The Distribution of Herring Spawn and Associated Roe Fisheries in British Columbia (1956 to 1980)

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Les numéros 1 à 25 de cette série ont été publiés à titre de Records statistiques, Service des pêches et de la mer. Les numéros 26-160 ont été publiés à titre de Rapports statistiques du Service des pêches et de la mer, Ministère des Pêches et de l'Environnement. Le nom de la série a été modifié à partir du numéro 161.

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September 1983

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by

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ABSTRACT

Haegele, C. W. and L. C. Fitzpatrick. 1983. The distribution of herring spawn and associated roe fisheries in British Columbia (1956 to 1980). Can. Data Rep. Fish. Aquat. Sci. 407: v + 245 p.

The spatial and temporal distribution of herring spawns in British Columbia were summarized in sixty-one pairs of maps and graphs, incorporating information from spawn reports submitted by Fishery Officers for the 25 year period from 1956 to 1980. During that period, 3091 km of coastline were reported to have been utilized by herring for spawning. The roe herring catch was also tabulated by area, year and fishing gear.

Key words: Pacific herring, spawn, catch, distribution.

RÉSUMÉ

Haegele, C. W. and L. C. Fitzpatrick. 1983. The distribution of herring spawn and associated roe fisheries in British Columbia (1956 to 1980). Can. Data Rep. Fish. Aquat. Sci. 407: v + 245 p.

Les répartitions spatiales et temporelles du frai du hareng en Colombie-Britannique sont résumées dans 61 paires de cartes et de graphiques, lesquelles regroupent les données contenues dans les rapports sur le frai présentés par les agents des pêches pendant une période de 25 ans, soit de 1956 à 1980. Pendant cette période, 3091 km du littoral sont censés avoir été utilisés par le hareng pour la fraie. Les prises de harengs pleins font l'objet de tableaux selon la région, l'année et l'engin de pêche.

Mots-clés: hareng du Pacifique, frai, prise, répartition

INTRODUCTION

Pacific herring spawn in the intertidal and upper subtidal zone, where the eggs are attached to marine algae and sea-grasses. Because of this intimate relationship of herring, which is an otherwise pelagic species, with the nearshore environment, any process that would impinge on this habitat could affect the reproductive success of the species. Hence, those portions of the coastline that have been the site of herring spawns should be identified so that this information can be taken into consideration when human encroachment on the foreshore is planned. It is primarily for this reason that a report, which summarizes the location of spawn deposition, was desired. Another impetus for this report originated with concerns raised by various individuals and groups that the fishery of herring for roe near their spawning grounds causes the fish to abandon the more traditional spawning locations. These, presumed to be the most favorable for egg and larval survival, would be replaced by other locations where physical conditions for eggs and larvae would be less benign.

This report identifies, on a discrete geographical basis, the portions of the coastline that have been used by herring as spawning sites and the frequency with which each site has been utilized for this purpose. Only information on the locations of spawns, not on their width, intensity or timing is provided. This more quantitative treatment of the spawn data is being undertaken by D. Hay (pers. comm.). Information on the roe fishery, which was not always well documented, is included with the spawn data.

METHODS

The yearly spawn reports from 1956 to 1980, as submitted by Fishery Officers, were used to compile the record of herring spawn distribution. These reports included maps depicting the location of all individual spawns surveyed. The shoreline, where spawns had occurred, was demarcated into one-tenth nautical mile (1 cable) units on marine charts. These maps were then reproduced in units that closely correspond to geographical divisions identified as management units for herring data. The presence of spawn was indicated on a bar graph, by year, for the shoreline identified on the maps. Hence, the distribution of herring spawn over the 25 year period is visually presented on sixty-one pairs of maps and graphs, while the source record consists of in excess of 6,000 individual maps.

The size of the roe herring catches were also tabulated by map, year and gear, and this information was included in the narrative that precedes each pair of maps and graphs.

RESULTS

Herring have been reported to have utilized 3091 km of British Columbia shoreline for spawning during the 25 year period of 1956 to 1980. Some of this coastline has been utilized for spawning nearly every year, such as the head of Nanoose Bay, some of it quite frequently, but much, perhaps half, only sporadically. The average yearly deposition has been 387 km long. The reporting of spawn is considered to have been generally complete except for the more inaccessible and sparsely inhabited areas of the coast, such as the west coast of the Queen Charlotte Islands, the upper reaches of the mainland inlets, and the upper west coast of Vancouver Island. Also, it is probably true that the opportunity and effort in surveying herring spawn has increased with the inception of the roe fishery and the greater emphasis placed on spawn surveys in recent years. The spawn records can therefore not be considered complete but our intuitive impression is that most of the spawn has been reported.

The roe fisheries began in 1971 and were then almost exclusively by seine. The gillnets were introduced in 1972 and by 1974 took almost 40% of the catch, at which level the gear split has been roughly maintained (45% gillnet, 55% seine). The fleet that participates in the roe fishery consists of approximately 250 seine vessels and 1,400 gillnetters. Up to 1980, each gillnet license holder could fish up to 150 fathoms of net in two sections. This was reduced to 75 fathoms and one section in 1980. It was not uncommon for a large proportion of this gear to be congregated in one fishing area and in 1981 an area licensing system was introduced to limit the amount of gear that could fish in any given area. Mainly in an effort to control this gear, the herring roe fisheries have polarized more and more as this fishery has developed. The spawns for the coast are shown in 61 maps in this report. For the years 1972 to 1976, herring roe fisheries exceeding 200 tons occurred in areas portrayed by 22 to 26 of these maps. The areas portrayed by 16 and 19 maps were fished in 1977 and 1978, respectively. In 1979, fisheries occurred in only nine of these areas and in 1980, a strike year, eight areas were fished. Hence, although it has become easier to monitor the fisheries, the amount of gear participating in any one opening has probably not decreased. What could be considered "shifts in spawn" occurred frequently in many of the areas and quite often pre-dated the roe fishery. Hence no conclusions could be made on the effect of roe fishing on spawnings site selection.

QUEEN CHARLOTTE ISLANDS

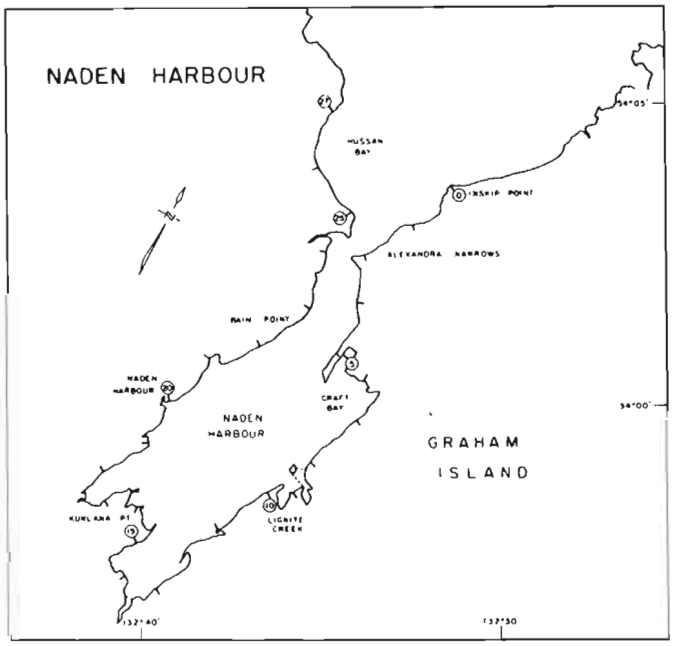
Spawn survey records for the Queen Charlotte Islands are not always complete because of the relative inaccessibility, due to distance and weather, of some parts of the islands' coastline. In the earlier years, the north and west coasts of the islands were incompletely surveyed while the survey coverage for the east coast was more complete. In more recent years, coverage on the east coast of the islands has probably been more complete than in earlier years because fisheries guardians have been stationed in the major inlets. Also, pilots of commercial aircraft, which make frequent overflights, have been reporting the occurrence of spawnings to the Fisheries Office, which has helped in dispatching vessels to spawning sites for surveys. In the years for which there is spawn survey data, 350 km of shoreline have been utilized for spawning. Spawn deposition has averaged 60 km for these years.

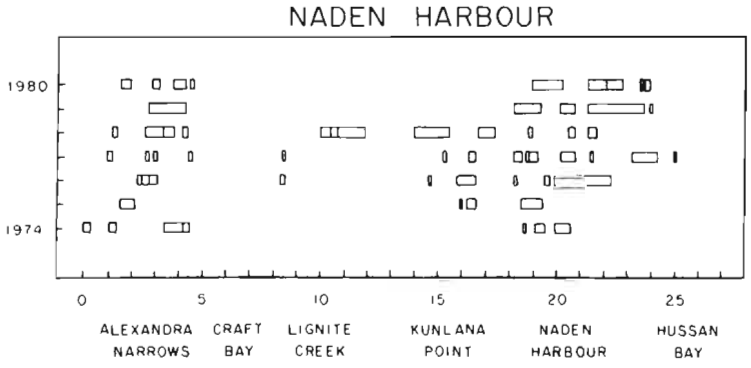
Naden Harbor

Map records of herring spawnings have been available for Naden Harbor only since 1974. Previous to 1974, spawnings were either not surveyed or only a written record of spawn survey information exists. The Naden Harbor spawnings are the earliest on the north coast, beginning usually in early February, while for the remainder of the Queen Charlotte Islands they generally do not begin until mid-March. The location of spawns in Naden Harbor have been nearly constant over the years with the most consistent deposition on the east shore of Alexandra Narrows and on the west shore of the inner harbor. Since spawning in the inlet generally occurs over a month long period, the same portion of shoreline is frequently utilized more than once.

The size of the spawning stock in Naden Harbor is considered to be quite small. There have been small gillnet roe fisheries here, with only a few skiffs operating over a one week period.

Year	Tons roe catch		
	GN	SN	TOT
1978	169	-	169
1979	106	-	106
1980	101	-	101


NADEN HARBOUR
HUSSAN BAY
ALEXANDRA NARROWS
RAIN POINT
NADEN HARBOUR
CRAFT BAY
NADEN HARBOUR
GRAHAM ISLAND
KUNLANA PT
LIGNITE CREEK
132°40'
132°30'
54°00'

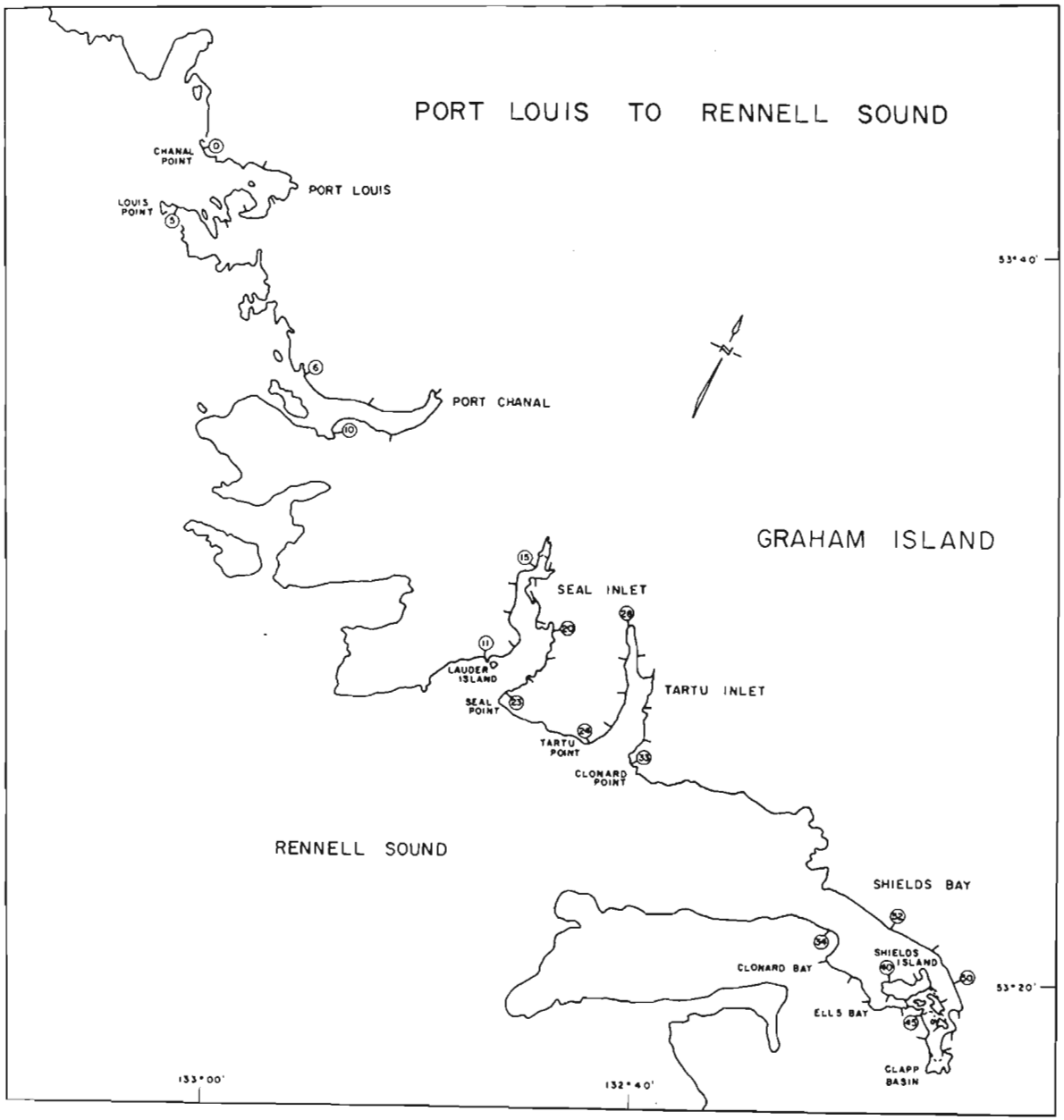

NADEN HARBOUR
1980
1974
0
5
10
15
20
25
ALEXANDRA NARROWS
CRAFT BAY
LIGNITE CREEK
KUNLANA POINT
NADEN HARBOUR
HUSSAN BAY

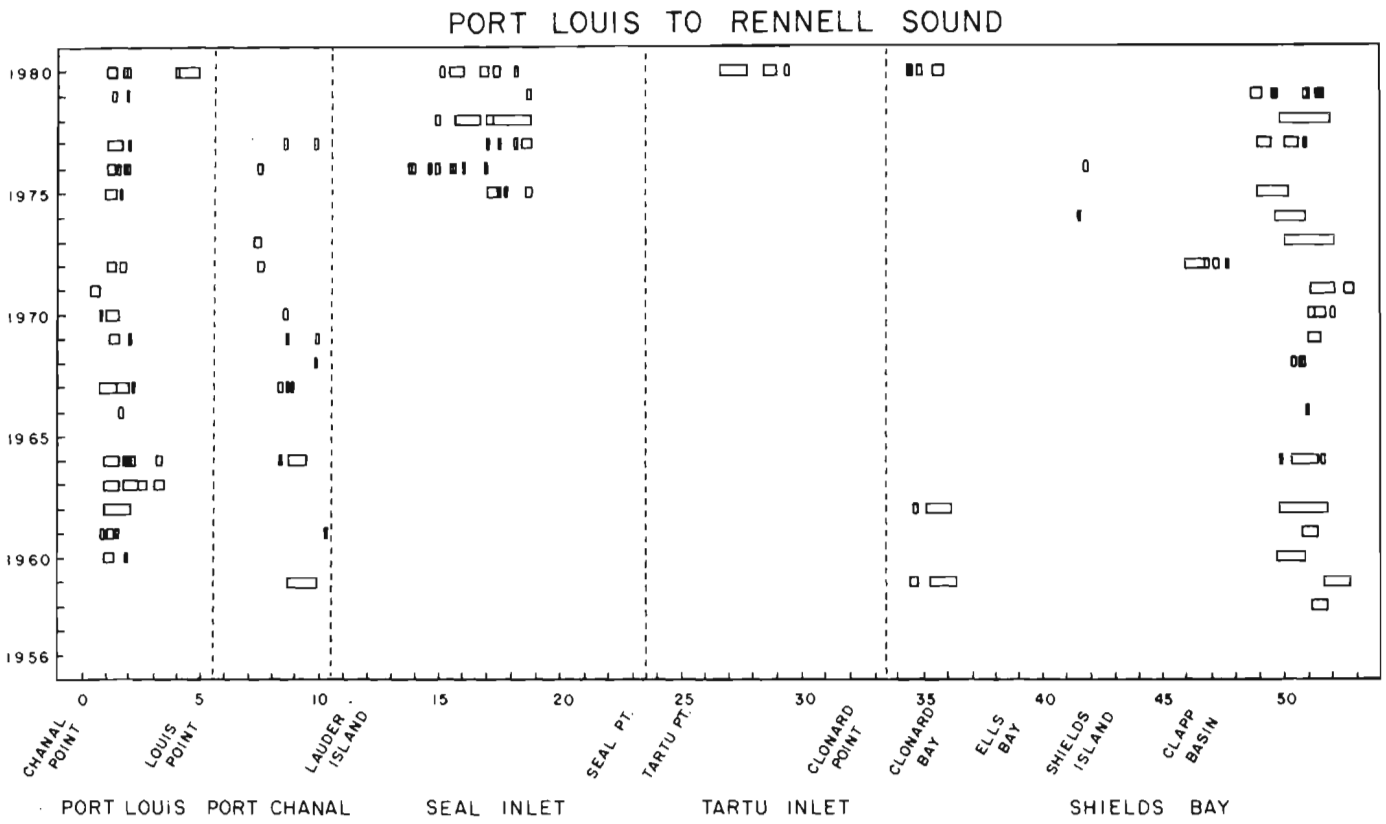
Port Louis to Rennell Sound

On the west coast of Graham Island, spawn survey coverage was not always complete, especially in the early part of the time series. This can be attributed mostly to the relative remoteness and inaccessibility of this coastline. Since the inception of the roe fishery, the quality of reporting appears to have been better. Spawnings have occurred regularly in Port Louis, in Port Chanal, in Seal Inlet and inside Shields Bay. (Note: Units 1 to 10 in map on page 8 represent 2 nautical miles each, rather than the usual 1 nautical mile.)

There has been no gillnet roe fishery in the area covered by this map and only limited seine roe fisheries in Rennell Sound.

Year	Tons roe catch		
	GN	SN	TOT
1974	-	445	445
1975	-	495	495
1979	-	118	118


PORT LOUIS TO RENNELL SOUND
CHANAL POINT
PORT LOUIS
LOUIS POINT
PORT CHANAL
GRAHAM ISLAND
SEAL INLET
LAUDER ISLAND
SEAL POINT
TARTU INLET
TARTU POINT
CLONARD POINT
RENNELL SOUND
SHIELDS BAY
CLONARD BAY
SHIELDS ISLAND
ELLS BAY
CLAPP BASIN
53°40'
53°20'
133°00'
132°40'

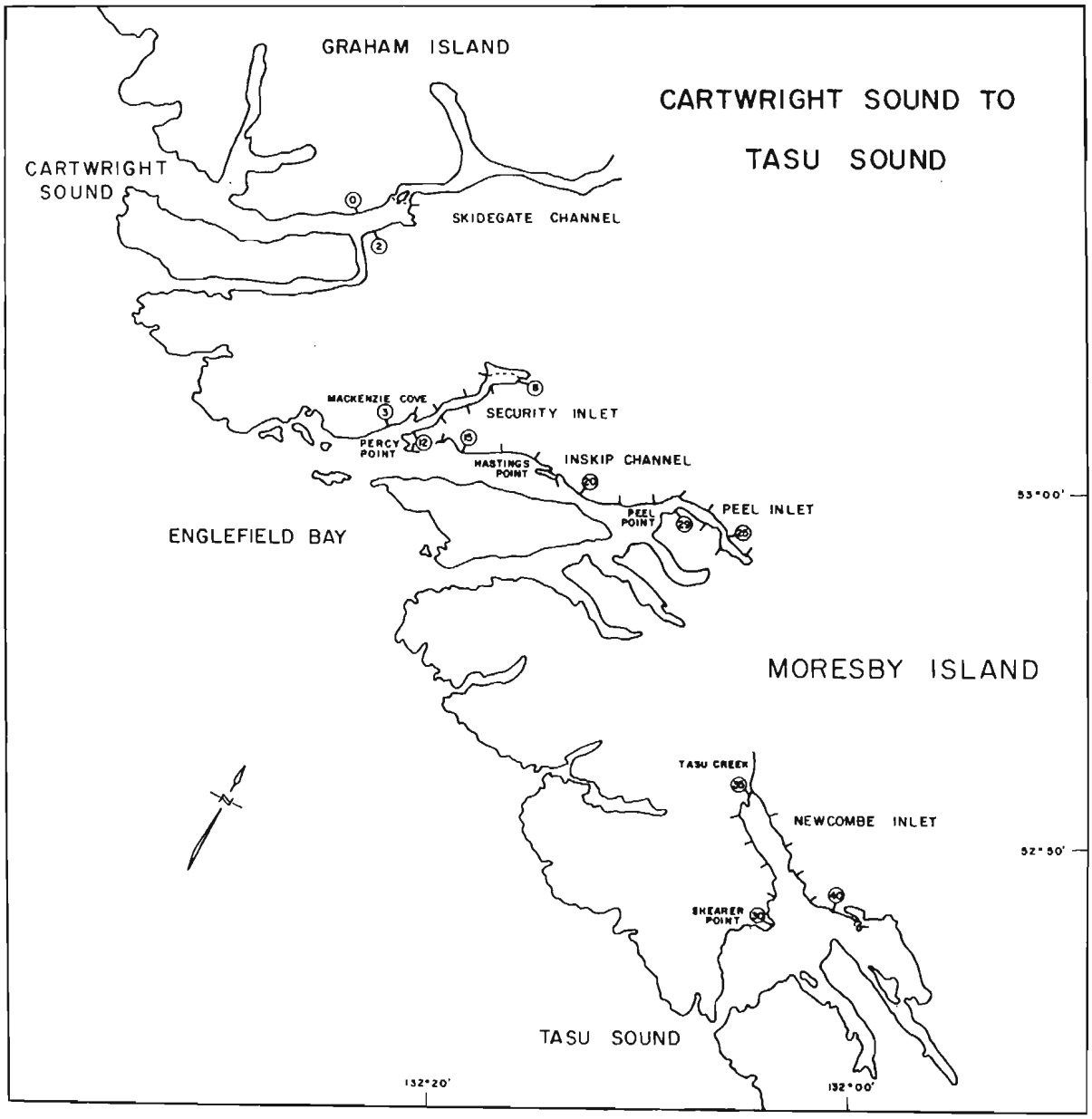

PORT LOUIS TO RENNELL SOUND
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
CHANAL POINT
LOUIS POINT
LAUDER ISLAND
SEAL PT.
TARTU PT.
CLONARD POINT
CLONARD BAY
ELLS BAY
SHIELDS ISLAND
CLAPP BASIN
PORT LOUIS
PORT CHANAL
SEAL INLET
TARTU INLET
SHIELDS BAY

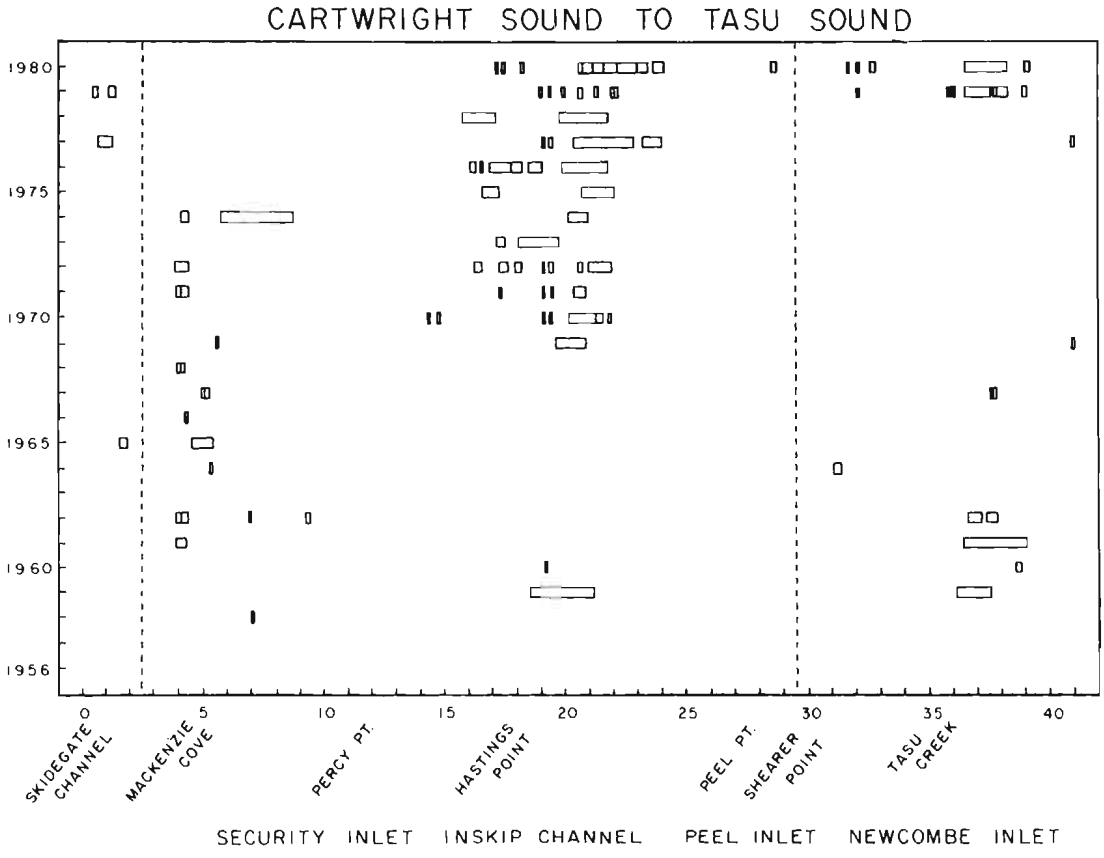
Cartwright Sound to Tasu Sound

As for the west coast of Graham Island, spawn survey coverage has also been spotty on the west coast of Moresby Island and for the same reason. In the 1970s most of the spawn has been found in Inskip Channel and in Newcombe Inlet. In the earlier years, spawn was also consistently found in Mackenzie Cove.

There has not been a gillnet roe fishery in the coastline covered by this map and there have been infrequent seine roe fisheries in Inskip Channel.

Year	Tons roe catch		
	GN	SN	TOT
1973	-	778	778
1978	-	633	633
1979	-	590	590


GRAHAM ISLAND
CARTWRIGHT SOUND TO
TASU SOUND
CARTWRIGHT
SOUND
SKIDEGATE CHANNEL
MACKENZIE COVE
SECURITY INLET
PERCY
POINT
HASTINGS
POINT
INSKIP CHANNEL
PEEL
POINT
PEEL INLET
53°00'
ENGLEFIELD BAY
MORESBY ISLAND
TASU CREEK
NEWCOMBE INLET
52°50'
SHEARER
POINT
TASU SOUND
132°20'
132°00'

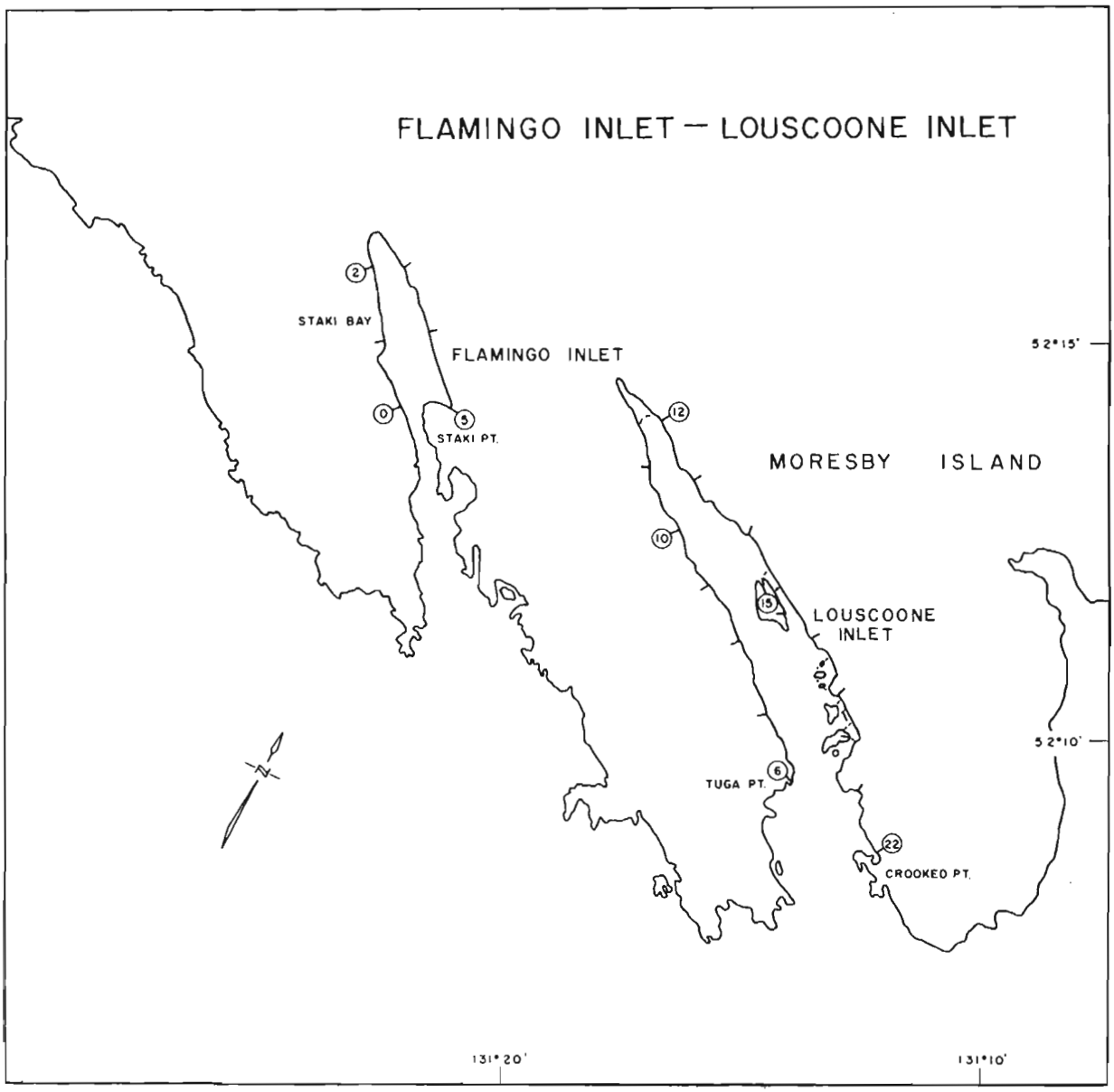

CARTWRIGHT SOUND TO TASU SOUND
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
SKIDEGATE CHANNEL
MACKENZIE COVE
PERCY PT.
HASTINGS POINT
PEEL PT.
SHEARER POINT
TASU CREEK
SECURITY INLET
INSKIP CHANNEL
PEEL INLET
NEWCOMBE INLET

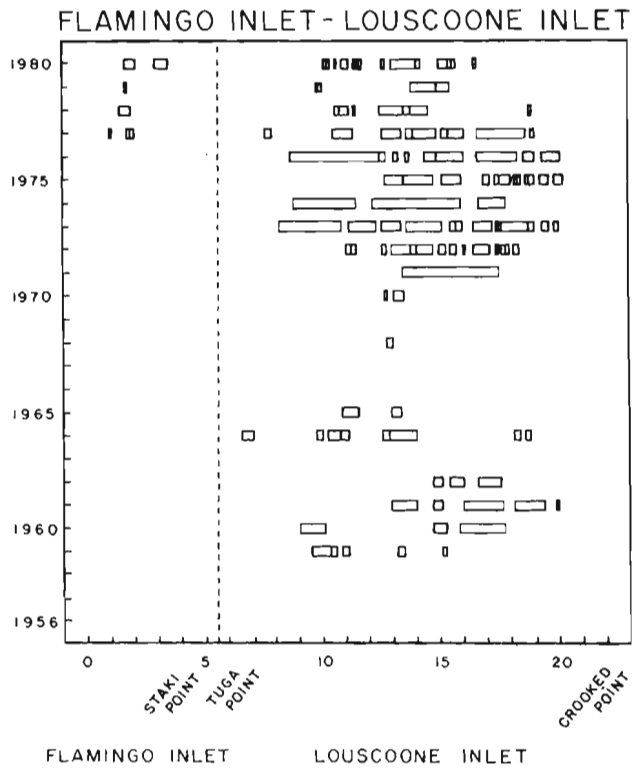
Flamingo Inlet-Louscoone Inlet

Spawn survey coverage for Louscoone Inlet appears to be better than for the remainder of the west coast of the Queen Charlotte Islands. In recent years, spawns have also been reported for Flamingo Inlet but the appearance of these are most likely the result of extended survey coverage. The amount of coastline spawned on was highest in the mid-1970s.

There have been mostly seine but also smaller gillnet roe fisheries for most years in Louscoone Inlet.

Year	Tons roe catch		
	GN	SN	TOT
1972	-	565	565
1973	-	78	78
1975	-	1778	1778
1976	369	2376	2745
1977	-	2870	2870
1978	587	1879	2466
1980	275	874	1149


FLAMINGO INLET — LOUSCOONE INLET
STAKI BAY
FLAMINGO INLET
STAKI PT.
MORESBY ISLAND
LOUSCOONE INLET
TUGA PT.
CROOKED PT.
52°15'
52°10'
131°20'
131°10'
2
0
5
12
10
15
6
22


FLAMINGO INLET - LOUSCOONE INLET
1980
1975
1970
1965
1960
1956
0
5
10
15
20
STAKI POINT
TUGA POINT
CROOKED POINT
FLAMINGO INLET
LOUSCOONE INLET

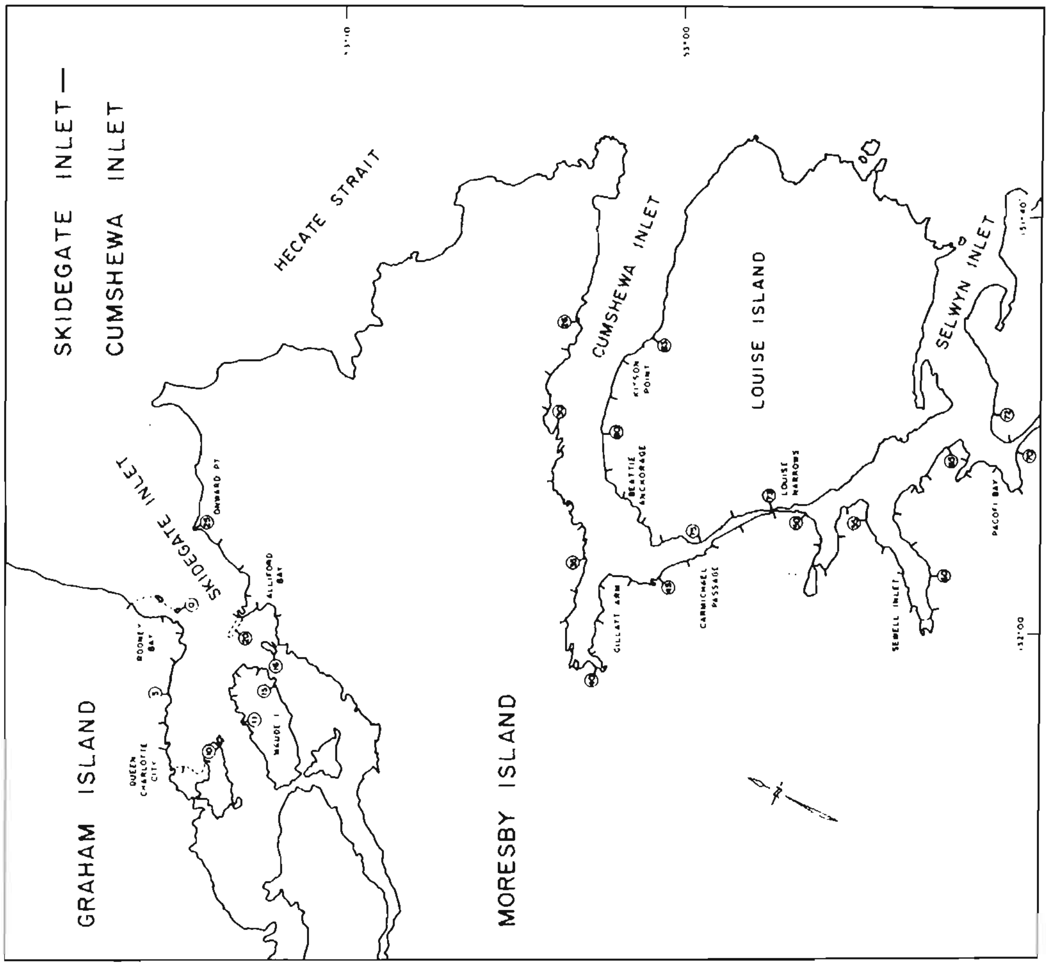
Skidegate Inlet-Cumshewa Inlet

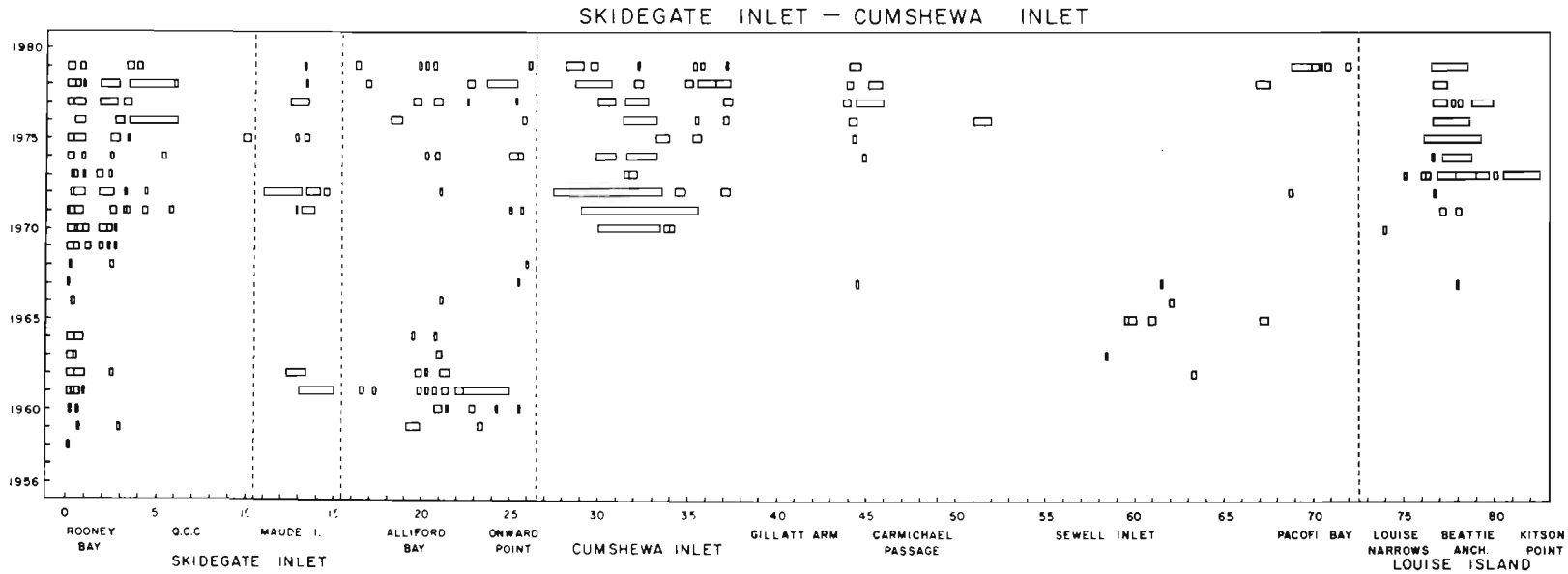
Herring spawns have been recorded in Skidegate Inlet for every year, except 1965, since surveys were begun in 1958. Herring have spawned consistently in and near Rooney Bay on the north shore of the entrance to the inlet and between Alliford Bay and Onward Point on the south shore. In some years there have also been spawns on Maude Island. There have been small seine roe fisheries in Skidegate Inlet.

Year	Tons roe catch		
	GN	SN	TOT
1971	-	331	331
1972	-	158	158
1974	-	371	371
1976	-	157	157
1977	-	98	98
1979	-	78	78

Prior to 1970 there had been no reports of spawn in Cumshewa Inlet. Since then, there have been substantial spawns on the north shore of the inlet, in Carmichael Passage and on the south shore in and near Beattie Anchorage. Intermittently, through the years, there have been reports of spawn in Sewell Inlet and Pacofi Bay, south of Cumshewa Inlet. In the early years of the roe fisheries there were substantial catches made in Cumshewa Inlet, almost wholly by seine.

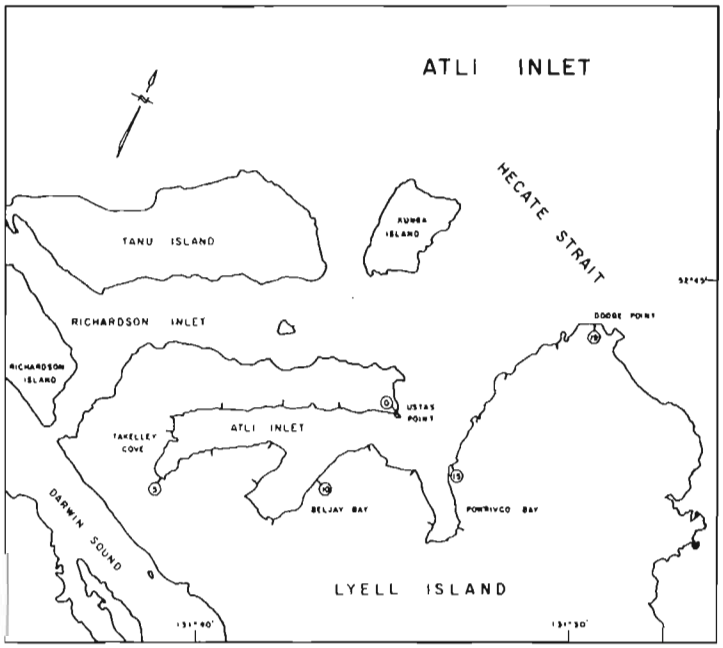
Year	Tons roe catch		
	GN	SN	TOT
1971	-	112	112
1972	-	1490	1490
1973	-	5753	5753
1974	65	4390	4455
1975	-	1877	1877
1976	324	1689	2013

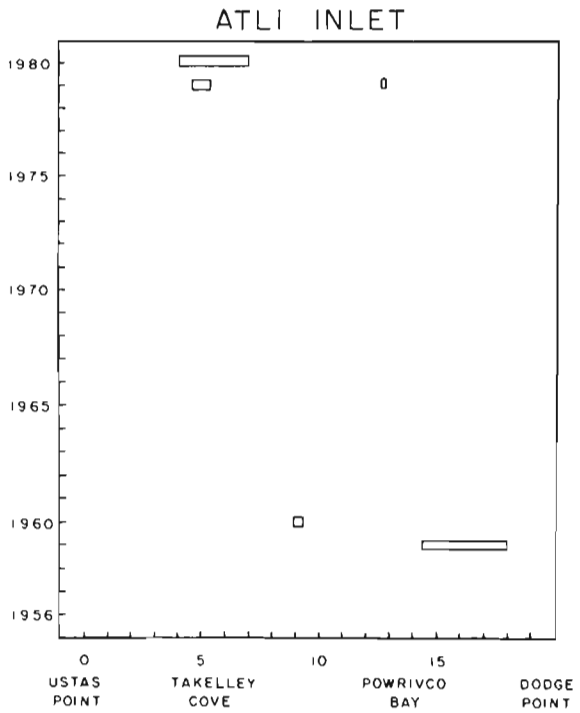

SKIDEGATE INLET —
CUMSHEWA INLET
HECATE STRAIT
GRAHAM ISLAND
MORESBY ISLAND
LOUISE ISLAND
CUMSHEWA INLET
SELWYN INLET
SKIDEGATE INLET
LOUISE NARROWS
SEWELL INLET
CARMICHAEL PASSAGE
GILLATT ARM
BEATTIE ANCHORAGE
ALLIFORD BAY
ROONEY BAY
QUEEN CHARLOTTE CITY
MAUDE I.


SKIDEGATE INLET — CUMSHEWA INLET
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
ROONEY BAY
Q.C.C
MAUDE I.
ALLIFORD BAY
ONWARD POINT
GILLATT ARM
CARMICHAEL PASSAGE
SEWELL INLET
PACOFI BAY
LOUISE NARROWS
BEATTIE ANCH.
KITSON POINT
SKIDEGATE INLET
CUMSHEWA INLET
LOUISE ISLAND

Atli Inlet

There have been records of spawn in Atli Inlet for only 4 of the years between 1956 and 1980. The first roe fishery in the inlet occurred in 1981.



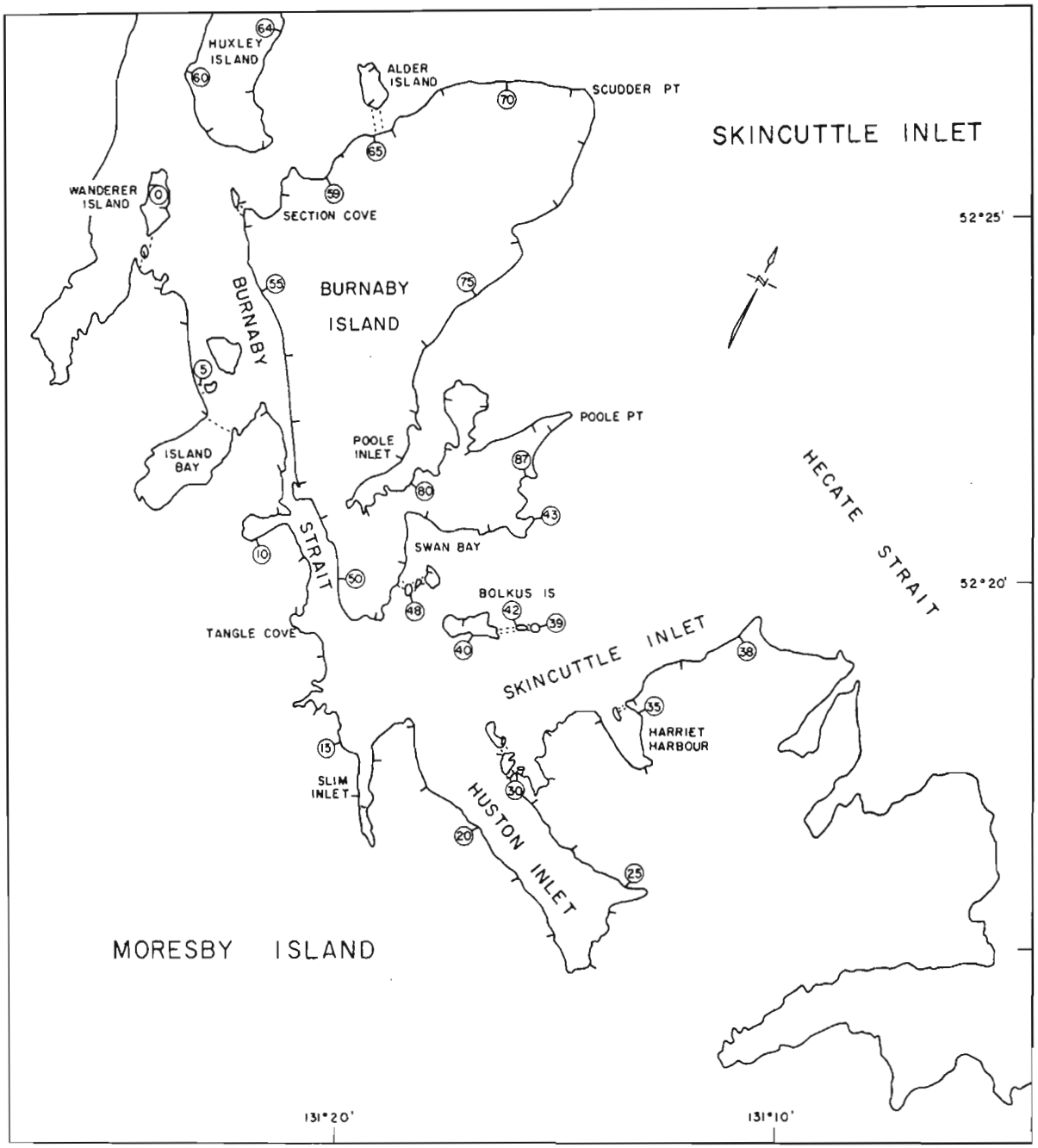


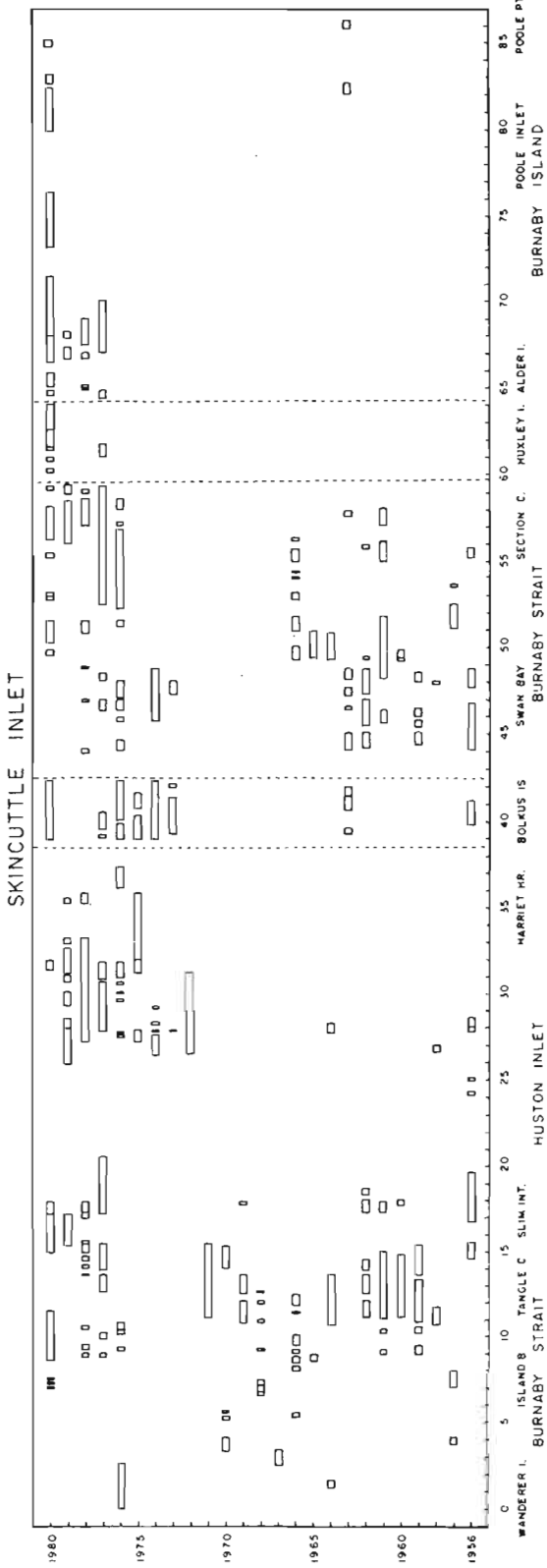
Skincuttle Inlet

Skincuttle Inlet and the lower portions of Laskeek Bay connected to the inlet by Burnaby Strait have had substantial spawns reported in most years. On the Moresby Island shoreline, from Island Bay to Harriet Harbor, there have been spawns in all years. More recently, there has been an increase in spawning in the Huston Inlet to Harriet Harbor section. Herring have spawned consistently on the Bolkus Islands in the 1970s. On the Burnaby Island shoreline, herring have also consistently spawned between Swan Bay and Section Cove except in the years 1967 to 1972 when levels of spawn were generally low. In more recent years, spawns have also been reported on the more exposed shoreline near Scudder Point.

There have been substantial roe fisheries, both by seine and gillnet, for all years since 1972, mostly in the southern portions of Skincuttle Inlet.

Year	Tons roe catch		
	GN	SN	TOT
1972	-	1389	1389
1973	-	2459	2459
1974	75	2435	2510
1975	116	4724	4840
1976	1294	9095	10389
1977	1631	9393	11024
1978	2228	8231	10459
1979	2299	6412	8711
1980	1059	1448	2507


HUXLEY ISLAND
64
60
ALDER ISLAND
70
SCUDDER PT
SKINCUTTLE INLET
65
WANDERER ISLAND
0
59
SECTION COVE
52°25'
BURNABY
55
BURNABY ISLAND
75
5
POOLE PT
POOLE INLET
87
ISLAND BAY
80
43
HECATE STRAIT
SWAN BAY
10
STRAIT
50
52°20'
BOLKUS IS
42
48
39
TANGLE COVE
40
SKINCUTTLE INLET
38
35
HARRIET HARBOUR
13
SLIM INLET
30
HUSTON INLET
20
25
MORESBY ISLAND
131°20'
131°10'


SKINCUTTLE INLET
1980
1975
1970
1965
1960
1956
0
WANDERER I.
5
ISLAND 8
10
TANGLE C
15
SLIM INT.
20
25
30
HARRIET HR.
35
BOLKUS IS
40
45
SWAN BAY
50
55
SECTION C.
60
HUXLEY I.
65
ALDER I.
70
75
POOLE INLET
80
POOLE PT.
85
BURNABY STRAIT
HUSTON INLET
BURNABY STRAIT
BURNABY ISLAND

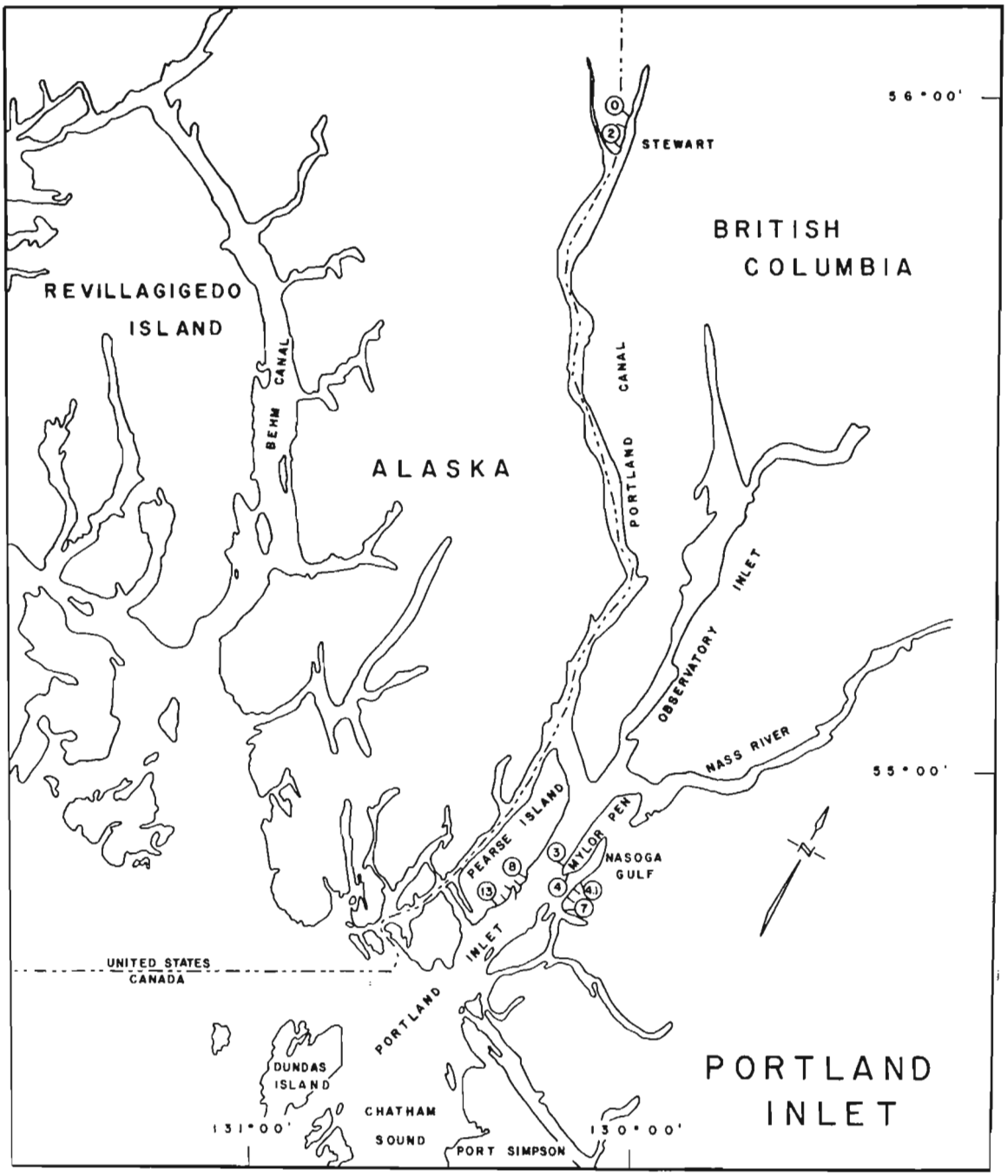
NORTH COAST

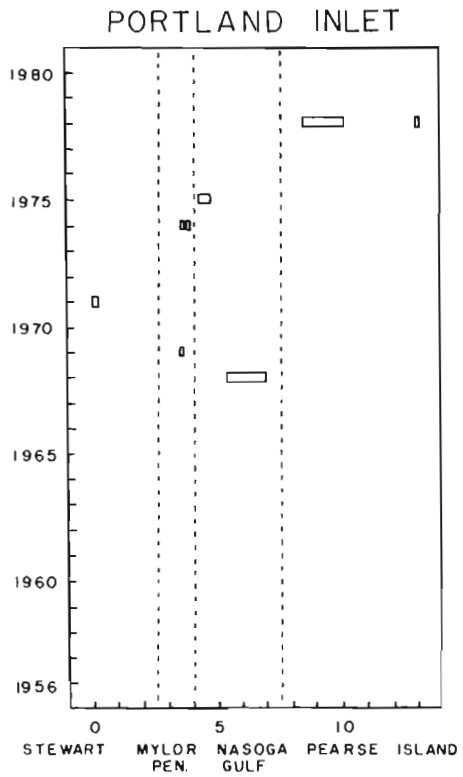
The north coast includes statistical areas 3 to 5, which are the waters along the mainland coast that are north of Banks Island. Reporting of spawn is considered to be fairly complete, except for the extreme northern and southern portions. Most of the spawn has been deposited on the coastline between Port Simpson and Big Bay and in Kitkatla Inlet. While the average yearly deposition has been 27.3 km of spawn, a total of 265.5 km of coastline have been utilized for spawning during the 25 years of the study period.

Portland Inlet

There have been infrequent reports of herring spawn from Portland Inlet. No regular spawn surveys were conducted in this inlet and there may have been minor spawnings in years for which there were no reports. The spawns have been in different locations in each of the six years for which there have been reports, but generally the spawn has been near the entrance to the inlet. There were roe fishery catches, by seine, reported here for only the first two years of this fishery.

Year	Tons roe catch		
	GN	SN	TOT
1971	-	227	227
1972	-	884	884


56°00'
STEWART
BRITISH
COLUMBIA
REVILLAGIGEDO
ISLAND
BEHM CANAL
ALASKA
PORTLAND CANAL
OBSERVATORY INLET
NASS RIVER
55°00'
PEARSE ISLAND
MYLOR PEN
NASOGA
GULF
UNITED STATES
CANADA
PORTLAND INLET
DUNDAS
ISLAND
CHATHAM
SOUND
131°00'
PORT SIMPSON
130°00'
PORTLAND
INLET

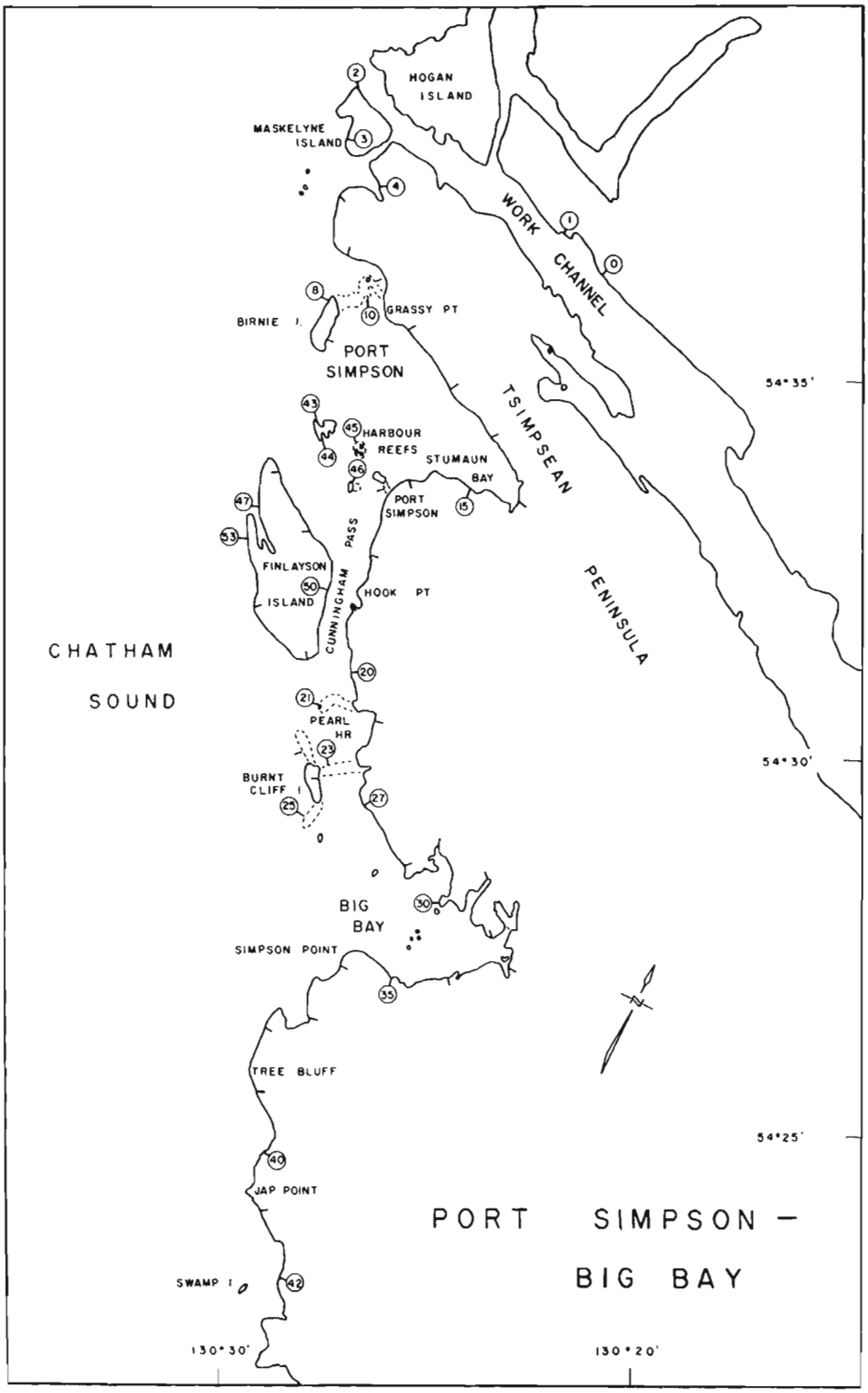

PORTLAND INLET
1980
1975
1970
1965
1960
1956
0
5
10
STEWART
MYLOR PEN.
NASOGA GULF
PEARSE ISLAND

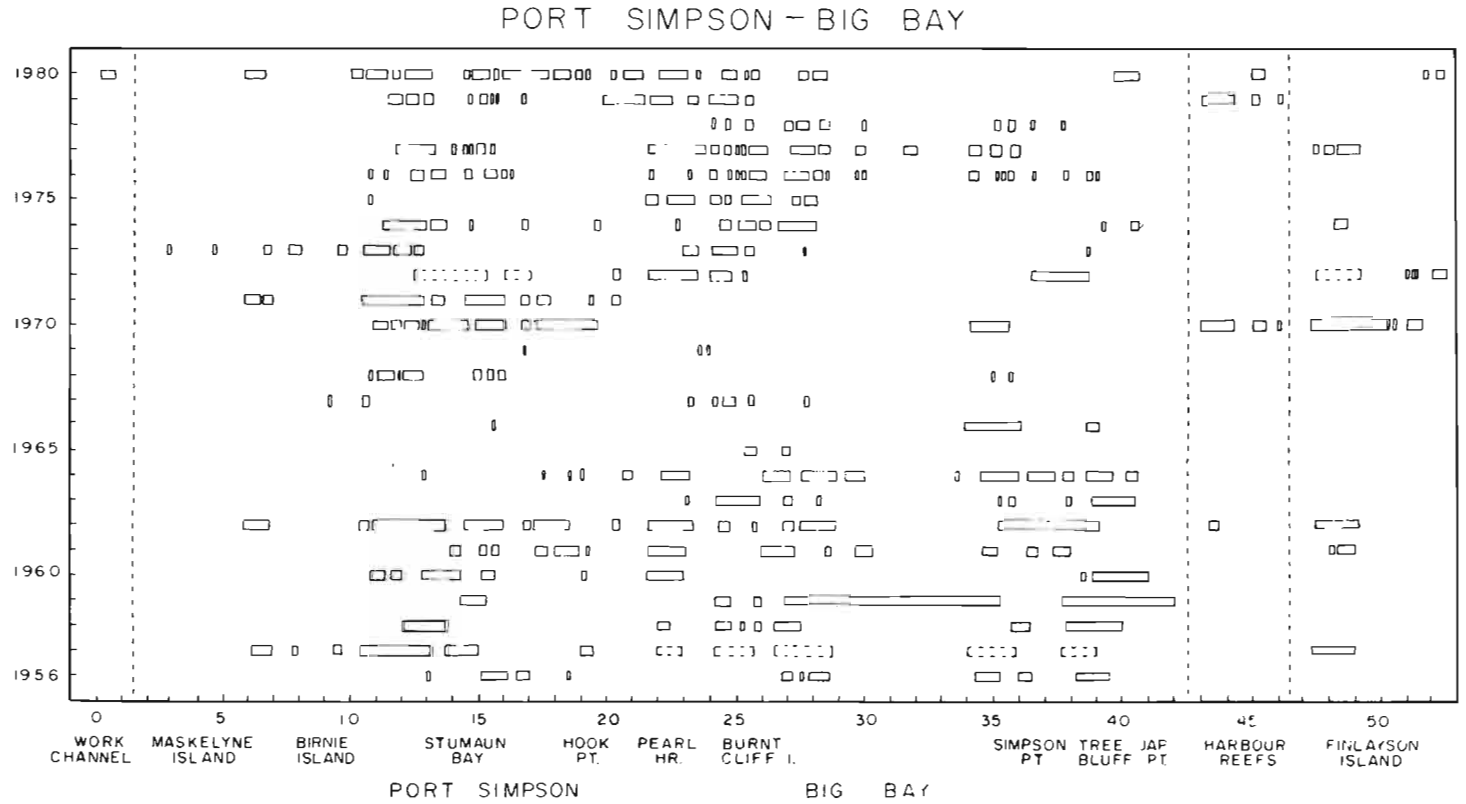
Port Simpson-Big Bay

The entire coastline between Maskelyne Island and Jap Point has been utilized for spawn deposition in the years of the study period. In the upper portion, Maskelyne Island to Grassy Point, spawns have been reported infrequently. For most years, there have been spawns in Port Simpson between Grassy Point and Village Island and occasionally on Harbor Reefs. The coastline between Village Island and Pearl Harbor had spawn in half of the years, while in Pearl Harbor and on adjacent Burnt Cliff Island there has been spawn in all recent years and for most of the years during the study period. In Big Bay there have been spawns recorded near the entrances, but not at the head, for most of the years in the study period. Occasionally, there have been spawns on the Finlayson Island shoreline.

The herring roe fisheries have occurred mainly between Stumaun Bay and Pearl Harbor and both gear types have been used. Catches peaked at 6215 tons in 1977 and there has been no roe fishery in this area since 1978, although some fish are taken early for spawn-on-kelp ponds in Pearl Harbor.

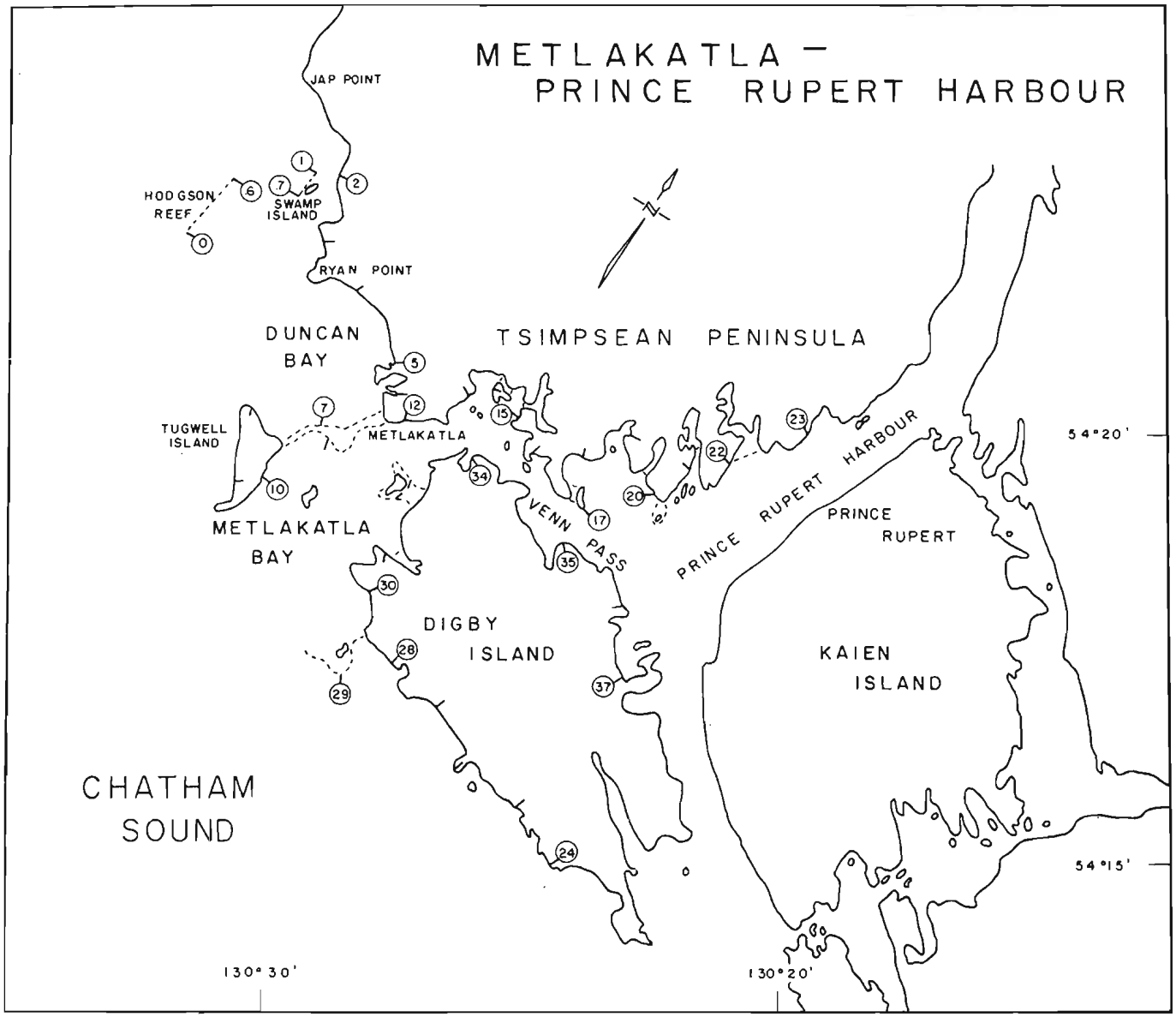
Year	Tons roe catch		
	GN	SN	TOT
1971	-	124	124
1972	-	1983	1983
1973	-	1530	1530
1974	510	1698	2199
1976	147	1362	1509
1977	915	5300	6215
1978	2026	1681	3707

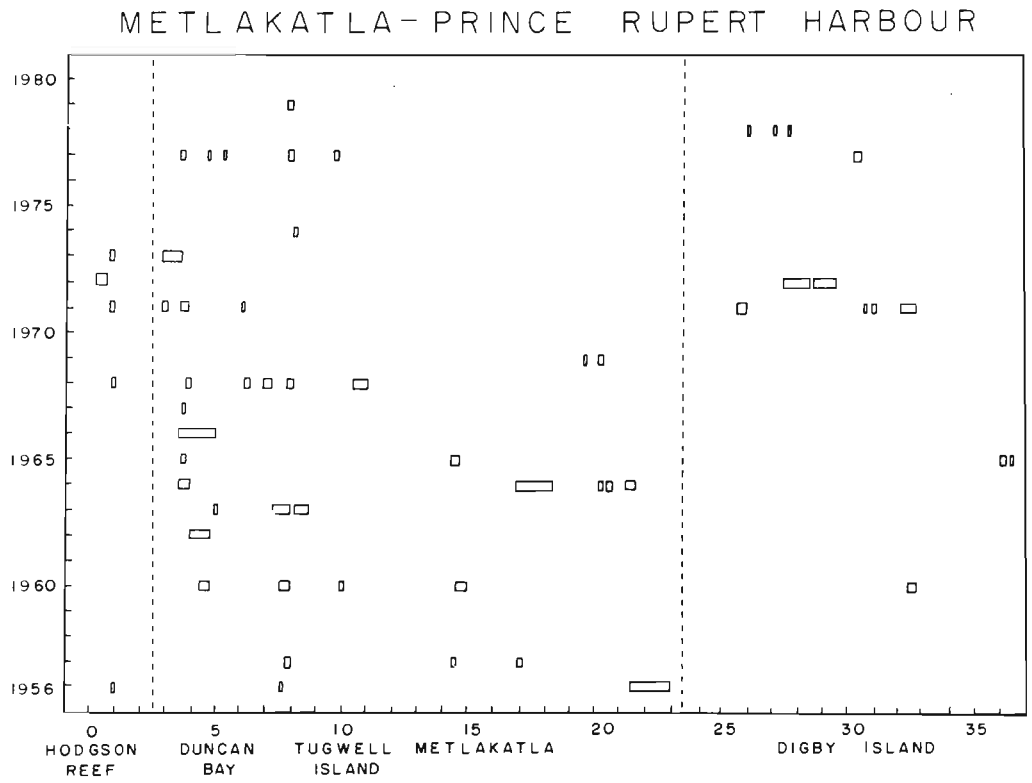

HOGAN ISLAND
MASKELYNE ISLAND
WORK CHANNEL
BIRNIE I.
GRASSY PT
PORT SIMPSON
TSIMPSEAN PENINSULA
54°35'
HARBOUR REEFS
STUMAUN BAY
PORT SIMPSON
FINLAYSON ISLAND
CUNNINGHAM PASS
HOOK PT
CHATHAM SOUND
PEARL HR
BURNT CLIFF I.
54°30'
BIG BAY
SIMPSON POINT
TREE BLUFF
54°25'
JAP POINT
PORT SIMPSON — BIG BAY
SWAMP I.
130°30'
130°20'


PORT SIMPSON – BIG BAY
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
WORK CHANNEL
MASKELYNE ISLAND
BIRNIE ISLAND
STUMAUN BAY
HOOK PT.
PEARL HR.
BURNT CLIFF I.
SIMPSON PT
TREE BLUFF
JAP PT.
HARBOUR REEFS
FINLAYSON ISLAND
PORT SIMPSON
BIG BAY

Metlakatla-Prince Rupert

The shoreline between Hodgson Reef and Prince Rupert Harbor has been infrequently utilized for spawning, especially since 1968 when there have been only small spawns in this area. There have been no roe fisheries here.

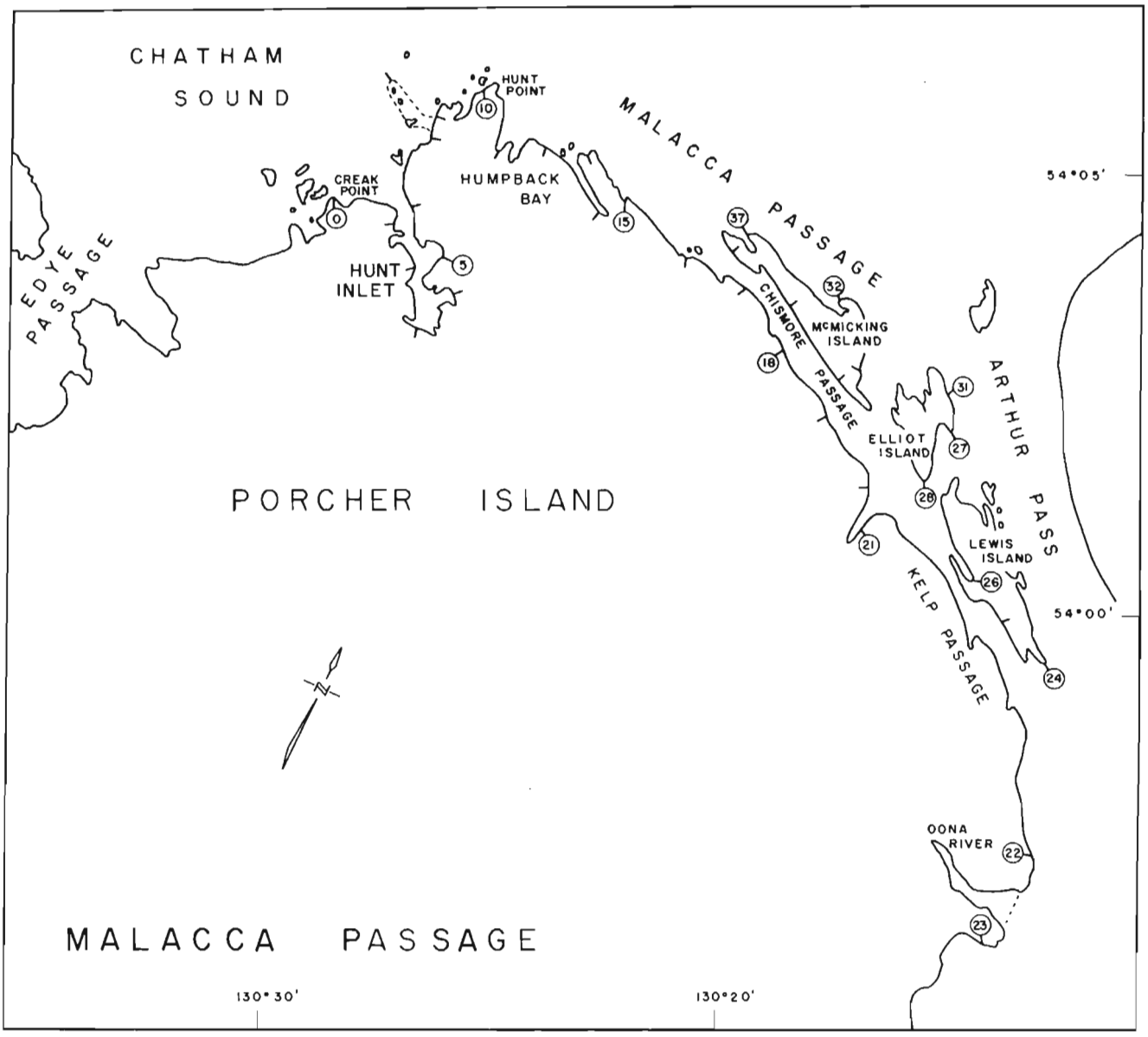

METLAKATLA –
PRINCE RUPERT HARBOUR
JAP POINT
HODGSON REEF
SWAMP ISLAND
RYAN POINT
DUNCAN BAY
TSIMPSEAN PENINSULA
TUGWELL ISLAND
METLAKATLA
METLAKATLA BAY
VENN PASS
PRINCE RUPERT HARBOUR
PRINCE RUPERT
DIGBY ISLAND
KAIEN ISLAND
CHATHAM SOUND
54°20'
54°15'
130°30'
130°20'

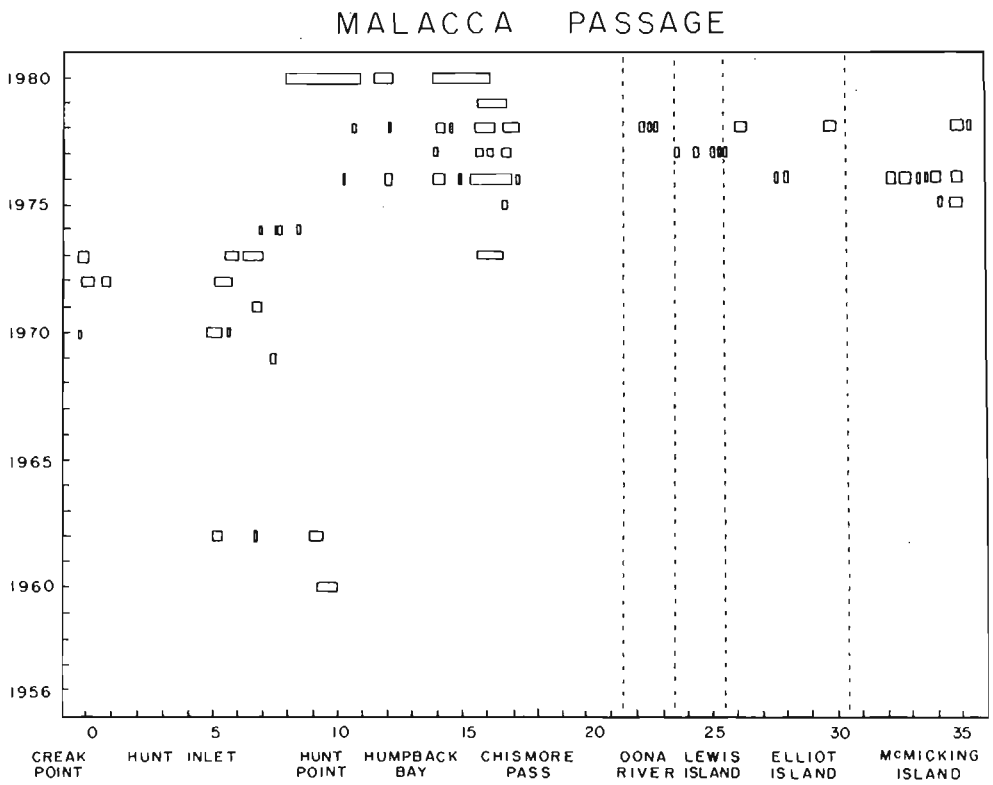

METLAKATLA – PRINCE RUPERT HARBOUR
1980
1975
1970
1965
1960
1956
0
HODGSON REEF
5
DUNCAN BAY
10
TUGWELL ISLAND
15
METLAKATLA
20
25
30
DIGBY ISLAND
35

Malacca Passage

Records of spawn on the north coast of Porcher Island are recent phenomena. Prior to 1969, there are only two records of spawn. Since then, there have been reports of yearly spawns either in or near Hunt Inlet, near Humpback Bay, and in Chismore Passage, both on the Porcher Island shoreline and on the smaller islands forming the other shore of the passage. There have been reports of small spawns in Edye Passage in some of the years, but these were never surveyed. There has been some fishing for spawn-on-kelp in this area, as well as a small roe fishery in some years.

Year	Tons roe catch		
	GN	SN	TOT
1971	-	91	91
1974	404	589	993
1976	157	-	157


CHATHAM
SOUND
HUNT
POINT
10
MALACCA PASSAGE
54°05'
CREAK
POINT
0
HUMPBACK
BAY
15
37
EDYE
PASSAGE
HUNT
INLET
5
32
CHISMORE PASSAGE
McMICKING
ISLAND
18
31
ARTHUR PASS
ELLIOT
ISLAND
27
PORCHER ISLAND
28
LEWIS
ISLAND
21
26
KELP PASSAGE
54°00'
24
OONA
RIVER
22
23
MALACCA PASSAGE
130°30'
130°20'

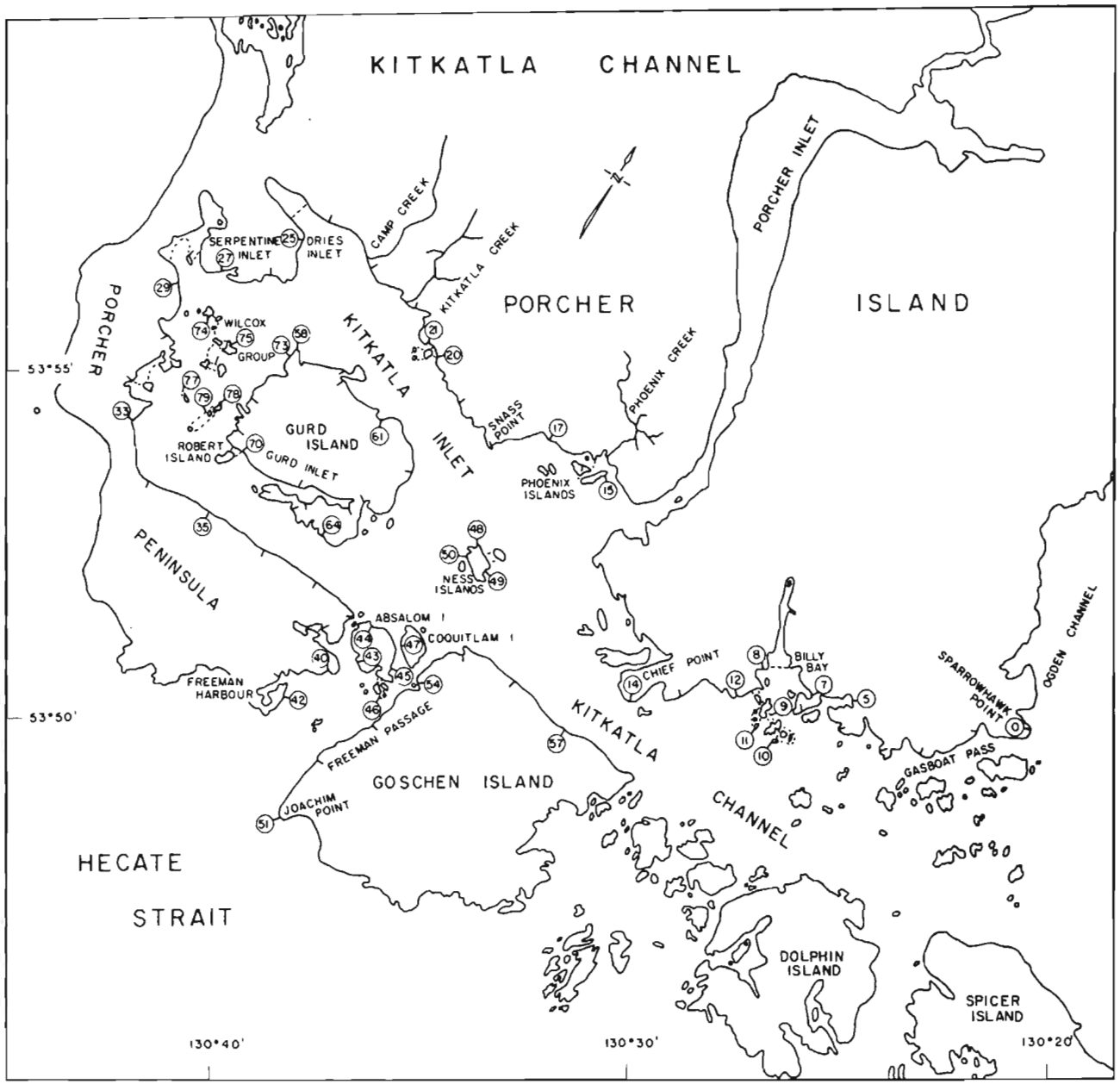

MALACCA PASSAGE
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
CREAK POINT
HUNT INLET
HUNT POINT
HUMPBACK BAY
CHISMORE PASS
OONA RIVER
LEWIS ISLAND
ELLIOT ISLAND
McMICKING ISLAND

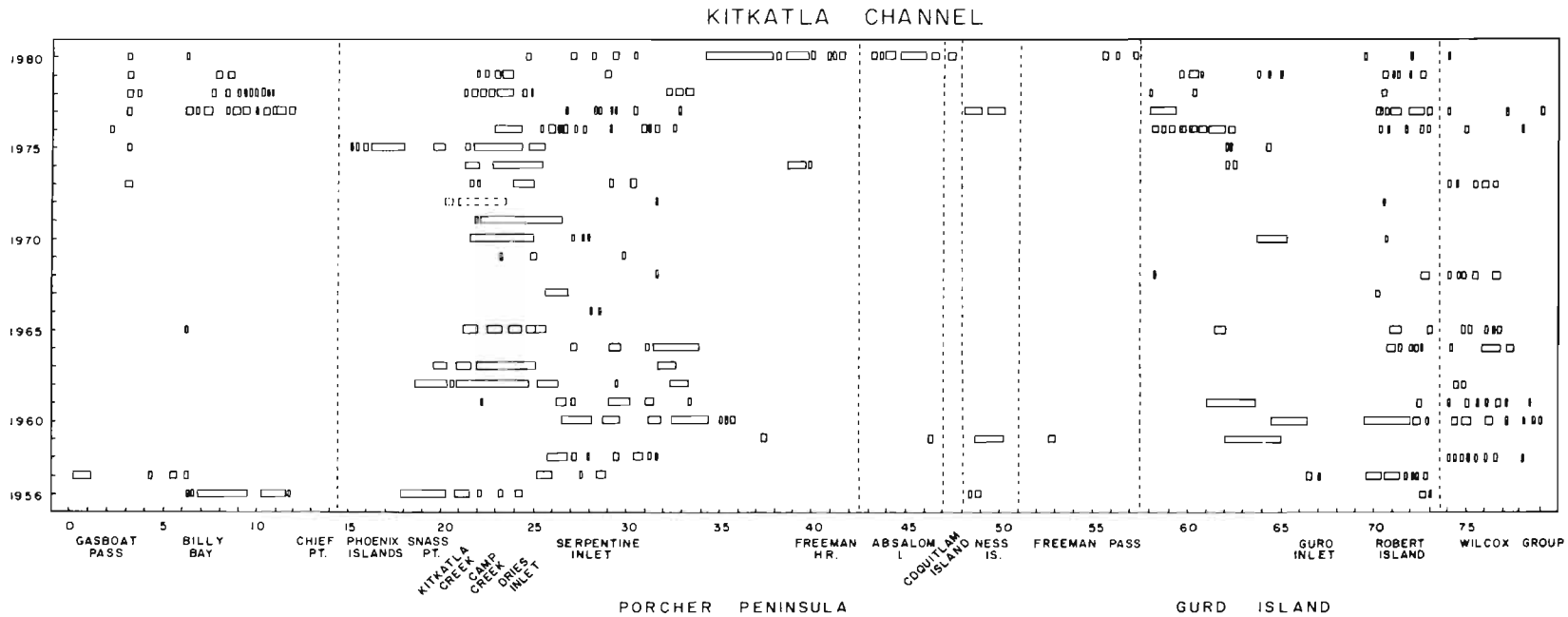
Kitkatla Channel

There have been spawns recorded for Kitkatla Channel for every year of the study period. In the late 1960s, the amount of spawn recorded was much less than in earlier and more recent years. In most years, the largest proportion of the spawn was recorded for the shoreline between Snass Point and Serpentine Inlet, and the north and west shore of Gurd Island and the smaller islands in its vicinity (Wilcox Group and Robert Island). The roe fishery has also been held in this area. Spawns have been found more recently in and near Freeman Passage and in the islands near Billy Bay. At the latter location, spawns are generally later by two weeks than elsewhere in the inlet, and were also recorded there in the late 1950s but not in the intervening fifteen years.

There has been spawn-on-kelp fishing and a substantial roe fishery in the inlet since 1971. There has been no roe fishery in the inlet since the last year of the study period, 1980.

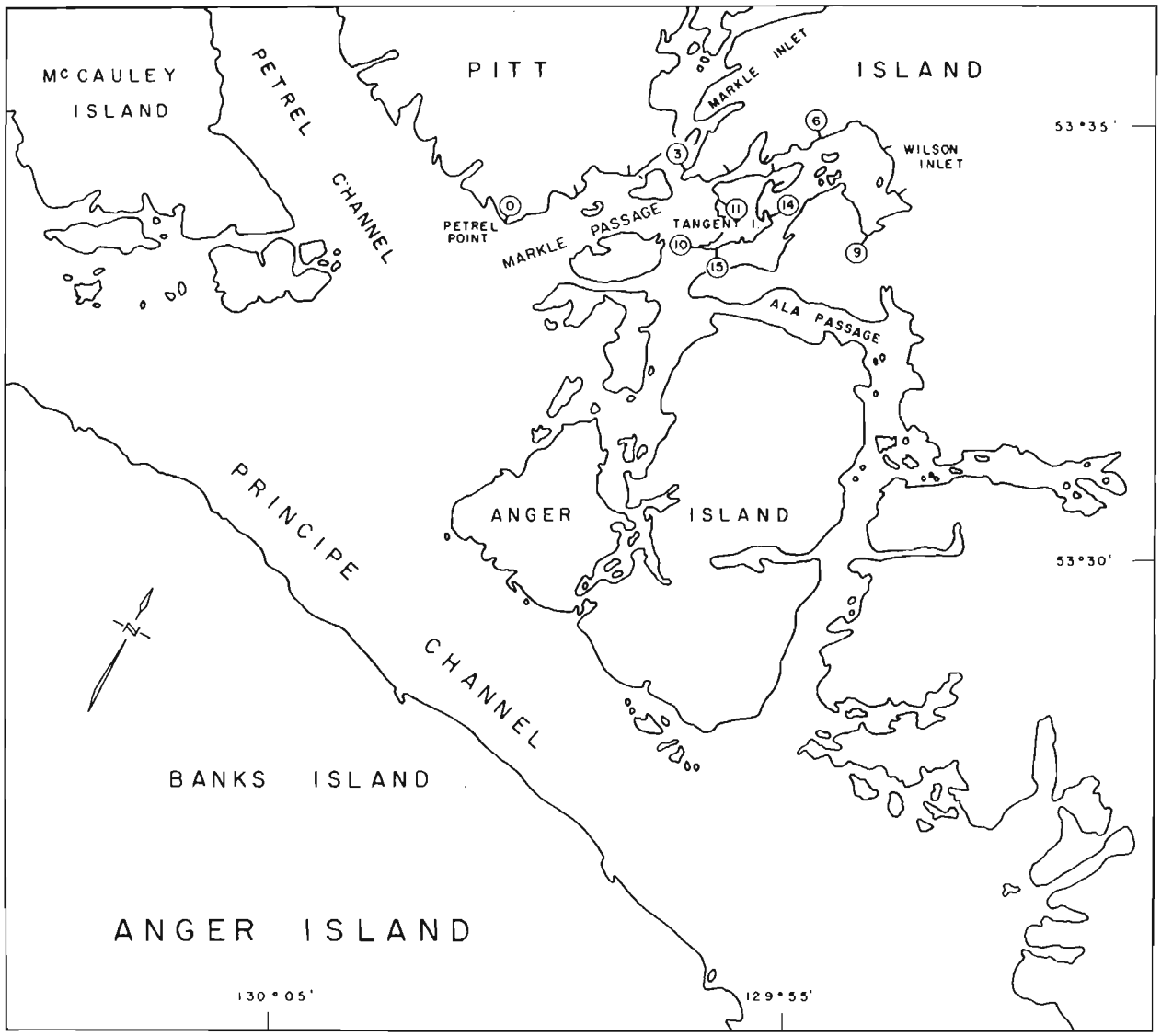
Year	Tons roe catch		
	GN	SN	TOT
1971	-	3190	3190
1972	4	1116	1120
1974	756	-	756
1975	12	1653	1705
1976	-	2459	2459
1977	732	1155	1887
1978	1308	565	1873
1979	1362	1401	2763
1980	1153	1809	2962

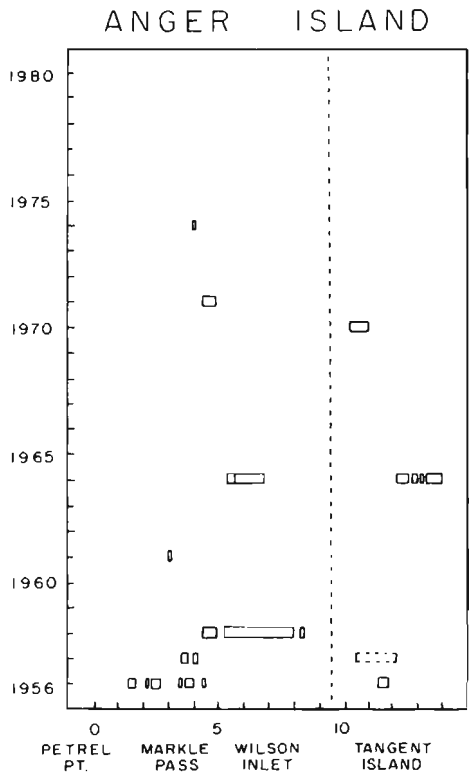

KITKATLA CHANNEL
PORCHER INLET
CAMP CREEK
KITKATLA CREEK
SERPENTINE INLET
DRIES INLET
PORCHER ISLAND
PORCHER PENINSULA
WILCOX GROUP
KITKATLA INLET
GURD ISLAND
GURD INLET
ROBERT ISLAND
SNASS POINT
PHOENIX CREEK
PHOENIX ISLANDS
NESS ISLANDS
ABSALOM I
COQUITLAM I
FREEMAN HARBOUR
FREEMAN PASSAGE
CHIEF POINT
BILLY BAY
SPARROWHAWK POINT
OGDEN CHANNEL
GASBOAT PASS
KITKATLA CHANNEL
GOSCHEN ISLAND
JOACHIM POINT
HECATE STRAIT
DOLPHIN ISLAND
SPICER ISLAND
53°55'
53°50'
130°40'
130°30'
130°20'


KITKATLA CHANNEL
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
GASBOAT PASS
BILLY BAY
CHIEF PT.
PHOENIX ISLANDS
SNASS PT.
KITKATLA CREEK
CAMP CREEK
ORIES INLET
SERPENTINE INLET
FREEMAN HR.
ABSALOM I.
COQUITLAM ISLAND
NESS IS.
FREEMAN PASS
GURD INLET
ROBERT ISLAND
WILCOX GROUP
PORCHER PENINSULA
GURD ISLAND

Anger Island

There have been small spawns recorded in the area north of Anger Island for only seven years out of the 25 years of the study period. Because of the relative isolation of the area and the generally small spawns, it is not inconceivable that there were spawns, which were not observed, in the other years. There have been no roe fisheries here.


McCAULEY ISLAND
PETREL CHANNEL
PITT ISLAND
MARKLE INLET
53°35'
WILSON INLET
PETREL POINT
MARKLE PASSAGE
TANGENT I.
ALA PASSAGE
PRINCIPE CHANNEL
ANGER ISLAND
53°30'
BANKS ISLAND
ANGER ISLAND
130°05'
129°55'
0
3
6
9
10
11
13
14


ANGER ISLAND
1980
1975
1970
1965
1960
1956
0
5
10
PETREL PT.
MARKLE PASS
WILSON INLET
TANGENT ISLAND

CENTRAL COAST

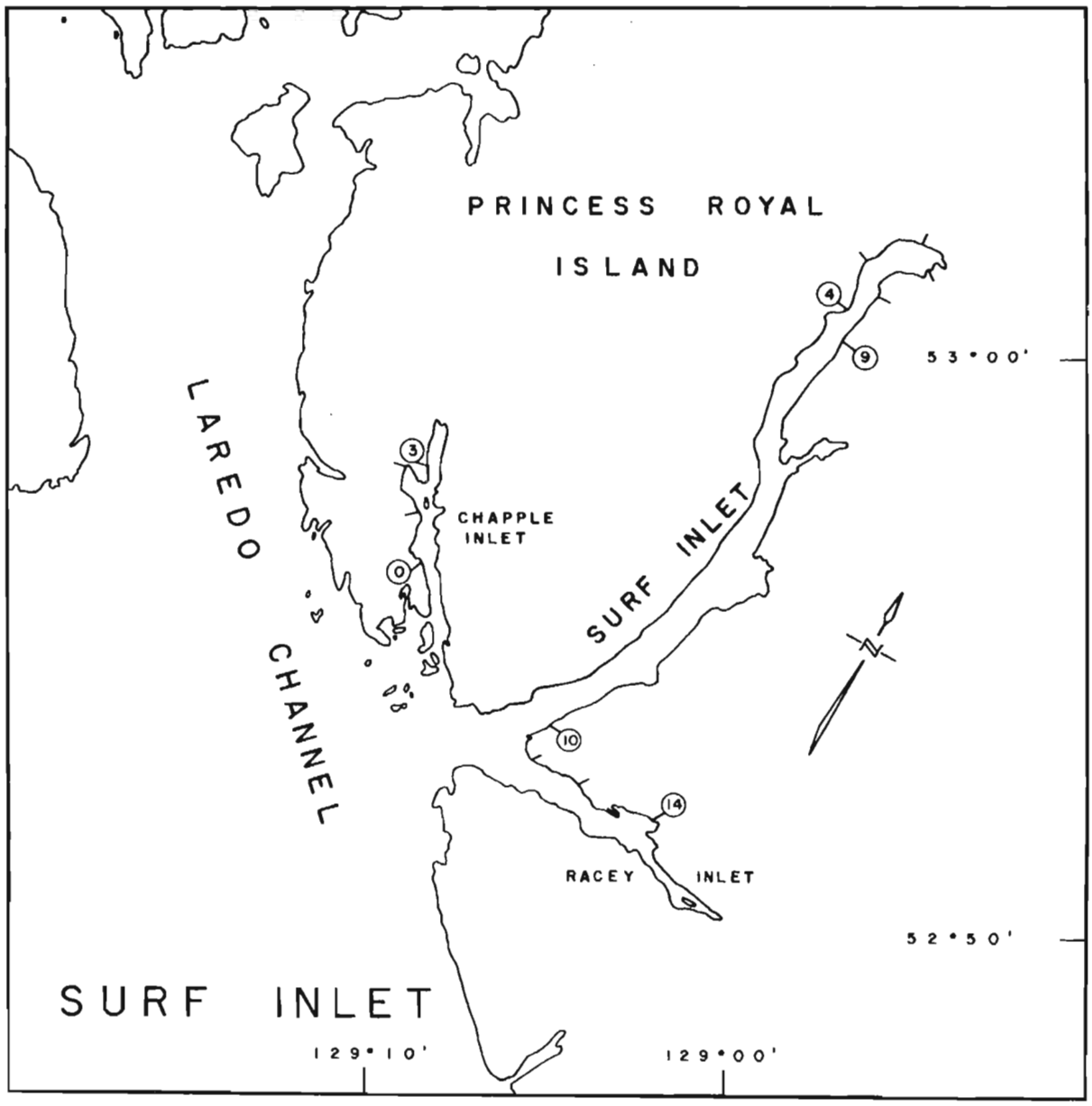
The Central Coast includes statistical areas 6 to 10. This section of the coast is characterized by hundreds of islands that make up the Outer Central Coast and several major long inlets that have been grouped together as the Central Coast Inlets. Most of the spawn in the Central Coast has been recorded on the Outer Central Coast. In the 25 years of the study period, 995 km of coastline have been utilized for spawning, with yearly deposition averaging 99 km. The completeness of spawn survey coverage for the Central Coast is considered to be generally good. However, the spawn in the upper reaches of some of the longer inlets and on the outer islands probably has been only sporadically reported.

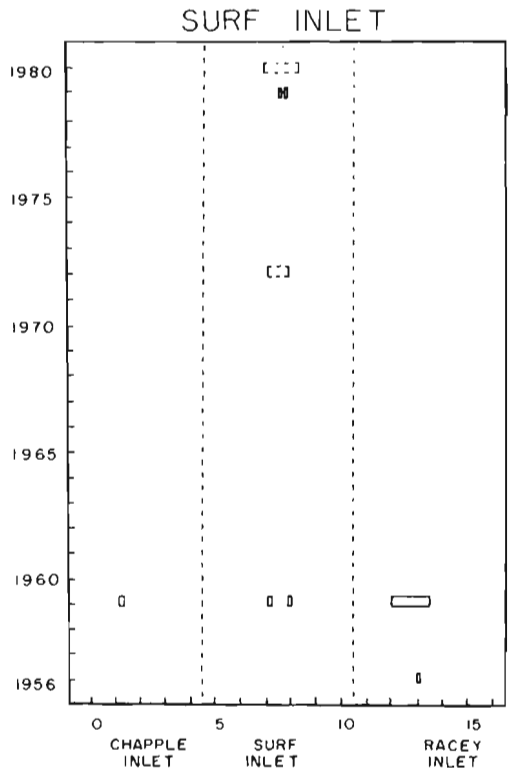
OUTER CENTRAL COAST

The many islands, bays, and channels of the Outer Central Coast provide a varied and complex coastline for herring to spawn along. As a result, spawn records have been for individually short spawns but there have been many records, more than for any other major portion of the coast. Most of the Central Coast roe catch has been taken on the Outer Central Coast.

Surf Inlet

There have been records of spawn in Surf Inlet for only 4 years and in 2 of them the spawns were not surveyed by Fishery Officers. Hence, this is a very minor spawning area and there have been no roe fisheries here.

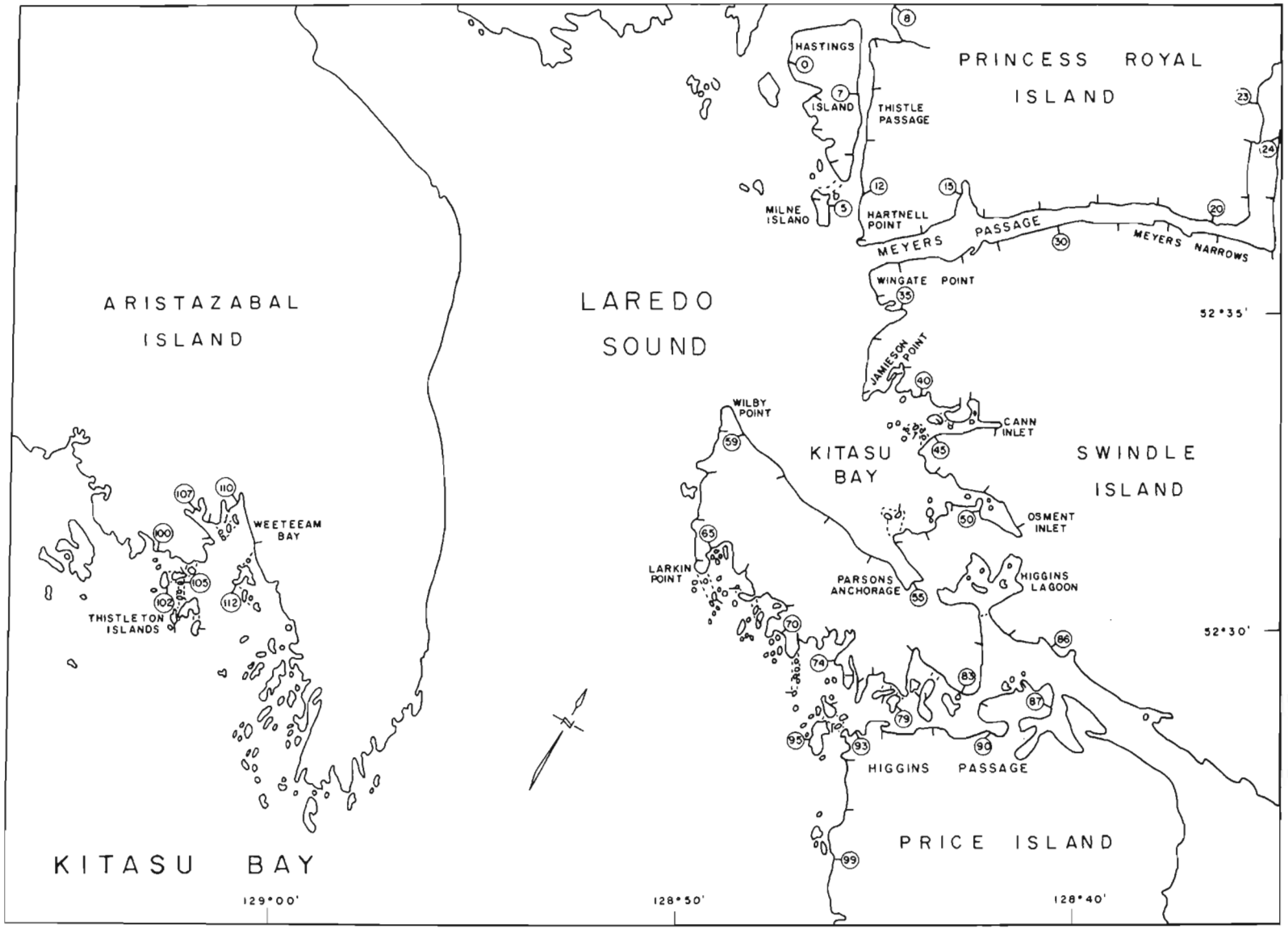

PRINCESS ROYAL
ISLAND
LAREDO CHANNEL
CHAPPLE INLET
SURF INLET
RACEY INLET
53°00'
52°50'
129°10'
129°00'
SURF INLET
3
0
4
9
10
14

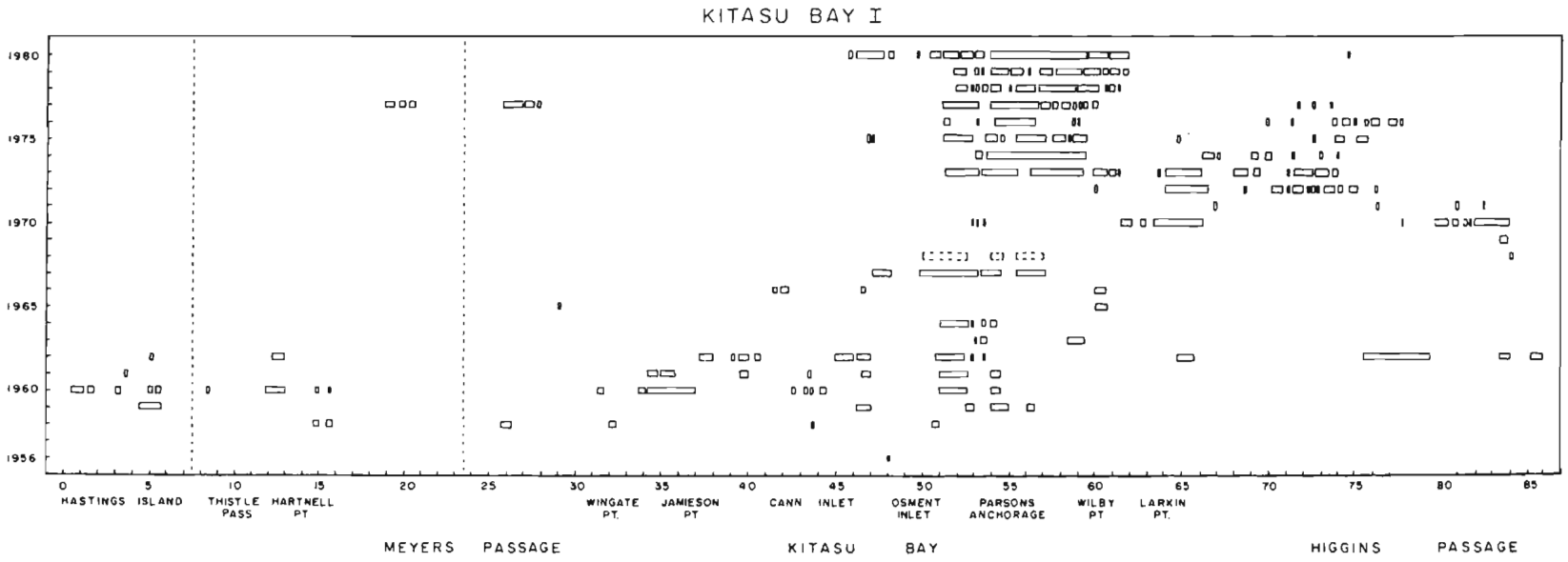

SURF INLET
1980
1975
1970
1965
1960
1956
0
5
10
15
CHAPPLE INLET
SURF INLET
RACEY INLET

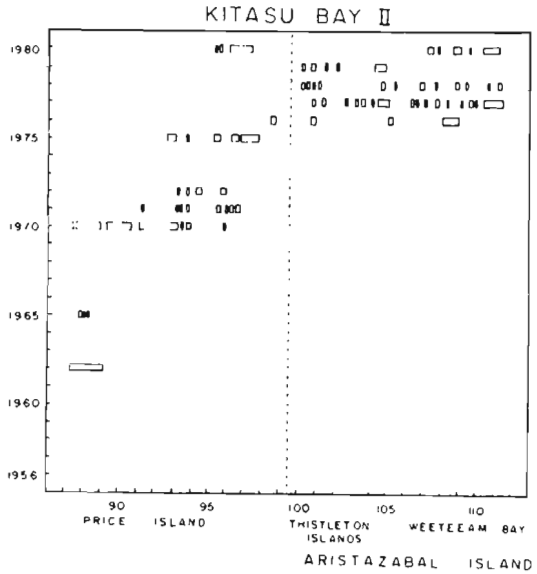
Kitasu Bay

In recent years, the major spawning locations in this area have been inside Kitasu Bay from Cann Inlet to Wilby Point, outside Kitasu Bay from Larkin Point to Higgins Passage, and in Weeteeam Bay. Prior to 1970, spawns were reported to occur mostly in the upper portion of the area (Hastings Island, Thistle and Higgins Passage) and inside Kitasu Bay. There were infrequent records of spawn in the more exposed locations. The roe fishery has been largely confined to the inside of Kitasu Bay and to Higgins Passage and the major portion has been taken by gillnet.

Year	Tons roe catch		
	GN	SN	TOT
1971	-	1745	1745
1974	1463	694	2157
1975	2351	417	2768
1976	1185	875	2060
1977	809	64	873
1978	1928	562	2490
1980	582	-	582


HASTINGS
0
7
ISLAND
THISTLE PASSAGE
PRINCESS ROYAL ISLAND
8
23
24
12
15
20
MILNE ISLAND
5
HARTNELL POINT
MEYERS PASSAGE
30
MEYERS NARROWS
WINGATE POINT
35
52°35'
ARISTAZABAL ISLAND
LAREDO SOUND
JAMESON POINT
40
WILBY POINT
59
CANN INLET
45
KITASU BAY
SWINDLE ISLAND
50
OSMENT INLET
65
LARKIN POINT
PARSONS ANCHORAGE
55
HIGGINS LAGOON
52°30'
70
74
86
83
87
79
95
93
90
HIGGINS PASSAGE
99
PRICE ISLAND
107
110
WEETEEAM BAY
100
105
102
112
THISTLETON ISLANDS
KITASU BAY
129°00'
128°50'
128°40'

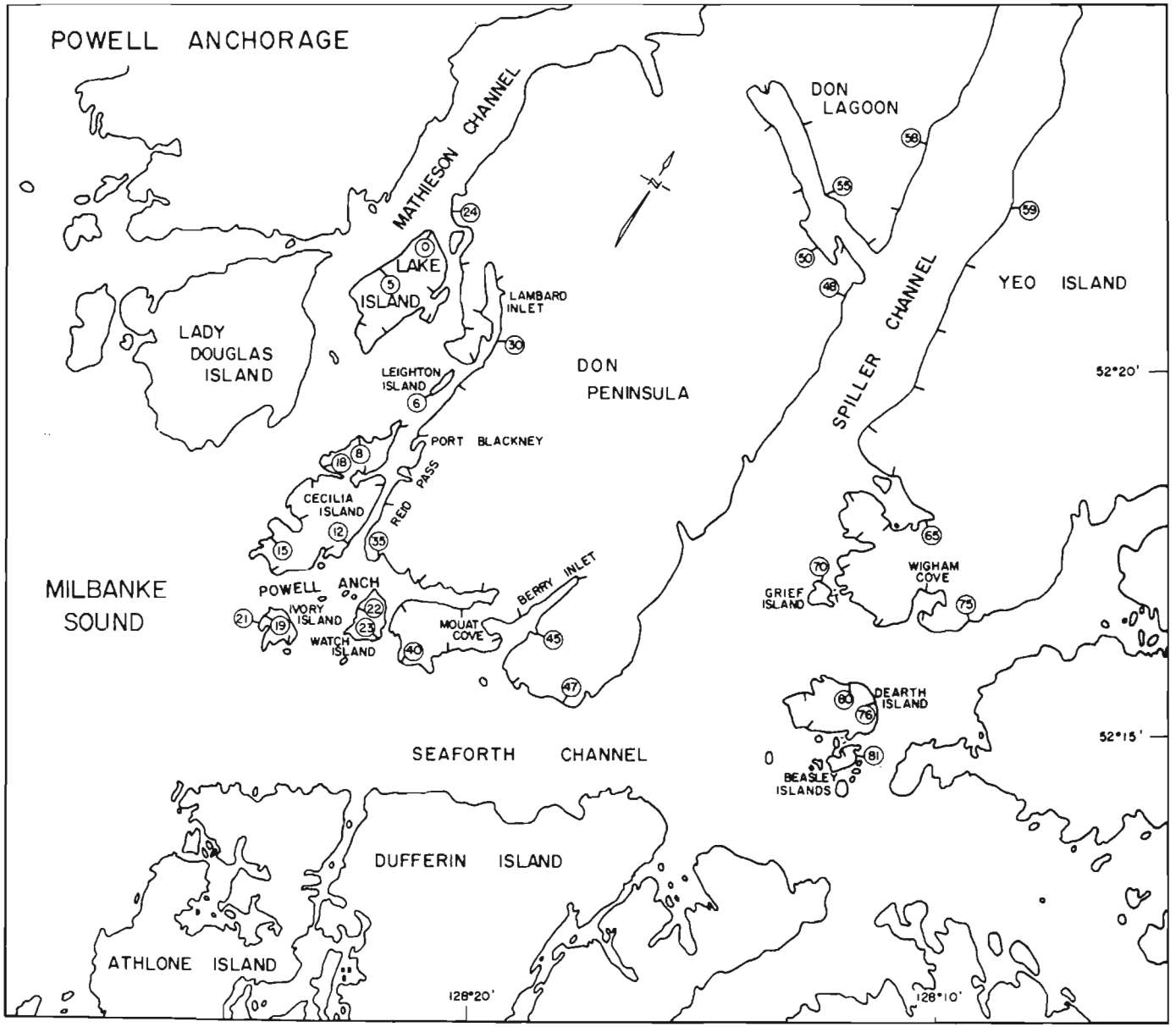

KITASU BAY I
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
HASTINGS ISLAND
THISTLE PASS
HARTNELL PT
WINGATE PT.
JAMIESON PT
CANN INLET
OSMENT INLET
PARSONS ANCHORAGE
WILBY PT
LARKIN PT.
MEYERS PASSAGE
KITASU BAY
HIGGINS PASSAGE

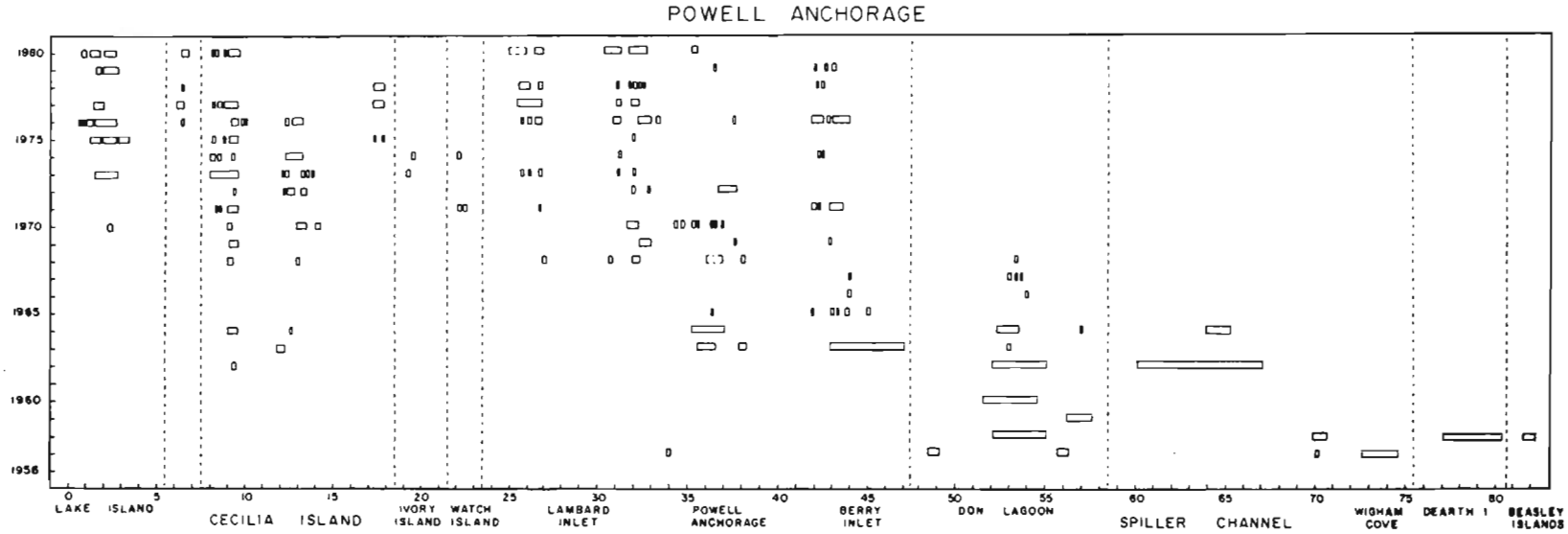

KITASU BAY II
1980
1975
1970
1965
1960
1956
90
95
100
105
110
PRICE ISLAND
THISTLETON ISLANDS
WEETEEAM BAY
ARISTAZABAL ISLAND

Powell Anchorage

Prior to 1965 spawns were recorded in Powell Anchorage, Berry Inlet, Don Lagoon and on the eastern shoreline of Spillar Channel. Since 1965, spawnings have not been observed at the latter two locations. Instead, spawnings have been concentrated in Powell Anchorage, Reid Passage, Lambard Inlet and Lake Island. There have been roe fisheries, mostly by gillnet, in and near Powell Anchorage.

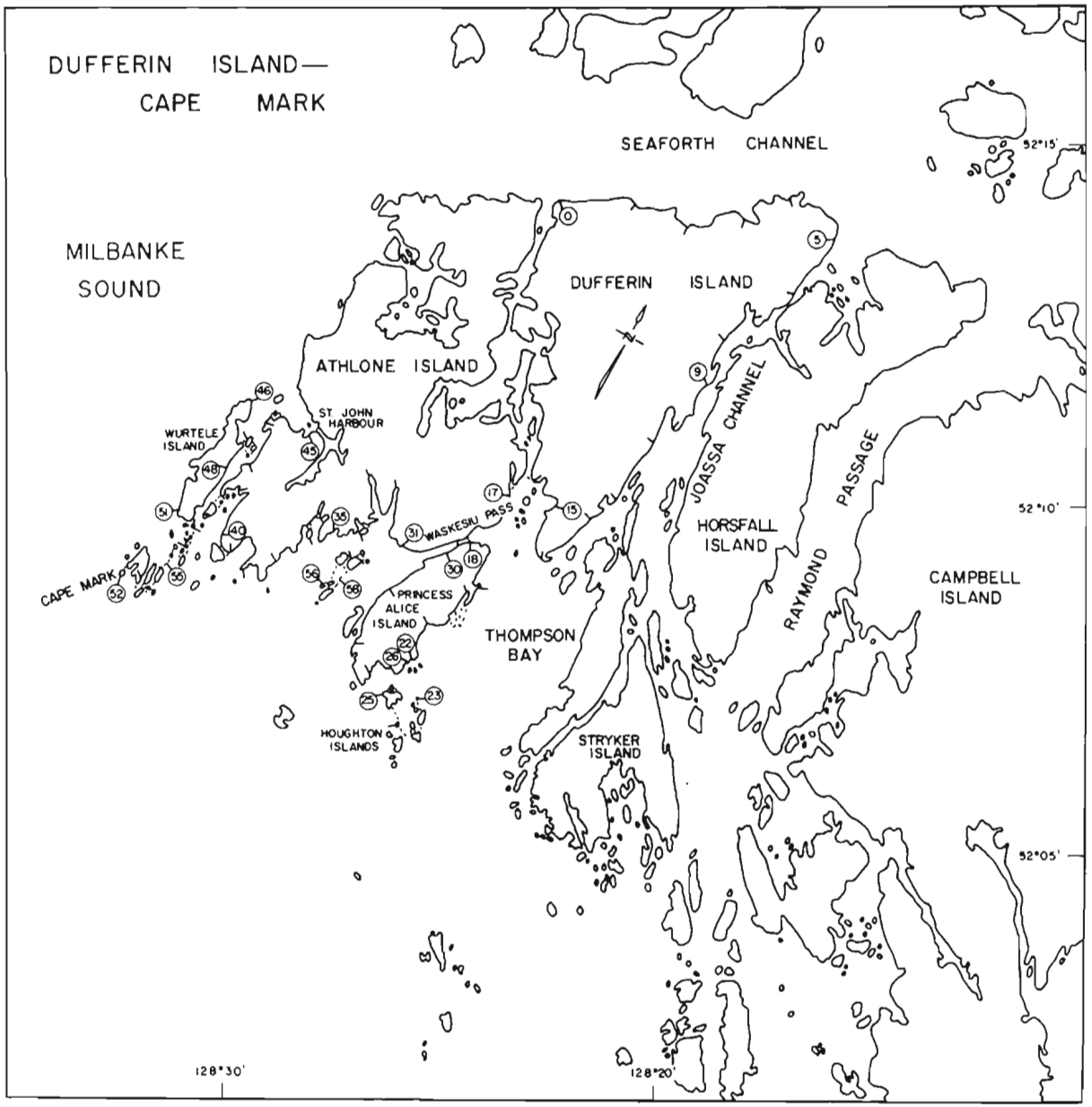
Year	Tons roe catch		
	GN	SN	TOT
1973	-	90	90
1974	30	-	30
1975	351	111	462
1976	878	889	1767
1977	1579	4	1583
1978	1471	-	1471

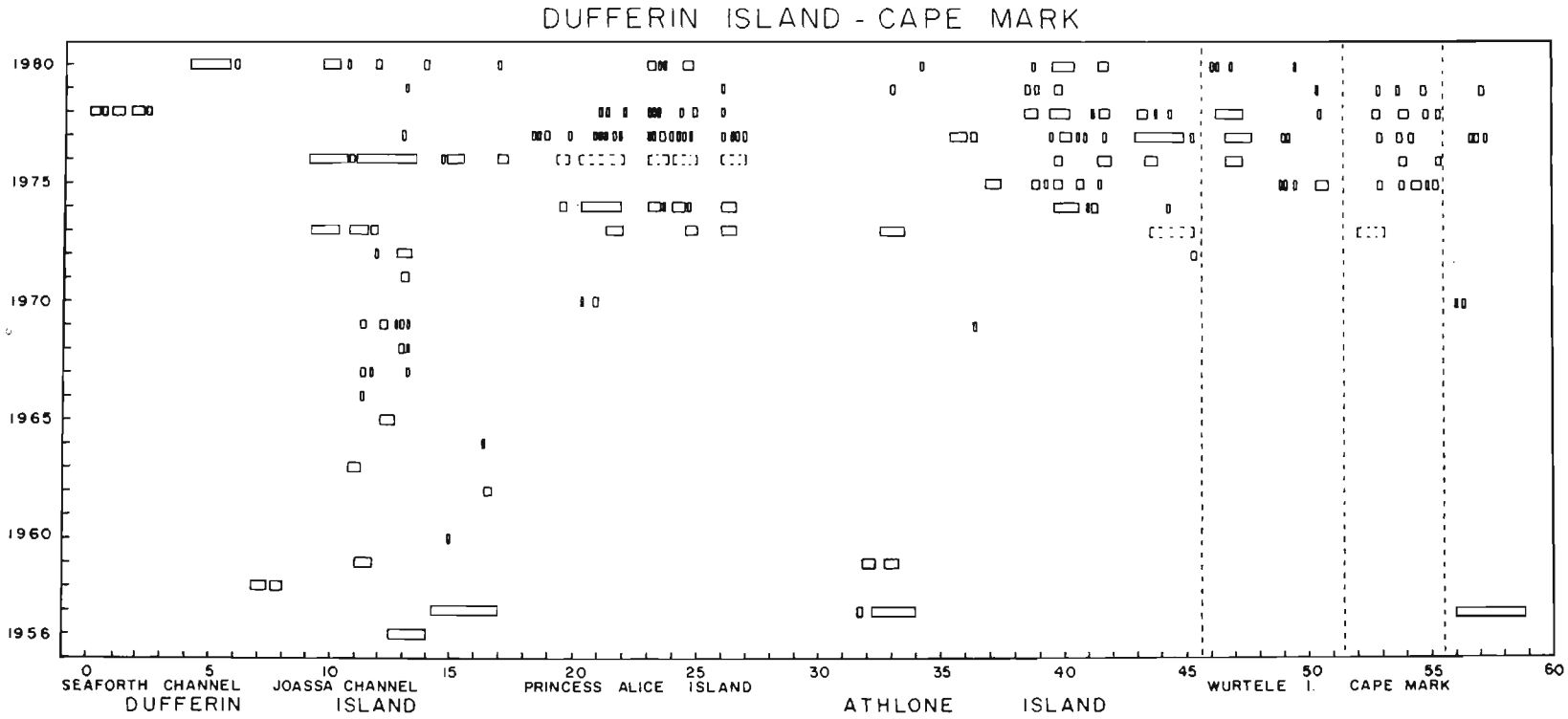

POWELL ANCHORAGE
MATHIESON CHANNEL
DON LAGOON
LAKE ISLAND
LAMBARD INLET
LADY DOUGLAS ISLAND
LEIGHTON ISLAND
DON PENINSULA
SPILLER CHANNEL
YEO ISLAND
52°20'
PORT BLACKNEY
REID PASS
CECILIA ISLAND
MILBANKE SOUND
POWELL ANCH
IVORY ISLAND
WATCH ISLAND
MOUAT COVE
BERRY INLET
WIGHAM COVE
GRIEF ISLAND
DEARTH ISLAND
52°15'
SEAFORTH CHANNEL
BEASLEY ISLANDS
DUFFERIN ISLAND
ATHLONE ISLAND
128°20'
128°10'


POWELL ANCHORAGE
1980
1975
1970
1965
1960
1955
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
LAKE ISLAND
CECILIA ISLAND
IVORY ISLAND
WATCH ISLAND
LAMBARD INLET
POWELL ANCHORAGE
BERRY INLET
DON LAGOON
SPILLER CHANNEL
WIGHAM COVE
DEARTH I
BEASLEY ISLANDS

Dufferin Island-Cape Mark

Reported spawns for this area were confined almost exclusively to Joassa Channel prior to 1970. Since then, spawn has been regularly reported for Joassa Channel, Princess Alice Island, Cape Mark and Wurtele Island. It is possible that reports of spawn at the latter locations are the result of better survey coverage. Otherwise, there would appear to have been a considerable expansion of spawn sites and a concomitant increase in the amount of spawn. There have been roe fisheries by gillnet in Waskesiu Passage and at Cape Mark in 1973, 1976, and 1977. The amount of the catch is included with the Thompson Bay records, since both these areas belong to the same section and the division in the catch could not be extracted from the records.

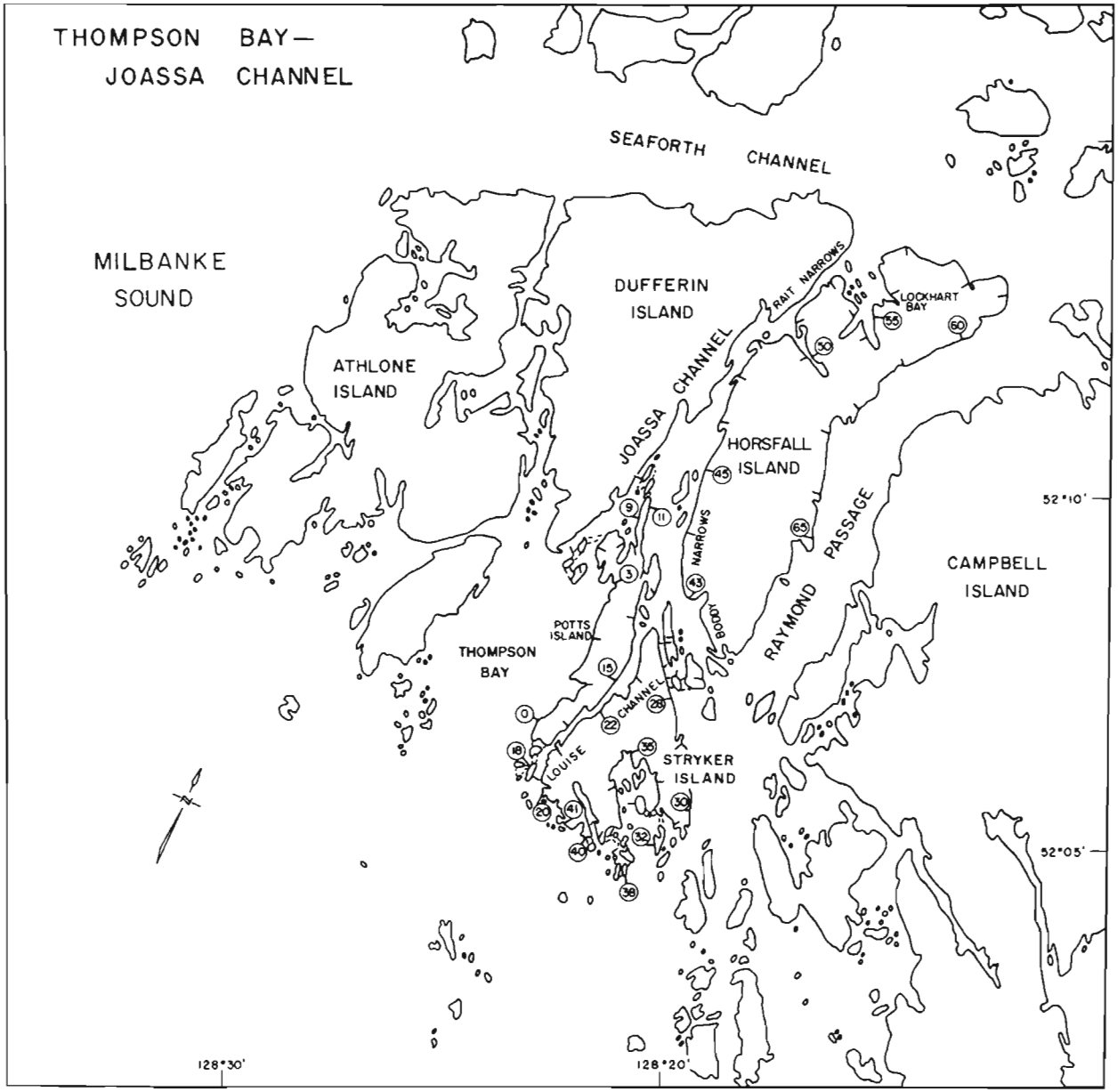

DUFFERIN ISLAND—
CAPE MARK
SEAFORTH CHANNEL
52°15'
MILBANKE
SOUND
DUFFERIN ISLAND
ATHLONE ISLAND
ST. JOHN
HARBOUR
WURTELE
ISLAND
JOASSA CHANNEL
RAYMOND PASSAGE
WASKESIU PASS
HORSFALL
ISLAND
52°10'
CAPE MARK
PRINCESS
ALICE
ISLAND
THOMPSON
BAY
CAMPBELL
ISLAND
HOUGHTON
ISLANDS
STRYKER
ISLAND
52°05'
128°30'
128°20'

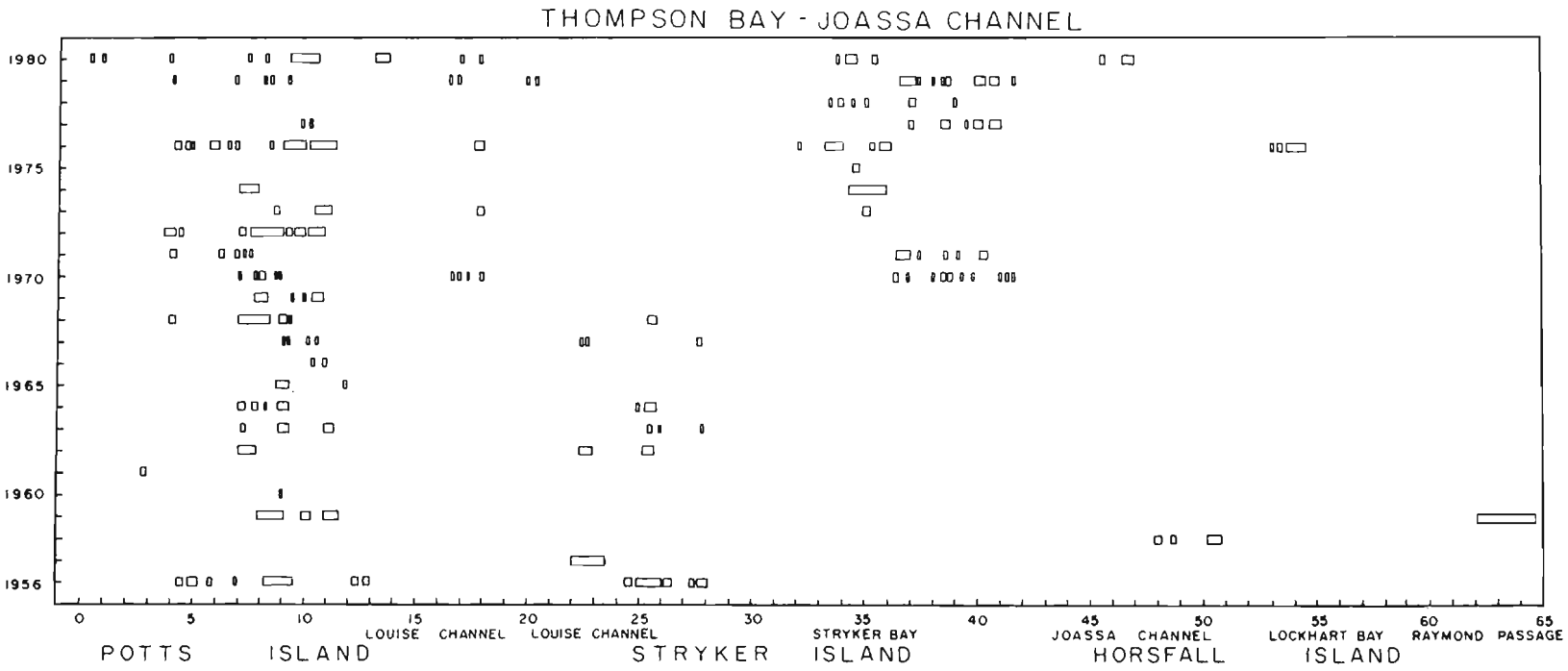

DUFFERIN ISLAND - CAPE MARK
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
60
SEAFORTH CHANNEL
DUFFERIN
JOASSA CHANNEL
ISLAND
PRINCESS ALICE ISLAND
ATHLONE ISLAND
WURTELE I.
CAPE MARK

Thompson Bay-Joassa Channel

This area also appears to have experienced an expansion in spawning sites in recent years. Prior to 1970, spawns were reported mostly for the west shore of Potts Island and the east shore of Stryker Island and the smaller islands in the vicinity. Throughout the study period, but not every year, spawn has been reported in Louis Channel. There have been roe fisheries in this area up to 1978 and since 1974 between 60% and 85% of the catch has been taken by gillnets, which were fished near the major spawning locations outlined above.

Year	Tons roe catch		
	GN	SN	TOT
1971	-	1968	1968
1972	4	2729	2733
1973	1020	3459	4479
1974	3551	2479	6030
1975	1606	1023	2629
1976	3788	745	4533
1977	5075	1685	6750
1978	5778	2413	8191

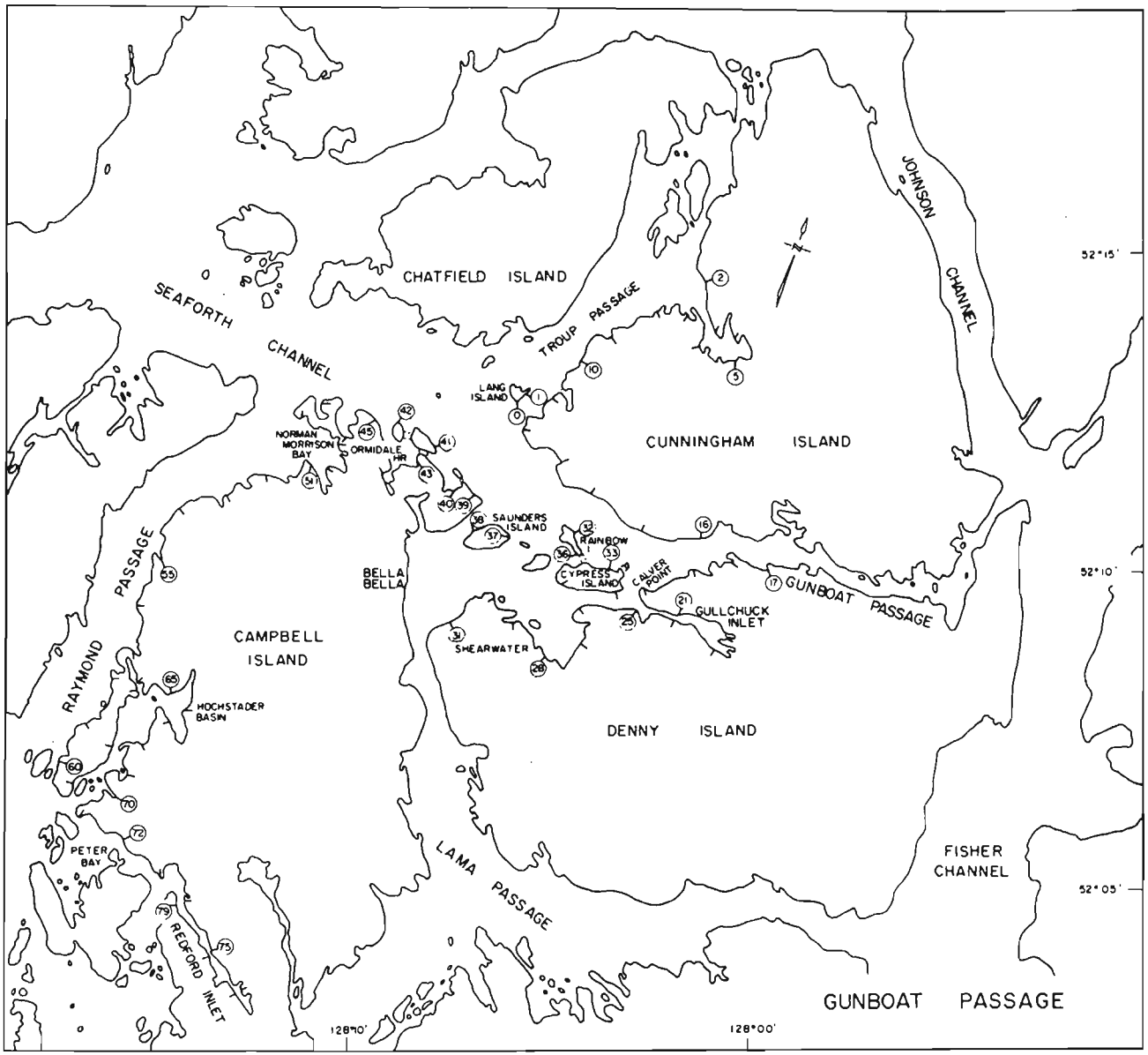

THOMPSON BAY—
JOASSA CHANNEL
SEAFORTH CHANNEL
MILBANKE SOUND
DUFFERIN ISLAND
RAT NARROWS
LOCKHART BAY
ATHLONE ISLAND
JOASSA CHANNEL
HORSFALL ISLAND
NARROWS
RAYMOND PASSAGE
CAMPBELL ISLAND
POTTS ISLAND
THOMPSON BAY
BODDY
CHANNEL
LOUISE
STRYKER ISLAND
52°10'
52°05'
128°30'
128°20'

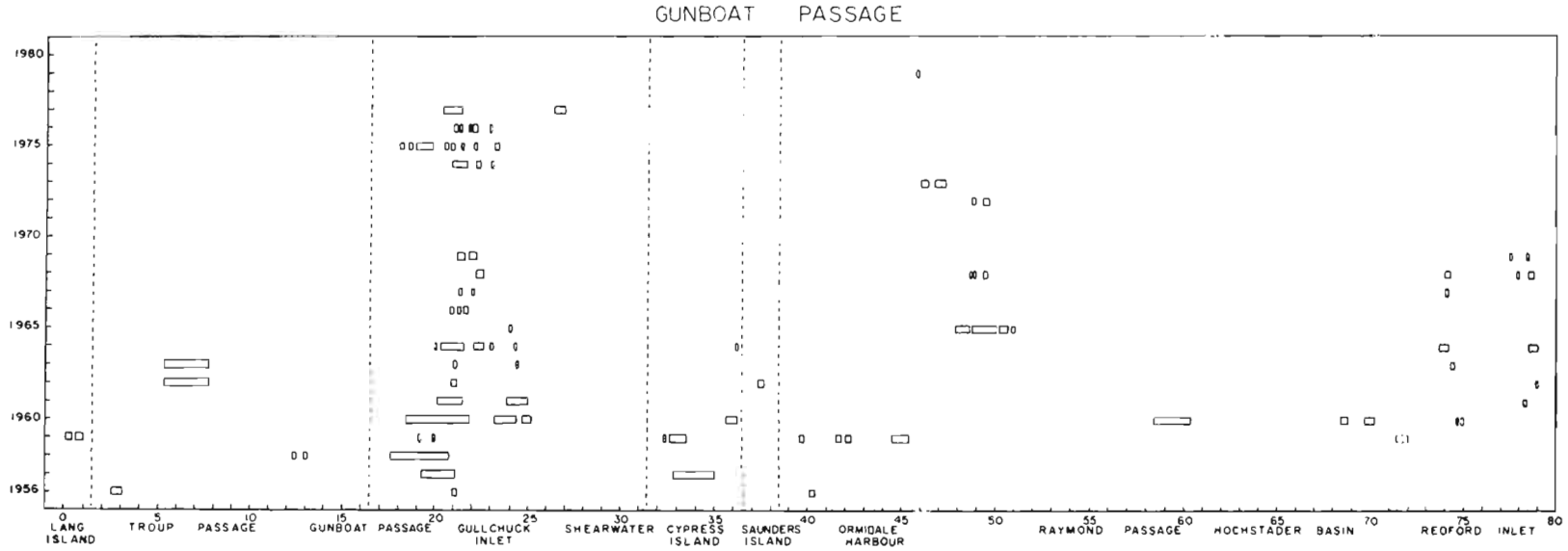

THOMPSON BAY - JOASSA CHANNEL
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
60
65
LOUISE CHANNEL
LOUISE CHANNEL
STRYKER BAY
JOASSA CHANNEL
LOCKHART BAY
RAYMOND PASSAGE
POTTS ISLAND
STRYKER ISLAND
HORSFALL ISLAND

Gunboat Passage

Spawn has been totally absent in this area during the last two years of the study period and there was negligible spawn in the years 1968 to 1972. Prior to 1968 and during the middle part of the 1970s, spawns were reported in and around Gullchuck Inlet. In addition, and only prior to 1968, spawns were reported at a variety of locations throughout the area, but none of these were consistently utilized for spawning. Since 1976, there has been no spawn reported for outside of Gullchuck Inlet. There have been modest roe fisheries in this area.

Year	Tons roe catch		
	GN	SN	TOT
1972	-	60	60
1973	86	131	217
1974	182	-	182
1975	413	288	701
1976	291	723	1014
1978	28	94	122

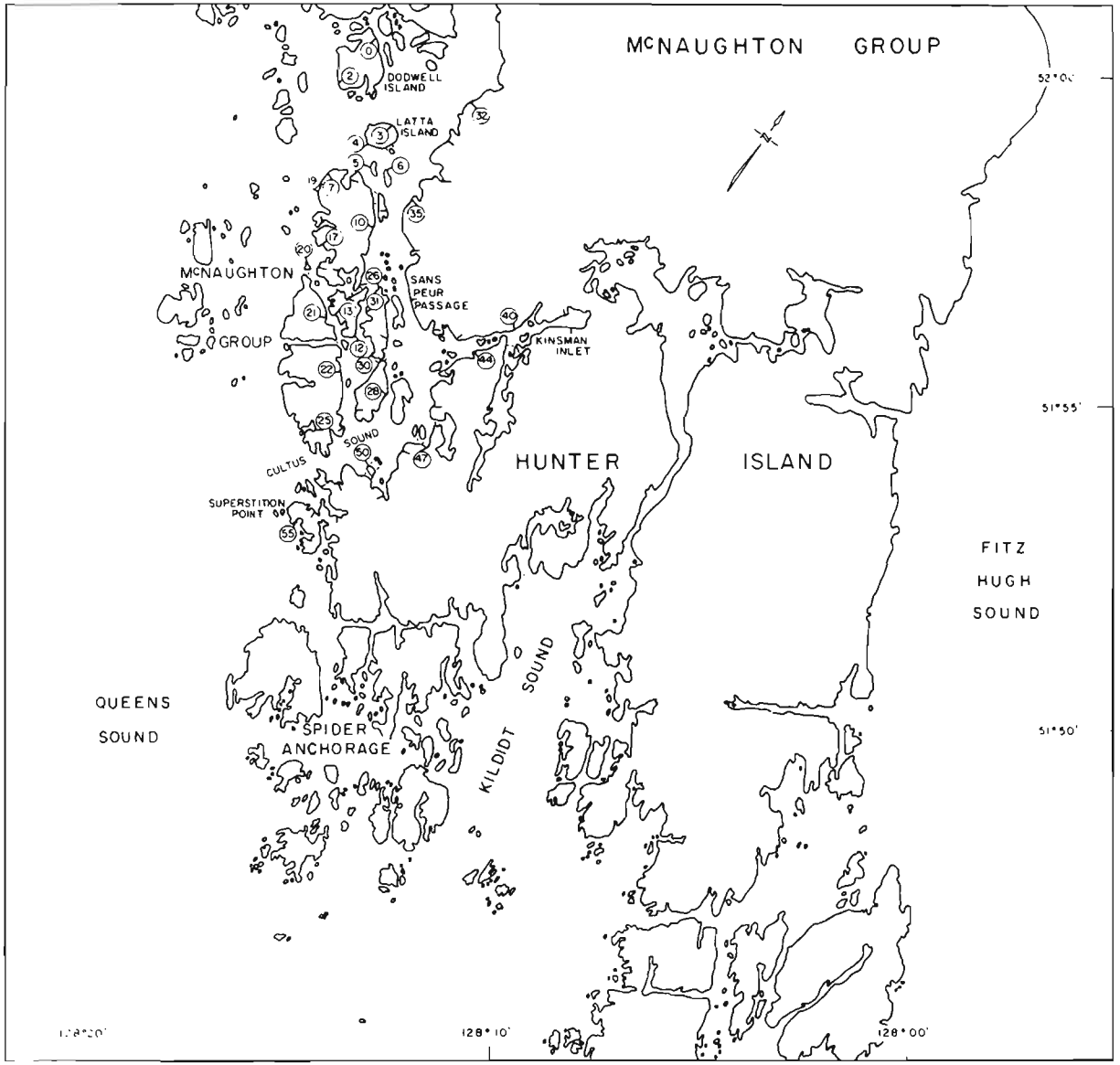

CHATFIELD ISLAND
SEAFORTH CHANNEL
TROUP PASSAGE
JOHNSON CHANNEL
LANG ISLAND
CUNNINGHAM ISLAND
NORMAN MORRISON BAY
ORMIDALE HR
SAUNDERS ISLAND
RAINBOW
CYPRESS ISLAND
CALVER POINT
GULLCHUCK INLET
GUNBOAT PASSAGE
BELLA BELLA
CAMPBELL ISLAND
SHEARWATER
RAYMOND PASSAGE
HOCHSTADER BASIN
DENNY ISLAND
PETER BAY
REDFORD INLET
LAMA PASSAGE
FISHER CHANNEL
GUNBOAT PASSAGE
52°15'
52°10'
52°05'
128°10'
128°00'

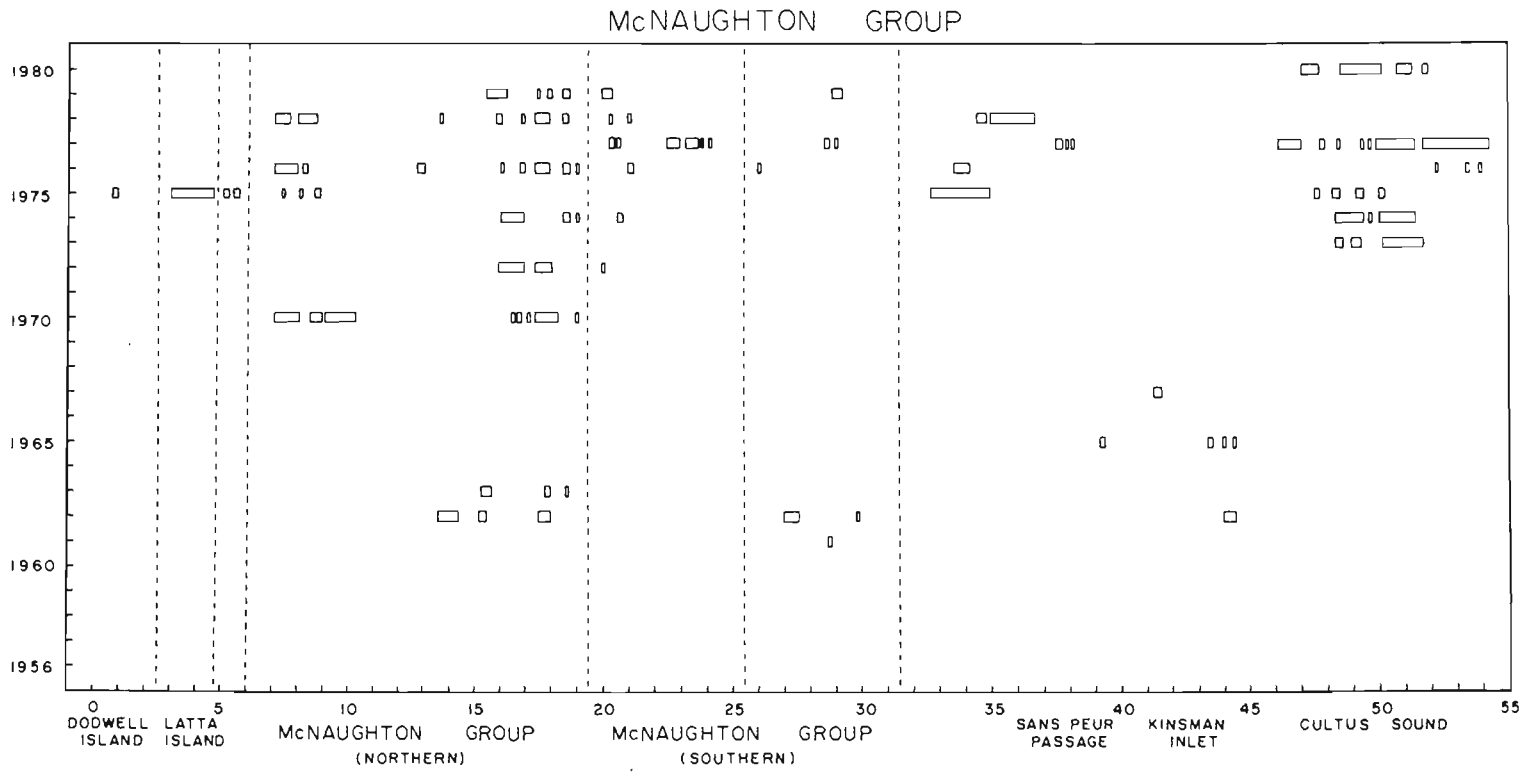

GUNBOAT PASSAGE
1980
1975
1970
1965
1960
1956
0
LANG ISLAND
5
TROUP PASSAGE
10
15
GUNBOAT PASSAGE
20
GULLCHUCK INLET
25
SHEARWATER
30
CYPRESS ISLAND
35
SAUNDERS ISLAND
40
ORMIDALE HARBOUR
45
50
RAYMOND PASSAGE
55
60
HOCHSTADER BASIN
65
70
REDFORD INLET
75
80

McNaughton Group

There were few spawns reported for this area prior to 1970. Since then, spawn was reported in all but two years and the major spawning locations are the various islands in the McNaughton group, Sans Peur Passage, and the southeastern shore of Cultus Sound. There were some roe fisheries, mostly quite small, in this area.

Year	Tons roe catch		
	GN	SN	TOT
1972	-	1266	1266
1973	50	611	661
1974	38	-	38
1975	101	-	101
1976	345	774	1119
1977	19	-	19
1978	849	-	849

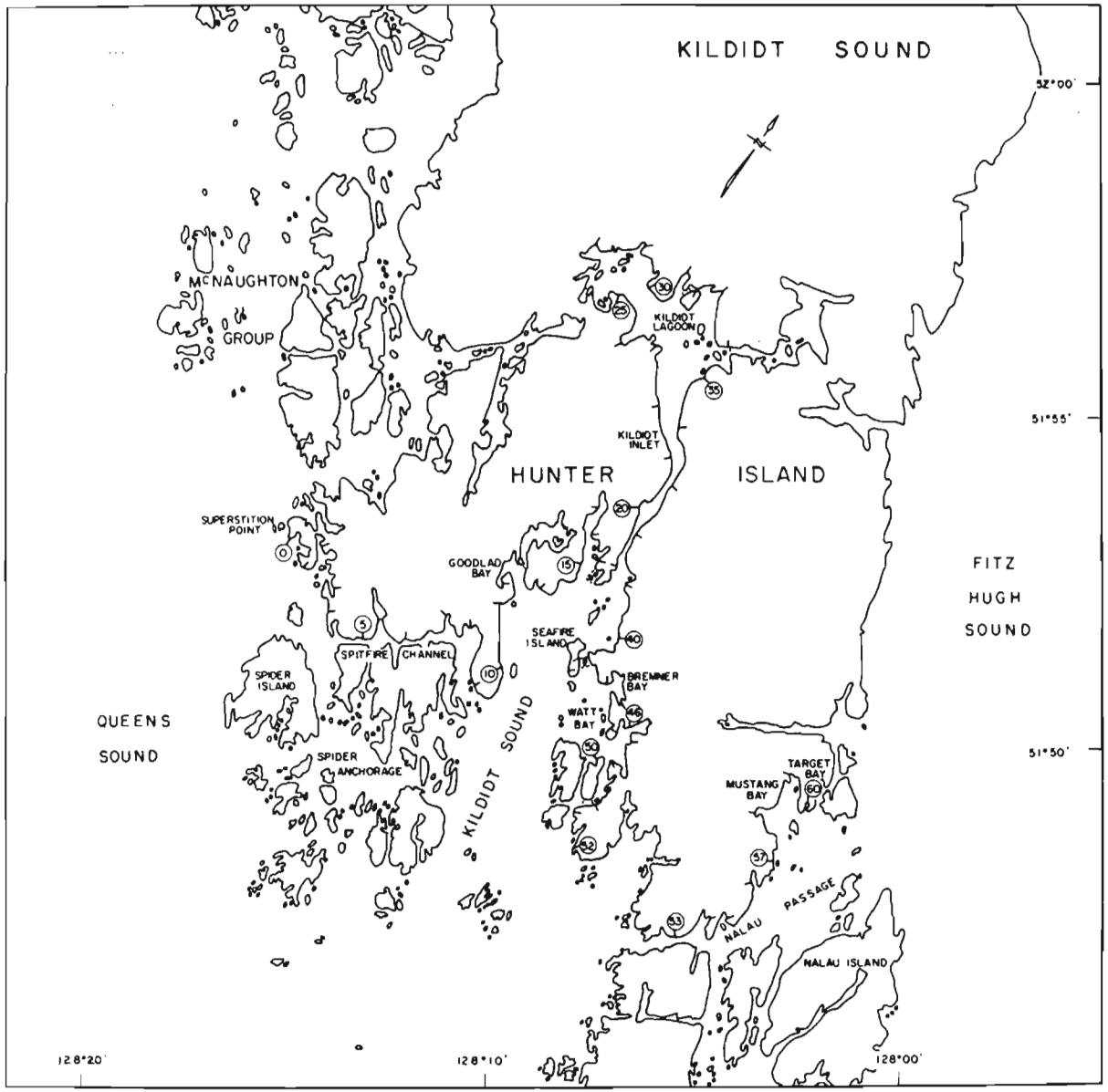

McNAUGHTON GROUP
52°00'
DODWELL ISLAND
LATTA ISLAND
McNAUGHTON GROUP
SANS PEUR PASSAGE
KINSMAN INLET
51°55'
HUNTER ISLAND
CULTUS SOUND
SUPERSTITION POINT
FITZ HUGH SOUND
QUEENS SOUND
SPIDER ANCHORAGE
KILDIDT SOUND
51°50'
128°20'
128°10'
128°00'

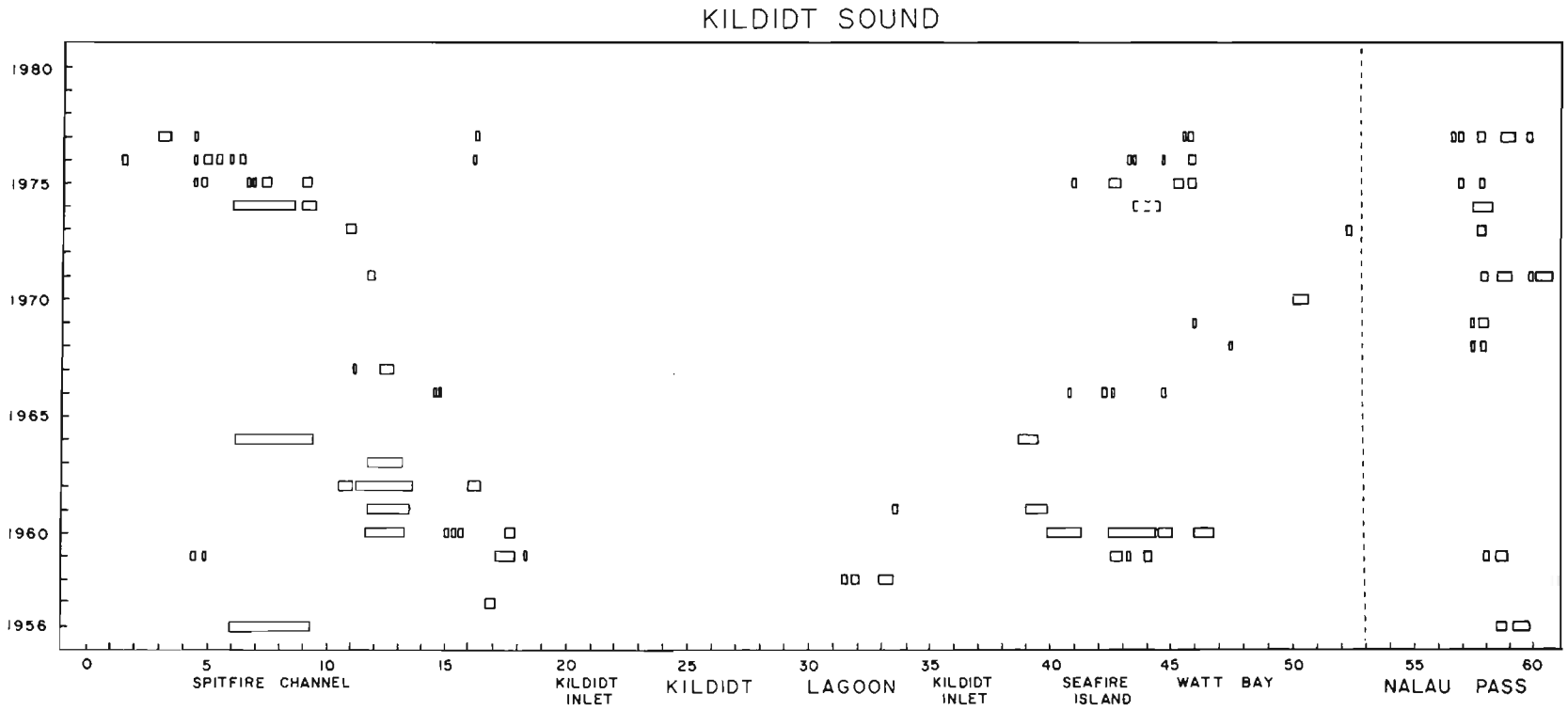

McNAUGHTON GROUP
1980
1975
1970
1965
1960
1956
0
DODWELL ISLAND
5
LATTA ISLAND
10
15
McNAUGHTON GROUP
(NORTHERN)
20
25
McNAUGHTON GROUP
(SOUTHERN)
30
35
SANS PEUR PASSAGE
40
KINSMAN INLET
45
50
CULTUS SOUND
55

Kildidt Sound

There have been no spawns reported in this area for 1978 to 1980. During the mid 1970s, there was spawn in Spitfire Channel, in Watt Bay, and in Nalau Passage. From 1965 to 1972 there were only small, scattered spawnings reported. However, prior to 1965, spawn was at the same location as during the mid 1970s and at the same or greater level. There were substantial roe fisheries, mostly by seine, in this area and in adjacent Spider Anchorage, for which catches are included below.

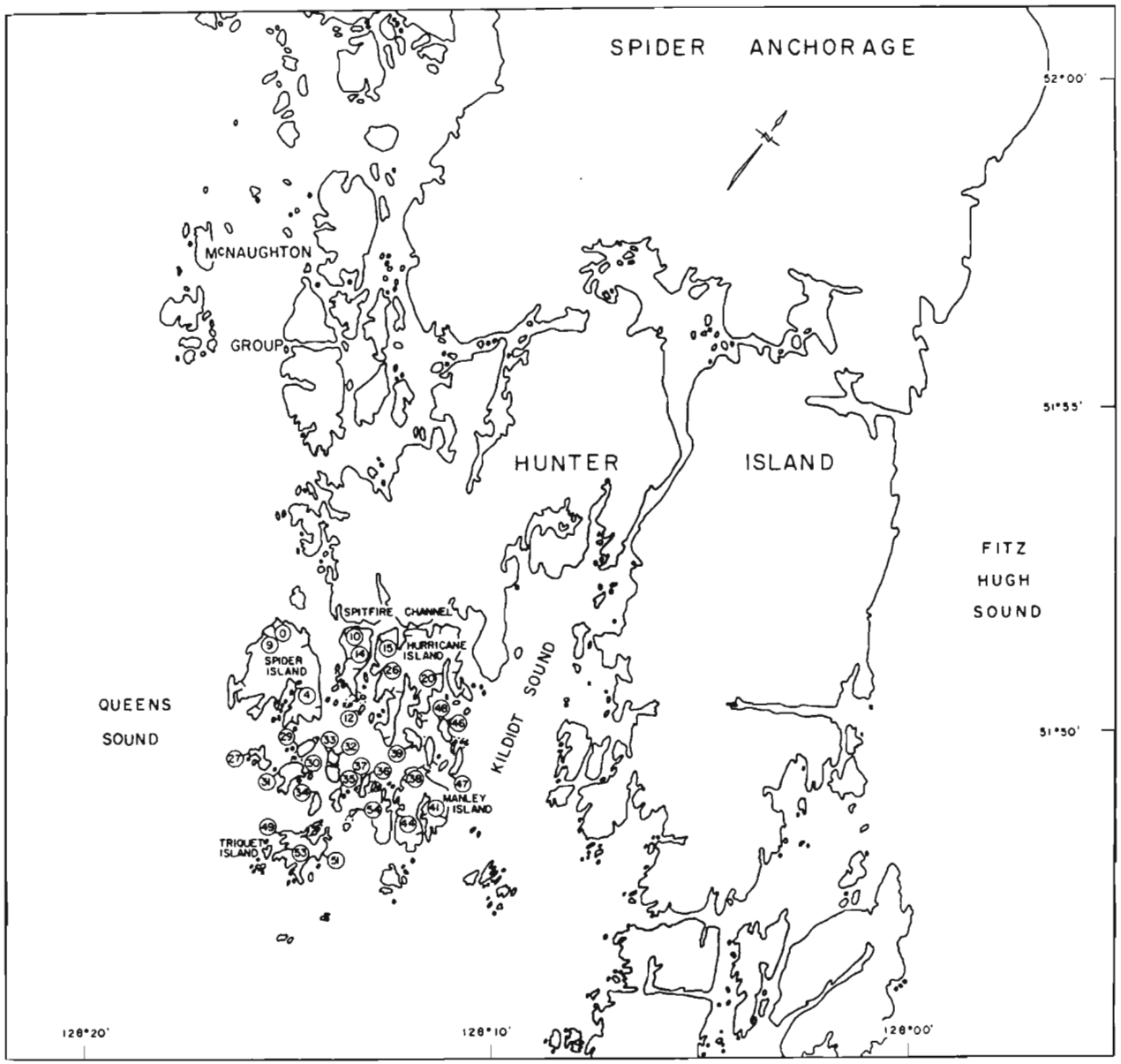
Year	Tons roe catch		
	GN	SN	TOT
1971	-	36	36
1972	147	5313	5460
1973	69	2916	2688
1974	245	326	571
1975	953	-	953
1976	287	2449	2736
1977	93	2525	2618
1978	53	2188	2241

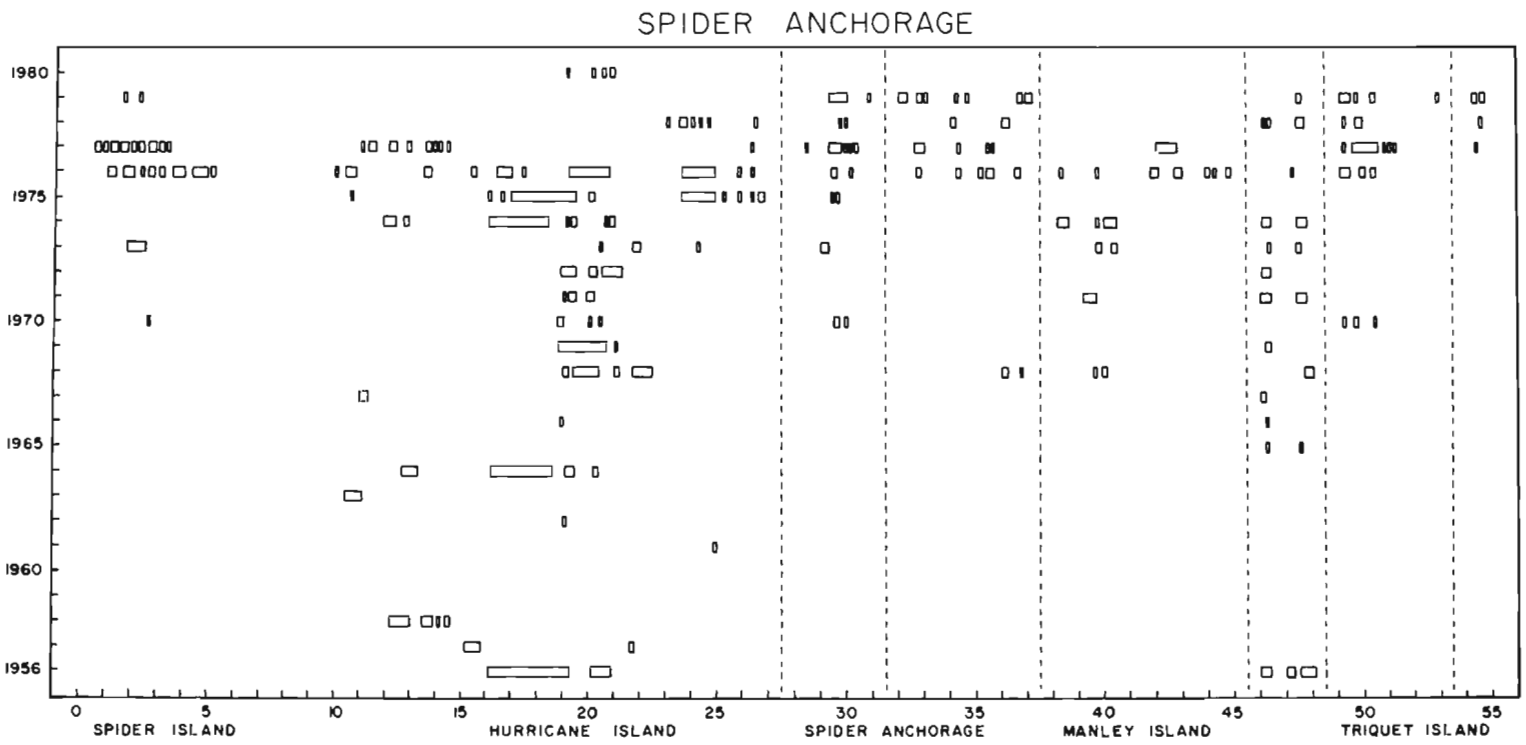

KILDIDT SOUND
52°00'
McNAUGHTON GROUP
KILDIOT LAGOON
KILDIOT INLET
HUNTER ISLAND
51°55'
SUPERSTITION POINT
GOODLAD BAY
FITZ HUGH SOUND
SEAFIRE ISLAND
SPITFIRE CHANNEL
SPIDER ISLAND
BREMNER BAY
WATT BAY
QUEENS SOUND
SPIDER ANCHORAGE
KILDIDT SOUND
TARGET BAY
MUSTANG BAY
51°50'
NALAU PASSAGE
NALAU ISLAND
128°20'
128°10'
128°00'


KILDIDT SOUND
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
60
SPITFIRE CHANNEL
KILDIDT INLET
KILDIDT
LAGOON
KILDIDT INLET
SEAFIRE ISLAND
WATT BAY
NALAU PASS

Spider Anchorage

In recent years, there have been spawns reported for most of the small islands that populate this area. The highest level of spawn appears to have been achieved in the mid 1970s. In other years, spawns have been few and small. There has been some roe fishing in Spider Anchorage, but the bulk of the catch in this general areas was taken in adjacent Kilditdt Sound and the catch for both areas is reported there.

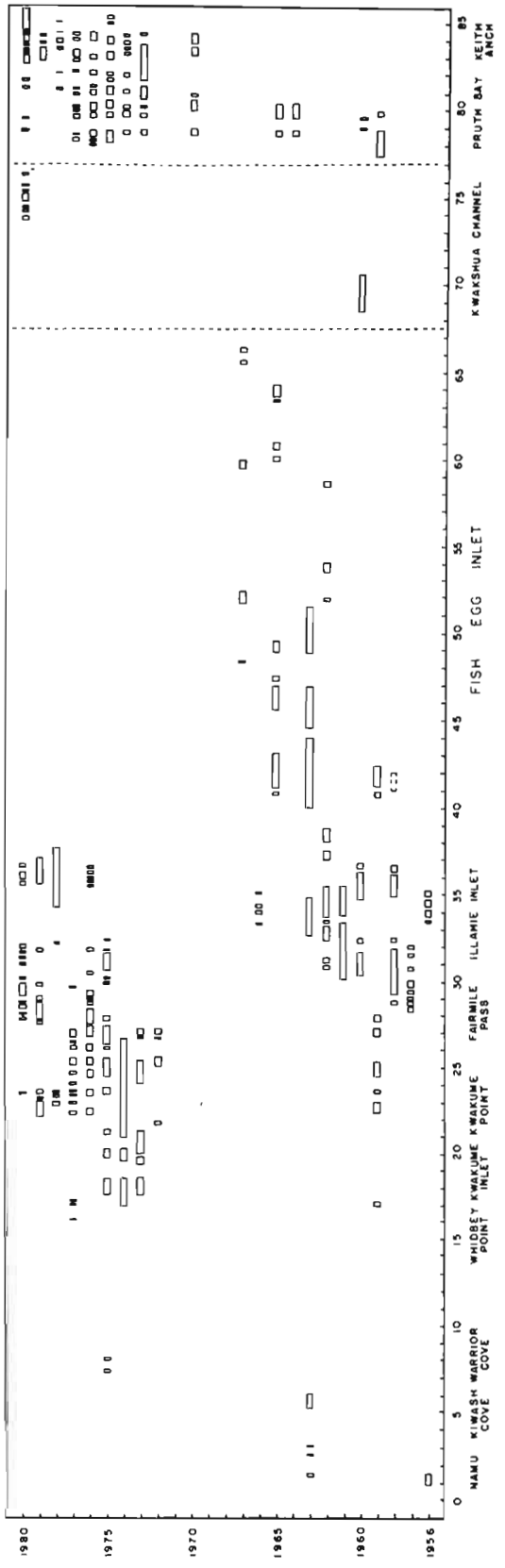

SPIDER ANCHORAGE
52°00'
McNAUGHTON
GROUP
51°55'
HUNTER ISLAND
FITZ
HUGH
SOUND
SPITFIRE CHANNEL
HURRICANE ISLAND
SPIDER ISLAND
QUEENS
SOUND
KILDIDT SOUND
51°50'
MANLEY ISLAND
TRIQUET ISLAND
128°20'
128°10'
128°00'

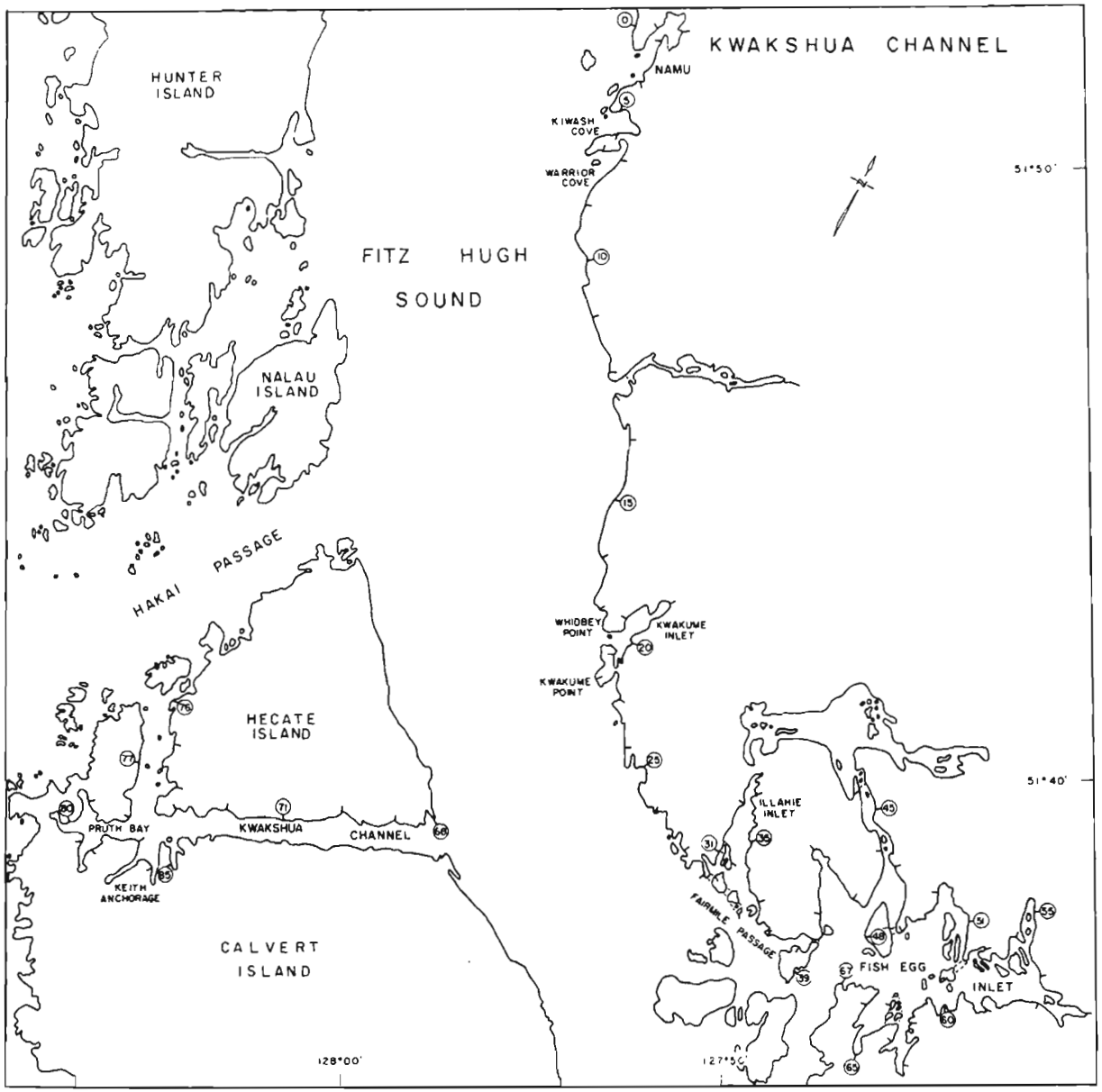

SPIDER ANCHORAGE
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
SPIDER ISLAND
HURRICANE ISLAND
SPIDER ANCHORAGE
MANLEY ISLAND
TRIQUET ISLAND

Kwakshua Channel

In the late 1960s, there was no spawn recorded in this area. Prior to this time, spawns were recorded for Illahie Inlet, Fish Egg Inlet and Pruth Bay. Since 1970, there have been reports of spawn on the shoreline from Kwakume Inlet to Illahie Inlet and no reports of spawn from Fish Egg Inlet. As well, fish have spawned yearly in Pruth Bay and Keith Anchorage. The roe fisheries in this area have been almost exclusively in Kwakshua Channel.

Year	Tons roe catch		
	GN	SN	TOT
1972	-	111	111
1973	-	425	425
1974	251	492	743
1975	173	1846	2019
1976	59	144	203
1978	36	-	36


KWAKSHUA CHANNEL
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
NANU
KIWASH COVE
WARRIOR COVE
WHIDBEY POINT
KWAKUME INLET
KWAKUME POINT
FAIRMILE PASS
ILLAHIE INLET
FISH EGG INLET
KWAKSHUA CHANNEL
PRUTH BAY
KEITH ANCH

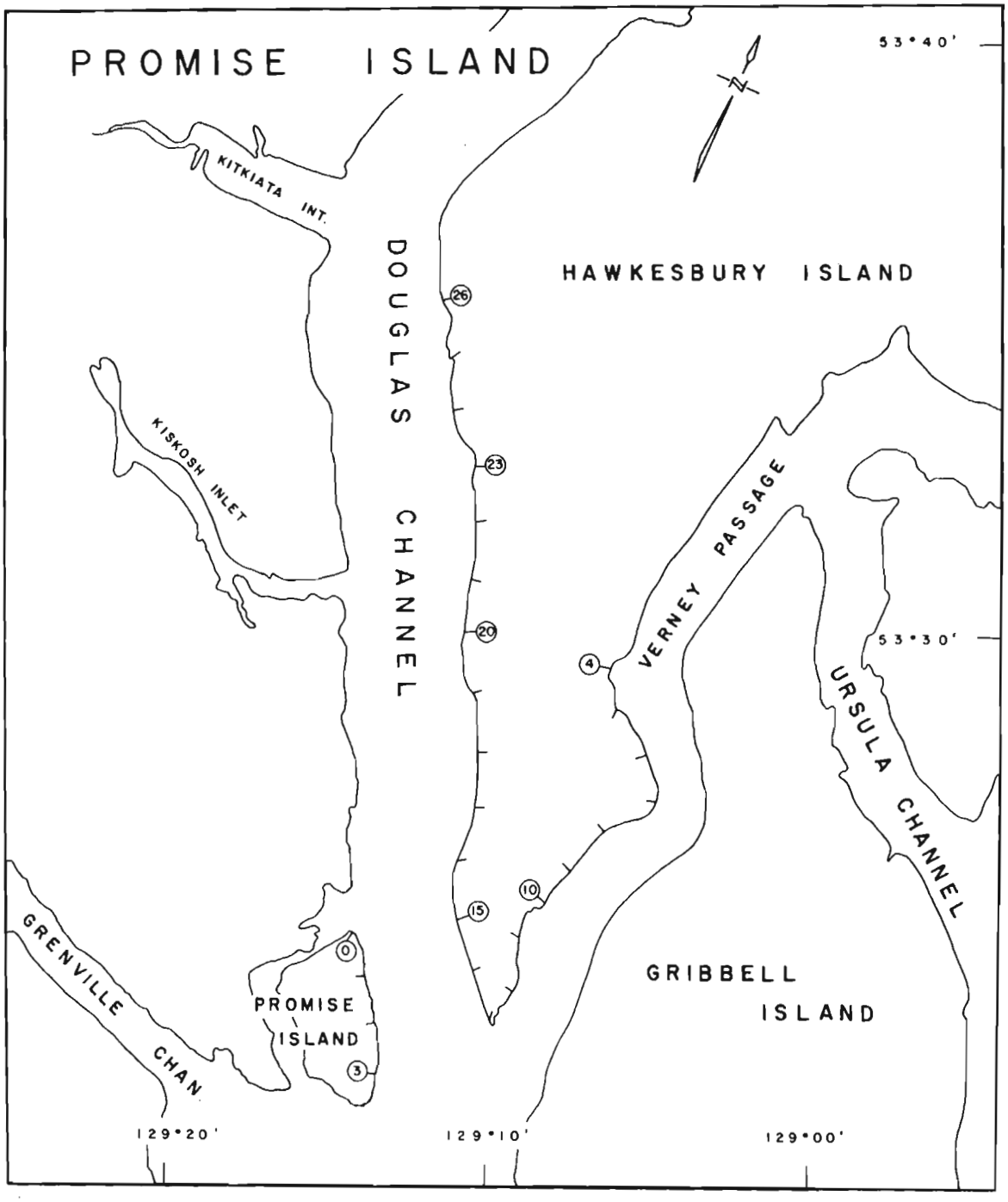

KWAKSHUA CHANNEL
HUNTER ISLAND
NAMU
KIWASH COVE
WARRIOR COVE
51°50'
FITZ HUGH SOUND
NALAU ISLAND
HAKAI PASSAGE
WHIDBEY POINT
KWAKUME INLET
KWAKUME POINT
HECATE ISLAND
ILLAHIE INLET
51°40'
PRUTH BAY
KWAKSHUA CHANNEL
KEITH ANCHORAGE
FAIRMILE PASSAGE
FISH EGG INLET
CALVERT ISLAND
128°00'
127°50'

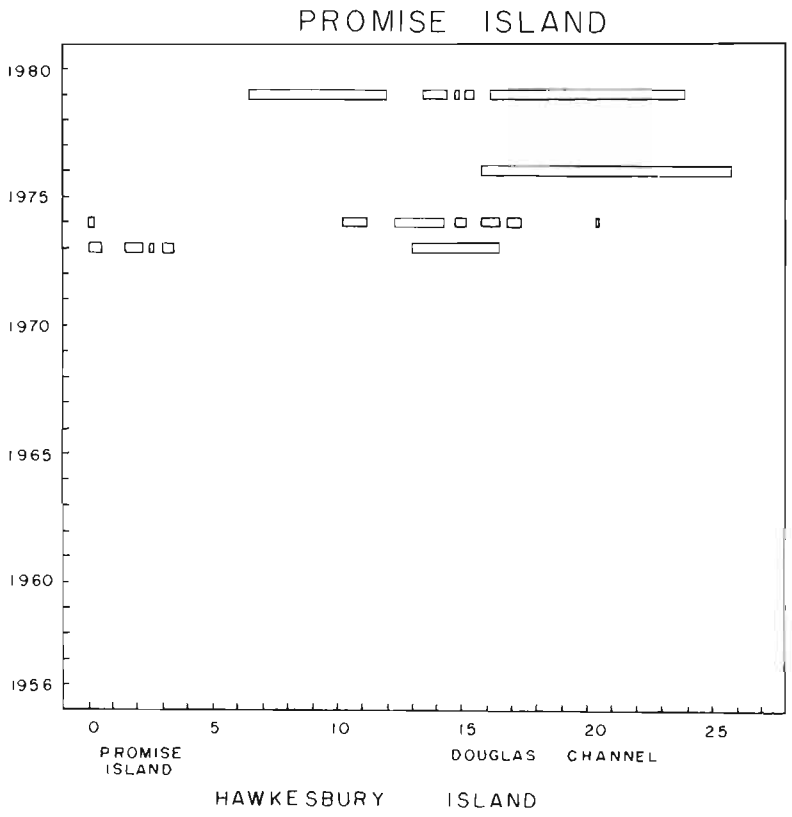
CENTRAL COAST INLETS

The Central Coast inlets are characterized by steep shorelines along which, except for Rivers Inlet and Burke Channel, herring spawn only infrequently. It is generally believed that herring that spawn here belong to relatively small, non-migrating stocks. These fish have been infrequently fished for roe and then only during the early years of the roe fishery.

Promise Island

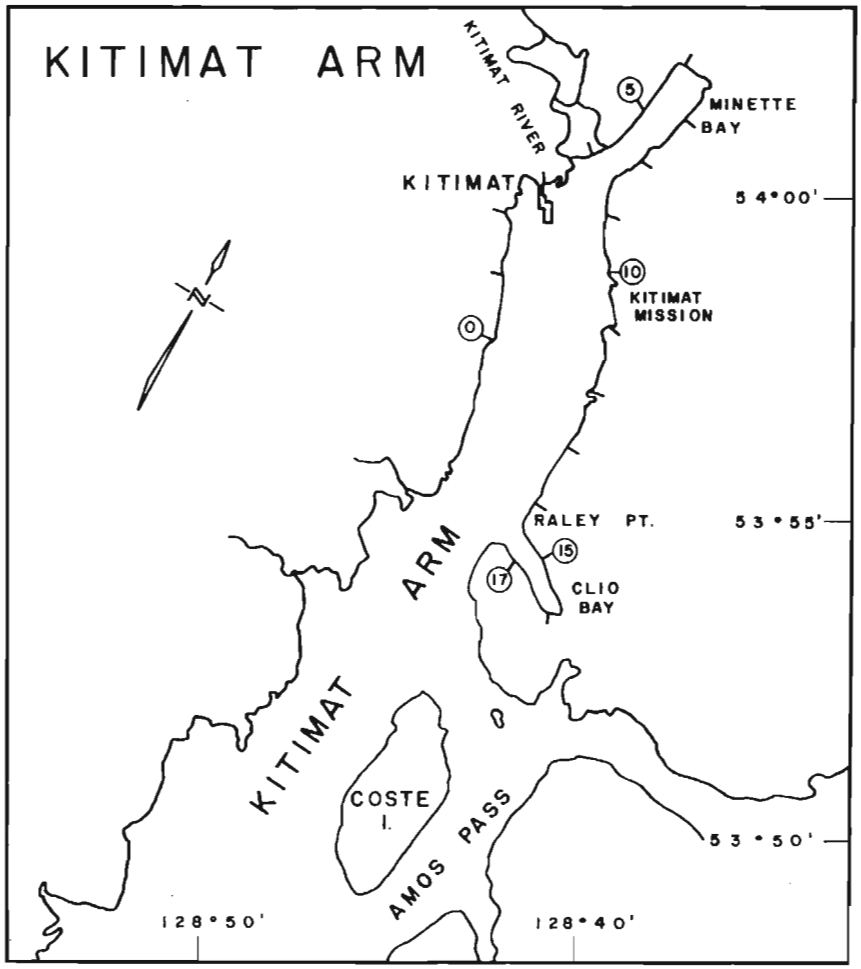
There have been reports of spawn in this section only since 1973. In the eight years since then, herring have spawned here in four years, mostly at the entrance to Douglas Channel and in adjacent Verney Passage. There have been no roe fisheries here.

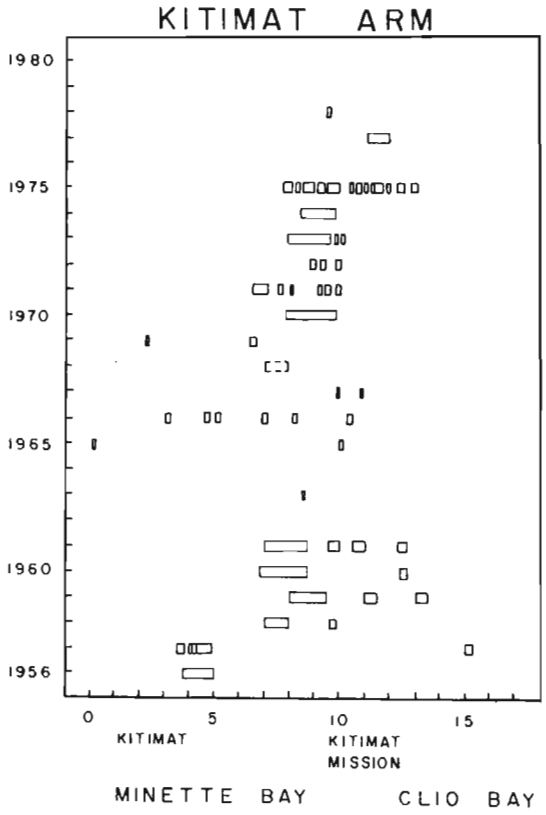

PROMISE ISLAND
53°40'
KITKIATA INT.
DOUGLAS CHANNEL
HAWKESBURY ISLAND
KISKOSH INLET
VERNEY PASSAGE
URSULA CHANNEL
53°30'
GRENVILLE CHAN.
PROMISE ISLAND
GRIBBELL ISLAND
129°20'
129°10'
129°00'
0
3
4
10
15
20
23
26


PROMISE ISLAND
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
PROMISE ISLAND
DOUGLAS CHANNEL
HAWKESBURY ISLAND

Kitimat Arm

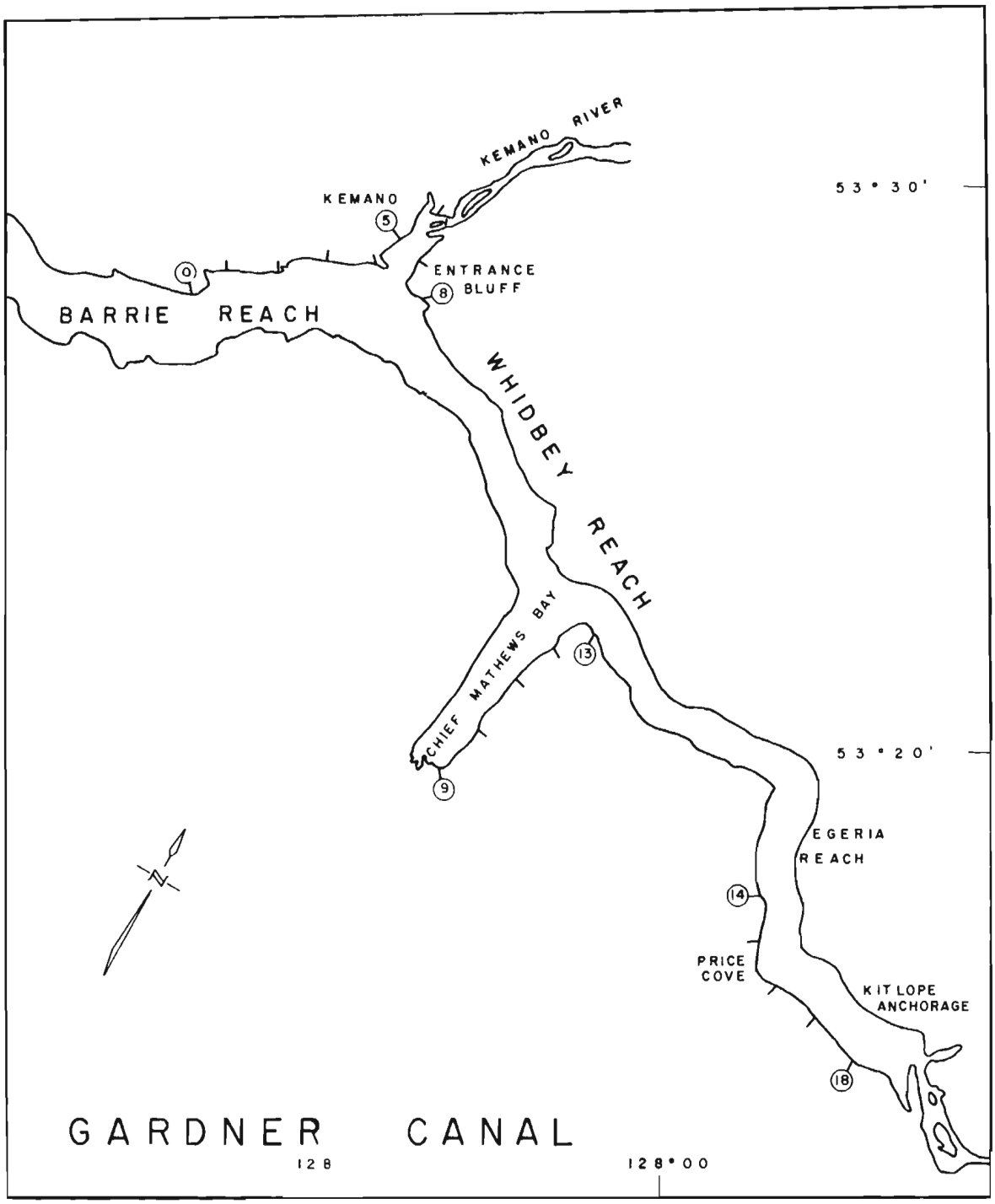
Spawn in this section has been deposited mostly between Minnette and Clio bays. The amount of spawn has never been very large and in the 1960s and since 1975, only traces of spawn were recorded. There have been no roe fisheries in this inlet.

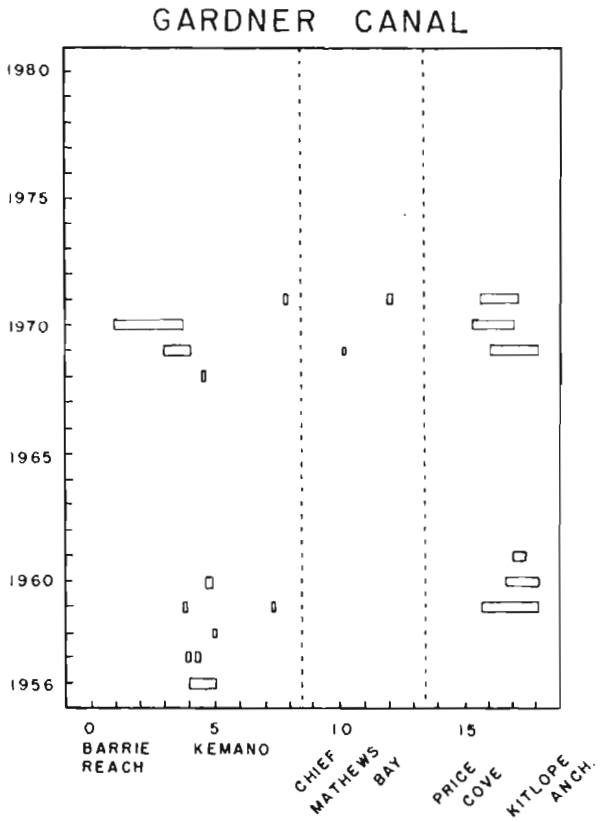

KITIMAT ARM
KITIMAT RIVER
5
MINETTE BAY
KITIMAT
54°00'
10
KITIMAT MISSION
0
RALEY PT.
53°55'
15
17
CLIO BAY
ARM
KITIMAT
COSTE I.
AMOS PASS
53°50'
128°50'
128°40'


KITIMAT ARM
1980
1975
1970
1965
1960
1956
0
5
10
15
KITIMAT
KITIMAT MISSION
MINETTE BAY
CLIO BAY

Gardner Canal

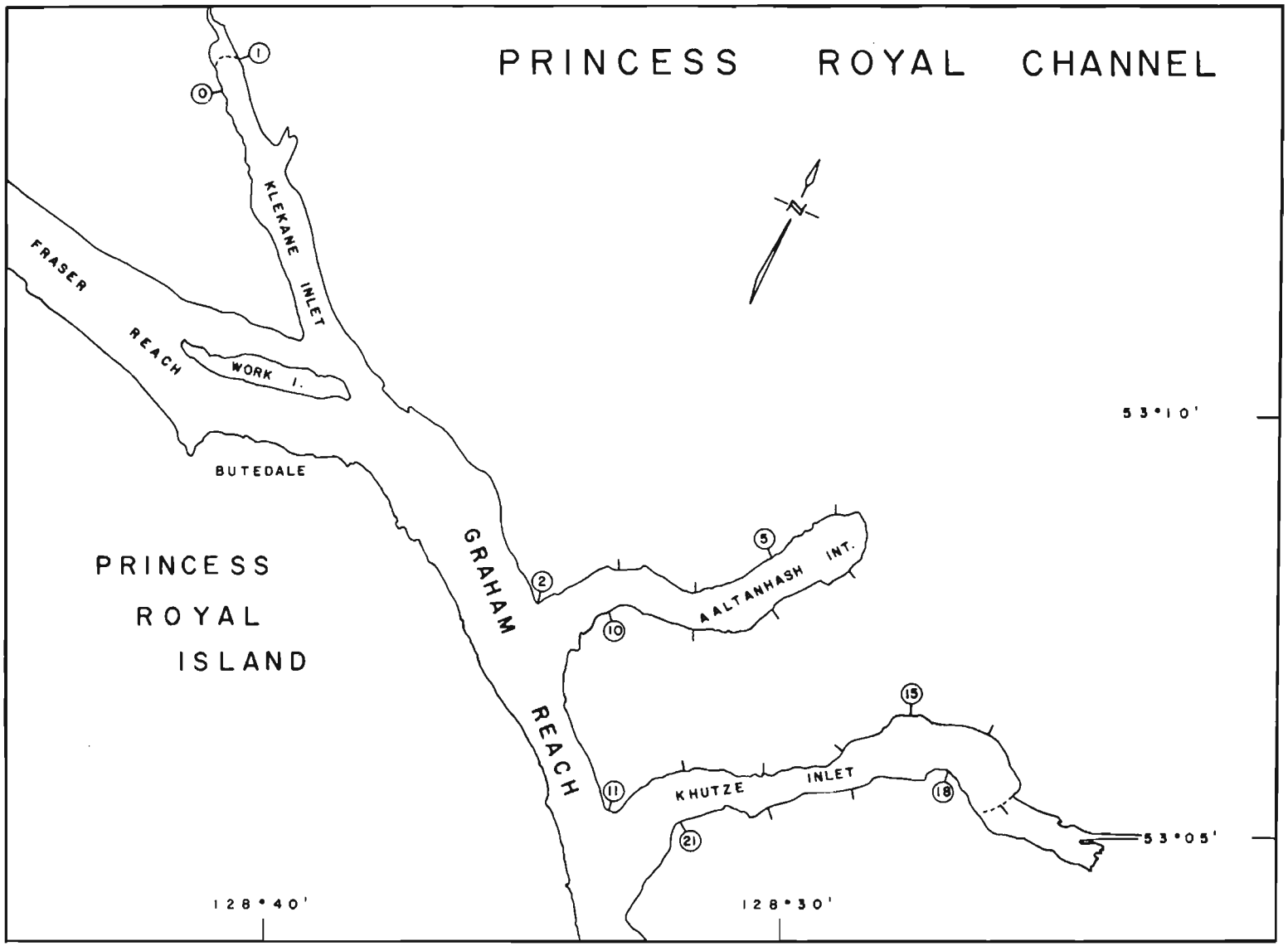
There have been only infrequent reports of small spawns for the upper portions of Gardner Canal. There have been no reports of spawn since 1971 and no spawns were reported in the period 1962 to 1967. In the years where there was spawn, it was deposited mostly near Kemano and Kitlope Anchorage. There have been no roe fisheries here.

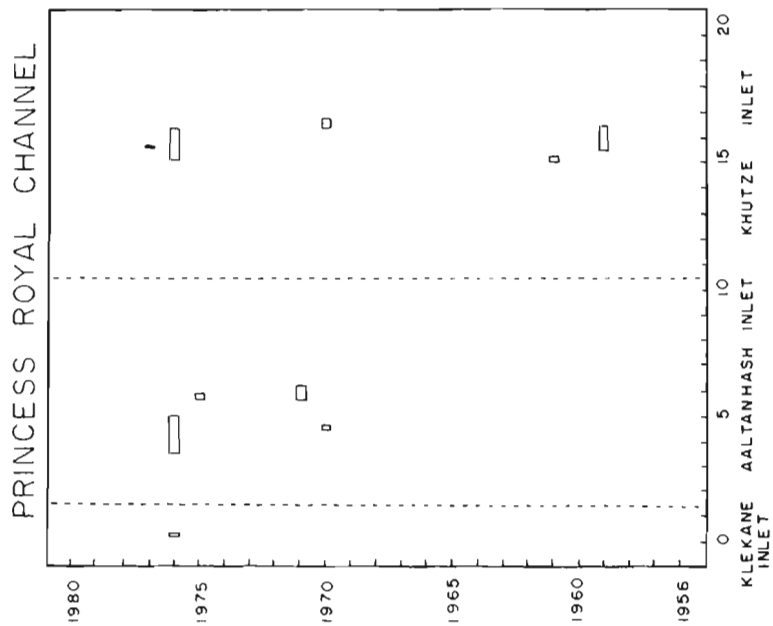

KEMANO RIVER
KEMANO
5
53 ° 30'
ENTRANCE
BLUFF
8
0
BARRIE REACH
WHIDBEY REACH
CHIEF MATHEWS BAY
13
9
53 ° 20'
EGERIA
REACH
14
PRICE
COVE
KITLOPE
ANCHORAGE
18
GARDNER CANAL
128
128 ° 00


GARDNER CANAL
1980
1975
1970
1965
1960
1956
0
BARRIE REACH
5
KEMANO
10
CHIEF MATHEWS BAY
15
PRICE COVE
KITLOPE ANCH.

Princess Royal Channel

There have been reports of spawn, located in the upper reaches of Princess Royal Channel, for only seven of the years in the 25 year study period. These spawns have all been small and located mostly in Aaltenash and Khutze inlets. There have been no roe fisheries here.


PRINCESS ROYAL CHANNEL
KLEKANE INLET
FRASER REACH
WORK I.
BUTEDALE
PRINCESS ROYAL ISLAND
GRAHAM REACH
AALTANHASH INT.
KHUTZE INLET
53°10'
53°05'
128°40'
128°30'
0
1
2
5
10
11
15
18
21

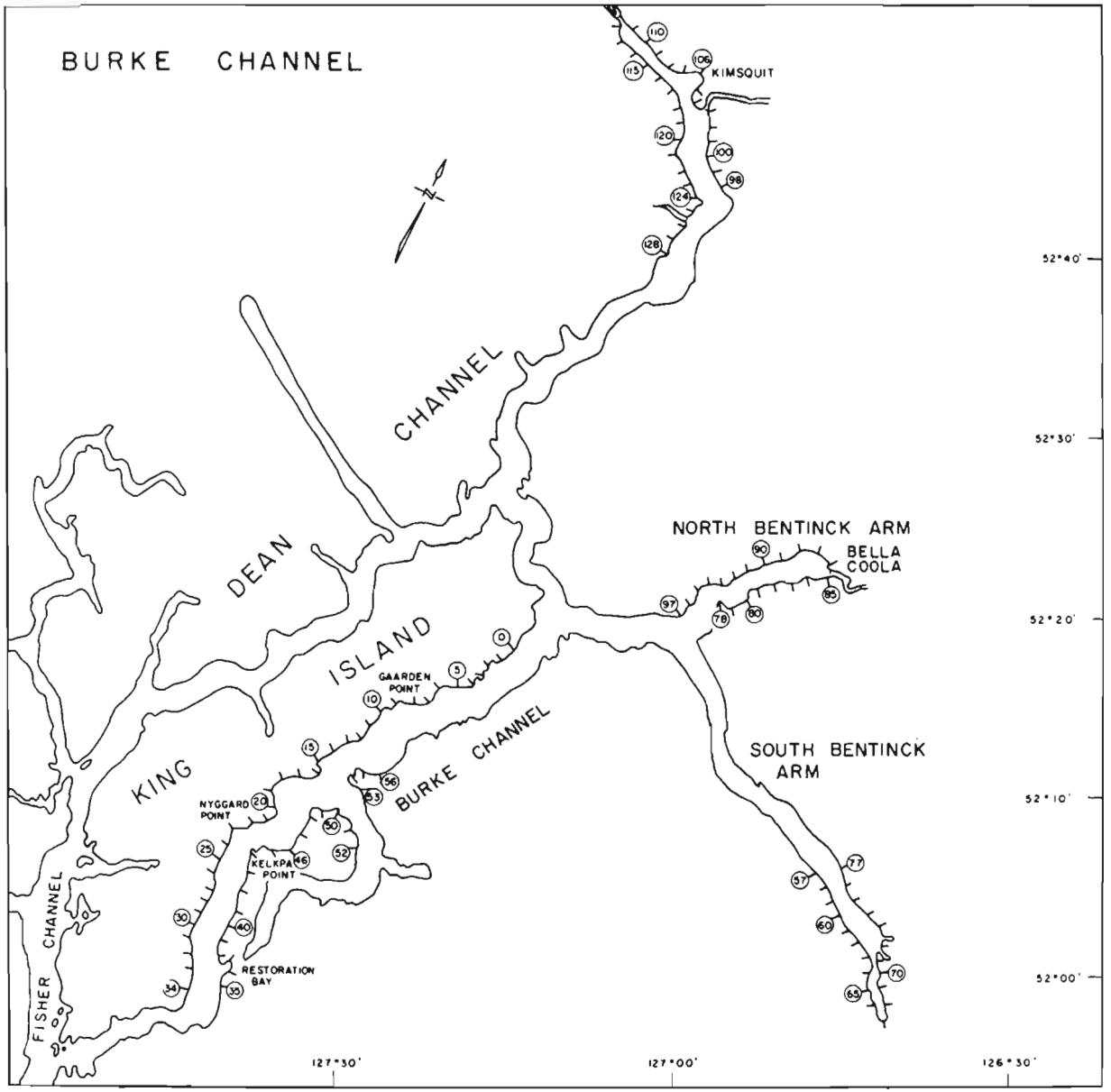

PRINCESS ROYAL CHANNEL
1980
1975
1970
1965
1960
1956
0
5
10
15
20
KLEKANE INLET
AALTANHASH INLET
KHUTZE INLET

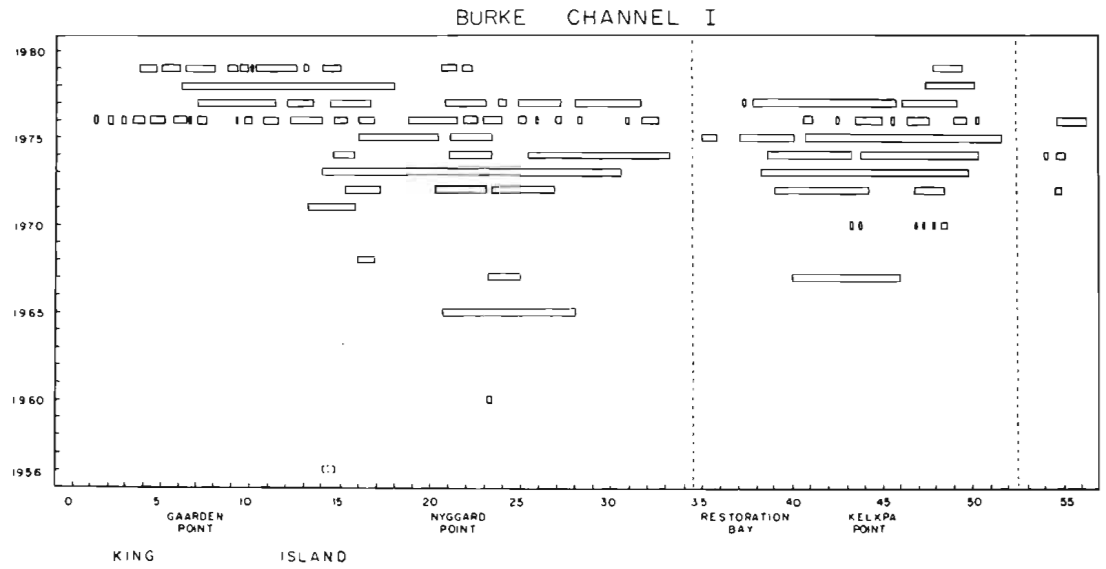
Burke Channel

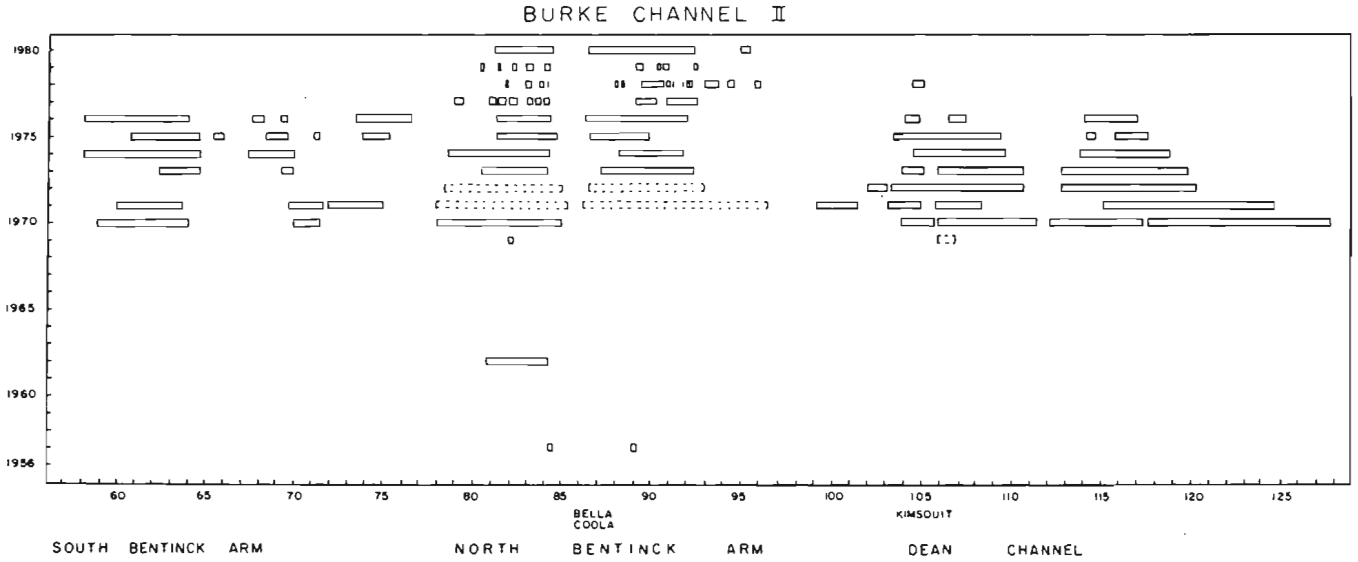
Reports of yearly and substantial spawns in the Burke Channel unit are a recent phenomenon. Prior to 1970, there were only occasional records of spawn. Characteristically, spawns in this unit are recorded as very narrow bands over long distances of shoreline, an average of 35 mi long. Since 1977, recorded spawn lengths have been declining. In addition to the shorelines of Burke Channel, herring have spawned in the sheltered, upper portions of North and South Bentinck arms and in Dean Channel.

There were seine and gillnet roe fisheries in this area in the early years of this fishery. Coincident with these fisheries, reported spawn was also at its peak, perhaps indicating that only when fisheries were conducted were spawns completely surveyed. Characteristically, spawns in the upper portions of the inlets occurs in late March and early April while those in Burke Channel occur in late May and early June.

Year	Tons roe catch		
	GN	SN	TOT
1973	-	787	787
1974	72	269	341
1975	385	531	916
1976	308	233	541


BURKE CHANNEL
KIMSQUIT
CHANNEL
DEAN
ISLAND
KING
FISHER CHANNEL
GAARDEN POINT
NYGGARD POINT
KELKPA POINT
RESTORATION BAY
BURKE CHANNEL
NORTH BENTINCK ARM
BELLA COOLA
SOUTH BENTINCK ARM
52°40'
52°30'
52°20'
52°10'
52°00'
127°30'
127°00'
126°30'

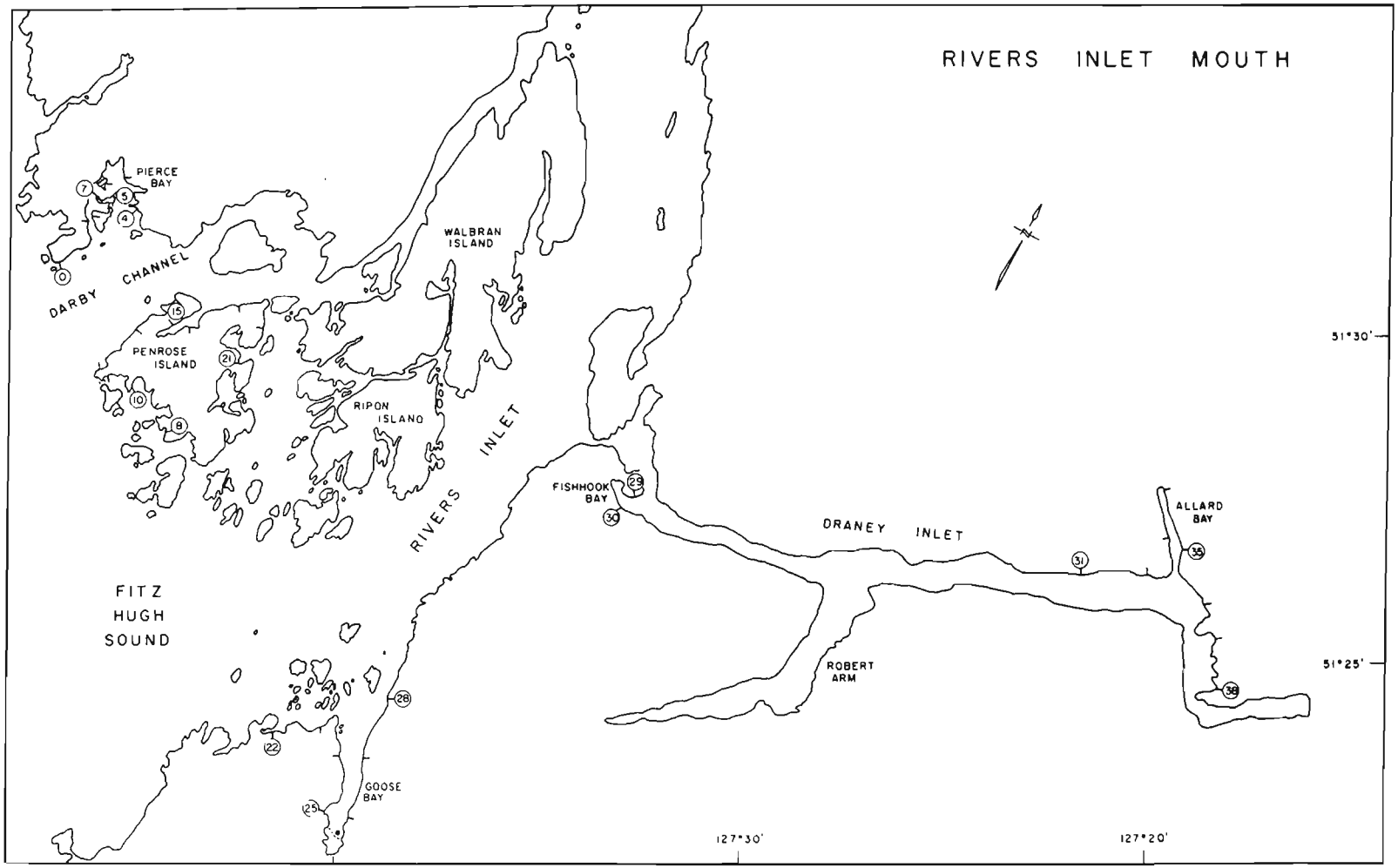

BURKE CHANNEL I
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
GAARDEN POINT
NYGGARD POINT
RESTORATION BAY
KELKPA POINT
KING ISLAND

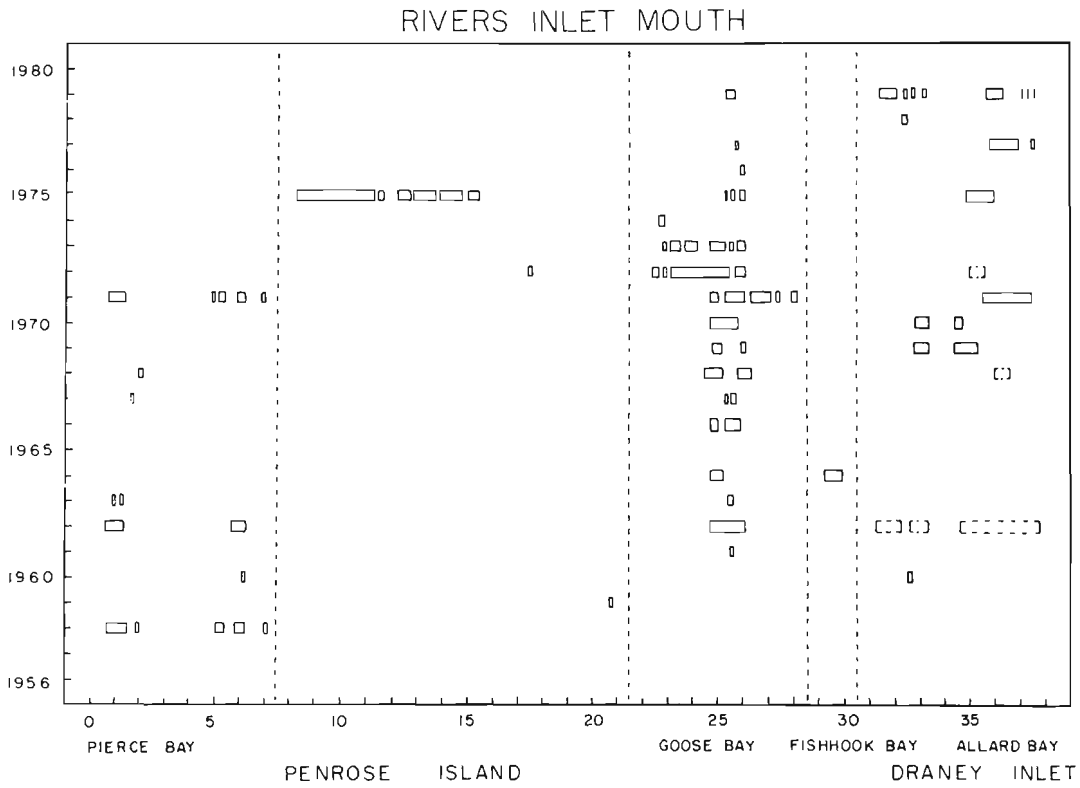

BURKE CHANNEL II
1980
1975
1970
1965
1960
1956
60
65
70
75
80
85
90
95
100
105
110
115
120
125
BELLA COOLA
KIMSQUIT
SOUTH BENTINCK ARM
NORTH BENTINCK ARM
DEAN CHANNEL

Rivers Inlet-mouth

There have been small spawns for most years of the study period at the entrance to Rivers Inlet. Herring have spawned most consistently in Goose Bay. There have been infrequent reports of spawn in Pierce Bay, among the islands at the entrance to Rivers Inlet, and at the head of Draney Inlet. There have been small fisheries here, mostly by seine, in the early years of the roe fishery.

Year	Tons roe catch		
	GN	SN	TOT
1971	-	226	226
1972	-	539	539
1974	70	191	261
1975	13	-	13

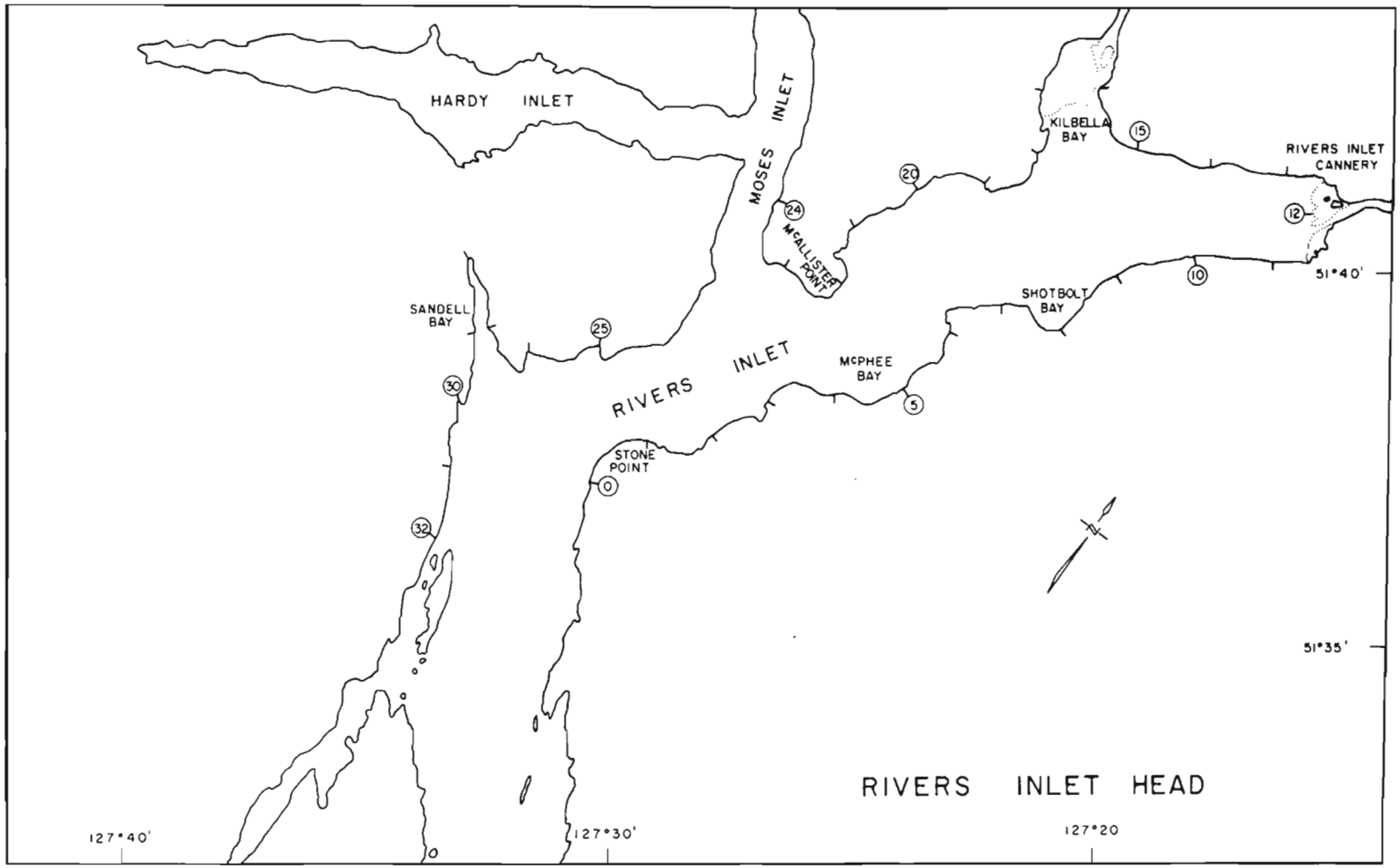

RIVERS INLET MOUTH
PIERCE BAY
DARBY CHANNEL
WALBRAN ISLAND
PENROSE ISLAND
RIPON ISLAND
RIVERS INLET
FISHHOOK BAY
DRANEY INLET
ALLARD BAY
ROBERT ARM
FITZ HUGH SOUND
GOOSE BAY
51°30'
51°25'
127°30'
127°20'

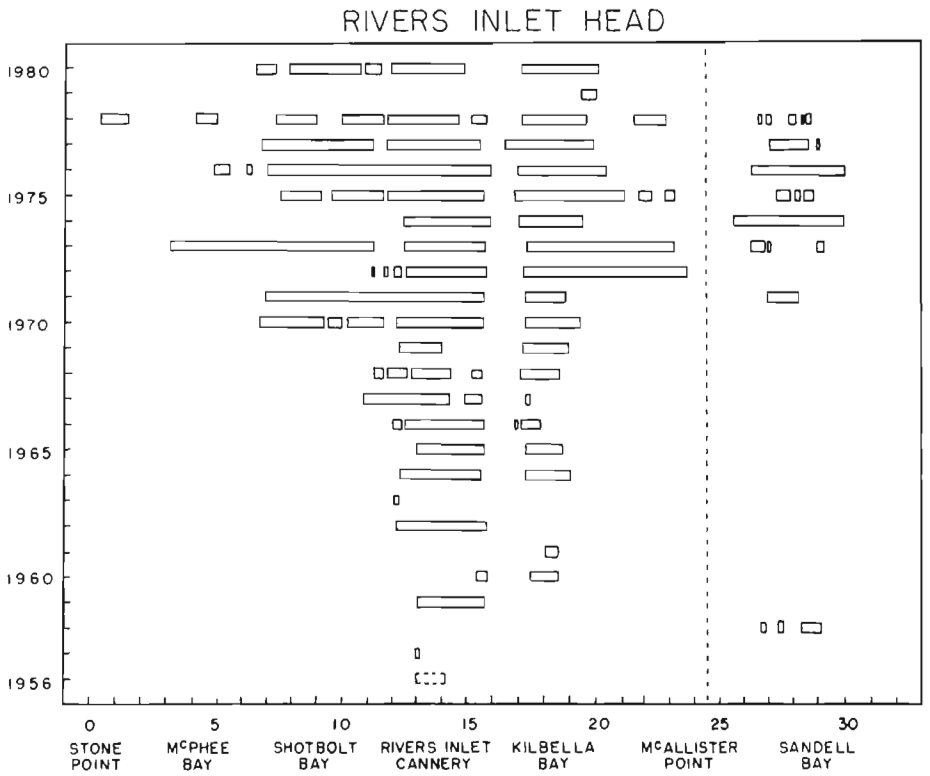

RIVERS INLET MOUTH
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
PIERCE BAY
PENROSE ISLAND
GOOSE BAY
FISHHOOK BAY
ALLARD BAY
DRANEY INLET

Rivers Inlet-head

Spawn inside Rivers Inlet has been deposited consistently and mostly near the head and, in the 1970s, in Sandell Bay. Characteristically, spawns are reported as very narrow and long along the steep sides of the inlet. There were roe fisheries at the head of the inlet in the first six years of the roe fishery. Except for 1973, catches were small.

Year	Tons roe catch		
	GN	SN	TOT
1972	-	209	209
1973	-	1856	1856
1974	6	525	531
1975	95	-	95
1976	308	-	308
1977	41	-	41

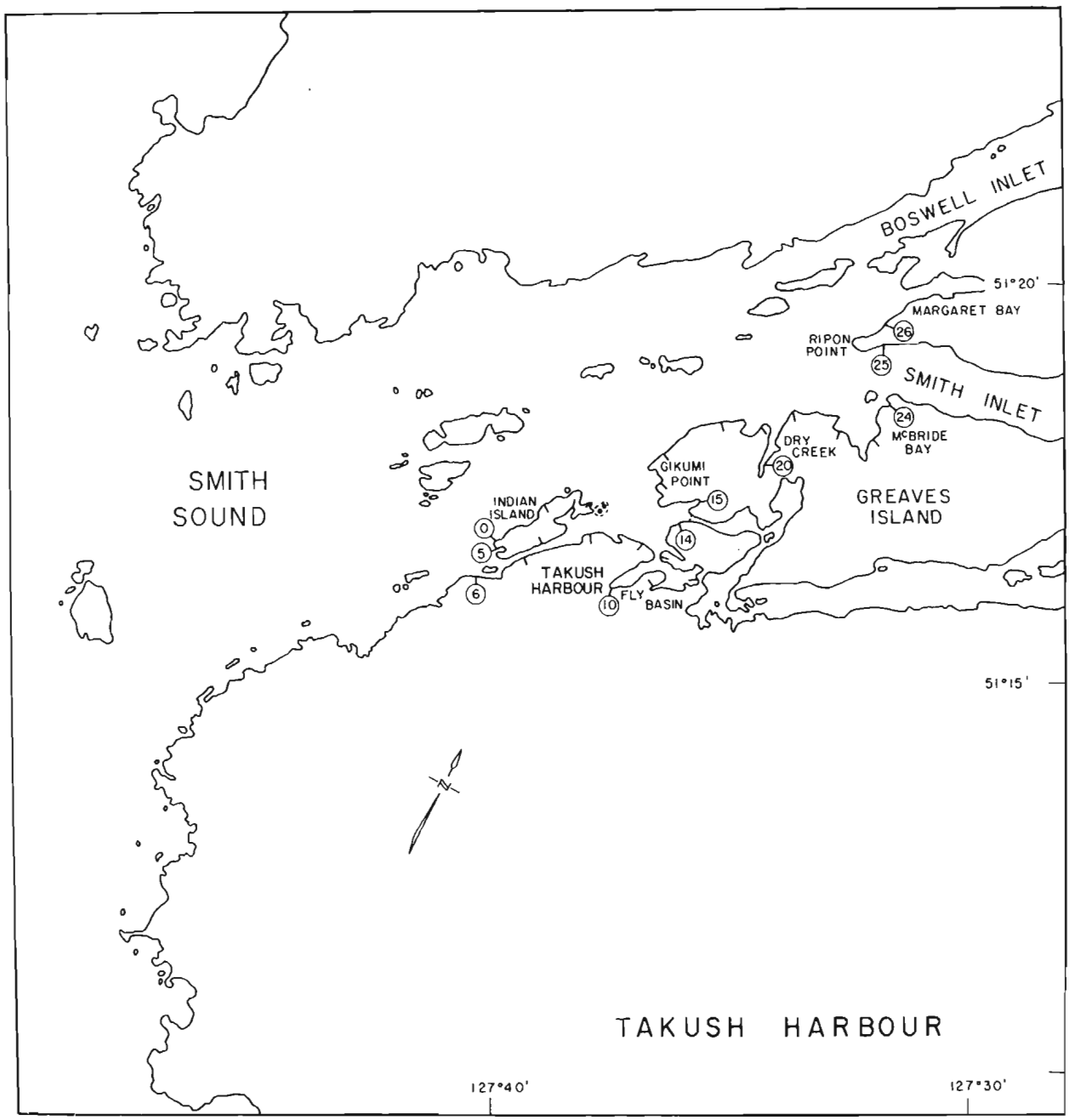

HARDY INLET
MOSES INLET
KILBELLA BAY
RIVERS INLET CANNERY
McALLISTER POINT
SANDELL BAY
SHOTBOLT BAY
RIVERS INLET
McPHEE BAY
STONE POINT
51°40'
51°35'
127°40'
127°30'
127°20
RIVERS INLET HEAD

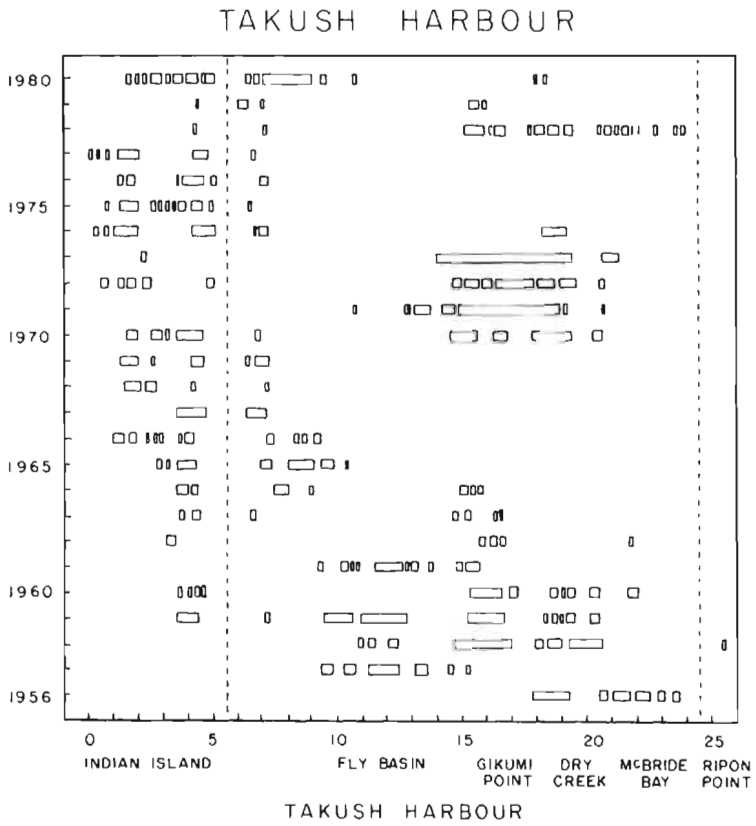

RIVERS INLET HEAD
1980
1975
1970
1965
1960
1956
0
STONE POINT
5
McPHEE BAY
10
SHOTBOLT BAY
15
RIVERS INLET CANNERY
20
KILBELLA BAY
25
McALLISTER POINT
30
SANDELL BAY

Takush Harbor

Herring have spawned yearly on the south shore near the entrance to Smith Sound. Typically, spawns have been reported as small and patchy and in the 25 miles of coastline between Indian Island and McBride Bay, spawns have averaged 3.5 miles long. Roe fishery catches in the area have been small, except for 1972 when a large seine catch was taken.

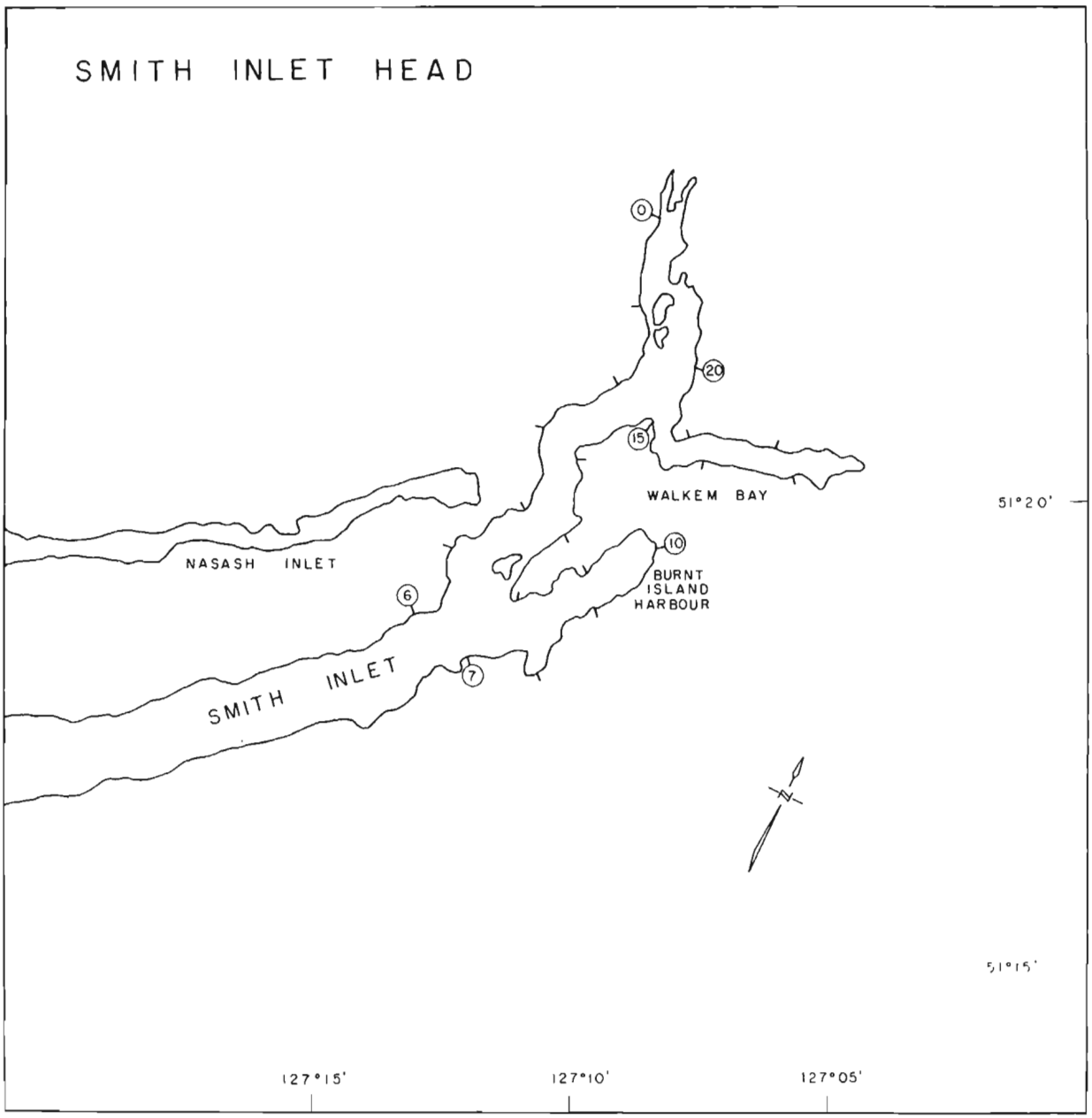
Year	Tons roe catch		
	GN	SN	TOT
1971	-	263	263
1972	-	1105	1105
1974	201	-	201
1975	223	-	223
1976	109	-	109
1977	4	-	4

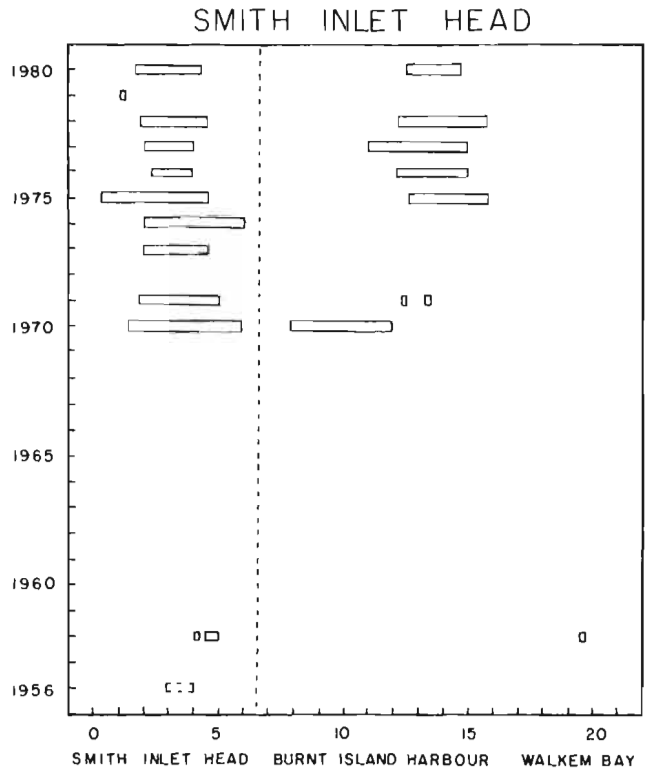

BOSWELL INLET
51°20'
MARGARET BAY
RIPON POINT
26
25
SMITH INLET
24
McBRIDE BAY
DRY CREEK
20
GIKUMI POINT
15
SMITH SOUND
INDIAN ISLAND
0
5
6
14
GREAVES ISLAND
TAKUSH HARBOUR
10
FLY BASIN
51°15'
TAKUSH HARBOUR
127°40'
127°30'


TAKUSH HARBOUR
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
INDIAN ISLAND
FLY BASIN
GIKUMI POINT
DRY CREEK
McBRIDE BAY
RIPON POINT
TAKUSH HARBOUR

Smith Inlet-head

There have been reports of spawn at the head of Smith Inlet for 10 of the 11 years since 1970. Prior to 1970, the inlet appears not to have been surveyed for spawn on a regular basis and there were reports of spawn for only 2 years in the late 1950s. There have been no roe fisheries at the head of Smith Inlet, although the 1972 seine fishery at the entrance, which took 1105 tons, may have intercepted fish that would have spawned there.


SMITH INLET HEAD
0
20
15
WALKEM BAY
51°20'
NASASH INLET
10
BURNT
ISLAND
HARBOUR
6
SMITH INLET
7
51°15'
127°15'
127°10'
127°05'


SMITH INLET HEAD
1980
1975
1970
1965
1960
1956
0
5
10
15
20
SMITH INLET HEAD
BURNT ISLAND HARBOUR
WALKEM BAY

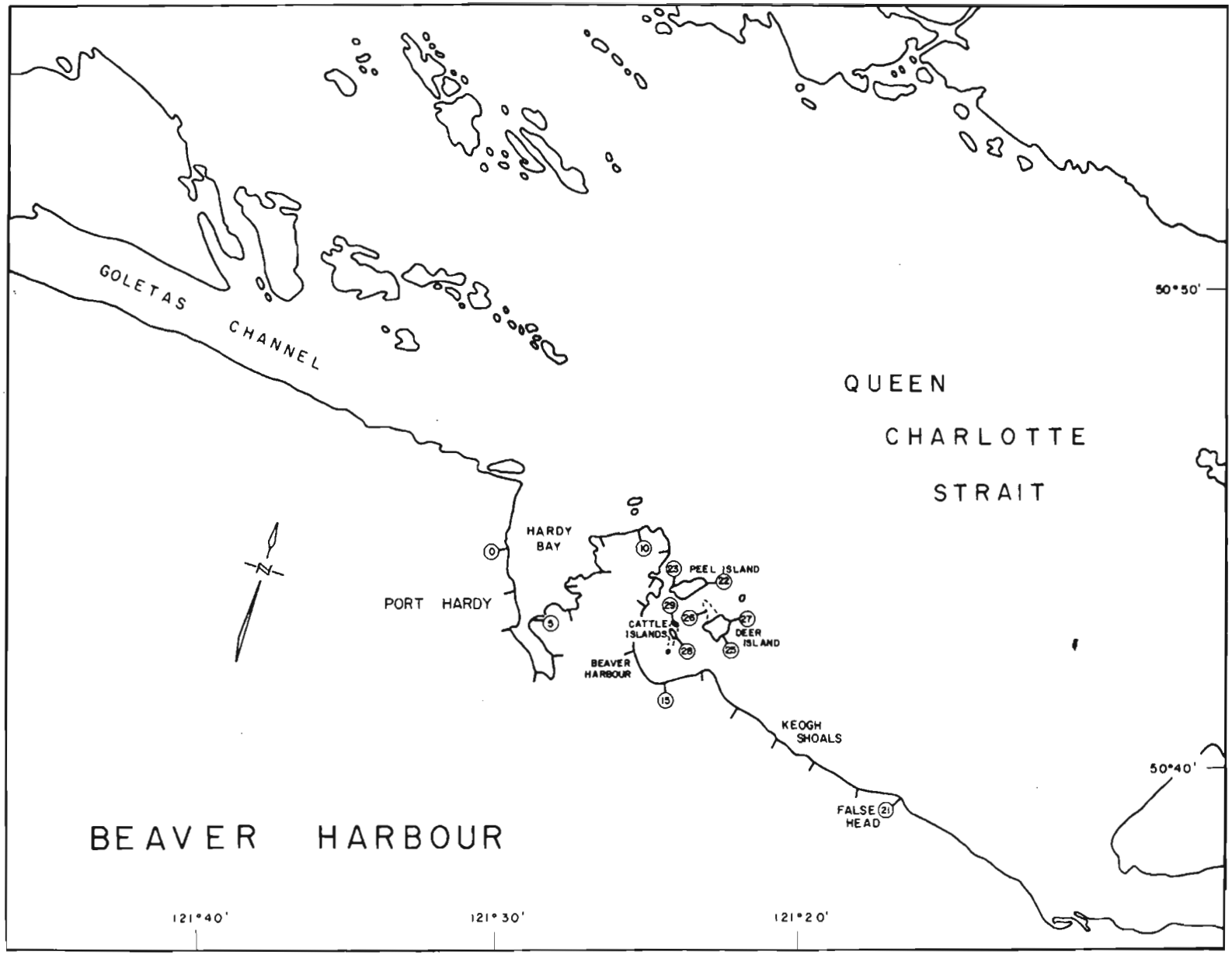
JOHNSTONE STRAIT

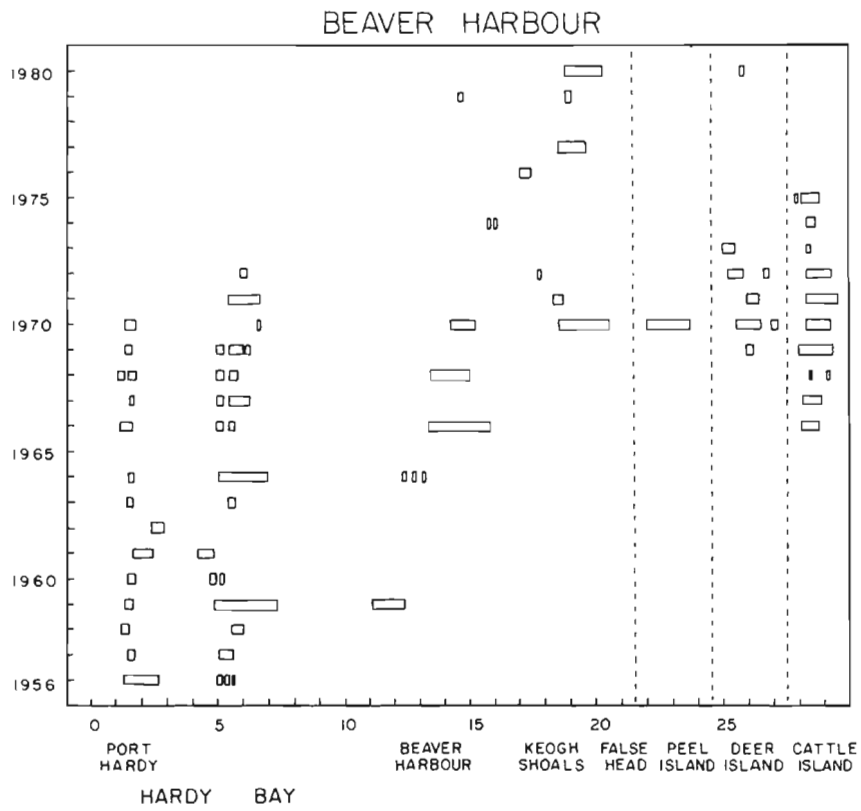
The islands in Queen Charlotte and Johnstone straits and the heads of the mainland inlets adjacent to these bodies of water provide the major spawning sites for herring in Statistical Areas 11 to 13. The Vancouver Island shoreline, except for Beaver Harbor, is not used for spawning. In the years of the study period, 404 km of shoreline have been used for spawning with yearly deposition averaging 63 km. There have been no roe fisheries in the Johnstone Strait division since 1978.

Beaver Harbor

From the beginning of the study period until the early 1970s most of the herring spawn in this area was recorded in Hardy Bay and inside Beaver Harbor. From the late 1960s to the end of the study period, herring have spawned primarily on the islands in Beaver Harbor and on Keogh Shoals. There has never been a large amount of spawn in this area and there have been only small roe fisheries in the early 1970s.

Year	Tons roe catch		
	GN	SN	TOT
1973	264	124	388
1974	245	170	415
1975	113	-	113
1976	23	-	23

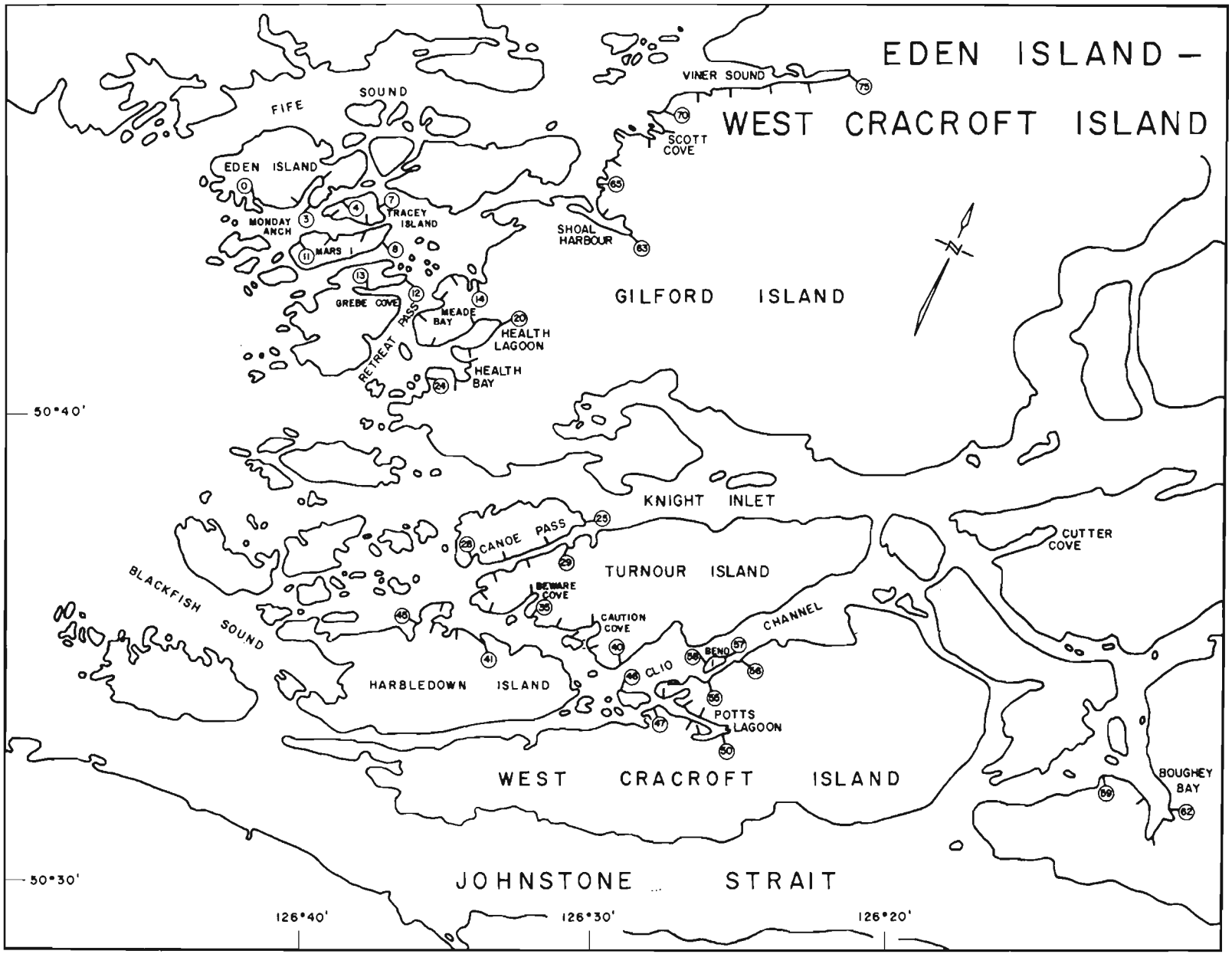

GOLETAS CHANNEL
QUEEN CHARLOTTE STRAIT
50°50'
HARDY BAY
PORT HARDY
PEEL ISLAND
CATTLE ISLANDS
DEER ISLAND
BEAVER HARBOUR
KEOGH SHOALS
FALSE HEAD
50°40'
BEAVER HARBOUR
121°40'
121°30'
121°20'

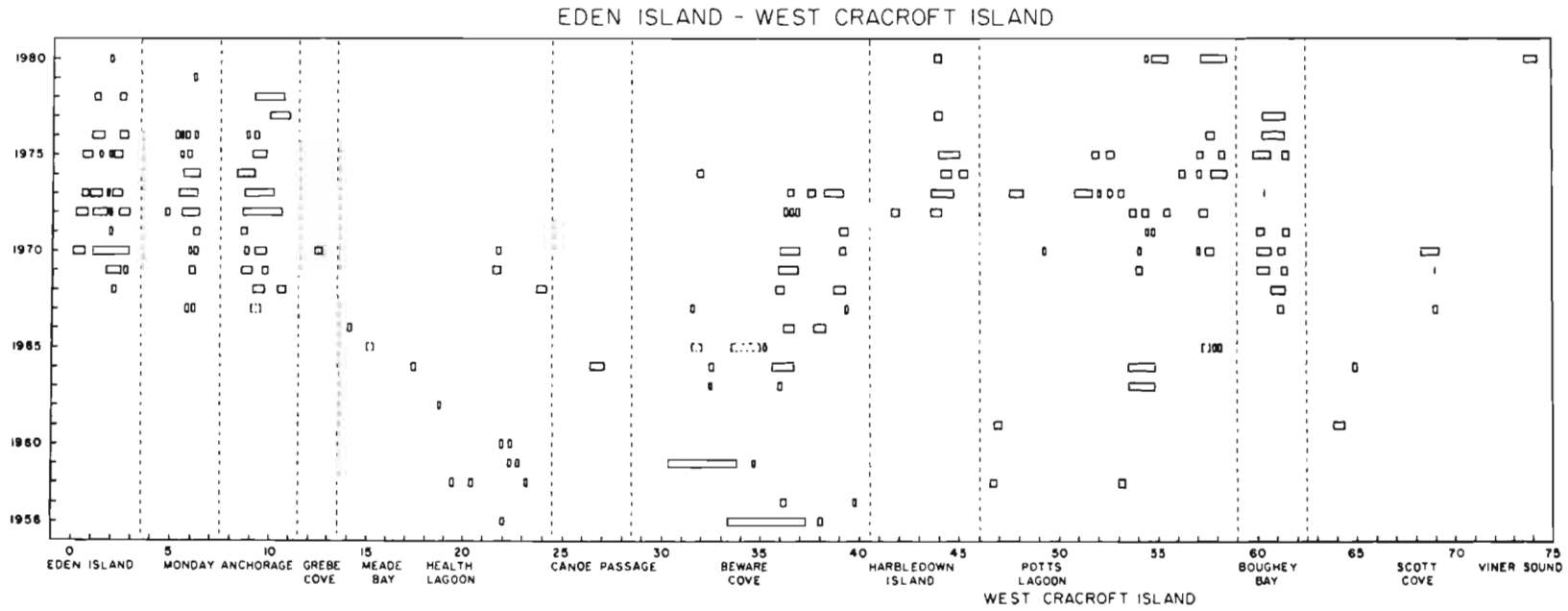

BEAVER HARBOUR
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
PORT HARDY
BEAVER HARBOUR
KEOGH SHOALS
FALSE HEAD
PEEL ISLAND
DEER ISLAND
CATTLE ISLAND
HARDY BAY

Eden Island-West Cracoft Island

The major spawning locations in this area in recent years have been the shorelines of the islands surrounding Monday Anchorage, the north side of Harbledown Island, and Boughey Bay. In the earlier years, but not recently, spawn was recorded in the bays of Retreat Passage, in Canal Passage, and on the south shore of Turnour Island. Throughout the study period, herring have spawned intermittently on the south shore of Clio Channel and occasionally in and near Scott Cove. There have been modest catches in this area in the earlier years of the roe fishery.

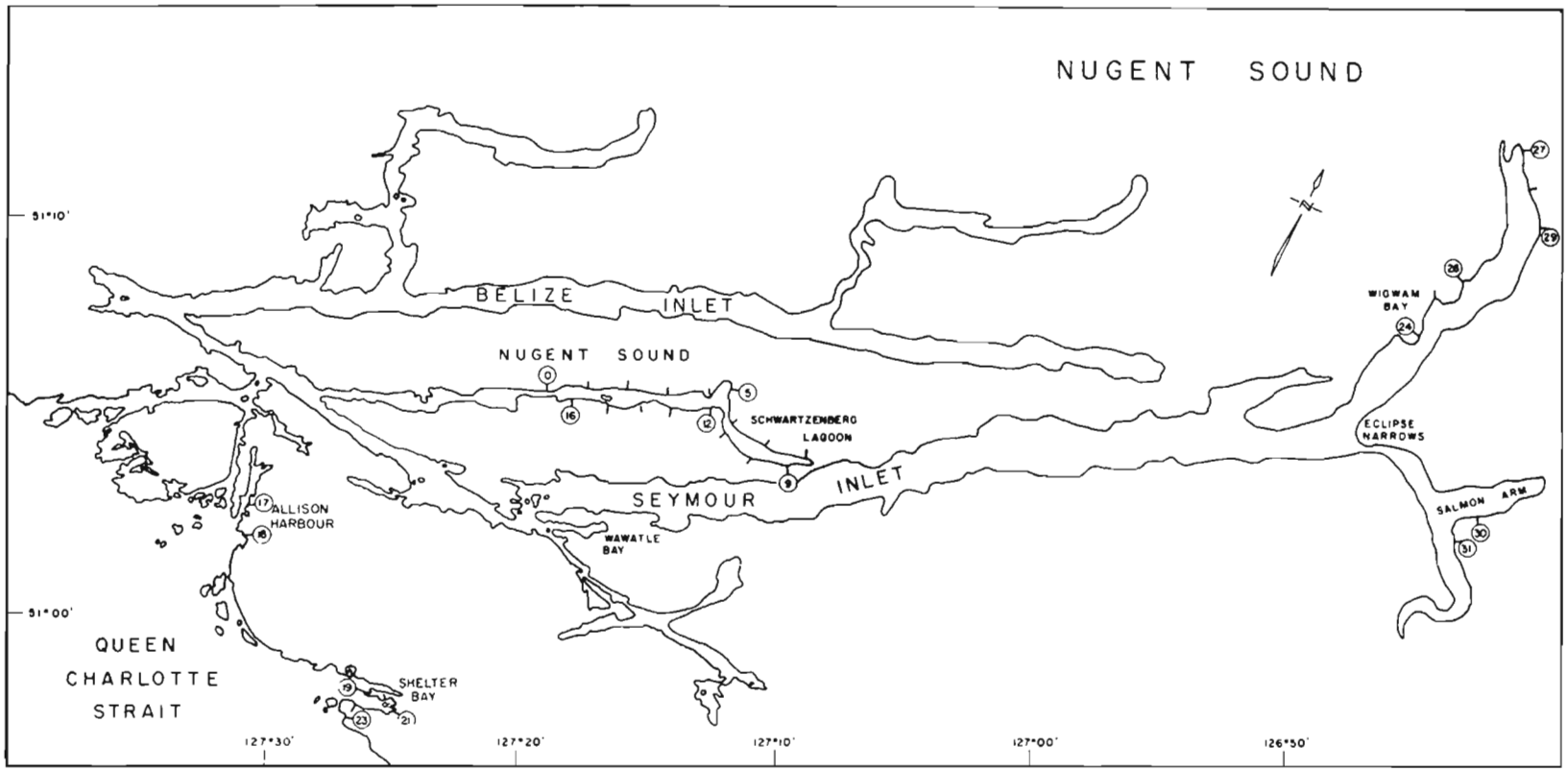
Year	Tons roe catch		
	GN	SN	TOT
1971	-	98	98
1972	16	435	451
1973	520	65	585
1974	572	349	921
1975	534	21	555
1976	280	-	280
1977	43	-	43
1978	3	-	3

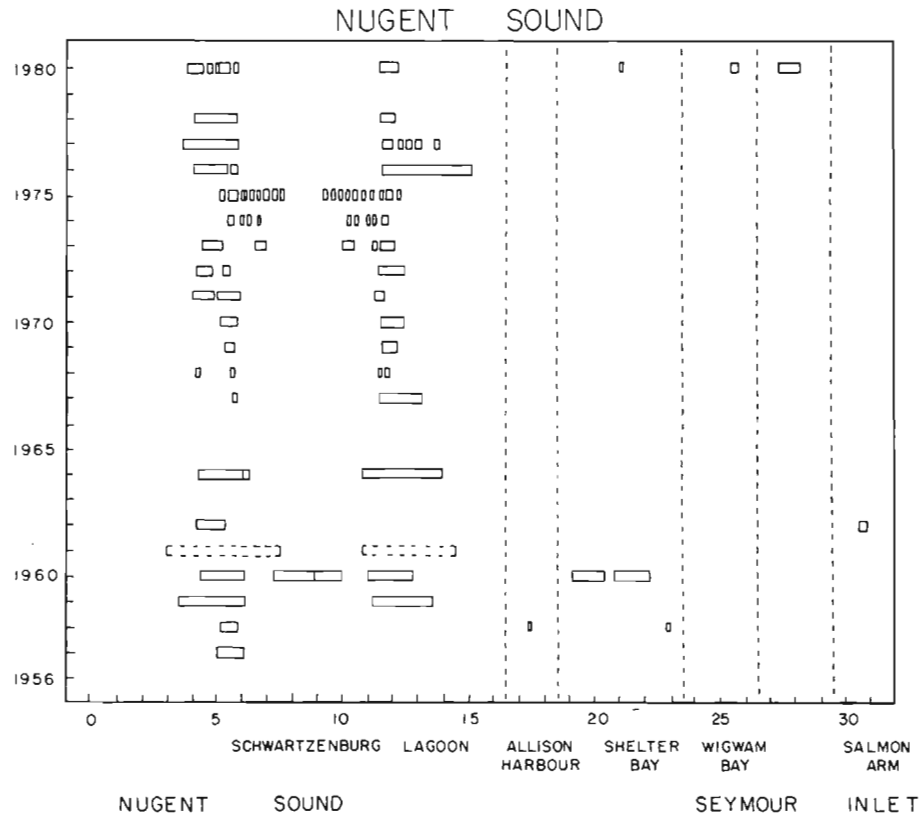

EDEN ISLAND –
WEST CRACROFT ISLAND
VINER SOUND
FIFE
SOUND
SCOTT COVE
EDEN ISLAND
MONDAY ANCH
TRACEY ISLAND
MARS I
SHOAL HARBOUR
GILFORD ISLAND
GREBE COVE
RETREAT PASS
MEADE BAY
HEALTH LAGOON
HEALTH BAY
50°40'
KNIGHT INLET
CANOE PASS
CUTTER COVE
TURNOUR ISLAND
BEWARE COVE
CAUTION COVE
CHANNEL
BLACKFISH SOUND
BEND
CLIO
HARBLEDOWN ISLAND
POTTS LAGOON
WEST CRACROFT ISLAND
BOUGHEY BAY
50°30'
JOHNSTONE STRAIT
126°40'
126°30'
126°20'


EDEN ISLAND - WEST CRACROFT ISLAND
1980
1975
1970
1965
1960
1956
0
EDEN ISLAND
5
MONDAY
10
ANCHORAGE
GREBE COVE
15
MEADE BAY
20
HEALTH LAGOON
25
CANOE PASSAGE
30
35
BEWARE COVE
40
HARBLEDOWN ISLAND
45
50
POTTS LAGOON
55
60
BOUGHEY BAY
65
70
SCOTT COVE
75
VINER SOUND
WEST CRACROFT ISLAND

Nugent Sound

Most of the spawn in this area has been deposited in the upper reaches of Nugent Sound, with spawn frequently extending into Schwartzenberg Lagoon, where, according to spawn reports, the eggs frequently died before hatching. Occasionally, there have also been reports of spawn in Shelter Bay and Allison Harbor on the outer coast and in Wigwam Bay and Salmon Arm at the head of Seymour Inlet. These latter locations are probably not regularly surveyed for spawn and the frequency of spawn there may be greater than indicated by the spawn reports. There have been no roe fisheries in this area.

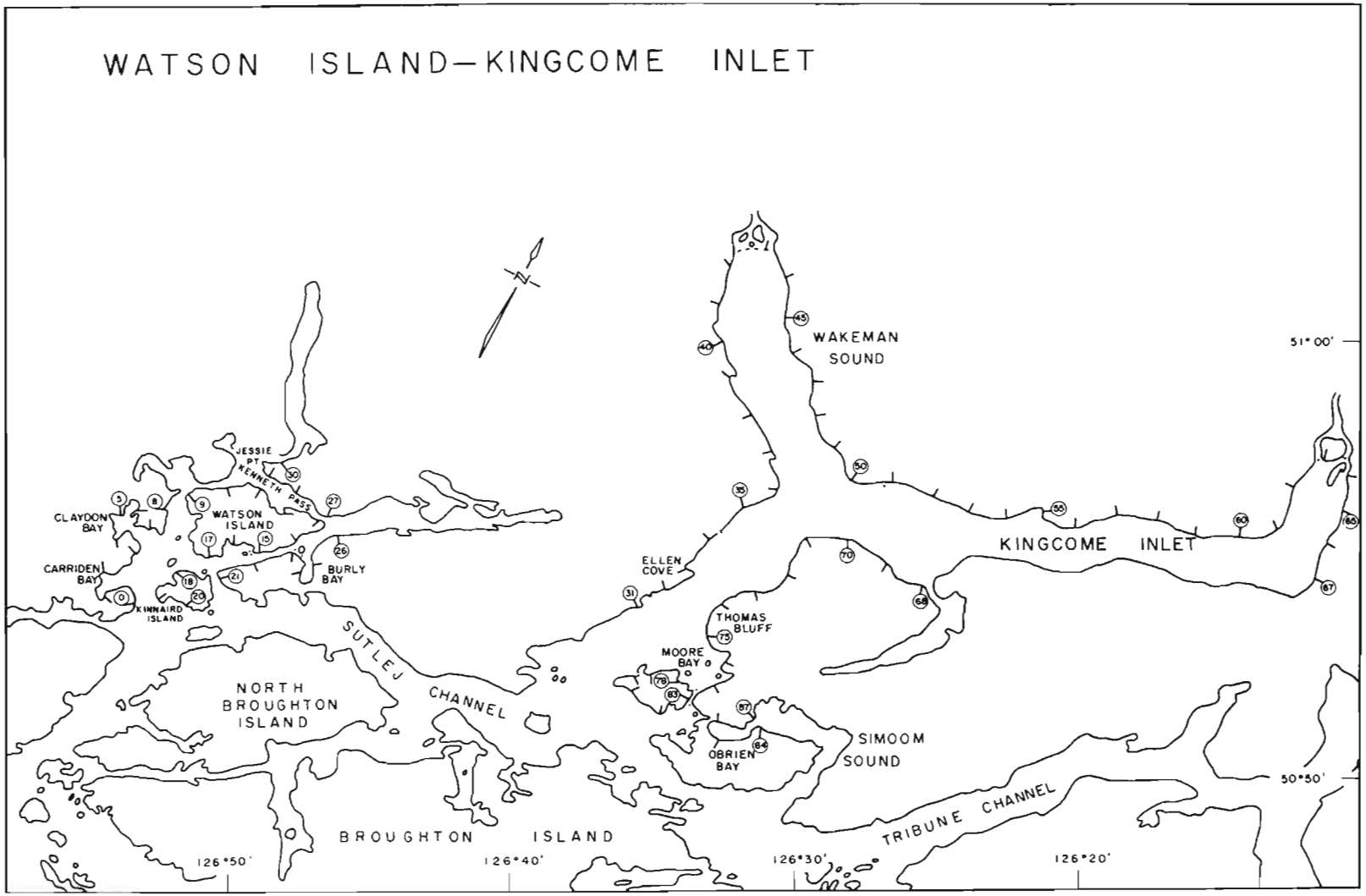

NUGENT SOUND
51°10'
BELIZE INLET
NUGENT SOUND
0
16
5
12
SCHWARTZENBERG LAGOON
9
SEYMOUR INLET
WAWATLE BAY
17
ALLISON HARBOUR
18
51°00'
QUEEN CHARLOTTE STRAIT
19
SHELTER BAY
23
21
27
29
28
WIGWAM BAY
24
ECLIPSE NARROWS
SALMON ARM
30
31
127°30'
127°20'
127°10'
127°00'
126°50'

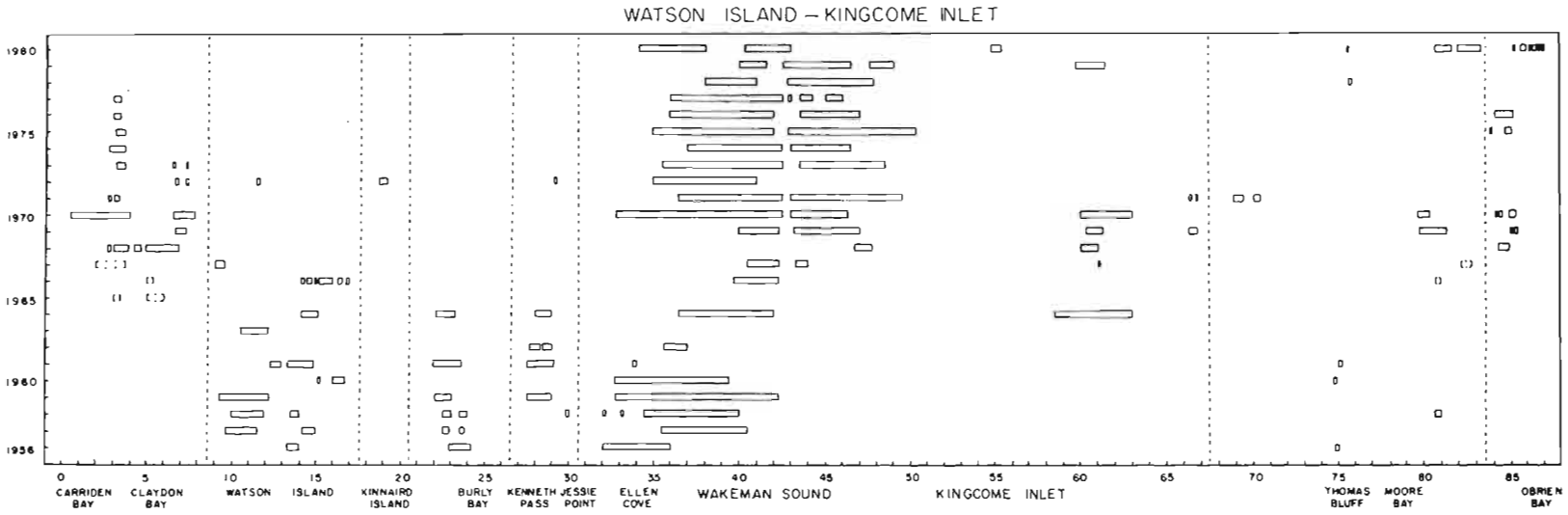

NUGENT SOUND
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
SCHWARTZENBURG
LAGOON
ALLISON HARBOUR
SHELTER BAY
WIGWAM BAY
SALMON ARM
NUGENT SOUND
SEYMOUR INLET

Watson Island-Kingcome Inlet

Most of the spawn in this area has been deposited along the approaches to and inside Wakeman Sound. In recent years, spawn has also been recorded in Carriden and Claydon bays to the east and O'Brien and Moore bays to the west. In the years prior to 1967, spawns were also recorded along the channels surrounding Watson Island. There have been roe fisheries in this area up to 1978, with the catch in most years being taken in Wakeman Sound.

Year	Tons roe catch		
	GN	SN	TOT
1972	-	1514	1514
1973	141	913	1054
1974	157	293	450
1975	106	564	670
1976	93	615	708
1977	23	-	23
1978	35	376	411

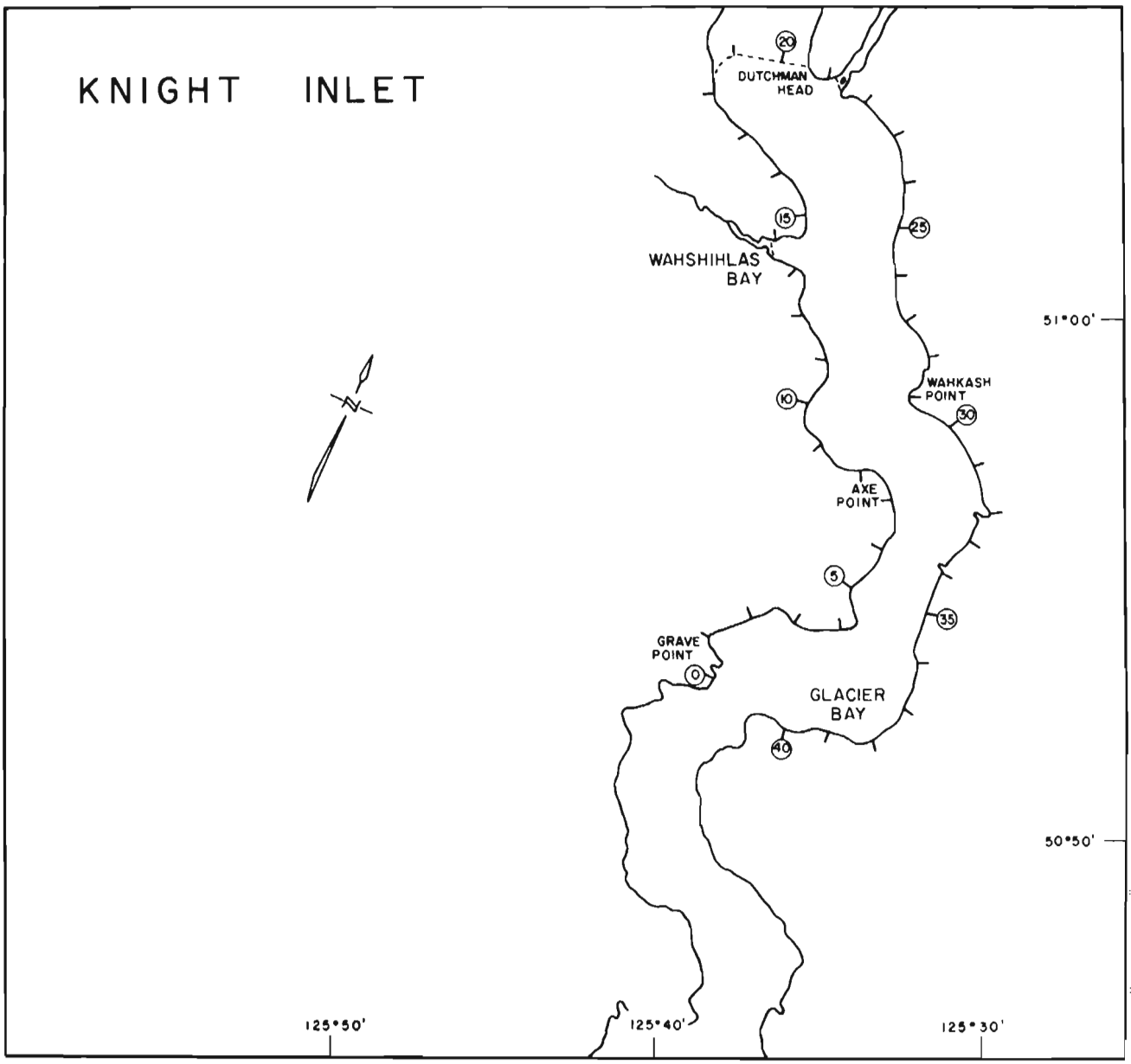

WATSON ISLAND—KINGCOME INLET
WAKEMAN SOUND
KINGCOME INLET
51°00'
JESSIE PT.
KENNETH PASS
CLAYDON BAY
WATSON ISLAND
CARRIDEN BAY
BURLY BAY
KINNAIRD ISLAND
ELLEN COVE
THOMAS BLUFF
MOORE BAY
SUTLEJ CHANNEL
NORTH BROUGHTON ISLAND
OBRIEN BAY
SIMOOM SOUND
TRIBUNE CHANNEL
50°50'
BROUGHTON ISLAND
126°50'
126°40'
126°30'
126°20'

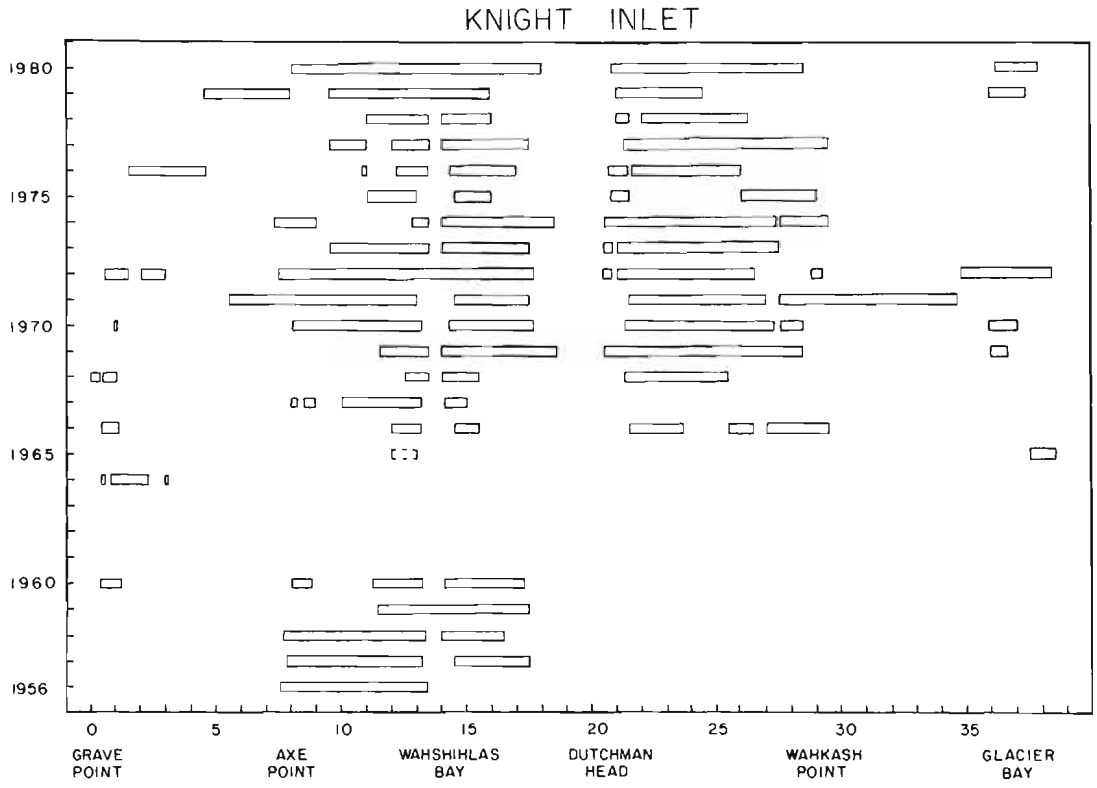

WATSON ISLAND – KINGCOME INLET
1980
1975
1970
1965
1960
1956
0
CARRIDEN BAY
5
CLAYDON BAY
10
WATSON
15
ISLAND
20
KINNAIRD ISLAND
25
BURLY BAY
30
KENNETH PASS
JESSIE POINT
35
ELLEN COVE
40
WAKEMAN SOUND
45
50
55
KINGCOME INLET
60
65
70
75
THOMAS BLUFF
80
MOORE BAY
85
OBRIEN BAY

Knight Inlet

Spawn reports indicate that up to 1960, herring spawned only on the east shore of Knight Inlet. Between 1961 and 1965, very little or no spawn was reported in Knight Inlet. Since 1966, extensive spawns have been reported for both sides of the inlet. The roe fisheries in Knight Inlet were mostly quite small and in the earlier years of the fishery.

Year	Tons roe catch		
	GN	SN	TOT
1973	-	135	135
1974	242	467	709
1975	4	58	62
1976	75	630	705
1978	56	180	236

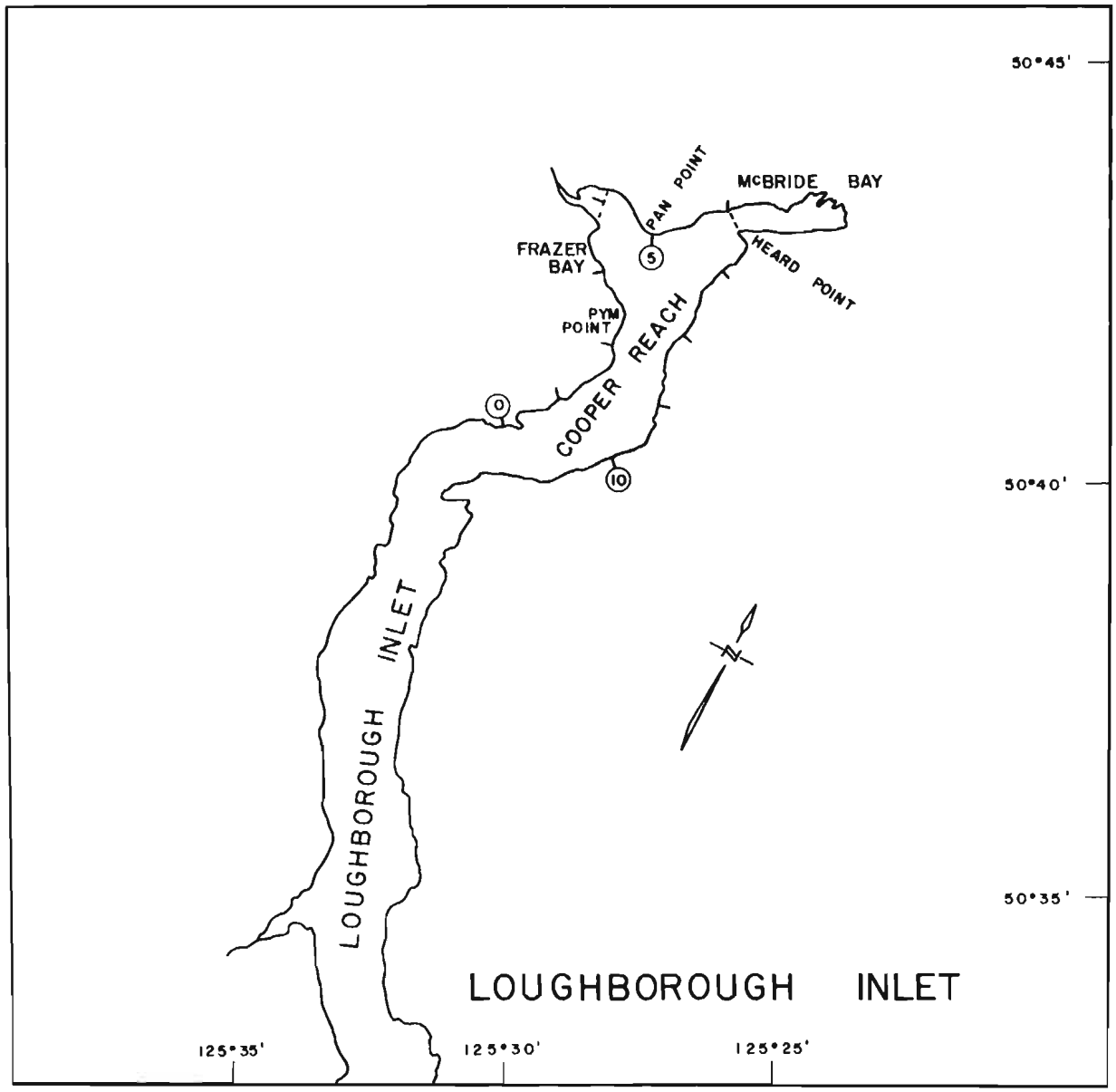

KNIGHT INLET
20
DUTCHMAN HEAD
15
25
WAHSHIHLAS BAY
51°00'
WAHKASH POINT
30
10
AXE POINT
5
35
GRAVE POINT
0
GLACIER BAY
40
50°50'
125°50'
125°40'
125°30'

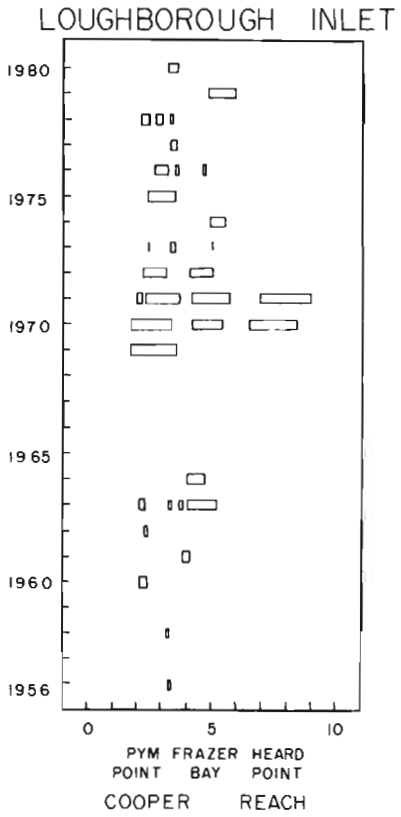

KNIGHT INLET
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
GRAVE POINT
AXE POINT
WAHSHIHLAS BAY
DUTCHMAN HEAD
WAHKASH POINT
GLACIER BAY

Loughborough Inlet

The spawns at the head of Loughborough Inlet have been, except for 1969 to 1971, quite small. For 1965 to 1968 there was no spawn reported to have occurred here. There has been almost negligible fishing for roe herring in Loughborough Inlet.

Year	Tons roe catch		
	GN	SN	TOT
1972	2	68	70
1973	-	121	121

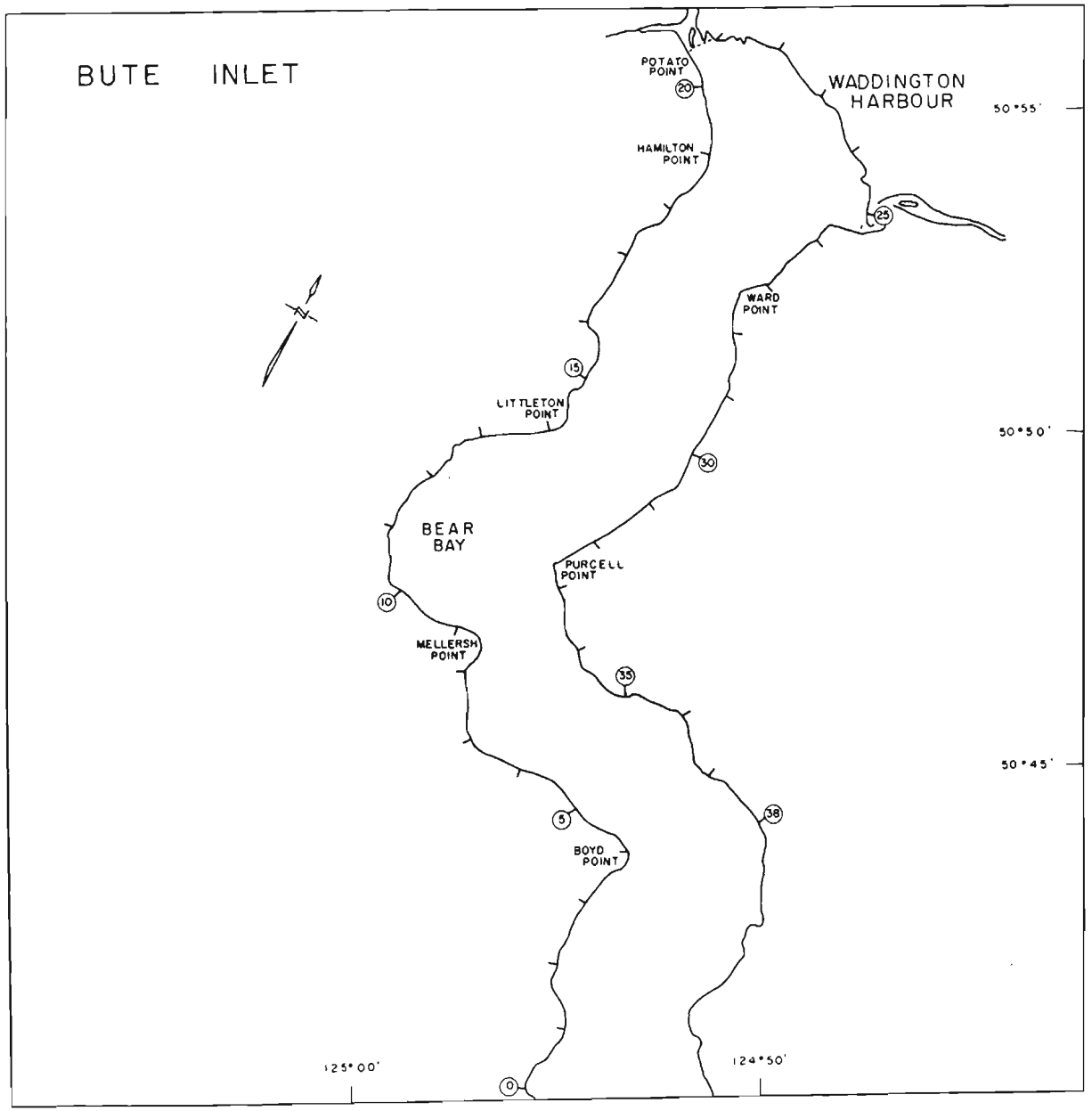

50°45'
50°40'
50°35'
125°35'
125°30'
125°25'
McBRIDE BAY
PAN POINT
FRAZER BAY
HEARD POINT
PYM POINT
COOPER REACH
LOUGHBOROUGH INLET
LOUGHBOROUGH INLET
5
0
10

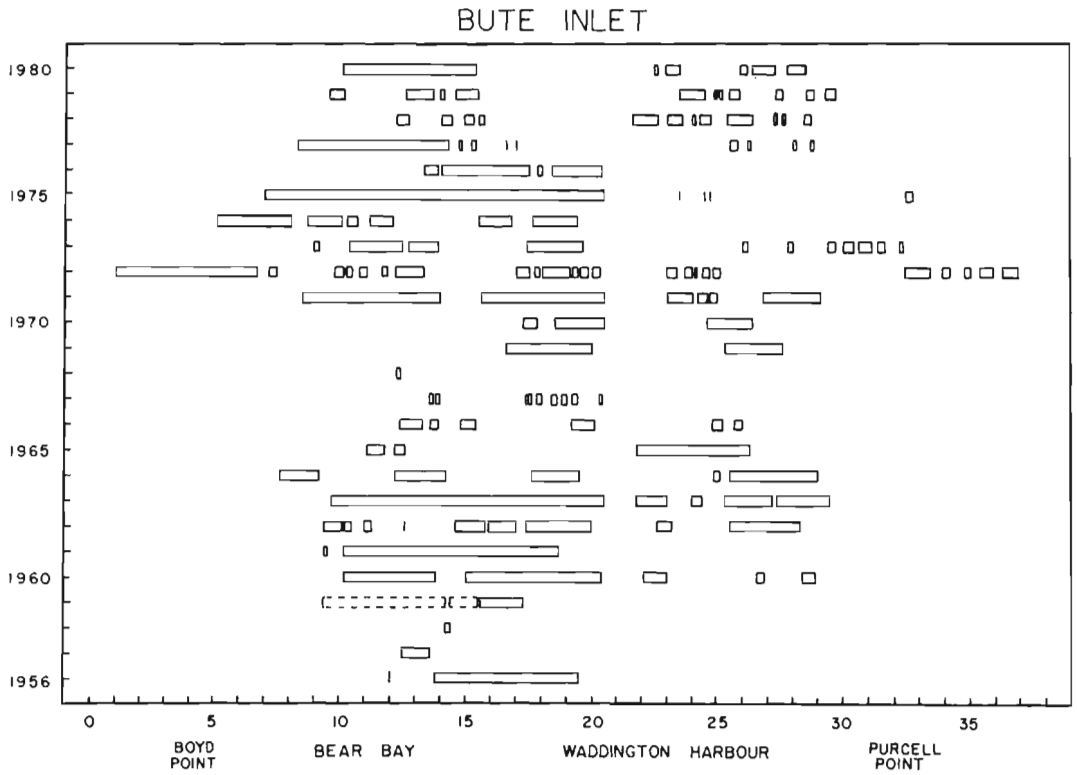

LOUGHBOROUGH INLET
1980
1975
1970
1965
1960
1956
0
5
10
PYM POINT
FRAZER BAY
HEARD POINT
COOPER REACH

Bute Inlet

Herring have spawned along both sides of Bute Inlet during the entire study period. There has been considerable variation in the amount of shoreline utilized for spawning. In some years (1958, 1968) there was less than one mile of spawn reported, while in other years (early 1960s and early 1970s) over 10 miles of spawn were reported. There have been small, infrequent roe catches made in Bute Inlet.

Year	Tons roe catch		
	GN	SN	TOT
1972	-	10	10
1975	-	157	157

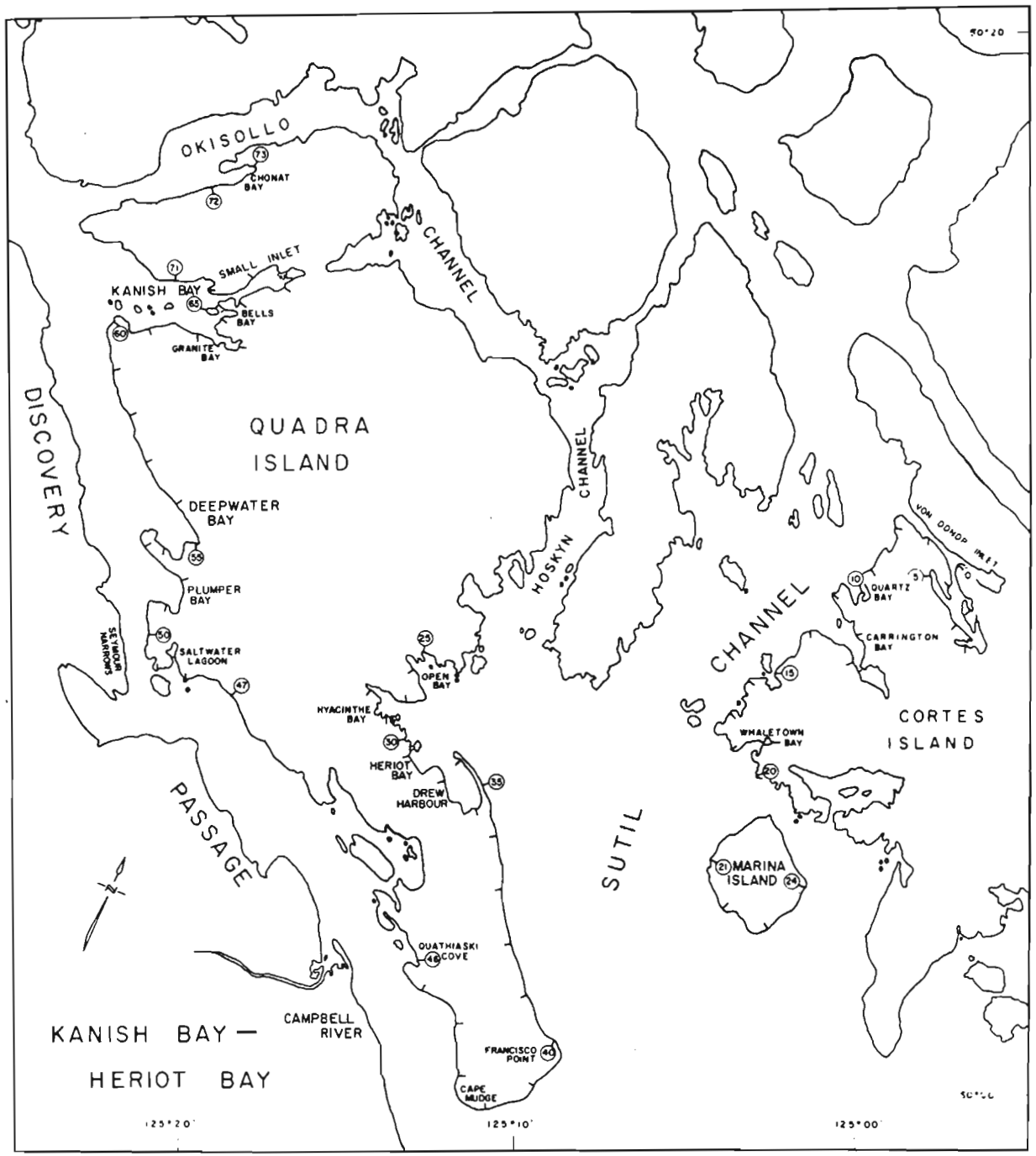

BUTE INLET
POTATO POINT
20
WADDINGTON HARBOUR
50°55'
HAMILTON POINT
25
WARD POINT
15
LITTLETON POINT
50°50'
30
BEAR BAY
PURCELL POINT
10
MELLERSH POINT
35
50°45'
38
5
BOYD POINT
0
125°00'
124°50'

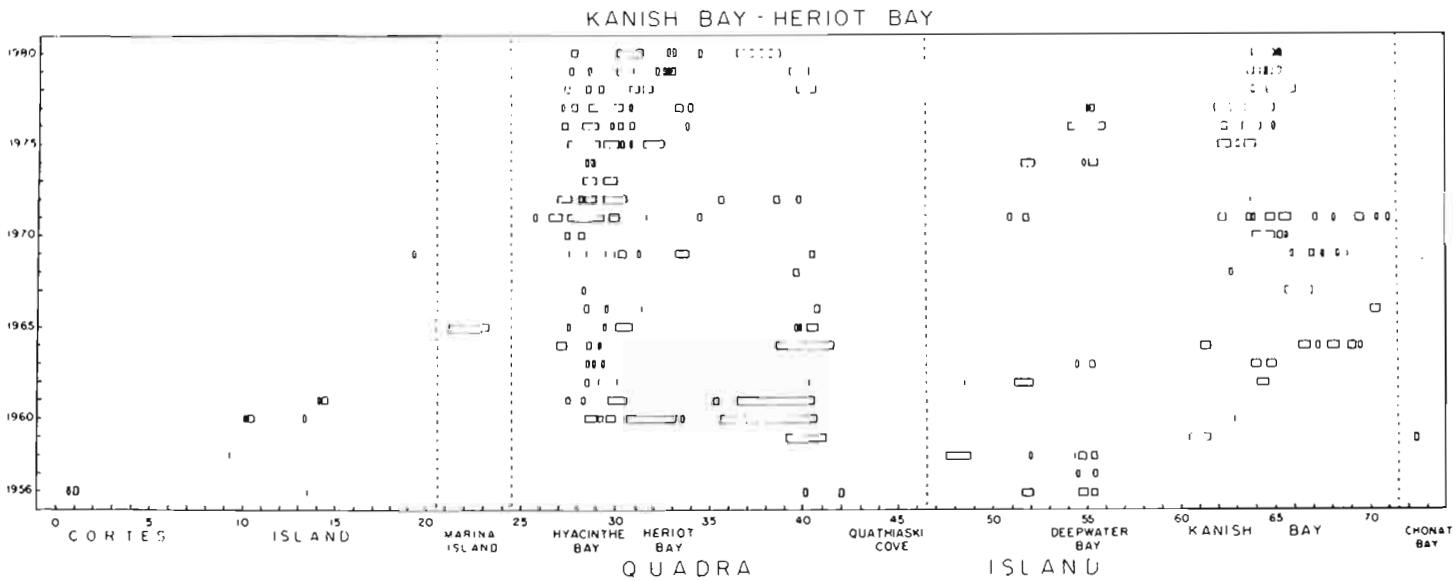

BUTE INLET
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
BOYD POINT
BEAR BAY
WADDINGTON HARBOUR
PURCELL POINT

Kanish Bay-Heriot Bay

On the shoreline of Quadra Island, herring regularly spawn in and near Heriot Bay and in Kanish Bay. Frequently, spawn is also reported on the more exposed shoreline between Rebecca Spit and Francisco Point and in Plumper and Deepwater bays. There have also been infrequent reports of spawn on the northwest shore of Cortes Island and on the south shore of Marina Island. There have been catches made in Kanish, Deepwater and Heriot bays in the early years of the roe fishery.

Year	Tons roe catch		
	GN	SN	TOT
1971	-	343	343
1972	3	1302	1305
1973	23	276	299
1974	4	468	472
1975	-	210	210
1976	-	166	166


OKISOLLO
CHONAT BAY
CHANNEL
SMALL INLET
KANISH BAY
BELLS BAY
GRANITE BAY
DISCOVERY
PASSAGE
QUADRA ISLAND
DEEPWATER BAY
PLUMPER BAY
SEYMOUR NARROWS
SALTWATER LAGOON
HOSKYN CHANNEL
OPEN BAY
HYACINTHE BAY
HERIOT BAY
DREW HARBOUR
QUATHIASKI COVE
CAMPBELL RIVER
KANISH BAY — HERIOT BAY
FRANCISCO POINT
CAPE MUDGE
SUTIL CHANNEL
VON DONOP INLET
QUARTZ BAY
CARRINGTON BAY
WHALETOWN BAY
CORTES ISLAND
MARINA ISLAND
50°20'
125°20'
125°10'
125°00'


KANISH BAY - HERIOT BAY
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
CORTES ISLAND
MARINA ISLAND
HYACINTHE BAY
HERIOT BAY
QUATHIASKI COVE
DEEPWATER BAY
KANISH BAY
CHONAT BAY
QUADRA ISLAND

STRAIT OF GEORGIA

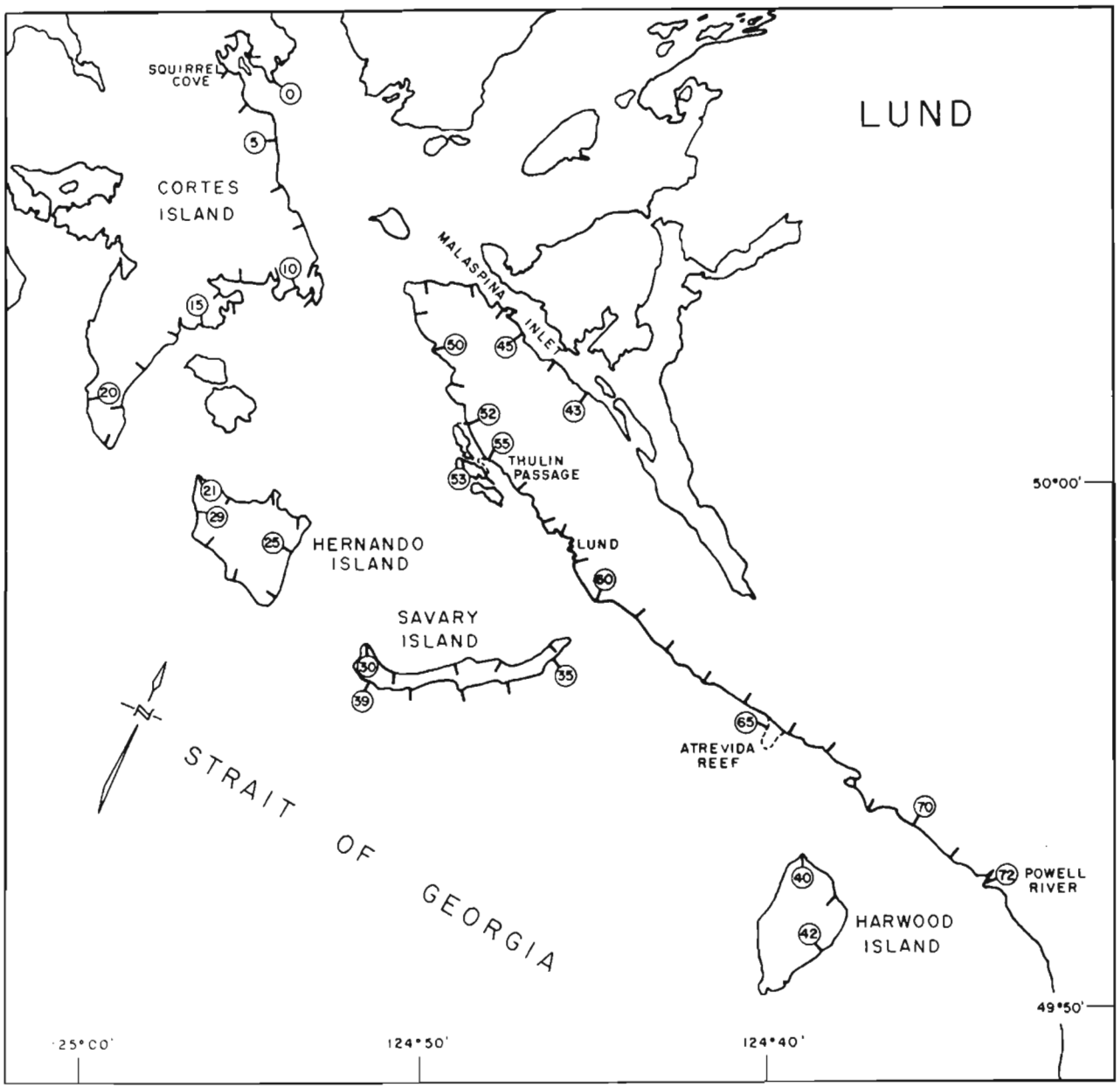
The Strait of Georgia has been separated into the mainland and Vancouver Island shore for the purposes of this study. About two-thirds of the total Strait of Georgia spawn is deposited on the Vancouver Island side and it is here that the roe fisheries, which have averaged 6,500 tons and have ranged between 1,300 and 13,000 tons have operated.

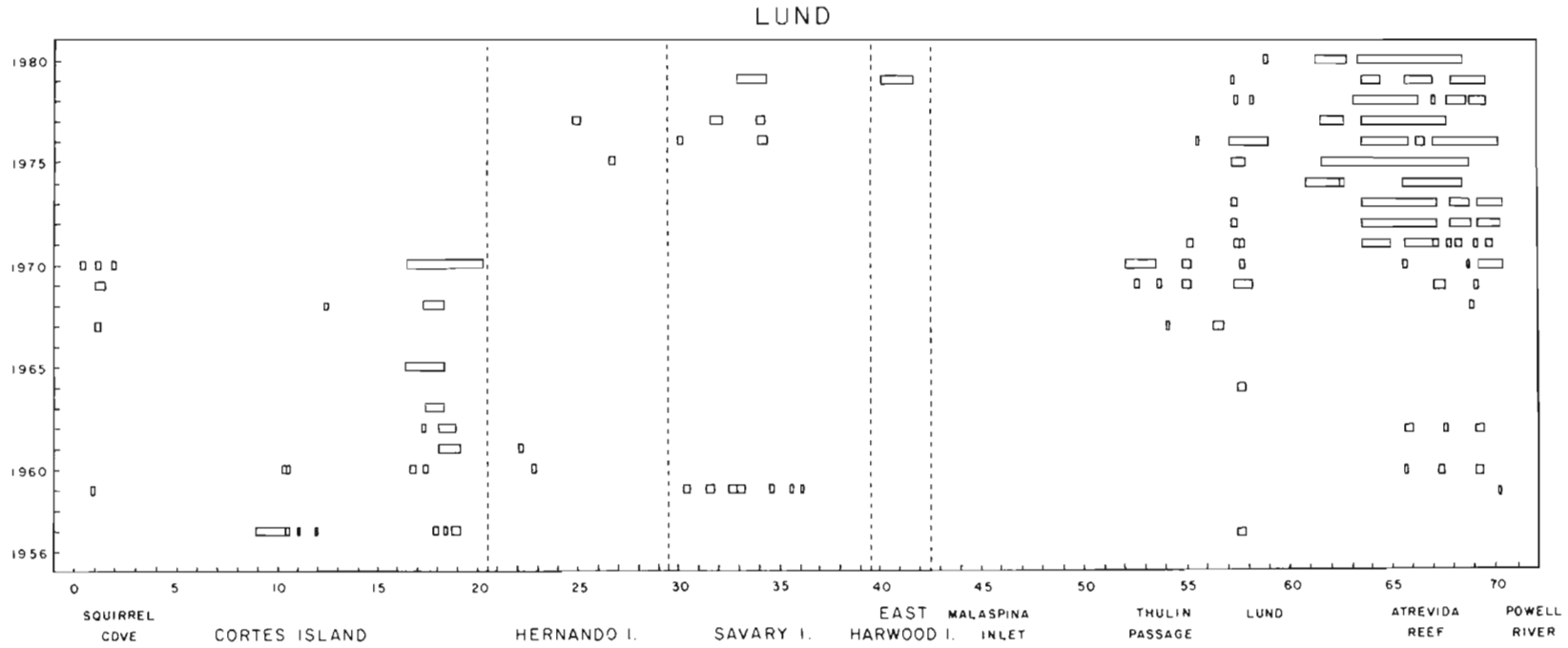
STRAIT OF GEORGIA - MAINLAND SHORE

In recent years, the focus of herring spawn on the mainland shore of the Strait of Georgia has been in the Lund and Powell River area. There had been considerable spawns in the Sechelt Inlet, Pender Harbor and Howe Sound areas prior to 1970, but recently the level of spawn has been very low there. Near the Fraser River estuary there have been no spawns recorded during the study period, except in Boundary Bay. The average yearly deposition along this coastline was 25 km and 227 km of coastline were utilized for spawning during the study period. There have been major roe fishery on the mainland shore of the Strait of Georgia.

Lund

Herring have spawned yearly since 1969 along much of the shoreline between Thulin Passage and Powell River. Prior to that time, only small spawns were infrequently recorded here. Prior to 1970 and not since then, herring spawned frequently on the southeast shore of Cortes Island. Herring have also spawned occasionally on the shores of Hernando, Savary, and East Harwood islands. There have been no significant roe herring catches made in this area.

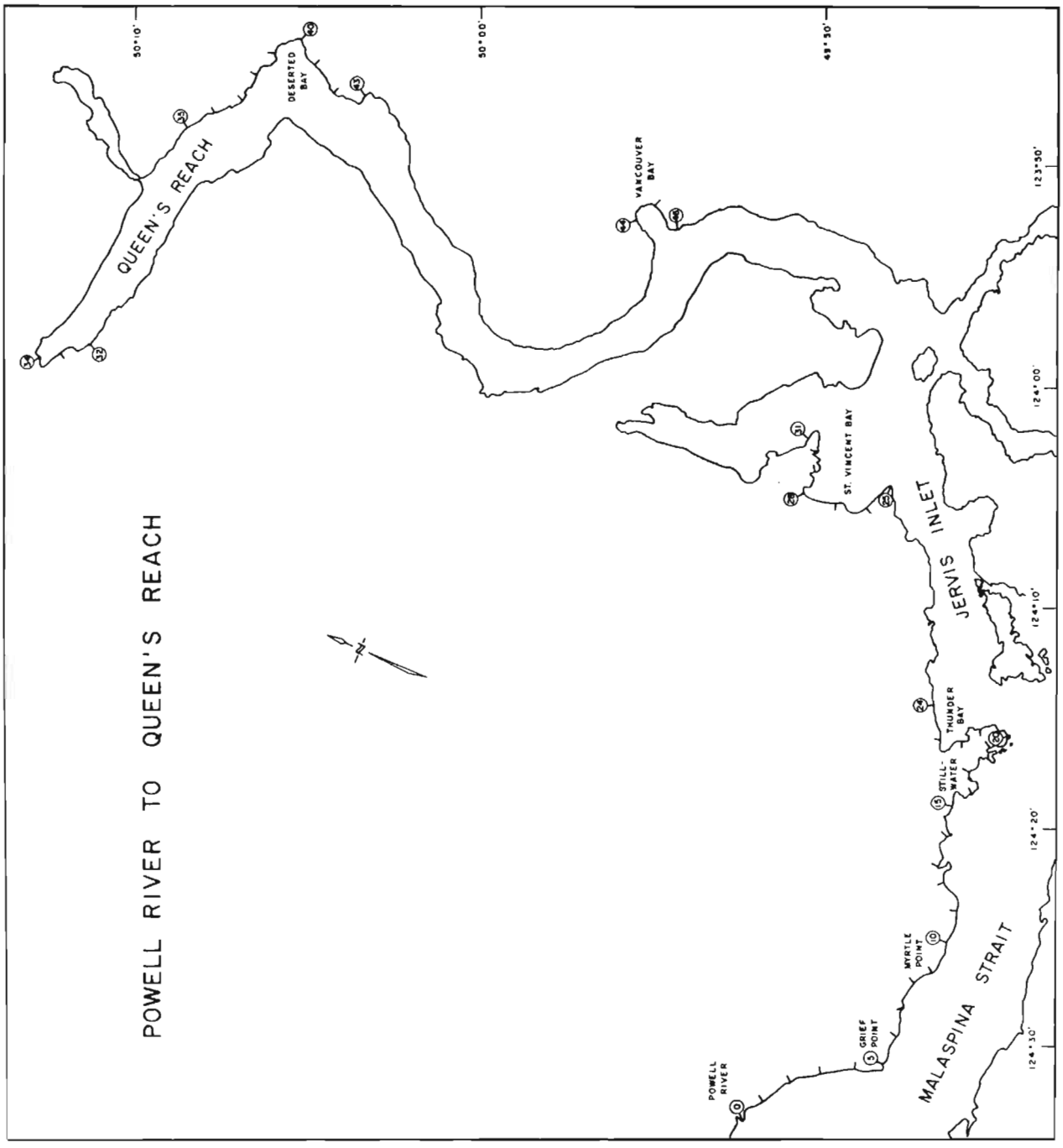

SQUIRREL COVE
0
5
CORTES ISLAND
10
15
20
LUND
MALASPINA INLET
30
45
43
52
55
53
THULIN PASSAGE
21
29
25
HERNANDO ISLAND
LUND
80
SAVARY ISLAND
30
35
39
65
ATREVIDA REEF
70
72
POWELL RIVER
40
42
HARWOOD ISLAND
STRAIT OF GEORGIA
50°00'
49°50'
125°00'
124°50'
124°40'

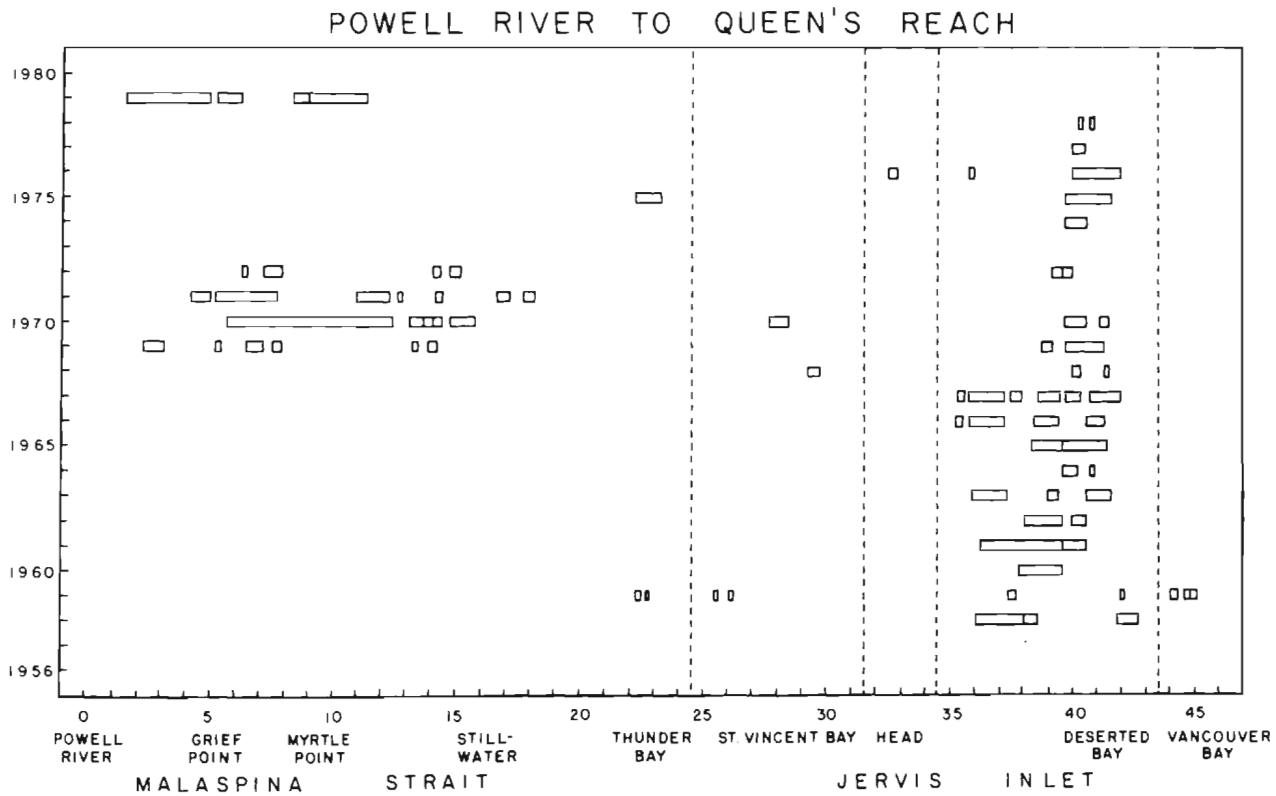

LUND
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
SQUIRREL COVE
CORTES ISLAND
HERNANDO I.
SAVARY I.
EAST HARWOOD I.
MALASPINA INLET
THULIN PASSAGE
LUND
ATREVIDA REEF
POWELL RIVER

Powell River to Queen's Reach

In Jervis Inlet, there has been only one location where herring have spawned with any consistency -- the shoreline in and near Deserted Bay. For four years between 1969 and 1973 and in 1979 herring spawned along the shoreline between Powell River and Stillwater. Occasionally, herring have also spawned in Thunder, St. Vincent and Vancouver bays and at the head of Queen's Reach. There has been only one major roe fishery in this area, when 1600 tons were taken by seine near Grief Point in 1972.

Year	Tons roe catch		
	GN	SN	TOT
1971	-	40	40
1972	-	1613	1613
1973	264	-	264

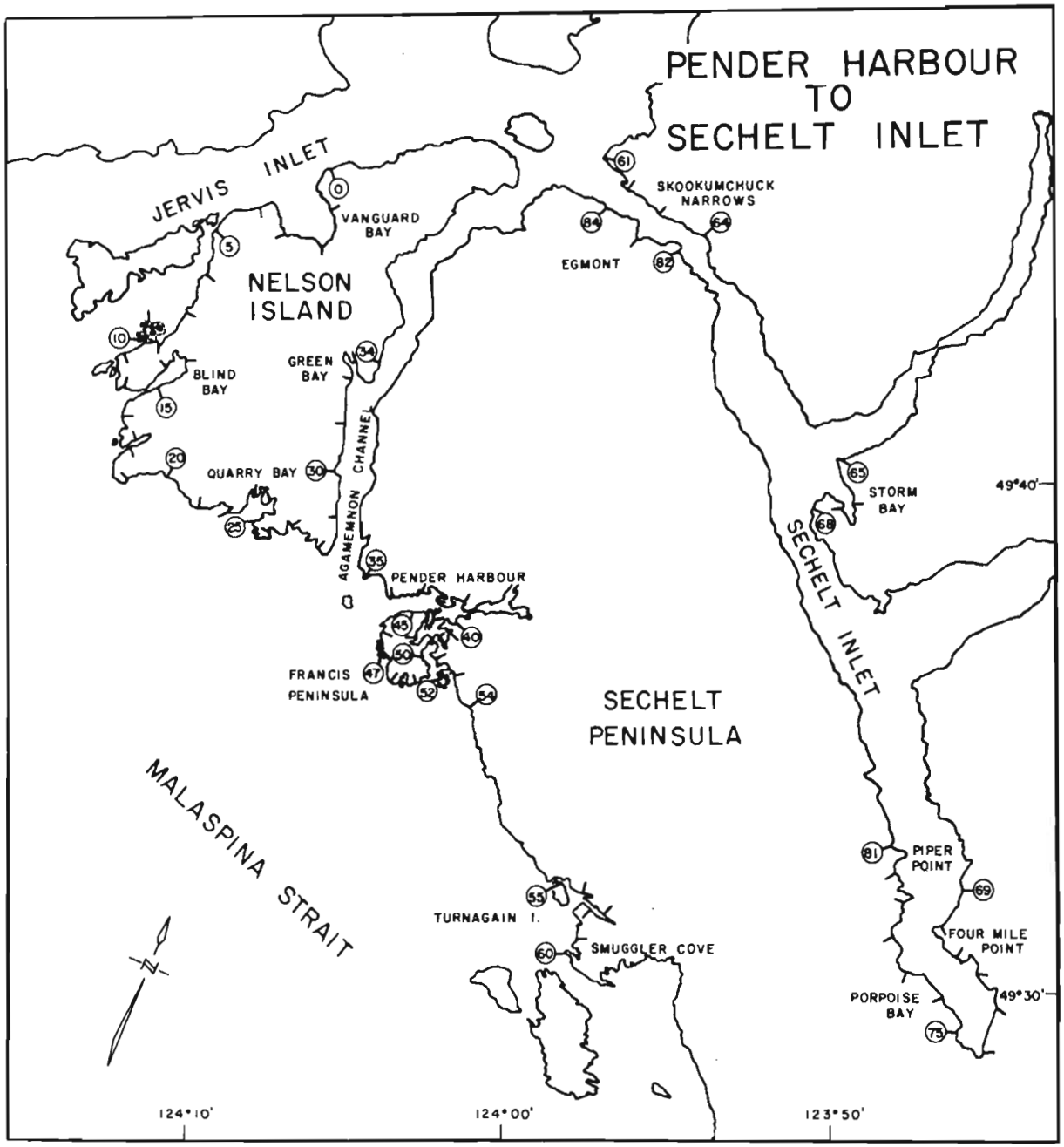

POWELL RIVER TO QUEEN'S REACH
QUEEN'S REACH
DESERTED BAY
VANCOUVER BAY
ST. VINCENT BAY
JERVIS INLET
THUNDER BAY
STILL-WATER
MYRTLE POINT
GRIEF POINT
POWELL RIVER
MALASPINA STRAIT
50°10'
50°00'
49°50'
124°00'
124°10'
124°20'
124°30'
123°50'

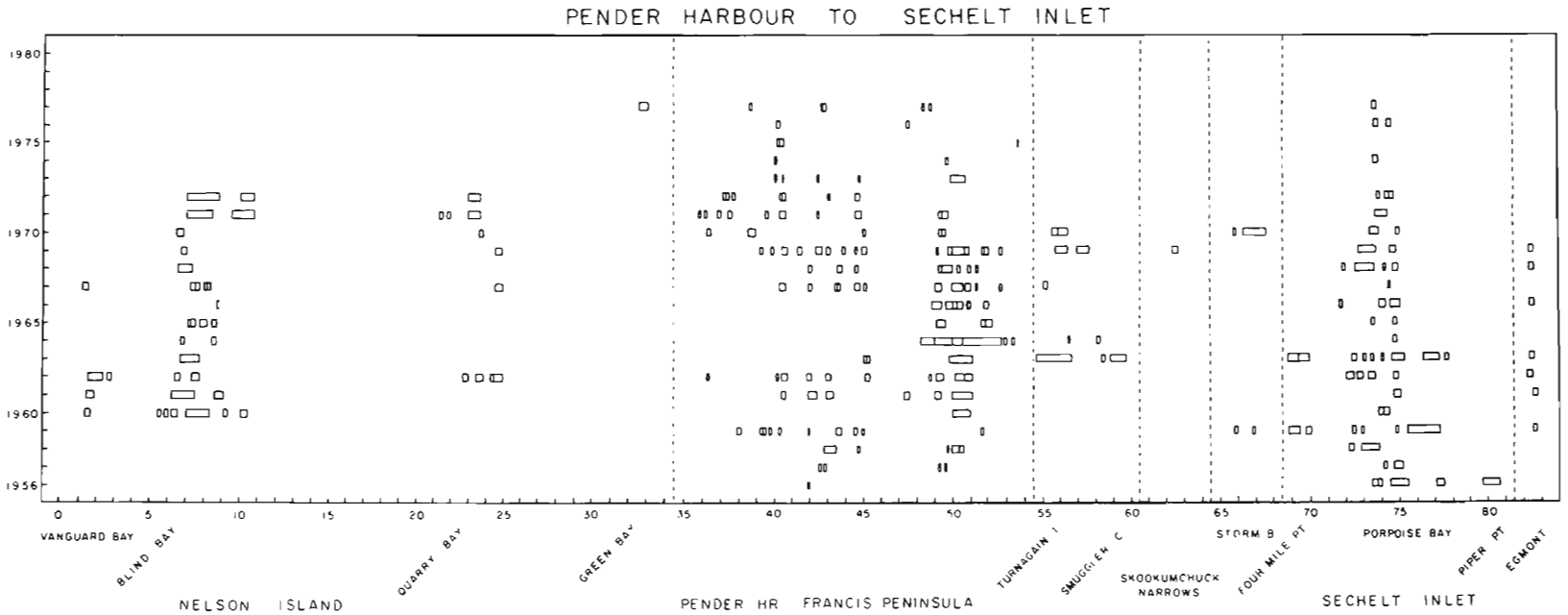

POWELL RIVER TO QUEEN'S REACH
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
POWELL RIVER
GRIEF POINT
MYRTLE POINT
STILL-WATER
THUNDER BAY
ST. VINCENT BAY
HEAD
DESERTED BAY
VANCOUVER BAY
MALASPINA STRAIT
JERVIS INLET

Pender Harbor to Sechelt Inlet

The distribution and magnitude of spawn was quite constant for this area until 1972. Herring regularly spawned in and near Blind and Quarry bays, in Pender Harbor and along Francis Peninsula, and in and near Porpoise Bay. Since 1972, there have been only very small spawns at some of these locations. There were small roe fisheries here for only two years.

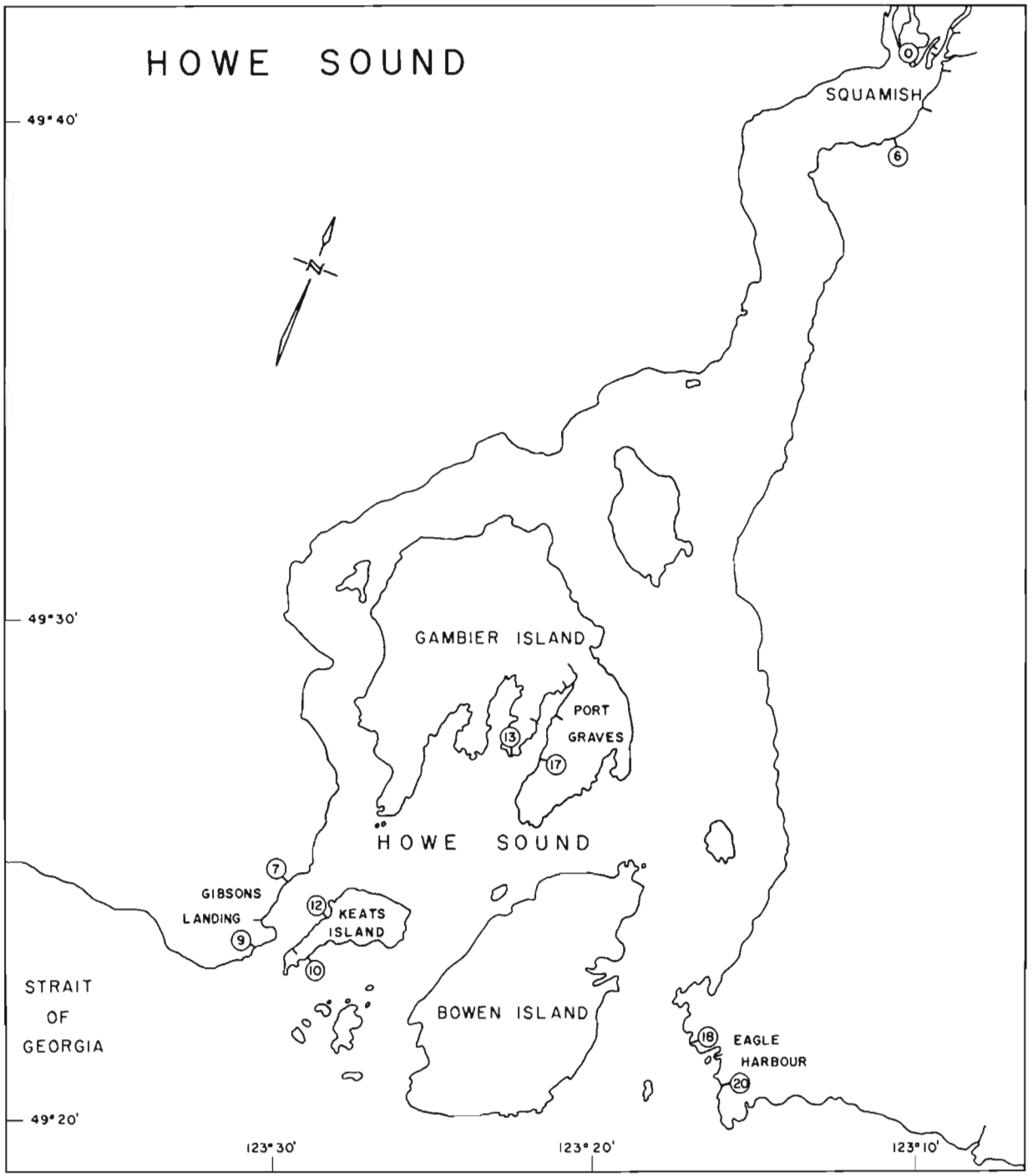
Year	Tons roe catch		
	GN	SN	TOT
1971	2	158	160
1972	-	69	69

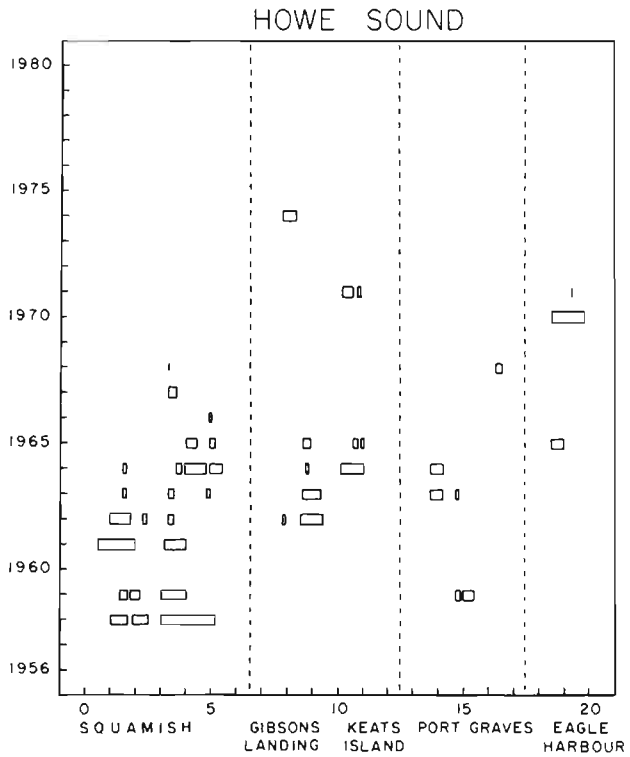

PENDER HARBOUR
TO
SECHELT INLET
JERVIS INLET
VANGUARD BAY
SKOOKUMCHUCK NARROWS
EGMONT
NELSON ISLAND
BLIND BAY
GREEN BAY
AGAMEMNON CHANNEL
QUARRY BAY
STORM BAY
49°40'
SECHELT INLET
PENDER HARBOUR
FRANCIS PENINSULA
SECHELT PENINSULA
MALASPINA STRAIT
TURNAGAIN I.
SMUGGLER COVE
PIPER POINT
FOUR MILE POINT
PORPOISE BAY
49°30'
124°10'
124°00'
123°50'


PENDER HARBOUR TO SECHELT INLET
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
VANGUARD BAY
BLIND BAY
QUARRY BAY
GREEN BAY
TURNAGAIN I
SMUGGLER C
SKOOKUMCHUCK NARROWS
STORM B
FOUR MILE PT
PORPOISE BAY
PIPER PT
EGMONT
NELSON ISLAND
PENDER HR
FRANCIS PENINSULA
SECHELT INLET

Howe Sound

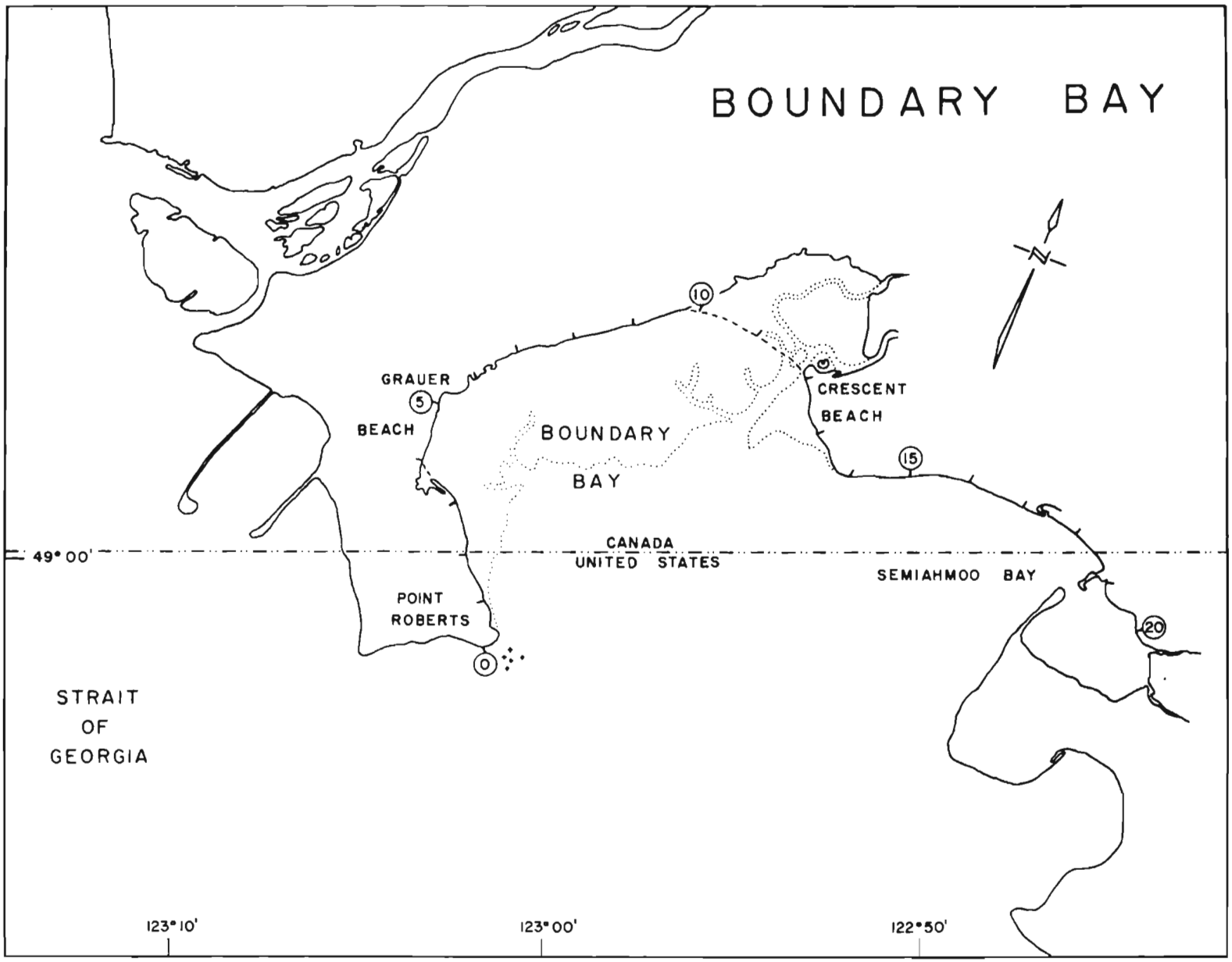
After 1965 there have been only infrequent reports of small spawns in Howe Sound. Prior to 1965, herring frequently spawned near Squamish and occasionally at Gibsons Landing and Port Graves. There has been no roe fishery in this area.

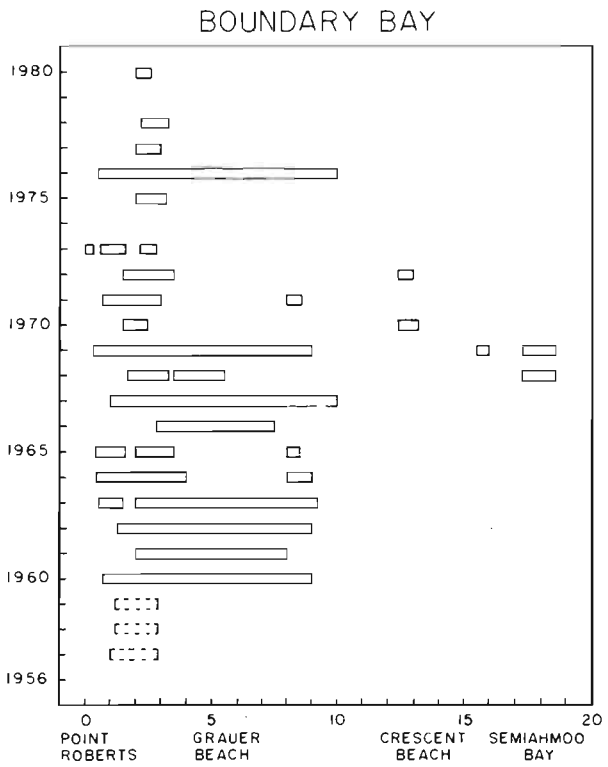

HOWE SOUND
49°40'
49°30'
49°20'
123°30'
123°20'
123°10'
SQUAMISH
6
GAMBIER ISLAND
PORT
GRAVES
13
17
HOWE SOUND
7
GIBSONS
LANDING
9
12
KEATS
ISLAND
10
STRAIT
OF
GEORGIA
BOWEN ISLAND
18
EAGLE
HARBOUR
20


HOWE SOUND
1980
1975
1970
1965
1960
1956
0
5
10
15
20
SQUAMISH
GIBSONS LANDING
KEATS ISLAND
PORT GRAVES
EAGLE HARBOUR

Boundary Bay

Spawns in Boundary Bay are probably not well documented and for the three years for which there were no records, there probably was some spawn. The fish that spawn here are most likely part of the stock that spawns between Point Roberts and Point Whitehorn and although there has been no Canadian roe fishery here there have been roe fisheries in adjacent American waters.


BOUNDARY BAY
N
10
GRAUER
5
BEACH
BOUNDARY
BAY
CRESCENT
BEACH
15
49° 00'
CANADA
UNITED STATES
SEMIAHMOO BAY
POINT
ROBERTS
0
20
STRAIT
OF
GEORGIA
123° 10'
123° 00'
122° 50'


BOUNDARY BAY
1980
1975
1970
1965
1960
1956
0
5
10
15
20
POINT ROBERTS
GRAUER BEACH
CRESCENT BEACH
SEMIAHMOO BAY

STRAIT OF GEORGIA - VANCOUVER ISLAND SHORE

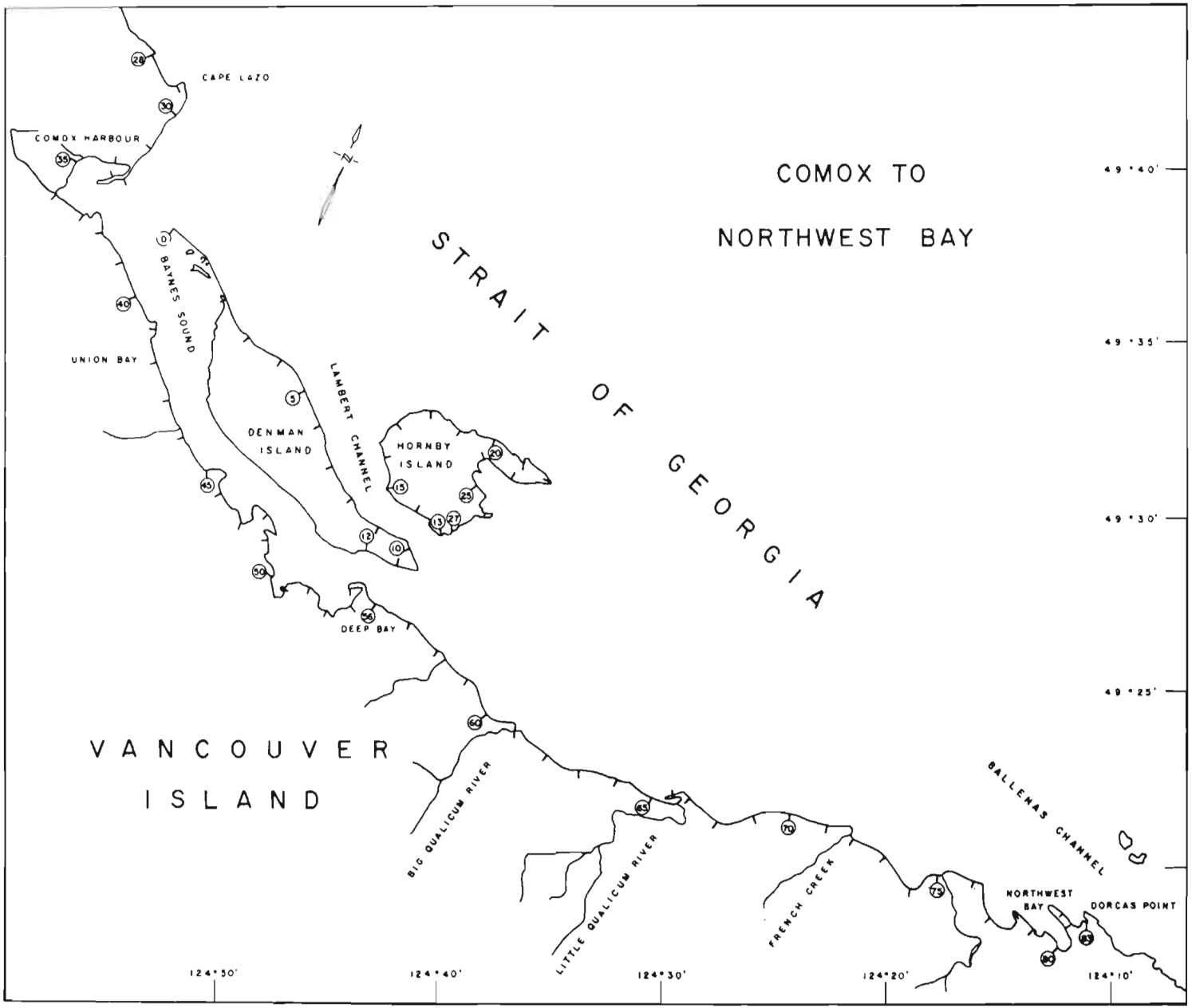
Herring that spawn on the west side of the Strait of Georgia have utilized 325 km of shoreline during the 25 years of the study period. The average amount of coastline utilized for spawning is 61 km per year. In general, most of the spawn has been deposited on the Vancouver Island shore between Comox and Ladysmith harbors, and on the shores of the larger islands: Denman, Hornby, Thetis, Kuper, and Saltspring. There do not appear to have been any major shifts in spawn locations over the 25 years. What appears to have happened is that in the late 1960s spawn levels were at a very low point and, after 1970, spawning locations that had been regularly used prior to 1965 were repopulated. There also appears to have been some genuine expansion of spawning sites, most notably Lambert Channel, Parksville Bay and adjacent shorelines, and Thetis and Kuper islands. The major roe fisheries in the Strait of Georgia have been concentrated in Lambert Channel, French Creek, Nanoose Bay, and Ganges Harbor.

Comox to Northwest Bay

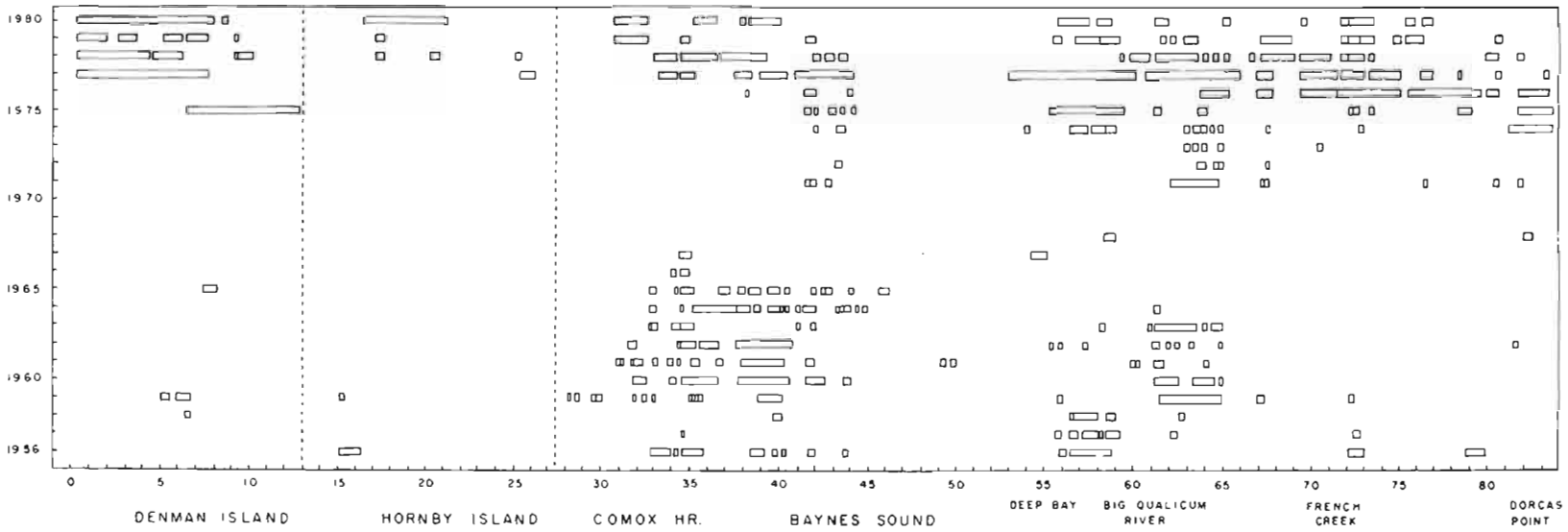
After the period from 1966 to 1973, when the level of spawn in this area was very low, herring returned to spawn regularly at all of the locations utilized regularly for spawning prior to that period: Comox Harbor, Baynes Sound, and Deep Bay to Little Qualicum River. Additionally, locations which had been used infrequently for spawning before 1966 were being used on a regular basis after 1973: Lambert Channel, Qualicum Beach to Craig Bay, and Northwest and Nuttall bays.

There have been substantial roe fisheries, mainly by gillnet, in this area since 1976. In 1976, most of the catch was taken by gillnets fishing between Northwest Bay and French Creek. In 1977, 40% of the catch was also taken by gillnet in this section, 25% by gillnet near the Big Qualicum River, and 35% by seine between Deep Bay and French Creek. In 1978, all of the catch was taken by gillnet in Northwest Bay. In 1979, 50% of the catch was made by gillnet between Northwest Bay and French Creek, 35% by gillnet in Lambert Channel, and the remainder north of French Creek by gillnet. In 1980, 97% of the catch was made by gillnet in Lambert Channel, with only a few fish entering Northwest Bay, where the other gillnet opening occurred. The shoreline between Northwest Bay and French Creek had the heaviest fishing pressure by gillnet in the earlier years of the roe fishery here, while in later years the gillnet fishing has shifted to Lambert Channel. It is of interest that the locations fished by gillnet most frequently are also recent spawning sites, while traditional spawning sites have not been heavily fished by gillnet and presently support about the same level of spawn as in the late 1950s and early 1960s.

Year	Tons roe catch		
	GN	SN	TOT
1975	285	-	285
1976	4638	21	4659
1977	7469	4022	11491
1978	1781	-	1781
1979	7418	-	7418
1980	3502	187	3689


COMOX TO
NORTHWEST BAY
STRAIT OF GEORGIA
VANCOUVER ISLAND
CAPE LAZO
COMOX HARBOUR
UNION BAY
BAYNES SOUND
DENMAN ISLAND
LAMBERT CHANNEL
HORNBY ISLAND
DEEP BAY
BIG QUALICUM RIVER
LITTLE QUALICUM RIVER
FRENCH CREEK
BALLENAS CHANNEL
NORTHWEST BAY
DORCAS POINT
49°40'
49°35'
49°30'
49°25'
124°50'
124°40'
124°30'
124°20'
124°10'

COMOX TO NORTHWEST BAY

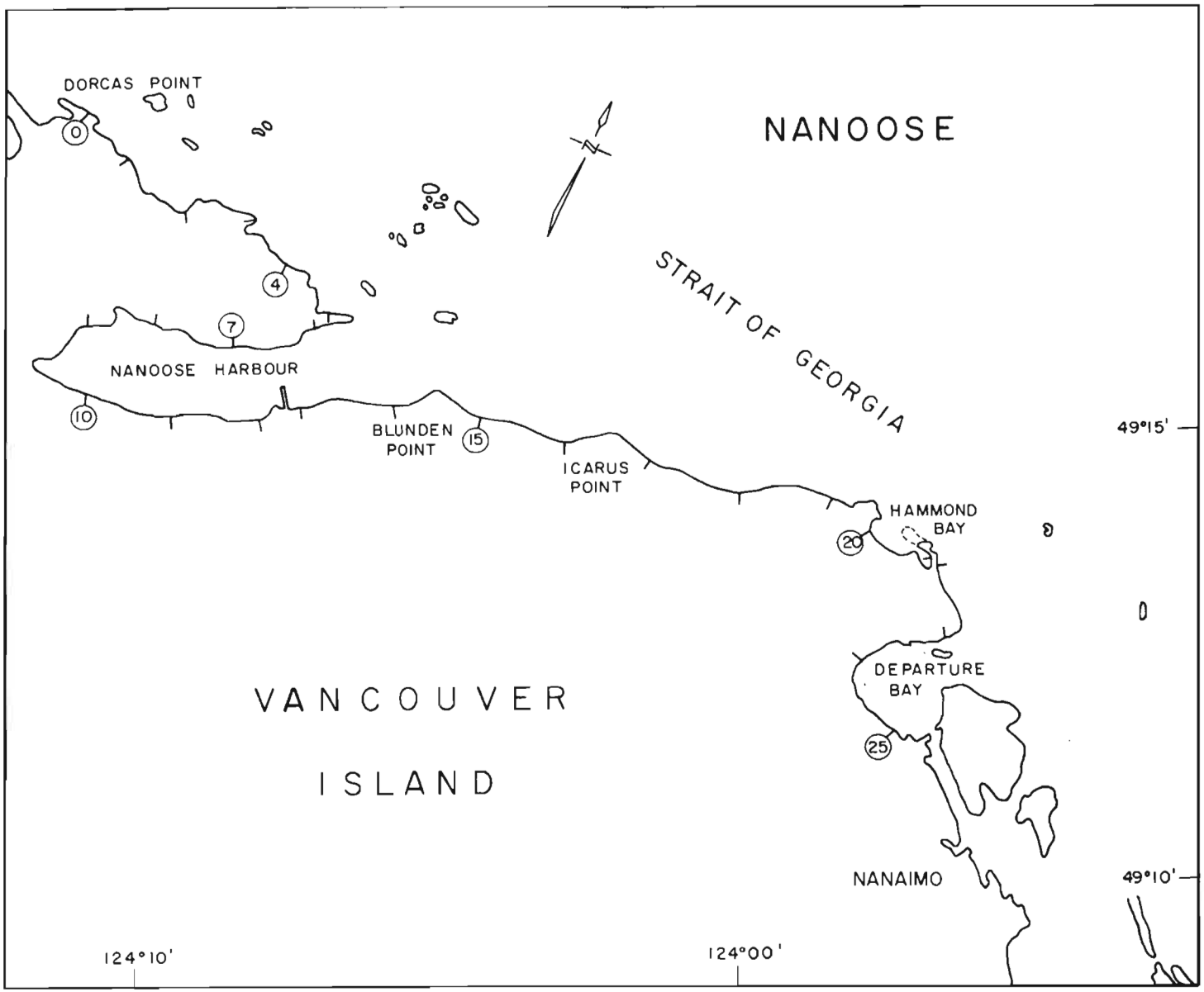


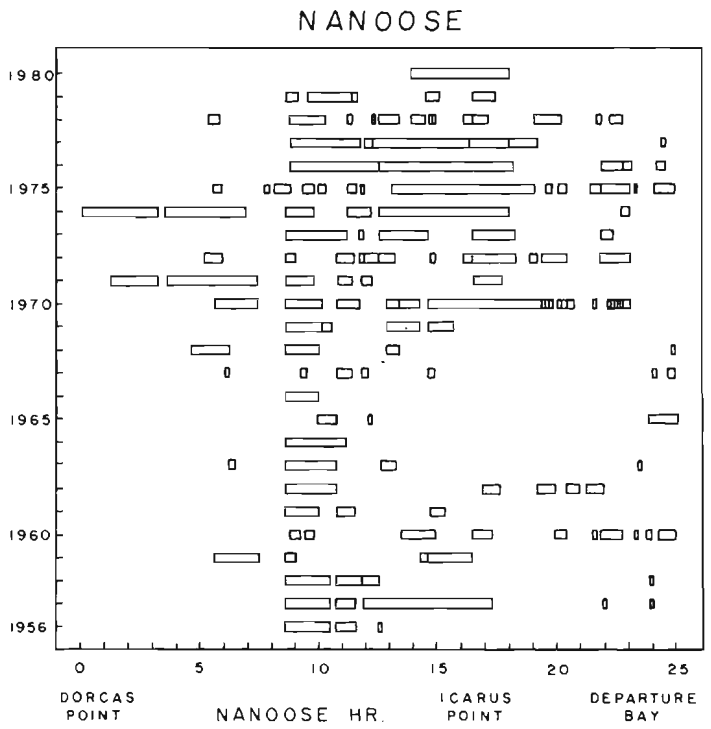
Nanoose

There has been spawn reported for portions of the shoreline between the head of Nanoose Bay and the breakwater for every year of the study period, except the last. During years of low levels of spawn (mid 1960s), this was virtually the only location where spawn was recorded. In years of higher spawn abundance, and especially since 1970, herring have also spawned regularly along the shoreline between the Nanoose Bay breakwater and Neck Point. Occasionally, herring have also spawned between Hammond Bay and Departure Bay and between Ranch Point and Wallis Point. In only two years has there been spawn reported for the shoreline between Dorcas and Wallis points.

There have been catches made in this area since the inception of the roe fishery and until 1978, when a record 9,400 tons were landed. Gillnet fisheries were frequently more successful than seine fisheries because quite often spent fish were mixed with ripe fish when roe yields from the latter were sufficiently high to consider a seine fishery. The seine and gillnet fisheries generally occurred within Nanoose Bay although in some years, when the weather was good, the gillnets operated near Icarus, Blunden and Neck points, and, in one year, as far southeast as Departure Bay. The favored gillnet fishing location was always at the head of Nanoose Bay, probably because the waters were sheltered and herring predictably spawned here. Despite this yearly presence of the gillnet gear, herring spawned every year at the head of Nanoose Bay. Only in 1980, when spawning levels in the area had been considerably reduced from levels in the mid 1970s and there had been no fishery for the two years after the record catch of 9,400 tons, was there no spawn recorded for the head of Nanoose Bay.

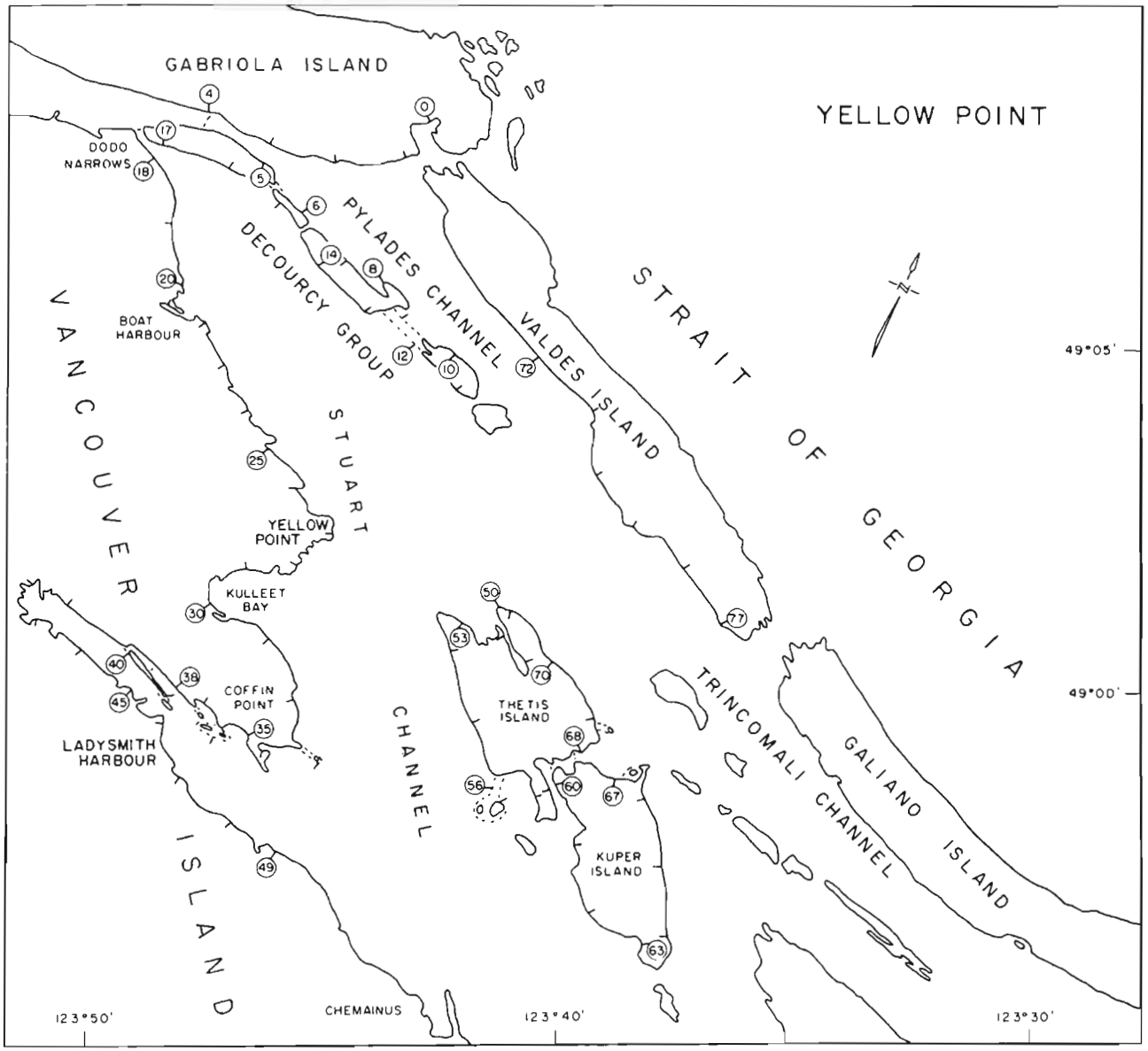
Year	Tons roe catch		
	GN	SN	TOT
1971	-	490	490
1972	-	2988	2988
1973	1260	1492	2752
1974	2883	-	2883
1975	4136	242	4378
1976	1917	-	1917
1977	274	-	274
1978	5254	4102	9356

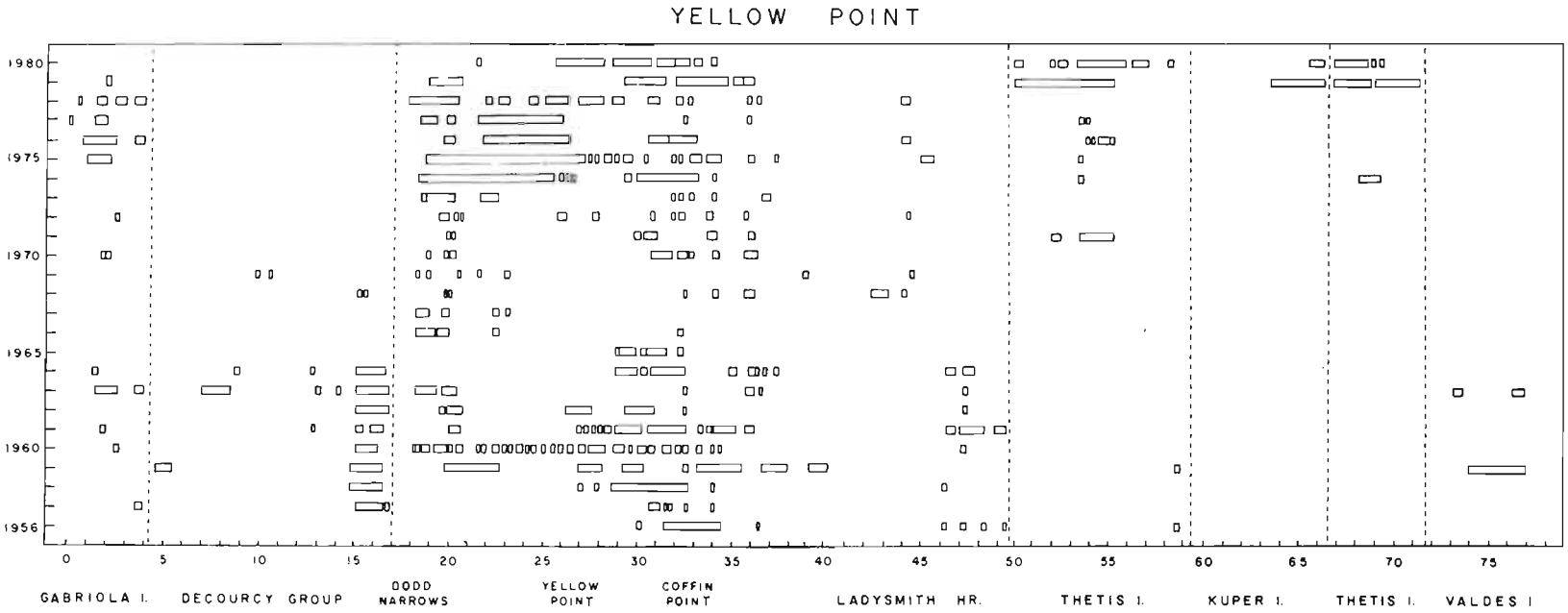

DORCAS POINT
0
NANOOSE
4
7
NANOOSE HARBOUR
10
BLUNDEN POINT
15
ICARUS POINT
STRAIT OF GEORGIA
49°15'
HAMMOND BAY
20
DEPARTURE BAY
25
VANCOUVER ISLAND
NANAIMO
49°10'
124°10'
124°00'


NANOOSE
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
DORCAS POINT
NANOOSE HR.
ICARUS POINT
DEPARTURE BAY

Yellow Point

The focus of herring spawns in this area has been the shoreline on Vancouver Island between Dodd Narrows and Coffin Point. In the period 1965-1970, when levels of spawn were at their lowest, this was virtually the only location for which spawn was reported. Prior to that period, but not since then, herring also spawned on the Stuart Channel side of the DeCourcey Group. Since 1970, herring have spawned consistently on Thetis and Kuper islands, while prior to 1970, they spawned there only occasionally. Throughout the study period, herring spawned intermittently on the shore of Gabriola Island near False Narrows and in Ladysmith Harbor. There has been no roe fishery in this area up to 1980.


GABRIOLA ISLAND
YELLOW POINT
DODO NARROWS
PYLADES CHANNEL
DECOURCY GROUP
VALDES ISLAND
STRAIT OF GEORGIA
BOAT HARBOUR
VANCOUVER ISLAND
STUART CHANNEL
YELLOW POINT
KULLEET BAY
COFFIN POINT
LADYSMITH HARBOUR
THETIS ISLAND
KUPER ISLAND
TRINCOMALI CHANNEL
GALIANO ISLAND
CHEMAINUS
49°05'
49°00'
123°50'
123°40'
123°30'

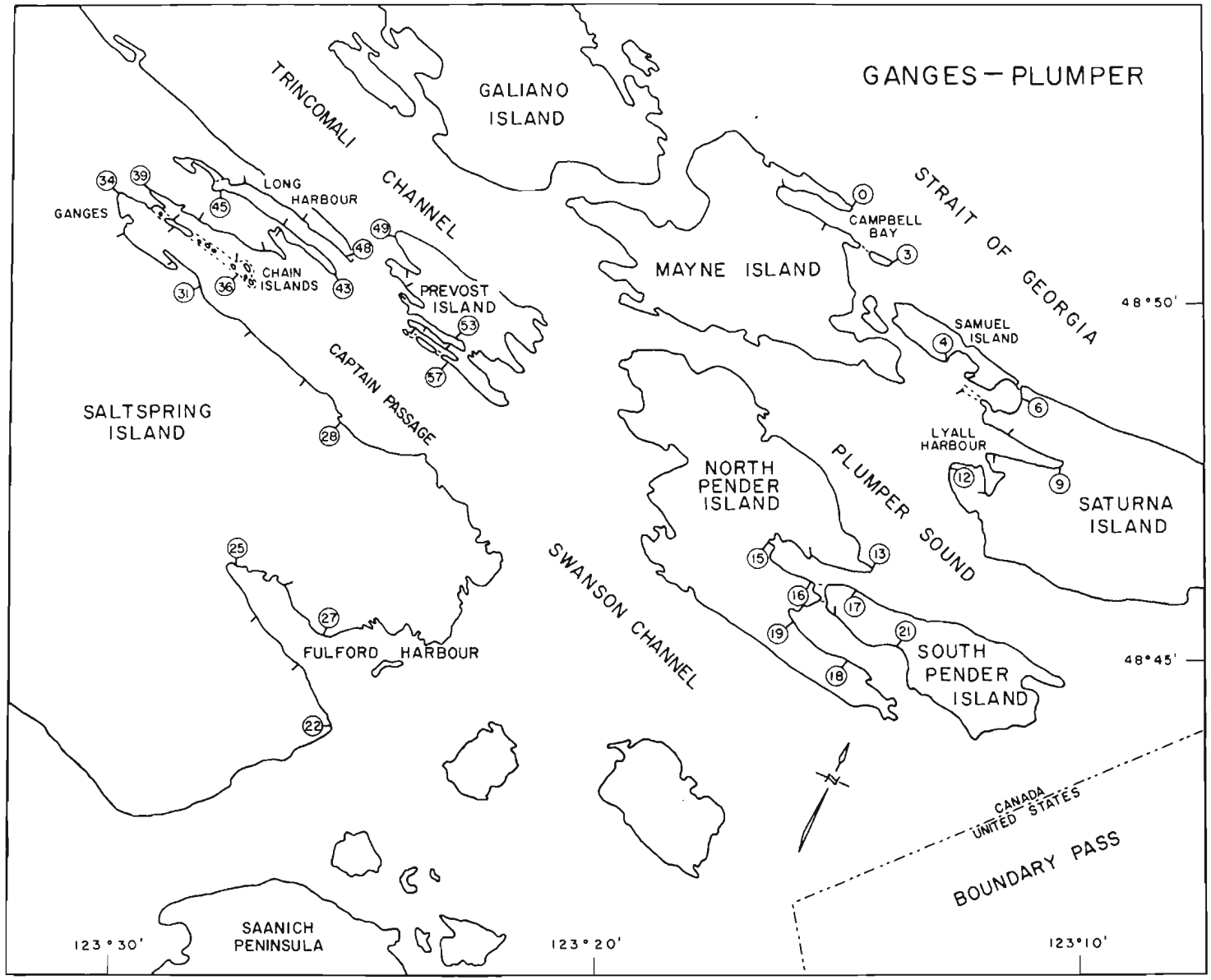

YELLOW POINT
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
GABRIOLA I.
DECOURCY GROUP
DODD NARROWS
YELLOW POINT
COFFIN POINT
LADYSMITH HR.
THETIS I.
KUPER I.
THETIS I.
VALDES I

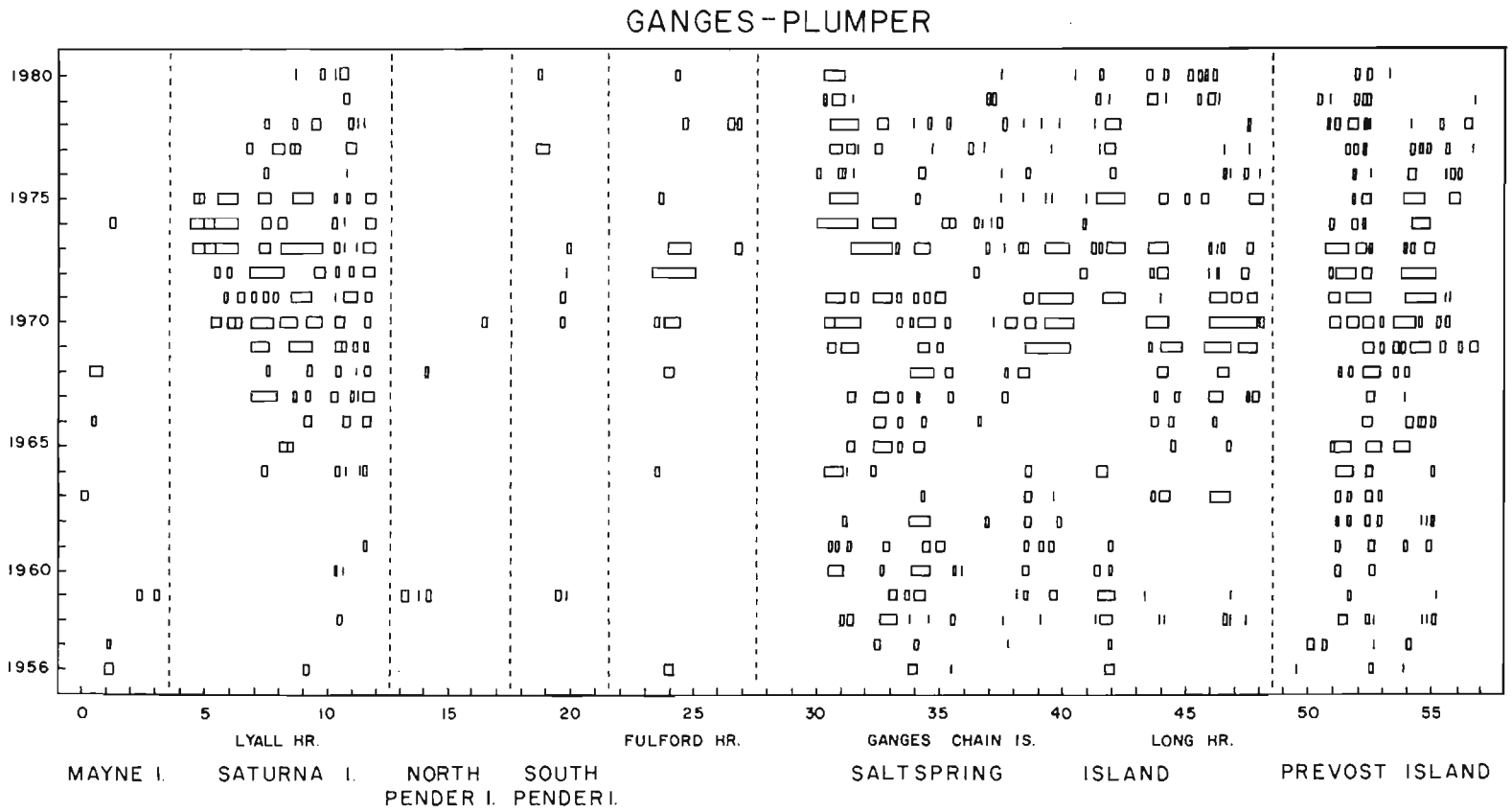
Ganges-Plumper

Herring have spawned every year in Ganges and Long harbors and in the bays and inlets on the west shore of Prevost Island. In the 10 years between 1965 and 1975 there has also been consistent spawning in and near Lyall Harbor. In some years, herring also spawned in Fulford Harbor and Campbell Bay, and along the lower shore of North Pender and the upper shore of South Pender islands. Generally, in this area, herring spawn over a one month period from mid-February to mid-March and individual spawns are usually small and of light intensity.

There have been catches, mostly by gillnet, in the Ganges-Long Harbor and Prevost Island locations for the first eight years of the roe fishery. Quite frequently this fishery was plagued by fish spawning on gillnet web. This complication and indications that a relatively small, non-migrating stock was being fished, led to the area not having opened to roe fishing after 1978.

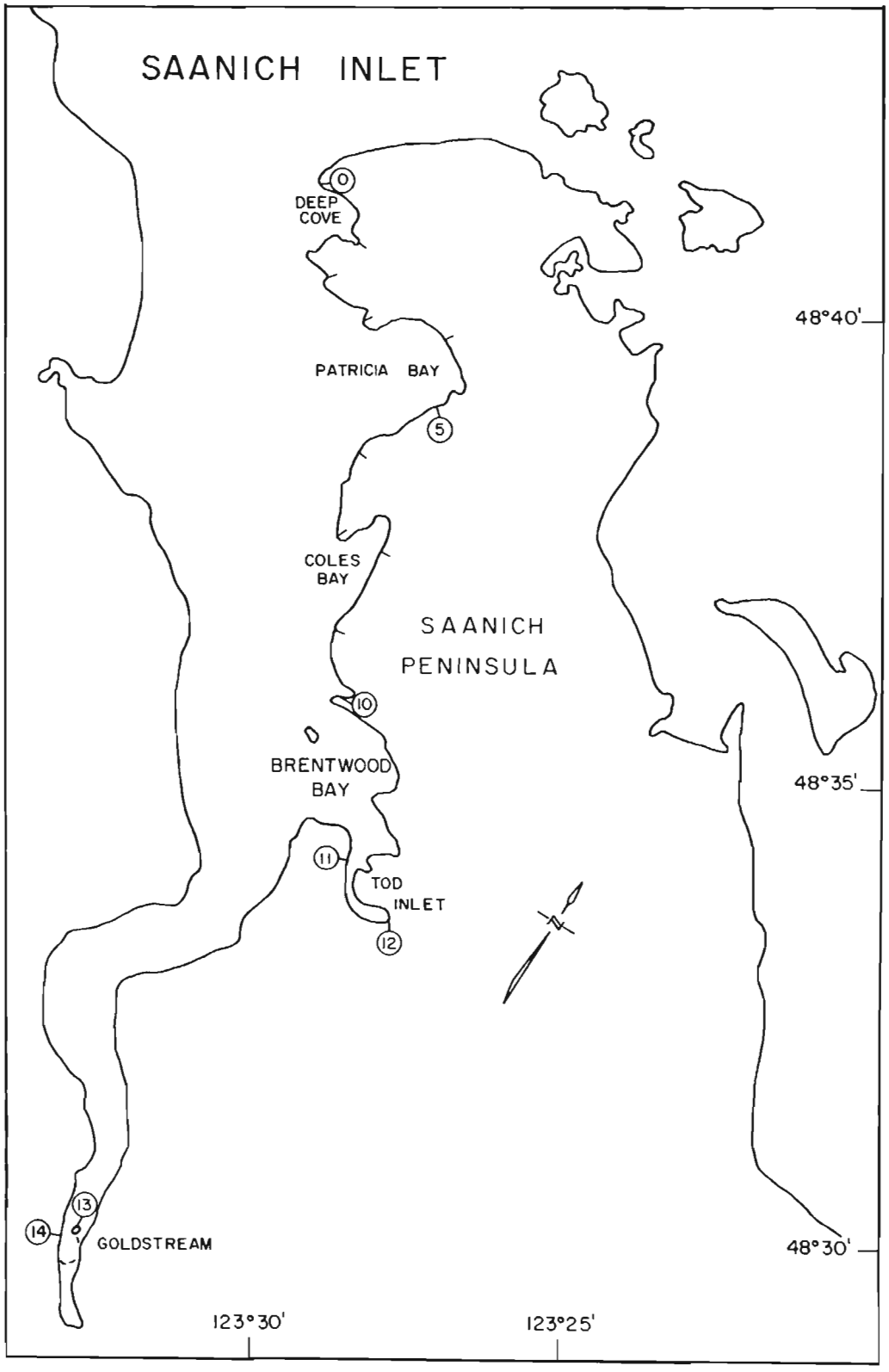
Year	Tons roe catch		
	GN	SN	TOT
1971	84	730	814
1972	148	473	621
1973	702	-	702
1974	522	-	522
1975	807	-	807
1976	716	-	716
1977	761	-	761
1978	936	-	936

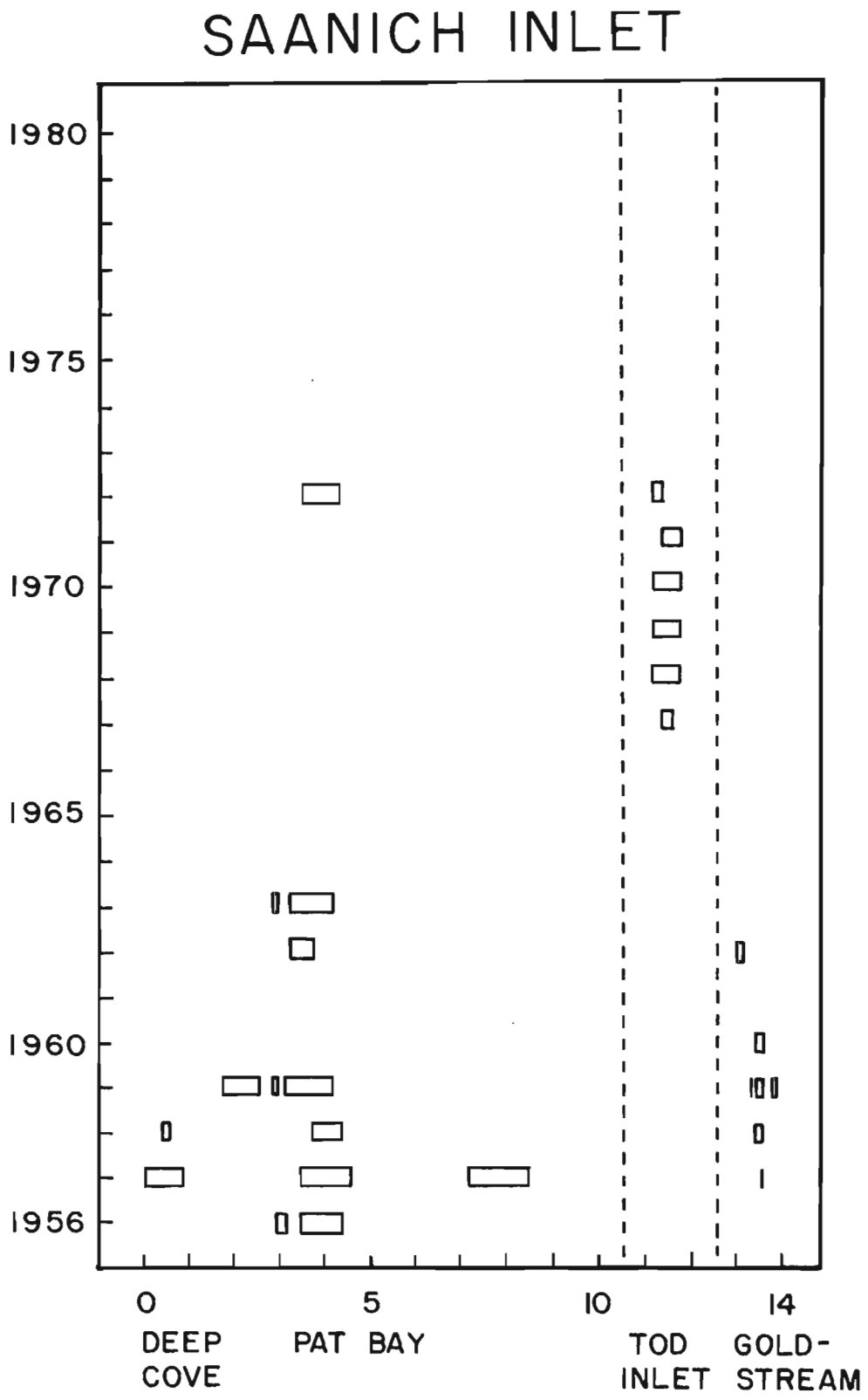

GANGES — PLUMPER
TRINCOMALI CHANNEL
GALIANO ISLAND
STRAIT OF GEORGIA
LONG HARBOUR
GANGES
CHAIN ISLANDS
PREVOST ISLAND
MAYNE ISLAND
CAMPBELL BAY
SAMUEL ISLAND
48°50'
CAPTAIN PASSAGE
SALTSPRING ISLAND
LYALL HARBOUR
NORTH PENDER ISLAND
PLUMPER SOUND
SATURNA ISLAND
SWANSON CHANNEL
FULFORD HARBOUR
SOUTH PENDER ISLAND
48°45'
CANADA
UNITED STATES
BOUNDARY PASS
SAANICH PENINSULA
123°30'
123°20'
123°10'


GANGES-PLUMPER
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
LYALL HR.
FULFORD HR.
GANGES CHAIN IS.
LONG HR.
MAYNE I.
SATURNA I.
NORTH PENDER I.
SOUTH PENDER I.
SALTSPRING ISLAND
PREVOST ISLAND

Saanich Inlet

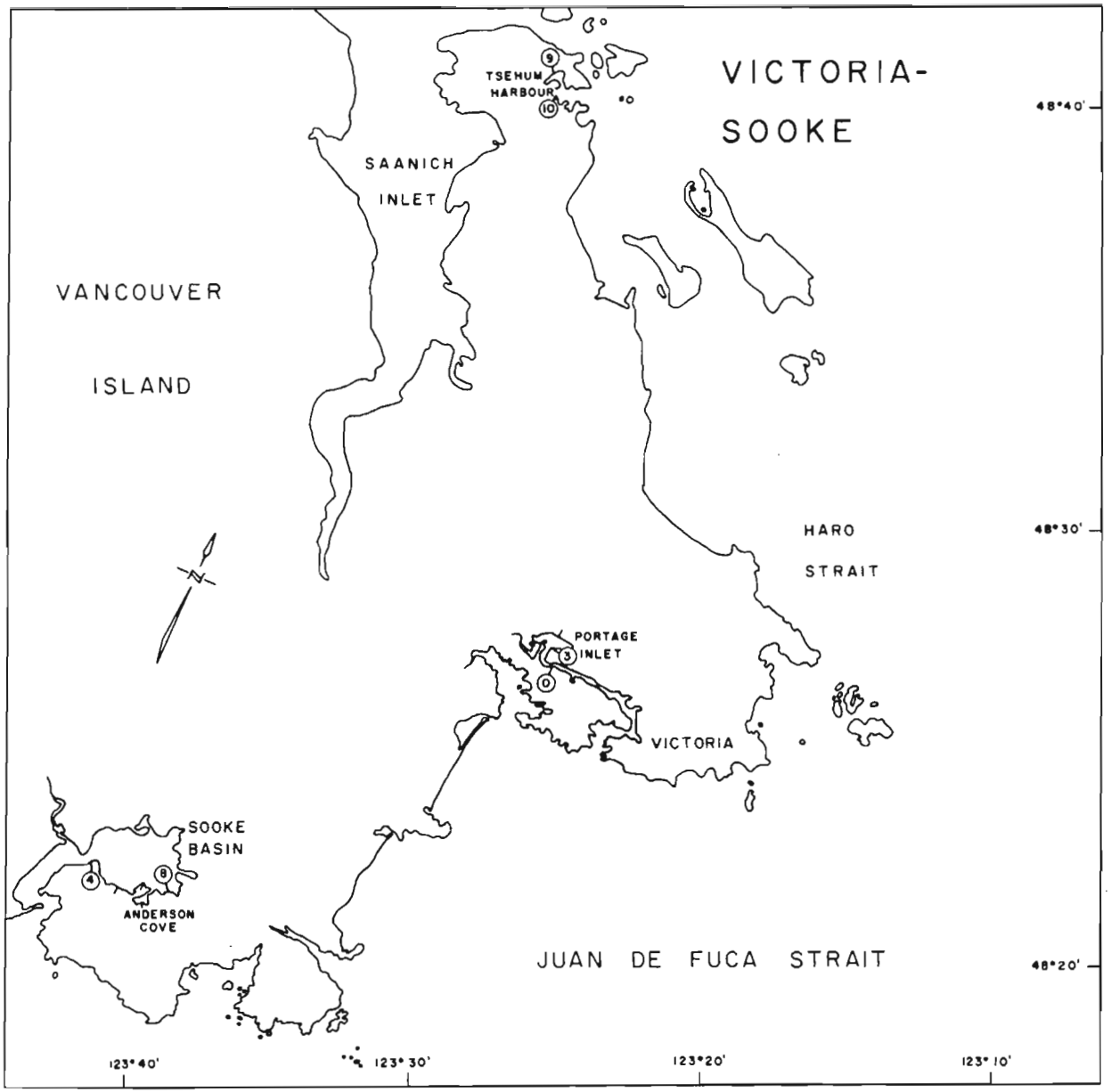
There have been reports of small herring spawns in Saanich Inlet up to 1973. The fish that spawned here generally did so in late March and hence probably belonged to a small, non-migratory stock that either has been considerably reduced in size, perhaps in the seine roe fisheries of 1971 and 1972 in Area 18, or now spawns elsewhere. There have been no roe fisheries in Saanich Inlet.

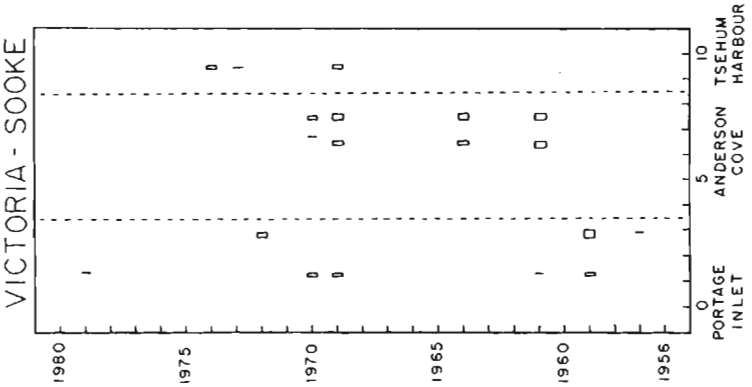

SAANICH INLET
0
DEEP COVE
48°40'
PATRICIA BAY
5
COLES BAY
SAANICH PENINSULA
10
BRENTWOOD BAY
48°35'
11
TOD INLET
12
13
14
GOLDSTREAM
48°30'
123°30'
123°25'


SAANICH INLET
1980
1975
1970
1965
1960
1956
0
5
10
14
DEEP COVE
PAT BAY
TOD INLET
GOLD-STREAM

Victoria-Sooke

Very small spawns have been reported for some years in Sooke Basin, Anderson Cove and Tsehum Harbor. As in Saanich Inlet, these spawns generally occurred in late March and the fish that spawned here are distinct from the major migratory populations that spawn in early March in the inner Strait of Georgia. Catch records show a 410 ton seine catch for this area in 1977.


VICTORIA-
SOOKE
TSEHUM
HARBOUR
9
10
SAANICH
INLET
VANCOUVER
ISLAND
HARO
STRAIT
PORTAGE
INLET
3
1
VICTORIA
SOOKE
BASIN
4
8
ANDERSON
COVE
JUAN DE FUCA STRAIT
48°40'
48°30'
48°20'
123°40'
123°30'
123°20'
123°10'


VICTORIA - SOOKE
1980
1975
1970
1965
1960
1956
0
PORTAGE INLET
5
ANDERSON COVE
10
TSEHUM HARBOUR

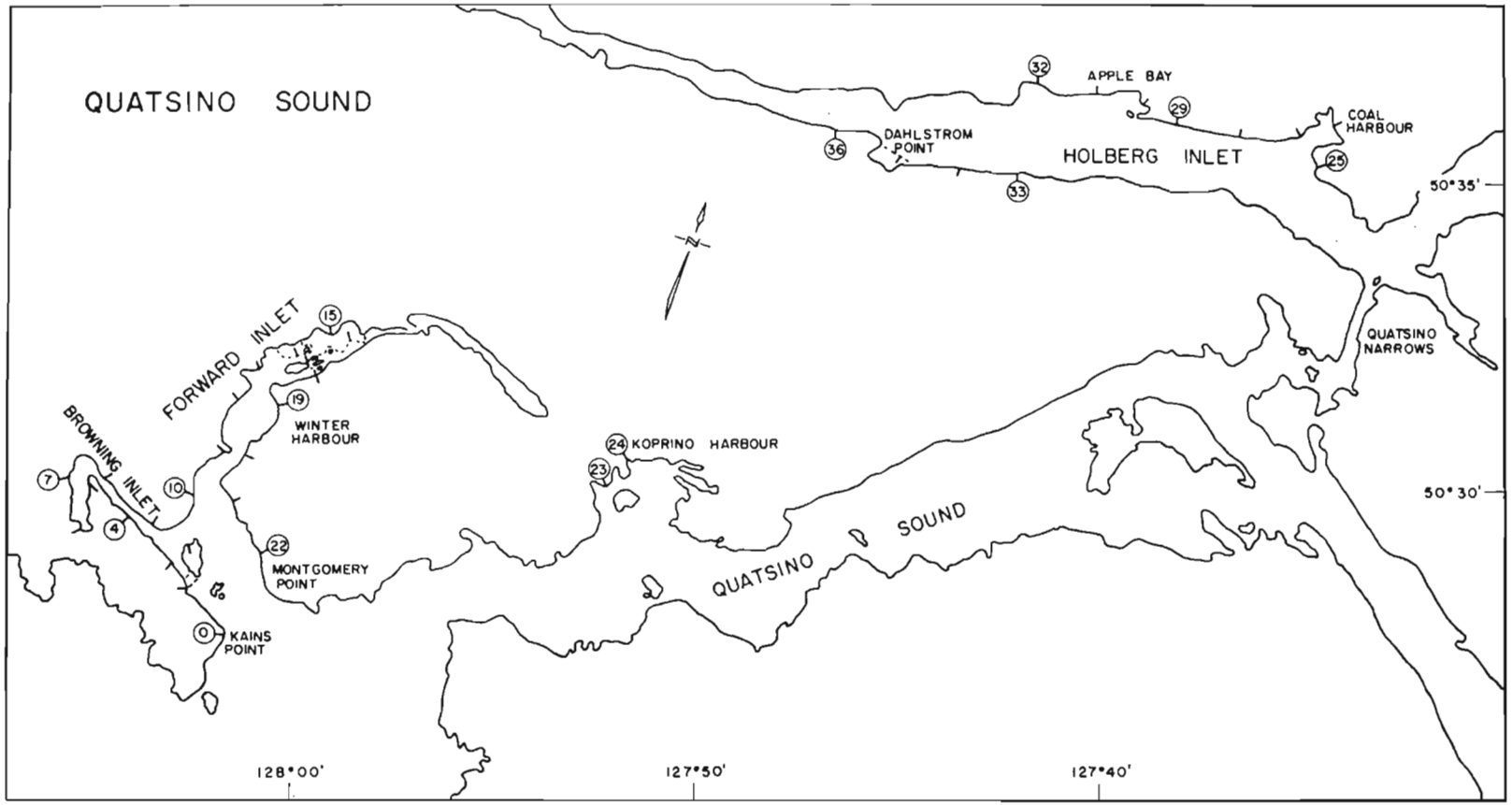
WEST COAST VANCOUVER ISLAND

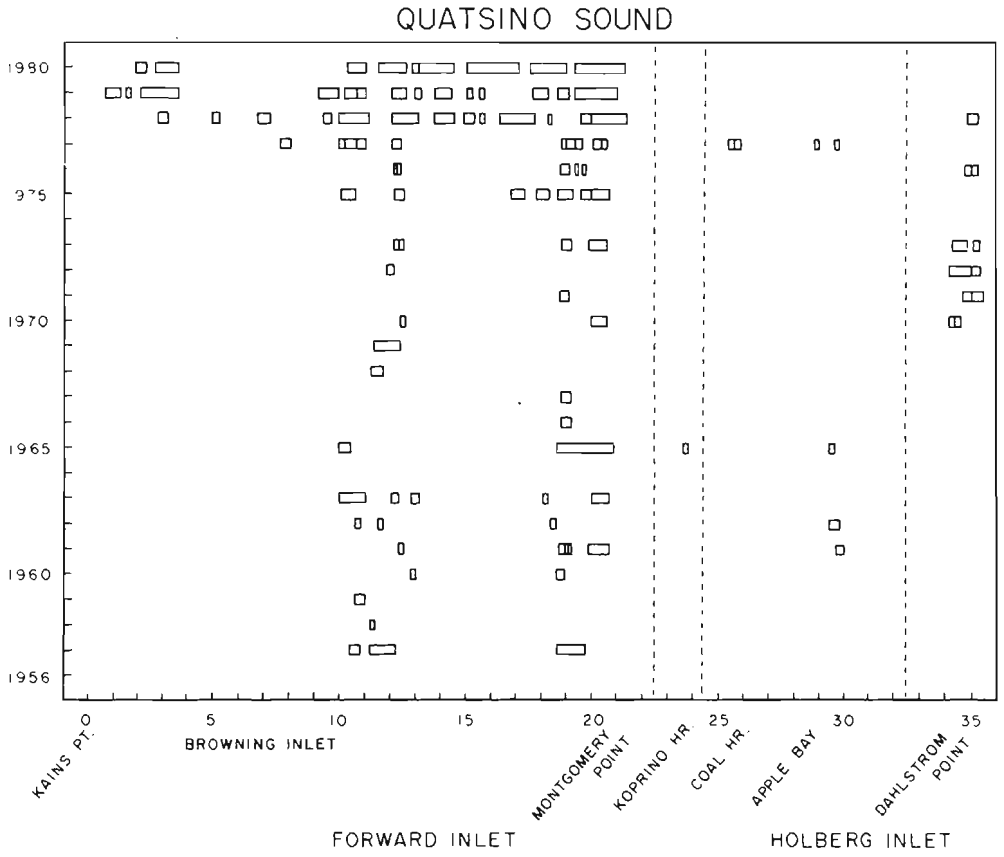
Herring spawns on the west coast of Vancouver Island have been documented from Quatsino to Barkley sounds. Herring do not appear to spawn between Barkley Sound and Sooke Basin although there have been sightings of spawns, which have not been documented, in Nitinat Lake. The spawn reports for the west coast are considered to be quite complete, except for the more inaccessible portions such as Brooks Bay and Hesquiat Harbor. During the 25 years of the study period, 523 km of coastline have been utilized for spawn deposition and yearly depositions have averaged 53 km.

Quatsino Sound

Herring have been reported to spawn on both shores of Forward Inlet for most years of the study period. In recent years, herring have also spawned at the head of this inlet and in adjacent Browning Inlet. Hence, the amount of spawn appears to have substantially increased. As well, there have been reports of spawn in Holberg Inlet for some of the years of the study period. There have been some roe fisheries in this area and most of the catch has been taken by a small amount of fishing gear.

Year	Tons roe catch		
	GN	SN	TOT
1974	20	560	580
1976	74	-	74
1978	8	-	8
1979	298	465	763
1980	561	-	561

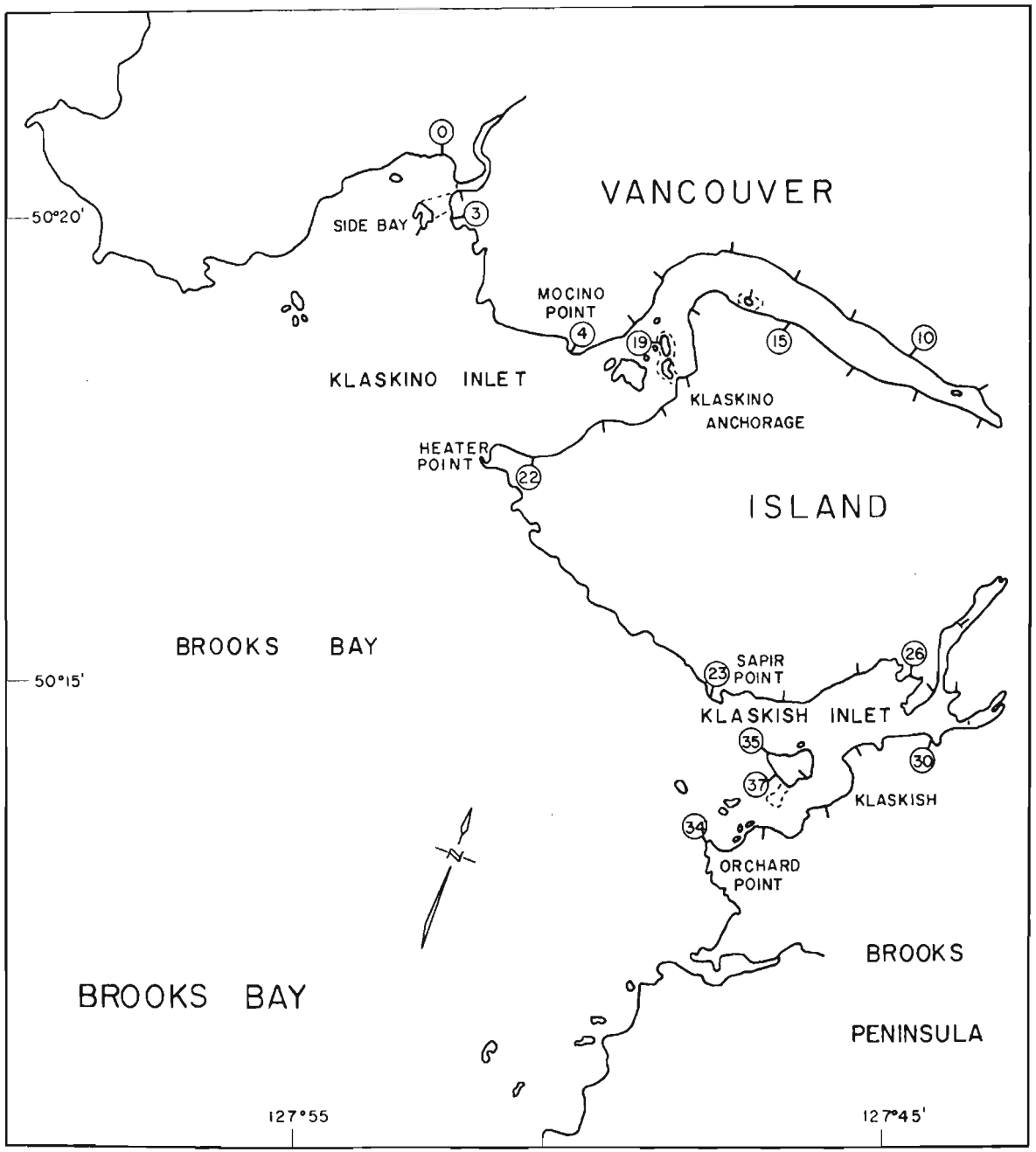

QUATSINO SOUND
APPLE BAY
COAL HARBOUR
DAHLSTROM POINT
HOLBERG INLET
50°35'
FORWARD INLET
QUATSINO NARROWS
WINTER HARBOUR
BROWNING INLET
KOPRINO HARBOUR
50°30'
MONTGOMERY POINT
QUATSINO SOUND
KAINS POINT
128°00'
127°50'
127°40'

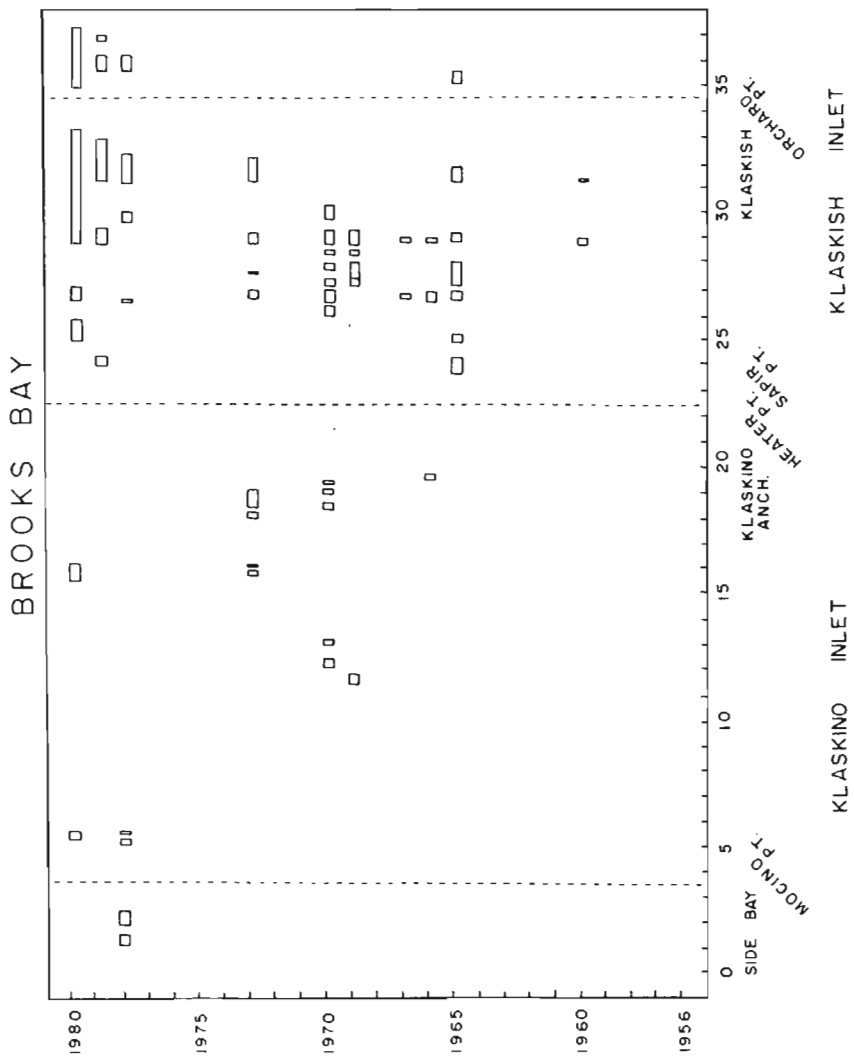

QUATSINO SOUND
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
KAINS PT.
BROWNING INLET
MONTGOMERY POINT
KOPRINO HR.
COAL HR.
APPLE BAY
DAHLSTROM POINT
FORWARD INLET
HOLBERG INLET

Brooks Bay

Spawn reports for Brooks Bay have not always been complete and in some of the years for which no spawn was reported this was probably a result of a lack of survey coverage, not of spawn. In Brooks Bay, herring spawned most frequently in Klaskish Inlet and Klaskino Anchorage, which are the only relatively sheltered locations in the bay. There were some small gillnet catches made here.

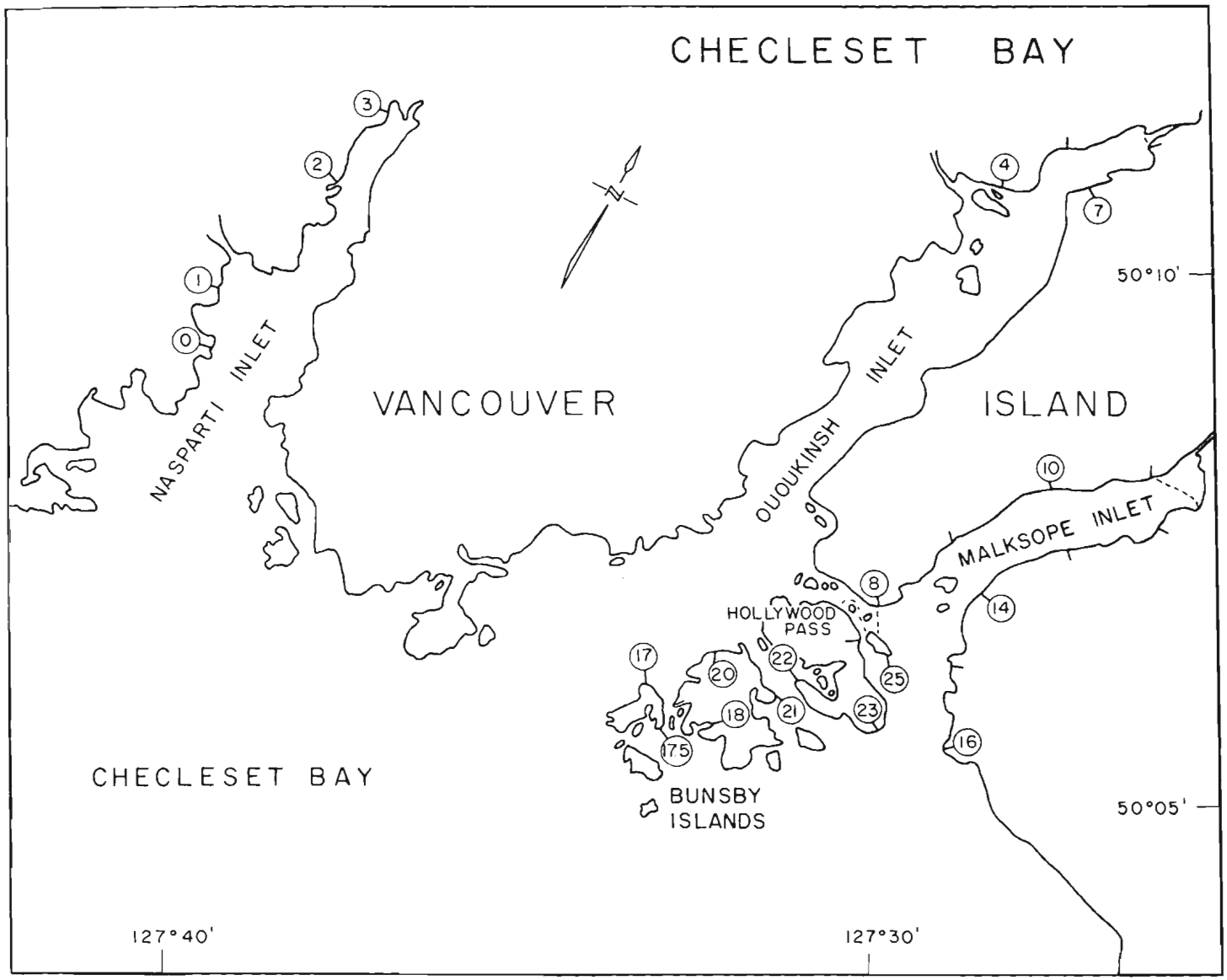
Year	Tons roe catch		
	GN	SN	TOT
1976	13	-	13
1978	74	-	74

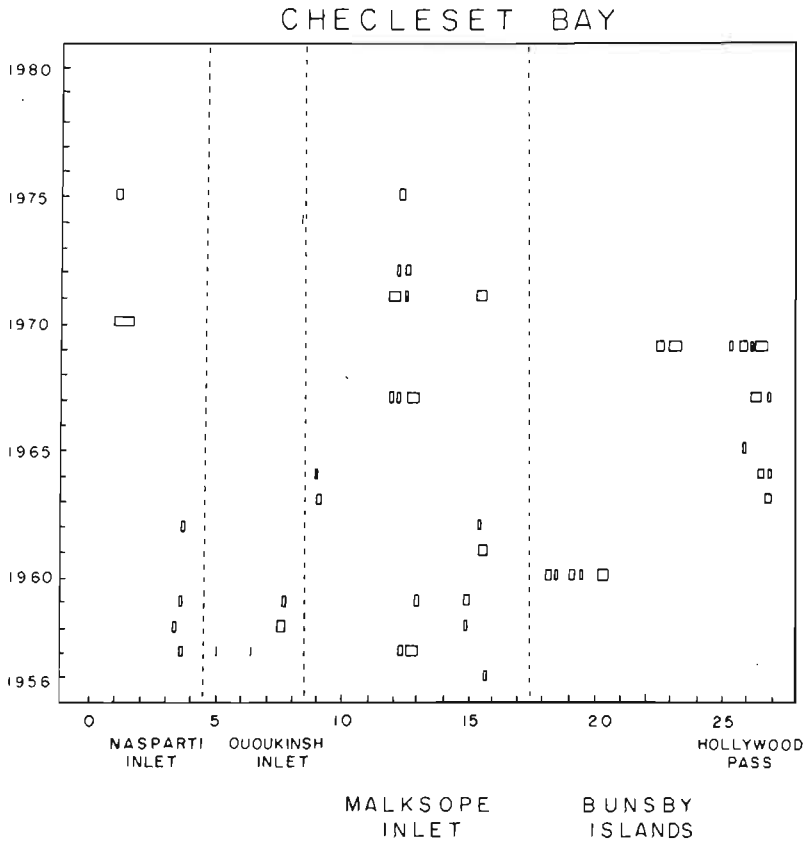

VANCOUVER
ISLAND
50°20'
50°15'
SIDE BAY
MOCINO POINT
KLASKINO INLET
KLASKINO ANCHORAGE
HEATER POINT
BROOKS BAY
SAPIR POINT
KLASKISH INLET
KLASKISH
ORCHARD POINT
BROOKS BAY
BROOKS PENINSULA
127°55
127°45'
0
3
4
19
15
10
22
23
26
35
30
37
34


BROOKS BAY
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
SIDE BAY
MOCINO PT.
KLASKINO ANCH.
HEATER PT.
SAPIR PT.
KLASKISH
ORCHARD PT.
KLASKINO INLET
KLASKISH INLET

Checleset Bay

Small spawns were reported for this area up until the early 1970s. Since then, there have been no spawns reported here. This may be the result of decreased spawn survey coverage. Spawns have been reported in Nasparti, Ououkinish, and Malksope inlets, and in the passages between the Bunsby Islands. Herring were never reported to regularly spawn at any of these locations. There have been no roe fisheries in Checleset Bay.

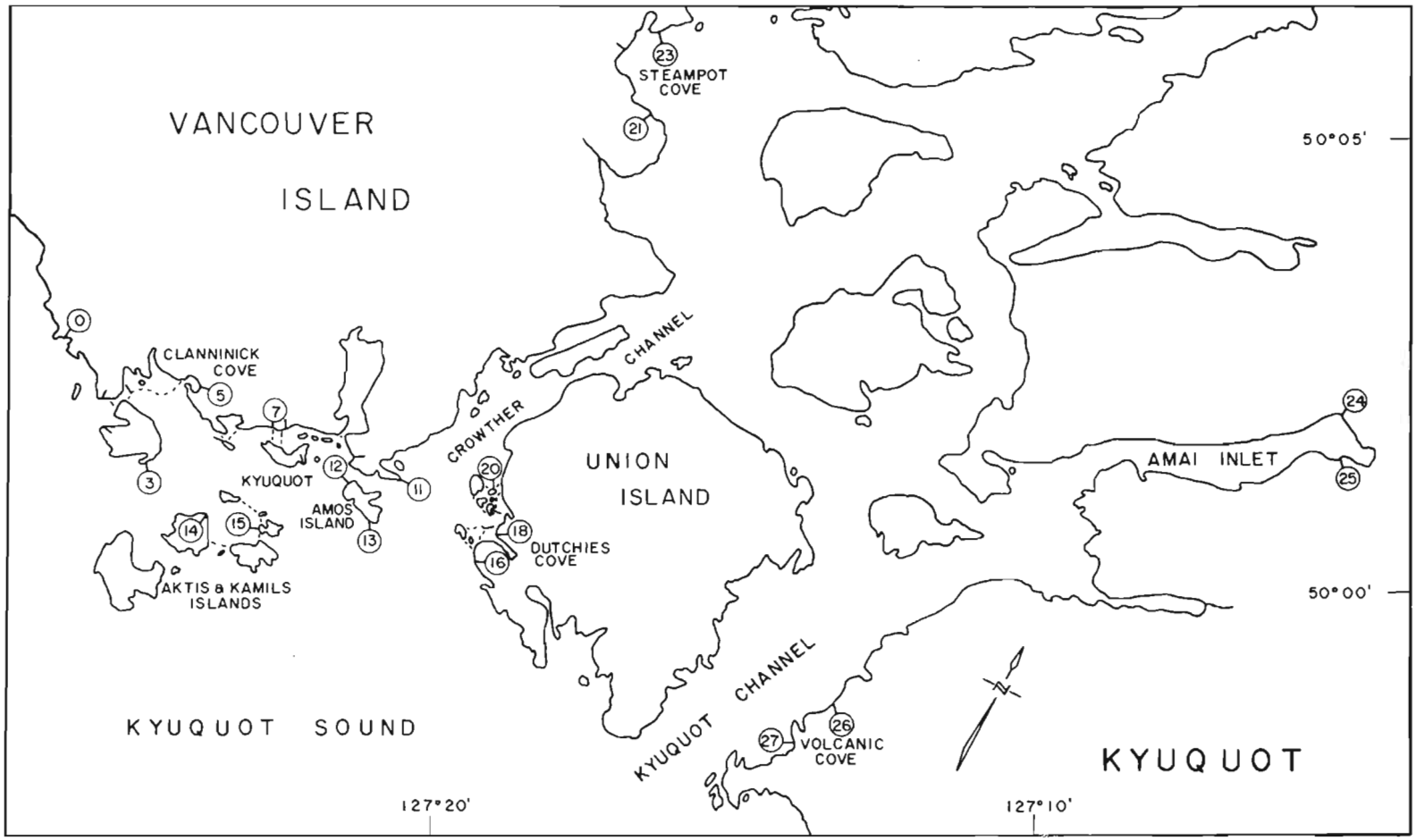

CHECLESET BAY
VANCOUVER
ISLAND
NASPARTI INLET
OUOUKINSH INLET
MALKSOPE INLET
HOLLYWOOD PASS
BUNSBY ISLANDS
CHECLESET BAY
50°10'
50°05'
127°40'
127°30'
0
1
2
3
4
7
8
10
14
16
17
175
18
20
21
22
23
25

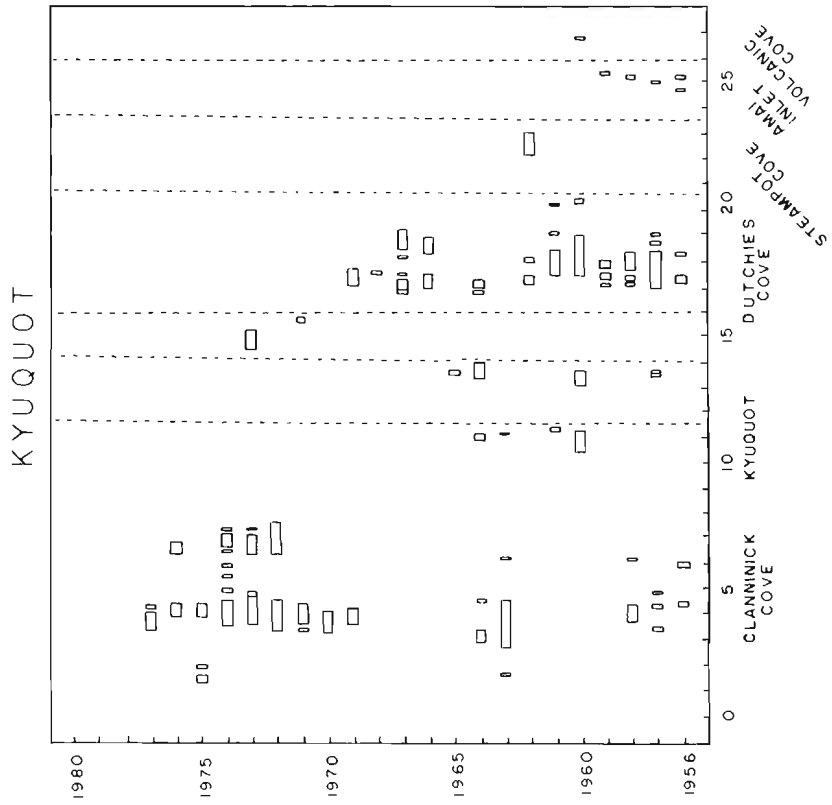

CHECLESET BAY
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
NASPARTI INLET
OUOUKINSH INLET
HOLLYWOOD PASS
MALKSOPE INLET
BUNSBY ISLANDS

Kyuquot

There have been no reports of spawn in Kyuquot Sound since 1978. In the period 1969 to 1977, herring spawned regularly in Clanninick Cove and occasionally there prior to 1969. Also prior to 1969, but not since then, herring spawned regularly in Dutchies Cove. There have been some small roe catches in this area.

Year	Tons roe catch		
	GN	SN	TOT
1976	63	-	63
1977	96	-	96

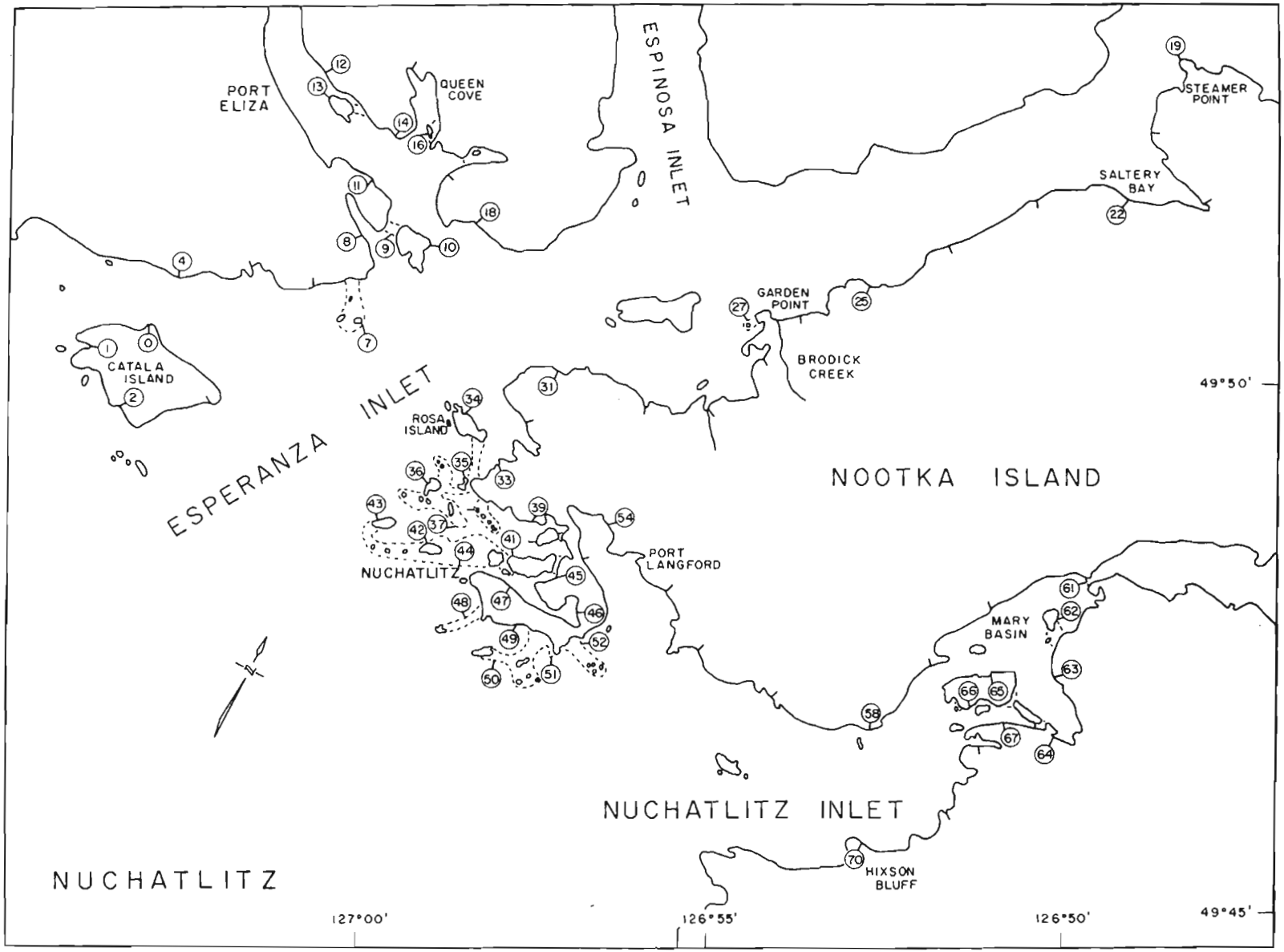

VANCOUVER
ISLAND
STEAMPOT COVE
23
21
50°05'
0
CLANNINICK COVE
5
7
3
KYUQUOT
12
AMOS ISLAND
13
11
14
15
AKTIS & KAMILS ISLANDS
CROWTHER CHANNEL
20
18
DUTCHIES COVE
16
UNION ISLAND
24
AMAI INLET
25
50°00'
KYUQUOT SOUND
KYUQUOT CHANNEL
27
26
VOLCANIC COVE
KYUQUOT
127°20'
127°10'

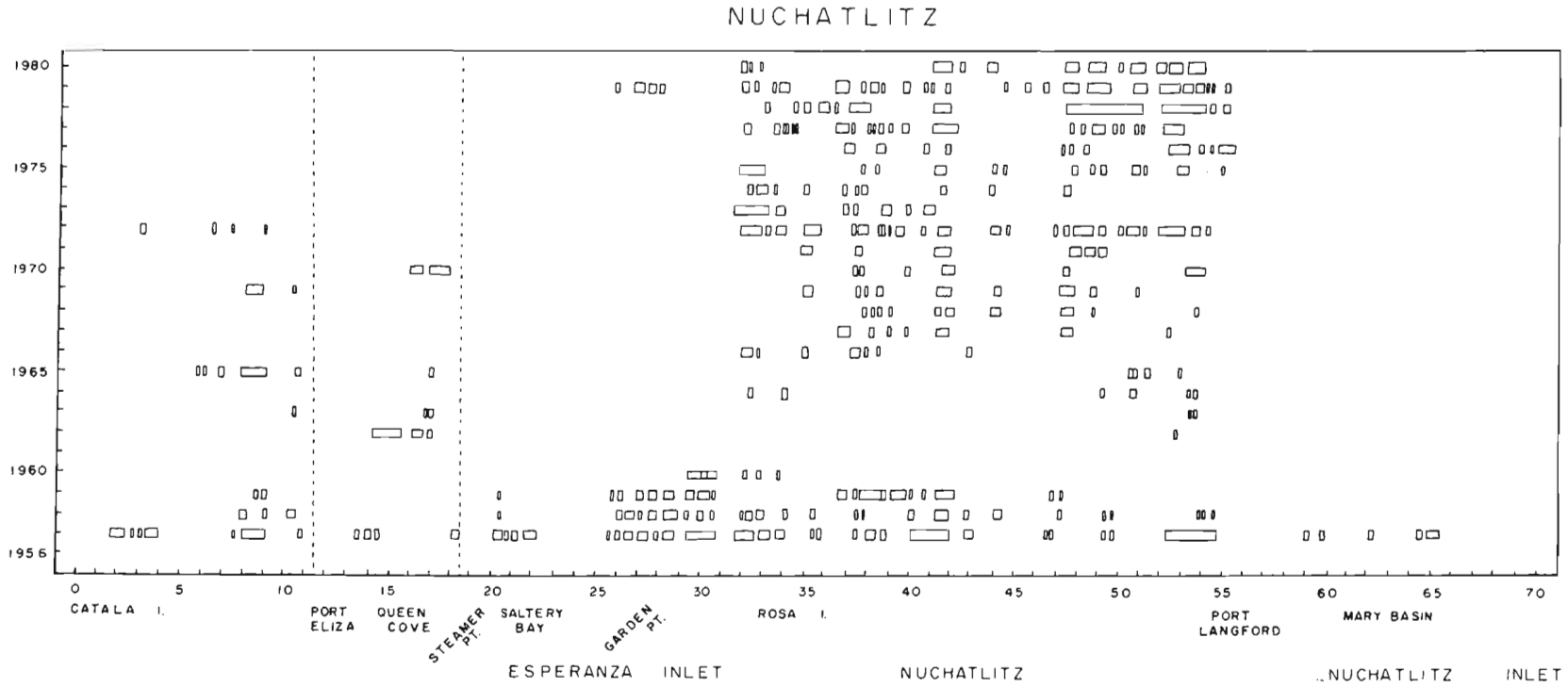

KYUQUOT
1980
1975
1970
1965
1960
1956
0
5
CLANNINICK COVE
10
KYUQUOT
15
DUTCHIES COVE
20
STEAMPOT COVE
25
AMAI INLET
VOLCANIC COVE

Nuchatlitz

Since 1966, herring have spawned mostly and regularly in inner and outer Nuchatlitz, Rosa Harbor, and Port Langford and almost nowhere else in Esparanza Inlet. Prior to 1960, herring also spawned at these locations regularly as well as along the approaches to Port Eliza and from Rosa Harbor to Garden Point. In the intervening period of 1961 to 1965, there was virtually no spawn in inner and outer Nuchatlitz and only small amounts at the other locations. There have been substantial roe fisheries in this area and an additional large seine catch of 5370 tons was taken on adjacent Bajo Reef in 1979. The gillnet roe fisheries were conducted for all years in and around Nuchatlitz and the seine fisheries occurred near Center Island.

Year	Tons roe catch		
	GN	SN	TOT
1972	-	201	201
1973	15	-	15
1975	244	4023	4267
1976	2141	3794	5935
1977	3204	2	3206
1978	3503	70	3573
1979	4349	-	4349
1980	1881	-	1881


PORT ELIZA
QUEEN COVE
ESPINOSA INLET
STEAMER POINT
SALTERY BAY
GARDEN POINT
BRODICK CREEK
CATALA ISLAND
ESPERANZA INLET
ROSA ISLAND
NOOTKA ISLAND
NUCHATLITZ
PORT LANGFORD
MARY BASIN
NUCHATLITZ INLET
HIXSON BLUFF
NUCHATLITZ
49°50'
49°45'
127°00'
126°55'
126°50'

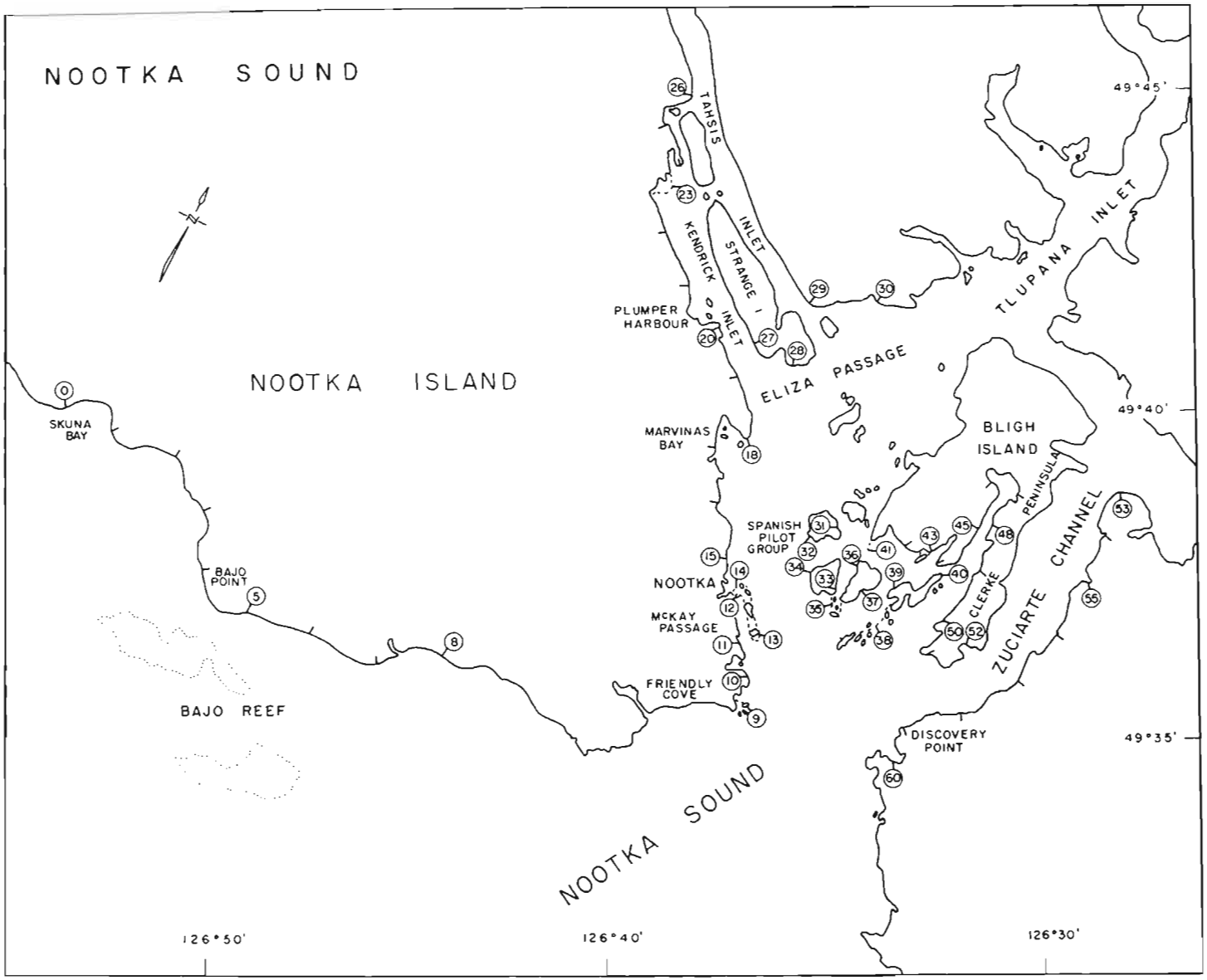

NUCHATLITZ
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
CATALA I.
PORT ELIZA
QUEEN COVE
STEAMER PT.
SALTERY BAY
GARDEN PT.
ROSA I.
PORT LANGFORD
MARY BASIN
ESPERANZA INLET
NUCHATLITZ
NUCHATLITZ INLET

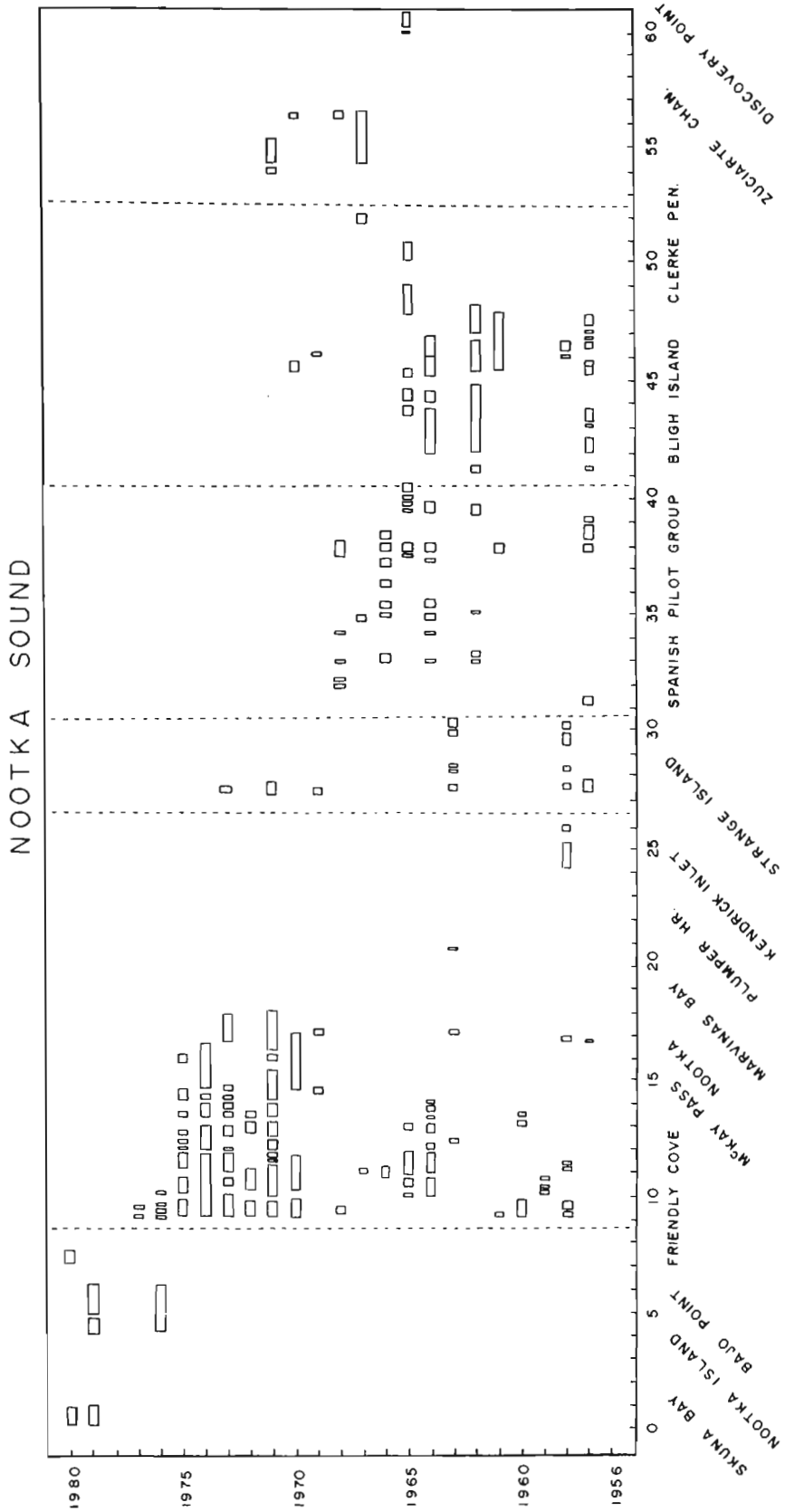
Nootka Sound

Since 1976 there has been negligible spawn reported for Nootka Sound, although in 1979 and 1980, small amounts of spawn were reported for outside of Nootka Sound near Bajo Reef. The distribution of spawn was quite different prior to 1970 than afterwards. In the 1950s and 1960s, much of the spawn was deposited in the Spanish Pilot Group and along the southern shore of Bligh Island, and there was some spawning between Friendly Cove and Marvinas Bay. In the 1970s, in the years when there was spawn in Nootka Sound, nearly all of the spawn was deposited between Friendly Cove and Marvinas Bay. The gillnet roe fisheries occurred near these spawning locations.

The seine fisheries generally took place near the entrance of the Sound and, in later years, near Bajo Reef, where fish probably destined to spawn in Esperanze Inlet were intercepted. Relative to the amount of spawn deposited, Nootka Sound has had some very large roe fisheries, which may have contributed to the decline of spawn in the late 1970s.

Year	Tons roe catch		
	GN	SN	TOT
1972	-	2675	2675
1973	551	8136	8687
1974	1216	9766	10982
1975	1346	2670	4016
1977	-	751	751
1978	-	717	717
1979	-	5370	5370


NOOTKA SOUND
NOOTKA ISLAND
TAHSIS INLET
KENDRICK INLET
STRANGE I
PLUMPER HARBOUR
ELIZA PASSAGE
TLUPANA INLET
MARVINAS BAY
BLIGH ISLAND
PENINSULA
SPANISH PILOT GROUP
NOOTKA
McKAY PASSAGE
CLERKE
ZUCIARTE CHANNEL
SKUNA BAY
BAJO POINT
BAJO REEF
FRIENDLY COVE
DISCOVERY POINT
NOOTKA SOUND
49°45'
49°40'
49°35'
126°50'
126°40'
126°30'


NOOTKA SOUND
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
60
SKUNA BAY
NOOTKA ISLAND
BAJO POINT
FRIENDLY COVE
MCKAY PASS
NOOTKA
MARVINAS BAY
PLUMPER HR.
KENDRICK INLET
STRANGE ISLAND
SPANISH PILOT GROUP
BLIGH ISLAND
CLERKE PEN.
ZUCIARTE CHAN.
DISCOVERY POINT

Hesquiat Harbor-Sydney Inlet

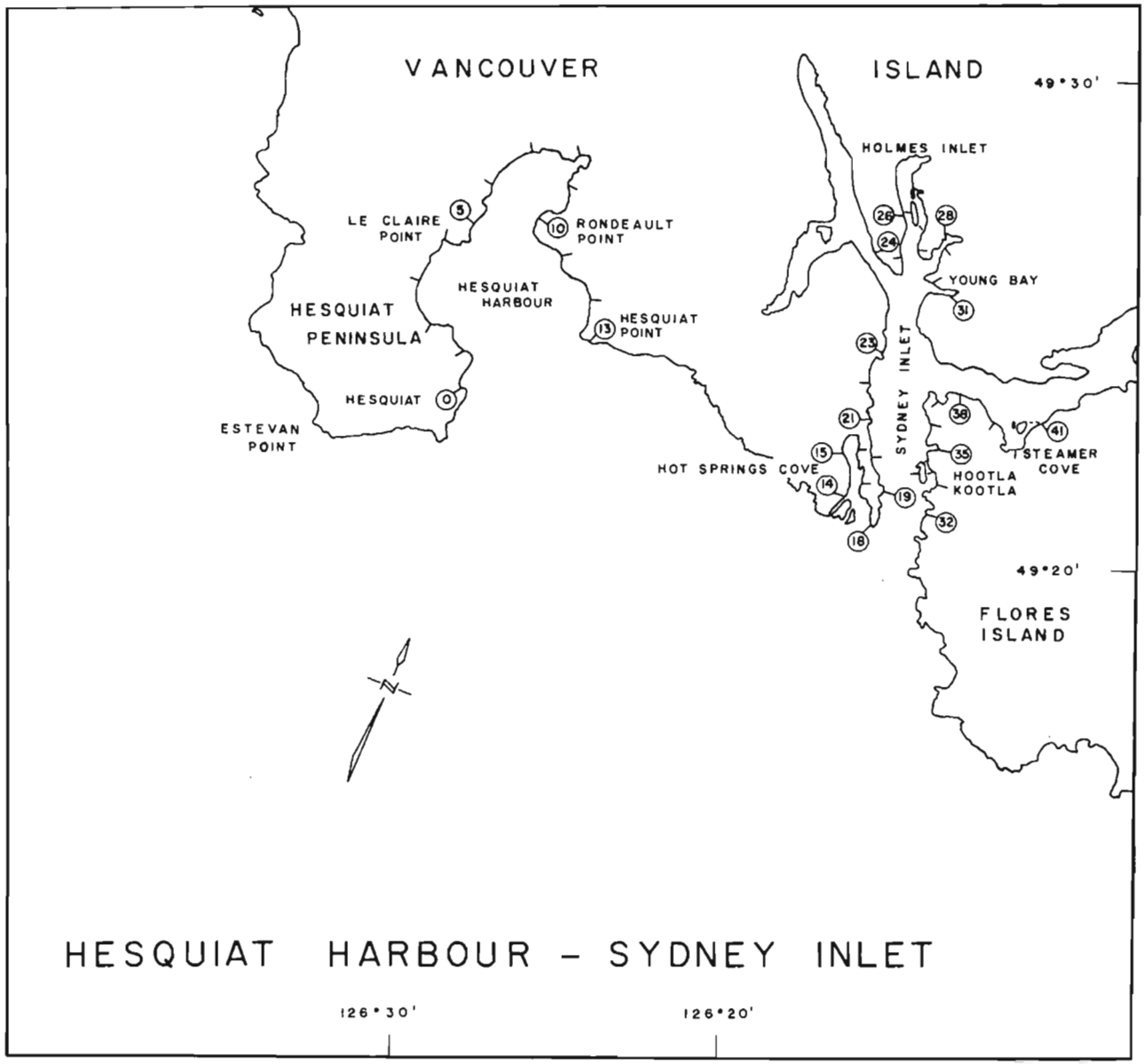
Spawns in Hesquiat Harbor have not always been well documented and in the years when there was no spawn reported, this was most likely due to the lack of survey coverage. There has been considerable fluctuation in the amount of spawn reported for Hesquiat Harbor, but in the 1970s herring appear to have spawned here consistently.

These fluctuations may reflect the degree of survey coverage more than the actual spawn deposition. There have been gillnet roe fisheries in Hesquiat Harbor from 1972 to 1976.

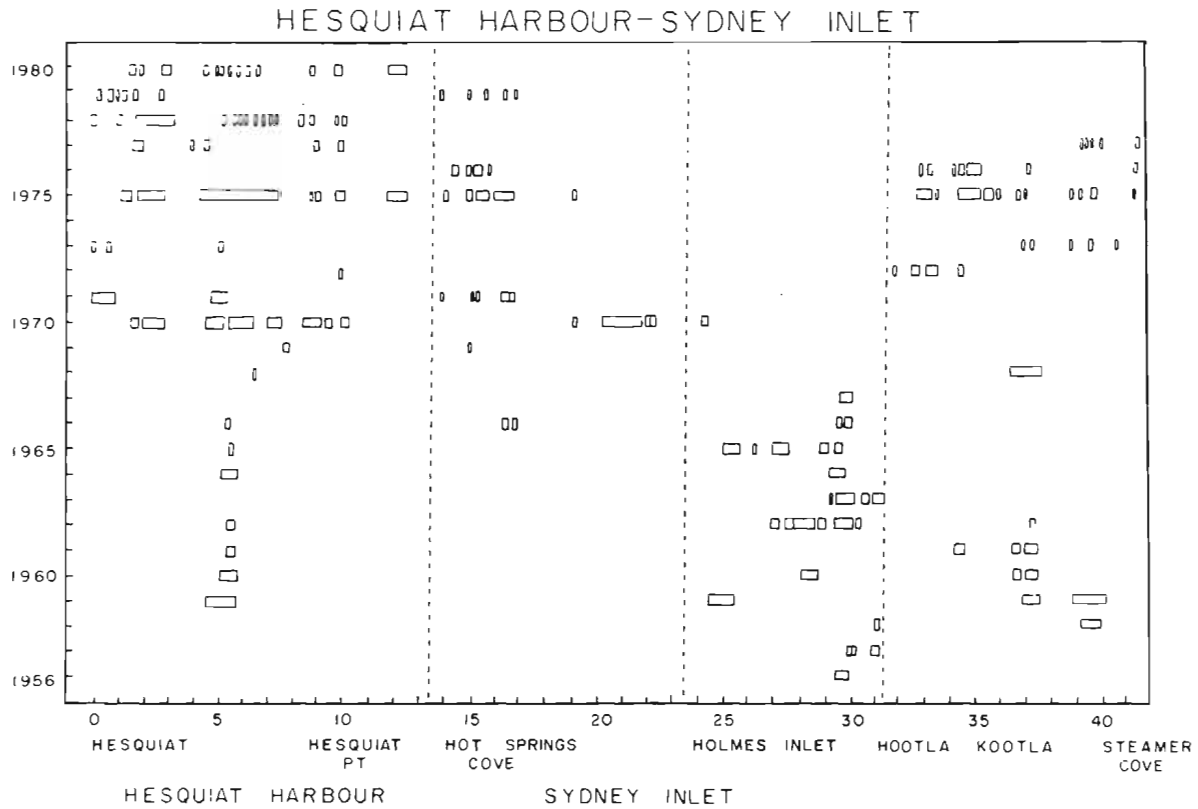
Year	Tons roe catch		
	GN	SN	TOT
1972	182	-	182
1973	465	-	465
1974	383	-	383
1975	1164	68	1232
1976	139	-	139

In Sydney Inlet herring spawned intermittently in Hot Springs Cove and from Steamer Cove to Hootla Kootla. Prior to 1967 spawns were also reported in Holmes Inlet. For the three years after 1977, when the last of the quite substantial roe fisheries was held, there was no spawn reported from Sydney Inlet. Herring were fished for roe by both gillnet and seine. The gillnet fisheries were held in Steamer Cove and along the Hootla Kootla shoreline, intercepting fish that would have spawned there. The seine fisheries were held at the confluence of Sydney and Shelter inlets and probably intercepted fish that would have spawned here as well as in other parts of Clayoquot Sound. Regardless, the fisheries in Sydney Inlet were quite large in relation to the amount of spawn deposited and may have contributed to the decrease of spawn in the late 1970s.

Year	Tons roe catch		
	GN	SN	TOT
1972	-	3404	3404
1973	163	8677	8840
1974	2	-	2
1975	2082	6607	8689
1976	2938	6897	9835
1977	370	3150	3520



HESQUIAT HARBOUR - SYDNEY INLET

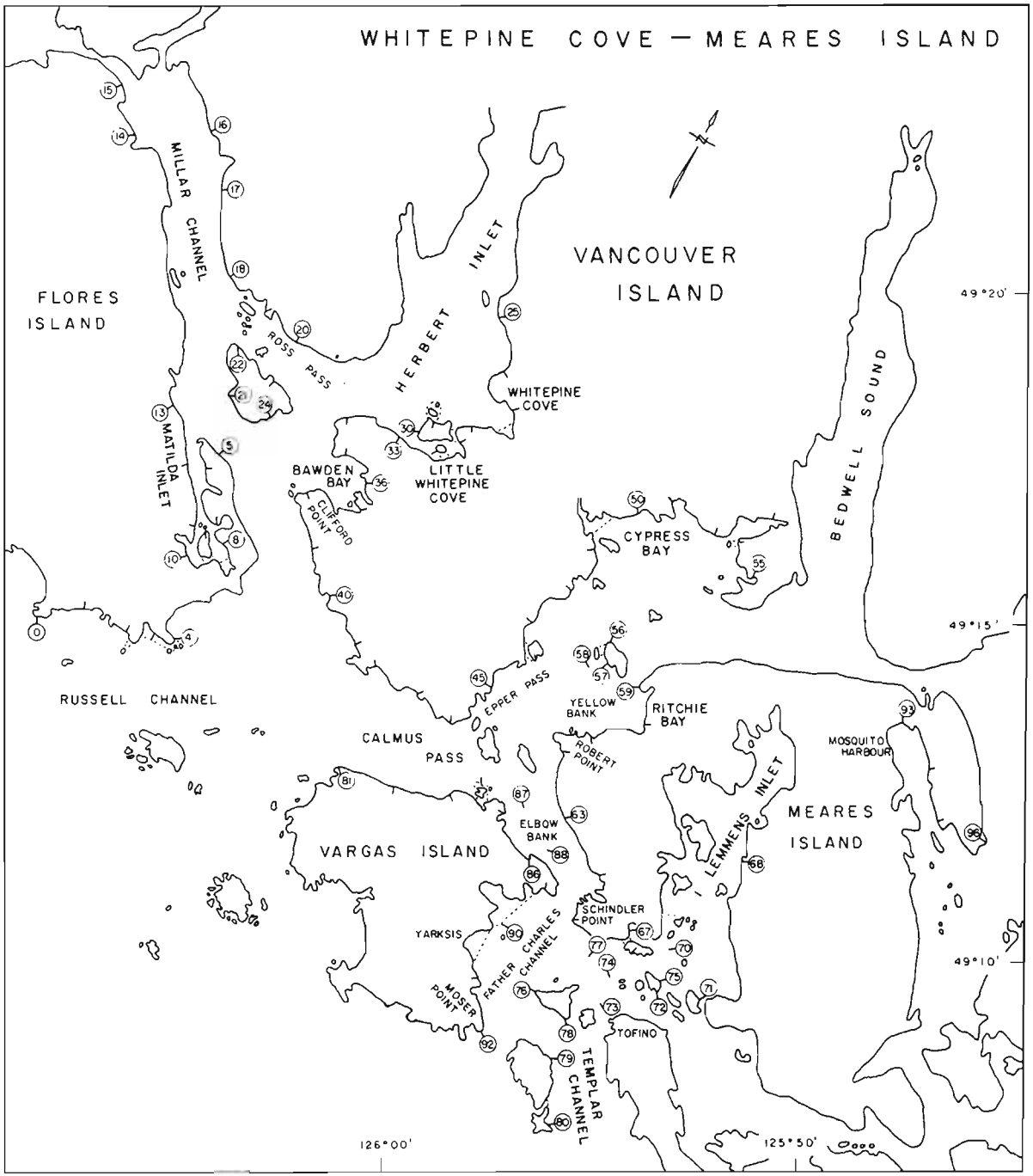

HESQUIAT HARBOUR-SYDNEY INLET
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
HESQUIAT
HESQUIAT PT
HOT SPRINGS COVE
HOLMES INLET
HOOTLA
KOOTLA
STEAMER COVE
HESQUIAT HARBOUR
SYDNEY INLET

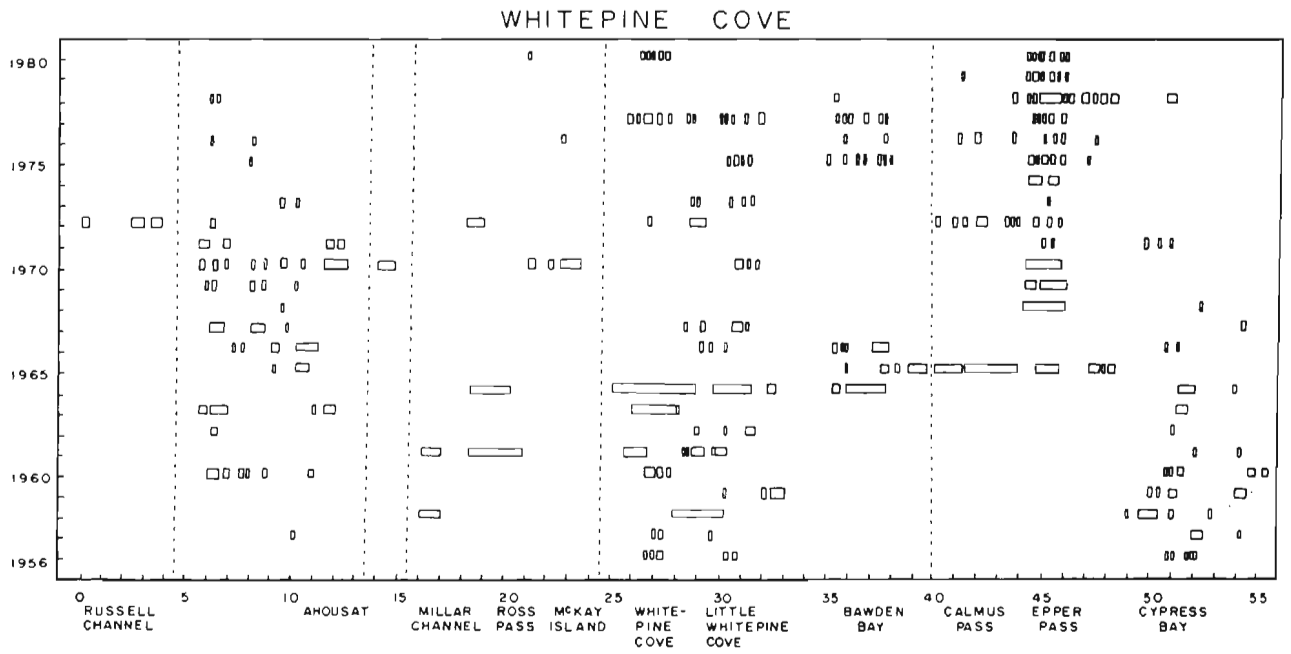
Whitepine Cove-Meares Island

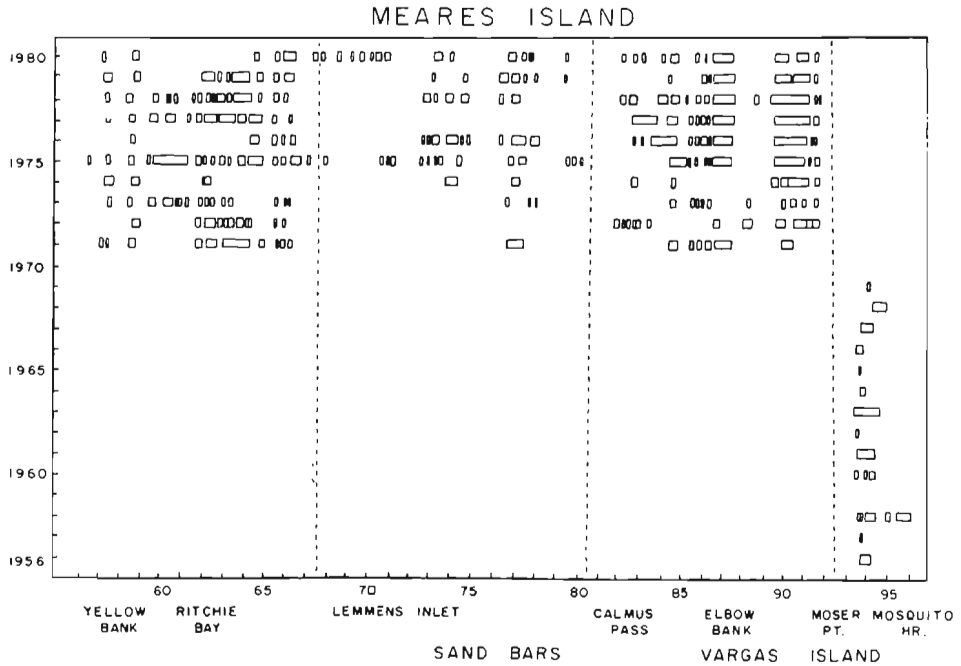
There are several locations where spawn has been concentrated in this area. Herring have spawned in Matilda Inlet in most years, but in recent years spawns have been very small and more infrequent here. Bawden Bay and Whitepine Cove have also had spawns in most years. Herring spawned regularly in Cypress Bay until the late 1960s after which the adjacent shoreline of Epper Passage was regularly utilized for spawning. The other traditional spawning location was Mosquito Harbor, for which no spawn has been recorded since 1969. However, the senior author visited this location in two years in the mid 1970s and on both occasions observed spawn here. Hence, the absence of reports of spawn in Mosquito Harbor can probably be attributed to the lack of survey coverage. The extensive spawns on the west shore of Meares Island, on the east shore of Vargas Island, and the islands in Tofino Harbor have only occurred since 1971. The lack of reports prior to this time for these locations can probably not be attributed to the lack of survey coverage since this is the most populated area of Clayoquot Sound. These extensive spawns can thus be considered a genuine expansion in spawning locations, and not at the expense of more traditional spawning sites in the sound.

There have been both seine and gillnet roe fisheries in this area since 1972. The gillnet fisheries have taken place mostly between Cypress Bay and Father Charles Channel, although in 1977, 2461 tons were taken by gillnet in Whitepine Cove and Bawden Bay. The seine fisheries have generally taken place in the deeper channels adjacent to locations fished by gillnet.

Year	Tons roe catch		
	GN	SN	TOT
1972	-	149	149
1973	533	393	926
1974	1508	-	1508
1975	1937	241	2178
1976	1634	5562	7196
1977	6963	3449	10412
1978	5666	1576	7242
1979	2204	-	2204
1980	654	1666	2320


WHITEPINE COVE — MEARES ISLAND
FLORES ISLAND
MILLAR CHANNEL
ROSS PASS
HERBERT INLET
VANCOUVER ISLAND
WHITEPINE COVE
MATILDA INLET
BAWDEN BAY
CLIFFORD POINT
LITTLE WHITEPINE COVE
CYPRESS BAY
BEDWELL SOUND
49°20'
49°15'
RUSSELL CHANNEL
EPPER PASS
YELLOW BANK
RITCHIE BAY
CALMUS PASS
ROBERT POINT
MOSQUITO HARBOUR
INLET
MEARES ISLAND
ELBOW BANK
VARGAS ISLAND
LEMMENS
SCHINDLER POINT
YARKSIS
CHARLES
FATHER CHANNEL
MOSER POINT
TOFINO
TEMPLAR CHANNEL
49°10'
126°00'
125°50'


WHITEPINE COVE
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
RUSSELL CHANNEL
AHOUSAT
MILLAR CHANNEL
ROSS PASS
McKAY ISLAND
WHITE-PINE COVE
LITTLE WHITEPINE COVE
BAWDEN BAY
CALMUS PASS
EPPER PASS
CYPRESS BAY

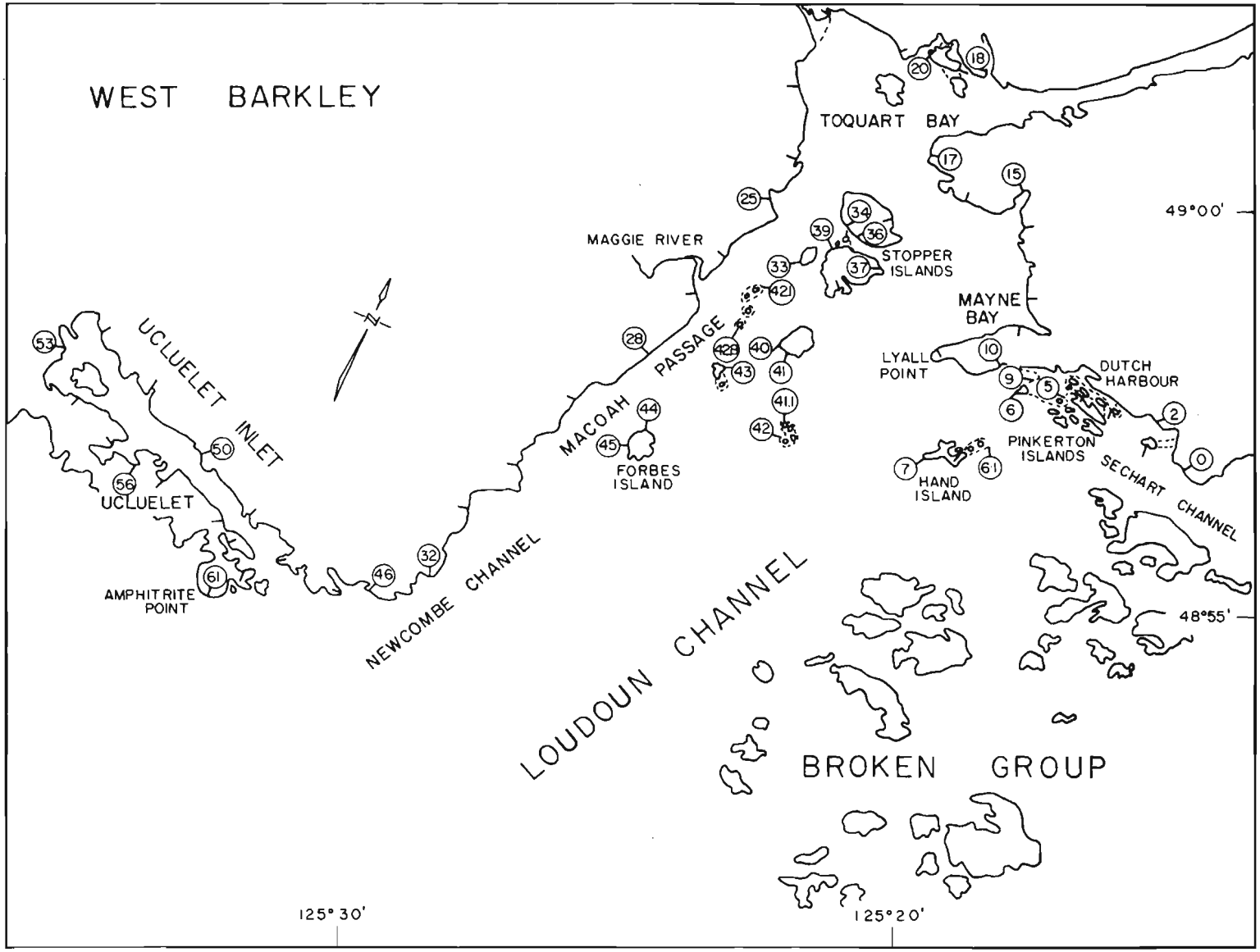

MEARES ISLAND
1980
1975
1970
1965
1960
1956
60
65
70
75
80
85
90
95
YELLOW BANK
RITCHIE BAY
LEMMENS INLET
CALMUS PASS
ELBOW BANK
MOSER PT.
MOSQUITO HR.
SAND BARS
VARGAS ISLAND

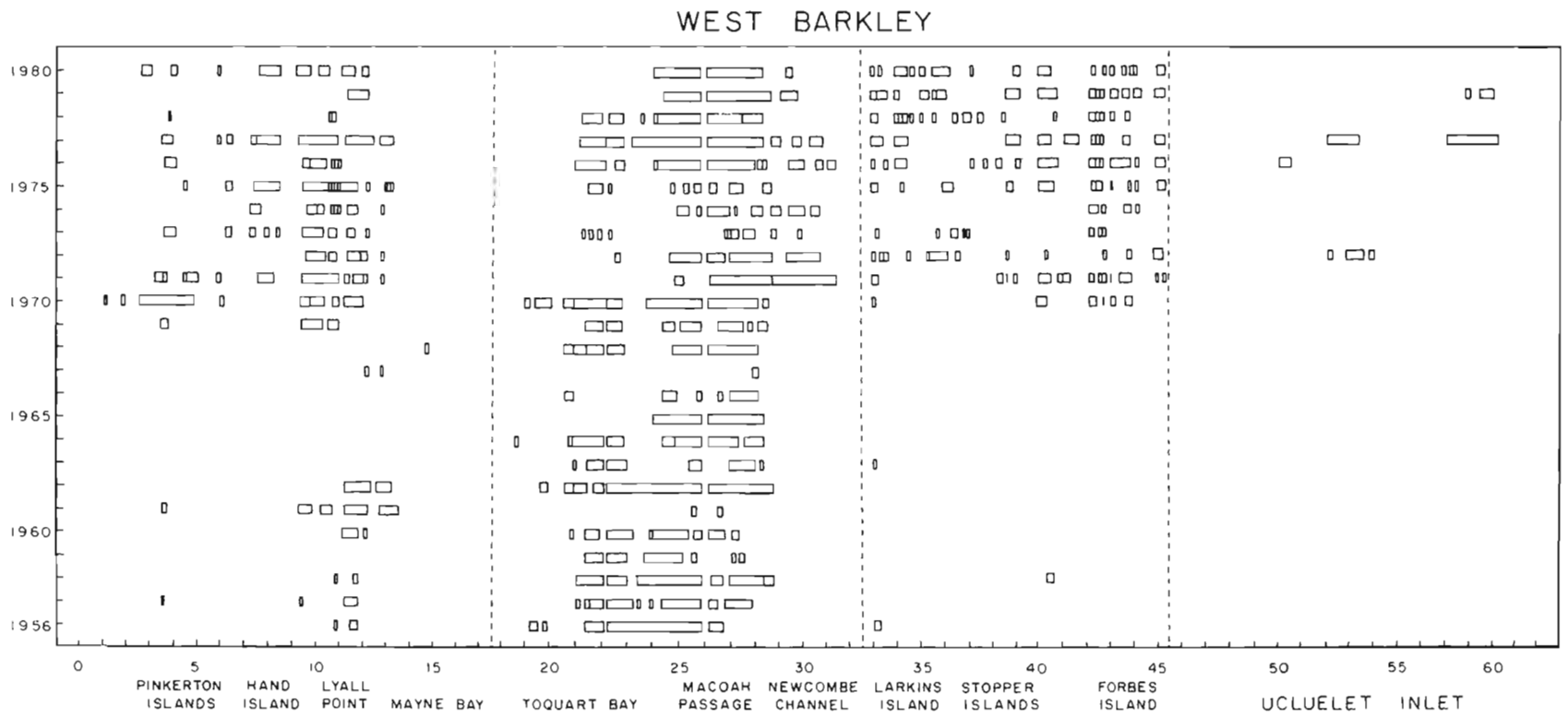
West Barkley

Throughout the study period, herring have spawned on parts of the shoreline between Toquart Bay and Newcombe Channel and near Lyall Point. Only since 1970, have herring spawns been reported for Stopper, Larkin, St. Ines, Forbes, and other small islands in Macoah Passage; Loudon Channel; Pinkerton Islands; and Hand Island. There have also been reports of spawn in Ucluelet Inlet in recent years. This expansion in spawning localities indicates either that spawn survey coverage has been increased or a genuine expansion and diversification of spawning sites has occurred. The former is probably the more reasonable explanation although both have likely occurred.

There have been substantial roe fisheries in the sound. The gillnet fisheries have mostly taken place between Dutch Harbor and Mayne Bay, on Stopper and Larkin islands, from Toquart Bay to Maggie River, and in Macoah Passage. The seine fisheries have generally been held in Loudon Channel between St. Ines and Hand islands.

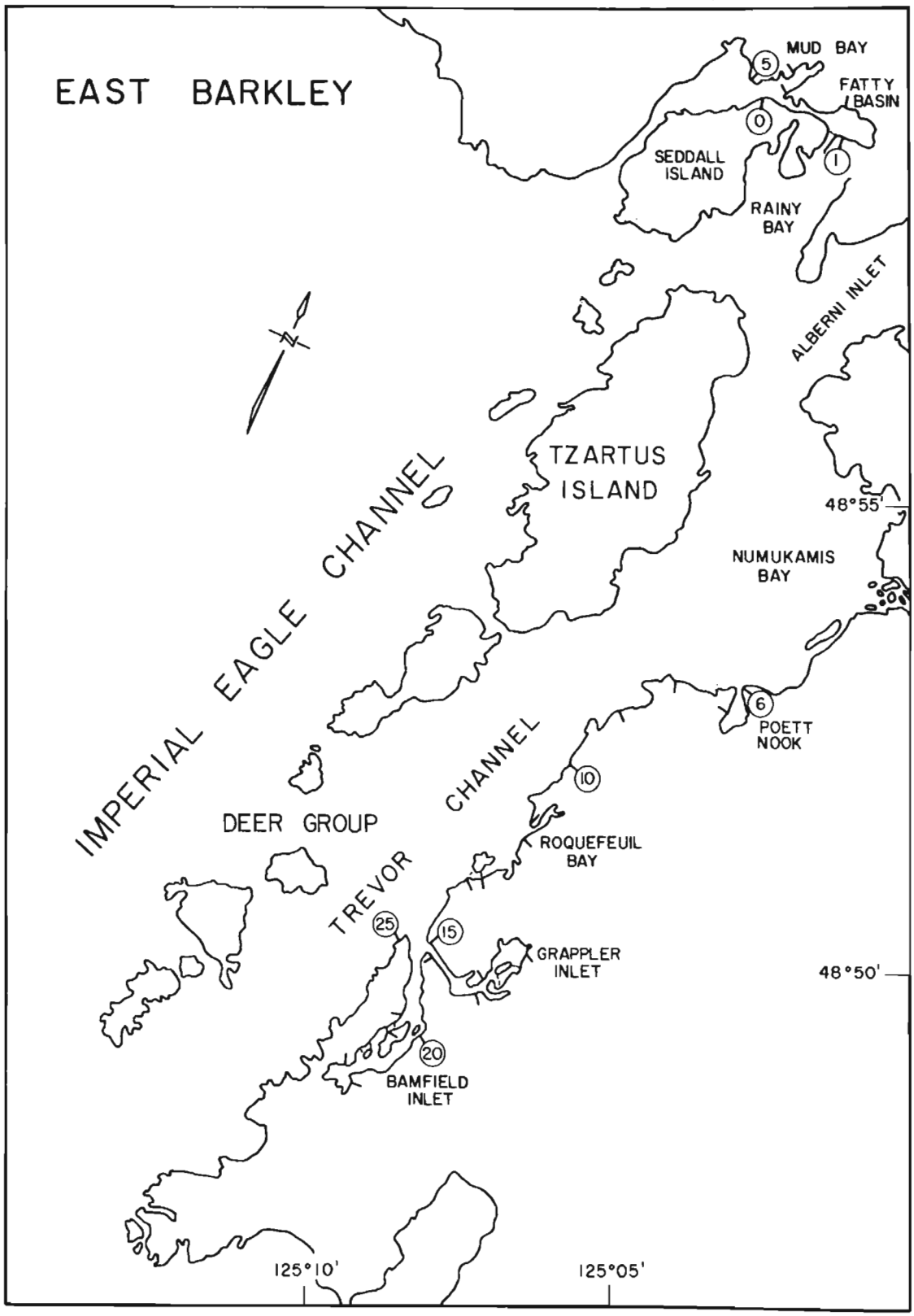
Year	Tons roe catch		
	GN	SN	TOT
1972	-	3673	3673
1973	454	7554	8008
1974	574	3897	4471
1975	2861	6078	8939
1976	9450	8590	18040
1977	3447	11892	15339
1978	8252	3316	11568
1979	2428	6173	8601
1980	-	187	187

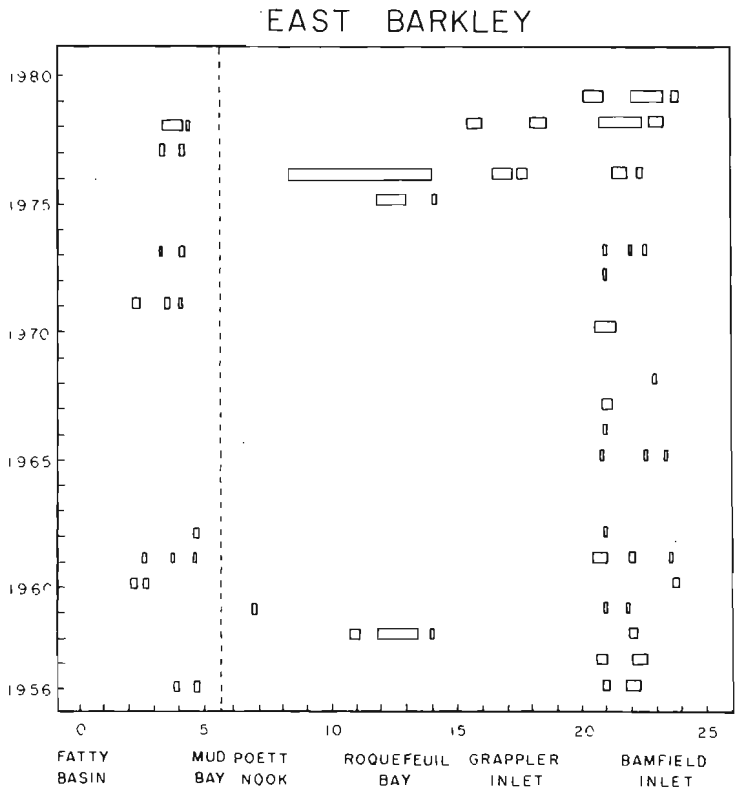

WEST BARKLEY
TOQUART BAY
MAGGIE RIVER
STOPPER ISLANDS
MAYNE BAY
LYALL POINT
DUTCH HARBOUR
PINKERTON ISLANDS
HAND ISLAND
SECHART CHANNEL
MACOAH PASSAGE
FORBES ISLAND
UCLUELET INLET
UCLUELET
AMPHITRITE POINT
NEWCOMBE CHANNEL
LOUDOUN CHANNEL
BROKEN GROUP
49°00'
48°55'
125°30'
125°20'


WEST BARKLEY
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
30
35
40
45
50
55
60
PINKERTON ISLANDS
HAND ISLAND
LYALL POINT
MAYNE BAY
TOQUART BAY
MACOAH PASSAGE
NEWCOMBE CHANNEL
LARKINS ISLAND
STOPPER ISLANDS
FORBES ISLAND
UCLUELET INLET

East Barkley

Herring have spawned for most years of the study period in Bamfield Inlet, and occasionally in adjacent Grappler Inlet and Roquefeuil Bay. Some small spawns have been observed in Fatty Basin. A 243 ton seine roe catch was made here in 1976.


EAST BARKLEY
MUD BAY
5
FATTY BASIN
0
1
SEDDALL ISLAND
RAINY BAY
ALBERNI INLET
TZARTUS ISLAND
IMPERIAL EAGLE CHANNEL
48°55'
NUMUKAMIS BAY
6
POETT NOOK
10
ROQUEFEUIL BAY
DEER GROUP
TREVOR CHANNEL
25
15
GRAPPLER INLET
48°50'
20
BAMFIELD INLET
125°10'
125°05'


EAST BARKLEY
1980
1975
1970
1965
1960
1956
0
5
10
15
20
25
FATTY BASIN
MUD BAY
POETT NOOK
ROQUEFEUIL BAY
GRAPPLER INLET
BAMFIELD INLET