

# **INFORMATIONAL LEAFLET NO. 240**

## OBSERVATIONS ON EXTERNALLY SCARRED AND MARKED CHINOOK AND COHO SALMON IN THE 1982 SOUTHEASTERN ALASKA COMMERCIAL TROLL FISHERY

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TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES . . . . .	i
LIST OF FIGURES . . . . .	ii
LIST OF APPENDICES . . . . .	iii
ABSTRACT . . . . .	iv
INTRODUCTION . . . . .	1
1973-1975 Troll Fishery Catch Sampling Program . . . . .	1
1981 Troll Fishery Catch Sampling Program . . . . .	1
1982 TROLL FISHERY CATCH SAMPLING PROGRAM . . . . .	1
Methods . . . . .	3
Results . . . . .	5
Discussion . . . . .	12
LITERATURE CITED . . . . .	18
APPENDIX A . . . . .	19
APPENDIX B . . . . .	26
APPENDIX C . . . . .	39
APPENDIX D . . . . .	41
APPENDIX E . . . . .	48
APPENDIX F . . . . .	57

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1.	Occurrence of external scars on chinook and coho salmon in the Southeastern Alaska troll fishery, 1973-1975 . . . . .	2
2.	Sampling levels for observations on scarred/marked chinook and coho salmon harvested in the 1982 Southeastern Alaska troll fishery . . . . .	6
3.	Percentage of chinook and coho salmon with scars and/or marks in categories 1-6 and categories 1-3 in the sample catches from the 1982 Southeastern Alaska troll fishery . . . . .	7
4.	Percentage of chinook salmon sampled having categories 1-6 type scars and/or marks in the 1982 Southeastern Alaska troll fishery . .	10
5.	Percentage of coho salmon sampled having categories 1-6 type scars and/or marks in the 1982 Southeastern Alaska troll fishery . . . . .	11
6.	Percentage of chinook salmon sampled having categories 1-3 type marks in the 1982 Southeastern Alaska troll fishery . . . . .	13
7.	Percentage of coho salmon sampled having categories 1-3 type scars and/or marks in the 1982 Southeastern Alaska troll fishery . . . . .	14

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
1.	Southeastern Alaska commercial fishing statistical areas (numbered) and grouped data reporting areas (named) . . . . .	4
2.	Percentage incidence of scarred and marked chinook and coho salmon by category in the 1982 Southeastern Alaska troll fishery . . . . .	8
3.	Percentage incidence of scarred and marked chinook salmon in categories 1-3 by time and area in the 1982 Southeastern Alaska troll fishery . . . . .	15
4.	Percentage incidence of scarred and marked coho salmon in categories 1-3 by time and area in the 1982 Southeastern Alaska troll fishery . . . . .	16

LIST OF APPENDICES

<u>Appendix</u>	<u>Page</u>
A. Category photographs used by field samplers when sampling chinook and coho salmon for scars and marks in the 1982 Southeastern Alaska troll fishery . . . . .	19
B. Percentage of scarred and marked chinook and coho salmon observed by category . . . . .	26
C. Numbers of external scars observed for all areas for 1 April - 20 September . . . . .	39
D. Numbers of external scars observed by area for 15 May - 20 September . . . . .	41
E. Numbers of external scars observed for all areas by month . . . . .	48
F. Numbers of external scars observed for outside areas by month . . . . .	57

## ABSTRACT

Limited sampling of the commercial troll fishery in Southeastern Alaska for the occurrence of externally scarred chinook (*Oncorhynchus tshawytscha*) and coho (*O. kisutch*) salmon was conducted during the periods 1973-1975 and 1981-1982. Expanded sampling was conducted during 1982 with 23 and 12%, respectively, of the 1982 summer season chinook and coho salmon troll catches being sampled. Scars of the six categories established for this study were recorded for 2.05% of the chinook and 1.55% of the coho salmon sampled. Approximately 0.71 and 0.76%, respectively, of the chinook and coho salmon sampled were recorded with marks in Categories 1-3 considered representative of marks possibly inflicted by previous encounters with fishing gear. An estimated 1,600 chinook and 9,900 coho salmon in the 1982 summer troll fishery harvest had marks of this type.

KEY WORDS: Chinook salmon, coho salmon, Southeastern Alaska, troll fishery, sampling, external scars.

## INTRODUCTION

For a number of years fishermen, processors, and fishery managers have observed and reported the occurrence of chinook (*Oncorhynchus tshawytscha*) and coho (*O. kisutch*) salmon harvested in the Southeastern Alaska troll fishery with marks and/or scars similar to those which might be inflicted by non-troll gear such as gillnets, seines, or trawls. The occurrence of such marks, particularly during the early part of the troll season before local domestic net fisheries begin, caused speculation that these salmon stocks could possibly be encountering certain foreign and/or domestic ocean net fisheries.

### 1973-1975 Troll Fishery Catch Sampling Program

The Alaska Department of Fish and Game (ADF&G) began efforts to determine the incidence of occurrence of these scars on chinook and coho in 1973. Sampling efforts were expanded in 1974 and 1975. Table 1 presents a summary of sampling effort for those years and the occurrence of scars thought to be caused by salmon encountering gillnets. Results were nearly identical in 1974 and 1975 with 0.4% and 0.2%, respectively, of chinook and coho containing scars and/or marks. In 1973, however, the scar/mark occurrence was approximately three times higher than in 1974-75 with 1.2% of the chinook and 0.5% of the coho sampled exhibiting scars. The sampling effort was, however, much lower in 1973.

Additionally, observations were made at Pelican and Sitka in 1974 by ADF&G research biologists inspecting salmon for color pigment marking (Phil Gray, personal communications). Approximately 52,000 chinook and 134,000 coho salmon were inspected with 99 or 0.2% chinook and 114 or 0.1% coho salmon being recorded as "gillnet-marked" salmon. Review of photographs taken during the study suggested that not all of the scarred salmon could be positively identified as gillnet-marked fish.

### 1981 Troll Fishery Catch Sampling Program

In response to fishermen reports of increasing numbers of scarred, wounded, and/or gear marked salmon in the Southeastern Alaska troll fishery catches, ADF&G port samplers inspected approximately 780 chinook and 7,460 coho salmon landed in Sitka and Pelican in 1981. Because the fish inspected constituted landings known to contain some scarred or marked fish, the observed average scarred rates of 1.7% for chinook salmon and 2.2% for coho salmon represented upper bounds on the percentage of fish landed at the two ports expected to have scars.

Approximately 100-150 photographs of scarred, wounded, and/or gear marked fish were also obtained during the 1981 season to better document the types of scars observed and were used to develop a scar categorization system for future studies.

## 1982 TROLL FISHERY CATCH SAMPLING PROGRAM

A substantially increased catch sampling program was implemented for the Southeastern Alaska salmon fisheries in 1982. Although this program was expanded primarily for purposes of coded-wire tag recovery and studies associated with

Table 1. Occurrence of external scars on chinook and coho salmon in the Southeastern Alaska troll fishery, 1973-1975<sup>1</sup>.

Year	No. sampled	No. scarred	Percent
<u>Chinook Salmon</u>			
1973	6,254	78	1.2
1974	35,692	146	0.4
1975	46,907	163	0.4
Total	88,853	387	0.4
<u>Coho Salmon</u>			
1973	9,929	47	0.5
1974	81,806	170	0.2
1975	102,479	201	0.2
Total	194,214	418	0.2
Combined chinook-coho (all years)	283,067	805	0.3

<sup>1</sup> ADF&G Technical Data Report No. 29.

U.S.-Canada salmon interception research, it also provided an opportunity to increase sampling for scarred fish.

### Methods

Random sampling of troll vessel landings was conducted dockside by samplers located at various landing ports throughout Southeastern Alaska. Samplers recorded numbers of fish landed by species and approximate date and area of catch as reported by the fishermen. Area of catch was recorded according to eight groupings of ADF&G statistical reporting areas as shown in Figure 1.

Samplers were instructed to record the number of observed scarred salmon in one of six categories. The categories were developed on the basis of photographs of scarred fish obtained by ADF&G samplers in 1981 and discussions with biologists and fishermen familiar with the problem. Categories were intentionally numbered rather than labeled with names descriptive of potential sources of marks to eliminate any requirement on part of samplers to judge the source or cause of observed marks.

Samplers were provided with three sample photographs for each category plus narrative descriptions of each category as follows:

<u>Category</u>	<u>General Discription</u>
1	One or more fairly well delineated linear marks between the head and dorsal fin, approximately perpendicular to the longitudinal body axis and encircling or partially encircling the body.
2	A series of approximately parallel mark or scrape lines over a substantial portion of the body; two or more series of such marks occurring at different angles may give the appearance of cross hatching marks.
3	A fairly well delineated scrape band generally occurring between the head and the dorsal fin approximately perpendicular to the longitudinal body axis or angled slightly backward from the top to the bottom of the body and containing an approximately oval shaped open wound normally in the upper portion of the body.
4	Extensive descaling of at least 25% or more of one or both sides of the body, but with no well delineated marks or wounds.
5	Open, gaping wounds or puncture marks located anywhere on the body either with no other marks and scrapes or with adjacent irregular "scratch" or "claw" marks but no marks as described in Categories 1-4.
6	Any scars/marks not fitting the descriptions in Categories 1-5.

Category sample photographs are included in Appendix A.

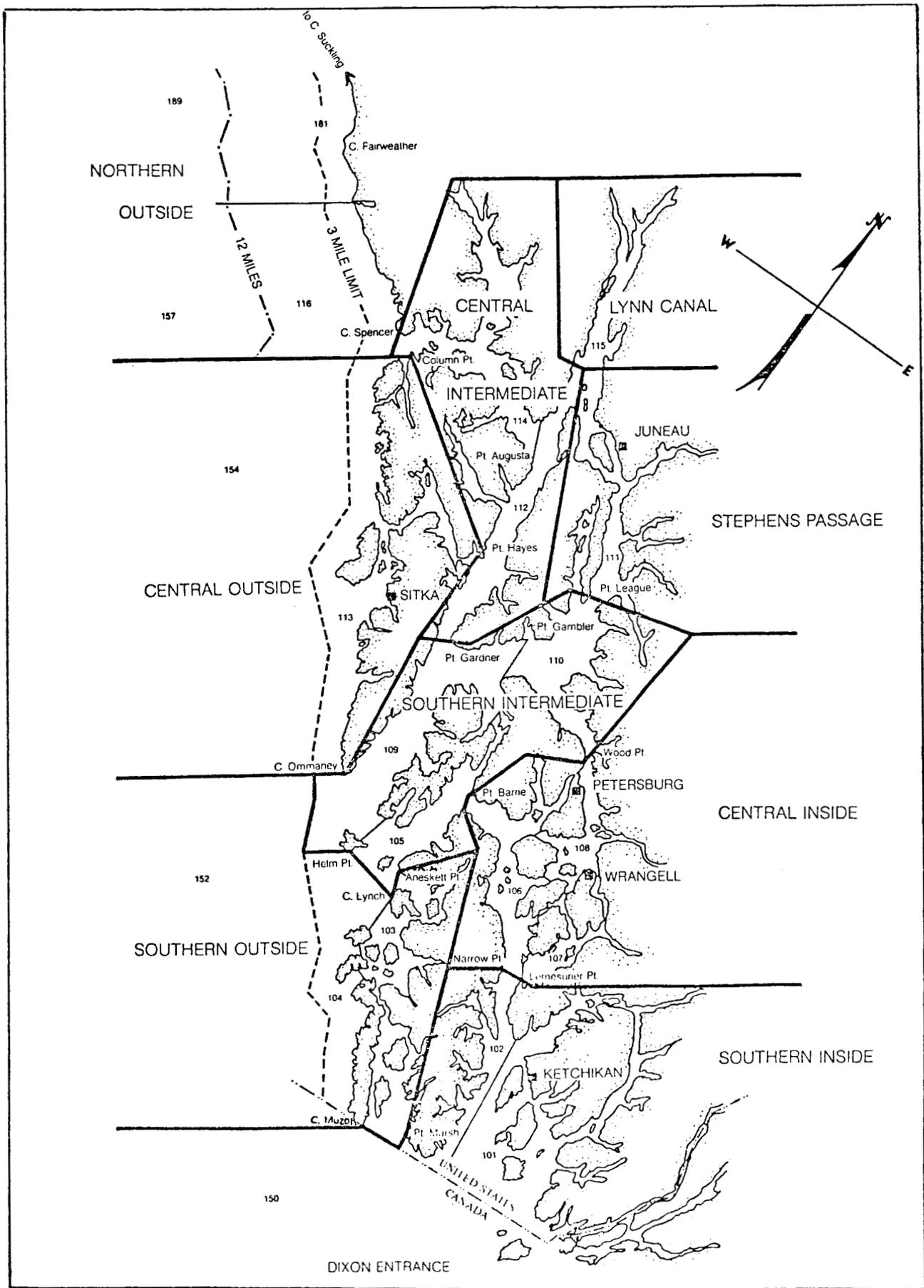


Figure 1. Southeastern Alaska commercial fishing statistical areas (numbered) and grouped data reporting areas (named). (ADF&G 10/82)

In establishing the above categories, the first three categories were selected as representing types of scars or marks which might be expected to result from encounters with different types of fishing gear. Several category photographs were in fact of fish known to be harvested in domestic gillnet fisheries. While Category 4 marks are thought to have resulted in some cases from gear encounters and in other cases from handling after the fish had been caught, in general it would not be possible to distinguish between the different causes. Category 5 was considered to represent predator type wounds while Category 6 was for any scars or marks not falling in Categories 1-5.

Samplers were also instructed to categorize the scars or wounds as fresh or healed. Fresh scars were determined by the presence of exposed flesh; healed scars were those that displayed no exposed flesh and which had healed to the point of skin regeneration.

In addition to general sampling for incidence of scarred salmon in the commercial troll fishery, an ADF&G biologist was assigned to more intensively sample landings in the major troll landing ports of Sitka and Pelican. Fishermen were interviewed regarding incidence of scarred salmon by area and time for the most recent trip and all scarred salmon were weighed and measured (fork length). Additional details were recorded concerning types of scars encountered within catch reporting areas, presence of discarded gillnet or trawl gear seen by the fishermen in the area, presence of predators in the area fished, and any additional pertinent comments the fishermen chose to make. Following these interviews, photographs were taken of each scarred salmon in the delivery.

Data on scarred salmon were recorded on troll fishery performance data forms, sent to the Sitka area office and entered in-season in computer data files. Field sampling was completed by mid-September.

## Results

Approximately 2,000 troll vessel landings were sampled during the 1982 season with 53,629 chinook and 157,903 coho salmon being examined for scars and marks (Table 2). This represents sampling rates of 23.49 and 12.10%, respectively, for the summer troll season chinook salmon harvest of 230,000 fish and the coho salmon harvest of 1.3 million fish. Sampling of chinook salmon was conducted from 15 May through 28 July. Coho sampling occurred from 15 June through 20 September. Sampling effort was distributed between area and time strata approximately in proportion to actual catches.

Of the fish sampled 2.05% chinook salmon and 1.55% coho salmon were recorded as having scars falling in one of the six categories (Table 3). For Categories 1-3 which were considered to represent types of scars similar to those which might be inflicted during encounters with various types of fishing gear, 0.73% of the chinook salmon and 0.76% of the coho salmon sampled were thus marked. The percentage of scars/marks by category for both chinook and coho salmon is shown graphically in Figure 2.

As shown in Tables 4 and 5 (and Appendix B and C) area distribution patterns of Categories 1-6 scarred chinook and coho salmon were similar to the extent that scarred fish of both species were more abundant in intermediate areas (chinook - 3.57%, coho - 2.83%) than in outside areas (chinook - 1.83%, coho - 1.19%) or

Table 2. Sampling levels for observations on scarred/marked chinook and coho salmon harvested in the 1982 Southeastern Alaska troll fishery. (ADF&G 12/82)

Sampling period	Outside Area <sup>1</sup>			Intermediate Area <sup>2</sup>			Southern Inside Area <sup>3</sup>			All Areas <sup>4</sup>		
	Vessel landings	# of fish	% of catch <sup>5</sup>	Vessel landings	# of fish	% of catch <sup>5</sup>	Vessel landings	# of fish	% of catch <sup>5</sup>	Vessel landings	# of fish	% of catch <sup>5</sup>
May Chinook	72	3,348	12.39	47	472	7.44	1	17	2.51	120	3,387	9.61
June Chinook		23,509	32.65		4,316	25.64		1,758	34.26		30,471	30.37
Coho	323	2,139	14.12	199	623	19.85	35	2,691	34.21	571	5,539	18.67
July Chinook		12,104	18.66		3,464	20.57		3,155	50.73		18,984	20.48
Coho	353	62,043	17.06	356	12,353	21.07	125	22,752	44.07	839	97,461	19.77
August Coho	100	27,931	6.99	165	8,556	4.77	60	8,881	15.43	332	45,595	6.88
September Coho	14	4,007	6.22	55	2,784	7.48	33	2,517	19.56	102	9,308	7.81
Season Totals Chinook		38,961	23.77		8,252	20.62		4,930	40.99		53,629	23.49
Coho	864	96,120	11.41	822	24,316	8.73	254	36,841	28.36	1,994	157,903	12.10

<sup>1</sup> Outside Area includes northern, central, and southern outside areas shown in Figure 1.

<sup>2</sup> Intermediate Area includes central and southern intermediate areas.

<sup>3</sup> Southern Inside Area includes southern Clarence Strait, Behm Canal, and Duke Island areas.

<sup>4</sup> Central and Northern Inside Area samples were included in the All Areas section, but were not examined individually due to small sample sizes.

<sup>5</sup> Catch percentages are preliminary.

Table 3. Percentage of chinook and coho salmon with scars and/or marks in categories 1-6 and categories 1-3 in the sample catches from the 1982 Southeastern Alaska troll fishery.

Species	Sample size	Sample Percentage	
		Categories 1-6	Categories 1-3
Chinook	53,629	2.05	0.73
Coho	157,903	1.55	0.76

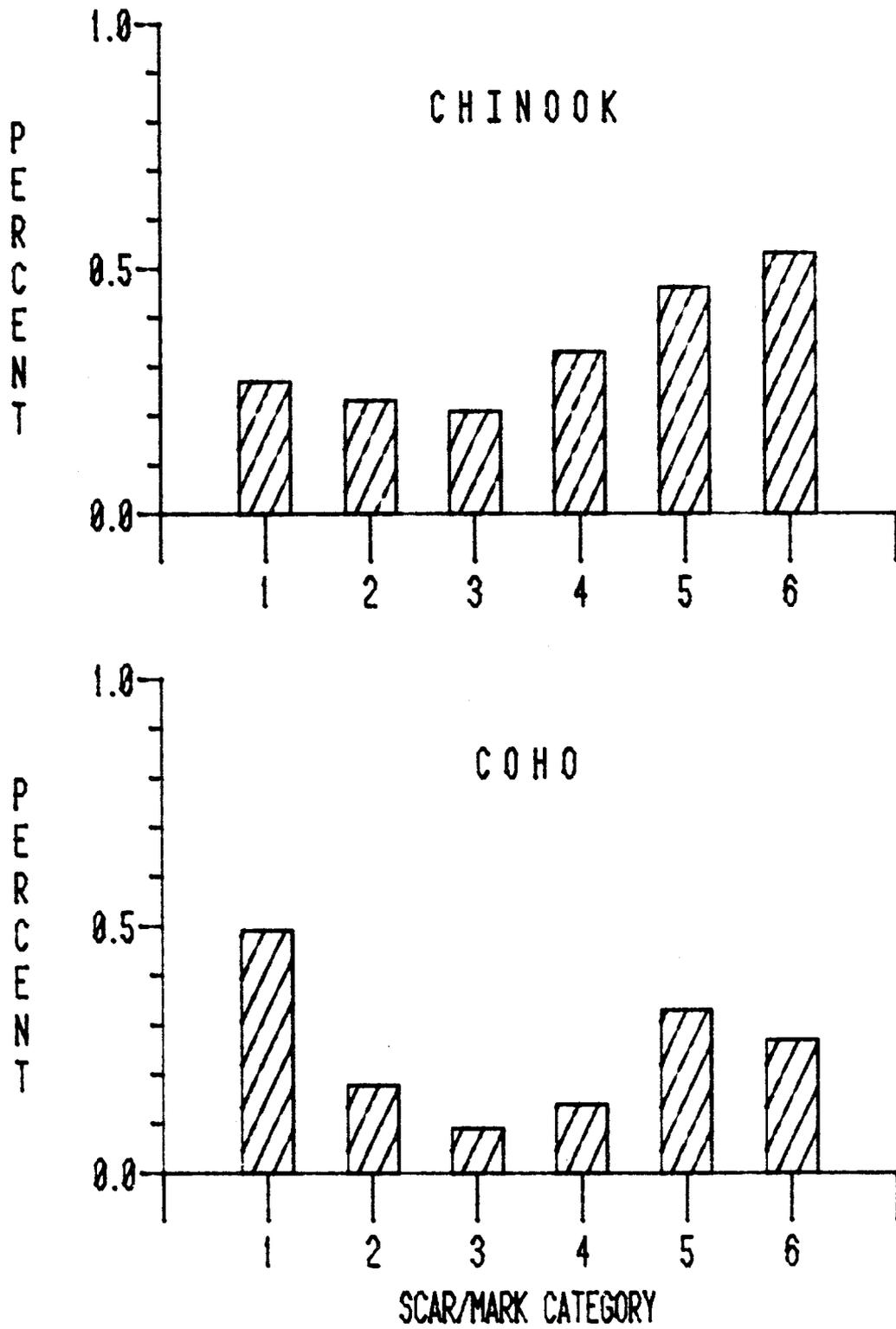


Figure 2. Percentage incidence of scarred and marked chinook and coho salmon by scar/mark category in the 1982 Southeastern Alaska troll fishery.

inside areas (chinook - 1.22%, coho - 1.42%). Reasons for this pattern are not immediately apparent since one might initially expect to find highest percentages of scarred fish in inside areas where the likelihood of encounters with local, domestic fisheries was greatest. One possibility is that scars became less apparent as fish neared their spawning streams and physical changes associated with maturation occurred.

Time distribution patterns of Categories 1-6 scarred chinook and coho salmon were different. Chinook salmon exhibited decreasing scarred frequencies as the season progressed (May - 2.50%, June - 2.36%, July - 1.43%), while coho salmon exhibited increasing scarred frequencies (June - 1.30%, July - 1.12%, August - 2.17%, September - 2.53%). For chinook, the decreasing pattern may have been the result of older age fish being more prevalent in the May-June period during spawning migrations of mature fish with relative abundance of these fish decreasing in July. For coho, the increasing pattern (reaching later into August and September) may have been the result of increased likelihood of prior local gear encounters as the season progressed. (For reference, more detailed scar percentage data for various levels of aggregation are shown in Appendices D,E, and F).

Maximum and minimum percentages are also shown in Tables 4 and 5 for individual landings. High values shown for maximum percentages (up to 100%) normally occurred for landings with relatively few numbers of fish, however, this tends to substantiate reports by fishermen on unusually high percentages of marked fish occurring occasionally at certain times and areas.

A higher incidence of Category 1 marks was observed for coho salmon (0.49%) than for chinook salmon (0.27%). (This difference was shown to be significant at the 99% level during statistical testing of data, chi-square = 45.2 with 3 degrees of freedom). This observation is noteworthy in that many fishermen commented that the "gill-net type" marks of Category 1 are actually caused in some cases by coho salmon rolling and entangling the troll lines. A scientific observer onboard a troll vessel during the 1982 season also reported observing this phenomena (W. Robinson, personal communications). Fishermen further commented that this was much more characteristic of coho salmon behavior than of chinook salmon. Catch samplers were generally not able to distinguish between Category 1 marks caused by troll gear and those caused by other types of gear during dock-side sampling of landed fish. In future studies it may be possible to make observations on board troll vessels while marks caused by troll gear are still fresh to estimate the incidence rate of these types of marks. (It is interesting to note that chinook salmon were observed to have higher percentages of marks than coho salmon in each of the other categories.)

Cursory examination of the relative incidence of healed and fresh scars and marks indicated a substantially higher proportion of fresh marks from July through the end of the season than prior to July for both chinook and coho salmon. Ratios of healed to fresh marks observed prior to 1 July for chinook and coho salmon were 3.1 and 2.8, respectively, and 0.4 and 0.5 after 1 July. A similar trend existed for catch samples grouped for the three outside areas with healed to fresh ratios of 3.2 and 2.8 for chinook and coho, respectively, prior to July and 0.6 and 0.7 after 1 July.

Because the primary objective of this study was to investigate the occurrence of gear marked fish in the Southeastern Alaska troll fishery, the remaining dis-

Table 4. Percentage of chinook salmon sampled having categories 1-6 type scars and/or marks in the 1982 Southeastern Alaska troll fishery (ADF&G 10/08/82).

Sampling period	Outside areas <sup>1</sup>				Intermediate areas <sup>2</sup>	Inside areas <sup>3</sup>	All areas
	Northern	Central	Southern	All			
May - Average	0.53	2.09	0.58	1.14	12.29	0.00	2.50
- Maximum	30.77	18.18	6.67	30.77	100.00	0.00	100.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun - Average	2.21	2.49	0.49	2.24	3.98	0.71	2.36
- Maximum	28.57	42.86	6.25	42.86	100.00	10.00	100.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul - Average	1.54	1.17	1.84	1.26	1.87	1.61	1.43
- Maximum	6.15	50.00	7.69	50.00	100.00	14.29	100.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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Season Totals							
Unweighted Average	1.91	1.88	0.93	1.83	3.57	1.22	2.03
- Maximum	30.77	50.00	7.69	50.00	100.00	14.29	100.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1</sup> Outside areas include Northern, Central, and Southern outside areas shown in Figure 1.

<sup>2</sup> Intermediate areas include Central and Southern intermediate areas.

<sup>3</sup> Inside areas include Lynn Canal, Stephens Passage, and Central and Southern inside areas.

Table 5. Percentage of coho salmon sampled having categories 1-6 type scars and/or marks in the 1982 Southeastern Alaska troll fishery (ADF&G 10/08/82).

Sampling period	Outside areas <sup>1</sup>				Intermediate areas <sup>2</sup>	Inside areas <sup>3</sup>	All areas
	Northern	Central	Southern	All			
May - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun - Average	0.00	1.59	1.21	1.45	3.88	0.61	1.30
- Maximum	0.00	50.00	33.33	50.00	40.00	6.80	50.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul - Average	1.60	0.67	1.51	0.78	2.34	1.40	1.12
- Maximum	20.00	20.00	8.61	20.00	100.00	81.25	100.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug - Average	3.61	1.71	2.00	2.03	3.35	1.37	2.17
- Maximum	8.56	16.22	7.69	16.22	71.43	20.00	71.43
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep - Average	1.95	1.70	0.00	1.90	3.14	2.54	2.53
- Maximum	11.76	2.66	0.00	11.76	11.11	9.30	11.76
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-----							
Season Totals							
Unweighted Average	2.56	0.99	1.59	1.19	2.83	1.42	1.50
- Maximum	20.00	50.00	33.33	50.00	100.00	81.25	100.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1</sup> Outside areas include Northern, Central, and Southern outside areas shown in Figure 1.

<sup>2</sup> Intermediate areas include Central and Southern intermediate areas.

<sup>3</sup> Inside areas include Lynn Canal, Stephens Passage, and Central and Southern inside areas.

cussion of results will be limited to observations on scars and marks of Categories 1-3. As mentioned above, while Category 4 marks (i.e., significant descaling without well delineated or patterned marks) are thought to have resulted in some cases from gear encounters, in general it would not be possible to determine the type of gear causing the marks or distinguish gear marks from marks resulting from handling of fish onboard the troll vessels or at the docks.

Percentages of sampled chinook and coho salmon observed with scars and marks in Categories 1-3 combined are presented graphically by month and area in Figures 3 and 4 and in tabular form in Tables 6 and 7, respectively. With respect to temporal patterns, a decreasing percentage of marks for all areas combined was observed for chinook salmon (Table 6) from May (1.07%) through July (0.51%) while coho salmon sampling indicated similar levels for June and July but higher levels for August and September (Table 7). While the pattern observed for coho salmon could be expected to be the result of major coastal net fisheries being conducted during the latter period, there is no immediate explanation for the somewhat opposite pattern observed for chinook salmon.

Spatial patterns for the broader categorization of areas were similar for both species with similar percentages of marks being observed in the outside and inside areas but higher percentages being observed in the intermediate areas (Tables 6 and 7 and Figures 3 and 4). The higher levels in the intermediate areas compared to the outside areas again could be the result of local net fisheries, however, the reason for the lower percentage in the inside areas is not apparent.

Based on the 1982 sampling, a total of approximately 1,679 (0.73% x 230,000) chinook salmon and 9,880 (0.76% x 1.3 million) coho salmon in Southeastern Alaska troll fishery catches was estimated to have had scars and/or marks recorded in Categories 1-3.

### Discussion

While the 1982 study has provided estimates of the incidence of scarred salmon in the Southeastern Alaska troll fishery, it does not provide the basis for determining specific sources or causes of observed marks. Category photographs were inspected by several fishery scientists from the National Marine Fisheries Service Montlake Laboratory in Seattle, Washington, who had extensive experience with different types of high seas fishing gear. They also concluded that marks in Categories 1-3 were probably caused by encounters with fishing gear but were not able to further identify specific types of gear (Lael Ronholt, personal communications).

It appears reasonably certain that at least a high proportion - if not all - of the marks in Categories 1-3 were in fact the result of previous encounters with fishing gear. Potential sources of this marking - excluding marks in Category 1 because of troll gear - include the following: 1) Southeastern Alaska net fisheries, 2) Other coastal and inshore fisheries in northern British Columbia and central and western Alaska, and 3) Foreign or domestic ocean fisheries.

On the basis of past tagging studies, some chinook and coho salmon entering the Southeastern Alaska troll fishery are known to migrate through areas in which they could encounter the other fisheries listed above.

Table 6. Percentage of chinook salmon sampled having categories 1-3 type scars and/or marks in the 1982 Southeastern Alaska troll fishery (ADF&G 10/08/82).

Sampling period	Outside areas <sup>1</sup>				Intermediate areas <sup>2</sup>	Inside areas <sup>3</sup>	All areas
	Northern	Central	Southern	All			
May - Average	0.23	0.85	0.00	0.45	5.51	0.00	1.07
- Maximum	7.69	12.50	0.00	12.50	100.00	0.00	100.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun - Average	0.76	0.90	0.35	0.80	1.05	0.31	0.80
- Maximum	11.76	20.00	3.12	20.00	100.00	10.00	100.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul - Average	1.19	0.31	0.98	0.46	0.35	0.88	0.51
- Maximum	4.65	33.33	2.98	33.33	25.00	14.29	33.33
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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Season Total							
Unweighted Average	0.74	0.63	0.50	0.66	1.01	0.64	0.71
- Maximum	11.76	33.33	3.12	33.33	100.00	14.29	100.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1</sup> Outside areas include Northern, Central, and Southern outside areas shown in Figure 1.

<sup>2</sup> Intermediate areas include Central and Southern intermediate areas.

<sup>3</sup> Inside areas include Lynn Canal, Stephens Passage, and Central and Southern inside areas.

Table 7. Percentage of coho salmon sampled having categories 1-3 type scars and/or marks in the 1982 Southeastern Alaska troll fishery (ADF&G 10/08/82).

Sampling period	Outside areas <sup>1</sup>				Intermediate area <sup>2</sup>	Inside areas <sup>3</sup>	All areas
	Northern	Central	Southern	All			
May - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun - Average	0.00	0.86	0.24	0.70	2.75	0.25	0.71
- Maximum	0.00	25.00	33.33	33.33	40.00	2.43	40.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul - Average	0.94	0.47	0.77	0.51	1.44	0.65	0.66
- Maximum	20.00	20.00	4.64	20.00	23.08	31.25	31.25
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug - Average	1.31	0.72	0.46	0.80	1.81	0.45	0.93
- Maximum	4.59	11.11	2.13	11.11	20.00	11.11	20.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep - Average	0.72	0.00	0.00	0.63	1.42	0.75	0.94
- Maximum	5.88	0.00	0.00	5.88	5.56	9.30	9.30
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-----							
Season Totals							
Unweighted Average	1.04	0.55	0.66	0.61	1.60	0.58	0.76
- Maximum	20.00	25.00	33.33	33.33	40.00	31.25	40.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1</sup> Outside areas include Northern, Central, and Southern outside areas shown in Figure 1.

<sup>2</sup> Intermediate areas include Central and Southern intermediate areas.

<sup>3</sup> Inside waters include Lynn Canal, Stephens Passage, and Central and Southern inside areas.

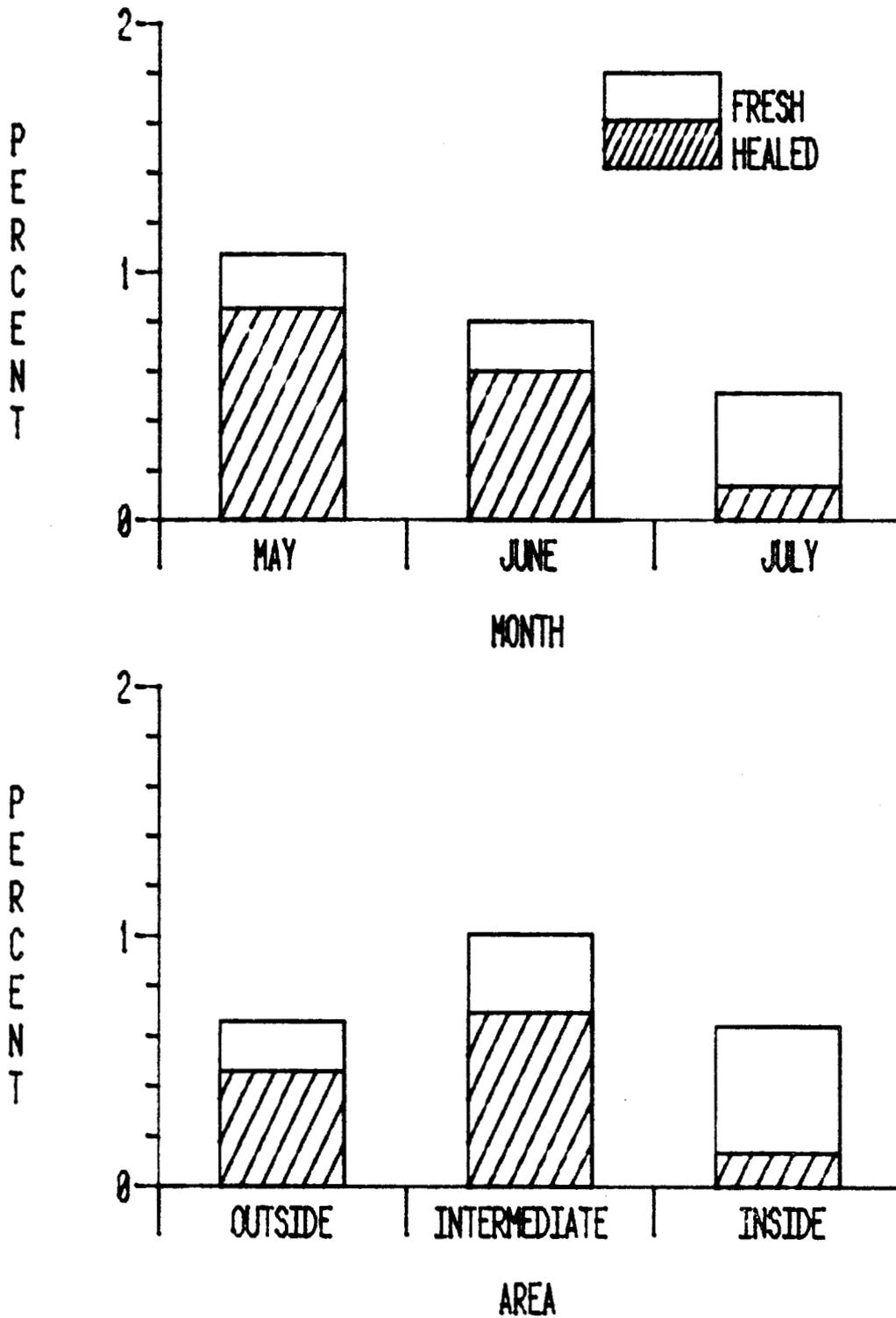


Figure 3. Percentage incidence of scarred and marked chinook salmon in scar/mark categories 1-3 by time and area in the 1982 Southeastern Alaska troll fishery. (ADF&G 10/82)

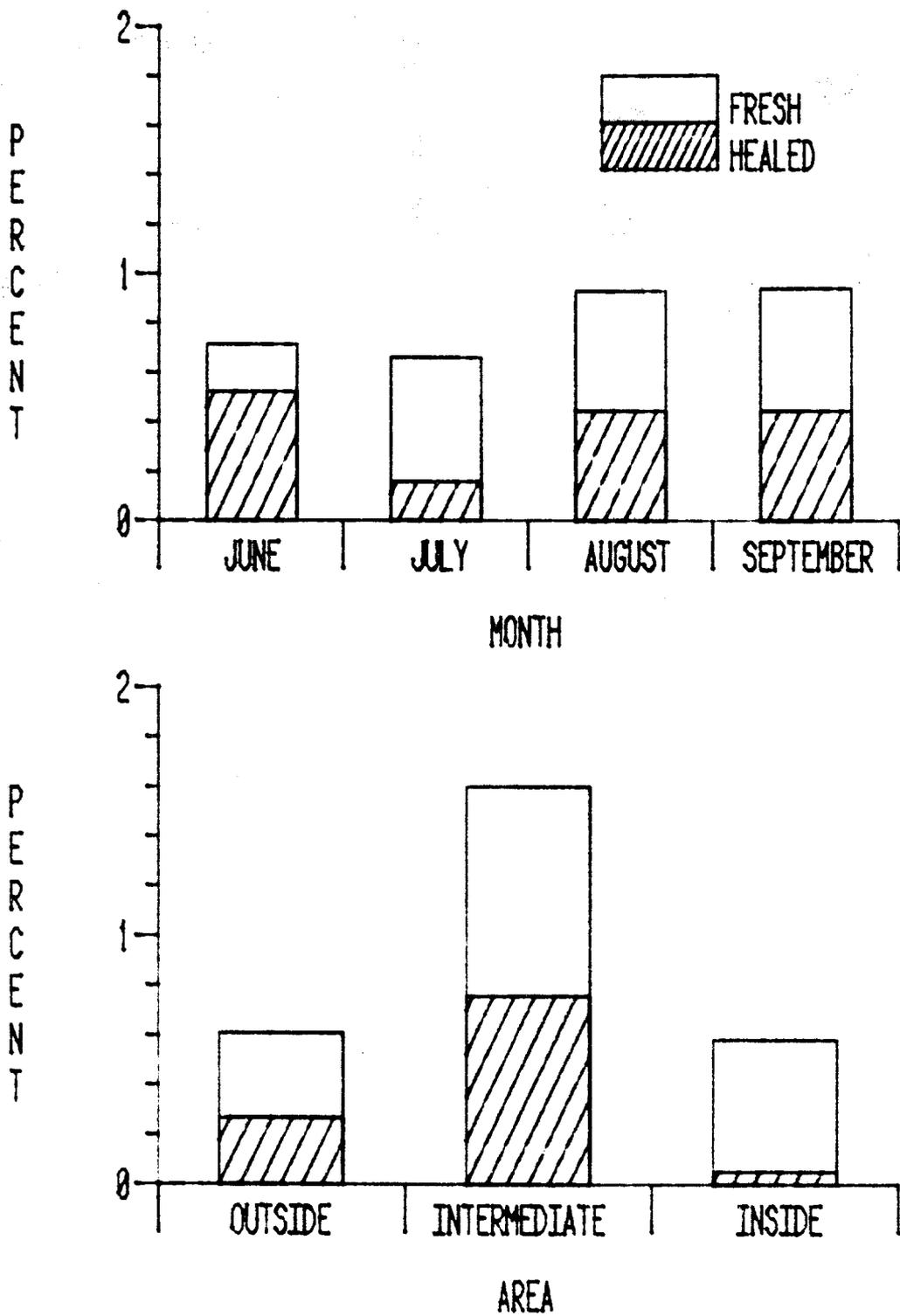


Figure 4. Percentage incidence of scarred and marked coho salmon in scar/mark categories 1-3 by time and area in the 1982 Southeastern Alaska troll fishery. (ADF&G 10/82)

The season for Southeastern Alaska net fisheries generally begins about mid-June for gillnets and early July for purse seines. (Limited set gillnet openings begin in early June in the Yakutat area, however, these are small terminal area and river fisheries.) While purse seine fisheries may operate in most areas of Southeastern Alaska, gillnet fisheries are limited to inside waters near terminal areas.

It is highly unlikely then that net marked salmon observed in the troll fishery prior to early July, particularly in outer coastal areas, could have migrated through areas open to Southeastern Alaska net fisheries. An exception to this are chinook salmon which could have encountered Southeastern Alaska net fisheries in prior years while rearing as immature fish. It is not possible to distinguish net marks as a result of the latter source from those due to other sources.

Other coastal and inshore fisheries in northern British Columbia and central and western Alaska also generally begin their seasons about mid-June. Thus, allowing for migration time, salmon entering Southeastern Alaska waters in May and June would not be expected to have migrated through those fisheries except possibly as immature chinook salmon in prior years. While tagging data has shown that certain chinook and coho salmon stocks contributing to the Southeastern Alaska troll fishery may have significant migrations through parts of northern British Columbia, it does not suggest significant migrations through near coastal and inside waters of central and western Alaska where local fisheries occur.

Although only limited information exists on ocean migrations of chinook and coho salmon stocks contributing to the Southeastern Alaska troll fishery, it does suggest that chinook salmon in particular have wide-ranging northerly migrations into the Gulf of Alaska and occasionally into the Bering Sea. French, Bakkala, and Sutherland (1975) state "Similar extensive migrations were demonstrated for chinook salmon from southeastern Alaska and the Columbia River by returns to those areas from tagging south of the Central Aleutians." A chinook salmon tagged in 1980 near the southern tip of Admiralty Island in Southeastern Alaska was reported recovered the following year by a U.S. trawl vessel operating north of the Alaska Peninsula in the Bering Sea (S. Hoffman, personal communications).

Data also presented in French et al. (1975) suggests that coho salmon entering Southeastern Alaska fisheries tend to have ocean migrations restricted to more central and eastern areas of the Gulf of Alaska but also as far south as 45-50 degrees N. latitude.

Thus it appears likely that some chinook and coho salmon entering the Southeastern Alaska troll fishery could experience previous encounters with foreign and/or domestic ocean fisheries operating in the Gulf of Alaska.

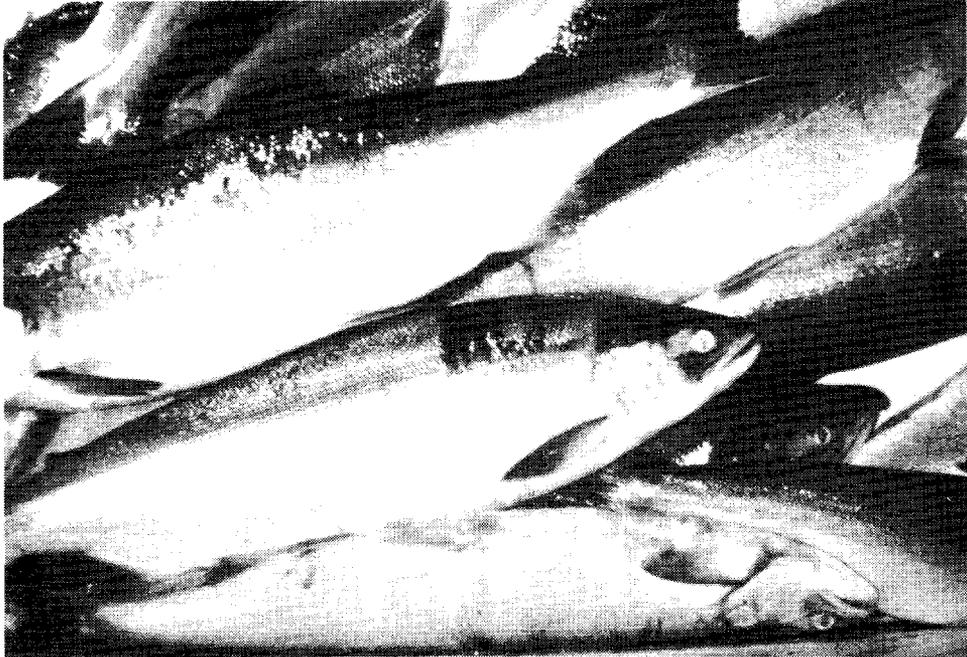
Further studies will be required to determine quantitatively the extent to which encounters with the above fisheries are responsible for the scarred and marked salmon observed in the Southeastern Alaska troll fishery.

#### LITERATURE CITED

French, R.R., R.G. Bakkala, and D.F. Sutherland. 1975. Ocean distribution of stocks of Pacific salmon and steelhead trout as shown by tagging experiments. NOAA Tech. Report NMFS SSRF-689.

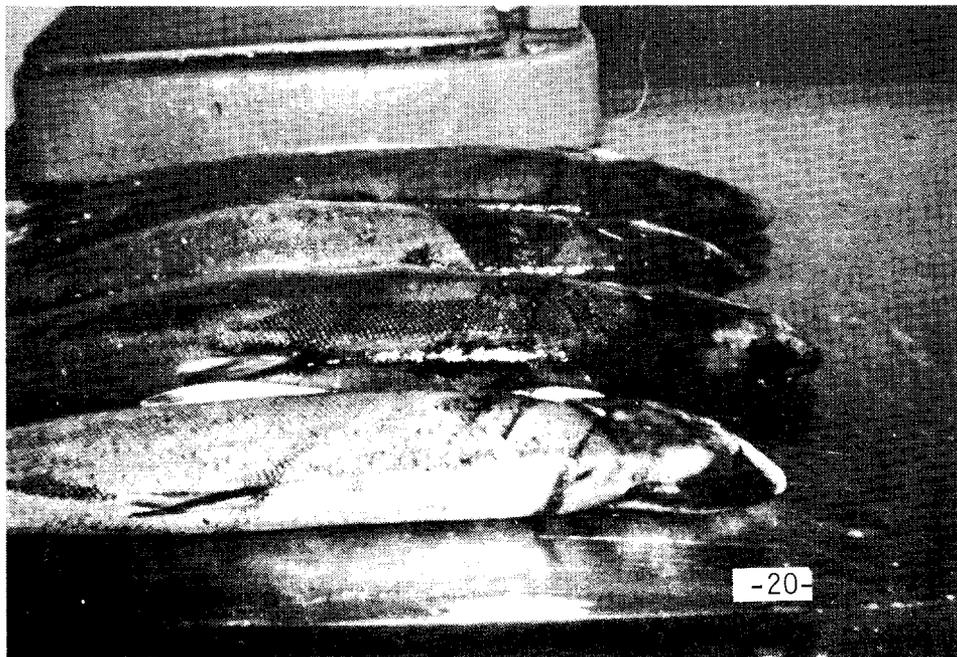
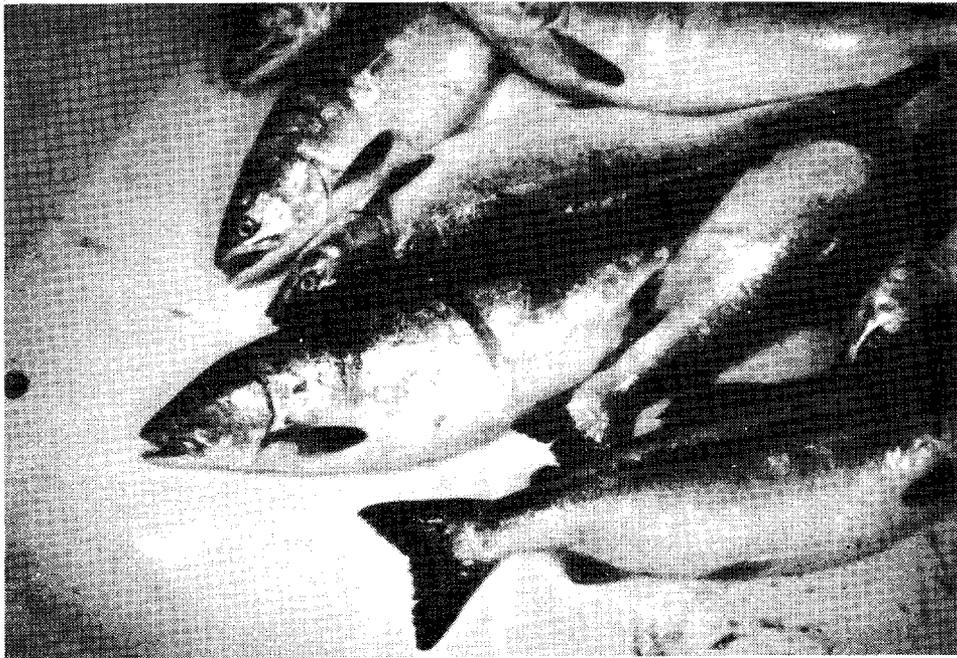
## APPENDIX A

Category photographs used by field samplers when  
sampling chinook and coho salmon for scars and marks  
in the 1982 Southeastern Alaska troll fishery.



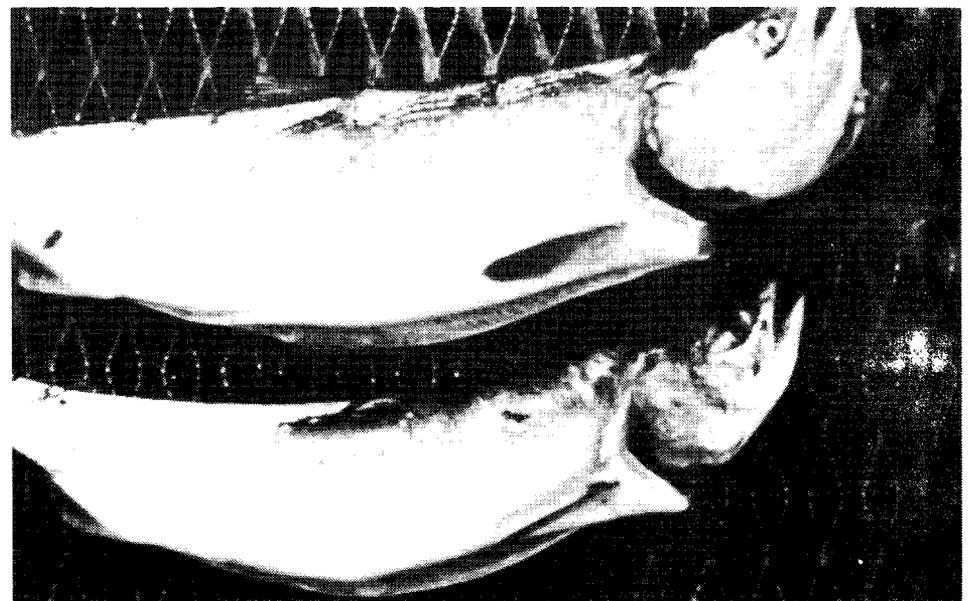
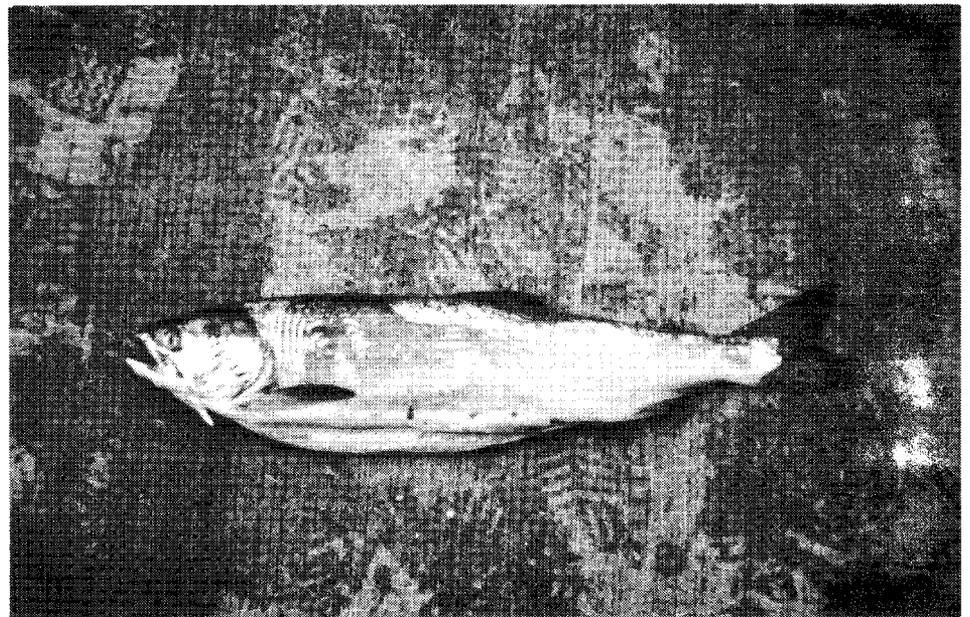
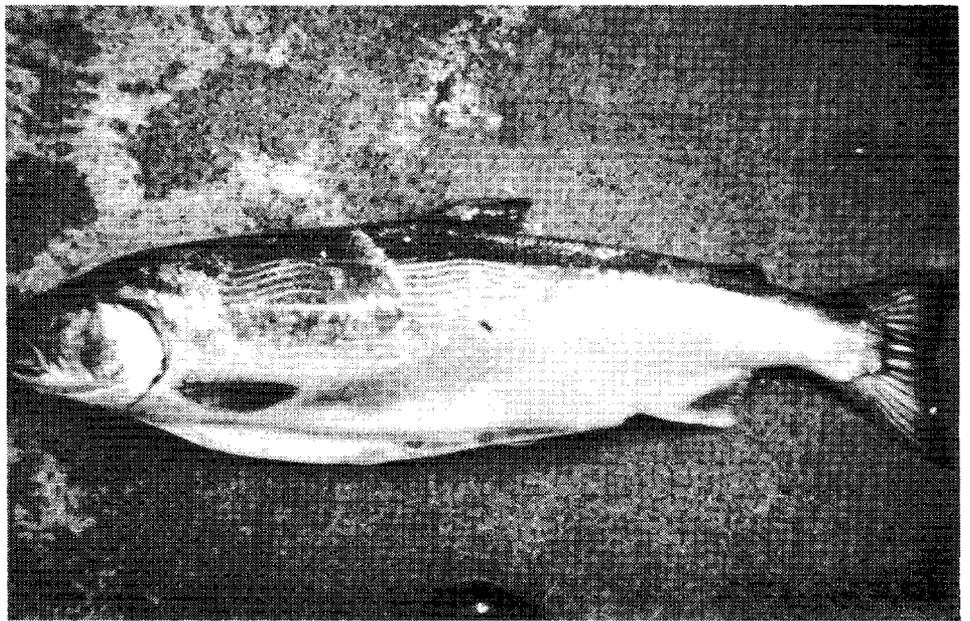
CATEGORY 1

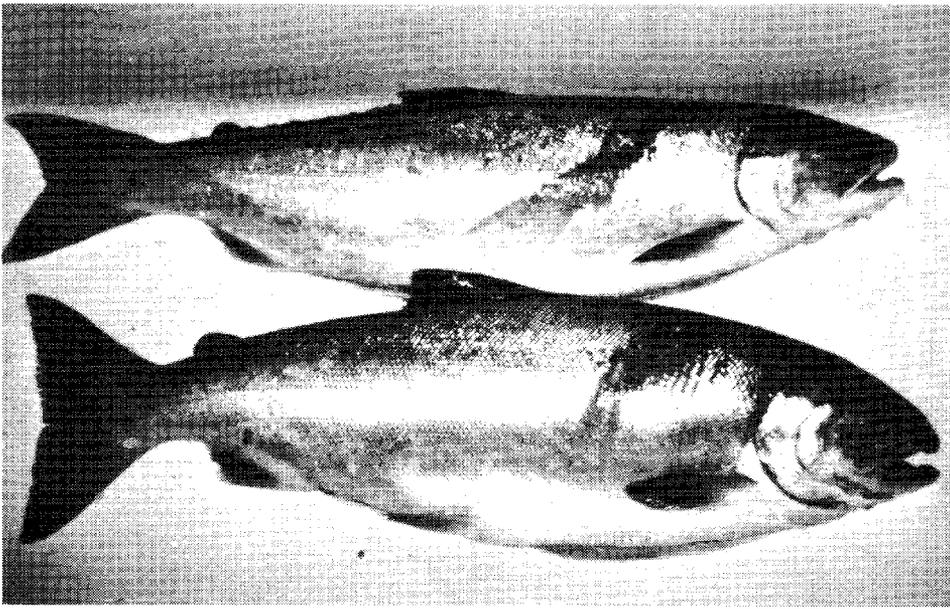
One or more fairly well delineated linear marks between the head and the dorsal fins, approximately perpendicular to the longitudinal body axis and encircling or partially encircling the body.



CATAGORY 2

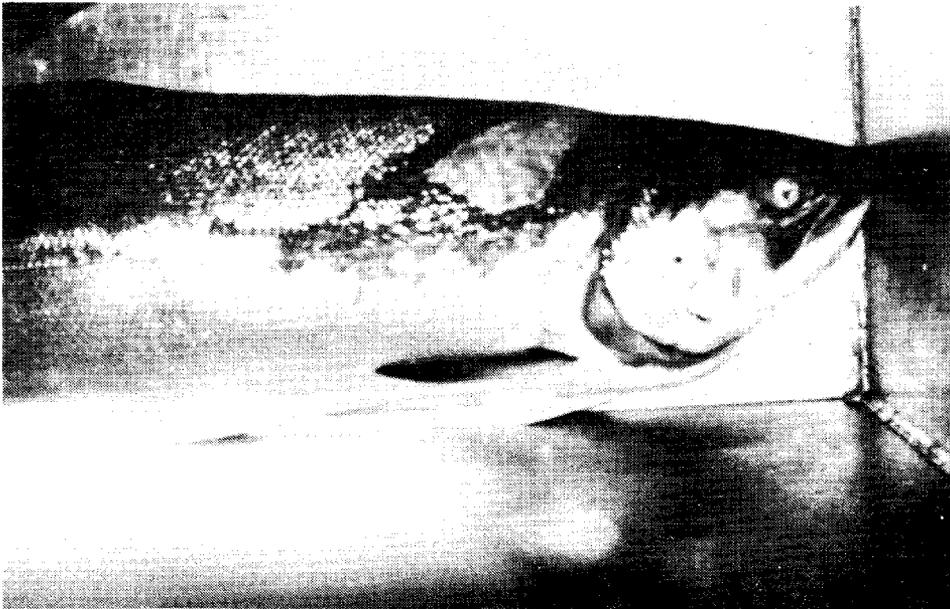
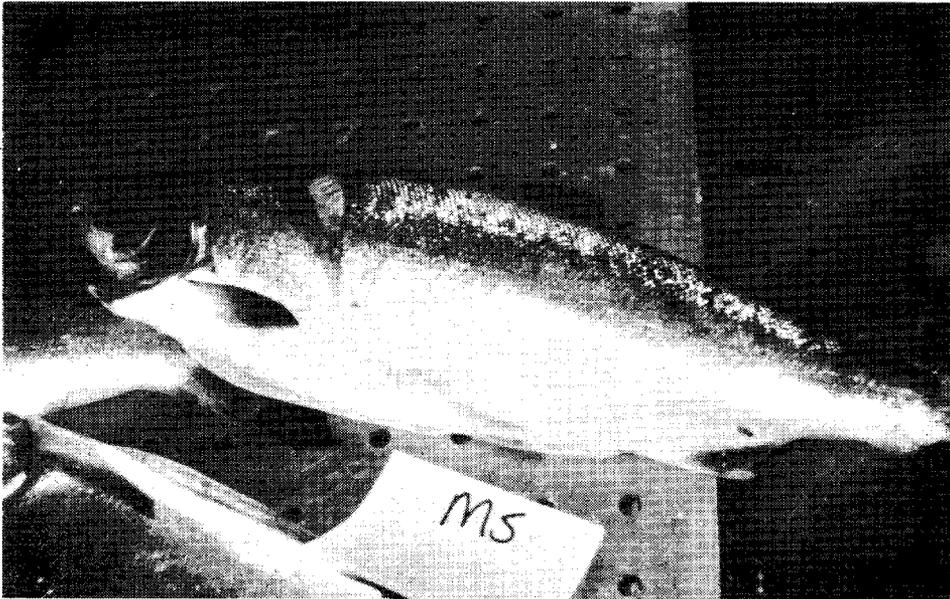
A series of approximately parallel mark or scrape lines over a substantial portion of the body; two or more series of such marks occurring at different angles may give the appearance of cross hatching marks.





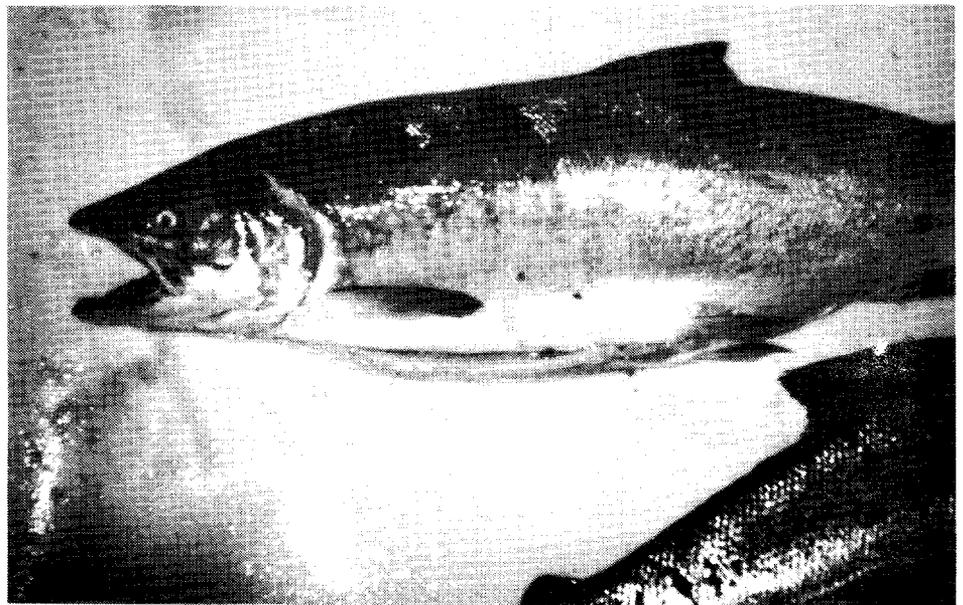
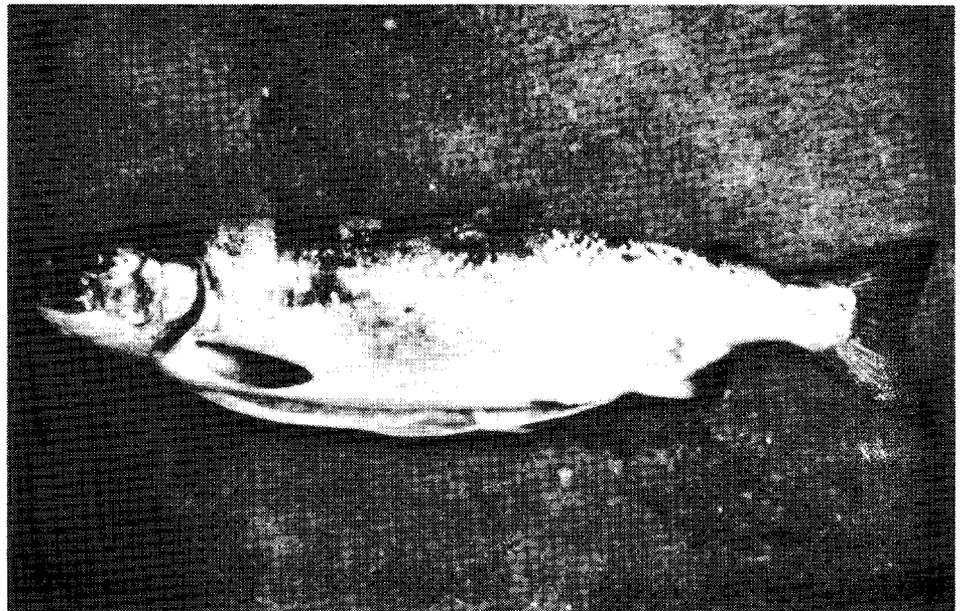
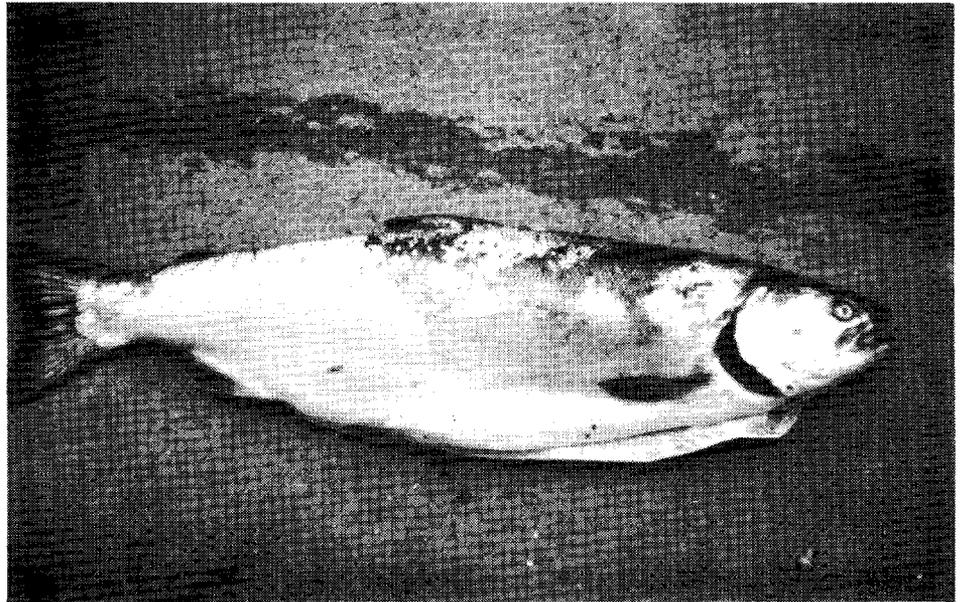
CATEGORY 3

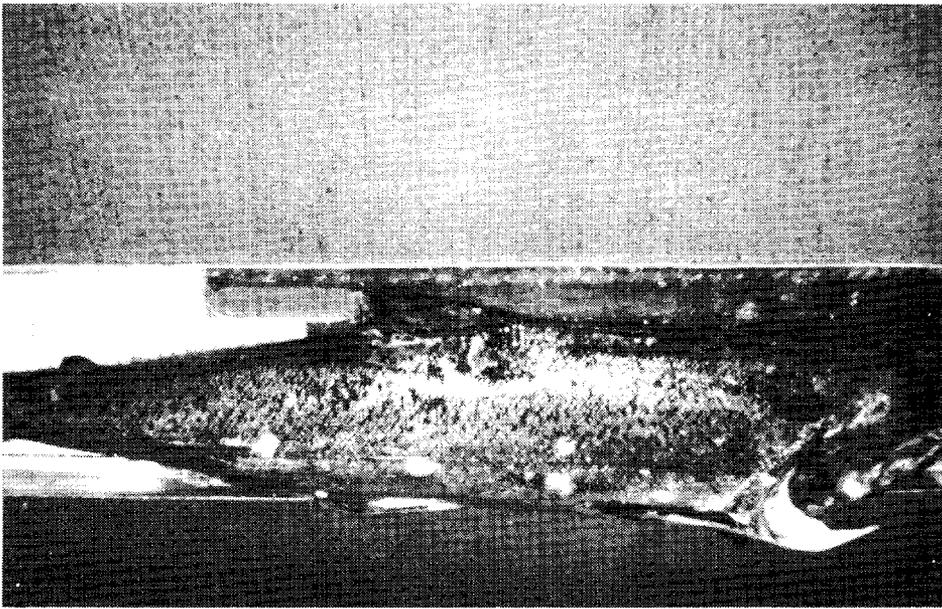
A fairly well delineated scrape band generally occurring between the head and the dorsal fin approximately perpendicular to the longitudinal body axis or angled slightly backward from the top to the bottom of the body and containing an approximate oval shaped open wound normally in the upper portion of the body.



CATEGORY 4

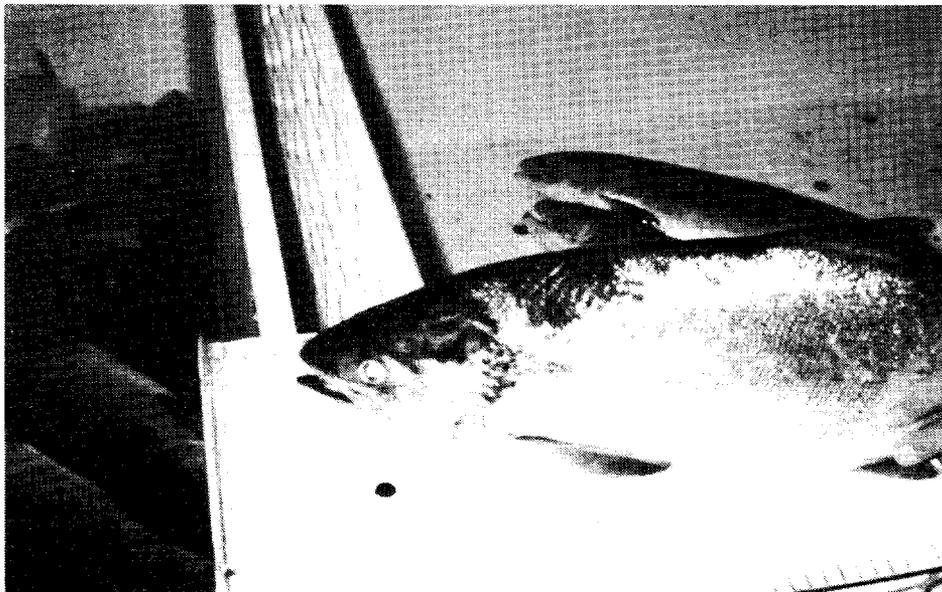
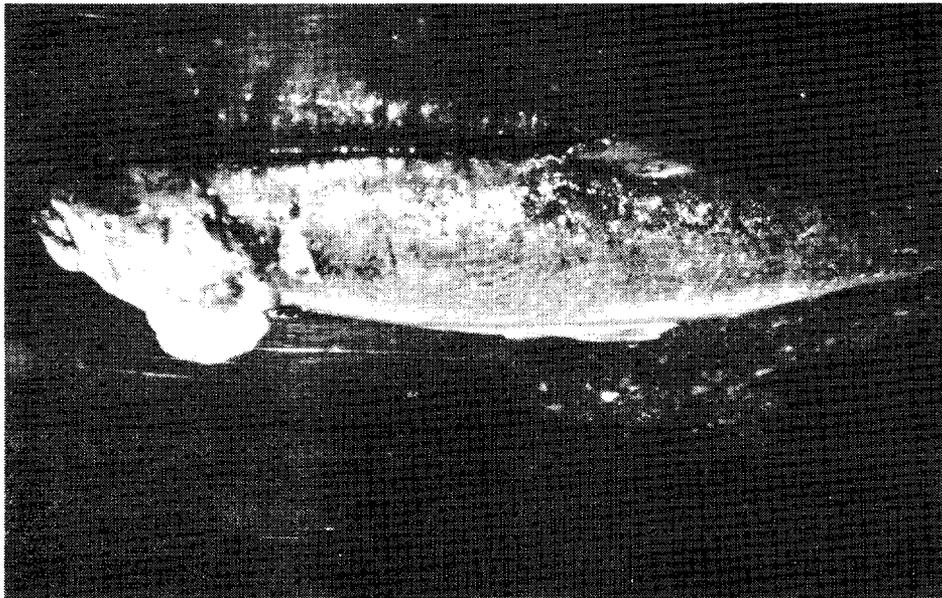
Extensive descaling of at least 25% or more of one or both sides of the body but with no well delineated marks or wounds.





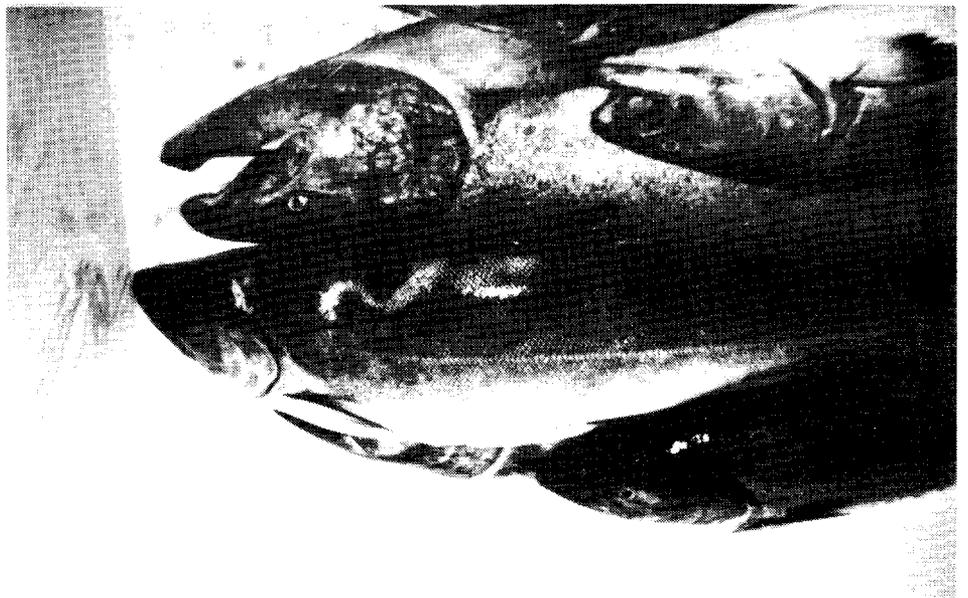
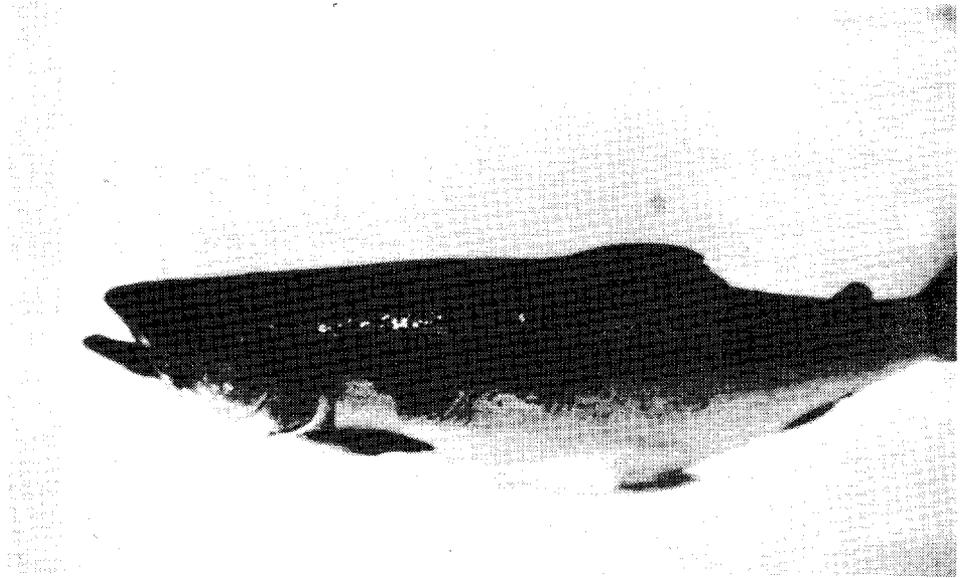
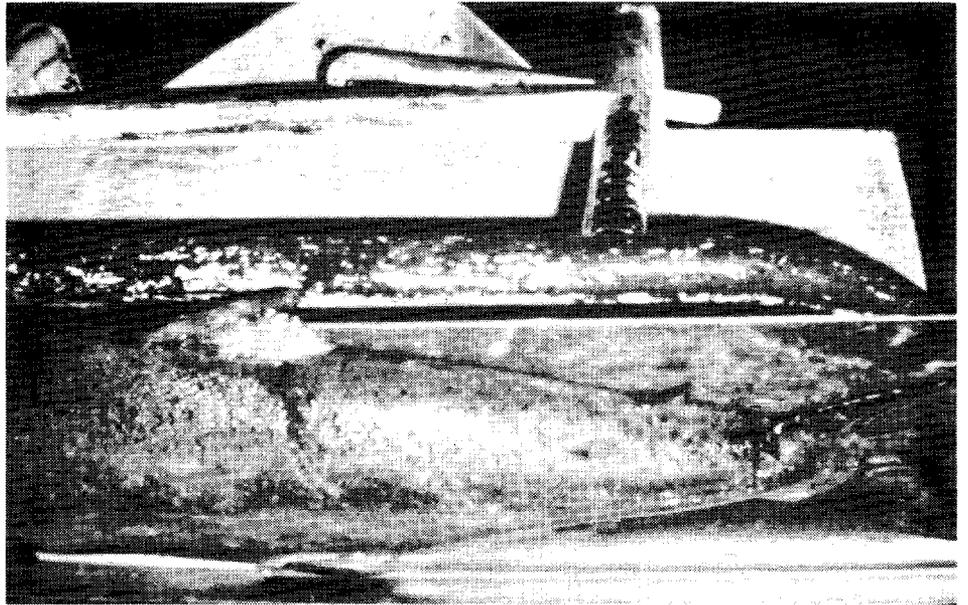
CATEGORY 5

Open, gaping wound or puncture marks located anywhere on the body either with no other marks and scrapes or within adjacent irregular 'scratch' or 'claw' marks but no marks as described in Categories 1-5.



CATEGORY 6

Any scars/marks not fitting the descriptions in Categories 1-5.



APPENDIX B

Percentage of scarred and marked chinook and  
coho salmon observed by category.

Table B-1. Percentage of chinook salmon sampled having category 1 type scars and/or marks in the 1982 Southeastern Alaska troll fishery (ADF&G 10/08/82).

Sampling period	Outside areas <sup>1</sup>				Intermediate areas <sup>2</sup>	Inside areas <sup>3</sup>	All areas
	Northern	Central	Southern	All			
May - Average	0.00	0.23	0.00	0.09	1.48	0.00	0.26
- Maximum	0.00	12.50	0.00	12.50	66.67	0.00	66.67
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun - Average	0.27	0.44	0.14	0.35	0.36	0.00	0.32
- Maximum	5.88	12.50	3.12	12.50	20.00	0.00	20.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul - Average	0.70	0.10	0.37	0.19	0.09	0.32	0.20
- Maximum	4.65	33.33	1.79	33.33	16.67	4.55	33.33
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-----							
Season Totals							
Unweighted Average	0.28	0.28	0.19	0.27	0.31	0.18	0.27
- Maximum	5.88	33.33	3.12	33.33	66.67	4.55	66.67
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1</sup> Outside areas include Northern, Central, and Southern outside areas shown in Figure 1.

<sup>2</sup> Intermediate areas include Central and Southern intermediate areas.

<sup>3</sup> Inside areas include Lynn Canal, Stephens Passage, and Central and Southern inside areas.

Table B-2. Percentage of chinook salmon sampled having category 2 type scars and/or marks in the 1982 Southeastern Alaska troll fishery (ADF&G 10/08/82).

Sampling period	Outside areas <sup>1</sup>				Intermediate area <sup>2</sup>	Inside areas <sup>3</sup>	All areas
	Northern	Central	Southern	All			
May - Average	0.12	0.23	0.00	0.15	2.54	0.00	0.44
- Maximum	7.69	3.12	0.00	7.69	33.33	0.00	33.33
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun - Average	0.25	0.33	0.00	0.28	0.36	0.24	0.28
- Maximum	5.88	20.00	0.00	20.00	25.00	1.56	25.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul - Average	0.42	0.10	0.00	0.13	0.09	0.09	0.12
- Maximum	1.54	4.35	0.00	4.35	25.00	4.76	25.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-----							
Season Totals							
Unweighted Average	0.25	0.23	0.00	0.22	0.37	0.15	0.23
- Maximum	7.69	20.00	0.00	20.00	33.33	4.76	33.33
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1</sup> Outside areas include Northern, Central, and Southern outside areas shown in Figure 1.

<sup>2</sup> Intermediate areas include Central and Southern intermediate areas.

<sup>3</sup> Inside areas include Lynn Canal, Stephens Passage, and Central and Southern inside areas.

Table B-3. Percentage of chinook salmon sampled having category 3 type scars and/or marks in the 1982 Southeastern Alaska troll fishery (ADF&G 10/08/82).

Sampling period	Outside areas <sup>1</sup>				Intermediate areas <sup>2</sup>	Inside areas <sup>3</sup>	All areas
	Northern	Central	Southern	All			
May - Average	0.12	0.39	0.00	0.21	1.48	0.00	0.36
- Maximum	1.77	9.09	0.00	9.09	50.00	0.00	50.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun - Average	0.24	0.13	0.21	0.18	0.33	0.08	0.19
- Maximum	4.55	9.09	1.19	9.09	100.00	10.00	100.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul - Average	0.07	0.10	0.61	0.13	0.18	0.47	0.20
- Maximum	0.17	4.35	1.35	4.35	16.67	14.29	16.67
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-----							
Season Totals							
Unweighted Average	0.20	0.13	0.31	0.17	0.33	0.30	0.21
- Maximum	4.55	9.09	1.35	9.09	100.00	14.29	100.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1</sup> Outside areas include Northern, Central, and Southern outside areas shown in Figure 1.

<sup>2</sup> Intermediate areas include Central and Southern intermediate areas.

<sup>3</sup> Inside areas include Lynn Canal, Stephens Passage, and Central and Southern inside areas.

Table B-4. Percentage of chinook salmon sampled having category 4 type scars and/or marks in the 1982 Southeastern Alaska troll fishery (ADF&G 10/08/82).

Sampling period	Outside areas <sup>1</sup>				Intermediate areas <sup>2</sup>	Inside areas <sup>3</sup>	All areas
	Northern	Central	Southern	All			
May - Average	0.23	0.08	0.00	0.15	4.87	0.00	0.73
- Maximum	23.08	9.09	0.00	23.08	66.67	0.00	66.67
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun - Average	0.42	0.26	0.00	0.31	1.12	0.00	0.40
- Maximum	25.71	32.14	0.00	32.14	37.50	0.00	37.50
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul - Average	0.07	0.02	0.61	0.07	0.32	0.18	0.13
- Maximum	1.54	3.57	2.98	3.57	25.00	8.70	25.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-----							
Season Totals							
Unweighted Average	0.35	0.14	0.19	0.22	1.00	0.10	0.33
- Maximum	25.71	32.14	2.98	32.14	66.67	8.70	66.67
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1</sup> Outside areas include Northern, Central, and Southern outside areas shown in Figure 1.

<sup>2</sup> Intermediate areas include Central and Southern intermediate areas.

<sup>3</sup> Inside areas include Lynn Canal, Stephens Passage, and Central and Southern inside areas.

Table B-5. Percentage of chinook salmon sampled having category 5 type scars and/or marks in the 1982 Southeastern Alaska troll fishery (ADF&G 10/08/82).

Sampling period	Outside area <sup>1</sup>				Intermediate areas <sup>2</sup>	Inside areas <sup>3</sup>	All areas
	Northern	Central	Southern	All			
May - Average	0.00	0.46	0.58	0.24	1.48	0.00	0.39
- Maximum	0.00	9.09	6.67	9.09	33.33	0.00	33.33
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun - Average	0.36	0.74	0.07	0.53	0.69	0.35	0.54
- Maximum	8.70	7.55	1.61	8.70	50.00	4.92	50.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul - Average	0.21	0.24	0.24	0.24	0.67	0.38	0.34
- Maximum	0.35	33.33	7.69	33.33	100.00	8.97	100.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-----							
Season Totals							
Unweighted Average	0.30	0.50	0.19	0.41	0.73	0.37	0.46
- Maximum	8.70	33.33	7.69	33.33	100.00	8.97	100.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1</sup> Outside areas include Northern, Central, and Southern outside areas as shown in Figure 1.

<sup>2</sup> Intermediate areas include Central and Southern intermediate areas.

<sup>3</sup> Inside areas include Lynn Canal, Stephens Passage, and Central and Southern inside areas.

Table B-6. Percentage of chinook salmon sampled having category 6 type scars and/or marks in the 1982 Southeastern Alaska troll fishery (ADF&G 10/08/82).

Sampling period	Outside areas <sup>1</sup>				Intermediate areas <sup>2</sup>	Inside areas <sup>3</sup>	All areas
	Northern	Central	Southern	All			
May - Average	0.06	0.70	0.00	0.30	0.42	0.00	0.31
- Maximum	0.88	5.56	0.00	5.56	50.00	0.00	50.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun - Average	0.67	0.59	0.07	0.59	1.12	0.04	0.62
- Maximum	5.66	25.00	3.12	25.00	50.00	1.61	50.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul - Average	0.07	0.60	0.00	0.50	0.53	0.18	0.44
- Maximum	1.54	50.00	0.00	50.00	50.00	12.50	50.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-----							
Season Totals							
Unweighted Average	0.52	0.60	0.04	0.53	0.83	0.12	0.53
- Maximum	5.66	50.00	3.12	50.00	50.00	12.50	50.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1</sup> Outside areas include Northern, Central, and Southern outside areas shown in Figure 1.

<sup>2</sup> Intermediate areas include Central and Southern intermediate areas.

<sup>3</sup> Inside area includes Lynn Canal, Stephens Passage, and Central and Southern inside areas.

Table B-7. Percentage of coho salmon sampled having category 1 type scars and/or marks in the 1982 South-eastern Alaska troll fishery (ADF&G 10/08/82).

Sampling period	Outside areas <sup>1</sup>				Intermediate areas <sup>2</sup>	Inside areas <sup>3</sup>	All areas
	Northern	Central	Southern	All			
May - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun - Average	0.00	0.67	0.24	0.56	2.10	0.07	0.49
- Maximum	0.00	25.00	33.33	33.33	40.00	0.97	40.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul - Average	0.44	0.35	0.45	0.36	1.19	0.43	0.48
- Maximum	20.00	20.00	3.97	20.00	23.08	25.00	25.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug - Average	0.47	0.39	0.15	0.39	1.25	0.28	0.54
- Maximum	3.21	8.11	0.82	8.11	20.00	11.11	20.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep - Average	0.04	0.00	0.00	0.04	0.47	0.44	0.31
- Maximum	0.56	0.00	0.00	0.56	3.45	9.30	9.30
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-----							
Season Totals							
Unweighted Average	0.35	0.37	0.36	0.36	1.15	0.37	0.49
- Maximum	20.00	25.00	33.33	33.33	40.00	25.00	40.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1</sup> Outside areas include Northern, Central, and Southern outside areas shown in Figure 1.

<sup>2</sup> Intermediate areas include Central and Southern intermediate areas.

<sup>3</sup> Inside areas include Lynn Canal, Stephens Passage, and Central and Southern inside areas.

Table B-8. Percentage of coho salmon sampled having category 2 type scars and/or marks in the 1982 South-eastern Alaska troll fishery (ADF&G 10/08/82).

Sampling period	Outside areas <sup>1</sup>				Intermediate areas <sup>2</sup>	Inside areas <sup>3</sup>	All areas
	Northern	Central	Southern	All			
May - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun - Average	0.00	0.18	0.00	0.14	0.65	0.04	0.14
- Maximum	0.00	11.11	0.00	11.11	25.00	0.69	25.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul - Average	0.38	0.09	0.10	0.11	0.17	0.10	0.11
- Maximum	0.81	2.86	1.02	2.86	7.69	5.08	7.69
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug - Average	0.49	0.22	0.23	0.27	0.48	0.04	0.27
- Maximum	1.60	3.70	2.13	3.70	14.29	10.00	14.29
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep - Average	0.55	0.00	0.00	0.48	0.84	0.20	0.52
- Maximum	5.88	0.00	0.00	5.88	4.76	3.85	5.88
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-----							
Season Totals							
Unweighted Average	0.46	0.13	0.12	0.17	0.37	0.09	0.18
- Maximum	5.88	11.11	2.13	11.11	25.00	10.00	25.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1</sup> Outside areas include Northern, Central, and Southern outside areas shown in Figure 1.

<sup>2</sup> Intermediate areas include Central and Southern intermediate areas.

<sup>3</sup> Inside areas include Lynn Canal, Stephens Passage, and Central and Southern inside areas.

Table B-9. Percentage of coho salmon sampled having category 3 type scars and/or marks in the 1982 South-eastern Alaska troll fishery (ADF&G 10/08/82).

Sampling period	Outside areas <sup>1</sup>				Intermediate areas <sup>2</sup>	Inside areas <sup>3</sup>	All areas
	Northern	Central	Southern	All			
May - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun - Average	0.00	0.00	0.00	0.00	0.00	0.14	0.07
- Maximum	0.00	0.00	0.00	0.00	0.00	1.46	1.46
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul - Average	0.13	0.03	0.22	0.05	0.08	0.12	0.07
- Maximum	20.00	4.29	3.70	20.00	11.11	7.14	20.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug - Average	0.35	0.10	0.08	0.14	0.08	0.13	0.13
- Maximum	0.88	0.80	0.41	0.88	4.35	2.85	4.35
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep - Average	0.13	0.00	0.00	0.11	0.11	0.12	0.11
- Maximum	0.22	0.00	0.00	0.22	1.22	4.55	4.55
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-----							
Season Totals							
Unweighted Average	0.23	0.05	0.17	0.08	0.08	0.12	0.09
- Maximum	20.00	4.29	3.70	20.00	11.11	7.14	20.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1</sup> Outside areas include Northern, Central, and Southern outside areas shown in Figure 1.

<sup>2</sup> Intermediate areas include Central and Southern intermediate areas.

<sup>3</sup> Inside areas include Lynn Canal, Stephens Passage, and Central and Southern inside areas.

Table B-10. Percentage of coho salmon sampled having category 4 type scars and/or marks in the 1982 South-eastern Alaska troll fishery (ADF&G 10/08/82).

Sampling period	Outside areas <sup>1</sup>				Intermediate areas <sup>2</sup>	Inside areas <sup>3</sup>	All areas
	Northern	Central	Southern	All			
May - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun - Average	0.00	0.31	0.00	0.23	0.16	0.32	0.27
- Maximum	0.00	12.50	0.00	12.50	7.69	4.37	12.50
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul - Average	0.06	0.02	0.32	0.05	0.17	0.42	0.15
- Maximum	1.59	10.00	3.97	10.00	16.67	37.50	37.50
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug - Average	0.33	0.13	0.00	0.16	0.18	0.04	0.14
- Maximum	1.07	4.59	0.00	4.59	14.29	1.79	14.29
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep - Average	0.00	0.00	0.00	0.00	0.04	0.04	0.03
- Maximum	0.00	0.00	0.00	0.00	1.37	1.49	1.49
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-----							
Season Totals							
Unweighted Average	0.17	0.06	0.22	0.08	0.16	0.30	0.14
- Maximum	1.59	12.50	3.97	12.50	16.67	37.50	37.50
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1</sup> Outside areas include Northern, Central, and Southern outside areas shown in Figure 1.

<sup>2</sup> Intermediate areas include Central and Southern intermediate areas.

<sup>3</sup> Inside areas include Lynn Canal, Stephens Passage, and Central and Southern inside areas.

Table B-11. Percentage of coho salmon sampled having category 5 type scars and/or marks in the 1982 South-eastern Alaska troll fishery (ADF&G 10/08/82).

Sampling period	Outside areas <sup>1</sup>				Intermediate areas <sup>2</sup>	Inside areas <sup>3</sup>	All areas
	Northern	Central	Southern	All			
May - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun - Average	0.00	0.12	0.73	0.23	0.48	0.04	0.16
- Maximum	0.00	4.35	7.41	7.41	25.00	0.69	25.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul - Average	0.09	0.07	0.22	0.08	0.41	0.26	0.07
- Maximum	0.29	12.50	1.85	12.50	100.00	7.69	100.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug - Average	0.20	0.41	1.54	0.43	0.65	0.84	0.55
- Maximum	0.56	5.23	6.59	6.59	20.00	10.00	20.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep - Average	0.76	1.70	0.00	0.86	1.24	1.47	1.18
- Maximum	4.52	2.66	0.00	4.52	7.32	7.14	7.32
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-----							
Season Totals							
Unweighted Average	0.30	0.17	0.55	0.21	0.59	0.46	0.33
- Maximum	4.52	12.50	7.41	12.50	100.00	10.00	100.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1</sup> Outside areas include Northern, Central, and Southern outside areas shown in Figure 1.

<sup>2</sup> Intermediate areas include Central and Southern intermediate areas.

<sup>3</sup> Inside areas include Lynn Canal, Stephens Passage, and Central and Southern inside areas.

Table B-12. Percentage of coho salmon sampled having category 6 type scars and/or marks in the 1982 South-eastern Alaska troll fishery (ADF&G 10/08/82).

Sampling period	Outside areas <sup>1</sup>			All	Intermediate areas <sup>2</sup>	Inside areas <sup>3</sup>	All areas
	Northern	Central	Southern				
May - Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun - Average	0.00	0.31	0.24	0.28	0.48	0.00	0.16
- Maximum	0.00	50.00	3.70	50.00	14.29	0.00	50.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul - Average	0.50	0.11	0.20	0.14	0.32	0.07	0.14
- Maximum	1.74	20.00	1.33	20.00	25.00	8.22	25.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug - Average	1.77	0.45	0.00	0.65	0.71	0.05	0.55
- Maximum	5.35	5.26	0.00	5.35	71.43	0.33	71.43
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep - Average	0.47	0.00	0.00	0.41	0.44	0.28	0.38
- Maximum	5.88	0.00	0.00	5.88	5.88	5.88	5.88
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-----							
Season Totals							
Unweighted Average	1.05	0.21	0.16	0.30	0.47	0.07	0.27
- Maximum	5.88	50.00	3.70	50.00	71.43	8.22	71.43
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1</sup> Outside areas include Northern, Central, and Southern outside areas shown in Figure 1.

<sup>2</sup> Intermediate areas include Central and Southern intermediate areas.

<sup>3</sup> Inside areas include Lynn Canal, Stephens Passage, and Central and Southern inside areas.

APPENDIX C

Numbers of external scars observed  
for all areas for 1 April - 20 September.

## Alaska Department of Fish and Game

\*\*\* Preliminary \*\*\*

## 1982 Scar Sampling Summary

External Scars Observed for

ALL AREAS

1 APRIL THRU 20 SEPTEMBER

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	154	125	111	170	253	288
Percent of sample:	.29	.23	.21	.32	.47	.54

Chinook sample size = 53,629    Total chinook scars - 1,101    Overall chinook scar percentage = 2.1%

---

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	773	290	143	243	535	458
Percent of sample:	.49	.18	.09	.15	.34	.29

Coho sample size = 157,903    Total coho scars = 2,442    Overall coho scar percentage = 1.5%

---

APPENDIX D

Numbers of external scars observed  
by area for 15 May - 20 September.

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

NORTHERN OUTSIDE

15 MAY THRU 20 SEPTEMBER

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	51	35	27	46	54	72
Percent of sample:	.36	.25	.19	.33	.39	.51

Chinook sample size = 13,996      Total chinook scars = 285      Overall chinook scar percentages = 2.0%

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	48	58	30	33	42	140
Percent of sample:	.41	.50	.26	.28	.36	1.20

Coho sample size = 11,696      Total coho scars = 351      Overall coho scar percentages = 3.0%

## Alaska Department of Fish and Game

\*\*\* Preliminary \*\*\*

## 1982 Scar Sampling Summary

External Scars Observed for:

CENTRAL OUTSIDE

15 MAY THRU 20 SEPTEMBER

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	62	51	30	32	113	141
Percent of sample:	.27	.23	.13	.14	.50	.62

Chinook sample size = 22,582

Total chinook scars = 429

Overall chinook scar percentages = 1.9%

---

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	287	103	38	47	133	166
Percent of sample:	.37	.13	.05	.06	.17	.21

Coho sample size = 78,487

Total coho scars = 774

Overall coho scar percentages = 1.0%

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

SOUTHERN OUTSIDE

15 MAY THRU 20 SEPTEMBER

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	5	0	8	5	5	1
Percent of sample:	.19	0.00	.31	.19	.19	.04

Chinook sample size = 2,613      Total chinook scars = 24      Overall chinook scar percentages = .9%

---

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	21	7	10	13	32	9
Percent of sample:	.35	.12	.17	.22	.54	.15

Coho sample size = 5,937      Total coho scars = 92      Overall coho scar percentage = 1.5%

---

Alaska Department of Fish and Game

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

CENTRAL INTERMEDIATE (STAT. AREAS 112 & 114)

15 MAY THRU 20 SEPTEMBER

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	13	18	12	66	7	4
Percent of samples:	.94	1.30	.87	4.76	.50	.29

Chinook sample size = 1,387      Total chinook scars = 120      Overall chinook scar percentage = 8.7%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	27	40	12	16	40	36
Percent of sample:	.34	.51	.15	.20	.51	.46

Coho sample size = 7,912      Total coho scars = 171      Overall coho scar percentages = 2.2%

Alaska Department of Fish and Game

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

SOUTHERN INTERMEDIATE (STAT. AREAS 105, 109, & 110)

15 MAY THRU 20 SEPTEMBER

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	12	12	16	15	52	63
Percent of Sample:	.17	.17	.23	.22	.75	.90

Chinook sample size = 6,972      Total chinook scars = 170      Overall chinook scar percentages = 2.4%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	254	49	8	22	109	80
Percent of sample:	1.55	.30	.05	.13	.66	.49

Coho sample size = 16,404      Total coho scars = 522      Overall coho scar percentage = 3.2%

Alaska Department of Fish and Game

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

SOUTHERN INSIDE (STAT. AREAS 101 & 102)

15 MAY THRU 20 SEPTEMBER

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	11	9	17	6	20	5
Percent of samples:	.22	.18	.34	.12	.41	.10

Chinook sample size = 4,930      Total chinook scars = 68      Overall chinook scar percentages = 1.4%

---

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	136	32	45	112	179	26
Percent of sample:	.37	.09	.12	.30	.49	.07

Coho sample size = 36,841      Total coho scars = 530      Overall coho scar percentage = 1.4%

---

APPENDIX E

Numbers of external scars observed  
for all areas by month.

APPENDIX E-1.

Alaska Department of Fish and Game

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

ALL AREAS

15 MAY THRU 31 MAY

Category:	#1	#2	#3	#4	#5	#6
# Scarred chinook:	10	17	14	28	15	12
Percent of sample:	.26	.44	.36	.73	.39	.31

Chinook sample size = 3,837      Total chinook scars = 96      Overall chinook scar percentage = 2.5%

---

Category:	#1	#2	#3	#4	#5	#6
# Scarred coho:	0	0	0	0	0	0
Percent of sample:	0.00	0.00	0.00	0.00	0.00	0.00

Coho sample size = 0      Total coho scars = 0      Overall coho scar percentage = 0.0%

---

Alaska Department of Fish and Game

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

ALL AREAS

MONTH OF JUNE

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	107	86	59	117	173	192
Percent of sample:	.35	.28	.19	.38	.57	.63

Chinook sample size = 30,471

Total chinook scars = 734

Overall chinook scar percentage = 2.4%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	27	8	4	15	9	9
Percent of sample:	.49	.14	.07	.27	.16	.16

Coho sample size = 5,539

Total coho scars = 72

Overall coho scar percentages = 1.3%

Alaska Department of Fish and Game

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

ALL AREAS

MONTH OF JULY

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	37	22	38	25	65	84
Percent of sample:	.19	.12	.20	.13	.34	.44

Chinook sample size = 18,984

Total chinook scars = 271

Overall chinook scar percentage = 1.4%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	470	111	65	146	165	142
Percent of sample:	.48	.11	.07	.15	.17	.15

Coho sample size = 97,461

Total coho scars = 1,099

Overall coho scar percentage = 1.1%

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

ALL AREAS

MONTH OF AUGUST

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	0	0	0	0	0	0
Percent of sample:	0.00	0.00	0.00	0.00	0.00	0.00

Chinook sample size = 0      Total chinook scars = 0      Overall chinook scar percentage = 0.0%

Category:	#1	#2	#3	#4	#5	#6
# Scarred coho:	248	122	60	67	254	262
Percent of sample:	.54	.27	.13	.15	.56	.57

Coho sample size = 45,595      Total coho scars = 1,013      Overall coho scar percentages = 2.2%

APPENDIX E-5.

Alaska Department of Fish and Game

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

ALL AREAS

MONTH OF SEPTEMBER

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	0	0	0	0	0	0
Percent of sample:	0.00	0.00	0.00	0.00	0.00	0.00

Chinook sample size = 0      Total chinook scars = 0      Overall chinook scar percentage = 0.0%

---

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	28	49	14	15	107	45
Percent of sample:	.30	.53	.15	.16	1.15	.48

Coho sample size = 9,308      Total coho scars = 258      Overall coho scar percentage = 2.8%

---

\*\*\* Preliminary \*\*\*

## 1982 Scar Sampling Summary

External Scars Observed for:

ALL AREAS

MONTH OF JULY

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	37	22	38	25	65	84
Percent of samples:	.19	.12	.20	.13	.34	.44

Chinook sample size = 18,984

Total chinook scars = 271

Overall chinook scar percentage = 1.4%

---

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	470	111	65	146	165	142
Percent of sample:	.48	.11	.07	.15	.17	.15

Coho sample size - 97,461

Total coho scars = 1,099

Overall coho scar percentages = 1.1%

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

ALL AREAS

MONTH OF AUGUST

-55-

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	0	0	0	0	0	0
Percent of sample:	0.00	0.00	0.00	0.00	0.00	0.00

Chinook sample size = 0      Total chinook scars = 0      Overall chinook scar percentage = 0.0%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	248	122	60	67	254	262
Percent of samples:	.54	.27	.13	.15	.56	.57

Coho sample size = 45,595      Total coho scars = 1,013      Overall coho scar percentages = 2.2%

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

ALL AREAS

MONTH OF SEPTEMBER

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	0	0	0	0	0	0
Percent of sample:	0.00	0.00	0.00	0.00	0.00	0.00

Chinook sample size = 0      Total chinook scars = 0      Overall chinook scar percentage = 0.0%

---

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	28	49	14	15	107	45
Percent of sample:	.30	.53	.15	.16	1.15	.48

Coho sample size = 9,308      Total coho scars = 258      Overall coho scar percentage = 2.8%

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APPENDIX F

Numbers of external scars observed  
for outside areas by month.

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

NORTHERN OUTSIDE

15 MAY THRU 31 MAY

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	0	2	2	4	0	1
Percent of samples:	0.00	.12	.12	.23	0.00	.06

Chinook sample size = 1,711      Total chinook scars = 9      Overall chinook scar percentage = 0.5%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	0	0	0	0	0	0
Percent of sample:	0.00	0.00	0.00	0.00	0.00	0.00

Coho sample size = 0      Total coho scars = 0      Overall coho scar percentage = 0.0%

Alaska Department of Fish and Game

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

CENTRAL OUTSIDE

15 MAY THRU 31 MAY

-59-

Category:	#1	#2	#3	#4	#5	#6
# Scarred chinook:	3	3	5	1	6	9
Percent of sample:	.23	.23	.39	.08	.46	.70

Chinook sample size = 1,292      Total chinook scars = 27      Overall chinook scar percentage = 2.1%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	0	0	0	0	0	0
Percent of sample:	0.00	0.00	0.00	0.00	0.00	0.00

Coho sample size = 0      Total coho scars = 0      Overall coho scar percentage = 0.0%

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

SOUTHERN OUTSIDE

15 MAY THRU 31 MAY

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook	0	0	0	0	2	0
Percent of sample:	0.00	0.00	0.00	0.00	.58	0.00

Chinook sample size = 345      Total chinook = 2      Overall chinook scar percentage = 0.6%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	0	0	0	0	0	0
Percent of sample:	0.00	0.00	0.00	0.00	0.00	0.00

Coho sample size = 0      Total coho scars = 0      Overall coho scar percentages = 0.0%

APPENDIX F-4.

Alaska Department of Fish and Game

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

NORTHERN OUTSIDE

MONTH OF JUNE

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	41	27	24	41	51	70
Percent in sample:	.38	.25	.22	.38	.47	.64

Chinook sample size = 10,861      Total chinook scars = 254      Overall chinook scar percentage = 2.3%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	0	0	0	0	0	0
Percent of sample:	0.00	0.00	0.00	0.00	0.00	0.00

Coho sample size = 92      Total coho scars = 0      Overall coho scar percentage = 0.0%

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

CENTRAL OUTSIDE

MONTH OF JUNE

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	49	38	15	29	83	73
Percent of sample:	.44	.34	.13	.26	.74	.65

Chinook sample size = 11,229      Total chinook scars = 287      Overall chinook scar percentage = 2.6%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	11	3	0	5	2	5
Percent of sample:	.67	.18	0.00	.31	.12	.31

Coho sample size = 1,635      Total coho scars = 26      Overall coho scar percentage = 1.6%

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

SOUTHERN OUTSIDE

MONTH OF JUNE

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	2	0	3	0	1	1
Percent of sample:	.14	0.00	.21	0.00	.07	.07

Chinook sample size = 1,419      Total chinook scars = 7      Overall chinook scar percentage = .5%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	1	0	0	0	3	1
Percent of sample:	.24	0.00	0.00	0.00	.73	.24

Coho sample size = 412      Total coho scars = 5      Overall coho scar percentage = 1.2%

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

NORTHERN OUTSIDE

MONTH OF JULY

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	10	6	1	1	3	1
Percent of sample:	.70	.42	.07	.07	.21	.07

Chinook sample size = 1,424      Total chinook scars = 22      Overall chinook scar percentage = 1.5%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	14	12	4	2	3	16
Percent of sample:	.44	.38	.13	.06	.09	.50

Coho sample size = 3,196      Total coho scars = 51      Overall coho scar percentage = 1.6%

Alaska Department of Fish and Game

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

CENTRAL OUTSIDE

MONTH OF JULY

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	10	10	10	2	24	59
Percent of sample:	.10	.10	.10	.02	.24	.60

Chinook sample size = 9,831      Total chinook scars = 115      Overall chinook scar percentage = 1.2%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	190	51	15	13	37	62
Percent of sample:	.35	.09	.03	.02	.07	.11

Coho sample size = 54,651      Total coho scars = 368      Overall coho scar percentage = 0.7%

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

SOUTHERN OUTSIDE

MONTH OF JULY

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	3	0	5	5	2	0
Percent of sample:	.35	0.00	.59	.59	.24	0.00

Chinook sample size = 849      Total chinook scars = 15      Overall chinook scar percentage = 1.8%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	18	4	9	13	9	8
Percent of sample:	.43	.10	.21	.31	.21	.19

Coho sample size = 4,196      Total coho scars = 61      Overall coho scar percentage = 1.5%

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

NORTHERN OUTSIDE

MONTH OF AUGUST

-67-

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	0	0	0	0	0	0
Percent of sample:	0.00	0.00	0.00	0.00	0.00	0.00

Chinook sample size = 0      Total chinook scars = 0      Overall chinook scar percentage = 0.0%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	30	25	18	18	9	98
Percent of sample:	.64	.53	.38	.38	.19	2.07

Coho sample size = 4,724      Total coho scars = 198      Overall coho scar percentage = 4.2%

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

CENTRAL OUTSIDE

MONTH OF AUGUST

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	0	0	0	0	0	0
Percent of sample:	0.00	0.00	0.00	0.00	0.00	0.00

Chinook sample size = 0      Total chinook scars = 0      Overall chinook scar percentage = 0.0%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	86	49	23	29	89	99
Percent of sample:	.39	.22	.10	.13	.41	.45

Coho sample size = 21,907      Total coho scars = 375      Overall coho scar percentage = 1.7%

Alaska Department of Fish and Game

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

SOUTHERN OUTSIDE

MONTH OF AUGUST

-69-

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	0	0	0	0	0	0
Percent of sample:	0.00	0.00	0.00	0.00	0.00	0.00

Chinook sample size = 0      Total chinook scars = 0      Overall chinook scar percentage = 0.0%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	2	3	1	0	20	0
Percent of sample:	.15	.23	.08	0.00	1.54	0.00

Coho sample size = 1,300      Total coho scars = 26      Overall coho scar percentage = 2.0%

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

NORTHERN OUTSIDE

MONTH OF SEPTEMBER

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	0	0	0	0	0	0
Percent of sample:	0.00	0.00	0.00	0.00	0.00	0.00

Chinook sample size = 0      Total chinook scars = 0      Overall chinook scar percentage = 0.0%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	4	21	8	13	30	26
Percent of sample:	.11	.57	.22	.35	.81	.71

Coho sample size = 3,684      Total coho scars = 102      Overall coho scar percentage = 2.8%

Alaska Department of Fish and Game

\*\*\* Preliminary \*\*\*

1982 Scar Sampling Summary

External Scars Observed for:

CENTRAL OUTSIDE

MONTH OF SEPTEMBER

-71-

Category:	#1	#2	#3	#4	#5	#6
# scarred chinook:	0	0	0	0	0	0
Percent of sample:	0.00	0.00	0.00	0.00	0.00	0.00

Chinook sample size = 0      Total chinook scars = 0      Overall chinook scar percentage = 0.0%

Category:	#1	#2	#3	#4	#5	#6
# scarred coho:	0	0	0	0	5	0
Percent of sample:	0.00	0.00	0.00	0.00	1.70	0.00

Coho sample size = 294      Total coho scars = 5      Overall coho scar percentage = 1.7%

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