

JOB COMPLETION REPORTS

Project W-3-R-13 June 30, 1959

Wildlife Investigations
Work Plan H

TERRITORY-WIDE WILDLIFE DATA COLLECTIONS

REPORT OF FIELD OBSERVATIONS

POLAR BEAR

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Not for Publication

(The results described in these reports are preliminary and often fragmentary in nature. Conclusions are subject to change with further investigation and interpretation).

WORK PLAN H : Territory-wide Wildlife Data Collection

JOB NO. 1 : Reports of Field Observations

PERIOD COVERED: November 1, 1958 - May 15, 1959

ABSTRACT

The polar bear harvest off Alaska's arctic coast by native Eskimo and white trophy hunters was assessed and evaluated with the following results:

1. The known kill was 225 and the total estimated kill 250.
2. The known white kill was 182 and the native kill was 43.
3. Native hunting is done by foot and dog team and kills were made generally within a 15 mile-radius of the village. Barrow, Wainwright, and Point Hope accounted for almost the entire known kill. Villages below Point Hope to the Bering Straits took an estimated 10 additional bear.
4. White trophy hunting is done primarily by use of aircraft out of Kotzebue and Point Barrow and to a much lesser extent out of Teller, Cape Lisburne, and Barter Island. The average distance at which bear were taken off shore was 52 miles; however, kill distances ranged from 10 to 160 miles off shore.
5. The sex ratio of adult polar bear killed by trophy hunters was 520 males: 100 females and by natives 260 males: 100 females.
6. Natives take polar bear November through March with 80 percent of the kill occurring prior to February.
7. The kill by whites is made between late February and mid-May. Forty-two percent of the kill occurred in March and twenty-three percent in April.
8. The number of bear seen per hour of observation increased from 1.1 in 1958 to 1.2 in 1959. The number of square miles per bear decreased from 21 in 1958 to 12 in 1959.

OBJECTIVES

To determine the size and characteristics of the current polar bear harvest off Alaska's arctic coast.

TECHNIQUES USED

The assessment and evaluation of the polar bear harvest off Alaska's arctic coast during the winter of 1958-1959 was accomplished by Sigurd T. Olson with the assistance of Gerald Vogelsang, graduate research student from the University of Alaska.

Prior to the advent of the hunting season reliable local residents of coastal communities where polar bear are hunted by natives, were contacted by letter and requested to record the number of bear killed, sex, age, locality, and date of the kill on forms provided for that purpose. To record the kill by white trophy hunters all persons known by previous experience to conduct guided polar bear hunts or were planning to hunt polar bear on their own were contacted either personally or by letter and requested to keep records of their hunting activities. Each guide was provided with a supply of data sheets to standardize as much as possible the recording of information. The cooperation received was excellent; of ten guides and hunting parties requested to cooperate, only one failed to keep records in detail.

The following information was requested for each hunt made:

1. Dates.
2. Total flight time and time spent observing (hunting).
3. Total number of bear seen (sex and size of bears seen, and occurrence of cubs with females was recorded when possible).
4. Sex, size, and number of bear killed.
5. Location of kill (distance and direction from a known reference point).

In addition, three guides were asked to record their flight routes on base maps provided and to plot the location of bears seen and killed along the route covered.

Military conservation officers at Elmendorf AFB, Ladd AFB, and Eielson AFB were requested to maintain a record of bear taken by military personnel stationed at Cape Lisburne or other strategically located DEW sites. Personal contacts, reports by cooperators and interested persons, plus a type of "mukluk telegraph" coupled with local knowledge and acquaintance with the circumstances peculiar to the polar bear hunting season made it possible to obtain information on bear taken by private hunters or parties not associated with an actual guided hunt.

FINDINGS

The Kill: The total known kill of polar bear during the winter of 1958-59 (November - May) was 225. Of this total, 182 were taken by white trophy hunters and 43 by native Eskimos. The total kill perhaps exceeds the known kill by 25 bear. This includes an estimated additional 10 bear taken by natives between Point Hope and Little Diomed Island and 15 unreported by trophy hunters. The total kill is, therefore, believed to be approximately 250 bear. The known kill for 1958-59 exceeds the 1956-57 known kill (206) by nine percent and the 1957-58 kill (128) by fifty-six percent. The comparatively low kill of 1957-58 resulted from a lack of hunters

rather than the availability of the bear. The economic "recession" at that time resulted in many hunt cancellations by stateside hunters according to guides and definitely cut down the number of resident hunters who were planning polar bear hunts. Excellent weather, good ice conditions, and an economic recovery from the recession provided an exceedingly favorable hunting climate in 1959 which resulted in a record kill by white hunters.

The pattern of the harvest has changed significantly in the past five years with regard to the kill by natives and whites. Prior to 1954, relatively few polar bear were taken by white hunters using aircraft or even dog teams. The native kill accounted for almost all the bear taken each year. During the last four years hunting pressure has increased markedly by trophy hunters using aircraft. During the winter of 1956-57, 61 percent of the bear were taken by whites and 38 percent by natives. In 1957-58 the kill by whites increased to 81 percent as opposed to 19 percent by the natives.

A summary of the current polar bear kill by type of hunter and by area is presented in Table 1.

Table 1 SUMMARY OF KNOWN POLAR BEAR
KILL BY AREA AND TYPE OF HUNTER
1958-59 SEASON (NOVEMBER - MAY)

Type of Hunter	Area	Known Bear Kill Number Percent		Estimated Kill	Total Bear Kill
<u>Trophy Hunter</u>	Teller	8	4%		
	Kotzebue	107	59%		
	Lisburne	20	11%		
	Barrow	44	24%		
	Barter Is.	3	2%		
	Sub-Total	182	100%	15 ⁽¹⁾	197
<u>Native</u>	Pt. Hope	16	37%		
	Wainwright	11	25%		
	Pt. Barrow	15	35%		
	Barter Is.	1	3%		
	Sub-Total	43	100%	10 ⁽²⁾	53
	Grand Total	225			250

(1) Non-reported trophy kills.

(2) Non-reported native kills from villages of Shishmaref, Wales and Diomed Island.

Areas Hunted: The frozen Arctic Ocean, adjacent to the Alaskan coast from the Bering Strait on the west to Barter Island on the northeast serves as a polar bear hunting ground for both Eskimos and whites. The native communities of Little Diomed, Wales, Shishmaref, Kivalina, Point Hope, Wainwright, Point Barrow and Barter Island are the focal points of native hunting activity. The villages of Point Hope, Wainwright and Barrow harvested 37, 25, and 35 percent of the known bear killed; however, ice and weather conditions can shift emphasis on the pattern of kill to any of the villages mentioned. As pointed out in the section on hunting techniques, the areas hunted from the villages seldom exceeds a 15-mile radius.

The principle hunting effort by whites is exerted by hunters based at Kotzebue and Barrow, who took 59 and 24 percent of the total kill, respectively. To a lesser degree, pressure is exerted by hunters based at Teller, Cape Lisburne and Barter Island. Kotzebue-based hunters hunt the area from the Bering Straits north and east to Point Hope and Cape Lisburne. Little trophy hunting occurs between the area off Cape Lisburne and Point Barrow. Hunters out of Barrow cover the areas generally west and north of that village. It is interesting to note that a significant number of flights out of Kotzebue and Point Hope extend west across the International Date Line and a correspondingly significant number of polar bear are shot "tomorrow and brought back today". In 1958, 50 percent of the bear were in this category and since hunting patterns did not vary substantially in 1959, it can be assumed that circumstances were much the same. Several parties interviewed reported that they could see the Siberian coast plainly while hunting and one party reported it still visible from the ice where they had landed to shoot a bear. Figure 1 depicts the Alaskan Arctic Ocean coast and the areas hunted by whites and natives.

Hunting Techniques: Polar bear are taken primarily by two groups of hunters whose respective incentives are basically quite diverse. Native Eskimos inhabiting the coastal area kill polar bear for food and the values of the pelt. White hunters are interested only in the trophy value of the animal.

The hunting technique employed by the natives is not particularly specialized. Most bear are taken incidental to seal hunting which primarily involves travel by dog team or simply by foot. Ice conditions regulate the distance which can be traveled and open leads effectively prevent extensive off-shore hunting. Most bear taken by natives are shot within 15 miles of the shore on new ice or areas with open leads which provide seal hunting grounds for both the Eskimo and the bear.

Records kept at Point Hope in 1959 showed that the minimum distance bear were killed off shore was one-half mile and the maximum was 15 miles. The average was 7.7 miles. The tabulation of known distances for 16 bear is shown in Table 2. These can be considered typical for all

villages along the Arctic coast.

Table 2. Distances off shore at which polar bear were killed by Eskimo hunters at Point Hope (January - April 1959)

<u>Distance Off Shore From Point Hope</u>	<u>Number of Bears Killed</u>
0-2 Miles	2
3-5 "	2
6-8 "	7
9-11 "	1
12-14 "	2
15 "	2
	<hr/> 16

Average distance 7.7 miles.

The caliber of rifle used ranges from a "22 Hornet" to the standard 30.06. If the primary objective of the hunt is bear, the larger calibers are favored, but the Eskimo is not averse to trying his luck with a lighter weapon usually used for seal, if the opportunity presents itself.

The techniques utilized by the white trophy hunters usually involves the use of two light aircraft, although an occasional party will risk their luck with one plane. The planes are radio equipped and fly within sight of one another at all times. Although both planes hunt, one serves as cover for the other, particularly during ice landings and take-offs. The usual procedure is to find a bear track and follow it. Experienced guides can recognize an adult bear and its approximate size by its track from the air. When the bear is sighted it is "looked over", if acceptable, a landing is made nearby if ice conditions permit. If not, the bear may be herded by plane to an acceptable area. The plane with the hunter then lands. Sometimes it is possible to merely jump out of the plane and shoot the bear although it is often necessary for the cover plane to "herd" the bear into a favorable position for the hunter to shoot. Once the bear is down, the second plane lands, assists with the skinning and then both aircraft depart with guides, hunters, and trophies.

Most aircraft hunting is accomplished well off shore. Distances at which kills are made range seaward from 10 to 160 miles and average is 52 miles. A tabulation of actual kill distance off shore is presented in Table 3.

Very few white hunters are willing to resort to hunting by dog team or on foot although each year one or two bear are taken this way. A guided dog team hunt can be obtained out of Point Hope, either by dealing directly with the natives or a white guide who arranges the hunts with the Eskimos.

Table 3

DISTANCES OFF THE COAST OF ARCTIC ALASKA
AT WHICH POLAR BEAR WERE CITED BY TROPHY
HUNTERS DURING THE 1959 SEASON¹
(FEBRUARY - MAY 10, 1959)

Hunting Base	No. Bear	Range of Distance		Average Distance
		Least	Greatest	
Kotzebue	59	20	160	56
Pt. Hope	13	25	80	57
Cape Lisburne	15	10	50	35
Pt. Barrow	16	10	120	53
All Areas	103 ²	10	160	52

1 From guide and hunter reports

2 57% of total kill by trophy hunters

Composition of the Kill: The most significant aspect of the kill composition is the preponderance of adult male bear represented, Table 4. This holds true for both the white and native kill. The technique of trophy hunting by aircraft favors the taking of adult male bear since small tracks or tracks of a female with cubs are seldom ever followed. In addition, the law prohibiting the taking of females with cubs serves as another deterrent against the killing of females. The latter is also true of the native kill since this law went into effect, however, to a lesser extent, since some of the Eskimos are still prone to shoot whatever comes along as shown by the higher proportion of cubs and females in the native kill.

Like all bears, polar bear are polygamous, therefore, the taking of male bears would have the least detrimental effect on the population. Total numbers are reduced temporarily by removing a part of the male segment of the population, but the reproductive potential remains essentially the same. As long as the current trend continues there is slight likelihood that any deterioration of the bear population will result.

Chronology of the Kill: The polar bear hunting season by white hunters began in late February. By this time there is a long enough period of daylight to permit extended flights over the ice pack. At least six hours of light are needed by hunters flying out of Kotzebue since it takes at least one and a half hours of flying to reach the best hunting areas off Point Hope or the Bering Straits. Assuming the same time is needed to return, only three hours at best remain to find a bear, make a kill, skin out the trophy and get back into the air again.

The season gained momentum rapidly during March, reached its peak about the last week and tapered off slowly in April. By May 10, hunting was over completely due to deteriorating snow and ice conditions which impaired aircraft ski landing both at the base and on the sea ice. Pelts also begin to turn yellow and are less desirable as trophies. The chronology of the kill is presented in Figure 2.

The kill by natives preceeds that of the white hunters. Most of the bear are taken in December and January. During the past season approximate dates of kill were obtained on 39 bear taken by Eskimos and are presented in Table 5. The actual timing of the kill may vary somewhat from one year to the next due to the influence of weather and ice conditions, but as a general rule the bulk of the native kill occurs prior to March.

FIG. 2 CHRONOLOGY OF THE POLAR BEAR KILL BY WHITE HUNTERS
FEB - MAY 1959

(Based on 130 known kill dates)

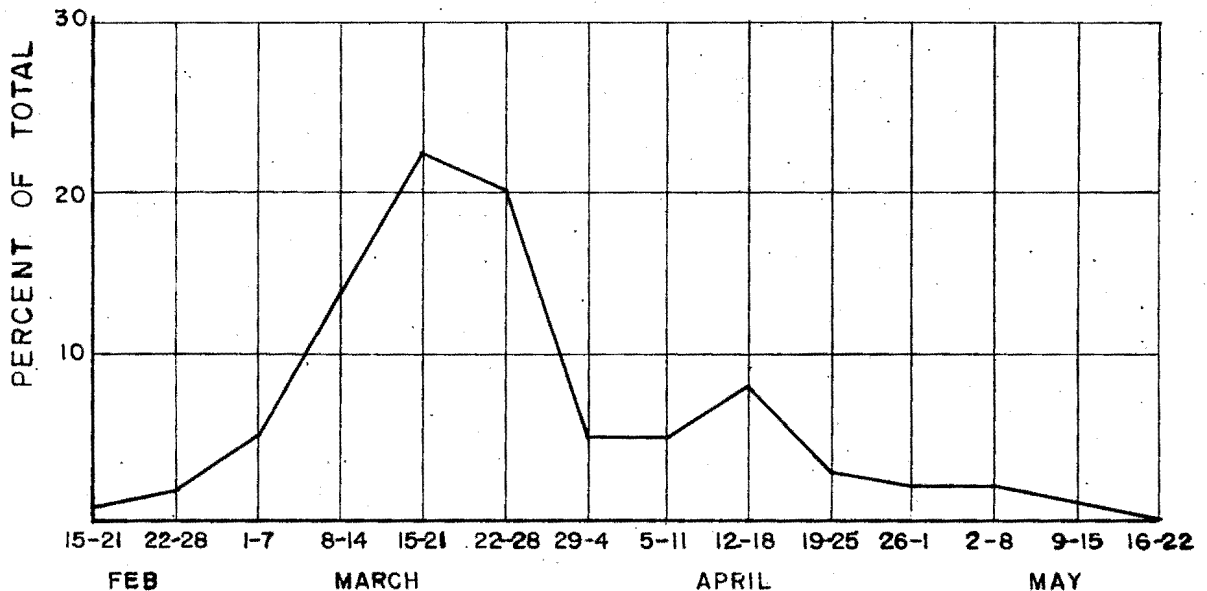


Table 4

SEX AND AGE COMPOSITION OF POLAR BEAR KILL
BY WHITE TROPHY HUNTERS AND NATIVE ESKIMO HUNTERS
(NOVEMBER 1958 - MAY 1959)

Area	Type of Hunter	Adults			Total Adults	Cubs			Total Cubs	Total All Bear
		Male	Female	?		Male	Female	?		
Teller	White	2	--	6	8	0	0	0	0	8
Kotzebue	"	74	7	11	92	0	0	0	0	92
Pt. Hope	"	13	2	0	15	0	0	0	0	15
Cape Lisburne	"	11	8	1	20	0	0	0	0	20
Barrow	"	35	8	1	44	0	0	0	0	44
Barter Island	"	0	1	0	1	0	0	2	2	3
Total		135	26	19	180	0	0	2	2	182
Sex ratio of adult kills of known sex 520 males:100 females										
Pt. Hope	Native	7	4	0	11	3	2	0	5	16
Wainwright	"	9	1	1	11	0	0	0	0	11
Pt. Barrow	"	5	3	5	13	1	1	0	2	15
Barter Island	"	0	0	0	1	1	0	0	1	1
Total		21	8	6	35	5	3	0	8	43
Sex ratio of adult kills of known sex 262 males: 100 females										
Total-All Bears		156	34	25	215	5	3	2	10	225

Sex ratio of adult kills of known sex 459 males:100 females. Cub ratio:166 males: 100 females

Table 5

CHRONOLOGY OF THE NATIVE POLAR BEAR KILL 1958-59

Period	No. Bear Killed	% of Total Kill
Nov.-Dec. 1958	17	41%
January 1959	14	38%
February 1959	1	3%
March 1959	6	15%
April 1959	1	3%
Total	39	100%

Population Density: In an attempt to maintain a tangible means of evaluating the current status of the bear population off Alaskan shores, guides and hunters were requested to record the number of bears observed and the number of flying hours spent hunting for each flight. Interviews and personal experience have indicated that observers from a light aircraft can effectively scan a ground strip $\frac{1}{4}$ mile wide while hunting. This value has been arbitrarily accepted as a standard for all observers. The above information has thus made it possible to establish the following indices to abundance: bears seen per hour; number of square miles scanned per bear seen. This information is presented in Table 6 where it is compared to similar data for 1956, 1957, and 1958 on an area basis. It should be remembered that the hunting methods employed by whites are highly selective, therefore the sample of bears seen cannot be considered a random one since tracking often results in sighting only the individual bears followed. The indices are, therefore, only relative and cannot be considered a direct indication of the actual population density. Nevertheless, assuming that conditions are more or less constant from year to year in this type of hunting, these data serve their intended purpose when considered on a comparative basis from year to year.

The information presented in Table 6 indicates that bears are increasing if interpreted literally. In actuality, it may mean that experience gained over the past four years has enabled guides and hunters to locate bear with greater facility. It may also indicate that certain natural phenomena such as favorable ice and weather conditions or an unusually good food supply may have caused a greater proportion of the polar bear population to shift into the areas accessible from Alaska than might normally be the case. There may actually be no increases in the total bear population inhabiting the Arctic Ocean, however, this will be impossible to ascertain until detailed information is available relative to seasonal distribution and numbers on a coordinated international basis.

The data presently available in the form of the above indices can be interpreted to mean that the polar bear population adjacent to the Alaskan coast is sufficiently adequate to withstand the current hunting pressure.

Distribution: The distribution of the polar bear population adjacent to the Alaskan coast is also only generally known and understood. The distribution of kills and observations reported by guides and hunters indicates that, with the exception of the Kotzebue Sound area where ice conditions seem to preclude their occurrence, polar bears range from the southern edge of the polar ice pack along the entire Alaskan arctic coast. Although very rarely found inland, they inhabit the ice pack from the coast seaward several hundred miles. Kill locations show that bear were found as far seaward as 160 miles, beyond this distance it is necessary to rely on the reports of military and other observers. Pilot Robert Fisher of the Arctic Research

Laboratory at Barrow reported that polar bears were numerous 250-300 miles north of Point Barrow during the aerial search for a suitable ice island for Drifting Station Alpha II. Personnel on the newly established "Ice Island" 550 - 600 miles north of Point Barrow have reported subsequently that polar bears are "common".

Distribution has its seasonal aspects as well since the bear retreat northward with the summer recession of the southern limits of ice. The distribution discussed above can be considered valid only for the period from February through May.

Table 6

SUMMARY BEAR DENSITY INDEX BASED ON NO.
BEARS SEEN PER HOUR AND NO. SQ. MILES PER BEAR
1956, 1957, 1958, AND 1959 COMPARED

Area Hunted	Year	No. Flying Hours	No. Bear Sighted	Bears Seen Per Hour	No. Sq. Miles Scanned	Sq. Mi. Per Bear
<u>Kotzebue</u>	1956	84	33	0.4	1,888	57
	1957	222	175	0.8	4,971	28
	1958	106	111	1.0	2,387	22
	1959	160	344	2.2	3,600	10
	Total	572	663	1.1	12,246	18
<u>Barrow</u>	1956	---	---	---	---	--
	1957	161	47	.3	3,379	72
	1958	79	90	1.2	1,764	20
	1959	105	154	1.5	2,363	15
	Total	345	291	.8	7,506	26
<u>Above Combined</u>	1956	84	33	.4	1,888	57
	1957	383	222	.6	8,350	37
	1958	187	203	1.1	4,207	21
	1959	265	498	1.9	5,963	12
	Total	919	956	1.0	20,408	21

Management: Under present circumstances regulations have no jurisdiction beyond the three mile limit, thus there can be no pretense of current management or control. The present investigation has, however, made available information which can provide a basis for a future management or regulatory program. The chronology of the kill provides a time table which can be used to control the size of the harvest by manipulation of opening and closing season dates. The size of the annual kills can serve as a measuring stick upon which to gauge future harvest. The kill composition data can likewise be used on a comparative basis in the future to determine trends or signs of change; particularly if it is assumed that the present status of the polar bear population adjacent to Alaska is satisfactory as indicated by the plentitude of trophy animals available to the hunters and the increasing incidence of bear sightings per unit of area and effort.

Recommendations: Perhaps the most important single aspect is the realization that future investigations must be designed to not only ascertain the size and characteristics of the annual harvest of polar bear, but also to develop a means of detecting variations in the population structure indicating changing status and welfare, to determine movements and distributions, and to amass sufficient general knowledge on polar bear biology to facilitate a more complete understanding and appreciation of the significance of the polar bear in the Alaska Arctic.

Prepared by: _____

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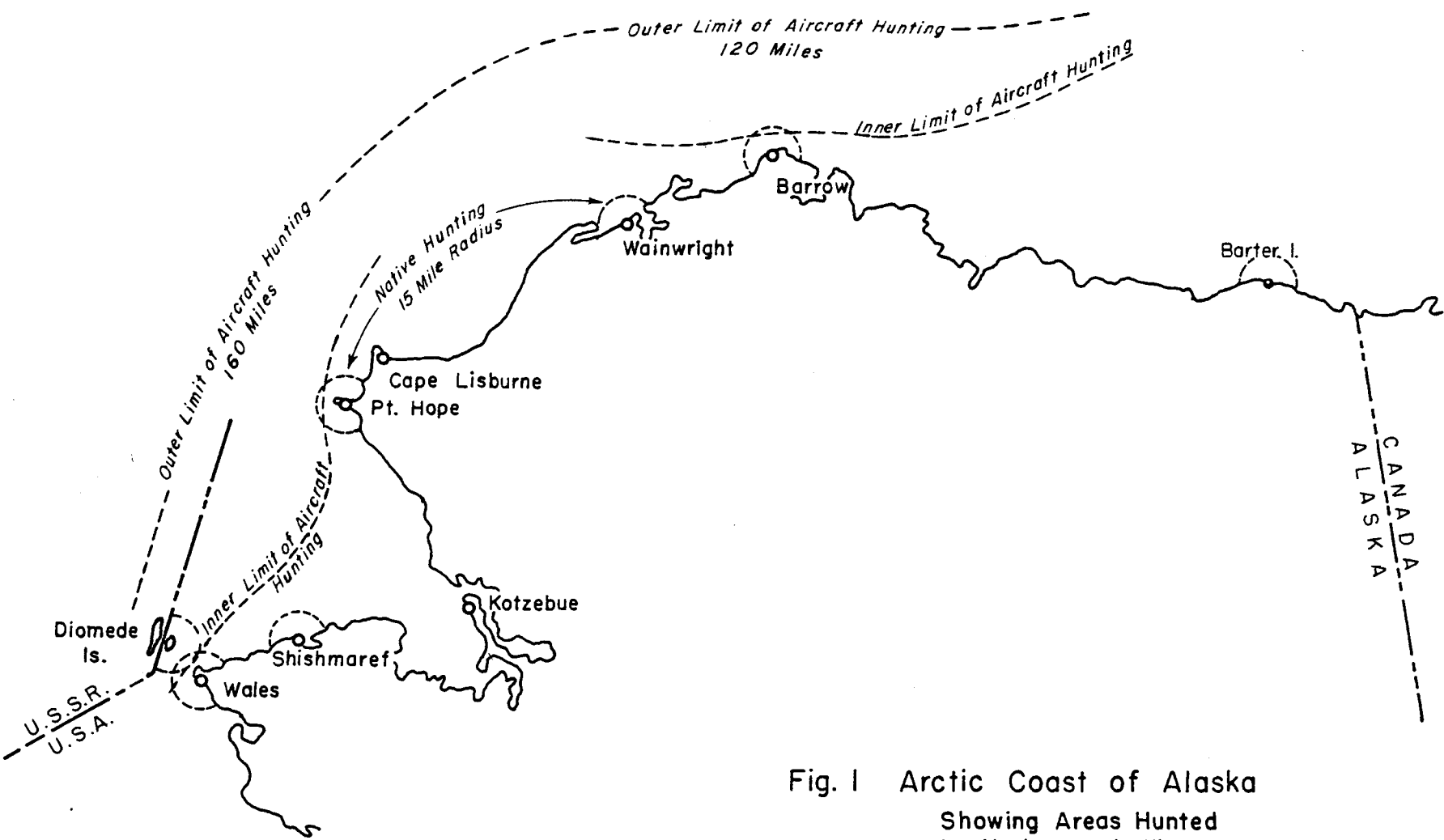


Fig. 1 Arctic Coast of Alaska
Showing Areas Hunted
by Natives and Whites

