POND INLET, NORTHERN BAFFIN ISLAND: THE STRUCTURE OF AN ESKIMO RESOURCE AREA

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Abstract: The structure and yield of hunting, trapping and fishing areas around Pond Inlet in northern Baffin Land are analyzed on the basis of interviews with local Eskimos. Despite the abandonment of outlying Eskimo camps and the concentration of population in the central settlement of Pond Inlet since the 1960's, virtually all the former hunting and fishing areas continue to be exploited. However, the intensity of use (in number of fishing or hunting days per km^2) is highest in the immediate vicinity of the central settlement, as is also the intensity of yield (in kilocals per km^2 and in dollar revenue per km^2). On the basis of optimal daily energy requirements in Arctic regions, local hunting and fishing are found to supply less than 29 percent of food energy needs; Eskimos evidently show a growing preference for foodstuffs of southern Canadian origin. Fieldwork in 1973–74 was supported by the Deutsche Forschungsgemeinschaft. (The translation is by William Barr, University of Saskatchewan.)

The evaluation of Eskimo resource areas, i.e., the totality of hunting, fishing and trapping areas utilized by local groups, has undergone fundamental changes in the last 25 years. Mainly as a result of the Area Economic Survey reports by the then Department of Northern Affairs and National Resources in Ottawa, from the late 1950's onward the emphasis shifted from pure description of the spatial and temporal sequence of economic activities to productive capacity, with a view of insuring the livelihood of the Eskimo population. Those reports, which were conceived as planning aids, focused on qualitative and especially quantitative aspects: the nature and extent of available resources, and the degree of present and potential utilization. This type of statement as to the yield capacity of individual Arctic areas in most cases was made possible by the resource surveys being undertaken with increasing frequency at that time by the then Fisheries Research Board (Arctic Unit) and by the Canadian Wildlife Service.

Because of the intensification of economic development of the Canadian North as a source of raw materials during the last few years, the question of the Eskimo resource area has again become timely, while the point of view from which it has been approached has been steadily changing. In Canada, following the Alaskan precedent, previously demarcated and competing territorial claims have led since 1972 to the demand for recognition of hereditary Eskimo rights to land ownership. Inuit Tapirisat (Eskimo Brotherhood) of Canada, the national representative association of the Canadian Eskimo, has since 1973 been conducting a research program, financed by the Federal Government, into Eskimo land use in the Northwest Territories from early settlement until the present. This will provide the basis for a clarification of land ownership claims. Within the framework of a large-scale questionnaire program, over 2,000 Eskimos will be asked about residence sites and hunting and trapping areas used in the recent past. In accordance with the aims of the investigation, historical aspects relating to continuity of settlement and economic activity will be stressed; originally planned surveys of the frequency of use of specific areas during specific periods could not be carried out within the present project because of time limitations, so that the emphasis will be placed

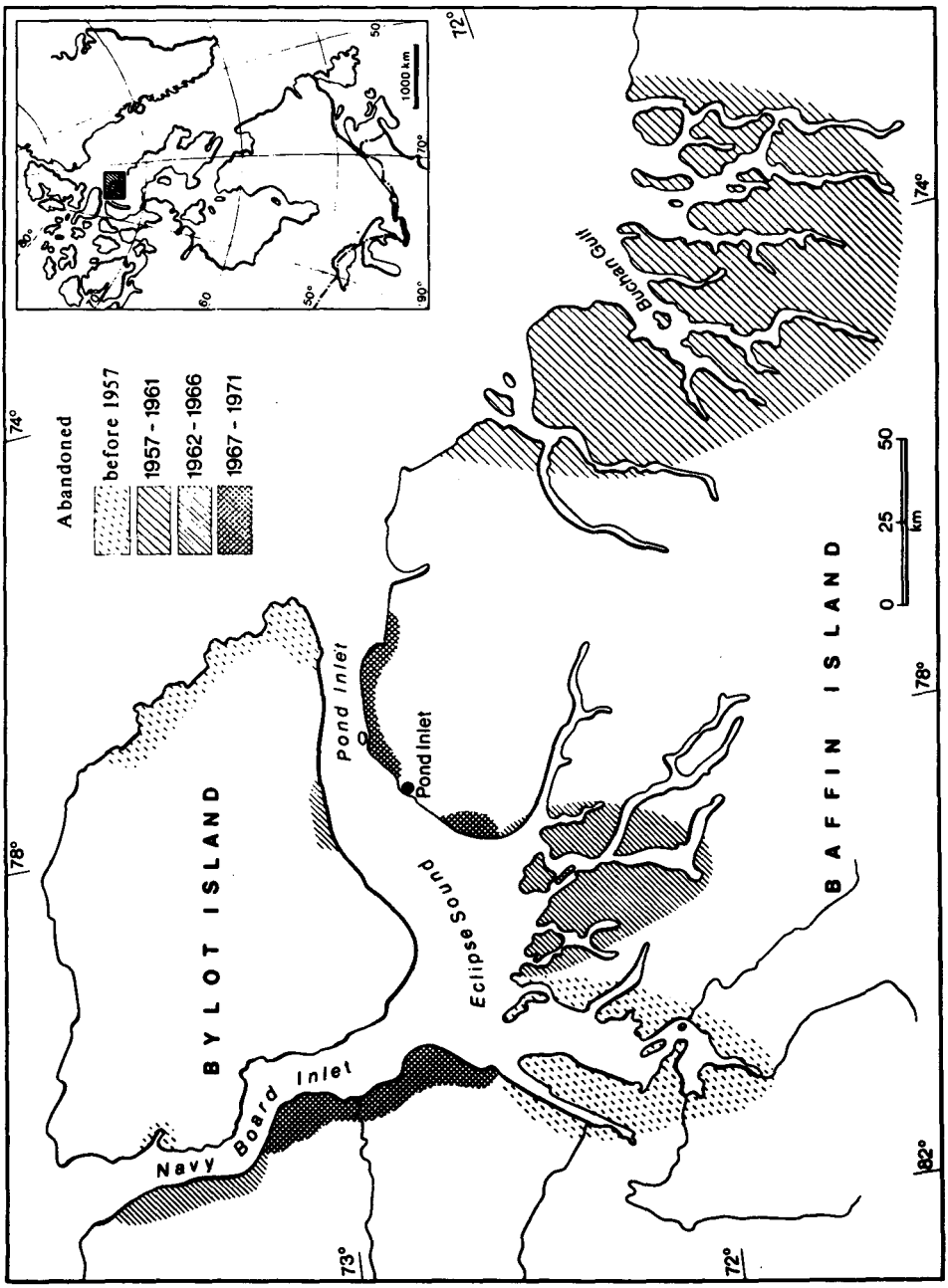

Fig. 1. Abandonments of Eskimo camp settlement areas around Pond Inlet since 1950. *Source:* Bissett (1968) and personal interviews.

TABLE 1

Population Distribution Between Pond Inlet and Its Hinterland, 1951–1972

Year	*Total population*	*Camp population*
		(%)
1951	182	74.7
1956	211	81.0
1958	239	80.4
1963	279	70.6
1972	408	0.0

Sources: Bissett (1968) and personal observations.

more on determining the limits of the hunting and trapping areas than on working out the internal organization of the resource area and the yield capability of component parts.

Previous attempts at demarcation have been limited to intensely used core areas for individual regions or for central-place settlements, i.e., hunting, fishing and trapping areas favored over a period of years, as against extensively used secondary or supplemental areas (Foote, 1967; Treude, 1972). Only the area used in a single year was accurately delimited and mapped, with the demarcation of various activities: seal hunting, caribou hunting, fishing, etc. (cf. Usher, 1965; Roy 1971; Treude, 1974). As a rule, these findings have been supported by statistical material on hunting productivity, which in the main has been based on the files of the resident trading company or on estimates by the Royal Canadian Mounted Police (RCMP); these yielded at least an approximate count of the number of pelts and furs available for trade. In the case of the Keewatin, Brack and McIntosh (1963) have gone so far as to determine the population capable of being supported by the study area on the basis of the calculated usable number of calories, determined from the yields of hunting, fishing and trapping, and to relate it to the population already resident. In view of the growing role of paid employment, however, this exercise was not pursued any further. On the other hand, Kemp (1971) analyzed the energy flows in an Eskimo settlement in southern Baffin Island on the basis of two households, one traditional, the other with more "modern" inclinations, and demonstrated the efficiency of Eskimo hunting.

Foote (1968) was the first to attempt to examine the Eskimo resource area of Point Hope (Alaska) in a differentiated approach and to determine, in terms of calories, the relative productivity of the areal components. In the case of caribou hunting on the mainland, he was able to plot the precise locations of caribou kills on the map, but difficulties arose in determining locations of kills in the case of seal hunting some distance from the coast only these two types of hunting were examined. He attempted to overcome this problem by dividing the entire coastal region into zones of equal area, and then calculated the hunting yield of each zone. However some lack of precision arose from the fact that a uniform unit of exploitation was not selected.

In the present paper, Foote's approach has been adopted and an attempt has been made to apply it in a modified form to the resource area around the settlement of Pond Inlet (Baffin Island).

The Development of the Settlement of Pond Inlet and Its Resource Area

Like most settlements in the Canadian Arctic, Pond Inlet can be traced back to a trading post. In 1921 the Hudson's Bay Company erected an establishment here, at a site that had served whalers as a summer station until the first decade of this century. The location fulfilled the two requisites for the establishment of a trading post: it was central to a large area of Eskimo occupation, and was easily accessible by ship. That same year a RCMP post was set up, and, in 1929, Anglican and Catholic missions were added. Pond Inlet thus developed into a central-place settlement, surrounded by Eskimo camps; it was visited by Eskimos only at irregular intervals for trading business or church ceremonies. The Eskimo population of the settlement itself was limited to a small number of families in the service of the HBC or the RCMP.

Attempts by other families to settle in the immediate neighborhood were, as a rule, discouraged by the RCMP on the ground that only by living in small camps on actual hunting grounds could the Eskimo be guaranteed a livelihood. The characteristic features of this period were:

(1) Camps of 2 to 12 families (Crowe, 1969) located some distance from the trading post and organized on the basis of family groupings and economic cooperation under the leadership of an *issumatak* (camp boss);

(2) Basically a subsistence economy, with one market-oriented economic activity, namely trapping.

This pattern lasted until the early sixties. However, starting in early fifties an evident movement of population had become apparent, with abandonment of outlying regions and in-migration into Pond Inlet (Fig. 1). Contributing factors may have been Federal social programs that were beginning at that time (cf. Treude, 1972), i.e., the payment of family allowances, old age pensions and especially welfare checks in the settlement of Pond Inlet itself. There were other causes for the increasing shift of population into the central settlement after 1960. One was the breakdown of traditional camp communities as members suffering from tuberculosis were sent to sanatoria in southern Canada. If this involved a breadwinner, in many cases the remainder of the family moved into the settlement, where the Federal agencies undertook to look after them. Other contributing factors were the opening of a day school (1961) and a nursing station (1966), and the start of a rental housing building program (1966). The building program, which lasted several years, provided Eskimos with the opportunity of accepting paid employment. Water supply, sewage removal and building maintenance brought with them a fairly large number of permanent jobs. In 1967 a cooperative undertook the purchase and sale of handicraft articles made in the settlement. Further examples can be cited to show how, parallel with the abandonment of the camps, the emphasis in the Eskimo economy shifted to wage employment.

The Eskimo camps were usually situated near hunting areas. Ideally, a camp was located in the center of a narrowly circumscribed hunting area that supported it; however, this situation obtained year-round only in rare cases. As a rule, spatial and temporal variations in the food source made it necessary to move camp, i.e., to exploit hunting, fishing and trapping opportunities, short-term hunting camps were used. The various types of hunting, fishing and trapping, all of which continue to be practiced, will now be briefly outlined in their seasonal sequence.

1. *Seal hunting:* principally directed at the ringed seal (*Pusa hispida*), which generally stays in these waters year-round; to a lesser extent at the larger bearded seal (*Erignathus barbatus*) (*ujjuk*), and also at the harp seal (*Pagophilus groenlandicus*), which is a migratory species; carried out by the following techniques:

(a) *Aglu* hunting for ringed seal from the end of October, after the formation of the first new ice cover, until the middle of April, at the breathing holes (*agluit*) kept open by the seals; either as bare-ice hunting when the ice is still snow-free, or as true *aglu* hunting when the ice becomes snow-covered. Included in this category is hunting along tide cracks, in part using nets, as well as hunting for young seals in snow caves fashioned by the parents over the *agluit*. A new style of hunting is represented by "set-gun" hunting, introduced by the RCMP, whereby a rifle is set up at short range above the *aglu* in such a way that on surfacing, the seal itself trips the shot.

(b) Floe-edge hunting for ringed seal, and to some extent also bearded seal, from the end of January until the beginning of July at the edge of the fast ice; the seals are shot in the water from the ice and retrieved by means of a small boat hauled on a sledge.

(c) Hunting with a shooting-screen (*taluak*), from mid-April to the beginning of July, for ringed seal basking on the ice near their *agluit*; as the hunter approaches the seal, he pushes a white shooting screen ahead of him.

(d) Hunting from a boat for ringed seal, and also to a limited extent for bearded and harp seal in open water, from early August until the end of September. Included in this category is hunting from the shore, with the animal retrieved by a boat; also netting of seals in summer.

2. *Walrus hunting:* as a rule restricted to animals encountered during floe-edge hunting; special walrus hunts, similar to those known in Foxe Basin, with its large stocks of walrus, do not occur. Solitary animals that occasionally occur in Eclipse Sound may have arrived there in early summer with the ice drifting through Navy Board Inlet.

3. *Narwhal hunting* begins at the end of July at the floe edge; schools subsequently follow ice breakup into the southern Milne Inlet area; the return migration is effected in September. Hunting initially carried out from cracks in the ice; later hunting from boats in open water.

4. *Polar bear hunting:* from February to April primarily in the area of the floe edge off Pond Inlet. Isolated animals killed in early winter in Eclipse Sound may have reached this area on drifting ice coming through Navy Board Inlet.

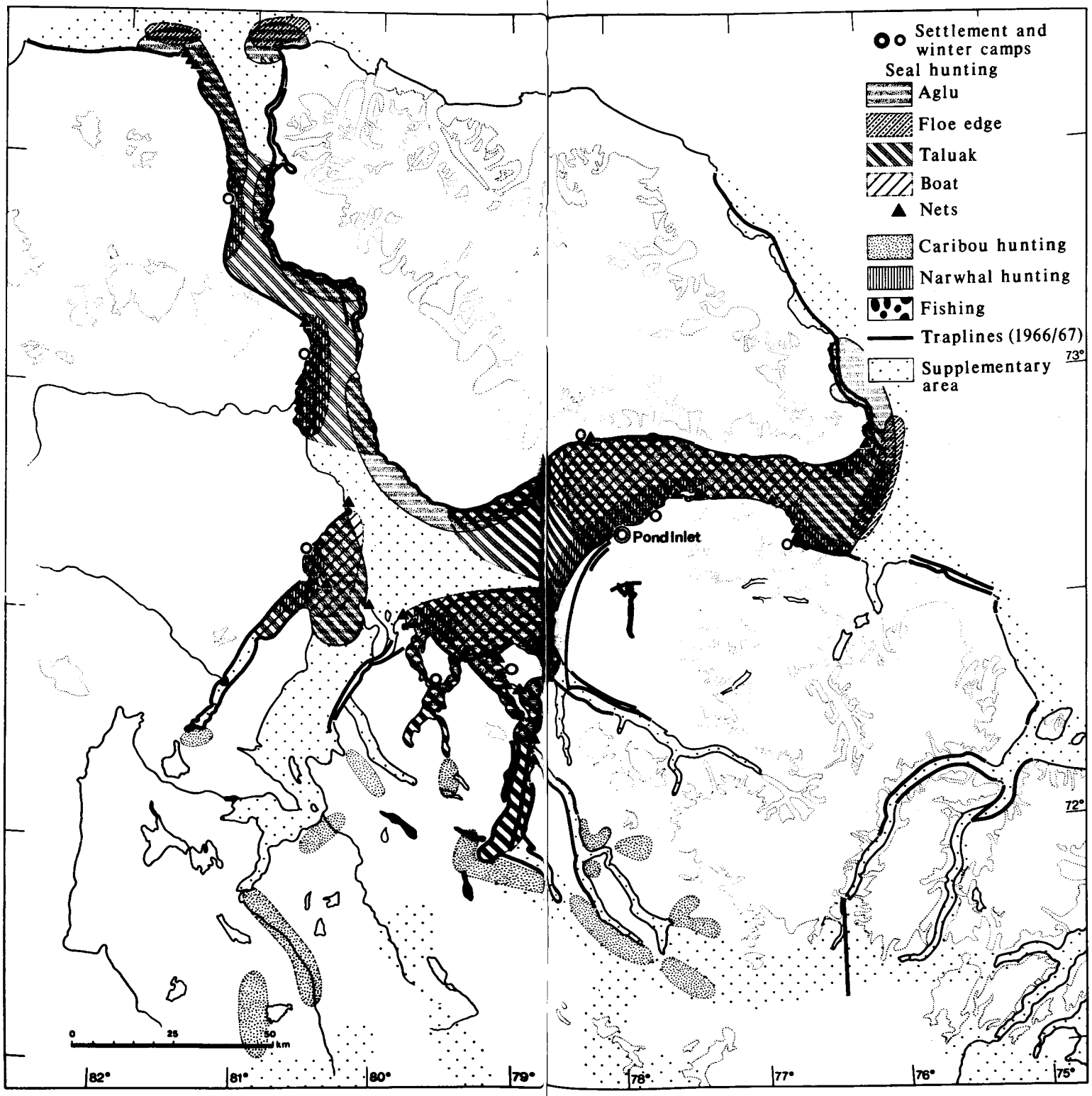

Fig. 2. Settlements and exploitation areas around Pond Inlet in the mid-1960's.

Sources: Bissett (1968) and personal interviews.

5. *Caribou hunting:* winter hunting, with a distinct seasonal emphasis on November and December, as soon as the ice is bearing, and there is adequate snow cover on the land for sledge travel; also from February to May in the traditionally preferred traveling season, with adequate daylight and ideal snow conditions; occasional summer hunting in August and September.

6. *Fishing:* summer fishing at the river mouths in early July as the arctic char (*Salvelinus alpinus*) downriver, and again in the second half of August as they run upstream; winter fishing from November to February through the ice on various lakes.

7. *Fur trapping:* from mid-November till late December, and with a lesser intensity until mid-April, trapping of arctic fox, predominantly in the coastal zone; only occasionally are trap lines placed on sea ice (in connection with seal hunting) or in the interior (in connection with caribou hunting or ice fishing).

Figure 2 reconstructs the areas of exploitation for the former camps as well as for the central settlement. As can be seen, the principle of proximity of residence site to exploitation area was generally observed. Even if yields demonstrated spatial and temporal variations, a certain regularity was still displayed in the seasonal sequence of resource utilization, and thus a certain constancy in the exploitation of specific areas from year to year; depending on ecological factors, from the type and duration of ice cover or the thickness of snow cover, to the migration patterns of individual species, it was found expedient to hunt, year after year, at a specific time and a specific place, using appropriate hunting techniques. With the exception of floe-edge hunting, which was associated with the mouths of Pond Inlet and Navy Board Inlet, the hunting and trapping areas were close together, with the camp in a central position. Even caribou hunting could originally be pursued on Bylot Island and on the west shore of Navy Board Inlet; only since the elimination of these herds in the early fifties, probably as a result of overhunting, has it been concentrated in the Milne Inlet, Tay Sound and Paquet Bay areas, to the south of Eclipse Sound.

In view of the abandonment of the camps and the concentration of the population in one location, the question arises whether these population movements have led to further contraction of the area of exploitation, or whether, and to what extent, it was possible to use the traditional hunting and trapping areas from the central settlement. A contraction of the hunting areas as a consequence of permanent employment can be generally ruled out; it has been universally observed in Arctic settlements that the wage employees are at the same time the most successful hunters. The reason may lie in the fact that, on the one hand, it is the most active Eskimos who take the trouble to find jobs, and on the other hand, it is precisely this group that has the financial means for purchasing machines, fuel and ammunition. The retention of the old areas of exploitation, despite increased distance from place of residence, is further explained in part by the circumstances that, with the introduction of snowmobiles and the intensified use of outboard motors since 1965, convenient, if expensive, means of transport have been available. With increasing use of snowmobiles, the number of sledge dogs has declined rapidly; by 1973 only three complete teams survived. The provision of food for dogs had been a significant motivation for hunting activities. Now stimulus was the desire to supply at least part of one's own consumption of meat, as well as to acquire fox pelts and, since the sudden price rise in 1973, sealskins for sale.

Compared with the mid-sixties, the exploitation area around Pond Inlet (Fig. 3) for 1972–73, i.e., after the abandonment of the last camp in early winter 1971, displays a marked contraction only in its outermost, peripheral areas, particularly in the northern part of Navy Board Inlet. Figure 3 indicates the positions of the areas utilized during one year (summer of 1972 and winter of 1972–73) but tells nothing of the intensity with which hunting was pursued in these areas; this topic will now be examined.

Intensity of Utilization and of Yield

In the summer of 1973 a program of interviewing was undertaken, covering 93 men, or 84 percent of the productive male population of the settlement older than 16 years of age. For 85 of those interviewed, i.e., 92 percent of those involved in some form of hunting or trapping in the previous year, the area utilized for each individual hunting trip was mapped as far as possible, and the number of days spent and the yield of the trip were determined. Apart from exact statements as to the extent of hunting in general, the number of individual hunting trips, as well as the total productive yield, the aim of these investigations was to acquire some concept as to intensity of utilization and its spatial distribution, and to select a measure that would also be applicable for comparative purposes in other Arctic areas. On the basis of the data assembled, it proved possible to divide the resource area used by the people of Pond Inlet as follows:

a) according to the duration of use in days, for every km^2 of resource area;

b) according to usable yield obtained, in calories per km^2 of resource area;

c) according to cash yield achieved, in dollars per km^2 of resource area.

Table 2 provides information on the type and duration of hunting trips, i.e., period of absence from home, as well as number of hunters involved. The combined hunts were in most cases planned as such and were conducted either in parallel or, in some cases, sequentially, after a change of hunting locale. Also included are undertakings in which an additional type of hunting was inserted spontaneously after the game, perhaps a bear or an *ujjuk*, had been sighted. A clear separation is impossible in such cases. Relatively short trips, of 1–2 days, comprise 84.5 percent of the total; longer trips lasting more than a week, and necessitating operations from one or more hunting camps, accounted for 4.8 percent of trips, but for 26.5 percent of total days spent. The duration of hunts, as a rule, was rounded off to the nearest whole day; only in some cases, as in summer fishing at a river near the settlement, were half days included. No attempt was made to differentiate between shorter winter days and longer summer days.

On the basis of data on the duration of hunting trips and the location and size of the hunting areas, maps of the intensity of utilization were drawn for every type of hunting, as well as for the totality of hunting activities (Fig. 4) on the basis of hunting days per km^2 of hunting area, and the areal contribution of each intensity class was determined as a percentage of the total area. The data suggest the intensity with which the individual types of hunting are pursued, i.e., the degree of exploitation of an area as determined by the ratio of hunting days to area. Summer fishing leads in use intensity, with 9.9 days per km^2, but involves a relatively small area (Table 3; it should be noted that relatively "area-intensive" floe-edge hunting

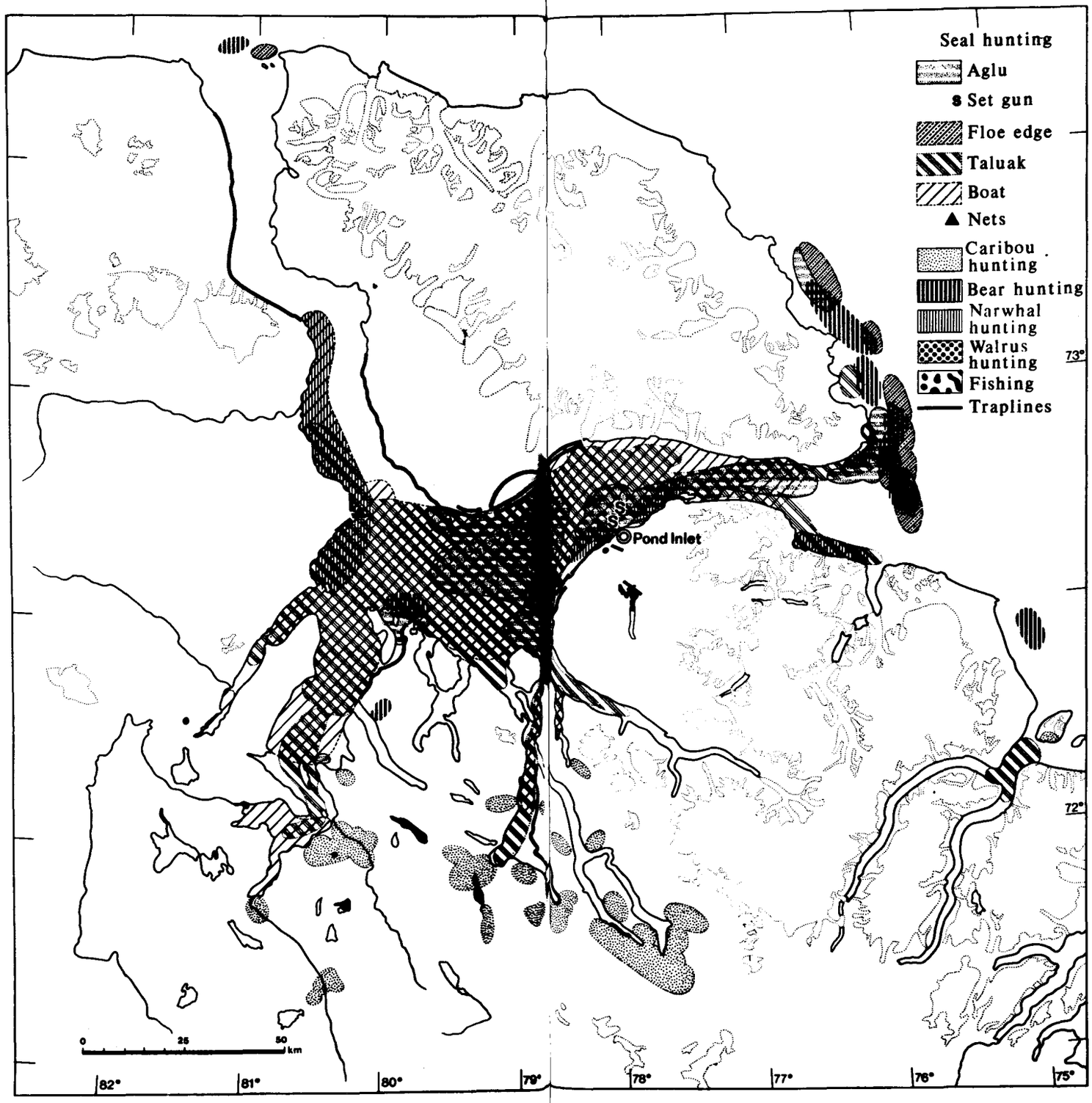

Fig. 3. Settlement and exploitation areas around Pond Inlet in 1972–73.

Sources: Personal interviews.

TABLE 2

Type and Duration of Hunting, Pond Inlet, July 1972–1973*

			Number of trips					
			<3	3–4	5–6	>6		
	Hunters	Total days	(Days per trip)				Total	Average duration
Aglu hunting	41	504	363	4	10	5	382	1.3
"Set gun" hunting	2	14	14	–	–	–	14	1.0
Floe edge hunting	34	163	20	7	10	5	42	3.9
Floe edge/*aglu*	6	64	18	–	1	2	21	3.0
Taluak hunting	64	464	78	7	18	15	118	3.9
Floe edge/*taluak*	1	2	1	–	–	–	1	2.0
Boat hunting	45	311	244	2	3	4	253	1.2
Boat hunting/nets	1	6	–	–	1	–	1	6.0
Floe edge/*aglu*/bear	1	24	–	–	–	1	1	24.0
Floe edge/walrus/narwhal	1	6	–	–	1	–	1	6.0
Floe edge/narwhal	1	2	1	–	–	–	1	2.0
Taluak hunting/caribou	2	9	–	1	1	–	2	4.5
Taluak hunting/caribou/fishing	1	3	–	1	–	–	1	3.0
Boat hunting/*ujjuk*	2	69	69	–	–	–	69	1.0
Boat hunting/narwhal	4	38	–	–	1	3	4	9.5
Boat hunting/*ujjuk*/narwhal	2	30	–	–	–	2	2	15.0
Boat hunting/caribou/narwhal	1	14	–	–	–	1	1	14.0
Boat hunting/caribou/fishing	1	12	–	–	–	1	1	12.0
Ujjuk hunting	5	5	6	–	–	–	6	0.8
Walrus hunting	2	6	1	1	–	–	2	3.0
Narwhal hunting	11	40	20	1	1	1	23	1.7
Narwhal hunting/*ujjuk*	1	12	–	–	–	1	1	12.0
Polar bear hunting	8	18	9	1	1	–	11	1.6
Trapping	11	118	82	–	–	3	85	1.4
Caribou hunting (summer)	7	43	1	4	1	2	8	5.4
Caribou hunting (winter)	59	362	55	26	13	10	104	3.5
Caribou (winter)/trapping	1	4	–	1	–	–	1	4.0
Caribou (winter)/fishing	9	64	2	1	4	3	10	6.4
Fishing (summer)	38	141	180	–	1	2	183	0.8
Fishing (winter)	35	238	33	12	14	7	66	3.6
Fishing (summer)/caribou	2	9	–	1	1	–	2	4.5
Total hunting trips	85	2,795	1,197	70	82	68	1,417	2.0

*Ringed seal is species hunted unless otherwise specified.

contrasts with the more "area-extensive" *taluak* hunting). On another level the areal pattern of distribution of use intensity suggests that, if one excludes caribou hunting, which is tied to particular localities (although even here a trend toward hunting nearer the settlement is discernable), hunting is now clearly concentrated in the immediate vicinity of Pond Inlet as well as in the area around Button Point, the southeastern tip of Bylot Island, which is known to be highly productive. Secondary centers are in the areas of the former camps in the central section of Navy Board Inlet and in the southeastern part of Eclipse Sound, as well as off the southwest tip of Bylot Island. There are indications that 1972–73 was a fairly typical year for the degree of exploitation of the resource area since the abandonment of the camps. We can thus conclude that, despite the spread of efficient means of transport, use intensity in the old exploitation zones around the camps has declined.

As the next stage, we attempted a spatial breakdown based on yield per km^2 of hunting area. Differentiation on the basis of yield of animals per km^2 (Table 4) permits comparisons solely between the types of hunting pursued. However, an overview becomes possible when those components of the yield that are usable for human food–meat, edible viscera and *muktuk* (the skin of the narwhal, regarded as a delicacy)–are converted into kilocalories, according to the conversion data presented in Table 5. Since appropriate figures are not available for the narwhal, I have substituted those for beluga, whose weight is identical.

As in the case of use intensity, productivity intensity maps (Fig. 5) were also compiled for this interpretation of yield, and the areal proportion of each value class was determined as a component of the total area (Table 6). Fishing is still in first place, with the highest yields per unit area; because of the greater weight per animal, walrus hunting and winter caribou hunting come next, ahead of the various types of ringed seal hunting. The spatial distribution pattern displays clear parallels with that of use intensity. However, though this tendency is partly concealed by the class-size interval, the immediate vicinity of Pond Inlet seems to emerge less favorably from the point of view of the calories/day relationship than the more extensive surrounding area, and particularly the secondary centers. There may be two explanations. First, there is the phenomenon, examined in detail by Bradley (1970), of the ringed seal's avoiding areas of heavy traffic and high noise intensity, such as the vicinity of large settlements and heavily traveled boat and snowmobile routes. Second, the more experienced and more successful hunters tend to hunt farther away from the settlement in what are often richer game areas. For exact statements on this aspect, however, the interview would have to be designed differently, and the actual point of killing would have had to be more precisely defined. Hence no attempt was made to produce a map depicting calories/day relationships.

Finally, for the market-potential aspect of Eskimo hunting, we made a spatial breakdown according to cash yield per km^2 of hunting area. This was based on average prices paid in 1972–73 by a trading company operating in the settlement:

$15.60 for a ringed seal skin
$16.00 for a fox pelt
$1,130.00 for a polar bear skin

Since accurate figures on the extent of sales of narwhal tusks were not available, and since the number of kills of female animals (which are tuskless) could scarcely

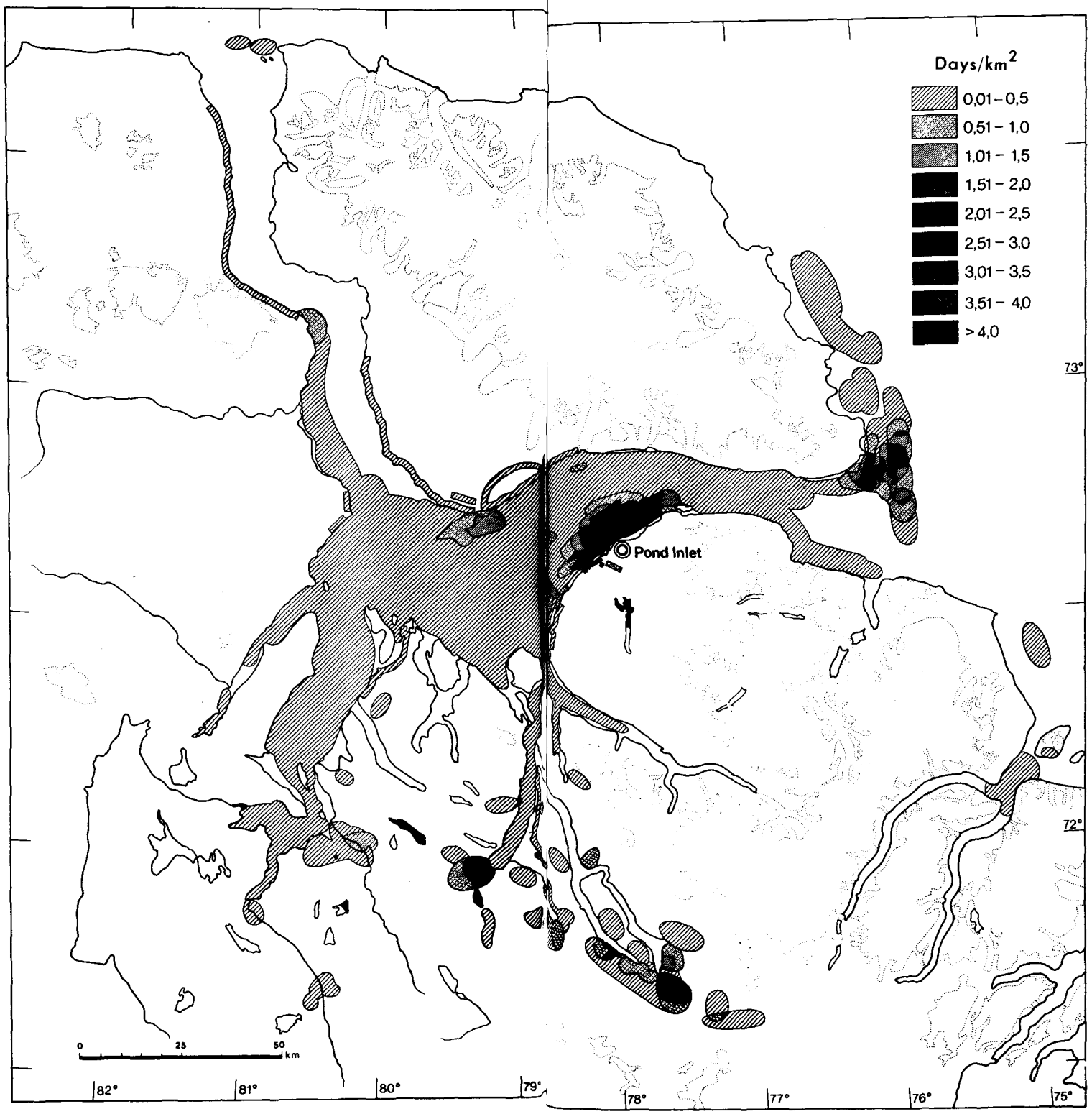

Fig. 4. Intensity of use of hunting areas around Pond Inlet (in days/km^2).

Source: Personal interviews.

TABLE 3

Breakdown of Total Area by Use-intensity Classes (days/km^2)*

	Area (km^2)											
	Total	*0.01–0.05*	*0.51–1.00*	*1.01–1.50*	*1.51–2.00*	*2.01–2.50*	*2.51–3.00*	*3.01–3.50*	*3.51–4.00*	*>4.01*	*Total days*	*Days km^2 (mean)*
Aglu hunting (incl. set gun)	1,758	1,431	164	62	50	10	8	16	14	3	563	0.3
Floe edge hunting	360	210	85	32	18	15	–	–	–	–	214	0.6
Taluak hunting	4,374	4,354	20	–	–	–	–	–	–	–	472	0.1
Boat hunting (incl. nets)	4,335	4,062	155	118	–	–	–	–	–	–	475	0.1
Ujjuk hunting	432	386	46	–	–	–	–	–	–	–	116†	0.3
Walrus hunting	66	66	–	–	–	–	–	–	–	–	12†	0.2
Narwhal hunting	742	688	54	–	–	–	–	–	–	–	139†	0.2
Polar bear hunting	394	394	–	–	–	–	–	–	–	–	30†	0.1
Trapping	333	306	18	4	–	–	–	–	5	–	122†	0.4
Caribou (summer)	253	253	–	–	–	–	–	–	–	–	47	0.2
Caribou (winter)	855	589	164	13	58	31	–	–	–	–	410	0.5
Fishing (summer)	15	–	2	–	9	–	–	–	–	4	149	9.9
Fishing (winter)	38	–	–	–	14	–	–	–	–	24	286†	7.5
Total number of trips	7,022	6,018	515	158	120	84	42	18	11	56	2,795	0.4

*Species hunted is ringed seal unless otherwise specified.

†Includes days for which a parallel type of hunting has already been recorded, mainly under the heading "*ujjuk* hunting."

TABLE 4

Breakdown of Total Area by Yield Intensity Classes (animals/km^2)*

	Area (km^2)												
	Total	*Unproductive*	*0.01–0.50*	*0.51–1.00*	*1.01–1.50*	*1.51–2.00*	*2.01–2.50*	*2.51–3.00*	*3.01–3.50*	*3.51–4.00*	*>4.01*	*Total animals*	*Animals/km^2 (mean)*
Aglu hunting (incl. set gun)	1,758	24	1,456	92	58	43	30	7	11	31	6	724	0.4
Floe edge hunting	360	48	188	28	27	17	11	14	10	17	–	315	0.9
Taluak hunting	4,374	85	4,096	167	26	–	–	–	–	–	–	694	0.2
Boat hunting (incl. nets)	4,335	240	3,807	159	43	43	25	18	–	–	–	747	0.2
Ujjuk hunting	432	–	432	–	–	–	–	–	–	–	–	15	0.03
Walrus hunting	66	–	66	–	–	–	–	–	–	–	–	4	0.06
Narwhal hunting	742	488	254	–	–	–	–	–	–	–	–	32	0.04
Bear hunting	394	22	372	–	–	–	–	–	–	–	–	12	0.03
Trapping	333	53	260	20	–	–	–	–	–	–	–	59	0.17
Caribou (summer)	253	–	202	51	–	–	–	–	–	–	–	58	0.2
Caribou (winter)	855	–	585	142	51	36	14	27	–	–	–	542	0.6
Fishing (summer) (100's)	15	–	9	2	–	1	–	1	–	–	2	18.9	1.3
Fishing (winter) (100's)	38	–	11	4	14	1	7	–	1	–	–	43.8	1.2

*Species hunted is ringed seal unless otherwise specified.

TABLE 5

Weights and Nutritional Values for Arctic Game Animals (after Foote, 1967)

	Average live weight (kg)	*Fat & blubber*		*Meat*		*Edible viscera*		*Muktuk*		*Total*		*Usable portion*	
		kg	*10^4 kcal*	*kg*	*10^4 kcal*	*kg*	*10^4 kcal*	*kg*	*10^4 kcal*	*kg*	*10^4 kcal*	*kg*	*10^4 kcal*
Ringed seal	45.5	14.6	11.7	12.3	1.8	4.1	0.5			31.0	14.0	16.4	2.3
Ujjuk	273.0	73.1	58.5	68.3	7.3	24.6	2.6			166.0	68.4	92.9	9.9
Walrus	682.0	109.1	87.3	238.7	34.4	177.3	25.5			525.1	147.2	416.0	59.9
Narwhal	454.0	113.5	90.8	77.2	7.4	104.4	10.0	77.2	10.0	372.3	118.2	258.8	27.4
Polar bear	363.6	134.5	107.6	138.2	17.7	10.9	1.4			283.6	126.7	149.1	19.1
Caribou	68.2	6.8	5.4	23.9	2.8	13.6	1.5			44.3	9.7	37.5	4.3
Arctic char	1.6											1.2	0.16

TABLE 6

Breakdown of Yield Intensity Classes (kcal/km^2) for Entire Area*

	Area (km^2)												
	Total	*Unproductive*	*<1.00*	*1.01–2.00*	*2.01–3.00*	*3.01–4.00*	*4.01–5.00*	*5.01–6.00*	*6.01–7.00*	*7.01–8.00*	*>8.01*	*Total 10^4 kcal*	*10^4 kcal/km^2 (mean)*
							(10^4 kcal/km^2)						
Aglu hunting (incl. set gun)	1,758	24	1,405	129	52	33	43	16	9	2	45	1,655.2	0.94
Floe edge hunting	360	48	143	72	2	30	19	5	14	10	17	724.5	2.01
Taluak hunting	4,374	85	3,942	320	27	–	–	–	–	–	–	1,596.2	0.36
Boat hunting (incl. net)	4,335	240	3,751	220	23	23	59	13	6	–	–	1,718,1	0.40
Ujjuk hunting	432	–	374	58	–	–	–	–	–	–	–	148.5	0.34
Walrus hunting	66	–	–	43	15	3	–	–	–	–	5	239.6	3.63
Narwhal hunting	742	488	23	37	83	68	–	–	27	16	–	876.8	1.18
Polar bear hunting	394	22	327	45	–	–	–	–	–	–	–	229.2	0.58
Caribou (summer)	253	–	176	26	30	–	21	–	–	–	–	206.4	0.82
Caribou (winter)	855	–	338	200	129	68	14	40	10	26	30	2,330.6	2.73
Fishing (summer)	15	–	1	8	–	–	–	–	–	1	5	302.7	20.18
Fishing (winter)	38	–	–	11	–	–	–	–	–	3	24	700.5	18.43
			<2.00	*2.01–4.00*	*4.01–6.00*	*6.01–8.00*	*8.01–10.00*	*10.01–12.00*	*12.01–14.00*	*14.01–16.00*	*>16.00*		
Total number trips	7,022	486	5,500	547	173	77	74	55	31	19	60	10,738.3	1.53

*Species hunted is ringed seal unless otherwise specified.

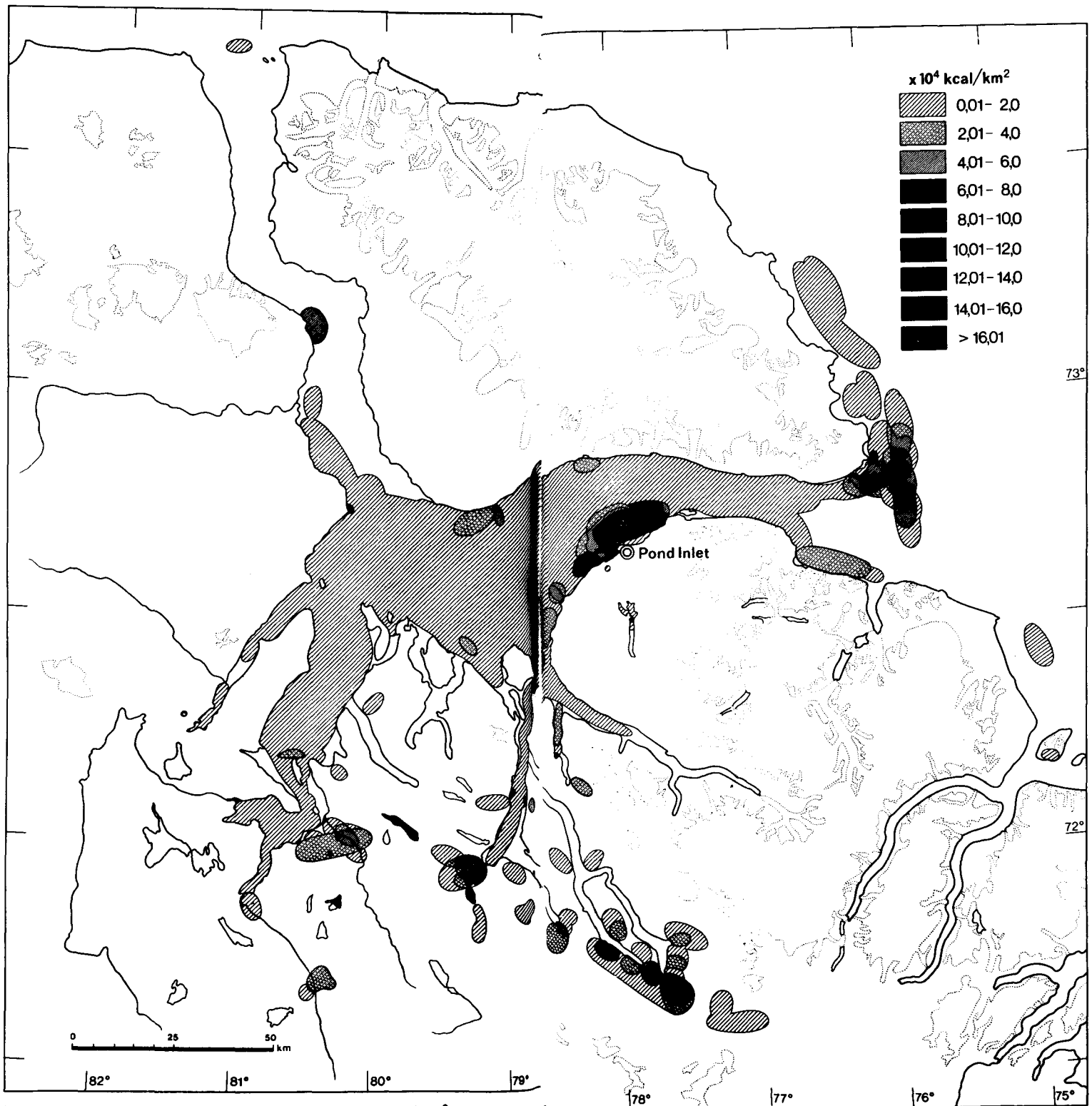

Fig. 5. Yield intensity of hunting areas around Pond Inlet (in kcal/km^2).

Source: Personal interviews.

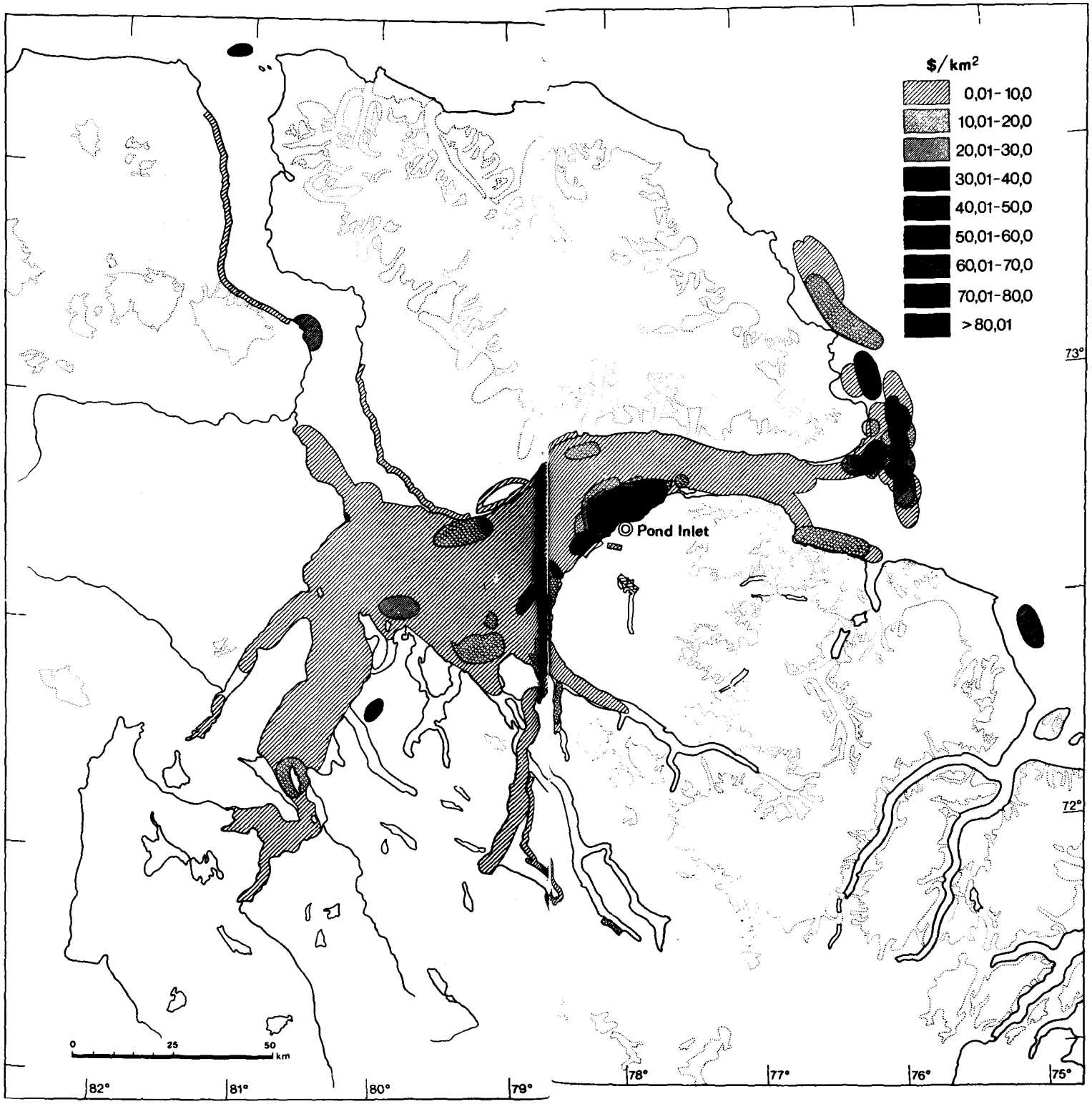

Fig. 6. Yield intensity of hunting areas around Pond Inlet (dollars/km^2).

Source: Personal interviews.

TABLE 7

Breakdown of Yield Intensity Classes ($/km^2) for Entire Area

Area (km^2)

	Total	*Unproductive*	*<2.00*	*2.01–4.00*	*4.01–6.00*	*6.01–8.00*
Trapping	333	53	164	54		53
			<10.00	*10.01–20.00*	*20.01–30.00*	*30.01–40.00*
Total hunts	7,022	1,270	4,567	586	198	52

be accurately determined, it was assumed that each animal killed produced 8 lbs. of tusk at $15.00 per lb. Ivory derived from walrus hunting occurred in such small amounts that it could be omitted from the calculations. Figure 6 shows the spatial pattern of yield intensity and Table 7 the areal proportions of individual value classes.

The numerical data used as the basis for our calculations require a word of explanation. On the one hand, the data were dependent on the memory of hunters and certainly contain errors. On the other hand, they represent the optimal possible; in every case, they are more accurate than official statistical data. The number of seals determined by interview inevitably includes animals whose skins were not suitable for sale, either because they had been damaged or because they were moulting, and also those which were retained for domestic use, e.g., for making boots or for further manufacture into handicraft items. However, it is still difficult to account for the discrepancy between the 703 sealskins traded in the 1972–73 fur-accounting year, from July 1 to June 30 (compared with 1,878 skins in 1971–72), and the figure of 2,480 seals killed, as determined by interviews. The summer of 1972 was notorious for ice; throughout the summer, sea ice hindered boat traffic, and hence boat hunting in Pond Inlet, but this could scarcely have resulted in such serious discrepancies. A fairly large number of hunters may have been involved in a government assistance program, which made it possible to ship skins to auctions in the South, circumventing the middlemen, and these shipments are not reflected in the official statistics. It seems reasonably certain that narwhal hunting suffered as a result of the unfavorable ice conditions; the 1972 yield was only one-third of the animals killed in the following summer, as recorded by the author.

The low yield from trapping in the 1972–73 winter coincided with a low point in the cyclic fluctuations in the stocks of Arctic fox: the 12 pelts that were traded during the study period can be contrasted with 611 previous years. The number of polar bears killed was evidently related to a government quota of 13 animals for Pond Inlet. However, of this quota three animals were surrendered by the Eskimo to trophy hunters in 1972–73. Thus when the statistics record 12 bears killed by the Eskimo, this in fact signifies that in contrast to the official statistics, two bears over the quota were shot, rather than one less than the quota. Finally official figures for caribou hunting in 1972–73 were not available for comparison; 274

8.01–10.00	*10.01–12.00*	*12.01–14.00*			*Total ($)*	*$/km²(mean)*
6	6	8			944	2.8
40.01–50.00	*50.01–60.00*	*60.01–70.00*	*70.01–80.00*	*>80.01*		
132	55	48	41	73	57,032	8.1

animals were recorded in 1971–72, but these data are known to be incomplete. Overall, the statistical data presented may be characterized as follows: the data cited for seal, caribou and bear hunting correspond in general to those for an average year; those for trapping and narwhal hunting correspond to a relatively poor year.

Outlook

An examination of the Eskimo resource area should involve an attempt to determine the position of hunting and trapping within the framework of the total economy of the settlement, as well as to indicate potential resource use compared to the present degree of exploitation. Even though detailed statements are precluded by the lack of reliable relevant data, at least approximate values can be calculated.

Table 8 shows some of the results of the interviews. While walrus, bear and narwhal produced the highest energy yield per hunting day, and in that respect exceeded caribou hunting, the basic significance of seal hunting is evident in the fact that more than half the usable calories were derived from this source. Theoretically, the totality of activities provided 90,467.3 kg of meat, fish, edible viscera and *muktuk*, representing $11{,}594 \times 10^4$ kcal, for consumption by the 411 inhabitants of the settlement (population as of Jan. 1, 1973), i.e., 220.1 kg, or 282,174 kcal per person per year. On the basis of the values proposed by Brack and McIntosh (1963) for daily energy requirements in arctic regions, i.e., 4,200 kcal/day for a male adult, 2,600 kcal/day for a female adult, 3,000 kcal per day for an adolescent, and 1,600 kcal per day for a child, the requirement for Pond Inlet, with 87, 80, 94 and 149 persons respectively in the categories cited would be $40{,}033 \times 10^4$ kcal/year. In other words the energy contribution derived from hunting and fishing in 1972–73 represented barely 29 per cent of the total energy requirements of the settlement. The actual contribution to the food supply from local hunting and fishing is considerably smaller than the theoretical value; apart from biological factors (during the mating season, from early March to mid-May, the meat of old male animals has an unpleasantly strong smell), even more significant are transport difficulties, inadequate freezer facilities in the settlement, and especially changing dietary habits, with a strong preference for foodstuffs of southern Canadian origin, all of which preclude full use of the products of hunting.

TABLE 8

Energy Yield and Cash Return from Hunting, Pond Inlet, NWT, 1972–1973*

	Hunters	Days	Days/ hunter	Animals	Usable yield kg	Usable yield 10^4 kcal	Usable yield %	Theoretical cash return $	Theoretical cash return %	Yield/day (10^4 kcal)	Cash return/ day
Aglu hunting (incl. set gun)	50	563	11.3	724	11,873.6	1,665.2	15.5	11,294.4	19.8	2.96	20.1
Floe edge hunting	43	214	5.0	315	5,166.0	724.5	6.7	4,914.0	8.6	3.39	23.0
Taluak hunting	67	472	7.0	694	11,381.6	1,596.2	14.9	10,826.4	19.0	3.38	22.9
Boat hunting (incl. nets)	54	475	8.8	747	12,250.8	1,718.1	16.0	11,653.2	20.4	3.62	24.5
Total ringed seal	82	1,724	21.0	2,480	40,672.0	5,704.0	53.1	38,688.0	67.8	3.31	22.4
Ujjuk hunting	9	116	12.9	15	1,393.5	148.5	1.4	–	–	1.28	–
Walrus hunting	3	12	4.0	4	1,664.0	239.6	2.2	–	–	19.97	–
Narwhal hunting	21	139	6.6	32	8,281.6	876.8	8.2	3,840.0	6.7	6.31	27.6
Polar bear hunting	9	30	3.3	12	1,789.2	229.2	2.1	13,560.0	23.8	7.64	452.0
Trapping	12	122	10.2	59	–	–	–	944.0	1.7	–	7.7
Caribou (summer)	11	47	4.3	58	2,175.0	206.4	1.9	–	–	4.39	–
Caribou (winter)	66	410	6.2	542	20,325.0	2,330.6	21.7	–	–	5.68	–
Total caribou	68	457	6.7	600	22,500.0	2,537.0	23.6	–	–	5.55	–
Fishing (summer)	40	149	3.7	1,892	2,252.8	302.7	2.9	–	–	2.03	–
Fishing (winter)	42	286	6.8	4,378	5,212.9	700.5	6.5	–	–	2.45	–
Total fishing	64	435	6.8	6,270	7,465.2	1,003.2	9.4	–	–	2.31	–
Total hunts	85	2,795	32.9		83,766.0	10,738.3	100.0	57,032.0	100.0	3.84	20.4

*Species hunted is ringed seal unless otherwise specified.

Theoretically, the yield of skins, pelts and ivory should produce a cash return of $57,032, or even $61,595 when adjusted to include the totality of the hunters. In fact, the number of items available for sale is significantly smaller, for reasons already stated. The total cash income of the Eskimo population of Pond Inlet was reported as $420,000 in 1972–73; hence the per capita income was about $1,020. As a result of the high incomes from involvement in oil exploration, it was significantly above the Arctic average. The share of this income deriving from hunting, if we accept the theoretical amount without deductions, would thus be about 15 percent.

From the ecological point of view, the only possible areas where the yield might be increased are those of seal hunting and fishing; interest in increased cash income would have to provide the motivation, rather than any desire for increased home consumption of locally derived food. McLaren (1958) calculated the potential yield for the area between Navy Board Inlet in the west and Cape Adair to the south of Buchan Gulf in the southeast, excluding the north coast of Bylot Island, at 5,300 seals per year. If animals lost by sinking are deducted, the annual seal kill would be about 3,000 animals. Even if hunting will not be intensified in the outer zones, the seal population might be replenished through in-migration into the possibly overexploited central area from the unutilized or only lightly utilized outer zones. Moreover a concentration of hunting in the immediate vicinity of Pond Inlet offers the advantage (not pursued here because of lack of suitable data) of a reduction of transport costs, which were already high before the enormous increases in fuel prices resulting from the energy crisis. Fishing might be intensified through the introduction of an export-oriented fishery, as has been achieved in other settlements in the last few years; suitable rivers are certainly available in sufficient numbers. So far no data have been available as to the size of the caribou stocks in northern Baffin Island; only conflicting data are available on the narwhal population. Trapping will remain dependent on the cyclic fluctuations in fox stocks and, as is also true of seal hunting, on unpredictable market fluctuations.

The basis for any resource area study, and also the point of departure for any planned increase in yield from individual branches of hunting or hunting areas, must be the establishment of the levels of exploitation of the component areas achieved at present. In view of the significance of use intensity, some thought might be given to introducing also the factor of the duration of use. By analogy to a definition of settlement type based on the duration of use of a residence, as adopted by Müller-Wille (1954), the concept of "type of economy" or "type of use" could express the duration of use of a resource area; however, this is not the place for a thorough conceptual definition or for a possible classification of potential "types of economy."

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