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Trade in Wild Antlers in Northwest Alaska: A Report to Alaska Board of Game

Prepared by

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**Alaska Department of Fish and Game
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Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Measures (fisheries)

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

Mathematics, statistics

<i>all standard mathematical signs, symbols and abbreviations</i>	
alternate hypothesis	H _A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics (F, t, χ^2 , etc.)	
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	log ₂ , etc.
minute (angular)	'
not significant	NS
null hypothesis	H ₀
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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ALASKA BOARD OF GAME**

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**TRADE IN WILD ANTLERS
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Division of Subsistence
Alaska Department of Fish and Game
Juneau, Alaska

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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 1990.¹ 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

¹ 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.² 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

² 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.³ In 1989 the Alaska caribou harvest was estimated to be 24,000⁴ (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

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

⁴ 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 corraling 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.⁵

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

⁵ 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 horn⁶ 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.

⁶ 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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