DESCRIPTION OF WILDLIFE SPECIES HARVESTED IN AND AROUND AUYUITTUK NATIONAL PARK BAFFIN ISLAND

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Introduction

The National Park Act has recently been modified to allow native hunters to exercise their hunting and trapping activities within the boundaries of national parks established in the Yukon and North West Territories. Auyuittuk was the first national park to be covered by these amendments. Agreements will have to be reached, that will better define the limits of the native rights and modalities for their application.

A prerequisite to the negotiations is an up-to-date knowledge of the status of wildlife populations in and around Auyuittuk national park, and an evaluation of the potential impact of native harvesting on wildlife. This study was initiated with these objectives in mind, and was more specifically aimed at:

1. the compilation of harvesting data of the recent past, the harvesting quotas, and the evolution of hunting success.
2. the determination of the status of wildlife populations presently exploited, the description of hunting methods and their impact on wildlife.
3. recommandations for more suitable quotas if necessary, and/or modification of the hunting methods, and description of suitable research and surveys program to ensure a sustainable yield from the wildlife resource.

The approach to this study relied heavily on a review of available litterature and on interviews. During the course of the study (January to March 1978) the author travelled twice to the study area, Frobisher Bay, Pangnirtung and Broughton Island and visited Edmonton and Yellowknife in order to meet individuals who had a personal acquaintance with the territory and of its problem. I am particularly indepted to Mr. Tom Smith, Dave Sergeant, Gerry Hunter and Keith Hayes of the Artic Biological Station, Ste-Anne de Bellevue, Albert Bourque, Regional Superintendant of the NWT Game Management Service in Frobisher Bay and Bob Hunter, Game Manager, Pangnirtung, Peter Animiuk, Park Warden, Pangnirtung, David Konulusee, Park Warden and Leslie Konulusee, social worker, Broughton Island, Sara Gaunt, Greg Mayes and Bill Kemp, McGill University, Tom Wood, Ian Sterling, Gerry Parker of the Canadian Wildlife Service, Ernie Sieber, formerly superintendant of Auyuittuk National Park, Ellis Land, Dan Murphy, and Bruce Stephenson, Game Management N.W.T., Yellowknife, and Paul Brodie, Fisheries and Marine Services, Halifax. This study was requested and funded by Parks Canada.

DATA BASE

BIG GAME

CARIBOU

Caribou numbers, movements and distribution in southeastern Baffin Island are getting better known, mostly through the extensive work by Elliott (1972, 1973, 1974) and through sporadic observations by Bourque (1975), Rippin (1972) and Murphy (1973) among others. Yet much remains to be learned. The following information summarizes what has been documented to date.

It is generally believed that numbers have been declining recently in southern Baffin where the present population is estimated at 20,000 animals (Bruce Stephenson, personal communication). Actual harvesting levels would take a heavy toll (Wood 1974) estimated at fifteen percent. Global figures cannot allow a proper evaluation of total impact of hunting activity in view of the fact that in some areas, the harvest may be made without sufficient conservation ethic. Half of the harvest north of Nettiling lake by Broughton Island hunters may be composed of pregnant does shot during their northward movement to calving grounds. This trip of over 200 miles to Nettilling is a recent tradition, and has been apparently induced by the extirpation of local caribou herds (Wood, 1974). Some cases of excessive kill and abandonment of carcasses are also on record.

Movements

In late summer and fall, a south west movement through the L. Nettilling area has been observed. Good numbers winter at the head of Cumberland Sound and along its west shore, in the McKeand river area, south of Nettilling lake and in the Amadjouac lake area (see figure 1 for place names). In spring, a reverse movement has been described (Rippin, 1972; Elliott, 1974) and herds seem to be heading towards calving grounds located in the Hantzsch river drainage basin (Rippin, 1972) and the Dewar lake area.

More localized movements have been noted in the Amadjouac lake area, involving animals wintering immediately north of Frobisher Bay. A large calving area has been identified south of Nettilling lake, and many small isolated calving sites are known to exist at the head of many fjords.

Earlier migration patterns used to bring caribous eastward along the southern edge of Penny Ice Cap and across Pangnirtung fjord. From there, caribou would have then fanned out on the entire eastern tip of Cumberland Peninsula. This area was used as a traditional hunting territory by inuit hunters from Pangnirtung (Kemp, 1976). Hunting was very rewarding south of Sunneshine fjord particularly inland of Tavadjuak in Hoare Bay. The intensity of harvesting is generally believed to have been a major cause of the interruption of this migration movement, although other causes could have been involved, such as

behavioral response to environmental changes particularly climatic conditions and resulting snow depths (Elliott, 1973) or changes in population densities related to other causes than hunting.

Hunting

The vicinity of upper Cumberland Sound, including the north shore of Clearwater Fjord, and the territory north and west of it, are hunted both in summer and winter (Figure 2; Kemp, 1976) by residents of Cumberland Sound. Nettilling lake and the area west of Nettilling Fjord, and the south shore of Cumberland sound for a considerable distance inland are only hunted in winter by the same hunters.

Caribou hunting by Broughton Island people occurs in the Nettilling lake area (Sarah Gaunt, personal communication; Kemp, 1976) and North towards Clyde River and Isabella bay. A few remaining herds are also still hunted east of Circle lake, at the tip of Kingnait Fjord.

Harvest in the Park

Broughton island people hunt caribou in the Park inland from Nudlung fjord and Okoa bay. Forty to fifty animals are harvested there every year. The total area over which harvesting still occurs in the park has been reduced somewhat over the years, and figure 2 may not present the actual picture, being a representation of the hunting activity over a period of 12 years (1962-1974). A probably better picture

of the present caribou hunting activity is shown on figure 12. Recent observations by Elliott (1973) confirm the presence of caribou within the Park area, animals having been observed in Okoa Bay and Nedlukseak Fjord. These animals however only spend the summer and fall seasons there (David Konulusee, personal communication). Caribou has been described by Elliott (ibid) as one of the rarest species in the park only to be observed in the northern and western part of the Park in the summer and fall.

In view of present scarcity of caribou within the park and considering former occupation by the species in the area, it seems necessary to take some steps towards reestablishing former densities. The only factor that seems controllable at the present time is hunting. A controlled caribou hunt should be arranged in the Park area. This could allow certain caribou herds to reinvade some of their former grounds and allow the small scattered remaining herds to recover. This can only be accomplished by involving the NWT Government and the native people. Inuits should be involved in all steps of the hunting plan, including data gathering, surveys, and other field work, to a participation in writing and interpretating the results. Thus the plan would have more chances of being accepted by hunters.

POLAR BEAR

The highest bear concentration in southern Baffin Area is found on the east coast of Cumberland Peninsula from Clyde River to the mouth of Cumberland Sound (Wood, 1974). More specifically, bears are found in winter around all fjords on the east coast in the Hoare Bay and Exeter Sound area and on the south coast of Cumberland sound in the Lemieux Islands area where deeper snow conditions are commonly found. During the past twelve years, they have been hunted mostly along the coast from Hoare Bay towards Padloping, and in the Broughton Island area (Figure 3) and the numbers harvested appear to conform to quota (Table 1 and 2). This quota is presently 16 for Broughton and 14 for Pangnirtung. At the instigation of the government of the Northwest Territories, there is a tendency on the part of the hunters to wait until January to begin harvesting polar bear in order to obtain the highest price, the skins being in their prime condition. Hunting season extends from October 1st to May 31th. As a consequence, bears are harvested in relatively small numbers in the fjords in the Broughton Island area as well as in the Park as they are more normally found on the ice pack at that time.

Harvest in the Park

Approximately thirteen bears have nonetheless been harvested in Kivitoo and in Quajon and Maktak fjords area from August 76 to April 77

Table 1. Hudson's Bay Company Fur returns and value by 5 year periods, 1946-1966, for Broughton Island and Pangnirtung

	Ermine	Fox Silver	Fox Cross	Fox Red	Fox White	Fox Blue	Wolf	Seal	Artic Hare	Polar Bear	
1946-1951											
Pangnirtung	1,219	3	14	62	3,168	94	-	8,705	700	100	
51-1956											
Pangnirtung	459	-	4	10	2,822	53	-	7,546	44	6	
1956-1961											
Broughton Island	11	-	-	-	462	4	-	820	-	-	2 years only
Pangnirtung	311	-	8	14	1,857	12	2	20676	-	25	
1961-1966											
Broughton Island	15	-	-	-	464	-	-	15496	-	46	
Pangnirtung	109	-	-	-	1,301	1	-	44435	16	26	

Table 2: Hunter Kill statistics N.W.T. Game management Branch Broughton Island and Pangnirtung

	Seals	Bears	Red Fox	White	Wolf	Weasel
Broughton Island						
76-77	8092	13	7	57	2	
75-76	4778	9	43	107	0	
74-75	4957	15	12	352	2	
73-74	5347	5	0	1	9	
72-73	3480	11	0	22	0	
71-72	5314	16	1	552		
70-71		15		46		
69-70		5		11		
68-69		19		171	3	
67-68		19		171	3	
66-67		49	1	11		

(Continued table 2)

	Seals	Bears	Red Fox	White	Wolf	Weasel
Pangnirtung						
76-77	11221	15	20	24	11	
75-76	9436	10	4	41	1	
74-75	9306	7	66	439	9	
73-74	8792	9	9	50	9	2
72-73	7012	8		24		
71-72	7082	5	18	558		
70-71		5		22	2	
69-70		5		29	2	
68-67		6	3	22	1	
67-68		4		77	4	
66-67		5		2		

(David Konulusee, personal communication). Some of these kills are reported as self-defense, but the majority are simple harvests. Six were killed in August to October, and seven in February to April periods.

Quotas

Bear harvesting is now well controlled by a quota system but the quotas affect only harvesting done for commercial purpose. No limit is imposed on subsistance hunting. The responsibility for distributing tags lies in the hands of the Hunters and Trappers Associations, a responsibility that they fulfill very well. People seem to take this responsibility so well that a case if known where a hunter has returned a tag after shooting a bear that could not be retrieved. He judged that he had skipped his chance to harvest a bear that year...

There is a general belief that the present quotas are somewhat conservative. They have been raised in a few settlements recently, including Pangnirtung. The fact that no difficulty is met in filling up quotas, and that good numbers of bear are present in the territory is not indicative of an endangered resource. The number of bears harvested in the Park area should continue to be recorded as data now cover too short a period of time to be of much value.

Outlook for the future

The future of polar bear exploitation for a profit is uncer-

tain however. The U.S.A. have recently banned all importations. The present price is mainly controlled by the Japanese importers (Smith, 1972). There is a large stock of unsold hides in auction houses, and the demand is now for large skins of prime condition and well prepared, a requirement not always fullfilled.

There should be carefull planning here to avoid flooding the market with skins, and causing price reduction. No raising of quotas should be allowed at the present time, even if biologically sound. A sports hunting program could be developped if it appears necessary to harvest more. This would mean cash income for inuit hunters who could become part time guides.

FUR BEARERS

WOLF

Data on wolf distribution and harvest are scanty. Wolves have a tendency to be found in areas where caribou, their main food source (Clarke, 1967) are abundant. Clarke found caribou remains in 98.9% of wolf scats. The geographical distribution of wolf harvest as described by Figure 3 is not necessarily representative of wolf distribution, as hunters harvest wolves only accidentally during their caribou hunting trips. Less than a dozen wolves are harvested per year by Pangnirtung and Broughton Island residents (Table 2), an indication that wolves may not be very abundant in the area. No wolf seem to be harvested in the Park at the present time. Wolves have not been observed there by Elliott (1972). If proper management increased caribou populations in the Park area, wolf would undoubtly follow the same trend.

FOXES

The red fox is a recent immigrant to Baffin Island (Wood, 1974). It has been observed by Elliott (1972) on the west coast, and is harvested in small numbers (Table 2) by residents of Broughton Island and Pangnirtung, in areas described by Figure 4, which also includes Arctic fox harvests. It is not felt that the present fox trapping activity has a great impact on the fox population. Trapping is not an occupation that inuit

hunters affectionate, and special incentive programs have been used in the past to encourage the development of this activity. Here again, the pressure is considered light.

A distinct four year cycle is easily detectable in data of figure 2 for arctic fox. This cycle could be substantially affected in certain areas due to reliance of foxes on a seal pup diet (Smith, 1976). Given the present demand for long haired furs, and the prices, recently paid for these furs at auctions (Table 3; M. Beaudet, Quebec Fur Service personal communication) and in view of the possible collapse of a seal based inuit economy (see section on seals) there could be an increased effort to develop harvesting long-haired furs such as foxes and wolves in the near future. As Broughton Island hunters harvest foxes "everywhere" in the Park (David Konulusee, personal communication) we should expect an increase of fox harvest in the Park area in the years to come. Red fox skins command higher prices than arctic fox, however, and the pressure may be more towards havesting that species.

Harvest in the Park

No figures are available for present harvest of foxes in the Park. Looking at the extent of traditional fox hunting areas in the Park zone (Figure 4), more than 50% of the Broughton Island harvest must be made there. No fox harvest by Pangnirtung residents seems to occur in the Park.

Table 3: Average price paid for fur at fur auction sales 1967-1978.

	Seal*	Bear	Fox Blue	Cross	Red	Silver	White	Wolf
75-76	24	450	59	68	48	33	26	109
74-75	17	640	20	39	28	36	18	63
73-74	17	1073	23	53	42	42	30	59
72-73	15	600	17	36	22	19	18	61
71-72	10	340	13	18	14	15	11	44
70-71	9	214	10	14	10	17	12	34
69-70	8	222	11	14	12	19	14	35
68-69	8	157	10	12	12	17	12	29
67-68	4	135	8	7	5	15	10	

* 1978 price is $8.00

MARINE MAMMALS

SEALS

Seals have traditionally been the bread and butter of inuit economy. Fur trade contributes close to 15% of the native income in Pangnirtung (Mayes, 1975) and probably slightly more in Broughton Island. Until recently at least 90% of this income came from the seal harvest. Seal is thus the major source of income from local resources (Mayes, personal communication). Of the five species of seals present in the Cumberland Sound, the ringed seal *(Phoca hispida)* is the most abundant and appears in largest proportion in the harvest (Wood, 1974). The harp seal *(Pagophilus groendlandicus)* is fairly common and constitutes 10% of the harvest. The large bearded *(Erignathus barbatus)* hooded *(Cystophora cristata)* and harbour seal *(Phoca vitulina)* are quite rare and usually not harvested (Elliott, 1973).

According to Smith (1973), the ringed seal population of Cumberland Sound is heavily exploited, while the Home Bay herd appears underexploited. In the Home Bay area, during the period of November to March, adolescent seals form the largest proportion of the catch, adult seals being almost completely absent from the harvest. Most of the hunt is done at the floe's edge, and adults are then distributed under the fast ice and inaccessible to hunters. The highest proportion of adults is taken in May, and the area then hunted is the fast ice, mostly occupied by adults and the new born pups; adolescent seem to be absent from this area until June.

In Cumberland Sound, the situation is different. A high proportion of the animals there are adolescent in all the periods considered. A higher proportion of yearlings can be noticed in June, suggesting a movement into Cumberland Sound of seals produced in adjacent areas such as Hoare Bay. A number of reasons such as unsuitability of the area for breeding purposes may be involved; overexploitation of the resident stock could also have produced this. But the most logical explanation is that hunters are exploiting seals that are born outside of Cumberland Sound.

In the Home Bay area, exploited mostly by Broughton Island residents, the total annual catch was estimated at 5,093 seals, including sinking losses and furs not traded. This represents 7.2% of the estimated population of 70,684 seals in 1973.

In Cumberland Sound, the total catch was determined at 9,262, and the total population at 58,782, a percentage of 15.11% of the population, much higher than the calculated sustainable yield of 7.2%. It is only through immigration from Hoare Bay that the Cumberland Sound population can sustain such a harvest much above what could be supported by its resident population (Smith, 1973).

The current collapse of the seal skin market, due mostly to the reaction of importing countries to the adverse publicity surrounding the Gulf of St.Lawrence seal hunt will probably result in a drop of the seal harvest. An integrated management program is nonetheless necessary in order to avoid population collapses that can be foreseen for a very near future should current harvesting rates increase.

Harvest in the Park

Some of the harvest by Broughton Island hunters is done in the Fjords bordering the Park to the North mainly in fall, before ice is considered safe out on the ice pack. (Figure 5 shows the extent of seal harvesting activity near the two main settlements, and Figure 12 illustrates the extent of seal harvesting in the Fjords bordering the Park). A similar situation prevails in spring when the ice becomes less safe. Five hundred seals are estimated to be harvested annually in the park area (David Konulusee, personal communication).

A north-west movement of walruses is known to occur at the mouth of Cumberland Sound in June-July, towards Abraham Bay and Cape Mercy area. This movement does not seem to be related to breeding, as rutting extends from November to late May, and calving, for a period of two months, with a peak in mid-May (Mansfield, 1959).

Walruses have been hunted in the past twelve years, mostly in the Abraham and Hoare Bay area, in the Exeter Sound and Padloping Island area and at the mouth of Okoa Fjord (Kemp, 1976; Figure 6). Recently, they were still being harvested in Padloping Island and Okoa bay areas. The prime objective of their harvest is now ivory, Walruses being no more in demand for dog food. Great losses are known to occur during the harvest, as up to 70% of the carcasses are lost due to sinking (Smith and Taylor, 1977; Loughrey, 1955). Carcasses now find no use except for fox trapping bait and much is simply left to rot.

Numbers taken by Broughton and Pangnirtung hunters vary widely (Table 4). The actual quota of seven per hunter per year does not allow for much restraint, as exemplified by the 1974-75 harvest in Pangnirtung. Pressure on the resource in general has been declining recently, as walrus hunting is now restricted to a few families in each settlement. A quota by village will however be established soon (Tom Smith, personal communication) to avoid such excessive kills.

Harvest in the Park

No walrus are taken within the park boundary at the present time.

	1972-72	1972-73	1973-74	1974-75	1975-76	1976-77	Suggested quota
Broughton Island	-	29	-	-	-	-	15
Clyde River	-	37	-	-	-	-	15
Frobisher Bay	-	-	-	50	-	-	25
Pangnirtung	4	6	3	125	-	15	25
Cape Dorset	-	35	-	-	-	-	20

Table 4: Walrus harvest 1971 to 1977 and suggested future quotas for various southern Baffin Island settlements. Solid lines indicate missing data.

WHITE WHALES

White whales in the north american arctic number at least 30,000 (Sergeant and Brodie, 1975). Hunting has decreased in the last decade from 1000 or more to about 500 annually, and is clearly below sustainable yield, except in Cumberland Sound, where the local population of white whales has never recovered from a past depletion (Sergeant and Brodie, op. cit.) (More than 2500 were killed in 1923 to 1928, Valdykov, 1944). The white whale is now believed to use the warm waters of the river estuaries for calving (Sergeant and Brodie, 1969; Addison and Brodie, 1973; Sergeant, 1973). This is where the species is most vulnerable.

The area where beluga concentrate is not large in Cumberland Sound: it covers only part of Clearwater fjord. This is where most of the local hunting takes place (Figure 7). Hardly any ingression is believed to take place from Lancaster Sound despite seasonal migrations and favorable currents. In 1967, the population in Cumberland sound was estimated at 769 animals (Brodie, 1977) and suggestions were made not to exceed 75 captures annually as an interim measure. These instructions were followed for a few years, but harvest increased suddenly in 1976 and 1977 as can be seen on Table 5, and exceeded largely the interim quota. The stock was consequently affected and a reduction of population noticed. A new quota of 50 is presently requested, including whales killed and lost, which should allow a small population recovery.

Table 5: White whale population size and estimated Kill in Clearwater Fjord, 1967 to 1977 (From Brodie, 1977)

Year	Stock Size	Estimated Total Kill	Fall Stock Remaining
1967			769
1968	830	50	780
1969	842	50	792
1970	856	100	756
1971	816	50	766
1972	828	50	787
1973	850	40	810
1974	875	40	835
1975	902	40	862
1976	930	120	810
1977	875	169	706

There are economic aspects involved in white whale harvesting: muktuk, or skin, sells for food at .40 per lb and an average of 300 lbs is obtained per beluga. Netting would be much more efficient for harvesting whale, but again here this hunting method is not culturally appealing. Hunters prefer to use firearms and loose a certain percentage of their kill. There is here a definite need for a better control on harvesting of a ressource that could be easily depleted beyond recovery in a few years. Education programs have to be urgently put together and delivered in order to halt the overexploitation of this ressource.

No white whale is harvested within the Park boundary. Whales are rarely seen on the east coast of Cumberland Peninsula and are seldom harvested.

NARWHALS

Narwhals are deep water whales. They spend the winter in Baffin Bay and Davis Strait waters. As soon as spring comes, Narwhals move towards the heads of Fjords, mostly in Northern Baffin, Pond Inlet and Artic Bay, and feed there until ice starts to form again. Their presence in Southern Baffin is rare, and when they appear there in numbers, as it was the case in Pangnirtung in 1962-63, Inuits relates the phenomenon to the presence of Killer Whales.

A small harvest of Narwhals is recorded in Pangnirtung and a sporadic hunt occurs in Broughton Island. Federal fishery officers considered necessary to impose a quota of 15 on Narwhal harvest in Pangnirtung. A quota of 35, recently raised from 15 after local complaints, is enforced in Broughton Island. In Pangnirtung, the average yearly catch over a period of 24 years (1953 to 1977) was close to 10 animals (R. Hunter, personal communication; Mansfield *et.al*, 1975). According to Mansfield (op. cit.) the best harvests are brought about by animals being driven in by killer whales.

Land (1976) raised much concern over the well being of the Narwhal population, and particularly stressed the high rate of loss of animals occurring during the hunt, and the high percentage of carcasses left unused after the valuable ivory had been removed. The muktuk, or skin, is particularly appreciated by locals, and its high vitamin content make it a high value food, but is not fully utilized. Methods of harvesting come under criticism (Sara Gaunt, personal communication), but no acceptable alternatives are proposed. Nets have

been suggested but are not culturally acceptable and are usually selective for females and young, as males tend to be found in deeper water (Dave Sergeant, personal communication). High caliber rifles and hard point ammunitions remain the best harvesting weapon (David Konulusee, personal communication). Use of harpoons, which could prevent sinking of carcass, is rarely possible, as Narwhals are fast swimmers, usually found in deep waters, and are more readily pursued and shot at from a distance.

A population of 10 to 15,000 Narwhals is believed to winter of the coast of Baffin (Mansfield *et al*, 1975). Assuming a gestation period of 15 months and a lactation period of 20 months similar to that of the white whale, calving would occur only once every three years and a rate of increase of 0.09 would seem plausible, which would allow an annual catch of about 900. Due to high sinking rate, the present annual kill is estimated by Mansfield (op. cit) at about 1,154 animals, well above the estimated production of 900.

However, a recent letter from P.E. Sergeant to Mr. R. Peet, Fisheries and Marine Services in Winnipeg (on file, CWS, Quebec Region) mentions a count made by R. Greendale, at Cap Hay, Bylot Island, showing that the number of Narwhals passing was approximately the same as seen by Dr. L. Tuck of CWS at the same site in the summer 1957. This finding was reinforcing Dr. Sergeant in his opinion that Narwhals in Lancaster Sound were not under heavy pressure, such as would bring about a decrease in numbers. Dr. Sergeant in his letter also recognized the need for cutting down wastes resulting from this species harvest.

Better censuses and more control on harvest data seem necessary to complement information and form an opinion on these slightly contradictory voices.

The present situation makes it hardly necessary to go to such extremes as total ban on hunting as suggested by E. Land in a letter to R.E. Scheinsburg (dated January 76, on file, N.W. Territories, Natural and Cultural affairs, Frobisher Bay, regional Office) hoping that way to create a negative economic hardship and to remove present high incentive to hunt other than for food.

Harvest in the Park

Very few Narwhals, if any, are killed within the Park boundaries. Quajon and Maktak fjords would be the likely hunting areas (Figure 13).

KILLER WHALES *(Orcinus orca L.)*

Killer whales are occasionnally observed in Cumberland Sound and on the east coast of Cumberland Peninsula. They are not normally harvested by hunters of the area, and are more usually feared and avoided (Bob Hunter, and Ernie Sieber, personal communication). Hunters generally believe that killer whales are detrimental to the seal and whale population and dislike them.

In fall 1977, a group of at least eight was killed near Pangnirtung and hauled to shore. No other recent mention of harvest on either coast has been found.

BIRDS

SEA BIRDS

Important sea birds colonies are found in Exeter Sound, Cape Searle and Reid Bay (Figure 11) at the southern end of Cumberland Peninsula. Main species present are Fulmars *(Fulmarus glacialis)* numbering approximately 2,000, 100,000 and 10,000 nests at those respective locations; thick billed Murre *(Uria lumvia)* occupy 200,000 nests at Reid Bay; a 140 pairs of black legged Kittiwake *(Rissa tridactyla)* nests on Kekertal Island. Other species of birds nesting mostly everywhere in the area include the Glaucous *(Larus hyperboreus)*, and Iceland Gull *(Larus Glaucoides)* and Arctic Tern *(Sterna paradisaea)* (Brown *et al*, 1975). Sea birds colonies are in general very sensitive to human interference, particularly the thick billed Murre which should be exploited only under close supervision (G. Chapdelaine, CWS Quebec Region, personal communication). Arctic tern is also included in the category of birds sensitive to exploitation. Gulls don't present that problem.

Little information is available on present harvest levels of these species by Inuit. In the past, murre colonies were an important food source, but now seldom exploited (Tuck, 1960).

DUCK AND GEESE

Ducks and Geese are harvested sporadically. It seems that migratory bird law and regulations are a deterrent to bird harvesting

out of season by inuit (Sarah Gaunt and David Konulusee, personal communication). Normal hunting season opens too late to allow for the legal harvest of migratory birds. A few birds are harvested in Broughton Island; in Pangnirtung a harvest of 276 ducks and one goose has been reported for the period of July 1976 to January 1977 (R.A. Hunter letter to A. Bourque, Regional Superintendant, N.W.T. Frobisher bay) those numbers projected on a yearly harvest would not amount to considerable harvesting levels. Areas traditionally hunted for waterfowl from 1962 to 1974 is shown on Figure 8. Some areas of the Park are included in the harvesting zone of Figure 8, but the take must be very small.

PTARMIGANS

Few Rock Ptarmigan *(Lagopus mutus)* are taken: 61 have been recorded in the six month period mentioned above from reports of Pangnirtung hunters. An average of 150 to 200 birds annually were reported taken for the same settlement, in the period 1963 to 1972, vs less than 30 in Broughton Island.

FALCONS

Falcons *(Falco peregrinus)* are known to nest in the Park area (Wood, 1974). They are not specifically hunted, but one has been reported shot by a crow hunter (Bob Hunter, personal communication). The status of that species in eastern Canada is very precarious at this

time, and very special protection should be given to falcons presently nesting in the area. Posters and warnings should be placed in settlements, informing hunters to avoid harassing those birds in any manner.

Small game

Arctic hare *(Lepus Arcticus)* is the most widespread and the most noticeable mammal species on the Peninsula. It is commonly seen on the low part of hills bordering the fjords of the eastern coast. Elliott (1973) was reporting this species as scarce in the Park in 1972, having been seen only once per three man days of travel in areas likely to support hares (on ridge tops with noticeable vegetation nearby). Arctic hares show cycles of abundance over about a four year period.

Harvest in the Park

According to informants from Broughton Island, arctic hares are harvested in all areas where hunters normally travel in the Park. Areas where harvests have occured in the period 1962-1974 are shown in figure 9. Many hunting areas are probably missing on this map as the harvest of a hare is probably not a memorable event. No evaluation of the actual numbers harvested within the park has been obtained.

FISHES

CHAR

Many lakes, fjords and rivers offer good char fishing opportunity in the Cumberland Sound area. Figure 10 is an illustration of only a part of that reality, as more lakes are continuously explored by NWT game officers to offer opportunities to inuit hunters for new sources of fish. In fact, this may be the sole sensible approach to char fishing: a light harvest at long intervals. Char commercial and subsistance fishing is very difficult to manage. Char populations have a tendency to collapse under harvesting pressure if same site is fished for a period of time. Very soon the size of fish diminishes and fewer numbers are caught and fishing becomes a worthless exercise. High incidence of parasites pauses marketing problems, as well as physiological problems, as presence of parasites may interfere with the reproduction by forcing char to stay in freshwater. (*Diphyllabotrium* was found in 60% of fish by G. Hunter at Nettilling lake. Forty percent of fish were unmarketable)

Sustained cath may be in the vicinity of o.1 lb/acre/year. But even at that rate, all commercial char fisheries have failed according to Gerry Hunter, Arctic Biological unit. Examples of failure include Nachvaak Fjord, in Labrador, where harvesting lasted two years, Tree River, NWT and Sylvia Grinnel River. Overfishing does not seem to hurt on the long range, as recruitment is very high.

In Cumberland Sound area, many small lakes are under harvest at the present time, but Nettilling lake with its high potential (60,000 lbs/year estimated by G. Hunter) is an interesting venture. It has been fished now for four years (1974-1977). A conservative quota of between 22,000 and 34,000 pounds has been used and the catch followed closely the quota, except for one year, 1976, where only one third of the quota has been fished. It seems that the situation is well in hand, and A.H. Kristofferson, Freshwater Institute, Winnipeg, in charge of the project, is presently demonstrating, as he stated in a letter dated February 28, 1978, that given proper management, there is no reason why arctic char in Nettilling lake cannot support a fishery on sustained basis.

Harvest in the Park

Char fishing in the Park area has been very limited, and is restricted at the present time to two fjords of the east coast, (Figure 10 and 13) Nedlusuak and Narpaign, the closest good char fishing areas to Broughton Island. No figures on catch is available. Pangnirtung harvest figures outside the Park may however offer an idea of the order of magnitude of the annual catch: for a period of six months, July 1976 to January 1977, the total catch in Pangnirtung was 21,228 lbs, of which 9,000 lbs were sold.

HUNTING METHODS

TRANSPORTATION

Since 1962, when an epidemic killed the majority of the dog population in the region, ground transportation has been taken care of by a massive use of snowmobiles.

This widespread use of a fast transportation mean counteracted the burden imposed by concentration of populations in settlements sometimes located far from hunting grounds, but imposed on hunters a considerable economic and logistic pressure. Snowmobiles are expensive machines to purchase, to operate and to upkeep. About 25% of the cash income was spent on gazoline, snowmobile parts and hunting equipment by five families surveyed by Mayes (1975) in Pangnirtung. Use of snowmobiles allow hunter to do weekend hunting trips, but also cause friction between settlement and camp dwellers (Ernie Sieber, personal communication) due to the different mentality of the two groups and the attitude they have towards harvesting. (See section on outpost camps) At the present time, no more than a couple of dog teams are operative.

OUTPOST CAMPS PROGRAM

An outpost camp program that could considerably affect the hunting economy of inuit hunters has been launched by the Government of Northwest Territories at the request of the hunters and trappers associations to promote dispersion of hunter populations in smaller camps

scattered in the traditional hunting territory. This is a heavily sponsored program, where an average family can obtain financial support to meet living, housing and fuel costs. Up to now interest has been high in the program, (Sarah Gaunt, personal communication) although many questions remain unsolved in the hunter's mind regarding the real concern the government has towards their traditional way of living. No services are planned for the camps (school, medical services) but inuit hunters are asking at least for radio communication as basic security requirement and for travelling medical services. Long term effects of abandonment of schooling is feared by concerned people (Father Rauke, Frobisher, personnal communication).

One major effect the proposed dispersion will have is a reduced pressure on transportation requirements for harvesting purposes. People living in Pangnirtung have always been far from their hunting grounds. A simple trip to go hunting seal turns out to a day's travel, with consequent price tag on fuel and wasted time. (David Konulusee, personal communication). The relocation of hunters in the territory will alleviate their problem and allow a more strategic localization of hunters in relation to the resource.

The second beneficial aspect of the outpost camp program concerns the hunting pressure. The high concentration of hunters in a few settlements as can be observed presently is synonym of a high hunting pressure on a reduced area. The dispersion of hunters will equalize pressure, and allow for more flexibility in the management of ressource.

Finally, hunters will be in a better position to pass on to the following generations the subtilities of their art. Under present circumstances, the eskimo culture is being lost in favor of a north american education that is of no value to survive of this harsh land. The outpost camp program could make a difference in the right direction. Hunters realize this, and have actually passed a resolution (Resolution #1, Baffin Island Region Inuit Association) where it is said that outpost camps would represent "means of passing the skills and values of our traditional life style on to our children, and as an alternative to wage economy." Presently, six camps are in operation in Cumberland Sound, and a few more are planned for Broughton Island. The demands of the native people are calling for investments that may be beyond what had been planned for the program. The side benefits mentioned above would make it regrettable if that interesting project did not remain viable.

Economic value of game harvested

Monetary value of harvest by five families of Pangnirtung at a replacement value of 1.50/pound was evaluated at $12,429 by Mayes (1975) 30% of the annual income total. The edible total of 8285 lb for an estimated number of 30 consumption units for the five families (adults equal one consumption unit, juvenile, 6-15 years and children 0-6 years equal 2/3 and 1/3 consumption unit respectively) for a seven month period would represent a yearly average of 473 lb per consumption unit, a figure much lower than the 1,320 lbs recorded for Northern

Quebec Inuits by the Native Harvest Research study, 1976. The missing five month harvest could however represent more in total weight harvested than simple projection of the seven months of recorded harvest,due to seasonality of harvesting activities. As figures stand, there would be an indication that Inuits of Pangnirtung rely more on southern foods than their counter parts of Northern Quebec. In fact, the expenditure for food of the families surveyed by Mayes compared in percentage to the canadian mean roughly 20% (Mayes, 1975, pp. 73-74; the caloric intake from game food accounts for 25% of total, 42% in weight).

On the other hand, income from fur trade was in 1972/73 approximately half of what it was in 1956 (14.8 vs 28.6) a considerable shift towards wage employment (Mayes, p. 104).

HARVESTING TECHNIQUES

Use of apparently improper harvesting techniques is conducive to considerable wastes of game, Land, 1976, Ernie Sieber and Sarah Gaunt, personal communication, Wood, 1974, and in fact, the majority of people who have written on harvests of land and sea mammals in the area mention this waste. Modification of harvesting technique have been proposed, such as use of nets instead of firearms to harvest sea mammals, or use of more proper calibers. Indeed, new NWT wildlife Ordinance (Bill 2-63, 1977 session) about to be applied (june, 1978), will include limitation of use of certain calibers for harvesting big game, including the use of 22's and will also prohibit wastage, such as abandonment of carcass of edible species. These requirements should also be included in the fisheries act so as to halt the extensive wastage occuring through sinking of dead animals, escaping wounded animals, and abandonment of carcass.

CONCLUSIONS AND RECOMMENDATIONS

The main species of wildlife harvested in the Park at the present time by Broughton Island people are sea mammals(seals and narwhals) and polar bears in the fjords of the east coast, caribou at the head of Okoa fjord, some foxes, hares and ptarmigans, and char. Pangnirtung hunters also do some char fishing, and possibly some small game hunting.

The species that need most attention in the Park area at the present time is caribou. Extent of caribou distribution in the Park has been decreasing continuously in the past years. Causes of this phenomenon are unknown, but hunting and climatic factors are suspected, with hunting probably being the main factor. Caribou was present in Pangnirtung Pass a few years ago, and it's distribution in the north east was more extensive than nowadays. It could reappear in it's former range with proper management of the harvest. Surveys, population estimates, determination and enforcement of quotas will constitute the basic steps towards reestablishment of caribou numbers.

Outside the Park area, the beluga is locally the species in the worst condition. A very close supervision of hunting will be necessary to insure the survival of the Cumberland Sound herd. Considering the harvest of the recent years, beluga could be wiped out of the Sound in a very short time. Better harvesting techniques are needed here, as well as in the harvest of walrus and narwhals. Actual wastage rate is unbearable and this will have to be understood by the hunters in very near future.

Seal populations are to be closely watched. As established in this report, local population is overexploited.If a healthy skin marquet is

reestablished (which could happen again with fluctuations of fashion and public attention) seal numbers could be reduced. With existing movement patterns, and natural compensation for local overexploitation, the well-being of southern Baffin herd is presently in no jeorpardy.

The most pressing problem is an education program to make hunters realise the necessity of management including a control of the harvest, if they want to see the perpetuation of the very ressource that support their way of life. Making them understand this necessity is the key to wildlife management in the area.

Following are the main recommendations of this report.

Recommendations

1- Caribou quotas should be established for harvest in the Park area, and in the whole of Cumberland Peninsula to allow recovery of population.

2- There should be no increase of Polar bear quota, even if biologically sound, due to the present marquetting situation. There is presently a surplus of unsold skins, a situation that should be controlled before it affects seriously the commercial value of skins.

3- Polar bears taken in Park should be part of recognized outside quota. Presently, only a gentlemen agreement controls the take of those bears, a situation that could create administrative problems.

4- If Polar bear quota needs to be raised, there should be consideration given to the possibility of establishing sports hunting in the area, with full participation of local hunters.

5- Promotion of Polar bear harvest in mid-winter should continue in order to obtain best possible price for skins.

6- Alternatives to seal harvesting income should be found soon, given the present total collapse of seal fur marquet. Development of long-haired fur trapping industry will help, but no fur animal populations exist on the Island that will produce income similar to seal at present time.

7- Education programs on game management aimed at schooling children and adults should be devised in order to develop a conservation attitude in population that does not exist at present time.

8- Information on harvest of wildlife is needed, and a system of data gathering should be established that would provide continuous

information on quantity harvested. The present N.W.T. data gathering system is a start, but could be more efficient. Native interviewers should be hired to do the work, in a similar fashion to what presently exists in Northern Quebec settlements. This project could work through the Hunters and Trappers associations.

9- A complete control on beluga harvesting is needed in order to avoid total collapse of local herd. Season should be fixed, and fishery officer present at all time to supervise hunt, apply quotas, and oversee full use of carcasses.

10- Modification of Migratory bird hunting seasons is needed for the area, in order to encourage people to go on abiding with hunting regulations.

11- Information leaflets, posters, and all possible education means should be used to halt whatever remaining Falcon shooting exists. A minimum fine of $2,000 will be applicable in June 78, with new Wildlife Ordinance taking force.

12- It will be necessary to include interdiction to use small caliber rifles in harvest of sea mammals in Federal fisheries regulations, and oblige hunters to make full use of carcasses.

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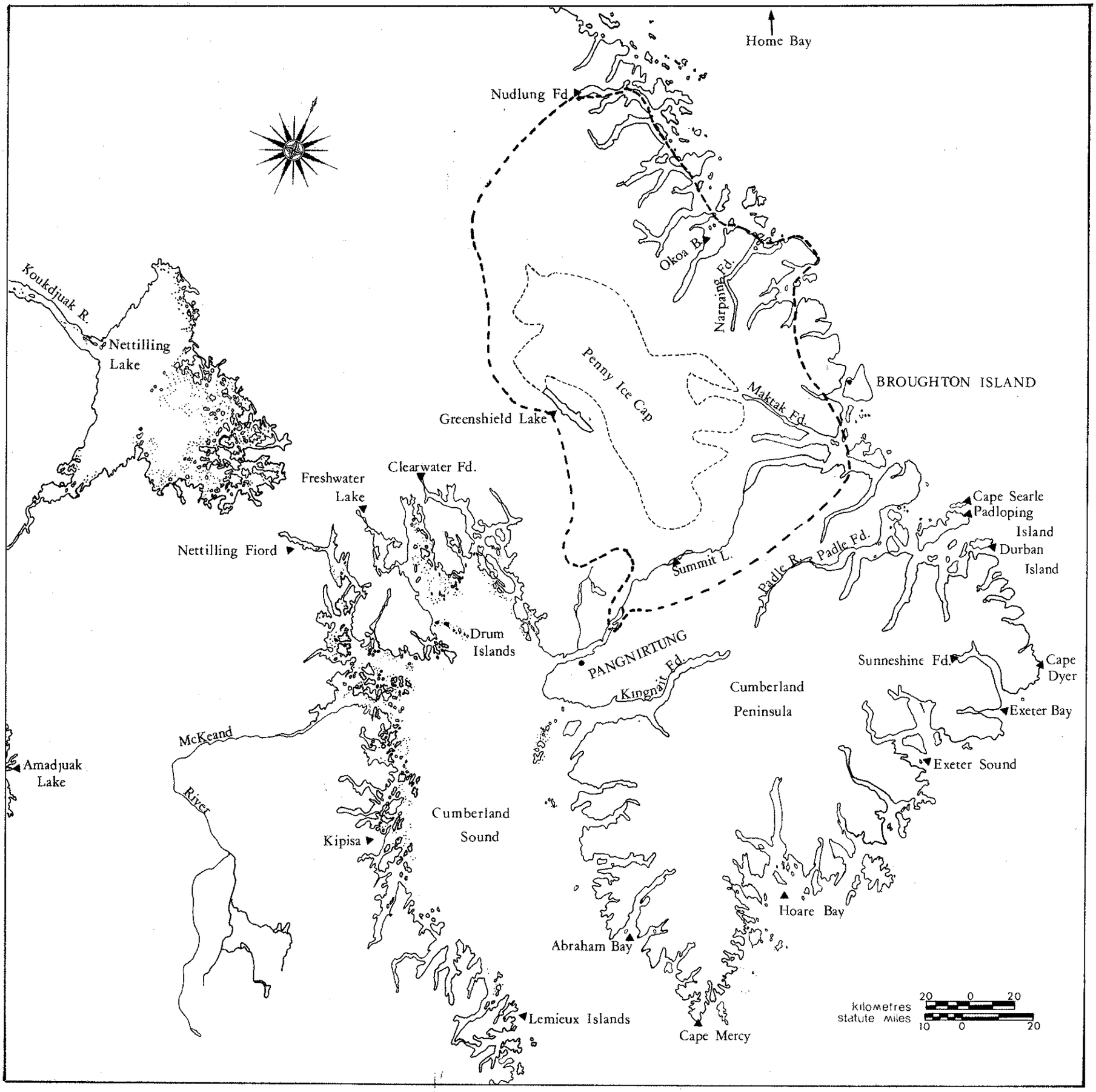

Figure 1: Place names, Southern Baffin Island.

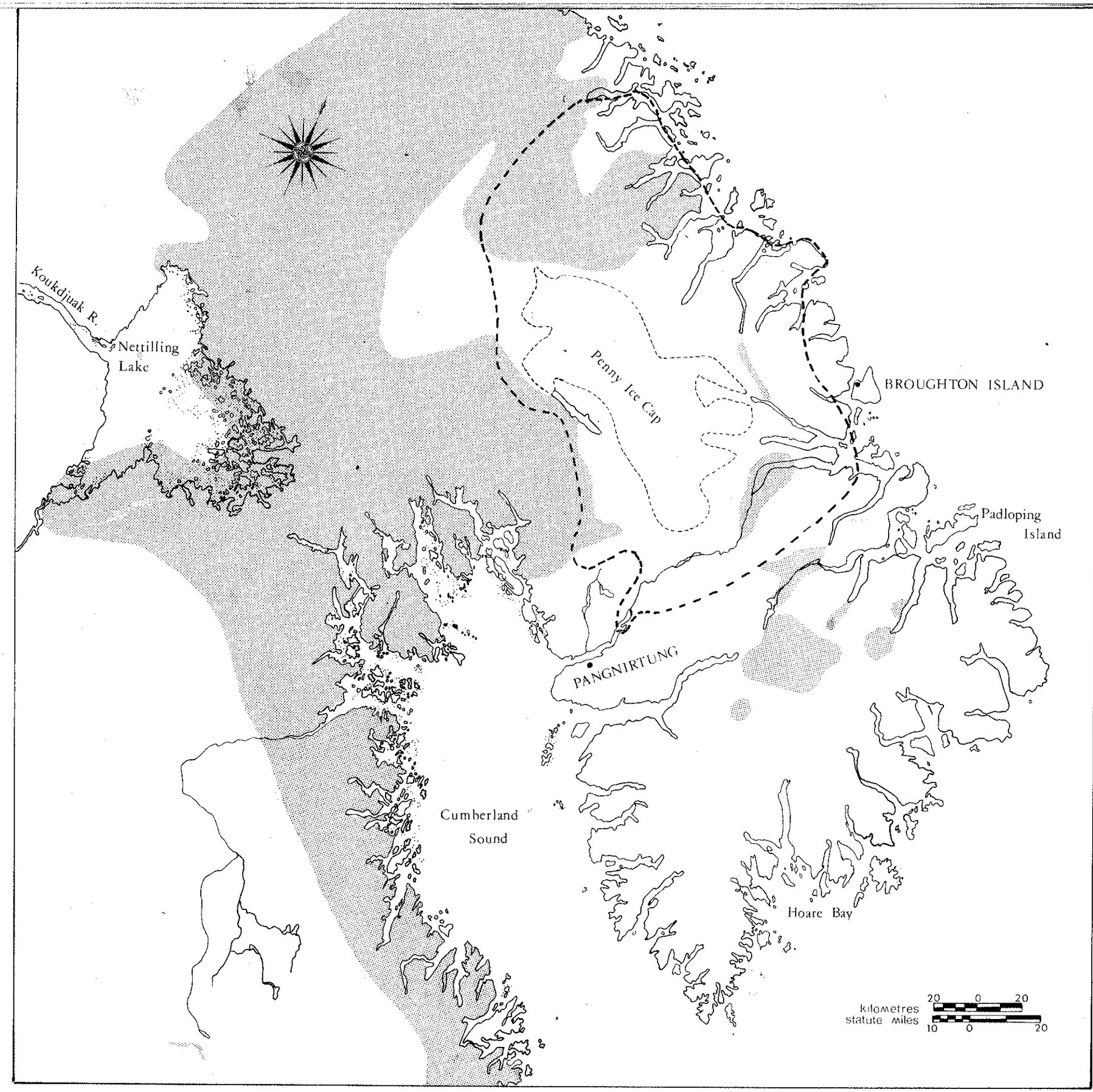

Figure 2: Caribou hunting grounds utilized by Broughton Island and Pangnirtung residents for the periods 1955-1974 and 1962-1974 respectively. After Kemp, 1976.

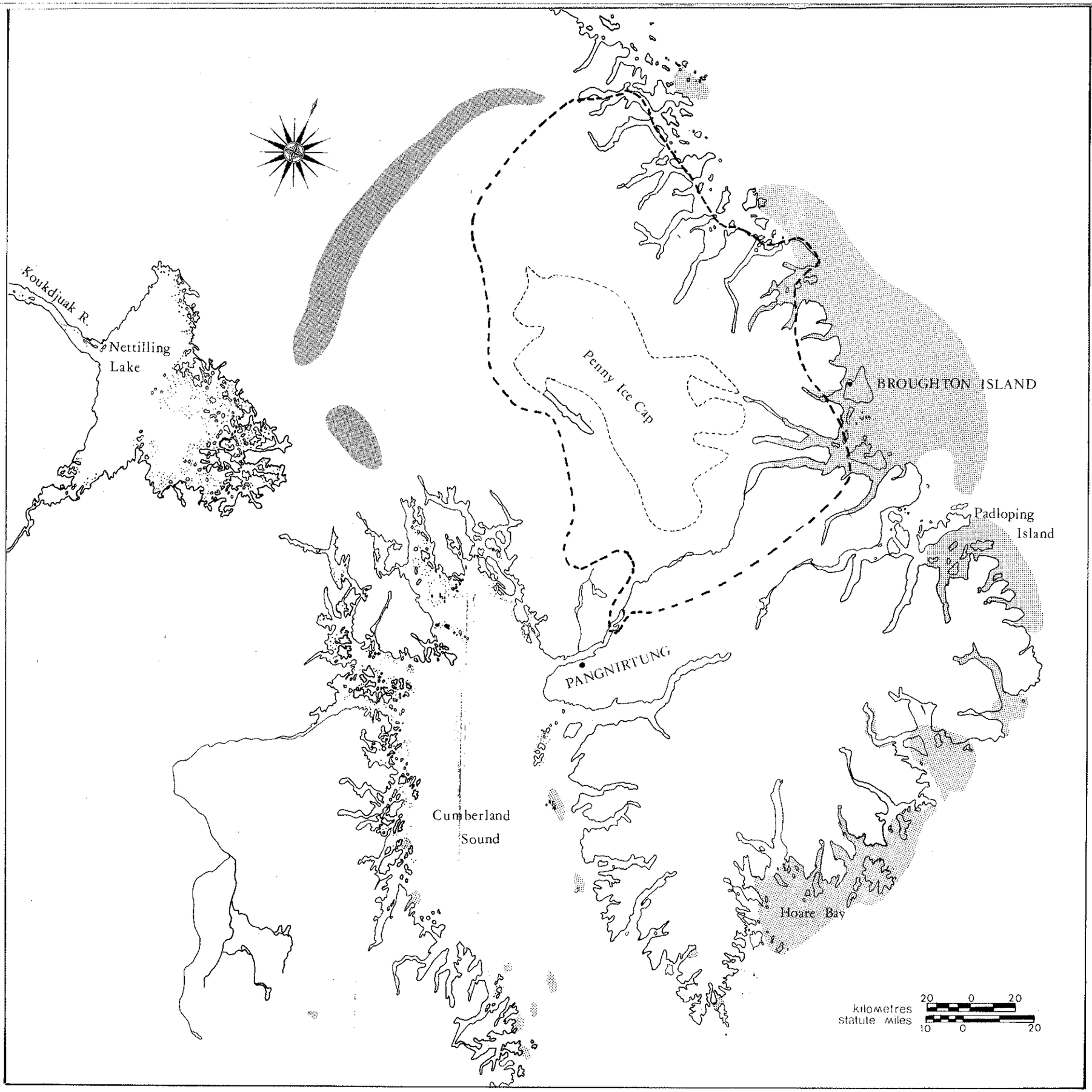

Figure 3: Polar bear (light tone) and Wolf hunting grounds utilized by Broughton Island and Pangnirtung residents, for the periods 1955-1974 and 1962-1974 respectively. After kemp, 1976.

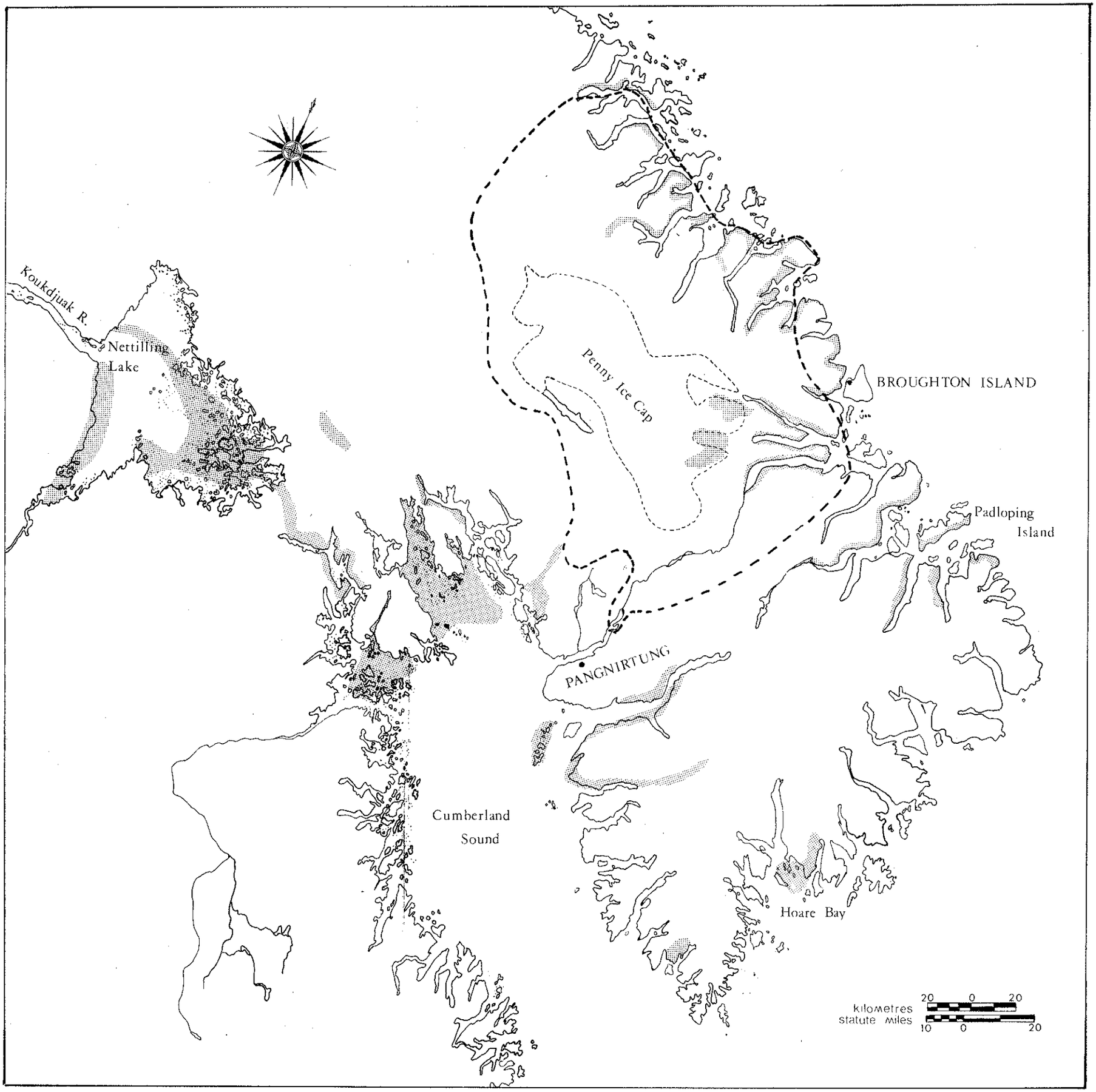

Figure 4: Fox traplines utilized by Pangnirtung and Broughton Island residents for the period 1962-1974 and 1955-1974 respectively. After Kemp,1976.

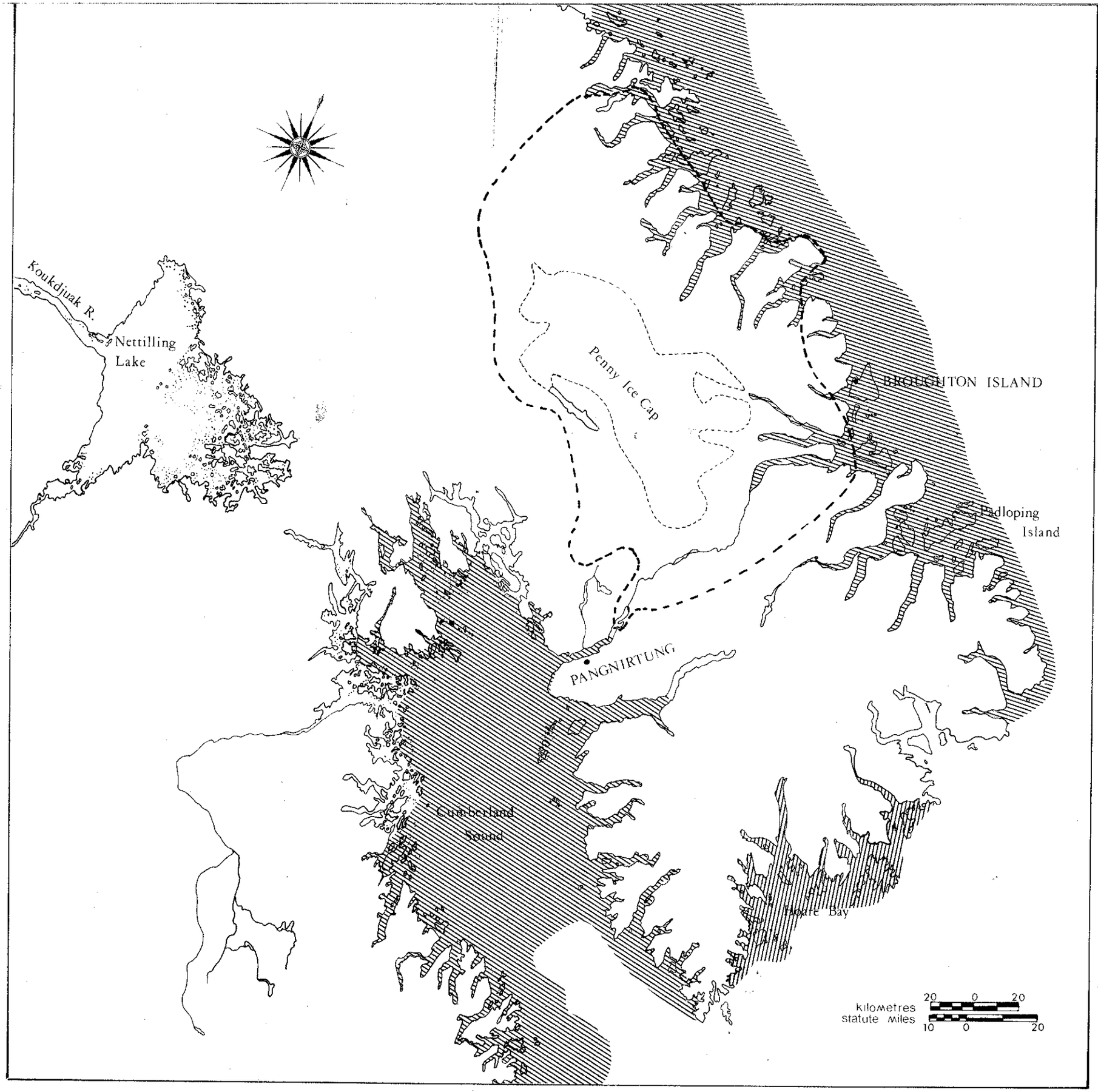

Figure 5: Seal harvesting areas utilized by Pangnirtung and Broughton Island residents for the periods 1962-1974 and 1955-1974 respectively. After Kemp, 1976.

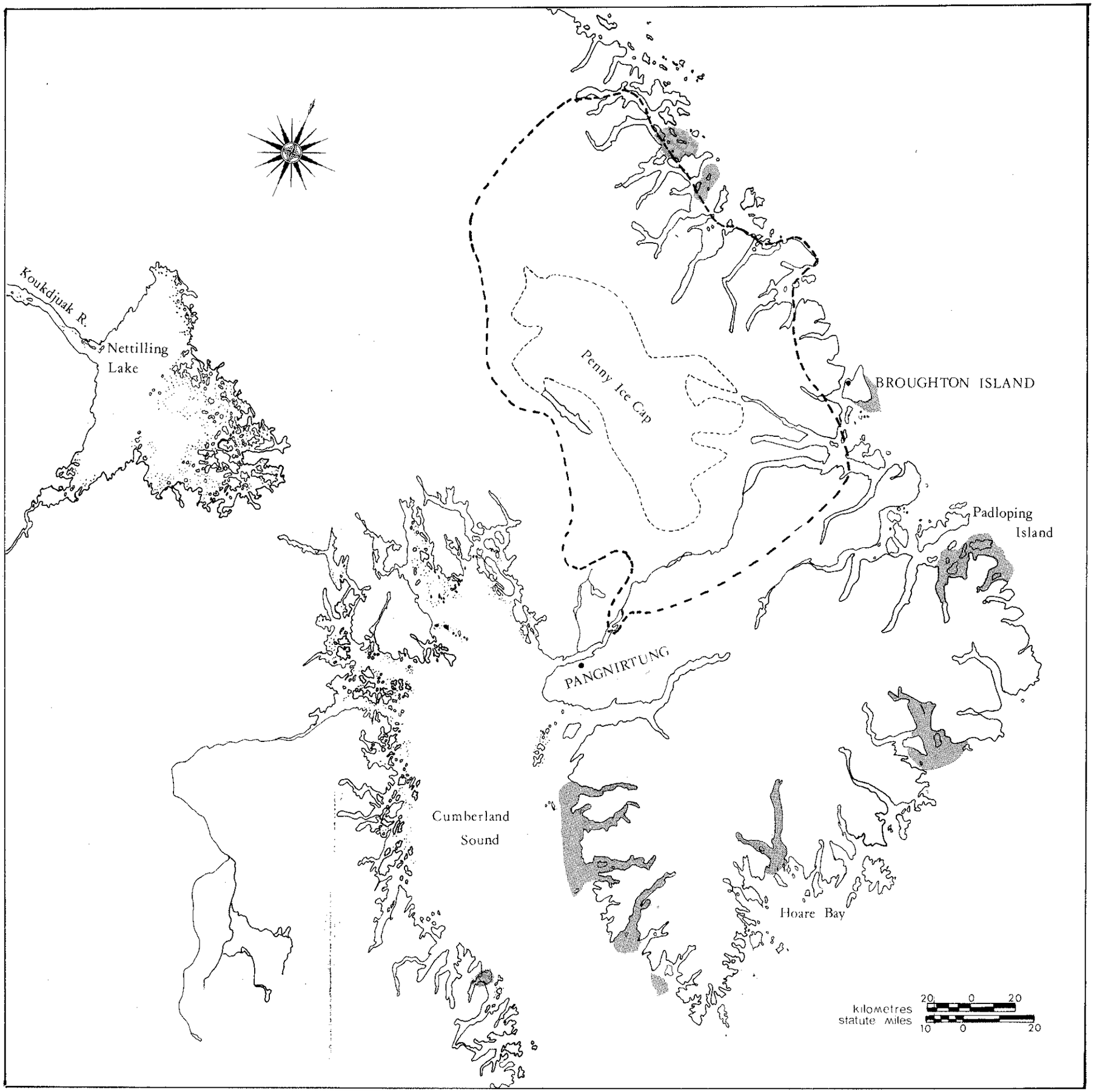

Figure 6: Walrus hunting areas used by Pangnirtung and Broughton Island residents for the periods 1962-1974 and 1955-1974 respectively. After Kemp,1976.

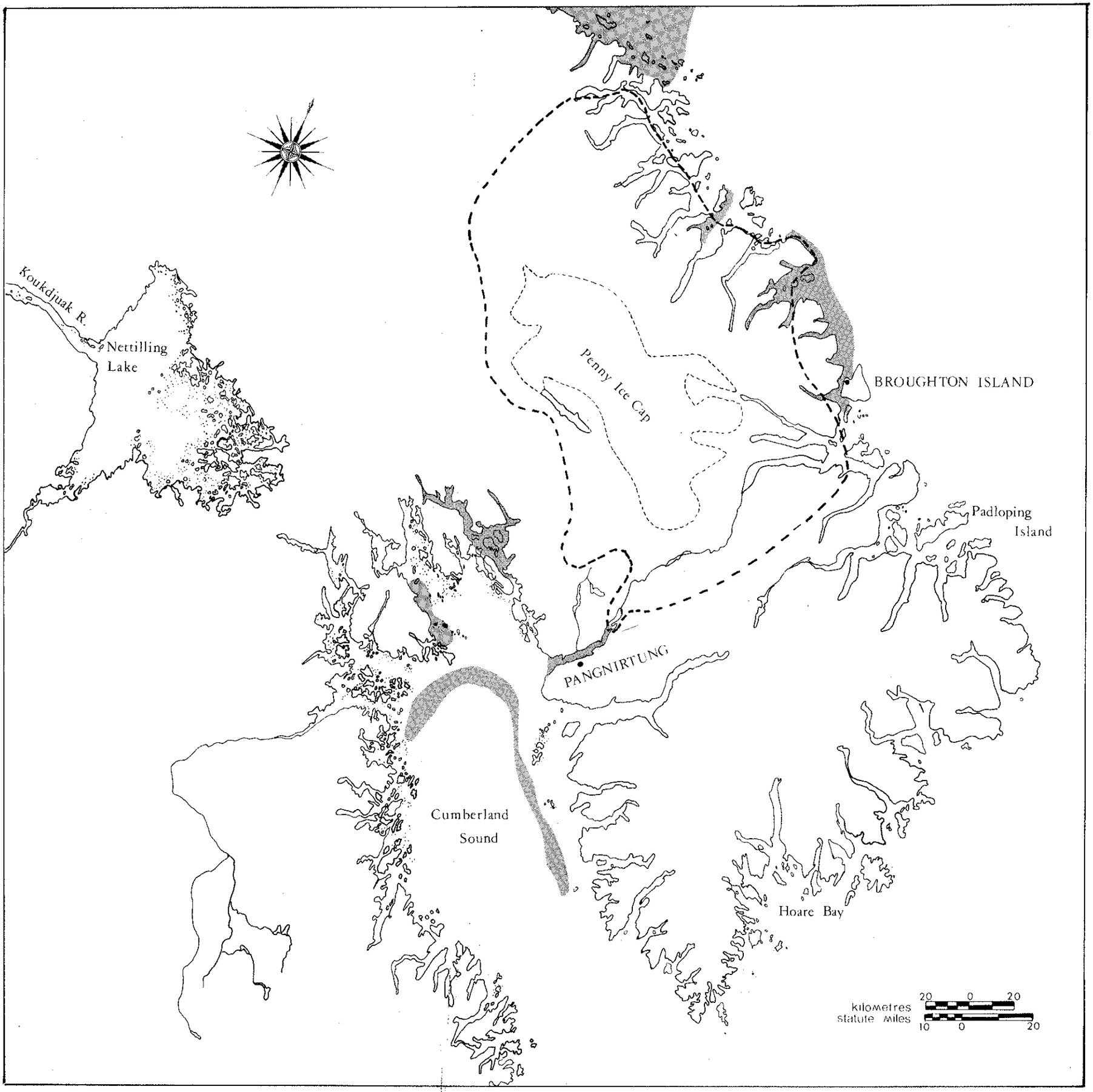

Figure 7: Whale hunting grounds utilized by Pangnirtung and Broughton Island residents for the periods 1962-1974 and 1955-1974 respectively. After Kemp, 1976.

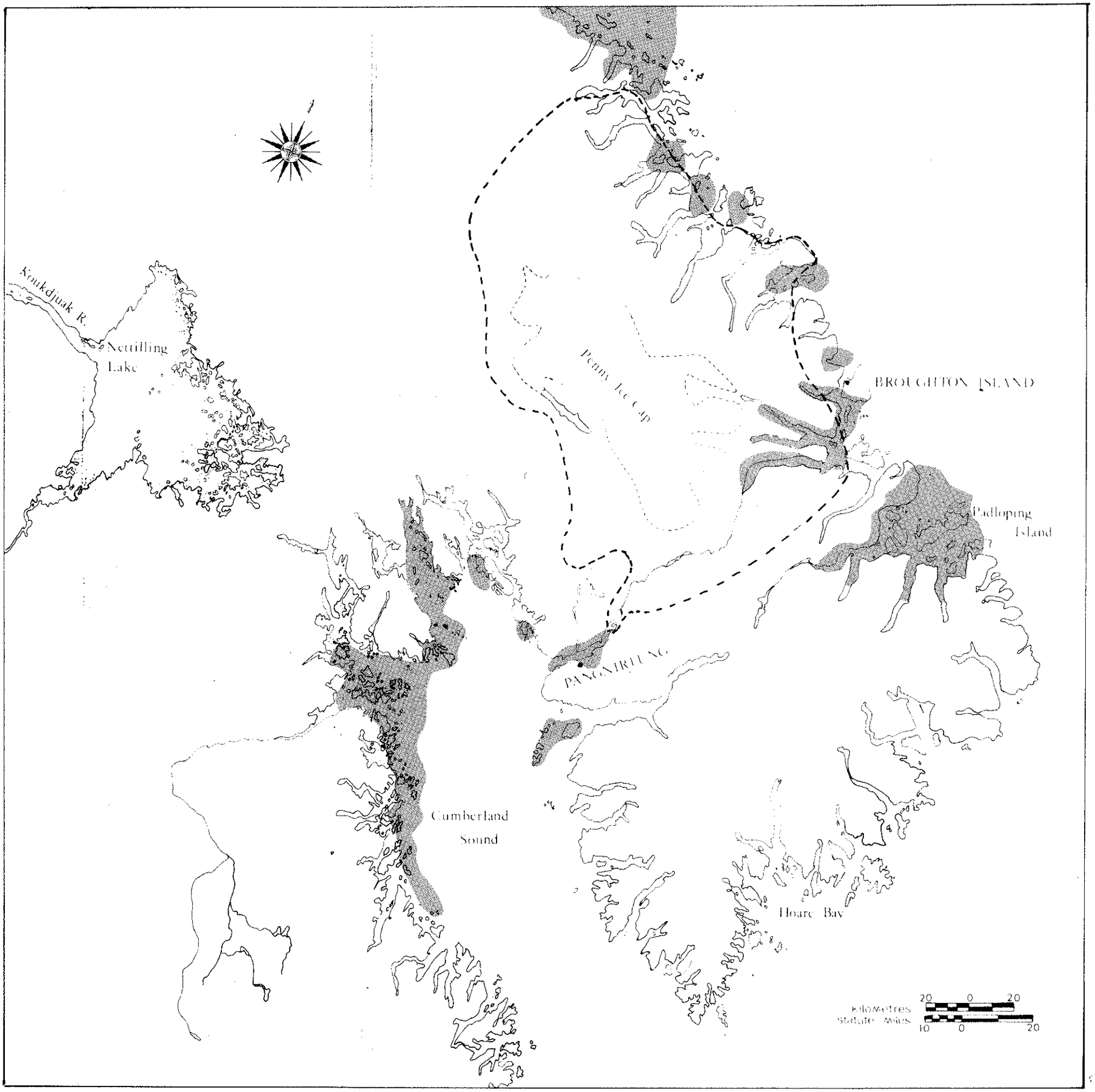

Figure 8: Wildfowl hunting areas utilized by Pangnirtung and Broughton Island residents for the periods 1962-1974 and 1955-1974 respectively. After Kemp, 1976.

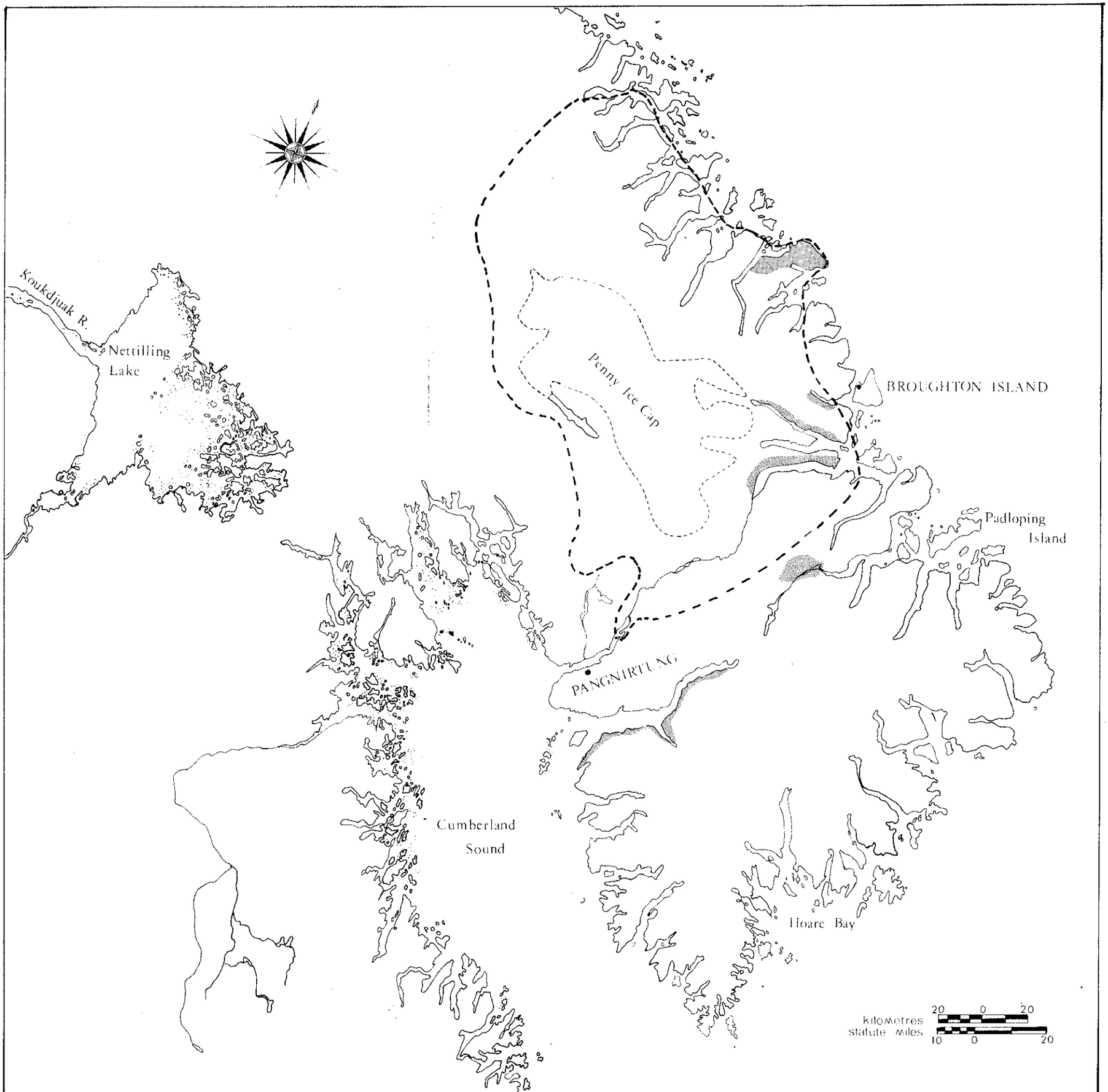

Figure 9: Zones where Hares have been harvested by Pangnirtung and Broughton Island residents during the periods 1962-1974 and 1955-1974 respectively. After Kemp, 1976.

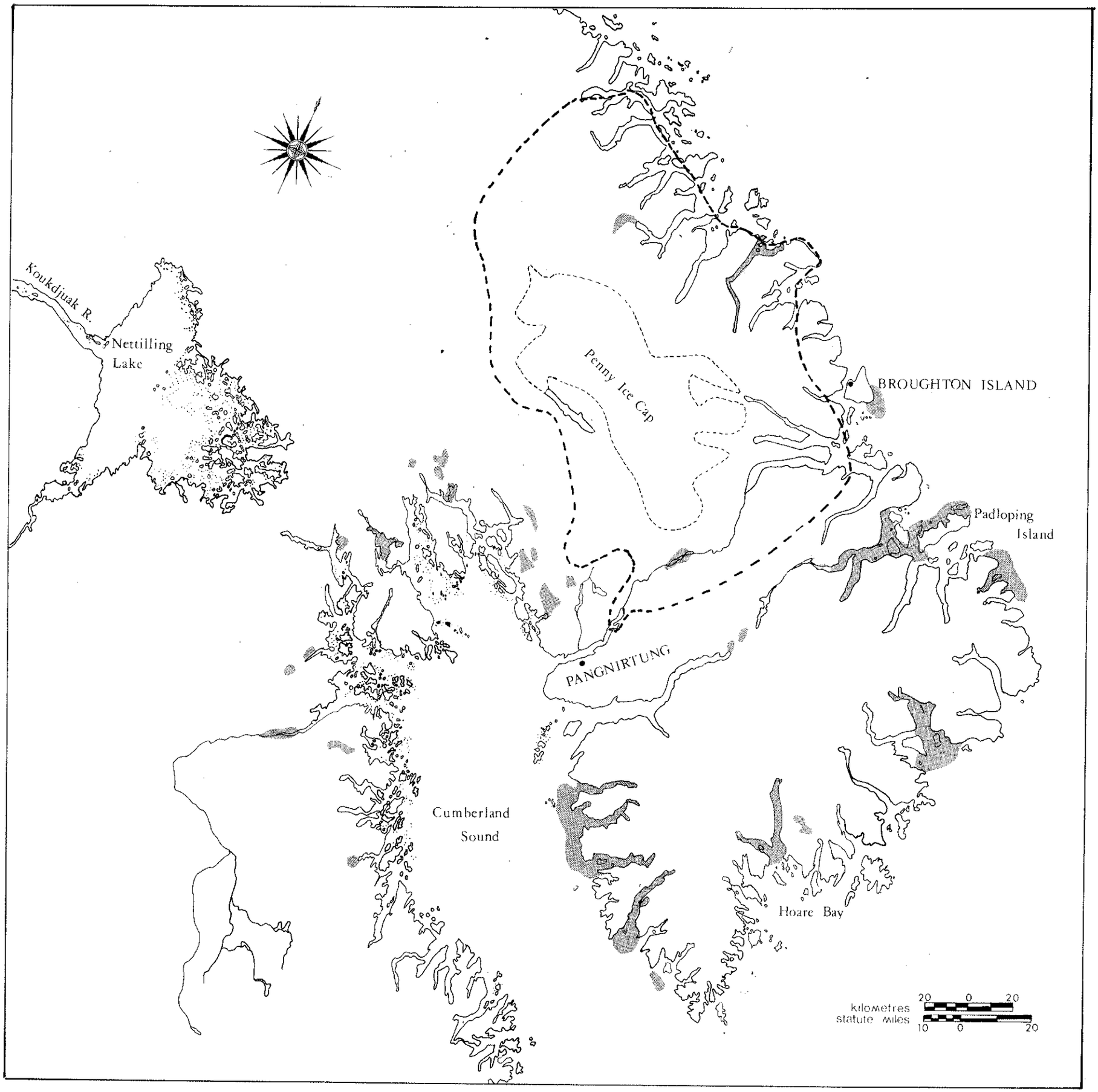

Figure 10: Areas fished by Pangnirtung and Broughton Island residents, for the periods 1962-1974 and 1955-1974 respectively. After Kemp, 1976.

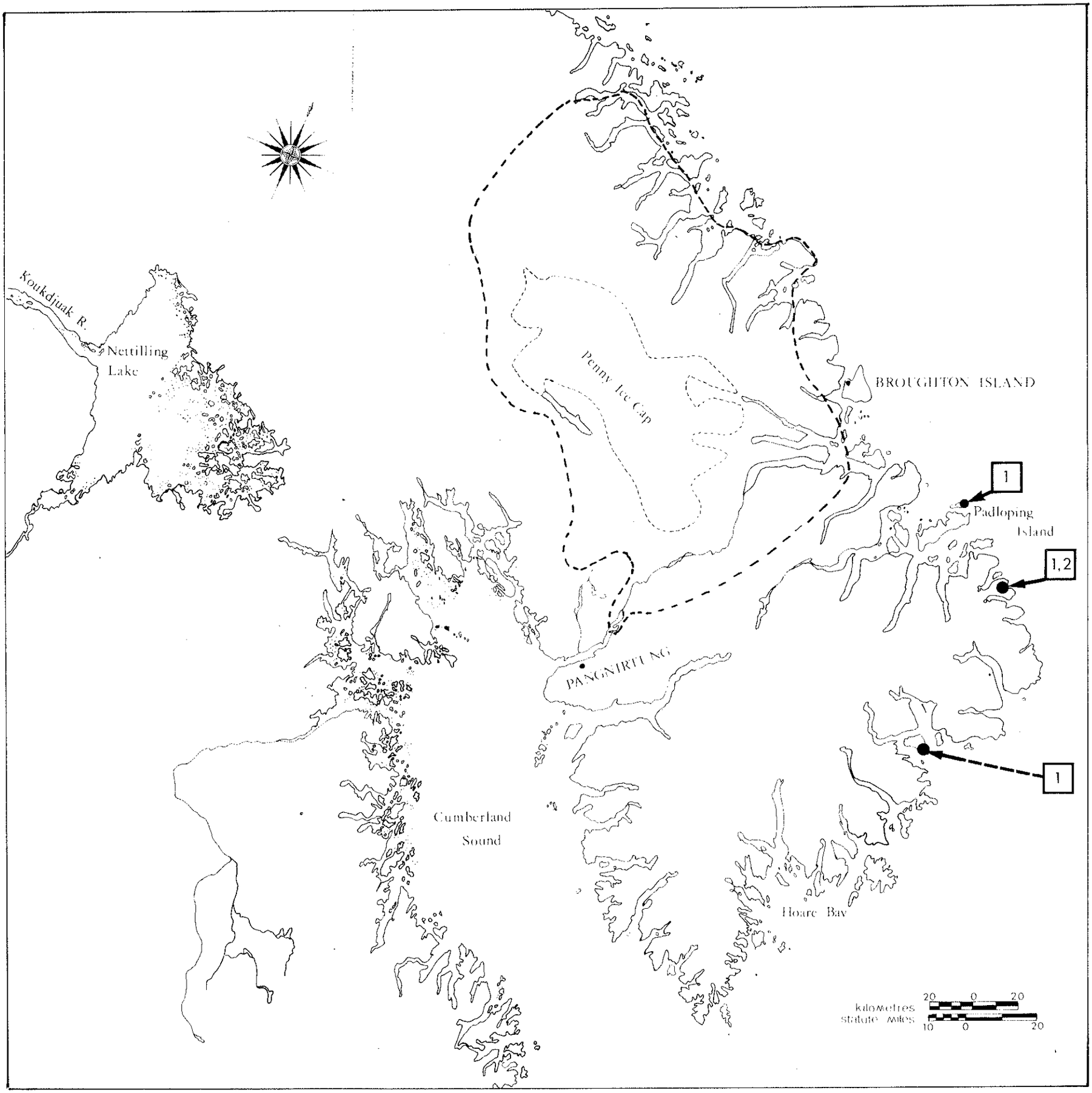

Figure 11: Sea bird colonies found in Southern Baffin area. 1: Fulmar 2: Thick billed murre. After Brown et al, 1975.

parc national

AUYUITTUQ

national park

Figure 12:

Extent of Caribou, Seal and Fox harvesting in Auyuittuq National Park;

Caribou

Seal

Fox

1: 250,000

Miles 4 2 0 4 8 12 Miles

Kilometres 4 2 0 4 8 12 Kilometres

Couverture Cartographique

1: 250,000

1: 125,000

1: 50,000

C D A B B-3 B-4 A-2 B-1 B-2

PARCS CANADA
RÉGION DU QUÉBEC
CONSERVATION DES RESSOURCES NATURELLES

parc national

AUYUITTUQ

national park

Figure 13:

Extent of Narwhal, Polar bear and Char harvesting in Auyuittuq National Park;

Polar Bear :

Char :

Polar Bear and Narwhal :

1: 250,000

Couverture Cartographique

1: 250,000

1: 125,000

1: 50,000

PARCS CANADA
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