals would be killed, often after being tortured, and groups would be attacked by an armed force (see Burch 1974). Like most modern societies, therefore, the north-west Alaskan Eskimos had both rules of accommodation to permit border crossing and sanctions against it when those rules were broken (cf. Lee 1968b: 157). But there

was no question about which society owned which land or about what the consequences of trespass were.

Ownership of societal land was, of course, a diffuse quality since there was no government or similar organization to hold it 'in trust' for the people. In practice, this meant that any individual could travel freely about the territory owned by his own society, subject only to some constraints at the local and domestic family levels, which are discussed below. Conversely, a constant watch was kept for foreign trespassers. As Charles Brower (n.d.: 143) discovered in the mid-1880s, 'it was almost impossible to enter a village day or night without someone seeing you'. Strangers were assumed to have hostile intentions unless they could prove otherwise, and they had to do that very quickly or blood would flow.

*Local family property*

In a previous work (Burch 1975a: 237) I distinguished two different levels of family unit in north-west Alaska, domestic and local. The former was defined as a family whose members occupy a single dwelling, whereas a local family was defined as one whose members occupy more than one dwelling but nevertheless still operate in terms of a single overriding family unit. A local family is what most students of hunter-gatherer peoples (for example, Helm 1965: 375) have called a 'band' or, sometimes more specifically, a 'local band'. In employing the word 'family' instead of 'band' I am not trying to be perverse. It simply seems to me that if such an organization meets a reasonable definition of family, and if investigators in Africa and Asia are likely to use the term 'family' when referring to this type of system, then students of hunters should do likewise — at least if we are attempting to contribute to a science in which broad comparisons are possible.

The local family was the primary 'segment' that made up the segmental societies of north-west Alaska. Domestic and conjugal families could separate from their kinsmen and set out on their own, but very few of them did so except during times of hunger. For most of the people most of the time, the local family was the basic unit of daily life. Indeed, most 'villages' were made up of the members of a single local family involving perhaps a dozen to seventy-five people living in two to seven or eight houses. The men hunted and worked together, the women did likewise, and everyone moved freely among the houses. Dwellings often were linked together by passageways, in which case the entire unit had something of the structure of an apartment house, but one constructed horizontally instead of vertically.

Local families owned very little property outright. One thing they did own was land; specifically, the land on which their houses were built. In contrast to societal land-ownership, this was strictly usufruct;

it was theirs only as long as they used it, at least on a regular seasonal basis. Technically they could not stop another family from building its houses very close by, although if doing so overloaded the local food supply, trouble was likely to follow. If a family failed to return to its previous settlement site in any given year, it lost any claim to it subsequently. There were no family hunting territories or fishing stations in which ownership was considered permanent.

Another type of local family property was the 'community hall', or *qazgi*. This was a building in which men and older boys gathered during the day, when not hunting, to manufacture or repair weapons and tools, to talk, and to eat. Women and children were welcome during festivals, dances, games and story-telling sessions in the evenings. In the smaller settlements, the *qazgi* was simply an ordinary house — the one in which the men gathered during the day.

The third and final type of local family property was food. Here the question of *degree* of ownership becomes especially relevant. Food, in the first instance, belonged to the person who acquired it, but more generally to the domestic and local families of which that person was a member. In the great majority of cases, the food resources of a local family were pooled, usually under the direction of the wife of the family head. All the men and older boys ate together, as did the women and the younger children. Everyone was expected to contribute to the general supply.

#### *Domestic family property*

A domestic family was a family whose members occupied a single dwelling. Occasionally a domestic family coincided with a conjugal family. Most of the time, however, domestic families were extended families consisting of at least two, and often three closely-related conjugal families (usually involving some combination of adult siblings or cousins) and perhaps an aged parent or two.

The property of a domestic family consisted primarily of food and the major items of shelter and transportation: houses, tents, large boats (*umiak*), sleds and dogs. Theoretically each of these things could belong to individuals or conjugal families. In practice they always had to be placed at the service of the domestic and local family units, which means that they exercised some ownership rights with respect to them.

#### *Conjugal family property*

Conjugal families were pretty well overwhelmed in the framework of north-west Alaskan Eskimo societies by domestic and local families. However, they did own their own bedding and also the hides or pelts of animals killed by any conjugal family member. A supply of skins was

absolutely required for clothing, bedding and a few other uses; but beyond that, skins constituted a marketable commodity. Furs, particularly those of species having a restricted distribution within north-west Alaska and of species important in intersocietal trade (discussed in a later section), were a major source of wealth. In practice many couples turned over their surplus furs and hides to the local family head, but this was done in the full expectation that they would receive some benefit from whatever he was able to acquire with them.

#### *Personal property*

Personal property consisted of everything not yet discussed: clothing, tools, weapons, hunting boats (*kayak*), utensils, amulets — virtually everything used by individuals during the course of daily life. Clothing was made and maintained by women for other family members, and men made such things as the utensils, but the user was always the owner. Each individual had a personal property mark (Boas 1899; Reynolds 1983a; 1983b) with which most of his possessions — but particularly weapons — were labeled, although the oldest son or daughter (or perhaps a special grandchild) was sometimes given the mark of a parent or grandparent to use as his or her own. When a person died, it was these personally-used goods that were placed with the body on the grave.

One other type of personal property was the song. Some songs were in general use, but others — particularly magic songs — were strictly private property. Some were sung on public occasions and were well known to the other members of one's local family, but could be sung only by the owner. Others were secret, and sung only in private. Both types could be given or sold to someone else, at which point they became the personal property of the recipient.

A final type of personal property consisted of raw or partially modified mineral or plant products that had been picked up or even moved in such a way as to indicate someone's claim to it. For example, if a man found a fine piece of timber on the beach, all he had to do was prop it up in a way that indicated human intervention; then it was his, even if some time passed before he retrieved it. The incision of a property mark would bolster his claim to it, but it was not needed to establish ownership in the first place.

#### **Division of the harvest**

Fish and game were owned by individuals and the different kinds of family. However, they attained this status through processes that are sufficiently interesting to justify a separate section on the subject.

The simplest situation was for a single person individually to shoot, trap or catch an animal or fish in isolation, with no witnesses or associates. In that case, the game initially belonged to the person who acquired it. To the extent that it was considered food, it subsequently became the joint property of the domestic and often the local family of which that person was a member, while the pelt or hide became the property of the hunter and spouse.

There were many situations in which a hunter or fisherman was accompanied or assisted or observed by one or more other people, either at the time of the kill or at some subsequent period before the meat and/or skins had been disposed of. There were several possibilities here. One was for an animal taken by one person in the presence of someone else, nevertheless to belong solely to the person who killed it. Bears, ringed seals, spotted seals, fur-bearing animals, birds and fish caught with hook and line or leister were the most common of these. This was known as *ilimikkuq*, or 'every man for himself'. Some collective hunts were also carried out on this basis. Examples include the major annual belukha hunt carried out by the Kangirmiut people, and caribou drives in which individually owned snares were used to capture and hold the prey. In both instances the animals were herded or driven collectively, but the kill and subsequent ownership of the harvest were strictly individual.

The most common type of division was called *aviktuuzaaq*, which meant a division into equal shares among those in the party, and usually with a share for the *umiak* or net if one was used. Animals divided in this way were caribou, bearded seals, walrus, fish caught by a crew using a seine, and ptarmigan, waterfowl or hares driven into a net. The major belukha hunt at Sisualik, in contrast to the one conducted by the Kangirmiut, was also carried out on an *aviktuuzaaq* basis.

A variation on the theme of *aviktuuzaaq* was known as *qiliqut*, which means 'to take the largest share'. This meant that someone — usually the boat owner or family head — might take a little extra for himself near the end of an otherwise equal division. This was his decision to make, and not everyone appreciated this inequality. Another variation was *umiqtuat*, 'to pick out the best one'. For example, if three men killed three caribou, the senior one, who ordinarily directed the division, might pick the largest or fattest portion for himself.

The second type of division was inherently unequal, and was known as *umiqtiq*. In the study region this procedure was employed in two different contexts. The first was if a bowhead or gray whale was taken — in which case there was a whole set of rules governing the disposition of the carcass into a series of graded shares (see Wolf 1980). The second context was when someone just followed some hunters without actively participating in the hunt, or if someone did not even accompany the hunters but assisted in unloading the sled (or in some similar

way): in both cases he would be entitled to a portion of the meat or fish, but not to a full share.

A final form of division was *pikszak*. This occurred when a person was just standing around, perhaps watching someone else divide the fish or else butcher a carcass. The person doing the work might offer some to the observer, although this was a courtesy, not an obligation. This was not the same as an outright gift, however, because the recipient was expected to return the favor at some appropriate time in the future.

### Transfers of property

Real estate, including land and buildings, was not subject to transfer from one person or organization to another except by default, such as when a house remained abandoned for some years and was eventually taken over by someone else. But literally everything else, once it became the property of one individual or organization, could be transferred to another, either temporarily or permanently. In English the words 'exchange', 'barter' or 'trade' are normally used to describe these transactions, but the Eskimos had a more complex set of distinctions. These are listed and briefly described below.

*Simmij*: direct exchange of similar goods. For example, if one person's parka was a bit too large and another's was a bit too small, they could exchange them. This could happen anywhere, any time, between any two individuals.

*Tuqsuq*: this is usually translated 'buy'. Nowadays it is what happens in a store. Traditionally, the procedure was for a person to offer goods — usually furs — for sale, and one or more other people would bid (*pullit*) on them. If the seller was not satisfied with the bids, he could withdraw the articles for sale. Otherwise, the top bid (*qazrut*) carried the day. For example, if a person had a poke of seal oil, he could put it up for sale, and other people could bid anything they wanted for it — a boat, caribou skin, three wolverine pelts, a pair of boots — whatever. This type of transaction was on a 'let the buyer beware' basis, usually between people who were not closely related, and certainly not members of the same domestic or local family. Normally *tuqsuq* transactions required immediate payment. However, there was also a well-developed concept of credit, *akipszuq*, in which payment could be deferred for some time.

*Tumilaq*: this was almost the mirror image of *tuqsuq*.<sup>2</sup> In this type of transaction it was the buyer who initiated the transaction. He

might want some goods, or some sort of service, such as the aid of a shaman. Here the buyer would state what he wanted, and then would tell what he was willing to pay for it. The 'seller' could accept or reject the offer; in the latter case, the 'buyer' could raise the offer or abandon the proposal. This type of transaction was also usually between people who were not members of the same family.

*Niuvig*: this type of transaction took place only between people who were in a special, permanent relationship known as *niuviriik*, usually translated as 'trade partners' (Burch 1970; Spencer 1959: 167ff.); usually they were members of entirely different societies. The essence of this relationship was to ask one's partner for some specific thing — a raw material or manufactured good — that one needed, whatever it might be, and for the partner to attempt to satisfy that request. Usually there was a pattern to the exchanges, however. For example, if one person lived far inland, he might be perpetually in need of seal oil, and his partner on the coast regularly might have a difficult time getting, say, muskrat or mink skins. But there was much more to it than that. If a famine struck one country, then the need of the person living there was basic sustenance, which he could request and expect to receive from a partner living in more fortunate circumstances in another region. In traditional times this was the main form of intersocietal alliance. The relevant transactions usually occurred at trade fairs or messenger feasts, about which more is said later.

*Atulig*: 'restricted sharing', or 'sharing' with a definite expectation of a return. One type was *aturaksak*, which meant to borrow/loan a good that is dissipated in the process of consumption. Food was the most frequent type of good involved here, but sometimes clothing — especially boots or mittens — were borrowed until they were worn out. The other type was *ataqsi*: borrowing/loaning an item to use, then to be returned intact. Tools, weapons and utensils were the most common goods involved in this type of transaction. Restricted sharing apparently occurred primarily between related local families.

*Pigziq*: 'unrestricted sharing'. The borrower could use or consume the good with no expectation of return. This was the sort of sharing that figured so prominently in Eskimo ideology. In practice

2. The *tauqsig* and *tunliq* modes governed exchanges with Europeans. The first explorers to reach the region (see, for example, Beechey 1831, I: 391; Kotzebue 1824, I: 10-11) were amazed by the native sophistication in trading and by their elaborate efforts at deception.

it occurred only between relatively close kin — almost always at the local or domestic family levels. It differed from *aiccuq*, which follows, in that ownership of the good involved continued to reside in the lender.

*Aiccuq*: this is a 'free gift', a transfer of ownership with no expectation of a return. This type of transaction usually involved close relatives. Successful hunters often made free gifts of food to old people or incompetent hunters in other families, however; to the extent that one did so, one acquired prestige in the community at large. Free gifts also figured in the initial stages of partnership formation.

*Kinguvuanaqtuq*: inheritance. For the most part inheritance involved the passage of domestic family property, such as an *umiak* or a sled, nominally owned by the family head, to his successor. But it could also involve songs or amulets passed on shortly before the donor's death, and the odd item of personal property.

*Tiglik*: this means 'steal'. Theft was by no means unknown in traditional times. It was one reason why people used property marks, kept as many of their goods as possible inside the stormshed of their house, and staked dogs around any outside caches. In the larger villages, which were occupied by several local families, entrance passages were often booby-trapped to catch or frighten away potential thieves (Simpson 1875: 248).

### Trade networks

The various sorts of transaction outlined in the previous section were not hypothetical or ritualized activities, but part of the substance of life in traditional north-west Alaska. Virtually all of the early European explorers to visit the area found that, once their peaceful (and novel) intentions had been explained, the Eskimos became not only eager but sophisticated traders, always on a *tauqsig* ('buyer beware') basis. Among themselves the Eskimos engaged in some kind of trade whenever members of different families or different societies came together in peaceful circumstances. Two institutions were especially important in the promotion of trade: the trade fair and the messenger feast.

Trade fairs took place annually at Sisualik, on the northern shore of Kotzebue Sound; at Nirliq, in the Colville river delta; and at Point Spencer, just south of Bering Strait. The largest was at Sisualik where, in any given year, as many as 2000 people came together for several weeks of dancing, feasting, athletic competition and trading.

The main focus of the trading at the fairs was *niuvirik*, or partnership. However, once partnership obligations had been taken care of, people were free to engage in any other kind of trade. Apparently the most common was *tauqsik* trade, in which surplus goods were auctioned off. But *tunilaq* trade could also be initiated, whenever one saw something that he wanted badly enough to bid on. It was primarily through the transactions at the Kotzebue and Point Spencer fairs that goods such as Russian tobacco, metal, Siberian reindeer skins, and glass beads entered the north-west Alaskan economy long before the first direct contact with Europeans (Hickey 1979; V. Smith 1968).

The second major type of event was the messenger feast (*apputat*) (see Hawkes 1913; Spencer 1959: 210ff.). This usually took place in late fall or early winter. It involved wealthy *niuvirik* (from two different societies) and the members of the local families they headed. This event resembled the trade fair in that feasting, games, dancing and trading were all involved, but on a much more restricted scale. It has received the English label 'messenger feast' because messengers were sent by the host to his partner (and his family) to issue the invitations to come, to state what the host expected his partner to bring, and to ascertain what was wanted in return. Messenger feasts could not be held as regularly as the summer fairs because particularly successful summer and fall hunts were prerequisites; they did not involve any family every year, or every family in any year. Most of the trade at these events was of the *niuvik* variety, but participants who were not partners could and did engage in both the *tauqsik* and the *tunilaq* variety as well.

Fairs and messenger feasts were only the major nodes in a network of intersocietal trade that spanned not only north-west Alaska, but all of aboriginal Alaska and beyond. Individuals or families could visit relatives or partners in other societies as long as an active state of war did not exist (see Burch 1976), and some sort of exchange always took place during trips of this kind. As Beechey (1831, I: 408) discovered, 'on meeting with the Esquimaux, after the first salutation is over an exchange of goods invariably ensues, if the party have any thing to sell, which is almost always the case'. Stefansson (1914: 5) estimated that goods could traverse the thousand miles between Bering Strait and Barter Island, near the Canadian border, in little more than a year. Major linguistic and ethnic boundaries were not barriers to the movement of goods across the country (Burch and Correll 1972; Clark 1977).

### The accumulation of property

Through a combination of production and exchanges, effectively led families were able to accumulate physical property in quantities that would be scarcely conceivable to members of most hunter-gatherer

societies. An accurate inventory of the holdings of a domestic or local family was never made during the traditional period, but an observation made by the English explorer F.W. Beechey on 6 September 1826 may serve as an indicator of what was possible.

From two of these [boats] they landed fourteen persons, eight tent poles, forty [caribou] skins, two kyacks, many hundred weight of fish, numerous [storage bags] of oil, earthen jars for cooking, two living foxes, ten large dogs, bundles of lances, harpoons, bows and arrows, a quantity of [balcen], [bags] full of clothing, some immense nets made of hide for taking small whales and porpoises, eight broad planks, masts, sails, paddles, etc., besides [walrus] hides and [tusks], and a variety of nameless articles always to be found among the Esquimaux (Beechey 1831, I: 405).

Beechey also noted that 'the party consisted of two [domestic] families, each of which had its distinct property, tents, baidar [*umiak*], etc.', and that, despite their wealth, they were 'of a much lower condition' than another party he had met shortly before.

As impressive as the quantity of items being transported by these families (clearly the members of a single local family) was the efficiency of their procedures:

We watched their landing, and were astonished at the rapidity with which they pitched their tents, settled themselves, and transferred to their new habitations the contents of their [boats], which they drew out of the sea and turned bottom upwards. On visiting their abode an hour after they landed, everything was in as complete order as if they had been established there a month, and scarcely any thing was wanting to render their situation comfortable (ibid).

These passages highlight one of the crucial features of property accumulation in north-west Alaska, namely, a means of transporting it. The *umiak* was important in this respect, but sleds were nearly as helpful during the winter months (Burch 1975b).

Through a combination of competent production (both hunting and manufacture), clever trading and wise management of family affairs, it was possible for a north-west Alaskan Eskimo local family head to acquire considerable material wealth and, thereby, influence over his fellows. Such a person was known as an *umialik*, a term which etymologically means 'boat builder', but which is usually translated as 'rich man' or 'chief' by bilingual Eskimos.

No detailed account of the holdings of an *umialik* has come down to us but, again, observations from the nineteenth century indicate the general order of magnitude of one man's holdings. This time the observer is Charles Brower, the time is late winter, 1885, and the settlement is Qikiqtarzuq (Kotzebue):

Kil-yuk-ka-ruk [Kilyagzaq] was the omalik. He was a wealthy man. On his racks he had many bundles of Siberian deer skins, and several bales of Russian tobacco, besides many furs of all kinds. All winter Eskimos came from every section of northern Alaska to buy deer skins and tobacco from Kil-yuk-ka-ruk, trading him their furs in exchange. He had his choice of all that was good, becoming a wealthy man. I think he had more influence with the Eskimos in the [Kotzebue] Sound than At-tung ow-rah [Atangauzaq] at Tigera [Point Hope]. The omalik at Tigera kept his influence through fear, while the one here at Keg-ic-low-rak, kept his through his ability to supply his neighbors with things they needed during the winter, extending them credit when they were not in a position to pay. Among his wealth he had many beads which he brought out for my inspection. Some were white. He seemed to value them quite highly. The choicest were the turquoise, of which he had many, arranged in strings and sewn on a background of buckskin, the whole forming a breast ornament with the ends fastened to the shoulders (Brower n.d.: 160-1).

### Discussion

The data from north-west Alaska strongly support Gould's (1982: 88) conclusion that sharing is not the only kind of exchange to be found in hunting and gathering societies. It probably occurs to some extent everywhere (in *all* kinds of society) but it does not necessarily exhaust the repertoire of exchanges in any society.

In north-west Alaska sharing, in the sense of generalized reciprocity, was restricted to a very specific social context, namely, the local family (and its constituent parts). However, it could be questioned whether the exchanges that took place within local families involved sharing as much as they did differing degrees of ownership. Oft-repeated formulae such as 'if my brother has a boat I have a boat' suggest that family members felt that they had a *right* to use one another's things. The same conclusion is indicated by the vehement reactions of people whose attempts to borrow or consume another family member's goods were challenged. Meeting an obligation to share is not the same thing as being generous. A 'lender' might actually have been recognizing in practice the fact that a kinsman was part owner, even if in lesser degree, of the good concerned.

Well-led families are characterized by informants as having been redistribution networks in which all of the tools, utensils, boats and other goods that were made or acquired by any family member were placed at the disposal of all. There were very few things — amulets, some items of clothing or personal adornment, magic songs — that were exempt from this rule. If one needed something, one took it without even asking. Commodities such as meat and furs were pooled and redistributed as necessary and appropriate by the family head or

his wife. It was through hard work, clever trading with outsiders, and effective management of the pooling and redistribution process that some family heads became so much wealthier than others.

Outside the local family context sharing was quite uncommon except in times of great abundance. Indeed, except where partnerships were concerned, exchanges between members of different local families tended to be characterized more by avarice than altruism. As John Simpson (1875: 247) put it, after four years' experience in the region around the middle of the nineteenth century: 'Perhaps it is not too much to say that a free and disinterested gift is totally unknown among them'. Exchange between members of different families was based on a sound knowledge of the law of supply and demand, and exercised in a geographic setting characterized by marked seasonal and regional differences in supply. The goal of buying low and selling high was well understood, and deceit was an integral part of the game.

The north-west Alaskan data also suggest why it is so easy to conclude that sharing was ubiquitous in traditional times. 'Everyone in the village used to share' is a view that is often expressed by native elders today. But of course everyone in most villages used to belong to a single local family, which is the precise context in which generalized reciprocity (or diffused ownership) did occur. It is instructive in this regard to compare single-family villages with multi-family villages such as Point Hope. In the latter the distinction between intrafamily and interfamily relations was clearly drawn, and the generalized reciprocity that one usually associates with the word 'sharing' occurred *only* in the intrafamily context.

This raises the possibility that many, if not most, accounts of generalized sharing among hunters and gatherers have been based on studies of the internal dynamics of single local-family villages. To the extent that this is so, the accounts are not wrong, they simply tell only part of the story. Until this possibility is explored, the view that sharing is the only significant mode of exchange in hunting and gathering societies should be regarded as an assumption requiring investigation, not as a statement of fact.

## SECTION VII

### GENERAL THEORY ON DISTRIBUTION AND EXCHANGE

This section provides a relatively detailed theoretical discussion of distribution and exchange of wild resources in Alaska ("Distribution and Exchange of Subsistence Resources in Alaska," by Steve Langdon and Rosita Worl). The report was prepared in 1981 by researchers from the University of Alaska and Arctic Environmental Information and Data Center, for the Alaska Department of Fish and Game.

In the report, the researchers summarize the literature on the distribution and exchange of wild resources in Alaska. The first part provides a theoretical presentation, and the second part provides historic and contemporary examples of distribution and exchange. The report's abstract states the following:

"the varied subsistence systems in Alaska exhibit many different types of distribution patterns. Each Native culture has its own set of related customs and values governing the transfer of goods [including]... ceremonial, sharing, partnership, trade, and commercial exchange".

DISTRIBUTION AND EXCHANGE OF SUBSISTENCE  
RESOURCES IN ALASKA

by  
Steve Langdon and Rosita Worl

Technical Paper Number 55

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University of Alaska  
Arctic Environmental Information and Data Center  
707 A Street  
Anchorage, Alaska 99501

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## ABSTRACT

This is a two-part report on a literature survey of subsistence exchange systems. Part I, by Steve Langdon, contains an introduction to the theory of anthropological economics and a discussion of subsistence studies relevant to the Alaska situation. This theoretical background gives insight into the difficulties of explaining the multifunctional aspects of subsistence distribution and exchange in the context of economics and reviews relevant concepts. Part II, by Rosita Worl, contains a review of ethnographic literature pertinent to distribution and exchange of subsistence resources in Alaska. It reveals that the varied subsistence systems in Alaska exhibit many different types of distribution patterns. Each Native culture has its own set of related customs and values governing the transfer of goods, and these are discussed in the following categories: ceremonial, sharing, partnership, trade, and commercial exchange. The literature indicates that the values which promote ceremonial feasting and distribution of resource goods have persisted in all Alaska groups, but precise descriptions of surviving ceremonies and accountings of the amount of subsistence resources involved have not been done for the contemporary period.

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## PREFACE

This report was based on a review of theoretical approaches in economic anthropology which illuminates the dimensions of Alaska subsistence use of fish and wildlife. The primary research objective was generated through discussions with Tom Louner, former Chief of the Subsistence Section of the Alaska Department of Fish and Game, and the authors. The objective was to identify patterns of distribution, allocation, sharing, and consumption of subsistence resources through a survey of ethnographic literature. This work represents a collaborative effort by Steve Langdon and Rosita Worl. The material on economic anthropology was authored by Steve Langdon and the ethnographic material on subsistence distribution and exchange was written by Rosita Worl. Pattie McMillan, Lynn Ellis, Lynda Hadley, and Helen Jenkins provided assistance throughout the project.

SUBSISTENCE EXCHANGE SYSTEMS IN  
ALASKA LITERATURE SURVEY

PART I. ANTHROPOLOGICAL ECONOMICS

Introduction

Hunting, fishing, and collecting wild animals and plants as the primary source of food is practiced by many residents of rural Alaskan communities, and, in fact, has been the predominant method for obtaining food for 99 percent of human existence (Lee and Devore 1968). It continues to be especially important to rural Alaskan Native villagers who practice modified food quests similar to those carried on by their ancestors for many hundreds and, in some cases, thousands of years before them. This type of production and consumption is commonly termed subsistence in Alaska, to differentiate it from commercial purchase as the primary source of food. Of course there is a great deal more involved in Alaskan Native subsistence practices than merely harvesting and consuming resources. Of particular importance are the social and religious components of the subsistence practices of many Alaskan Native villagers.

This report will review the literature on one important social aspect of subsistence—distribution and exchange of subsistence products between human beings. The review will begin with a survey of the theory of anthropological economics to provide insight into the difficulties and ambiguities in attempting to adequately explain the multifunctional aspects of subsistence distribution and exchange in noncommercialized

economics. A set of relevant concepts as well as definitions and orienting questions close the introductory section. The second section of Part I examines the anthropological literature on the role of subsistence distribution and exchange in hunting and gathering and mixed horticultural/hunting and gathering societies around the world.

#### Overview of Theoretical Approaches

Approaches to the study of the economy or economic phenomena in anthropology are diverse and, to a significant degree, competing for recognition. Since the emergence of this discrete subdiscipline about 40 years ago, there has been controversy about the degree of applicability of conventional economic theory to all societies. Anthropological economics which until recently was known as economic anthropology, has been distinguishable since Bronislaw Malinowski systematically examined the Kula ring activities of Trobriand Islanders of the western Pacific near New Guinea as an economic, as opposed to technological or social (kinship), phenomenon (Malinowski 1922). Malinowski's contribution, however, was to question the applicability of conventional economic theory based on the concept of "economic man" to what he termed "primitive" societies. He held that unlike the economic man of theory, most "primitive" men were not motivated by material self-interest (LeClair and Schneider 1968:4). In taking this position, Malinowski initiated a debate among anthropologists which had already raged among economists for more than a quarter of a century. The comparable theory in economics, known as the institutionalist school, had earlier emerged from the work of Thorstein Veblen to challenge the conventional neoclassical school, associated with the writings of Alfred Marshall.

Malinowski's stature in anthropology guaranteed wide acceptance of his ideas, particularly by descriptive ethnographers, who operated with a limited and, some would claim, biased view of economic theory. In part they saw in normative (as opposed to descriptive) economics the seeds for the potential resurrection of nineteenth century evolutionism and imperialistic interventionism. Frank Cancian (1980:162) commented on this propensity of economics as follows.

Normative economics applied as management science to present decision-making situations yields prescriptions for rational, maximizing behavior. At the same time, it makes possible to identify as irrational those peasants who do not follow its prescriptions, . . . (and subsequently) peasants' understandings of their situations are sacrificed to the pseudoincisiveness of a simple model constructed by outsiders to help them decide what they ought to do.

More importantly, descriptive ethnographers saw that "economic man" in its early formulation was clearly not relevant to the peoples they lived with and whose behavior they described.

Despite Malinowski's stance, his viewpoint did not take hold among the few practitioners of "economic anthropology" during the 1930's and 1940's, notably Firth, Herskovits, Thurnwald, and Goodfellow. These anthropologists began to systematically apply and seek analogues for "economic mechanisms and institutions" in other cultural settings. Firth's work on the New Zealand Maori and Malay fishermen are classic examples of early applications of conventional economic theory to anthropological subject matter (Firth 1929, 1939, 1946). These scholars refined the concept of "economic man" from the greedy, individualist interested only in his material desires to a rational, decision-making individual operating on the principle of maximization of utility. This modified assumption, however, opened questions about what it is that provides utility to individuals (What are their preferences?) and how to measure

utility. More importantly, these economic anthropologists accepted as universally applicable two analytical presuppositions of neoclassical theory—(1) the individual decision-maker is the focus of assumption and explanation and (2) decision-making, also called economizing, is characterized by the allocation of scarce resources among alternative uses. These scholars were willing to accept the universal applicability of these principles. More recently, anthropologists of the formalist school have criticized their thinking as preoccupied with social and cultural factors (LeClair and Schneider 1968:8).

The universal applicability of neoclassical theory was again challenged in economic anthropology in the late 1950's. This challenge was explicitly tied to the competing, if underdeveloped theory of Karl Polanyi, a relatively obscure economic historian whose early published work (1944, 1947) had been little noted. His Trade and Market in the Early Empires (1957), however, was widely read and debated in what proved to be the culmination of an interdisciplinary attempt to develop a broader theory of the economy to encompass all societies. George Dalton's (1961) classic assault on conventional economic theory quickly followed, and out of this emerged the formalist-substantivist debate, vestiges of which are still with us today.<sup>1</sup>

The essential feature of the Polanyi-Dalton school is the contention that the assumption of maximizing individuals, what they term the market principle, is not a characteristic of all societies or even of all aspects of market-dominated societies. They trace this to the dual claims that there is no element of choice in nonmarket societies, and there are no units of account (money) for comparing alternatives in nonmarket economies even if choices could be made. Further, they define the economy (as opposed to the term "economic") as "the instituted

process of material-means provisioning for society" (Halperin 1977:10), clearly departing from the intrapsychic theory of choice characteristic of neoclassical economics. Polanyi proposed that there were other principles (modes of economic integration or transactional modes) around which the economy could be organized. Finally, substantivists do not accept the positivist stance of conventional economic theory, which contends that economic behaviors and institutions can be isolated and analyzed apart from other behaviors in society.<sup>2</sup> This position posits that economic (in the material-provisioning sense of the term) activities are embedded in the social, cultural, and historical relations of a society (Polanyi 1977: 47-56). Marshall Sahlins' Stone Age Economics (1972) is considered one of the more powerful substantivist contributions, even though it is eclectic in the sense that it was also influenced by certain historical materialist and exchange concepts (discussed below). The most recent attempt by the substantivist school to develop theory and provide empirical findings derived from perspectives in Peasant Livelihood (1977), a volume of papers edited by Rhoda Halperin and James Dow.

A more economically sophisticated set of defenders came to the formalist faction of the debate in the 1960's. The formalist camp was most prominently represented in that era by Robins Burling (1962), Edward LeClair (1962), Scott Cook (1966, 1969), Frank Cancian (1965), Raymond Firth (1967), Richard Salisbury (1968), and most importantly Harold Schnieder (1964), who continues to be the most outspoken and extreme defender of unmodified formalism in anthropological economics. By emphasizing decision making or the "choice" aspect of conventional economic theory, the formalists were able to counter the adamant a priori assertions of the substantivists that economic theory was applicable

only to the market-oriented, price-governed economic systems of modern industrial capitalism. They were able to provide examples (Lee 1969; Salisbury 1962; Edel 1967; Orans 1968; Cook 1970) of how conventional economic concepts could be "functionally contextualized" to other cultural systems so that most anthropologists are now willing to concede "that conventional economics is at least potentially relevant and applicable to the study of primitive and peasant economies" (Cook 1973:796). For most anthropologists that concession depends on the formalists' own admission that use of conventional economic concepts and principles in the study of primitive and peasant economies does not assume a priori that the phenomena under study are necessarily explainable by them. Formalist analyses are regarded by most anthropologists as legitimate only under this constraint.

In addition, the delimitation of conventional economic theory to decision-making behaviors about scarce means and alternative ends conceptually eliminates a specific focus on goods and services normally considered as the field of inquiry for economics. So, for most formalist economic anthropologists there is no economy, only economic behavior. What follows intellectually is crucial.

Many anthropologists criticize microeconomic models for not explaining cultural values, since the models take the cultural values as given. A microeconomic analysis of production or of distribution in the U.S., no matter how excellent and valid, thus does not explain why we have a five-day work week with Saturday and Sunday as vacation days, or why consumption peaks around the Christmas holidays. The analysis reveals the economic effects of cultural values without studying the causes of the values (Plattner 1980: 574).

In the 1970's a new field of interest developed out of formalism and cognitive anthropology. This trend was partially the result of the continued inadequacy of formalist theory in accounting for and predicting

the behaviors of actors in other cultural settings and partially because the study of meaning and value gradually became the province of other branches of anthropology. The failure of formalism in the first regard was perceived to be the result of assumptions about the psychological functioning of human decision makers which were faulty, a line of argumentation for which Herbert Simon (1955, 1956, 1976, 1977) received the Nobel Prize in economics. Some practitioners in this new school of "natural decision-making" are especially concerned with decision making in the realm of material goods and services (cf. papers in Barlett (1980) Agricultural Decision Making), but that is not the interest which binds them together. Rather, an interest in the general heuristics and pragmatics of actual human decision making seems to be the theoretical hook which unifies them (Tversky and Kahneman 1977; Quinn 1975; 1978; Slovic, Fishoff, and Lichtenstein 1977; Barlett 1977). Since the findings of this school are only tangentially related to the topic of subsistence exchange, review will not be undertaken here.

Although the formalist-substantivist debate has produced some cross fertilization and recognition of some valid points of the opposition by both camps (Dalton 1969; Cancian 1972; Schneider 1974; Sahlins 1972), no true synthesis has emerged as a new theory that can be applied equally to "primitive" and "modern" societies. One attempt at a synthetic definition, although admittedly postulated from the viewpoint of the formalist camp, was made by (1976:331), who suggested that "economic anthropology is the study of decision-making under constraints." Another less formalist attempt was made by Edel (1969:430), who suggested that economic anthropologists concern themselves with the "economic process of matching resources to targets with reference to the social milieu to

which it is fitted." Still, some (formalists) continue to emphasize decision making most, and others (substantivists) adhere to examination of social and cultural institutions (or "constraints"). There are, however, occasional examples of well-integrated studies (Barlett 1977, Cancian 1980, Smith 1977).

Onto this theoretical battlefield created by seemingly unending philosophical jousting came a new contestant, born and reared in France in the late 1950's and early 1960's. This school is called historical materialist and can be characterized as an expansion and refinement of the positions of Karl Marx through the application of certain structuralist principles elaborated by Claude Levi-Strauss. The major figure in this theoretical synthesis was Louis Althusser (with E. Balibar 1970). He was followed by a group of French anthropologists who adapted, modified, refined, and developed his perspective in their pursuit of a diachronic, universal theory of economy and society. Important figures in the French school include Claude Meillassoux, Pierre-Phillippe Rey, George Dupre, Emmanuel Terray, and Maurice Godalier. Later, such English and American scholars as Maurice Bloch, Jonathan Friedman, Bridget O'Laughlin, and James Faris continued the development of historical materialist thought in anthropology.

The universal theory proposed by the historical materialists was built on the structuralist concept of a social formation (most easily understood as a society by other social scientists unfamiliar with historical materialist thought). A social formation is composed of a number of components—the infrastructure, in turn composed of forces and relations of production; and the superstructure, in turn made up of judicial-political and ideological relations (Friedman 1972:445).<sup>3</sup>

These components could theoretically stand in certain relationships to each other (dominance, determinance, contradiction); however, the application of the theory would require analysis of the empirical circumstances in different contexts to determine the actual characteristics of each structural component of the social formation and the dynamics which resulted from their interaction. Whereas the formalists and substantivists are in general agreement on the applicability of conventional economic theory (that is, any theory tied to individualist principles of maximization) to modern commercial industrial societies, the historical materialists deny its validity for any form of society.<sup>4</sup> The crucial difference that sets historical materialism apart from the other two is that it places analytical preeminence on the processes and relations of production rather than on those of distribution (Clammer 1978:7). To put it as succinctly as possible, conventional economic theory is built on the pricing mechanism which sets the value of goods and services through the forces of supply and demand. It is only in the exchange of one commodity for another that prices and, more importantly, value are established. In this way, conventional economics is wedded to a distributional (through the exchange of values) perspective on the provisioning of society.

As noted earlier, substantivists do not accept the universal validity of the market principle. Polanyi, however, cannot escape the criticism of distributional bias because he proposed two different distributional principles (he terms them "transactional modes")—reciprocity and redistribution—to account for the way nonmarket societies carry out the material-means provisioning task for their members (Polanyi 1977:35-43). Historical materialists, on the other hand, proposed that analysis and explanation should begin with the patterns of ownership of resources and

technologies, with the patterns of productive organization (labor), and with patterns of appropriation of surplus value (profit) from the productive process (O'Laughlin 1975; Godalier 1972; Friedman 1972; Hindess and Hirst 1975). Further, many historical materialists proposed that the value of any item is not a function of what it will bring in exchange but rather the amount of various kinds of labor that went into the production of the item. Following analysis of the production process, the distinct, yet interrelated aspects of distribution (including exchange) and consumption (or utilization) must be brought into historical materialist analysis to complete the picture.

Recently, the primacy of mode of production in historical materialist analysis has been questioned by Berthoud and Sabelli (1979:796), following Bataille (1967) and Baudrillard (1970, 1973), who suggested that "economic phenomena can be fully grasped only through the initial and irreducible complexity that is implied by destruction as an end." They went on to suggest that any mode of production is simultaneously a mode of destruction. Their major intention was to juxtapose the nature of the destruction of wealth in communal societies with the destruction of wealth characteristic of capitalist societies. Their work points up the need for a broader consideration of the nature of consumption (in conjunction with production, distribution, and exchange) and its relationship to other social and cultural practices.<sup>5</sup>

A fourth analytical mode in anthropology (and social science in general), pertinent to the problem at hand, is appropriately labelled exchange theory (Bafu 1977; Heath 1976). Exchange theory, however, is no more a single unified perspective than are the previously presented theoretical approaches. Practitioners of exchange theory seem to derive

from three different theoretical strands. The first set of these trace themselves to Marcel Mauss, whose classic study The Gift (1963) established the concept of "total prestation" as the fundamental form of social exchange in many societies. "Total prestations" are group exchanges which have a number of characteristics that distinguish them from the individual exchanges carried out by the "rational man" of economic theory. First, the fact that it is a group exchange, rather than individual exchange, is important. Second, and more importantly, a total prestation has social, religious, moral, legal, magical, and emotional meaning in addition to economic and utilitarian meaning (Heath 1976: 54). Finally, the total prestation includes the obligation of making an equivalent return and establishes a bond between the donor and recipient, in part resulting from the conceptualization that objects are never completely separated from those who exchange them. Mauss' theory has been returned to by a number of scholars for insights including Firth (1959), Gouldner (1960), Levi-Strauss (1963), and Sahlins (1965, 1972).<sup>6</sup> Perhaps the most significant contribution of Mauss' is the obligation of return, which has come to be known in anthropology and sociology as the principle or norm of reciprocity. A significant element of Claude Levi-Strauss' structural theory of "primitive" societies, which posits that the fundamental organizing principle in these societies is the type of marriage exchanges which characterize them, clearly derives from Mauss (Levi Strauss 1969).

The most recent and fullest elaboration of exchange as the generating principle of social and cultural order from the structuralist viewpoint has been carried farthest in the reach of material exchanges by Rosman and Rubel (1971, 1977, 1978). It is their view (1978:127) that "in a given society, the structure of production and consumption, as well as

the structure of exchange, relate to a more general underlying structure of ideas." Thus, exchange in the material realm is but one manifestation of structure of dual organization inherent in human cognition.

A second strand of exchange theory, presently glossed as transaction theory, took as its starting point the work of Frederik Barth (1959, 1966, 1967). Ekeh (1974) labelled Barth's approach as individualistic social exchanges to distinguish it from the collectivistic exchange of Mauss; however, such a label severely constricted the scope and relevance of Barth's contribution. Barth's major departure was to suggest that the processes of social life should be theoretically emphasized as opposed to the normative consensus of structural-functionalism, which has long regarded society as a system of moral injunctions unflinchingly followed by perfectly socialized persons (Kapferer 1976:2). Barth, although his critique was hardly the first, further contended that this approach could deal with a problem which had long bedeviled structural-functional anthropology—social change. He proposed to focus on transactional behaviors defined as "sequences of interaction systematically governed by reciprocity" (Kapferer 1976:3).

Subsequent writings have emphasized the requirement of reciprocity less and less. Barth proposed two modes of exchange—a transactional mode in which individual actors seek their own values and the exchange is based on bargained complementarity, and an incorporative mode based on "a relationship of jointness . . . since for certain purposes their interests are identical and inseparable" (Barth 1966: 23-24). Paine (1976:63) commented that the incorporative mode reminded him "how exchange can be independent of the notion of competition or even of contract; how exchange can be conducted between partners who offer not different but

similar, even identical commodities, how exchange need not posit a debt relationship (or be based on altruism)."

One direction which scholars who have taken their cue from Barth have moved is toward more systematic use of the rationality principle of formal economics (Salisbury 1976; Prattis 1973; Heath 1976a). Another direction has been to expand the application of the transaction and incorporative principles to examine how symbols, metaphors, values, meanings, and other nonmaterial elements are exchanged between actors (Kapferer 1972; Turner 1974; Handelman 1976; Paine 1974, 1976; Cohen and Comaroff 1976). This latter path leads away from positive economics and toward phenomenology.

The third species of exchange theory, known usually as social exchange, is traceable to the work of Blau (1954, 1955, 1964), Homans (1958, 1961), and Thibaut and Kelley (1959). This line of conceptualization has explicitly sought to bring the theory, methodology, and terminology of conventional economic theory to bear on the analysis of social relationships. This is epitomized by the use of price theory to analyze the conditions under which and the rates at which advice will be exchanged for approval or compliance among co-workers in a bureaucracy (Blau 1955). Power (Emerson 1972a, b), approval (Nord 1969), love (Foa 1971), integrity (Schneider 1974), and prestige/status (various authors) are other social valuables which have been suggested as items exchanged between beings. Heath (1976: 90-101) and Schneider (1974: 194-200) presented other examples of the way in which conventional economic analysis can be brought to bear on social exchange situations involving two valuables.

Some social exchange theorists (Blau 1964; Bennett 1968) regarded social exchange governed by morality (norms) as distinctly different

from economic exchange, largely due to the lack of choice characteristic of the former; others such as Heath (1976), Befu (1977), and Schneider (1974) believed this distinction to be of limited or no value. Schneider (1974: 152-53), for example, argued,

I think the evidence is to the contrary and that in the end we may even find that the distinction between material and social can be replaced by a more general idea, that of the exchange of property . . . . This concept would imagine economic man using whatever resources he has, social and material, to accomplish his ends, and it would ask why material means should be distinguished from social means in this process.

The most crucial tool for such a unified theory would be some unit of account which would allow direct comparison of material and social resources. Thus far, this has proved elusive, as Schneider (1974:78, 176) noted, and therefore no unified theory has emerged.

#### Relevant Concepts

The proposals of Scott Cook (1973), a former formalist, Maurice Godelier (1972), an eclectic historical materialist, and Marshall Sahlins (1972), a symbolic substantivist, appear to offer the most useful way out of the bewildering array of approaches examined in the previous section. Cook (1973:810) provided the following definition of the economic field: "The economy is a culturally mediated field of a human population's activity in which its members interact with their physical and social environment in the calculated attempt to acquire, directly or indirectly, a living." Cook (1973:814) went on to a more detailed exposition of the categories of an economy:

Production is the process by which the members of a society appropriate and transform natural resources to satisfy their needs and wants; distribution determines the extent to which the individual participates in the fruits of this production; exchange enables him to acquire the particular products into which he wishes to convert the quantity allocated to him through distribution; and through consumption, products are individually appropriated as objects of use and enjoyment.

Further elaboration on the distinction between distribution (the proportion of total output that the individual receives) and exchange (the process whereby the individual converts his share into specific desired products) is useful due to the central importance of these concepts to our review. Cook (1973:823) wrote:

Distribution implies a reward system in which produce is channeled out among individuals or groups by reason of their control over the factors of production or for the labor they expended in the productive process. Exchange, on the other hand, refers to the various processes by which goods (and services) move between individuals or groups, as, for example, between producer and consumer, buyer and seller, donor and recipient.

Although distribution implies a reward system based on factors Cook mentioned, and many societies have reward as a component of a distribution system, other mechanisms for distribution may be dominant in a society. One type of distribution system is rule-based or normative distribution, which is found in many hunting and gathering societies. Hunters are morally obligated to distribute their catch to members of their group. The actual rules of distribution may be twofold, an initial division among participating hunters and a secondary division based on kinship relations, but in other cases group membership alone is sufficient criteria for receiving some of the production. Examples of this pattern include the King Bushmen (Lee 1979), the Australian Walbiri (Meggitt, 1962), and the Salliumiut. (Pryor 1977). There are other rule-based distributions which might be based on need (elderly, widowed, orphaned

persons), on religious obligation, or on other similar rule-based, normative principles operating in specific cultures.

Another aspect of distribution and exchange which is not immediately apparent is the fact that people often have something taken away from them or do not get equivalent value in return. Frederic Pryor (1977: 27) has usefully added this needed clarification through his concept of transfer—"A transfer is a transaction where the goods and services going from a person or group to another are not 'balanced' by a directly observable counterflow."<sup>7</sup>

After the economic field of a society has been analyzed, it must be related to the other activity fields such as kinship, religion, and politics (Cook 1973: 813). These relationships must be conceived of as mutual, i.e., economic activities are influenced by other activity fields, likewise economic activities influence other activity fields. Godelier (1972: 257) suggested that we see the economic as both a domain of activities (production, distribution, consumption) and an aspect of all other activities which do not belong to this domain. This is important to the notion of subsistence exchange because certain items which are a normal part of subsistence production may be so due solely to their utility in a ceremonial activity carried out by a person other than the producer. In this case we readily see the influence of the religious or social field on the economic. On the other hand, the selection of a potential spouse for a young woman in a given society may be primarily dependant on the resources controlled by a young man. In this case, the influence of the economic on the social is readily observable. Delimiting the field of subsistence exchange is useful only if the linkages in the society to the exchange are brought into the analysis as well.

The question of decision making, or "rationality," has not been abandoned in this quest for a useful framework in which to examine subsistence exchange, but it has been relegated to one analytical approach among many that are necessary to fully account for human economic patterns. More specifically, by rational we do not mean that actors are making decisions in accordance with any universally operative maximization principle but simply that they are pursuing objectives, the content and order of priority of which are economically and culturally determined and coherent among themselves, and are employing culturally appropriate means in the pursuit of their objectives (Cook 1973:811; Godelier 1972:21). There are many different rationalities, and the use of rational choice analysis requires determination of preferences, determination of the availability and ownership patterns of resources, and determination of the technical production and exchange possibilities within a given sociocultural context (LeClair and Schneider 1968:457-459).

Equally knotty difficulties are posed by use of the term subsistence. In our view this term refers to an economic system which has the following characteristics.

- a. Production, whether from naturally occurring biological and other resources or from domesticated resources, is primarily for personal or household consumption (production of use values).
- b. Distribution is for the most part carried out through traditional, noncommercial channels.
- c. Consumption of the overwhelming majority of items produced takes place within the household or the community.

- d. Resources used are derived from local and regional areas in the vicinity of the community.
- e. Production and distribution are not organized to obtain the greatest possible return given available labor and technology but are organized for security and continued existence.

It is important to note that though the subsistence economic system may offer a limited standard of living, it by no means approximates human biological minima. There is tremendous variability in subsistence standards of living. The subsistence economic systems of Alaska are some of the richest in the world, due primarily to the importance of marine and anadromous resources in them (Langdon 1980). Also, note that "continued existence" typically includes analysis of a wide variety of "culturally rational" practices and religious beliefs that are tied to the subsistence production and distribution system.

Marshall Sahlins' analysis of societies, predominantly oriented to what he terms the domestic mode of production, reveals certain recurring elements in their organization (Sahlins 1972:41-99). These characteristics include "underexploitation of productive resources," a general underuse of labor determined primarily by household composition, and a substantial (20-30%) number of households failing to provide their own customary livelihood. Sahlins also noted that such "underproduction" by normative economic standards is "not necessarily inconsistent with a pristine 'affluence'" (Sahlins 1972:41). This later term refers to his contention that hunters and gatherers developed "the original affluent society," because their wants are finite, few, and relatively easily attainable with available technology and resources (Sahlins 1972:2).<sup>8</sup>

Two of Sahlins' claims for the affluent domestic production have been hotly debated. The first of these is his claim concerning the underuse of labor. There are two lines of contention to this claim—the normative/empirical and the relativistic. The normative/empirical contention is that conventional economic categories for work/employment/labor severely underrepresent the amount of time spent in productive labor by those engaged in subsistence production. Swetnam (1980) and Brush (1977) are examples of this position in that both authors report situations in nonindustrial economies where labor available and labor utilized show no appreciable amount of underdevelopment. The relativistic contention of Godelier (1972) is that cultural-specific ranking of activities may place greater value on ceremonial, social, artistic, or other endeavors which keep people's time occupied when they are not engaged in economic production. For example, Thompson (1949:26-34) was impressed that in the Murngin society of Australia, no one was idle except for very young children. Their efforts were largely devoted to their "elaborate and exacting ceremonial life," especially the ceremonial exchange cycle which bestowed prestige on craftsmanship and trade.

The second element of Sahlins' formulation which receives criticism is his "limited wants" argument. Smith (1980:2-3) contended that contact between tribal cultures and market economies show time and again that wants can almost overnight expand far beyond previous expectations. Although wants can be modified, they do not necessarily go from finite to infinite, but rather some cultural buffers appear to continue to operate in the new context. Ray and Freeman (1978) found such to be the case in their study of trade relations between Eastern Algonkians and the Hudson's Bay Company. Numerous other scholars, government administrators,

and entrepreneurs have repeatedly reported that in modified subsistence economies when prices rise, production falls and when prices fall, production rises. Sometimes called "target marketing," these occurrences confound conventional formalist predictions. But the behavior is primarily due to the interest of subsistence producers in interacting with the market economy only to obtain a relatively fixed set of use values in keeping with the basic security orientation of most subsistence economies (Sahlins 1972:86).

Before elaborating on subsistence exchange, one question about Sahlins' domestic mode of production should be addressed, and that is, how do the 20 to 30% of households which do not produce enough to sustain themselves survive? The "normal surplus of subsistence" (Allan 1965) produced by the rest of the society reaches them through a variety of mechanisms including exchange. Thus exchange is not only important to the society in terms of social solidarity and integration, it is also clearly implicated in the physical survival of a substantial number of members.

Subsistence exchange is, as noted earlier, a subtype of distributional phenomena. Pryor (1977:188) noted several other types of distribution, including centric and noncentric transfers. (The difference between the latter two is the degree to which the transfers are patterned so as to focus on either an institution or an individual carrying out a society-wide role (centric transfers) or to focus on the relationship between distinct pairs of individuals who are not tied in their transactions to societywide patterns (noncentric transfers) (Pryor 1977:34).<sup>9</sup> An example of noncentric is that of "sharing," which Pryor conceived as different from exchange in that it does not involve an obligation to

return something of equal value. Another example of a transfer is covered by the concept of "mutuality," a circumstance in which two people or groups have rights over and obligations to each other but which does not require balanced exchange. Finally, Polanyi's redistributive institutions in which produced goods flow to a central person or institution for reallocation are examples of centric transfers.

Perhaps the best known and most widely explored formulations on "primitive" exchange are those of Marshall Sahlins (1965, 1972). Sahlins proposed a typology of reciprocities, which he suggested form a continuum. The three primary types he identified are:

1. Generalized reciprocity, in which transactions are "putatively altruistic," when "the expectation of a direct material return is unseemly," where "the material side of the transaction is repressed by the social" (Sahlins 1972: 194). The expectation of return is implicit, but failure to reciprocate does not cause the donor to cease giving.
2. Balanced reciprocity, in which there is "precise balance," and "transactions which stipulate returns of commensurate worth" (Sahlins 1972: 194-195). This is what Pryor had in mind with his concept of reciprocal exchange.
3. Negative reciprocity, which "is the attempt to get something for nothing with impunity, the several forms of appropriation, transactions opened and conducted toward net utilitarian advantage." Sahlins goes on to characterize such transactions as ones in which "participants confront each other as opposed interests, each looking to maximize utility at the other's expense," each seeking to gain "the unearned increment" (Sahlins 1972:195).

Significantly divergent opinions exist on whether market exchange and commercial transactions are examples of balanced reciprocity or negative reciprocity. Sahlins clearly did not relate his distinction to market transactions. Most would agree that both are possible, and the occurrence of one or the other is dependent on the actors, their relationship, and the specific circumstances of their commercial transaction.

Sahlins went on to relate his continuum of reciprocities to several dimensions of society. The most important of these are kinship distance, location, rank, and wealth. He also discussed the nature of exchange relations involving food, which he inductively appraised was a special category of exchange object in primitive societies.

#### Dimensions of Subsistence Exchange

The examination of subsistence exchange requires attention to a number of levels and relationships. These include the basic production strategy of the group, the units involved in subsistence exchange, the items exchanged and their use and role in each group, the frequency of exchanges, the timing of exchanges, and the context of exchanges. The first level of analysis is to determine the basic production strategies of the groups under consideration. Therefore, we were concerned almost exclusively with the literature on subsistence exchange among hunting and gathering groups, although exchange patterns among groups practicing other production strategies have been examined where they appear particularly relevant to current circumstances in Alaska.

The next analytical cut requires identification of the types of units and types of relationship found within a given group and boundaries

of the group. Likely candidates for inclusion are families, households, kinsmen, lineages, clans, moieties, bands, villages, voluntary associations, friendships, partnerships, fictive kin (godfathers), patron-client relations, and other culturally specific situations of exchange.

After determination of the relevant exchange relationship, an analysis of the different aspects of subsistence exchanges characteristic of relationship and units can be undertaken. Since most hunting and gathering societies have a local group level (usually based on land or, in the modern Alaska context, the village), that unit might be used as an initial focus to organize exchange relationships. One important reason for such a strategy is that the band or village group is harvesting resources from similar or contiguous areas, and different unit members' use of the area likely accounts for most natural resource harvests from fish, animal, and plant populations in a given area. A second important reason is that subsistence exchanges in terms of amounts of goods exchanged and frequency of exchanges are likely highest between various individuals and units within this group. Pryor and Graburn (1977:77) in their analysis of Sallumiut Inuit found that intervillage exchange instances were so few that they could be ignored in the context of total quantities of goods and services exchanged within the village. This second factor may well be substantially different for certain groups but can only be determined by empirical observation. The first task would be to determine the units and individuals involved in subsistence distribution and exchange. Below is a sample list.

Distribution and Exchange within a Group

Between household members

Between households of kinsmen as households (degree of kinship distance noted)

Between households of nonkinmen as households

Between individual kinsmen not living in the same household (degree of kinship distance noted)

Between individual nonkinmen who are friends or partners

Between individual nonkinmen with no relationship

Between men

Between women

Between women and men

} This set is a subtype  
} of each of the  
} above types

After identifying exchanges between units within a group, identification of exchanges of various types between groups can be undertaken.

Distribution and Exchange between Groups

Between households of kinsmen as households (degree of kinship distance noted)

Between households of nonkinmen as households

Between individuals as kinsmen

Between individuals as friends or partners

Between individuals as nonkinmen

Between group or groups

Between men

Between women

Between women and men

} This set is a subtype of  
} each of the  
} above types

For each of the distributions or exchange cases, the following characteristics should be identified.

Item exchanged, use, and relative importance to each group or individual

Frequency of distribution or exchange of different items

Specific labels for exchange relationship or exchange events

(Are they linguistically labelled?).

Timing of distribution and exchange

Context of distribution and exchange (religious, social, recreational, etc.)

Reason given for distribution or exchange

Based on analysis of the data collected a comprehensive view of subsistence distribution and exchange for a given group should be possible.

Another important dimension of subsistence economy is the production strategy of exchanging groups. For example, the Bambuti Pygmies of Zaire have for many years maintained exchange relationships with Bantu agriculturalists who live in sedentary villages on the edge of the forests where the Pygmies hunt and gather (Turnbull 1965; Hart 1978). This is an example of exchange between groups using different production strategies—the Pygmy hunter-gatherers and the Bantu horticulturalists. Comparing exchange along this dimension allows exploration of questions about initial dependence and the development of specialization due to exchange. These topics have recently received considerable attention in the writings of Bates and Lees (1977) and Peterson (1979, 1978). They are not crucial in Alaska Native societies, in which their uniform status as hunters and gatherers presupposes that all interethnic and

intergroup exchange among them prior to contact was necessarily between groups with the same basic productive strategy. This does not preclude comparison of exchange between hunting and gathering groups with substantial different basic resource inventories and hunting and gathering groups with essentially similar basic resource inventories. They may display very different patterns and purposes in these exchange relationships. Of more importance to the contemporary situation of Alaska Natives is the nature of hunter-gatherer subsistence exchange with the market economy. Insights into the dynamics and outcomes of this situation on hunter-gatherer resource conditions and sociocultural organization under present circumstances of sedentism in villages in rural Alaska can be gained by examining impacts of similar circumstances on the sedentary, relatively sparsely settled areas of the world inhabited by swidden horticulturalists practicing mixed production strategies, including hunting and gathering.

#### IMPORTANT QUESTIONS ABOUT SUBSISTENCE DISTRIBUTION AND EXCHANGE

Underlying this review of the literature on subsistence exchange is a set of crucial questions about Alaska Native individuals and groups, who have traditionally and continue to practice subsistence production and exchange, and their relationship to the resources they depend on. These questions can be broken down into those concerning traditional subsistence exchange practiced in a noncommercial setting and those concerning the impact of commercial exchange of subsistence products on subsistence exchange as well as on group sociocultural organization and practice.

A. Questions about Traditional Subsistence Distribution and Exchange

1. To what extent is group survival or individual survival maintained by subsistence distribution and exchange?
2. To what extent do group cultural practices involve subsistence distribution and exchange?
3. To what extent is group autonomy and social existence related to subsistence distribution and exchange?
4. To what extent does subsistence distribution and exchange accentuate or minimize material well-being differentials among group members?
5. To what extent do production activities carried out for traditional subsistence distribution and exchange disrupt or endanger fish and animal populations?

B. Questions about the Impact of Commercial Exchange on Subsistence Distribution and Exchange (answers to the following questions partially depend on answers to the preceding)

1. To what extent does individual or group involvement in commercial exchange for subsistence products disrupt traditional subsistence distribution and exchange?

2. To what extent has commercial exchange of subsistence products modified group autonomy, social organization, or cultural practices?
3. To what extent has commercial exchange of subsistence products modified individual or group standards of living?
4. To what extent has commercial exchange of subsistence products accentuated or minimized material well-being differentials among group members?
5. To what extent does individual or group involvement in commercial exchange for subsistence products disrupt or endanger fish and animal populations?

Data in the ethnographic literature on the dimensions of subsistence exchange outlined previously as well as on most of these questions are often anecdotal and partial and only rarely systematically derived as the product of a detailed problem-focused investigation. Although material concerning Alaska Native exchange is primarily of the first variety, in recent years there has been a number of relevant problem-focused studies from other parts of the world on subsistence distribution and exchange and the interaction of subsistence production and commercial exchange which will be addressed later.

## The Relationship between Culture and Economy

Before turning to the discussion of empirical evidence for the occurrence and nature of subsistence distribution and exchange in Alaska and elsewhere, a brief elaboration on the relationship between culture and economy is in order. One school of thought composed of unyielding formalists, cultural materialists, and "vulgar" historical materialists argues that economy encapsulates, generates, and ultimately explains cultural manifestations. The other view, argued by symbolists, structuralists, and "refined" historical materialists, holds the reverse—that culture defines, orders, and ultimately explains economic manifestations. One might ask about the concept of society-social relations, kinship, etc. For the economists, it is merely an epiphenomena of allocations (see Schneider quotes below), and for culturalists, just another example of symbolic ordering. These two views can be schematicized as follows.

A. Economists



B. Culturalists



Although this dichotomy is hyperbolic and perhaps oversimplifies the complexity of the issues and positions involved, it summarizes the extreme positions accurately. Most representative of these competing paradigms are Harold Schneider (1974) and Marshall Sahlins (1976).

Pertinent examples of their views follow.

Schneider (1974:134, 135, 142)

Thus households persist in any society because their forms are recreated by behavior each day, behavior based on allocations and not simply on positive valuation of the form.

I would like to suggest that cross-cousin marriage systems in these societies are the result not of rules but of maximizing choices, and that the systems in fact may be simply epiphenomenon of the end dealing.

The division of labor in human society (of which the relations of producer and consumer is just one example) is not merely one dimension of society but the whole of it. Recognizing this, we also immediately recognize that all interacting between people who have interdependent needs constitute social transactions. The flow of these transactions throughout an integrated system creates the family structure and other regular social patterns. The study of society becomes, therefore, the study of the flow of transactions, which makes obsolete simplistic technological formulations such as 'the family exists to provide sexual fulfillment, procreation, and socialization.'

Sahlins (1976:164, 167, 206)

The point is that material effectiveness, practicality does not exist in any absolute sense, but only in the measure and form projected by a cultural order. Selecting its material means and ends from among all possible ones, as well as the relatives under which they are combined, it is society which sets the productive intentions and intensities, in a manner and measure appropriate to the entire structural system. There remains, as logic, only the meaningful system of culture.

The structure of the economy appears as the objectivized consequence of practical behavior, rather than a social organization of things, by the institutional means of the market, but according to a cultural design of persons and goods.

. . . no cultural form can ever be read from a set of 'material forces,' as if the cultural were the dependent variable of an inescapable practical logic. . . It is not that the material forces and constraints are left out of account, or they have no real effects on cultural order. It is that the nature of the effects depend on their cultural encompassment. The very form of social existence of material force is determined by its integration in the cultural system.

In the past two years two views of southwestern Alaska (Yupik Eskimo) society have appeared which more or less correspond to each of these approaches. Although Wolfe (1979: 252-261) is clearly cognizant of social and cultural factors involved in Kwikpagmiut food production, he nevertheless analytically explains the behavior he observed with formalist concepts. For example, he (1979:259) wrote:

. . . subsistence foods were harvested if their average capital costs were less than the retail costs of food substitutes . . . Meat, fish, and fowl was harvested from the local environment at about 80.31 per pound dressed weight, substantially lower than the retail price of imported meat, fish, and poultry of about \$2.50 per pound at Kotlik stores. This differential was advanced to explain why Kotlik families bought little of these food items from the store, choosing instead to procure their own at greater monetary saving.

In this passage, Wolfe assumed that store-bought foods are substitutes for subsistence foods, but nowhere does he provide evidence that they are culturally defined substitutes. If they were in fact cultural substitutes and Kotlik families were given the amount of money necessary to purchase store-bought foods sufficient to replace subsistence-produced foods, they would theoretically cease subsistence production. Such a formalist proposition is clearly false and indicates a major weakness in this type of analysis.

Riordan (1980) analyzed the process of production and reproduction among the Qaluyaarmiut of Toksook Bay, Tununak, Cherfornak, Newtok, and Nightmute from a decidedly culturalist perspective. She believed that in the Qaluyaarmiut view "the natural world is a moral order subject to the same rules of hierarchy, power transference, and the cycling of souls as the human social order, and dependent for continuity on right relations within that order" (Riordan 1980:126). Her view on subsistence

has nothing to do with costs, prices, input-output analyses or other formalist tools. Instead, it is her view that

Subsistence production is tied to a fundamental cosmological reproduction, which a preliminary consideration of ritual distribution can make clear. The value hierarchy of objects exchanged and the categorical relations between persons exchanging remains opaque without reference to the larger system at work, which in the case of the Qaluyaarmiut, involves an exigesis on the continual creation and recreation of the conditions of generation, a fundamental cosmological reproduction.

Although her scholarly marshalling and ordering of diverse, seemingly unrelated data are impressive and compelling at one level, they do not provide a view of the individual and familial variability found in these communities, the dynamic factors of day-to-day material life, the essential characteristics of the biological survival of the Qaluyaarmiut, or links to the world economy.

It is impossible to unify these different approaches at this time, yet both are clearly needed to fully comprehend human economic behavior. More rigorous analyses of the culturalist variety should be made by those who seek to examine the functioning of the economic field in all cultural settings.

#### Relevant Studies of Other Subsistence

##### Distribution and Exchange Systems

The previous section lists important questions about subsistence distribution and exchange. The next section individually addresses each question in light of important findings on subsistence in other parts of the world, focusing primarily on hunting and gathering societies but also treating mixed horticultural/foraging/hunting and gathering/adaptations

as well. This review is limited to problem-focused investigations of these patterns that have been undertaken in the past 10 to 20 years.

#### "TRADITIONAL" SUBSISTENCE DISTRIBUTION AND EXCHANGE

Question 1 To what extent is individual and/or group survival maintained by subsistence distribution and exchange?

Since the important Man, the Hunter (1968) volume, it has been a widely accepted proposition that communal distribution of production throughout the local group is a basic feature of hunting and gathering societies. This feature has been seen not as arbitrary, but rather as crucial to the survival of groups and therefore to individual group members as well due to the uncertainty of resources and individual production. Some scholars (Suttles 1968; Murdock 1968; Moseley 1975) have pointed out that the "trial formulation" concerning the nature of hunting and gathering societies seemed to be most relevant to those in resource scarce, marginal environments and are not necessarily applicable to hunters and gatherers in resource-rich environments. In a recent comparison of resource-rich (northwestern California) and resource-poor (western interior Australia) hunting and gathering societies, Gould (1980) found that in the Australian case, access to key resources was based on widely extended social networks that operated through egalitarian sharing, but in the California society little or no sharing of basic resources above the level of the nuclear family was noted. He proposed that communal sharing (distribution and reciprocal exchange) tended to decline as a risk-minimizing strategy for group and individual survival when key resources were predictably available in adequate supply for the group as a whole.

This proposition has empirical support in a number of other recent studies. Mooney (1976, 1978), demonstrated that a generalized reciprocity is still the predominant form of transaction among the Coast Salish (Native American) population living in the vicinity of Victoria. In addition, she found that the network of sharing expanded and contracted in response to resource availability in the following fashion:

<u>Resource Availability</u>	<u>Sharing Network</u>
Above normal →	Expanded
Normal →	Normal
Below normal →	Expanded
Drastically below normal →	Contracted

What this pattern indicates is that only when conditions of extreme shortage threatens survival does hoarding at the individual or familial level become common. Turnbull's (1978) analysis of the Ik of East Africa is perhaps the archetypal case of how extended periods of scarcity can destroy group, extended family, and, ultimately, nuclear family levels of sharing, leaving each individual over the age of four responsible for his own survival.

Based upon research among the Ute and other western Native American groups, Jorgensen (1971, 1972) has suggested that the moral obligations and practice of the Native American collective ethic of widespread cooperation and sharing are primarily a function of poverty in the modern American setting and only secondarily a continuation of traditional cultural practices. It should be pointed out that this analysis does not address ceremonial distribution and exchange nor the role of subsistence

distribution and exchange to the maintenance of ethnic identity in modern American society.

This basic pattern, termed the accordion effect by Laughlin (1974), has been documented recently by Waddell (1975), Dirks (1980), and in a number of case studies by Bishop, Cawte, and Lomnitz in Extinction and Survival in Human Populations (1978). In the introductory essay Laughlin and Brady (1978b:32) noted that "the most common pattern found in the ethnographic literature is one of solidary response to adversity. Initially . . . the range of generalized sharing is extended to include persons and groups who are socially and perhaps genetically distant." This expansion is not likely to continue because "prolonged resource deprivation resulting from either cyclical or progressive alterations of basic resources may trigger a deescalation of the normal patterns of sharing resources" (Laughlin and Brady 1978b:31). They further pointed out that "this degeneration of solidarity can be expected under conditions . . . identified . . . as unremitting deprivation" (Laughlin and Brady 1978b:31).

In summary, a wide variety of studies shows that

1. Communal distribution and exchange is an important survival technique for hunters and gatherers with uncertain resource bases.
2. Expanded networks of sharing are characteristic of groups in conditions of resource shortage.

Question 2 To what extent do group cultural practices involve subsistence distribution and exchange?

Question 3 To what extent is group autonomy and social existence related to subsistence distribution and exchange?

Information on these questions can be found for many different hunting and gathering and horticultural societies, and since they are usually intimately linked, they will be treated as a unit in this discussion. Chagnon (1968) and Gregor (1977) noted that exchange of subsistence products between Yanomama and Mekinsku villages in the Amazonian lowlands was a crucial signifier of whether war or peace prevailed between two villages. When subsistence products were exchanged, even those that were nearly identical, (fish, arrows, cotton thread), then a state of peace reigns. This is not an example of a non-Western idiosyncrasy since DUBY (1974) has noted for northern Europeans that "whenever peace was made between tribes of equal strength, it would be prudent to preserve it carefully with return gifts, the essential tokens of its permanence. What was 'peace' for the author of Beowulf but the prospect of exchanging gifts between people!" Many other examples from all parts of the world can be found which demonstrate the crucial role exchange plays in the establishment and preservation of peaceful intergroup relations.

Subsistence distribution and exchange also play a significant role in the social and ceremonial patterns of hunting and gathering groups. As noted in the theoretical section, structuralist theory as developed by Claude Levi-Strauss is built on the social exchange theory of Marcel Mauss. Exchange is a crucial element in the dynamics of cultural structures.

and subsistence exchange is a component of the larger cultural system of exchanges. The potlatch as practiced by Kwakiutl, Nootka, Tsimshian, Tlingit, and Haida groups on the northwest coast of North America has been analyzed by Roman and Rubel (1971, 1978) from the structuralist viewpoint. It is their contention that "the ceremonial distribution of goods at the potlatch—blankets, canoes, guns, kettles, money, clothing, dishes, foodstuffs, etc.—clearly involving the flow of material goods is part of the larger system of exchanges which also includes the exchange of women and ritual services. The distribution of material goods, as well as the larger system of exchanges, constitutes a manifestation of the underlying structure" (Rosman and Rubel 1978b:110). It is clear from this passage that subsistence distribution and exchange and not purely ceremonial goods are involved in potlatches. Further, they stated, "Potlatches occur at critical junctures and are in effect rites de passage for the society; critical junctures mark the rearrangement of the social structure, when, in the absence of fixed rules relating to structural changes, the outcome of such changes is dependent upon the manipulations of individual actors" (Rosman and Rubel 1978:113).<sup>10</sup> This passage indicates the crucial role which the potlatch plays in the cultural systems of the northwest coast. In the case of these societies we see that subsistence distribution and exchange is central to the institution through which major cultural changes occur.

Another way to evaluate the importance of an institution in a cultural system which involves subsistence distribution and exchange is to examine the cultural impact when the behaviors are outlawed or suppressed by a dominant external group. This was the case with the potlatch, which was outlawed at the insistence of missionaries and government

agents in British Columbia in 1889 (Fisher 1977:207). The ban was met by both vigorous protest and quiet defiance, particularly by the Kwakiutl who "defied it by ignoring every exhortation by the Indian agent to give up the custom" (Fisher 1977:207). Codere (1961), Spradley (1969), and Ford (1941) noted that potlatching was formally outlawed, but their descriptions of the period from 1890 to 1920 indicate that this was perhaps the height of potlatching among the Kwakiutl in terms of per capita outlays on the potlatch. The crucial importance of this institution to the cultural identity of these groups is clearly demonstrated in their response to the attempt to suppress it.

Returning to the importance of subsistence distribution and exchange to cultural practices, Rosman and Rubel examined a number of other cultural institutions around the world which involved large-scale ceremonial distributions of subsistence products. Included in their studies was analysis of the Maori of New Zealand, whose cultural structure and ceremonial exchange pattern they liken to that of the Northwest Coast Indians, and the Trobriander Islanders of Melanisia, whose exchange structure is different but equally as important to the cultural system as other ceremonial exchanges. Their most recent work is a meticulous examination of 13 New Guinean societies in which they identified four types of basic exchange principles (Rosman and Rubel 1978a). They described a wide variety of material transactions, the vast majority of which involved subsistence products that accompany marital exchanges in these societies and thus crucial reproduction processes which insure cultural maintenance.

Subsistence distribution and exchange, as cultural institutions in many societies, have been shown to be critically important to:

1. Preservation of peaceful relations between one group and another
2. Preservation of internal processes of cultural maintenance and reproduction

Question 4 To what extent does subsistence distribution and exchange accentuate or minimize material well-being differentials? (This question is related to question 1 but refers to the effects of subsistence distribution and exchange during periods of normal resource availability rather than to periods of resource shortage.)

The vast majority of the literature on hunting and gathering societies indicates that the processes of communal distribution and generalized reciprocity have the net effect of reducing differentials in material well-being, thus reducing stratification. Although this is particularly true for hunters and gatherers of marginal means, some authors claim that those in richer environments reduce material well-being differentials through subsistence distribution and exchange (Piddocke 1965; Suttles 1968). On the other hand, some (Gould 1980; Kobrinsky 1976; and Ruyle 1973) have contended that lavish ceremonial giveaways by the affluent elite of rich hunting and gathering societies mask substantial amounts of direct labor exploitation (slavery) and indirect labor transfers by commoners to their noble kinsmen. This same dispute has also arisen over the nature of so called "Big Man" societies in Melanesia and Polynesia, where lavish distributions of yams and other subsistence products are

made by lineage heads who have prodded and cajoled their kinsmen for additional production, which is then appropriated by the "Big Man" for the feasts (ceremonial distributions) which increase his prestige. Note that these are mixed horticultural and hunting and gathering populations. Despite some countervailing evidence concerning hunters and gatherers in rich environments, the basic findings of the ethnographic literature are that subsistence distribution and exchange leads to a decrease in differentials in material well-being between group members.

Question 5      To what extent do production activities leading to subsistence distribution and exchange disrupt or endanger fish and animal populations?

This topic has received considerable attention in recent anthropological literature. There are two major schools of thought. The first, epitomized by the work of Joseph Birdsell (1953, 1957, 1968) but widely supported, is that hunting and gathering societies maintain equilibrium with their environments. Their cultural practices have the net joint effect of keeping population from rising to a level where economic processes (production, distribution, and exchange) can disrupt and degrade the productivity of the plant and animal resources on which the population depends. A number of cultural practices appear to serve the function of population control, including infanticide, warfare, male dominance, and religious beliefs (Harris 1974). Since this position holds that the overall cultural pattern leads to equilibrium with ecosystemic production, then it follows that subsistence distribution and exchange do not lead to overexploitation and disruption.

Most of the discussion about this model centers around the question of rates of population growth, the size of the population being seen as the crucial determiner of resource use patterns. Thus Ammerman (1976) has suggested that a stochastic model of population fluctuation, rather than a static model of population equilibrium, is a more reasonable assumption for hunting and gathering societies. In his model, stochastic variation in population growth would occasionally lead to pressure on resources, which could have a number of effects—migration, resource degradation, technological development. This view implicitly assumes a Boserupian stance in which population pressure (however defined) is seen as keying technological change and intensification of production. The Malthusian perspective, on the other hand, assumes random technological breakthroughs which allow short periods of increased standards of living to occur followed by the inevitable return to a minimal subsistence (in the sense of bare survival) standard of living due to inexorable population growth.

Despite these minor variations, supporters of the view of essentially equilibrium processes for hunting and gathering societies are persuaded by the evidence for 40,000 years of sustained interaction between hunting and gathering population and their resources without major disruption from 50,000 years ago to 10,000 years ago, when food production began.

It is at this particular juncture, that of the Neolithic revolution 10,000 years ago, which has caused recent alternative views on equilibrium processes in hunting and gathering societies to appear. If hunting and gathering societies are in equilibrium and finely tuned to the levels of resources available to them, what is the mechanism to account for the shift to food production? The Malthusian view, that of random technological

innovation, is seen by most anthropologists as begging the question. A more plausible view, advanced by Binford (1968) and Harris (1977), is that of an interactive effect between climatic change, (which led to modifications in available resources), a rise in sea level, and differential population pressures. Human populations, attempting to maintain their numbers and standard of living in the face of declining resources, were forced into the innovation of food production.

Cohen (1977) made an even stronger statement against equilibrium-system models of hunting and gathering populations. He discounted the importance of climatic and environmental change, and suggested that the archeological record, prior to domestication of plants and animals, show a "continuous (although not necessarily steady or constant) population growth and population pressure" throughout the world. He suggested that selective hunting and gathering diets focusing on animals gradually had to be broadened as increasing numbers of hunters and gatherers were found to eat more and more unpalatable goods.

An even more extreme and generally unaccepted proposition is that of Paul Martin (1973), who suggested that indiscriminate hunting practices of big-game hunting bands in the New World led to the extinction of a number of genera at the end of the Pleistocene (approx. 13,000 to 10,000 years ago). In his view subsistence practices of these hunting and gathering bands were clearly not ecologically equilibrated, but rather were a major cause in producing the shortage which required the adjustment to food production. In fact, there is virtually no direct evidence of serious resource degradation or extinctions made by hunting and gathering societies outside of the context of a broader economic system.

One of the crucial features seen by Sahlins (1976) of hunting and gathering equilibrium is the lack of incentives for material production to satisfy ever expanding wants. His widely known formulation of the "original affluent society" is built on an assumption of limited wants being well satisfied in hunting and gathering societies. There are a few hunting and gathering societies, however, which clearly did have cultural mechanisms to spur production. The most notable example of this are Northwest Coast societies, where motivation for prestige gain through potlatch distributions is thought by some to be an important spur to intensified production (Piddocke 1965, Suttles 1968, Harris 1974). Even in these societies there is no evidence of intensified production leading to resource overexploitation or degradation in the precontact period.

The whole question of population growth and regulation has been addressed in a recent collection (Cohen, Malpass, and Klein 1980), but none of the articles indicates possible implications of differential subsistence distribution and exchange systems for population growth or patterns of resource use. These questions should be investigated.

In sum, the evidence shows few, if any cases of hunting and gathering societies degrading their resources. It can therefore be inferred that subsistence distribution and exchange systems operating in hunting and gathering societies have not led to disruption of plant and animal populations.

## THE IMPACT OF COMMERCIAL EXCHANGE ON SUBSISTENCE DISTRIBUTION AND EXCHANGE

Throughout the world, hunters and gatherers have been brought into contact with various aspects of the world economy as well as being encapsulated in the political system of nation states. This has occurred at various times for different hunting and gathering groups. For example, the Tiwi of the islands off northern Australia, did not receive direct and sustained contact until the 1950's, and the Tasaday of the Phillipine Islands until the 1960's. In nearly every case such contact brings almost immediate major cultural changes after set in motion by introduction of more efficient harvesting technologies. In this section, the impacts of one type of interaction between hunting and gatherers and the world economy, that of the impacts of commercial exchange of subsistence products.

Question 1      To what extent does individual or group involvement in commercial exchange for subsistence products alter "traditional" subsistence distribution and exchange?

It should be understood that the nature of the participation of any group of hunters and gatherers in commercial exchange for their subsistence products is a function of a number of variables. A minimal set of considerations is beginning to address this variability includes the subsistence products socially produced, the size and productivity of wild population from which those products are derived, the size of the local group, the relative dietary importance of the product to the local

group, the availability of cultural substitutes, the relationship of the subsistence product to cultural institutions (required distribution, ritual, prohibitions, etc.), the amount of demand for the product in the world economy, direct or indirect competition for the commercial trade of the item, and direct or indirect completion for harvesting the item. There may be additional influences on the local group in other cultural areas which can lead to differential response to commercial exchange.

Taking these various factors into consideration, most studies indicate a significant alteration in "traditional" subsistence distribution and exchange resulting from commercial exchange for subsistence products. The classic article on this process is that of Murphy and Steward (1956:335-336) who, in comparing the Montagnais Indian hunter-trappers of Quebec with the Mundurven horticulturalist-trappers of Brazil, argued "outside commercial influence led to reduction of the local level of integration from the band or village to the individual family which became integrated as a marginal part of the much larger nation." Of specific relevance to this question, they cited a decline in "intragroup dependency," for labor as well as subsistence distribution and exchange as families became dependent on traders for subsistence, largely due to debt obligations and necessary audit relationships. In their view "the culmination point may be said to have been reached when the amount of activity devoted to production for trade grows to such an extent that it interferes with the aboriginal subsistence cycle and associated social organization and makes their continuance impossible" (Murphy and Steward 1956:336).

There are a number of important assumptions in the Murphy and Steward model which must be spelled out because deviations from these conditions, particularly, can lead to different cultural responses. The

first of these, which the authors regard as primary, is that subsistence resources desired by the world economy were best exploited by individual families controlling these products within delimited territories. A second important condition is that local technology and crafts are given up as replacements from the world economy are incorporated into the local culture through commercial exchange. They also postulate a "steady increase in demand for manufactured goods" (Murphy and Steward 1956:347) which has been recently questioned (see below). A third important condition is that of debt relations between trader and native producer. This is extremely important since it has been shown elsewhere by Ray and Freeman (1978) that fur production for commercial exchange by Alogonkians shows a strong but inverse relationship to exchange rates.

Although not specifically identified by Murphy and Steward, change in productive technology is a major intermediary variable which is given primary causal status in most theoretical treatises in social and cultural change (Mason 1975). The classic account of the near complete cultural reordering which can follow from that introduction of a more efficient production technology is Sharp's (1952) account of the impact of steel axes on the social and cultural practices of the Yir Yoront of Australia. The modifications in subsistence distribution and exchange practices, which Murphy and Steward found resulting from commercial exchange of subsistence production, has been widely, if not universally documented.

One of the most complete explorations of the modification of subsistence distribution and exchange patterns is Mutschman's (1973) study of the Mishico Indians of Nicaragua. This group practices a combination of horticultural, land hunting, and sea hunting for large turtles. Turtles are harvested by skilled pairs of men operating out of canoes, and they

make up the major proportion of the animal protein consumed by the 1,000 villages in the community Nietschmann studied. The turtle population was first devastated in the early twentieth century to supply food for the lumber and banana industries which brought large enclosed populations to the area. Following the decline of the markets for these resources in the 1930's (the outside populations left), they returned to a primarily subsistence food economy and the turtle population rebounded. Mishito subsistence distribution and exchange followed a pattern of reciprocal sharing. Turtlemeat distribution documented in Nietschman in the 1960's showed eight direct distributions by the producer to other villages. In 1969 several freezing vessels began purchasing turtles for export and conversion into turtle soup. In response to a guaranteed market and high prices, the Mishito began to intensify production and increased it by 228% in one year (Nietschmann 1973:199). The increase in turtles sold was 150% at the same time, in the face of this tremendously expanded production, the amount of turtle meat consumed in the village decreased by 14% (Nietschmann 1973:199). Nietschmann (1973:202) concluded:

The more dependent Tasbajsaauri nuclear families become on turtles (as well as other marketable resources) for international external exchange, the more independent they are becoming from extended families and the kinship network . . . To the extent that families participate in cash market activities involving not only surplus resources and labor above subsistence, but also labor and resources from subsistence, is the degree to which they have to disengage from horizontal social relationships kept viable through reciprocity.

Thus, commercial exchange of subsistence products has dramatically contracted the distribution and exchange networks of reciprocity practiced by the Mishito.

It is not only commercial exchange with its important characteristic of unflagging demand but also more localized exchange of subsistence

products between hunters and gatherers and horticulturalists can have similar impacts on internal subsistence distribution and exchange networks. In his analysis of differences between net-hunter and archer groups of Pygmy hunters in the Congo rain forest, Alerenzi (1980:14-20) shows how archer groups are primarily dependent on cultivated foodstuffs which they obtain from Bantu horticulturalists in exchange for meat and predator protection. Net hunters, on the other hand, are overwhelmingly dependent on their own subsistence production for survival. The upshot of these different strategies or internal relationship is as follows (Abruzzi 1980:14):

The economic dependence of the archers, unlike that of the net hunters, is not upon each other, instead their economic ties are primarily with the external agricultural villages, and not as a group, but rather as individual hunters. Consequently, individual archer families have developed strong socioeconomic relationships with the villagers rather than with each other. This is in contrast to the net-hunters who, being dependent upon each other economically, have organized socially to ensure their survival.

Thus, in some cases, external dependence and exchange rather than commercial or market dependence and exchange may also cause the contraction of internal group subsistence distribution and exchange networks.

Despite the predominance of findings supporting the attenuation of subsistence distribution and exchange networks as a result of commercial (or other) exchange of subsistence production, there are a number of examples of group intensifying cultural traditions after becoming involved in commercial trade for subsistence products. The most notable examples of this pattern are Northwest Coast Native American societies, who a number of writers (Drucher 1939; Duff 1964; Fisher 1977) have suggested underwent cultural florescence in terms of artistic production and potlatching during the period of the sea otter trade in late eighteenth

and nineteenth century. Although these studies do not specifically deal with subsistence distribution and exchange, it can be inferred from mention of potlatching behavior having increased that these other patterns would have likely persisted. This is particularly true since Euroamerican sea otter traders did not use subsistence replacement as a mainstay of the trade goods and therefore Northwest Coast groups continued to be dependent on their own subsistence products. In addition, no technological element introduced at that time could lead individual efforts nor did the sea otter population lead itself to delimited territorial patterns of exploitation.

Hart (1978) in a recent study of net hunting Pygmies involved in commercial exchange of the meat they catch with outside traders found no attenuation in subsistence distribution and exchange networks, although he did find reduced levels of meat consumption during certain periods for the group as a whole. He attributed this continuation to the fact that the production technology has not been altered, and the traditional commercial net hunt involving the entire group, including women and children, are still the major production strategy. Hunt (1978:349) observed "From what I saw, Mbuti are unable or unwilling to show money among themselves in the same way that they share material possession, including salt and clothing." He attributed this to the fact that most material goods are perishable or not easily concealed and therefore almost immediately enter the distribution network. Money, on the other hand, can be stored and concealed.

Although this pattern of money being treated differently than other subsistence goods may be occurring among the Pygmy, it is not universal. Many Northwest Coast and Polaris groups have readily incorporated money

into potlaches and "give-aways." Gron et al. (1979:1099) point out that the Kasela of Brazil, who are heavy participators in commercial exchange, use money to meet ceremonial obligations.

Recently in alternative perspective of the individualism-attenuation model discussed above has been offered by Gross et al (1979). Based on study of four Srazilis groups with different environmental conditions and ties to the commercial economy, these authors suggest that market participation is a function primarily of encroachment, circumscription, redencorization, and habitual-degradation forcing people to turn to new techniques, tools, and activities to meet subsistence needs. Further, their findings indicate little support for the view that the irresistible lure of trade goods is what attracts Native peoples to market exchange. Finally, even in the face of significant market interaction by two of the groups, Gross et al (1979:1097) found that "preservation of native culture seems not only to contribute to survival by maintaining group identity but also by ordering social behavior and exchange is a concretely beneficial fashion."

In sum, although many studies indicate that commercial exchange of subsistence products can lead to contraction of subsistence distribution and exchange networks, there are also cases in which this does not occur. It appears that an important variable is whether it does or does not occur is the degree to which decline of resources or environmental degradation accompanies the commercial exchange of subsistence products.

## Notes to Part I

1. The terms formalist and substantivist are derived from Polanyi, who traced the division to the work of Austrian economist Karl Merger. Polanyi uses the term "formal" to refer to the "logical character of the means-end relationship" and the term "substantive" to mean "an institutionalized process of interaction which functions to provide material means in society." A formalist, then, supports the universal validity and applicability of conventional economic theory. A substantivist denies its universal applicability, claiming that it is germane only to industrial-commercial societies or commercial sectors of preindustrial societies where, among other things, a price-making mechanism is available to fix the relationship between supply and demand.
  
2. The substantive view is not totally foreign to conventional economists as the following quotation from Boulding (1970:6) indicates:

In some fields the 'less or more' may be less nicely calculated than in the market place, though one sometimes wonders after studying the exotic behavior of banks, corporations, and labor unions whether those phenomena could not be profitably studied with the techniques of the cultural anthropologist. Custom, habit, tradition, and ritual play an important part in the day-to-day activity of the most solemnly economic and ostensibly money-making institutions... Indeed, it may well be that the saint—who knows what spiritual goods he wants and who goes after them regardless of how many norms of conventional behavior he shatters—is closer to the pattern of economic man than is the frock-coated banker whose watch word is respectability...
  
3. There is a great deal of variation among historical materialists in the theoretical usage of these terms.

4. Polanyi accepts the premise that there are societies in which the economy is not embedded in the social structure, namely capitalist societies (Cook 1973:514).
5. A similar cry for attention to consumption has sounded from the symbolic camp in Mary Douglas' and Baron Isherwood's recent work The World of Goods (1979).
6. Polanyi's formulation of the principal of reciprocity in his first opus The Great Transformation (1944:47) appears to be derived solely from the works of Melinowski and Richard Thurnwald, an early British economic anthropologist, and not from Mauss.
7. Pryor's modification is based on "the exclusion of most 'social invisibles' that are often invoked by the participants or by observers to be the counterflows which 'balance' a flow of goods and services," (Pryor 1977:28). The "social invisibles" he clearly implicates are deference, respect, prestige, protection, and recognition. Although it is important to make this distinction to escape from the tautologies of the social exchange theorists such as Heath and Schneider who assume a priori a "balance" in transactions and the post hoc seek elements to balance the exchange. Pryor precipitously destroys the possibility of any social exchange theory. Such a position is excessive.

8. Sahlins has an unusual definition of affluence—"By the common understanding, an affluent society is one in which all the people's material wants are easily satisfied" (Sahlins 1972:1). It is a psychological definition tied to satisfaction rather than an empirical definition tied to the measurement of quantities.
  
9. Transfers can be benevolently inspired (parents gifts to children) or malevolently inspired (theft, exaction of tribute) (Pryor 1977:34).
  
10. They also go on to say that potlatches are actually staged by one group and involve another invited group and interpret this as an acknowledgement by the individual being potlatched or staging the potlatch of the claims of the group over his individual claims.

## SUBSISTENCE EXCHANGE SYSTEMS IN

### ALASKA LITERATURE SURVEY

#### PART II. DISTRIBUTION AND EXCHANGE OF SUBSISTENCE

##### RESOURCES IN ALASKA

#### Introduction

Review of Alaskan ethnographic literature reveals that subsistence systems in Alaska are characterized by many different types of distribution patterns. Analysis of the circulation of goods and services or subsistence resources in Alaska reveals the relationship between economic systems and non-economic institutions. In many instances the task of distinguishing between purely economic and cultural functions of distribution is at best imprecise. Customs and values affect the interplay between economic behavior and social relations, and culturally determined rules and regulations govern the transfer of goods from production to consumption or utilization. Alaskan distribution systems involving subsistence resources also include pure economic transactions in which the movement of goods is initiated for the principal value derived from the product itself. The literature also reveals that each society is governed by varying patterns of distribution which regulate internal as well as intertribal exchange. The mechanisms for the circulation of resource products in Alaska are classified under the following general headings:

1. Ceremonial distribution
2. Sharing

3. Vagueness
4. Trade
5. Commercial exchange

#### Ceremonial Distribution

One of the most prevalent forms of resource distribution in Alaska, and certainly the form which captures the attention of most ethnographers, occurs under the rubric of ceremonial distribution. The circulation of goods is embedded within social and cultural institutions. Although the economic aspect is significant, ceremonial activities often overshadow the importance of the distribution of goods. Alaskan societies afford striking examples of varying types of ceremonial gift giving. However, the most prevalent elements generally associated with ceremonial distribution are:

1. Feasting
2. Rites of distribution
3. Prestige and status

#### TLINGIT, HAIDA, TSIMSHIAN

Perhaps the most classic ceremonies associated with the circulation of goods are those practiced by the Indians of southeast Alaska. The lavish potlatch ceremonies sponsored by the Tlingit, Haida, and Tsimshian have been reported in the literature dating from early contact until recent times. The economic aspects of the exchange of resource goods and services within the potlatch involve the consumption and distribution of enormous amounts of fish, shellfish, meat, oil, seaweed, plants, and

berries. Niblack (1970) reported that all kinds of personal and household property, including blankets, dishes, pots, knives, spoons, canoes, spears, guns, ammunition, garments, furs, mirrors, and money, are given as gifts during potlatch ceremonies. Formerly, slaves were also given to rich and powerful visitors. Billman (1969) reported that in 1877 approximately 1,500 Tlingit participated in a potlatch which lasted four weeks. The Sitka Tlingit hosted the Kake Tlingit and were responsible for feeding their guests during the entire time they remained in Sitka. In addition to the vast amounts of subsistence food consumed, the guests also received expensive gifts. The following example, which also occurred during this potlatch, illustrates the interrelationship which existed between social relations and business transactions. A clan chief signaled that the time had arrived for debts to be paid by beating on a drum. The previous year a sister had given her brother's wife a very valuable gift and now the brother was to repay his brother-in-law, adding a percentage (Billman 1969). A person's social status increased according to the percent added to the original debt.

Oberg (1973) provided us with an economic analysis of the potlatch. He reported that potlatch goods are derived from the surplus of economic goods through exchange and also through the practice of borrowing. These debts were paid back with approximately 20 percent interest. Although no definite time limit for repayment was established, the borrower would lose prestige if the debts were not repaid in a reasonable period. The early practice was to borrow fish oil, furs, money, and ornaments to purchase slaves, coppers, and blankets--the primary potlatch gifts. In later periods, blankets and money were borrowed and used as the potlatch gifts. Oberg points out the distinction between

the economic transaction of borrowing and lending and ceremonial distribution in the potlatch. When blankets were borrowed and returned with interest, it was a commercial transaction. However, in the potlatch these same blankets have an important social and cultural value.

Codere (1950) pointed out that potlatches are more than a single event. The distribution of property is a recurrent climax in an endless cycle of accumulating property, distributing it in a potlatch, receiving property, and once again accumulating and distributing it. Also associated with the ceremonial exchange of gifts are ceremonial services, such as assisting with invitations to potlatches or in funeral services. The ceremonial exchange of goods and services is a series of reciprocities between clans. Potlatches are sponsored to provide the dead with food and clothing and to honor their memory, to dedicate and name new or renovated tribal houses, to exhibit new clan regalia, and to validate the assumption of a new name or title (de Laguna 1972). Although potlatches are not held to the extent they formerly were, southeastern Alaska Indians do continue to sponsor them.

During August 1980, a Peace Ceremony was held at Haines. This was as a symbolic gesture to reclaim a traditional area owned by the Chilkoot Tlingits, to protest the desecration of significant landmarks (such as Deer Rock and Loon Rock) and burial grounds, and to express concern for the protection of natural resources and habitat. Prior to the Peace Ceremony, several hundred visitors (including Tlingit and non-Tlingit) feasted on dry fish, smoked fish, seal oil, eulachon oil, seaweed, and herring eggs which had been gathered by members of Raven clans.

A potlatch was held at the Alaska Native Brotherhood Hall in Haines during which members of Raven clans distributed gifts to members of

Eagle clans (Tlingit & Haida Tribal News, 1980). I participated in this potlatch and received a box containing both Tlingit and store-bought food, blankets, towels, scarfs, and \$227 from seven different individuals. In addition, salmon, seaweed, and berries were served. Daanaawaak (Austin Hammond) distributed \$5,020, of which \$4,000 was his personal money and \$1,020 was given to him by various members of his own clan and other Raven clans. The total amount of money distributed among the Eagles was \$8,512, and each also received a box of goods.

#### ATEABASKAN

Van Stone (1974) suggested that the Alaskan Athabaskans transformed the potlatch ceremony from a community or clan-based rite to an essentially individualistic one. He hypothesized that this might be related to the limited availability of surplus food in the western Athabaskan area. Van Stone noted that the Upper Tanana potlatch was similar to that of the Tahltan, Carrier, Han, Atna, and Tlingit in that on the surface it was a feast of the dead but in reality, a means for achieving prestige. Less formalized potlatches were also given by the Tanana, Koyukon, Ingalik, and Kutchin. Townsend (1970) reported that the Tanana Athabaskans also held potlatches to honor the dead as well as living persons and to legitimize marriages. According to McKennan (1959), the Upper Tanana potlatch is a gift-giving festival in honor of a dead relative, and unlike the Tlingit, Haida, and Tsimshian potlatch, the gifts bear no interest nor are they returned. He indicated that rivalries between individuals prompted the sponsoring of more elaborate feasts to achieve leadership.

McKennan also noted that the potlatch stimulates reciprocity between different social units. Funeral preparations are conducted by members

of a different phratry than that of the deceased. Members of the deceased phratry are obligated to distribute gifts to those who assist in the burial. He noted that in the modern period, members of the deceased's phratry but a different clan also receive gifts, though not as many as the members of the clan which handled the funeral. According to McKennan, a potlatch during 1929-30 was considered small if \$2,000 worth of property were distributed. The largest potlatch reported among Upper Tanana people involved the distribution of goods worth nearly \$20,000. Property distributed included blankets, rifles, cloth, skins, furs, and food (Van Stone 1974; Graburn 1973). McKennan (1959) did not elaborate on the types of food served and distributed during a potlatch, but he noted that a "potlatch-man" would fill his cache with foodstuffs. McKennan did report that the people of the Upper Tanana serve boiled strips of fat sheep meat, but we can assume from other types of feasts that are conducted among the Athabaskans that moose, bear, caribou, and fish are also important potlatch foods.

Townsend (1970) reported that in the modern period potlatches are no longer held to establish status or validate marriages. The following account (Loyens 1964) reported in detail about a modern potlatch held in Kaltag in 1963. The potlatch was held to honor two deceased men and was an intervillage affair lasting a week. Moose meat, "Native ice cream" (snow, salmon berries, seal oil, and deer tallow), pilot bread, cake, cookies, and cigarettes were served and distributed as gifts to the guests. The individuals who assisted in the burials were also paid in goods for their services during the potlatch ceremony.

In addition to potlatches, the Athabaskan groups also sponsor series of feasts at various times throughout the year. These feasts often involve only local village members, but several are held with the express purpose of inviting neighboring villages. Reciprocity, including ceremonial gift-giving between two or more villages, is traditional. Large accumulations of subsistence foods are necessary since guests are fed for several days. They are also given gifts, including subsistence and commercial goods. Feasts are held for a variety of reasons, ranging from individual life crisis, significant environmental events, or the first catch of an important fish or animal. The social and cultural rites of the feasts tend to diminish their economic value, but their frequency, the number guests (who are fed for several days), and the ceremonial gifts of resource goods indicate that the cumulative economic value of these feasts is significant.

Osgood and other ethnographers who conducted field work in Alaska during the 1930's and 1940's provided a representative sample of the various types of feasts involving ceremonial exchange of subsistence goods among the Athabaskan groups. Some of the feasts listed below have been abandoned. For example, the King Salmon Ceremony, which celebrated the first fish caught, has not been practiced since the introduction of fishwheels because it was no longer possible to determine the first salmon caught (Sullivan 1942).

Ingalik (Osgood 1958)

The Feast of the Eclipse

Feast of the First Salmon

Wolverine Feasts

Wolf Ceremony  
Eskimo Bear Ceremony  
Putting Down For First Game  
Putting Down For a Second Name  
Putting Down For Labrets  
The Partner's Potlatch  
The Mask Dance  
The Bladder Ceremony

Koyukon (Sullivan 1942)

Duck Hunt Feast  
King Salmon Ceremony  
Wolverine Feasts  
Midwinter Celebration  
Big Feast (unnamed, held in spring)

Chandalar Kutchin (McKenna 1965)

Lunar Eclipse Festival  
Birth of Child  
Boy's First Killing of Game  
Marriage  
Ditcurai (Successful Hunt)  
Story-telling Contests

Vunta Kutchin (Balicki 1963)

Birth of First Child  
First Kill

Arrival of First King Salmon

Moose Feast

Tanaina (Osgood 1933)

Rite of First Salmon

Upper Tanana (McKenna 1959)

Winter Festival

Han (McKenna 1959)

Winter Festival

#### ALEUT

The ethnographic literature describing ceremonial exchange among the Aleut is not as extensive as that for other cultural groups, but we know from several sources, that the distribution of gifts within ceremonies was an integral part of early aboriginal Aleut life (Coxe 1966, Lantis 1970, Reubal 1961). Lantis (1947) reported that Aleut ceremonialism resembled Northwest Coast, or the Tlingit, Haida, and Tsimshian of south-east Alaska. She cited a greater prominence of potlatching in contrast to gift exchange.

A translation of early Russian material (circa 1763) noted that interisland feasts were common (Coxe 1966). Veniaminov reported that both formal and informal feasts were sponsored. He did not offer a description of informal feasts except to note that they were private. He described formal festivals as alternating between one settlement and another. The feasts were sponsored by the entire village, and almost

every inhabitant gave their entire food supply away (Spaulding 1955). Reubel (1961), drawing on earlier ethnographic reports, described an "Asking Festival." During the ceremonial rite of exchange, an individual holding a wand would request a specific gift from someone of the opposite sex. Apparently, the individuals exchanging gifts are considered partners or hold a temporary relationship to one another. They would continue to exchange gifts in succeeding years at the same festival. Spaulding (1955) disputed Veniaminov's claim that Aleuts abandoned feasts and festivals at the time they became Christianized. He reported that in 1952 his informants described feasts which were held in Akutan which were similar to those described by Veniaminov.

#### YUPIK-INUPIAT

Four cultural provinces are distinguished among the Yupik and Inupiat (collectively called Eskimos)—the Northwest Interior, Bering Strait, Seward Peninsula to Kuskokwim River, and Pacific Coast. Lantis (1947) explained the particularities of each of these areas on routine contact with surrounding major culture areas and by local development within the above identified culture province.

Lantis' (1947) survey on Inupiat-Yupik ceremonialism provided an exhaustive analysis of the cultural elements (noneconomic) of ceremonialism. She classifies ceremonialism into three categories. The first includes ceremonies at life crises, memorial feasts, secret, and society performances which are involved with individual life crises; the second for building, war, and the celestial phenomena (usually small and disparate); and the third was associated with hunting. Boat launching

ceremonies initiated the hunting seasons. Minor hunting and fishing rites included first fruit rituals and the cults of individual species of game.

The Great Hunting Festivals were held for large numbers of people and were directed toward spirits controlling the animals. The coastal Inupiat and Yupik ceremonies focused on seal, bear, whale, and walrus. In the interior of northwest Alaska, the fox, wolf, and wolverine were also considered important. Lantis (1947) reported that all ceremonies connected with hunting were stressed. The first catch; boat-launching for hunting celebrations after the hunt; returning of the head, bones, or bladder of the slain animal to the sea; and entertaining the spirits that controlled the animals were all highly ceremonialized. The hunting ceremonies were elaborate and characterized by feasting and gift distribution almost to the limit of the groups capacity to provide for them.

In general, gift exchange within ceremonies were of two principal forms. The first was an exchange of presents which individuals had previously requested. The second was contribution of goods to a common pile which was distributed to all present at the feasts but particularly to the elderly. The prearranged gift exchanges occurred between the sexes, between two sides of the ceremonial houses or between two ceremonial houses within a community, and also between communities. Lantis (1947) noted that the prearranged gift exchange was characteristic of all of western Alaska. Although the literature does not present detailed information on economic exchange, other sources give additional information about the economic elements or aspects of ceremonial exchange of resources in Inupiat and Yupik ceremonies.

According to Oswalt (1963) the most elaborate set of rituals performed by the Kuskokwim Yupik were associated with the "Great Ceremony for the Dead." He reported on a feast which was held in 1887 at Napaskiak. Of the 706 participants, 580 were guests from other villages. During the first six days the visitors were fed an estimated 2,880 pounds of frozen fish, an undetermined amount of dry fish, 14 large dishes of "native ice cream," and seal oil during the 6 day feast. Gifts were also distributed to the 580 guests. One elderly woman alone presented the following:

27 pairs fish skin boots each with straw socks

21 fish skin coats with fish skin bags

20 fish skin bags

23 grass baskets

21 grass fish bags

40 tin dippers

20 small wooden buckets.

One man gave 20 coils of rounded harpoon rope cut from sea lion skins and ivory attachments. Another man gave 20 bags of seal oil, worth \$2.50 according to prices paid by the traders.

Various mechanisms were also initiated by the Inupiat and Yupik to facilitate resource exchange. Among some Yupik groups, old men exchanged their songs with different dancers for items they needed (Hawkes 1913). In other feasts women could ask for gifts they needed (Oswalt 1963). Birket-Smith (1933) reported "extravagant" eating and distribution of gifts among the Sugpiaq (Chugach Eskimos). Ingstad (1954) noted that

the Nunamiut awarded skin tents to individuals who won races during their Invitation Feast. Other presents distributed were fox, wolverine, and wolf skins. Songs were sung about the presents which the guests would not receive. Gubser (1965) reported that on rare occasions the Nunamiut (inland Inupiat) exchanged feasts with the Koyukon Indians. Ray (1975) noted that products which were not available within the boundaries of one group were acquired from neighboring groups through requests made in the Messenger feasts. Giddings reported on a Feast for the Dead held in Kobuk in 1941. Relatives who worked on a funeral were paid with food and seal oil and clothes, which included beaver pants, marten skin parkas, and rawhide lines. He also reported another feast which lasted several days and included people from Shungnak, Kotzebue, and the lower Yukon. Many of the traditional feasts are held concurrently with American holidays, such as Fourth of July, Thanksgiving, and Christmas (Chance 1966).

The most notable recent report on ceremonial distribution comes from southwestern Alaska. Riordan (1980) reported on three types of public ceremonial distribution. The first one, the Spring Seal party, involved the distribution of seal meat and other goods from a woman to other women who are not her relatives. At the second, a Fall Feast, seal meat is again distributed. This may be either with or without accompanying gifts and a public meal for older men of the community. A third ceremony, the Winter Exchange Dance, is a two-phase event. During the first phase, women acting as men dance and give gifts to men. In the second phase, men acting as women dance and present gifts to women of the village. Riordan noted that during one month she attended 70 seal parties. Worl (1979, 1980) reported on the distribution of

whale meat, muktuk, caribou, and fish during ceremonies associated with whaling.

### Sharing

A survey of ethnographic literature describing modes of subsistence exchange in Alaska revealed that the concept of "sharing" has been extensively used, particularly in reference to the Yupik and Inupiat and to a lesser degree among the Athabaskan. Price (1975) defined sharing as the allocation of economic goods and services without calculating returns. His analysis, which appears to be particularly relevant to Alaskan societies, found that most sharing takes place within a social group that is small scale and personal in quality. He noted that there is generally face-to-face interaction of the same people over an extended period of time. The patterns of personal interdependency significantly influence the patterns of economic distribution, which are often initiated at an unconscious level. Sharing is also embedded within the social and cultural dimensions of the society and is expressed in ethical and religious systems. Although members of the group are cooperative and interdependent, sharing tends to be unequal.

#### TLINGIT, HAIDA, TSIMSHIAN

According to the basic criteria outlined above for the circulation of goods through sharing, southeast Alaska Indians' distribution systems are not characterized by formal sharing attributes. However, informal sharing occurs through casual visiting patterns. For example, Sackett (1979) reported visiting among families camped along the riverside

during eulachon season. According to Sackett, they were observed sharing food, particularly eulachon and eulachon oil during their visits.

Internal exchange among the Tlingit, Haida, and Tsimshian occurred through other mechanisms, such as the potlatch. Additionally, the house and clan unit, which characterized the southeast Alaska Indians social organization, was also considered the economic unit. In this case, goods procured by the economic unit were owned and shared by members of that group. Stanley (1965) reported that the Tlingit clan houses still exist in Kake, Sitka, Juneau, Hoonah, and Klukwan. He noted that they remain a focus for ceremonial and social life but did not refer to the economic activity associated with the house unit. His reference to social function may refer to the hosting of potlatches. Earlier citations indicated that potlatches still serve as a mechanism for the distribution of goods. In theory, if the clan and house units are no longer functioning as economic units except through the potlatch, sharing would intensify.

#### ATHABASKAN

The sharing of such big game, as caribou, moose, and bears, according to some definite pattern of distribution, is customary among a number of Alaskan Athabaskan groups. Among the Koyukon the successful hunter gets the head and breast, and the remainder is divided in equal shares among members of the band. Even if the hunter takes game without any assistance, he still must share his take. The eldest hunter receives special consideration, such as getting the hide of any bear taken. Each man takes the rabbits he kills during a rabbit drive,

which involves several men; however, he is expected to share his catch with those who are less successful (Sullivan 1942). The Upper Tanana hunter who kills an animal is entitled to the hind quarter, the ribs and hide goes to his partner, and the rest is shared with other members of the camp, particularly with those in need of assistance (McKenna 1959). The Kutchin hunter gives his harvest to a man of a different clan, who in turn provides a feast for the entire group (Graburn 1973; Osgood 1970). Graburn also indicated that individuals who owned caribou surrounds were entitled to share in caribou killed by other hunters who used the surround. However, Balikci (1963) noted that among the Vunta Kutchin the owner of the caribou surround was considered the owner of all caribou taken and that he supervised sharing. Less successful hunting groups assembled near the successful and participated in consumption. Among the Peel River Kutchin, members of the poor class, who assisted wealthy men in the construction of caribou surrounds, could share in the distribution of meat following the successful harvest of caribou (Osgood 1970). The Vunta Kutchin also shared among themselves fish taken in fish traps. The shares were not distributed equally among the participants but depended on the size of the family.

When a youth kills his first game he generally does not keep a portion; instead, he shares it with various members of the community. The people of Tetlin hold that caribou, sheep, rabbit, or any meat of any animal taken by a youth for the first time cannot be eaten by the boy or his family. Instead, the meat must be given to his cross-relatives. If the game is small, it is given together with two or three blankets without other ceremonies. If the parents of the youth who took

his first game or a daughter who picked her first berries are rich, they are expected to host a potlatch (Guedon 1974).

According to several researchers, the tradition of sharing remains strong among the Athabaskan groups. Caulfield (1979) who conducted field research in 1976-1977 in the Upper Yukon, found that moose and other large game are commonly divided among households to insure that everyone gets fresh meat. Hosley (1961) maintains that a basic feature of the social structure in the Upper Kuskokwim is sharing and cooperation. Food, wood, and even gasoline and money are shared. An individual who works alone and does not share his harvest is not considered a good member of the village. Among the Kutchin, the contemporary hunting unit is comprised of two or three nonkin hunters. Most frequently the harvest is still shared equally among members of the hunting unit. According to Balikci (1963), the general rule among the Vunta Kutchin is that if game is abundant and everyone is able to hunt, sharing is restricted. However, if caribou are few, sharing is maximized immediately after the hunt. Later, after the meat is dried, needy families receive food gifts from more fortunate relatives. Balikci's informants maintained that caribou meat had formerly been much more generously shared. Today, caribou is considered individual property, but moose is always shared throughout the settlement.

#### ALEUT

The distribution of fish according to established sharing patterns throughout the entire community, originally reported for the 1750 to 1810 period by Lantis (1970), remains prevalent among Aleut communities (Spauling 1955; Berreman 1954). In the early aboriginal period, an

island chief was entitled to a share of every village hunt (Stein 1977). Two primary subsistence products, salmon and sea lions, are harvested through cooperative efforts and are shared on a villagewide basis. A hunter generally keeps enough to maintain his own household, but he is expected to share with those who were less successful and to reserve shares for those to whom he has an obligation.

Sharing is uniformly reported to be based on need and not an equal distribution throughout the community households. Berreman (1954) reported that although every man was capable of securing his own sea lion, they were always shared throughout the village. Even those households that didn't send a representative were appropriated a share at the time of butchering and division (Spaulding 1955). Berreman (1954) reported that one community which took their salmon through seining, shared the salmon among only those who participated in seining.

Berries and greens gathered by women in small, kin-related groups are shared according to the desires of each woman or may be used to pay off obligations. Egg collecting is a communitywide effort. Eggs are pooled and distributed throughout the village.

#### YUPIK-INUPIAT

Noneconomic values which promote economic distribution through various sharing mechanisms are the most pronounced among the Inupiat and Yupik societies. Cultural values, socialization patterns, social status and prestige, ideological beliefs, and even modern-day Christian church activities promote sharing of resource goods (Worl 1979). Sharing is commonly noted as an integral aspect of hunting in almost all ethnographic literature relating to Yupik and Inupiat subsistence from the

earliest period to contemporary times.

Birket-Smith (1933) reported that the Suppiak considered meat to be common property to be divided equally among villagers. The Palugruvik even shared the whales they caught with nearby villages where the waters was too shallow for whales to enter. Although no intricate rules for division of whale meat existed, special rules for sharing baleen and skins did apply. Befu (1970) also reported that the Sugpiaq of Kodiak Island distributed the meat of large animals such as seals, sea lions, and bears among village members.

Lantis (1946), who conducted her fieldwork during 1939-1940, noted that Nunivak Yupik interpersonal social obligations were continuously discharged by wealthy men feeding the elderly and orphans. In return, these poor people would assist their benefactor in whatever manner they could. If an individual who was cutting and hanging fish was approached by someone saying he needed fish, he had to comply with the request. On the other hand, one must not ask too often. Lantis maintained that each family or individual was independent, giving and receiving from others on the basis of a variety of personal needs or social considerations.

Oswalt's (1963) work on Napaskiak described various forms of sharing. The men's ceremonial house served as a center where orphans and visitors were fed. Gifts of food always enhanced one's prestige. Individuals were expected to share with their family but not necessarily with the entire village. Oswalt noted that an extended family maintained subsistence obligations with each other, such as the common use of equipment and a common cache.

Sharing of subsistence resources among the St. Lawrence Island Siberian Yupik took several forms. One of the most unique patterns occurred with marriage. Once a couple decided on marriage, the prospective

groom began to work for his future father-in-law. His primary obligation was to serve as a crew member in his future father-in-law's boat. The usual period was from two to three years. The groom work requirement is retained in the present culture but is significantly shorter, lasting from six months to a year (Hughes 1960). (I conducted field work at Gambell in the spring of 1980. I reported in a film entitled "The Elusive Whale," produced by the University of Alaska, Arctic Environmental Information and Data Center in 1981, that a young man who married during the period I was there was obligated to give his share of whale from his father's boat to his father-in-law. He was also serving his year of servitude to his father-in-law). Hughes also reported that this first step in the marriage process began with the distribution of gifts to the girl's father and clansmen. He discussed subgroups in Gambell, which are distinguished as ramka or clans. The primary functions of these groups is to share meat and other food among its members. Although meat is shared freely with anyone who asks for it, clansmen receive preferential distribution. Clanswomen also provide services to boat captains by sewing walrus hide covers onto a boat frame. The captain gives a gift of meat or a useful article from the hunt at a later date.

Bogojavlensky's dissertation research (1969) among the King Islanders and Diomeders from 1966 through 1968 provides us greater detail and current data about sharing patterns governing the distribution of walrus. At Diomede, walrus is sorted in piles separating the tongues, flippers, and meat. The captain gets the first choice and as much as he desires; and the rest is divided among crew members. The captain and the owner of the outboard motor keep one half of all the ivory, and the rest is

divided equally among the crew, including any of the captain's sons over the age of twelve. The captain may also appropriate all the cow hides. He may also allow a faithful crew member to take a hide, but the captain retains the right to take back the hide once the crewman's wife has split the skin.

The wives and mothers of King Island crews, on the other hand, maintain the right to distribute the walrus. Distribution among the crew members is equal. The captain generally receives a larger share since his boat and sons also receive shares. However, his wife will redistribute shares among the wives of the crew members (or provide large wooden trays of cooked meat to members of the crew) during the winter months. King Island captains also retain full rights to cow (female walrus) hides except that they are more inclined to grant one hide to two crew members.

Yupik and Inupiat societies are characterized by formalized rules regulated sharing. Some of the distribution patterns, specifically those relating to bowhead whales, are even codified and reviewed annually (Spencer 1969; Vanstone 1962; Worl 1980). Contemporary sharing patterns among the Inupiat have been described in many sources. Uhl (1979) reported the necessity to share specialized and expensive equipment among friends, and sharing is also extended to include non-Inupiat members of northwestern villages. Saario (1966) observed skilled and successful hunters sharing with needy individuals. He also noted that caribou, which were hunted communally, were shared equally. Milan (1964) revealed that the practice of whaling captains providing their crew members with food survives into the present period. Anderson (1977) noted that inland-coastal patterns of sharing are still main-

tained. He found that individuals in Kiana received supplies of seal oil from their relatives in Kotzebue.

Lantis (1946) reported that patterns of formalized sharing of walrus occurred among the Nunivak Yupik. If two hunters took a walrus, it was divided equally. If three men were involved, the first two divided the walrus hide lengthwise and the third man got the tusks. If a fourth man participated, he received the stomach. Other intricate rules applied and were determined by who scored the first on a serious shot. Age also appeared to be a factor in dividing the walrus. Lantis noted that there were no rules for division of a whale found dead or caught in a net. Oswalt (1963) also noted that Kuskokwim Yupik divided beluga whale and seals according to established patterns. Ray (1966) reported that the hunters at St. Michael divided the whale among the hunters who captured the whale, the larger share going to the hunter who was responsible for the kill. Those who assisted in hauling in the whale were also entitled to a share, and bystanders received a small portion for immediate consumption. The tail was saved for a feast in which it was distributed among the guests.

Formalized patterns of sharing also governed the distribution of whales among the St. Lawrence Island Siberian Yupik (Hughes 1960). The traditional pattern of sharing was based on differential distribution. The amount a crew received was determined by the order in which the boats struck the whale. The order of the first four boats striking the whale was formalized in a series of titles. During the period in which Hughes conducted his field work, the pattern of division changed to provide for equal distribution, and the basic unit of division was the household.

Kivalina hunters, who communally harvested beluga in 1959 through 1961, divided them among all family units according to established customs. The tail flukes of the first beluga taken each season were cut into strips, and each child in the village receives a portion. Saario (1966) also reported that Kivalina whalers travelled to Point Hope and returned with 2,300 pounds of bowhead whale to share amongst themselves.

Milan (1964) reported that among the Wainwright people, whale, walrus, seals, and even coal harvested on organized hunts were shared according to definite rules. Crew members, helpers, the umiaq (boat) captain, and needy and old people were entitled to formal shares. Milan also noted that a minister who was preoccupied with other tasks contributed \$50 to a crew. He, in turn, received a proportionate share of the whale. Milan found that the traditional pattern of sharing walrus had changed. For example, if an umiaq has an outboard motor attached, the captain is entitled to receive both walrus tusks, penis bone, a share of the meat for himself and an additional share for the boat. If the umiaq does not have a motor, the tusks are sold and the proceeds are divided equally among the crew. If a bearded seal is taken by an umiaq with a motor, the captain receives the skin, otherwise the skin is cut up for boat sales or is sold, and the boat sales or money is divided among the hunters.

Worl (1979, 1980) described the formal distribution patterns of the bowhead whale within six communities. She noted that although the possessory law gives title to the captain who fired the first bomb, the

distribution codes in essence establish the captain as the trustee. The distribution codes dictate disposition of the whale and establish the vested interest of the crew. Work also made a distinction between the "initial" and "secondary" distributions. The initial distribution of the whale occurs among the whaling crews that assisted in taking the whale, and the secondary distribution occurs throughout the annual series of ceremonies.

### Partnership

The circulation of subsistence resources through the establishment of a formalized partnership between individuals is an effective method to obtain goods which are not readily available in one region. Although partnerships existed among all cultural groups within Alaska, they appear to have been most prevalent among the Inupiat, Yupik, and Athabaskan. For southeastern Alaska Indians, alliances between clans were more dominant than partnerships between individuals. Individuals did establish trading partnerships, but generally it was between clans which had trading relations.

The major characteristic of partnerships is that they are voluntarily established between two individuals who are not related. Partnerships generally persist throughout an individual's lifetime. An individual may also have more than one partner. Partnerships are generally established with individuals of the same sex. Although social or ritual elements may be involved in partnerships, the primary function is economic. Some partnerships are instituted between individuals who have access to different ecological resources. They are primarily oriented to the exchange of goods and services. Individuals will seek out a

person who provide particular goods and/or services. Partners are expected to share generously with each other (Burch 1970; Graburn and Strong 1973).

#### ATHABASKAN

The partnership is a common feature of northern Athabaskan social organization, with two types exhibited among several groups. One form of partnership was established primarily for hunting and the other explicitly for trading goods. The Eyak distinguished two types of partnerships based on kinship (Birket-Smith and deLaguna 1938). Temporary or short-term partnerships were also established among the Athabaskans.

The Peel River Kutchin established temporary hunting partnerships. They preferred individuals who were related but did choose partners from other clans. According to Osgood (1970), the kin relationship insured a greater share of the killer's portion of the game. The second type of partnership among the Peel River Kutchin was a special bond between two individuals. Not everyone entered into this type of relationship. The economic obligation between these partners included the right to expect the greatest material assistance possible. The Fort Yukon Kutchin also had two forms, including a hunting partnership and another relationship in which the partners were able to take anything belonging to their partner. These special relationships were also known to be established with Eskimos (Osgood 1970).

The Tannina also recognized two forms of partnership. One type was established between wealthy men who were of the opposite moiety and was established as a protective alliance. Partners were expected to

protect one another when visiting. These partnerships were formalized with the exchange of valuable gifts (such as a sea otter parka) followed by a potlatch. The second, more common type of partnership was for hunting, in which harvested game shared between the two (Osgood 1933).

The Chandalar Kutchin, Upper Tanana and Koyukon established partnerships based on friendship. The Koyukon recognized one partner as being senior, and he acted as the leader in common enterprises, such as the construction of fish wheels (Sullivan 1942). The Upper Tanana partnership enabled the partners to use each other's hunting camp if hunting was poor in their own area (McKenna 1959). The Chandalar Kutchin established partnerships within the band and another with neighboring groups. Partnerships with neighboring groups were recognized by mutual exchange of presents (McKenna 1965).

#### YUPIK-INUPLAT

Partnerships among the Yupik and Inupiat were quite common and continue to persist in essentially the traditional form. Burch (1970) reported that in northern Alaska individuals have at least one trading partner, and many are involved in several. New partnerships continue to be established.

Lantis (1946) reported that Nunivak partners exchanged gifts during ceremonies that they could never have obtained by their own effort. Ager (1980), who conducted fieldwork in Tununak in 1973, reported that women were responsible for the distribution of meat and most locally manufactured goods. A woman shared the food she collected and exchanged gifts with her partner. Ager noted that partnership exchanges were a

primary mechanism for mobility of resources and goods beyond the family circle. The St. Lawrence Siberian Yupik institutionalized partnerships between men of different clans. Partners were expected to share goods and assist one another (Hughes 1960).

The Inupiat established both hunting and trading partnerships. Hunting partners assisted one another and shared their harvest. Products not available within tribal boundaries were acquired through trading partners. In addition, partners also exchanged gifts (Chance 1966; Giddings 1961; Milan 1964; Ray 1975).

Anderson (1977) provided examples of recent partnership activities. He reported that several Kiana residents went to Point Hope in 1975 to attend the spring whaling feast. They brought with them dried white fish, half-dried fish, dried meat, and frozen berries. They stayed at the homes of their trading partners and received muktuk (whale blubber). Anderson noted that intervillage exchange among the inland villages along the Kobuk River occurred through partnerships. Widowed women with no kin established partnerships with female friends who would share meat from game hunted by her husband. Anderson described the following different types of partnerships.

1. Fishing partnerships between women
2. Partnerships between women who participate in joint activities such as berry picking and plant gathering
3. Transitory partnerships to cooperate in subsistence activities
4. Hunting partners
5. Trading partnerships
6. Partnerships to help with services

## Trading

Trading among Alaska Native societies was an economic mechanism to obtain subsistence resources which were not available locally. The literature reveals that trade flourished among all groups. Contact with Westerners intensified trade and changed the economic value patterns of aboriginal groups. Trade was intervillage and intertribal as well as intercontinental. Trade networks and routes were well recognized, and in some regions definite trading centers were established. While trading might be accompanied by ceremonies, ritual, or other social activities, the primary objective was and is economic—to acquire goods which are not available in one's own group. The exchange of one commodity for another might be according to established ratios or by actual bargaining. Although Alaskan ethnography is replete with accounts of trading transactions, the literature (with the exception of few accounts) does not generally indicate the worth of a commodity in terms of other commodities. Therefore, the degree of interdependence between trading groups is difficult to ascertain.

### TLINGIT, HAIDA, TSIMSHIAN

Trading was an important feature of Tlingit, Haida, and Tsimshian economies. These groups initiated trade within their own tribal group, among themselves, and with neighboring tribes. Early Russian, English, and American traders uniformly reported that they were highly skilled traders and conducted their business transactions according to definite procedures.

Slave trade was particularly important to the Tsimshian and Haida until it was outlawed by the government. Slave trade persisted into the 1860's (Van Den Brink 1974). According to Oberg (1973), to obtain slaves the Haida and Tsimshian either raided the villages of Puget Sound and at the mouth of the Fraser River or obtained them from the Kwakiutl, who also raided this area.

The basic exchange patterns among the southeast Indians involved trade between those groups living on the islands and those living on the mainland. The mainland villages situated along rivers undertook expeditions into the Interior to trade with the Athabaskans. A north and south trade also occurred. The Tlingit travelled several hundred miles to trade with the Haida and Tsimshian. During the fur trading era they undertook voyages of a thousand miles to Victoria and Puget Sound trading posts. Travel north and into the Interior was to such places as Copper and White rivers. Trade into the Interior was monopolized by certain clans and villages who maintained exclusive trading rights with the Athabaskans.

The materials traded were the outcome of regional and ecological differentiation. The islanders produced dried venison, seal oil, dried halibut, dried king salmon, dried herring, dried algae, clams, mussels, sea urchins, herring eggs, and numerous other sea products. They exchanged their surplus goods with mainland villagers who produced rabbit, marmot, moose hides, furs, eulachon oil, dried eulachon, cranberries preserved in oil, sheep horn spoons, Chilkat blankets, and spruce root baskets. The mainland Indians obtained from the Athabaskans prepared moose hides, decorated moccasins, birchwood bows wound with porcupine

gut, and prepared caribou hide. They also obtained placer copper, which was highly prized as a potlatch item. The Athabaskan obtained cedar bark baskets, fish oil, iron, and shell ornaments (Oberg 1973; Olson 1936).

Oberg (1973) noted that it is difficult to measure the degree of interdependence between the groups. Articles such as copper shields, Chilkat blankets, and abalone shell ornaments were of the highest value in potlatches, yet these articles were produced only in special regions. Wearing apparel of moose and caribou hide was universally worn by southeast Indians, yet there were no moose on the islands where the greatest number of Indians were concentrated. Eulachon oil was universally used by all southeast Indians and preferred over seal oil. The Tsimshian specialized in extracting this oil. The large cedar canoes used by the Tlingit were made by the Haida and Tsimshian. Oberg reported that the arrival of white men into the trading scene changed the economic value of furs, with the value decreasing in the following descending order.

<u>Before White Men</u>	<u>Arrival of White Men</u>
sea otter	sea otter
marten	black fox
beaver	cross fox
otter	beaver
black fox	marten
cross fox	otter
mink	mink
wolverine	wolf
wolf	wolverine
bear	bear

Niblack (1970) reported that Port Simpson at the head of Dixon Entrance was the great emporium of trade for the surrounding region. In September of 1841 approximately 14,000 Haida, Tlingit, and Tsimshian met there to trade. The Tsimshian served as the middlemen for the south to north trade. They were considered the great traders in oil and grease prepared from eulachon, seal blubber, deer, and goat flesh. One blanket brought 10 to 15 pounds of eulachon grease or oil in the late 1880's. After the depletion of the sea otter by the Russians, the Haida cultivated potatoes and traded 500 to 800 bushels a season. The Haida also traded with the Tsimshian for tobacco.

#### ATHABASKAN

Athabaskan groups traded among themselves and conducted intertribal trade with their Inupiat, Yupik, and Tlingit neighbors. Aboriginal trade played an important economic role and was well established prior to white contact. Athabaskans had obtained Russian manufactured goods through aboriginal Indian trade routes and through the Eskimos long before Westerners arrived in Alaska (Graburn 1973). The Chandalar Kutchin reported that prior to the establishment of the Hudson's Bay Company at Fort Yukon, they received iron kettles from the Eskimos in exchange for their wolverine skins and woven spruce root baskets. The Eskimos also brought polar bear and white fox furs.

This trade with the Eskimo was both social and economic in nature with large parties of Athabaskans and Eskimos meeting in the territory of either group. Old John Lake, near the present Arctic Village, was a favorite site for these gatherings (McKenna 1965). Unlike the Dihai Kutchin, the Chandalar Kutchin enjoyed relatively peaceful relations

with the northern Eskimo. They also entered into institutionalized partnerships with them. They travelled to the Arctic Coast and to the estuary of the Mackenzie River, trading their wolverine skins for baby seal skins. Osgood (1970) reported that the Kutchin also acquired whale bone from the Eskimos. The Tanaina Athabaskans traded their moose and caribou skins, ground squirrel and wolverine hides, and birchbark and sheep horn manufactured goods with Kodiak and Chugach Eskimos as well as those of the lower Kuskokwim. The Eskimos provided coastal products, such as sea mammal oil, seals, and skins (Behnke 1978; Osgood 1933). Koyukon Athabaskan traded wolverine and wolf skins with coastal Eskimos, who provided whale oil and blubber and seal skins. According to Sullivan (1942), The Koyukuk Indians and the Kobuk Eskimo formed the connecting link between the Indian summer fair at Nuklukheyet (near the mouth of the Tanana on the Yukon) and the summer trade fair at Kotzebue Sound.

Although the aboriginal trade decreased for a period, Clark (1974) noted a resurgence of trade during her field research in the early 1960's. She attributed this to the increase in ease of transportation, especially available by aircraft.

As noted earlier, the Athabaskan engaged in extensive commerce with the Tlingit until the mid-1800's. Copper was highly desired by the Tlingit for their potlatch gifts. The Ahtna obtained their copper from the Copper River; the Athabaskan group at Kluane secured the metal from the gravels of the Kletsan, a tributary of the White River. Although the Upper Tanana had little copper to trade with the Tlingit, they exchanged some with the Yukon tribes. The Upper Tanaina first secured dentalia, tobacco, glass beads, iron implements, blankets from the Kluane and Chilkat ceremonial robes from the Chilkat Tlingit. The Upper

Tanaina met the Chilkat at a site very close to the present international boundary. On their way home they would visit the Copper River to conduct further trade (McKenna 1959).

The Athabaskan groups also traded among themselves. McKenna (1965) reported that the Tanaina traded with inland Kutchin groups. The Athabaskan of the lower Tanana River served as middlemen. Dentalia and copper and later iron adzes and axes and beads were highly prized by the Chandalar Kutchin. Native tradition holds that the Dihai Kutchin originally came from the Tanana River and made their way down the Yukon River as far as Nulato and then up the Koyukuk River, where they settled near its headwaters. According to McKenna, this is the same route by which trade items first reached the Chandalar Kutchin. Osgood (1970) reported that the Yukon Flats Kutchin were distinguished traders, who obtained many of their goods from other Indians. He also provided us with a description of a transaction involving the exchange of beads and dry fish. A bundle of dry fish was set out, and the purchaser put a number of beads on top. If there were not enough beads, the owner of the fish would remove them, indicating that more must be added to complete the transaction. Price is not actually discussed. According to Osgood (1933), the Kenai Indians served as middlemen in trading activity between the Tyonek and Susitna Indians of Lake Clark, Mulchatna, and Stony River. They were also involved in an extensive network system (Behnke 1978). Townsend (1970) reported that the Tanaina were involved in extensive trading with the Copper River, Ingalik, Tanana, and Tlingit Indians as well as with Eskimo groups.

## ALEUT

Aboriginal trade was highly developed among the Aleut. Trade was primarily between contiguous villages and to a lesser degree interisland. Aleut exchange items included masks, bracelets, parkas, and other clothing items, dentalia, amber, sea otter skins, and occasionally slaves. Although trade is common between nearby communities, it is not known how often people from distant settlements meet for trade (Stein 1977; Graburn and Strong 1973). Reports on Aleut trading transactions during the early 1800's indicated that they did not trade in person. They used a reliable agent, selected from among the younger in their ranks. The agent took the goods and placed them up for sale but did not reveal the name of the owner. According to Lantis (1970), a buyer offered an item as the price, and only if the seller was satisfied did he keep it.

## YUPIK-INUPIAT

Oswalt (1967) provided a general overview of Yupik-Inupiat trading activities. Trading relations bound the Yupik-Inupiat societies with each other as well as with Siberian Yupik, Chukchi, Canadian Inupiat, and to a lesser degree with their Athabaskan neighbors. Archaeological evidence indicates that Siberia-Alaska trade is quite ancient, but Western goods began arriving in Alaska from northeastern Siberia after the Anadyrsk Post was established in 1649. The major trading centers were at Wales, Kotzebue, Sheshalik, the mouth of the Utukok River, Negalik at the mouth of the Colville River, and on Barter Island.

The primary export items from Siberia were Russian metal goods and Chukchi reindeer skins which were brought from East Cape to the Diomede

Islands, then to Wales, and later to Sheshalik. From here the Noatak people carried the goods to the Upper Noatak where they were received by inland Inupiat who then travelled to the trading center at Negalik. From here the movement of goods was east to Barter Island, where trade with the Canadian Inupiat was conducted. The number of people congregating at the trading centers was significant. Various reports have indicated that as many as 600 would meet at Negalik. In 1884 an estimated 1,400 persons met at the Kotzebue trading center. Trading and social activities lasted for days or weeks.

As noted earlier, trading was conducted through the partnership system. Generally the circulation of goods was inland products (caribou and other skin for clothing and wolverine) in exchange for coastal products (primarily sea mammal oil or fat, bearded-seal skin, sinew, waterproof boot soles, walrus stains and rawhide rope, whale bone, and walrus ivory). Ecological variations also stimulated regionalized and specialized items, such as whetstones and jade adz blades from the Kobuk River and copper knife blades and soapstone lamps from the Canadian Arctic.

The Yupik were not as active traders as the Inupiat. Oswalt (1967) cited the reason as being that the resources were more evenly distributed in their region. The northern trade in which they engaged was the exchange of sea mammal fat for caribou skins. Other items included hoary marmot and ground squirrel skins for parkas in exchange for walrus ivory from the Bering Strait region. The Yupik also traded beaver and river otter pelts for Siberian reindeer skins.

Ray (1966) reported two large trading centers, Pascolik and Tachek, located between Norton Sound and the Yukon. Trade had been carried on

at these centers since ancient times. Traders from Sledge and King Island and people from Cape Price of Wales and Kotzebue Sound brought domesticated skins from Siberia in exchange for wolverine furs and wooden dishes.

Lantis (1946) reported that Nunivak Island trade with mainland groups intensified between 1880-1920. They traded directly with the inland Yupik but never with the Indians, extending their territory to the Yukon northward and the Kuskokwim southward. Although direct trade toward the Yukon was later discontinued, in 1940 Nunivakers still made regular trips up the Kuskokwim. The farther inland they went, the more profitable the trade. Forty-five squirrel skins, enough to make a man's parka, were worth only one levtak skin of a year-old bearded seal far up the Kuskokwim River. On the coast, however, they were worth two levtaks and on Nunivak even more, so the man who could afford to buy squirrel skins not only for his own family but also for trade on Nunivak could make a good profit. As Lantis conducted her fieldwork on Nunivak Island in 1939-1940, she observed that older bark for dyeing skins was obtained in trade on the mainland.

Lantis (1970) obtained the exchange values of the following items from two old men who had done considerable trading on the mainland.

NUNIVAK ARTICLES

1 large poke of seal oil  
Prepared seal intestine for 1  
parka

COMPARABLE-VALUE MAINLAND ARTICLES

Muskrat skins for 1 parka  
Prepared fishskins for 1 parka.  
(These were obtained from inland territory just south of the Yukon, where particularly desirable fish were caught in the lakes.)

## NUNIVAK ARTICLES

Prepared seal or walrus intestine for 1 parka  
1 or 2 levtak skins (1 if trading with interior mainland, 2 with mainland coast); or 4 or 5 stomachfuls of seal oil (price varied according to quality of squirrel skins in trade); or 1 seal poka of oil  
20 caribou skins  
Puffin or murre skins for 1 man's parka  
1 medium-sized wooden dish  
  
1/2 walrus hide  
  
1 pair good boot soles prepared for use; 1 seal stomach of seal oil; sealskin lines (any width) from one small skin;  
2 dried codfish  
1 kayak  
  
1 kayak sled  
  
1 umiak

## COMPARABLE-VALUE MAINLAND ARTICLES

2 squirrel skins and strip of wolverine for 1 man's cap  
Squirrel skin for 1 parka  
  
1 wolverine  
1 mukluk skin (traded on Nunivak)  
1 foxskin; or 1 levtak skin (principally traded on Nunivak in recent years)  
1 levtak (on mainland coast, also on Nunivak)  
Each \$1 (1910-20); since one whole wolverine skin cost a Nunivaker from \$12 to \$15 at that time, one can gauge the value of the other products  
\$50, paid in beaver, squirrel, and wolverine  
\$10, paid in beaver, squirrel, and wolverine  
\$100, paid in beaver, squirrel, and wolverine

### Commercial Exchange

Although Alaska subsistence economies were once autonomous and independent, the literature indicates that these societies became increasingly interrelated with the commercial market after the arrival of the European and American traders. Initial transactions involved the direct exchange of natural resources, primarily furs, for Western wares. The evolution of the interrelationship between Alaska subsistence systems and the capital market has not been analyzed, but the literature indicates that subsistence systems are universally interrelated with the

market economy. The literature does not reveal the varying degree of interdependence between the different subsistence systems and market economies. Literature describing the commercial exchange for subsistence products in Alaska is limited, but we can discern some general contemporary patterns.

Van Stone's research (1960) in Point Hope, Napaskiak, and Eskimo Point revealed that the village stores traded furs and other locally manufactured items for commercial goods. In 1965 Smith (1966) found an entire room in the Point Hope store filled with seal, polar bear, walrus, and other hides and raw ivory, ivory carvings, masks, and baleen baskets which had been taken in trade. Worl (1980), who conducted research in the North Slope in 1975-1977, noted that the village store was often owned by the villagers themselves and served as the "protein bank." Individuals could later purchase the subsistence products they had sold to the store to acquire cash.

Clark (1974) reported that items sold by the Eskimos and Indians in the Allakaket and Alatna regions to Eskimos on the Kobuk and at Anaktuvuk Pass and the Indians on the lower Koyukuk and the Yukon included tanned moose skins, wolf skins for parka ruffs, racing dogs, and snow shoes. Muskrat parkas, caribou, and moose skin mukluks and dolls were manufactured by the Indians and Eskimos and sold to both Indians and Eskimos from the Koyukon who resided in other parts of the United States and also to retail houses in Fairbanks and Tanana. The major Native item purchased by the Indians and Eskimos at Allakaket and Alatna was smoked salmon strips obtained from Koyukon Athabaskans living at Ruby. Clark also reported that until World War II an Eskimo entrepreneur from Alatna made

several trips by dog sled each winter to the Shungnak region on the Kobuk, transporting passengers between the two rivers. They also obtained coastal products, seal oil, and whale blubber from the Kobuk Eskimo to resell to the Koyukuk.

Bogojavlensky (1969) described as follows the commercial exchange pattern of ivory among the King Islanders and Diomeders when he conducted his field research in 1966-1968.

Crew members with shares of ivory will, if possible, save it for the coming winter. It sells for two dollars per pound raw and up to four times that amount after it has been carved. It is therefore advantageous to dispose of ivory through carvings. In fact, it is often first sold to the store in the spring, and then bought back as it is needed for carving. Nowadays, carvers who are out of ivory will buy it from the Native Store. The stores in the Strait are usually out of raw ivory sometime in the winter because the supply ship picks up carvings, ivory and skins immediately after the spring hunt. By March, an ivory shortage for some men may begin. They are then forced to buy it from others, who exact high prices.

The captains' stocks of ivory were obviously far greater than any one man could carve in a winter. A captain is not obliged to keep a supply on hand for his crew, though he usually does, selling it to them at a very low price. In any case, there is no glory or prestige in carving, and captains tend to do less carving than other men, both because they have less need for store goods and because they have less time. Their position as leaders carries burdens of pursuing tasks more appropriate to the ideal of the Eskimo man, such as polar bear hunting, boatbuilding, and the fashioning of perfectly made traditional Eskimo artifacts, of which there are very many.

Consequently, the captains hauled their ivory harvest to the mainland to get better prices than those at the village store. Eskimos on the mainland were usually short of ivory to carve, so the island captains established trading relationships with certain profitable mainlanders. Such Native products as reindeer sinew, tallow, drymeat, berries, dried salmon, herring, and especially such furs as reindeer fawnskins, muskrat, wolf, wolverine, and Parry's ground squirrel are also scarce on the mainland and usually cannot be regularly purchased. Walrus oil, meat, and ivory are exchanged for these. All those products are harder to obtain than cash. Both the mainlanders and the islanders prefer to make such trading transactions rather than to use cash.

Worl (1980) found that commercial goods, subsistence resources, and manufactured products and services are exchanged in the North Slope subsistence economy. She noted that subsistence goods or products sold within the social unit are at a "Native price." This is a social exchange price which does not include labor costs, but it does require a reciprocal obligation on the part of the purchaser to provide or share subsistence resources at a later date. She developed the following table to demonstrate the exchange patterns. As the table indicates with an "X," cash is not generally shared, but an individual may allow a hunter to use his snow-machine or provide gas or ammunition (equipment) in exchange for a share of the resource harvested (natural resources).

#### SUMMARY

Ceremonial distribution of subsistence resources involves both feasting and gift-giving. The literature reveals that ceremonial rites involved the consumption of enormous amounts of subsistence foods during feasting, which would often last for several days or more. Various mechanisms were developed by the different societies to distribute gifts among community members and between different communities. These mechanisms served to increase the prestige of the donor as well as redistributing resources throughout the community. In addition, the ceremonial distribution of gifts also served as a social welfare system by providing a particular segment of the society, notably the elders, with goods they otherwise could not obtain. The ethnographic reports indicated that the types of ceremonies held by different groups were quite varied, but literature describing the modern period generally is not available to

SUBSISTENCE EXCHANGE

	Natural Resources	<sup>1</sup> Productive Services Goods	Use of Hunting Camp Site	<sup>2</sup> Equipment	Cash
Natural Resources	X	X	X	X	X
<sup>1</sup> Productive Services/Goods	X	X	X	X	X
Use of Hunting Camp Site	X	X	X	X	
<sup>2</sup> Equipment	X	X	X	X	
Cash	X				

1. Goods or services derived from the subsistence resource.

2. Equipment obtained from the capital market system.

identify the types of ceremonies which have survived into the contemporary period and the amount of subsistence resources involved. However, the literature available does indicate that cultural and social values which promote ceremonial feasting and distributing of resource goods has persisted in all Alaskan groups.

The distribution of subsistence resources through sharing patterns appears to have persisted among all groups to the present period. The apparent changes in the economic unit among the Tlingit, Haida, and Tsimshian may have altered the sharing patterns. As previously noted, the tribal house served as the basic economic unit, and goods produced by the economic unit were consumed by house members. While individual membership in a clan and house is still recognized, members of a clan no longer maintain common residence in tribal houses except in a few isolated instances. Thus, the tribal house probably no longer functions as an economic unit. Based on the changes in residential patterns and in the economic productive unit, and the continuing relationship between house and clan members (particularly manifested through potlatching); we may assume that sharing among house and clan members living in nuclear family houses occurs. Another apparent change in sharing patterns has occurred through the movement of individuals to urban centers. The literature suggests that subsistence resources are shared with these individuals. We also distinguish "formalized sharing patterns" dictating the disposition of resources, which is particularly evident in the whaling complex.

According to several sources, the partnership system is still viable, particularly among the Eskimo groups. While the partnership

form of distribution of subsistence goods was once prevalent among Athabaskan groups, the absence of discussion on partnerships in later literature indicates that it did not survive past the 1940's. The literature discusses contemporary Athabaskan exchange of resources through trade but does not mention formalized partnership. The extensive trading networks, routes, and centers which once characterized Alaskan societies into the early historic era have disappeared. However, regionalized trading, particularly through trading partners, persist.

While aboriginal trading patterns have declined, commercial exchange has increased. Within commercial exchange, we also find other distribution mechanisms, such as sharing and trading of commercial and subsistence goods to be prevalent. The interrelationship between subsistence and market economies in Alaska is an area which warrants further research. Recent studies initiated by the National Park Service and doctoral dissertation research by several individuals indicate that many groups still sustain themselves measurably through their own hunting, fishing, and gathering efforts.

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