Review of the 1979-1980 British Columbia Herring Fishery and Spawn Abundance

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ABSTRACT

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The 1979-1980 roe herring fishery took 18,000 tons for an estimated value of $15 million. The food and bait fishery took another 7,488 tons for a landed value of $3.6 million. Spawn deposition was 17.7 million standard square yards, still above the 8 year average of 16.2 million standard square yards.

KEY WORDS: Herring Fishery, Catch, Spawn.

RÉSUMÉ

Le total des prises de hareng rogué en 1979-1980 s'élevait à 18 000 tonnes d'une valeur de $15 millions. La pêche du hareng comme nourriture et appât totalisait 7 488 tonnes d'une valeur au débarquement de $3,6 millions. Les dépôts des produits de la fraie couvraient 17,7 millions de verges carrées, ce qui est supérieur à la moyenne de 16,2 millions pour 8 ans.

Mots-clés: pêche au hareng, prise, produits de la fraie.

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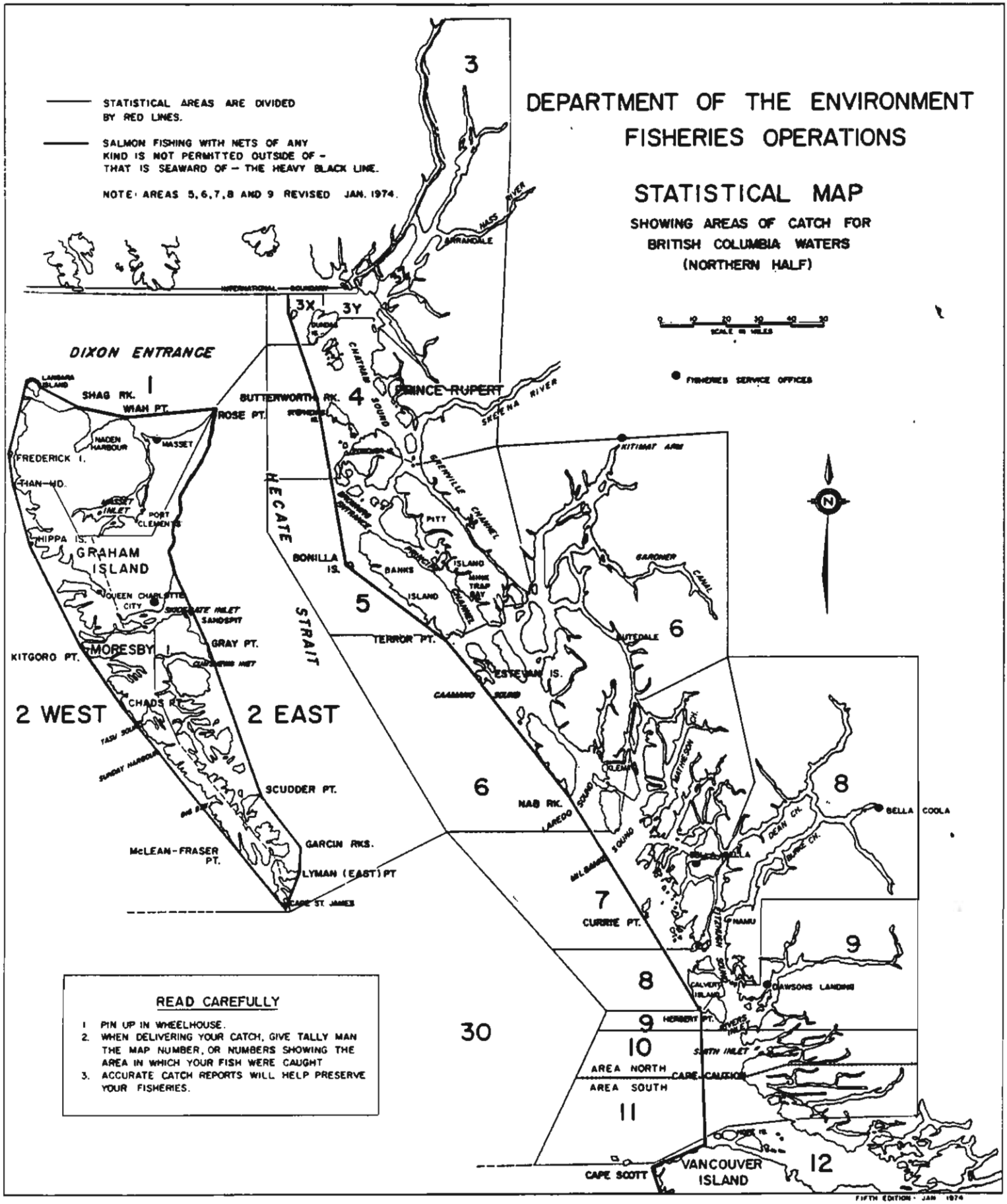
FIGURE I: Northern Statistical Areas



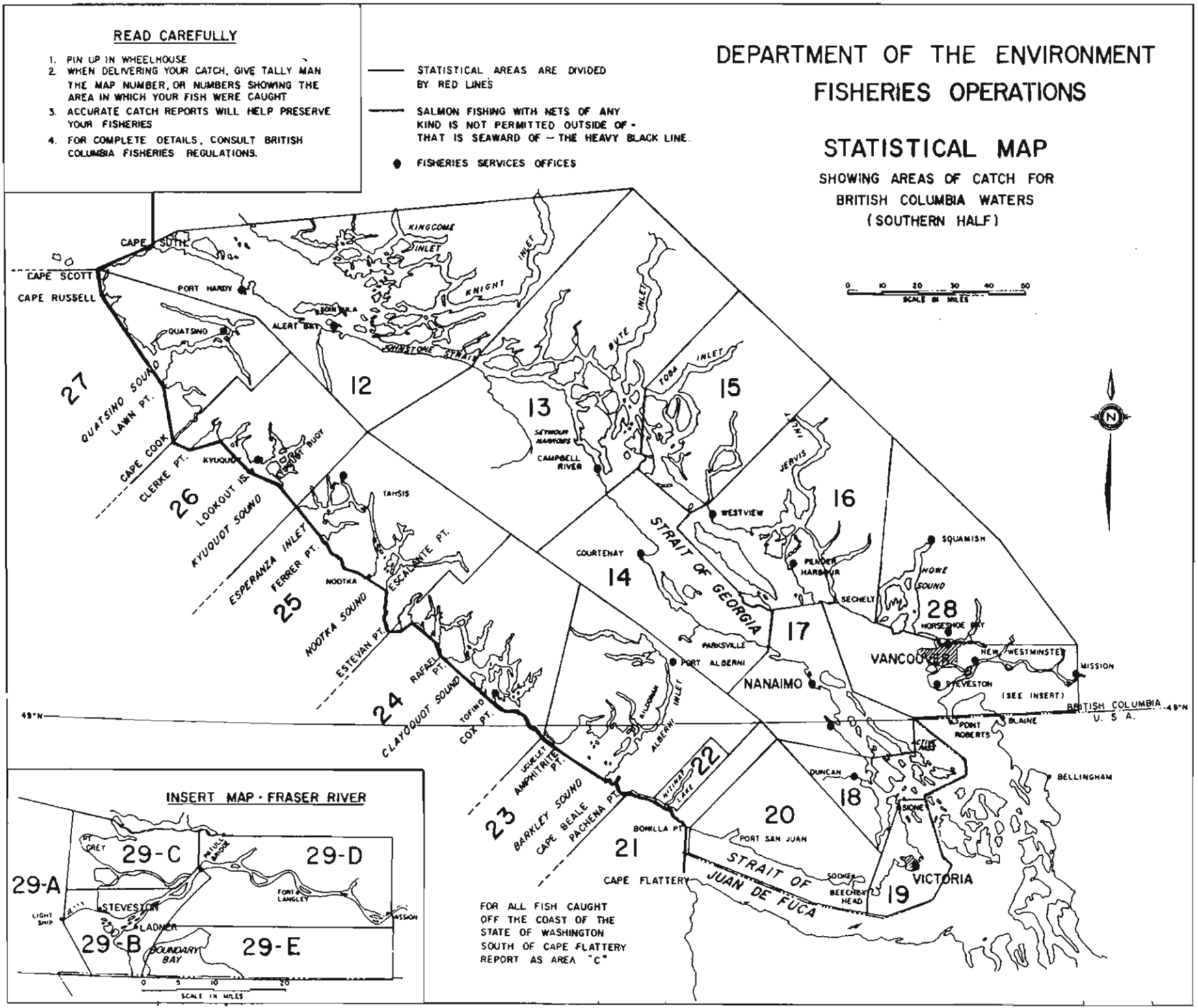


FIGURE 2: Southern Statistical Areas

INTRODUCTION

Adult herring return from offshore feeding areas between October and November. At this time they form into dense schools of varying sizes and migrate inshore to overwinter in coastal bays and inlets. During March and April, the herring mature and spawn on vegetation in and just below the intertidal zone, with the majority of the spawn occuring in waters shallower than 6 meters below the high water line.

While inshore, the herring stocks have been subjected to fisheries of varying intensity since the late 1880's. The first major commercial fishery began in 1904, for the dry-salt herring market in the Orient. Catches held around 30,000 tons until 1919, rose to 85,000 tons between 1919 and 1927, then fell back to 30,000 tons until the end of the dry-salt market in 1934. Markets shifted and between 1938 and 1966, the main focus was on a reduction fishery for fish meal and oil. Dramatic increases in catches occurred during this fishery with an average of 100,000 tons being taken annually. Landings reached a peak in 1962-63 when 264,000 tons were caught. The following season provided a near record catch of 260,000 tons and catches then rapidly declined each year until 1967-68 when the entire coast was closed to fishing for reduction purposes, due to the lack of stocks. For the next four years, only minor food and bait fisheries took place. This decline in the herring population can be attributed to three major factors:

1. Poor recruitment of the incoming year classes during and after the decline in stocks;
2. Increased technology and fishing efficiency maintained catches at a high level while population was declining;
3. Stock assessment procedures were not sensitive enough to detect the decline of the spawning populations until they were at a very low level.

(For further details of the decline and recovery of B. C. herring stocks, refer to Fisheries and Marine Service Technical Report No. 784 by A. S. Hourston).

With the complete curtailment of the reduction fishery during the latter part of the 1967-68 season, the stocks began rebuilding and were sufficiently strong enough to permit a limited roe fishery in 1971. During that year, 11,000 tons were caught and landings steadily increased until 1976 when a peak of 87,000 tons was reached. Over the next few years and until the present season, catches have steadily declined due to a number of factors such as: the difficulty in managing a large and highly mobile fleet, labour strife in the industry and an apparent decline of stocks in some of the major fishing locations. Although catches have been declining since 1976, the landed value of fish has been increasing dramatically. For example: 45,000 tons of fish were caught in 1979 for a value of $129 million dollars, while in 1976, 87,000 tons were landed for a value of $22 million dollars.

The current food and bait fishery takes place mainly during the fall when herring first come inshore and have their highest fat content. The impact on the resource of this fishery has probably been small because catches have been kept relatively low in relation to the roe herring fishery. Catches ranged from 2,500 tons in 1971-72 to a high of 20,000 in 1977-78 and down to 7,200 tons in 1979-80. The main market for food herring has been Japan with smaller amounts being exported to Europe. The smaller and poorer quality food fishery herring are sold as bait to domestic users and for the Alaskan King Crab and Halibut fisheries.

The roe fishery takes place on or near spawning grounds in March and April. Prior to each fishing season, fishery managers propose catch limits for individual British Columbia herring roe fisheries (Table 3). These catch limits are derived from forecasts made at the Pacific Biological station, and are determined from the amount of herring that spawned during the previous year,

recruitment of young fish into the spawning population, and natural mortality of each year class making up the population. The number of desired spawners is then subtracted from the total projected population and the remainder is the surplus available to the component herring fisheries. These proposals are then reviewed by representatives from various segments of the fishing industry before establishment of final management guidelines. Prior to commencement of any fishery, test fishing and hydro-acoustic biomass estimates are carried out by Patrol and Charter vessels. Catch limits may be adjusted on the basis of the pre-fishery data. Once it has been ascertained that it is safe to proceed with the proposed fishing pattern, it is necessary to determine when the herring roe will be mature enough to meet market demands. Ideally the highest percent of roe to body weight is most desirable. Fishery managers generally open a fishery when this reaches 10%. Once the fishery has been opened, it is the Fishery Officer's major concern to ensure that stocks are not overexploited and that there is an adequate escapement to the spawning grounds.

This bulletin outlines the 1980 pre-fishery catch expectations, hailed catch estimates obtained from fishermen leaving the grounds, landed catch tonnages and opening dates and times for each roe fishery. The 1979-80 food and bait fishery, the 1980 Spawn-On-Kelp fishery and 1980 herring spawn depositions are also summarized. Herring roe landings for 1980 and spawn depositions for 1972 to 1980 are tabled by statistical area.

SURVEY METHODS

The data for the fishery portion of this Information Bulletin is obtained from Fishery Officers' daily radio telephone reports to Field Operations Headquarters in Vancouver. These reports contain prefishery test data (tonnage estimates, size of

fish, and roe maturities), fishing gear counts, opening and closure times, catch figures and weather reports. The official landed catch figures are compiled from fishing company sales slips obtained by the Economic and Special Industrial Services Directorate. Since sales slip catches are reported primarily by statistical area and not by actual fishing location or Management Unit (geographically "close" fishing and spawning locations), both "hailed" and "landed" catch data are used in the text.

Spawn data was obtained from annual field reports submitted by District Officers to Vancouver Headquarters and computer processed. Each year refinements are made in the technique of measuring spawn depositions. Field officers record the length, width, and intensity of each spawning, type of vegetation on which the eggs are laid and percentage of spawn area that is devoid of spawn. Since most spawnings extend into the subtidal zone, the deeper extent of depositions has to be ascertained by dragging a hook apparatus that catches pieces of vegetation such as algae, rockweed, and eelgrass. A more accurate method of determining extent of spawning is by the use of SCUBA gear or by swimming the area using a mask and snorkle. Location of spawnings are plotted on large scale charts some of which are detailed shoreline vegetation maps that help in locating and describing spawnings.

Spawn data are converted to a standard measurement (Standard Square Yards at Medium Intensity) so that spawnings can be compared to one another. Standard Square Yards at Standard Intensity of Medium are calculated, from year to year, by multiplying the length of deposition times the width times a weighting factor times the percent of the calculated area with this last observation adjusted for patchiness of spawn depositions. A deposition of 600 yards times 15 yards at medium to heavy intensity with 60% of the area containing spawn would be 600 times 15 times 1.4 times .6 = 7,560 std. sq. yards. Since the numbers

generated are sufficiently large to be awkward, a base unit of 1,000 square yards is used - 7,560 would become 7.56 K std. square yards. Standard square yards is a convenient index of spawn abundance but does not truly reflect actual numbers of eggs. These are calculated using detailed information on layers of eggs by vegetation type.

1979-1980
FOOD AND BAIT FISHERY

Stringent guidelines were imposed this year to prolong the food and bait fishery and hence improve the quality of the product. Three main criteria had to be met before a licence was issued:

1. Proper chilling systems in fish holds;
2. Maximum load limits of 25 tons per delivery (this limit was increased to 50 tons for the bait fishery in Area 13;)
3. Herring had to be off-loaded within 18 hours of capture.

The 2,000 ton catch limit for the Northern sub-district was originally to be broken down into two openings of 1,500 tons for food and 500 tons for bait. However, some of the catch from the first opening was graded as bait and it was decided that the 500 tons assigned for bait could be processed as food, provided the guidelines for food fish were met. In the south, the first fishery was a food fishery in Area 17, with a proposed catch limit of 3,000 tons. There was a special permit bait fishery in Area 13 during December and January.

Northern Sub-District (Areas 3, 4, 5)

On October 9, 1979, Area 5 opened for food fishing until further notice. The majority of fishing effort was in the

area of the "outside edge" between Bonilla Island and Freeman Pass. Fishing was slow due to poor weather conditions until the last week of October, when it started to pick up. An average of six seines and three trawls operated during this opening, with a maximum of twelve seines and four trawls operating. The area closed to fishing at 0600 hours on November 1, 1979, with a total of 1,117 tons being taken by seines and 485 tons by trawl. The landed fish were of mixed sizes and small fish were graded out for bait.

The Area re-opened at 1400 hours on November 12, 1979. Fishing effort was again hampered by poor weather conditions and although there was a sizeable stock in the area, catches were low. An average of four seines and two trawls operated during this opening with a maximum of five seines and three trawls operating. The area closed for the balance of the season at 1800 hours on November 26, 1979. Seines caught 189 tons and trawls 172 tons, bringing the total catch for the area to 1,963 tons.

Middle East Coast Sub-District (Areas 13-16)

To ensure an adequate supply of commercial bait for domestic use a special permit bait fishery took place in Area 13 during December and January. Fifty ton bait permits were issued to fishermen who required large amounts of high quality commercial bait (i.e. for dog fish and black cod fishermen). The rationale for this type of fishery was that indications were that any fish caught during an open commercial fishery would be exported, leaving domestic bait users unable to fulfill their requirements.

The waters around Deepwater Bay and Granite Bay were opened for fishing on December 9, 1979 and remained opened until the December 14 Christmas closure. Early reports indicated large amounts of small fish were being caught and spilled inside Deepwater Bay and a couple of loads of small fish were

landed in Vancouver. Fishermen were advised that if excessive spillage continued, the area would be closed and there were no further problems. Fish caught outside Deepwater Bay and off Granite Point were of good size and so most of the fishing took place in these areas. Prior to the Christmas closure, 750 tons of herring were caught. A further 1,550 tons were caught during a second opening between January 9, 1980 and January 18, 1980, bringing the total catch for Area 13 to 2,300 tons.

Okisollo Channel was included in the second opening. Soundings indicated in excess of 3,000 tons to be holding in the area of which 500 tons were taken before it was closed on January 11, 1980, to preserve Bute Inlet stocks. The heads of Deepwater Bay and Granite Bay were also closed at this time, in order to prevent spillage of immature herring.

Lower East Coast Sub-District (Areas 17, 18, 19)

In Area 17, the waters of Trincomali Channel, below Porlier Pass, were opened for food herring fishing at 1700 hours on November 20, 1979. There were in excess of 100 fishing vessels in the area at the time of opening, however, not all boats caught fish. Due to the large fleet size, and limited catch available, it was felt that by opening the area in the evening when the fish had skimmed out, catches would be limited, thereby reducing spillage and loss of herring. The area closed to fishing at 1000 hours on November 21 at the request of the Department of Fisheries Inspection Branch. Inspection officers had noted that a number of processing plants were becoming plugged and would not be able to meet the 18 hour catch to unloading deadline. A total of 1,971 tons of herring were caught during this period.

There was a second opening on November 25 at 1400 hours. Again, there were in excess of 100 vessels in the area, however, by this time the majority of the fish had moved up above the

top of boundary line and fishing was very slow. The area closed for the balance of the season effective 1500 hours on November 26, 1979. A further 1,482 tons were caught during this opening, bringing the total catch for this sub-district to 3,225 tons.

TABLE 1

Herring Food and Bait Landings (Tons) by Statistical Area

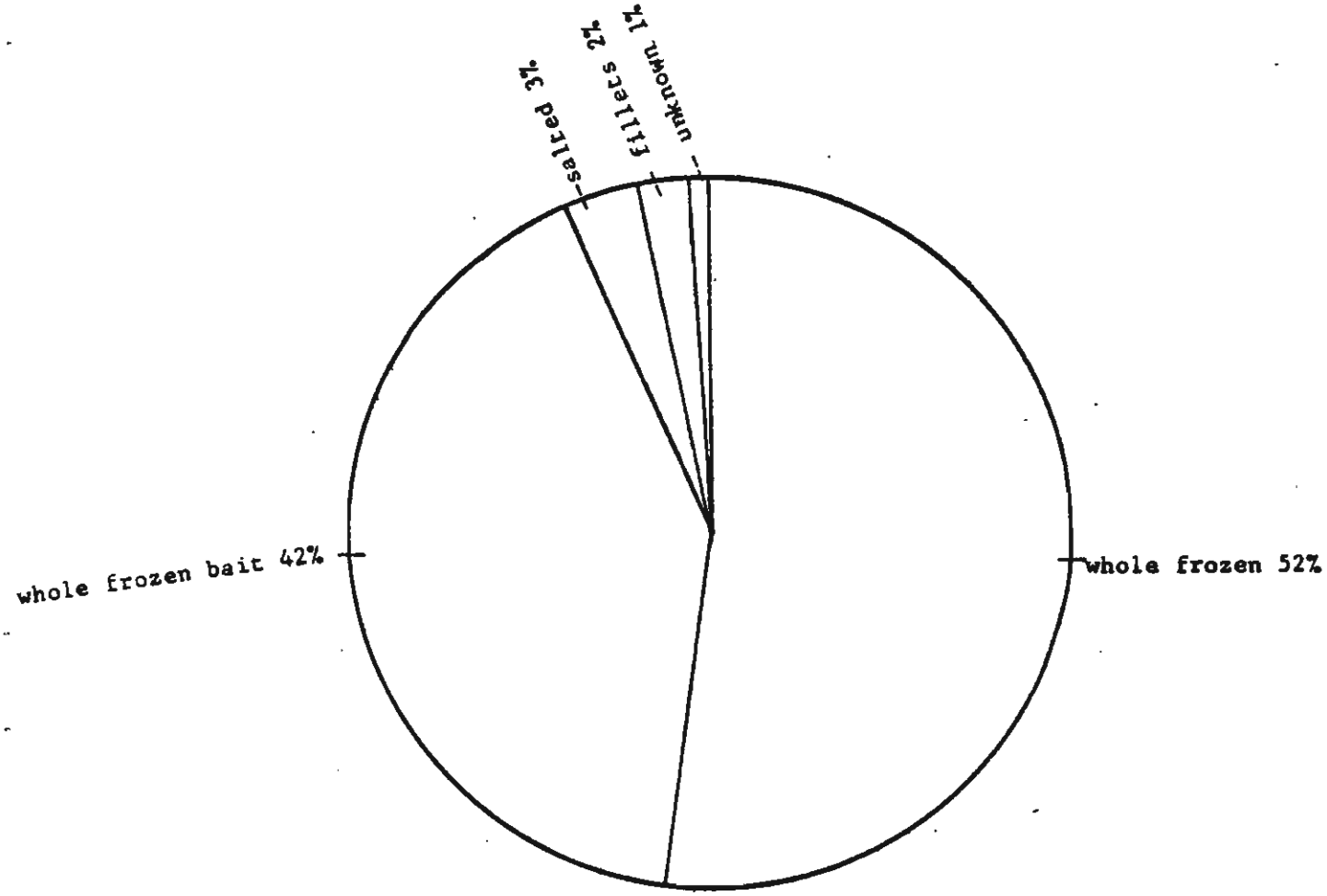
SUB-DISTRICT	AREA	TOTAL
Northern	5	1,963
Middle East Coast	13	2,300
Lower East Coast	18	3,225
TOTAL Coast		7,488

Catch Division by Gear and Landed Value

The landed value of food and bait herring was $1.95 million ($1.12 million for food and $0.82 million for bait). This was considerably lower than for the previous year when 15,522 tons were caught for a landed value of $3.6 million. Eighty-two seines and 17 trawlers landed herring during the food fishery and 27 seines landed fish in the Area 13 bait fishery. During the 1978-79 season, 130 seines and 35 trawlers participated in the fishery. In the North, seines landed 66% of the fish and trawlers the rest, while in the South seines caught practically all the fish. Union fishermen settled for a basic price of $115/ton with a premium rate of $139/ton being given for landings in which 60% of the fish were greater than 20 cm in length.

FIGURE 3

Percent total of herring landed by product type during the 1979–80 food and bait fishery.



Whole Frozen:

	Food	3958 Tons	52%
	Bait	3170 Tons	42%
	Unknown	20 Tons	1%
Fillets		127 Tons	2%
Salted		213 Tons	3%

Herring Products

Twenty eight processing plants and 13 cold storage facilities handled food herring. Fifty-five percent of the total tonnage were processed in the lower mainland, 37% in Prince Rupert and 8% on Vancouver Island. All the special permit bait fish from Area 13 were processed in the lower mainland.

The regulations designed to prolong the fishery and improve product quality appeared to work well. In the South, 98% of the fish processed was acceptable for food products and 75% was acceptable in the North. In 1978-79, only 20—25% of herring landed in the South was acceptable as food.

The majority of the catch was frozen whole (Figure 1). Small amounts were filleted and some were salted with smaller herring being graded out for bait.

1 9 8 0

R O E F I S H E R Y

On February 15, 1980, an information bulletin was sent to all segments of the fishing industry outlining the management plan for the 1980 roe herring fishery. This bulletin provided information on proposed fishing patterns, administration and regulations pertaining to both the seine and gillnet fleets, as well as entry requirements and catch predictions. These catch predictions were derived from forecasts of returning adults published at the Pacific Biological Station (Table 2). As in past years, the Department indicated their concern over the possible decline of stocks and catches in areas of previous intensive fishing, and explained that the proposed catch limits were targets and may not be met depending on the strength of the returning stocks to each fishing area.

TABLE 2

Proposed Catch Limits for 1980 Roe Herring Season

FISHING AREA	EXPECTED CATCH (TONS)
North of Cape Caution	5,000
South of Cape Caution:	
Gulf of Georgia	
(a) Powell River	
(b) Nanaimo/Comox	
GULF SUB-TOTAL	15,000
West Coast of Vancouver Is.	
(a) West Barkley	
(b) S. Clayoquot	
(c) Nootka Sound	
(d) Nuchatlitz Inlet	
WCVI SUB-TOTAL	15,000
T O T A L C O A S T	35,000

It had been proposed to retain the 55%/45% seine/gillnet catch division established in 1979, however, the final catch ended up 62%/38% in favour of gillnets. The main reason for this was the difficulty in obtaining a high enough roe yield (10% or greater) with seines due to the high proportion of three year old fish in the catches.

Regulation changes were implemented prior to the fishery, in order to reduce gear impact on the stocks and assist the fishery officers in keeping track of the amount of gear in the water at any one time (i.e. gillnets were reduced from 150 fathoms fished in two sections to 75 fathoms fished in one section and were to be no deeper than 100 meshes).

Queen Charlotte Islands (Areas 1, 2E, 2W)

Area 1

There was a small gillnet fishery in Naden Harbour. The area opened at 2400 hours on February 12th and closed at 1400 hours on February 14th for reassessment of stocks. The area re-opened at 1400 hours on February 17th and closed for the balance of the season at 0800 hours February 20th. Twenty-four gillnets caught 100 tons of fish during the two openings with a roe yield between 12.5% and 16%. There was no seine fishery in this area.

Area 2E

Prior to the fishery in Skincuttle Inlet, sounding indicated in excess of 10,000 tons of herring present. Sampling showed that up to 40% of the fish were below the 190 mm cutoff used to separate 3 year old fish from older fish. This high abundance of small fish prompted the Department to invite representatives from industry to conduct their own roe yield tests to determine whether they would meet industry requirements. Unanimous agreement from all participants that the roe yield met their requirements resulted in the area being opened to fishing by means of purse seine at 1400 hours on March 23, 1980. Thirty-five seines took 1,645 tons of herring before the area closed at 1655 hours on the same day. Roe yield was 9 to 11%.

The gillnet fishery was opened at 1200 hours on March 24, 1980. Fishing was very slow and the area did not close until 1600 hours on March 27, 1980. The 126 gillnets took 1,366 tons of herring with a roe yield of 14.5%. The area was not closed for the balance of the season until April 10th, because of the possibility of a fishery in Cumshewa Inlet. Unfortunately the anticipated stocks did not appear and the fishery did not materialize.

Area 2W

Louscoone Inlet was opened to gillnets and seines at 1600 hours on March 19, 1980. At the time of the opening, soundings indicated 4,200 tons in the area and roe tests indicated a yield of 14.7%. Gillnets were restricted to fishing north of a line drawn across from Head Rock, while seines were permitted to fish south of Head Rock to a line drawn from Tuga Point to Etches Point. The seines were further restricted by having to form pools with a limited number of vessels fishing at any one time.

The catch limit was 1,300 tons and at closing time 60 gillnets had caught 312 tons and the 24 seines had divided up a catch of 930 tons. Roe tests of seine fish indicated a yield of 13%.

The area closed to fishing by gillnets at 0700 hours on March 21, and by seines at 0847 hours on the same day.

North Coast (Areas 3, 4, 5)

Area 5

Soundings showed stocks building up in Kitkatla Inlet from March 25 to March 28, at this time 5,000 - 6,000 tons were estimated. There were four short seine openings: 1645 hour to 1930 hours on March 29; and 1050 hours to 1430 hours on March 30; then from 0900 hours to 0925 hours and 1015 hours to 1400 hours on March 31. Forty seines took 1600 tons with roe yields of 9.5 to 10%.

The 150 gillnets fished from 1700 hours March 29 until 1900 hours on March 31, taking 1200 tons of herring at a roe yield of 13%.

Central Coast (Areas 6, 7, 8, 9 and 10)

A small gillnet fishery in Weeteeam and Kitasu Bays was the only fishery in the central area. There were two openings in Weeteeam Bay with the first one from 1000 hours on March 18 to 1400 hours on March 19. Fishing was slow and 80 tons of herring were taken by 150 gillnets. Roe yields averaged 10%. Weeteeam Bay was re-opened along with Kitasu Bay at 1200 hours on March 25. Fishing picked up and by the time Weeteeam closed for the balance of the season, at 1400 hours on March 26, a further 400 tons were taken bringing the total for this area to 661 tons.

The upper and lower herring sub-district closed for the balance of the season at 1630 hours on March 27.

Middle East Coast (Areas 13, 14, 15 and 16)

Pre-fishery sounding by test boats in the Strait of Georgia indicated a high abundance of fish and it was anticipated that the projected catch limit would be met. A lack of packer capacity resulted in some areas not being opened and other areas being closed prematurely because gillnet fishermen were unable to unload their punts.

The first fishery was in Lambert Channel on March 5, when the area was opened to gillnets at 1400 hours. Although most of the 250 punts had good fishing the area was closed at 1400 hours on March 6 because packer capacity had been fully utilized. By closing time, 3,600 tons of herring had been taken with a roe yield of 12-13%.

There was a short seine opening in the southern portion of Lambert Channel between 1230 hours and 1500 hours on March 6. A test set, prior to the opening, indicated good size herring with 10% maturity. Shortly after the opening however, there was an influx of small fish into the area and only three vessels were able to obtain good sized fish. The roe yield of landed

fish was between 10 to 14%. There were no more seine openings in the Strait of Georgia because spent fish were mixing with immature fish.

The last fishery in the Strait of Georgia was in North West Bay between 0200 hours on March 9 and 1200 hours on March 12. Fishing was very slow and only 150 of the 250 to 260 punts were operating at closure. Only 100 tons were caught with roe yields of 10 to 14%.

A seine fishery was planned for the Westview-Lund area on the mainland but extensive sounding showed insufficient stocks.

West Coast (Areas 23, 24, 25, 26, 27)

Area 23

There was no fishery in this area due to lack of stocks in excess of spawning requirements.

Area 24

Clayoquot Sound was opened to purse seines at 2325 hours on March 7. When the area was closed at 1800 hours on March 8, 29 seines had taken 2,403 tons. The area was opened to gillnets on March 8 from 1415 hours to 1800 hours. A fleet of 29 punts took 900 tons.

Area 25

Rosa Harbour, Nuchatlitz Inlet, Esperanza Inlet and Port Langford were opened for 48 hours at 1400 hours on March 2. At this time, 120 punts were estimated to be in the area but only 70 were operating. This number increased shortly after to 180 to 190 punts with 140 operating. A 24 hour extension was given and when the area closed at 1400 hours on March 5, 2,000 tons of herring with a roe yield of 14.5 to 15% were taken.

HERRING ROE LANDINGS (1980)

TABLE 3

Hailed or estimated tonnages (Short Tons) as recorded by officers on the fishing grounds immediately after each fishery.

Area	Gear		Total
	SN	GN	
NORTH OF CAPE CAUTION			
Queen Charlotte Is. Herring Sub-District			
1	-	100	100
2E	1,645	1,366	3,011
2W	930	312	1,242
North Coast Herring Sub-District			
5	1,690	1,290	3,980
Upper Central Coast Herring Sub-District			
6		661	791
SOUTH OF CAPE CAUTION			
Lower East Coast Herring Sub-District			
14	290	3,757	4,047
West Coast Vancouver Island Herring Sub-District			
24	2,403	900	3,303
25	-	2,000	2,000
27	-	750	750
TOTAL	6,958	11,136	18,094

NOTE: Hailed figures are rough estimates of catches obtained from Fishing Skippers on the fishing grounds.

Area 27

Winter Harbour opened to gillnets until further notice on March 3 at 0800 hours. There were 60 punts in the area with 25 operating. The area was closed at 1400 hours on March 7, due to a lack of packers. The area was re-opened at 1500 hours on March 8 and closed for the balance of the season at 1600 hours on March 9. 750 tons of herring were taken.

NOTE: See attachments 1 - 10 for exact fishery locations.

THE 1980
SPAWN-ON-KELP FISHERY

Prior to 1975 herring spawn-on-kelp harvesting was restricted by regulation to Native Indians who have traditionally harvested it for food. However, coincident with the development of the herring sac-roe fishery, interest was focused on spawn-on-kelp as a commercially marketable product.

In 1972 the Department of Fisheries and Oceans carried out a program in the Queen Charlotte Islands to study the feasibility of commercially harvesting spawn-on-kelp from spawning beaches, similar to the Alaska Fishery as well as harvesting it from a floating impoundment. In the impoundment operation sexually mature herring were put into an enclosure in which kelp fronds had been suspended. When the herring spawned on the kelp, the spawn-on-kelp is removed, packaged and transported to processing plants. The herring impoundment operation produced a product of much higher quality than that harvested from the beaches. This led the Department to issue an experimental permit to the Skidegate Indian Band Council in 1974. The permit allowed them to produce a maximum of 8 tons of product with the operation being closely monitored by the Department.

Based on the results of the 1972 experiment and the success of the Skidegate Bands' operation, it was decided to continue this type of fishery on a trial basis. In 1975, 13 permits were issued, 12 of the permits were for 6 tons of product and one was for 3 tons of product. In 1976, 31 permits were issued with the criterion for obtaining a permit being the same as the previous year; i.e. experience in catching, impounding and holding live herring living in a remote coastal community and participating in any type of herring fishery besides a spawn-on-kelp or bait operation. Special consideration was given to Native Indians. A new stipulation was added to prevent new permit holders from participating in both the spawn-on-kelp and the herring roe fishery. The 1975 permit holders were given one extra year to decide on which fishery they would participate in. Due to the success of the 1976 fishery and the high quality of product produced the fishery was expanded to 24 permits of 10 tons each in 1977. In 1978, 29 permits were issued and the maximum production per permit was dropped to 8 tons. In 1979, one permit was not renewed and due to the limited market for the product it was decided to reduce the number of permits in operation to 28. The number of permits issued remain the same in 1980 as well as the maximum production per permit. Preliminary figures indicate total production to be 187.7 tons (84% of the maximum) for an approximate value of 2.2 million dollars. (See Table 4 for a summary of production from 1975 - 1980).

SPAWNINGS IN 1980

In 1980 some Fishery Officer estimates have been altered to incorporate additional data. Diving surveys conducted by researchers off herring spawnings were made in Areas 3, 4, 5, 6, 14, 17 and 23 and this information was used to supplement Fishery Officer reports. Consequently, the reports for these areas should more accurately reflect the magnitude of spawn depositions, but comparisons of results with previous years become less meaningful. The quality of the survey information and the method

of calculation of standard square yards of spawn at medium intensity (SYM) can produce discrepancies that may not actually exist. The decrease of nearly 10 million SYM in Area 14 is more a result of this difference in survey information than the level of egg deposition. Another example is the detailed diving surveys and egg calculations for Areas 3 and 4 showed 800 billion eggs in 1979 and 600 billion eggs in 1980, while SYM calculations based on Fishery Officer reports produced 1.2 million SYM in 1979 and 2.4 million SYM in 1980. Nevertheless it is felt that SYM provide meaningful index of spawn abundance and reporting in this form will continue until the system can be replaced by one that is more quantitative.

There were 17.7 million SYM of spawn depositied in B. C. in 1980 (Table 6). This is 12.5 million SYM less than in 1979 but this difference can be attributed almost exclusively to the special situation for Area 14. The 1972 - 79 average is 16.2 million SYM.

Queen Charlotte Islands (Areas 1, 2E, 2W)

There were 978 thousand SYM of spawn deposited in this sub-district in 1980. This is close to the 8 year average of 1 million SYM and almost double the 1979 level with most of the increase occurring in Area 2E.

North Coast (Areas 3, 4, 5)

There were 1.1 million SYM of spawn deposited in 1980 in the northern sub-districts. Close to the 8 year average of 1.2 million SYM, but a decrease by a factor of 0.5 over the previous year. Diver surveys indicate a more moderate decrease of 0.75.

Central Coast (Areas 6, 7, 8, 9, 10, 11)

The upper central sub-district spawn in Area 6 showed a large increase over 1979 and the 8 year average. The majority of this increase may be attributed to an intensive diver survey in Kitasu Bay. The diver information increased the area of spawn

reported by the Fishery Officers by a factor of 2.8.

The lower central coast sub-districts showed a large increase in spawn in both Area 7 and 8, with a smaller increase in Area 10. Area 9 spawning indicated a slight decrease over the previous year and so remains well below the 8 year average. The 1.5 million SYM of spawn in this sub-district would indicate a substantial increase in spawning population.

Upper East Coast (Areas 11, 12)

Spawning in this sub-district appears to be improving over the past two years but still remains well below the 8 year average.

Middle East Coast (Areas 13, 14, 15, 16)

Area 14 spawn was probably as abundant in 1980 as in 1979 and the large decrease indicated is probably a result of the diving survey results being used in the SYM calculations. This area appears to have had substantial increases in spawn deposition over the past 5 years with a fairly large population now spawning here. The increase in spawn is most noticable in the upper portions of Area 14.

Area 13 spawn was slightly below the previous year but still well above the 8 year average.

The upward trend in Area 15 spawnings seems to have reversed itself and the 1980 spawn shows a substantial decrease over the past year. Area 16 remains well below the 8 year average.

Lower East Coast (Areas 17, 18, 19, 20)

The spawn levels in Area 17 was considerably more than in 1979 and slightly above the 8 year average. Spawning was very late this year in the upper portion of Area 17 and was absent in the Nanoose Bay location. Area 18 still appears to have low levels of spawn abundance.

Lower West Coast (Areas 23, 24)

Area 23 also had late spawnings this year and spawn levels are still below the peak depositions of 1976 and 1977. By contrast spawn in Area 24 remains higher and is concentrated in the south east portion of the sound, especially on Elbow Bank and near Tofino.

Upper West Coast (Areas 25, 26, 27)

Area 25 showed a considerable decrease in spawn, mainly because poor weather conditions hampered surveys near Bajo Reef. Bajo Reef has been a major spawning locality in Area 25 in recent years. All of the reported spawn in Area 25 was from Nuchatlitz Inlet and Port Langford, with the lower portion of Nootka Sound having only one small deposition recorded. There was no spawn surveyed in Area 26 in 1980.

Area 27 showed another large increase in spawn, continuing a phenomenon observed in 1978. This increase coupled with a decrease observed in Barkley Sound has led to the speculation that spawnings have shifted northward. The validity of this hypothesis is difficult to correlate but a tagging program aimed at identifying the discrepancies of stocks and the fidelity with which herring return to spawning grounds is presently underway.

Southern Mainland

In 1980 only small spawnings were reported in Areas 28 and 29 this year.

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TABLE 4

B.C. Herring Spawn-On-Kelp Production 1975-1980

	1975	1976	1977	1978	1979	1980
No. of Permits	13	21	24	29	28	28
Maximum Quota	75	126	240	232	224	224
Quantity Produced (short tons)	16.2	61.9	130.5	168.5	215.8	187.7
% of Quota Attained	23	49	54	78	96	84

NOTE: 1980 production figures are preliminary and may be subject to change.

HERRING SPAWN SUMMARY TABLE FOR 1980 80.09.11

TABLE 5

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
AREA:01 ,NORTH COAST Q.C.I.							
BAIN POINT	26/03	28/03	1000	50	3	0.50	10.00
BAIN POINT	08/02	19/02	250	10	1	0.70	0.04
BAIN POINT	08/02	10/02	500	30	1	0.50	0.38
DEEPWATER POINT	08/02	10/02	900	15	1	0.40	0.41
GERMANIA CREEK	26/03	28/03	975	40	2	0.60	3.12
ISABELLA POINT	02/02	03/02	520	50	1	0.40	0.78
OBSERVATORY PT.	18/02	19/02	210	60	1	0.50	0.32
OBSERVATORY PT.	02/02	04/02	300	40	1	0.40	0.36
OBSERVATORY PT.	02/02	04/02	1200	50	1	0.65	1.05
OBSERVATORY PT.	20/02	23/02	450	100	1	0.60	0.90
TWIN CREEK	25/03	26/03	1650	50	3	0.40	19.80
TWIN CREEK	23/02	25/02	1500	60	2	0.40	10.80
AREA TOTAL			9455				47.96
AREA:02E,EAST COAST Q.C.I.							
ALDER ISLAND	28/03	30/03	200	50	5	0.50	5.00
ALDER ISLAND	27/03	30/03	170	30	8	0.00	12.24
ALDER ISLAND	28/03	30/03	200	20	2	0.50	0.40
ALDER ISLAND	28/03	30/03	200	20	5	0.50	2.00
ALDER ISLAND	28/03	30/03	200	20	3	0.00	1.60
ATLI INLET	15/04	18/04	1378	10	3	0.16	4.63
ATLI INLET	15/04	18/04	1114	11	3	0.00	4.90
ATLI INLET	15/04	18/04	400	41	4	0.00	10.66
ATLI INLET	15/04	18/04	415	21	3	0.00	3.49
ATLI INLET	26/04	26/04	2500	4	2	0.00	2.00
ATLI INLET	15/04	18/04	1216	16	2	0.10	3.50
BAG HARBOUR	31/03	03/04	75	5	1	0.00	0.02
BAG HARBOUR	31/03	03/04	125	5	2	0.00	0.13
BAG HARBOUR	31/03	03/04	650	9	2	0.00	1.17
BAG HARBOUR	31/03	03/04	500	14	4	0.10	4.10
BAG HARBOUR	31/03	03/04	1214	18	5	0.04	20.98
BAG HARBOUR	31/03	03/04	810	24	4	0.00	12.64
BAG HARBOUR	31/03	03/04	912	17	3	0.00	6.20
BAG HARBOUR	31/03	03/04	1256	18	4	0.03	14.26

AREA:02E, EAST COAST Q.C.I. CONTINUED

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000'S)
BAG HARBOUR	31/03	03/04	1054	24	5	0.08	23.28
BAG HARBOUR	01/04	03/04	1215	10	3	0.00	4.86
BAG HARBOUR	31/03	03/04	100	40	1	0.00	0.20
BAG HARBOUR	01/04	03/04	1013	18	5	0.18	15.50
BLUE JAY COVE	14/03	15/03	758	9	1	0.25	0.26
BOLKUS ISLAND	09/03	13/03	1809	9	4	0.05	10.05
BOLKUS ISLAND	09/03	13/03	4011	15	3	0.06	22.63
BOLKUS ISLAND	09/03	13/03	2891	28	4	0.02	31.87
BOLKUS ISLAND	09/03	13/03	1486	36	4	0.07	16.69
BOLKUS ISLAND	17/03	17/03	2099	4	4	0.02	8.03
BURNABY ISLAND	29/03	01/04	400	75	3	0.00	1.20
BURNABY ISLAND	29/03	01/04	200	80	4	0.50	7.00
BURNABY ISLAND	29/03	01/04	50	20	1	0.00	0.05
BURNABY ISLAND	29/03	01/04	800	10	3	0.00	1.60
BURNABY ISLAND	29/03	01/04	700	40	6	0.20	53.76
BURNABY ISLAND	29/03	01/04	440	20	6	0.10	11.09
BURNABY ISLAND	29/03	01/04	120	5	8	0.10	1.30
BURNABY ISLAND	29/03	01/04	150	15	1	0.80	0.02
BURNABY ISLAND	01/04	04/04	200	20	5	0.00	4.00
BURNABY ISLAND	25/03	30/03	700	15	5	0.10	9.45
BURNABY ISLAND	25/03	30/03	700	30	5	0.10	18.90
BURNABY ISLAND	25/03	30/03	440	30	9	0.00	39.60
BURNABY ISLAND	25/03	30/03	150	50	5	0.80	1.50
BURNABY ISLAND	01/04	02/04	1000	100	3	0.30	28.90
BURNABY ISLAND	01/04	02/04	300	100	5	0.80	6.00
BURNABY ISLAND	01/04	02/04	100	50	5	0.00	5.00
BURNABY ISLAND	01/04	02/04	200	30	4	0.90	0.30
BURNABY ISLAND	31/03	31/03	100	150	1	0.10	0.45
BURNABY ISLAND	01/04	02/04	200	50	4	0.00	6.50
DOLOMITE NARROWS	17/04	19/04	150	15	3	0.08	0.86
DOLOMITE NARROWS	17/04	19/04	400	10	1	0.05	0.10
DOLOMITE NARROWS	17/04	19/04	100	15	2	0.30	0.21
DOLOMITE NARROWS	17/04	19/04	85	3	3	0.05	0.03
DOLOMITE NARROWS	17/04	19/04	30	10	3	0.05	0.11
DOLOMITE NARROWS	17/04	19/04	75	15	2	0.20	0.16
HUXLEY ISLAND	31/03	02/04	1300	4	3	0.60	0.83
HUXLEY ISLAND	31/03	02/04	150	10	3	0.10	0.54
HUXLEY ISLAND	31/03	02/04	150	50	5	0.10	6.75
HUXLEY ISLAND	31/03	04/04	250	15	4	0.10	2.20
HUXLEY ISLAND	31/03	04/04	50	20	1	0.00	0.05
HUXLEY ISLAND	31/03	02/04	50	10	7	0.00	0.95
HUXLEY ISLAND	31/03	02/04	300	4	4	0.50	0.39
HUXLEY ISLAND	31/03	02/04	300	5	5	0.20	1.20
HUXLEY ISLAND	31/03	02/04	300	75	5	0.30	15.75

AREA:02E,EAST COAST Q.C.I. CONTINUED

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
HUXLEY ISLAND	31/03	02/04	100	13	4	0.05	0.61
HUXLEY ISLAND	28/03	30/03	200	30	2	0.10	1.08
HUXLEY ISLAND	28/03	30/03	100	10	1	0.10	0.05
HUXLEY ISLAND	28/03	30/03	200	20	4	0.50	1.30
HUXLEY ISLAND	03/04	04/04	440	20	1	0.50	0.22
HUXLEY ISLAND	03/04	04/04	200	20	1	0.05	0.19
HUXLEY ISLAND	03/04	04/04	500	20	5	0.05	9.50
HUXLEY ISLAND	03/04	04/04	400	30	3	0.20	3.84
HUXLEY ISLAND	03/04	04/04	100	50	1	0.00	0.25
HUXLEY ISLAND	03/04	04/04	600	4	6	0.00	3.36
JEDWAY	26/04	26/04	35	10	1	0.00	0.02
JEDWAY	19/04	20/04	25	25	4	0.00	0.41
JEDWAY	30/03	31/03	2020	11	3	0.33	5.96
POOLE INLET	02/04	03/04	600	5	1	0.15	0.13
POOLE INLET	02/04	03/04	75	75	3	0.00	2.25
POOLE INLET	02/04	03/04	250	4	2	0.00	0.20
POOLE INLET	02/04	03/04	125	4	4	0.00	0.33
POOLE INLET	02/04	03/04	100	50	1	0.00	0.25
POOLE INLET	02/04	03/04	100	100	1	0.00	0.50
POOLE INLET	02/04	03/04	125	5	3	0.00	0.25
POOLE INLET	31/03	01/04	400	20	3	0.10	2.88
POOLE INLET	19/03	19/03	470	22	1	0.00	0.52
POOLE INLET	02/04	03/04	200	8	3	0.00	0.16
POOLE INLET	31/03	01/04	150	15	3	0.15	0.77
POOLE INLET	31/03	01/04	300	15	4	0.10	2.64
POOLE INLET	31/03	01/04	200	30	2	0.10	1.08
SCUDDER POINT	01/04	02/04	200	20	3	0.30	1.12
SCUDDER POINT	02/04	03/04	80	30	3	0.00	0.96
SCUDDER POINT	01/04	02/04	250	4	4	0.10	0.59
SCUDDER POINT	01/04	02/04	400	75	2	0.25	4.50
SCUDDER POINT	01/04	02/04	175	100	4	0.50	5.69
SCUDDER POINT	01/04	02/04	700	50	2	0.50	3.50
SCUDDER POINT	01/04	02/04	100	100	2	0.10	1.80
SCUDDER POINT	01/04	02/04	440	30	1	0.50	0.33
SCUDDER POINT	01/04	02/04	100	20	1	0.75	0.03
SCUDDER POINT	01/04	02/04	750	25	3	0.75	1.88
SCUDDER POINT	01/04	02/04	250	8	3	0.00	0.80
SCUDDER POINT	01/04	02/04	350	15	2	0.10	0.95
SCUDDER POINT	01/04	02/04	480	4	4	0.10	1.13
SCUDDER POINT	01/04	02/04	300	25	2	0.10	1.35
SCUDDER POINT	01/04	02/04	200	25	3	0.30	1.40
SCUDDER POINT	01/04	02/04	250	15	1	0.03	0.18
SCUDDER POINT	01/04	02/04	350	20	1	0.30	0.25
SCUDDER POINT	02/04	03/04	150	3	1	0.00	0.02

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTENSITY	EST. BARE AREA	STD.SQ. YDS (1000'S)

AREA:02E,EAST COAST Q.C.I. CONTINUED

SCUDDER POINT	02/04	03/04	375	11	1	0.00	0.81
SCUDDER POINT	02/04	03/04	1300	3	1	0.00	0.80
SCUDDER POINT	02/04	03/04	150	16	1	0.00	0.09
SCUDDER POINT	02/04	03/04	225	5	1	0.00	0.06
SCUDDER POINT	02/04	03/04	500	20	4	0.50	3.25
SCUDDER POINT	02/04	03/04	400	10	3	0.75	0.40
SCUDDER POINT	02/04	03/04	75	25	2	0.05	0.36
SCUDDER POINT	02/04	03/04	150	1	4	0.00	0.10
SCUDDER POINT	02/04	03/04	200	25	1	0.10	0.23
SCUDDER POINT	02/04	03/04	80	7	1	0.05	0.03
SECTION COVE	04/04	06/04	350	35	2	0.10	2.21
SECTION COVE	04/04	06/04	350	15	2	0.10	0.95
SECTION COVE	04/04	06/04	350	8	2	0.25	0.48
SECTION COVE	01/04	04/04	600	25	4	0.25	7.31
SECTION COVE	01/04	04/04	300	25	2	0.50	0.75
SECTION COVE	01/04	04/04	300	13	4	0.10	2.29
SECTION COVE	01/04	04/04	50	20	5	0.90	0.10
SECTION COVE	01/04	04/04	20	50	2	0.00	0.20
SECTION COVE	01/04	04/04	200	13	5	0.00	2.60
SECTION COVE	01/04	04/04	80	30	6	0.10	0.76
SECTION COVE	01/04	04/04	100	16	2	0.10	0.27
SECTION COVE	01/04	04/04	220	100	3	0.75	2.20
SECTION COVE	04/04	06/04	450	10	3	0.10	1.62
SEDGEWICK BAY	02/04	02/04	425	20	1	0.00	0.43
SEDGEWICK BAY	02/04	02/04	250	20	1	0.00	0.25
SLIM INLET	26/03	27/03	467	34	4	0.00	10.32
SLIM INLET	26/03	30/03	250	160	8	0.00	84.00
SLIM INLET	24/03	30/03	1756	31	3	0.03	21.12
SLIM INLET	28/03	29/03	3527	18	4	0.07	38.38
AREA TOTAL			67731				755.58

AREA:02W,WEST COAST Q.C.I.

CLONARD BAY	31/03	31/03	200	5	3	0.00	0.40
CLONARD BAY	31/03	31/03	800	4	3	0.00	1.28

AREA:02W,WEST COAST Q.C.I. CONTINUED

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
CLONARD BAY	31/03	31/03	400	12	5	0.00	4.80
CLONARD BAY	31/03	31/03	300	12	5	0.00	3.60
CLONARD BAY	31/03	31/03	40	5	3	0.00	0.08
CLONARD BAY	31/03	31/03	50	3	3	0.00	0.06
FLAMINGO INLET	08/04	08/04	2500	10	3	0.10	9.00
INSKIP CHANNEL	26/03	26/03	450	4	6	0.00	2.52
INSKIP CHANNEL	26/03	26/03	1000	5	6	0.05	6.65
INSKIP CHANNEL	26/03	26/03	500	4	5	0.00	2.00
INSKIP CHANNEL	26/03	26/03	1400	5	6	0.10	8.82
INSKIP CHANNEL	26/03	26/03	700	5	5	0.10	3.15
INSKIP CHANNEL	26/03	26/03	500	7	5	0.10	3.15
INSKIP CHANNEL	03/04	03/04	270	15	5	0.10	3.65
INSKIP CHANNEL	03/04	03/04	300	5	4	0.10	0.88
INSKIP CHANNEL	03/04	03/04	230	5	5	0.10	1.04
INSKIP CHANNEL	26/03	26/03	500	5	6	0.10	3.15
INSKIP CHANNEL	26/03	26/03	800	7	6	0.10	7.06
INSKIP CHANNEL	22/03	22/03	200	10	3	0.20	0.64
INSKIP CHANNEL	26/03	26/03	230	17	5	0.10	3.52
KIOKATHLI INLET	29/03	31/03	400	15	5	0.10	5.40
KIOKATHLI INLET	29/03	31/03	125	10	6	0.00	1.75
KIOKATHLI INLET	29/03	31/03	100	20	4	0.20	1.04
KIOKATHLI INLET	29/03	31/03	40	30	5	0.20	0.96
KIOKATHLI INLET	29/03	31/03	200	35	8	0.15	14.28
KIOKATHLI INLET	29/03	31/03	1900	10	5	0.20	15.20
KIOKATHLI INLET	29/03	31/03	350	3	2	0.00	0.21
LOUSCOONE INLET	22/03	24/03	150	15	3	0.65	0.32
LOUSCOONE INLET	22/03	24/03	130	20	4	0.60	0.68
LOUSCOONE INLET	21/03	21/03	200	10	4	0.20	1.04
LOUSCOONE INLET	21/03	21/03	100	75	7	0.60	5.70
LOUSCOONE INLET	21/03	21/03	650	5	4	0.10	1.90
LOUSCOONE INLET	21/03	21/03	100	100	4	0.45	3.58
LOUSCOONE INLET	21/03	21/03	450	3	5	0.10	1.22
LOUSCOONE INLET	21/03	21/03	300	25	5	0.50	3.75
LOUSCOONE INLET	21/03	21/03	310	25	7	0.40	8.84
LOUSCOONE INLET	22/03	24/03	300	35	1	0.60	0.21
LOUSCOONE INLET	21/03	22/03	325	40	3	0.45	2.86
LOUSCOONE INLET	21/03	22/03	175	20	2	0.30	0.49
LOUSCOONE INLET	20/03	21/03	175	10	3	0.40	0.42
LOUSCOONE INLET	21/03	21/03	100	75	3	0.40	1.60
LOUSCOONE INLET	21/03	21/03	300	10	3	0.60	0.48
LOUSCOONE INLET	21/03	22/03	140	25	2	0.35	0.46
LOUSCOONE INLET	02/04	02/04	30	10	5	0.00	0.30
NEWCOMBE INLET	10/04	10/04	225	3	2	0.90	0.01
NEWCOMBE INLET	10/04	10/04	250	5	2	0.90	0.03

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
AREA:02W.WEST COAST Q.C.I.		CONTINUED					
NEWCOMBE INLET	10/04	10/04	300	8	2	0.90	0.03
NEWCOMBE INLET	10/04	10/04	2700	5	5	0.90	1.35
NEWCOMBE INLET	10/04	10/04	850	5	2	0.80	0.17
PORT LOUIS	29/03	29/03	750	5	2	0.25	0.56
PORT LOUIS	29/03	29/03	20	10	4	0.00	0.13
PORT LOUIS	29/03	29/03	1000	15	4	0.40	5.85
PORT LOUIS	29/03	29/03	250	5	3	0.15	0.43
PORT LOUIS	29/03	29/03	400	20	2	0.15	1.36
SEAL INLET	20/04	20/04	700	5	2	0.50	0.35
SEAL INLET	20/04	20/04	450	5	2	0.50	0.23
SEAL INLET	20/04	20/04	125	10	2	0.30	0.18
SEAL INLET	20/04	20/04	100	10	2	0.30	0.14
SEAL INLET	20/04	20/04	150	2	2	0.90	0.01
SEAL INLET	20/04	20/04	550	5	1	0.30	0.10
SEAL INLET	20/04	20/04	900	10	3	0.20	2.88
SEAL INLET	20/04	20/04	200	2	2	0.50	0.04
SEAL INLET	20/04	20/04	275	5	2	0.40	0.17
SKINDASKUN ISLAND	22/03	22/03	75	75	3	0.50	1.13
SKINDASKUN ISLAND	22/03	22/03	400	6	3	0.75	0.24
SKINDASKUN ISLAND	22/03	22/03	250	20	2	0.70	0.30
SKINDASKUN ISLAND	22/03	22/03	210	5	6	0.50	1.26
SKINDASKUN ISLAND	22/03	22/03	300	10	9	0.20	7.20
TARTU INLET	30/03	30/03	400	5	3	0.00	0.80
TARTU INLET	30/03	30/03	1100	2	3	0.00	0.88
TARTU INLET	30/03	30/03	2000	5	5	0.00	10.00
TWO MOUNTAIN BAY	10/04	10/04	400	8	4	0.50	1.04
AREA TOTAL			33750				175.21
AREA:03 ,NASS							
FLEWIN POINT	02/04	05/04	700	20	3	0.00	5.60
GRASSY POINT	25/03	25/03	1100	25	3	0.00	11.00
GRASSY POINT	25/03	25/03	1500	10	1	0.10	0.68
HOOK POINT	31/03	31/03	150	75	1	0.00	0.56
HOOK POINT	31/03	31/03	450	50	3	0.00	9.00

HERRING SPAWN SUMMARY TABLE FOR 1980 80.09.11

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
AREA:03 ,NASS		CONTINUED					
HOOK POINT	31/03	31/03	225	8	1	0.00	0.09
HOOK POINT	31/03	31/03	140	70	3	0.05	3.72
HOOK POINT	31/03	31/03	560	8	1	0.10	0.20
HOOK POINT	31/03	31/03	450	10	1	0.10	0.21
HOOK POINT	31/03	31/03	350	20	1	0.05	0.33
PORT SIMPSON	25/03	25/03	1100	20	1	0.10	0.99
PORT SIMPSON	25/03	25/03	1200	20	1	0.15	1.02
PORT SIMPSON	25/03	25/03	350	15	1	0.00	0.26
REDCLIFF POINT	31/03	31/03	330	15	3	0.00	1.98
STUMAUN BAY	26/03	27/03	150	25	1	0.25	0.14
STUMAUN BAY	26/03	27/03	1250	20	3	0.15	8.50
STUMAUN BAY	26/03	27/03	250	10	1	0.40	0.08
STUMAUN BAY	26/03	27/03	200	150	1	0.00	1.50
VILLAGE ISLAND	31/03	01/04	300	200	5	0.30	42.00
VILLAGE ISLAND	27/03	27/03	300	15	3	0.10	1.62
VILLAGE ISLAND	27/03	27/03	2100	40	3	0.00	33.60
VILLAGE ISLAND	26/03	27/03	250	40	1	0.10	0.45
VILLAGE ISLAND	27/03	27/03	950	50	3	0.00	19.00
WORK CHANNEL	07/04	07/04	700	20	7	0.30	18.62
AREA TOTAL			15055				161.15
AREA:04 ,SKEENA							
BIG BAY	01/04	10/04	300	400	4	0.00	78.00
BIG BAY	01/04	03/04	150	5	3	0.00	0.30
BIG BAY	01/04	03/04	350	20	1	0.00	0.35
BIG BAY	01/04	03/04	150	40	3	0.00	2.40
BIG BAY	01/04	03/04	100	50	1	0.00	0.25
BIG BAY	01/04	03/04	300	40	2	0.00	2.40
BIG BAY	01/04	03/04	400	40	1	0.20	0.64
BIG BAY	01/04	03/04	500	50	4	0.10	14.63
BIG BAY	01/04	03/04	450	30	1	0.20	0.54
BIG BAY	01/04	03/04	750	50	3	0.20	12.00
BURNT CLIFF ISLAND	31/03	31/03	600	215	1	0.20	5.16
BURNT CLIFF ISLAND	31/03	31/03	450	70	4	0.35	13.31

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
AREA:04 ,SKEENA	CONTINUED						
BURNT CLIFF ISLAND	31/03	31/03	600	235	1	0.60	2.82
FINLAYSON ISLAND WEST	05/05	05/05	325	30	3	0.00	3.90
FINLAYSON ISLAND WEST	07/05	07/05	650	10	3	0.00	2.60
ISLAND POINT	20/04	23/04	222	25	1	0.00	0.28
ISLAND POINT	20/04	23/04	100	70	5	0.00	7.00
ISLAND POINT	20/04	23/04	70	10	3	0.00	0.28
ISLAND POINT	20/04	23/04	205	30	5	0.00	6.15
ISLAND POINT	20/04	23/04	100	20	3	0.30	0.56
ISLAND POINT	20/04	23/04	100	30	4	0.50	0.98
ISLAND POINT	20/04	23/04	142	50	5	0.00	7.10
ISLAND POINT	20/04	23/04	24	25	3	0.50	0.12
ISLAND POINT	20/04	23/04	177	25	3	0.00	1.77
ISLAND POINT	20/04	23/04	138	85	1	0.05	0.16
ISLAND POINT	20/04	23/04	160	25	3	0.05	1.52
ISLAND POINT	20/04	23/04	30	25	1	0.00	0.04
ISLAND POINT	20/04	23/04	192	25	3	0.05	1.82
ISLAND POINT	20/04	23/04	260	25	4	0.00	4.23
ISLAND POINT	20/04	23/04	314	25	4	0.00	5.10
ISLAND POINT	20/04	23/04	252	25	5	0.05	5.99
ISLAND POINT	20/04	23/04	102	25	3	0.00	1.02
ISLAND POINT	20/04	23/04	56	25	1	0.00	0.07
ISLAND POINT	20/04	23/04	800	25	3	0.00	8.00
ISLAND POINT	20/04	23/04	216	25	3	0.00	2.16
ISLAND POINT	20/04	23/04	646	25	5	0.00	16.15
ISLAND POINT	20/04	23/04	156	25	3	0.00	1.56
JAP POINT	08/05	08/05	1600	10	1	0.00	0.80
OTTER ANCHORAGE	30/03	30/03	300	50	4	0.20	7.80
PEARL HARBOUR	31/03	31/03	500	70	1	0.20	1.40
PEARL HARBOUR	31/03	31/03	150	65	4	0.20	5.07
PEARL HARBOUR	31/03	31/03	250	25	1	0.00	0.31
PEARL HARBOUR	31/03	31/03	750	50	4	0.20	19.50
PEARL HARBOUR	31/03	03/04	1600	50	4	0.20	41.60
PEARL HARBOUR	31/03	31/03	250	35	1	0.20	0.35
AREA TOTAL			15931				288.19

HERRING SPAWN SUMMARY TABLE FOR 1980 80.09.11

AREA:05 ,GRANVILLE-PRINCIPE

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000'S)
ABSALOM ISLAND	05/04	08/04	400	20	5	0.10	7.20
ABSALOM ISLAND	05/04	08/04	800	20	5	0.10	14.40
ABSALOM ISLAND	05/08	08/04	350	20	6	0.00	9.80
ABSALOM ISLAND	05/04	08/04	1350	20	6	0.00	37.80
ABSALOM ISLAND	05/04	08/04	250	15	5	0.05	3.56
ABSALOM ISLAND	01/04	08/04	600	50	5	0.10	27.00
ABSALOM ISLAND	05/08	08/04	775	20	5	0.00	15.50
ABSALOM ISLAND	05/04	08/04	750	15	5	0.00	11.25
ABSALOM ISLAND	05/04	08/04	150	30	5	0.05	4.28
BILLY BAY	02/05	02/05	175	10	5	0.00	1.75
COQUITLAM ISLAND	01/04	08/04	850	50	5	0.10	38.25
COQUITLAM ISLAND	01/04	08/04	1200	50	5	0.10	54.00
DRIES INLET	06/04	07/04	400	100	4	0.15	22.10
FREEMAN PASSAGE	05/04	08/04	250	15	4	0.10	2.20
FREEMAN PASSAGE	05/04	08/04	250	15	4	0.05	2.32
FREEMAN PASSAGE	05/04	08/04	150	15	4	0.05	1.39
GASBOAT PASSAGE	22/04	23/04	300	150	4	0.05	27.79
GOSCHEN ISLAND	14/04	14/04	1500	15	4	0.10	13.17
GURD ISLAND	02/04	04/04	30	10	3	0.00	0.12
GURD ISLAND	07/04	09/04	150	75	4	0.05	6.94
PORCHER PENINSULA	01/04	08/04	700	30	4	0.10	12.29
PORCHER PENINSULA	07/04	11/04	600	50	4	0.05	18.53
PORCHER PENINSULA	07/04	11/04	300	10	4	0.10	1.76
PORCHER PENINSULA	05/04	08/04	2000	30	5	0.10	54.00
PORCHER PENINSULA	05/04	08/04	300	20	4	0.10	3.51
PORCHER PENINSULA	01/04	08/04	1550	50	5	0.05	73.63
PORCHER PENINSULA	01/04	08/04	225	30	4	0.10	3.95
PORCHER PENINSULA	01/04	08/04	2600	30	4	0.10	45.63
PORCHER PENINSULA	01/04	08/04	2500	30	4	0.10	43.88
SERPENTINE INLET	02/04	04/04	600	15	3	0.15	3.06
SERPENTINE INLET	02/04	04/04	400	30	4	0.15	6.63
SERPENTINE INLET	02/04	04/04	400	200	5	0.10	72.00
WILCOX GROUP	02/04	04/04	300	50	3	0.05	5.70
WILCOX GROUP	02/04	04/04	500	50	4	0.10	14.63
WILCOX GROUP	02/04	04/04	400	50	3	0.15	6.80
AREA TOTAL			24055				666.82

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
AREA:06 ,BUTEDALE							
HIGGINS PASSAGE	02/04	06/04	100	5	2	0.85	0.02
HIGGINS PASSAGE	02/04	06/04	3500	10	1	0.70	0.53
HIGGINS PASSAGE	02/04	06/04	100	50	3	0.60	0.80
HIGGINS PASSAGE	02/04	06/04	125	50	1	0.10	0.28
HIGGINS PASSAGE	02/04	06/04	1350	10	2	0.70	0.81
KITASU BAY	03/04	05/04	200	5	1	0.40	0.03
KITASU BAY	03/04	05/04	100	5	2	0.30	0.07
KITASU BAY	26/03	30/03	6640	26	4	0.20	89.78
KITASU BAY	03/04	05/04	250	5	2	0.35	0.16
KITASU BAY	27/03	27/03	2900	66	4	0.20	99.53
LAREDO SOUND	28/03	02/04	700	105	2	0.10	13.23
LAREDO SOUND	28/03	02/04	400	10	2	0.50	0.40
LAREDO SOUND	28/03	02/04	700	5	2	0.95	0.04
LAREDO SOUND	29/03	03/04	880	15	2	0.20	2.11
MARVIN ISLANDS	26/03	30/03	1984	74	5	0.29	104.24
OSMENT INLET	03/04	05/04	3104	6	3	0.44	4.17
PARSONS ANCHORAGE	26/03	30/03	1577	116	4	0.35	77.29
PARSONS ANCHORAGE	24/03	30/03	662	9	3	0.16	2.00
SURF INLET	08/05	13/05	2500	5	2	0.30	1.75
WEETEEAM BAY	13/03	16/03	765	15	2	0.25	1.73
WEETEEAM BAY	13/03	16/03	230	10	1	0.40	0.07
WEETEEAM BAY	13/03	16/03	1000	5	1	0.80	0.05
WEETEEAM BAY	13/03	16/03	100	10	2	0.20	0.16
WEETEEAM BAY	13/03	16/03	350	100	3	0.10	12.60
WEETEEAM BAY	13/03	16/03	100	40	2	0.60	0.32
WEETEEAM BAY	13/03	16/03	60	10	2	0.10	0.11
WEETEEAM BAY	13/03	16/03	275	50	4	0.50	4.47
WEETEEAM BAY	13/03	16/03	100	50	1	0.20	0.20
WEETEEAM BAY	13/03	16/03	150	25	1	0.30	0.13
WILBY POINT	28/03	02/04	400	20	3	0.20	2.56
WILBY POINT	28/03	02/04	150	5	1	0.50	0.02
WILBY POINT	27/03	31/03	350	8	1	0.50	0.07
AREA TOTAL			31802				419.73

AREA:07 ,BELLA BELLA

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
BOAT INLET	27/03	04/04	264	176	3	0.60	7.44
CAPE MARK	01/04	04/04	1203	25	5	0.26	22.26
CAPE MARK	01/04	04/04	1618	38	3	0.30	17.21
CAPE MARK	01/04	04/04	1247	27	6	0.05	44.78
CULTUS SOUND	27/03	04/04	3410	15	5	0.20	40.92
CULTUS SOUND	27/03	04/04	3130	30	4	0.25	45.78
CULTUS SOUND	27/03	04/04	1700	15	3	0.30	7.14
CULTUS SOUND	27/03	04/04	5750	20	4	0.25	56.06
DUNDIVAN INLET	06/04	10/04	1140	10	5	0.15	9.69
DUNDIVAN INLET	06/04	10/04	780	35	5	0.15	23.21
DUNDIVAN INLET	06/04	10/04	500	10	3	0.15	1.70
HOUGHTON ISLANDS	24/03	30/03	200	5	3	0.60	0.16
HOUGHTON ISLANDS	26/03	28/03	220	75	5	0.40	9.90
HOUGHTON ISLANDS	28/03	28/03	50	15	1	0.50	0.02
HOUGHTON ISLANDS	28/03	30/03	100	30	1	0.60	0.06
HOUGHTON ISLANDS	25/03	26/03	230	50	3	0.40	2.76
HOUGHTON ISLANDS	28/03	30/03	50	3	1	0.70	0.00
HOUGHTON ISLANDS	24/03	30/03	100	20	4	0.40	0.78
HOUGHTON ISLANDS	24/03	30/03	150	40	4	0.30	2.73
HOUGHTON ISLANDS	24/03	30/03	420	130	5	0.50	27.30
HURRICANE ISLAND	29/03	04/04	130	25	4	0.35	1.37
HURRICANE ISLAND	29/03	04/04	530	25	4	0.35	5.60
IDOL POINT	07/04	10/04	425	70	4	0.25	14.51
JOASSA CHANNEL	07/04	11/04	965	15	5	0.15	12.31
JOASSA CHANNEL	09/04	14/04	1025	105	6	0.40	90.41
JOASSA CHANNEL	09/04	13/04	1280	25	6	0.10	40.32
JOASSA CHANNEL	09/04	11/04	280	70	5	0.15	16.66
LADY TRUTCH PASS	21/03	31/03	1760	30	6	0.25	55.44
LADY TRUTCH PASS	31/03	31/03	587	10	7	0.20	8.92
LAKE ISLAND	21/03	31/03	350	100	5	0.00	35.00
LAKE ISLAND	21/03	31/03	175	2	5	0.00	0.35
LAKE ISLAND	21/03	31/03	700	50	6	0.10	44.10
LAKE ISLAND	21/03	31/03	530	4	6	0.10	2.67
LAMBARO INLET	21/03	31/03	1232	18	5	0.45	12.20
LAMBARD INLET	27/03	04/04	2288	22	7	0.20	76.51
LAMBARD INLET	21/03	31/03	1760	28	4	0.40	19.22
LOUISE CHANNEL	10/04	13/04	600	235	7	0.50	133.95
LOUISE CHANNEL	10/04	13/04	470	75	5	0.10	31.73
MATHIESON CHANNEL	21/03	31/03	440	12	5	0.40	3.17
MATHIESON CHANNEL	21/03	31/03	176	176	7	0.30	41.20
MATHIESON CHANNEL	21/03	31/03	352	88	7	0.30	41.20
MCNAUGHTON GROUP	27/03	03/04	40	5	3	0.30	0.06
POTTS ISLAND	24/03	26/03	75	20	3	0.20	0.48
POTTS ISLAND	26/03	02/04	250	50	5	0.30	8.75

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)

AREA:07 ,BELLA BELLA CONTINUED

POWELL ANCHORAGE	26/03	04/04	30	30	3	0.20	0.29
PRINCESS ALICE ISLAND	10/03	12/03	176	39	5	0.30	4.80
PRINCESS ALICE ISLAND	09/03	10/03	60	10	3	0.10	0.22
RAIT NARROWS	07/04	11/04	350	10	5	0.35	2.28
REID PASSAGE	27/03	04/04	1760	20	7	0.20	53.50
REID PASSAGE	2' 03	04/04	360	75	1	0.50	0.68
SPIDER ANCHORAGE	27/03	03/04	100	20	3	0.35	0.52
STRYKER ISLAND	09/04	11/04	380	10	4	0.20	1.98
STRYKER ISLAND	03/04	04/04	915	15	4	0.25	6.69
STRYKER ISLAND	02/04	02/04	40	10	3	0.20	0.13
STRYKER ISLAND	24/03	02/04	50	10	4	0.40	0.20
STRYKER ISLAND	24/03	24/03	50	20	5	0.25	0.75
STRYKER ISLAND	23/03	26/03	200	60	6	0.40	10.08
THOMPSON BAY	07/04	14/04	430	220	5	0.20	75.68
THOMPSON BAY	07/04	14/04	90	70	3	0.25	1.89
THOMPSON BAY	04/04	07/04	100	10	3	0.25	0.30
THOMPSON BAY	03/04	07/04	2100	10	4	0.25	10.24
THOMPSON BAY	04/04	07/04	30	10	5	0.25	0.23
TRIQUET ISLAND	27/03	03/04	50	25	3	0.40	0.30
AREA TOTAL			45953				1186.79

AREA:08 ,BELL COOLA

FAIRMILE PASSAGE	23/03	31/03	150	20	4	0.50	0.98
FAIRMILE PASSAGE	23/03	31/03	325	1	3	0.20	0.10
FAIRMILE PASSAGE	23/03	31/03	200	5	6	0.30	0.98
FAIRMILE PASSAGE	23/03	31/03	30	10	4	0.25	0.15
FAIRMILE PASSAGE	23/03	31/03	175	30	6	0.20	5.88
FAIRMILE PASSAGE	23/03	31/03	130	20	7	0.10	4.45
FAIRMILE PASSAGE	23/03	31/03	150	3	4	0.70	0.09
FAIRMILE PASSAGE	23/03	31/03	200	3	3	0.80	0.05
FAIRMILE PASSAGE	23/03	31/03	75	10	5	0.30	0.53
FAIRMILE PASSAGE	23/03	31/03	220	3	4	0.10	0.39
FAIRMILE PASSAGE	23/03	31/03	45	30	6	0.20	1.51
ILLAHIE INLET	23/03	31/03	800	3	3	0.50	0.48

AREA:08 ,BELL . . COOLA CONTINUED

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
ILLAHIE INLET	23/03	31/03	800	4	4	0.40	1.85
ILLAHIE INLET	23/03	31/03	5	5	1	0.00	0.00
ILLAHIE INLET	23/03	31/03	550	5	4	0.15	1.52
ILLAHIE INLET	23/03	31/03	100	100	3	0.10	3.60
ILLAHIE INLET	23/03	31/03	650	5	4	0.30	1.48
ILLAHIE INLET	23/03	31/03	150	2	3	0.30	0.08
ILLAHIE INLET	23/03	31/03	300	5	5	0.30	1.05
ILLAHIE INLET	23/03	31/03	50	5	1	0.50	0.01
ILLAHIE INLET	23/03	31/03	20	5	1	0.50	0.01
ILLAHIE INLET	23/03	31/03	950	10	4	0.50	3.09
ILLAHIE INLET	23/03	31/03	1025	10	4	0.20	5.33
KEITH ANCHORAGE	01/04	02/04	200	50	3	0.20	3.20
KEITH ANCHORAGE	01/04	02/04	30	20	6	0.20	0.67
KEITH ANCHORAGE	26/03	01/04	150	30	3	0.10	1.62
KEITH ANCHORAGE	26/03	01/04	300	75	4	0.20	11.70
KEITH ANCHORAGE	26/03	02/04	1000	15	4	0.10	8.78
KEITH ANCHORAGE	26/03	31/03	200	200	4	0.25	19.50
KEITH ANCHORAGE	01/04	05/04	2000	4	4	0.15	4.42
KEITH ANCHORAGE	26/03	31/03	150	5	3	0.20	0.24
KWAKSHUA CHANNEL	03/04	06/04	100	25	4	0.15	1.39
KWAKSHUA CHANNEL	03/04	06/04	125	50	5	0.05	5.94
KWAKSHUA CHANNEL	03/04	06/04	125	100	1	0.10	0.57
KWAKSHUA CHANNEL	03/04	06/04	400	200	1	0.15	3.40
KWAKSHUA CHANNEL	01/04	05/04	200	100	4	0.15	11.05
KWAKSHUA CHANNEL	07/04	09/04	75	30	5	0.00	2.25
KWAKSHUA CHANNEL	07/04	07/04	150	50	4	0.25	3.66
KWAKSHUA CHANNEL	05/04	05/04	100	15	6	0.05	2.00
KWAKSHUA CHANNEL	03/04	06/04	75	75	1	0.25	0.21
KWAKSHUA CHANNEL	03/04	06/04	600	8	4	0.20	2.50
KWAKSHUA CHANNEL	03/04	06/04	75	75	6	0.65	2.76
KWAKSHUA CHANNEL	03/04	06/04	200	5	3	0.05	0.38
KWAKUME POINT	23/03	25/03	25	25	1	0.50	0.02
KWAKUME POINT	23/03	25/03	200	25	4	0.20	2.60
NORTH BENTINCK ARM	15/03	15/03	2000	8	3	0.20	5.12
NORTH BENTINCK ARM	15/03	15/03	3500	2	3	0.20	2.24
NORTH BENTINCK ARM	15/03	15/03	4000	7	1	0.10	1.26
NORTH BENTINCK ARM	15/03	15/03	1250	2	1	0.50	0.07
NORTH BENTINCK ARM	15/03	15/03	6500	3	1	0.20	0.78
NORTH BENTINCK ARM	15/03	15/03	500	3	1	0.50	0.04
PRUTH BAY	23/03	05/04	400	90	6	0.05	47.88
PRUTH BAY	23/03	25/03	400	175	5	0.05	66.50

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000'S)
AREA:08 ,BELL COOLA		CONTINUED					
AREA TOTAL			32130				245.76
AREA:09 ,RIVERS INLET							
KILBELLA BAY	19/03	20/03	2200	3	4	0.70	1.29
KILBELLA BAY	19/03	20/03	2200	25	3	0.50	11.00
KILBELLA BAY	19/03	20/03	2400	3	1	0.50	0.18
RIVERS INLET-HEAD	30/03	01/04	5200	3	5	0.70	4.68
RIVERS INLET-HEAD	30/03	01/04	4000	3	3	0.70	1.44
RIVERS INLET-HEAD	30/03	01/04	500	100	1	0.70	0.75
SHOTBOLT BAY	30/03	01/04	3000	3	3	0.70	1.08
AREA TOTAL			19500				20.42
AREA:10 ,SMITH INLET							
DRY CREEK	31/03	01/04	15	2	1	0.50	0.00
DRY CREEK	31/03	01/04	50	2	3	0.50	0.02
FLY BASIN	28/03	30/03	60	2	1	0.50	0.01
FLY BASIN	26/03	28/03	100	1	4	0.60	0.03
LEROY BAY	30/03	01/04	1600	4	5	0.30	4.48
SMITH INLET (HEAD)	05/04	10/04	4840	5	3	0.10	8.71
SMITH INLET (HEAD)	05/04	10/04	500	5	3	0.10	0.90
SMITH INLET (HEAD)	05/04	10/04	3200	5	7	0.05	28.88
SMITH INLET (HEAD)	05/04	10/04	2025	5	5	0.10	9.12
TAKUSH HARBOUR	30/03	01/04	600	2	4	0.50	0.39
TAKUSH HARBOUR	25/03	27/03	900	12	5	0.20	8.64
TAKUSH HARBOUR	29/03	31/03	500	12	6	0.20	6.72

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
AREA:10 ,SMITH INLET		CONTINUED					
TAKUSH HARBOUR	30/03	01/04	1400	3	3	0.40	1.01
TAKUSH HARBOUR	30/03	01/04	600	6	5	0.30	2.52
TAKUSH NARROWS +	30/03	01/04	800	5	5	0.30	2.80
TAKUSH NARROWS +	30/03	01/04	800	2	5	0.40	0.96
AREA TOTAL			17990				75.19
AREA:11 ,SEYMOUR BELIZE							
NUGENT SOUND	02/04	02/04	2000	1	1	0.02	0.10
SEYMOUR INLET	26/04	26/04	250	1	3	0.02	0.10
SEYMOUR INLET	03/04	04/04	1500	1	3	0.02	0.59
SHELTER BAY	05/04	06/04	100	25	4	0.25	1.22
AREA TOTAL			3850				2.01
AREA:12 ,ALERT BAY							
AXE POINT	20/03	20/03	6000	3	2	0.30	2.52
BEND ISLAND	21/04	21/04	1650	15	5	0.00	24.75
BEND ISLAND	21/04	21/04	6000	15	6	0.00	126.00
BEWARE PASSAGE	03/04	03/04	675	10	6	0.00	9.45
CLACIER BAY	20/03	20/03	3200	5	2	0.40	1.92
CLIO CHANNEL	21/04	21/04	100	30	5	0.00	3.00
CLIO CHANNEL	21/04	21/04	600	25	5	0.00	15.00
CLIO CHANNEL	21/04	21/04	600	6	5	0.00	3.60
DEER ISLAND	17/04	17/04	127	33	1	0.15	0.18
FRANKLIN FLATS	20/03	20/03	500	50	2	0.50	2.50

AREA:12 ,ALERT BAY CONTINUED

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
FRANKLIN FLATS	20/03	20/03	500	3	2	0.40	0.18
FRANKLIN FLATS	20/03	20/03	200	1	1	0.60	0.00
GREGORY ISLAND	26/03	26/03	1300	10	9	0.00	39.00
GREGORY ISLAND	26/03	26/03	200	5	9	0.00	3.00
JOE COVE	31/03	31/03	22	2	3	0.00	0.02
JULA ISLAND	20/04	20/04	350	3	6	0.00	1.47
KEOGH SHOALS	02/04	03/04	1500	50	4	0.00	48.75
KEOGH SHOALS	02/04	03/04	300	25	4	0.00	4.88
KINGCOME INLET	28/03	28/03	100	4	3	0.00	0.16
KINGCOME INLET	06/04	06/04	2500	6	7	0.00	28.50
KNIGHT INLET	17/03	17/03	4000	10	2	0.40	4.80
KNIGHT INLET	20/03	20/03	4100	1	4	0.00	2.67
KNIGHT INLET	20/03	20/03	3800	10	2	0.50	3.80
KNIGHT INLET	17/03	17/03	2600	2	2	0.30	0.73
KNIGHT INLET	20/03	20/03	3800	3	2	0.60	1.37
KNIGHT INLET	20/03	20/03	2400	2	5	0.00	4.80
KNIGHT INLET	20/03	20/03	2600	2	1	0.60	0.10
KNIGHT INLET	20/03	20/03	800	10	2	0.30	1.12
KNIGHT INLET	17/03	17/03	1800	5	2	0.50	0.90
MOORE BAY	25/03	25/03	275	4	5	0.00	1.10
OBRIEN BAY	16/04	16/04	700	5	4	0.00	2.28
RUBBLE POINT	20/03	20/03	1200	5	5	0.00	6.00
SHAWL BAY	30/04	30/04	800	2	1	0.00	0.08
SIMOOM SOUND	16/04	16/04	700	5	4	0.00	2.28
VINER SOUND	14/04	14/04	400	5	4	0.20	1.04
VINER SOUND	25/04	25/04	2500	2	7	0.00	9.50
WAHSHIHLAS BAY	17/03	17/03	600	4	3	0.00	0.96
WAHSHIHLAS BAY	15/03	15/03	500	2	1	0.75	0.01
WAHSHIHLAS BAY	13/03	13/03	500	3	1	0.60	0.03
WAKEMAN SOUND	20/03	20/03	6000	2	5	0.00	12.00
WAKEMAN SOUND	06/04	06/04	5000	2	3	0.30	2.80
WAKEMAN SOUND	20/03	20/03	1000	22	4	0.00	14.30
AREA TOTAL			72499				387.65

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
AREA:13 ,QUATHIASKI							
BEAR BAY	26/03	26/03	2660	7	5	0.00	18.62
BEAR BAY	27/03	27/03	1800	6	5	0.00	10.80
BEAR BAY	31/03	31/03	1200	3	3	0.05	1.37
BEAR BAY	06/04	06/04	600	2	8	0.03	2.79
BEAR BAY	23/03	23/03	2640	7	4	0.00	12.01
BEAR BAY	06/04	06/04	800	2	8	0.02	3.76
BEAR BAY	19/03	19/03	50	15	3	0.00	0.30
BELLS BAY	19/04	20/04	200	150	4	0.00	19.50
BELLS BAY	18/04	19/04	800	6	5	0.00	4.80
BELLS BAY	18/04	18/04	1500	8	5	0.00	12.00
BELLS BAY	21/04	21/04	100	10	6	0.00	1.40
BUTE INLET	24/03	24/03	1000	4	3	0.04	1.54
BUTE INLET	31/03	31/03	1200	3	3	0.05	1.37
BUTE INLET	31/03	31/03	1800	2	5	0.02	3.53
BUTE INLET	24/03	27/03	400	6	3	0.00	0.96
BUTE INLET	27/03	27/03	1700	4	4	0.00	4.42
BUTE INLET	24/03	24/03	500	5	3	0.00	1.00
BUTE INLET	24/03	24/03	300	4	4	0.00	0.78
DREW HARBOUR	16/04	16/04	30	3	1	0.00	0.00
DREW HARBOUR	09/04	09/04	100	15	4	0.00	0.98
FRANCISCO POINT	21/03	21/03	1000	4	4	0.50	1.30
FRANCISCO POINT	12/03	14/03	3037	4	5	0.10	10.94
FRANCISCO POINT	12/03	14/03	3037	4	3	0.10	4.37
HERIOT BAY	03/04	03/04	25	10	3	0.00	0.10
HERIOT BAY	03/04	03/04	20	10	4	0.00	0.13
HERIOT BAY	04/04	04/04	100	15	5	0.00	1.50
HERIOT BAY	31/03	31/03	300	7	4	0.00	1.37
HERIOT BAY	31/03	31/03	600	5	7	0.00	5.70
HERIOT BAY	31/03	31/03	1000	5	4	0.20	2.60
HERIOT BAY	31/03	05/04	200	4	3	0.05	0.30
HERIOT BAY	31/03	31/03	200	4	6	0.00	1.12
HERIOT BAY	31/03	31/03	1000	5	5	0.02	4.90
HYACINTHE BAY	17/04	17/04	10	10	3	0.00	0.04
HYACINTHE BAY	17/04	17/04	10	10	3	0.00	0.04
HYACINTHE BAY	16/04	16/04	25	5	3	0.00	0.05
HYACINTHE BAY	16/04	16/04	20	10	4	0.00	0.13
KANISH BAY	22/04	22/04	10	6	3	0.00	0.02
KANISH BAY	18/04	19/04	200	15	5	0.00	3.00
LOUGHBOROUGH INLET	05/04	05/04	600	2	3	0.10	0.43
REBECCA SPIT	29/03	29/03	100	3	5	0.20	0.24
WADDINGTON HARBOUR	25/03	25/03	100	3	1	0.00	0.02

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
AREA:13 ,QUATHIASKI							
AREA TOTAL			30974				140.83
AREA:14 ,COMOX							
BIG QUALICUM RIVER	08/03	08/03	8823	61	4	0.80	64.17
BOWSER	08/03	08/03	50	75	1	0.10	0.17
BOWSER	08/03	08/03	4921	110	4	0.10	316.67
CAPE LAZO	11/03	11/03	1200	150	5	0.55	81.00
COMOX BAR	12/03	12/03	1000	100	3	0.60	16.00
DEEP BAY	08/03	08/03	609	164	1	0.05	6.30
DENMAN ISLAND (WEST)	04/03	04/03	100	10	5	0.35	0.65
ENGLISHMAN RIVER	13/03	13/03	656	11	1	0.30	0.25
ENGLISHMAN RIVER	13/03	13/03	1203	68	4	0.10	47.85
FRENCH CREEK	13/03	13/03	1094	16	1	0.00	0.88
FRENCH CREEK	13/03	13/03	848	138	6	0.10	147.45
GARTLEY POINT	17/03	17/03	1500	10	5	0.25	11.25
GARTLEY POINT	12/03	12/03	750	50	5	0.75	9.38
HART CREEK	12/03	12/03	1700	10	3	0.40	4.08
KOMAS BLUFF	04/03	09/03	5522	305	3	0.00	673.68
KOMAS BLUFF	04/03	04/03	5468	336	5	0.90	1837.25
LAMBERT CHANNEL	04/03	11/03	3828	55	3	0.10	75.60
LITTLE QUALICUM RIVER	08/03	08/03	2187	76	4	0.10	97.24
MADRONA POINT	28/03	28/03	1500	50	3	0.60	6.00
PARKSVILLE	03/03	07/03	2734	75	4	0.25	99.96
QUALICUM BEACH	08/03	08/03	765	153	4	0.50	38.04
SEAL ISLETS	07/03	10/03	2500	440	7	0.70	627.00
SHINGLE SPIT	08/03	08/03	3000	150	7	0.60	342.00
WHALING STATION BAY	09/03	09/03	8000	150	7	0.60	912.00
WILLEMAR BLUFF	11/03	11/03	5000	150	5	0.55	337.50
AREA TOTAL			58358				5752.57

HERRING SPAWN SUMMARY TABLE FOR 1980 80.09.11

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
AREA:15 ,WESTVIEW							
ATREVIDA REEF	11/03	19/03	350	100	6	0.00	49.00
ATREVIDA REEF	05/03	13/03	150	50	5	0.00	7.50
ATREVIDA REEF	06/03	19/03	600	5	4	0.00	1.95
ATREVIDA REEF	06/03	19/03	500	20	4	0.00	6.50
ATREVIDA REEF	06/03	19/03	100	10	4	0.00	0.65
ATREVIDA REEF	06/03	19/03	200	20	4	0.00	2.60
ATREVIDA REEF	06/03	19/03	1000	15	2	0.00	3.00
ATREVIDA REEF	06/03	19/03	1200	30	2	0.00	7.20
ATREVIDA REEF	05/03	13/03	900	150	4	0.00	87.75
DINNER ROCK	11/03	13/03	350	10	1	0.00	0.18
DINNER ROCK	11/03	13/03	400	30	2	0.00	2.40
DINNER ROCK	11/03	13/03	800	10	1	0.00	0.40
DINNER ROCK	11/03	13/03	950	40	3	0.00	15.20
DINNER ROCK	11/03	13/03	500	30	3	0.00	6.00
DINNER ROCK	11/03	13/03	500	30	4	0.00	9.75
DINNER ROCK	11/03	13/03	200	60	5	0.00	12.00
LUND	05/04	07/04	50	5	2	0.65	0.02
SCUTTLE BAY	11/03	13/03	120	40	1	0.05	0.23
SCUTTLE BAY	10/03	11/03	750	20	2	0.25	2.25
SCUTTLE BAY	11/03	13/03	60	20	1	0.05	0.06
SCUTTLE BAY	11/03	13/03	250	180	4	0.05	27.79
SCUTTLE BAY	11/03	13/03	200	40	4	0.05	4.94
AREA TOTAL			10130				247.37
AREA:16 ,PENDER HARBOUR							
CHURCHILL BAY	19/03	21/03	150	30	5	0.40	2.70
CHURCHILL BAY	19/03	21/03	200	60	5	0.40	7.20
PORPOISE BAY	12/04	14/04	1700	75	1	0.60	2.55

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
AREA:16 ,PENDER HARBOUR							
AREA TOTAL			2050				12.45
AREA:17 ,NANAIMO							
BLUNDEN POINT	26/03	26/03	3171	55	4	0.20	90.69
BLUNDEN POINT	25/03	25/03	2500	5	1	0.35	0.41
BOAT HARBOUR	07/04	07/04	100	5	1	0.20	0.02
CLAM BAY	26/03	28/03	450	50	2	0.35	2.93
CLAM BAY	26/03	28/03	200	200	3	0.30	11.20
CLAM BAY	26/03	28/03	1913	82	7	0.00	298.05
COFFIN POINT (IS.)	07/03	12/03	4000	23	5	0.00	92.00
COFFIN POINT (IS.)	08/04	08/04	100	7	2	0.20	0.11
DAYMAN ISLAND	05/04	06/04	1850	20	3	0.20	11.84
HORSWELL BLUFF	26/03	26/03	766	35	3	0.10	9.65
ICARUS POINT	26/03	27/03	3445	268	5	0.10	830.93
KUPER ISLAND	31/03	31/03	300	10	2	0.20	0.48
KUPER ISLAND	30/03	30/03	600	100	1	0.30	2.10
KUPER ISLAND	02/04	02/04	600	18	1	0.30	0.38
KUPER ISLAND	01/04	01/04	600	15	2	0.25	1.35
LEECH ISLAND	31/03	31/03	650	7	3	0.25	1.37
NORTH COVE	16/03	27/03	2300	44	5	0.00	101.20
PILKEY POINT	24/03	28/03	600	5	2	0.25	0.45
PILKEY POINT	26/03	28/03	500	15	3	0.30	2.10
PREEDY HARBOUR	19/03	21/03	765	273	7	0.00	396.81
THETIS ISLAND	31/03	31/03	150	4	2	0.25	0.09
THETIS ISLAND	18/03	24/03	4429	11	7	0.00	92.57
THETIS ISLAND	01/04	01/04	180	5	2	0.20	0.14
YELLOW POINT	10/03	12/03	6506	35	5	0.00	227.71
YELLOW POINT	14/03	16/03	2120	10	3	0.25	6.36
AREA TOTAL			38795				2180.94

HERRING SPAWN SUMMARY TABLE FOR 1980 80.09.11

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH YDS.	WIDTH YDS.	INTENSITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
AREA:18 ,COWICHAN							
ANNETTE INLET	21/02	21/02	100	40	1	0.50	0.10
ANNETTE INLET	20/03	20/03	150	30	3	0.60	0.90
ANNETTE INLET	11/03	11/03	100	40	3	0.40	0.96
ANNETTE INLET	21/03	21/03	180	10	3	0.75	0.18
ANNETTE INLET	01/03	01/03	100	40	3	0.50	0.60
ANNETTE INLET	24/02	24/02	60	25	1	0.50	0.04
ANNETTE INLET	01/03	01/03	80	45	3	0.50	0.72
BEDWELL HARBOUR	23/03	23/03	220	50	5	0.20	8.80
BOOT COVE	23/03	23/03	120	15	7	0.50	1.71
BOOT COVE	23/03	23/03	100	10	5	0.30	0.70
BOOT COVE	15/03	15/03	110	10	3	0.50	0.22
BOOT COVE	25/03	26/03	40	10	7	0.10	0.68
CHAIN ISLANDS	01/03	01/03	450	100	3	0.50	9.00
CHAIN ISLANDS	27/03	27/03	100	10	3	0.60	0.16
CHAIN ISLANDS	26/03	26/03	60	20	3	0.70	0.14
FULFORD HARBOUR	20/03	20/03	100	20	1	0.50	0.05
GANGES HARBOUR	24/03	24/03	275	30	5	0.50	4.13
GANGES HARBOUR	21/03	21/03	2500	100	5	0.75	62.50
GLENTHORNE PASSAGE	21/02	21/02	75	30	1	0.70	0.03
GLENTHORNE PASSAGE	21/02	21/02	200	20	1	0.70	0.06
LONG HARBOUR	04/03	04/03	200	80	6	0.80	11.20
LONG HARBOUR	04/03	04/03	200	10	3	0.50	0.40
LONG HARBOUR	04/03	04/03	300	10	1	0.50	0.08
LONG HARBOUR	04/03	04/03	200	20	3	0.75	0.40
LONG HARBOUR	04/03	04/03	250	25	3	0.70	0.75
LONG HARBOUR	06/03	06/03	400	25	5	0.50	5.00
LONG HARBOUR	06/03	06/03	300	10	5	0.50	1.50
LYALL HARBOUR	24/03	24/03	220	30	5	0.50	3.30
LYALL HARBOUR	09/03	09/03	120	20	3	0.50	0.48
LYALL HARBOUR	23/02	24/02	110	30	1	0.70	0.05
WELBURY BAY	02/03	02/03	150	30	3	0.50	0.90
WELBURY BAY	02/03	02/03	210	25	3	0.60	0.84
AREA TOTAL			7780				116.78

HERRING SPAWN SUMMARY TABLE FOR 1980 80.09.11

AREA:23 ,BARKLEY SOUND

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
DAVID ISLAND	25/03	27/03	383	5	4	0.30	0.87
DAVID ISLAND	25/03	27/03	153	5	9	0.00	2.30
DAVID ISLAND	25/03	27/03	656	27	7	0.00	33.65
EQUIS BEACH	27/03	28/03	3063	11	7	0.00	64.02
FORBES ISLAND	25/03	26/03	1094	27	6	0.00	41.35
HAND ISLAND	27/03	27/03	328	55	1	0.70	0.27
HAND ISLAND	27/03	27/03	109	11	1	0.80	0.01
HAND ISLAND	27/03	27/03	109	16	I	0.70	0.03
HAND ISLAND	27/03	27/03	142	137	2	0.25	2.92
HAND ISLAND	27/03	27/03	164	6	1	0.60	0.02
LARKIN ISLAND	25/03	27/03	224	11	2	0.00	0.49
LARKIN ISLAND	25/03	27/03	766	22	4	0.00	10.95
MACOAH PASSAGE	25/03	28/03	902	16	1	0.30	0.50
MACOAH PASSAGE	25/03	28/03	3829	44	5	0.00	168.48
MAGGIE RIVER	25/03	28/03	1094	82	4	0.00	58.31
MAGGIE RIVER	25/03	28/03	683	5	1	0.20	0.14
MAYNE BAY	27/03	28/03	924	16	5	0.25	11.09
MAYNE BAY	27/03	28/03	766	16	5	0.20	9.81
MAYNE BAY	27/03	28/03	383	3	3	0.30	0.32
OTTAWAY ISLET	25/03	27/03	328	38	6	0.00	17.45
PINKERTON ISLAND	26/03	26/03	1094	164	2	0.35	23.32
PINKERTON ISLAND	26/03	26/03	744	191	3	0.05	54.00
PINKERTON ISLAND	26/03	26/03	1094	5	1	0.70	0.08
PINKERTON ISLAND	26/03	26/03	328	273	3	0.10	32.34
PINKERTON ISLAND	26/03	26/03	301	301	3	0.10	32.62
SPILLING ISLET	25/03	27/03	1094	33	4	0.00	23.47
ST. INES ISLAND	25/03	27/03	985	22	5	0.00	21.67
STOPPER ISLANDS	25/03	27/03	426	11	1	0.70	0.07
STOPPER ISLANDS	25/03	27/03	2188	33	5	0.00	72.20
STOPPER ISLANDS	25/03	27/03	656	22	4	0.00	9.38
STOPPER ISLANDS	25/03	27/03	274	16	4	0.00	2.85
STOPPER ISLANDS	25/03	27/03	426	6	2	0.10	0.46
STOPPER ISLANDS	25/03	27/03	301	11	2	0.30	0.46
TOQUART BAY	25/03	28/03	1094	33	2	0.00	7.22
TWO RIVERS +	25/03	28/03	711	82	3	0.25	17.49
TWO RIVERS +	25/03	28/03	328	16	2	0.40	0.63
TWO RIVERS +	25/03	28/03	765	16	3	0.10	4.41
TWO RIVERS +	25/03	28/03	208	27	3	0.80	0.45
TWO RIVERS +	25/03	28/03	765	55	2	0.30	5.89

HERRING SPAWN SUMMARY TABLE FOR 1980 80.09.11

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)

AREA:23 ,BARKLEY SOUND

AREA TOTAL			29882				731.89

AREA:24 ,CLAYOQUOT SOUND

ANTONS SPIT	08/03	08/03	400	150	3	0.40	14.40
ANTONS SPIT	08/03	08/03	100	75	3	0.30	2.10
ANTONS SPIT	08/03	08/03	200	10	3	0.20	0.64
BIG WHITEPINE COVE	22/03	24/03	60	6	3	0.10	0.13
BIG WHITEPINE COVE	22/03	24/03	50	4	3	0.00	0.08
BIG WHITEPINE COVE	22/03	24/03	60	5	3	0.00	0.12
BIG WHITEPINE COVE	22/03	24/03	200	5	1	0.10	0.05
BIG WHITEPINE COVE	22/03	24/03	400	6	3	0.10	0.86
BIG WHITEPINE COVE	22/03	24/03	30	20	3	0.00	0.24
BIG WHITEPINE COVE	22/03	24/03	200	10	3	0.00	0.80
BIG WHITEPINE COVE	22/03	24/03	50	10	3	0.00	0.20
BIG WHITEPINE COVE	22/03	24/03	50	30	5	0.00	1.50
BIG WHITEPINE COVE	22/03	24/03	125	10	5	0.00	1.25
CALMUS PASS	12/03	12/03	75	7	3	0.20	0.17
CALMUS PASS	12/03	12/03	150	7	3	0.00	0.42
CALMUS PASS	12/03	12/03	75	25	7	0.00	3.56
ELBOW BANK	08/03	10/03	1600	600	5	0.25	720.00
FELICE ISLAND	09/03	12/03	20	10	3	0.15	0.07
FELICE ISLAND	09/03	12/03	150	150	3	0.25	6.75
HECATE BAY	10/03	13/03	100	50	5	0.20	4.00
HECATE BAY	10/03	13/03	100	75	5	0.00	7.50
HECATE BAY	10/03	13/03	75	20	5	0.15	1.28
HECATE BAY	10/03	13/03	200	70	5	0.10	12.60
HECATE BAY	10/03	13/03	30	10	3	0.00	0.12
HECATE BAY	10/03	13/03	150	100	3	0.15	5.10
HECATE BAY	10/03	13/03	35	25	5	0.00	0.88
HECATE BAY	10/03	13/03	70	10	7	0.00	1.33
HESQUIAT HARBOUR	08/03	08/03	200	50	1	0.40	0.30
HESQUIAT HARBOUR	08/03	08/03	600	125	1	0.40	2.25
HESQUIAT HARBOUR	08/03	15/03	1000	50	3	0.10	18.00
JENNY BEACH +	02/04	02/04	125	25	7	0.00	5.94
KAKAWIS	07/03	07/03	35	35	5	0.00	1.23

SPAWNING GROUND	DATE START	DATE END	LENGTH YDS.	WIDTH YDS.	INTENSITY	EST. BARE AREA	STD.SQ. YDS (1000'S)
AREA: 24 (CLAYOQUOT SOUND CONTINUED							PAGE 89
LECLAIRE POINT	08/03	15/03	60	15	3	0.00	0.36
LECLAIRE POINT	08/03	15/03	70	10	1	0.00	0.00
LECLAIRE POINT	08/03	15/03	100	15	1	0.30	0.06
LEMMENS INLET	12/03	15/03	100	100	1	0.00	0.50
LEMMENS INLET	12/03	15/03	200	100	3	0.50	6.40
LEMMENS INLET	12/03	15/03	250	15	3	0.00	1.00
LEMMENS INLET	10/03	13/03	30	6	3	0.00	0.08
LEMMENS INLET	10/03	13/03	30	5	3	0.00	0.06
LEMMENS INLET	10/03	13/03	250	15	7	0.10	6.42
LEMMENS INLET	10/03	13/03	325	4	7	0.10	0.86
LEMMENS INLET	10/03	13/03	60	4	3	0.00	0.10
LEMMENS INLET	10/03	13/03	100	10	3	0.00	0.40
LEMMENS INLET	10/03	13/03	700	17	5	0.10	10.71
LEMMENS INLET	10/03	13/03	200	6	3	0.00	0.48
LEMMENS INLET	12/03	15/03	60	20	1	0.00	0.06
LEMMENS INLET	12/03	15/03	70	35	3	0.00	0.98
MCKAY (CONE) ISLAND	22/03	22/03	150	20	7	0.00	5.70
MCKAY (CONE) ISLAND	22/03	23/03	75	15	3	0.05	0.43
OPITSAT RESERVE	08/03	08/03	100	7	7	0.20	1.06
OPITSAT RESERVE	08/03	08/03	125	11	5	0.25	1.04
OPITSAT RESERVE	08/03	08/03	150	25	3	0.10	1.35
OPITSAT RESERVE	08/03	08/03	350	125	3	0.10	15.75
ROBERT POINT	10/03	12/03	250	10	5	0.10	2.25
ROUNDEAULT POINT	08/03	15/03	500	50	3	0.40	6.00
ROUNDEAULT POINT	08/03	15/03	100	10	3	0.30	0.28
ROUNDEAULT POINT	08/03	15/03	60	7	3	0.30	0.18
ROUNDEAULT POINT	08/03	15/03	250	10	1	0.30	0.09
ROUNDEAULT POINT	08/03	15/03	175	5	3	0.30	0.25
ROUNDEAULT POINT	08/03	15/03	125	10	3	0.15	0.43
SARANAC ISLAND	10/03	12/03	100	15	3	0.15	0.51
STOCKHAM ISLAND	09/03	12/03	250	50	3	0.25	3.75
STOCKHAM ISLAND	09/03	12/03	70	15	3	0.30	0.29
STOCKHAM ISLAND	09/03	12/03	40	20	7	0.00	1.52
STOCKHAM ISLAND	09/03	12/03	15	7	3	0.15	0.03
STOCKHAM ISLAND	09/03	12/03	80	20	7	0.00	3.04
STOCKHAM ISLAND	09/03	12/03	60	10	7	0.00	1.14
STOCKHAM ISLAND	09/03	12/03	100	75	5	0.00	7.50
STUBBS ISLAND	09/03	12/03	1000	500	3	0.30	140.00
STUBBS ISLAND	09/03	12/03	30	15	3	0.25	0.14
STUBBS ISLAND	09/03	12/03	250	20	3	0.20	1.60
STUBBS ISLAND	09/03	12/03	100	40	7	0.25	5.70
VARGAS ISLAND	08/03	10/03	10	5	7	0.00	0.10
VARGAS ISLAND	08/03	10/03	200	100	5	0.15	17.00
VARGAS ISLAND	08/03	10/03	15	15	5	0.00	0.23

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTENSITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
AREA:24 ,CLAYOQUOT SOUND		CONTINUED					
VARGAS ISLAND	08/03	10/03	100	20	7	0.20	3.04
VARGAS ISLAND	04/03	08/03	300	40	3	0.50	2.40
VARGAS ISLAND	04/03	08/03	400	60	5	0.20	19.20
VARGAS ISLAND	04/03	08/03	500	120	5	0.15	51.00
VARGAS ISLAND	04/03	08/03	500	120	7	0.20	91.20
VARGAS ISLAND	04/03	08/03	400	20	7	0.20	12.16
VARGAS ISLAND	04/03	08/03	800	120	7	0.00	182.40
VARGAS ISLAND	04/03	08/03	20	20	7	0.00	0.76
VARGAS ISLAND	04/03	08/03	180	20	7	0.00	6.84
WICKANINNISH ISLAND	10/03	10/03	200	10	3	0.00	0.80
YELLOW BANK	10/03	12/03	500	200	7	0.40	114.00
AREA TOTAL			17750				1543.45
AREA:25 ,NOOTKA SOUND							
NUCHATLITZ INLET	04/03	14/03	600	200	1	0.40	3.60
NUCHATLITZ INLET	04/03	14/03	300	200	3	0.40	14.40
NUCHATLITZ INLET	04/03	14/03	700	500	2	0.30	49.80
NUCHATLITZ INLET	04/03	14/03	500	200	2	0.10	18.00
NUCHATLITZ INLET	04/03	14/03	1000	350	1	0.00	17.50
NUCHATLITZ INLET	04/03	14/03	100	50	1	0.00	0.25
NUCHATLITZ INLET	04/03	14/03	600	200	2	0.10	21.60
OUTER NUCHATLITZ	03/03	08/03	400	400	1	0.50	4.00
OUTER NUCHATLITZ	03/03	08/03	300	150	1	0.40	1.35
OUTER NUCHATLITZ	03/03	08/03	150	20	1	0.40	0.09
OUTER NUCHATLITZ	03/03	08/03	50	50	1	0.60	0.05
OUTER NUCHATLITZ	03/03	08/03	500	250	1	0.50	3.13
OUTER NUCHATLITZ	03/03	08/03	450	300	2	0.00	27.00
OUTER NUCHATLITZ	03/03	08/03	400	250	2	0.40	12.00
OUTER NUCHATLITZ	03/03	08/03	400	50	4	0.30	9.10
OUTER NUCHATLITZ	03/03	08/03	300	100	1	0.30	1.05
OUTER NUCHATLITZ	03/03	08/03	300	150	1	0.40	1.35
OUTER NUCHATLITZ	03/03	08/03	300	100	1	0.60	0.60
OUTER NUCHATLITZ	03/03	08/03	100	100	1	0.00	0.50
OUTER NUCHATLITZ	03/03	08/03	100	50	1	0.50	0.13

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
AREA:25 ,NOOYKA SOUND		CONTINUED					
OUTER NUCHATLITZ	03/03	08/03	100	30	3	0.60	0.90
OUTER NUCHATLITZ	03/03	08/03	400	200	4	0.30	36.40
OUTER NUCHATLITZ	03/03	08/03	200	75	1	0.00	0.75
OUTER NUCHATLITZ	03/03	08/03	350	250	2	0.00	17.50
OUTER NUCHATLITZ	03/03	08/03	500	300	2	0.40	18.00
OUTER NUCHATLITZ	03/03	08/03	300	100	2	0.00	6.00
PORT LANGFORD	03/03	08/03	100	50	1	0.50	0.13
PORT LANGFORD	03/03	08/03	150	50	3	0.30	2.10
PORT LANGFORD	03/03	08/03	500	400	2	0.20	32.00
PORT LANGFORD	03/03	08/03	300	100	2	0.40	3.60
PORT LANGFORD	03/03	08/03	200	50	2	0.40	1.20
PORT LANGFORD	03/03	08/03	100	50	2	0.90	0.10
PORT LANGFORD	03/03	08/03	100	50	2	0.20	0.80
PORT LANGFORD	03/03	08/03	100	50	2	0.30	0.70
PORT LANGFORD	25/02	25/02	1500	20	1	0.30	1.05
PORT LANGFORD	25/02	25/02	500	20	1	0.30	0.35
PORT LANGFORD	25/02	25/02	200	10	2	0.00	0.40
PORT LANGFORD	25/02	25/02	100	50	1	0.00	0.25
PORT LANGFORD	25/02	25/02	200	30	3	0.50	1.20
PORT LANGFORD	25/02	25/02	50	20	1	0.20	0.04
ROSA HARBOUR	05/03	05/03	100	50	3	0.00	2.00
ROSA HARBOUR	05/03	05/03	100	50	2	0.00	1.00
ROSA HARBOUR	05/03	05/03	75	50	2	0.20	0.60
AREA TOTAL			13775				311.35

AREA:27 ,

ANCHORAGE ISLAND	09/03	09/03	300	225	3	0.10	24.30
ANCHORAGE ISLAND	07/03	08/03	600	200	3	0.10	43.20
BROWNING INLET	03/04	03/04	600	175	1	0.10	4.73
FORWARD INLET	07/03	08/03	1200	30	5	0.05	34.20
FORWARD INLET	0/ 0	0/ 0	6400	200	5	0.05	1216.00
FORWARD INLET	05/03	07/03	1600	150	4	0.10	140.40
FORWARD INLET	02/03	02/03	1000	20	3	0.05	7.60
HAZARD POINT	08/03	09/03	900	200	5	0.30	126.00

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH YDS.	WIDTH YDS.	INTEN-SITY	EST. BARE AREA	STD.SQ. YDS (1000"S)
AREA:27 , CONTINUED							
HAZARD POINT	08/03	09/03	850	25	3	0.05	8.08
HAZARD POINT	08/03	09/03	1500	30	4	0.10	26.33
KLASKISH INLET	06/03	06/03	650	4	3	0.05	0.99
KLASKISH INLET	06/03	06/03	1200	300	5	0.05	342.00
KLASKISH INLET	05/03	06/03	6500	4	5	0.20	20.80
LEESON HARBOUR	06/03	06/03	380	25	6	0.10	11.97
LEESON HARBOUR	07/03	08/03	600	20	4	0.05	7.41
LEESON HARBOUR	06/03	06/03	700	50	5	0.10	31.50
LEESON HARBOUR	08/03	09/03	400	50	3	0.10	7.20
MCDOUGAL ISLAND	05/03	06/03	2200	4	3	0.15	2.99
MCDOUGAL ISLAND	05/03	06/03	1300	100	5	0.10	117.00
MCDOUGAL ISLAND	05/03	06/03	5400	4	5	0.10	19.44
NORTH HARBOUR	11/03	11/03	900	30	5	0.10	24.30
NORTH HARBOUR	11/03	11/03	1800	20	5	0.10	32.40
AREA TOTAL			36980				2248.84
AREA:29 ,FRASER RIVER							
BOUNDARY B-RNG MRKR(W SIDE)	29/02	29/02	1000	50	1	0.95	0.13
AREA TOTAL			1000				0.13
GRAND TOTAL			637175				17718.36

HERRING SPAWN TIMING SUMMARY FOR 1980 (PERCENT OF DEPOSITION) 80.09.15

	JAN					FEB					MAR					APR					MAY					JUN					TOTAL SPAWN STD SQ YDS
AREA CODE	WK 1	WK 2	WK 3	WK 4	WK 5	WK 1	WK 2	WK 3	WK 4	WK 5	WK 1	WK 2	WK 3	WK 4	WK 5	WK 1	WK 2	WK 3	WK 4	WK 5	WK 1	WK 2	WK 3	WK 4	WK 5	WK 1	WK 2	WK 3	WK 4	WK 5	IN 1000S
AREA 01						2	4	T	10	15				09																	47.96
AREA 02E											16	1	30	16		33	T	4	T												755.58
AREA 02W												25	35	27		3	7		2												175.21
AREA 03													49	23		17	12														161.15
AREA 04														23		36	14		25				3								289.19
AREA 05																51	43	2	4		T										666.82
AREA 06											4	1	77	14		3	T						T	T							419.73
AREA 07											T	4	26	11		20	30	8													1186.79
AREA 08											4		59	11		23	4														245.76
AREA 09												61		26		13															20.42
AREA 10													15	17		16	53														75.19
NORTHERN B.C. TOTAL AREA :																															
01-10						T	T	T	T	T		4	3	30	12	26	19	3	3		T	T	T								4042.80
AREA 11																65	30		5												2.01
AREA 12												T	16	11	T	16	8	1	47	T											387.55
AREA 13												11	1	36	16	2	5	21	8												140.23
AREA 14											65	35	T	T																	5752.57
AREA 15											19	70	11				T														247.37
AREA 16													80				7	14													12.45
AREA 17											1	13	24	60	T	T	T														2180.94
AREA 18									T	T	27	1	54	17																	116.78
AREA 23														100																	731.89
AREA 24											43	56	T	T		T															1543.45
AREA 25										1	77	22																			311.35
AREA 27											92	7				T															2248.84
AREA 29										100																					0.13
SOUTHERN B.C. TOTAL AREA :																															
11-29									T	T	50	26	5	16	T	T	T	T	1	T											13675.56
ALL B.C. TOTAL																															
01-29						T	T	T	T	T	38	21	5	19	3	6	5	1	2	T	T	T	T									17718.36

TABLE 7

The amount of herring spawn (square yards times 1,000 at a standard intensity of medium) deposited in the coastal waters of British Columbia from 1972 to 1980 by herring sub-district and statistical area.

	Spawning Years									8 yr Aug
Area	1972	1973	1974	1975	1976	1977	1978	1979	1980	(1972-1979)
QUEEN CHARLOTTE IS.										
1	-	-	598.3	66.4	372.1	503.3	317.46	20.0	48.0	234.7
2E	995.3	392.7	375.7	427.9	527.4	569.4	698.5	304.0	755.6	536.4
2W	220.6	272.4	332.4	390.6	319.3	148.0	103.2	158.3	175.2	243.1
	1,215.9	665.1	1306.4	884.9	1218.8	1220.7	1119.16	482.3	978.8	1014.2
NORTHERN										
3	100.2	167.8	116.0	4.6	47.4	55.5	5.4	845.9	161.1	167.9
4	625.9	1167.7	106.0	753.1	1354.4	328.3	80.2	350.0	288.2	595.7
5	154.6	225.2	517.1	578.5	524.9	672.0	277.5	867.8	666.8	477.2
	880.7	1560.7	739.1	1337.2	1926.7	1055.8	363.1	2063.7	1116.1	1240.8
UPPER CENTRAL										
6	111.1	492.3	116.1	252.8	148.9	118.8	143.2	50.0	419.7	179.2
	111.1	492.3	116.1	252.8	148.9	118.8	143.2	50.0	419.7	179.2
LOWER CENTRAL										
7	100.0	560.6	332.8	492.2	572.0	843.8	431.6	413.6	1186.8	468.3
8	251.2	337.0	204.1	298.7	369.7	256.0	108.4	72.5	245.7	237.2
9	43.5	344.8	85.2	207.7	81.2	94.4	59.7	23.0	20.4	117.4
10	18.2	34.5	21.3	20.8	19.5	7.2	45.4	15.6	75.2	22.8
	412.9	1276.9	643.4	1019.4	1042.4	1201.4	645.1	524.7	1528.7	845.8
UPPER EAST COAST										
11	5.9	1.8	1.0	4.6	7.3	3.7	2.4	11.6	2.0	4.8
12	636.8	1286.5	1092.1	1594.9	749.4	536.2	144.2	17.2	387.5	757.2
	642.7	1288.3	1093.1	1599.5	756.7	539.9	146.6	28.8	389.5	762.0

* Diving surveys of spawn were conducted in these areas and the data incorporated with the Fishery Officer field reports.

TABLE 7, cont'd

The amount of herring spawn.....

Area	Spawning Years									8 yr Aug
	1972	1973	1974	1975	1976	1977	1978	1979	1980	(1972-1979)
MIDDLE EAST COAST										
13	184.9	47.7	104.5	262.3	103.2	85.6	78.6	148.8	140.2	126.9
14	82.0	56.7	368.5	1746.4	3621.1	4678.9	9292.0	15393.4	5752.6	4404.9
15	270.4	466.9	229.6	419.8	1049.8	1485.7	1058.8	4354.9	247.4	1167.0
16	122.1	122.3	10.2	88.6	15.4	15.5	0.2	22.8	12.4	49.6
	659.4	693.6	712.8	2517.1	4789.5	6265.7	10429.6	19920.9	6152.6	5748.4
LOWER EAST COAST										
17	257.2	257.2	2895.5	1749.4	2397.7	1054.7	2123.0	614.8	2180.9	1584.5
18	250.5	226.5	422.6	948.0	49.8	71.1	166.2	74.5	116.8	276.2
19	0.2	-	0.4	-	-	-	-	-	-	0.1
20	-	-	-	-	-	-	-	-	-	-
	507.9	1394.8	3318.5	2697.4	2447.5	1125.8	2289.2	689.3	2297.7	1860.7
LOWER WEST COAST										
22	-	-	-	-	-	-	-	-	-	-
23	707.2	404.8	908.9	779.8	2411.6	3246.6	570.9	995.6	731.9	1253.1
24	1578.0	77.0	1662.4	2317.8	2188.1	1350.3	1373.0	1339.6	1543.4	1485.8
	2285.2	481.8	2571.3	3097.6	4599.7	4596.9	1943.9	2335.2	2275.3	2739.6
UPPER WEST COAST										
25	1349.1	1586.7	604.3	1373.9	366.2	755.5	764.5	3036.9	311.3	1229.6
26	313.4	186.0	77.7	66.0	30.8	7.0	-	-	-	85.1
27	16.3	83.3	-	299.7	31.4	48.9	1832.1	1068.6	2248.8	422.5
	1678.8	1856.0	682.0	1739.6	428.4	811.4	2596.6	4105.5	2560.1	1737.2
SOUTHERN MAINLAND										
28	-	-	12.0	-	-	-	-	-	-	12.0
29	45.0	15.2	52.5	320.0	69.3	30.0	3.8	-	0.1	67.0
	45.0	15.2	64.5	320.0	69.3	30.0	3.8	0	0.1	78.0
TOTAL SUB-DISTRICT	8439.9	9724.8	11247.5	15464.5	17428.1	16966.5	20649.0	30200.4	17,718.6	16,265.

* Diving surveys of spawn were conducted in these areas and the data incorporated with the Fishery Officer field reports.

LEGEND FOR ACCOMPANYING ATTACHMENTS 1 TO 10

GEAR CONCENTRATIONS:

Gillnet 

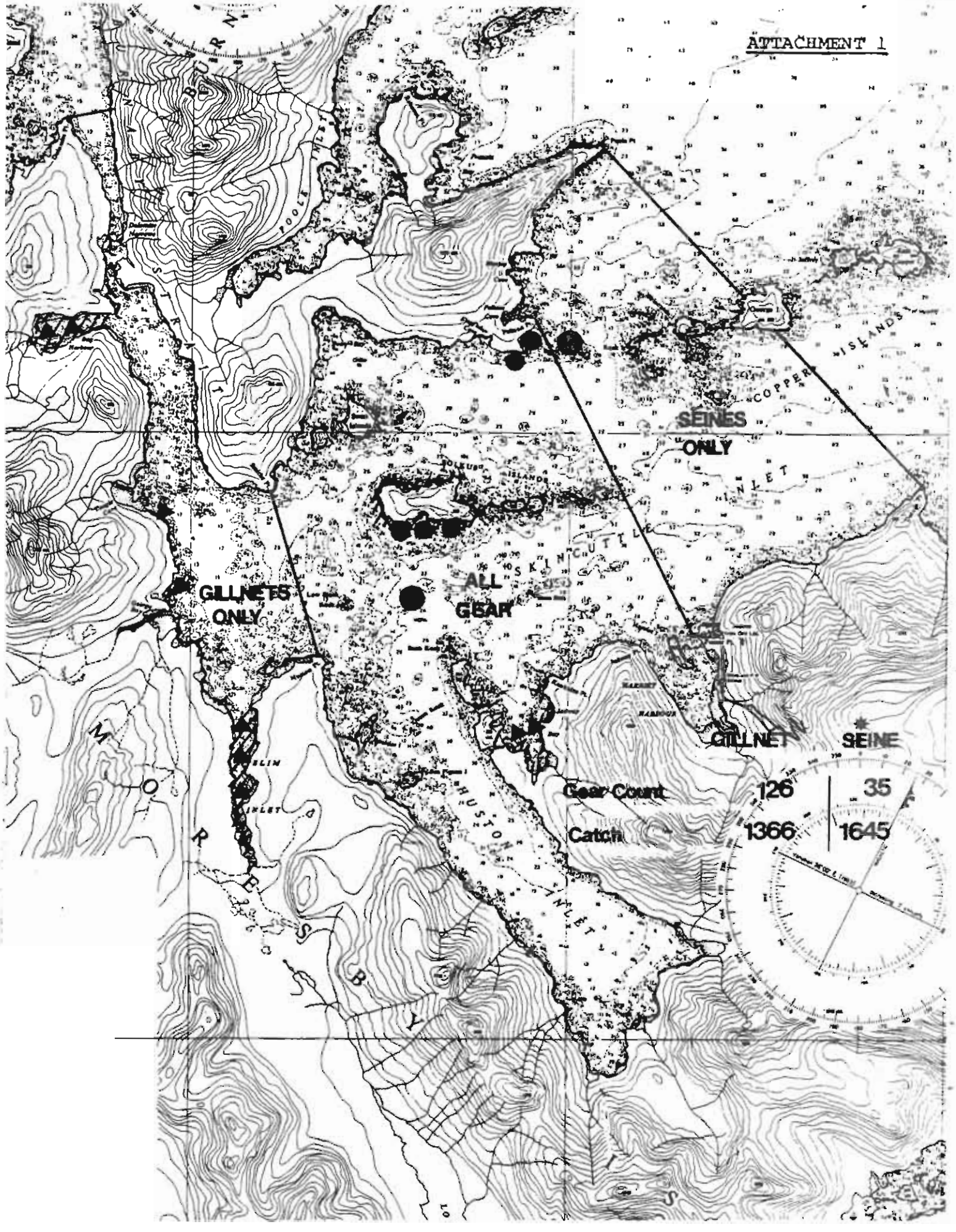
Seine 

MAJOR SPAWNINGS IN OPEN PORTIONS OF AREAS: 

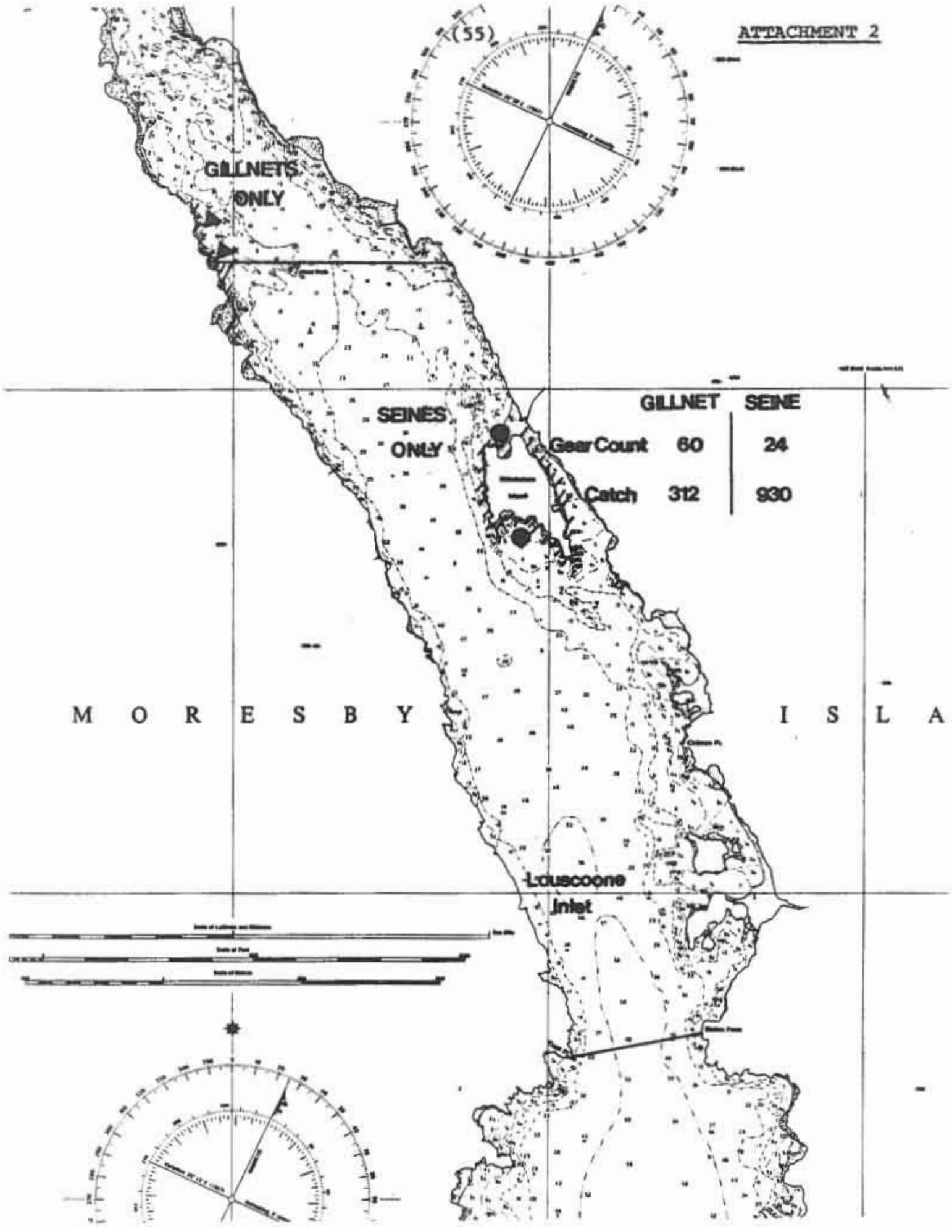
NOTE: ALL HAIL CATCHES REPORTED IN TONS

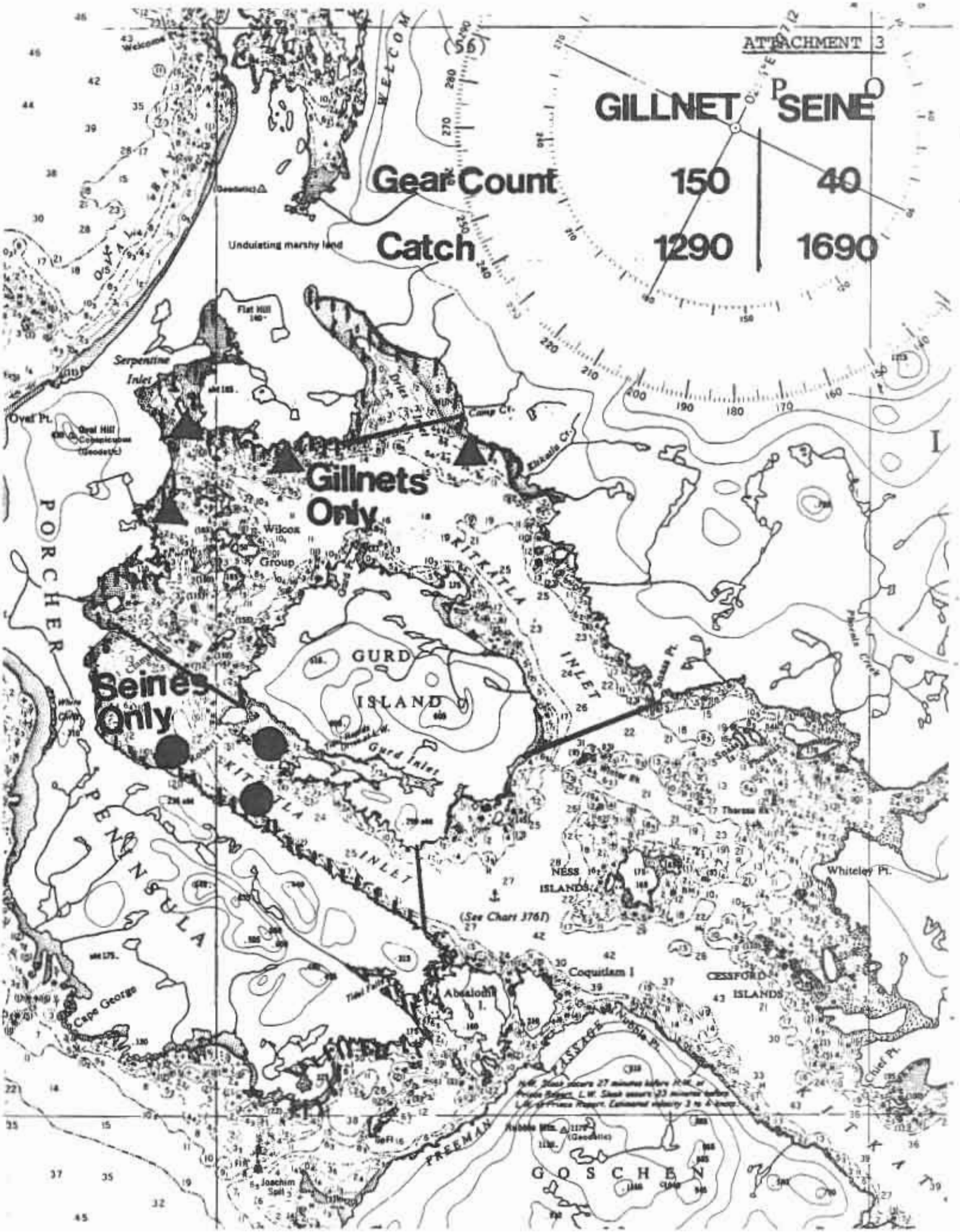
Attachment 1	Skincuttle Inlet	Area 2E
Attachment 2	Louscoone Inlet	Area 2W
Attachment 3	Kitkatla Inlet	Area 5
Attachment 4	Weeteeam Bay	Area 6
Attachment 5	Kitasu Bay	Area 6
Attachment 6	Lambert Channel	Area 14
Attachment 7	Northwest Bay	Area 14
Attachment 8	Clayquot Sound	Area 24
Attachment 9	Esperanza Inlet	Area 25
Attachment 10	Winter Harbour	Area 27

ATTACHMENT 1

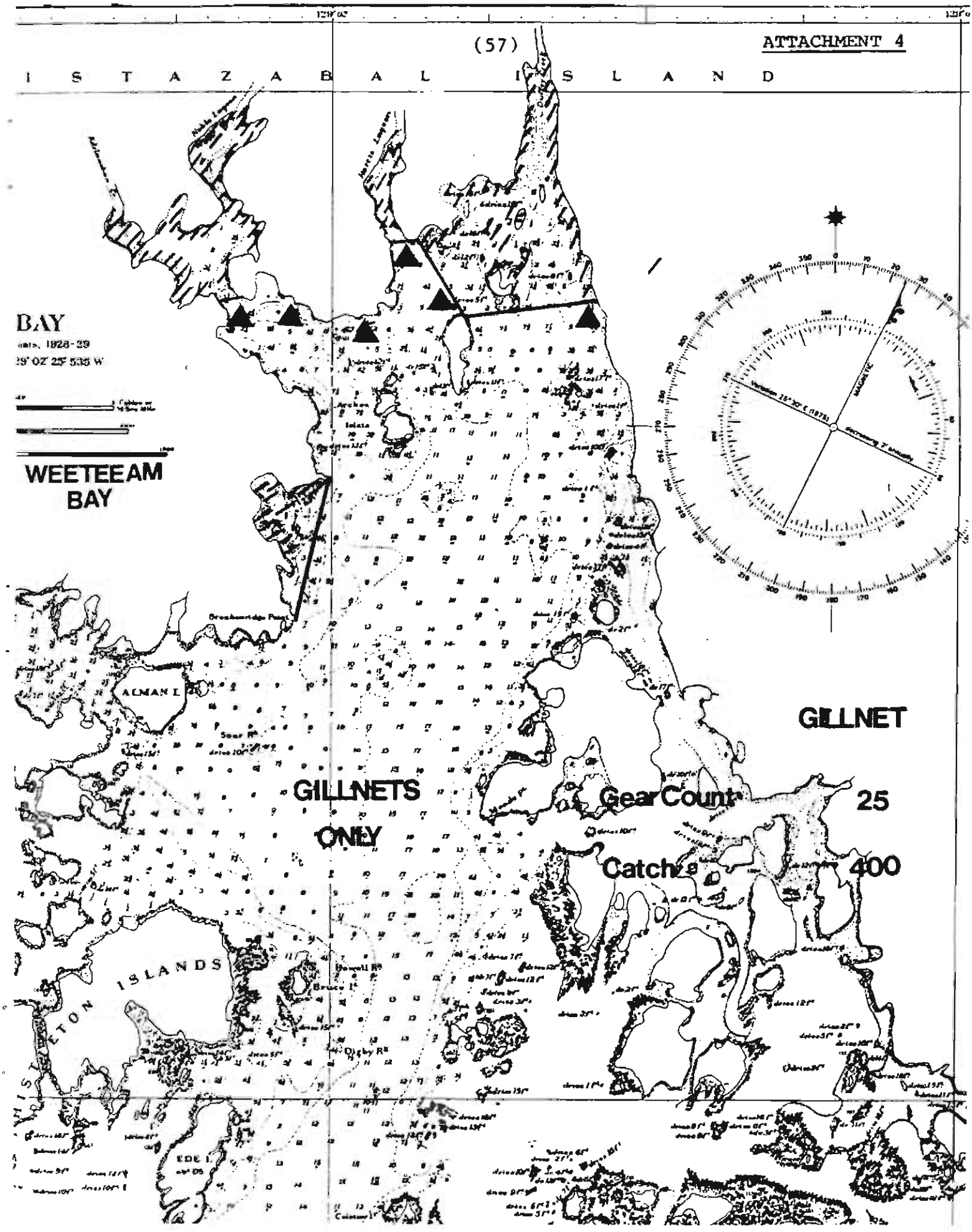


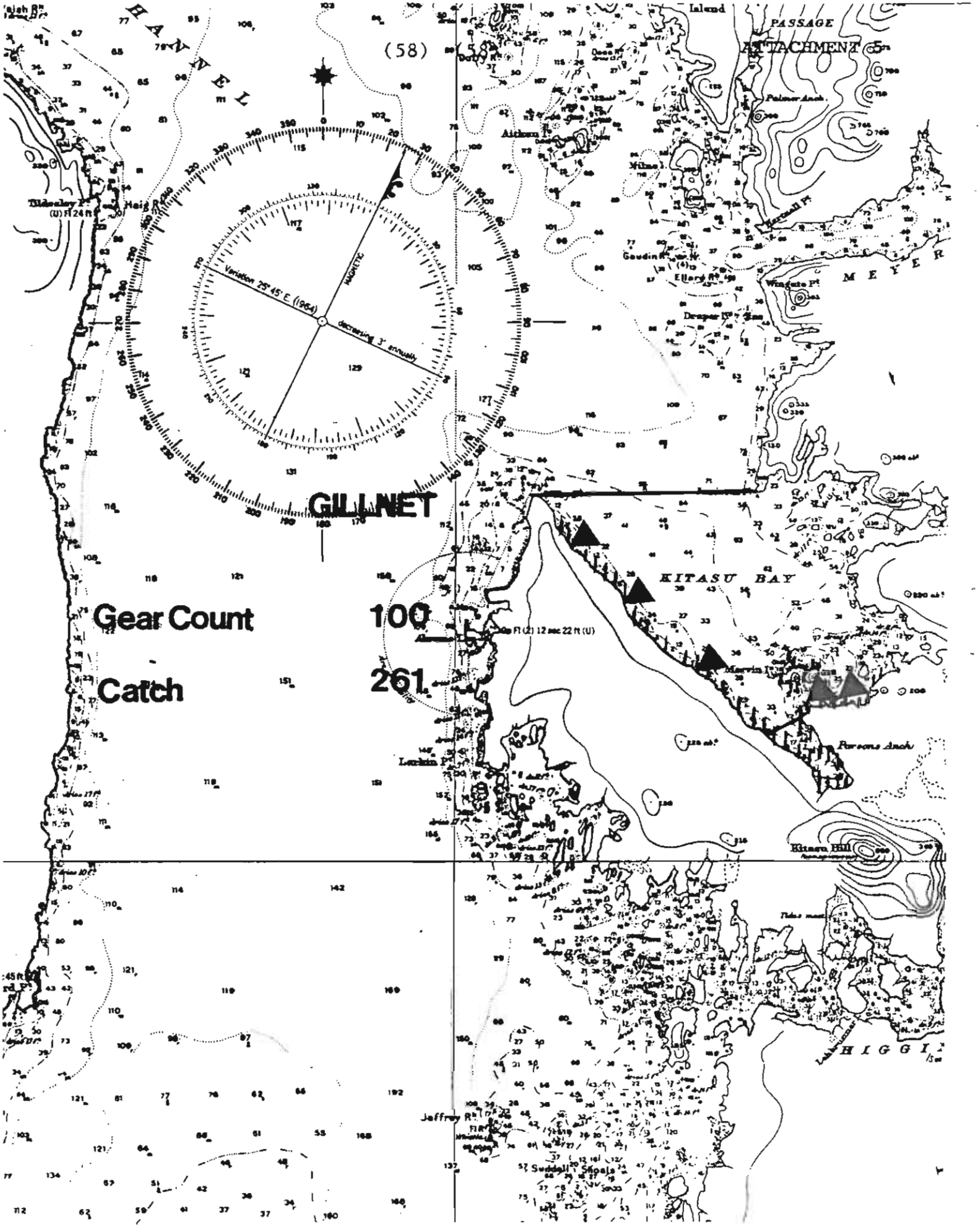
ATTACHMENT 2



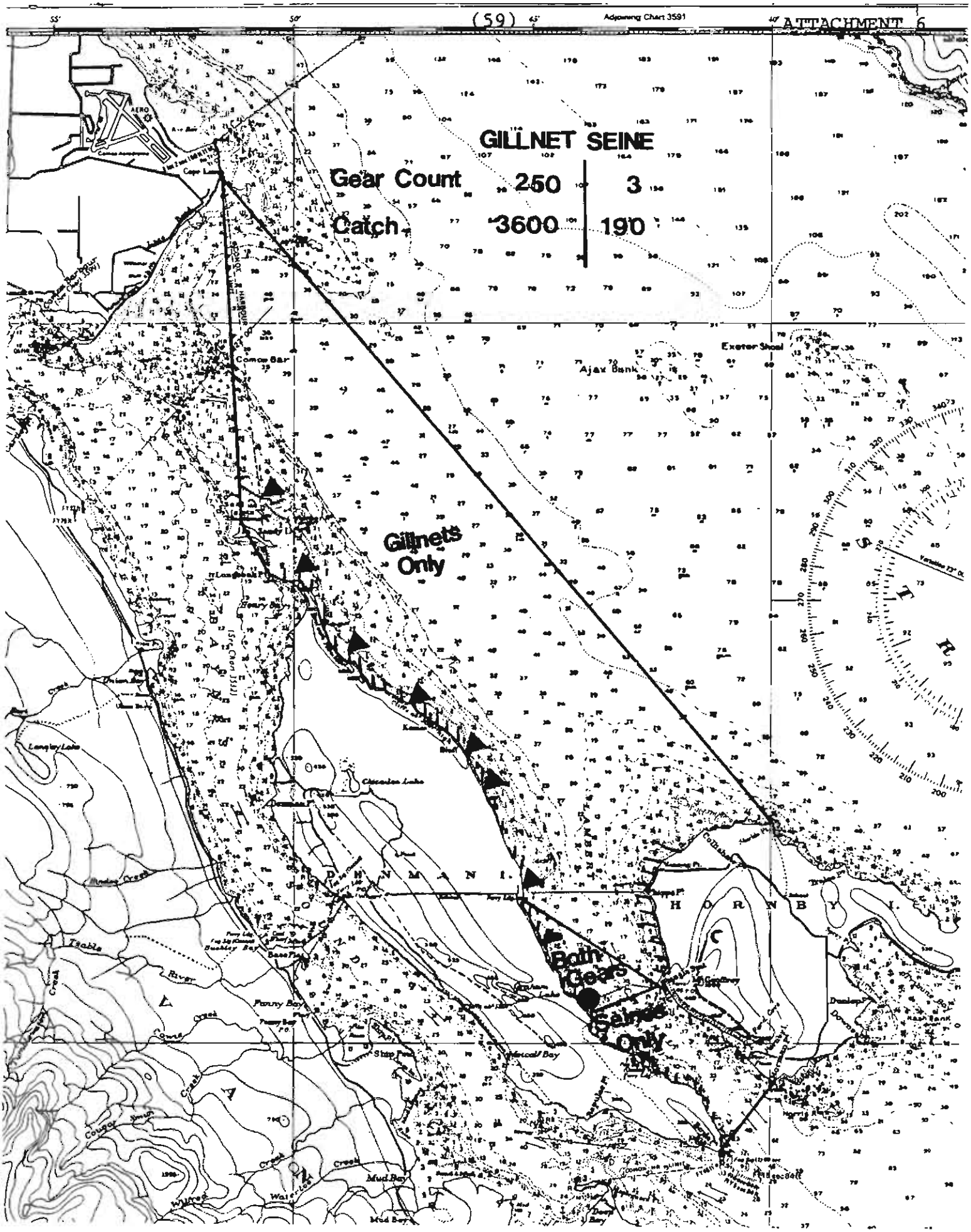

ATTACHMENT 3
GILLNET
SEINE
Gear Count
150
40
Catch
1290
1690
Gillnets Only
Seines Only
PORCHER PENINSULA
GURD ISLAND
KITKATLA INLET
Gurd Inlet
Wilcox Group
Serpentine Inlet
Oval Pt.
Flat Hill
Undulating marshy land
Camp Cr.
Ehkealis Cr.
Pharaoh Creek
NESS ISLANDS
CESSFORD ISLANDS
Whiteley Pt.
Coquitlam I
Abalone I.
Cape George
Chief Pt.
Joachim Spit
FREEMAN
GOSCHEN
(See Chart 3761)

ATTACHMENT 4




ATTACHMENT 5
(58)
HAWKEL
PASSAGE
Island
Aitken Pt
Tildesley Pt
(U) Fl 24 ft
Haig Pt
Palmer Anch
Milne I
Gaudin Pt
Ellery Pt
Wingate Pt
Draper Pt
M E Y E R
Variation 25° 45' E (1964)
MAGNETIC
decreasing 3' annually
GILLNET
KITASU BAY
Gear Count 100
Catch 261
Fl (2) 12 sec 22 ft (U)
Marvin Pt
Parsons Anch
Lankin Pt
Kitasu Hill
HIGGI
Jaffray Rk
Fl R
Suddell Shoals

ATTACHMENT 6



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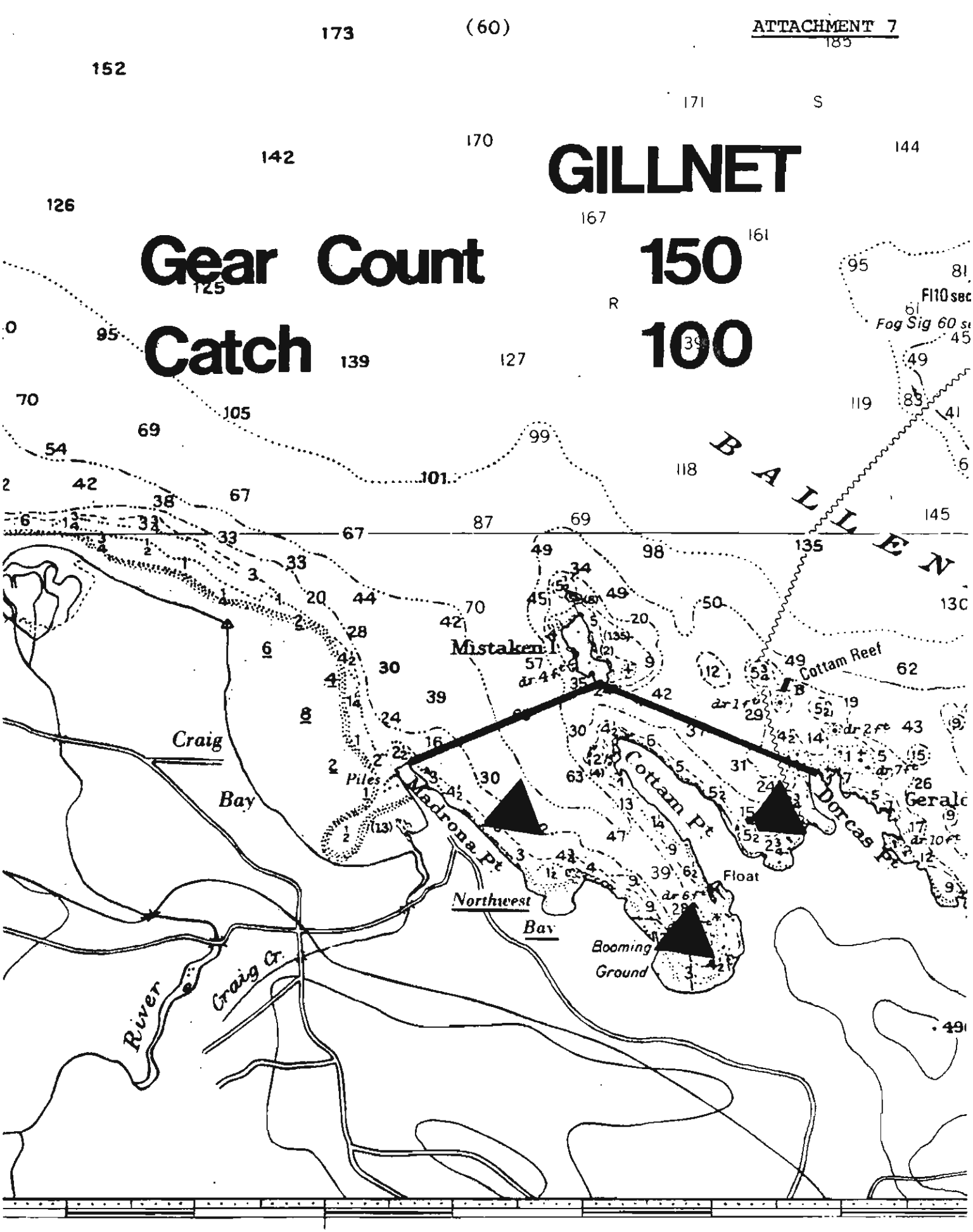

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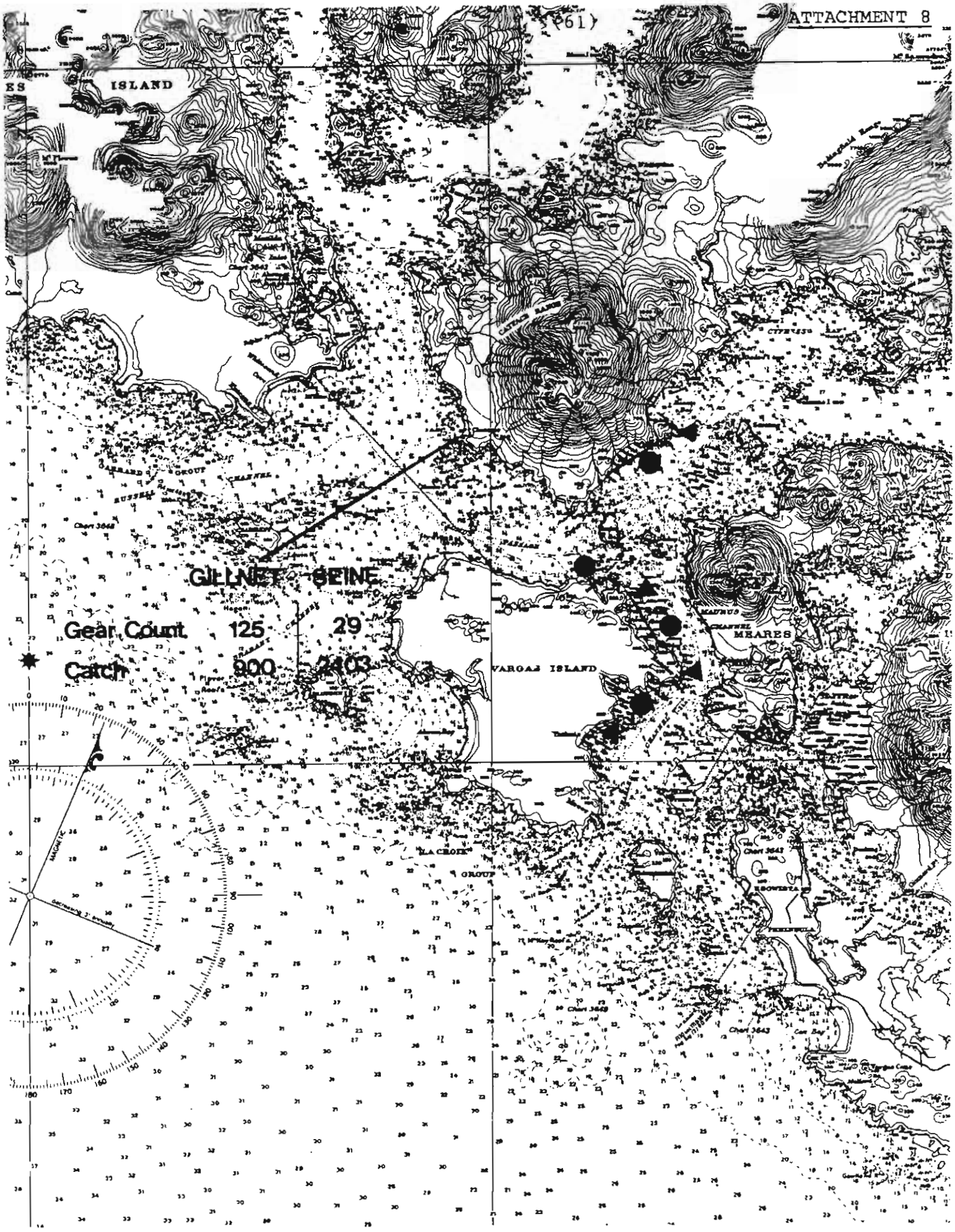

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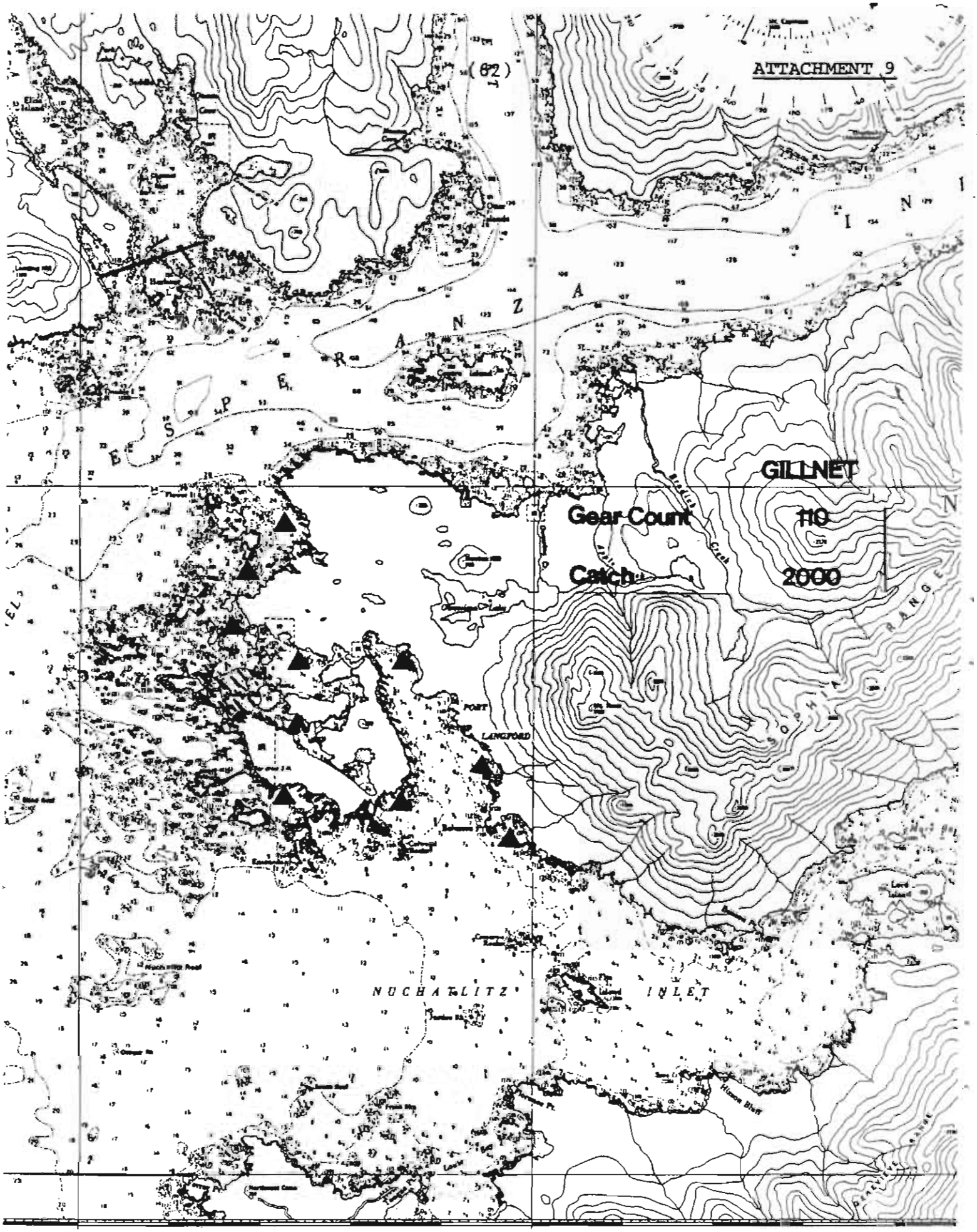

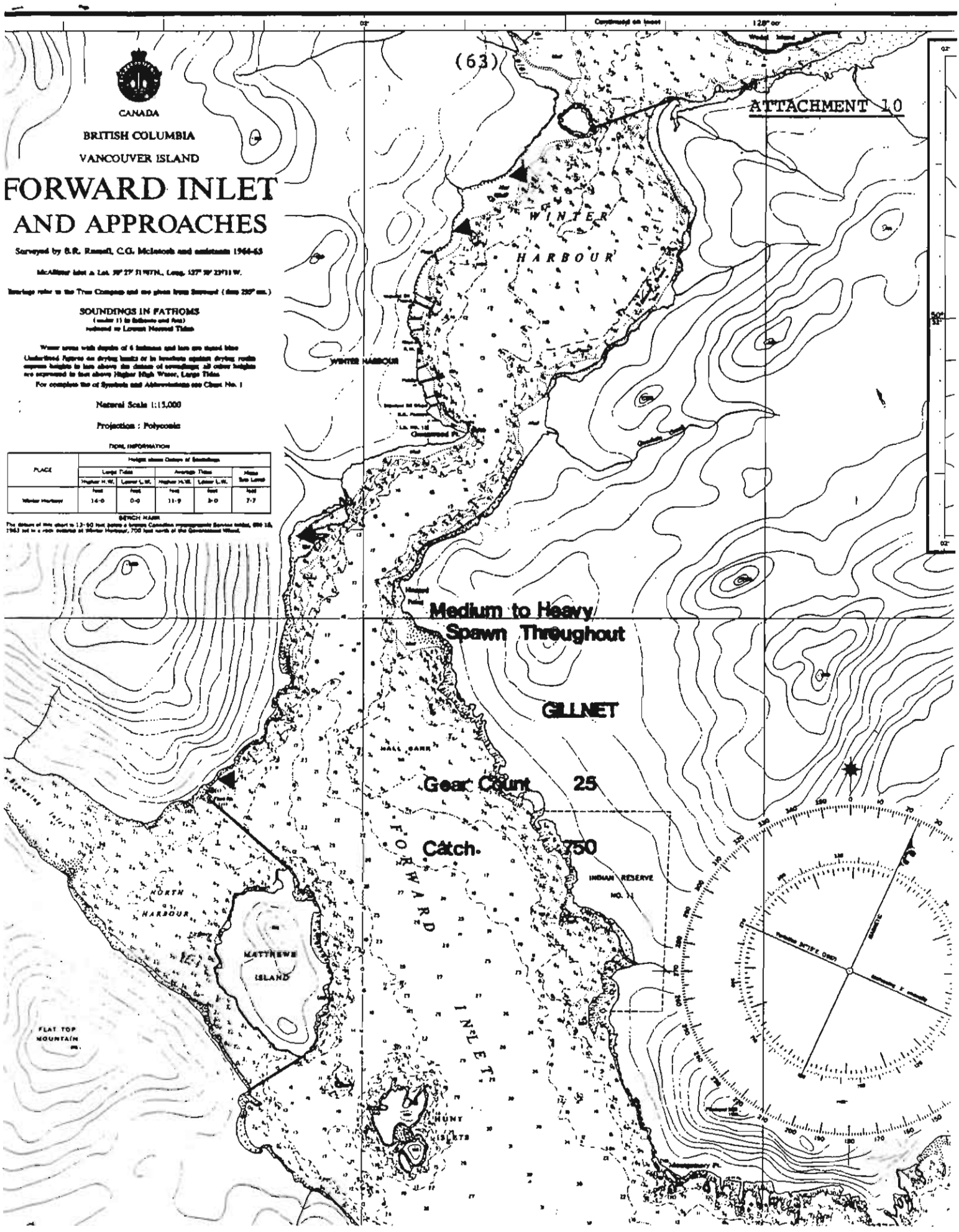
(63)
ATTACHMENT 10
CANADA
BRITISH COLUMBIA
VANCOUVER ISLAND
FORWARD INLET
AND APPROACHES
Surveyed by B.R. Russell, C.G. McIntosh and assistants 1964-65
SOUNDINGS IN FATHOMS
Natural Scale 1:15,000
Projection : Polyconic
WINTER HARBOUR
Medium to Heavy
Spawn Throughout
GILLNET
Gear Count 25
Catch 750
FORWARD INLET
NORTH HARBOUR
MATTHEWS ISLAND
FLAT TOP MOUNTAIN
HUNT ISLETS
INDIAN RESERVE

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