

PRINCE WILLIAM SOUND  
TANNER CRAB TAGGING AND INDEX SURVEY  
1988

by  
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## ABSTRACT

A relative abundance survey was conducted for Tanner crab (Chionoecetes bairdi) in Prince William Sound and adjacent waters of the Gulf of Alaska. The survey was conducted August 4 to 10 and September 21 to 30, 1988. Twenty eight stations, representing 119 pot set and lifts, are used for relative abundance estimates (traditional stations). Twenty four stations, representing 95 pot set and lifts (exploratory stations), were fished to identify areas of juvenile male and female abundance. The mean survey catch per pot of Tanner crab was 4.6 legal males, 8.7 sublegal males and 6.3 females for all survey stations. A total of 147 carapace dart tags were applied.

KEY WORDS: Tanner crab, Chionoecetes, bairdi, Prince William Sound, Gulf of Alaska, relative abundance, pots, carapace dart tag.

## INTRODUCTION

This report summarizes results of the 1988 Tanner crab (*Chionoecetes bairdi*) tagging and index of abundance surveys in the Prince William Sound Management Area, Figure 1. The assessment survey has been annually conducted since 1977 and is one of the primary management tools to establish preseason harvest projections. Goals of the survey were to:

- (1) establish an index of abundance of legal and sublegal males;
- (2) monitor the reproductive success of females by determining egg bearing incidence and relative clutch size;
- (3) tag legal males to analyze movement patterns;
- (4) increase documentation of Tanner crab distribution.

## METHODS

The 1988 index survey was conducted in two separate months, August and September. Implementation of other required department field projects necessitate the temporal separation between surveys.

The August survey focused primarily on waters of the Gulf of Alaska. Indexing areas covered by this portion of the survey included:

- (1) the trench immediately east of Montague Island (Western District);
- (2) the area west of Kayak Island (Eastern District);
- (3) the northern Montague Island (Hinchinbrook District);

The September survey, which examined waters in Prince William Sound proper, included:

- (1) a resurvey of stations at the northern Montague Island (Hinchinbrook District);
- (2) Hinchinbrook Entrance (Hinchinbrook District);
- (3) Orca Bay (Northern District); and
- (4) Port Fidalgo (Northern District).

The department research vessel, R/V Montague, was utilized for all survey work. The vessel's keel length is 49 ft. Twenty-four pots were carried on board. Pots had a base measurement of 7 ft x 7 ft and were pyramid shaped. The entrance was a 1.5 ft square opening on the top horizontal plane (top loading). Pots were covered with 3.5 in stretched mesh web. All pots were baited with two 1-qt jars of chopped herring, Clupea herringus. These research pots differed from commercial fishing pots by having smaller mesh size and no escape rings or hanging bait.

Two different types of stations were fished, traditional and exploratory. The traditional survey locations have a twelve year data base and are generally located in areas of historic commercial abundance. The exploratory stations have three or less years data and tend to be located in areas where juvenile crabs are found (Figure 2, Table 1). In this report exploratory and traditional stations are treated separately.

Exploratory index areas were selected on the basis of commercial fleet reports of areas where sublegal crabs were abundant. Thus far, these exploratory surveys, have not been used for index of abundance estimates. A time series, begun in 1986, is being established in promising areas with the eventual goal of incorporating these data into the abundance estimates. Crabs were tagged at exploratory stations to establish the relationship of these crabs to the commercial fishery through tag recovery during the fishery.

Pots were placed 0.33 mi apart at stations 1.0 mi in length and 0.25 mi apart at the Montague Trench stations where the length was 1.5 mi (Table 1 and Figure 2).

All Tanner crabs collected were measured to the nearest 1 mm of carapace width excluding spines with vernier calipers. Shell age was assigned to each crab based upon the relative degree of wear on the carapace. Shell age and shell width were combined to aggregate male crabs. Shell age and size categories used are listed in Appendix E.

The clutch size of all ovigerous females was noted along with the stage of egg development. An egg clutch filling the entire cavity between the abdominal flap and the thoracic sterna was recorded as 100%. Likewise if the egg mass filled one half of the cavity the fullness was judged as 50%. Stage of egg development was recorded as: (1) bright orange eggs with no eye spots, (2) orange eggs with no eye spots, (3) old eggs with eye spots, (4) no eggs. A determination of new or old grasping marks was made for each mature female. This may indicate relative time since mating.

The presence of black mat syndrome (Trichomaris invadens) was

recorded.

The aforementioned data were also recorded for any king crab (Paralithodes, Lithodes aequispina), and Dungeness crab (Cancer magister) captured. Carapace lengths rather than widths were recorded for king crab. Incidental catches of finfish and other invertebrates were also noted. Total lengths of pollock (Theragra chalcogramma), Pacific cod (Gadus macrocephalus) and halibut (Hippoglossus stenolepis) were recorded. Stomach contents of each cod and pollock were examined; halibut were returned to the sea alive.

Tanner crabs were tagged with carapace dart tags (Floy Tag and Manufacturing, Seattle, Wa.). The tagging goal was three new-shell legal crabs per pot. New-shell crabs were chosen to avoid senescent crabs which may have a higher rate of natural mortality than new-shell crabs. Since tags are recovered up to four years after placement, the new-shell crabs are preferred. The number of crabs tagged is a continuation of the tag program begun in the late 1970's . The program yielded useful migration data as well as a minimal estimate of postseason fishing mortality. Crabs with missing legs were not usually tagged, however, at stations with an inadequate number of first choice crabs, those missing one leg were tagged. If insufficient new-shell crabs were available then old-shell males were chosen. The tags were placed on the anterior portion of the right branchial chamber. Tag release data included: tag number, carapace width, shell age, depth, date and location.

The catch per pot, or catch per unit of effort (CPUE) in a given district, was calculated for each size and shell age category by dividing the number of crab caught of a given category by the total number of pots pulled in that district.

## RESULTS

The total catch of Tanner crabs from 119 pot lifts at the 28 traditional index stations was 1,945. Exploratory sampling accounted for 2,260 crabs from 95 pot lifts at 24 stations (Tables 2,3 and Appendices A,B).

Pots were set from 57 to 149 fathoms. The majority of legal male crabs (85%) were captured from 70 to 120 fathoms and the majority of female crabs (69%) from 90 to 104 fathoms.

At traditional stations the average per pot catch of legal males by district was 3.6 crabs in the Hinchinbrook District, 4.4 in the Northern District, and 2.5 in the Western District. The combined CPUE for the Northern and Hinchinbrook Districts was 4.1 (Table 4). As tag recovery shows a distinct relationship between crabs in the

Hinchinbrook and Northern Districts, their respective CPUE's were combined for the purpose of the index of abundance. No crabs were caught in the Eastern District.

Recruit crabs totalled 96 and postrecruits 298. CPUE of recruit crabs by district was: Hinchinbrook 0.8, Northern 1.4. There were no recruit crabs caught in either the Eastern or Western Districts (Table 5). In the true prerecruit one class 101 crabs were captured along with 700 other sublegals. Of these 700, 553 were skipmolts in the prerecruit one size class. The CPUE of true prerecruit one crabs by district was: Hinchinbrook 0.2, Northern 2.0. No true prerecruit one crabs were caught in the Eastern or Western Districts (Table 6).

Skip molting was common in all size ranges. Overall 55% of legal-size crabs captured had not molted during the previous year. Sublegal crabs were predominantly skip molts with 68% either old or very old shells.

Exploratory fishing at North Montague and Port Fidalgo produced the following male catch. The CPUE of recruit crabs was 0.3 at Port Fidalgo, 5.5 for the August North Montague survey and 4.3 for the September North Montague survey. The true prerecruit one crab catch was 1.1 crabs per pot at Port Fidalgo, 4.8 for the August North Montague survey and 4.3 for the September North Montague survey (Table 3, Appendix A).

The total number of female crabs captured at traditional stations was 750. All crabs were mature. The majority of females were very-old shell (675, 90%). New-shells numbered 20 or 3% of the total and old-shells numbered 55 or 7% of the total. The total catch of primiparous (mature, new-shell) females declined from the 1987 survey (Table 7). The percent of mature females, regardless of age, bearing full egg clutches was 69% (Tables 8 and 9).

The Hinchinbrook and Northern Districts catch of female crabs has decreased from 1987. CPUE of females in the Northern District was 5.2 in 1988 compared to 13.2 in 1987. The Hinchinbrook District female CPUE was 13.8 in 1988 compared to 10.0 in 1987.

The total female crab catch at exploratory stations was 605. Two of these crabs were immature. Very-old shell females comprised the majority of the catch (520, 86%). Old shells numbered 55 or 9%, and new shells numbered 30 or 5%. The percent of mature females, regardless of age, bearing full egg clutches was 80%.

A total of 147 (includes exploratory stations) tags were applied during the surveys. Tag application by district is shown in Table 10.

The incidental catch of red king crab was 2 females. One female was carrying an egg clutch 75% full. One female was immature. Sixteen

male and 143 female Dungeness crabs were captured along with 8 halibut and 29 Pacific cod (Appendices F & G).

## DISCUSSION

The total catch of Tanner crabs, in 1988, declined from the relatively stable level of the prior two surveys. The major concentration of crabs captured on the survey were located within Prince William Sound. The survey catch from the Western District of the Gulf of Alaska was characterized by old shell crabs with no recruitment or prerecruitment. No crabs were caught in the Eastern District.

Legal male abundance declined significantly from the 1987 survey. The 1988 survey catch of 4.1 legal male crabs per pot was the lowest on record for the Northern and Hinchinbrook Districts (Table 4). The previous low was 10.8 in 1985. The Western District catch of legal male crabs was 2.5, similar to the 1987 survey.

Recruitment of crabs to legal size was also poor. On the average, only 1.1 recruit crabs were captured/pot in the combined Northern and Hinchinbrook Districts. This compares to 5.8 crabs/pot in 1987 and 6.8 in 1986.

Prerecruit crabs also declined in relative abundance. Only 1.2 crabs per pot were captured at traditional stations within Prince William Sound. This is the lowest prerecruit abundance estimate since surveys have been conducted.

The female stock component remains stable in terms of numbers and egg production. Although the percent of mature females bearing full egg clutches is below the level seen in the late 1970's and early 1980's, the 1988 level of 69% is within the range of the prior five surveys. On a per pot basis the catch of female crabs declined from 7.3 in 1987 to 6.3 in 1988.

The survey catch of primiparous female Tanner crabs also declined in 1988, after increasing for three years (Table 7).

Since 1986, crab habitat at North Montague Island has been surveyed during July. Tag application during the summer survey and tag recovery during the winter commercial season, shows a distinct relationship exists between legal size crabs located at North Montague during the summer and those same crabs which are captured in deeper waters of the Hinchinbrook Entrance during the winter fishery.

Traditional survey stations of the Northern and Hinchinbrook Districts are surveyed during September. Since 1986 North Montague

has been surveyed in July. Beginning in 1989 the North Montague stations will be surveyed during September. The September survey will now include more of the productive crab habitat within Prince William Sound and allow the Department to view the stock within the Sound at one time period rather than having two surveys, which may result in over assessing the stock.

The catch of Tanner crabs at both North Montague and Port Fidalgo decreased over the 1987 level. A precipitous decline in catch, of both male and female crab, occurred at Port Fidalgo. The 1988 catch of 0.7 legal crabs per pot compares to the 1987 catch of 4.4 crabs. This area has been closed to commercial fishing since 1987. Tag recovery indicates that legal size crabs from Port Fidalgo migrate to waters open to commercial fishing where they are harvested. The same decline in numbers has been detected for the female stock component in Port Fidalgo, however, it is unknown if these crabs migrate from the area.

No Tanner crabs have been caught on the survey in the Eastern District since 1985. This district was a major contributor to total harvest during the late 1970's, when up to 4 million pounds were commercially harvested in a single season. The Western District survey catch of male crabs has remained low since 1982. Very few recruit or prerecruit crabs have been captured since the early 1980's.

In summary, the traditional survey stations indicate a decline in abundance for legal, sublegal and female Tanner crabs in the combined Northern and Hinchinbrook Districts. The survey indicated a continued low level of recruitment for 1988 at inshore locations. Offshore waters of the area (Eastern and Western Districts) showed no signs of a recovery.

## LITERATURE CITED

Donaldson, W.K. 1987. Tanner crab tagging and index survey, 1987  
Alaska Department of Fish and Game, Division of Commercial  
Fisheries, Prince William Sound Area Data Report Number 87-13,  
Anchorage.

Table 1. Effort by district for the 1988 Prince William Sound index of abundance survey.

District	Map Location	Area	Pots/ Station	# Stations	Station Length
Eastern	(CSE)	Cape St. Elias	4	3	1.0 mile
Western	(MT)	Montague Trench	6	4	1.25 mile
Hinchinbrook	(E)	Entrance	4	9	1.0 mile
Hinchinbrook (1)	(NM)	North Montague	4	9	1.0 mile (exploratory)
Hinchinbrook (2)	(NM)	North Montague	4	9	1.0 mile (exploratory)
Northern	(OB)	Orca Bay	4	12	1.0 mile
Northern	(PF)	Port Fidalgo	4	6	1.0 mile (exploratory)

(1) North Montague stations were surveyed in August (9 stations).

(2) North Montague stations surveyed again during September survey.

Map location references are illustrated on Figure 2.

Table 2. Sample effort and catch in numbers of Tanner crab from the Prince William Sound index of abundance surveys, traditional survey stations, 1977-1988. Commercial catch during subsequent fishery are also listed by year.

Year	Pots Pulled	Total Females	Total Sublegal Males	Total Legal Males	Commercial Catch (lbs.)
1977	51	1,972	875	1,898	4,806,674
1978	146	1,099	2,420	3,956	7,050,555
1979	237	3,210	10,234	6,597	5,992,717
1980	240	2,092	7,522	3,490	2,775,831
1981	216	1,064	4,924	3,190	2,865,651
1982	224	849	3,212	1,522	1,469,840
1983	180	573	1,892	1,333	0 <sup>1</sup>
1984	178	610	1,842	1,598	0 <sup>1</sup>
1985	163	212	993	1,198	535,377
1986	168	570	1,340	1,133	571,132
1987	138	1,010	1,339	997	474,092
1988	119	750	798	397	closed
1989	114	459	991	649	closed

<sup>1</sup> Inshore fishery closed, only offshore waters open to fishing.

1990	109	255	722	614	closed
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Table 3. Sample effort and catch in numbers of Tanner crab from the Prince William Sound index of abundance surveys, exploratory stations, 1985-88.

Year	Pots Pulled	Total Females	Total Sublegal Males	Total Legal Males
Hinchinbrook District - North Montague				
1985	12	11	77	67
1986	48	477	796	516
1987	48	586	1062	636
1988 August	35	368	542	325
September	36	231	438	244
1989	36	204	480	258
1990	35	132	429	305
Northern District - Port Fidalgo				
1986	24	182	456	196
1987	28	109	292	124
1988	24	6	89	17
1989	24	13	132	22
1990	23	12	54	14
Western District - Lower Montague Strait <sup>1</sup>				
1985	16	3	50	33
1986	36	316	568	220
1987	24	66	357	119
1988	no survey			
1989	no survey			
1990	43	175	287	266

*fringes of good habitat*

<sup>1</sup> Station location was different for each survey.

*same holds for 1989 + 1990*

Table 4. Average number of legal male Tanner crab caught per pot during the Prince William Sound index of abundance surveys, 1977-1988. Data from exploratory stations not included.

District	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Eastern	No Survey	29.8	36.4	5.9	3.2	2.6	0.5	0.1	0.1	0.0	0.0	0.0	
Western	No Survey	28.7	49.5	18.5	12.5	6.0	3.1	5.6	5.1	3.4	2.1	2.5	
Northern		40.1	29.5	12.0	26.1	25.7	15.6	15.5	14.5	12.8	13.1	9.6	4.4
Hinchinbrook		34.8	21.3	16.4	34.9	34.2	8.1	12.2	16.6	8.2	8.3	13.2	3.6
Northern and Hinchinbrook Combined		37.5	25.4	14.2	30.5	30.0	11.9	14.1	15.4	10.8	11.1	11.1	4.1

Table 5. Average number of recruit (new-shell males 133-157 mm in carapace width, excluding spines) Tanner crab caught per pot during the Prince William Sound index of abundance surveys, 1985-88. Data from exploratory stations not included.

DISTRICT	1985	1986	1987	1988
Eastern	0.0	0.0	0.0	0.0
Western	0.1	0.3	0.1	0.0
Northern	4.2	7.9	3.2	1.4
Hinchinbrook	1.9	5.2	9.1	0.8
Northern and Hinchinbrook Combined	3.2	6.8	5.8	1.1

Table 6. Average number of prerecruit male (new-shell males from 113 mm to to 132 mm in carapace width, excluding spines) Tanner crab caught per pot during the Prince William Sound index of abundance surveys, 1977-1988. Does not include data from exploratory surveys.

District	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Eastern	No Survey	15.3	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Western	No Survey	0.5	2.5	1.5	1.3	3.8	0.2	0.0	0.1	0.9	0.3	0.0	
Northern		16.0	5.6	26.2	47.7	25.5	8.4	5.1	6.9	6.2	7.6	4.4	2.0
Hinchinbrook		6.2	2.0	5.4	16.7	6.3	0.5	0.1	2.7	0.6	1.4	2.6	0.2
Northern and Hinchinbrook Combined		11.8	4.1	17.3	34.4	17.3	5.0	2.9	5.1	3.8	4.9	3.6	1.2

Table 7. Total number of primiparous female Tanner crab by district, caught in the Prince William Sound Index of abundance surveys, 1985-88; includes females caught at index stations only, not exploratory stations.

District	1985	1986	1987	1988
Eastern	0	0	0	0
Western	1	0	0	0
Northern	13	21	90	18
Hinchinbrook	4	7	42	2

Table 8. Percent of females bearing full clutches by shell age from the Prince William Sound index of abundance surveys, 1977-1988. Includes females caught at index stations only, not exploratory stations.

	1977 <sup>1</sup>	1978	1979	1980	1981	1982	1983	1984	1985	1986 <sup>2</sup>	1987	1988
New Shell	100	100	99	100	99	100	100	100	87	0	97	95
Old Shell	94	98	100	100	100	100	100	100	100	85	98	98
Very Old	77	87	72	82	83	86	73	64	48	62	83	65
Combined shell age	88	88	78	89	84	88	74	69	56	62	86	69

<sup>1</sup>Northern and Hinchinbrook data only.

<sup>2</sup>Zero percent of primiparous females bearing full egg clutches was a result of primiparous females being judged similar to multiparous females.

Table 9. Egg clutch fullness in each district by shell age from Prince William Sound index of abundance survey, 1988.

District	Number New Shell	Number Old Shell	Number Very Old Shell
Traditional Stations			
Northern			
100%	17	24	137
75%	0	0	29
50%	1	1	27
25%	0	0	7
0%	0	0	8
Hinchinbrook			
100%	2	30	303
75%	0	0	54
50%	0	0	59
25%	0	0	26
0%	0	0	23
Western			
100%	0	0	2
75%	0	0	0
50%	0	0	0
25%	0	0	0
0%	0	0	0
Eastern			
100%	0	0	0
75%	0	0	0
50%	0	0	0
25%	0	0	0
0%	0	0	0
Total Traditional Stations			
100%	19	54	442
75%	0	0	83
50%	1	1	86
25%	0	0	33
0%	0	0	31

-Continued-

Table 9. (page 2 of 2)

District	Number New Shell	Number Old Shell	Number Very Old Shell
Exploratory Stations			
North Montague (August)			
100%	9	34	243
75%	0	0	21
50%	0	2	40
25%	0	0	14
0%	0	0	5
North Montague (September)			
100%	17	18	159
75%	0	0	14
50%	0	0	10
25%	0	0	8
0%	2	0	3
Port Fidalgo			
100%	2	1	3
75%	0	0	0
50%	0	0	0
25%	0	0	0
0%	0	0	0
Total Exploratory Stations			
100%	28	53	405
75%	0	0	35
50%	0	2	50
25%	0	0	22
0%	2	0	8

Table 10. Numbers of Tanner crab tagged with carapace dart tags from the Prince William Sound index of abundance surveys, 1976-1988.

District	1976 <sup>1</sup>	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Eastern	...	0	118	245	119	9	0	0	0	0	0	0	0
Western	...	412	234	135	114	97	113	76	126	77	108	31	1
Northern	...	467	232	153	168	144	144	127	128	125	173	106	36
Hinchinbrook	...	319	169	87	81	105	74	72	119	86	183	198	110
Total	1,039	1,198	753	620	482	352	331	275	373	288	464	335	147

<sup>1</sup>Tagged from commercial crab vessels in-season which was prior to legal description of districts.

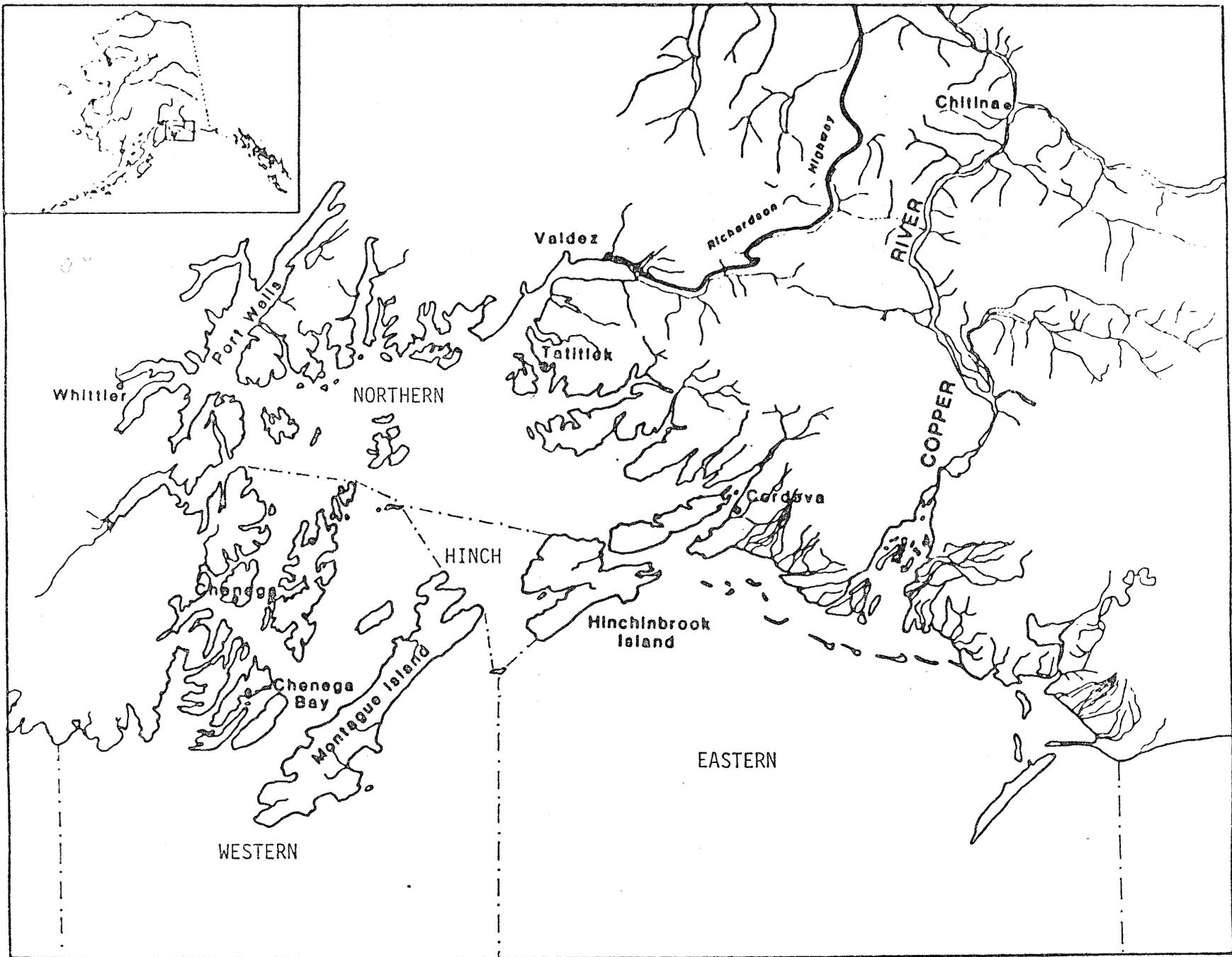


Figure 1. Prince William Sound Management Area and Tanner crab fishing districts

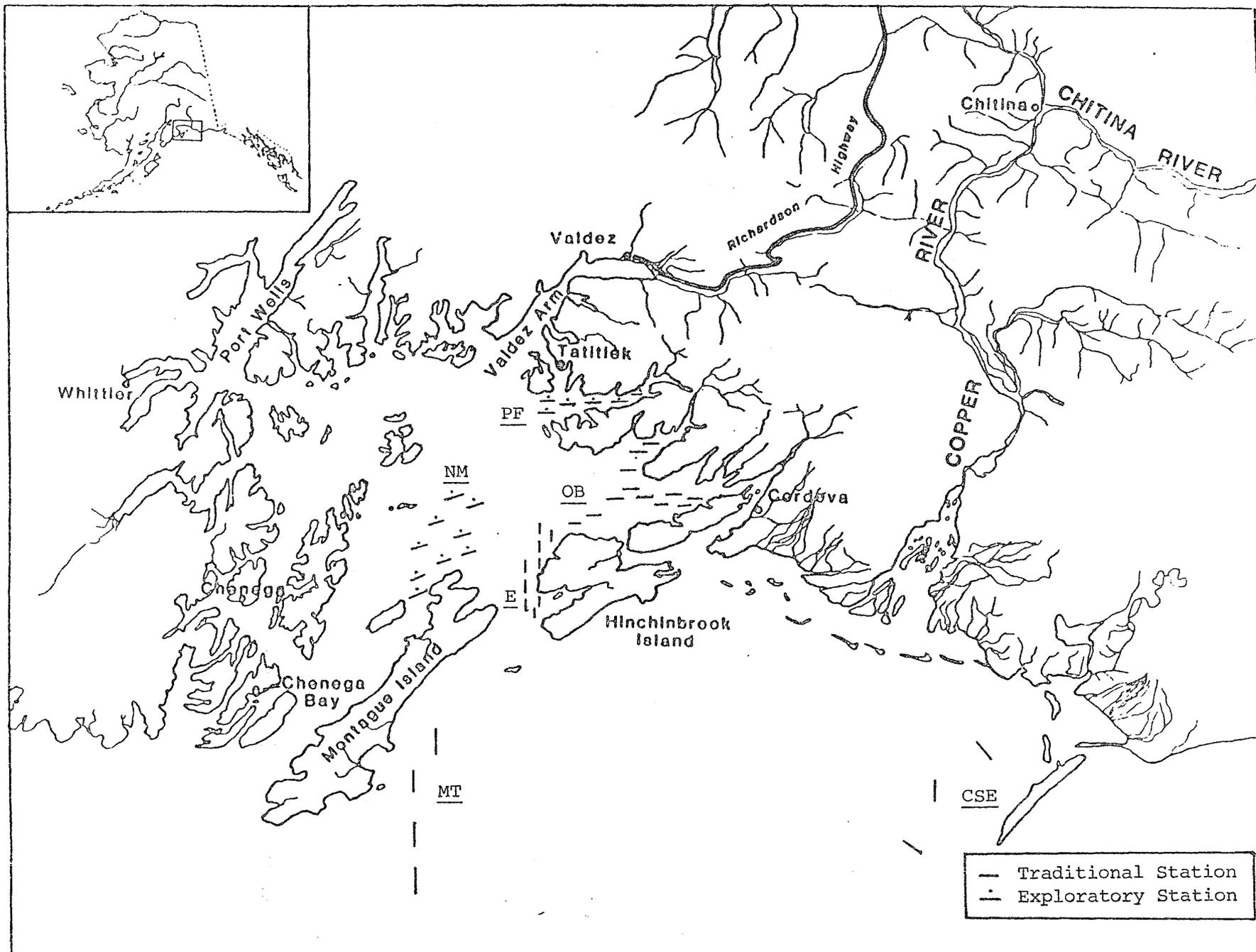


Figure 2. 1988 Index Stations, Traditional and Exploratory.

Appendix A. Total catch of male Tanner crab by station, 1988 Prince William Sound index of abundance survey.

STATION <sup>2</sup>	CLASS <sup>1</sup>										
	0	1	2	3	4	5	6	7	8	9 (Total)	
E05	0	0	0	0	0	0	0	0	0	0	0
E08	0	0	0	0	0	0	0	0	0	0	0
E20	0	0	0	0	0	0	0	0	0	0	0
H01	0	6	33	0	1	3	92	0	5	0	140
H02	0	2	3	1	0	0	15	0	1	0	22
H03	0	1	7	0	1	2	19	0	2	0	32
H04	0	2	5	0	0	0	4	0	1	0	12
H05	0	7	11	0	2	0	22	0	4	0	46
H06	0	0	20	1	0	1	55	0	0	0	77
H07	0	3	5	0	0	0	1	0	0	0	9
H08	0	6	7	1	0	0	7	0	3	0	24
H09	0	2	2	0	0	0	0	0	0	0	4
H14	0	20	1	1	0	12	12	2	1	0	49
H15	0	21	25	0	2	21	56	1	4	0	130
H50	0	22	0	1	0	62	0	26	2	4	117
H52	0	138	27	5	1	102	65	15	13	0	366
H58	0	33	11	0	0	25	46	1	10	0	126
H60	0	36	24	1	1	52	87	9	17	0	227
H62	0	22	74	2	0	23	107	4	5	0	237
H64	0	32	3	2	0	18	15	1	1	0	72
H66	0	22	41	0	0	9	127	1	23	2	225
N01	0	2	24	1	0	4	118	0	15	1	165
N02	0	3	4	0	1	3	8	1	2	0	22
N03	0	10	18	0	0	8	50	1	15	0	102
N04	0	19	3	1	0	21	4	21	4	0	73
N05	0	2	40	0	2	14	47	2	14	0	121
N06	0	4	5	0	0	16	6	10	4	1	46
N07	0	17	40	0	0	19	20	6	1	0	103
N08	0	1	0	0	0	4	0	6	4	2	17
N09	0	0	0	0	0	0	0	0	0	0	0
N10	0	8	2	0	0	5	4	1	1	0	21
N11	0	1	1	0	0	1	5	3	1	0	12
N12	0	0	0	0	0	0	0	0	0	0	0
N14	0	0	8	0	0	11	26	6	5	0	56
N16	0	0	0	0	0	7	1	8	3	0	19
N18	0	1	2	0	0	6	1	8	1	1	20
N20	0	4	1	0	0	3	0	2	0	0	10
N22	0	1	0	0	0	0	0	0	0	0	1
N24	0	0	0	0	0	0	0	0	0	0	0

-Continued-

Appendix A. (p. 2 of 2)

STATION	CLASS <sup>1</sup>										9 (Total)
	0	1	2	3	4	5	6	7	8		
W03	0	0	9	0	0	0	14	1	8	0	32
W04	0	0	34	0	2	0	43	0	5	0	84
W05	0	0	2	0	0	0	5	0	1	0	8
W09	0	0	9	0	0	0	14	0	0	0	23
TOTAL	0	448	501	17	13	452	1096	136	176	11	2850

<sup>1</sup> Classes are defined as follows:

- 1 = new shell 133 - 157 mm carapace width, excluding spines.
- 2 = old shell 133 - 157 mm carapace width, excluding spines.
- 3 = new shell greater than 157 mm carapace width, excluding spines.
- 4 = old shell greater than 157 mm carapace width, excluding spines.
- 5 = new shell 113 - 132 mm carapace width, excluding spines.
- 6 = old shell 113 - 132 mm carapace width, excluding spines.
- 7 = new shell 92 - 112 mm carapace width, excluding spines.
- 8 = old shell 92 - 112 mm carapace width, excluding spines.
- 9 = all crab between 71 and 91 mm carapace width, excluding spines
- 0 = all crab less than 71 mm carapace width.

<sup>2</sup> Station numbers H14 through H66 were surveyed twice.

Appendix B. Total catch of female Tanner crab by relative egg clutch fullness and station, 1988 Prince William Sound index of abundance survey.

STATION <sup>1</sup>	0	25	50	75	100	(Total)
H01	0	0	2	2	40	44
H02	4	12	17	9	175	217
H03	3	3	8	2	18	34
H04	11	5	23	23	44	106
H05	0	2	4	12	36	54
H06	4	2	3	2	13	24
H07	0	2	0	1	6	9
H08	1	0	2	3	3	9
H14	2	0	0	0	0	2
H15	1	2	3	4	70	80
H52	0	0	0	0	4	4
H58	0	1	0	0	1	2
H60	0	1	4	8	51	64
H62	1	0	1	0	2	4
H66	6	18	44	23	352	443
N01	0	4	12	11	60	87
N02	2	3	11	7	97	120
N03	4	0	6	9	14	33
N04	0	0	0	0	2	2
N05	0	0	0	0	2	2
N06	0	0	0	2	0	2
N07	1	0	0	0	2	3
N08	0	0	0	0	1	1
N10	1	0	0	0	0	1
N14	0	0	0	0	5	5
N20	0	0	0	0	1	1
W05	0	0	0	0	2	2
TOTAL	41	55	140	118	1001	1355

<sup>1</sup> Station numbers H14 through H66 were surveyed twice.

Appendix C. Soak time, depth, date, by station, 1988 Prince William Sound index of abundance survey.

STATION	DISTRICT	DEPTH	SOAK	DATE	# OF POTS
E05	Eastern	110	19	08/10/88	4
E08	Eastern	84	19	08/10/88	4
E20	Eastern	129	20	08/10/88	4
H01	Hinch	124	28	09/22/88	4
H02	Hinch	92	28	09/22/88	4
H03	Hinch	110	29	09/22/88	4
H04	Hinch	110	24	09/23/88	4
H05	Hinch	127	23	09/23/88	4
H06	Hinch	149	23	09/23/88	4
H07	Hinch	120	21	09/22/88	4
H08	Hinch	124	21	09/22/88	4
H09	Hinch	107	21	09/22/88	4
H14	Hinch	119	22	08/05/88	4
H14	Hinch	120	22	09/25/88	4
H15	Hinch	104	22	08/05/88	4
H15	Hinch	103	21	09/25/88	4
H50	Hinch	69	23	08/06/88	3
H50	Hinch	68	24	09/25/88	4
H52	Hinch	82	22	08/06/88	4
H52	Hinch	80	24	09/25/88	4
H58	Hinch	64	24	08/06/88	4
H58	Hinch	62	24	09/25/88	4
H60	Hinch	96	24	08/07/88	4
H60	Hinch	95	20	09/26/88	4
H62	Hinch	95	22	08/06/88	4
H62	Hinch	96	23	09/26/88	4
H64	Hinch	96	23	08/05/88	4
H64	Hinch	96	22	09/25/88	4
H66	Hinch	102	25	08/07/88	4
H66	Hinch	100	20	09/26/88	4
N01	Northern	83	24	09/24/88	4
N02	Northern	75	24	09/24/88	4
N03	Northern	72	24	09/24/88	4
N04	Northern	67	25	09/29/88	4
N05	Northern	71	25	09/29/88	4
N06	Northern	73	22	09/21/88	4
N07	Northern	78	26	09/29/88	4
N08	Northern	78	22	09/21/88	4
N09	Northern	87	22	09/21/88	4
N10	Northern	70	22	09/30/88	4
N11	Northern	68	22	09/30/88	4
N12	Northern	82	22	09/30/88	4
N14	Northern	88	24	09/28/88	4
N16	Northern	79	24	09/28/88	4
N18	Northern	89	24	09/28/88	4

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Appendix C. (p. 2 of 2)

STATION	DISTRICT	DEPTH	SOAK	DATE	# OF POTS
N20	Northern	106	23	09/27/88	4
N22	Northern	111	23	09/27/88	4
N24	Northern	113	23	09/27/88	4
W03	Western	119	25	08/09/88	6
W04	Western	113	27	08/08/88	5
W05	Western	112	21	08/09/88	6
W09	Western	106	16	08/09/88	6

Appendix D. Coordinates and depths of stations from the 1988 Tanner crab index of abundance survey. Coordinates are either Loran C or latitude, longitude. First and last pot only.  
 \* = Exploratory station

District	Station Number	Coordinate	Depth Range (fathoms)
Eastern	E05	144'56.32' W.	110 - 115
		59'50.25' W.	
		144'56.30' W.	
		59'51.15' W.	
	E08	145 02.06'	79 - 84
		59 44.11'	
145 00.66			
59 43.54'			
E20	144 41.31'	128 - 129	
	59 59.38'		
	144 39.88		
	59 58.83'		
Western	W03	147'10.75' W.	114 - 115
		59'32.00' W.	
		147'10.75' W.	
		59'30.75' W.	
	W04	147'07.00' W.	107 - 110
		59'58.50' W.	
		147'07.00' W.	
		59'57.25' W.	
	W05	147'10.75' W.	108 - 110
		59'38.00' W.	
		147'10.75' W.	
		59'36.75' W.	
W09	147'11.00' W.	102 - 111	
	59'52.25' W.		
	147'11.00' W.		
	59'51.00' W.		

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Appendix D. (p. 2 of 5)

District	Station Number	Coordinate	Depth Range (fathoms)
Northern	N01	146°39.15' W.	82 - 89
		60°29.80' W.	
		146°37.15' W.	
		60°29.80' W.	
	N02	146°37.10' W.	68 - 74
		60°30.80' W.	
		146°35.10' W.	
		60°30.80' W.	
N03	146°30.95' W.	68 - 70	
	60°32.80' W.		
	146°28.95' W.		
	60°32.80' W.		
N04	146°24.80' W.	59 - 70	
	60°35.80' W.		
	146°22.80' W.		
	60°35.80' W.		
N05	146°20.60' W.	65 - 70	
	60°34.80' W.		
	146°18.60' W.		
	60°34.80' W.		
N06	146°14.50' W.	70 - 73	
	60°33.80' W.		
	146°16.50' W.		
	60°33.80' W.		
N07	146°14.40' W.	74 - 75	
	60°34.85' W.		
	146°12.40' W.		
	60°34.85' W.		
N08	146°08.30' W.	73 - 75	
	60°32.85' W.		
	146°10.30' W.		
	60°32.85' W.		

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Appendix D. (p. 3 of 5)

District	Station Number	Coordinate	Depth Range (fathoms)
	N09	146'04.10' W. 60'33.80' W. 146'06.10' W. 60'33.80' W.	81 - 90
	N10	146'24.70' W. 60'37.85' W. 146'22.70' W. 60'37.85' W.	57 - 69
	N11	146'20.65' W. 60'39.85' W. 146'18.65' W. 60'39.85' W.	63 - 68
	N12	146'14.45' W. 60'41.85' W. 146'12.45' W. 60'41.85' W.	78 - 73
	N14*	14290.0 - 32105.0 14280.0 - 32105.0	78 - 84
	N16*	14280.0 - 32095.0 14270.0 - 32095.0	58 - 74
	N18*	14320.0 - 32100.0 14310.0 - 32100.0	90 - 100
	N20*	14330.0 - 32095.0 14340.0 - 32095.0	105 - 106
	N22*	14350.0 - 32095.0 14360.0 - 32095.0	111 - 112
	N24*	14365.0 - 32090.0 14375.0 - 32090.0	110 - 112

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Appendix D. (p. 4 of 5)

District	Station Number	Coordinate	Depth Range (fathoms)
Hinchinbrook	H01	146°43.25' W.	120 - 131
		60°28.80' W.	
		146°43.25' W.	
		60°29.80' W.	
	H02	146°41.25' W.	89 - 93
		60°28.80' W.	
		146°41.25' W.	
		60°27.80' W.	
H03	146°43.25' W.	108 - 111	
	60°26.80' W.		
	146°43.25' W.		
	60°27.80' W.		
H04	146°43.30' W.	100 - 107	
	60°25.75' W.		
	14068.7 - 31929.7		
H05	146°45.30' W.	123 - 125	
	60°24.75' W.		
	146°45.30' W.		
	60°25.75' W.		
H06	146°45.30' W.	135 - 146	
	60°22.75' W.		
	146°45.30' W.		
	60°23.75' W.		
H07	146°43.25' W.	92 - 105	
	60°19.75' W.		
	146°43.25' W.		
	60°18.75' W.		
H08	146°45.25' W.	114 - 124	
	60°17.70' W.		
	146°45.25' W.		
	60°18.70' W.		

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Appendix D. (p. 5 of 5)

District	Station Number	Coordinate	Depth Range (fathoms)
	H09	146'44.25' W. 60'18.20' W. 146'44.25' W. 60'17.20' W.	89 - 100
	H14*	31990.0 - 13983.5 31990.0 - 13993.5	110 - 118
	H15*	31985.0 - 14002.0 31985.0 - 14012.0	101 - 103
	H50*	13871.0 - 31920.0 13881.0 - 31920.0	68 - 73
	H52*	13900.0 - 31940.0 13910.0 - 31940.0	77 - 80
	H58*	13940.0 - 31955.0 13950.0 - 31955.0	59 - 61
	H60*	13970.0 - 31955.0 13980.0 - 31955.0	85 - 92
	H62*	13940.0 - 31970.0 13950.0 - 31970.0	88 - 92
	H64*	13950.0 - 31980.0 13960.0 - 31980.0	95 - 112
	H66*	13990.0 - 31970.0 13400.0 - 31970.0	97 - 99

Appendix E. Explanation of terms for shell age and size class used during the Prince William Sound index of abundance survey.

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SHELL AGE

New Shell	Crabs which have molted within the past year. This includes recently molted soft shells. These crabs were identified by carapaces which are free of abrasions and generally bright pink in color.
Old Shell	Crabs which have not molted between one and two years. Carapaces show few abrasions, some discoloration and spine wear.
Very Old Shell	Crabs with moderate to heavy abrasions, discoloration and obvious spine wear. Have not molted for 2+ years.

SHELL AGE AND SIZE

Other sublegal	Old and very old shell male crabs 113 - 132 mm carapace width, excluding spines, plus all male crab less than 113 mm.
True prerecruit	New-shell male crabs 113 - 132 mm carapace width, excluding spines.
Recruit	New-shell male crabs 133 - 157 mm carapace width, excluding spines.
Postrecruit	Old and very old shell male crabs 133 - 157 mm carapace width, excluding spines, plus all male crabs greater than 157 mm.
Legals	All male crabs greater than 132 mm carapace width, excluding spines.

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Appendix F. Red king crab (*P. camtschatica*) catch from the Prince William Sound index of abundance surveys, 1977-1988, traditional survey stations.

District	1977	1978	1979	1980	1981	1982	1983
Both Sexes							
Northern	3	80	136	83	11	6	3
Hinchinbrook	27	113	25	20	25	24	0
Total	30	193	161	103	36	30	3
Legal males only							
Northern	N/A	39	59	19	5	5	3
Hinchinbrook	N/A	18	5	0	0	8	0
Total		57	64	19	5	13	3
Sublegal males only							
Northern	N/A	34	43	15	2	1	0
Hinchinbrook	N/A	21	9	2	5	1	0
Total		55	52	17	7	2	0
Females only							
Northern	2	7	35	49	4	0	0
Hinchinbrook	18	74	11	18	20	15	0
Total	20	81	46	67	24	15	0

-Continued-

District	1984	1985	1986	1987	1988
Both Sexes					
Northern	0	13	12	1	2
Hinchinbrook	18	2	6	0	0
Total	18	15	18	1	2
Legal males only					
Northern	0	1	4	0	0
Hinchinbrook	1	0	0	0	0
Total	1	1	4	0	0
Sublegal males only					
Northern	0	0	6	0	0
Hinchinbrook	0	5	0	0	0
Total	0	5	6	0	0
Females only					
Northern	0	7	3	1	2
Hinchinbrook	17	2	5	0	0
Total	17	9	8	1	2

No red king crab have been caught in either the Eastern or Western District index stations. No blue king crab (*P. platypus*) have ever been caught. Two female brown king crab (*Lithodes aequispina*) were captured; 1 in 1983 and 1 in 1984. Both were caught in the Western District.

One non ovigerous female brown king crab (*Lithodes aequispina*), L=121 mm, was captured in the Western District.

Appendix G. Halibut (*H. stenolepis*) and Pacific cod (*G. macrocephalus*) catch from the Prince William Sound index of abundance surveys, 1977-1988, traditional survey stations.

District	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Halibut												
Eastern	Not fished	0	11	24	51	32	15	17	7	9	9	1
Western	Not fished	2	0	5	4	5	10	2	5	6	1	5
Northern	0	0	0	0	0	1	3	3	3	2	2	0
Hinchinbrook	0	0	0	1	0	0	3	0	0	1	1	2
Total	0	2	11	30	55	38	31	22	15	18	13	8
Pacific Cod												
Eastern	Not fished	11	11	12	19	23	17	11		9	6	4
Western	Not fished	30	1	3	5	19	4	4		14	10	3
Northern	7	12	0	0	8	18	19	18		9	25	11
Hinchinbrook	4	10	0	2	8	11	19	7		15	13	11
Total	11	63	12	17	40	71	59	40	2	47	54	29