HISTORIC DATABASE FOR PACIFIC HERRING IN PRINCE WILLIAM SOUND, ALASKA, 1973 - 1991

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ABSTRACT

A historic database has been compiled of data collected on Pacific herring, *Clupea pallasi*, in Prince William Sound from 1973 through 1991. This database includes the aerial survey estimates of both biomass and shoreline miles of spawn, Age-Weight-Length (AWL) sampling results, and fecundity results from 1988-1991. Maps of the location of the spawn occurring each year are included. Data are summarized by five major areas of spawning: the Northeast, Southeast, North Shore, Naked Island, and the Montague Island Areas. The summaries for all years examine annual differences in biomass by area, shoreline miles by area, spawner density by area, and run timing. The individual year summaries examine daily or weekly differences in biomass accumulation by area, and shoreline miles by area. In addition, the summaries for individual years include weight, length, and sex summaries by area and fecundity analyses for applicable years.

KEY WORDS: Pacific herring, *Clupea harengus pallasi*, spawning biomass, aerial survey, spawn deposition survey, Age/Sex/Size, population estimation, population abundance, population distribution, Prince William Sound.

HISTORIC DATABASE FOR PACIFIC HERRING IN PRINCE WILLIAM SOUND, ALASKA, 1973 - 1991

INTRODUCTION

This report summarizes corrected and finalized historic information on abundance, and age, sex, and size information for Pacific herring *Clupea pallasi* in Prince William Sound (PWS). Although much of this information has been documented in various Department of Fish and Game reporting series (e.g. Brady 1987; Sandone 1988a, 1988b, 1988c; Baker et.al. 1991a, 1991b), there were discrepancies between documents and years. Therefore, the information was corrected and compiled here in a single volume to serve as a more convenient source of biological information for Pacific herring in PWS from 1973 to 1991 and to document the available computer database. This report is not part of a series since updated annual information will be included in other reporting series. Results are presented for archival purposes alone and are not analyzed, precluding the need for a discussion section.

Herring spawn throughout PWS each year from mid April through early May. Herring that spawn within PWS may consist of several populations, but are managed as a single stock that spawns within coastal waters between Point Whitshed and Cape Fairfield (Appendix A.1).

A detailed herring stock assessment program began in 1988 and consists of: (1) monitoring harvests from fall food and bait, purse seine and gill net sac roe, and wild and pound spawn-on-kelp fisheries; (2) estimating the spawning escapement and total run biomass of herring from both aerial surveys and spawn deposition surveys; (3) estimating the age, weight, length, and sex (AWL) composition of herring in the commercial harvest in the spring, spawning escapement biomass, and total run biomass (commercial harvest plus spawning escapement biomass). Prior to 1988, biomass estimates were based entirely upon aerial survey data except in 1983 and 1984, when experimental spawn deposition programs provided auxiliary biomass information. Aerial survey biomass estimates, spawn area estimates, and AWL data have been available since 1973. The data set is incomplete for some of these years and does not include all three types of data. Fecundity measurements were begun in 1988.

Commercial herring fishing activities have been documented in PWS since 1913 (Rounsefell and Dahlgren 1932). Prior to that, herring and spawn on kelp were probably heavily utilized by the indigenous peoples of PWS for subsistence food items (Stratton and Chisum, 1986). The first commercial harvest of herring in PWS, recorded in 1913, occurred in Kiniklik and resulted in 10 tons for pickling and 0.8 tons for halibut bait (Rounsefell and Dahlgren 1932). Commercial fishing activity greatly increased in 1918 when the First World War boosted prices for foodstuffs. In the next two years 3,608 and 3,558 tons of herring were pickled using the "Scotch Cure"

method. Kippered herring, first produced as a canned product in 1916, reached a peak production of 1,303 tons in 1919 (Rounsefell and Dahlgren, 1932). The first fishmeal reduction plants opened in 1920 when 5,212 tons of waste from the pickling operations were processed. Fishmeal became the dominant product from the fishery after 1924 and continued to be produced through 1958. The peak years of the PWS commercial herring fishery occurred between 1935 and 1941 when an average of 52,118 tons was harvested each year. The greatest annual catch was 56,153 tons in 1938 (Reid, 1971). During the development of the fishery, herring reduction and salting plants were built throughout the Sound. However, development of similar fisheries in other parts of the world and other economic factors led to the decline of PWS's reduction fishery (Reid, 1972 and Carlson, 1977). Less than 1,102.5 tons a year were harvested from 1959 to 1971. A winter fishery for herring to be used as bait started in 1970. Average catch has been 996.8 ton per year from 1970 to 1991.

A herring roe fishery began in eastern PWS in 1969 when 355.7 tons were taken for sac roe and 2.7 ton of spawn on kelp were harvested (Burkey, 1986). The average annual catch for the wild spawn-on-kelp fishery for 1969 to 1991 was 170.5 tons of product. The average annual sac roe seine harvest for 1969 to 1991 was 5,631.3 tons. The use of gillnets for the harvest of sac roe began in 1974. Average annual harvest for 1974 to 1991 was 293.9 tons. In 1979, an experimental fishery began in which wild kelp and herring were placed in impoundments called pounds. Since the start of 1980, the average annual harvest of the pound fishery has been 62.8 tons of product.

During the early years of pickled and reduction products, the fishery centered mainly in the southwest part of the Sound during the summer with some activity in the North Shore Area and near Ports Fidalgo and Gravina (Appendix A.2). Since the onset of the sac roe and spawn-on-kelp fisheries, commercial fishing activity generally occurs between mid-April and mid-May and is centered where herring spawn.

Annual herring forecast reports (e.g. Baker and Biggs, 1992) and annual catch and escapement or stock assessment reports (e.g. Baker, et. al., 1991a, and Baker et. al., 1991b) have documented guideline harvest levels as well as current and historic catches. Annual age composition summaries for commercial and test fishery catches have been summarized by Sandone (1988a, 1988b, 1988c). These data have been compiled in computer files stored on the Cordova Area Office network.

METHODS

Beginning in late March, Alaska Department of Fish and Game (ADF&G) personnel survey the coastline of PWS twice weekly from small aircraft until a significant biomass of herring is observed (Brady 1987). Biologists then fly daily surveys to assess herring biomass accumulation,

document herring distribution, and map observed miles of spawn. Prior to 1984, surveys were flown less frequently. When herring have completed spawning, ADF&G SCUBA divers estimate mean density of spawn deposition. Total spawning biomass has been calculated from the estimate of the total number of eggs, mean herring weight, fecundity, and sex ratio (Jackson 1984; Biggs and Funk 1988). Age, weight, length, and sex composition was estimated from samples of herring collected during each commercial fishing period and from areas of significant biomass accumulation throughout PWS. In areas of biomass accumulation, for which no commercial catch samples were available, commercial or department vessels made multiple test purse seine sets to capture herring.

Biomass estimates were summarized by the five major areas in which herring spawn (Appendix A.1). The Southeast Area extends from Porcupine Point (the western and southern boundary of Pt. Fidalgo) south and east to the Copper River Flats including Orca Bay, Hinchinbrook and Hawkins Islands. The Northeast Area extends from Pt. Freemantle, on the western boundary of Valdez Arm, south and east to Porcupine Point. The North Shore Area extends from Pt. Freemantle west and north to Wells Bay including Fairmont Bay, Glacier, Esther, and Perry Islands and Unakwik Inlet. The Naked Island Area extends south of the North Shore Area including the Naked Island group, and the north portion of Knight Island, Ingot, Eleanor, and Smith Islands and west to Pt. Nowell on the mainland (not shown on the map). Finally, the Montague Island Area borders the Naked Island Area to the north and includes Green and Montague Islands and the eastern sides of Knight, Elrington, and Evans Islands as well as all of Latouche Island.

Aerial milt sightings and biomass estimates were recorded on individual survey maps which corresponded to ten subareas within the five major spawning areas. The "Simpson, Sheep and Islands" and the "Port Gravina" were subareas of the Southeast Area. "Port Fidalgo", Area", and "Valdez Arm and Port" were subareas of the Northeast Area. "Freemantle, Granite Pt." and "Granite, Esther Pass." were subareas of the North Shore Area. "Naked Island" and "Knight Island" were subareas of the Naked Island Area. The Montague Area was not divided into subareas. Biomass estimates and mile-days of spawn were recorded by subarea and day for each year. Biomass and mile-days of spawn for all years were summarized (Appendices A.3 and A.6)

Methods used for aerial surveys were listed by Brady (1987) and Baker (1990 and 1991). Methods used for spawn deposition surveys, including statistical analyses, were documented in Biggs and Funk (1988). AWL sample collection, processing and analysis is described in detail by Baker, et. al. (1991) and Sandone (1988a, 1988b, 1988c). Methods used in collecting, processing, and analyzing fecundity samples were described by Biggs et. al. (1993, in press). Spawner density, a useful term in evaluating and comparing the spring herring biomass interregnal, was calculated using the aerial survey milt sightings and biomass estimates. One million pounds per mile represents 500 tons of spawners and from miles of spawn, an estimate of spawning biomass can be calculated inseason. Annual spawner density is calculated by dividing the peak biomass for an area by the total shoreline miles of spawn for that area (where both data are present).

RESULTS

Department staff annually calculate three independent estimates or indices of herring biomass for PWS. Aerial survey estimates of herring date back to 1973 and have ranged from 7,330.0 tons in 1976 to 77,810.0 tons in 1981 (Brady, 1987; Appendix A.3). Estimates of the number of miles of spawn date back to 1973 and have ranged from 28.7 miles in 1978 to 166.3 miles in 1988 (Appendix A.6). Spawn deposition surveys were conducted in 1983, 1984, and 1988-1991 (Appendices A.3 and A.4)). However, 1983 was the initial method feasibility study and little credence was given to the spawning biomass estimate. An estimate of total spawning biomass was estimated for 1984 and 1988-1991 by adding the spawn deposition survey estimate to the total commercial catch for the management year. All estimates have been documented in the annual forecasts prepared as Regional Information Reports (e.g. Biggs and Baker, 1991).

Large aggregations of herring have consistently been observed since 1973 in the Northeast Area, with an average annual peak biomass of 16,515 tons, and in the Montague Island Area, with an average annual peak biomass of 12,251 tons for 1973 to 1991 (Appendices A.3 to A.5). Herring schools were not observed prior to 1980 at the Naked Island (average annual peak for 1973 to 1991 of 6,662 tons) and North Shore (average annual peak for 1973 to 1991 of 6,708 tons) areas. The greatest herring biomass in the Southeast Area was observed in 1979. Since then, biomass in this area has been much lower than that observed in other areas with an average annual peak biomass for 1973 to 1991 of 2,901 tons. Timing of biomass accumulation has varied since 1973 by date and area, but peak biomass generally seems to be reached by the second or third week in April (Appendices A.5, A.6, and A.7). The mean date of peak biomass accumulation for all years and all areas, 1973-1991, was April 19. The earliest peak date was April 13, in 1989 and 1990, and the latest was May 3, in 1978 (Appendix A.6). The average timing of the cumulative herring biomass reached 100% by May 4 for the years 1973 to 1991 and the variance about the mean increased to a maximum of about 40% of the total biomass prior to May 4 (Appendix A.7).

The average observed total shoreline accumulation of spawn is 65.1 miles (Appendices A.8 and A.9). Observed miles of spawn peaked at 166.3 miles of spawn in 1988, and dropped to a minimum of 28.7 in 1978 (Appendices A.8 and A.9). As with peak biomass observations, the most consistent spawn accumulation occurred in the Northeast (average annual shoreline accumulation of 28.9 miles) and Montague Island Area (average annual shoreline accumulation of 16.1 miles). Since 1982 the North Shore Area has also received a relatively large and consistent amount of spawn (average annual shoreline accumulation of 11.2 miles; Appendix A.8) The Southeast and Naked Island Areas have received much less spawn over the last 19 years (average annual shoreline accumulations of 4.4 miles for the Southeast and 4.5 miles for Naked Island; Appendix A.8). The mean date of herring peak spawning activity varied from April 14 in 1989 to May 1 in 1982, with a mean date of April 21 for all years (Appendices A.6 and A.10).

The mean date of 50% cumulative herring spawn occurred on April 20 with a variance of approximately 50% about the mean (Appendix A.10). Cumulative herring spawn reached 100% on about May 6 and the variance about the mean was approximately 10% (Appendix A.10).

Spawner density is a term that reveals relative concentrations of herring spawners. Average spawner density for all years has been 1.3 million pounds of spawners per mile (Appendices A.11 and A.12). Spawner density has fluctuated between approximately 0.2 and 2.5 million lb of spawners per mile since 1973, and extremely high values were observed for Naked Island in 1982 (14.77 lb/mi) and Montague Island (7.49 lb/mi; Appendix A.12) in 1980.

Fecundity was a linear function of female herring weight during all four years examined, 1988 to 1991 (Appendix A.13). The best fit for a linear regression was between nontransformed female weight and total egg count. This female weight to fecundity relationship has been used to back calculate total female weight in the escapement biomass from the total egg counts derived from the ground spawn surveys.

The herring population consists of multiple age classes and is generally dominated by a single cohort. From 1974 until 1977, the 1970 year class dominated the population (Appendix A.14). From 1979 until 1983, the 1976 year class dominated the population. The 1980 year class dominated the population from 1984 until 1986, but this year class was much smaller than previous dominant year classes. The largest year class observed since 1973 was the 1984 cohort which dominated the 1988 population making up 80% of the biomass. The 1984 year class continued to dominate the population through 1991. In 1991, it was apparent that the 1988 year class was large and it is expected to dominate the population in future years.

The results for individual years will not be described, however, Appendices B through T contain the individual year tables. Appendices B through F (representing 1973 to 1977) contain tabular and graphical biomass and spawn summaries. In addition, they contain the peak aerial biomass estimate by age class in tabular and graphical form, the individual AWL summary tables used, and a map delineating the spawn for that year. Appendices G through T (1978-91) contain the summaries listed above as well as an aerial survey summary table listing biomass and spawn sighted by subarea and day. Appendices Q through T (1988-91) also contain fecundity data summarized in tabular form and graphically by area and for all areas combined.

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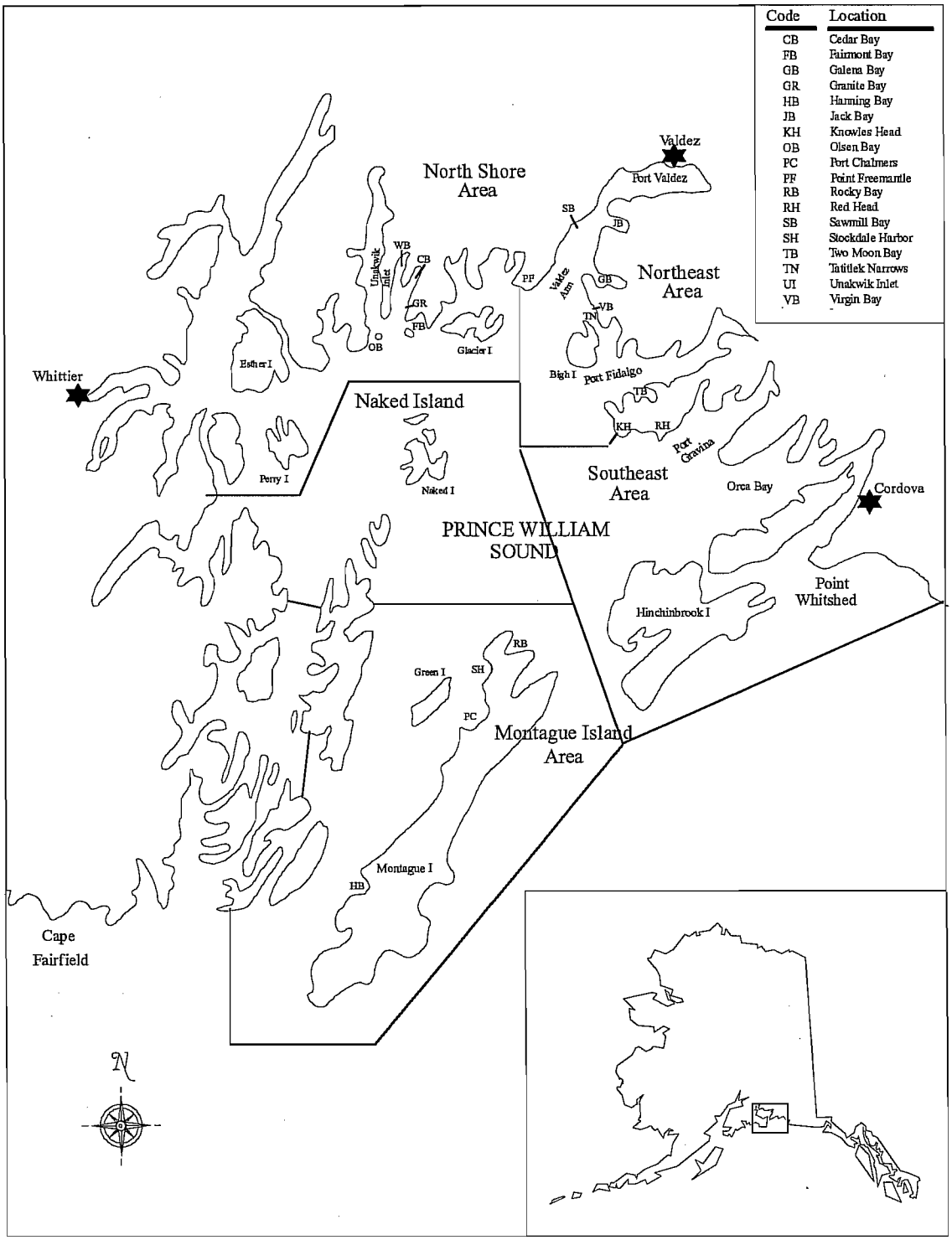
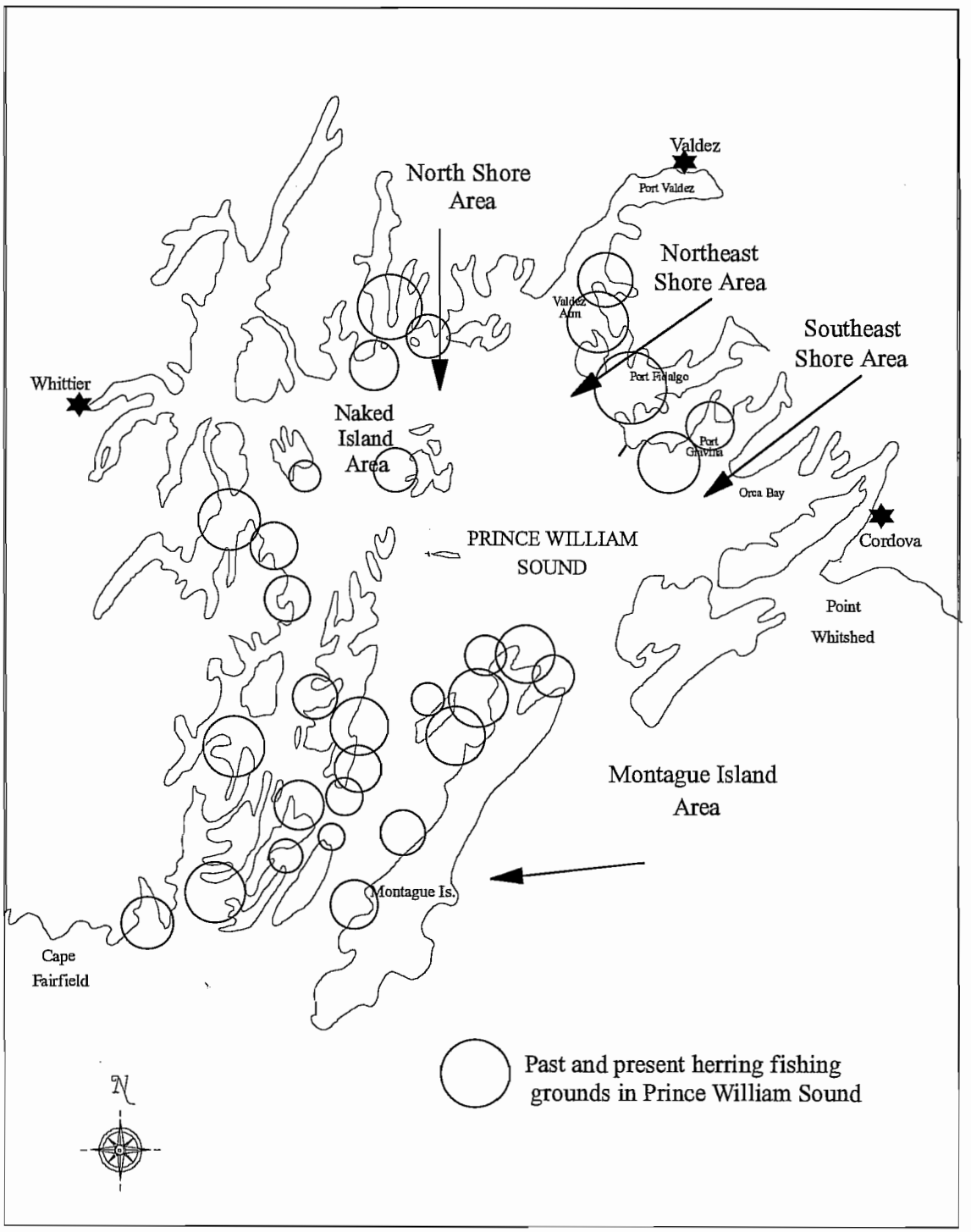
APPENDIX A: SUMMARY FOR ALL YEARS

Prince William Sound Herring Grounds by Area



Appendix A.1. Delineation of the five major spawning grounds in Prince William Sound; the North Shore, Northeast, Southeast, Naked Island and Montague Island Area.

Prince William Sound Historical Herring Fishing Grounds



Appendix A.2. Historical herring fishing grounds in Prince William Sound From 1914 to the Present.

Appendix A.3. Historical herring peak biomass estimates from aerial and spawn deposition surveys by area and year for Prince William Sound, 1973 - 1991.

Year	Southeast	Northeast	North Shore	Naked Area	Montague Area	Total
1973[a]						0
1974	50	35,000	590	NS	5,440	41,080
1975[a]						0
1976	NS	7,330	NS	NS	NS	7,330
1977	NS	16,810	NS	NS	20	16,830
1978	NS	11,650	1,700	NS	60	13,410
1979	20,040	20,670	390	NS	1,000	42,100
1980	3,520	38,180	10	NS	20,400	62,110
1981	7,340	27,200	2,020	NS	41,250	77,810
1982	310	25,090	10,600	25,840	6,950	68,790
1983[b]	540	2,970	2,660	11,450	24,230	41,850
1984[c]	6,140	15,150	6,050	7,630	23,900	58,870
1985	390	4,230	6,520	1,580	8,110	20,830
1986	290	3,930	10,430	90	440	15,180
1987	600	4,010	18,480	2,200	1,290	26,580
1988[d]	580	6,460	12,300	1,450	13,480	34,270
1989[e]	170	10,460	13,790	4,995	27,500	56,915
1990[f]	310	30,720	13,110	10,900	2,860	57,900
1991[g]	340	20,890	1,965	480	19,090	42,765
Average	**2,901**	**16,515**	**6,708**	**6,662**	**12,251**	**40,272**

[a]Aerial surveys were not conducted for the spring biomass estimates for 1973 and 1975.

[b]Spawn deposition survey estimate of spawner escapement was, 22,000.

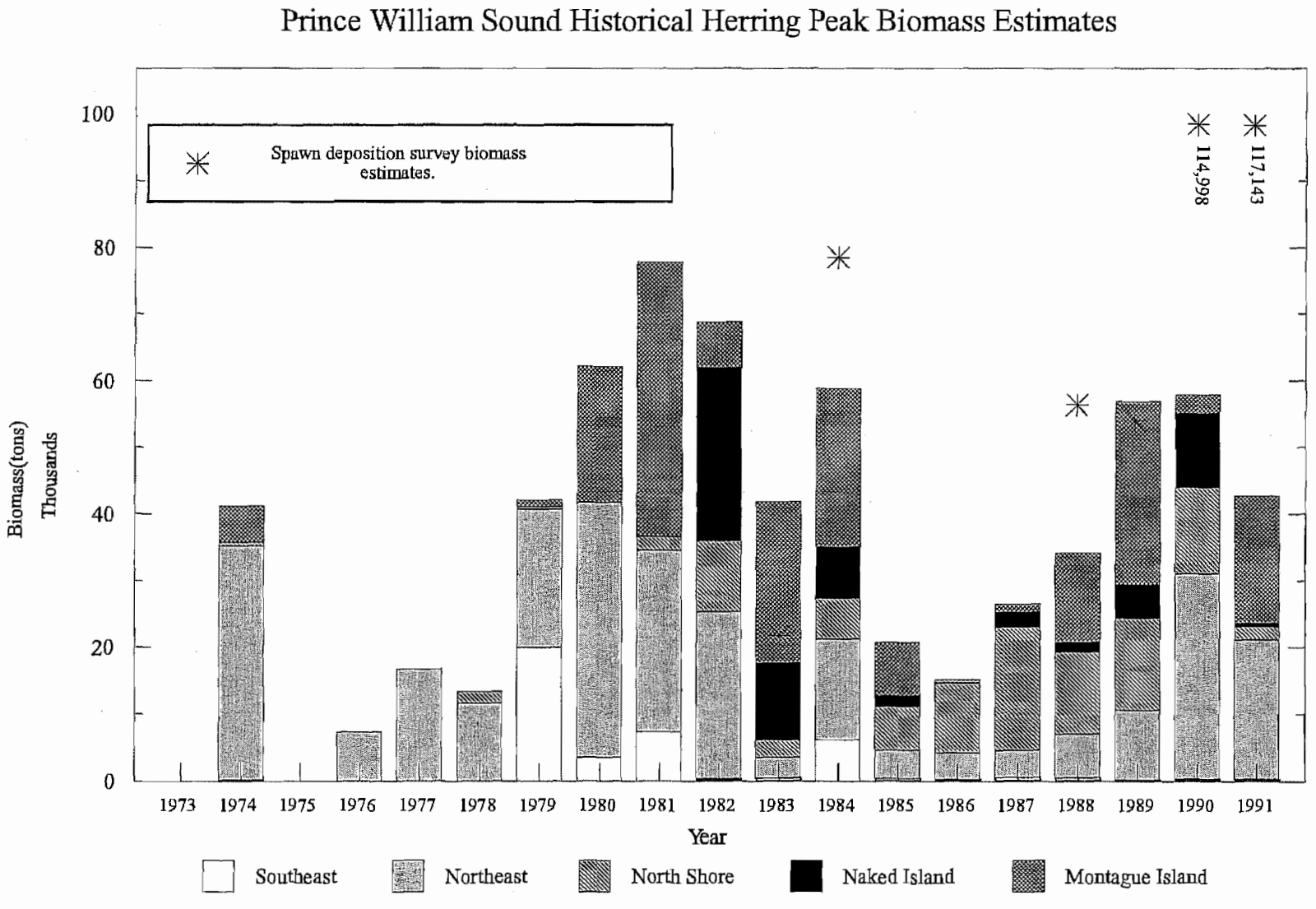
[c]Spawn deposition survey estimates of spawner escapement was, 79,710.

[d]Spawn deposition survey estimate of spawner escapement was, 59,310.

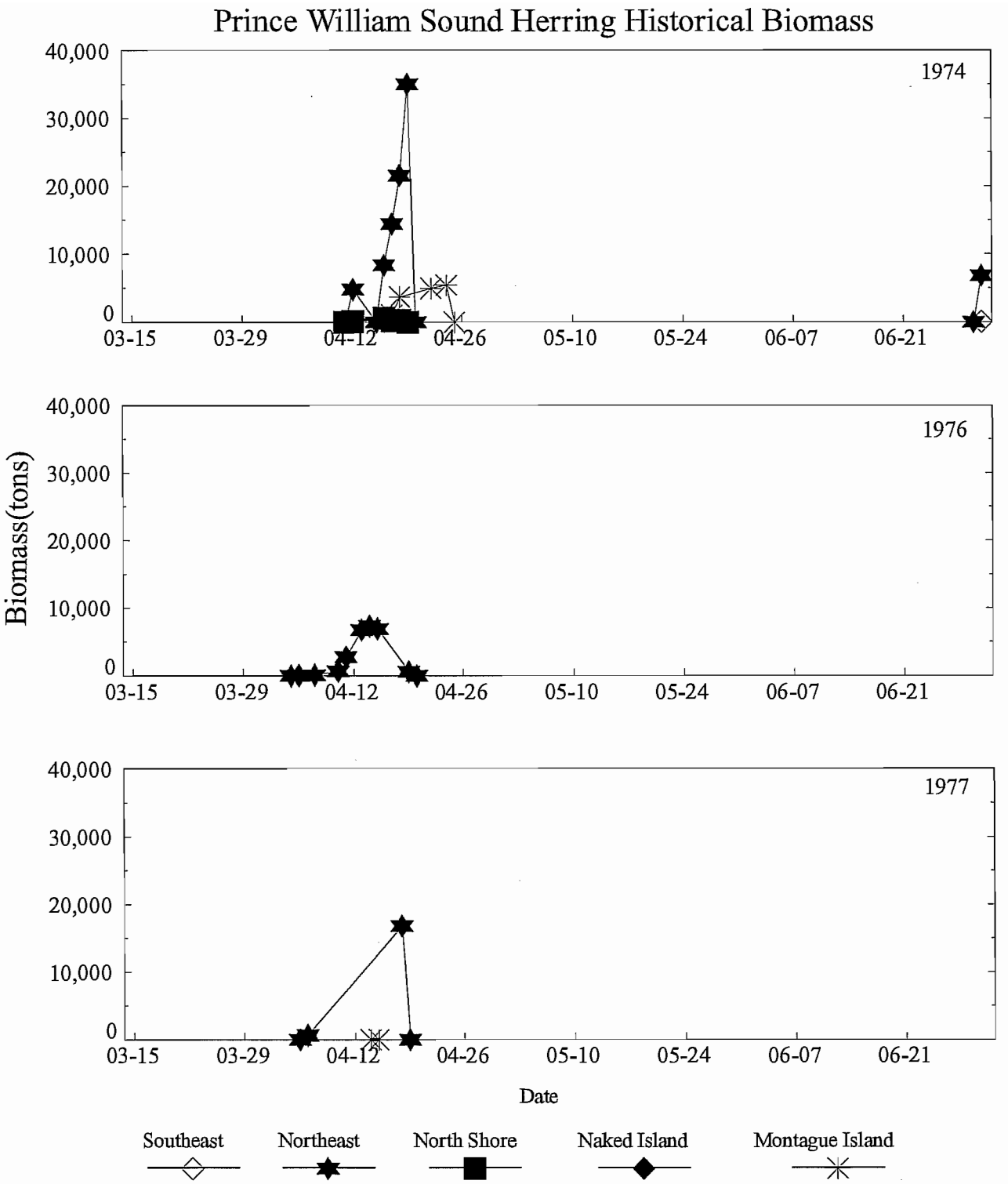
[e]Spawn deposition survey estimate of spawner escapement was, 57,580.

[f]Spawn deposition survey estimates of spawner escapement was, 114,998.

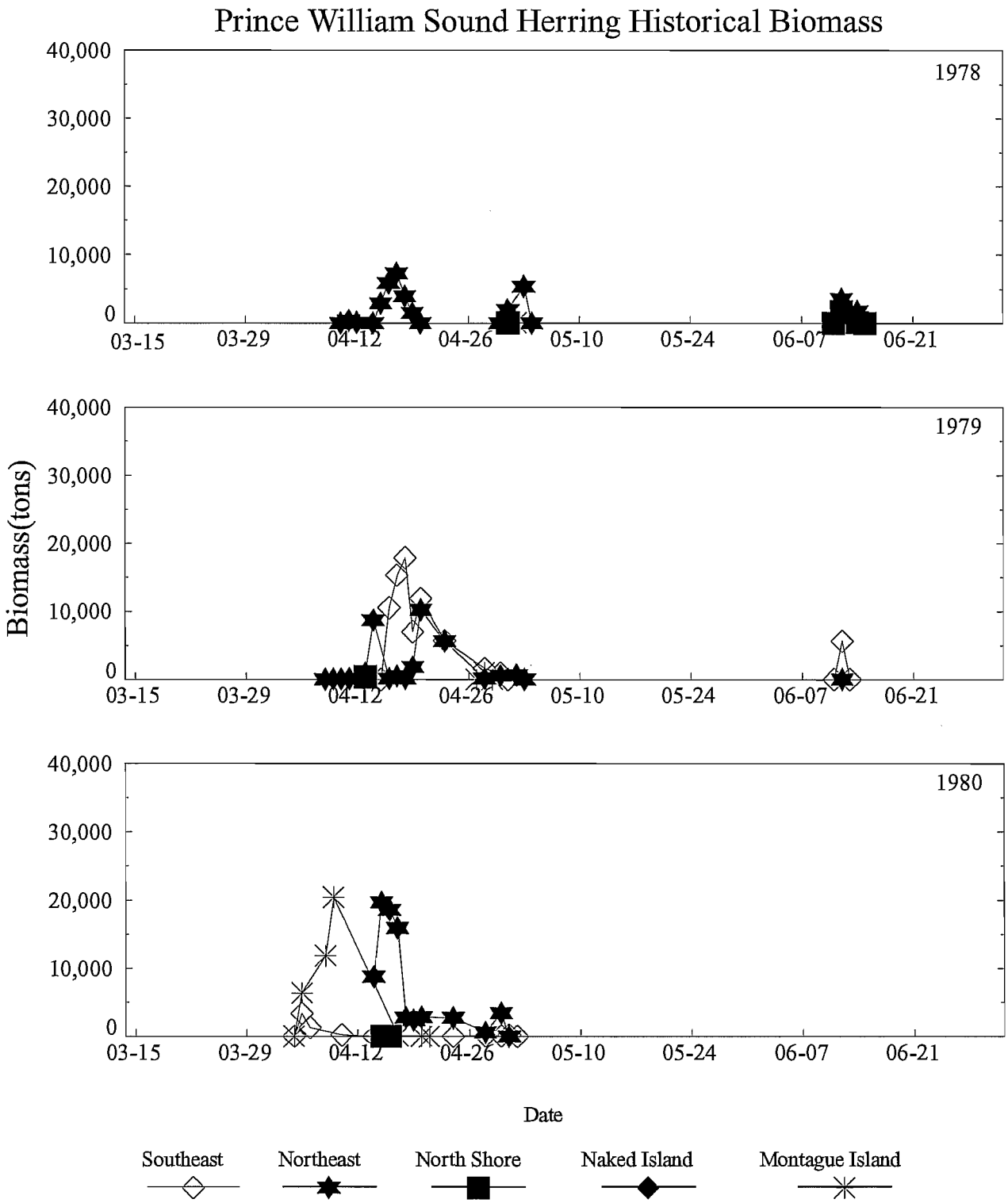
[g]Spawn deposition survey estimate of spawner escapement was, 117,143.



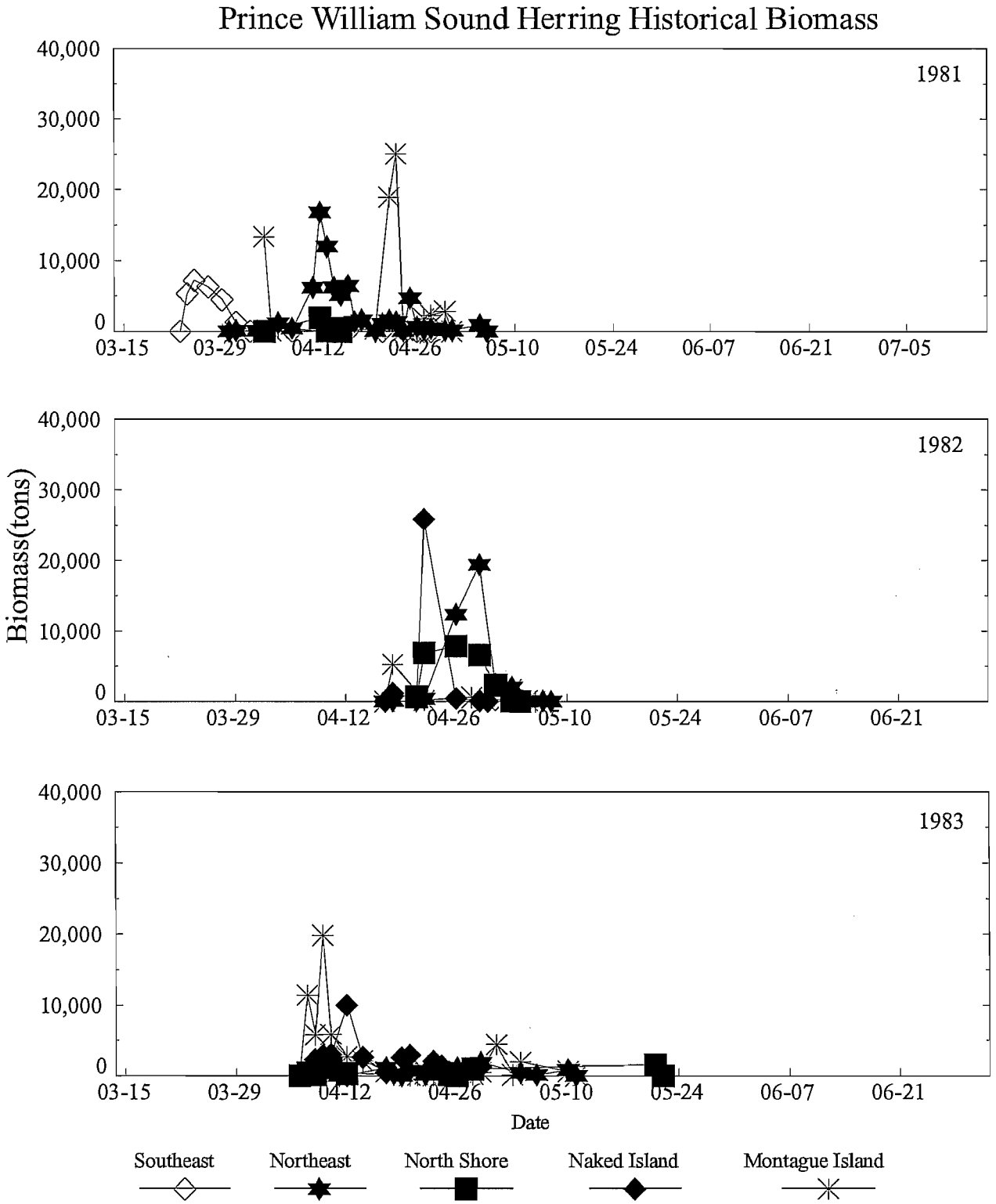
Appendix A.4. Historical herring peak biomass estimates from aerial and spawn deposition surveys by area and year for Prince William Sound, 1973 - 1991.



Appendix A.5. Historical herring biomass estimates from aerial and spawn deposition surveys by area and year for Prince William Sound, 1973-1991.



Appendix A.5. (page 2 of 6)



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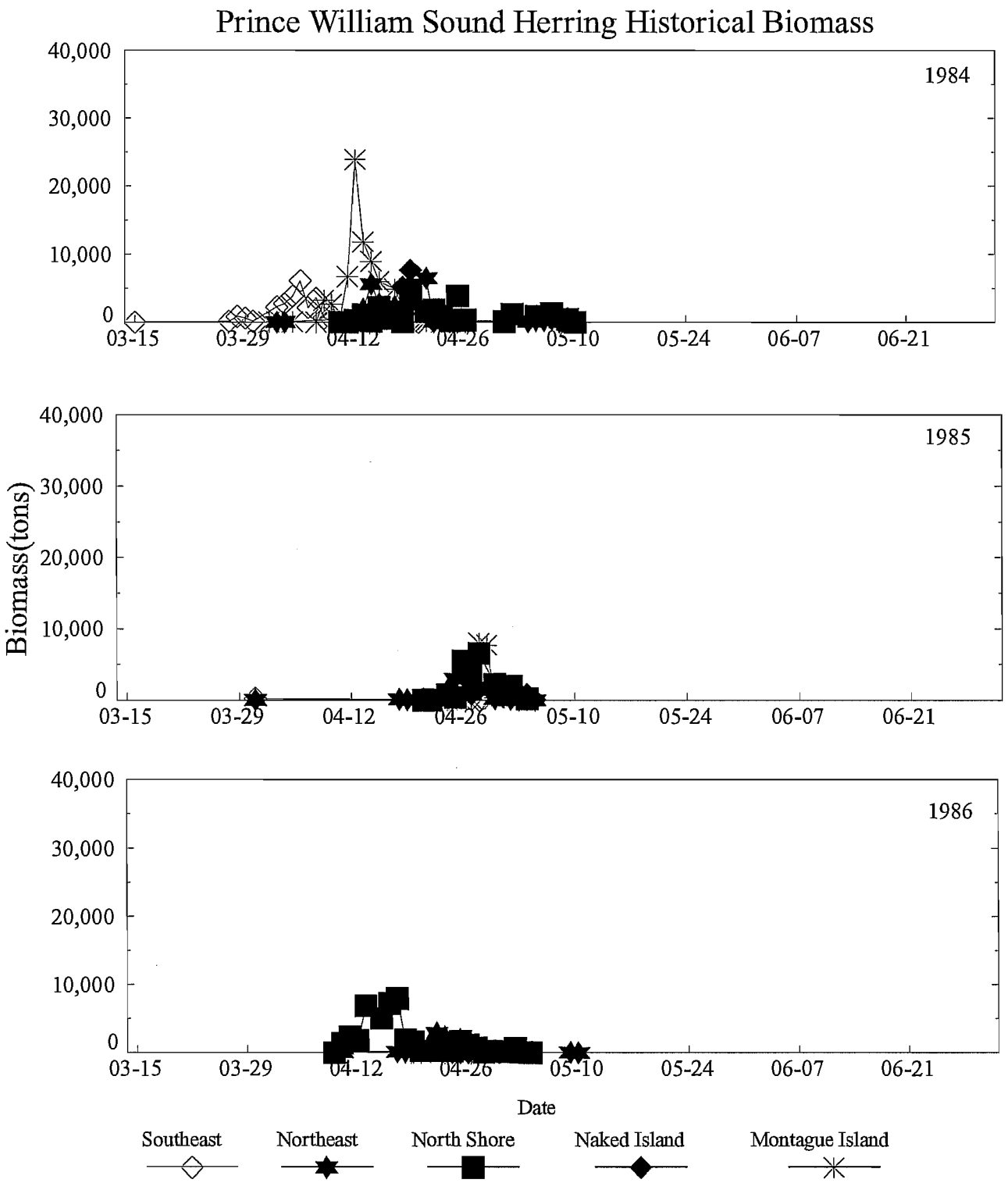

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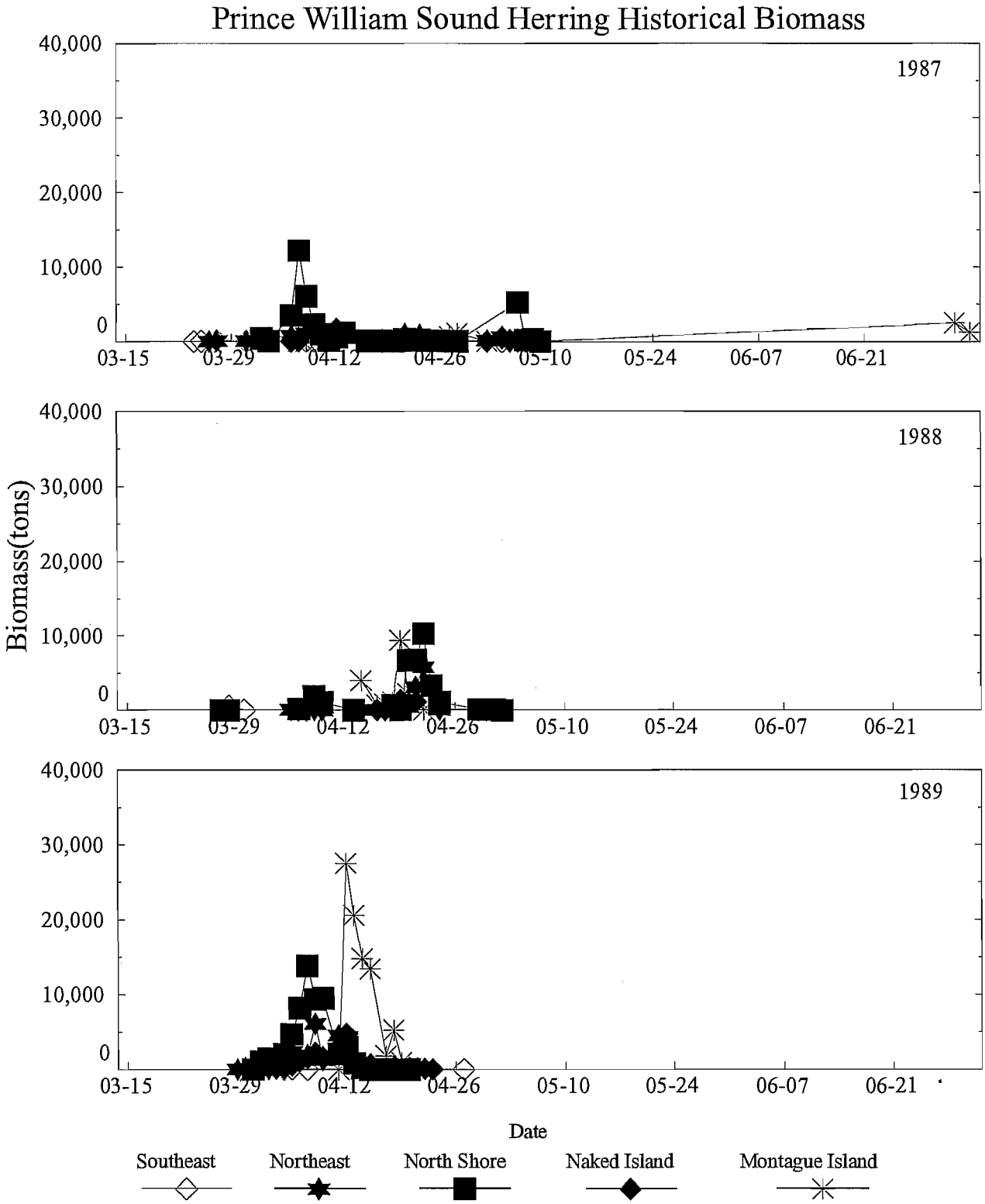
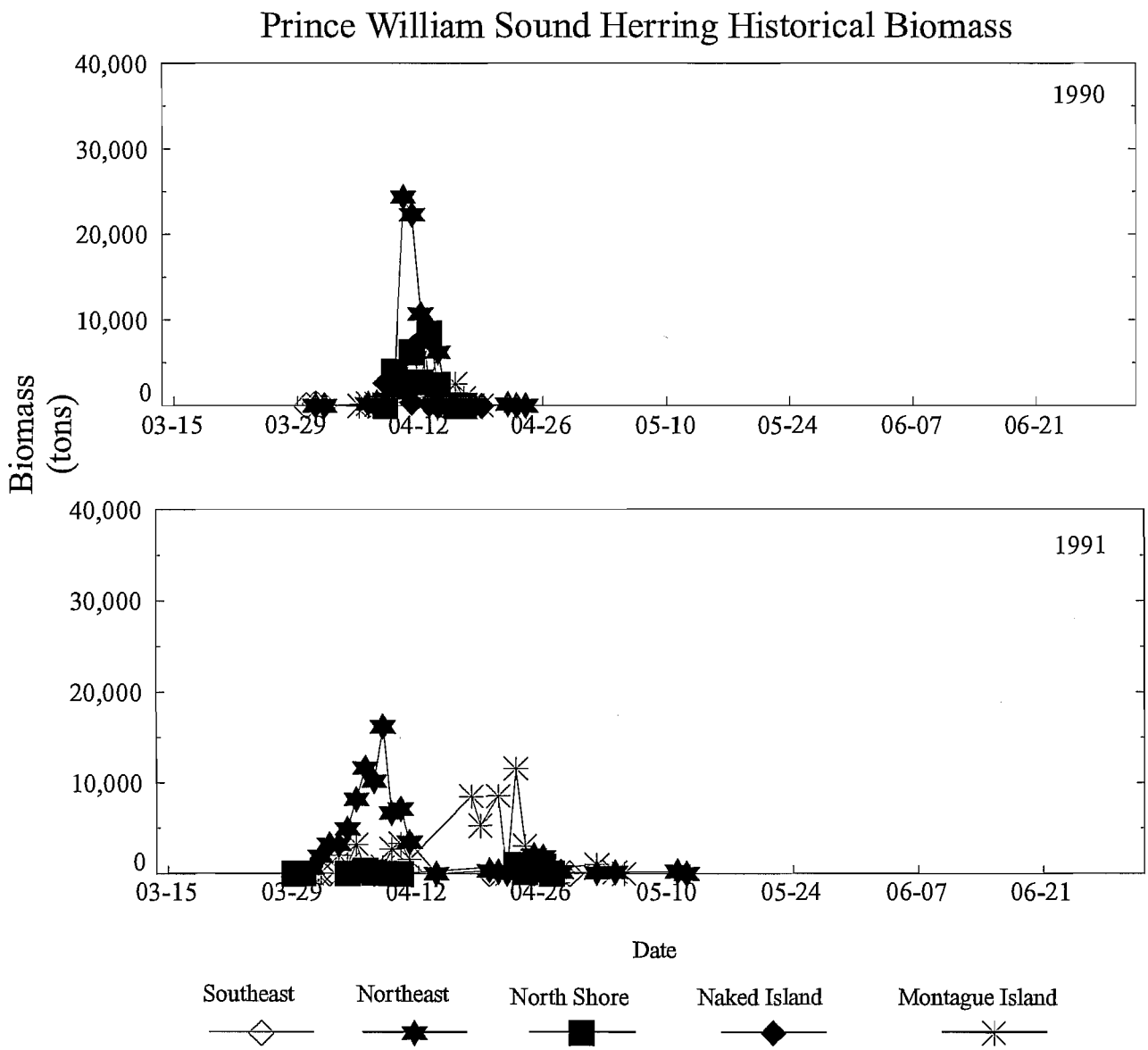


Appendix A.5. (page 5 of 6)

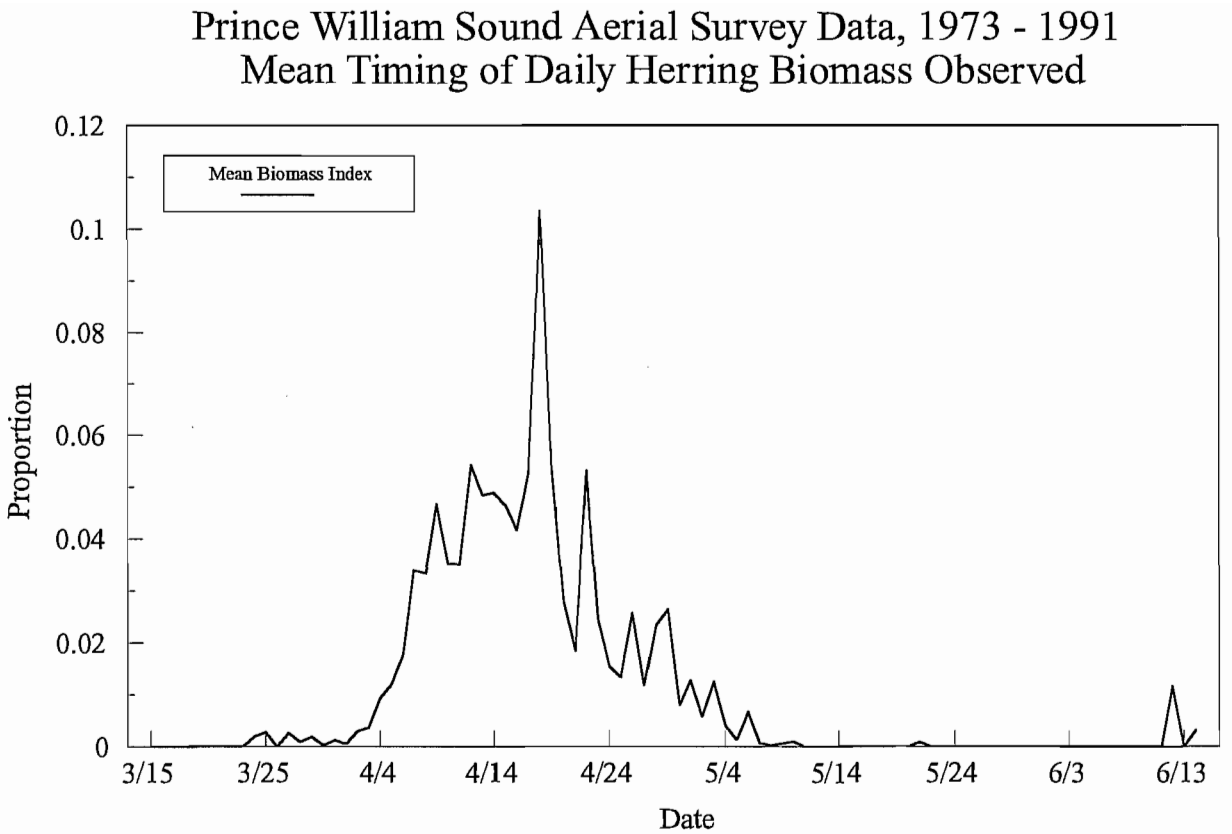


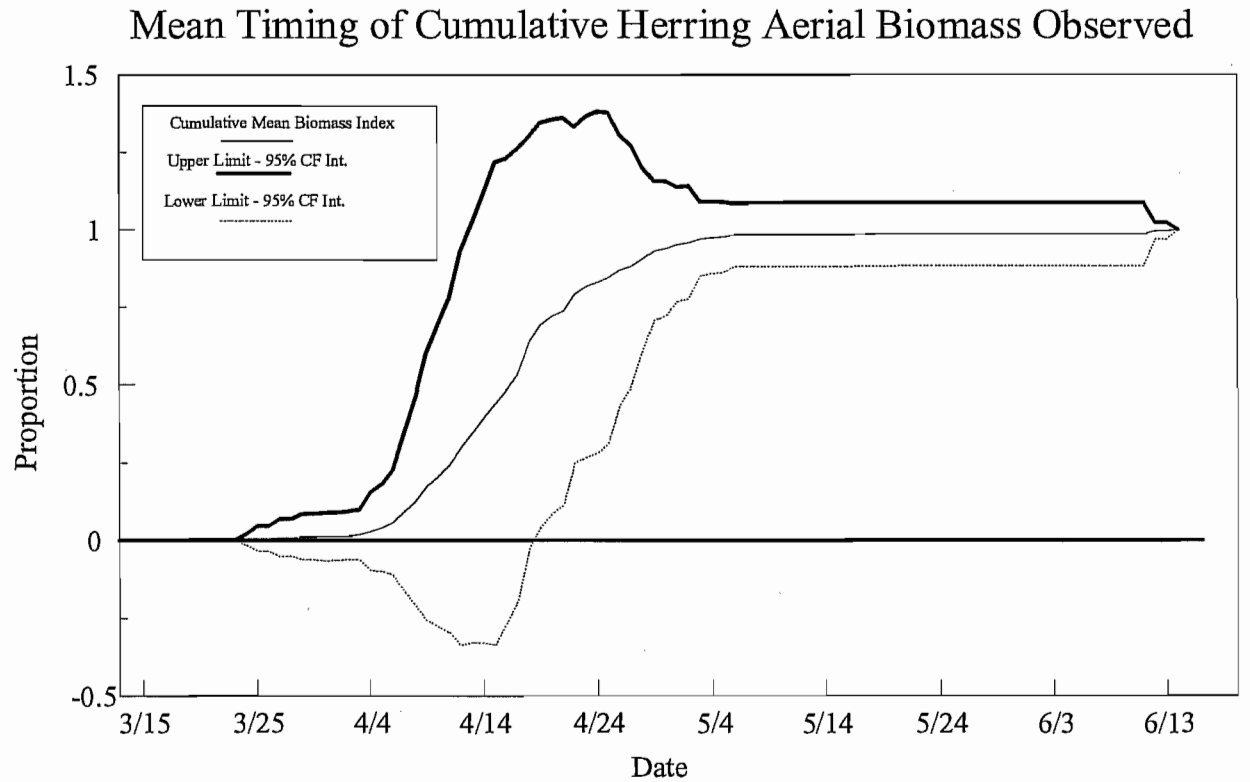
Appendix A.5. (page 6 of 6)

Appendix A.6. Mean dates and standard deviation from annual time series observations of daily herring abundance and miles of spawn, Prince William Sound, 1973 - 1991.

	Biomass		Spawn	
Year	Mean Date	SD (days)	Mean Date	SD (days)
1973	-		4/22	11
1974	4/18	3.1	4/22	3.9
1975	-		4/18	5
1976	4/16	1.7	4/17	4.6
1977	4/20	2.2	4/22	6.7
1978	5/03	22.0	4/18	5.2
1979	4/24	12.5	4/22	4.0
1980	4/16	5.5	4/20	7.4
1981	4/16	10.2	4/20	7.4
1982	4/28	4.0	5/01	2.3
1983	4/17	9.5	4/25	8.2
1984	4/16	6.8	4/21	9.1
1985	4/30	2.9	4/29	3.4
1986	4/20	5.3	4/23	6.7
1987	4/16	10.6	4/18	10.4
1988	4/21	4.1	4/22	4.9
1989	4/13	3.7	4/14	3.4
1990	4/13	1.8	4/16	3.2
1991	4/15	7.8	4/22	9.4
Mean[a]	**4/19**	**6.9**	**4/21**	**6.1**

[a]The mean dates in this row are derived from the mean timing curve generated from the average of the daily proportions for the 17 - 19 years of data.



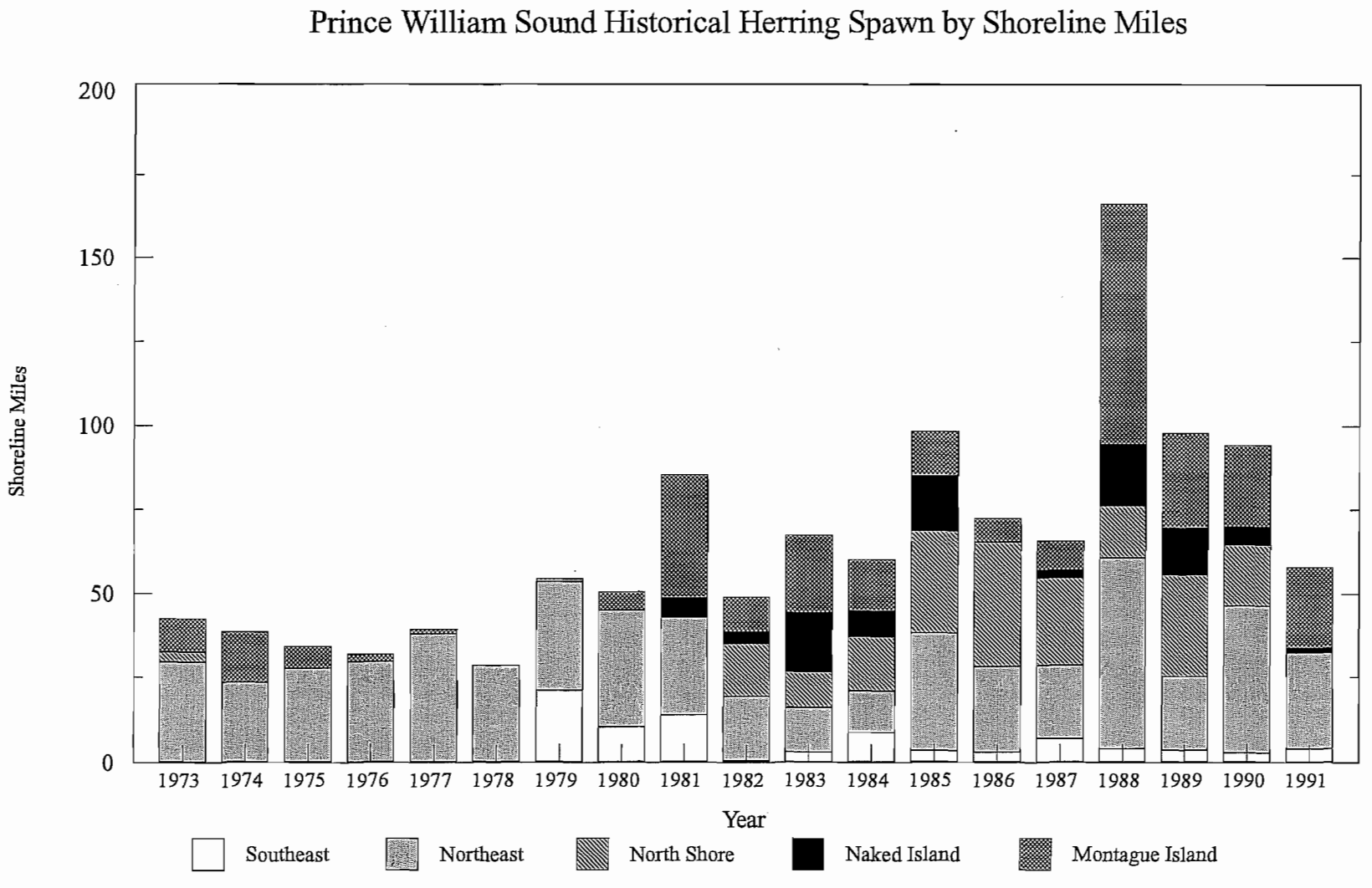


Appendix A.7. Mean timing curve of observed herring biomass from aerial surveys in Prince William Sound, 1973 - 1991.

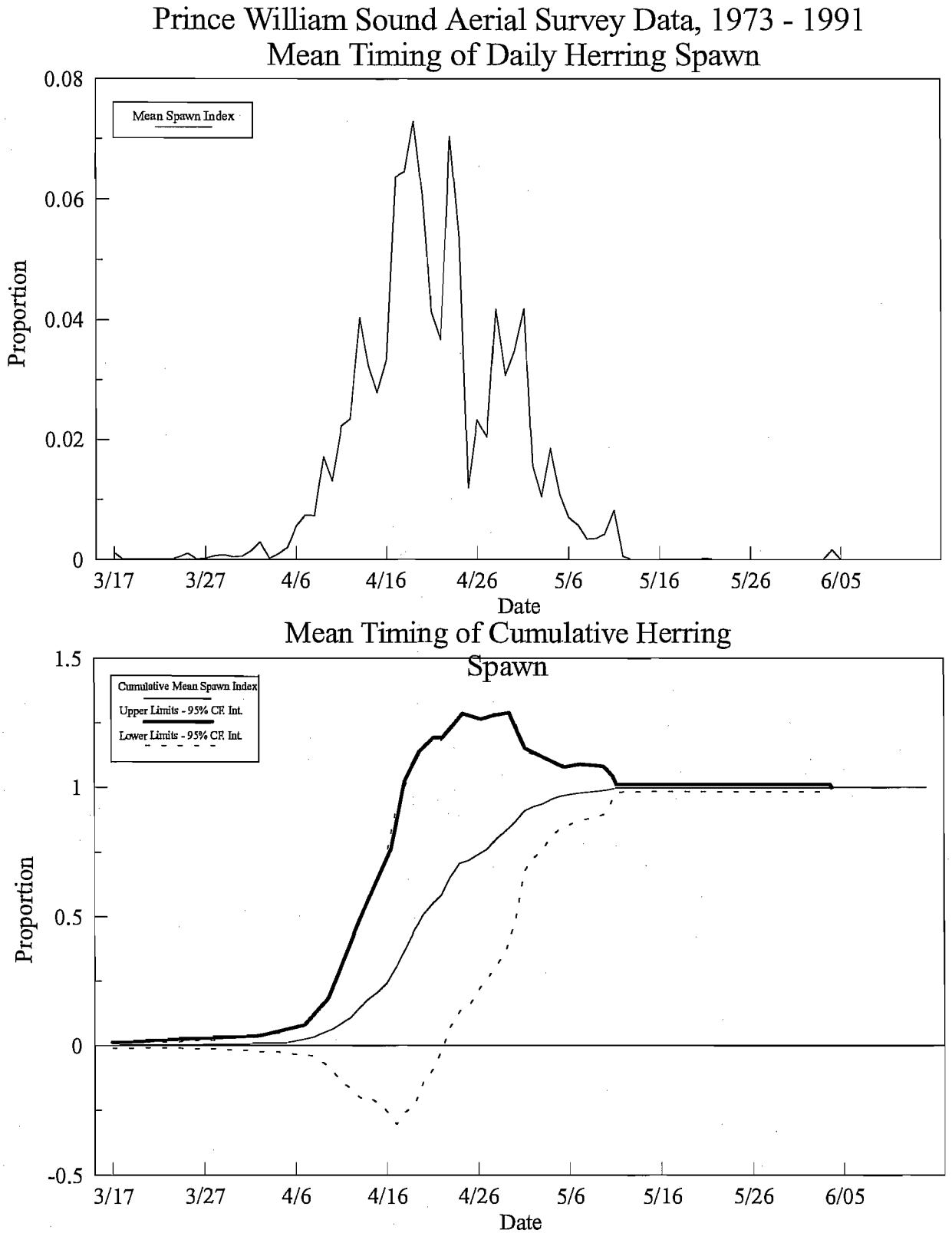
Appendix A.8. Historical herring spawn shoreline miles from aerial and spawn deposition surveys by area and year for Prince William Sound, 1973 - 1991.

Year	Southeast	Northeast	North Shore	Naked Area	Montague Area	Total
1973	0.0	29.5	3.0	0.0	10.0	42.5
1974	0.0	23.5	0.0	0.0	15.0	38.5
1975	0.0	27.7	0.0	0.0	6.5	34.2
1976	0.0	29.6	0.0	0.0	2.3	31.9
1977	0.0	37.8	0.0	0.0	1.5	39.3
1978	0.0	28.5	0.0	0.0	0.2	28.7
1979	21.0	32.5	0.0	0.0	1.0	54.5
1989	10.3	34.8	0.0	0.0	5.5	50.5
1981	13.9	29.0	5.8	0.0	36.8	85.4
1982	0.3	18.9	15.8	3.5	10.5	49.0
1983[a]	2.8	13.3	10.5	17.7	23.1	67.4
1984[a]	8.7	12.1	16.3	7.6	15.5	60.1
1985	3.2	35.0	33.5	16.4	13.2	101.2
1986	2.8	25.5	37.1	0.0	7.0	72.4
1987	6.9	21.3	26.3	2.3	8.5	65.3
1988[a]	3.8	56.9	15.4	18.3	72.0	166.3
1989[a]	3.5	21.6	30.7	13.7	28.9	98.4
1990[a]	2.6	43.7	18.2	5.4	24.2	94.1
1991[a]	3.9	28.5	1.2	0.0	24.4	58.0
Average	**4.4**	**28.9**	**11.2**	**4.5**	**16.1**	**65.1**
Percent of total	**6.8**	**44.4**	**17.2**	**6.9**	**24.7**	

[a]Shoreline miles confirmed by spawn deposition surveys.



Appendix A. 9. Historical herring spawn shoreline miles from aerial and spawn deposition surveys by area and year for Prince William Sound, 1973 - 1991.



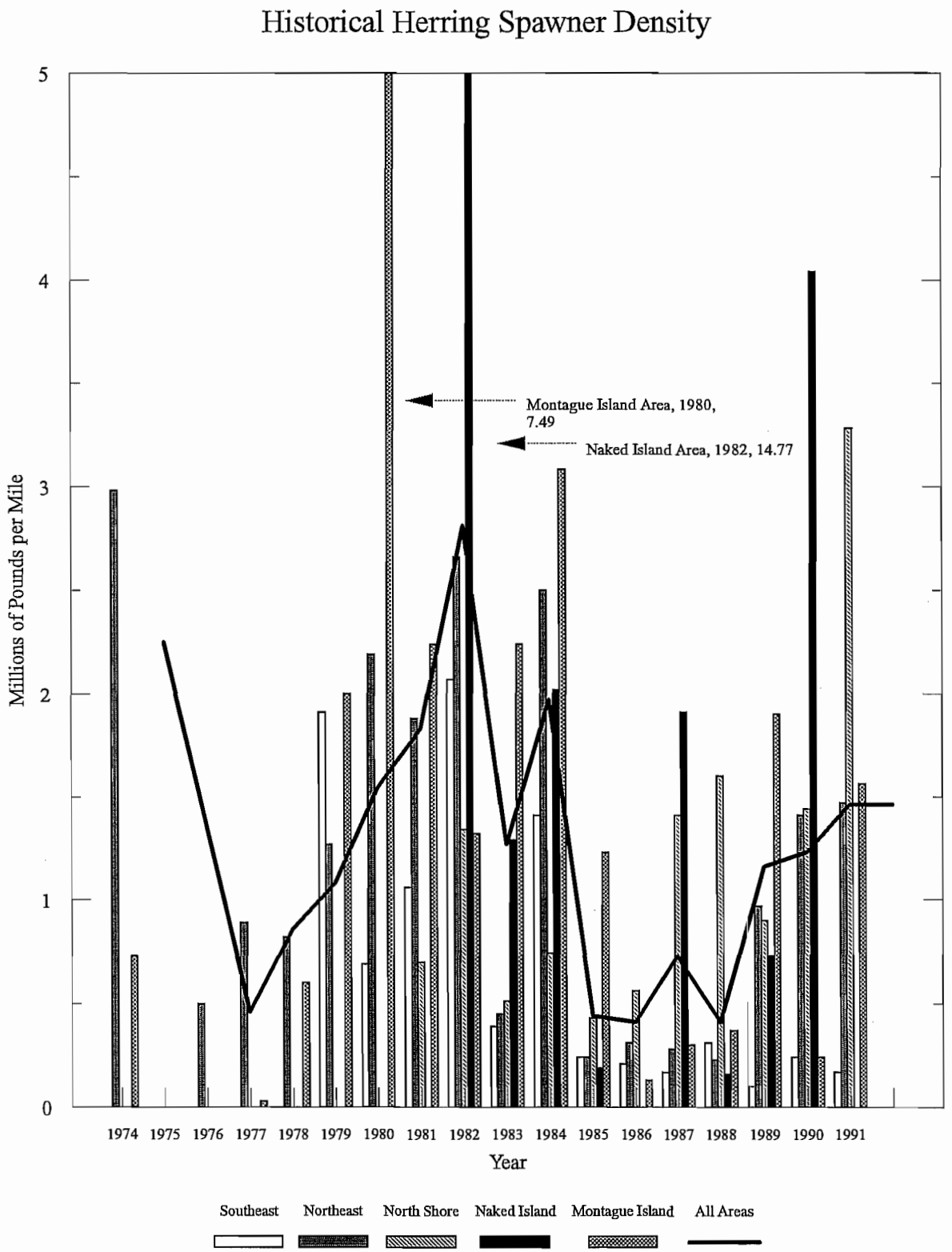
Appendix A. 10. Mean timing for observed herring spawning from aerial surveys in Prince William Sound, 1973 - 1991.

Appendix A.11. Herring spawner density from aerial and spawn deposition surveys by area and year for Prince William Sound, 1973 - 1991.[a]

Herring Spawner Density (millions of pounds of spawners/mile by area)

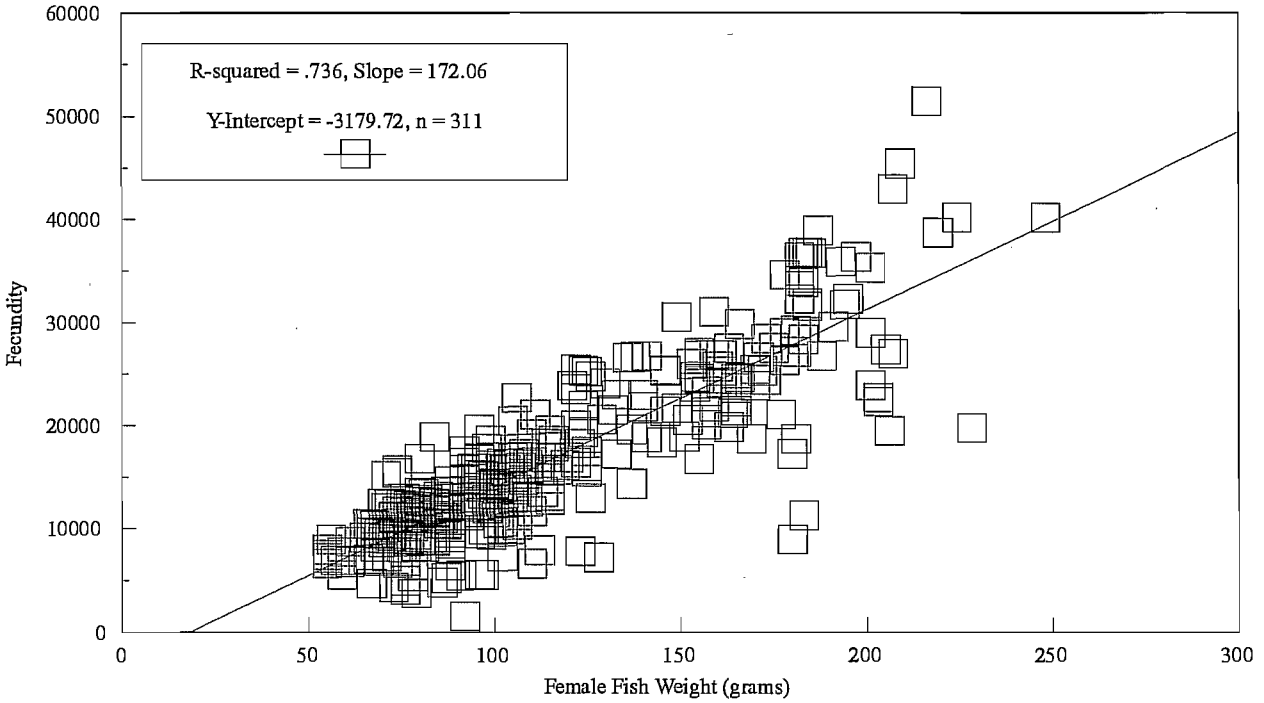
Year	Southeast	Northeast	North Shore	Naked Area	Montague Area	All Areas
1973						
1974		2.98			0.73	2.13
1975						
1976		0.50				0.46
1977		0.89			0.03	0.86
1978		0.82			0.60	0.93
1979	1.91	1.27			2.00	1.54
1980	0.69	2.19			7.49	2.46
1981	1.06	1.88	0.70		2.24	1.82
1982	2.07	2.66	1.34	14.77	1.32	2.81
1983	0.39	0.45	0.51	1.29	2.10	1.24
1984	1.41	2.50	0.74	2.02	3.08	1.96
1985	0.24	0.24	0.39	0.19	1.23	0.41
1986	0.21	0.31	0.56		0.13	0.42
1987	0.17	0.38	1.41	1.91	0.30	0.81
1988	0.31	0.23	1.60	0.16	0.37	0.41
1989	0.10	0.97	0.90	0.73	1.90	1.16
1990	0.24	1.41	1.44	4.04	0.24	1.23
1991	0.17	1.47	3.28		1.56	1.47
Average	**0.69**	**1.24**	**1.17**	**3.14**	**1.58**	**1.30**

[a]Spawner Density is total area estimated peak biomass over total area shoreline miles of spawn.

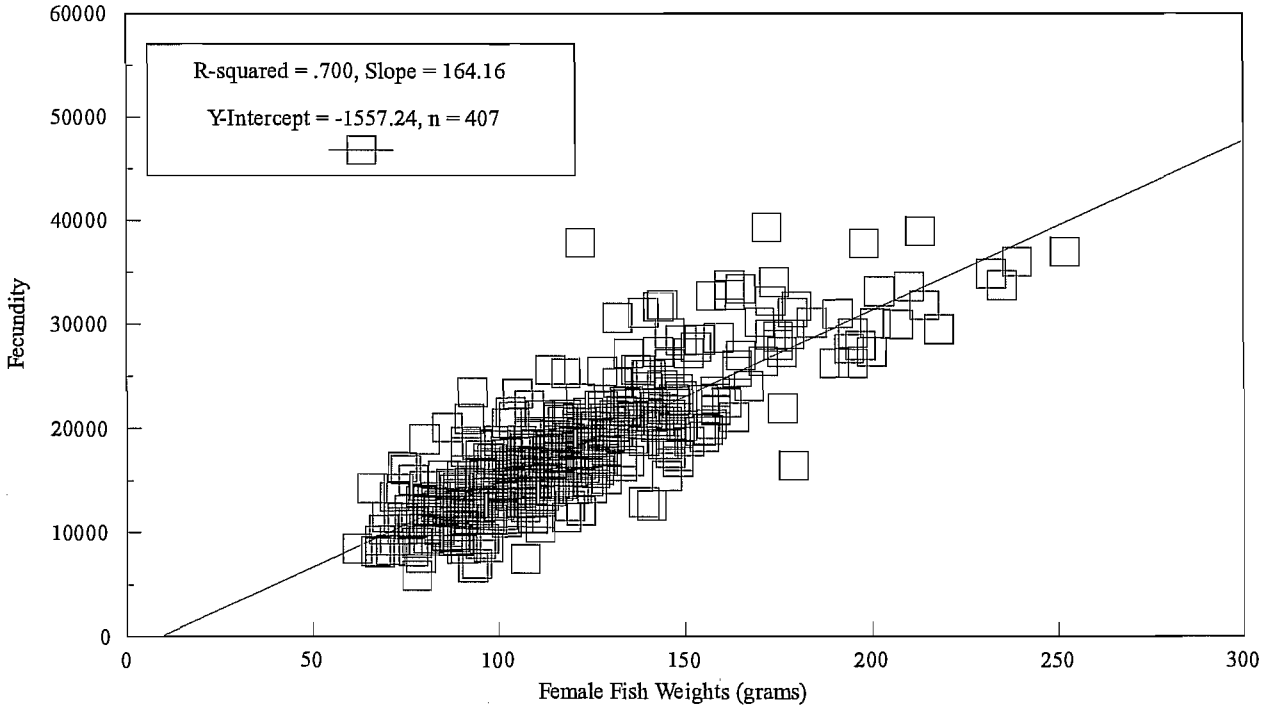


Appendix A.12. Historical herring spawner density from aerial and spawn deposition surveys by area and year for Prince William Sound, 1974 - 1991.

FECUNDITY DATA FOR ALL AREAS COMBINED, 1988

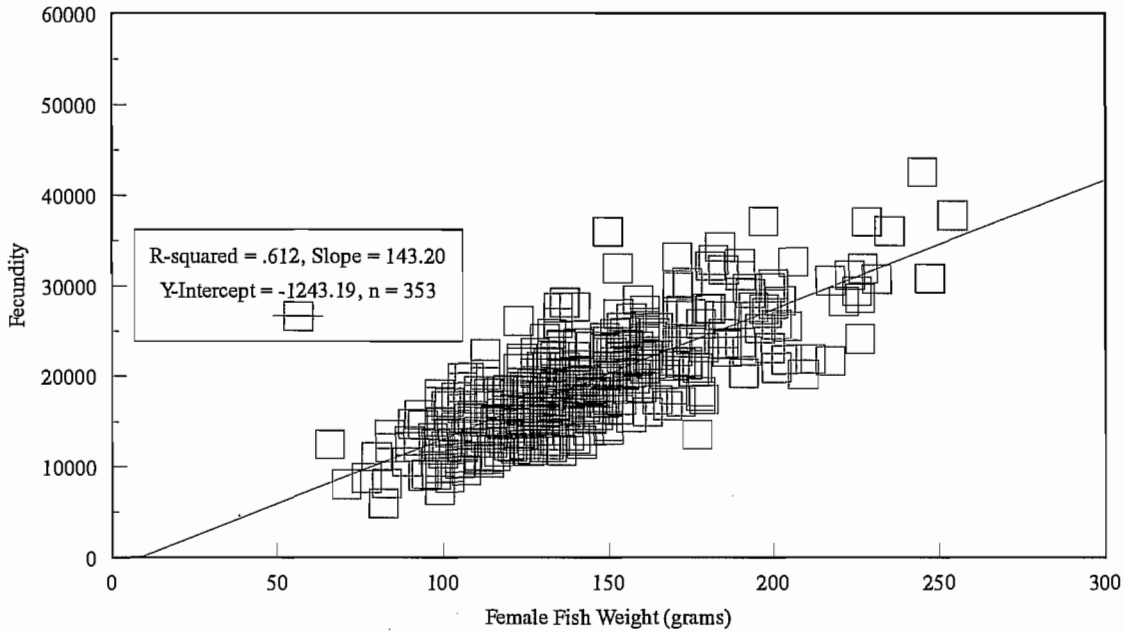


FECUNDITY DATA FOR ALL AREAS COMBINED, 1989

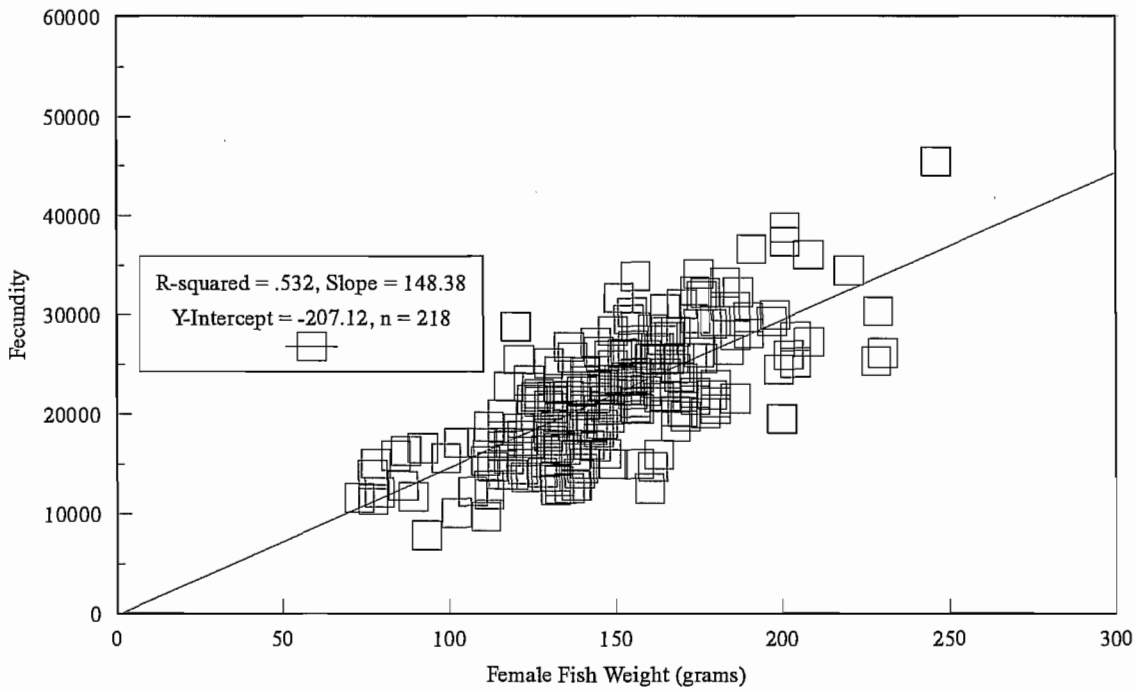


Appendix A. 13. Historical herring fecundity data from the spring purse seine test fishery and pound fishery by year for Prince William Sound, 1988 - 1991.

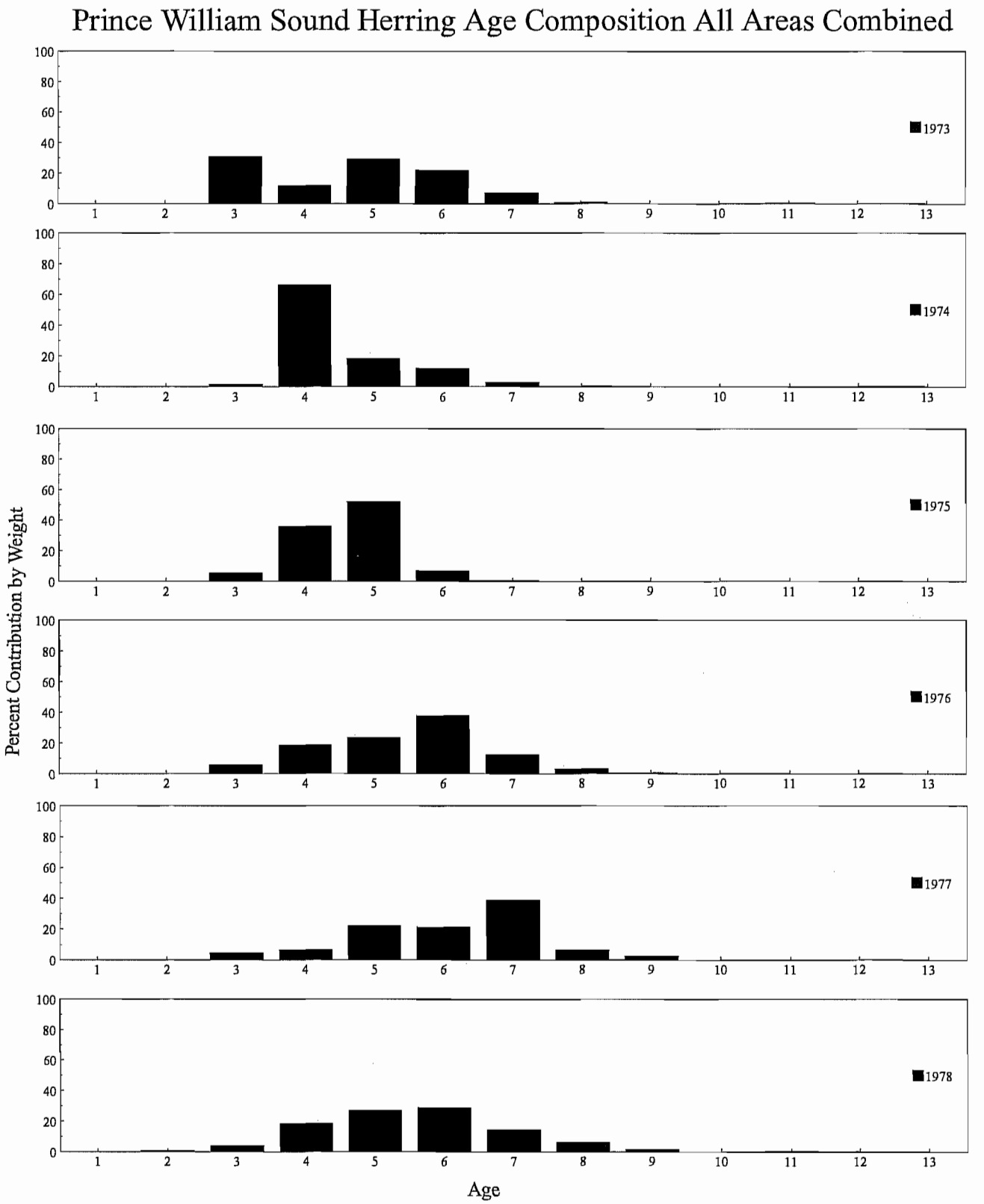
FECUNDITY DATA FOR ALL AREAS COMBINED, 1990



FECUNDITY DATA FOR ALL AREAS COMBINED, 1991

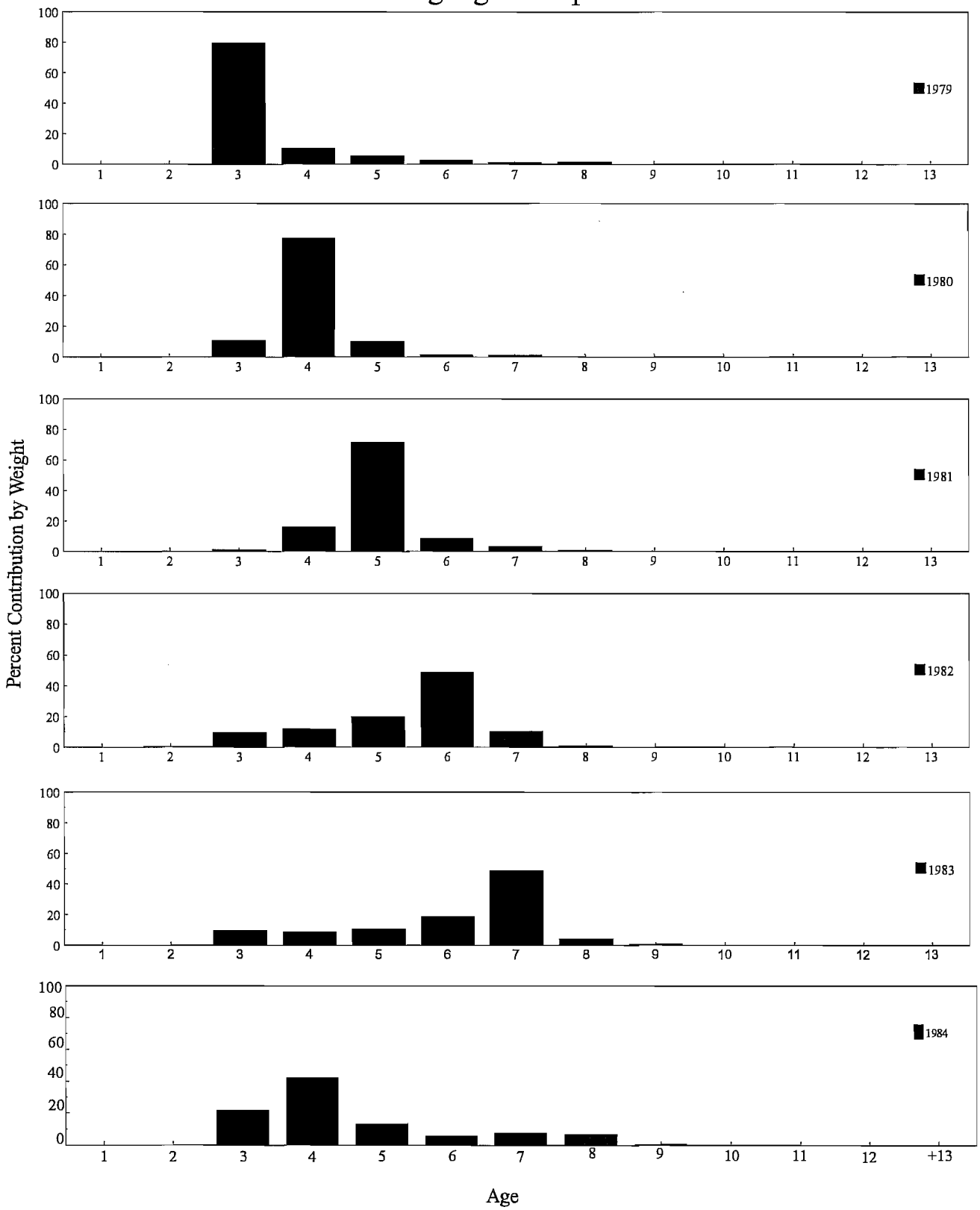


Appendix A.13. (page 2 of 2)



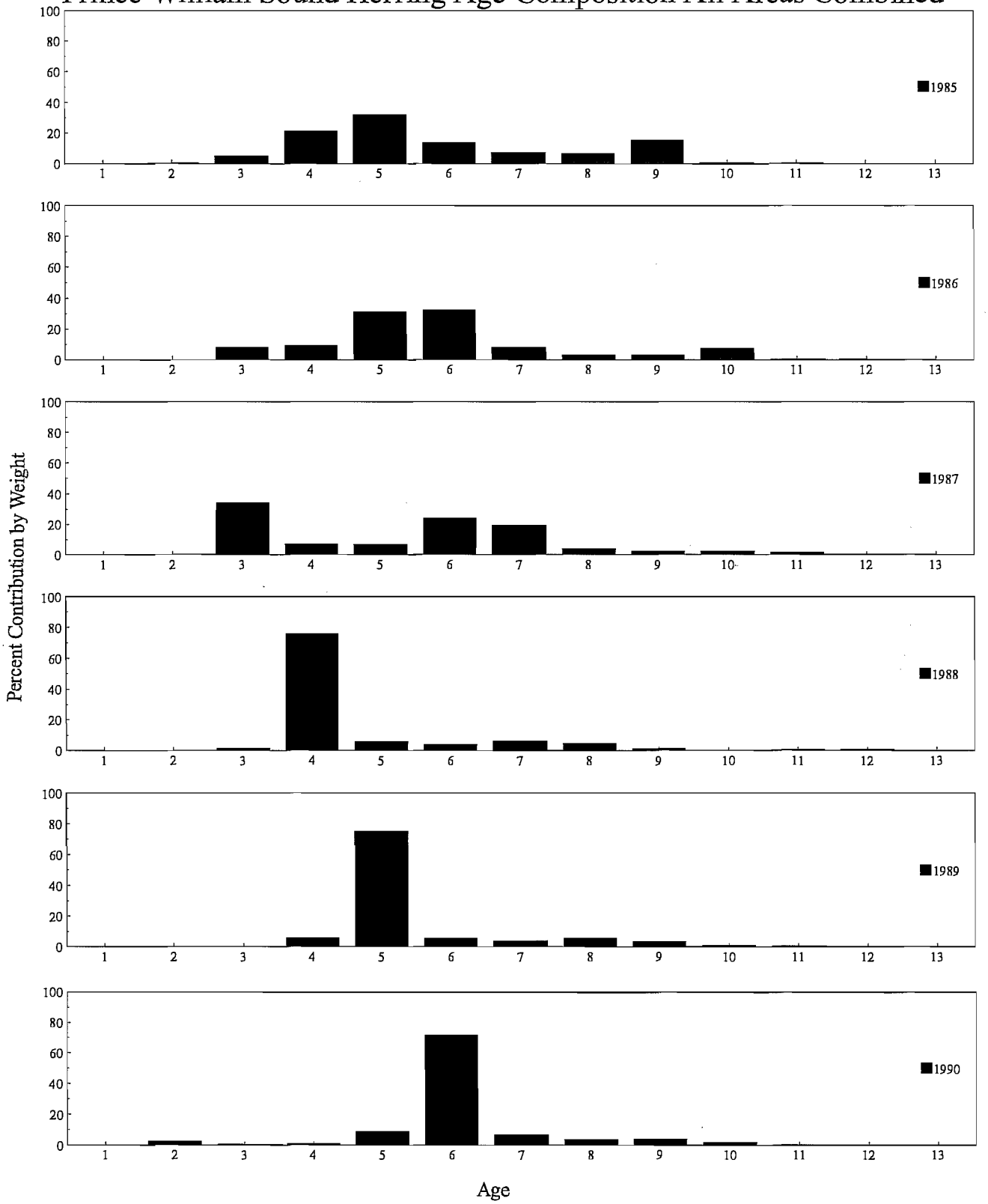
Appendix A.14. Estimates of the contributions of each age and year class to the estimated spawning biomass from aerial and spawn deposition surveys of herring in Prince William Sound, 1973 - 1991.

Prince William Sound Herring Age Composition All Areas Combined



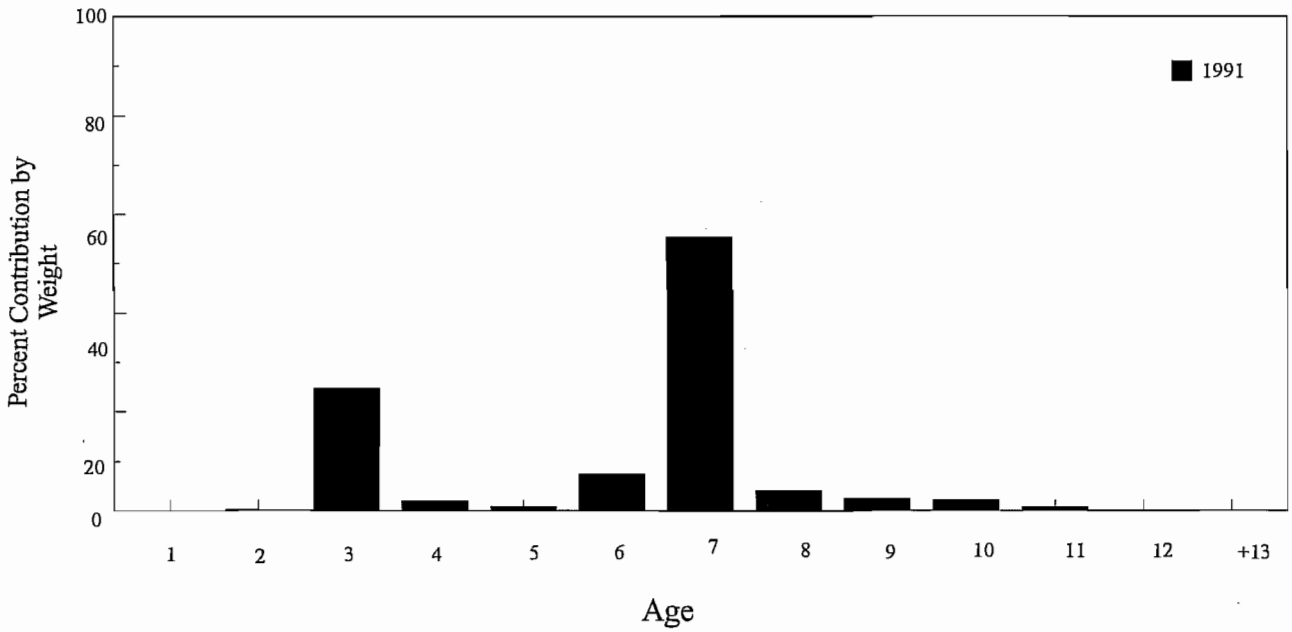
Appendix A.14. (page 2 of 4)

Prince William Sound Herring Age Composition All Areas Combined



Appendix A.14. (page 3 of 4)

Prince William Sound Herring Age Composition All Areas Combined



Appendix A.14. (page 3 of 4)

APPENDIX B: SUMMARY FOR 1973

Appendix B.1. Herring spawn mile days from aerial surveys by area and date for Prince William Sound, 1973. [a]

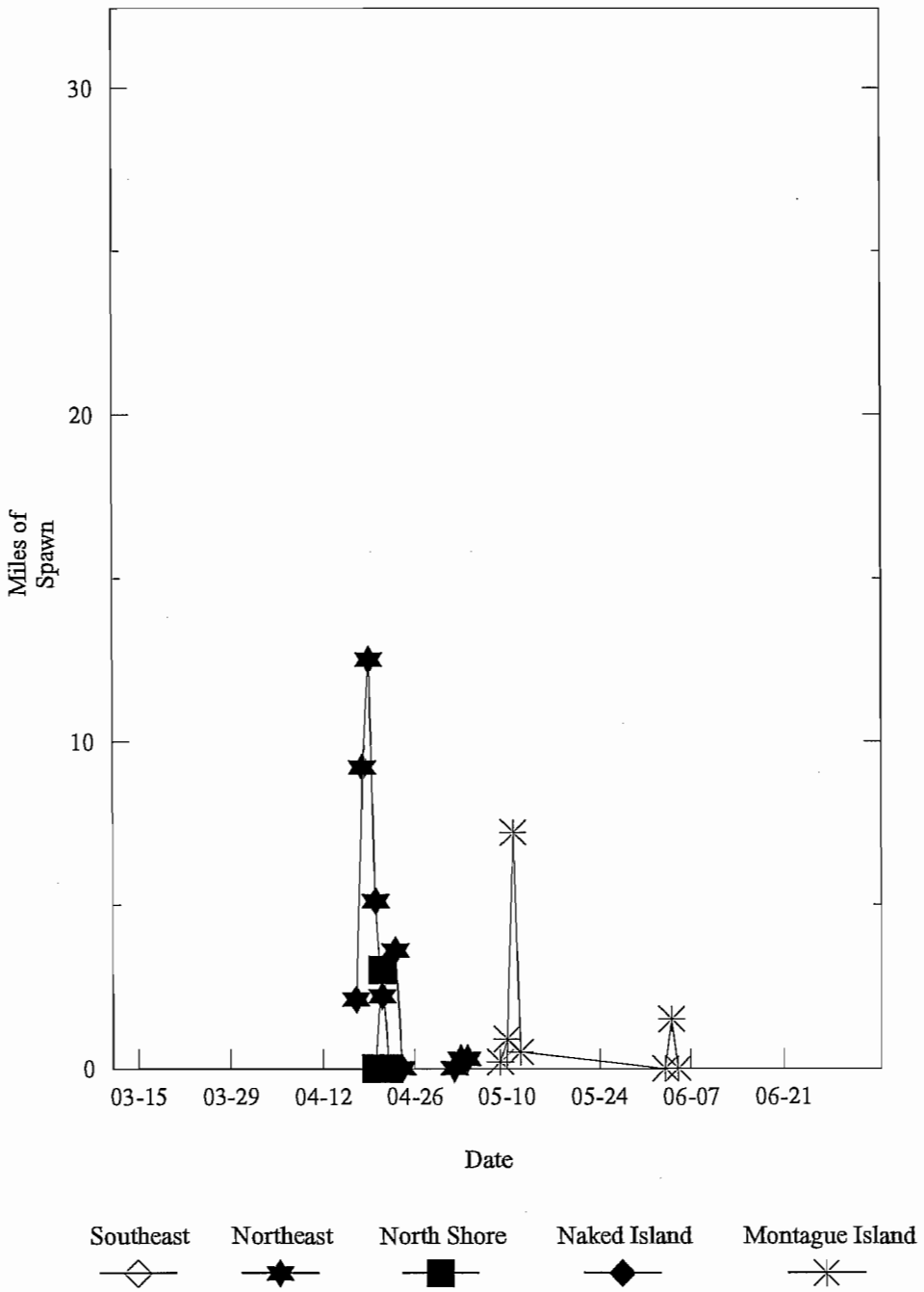
DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
04/17	NS	2.1	NS	NS	NS	2.1	04/17
04/18	NS	9.2	NS	NS	NS	9.2	04/18
04/19	NS	12.5	NS	NS	NS	12.5	04/19
04/20	NS	5.1	NS	NS	NS	5.1	04/20
04/21	NS	2.2	3.0	NS	NS	5.2	04/21
04/23	NS	3.6	NS	NS	NS	3.6	04/23
05/03	NS	0.3	NS	NS	NS	0.3	05/03
05/04	NS	0.3	NS	NS	NS	0.3	05/04
05/09	NS	NS	NS	NS	0.2	0.2	05/09
05/10	NS	NS	NS	NS	0.9	0.9	05/10
05/11	NS	NS	NS	NS	7.2	7.2	05/11
05/12	NS	NS	NS	NS	0.5	0.5	05/12
06/04	NS	NS	NS	NS	1.5	1.5	06/04
Mile Days	**NS**	**35.3**	**3.0**	**NS**	**10.3**	**48.6**	**Total**
Shoreline Miles	**0.0**	**29.5**	**3.0**	**0.0**	**10.0**	**42.5**	**Total**

a Dates displayed are for actual survey days.

NS = Not Surveyed

Note: Biomass estimates are not available for 1973.

Prince William Sound Spawn Miles by Area 1973



Appendix B.2. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1973

Appendix B.3. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound , 1973.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1972	1	0			0.0	0.0%	0.0	0.0%
1971	2	0			0.0	0.0%	0.0	0.0%
1970	3	252	69	178	0.0	30.4%	0.0	44.4%
1969	4	67	98	198	0.0	11.5%	0.0	11.8%
1968	5	132	124	214	0.0	28.7%	0.0	23.3%
1967	6	86	142	222	0.0	21.4%	0.0	15.2%
1966	7	27	149	224	0.0	7.0%	0.0	4.8%
1965	8	2	193	243	0.0	0.7%	0.0	0.4%
1964	9	0			0.0	0.0%	0.0	0.0%
1963	10	0			0.0	0.0%	0.0	0.0%
1962	11	1	180	225	0.0	0.3%	0.0	0.2%
1961	12	0			0.0	0.0%	0.0	0.0%
1960	13+	0			0.0	0.0%	0.0	0.0%
Total		**567**	**100**	**198**	**0.0**	**100.0%**	**0.0**	**100.0%**

Montague Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1972	1	0			0.0	0.0%	0.0	0.0%
1971	2	0			0.0	0.0%	0.0	0.0%
1970	3	201	68	176	0.0	0.0%	0.0	90.5%
1969	4	18	83	183	0.0	0.0%	0.0	8.1%
1968	5	3	131	210	0.0	0.0%	0.0	1.4%
1967	6	0			0.0	0.0%	0.0	0.0%
1966	7	0			0.0	0.0%	0.0	0.0%
1965	8	0			0.0	0.0%	0.0	0.0%
1964	9	0			0.0	0.0%	0.0	0.0%
1963	10	0			0.0	0.0%	0.0	0.0%
1962	11	0			0.0	0.0%	0.0	0.0%
1961	12	0			0.0	0.0%	0.0	0.0%
1960	13+	0			0.0	0.0%	0.0	0.0%
Total		**222**	**70**	**177**	**0.0**	**0.0%**	**0.0**	**100.0%**

-Continued-

Appendix B.3. (page 2 of 2)

North Shore

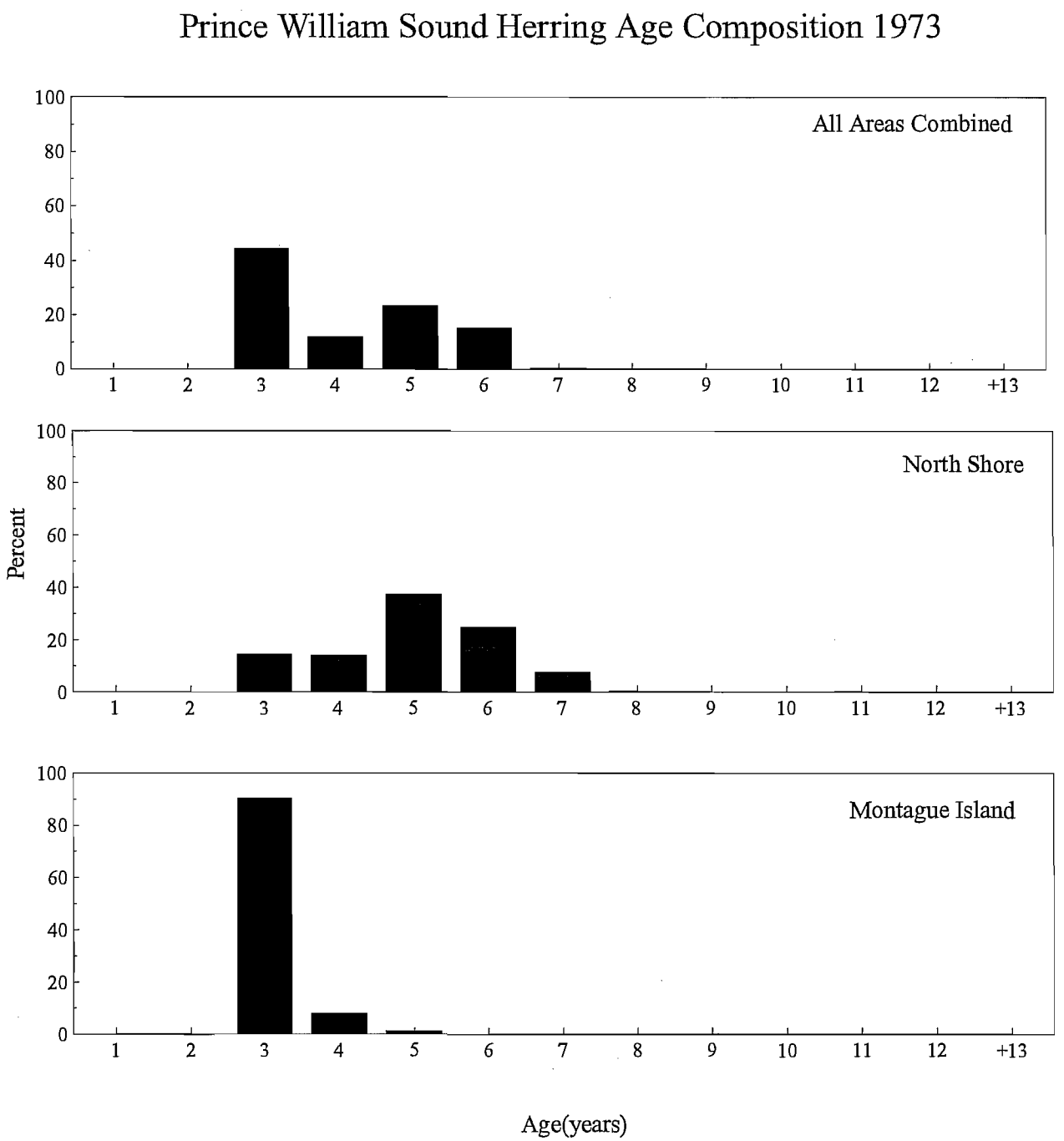
Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Biomass by Age Class: Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1972	1	0			0.0	0.0%	0.0	0.0%
1971	2	0			0.0	0.0%	0.0	0.0%
1970	3	51	73	183	0.0	0.0%	0.0	14.8%
1969	4	49	103	203	0.0	0.0%	0.0	14.2%
1968	5	129	124	214	0.0	0.0%	0.0	37.4%
1967	6	86	142	222	0.0	0.0%	0.0	24.9%
1966	7	27	149	224	0.0	0.0%	0.0	7.8%
1965	8	2	193	243	0.0	0.0%	0.0	0.6%
1964	9	0			0.0	0.0%	0.0	0.0%
1963	10	0			0.0	0.0%	0.0	0.0%
1962	11	1	180	225	0.0	0.0%	0.0	0.3%
1961	12	0			0.0	0.0%	0.0	0.0%
1960	13+	0			0.0	0.0%	0.0	0.0%
Total		**345**	**120**	**211**	**0.0**	**0.0%**	**0.0**	**100.0%**

Appendix B.4. Age, sex and size composition of Pacific herring from the purse seine sac roe fishery, Prince William Sound, 1973.

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	201	201	90.5	68	-	201	176	-	201
Rocky Bay	4	-	-	18	18	8.1	83	-	18	183	-	18
Montague Island	5	-	-	3	3	1.4	131	-	3	210	-	3
Spring, 1973	6	-	-	-	-	-	-	-	-	-	-	-
Purse Seine	7	-	-	-	-	-	-	-	-	-	-	-
Sac Roe Harvest	8	-	-	-	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13											
Total		-	-	**222**	**222**	**100.0**	**70**	-	**222**	**177**	-	**222**
	2	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	51	51	14.8	73	-	51	183	-	51
Columbia Bay	4	-	-	49	49	14.2	103	-	49	203	-	49
North Shore	5	-	-	129	129	37.4	124	-	129	214	-	129
Spring, 1973	6	-	-	86	86	24.9	142	-	86	222	-	86
Purse Seine	7	-	-	27	27	7.8	149	-	27	224	-	27
Sac Roe Harvest	8	-	-	2	2	0.6	193	-	2	243	-	2
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	1	1	0.3	180	-	1	225	-	1
	12	-	-	-	-	-	-	-	-	-	-	-
	+13											
Total		-	-	**345**	**345**	**100.0**	**120**	-	**345**	**211**	-	**345**

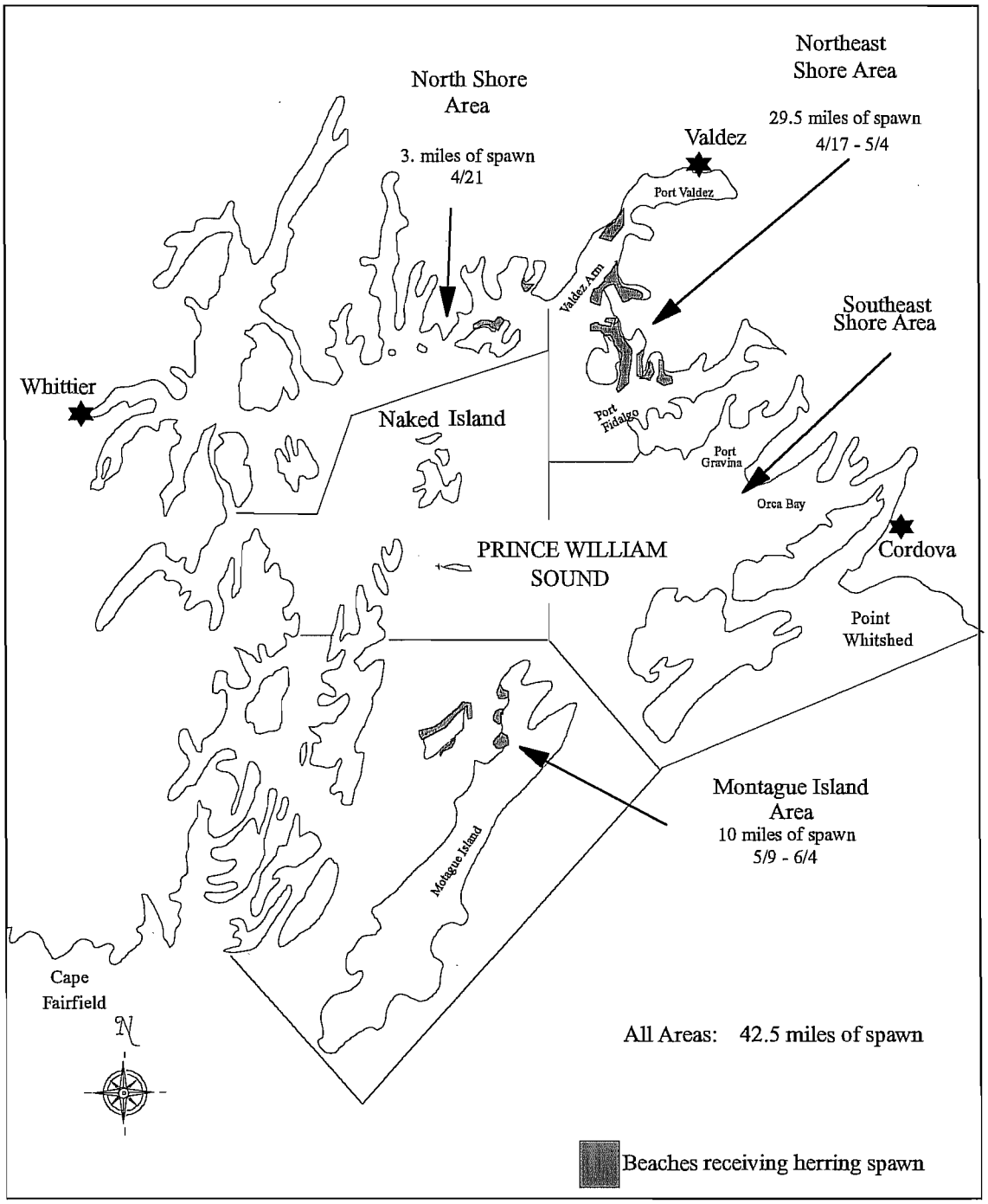
Indicates dominant age class.

Note: A test gillnet sample was collected at Bligh Island and due to gear selectivity, the AWL data is not representative of the spawning biomass.



Appendix B.5. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound, 1973.

Historical Herring Spawn and Shoreline Mileage



Appendix B.6. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys for 1973.

APPENDIX C: SUMMARY FOR 1974

Appendix C.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1974.[a]

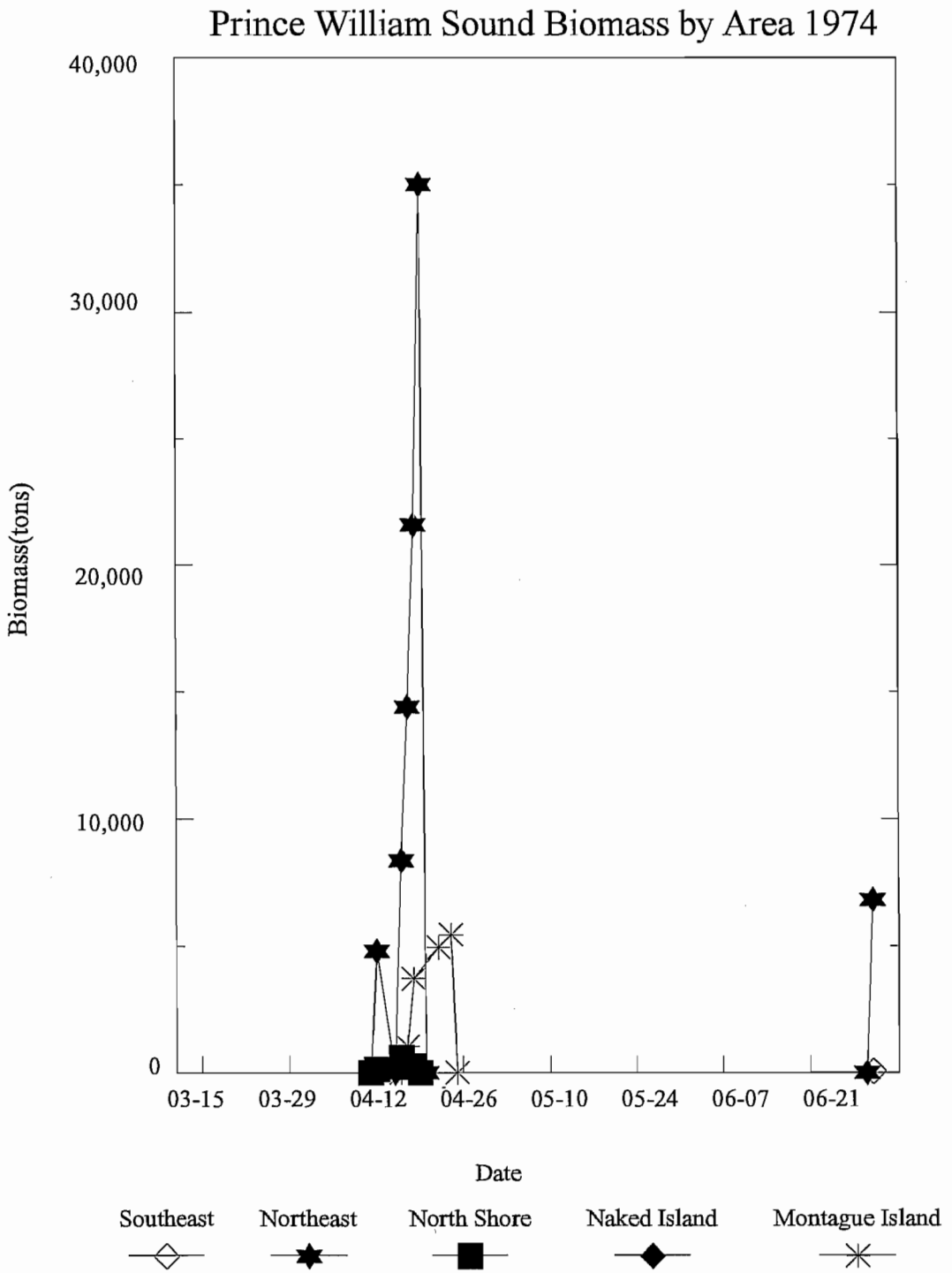
DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
04/05	0	0	NS	NS	NS	0	04/05
04/12	NS	4,790	120	NS	NS	4,910	04/12
04/16	NS	8,350	590	NS	NS	8,940	04/16
04/17	NS	14,410	210	NS	1,050	15,670	04/17
04/18	NS	21,570	250	NS	3,710	25,530	04/18
04/19	NS	35,000	NS	NS	NS	35,000	04/19
04/20	NS	0	NS	NS	NS	NS	04/20
04/22	NS	NS	NS	NS	4,940	4,940	04/22
04/24	NS	NS	NS	NS	5,440	5,440	04/24
04/26	0	NS	NS	NS	0	0	04/26
04/27	NS	NS	NS	NS	NS	0	04/27
04/29	NS	0	NS	NS	0	0	04/29
07/01	50	6,810	NS	NS	NS	6,860	07/01
AREA TOTAL	**50**	**90,930**	**1,170**	**NS**	**15,140**	**107,290**	**TOTAL**
PEAK ESTIMATES	**50**	**35,000**	**590**	**0**	**5,440**	**41,080**	**PEAK**

[a]Dates displayed are for actual survey days.
NS = Not Surveyed

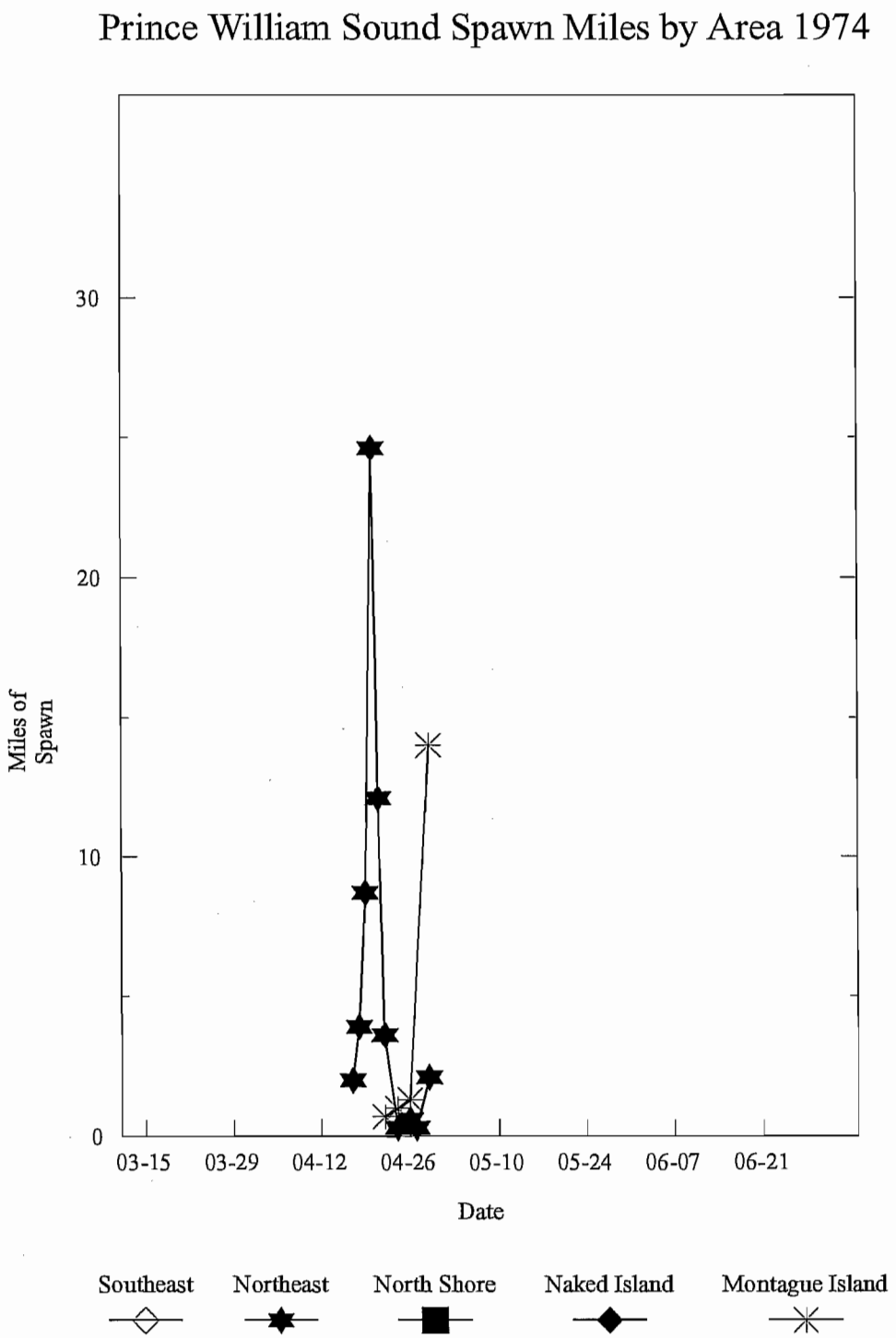
Appendix C.2. Herring spawn mile days from aerial surveys by area and date for Prince William Sound, 1974.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
04/05	0.0	NS	NS	NS	NS	0.0	04/05
04/12	NS	0.0	0.0	NS	NS	0.0	04/12
04/16	NS	0.0	0.0	NS	NS	0.0	04/16
04/17	NS	2.0	NS	NS	NS	2.0	04/17
04/18	NS	3.9	NS	NS	NS	3.9	04/18
04/19	NS	8.7	NS	NS	NS	8.7	04/19
04/20	NS	24.6	NS	NS	NS	24.6	04/20
04/21	NS	12.1	NS	NS	NS	12.1	04/21
04/22	NS	3.6	NS	NS	0.7	4.3	04/22
04/24	NS	0.3	NS	NS	1.0	1.3	04/24
04/26	NS	0.6	NS	NS	1.3	1.9	04/26
04/27	NS	0.3	NS	NS	NS	0.3	04/27
04/29	NS	2.1	NS	NS	14.0	16.1	04/29
07/01	0.0	0.0	NS	NS	NS	0.0	07/01
Mile Days	**0.0**	**58.2**	**0.0**	**NS**	**17.0**	**75.2**	**Total**
Shoreline Miles	0.0	23.5	0.0	0.0	15.0	38.5	Total

a Dates displayed are for actual survey days.
NS = Not Surveyed



Appendix C.3. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1974.



Appendix C.4. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1974.

Appendix C.5. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound , 1974.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1973	1	0			0.0	0.0%	0.0	0.0%
1972	2	0			0.0	0.0%	0.0	0.0%
1971	3	15	100	181	627.2	1.5%	5,509.7	1.7%
1970	4	643	101	195	27,155.4	66.1%	236,183.5	72.2%
1969	5	137	129	215	7,389.8	18.0%	50,322.1	15.4%
1968	6	78	148	225	4,827.0	11.8%	28,650.6	8.8%
1967	7	16	152	229	1,016.9	2.5%	5,877.0	1.8%
1966	8	1	152	223	63.6	0.2%	367.3	0.1%
1965	9	0			0.0	0.0%	0.0	0.0%
1964	10	0			0.0	0.0%	0.0	0.0%
1963	11	0			0.0	0.0%	0.0	0.0%
1962	12	0			0.0	0.0%	0.0	0.0%
1961	13+	0			0.0	0.0%	0.0	0.0%
Total		**890**	**114**	**205**	**41,080.0**	**100.0%**	**326,910.3**	**100.0%**

North Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1973	1	0			0.0	0.0%	0.0	0.0%
1972	2	0			0.0	0.0%	0.0	0.0%
1971	3	6	100	182	4.9	0.8%	44.2	0.9%
1970	4	409	101	197	336.7	57.1%	3,014.6	64.2%
1969	5	129	129	216	135.6	23.0%	950.8	20.3%
1968	6	76	148	225	91.7	15.5%	560.2	11.9%
1967	7	16	152	229	19.8	3.4%	117.9	2.5%
1966	8	1	152	223	1.2	0.2%	7.4	0.2%
1965	9	0			0.0	0.0%	0.0	0.0%
1964	10	0			0.0	0.0%	0.0	0.0%
1963	11	0			0.0	0.0%	0.0	0.0%
1962	12	0			0.0	0.0%	0.0	0.0%
1961	13+	0			0.0	0.0%	0.0	0.0%
Total		**637**	**114**	**205**	**590.0**	**100.0%**	**4,695.2**	**100.0%**

-Continued-

Appendix C.5. (page 2 of 2)

Montague Island

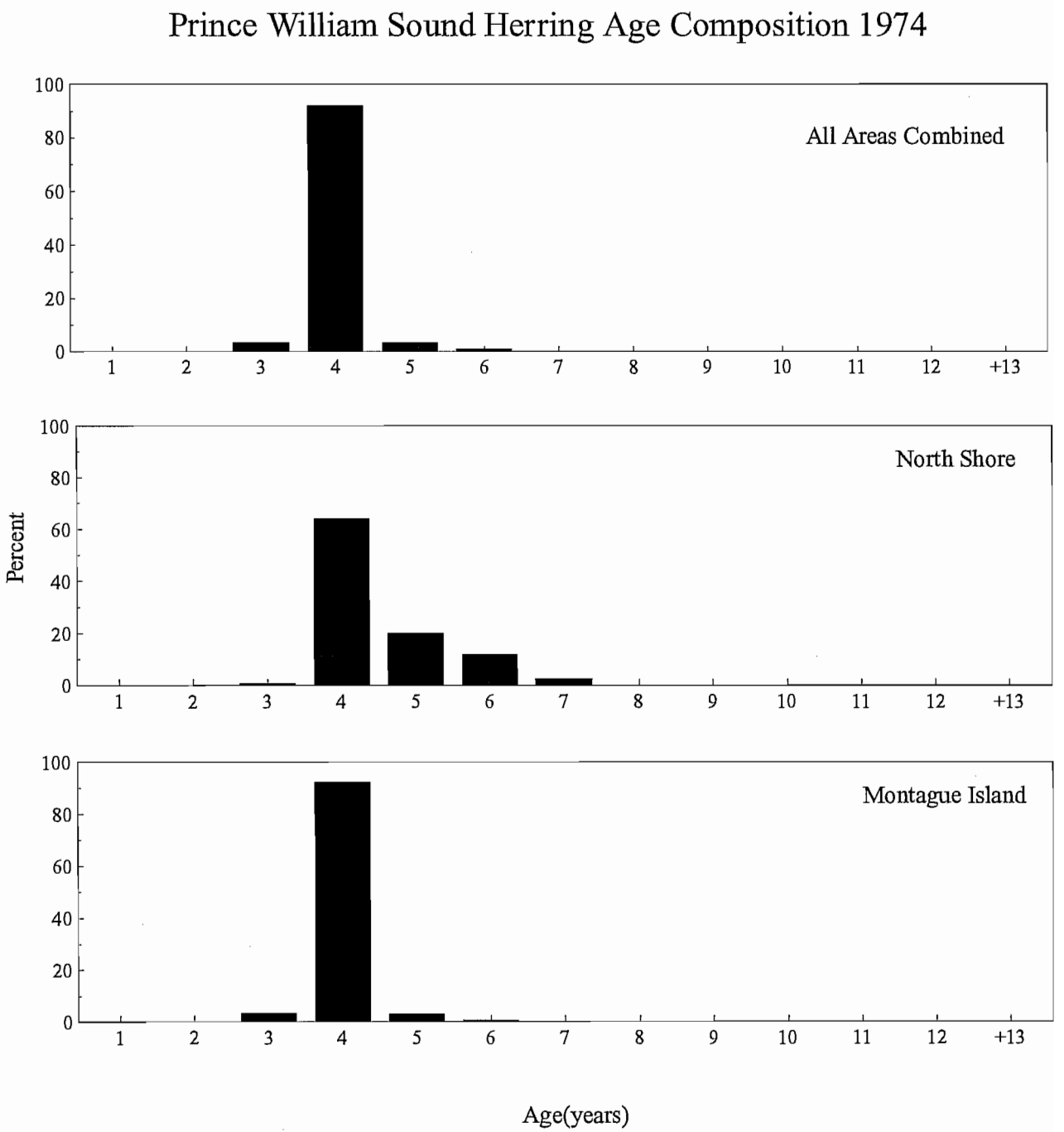
Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1973	1	0			0.0	0.0%	0.0	0.0%
1972	2	0			0.0	0.0%	0.0	0.0%
1971	3	9	100	181	189.3	3.5%	1,540.0	3.6%
1970	4	234	101	191	4,971.3	91.4%	40,039.8	92.5%
1969	5	8	129	206	217.1	4.0%	1,368.9	3.2%
1968	6	2	148	223	62.3	1.1%	342.2	0.8%
1967	7	0			0.0	0.0%	0.0	0.0%
1966	8	0			0.0	0.0%	0.0	0.0%
1965	9	0			0.0	0.0%	0.0	0.0%
1964	10	0			0.0	0.0%	0.0	0.0%
1963	11	0			0.0	0.0%	0.0	0.0%
1962	12	0			0.0	0.0%	0.0	0.0%
1961	13+	0			0.0	0.0%	0.0	0.0%
Total		**253**	**114**	**205**	**5,440.0**	**100.0%**	**43,290.9**	**100.0%**

Note: No age composition is available for the Northeast Area;
The samples available were pooled to calculate an all area age composition.

Appendix C.6. Age, sex and size composition of Pacific herring from the purse seine sac roe fishery, Prince William Sound, 1974.

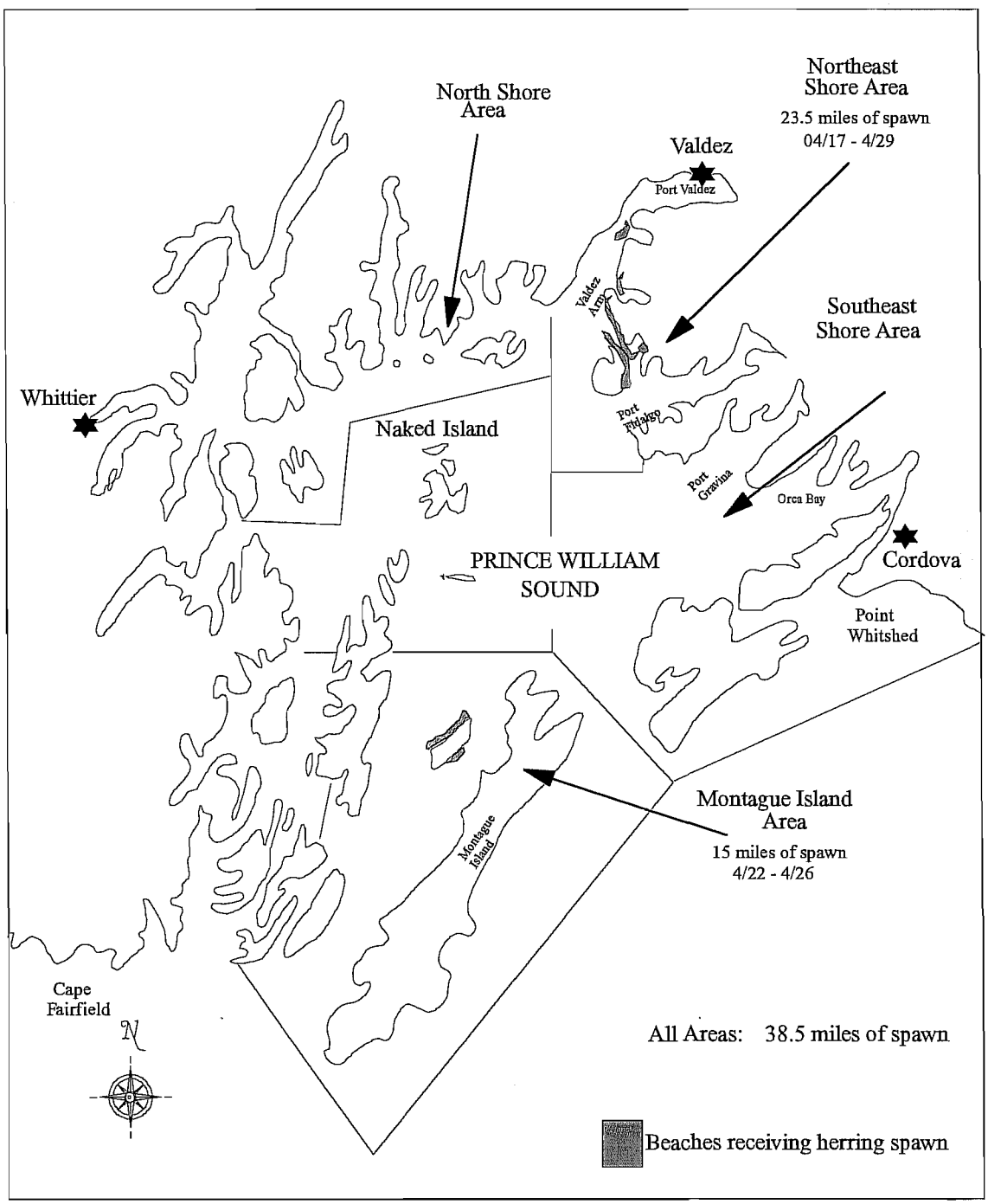
Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2											
	3	-	-	6	6	0.9	100	-	6	182	-	6
Columbia Bay,	4	-	-	409	409	64.2	101	-	409	197	-	409
North Shore	5	-	-	129	129	20.3	129	-	129	216	-	129
Purse Seine	6	-	-	76	76	11.9	148	-	76	225	-	76
Sac Roe Harvest	7	-	-	16	16	2.5	152	-	16	229	-	16
Spring, 1974	8	-	-	1	1	0.2	152	-	1	223	-	1
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13											
Total		**-**	**-**	**637**	**637**	**100.0**	**114**	**-**	**637**	**205**	**-**	**637**
	2	-	-	-	-	-	-	-	-	-	-	-
Green Island,	3	-	-	9	9	3.6	100	-	9	181	-	9
Montague Island Area	4	-	-	234	234	92.5	101	-	234	191	-	234
Purse Seine	5	-	-	8	8	3.2	129	-	8	206	-	8
Sac Roe Harvest	6	-	-	2	2	0.8	148	-	2	223	-	2
Spring,1974	7	-	-	-	-	-	-	-	-	-	-	-
	8	-	-	-	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	10											
	11											
	12											
	+13											
Total		**-**	**-**	**253**	**253**	**100.0**	**114**	**-**	**253**	**205**	**-**	**253**

Indicates dominant age class.



Appendix C.7. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1974.

Historical Herring Spawn and Shoreline Mileage



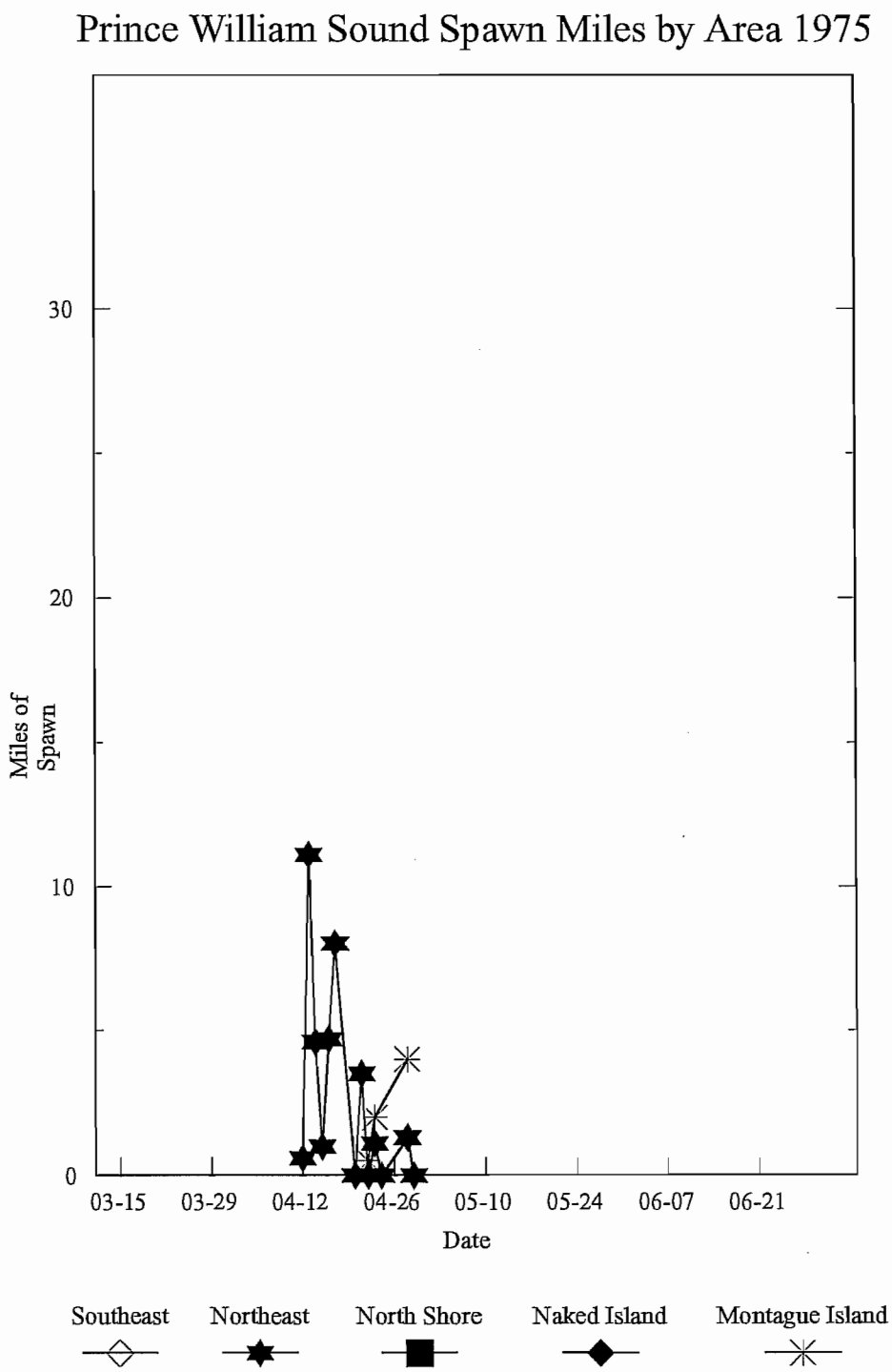
Appendix C.8. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys for 1974.

APPENDIX D: SUMMARY FOR 1975

Appendix D.1. Herring spawn mile days from aerial surveys by area and date for Prince William Sound, 1975.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
04/12	NS	0.6	NS	NS	NS	0.6	04/12
04/13	NS	11.1	NS	NS	NS	11.1	04/13
04/14	NS	4.6	NS	NS	NS	4.6	04/14
04/16	NS	4.7	NS	NS	NS	4.7	04/16
04/15	NS	1.0	NS	NS	NS	1.0	04/15
04/17	NS	8.0	NS	NS	NS	8.0	04/17
04/21	NS	3.5	NS	NS	NS	3.5	04/21
04/22	NS	0.0	NS	NS	0.5	0.5	04/22
04/23	NS	1.1	NS	NS	2.0	3.1	04/23
04/28	NS	1.3	NS	NS	4.0	5.3	04/28
Mile Days	**NS**	**35.9**	**NS**	**NS**	**6.5**	**42.4**	**Total**
Shoreline Miles	0.0	27.7	0.0	0.0	6.5	34.2	Total

a Dates displayed are for actual survey days.
NS = Not Surveyed



Appendix D.2. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1975.

Appendix D.3. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound , 1975.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1974	1	0			0.0	0.0%	0.0	0.0%
1973	2	1	46	155	0.0	0.0%	0.0	0.1%
1972	3	98	70	176	0.0	5.4%	0.0	8.2%
1971	4	466	97	194	0.0	35.6%	0.0	38.9%
1970	5	573	114	204	0.0	51.6%	0.0	47.8%
1969	6	56	154	225	0.0	6.8%	0.0	4.7%
1968	7	4	166	234	0.0	0.5%	0.0	0.3%
1967	8	0			0.0	0.0%	0.0	0.0%
1966	9	0			0.0	0.0%	0.0	0.0%
1965	10	0			0.0	0.0%	0.0	0.0%
1964	11	0			0.0	0.0%	0.0	0.0%
1963	12	0			0.0	0.0%	0.0	0.0%
1962	13+	0			0.0	0.0%	0.0	0.0%
Total		**1,198**	**105**	**199**	**0.0**	**100.0%**	**0.0**	**100.0%**

Northeast Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1974	1	0			0.0	0.0%	0.0	0.0%
1973	2	1	46	155	0.0	0.1%	0.0	0.1%
1972	3	59	67	174	0.0	5.2%	0.0	8.6%
1971	4	186	98	195	0.0	24.1%	0.0	27.1%
1970	5	388	117	207	0.0	59.9%	0.0	56.6%
1969	6	48	156	228	0.0	9.9%	0.0	7.0%
1968	7	4	166	234	0.0	0.9%	0.0	0.6%
1967	8	0			0.0	0.0%	0.0	0.0%
1966	9	0			0.0	0.0%	0.0	0.0%
1965	10	0			0.0	0.0%	0.0	0.0%
1964	11	0			0.0	0.0%	0.0	0.0%
1963	12	0			0.0	0.0%	0.0	0.0%
1962	13+	0			0.0	0.0%	0.0	0.0%
Total		**686**	**110**	**202**	**0.0**	**100.0%**	**0.0**	**100.0%**

-Continued-

Appendix D.3. (page 2 of 2)

Montague Island

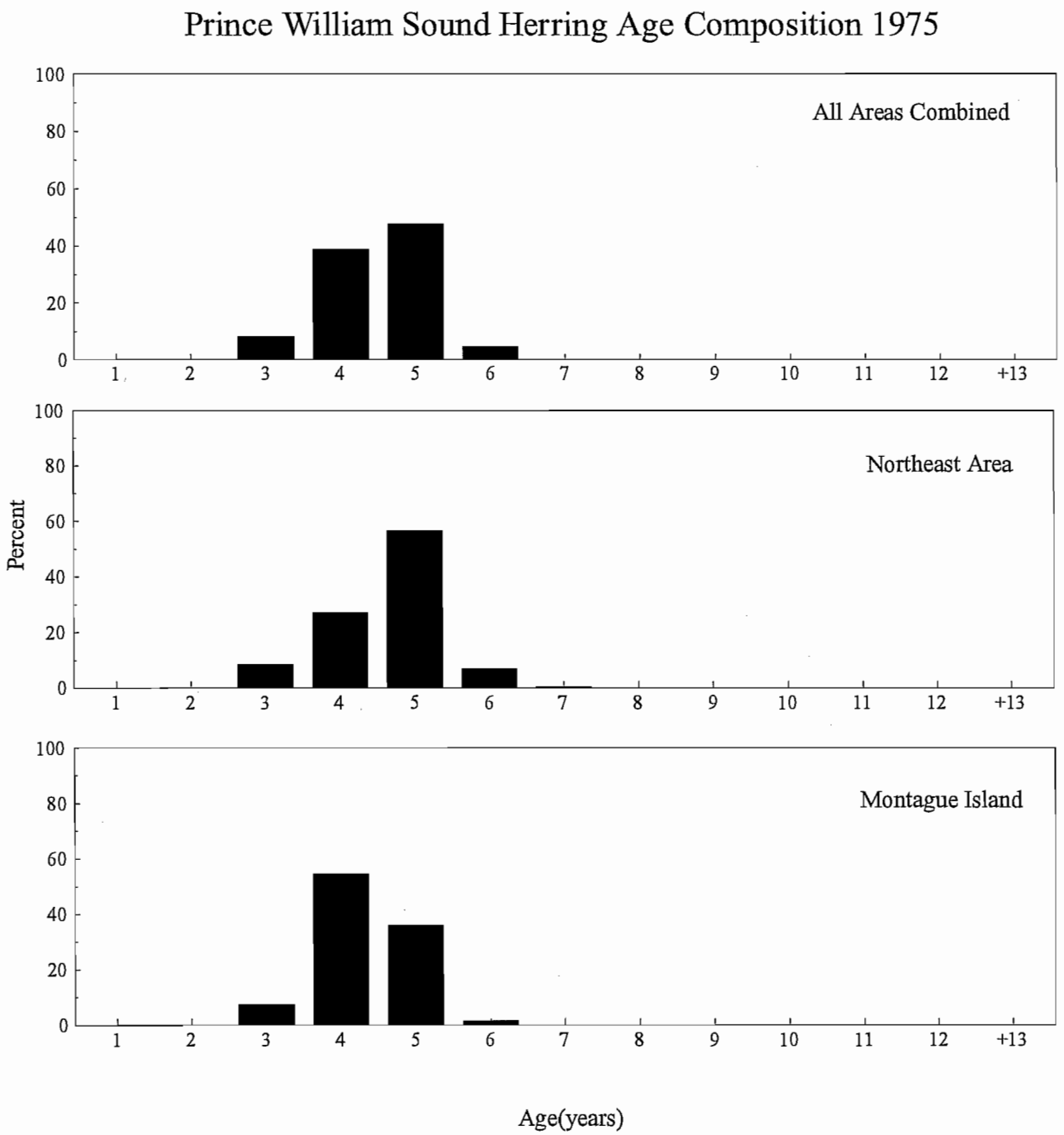
Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1974	1	0			0.0	0.0%	0.0	0.0%
1973	2	0			0.0	0.0%	0.0	0.0%
1972	3	39	74	179	0.0	5.7%	0.0	7.6%
1971	4	280	96	193	0.0	52.8%	0.0	54.7%
1970	5	185	108	199	0.0	39.3%	0.0	36.1%
1969	6	8	142	206	0.0	2.2%	0.0	1.6%
1968	7	0			0.0	0.0%	0.0	0.0%
1967	8	0			0.0	0.0%	0.0	0.0%
1966	9	0			0.0	0.0%	0.0	0.0%
1965	10	0			0.0	0.0%	0.0	0.0%
1964	11	0			0.0	0.0%	0.0	0.0%
1963	12	0			0.0	0.0%	0.0	0.0%
1962	13+	0			0.0	0.0%	0.0	0.0%
Total		**512**	**99**	**194**	**0.0**	**100.0%**	**0.0**	**100.0%**

Note: No biomass data is available for 1975.

Appendix D.4. Age, sex and size composition of Pacific herring from the purse seine sac roe fishery, Prince William Sound, 1975.

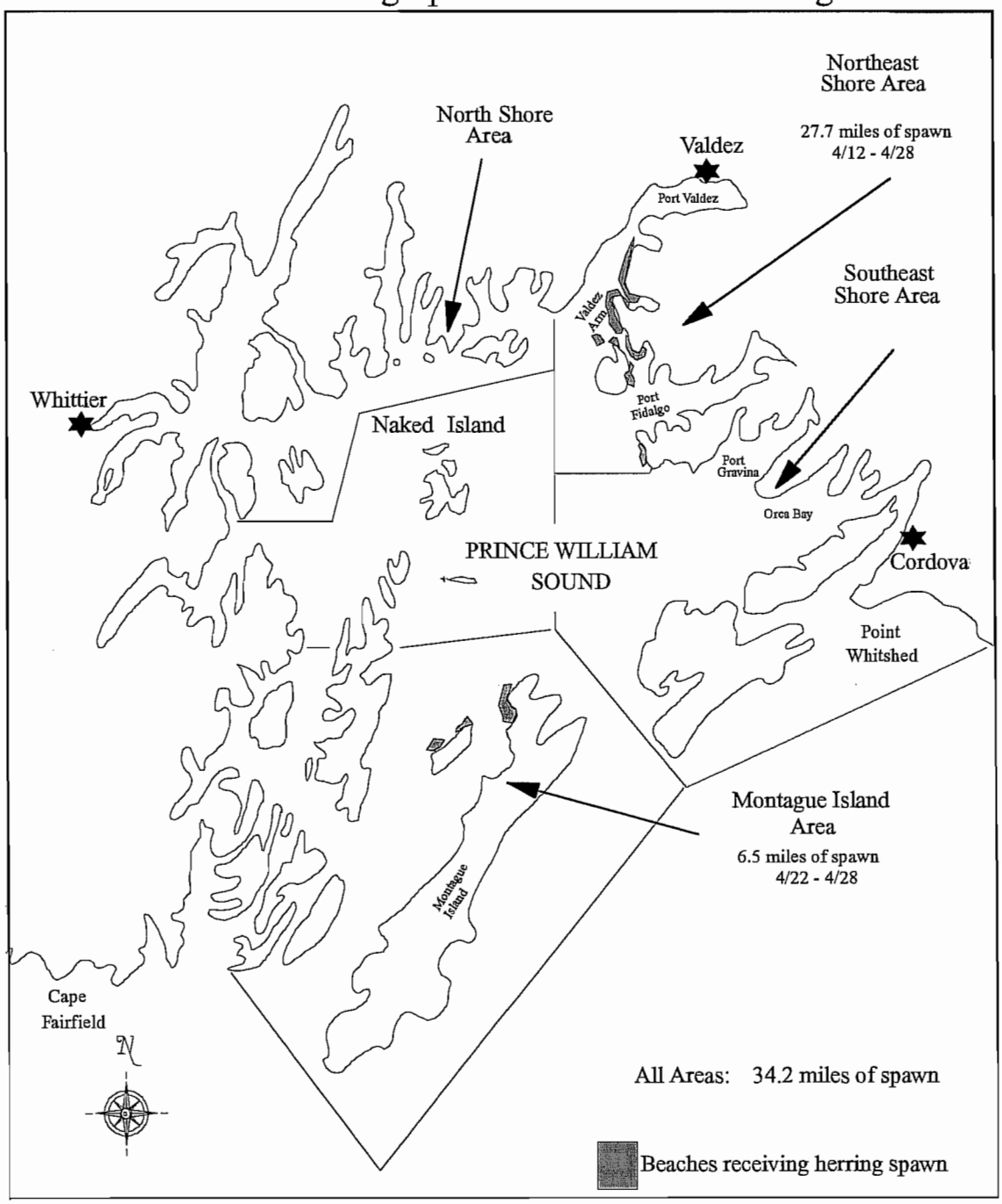
Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2											
	3	-	-	39	39	7.6	74	-	39	179	-	39
	4	-	-	280	280	54.7	96	-	280	193	-	280
Montague Island	5	-	-	185	185	36.1	108	-	185	199	-	185
Spring, 1975	6	-	-	8	8	1.6	142	-	8	206	-	8
Purse Seine	7	-	-	-	-	-	-	-	-	-	-	-
Sac Roe Harvest	8	-	-	-	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13											
Total		-	-	**512**	**512**	**100.0**	**99**	-	**512**	**194**	-	**512**
	2	-	-	1	1	0.1	46	-	1	155	-	1
	3	-	-	59	59	8.6	67	-	59	174	-	59
Galena Bay,	4	-	-	186	186	27.1	98	-	186	195	-	186
Northeast Area	5	-	-	388	388	56.6	117	-	388	207	-	388
Spring, 1975	6	-	-	48	48	7.0	156	-	48	228	-	48
Purse Seine	7	-	-	4	4	0.6	166	-	4	234	-	4
Sac Roe Harvest	8	-	-	-	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13											
Total		-	-	**686**	**686**	**100.0**	**110**	-	**686**	**202**	-	**686**

Indicates dominant age class.



Appendix D.5. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1975.

Historical Herring Spawn and Shoreline Mileage



Appendix D.6. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys for 1975.

APPENDIX E: SUMMARY FOR 1976

Appendix E.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1976.[a]

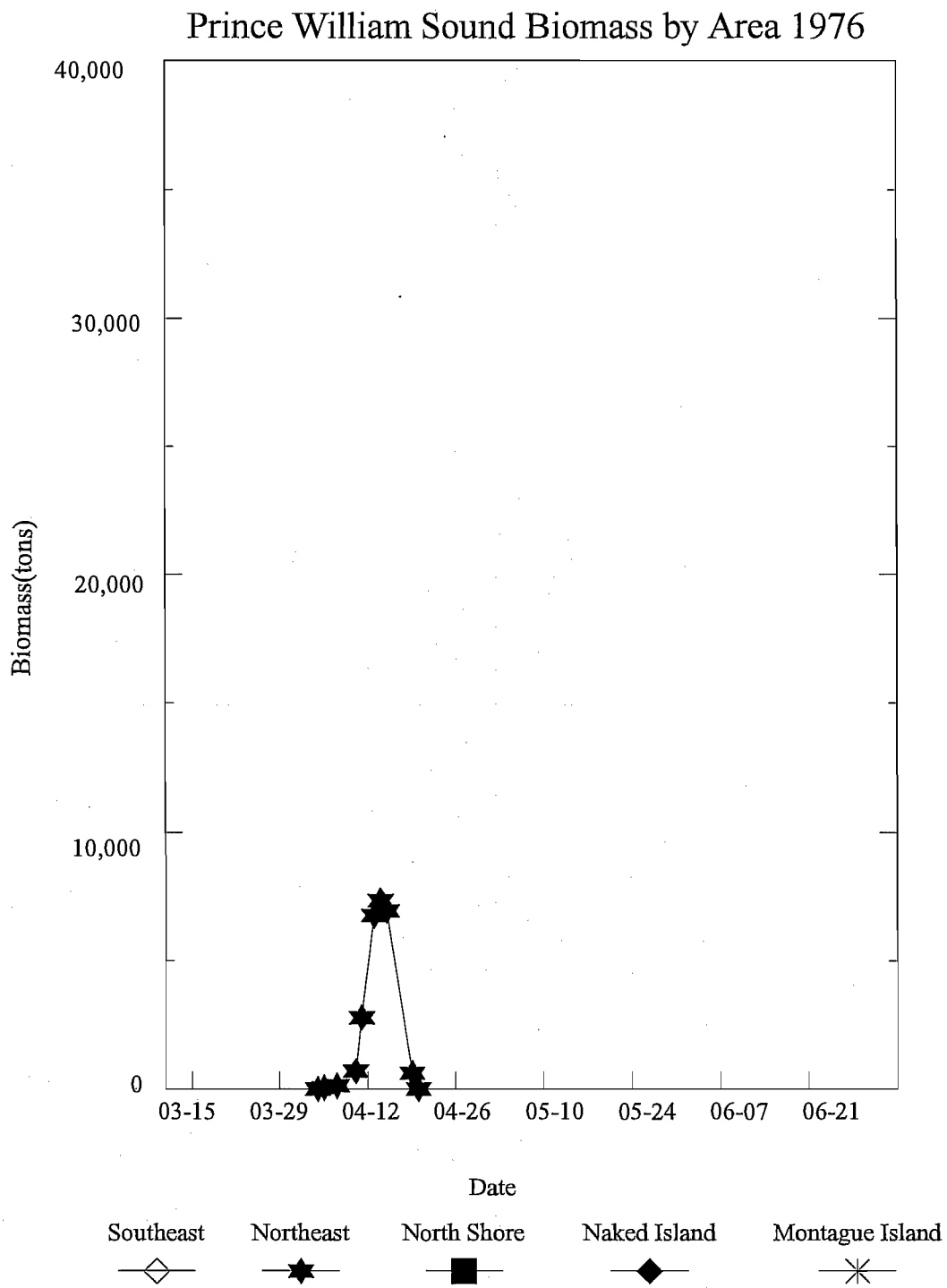
DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
04/05	NS	50	NS	NS	NS	50	04/05
04/07	NS	120	NS	NS	NS	120	04/07
04/10	NS	690	NS	NS	NS	690	04/10
04/11	NS	2,770	NS	NS	NS	2,770	04/11
04/13	NS	6,747	NS	NS	NS	6,747	04/13
04/14	NS	7,330	NS	NS	NS	7,330	04/14
04/15	NS	6,930	NS	NS	NS	6,930	04/15
04/16	NS	0	NS	NS	NS	0	04/16
04/17	NS	0	NS	NS	NS	0	04/17
04/19	NS	610	NS	NS	0	610	04/19
04/20	NS	0	NS	NS	NS	0	04/20
04/21	NS	0	NS	NS	NS	0	04/21
04/22	NS	0	NS	NS	NS	0	04/22
04/29	NS	0	NS	NS	0	0	04/29
04/30	NS	NS	NS	NS	0	0	04/30
AREA TOTAL	**NS**	**25,247**	**NS**	**NS**	**0**	**25,247**	**TOTAL**
PEAK ESTIMATES	**NS**	**7,330**	**NS**	**NS**	**0**	**7,330**	**PEAK**

[a]Dates displayed are for actual survey days.
NS = Not Surveyed

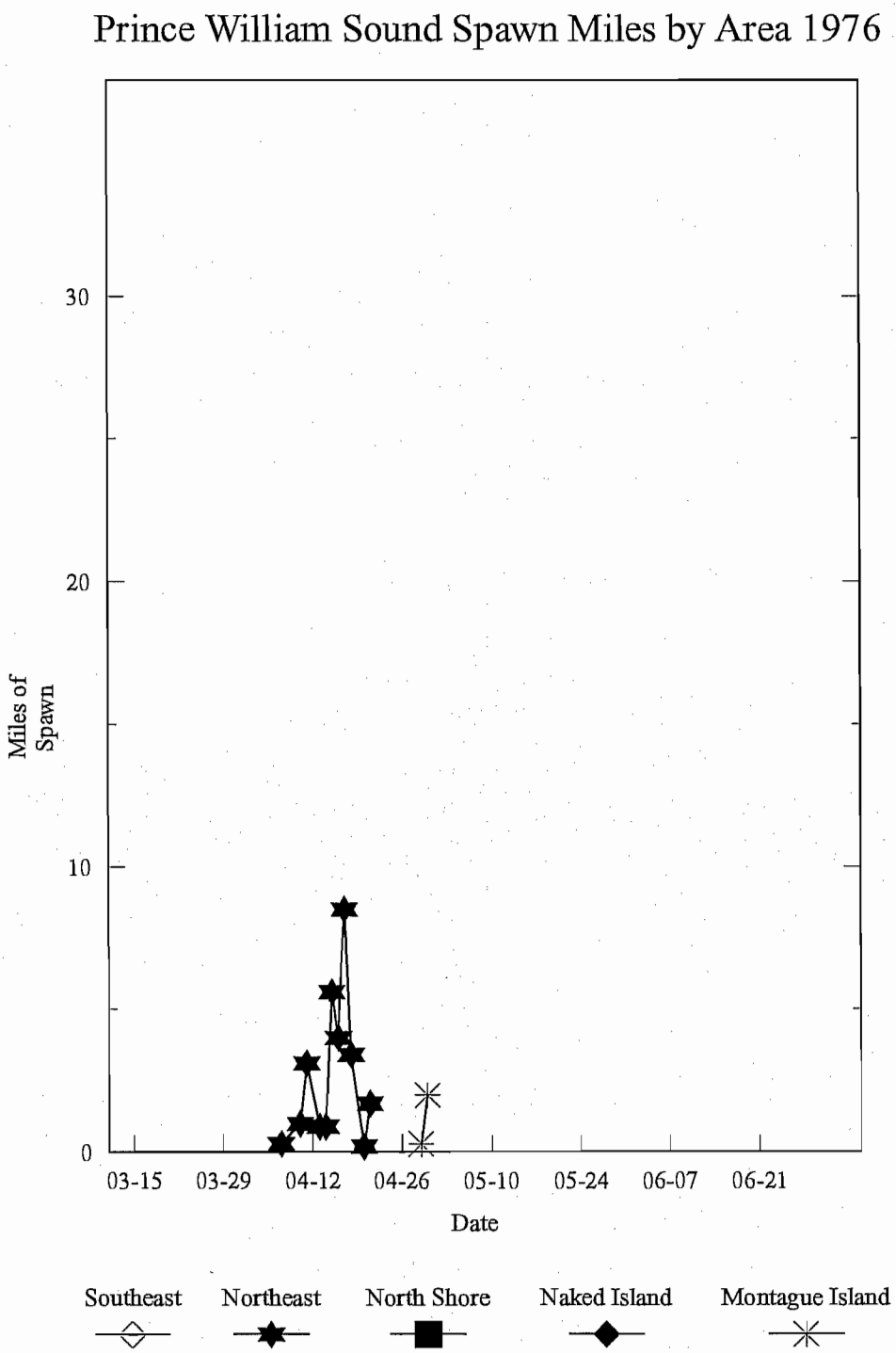
Appendix E.2. Herring spawn mile days from aerial surveys by area and date for Prince William Sound, 1976.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
04/05	NS	0	NS	NS	NS	0.0	04/05
04/07	NS	0.3	NS	NS	NS	0.3	04/07
04/10	NS	1.0	NS	NS	NS	1.0	04/10
04/11	NS	3.1	NS	NS	NS	3.1	04/11
04/13	NS	0.5	NS	NS	NS	0.5	04/13
04/14	NS	0.9	NS	NS	NS	0.9	04/14
04/15	NS	5.6	NS	NS	NS	5.6	04/15
04/16	NS	4.0	NS	NS	NS	4.0	04/16
04/17	NS	7.5	NS	NS	NS	7.5	04/17
04/19	NS	3.4	NS	NS	0.0	3.4	04/19
04/20	NS	0.0	NS	NS	NS	0.0	04/20
04/21	NS	1.7	NS	NS	NS	1.7	04/21
04/22	NS	3.4	NS	NS	NS	3.4	04/22
04/29	NS	0.0	NS	NS	0.3	0.3	04/29
04/30	NS	NS	NS	NS	2.0	2.0	04/30
Mile Days	**NS**	**31.4**	**NS**	**NS**	**2.3**	**33.7**	**Total**
Shoreline Miles	**0.0**	**30.5**	**0.0**	**0.0**	**2.3**	**32.8**	**Total**

a Dates displayed are for actual survey days.
NS = Not Surveyed



Appendix E.3. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1976.



Appendix E.4. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1976.

Appendix E.5. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound, 1976.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1975	1	0			0.0	0.0%	0.0	0.0%
1974	2	0			0.0	0.0%	0.0	0.0%
1973	3	29	62	165	410.8	5.6%	6,064.3	9.7%
1972	4	70	84	180	1,338.3	18.3%	14,637.9	23.3%
1971	5	69	108	193	1,698.5	23.2%	14,428.8	23.0%
1970	6	97	124	203	2,751.1	37.5%	20,283.9	32.3%
1969	7	28	138	208	886.1	12.1%	5,855.1	9.3%
1968	8	6	152	214	208.8	2.8%	1,254.7	2.0%
1967	9	1	159	225	36.4	0.5%	209.1	0.3%
1966	10	0			0.0	0.0%	0.0	0.0%
1965	11	0			0.0	0.0%	0.0	0.0%
1964	12	0			0.0	0.0%	0.0	0.0%
1963	13+	0			0.0	0.0%	0.0	0.0%
Total		**300**	**106**	**192**	**7,330.0**	**100.0%**	**62,733.7**	**100.0%**

Northeast Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1975	1	0			0.0	0.0%	0.0	0.0%
1974	2	0			0.0	0.0%	0.0	0.0%
1973	3	13	58	166	540.1	7.4%	9,312.0	12.5%
1972	4	35	75	174	1,880.3	25.7%	25,070.8	33.7%
1971	5	14	82	179	822.3	11.2%	10,028.3	13.5%
1970	6	13	123	203	1,145.4	15.6%	9,312.0	12.5%
1969	7	22	138	207	2,174.7	29.7%	15,758.8	21.2%
1968	8	6	152	214	653.3	8.9%	4,297.9	5.8%
1967	9	1	159	225	113.9	1.6%	716.3	1.0%
1966	10	0			0.0	0.0%	0.0	0.0%
1965	11	0			0.0	0.0%	0.0	0.0%
1964	12	0			0.0	0.0%	0.0	0.0%
1963	13+	0			0.0	0.0%	0.0	0.0%
Total		**104**	**98**	**187**	**7,330.0**	**100.0%**	**74,496.2**	**100.0%**

Note: The Southeast Area age composition was applied to the Northeast Area biomass due to proximity.

-Continued-

Appendix E.5. (page 2 of 2)

Montague Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1975	1	0			0.0	0.0%	0.0	0.0%
1974	2	0			0.0	0.0%	0.0	0.0%
1973	3	16	65	165	0.0	4.8%	0.0	8.2%
1972	4	35	92	185	0.0	14.8%	0.0	17.9%
1971	5	55	114	196	0.0	28.8%	0.0	28.1%
1970	6	84	124	203	0.0	47.8%	0.0	42.9%
1969	7	6	139	213	0.0	3.8%	0.0	3.1%
1968	8	0			0.0	0.0%	0.0	0.0%
1967	9	0			0.0	0.0%	0.0	0.0%
1966	10	0			0.0	0.0%	0.0	0.0%
1965	11	0			0.0	0.0%	0.0	0.0%
1964	12	0			0.0	0.0%	0.0	0.0%
1963	13+	0			0.0	0.0%	0.0	0.0%
Total		**196**	**111**	**195**	**0.0**	**100.0%**	**0.0**	**100.0%**

Southeast Area

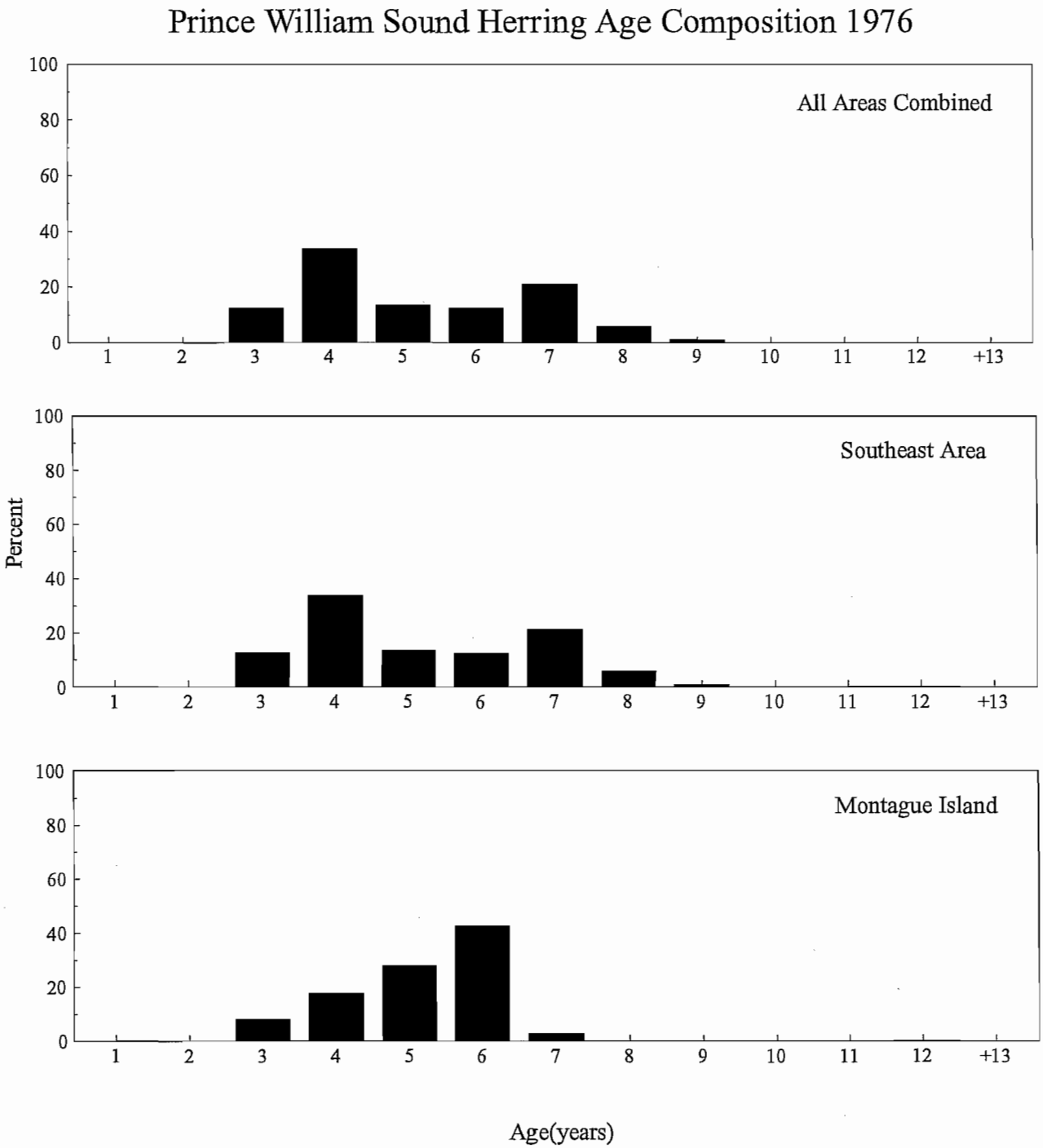
Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1975	1	0			0.0	0.0%	0.0	0.0%
1974	2	0			0.0	0.0%	0.0	0.0%
1973	3	13	58	166	0.0	7.4%	0.0	12.5%
1972	4	35	75	174	0.0	25.7%	0.0	33.7%
1971	5	14	82	179	0.0	11.2%	0.0	13.5%
1970	6	13	123	203	0.0	15.6%	0.0	12.5%
1969	7	22	138	207	0.0	29.7%	0.0	21.2%
1968	8	6	152	214	0.0	8.9%	0.0	5.8%
1967	9	1	159	225	0.0	1.6%	0.0	1.0%
1966	10	0			0.0	0.0%	0.0	0.0%
1965	11	0			0.0	0.0%	0.0	0.0%
1964	12	0			0.0	0.0%	0.0	0.0%
1963	13+	0			0.0	0.0%	0.0	0.0%
Total		**104**	**98**	**187**	**0.0**	**100.0%**	**0.0**	**100.0%**

Appendix E.6. Age, sex and size composition of Pacific herring from the purse seine sac roe fishery, Prince William Sound, 1976.

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2											
	3	-	-	13	13	12.5	58	-	13	166	-	13
Port Gravina,	4	-	-	35	35	33.7	75	-	35	174	-	35
Southeast Area	5	-	-	14	14	13.5	82	-	14	179	-	14
Spring, 1976	6	-	-	13	13	12.5	123	-	123	203	-	123
Purse Seine	7	-	-	22	22	21.2	138	-	22	207	-	22
Sac Roe Harvest	8	-	-	6	6	5.8	152	-	6	214	-	6
	9	-	-	1	1	1.0	159	-	1	225	-	1
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**-**	**-**	**104**	**104**	**100.0**	**98**	**-**	**104**	**187**	**-**	**104**
	2	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	16	16	8.2	65	-	16	165	-	16
Green Island,	4	-	-	35	35	17.9	92	-	35	185	-	35
Montague Island	5	-	-	55	55	28.1	114	-	55	196	-	55
Spring, 1976	6	-	-	84	84	42.9	124	-	84	203	-	84
Purse Seine	7	-	-	6	6	3.1	139	-	6	213	-	6
Sac Roe Harvest	8	-	-	-	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**-**	**-**	**196**	**196**	**100.0**	**111**	**-**	**196**	**195**	**-**	**196**

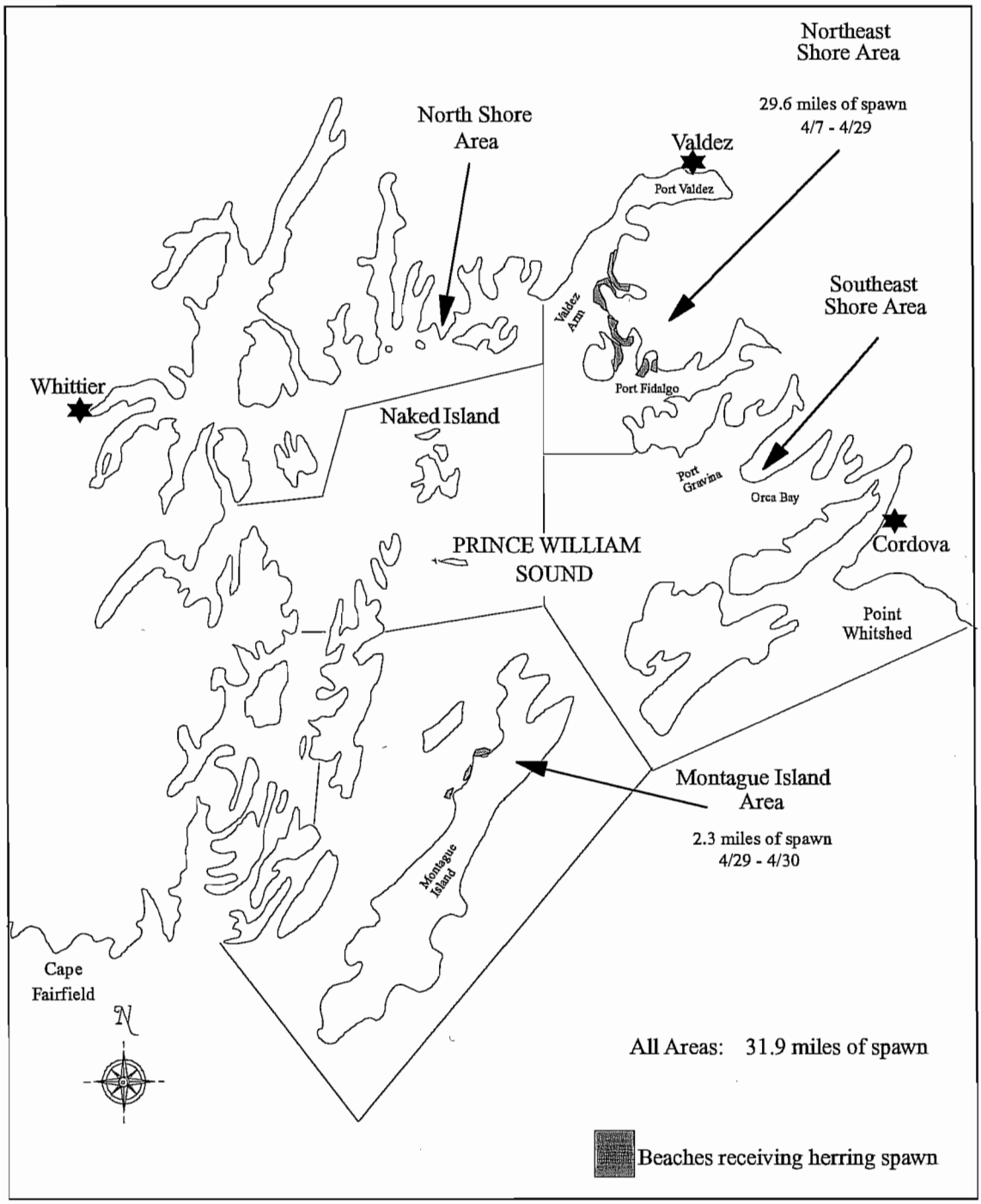
Indicates peak age class.

Note: Samples were collected in the Northeast Area, but were not summarized; only raw data sheets are available



Appendix E.7. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1976.

Historical Herring Spawn and Shoreline Mileage



Appendix E.8. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys for 1976.

APPENDIX F: SUMMARY FOR 1977

Appendix F.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1977.[a]

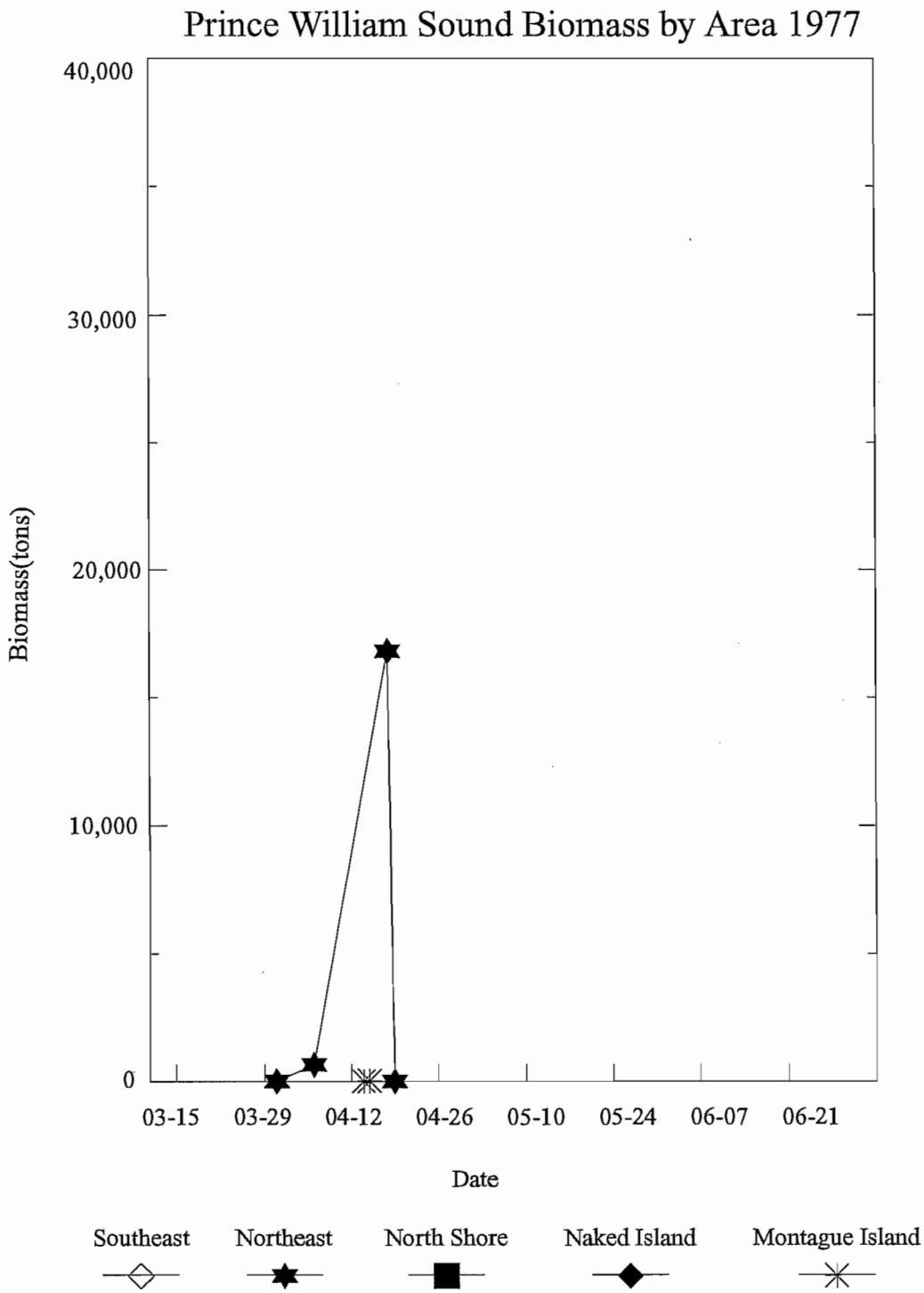
DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/31	0	0	NS	NS	NS	0	03/31
04/06	NS	630	NS	NS	NS	630	04/06
04/07	NS	0	NS	NS	NS	0	04/07
04/08	NS	0	NS	NS	NS	0	04/08
04/09	NS	0	NS	NS	NS	0	04/09
04/15	NS	NS	NS	NS	20	20	04/15
04/18	NS	16,810	NS	NS	NS	16,810	04/18
04/21	NS	0	NS	NS	NS	0	04/21
04/22	NS	0	NS	NS	NS	0	04/22
04/23	NS	0	NS	NS	NS	0	04/23
04/24	NS	0	NS	NS	NS	0	04/24
04/27	NS	0	NS	NS	NS	0	04/27
04/28	NS	0	NS	NS	NS	0	04/28
05/03	NS	0	NS	NS	NS	0	05/03
05/09	NS	NS	NS	NS	0	0	05/09
05//11	NS	NS	NS	NS	0	0	05//11
AREA TOTAL	**0**	**17,440**	**NS**	**NS**	**20**	**17,460**	**TOTAL**
PEAK ESTIMATES	**0**	**16,810**	**NS**	**NS**	**20**	**16,830**	**PEAK**

[a]Dates displayed are for actual survey days.
NS = Not Surveyed

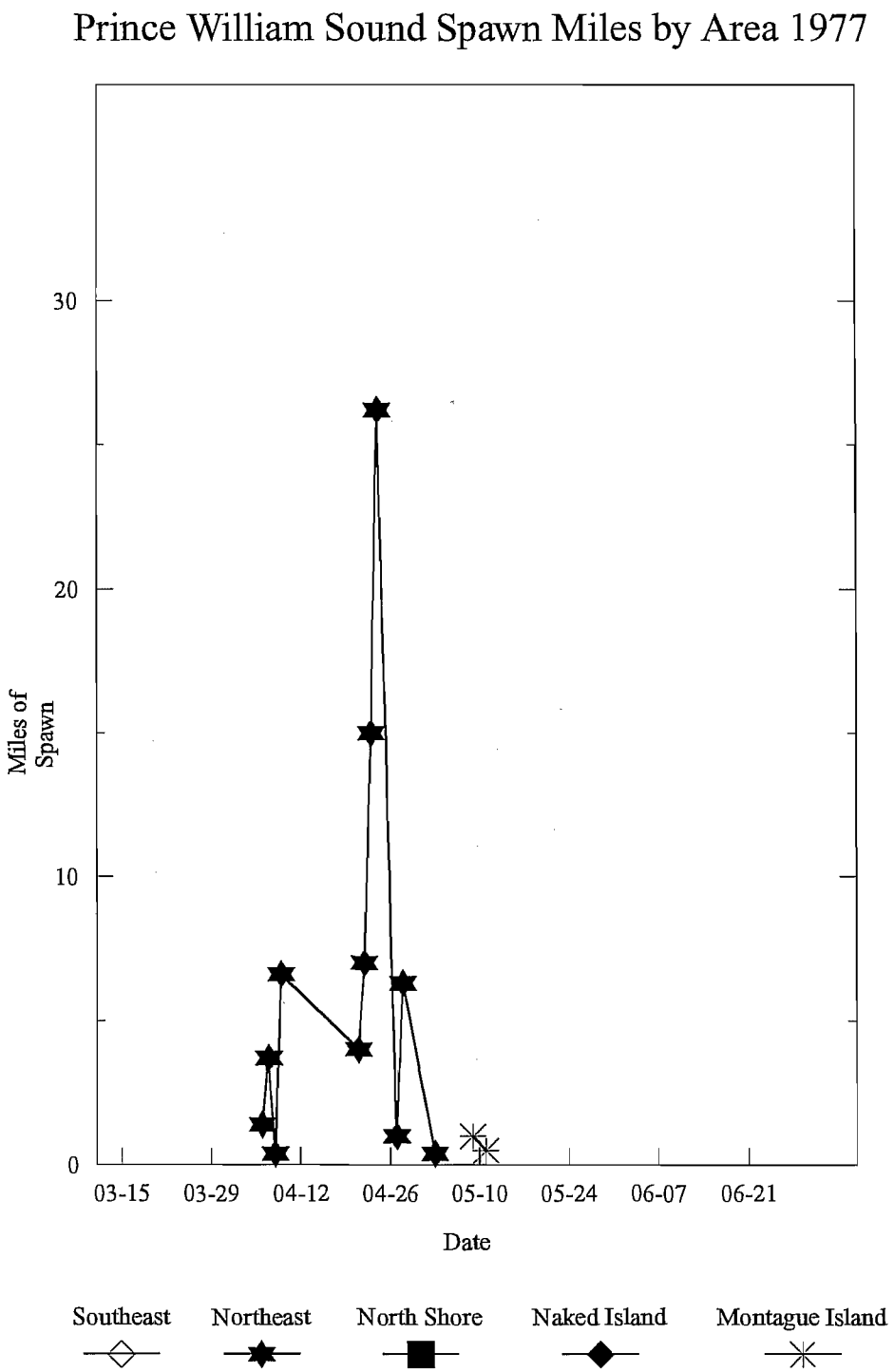
Appendix F.2. Herring spawn mile days from aerial surveys by area and date for Prince William Sound, 1977.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/31	0	0	NS	NS	NS	0.0	03/31
04/06	NS	1.4	NS	NS	NS	1.4	04/06
04/07	NS	3.7	NS	NS	NS	3.7	04/07
04/08	NS	0.4	NS	NS	NS	0.4	04/08
04/09	NS	6.6	NS	NS	NS	6.6	04/09
04/15	NS	NS	NS	NS	0	0.0	04/15
04/18	NS	0	NS	NS	NS	0.0	04/18
04/21	NS	4.0	NS	NS	NS	4.0	04/21
04/22	NS	7.0	NS	NS	NS	7.0	04/22
04/23	NS	15.0	NS	NS	NS	15.0	04/23
04/24	NS	26.2	NS	NS	NS	26.2	04/24
04/27	NS	1.0	NS	NS	NS	1.0	04/27
04/28	NS	6.3	NS	NS	NS	6.3	04/28
05/03	NS	0.4	NS	NS	NS	0.4	05/03
05/09	NS	NS	NS	NS	1.0	1.0	05/09
05/11	NS	NS	NS	NS	0.5	0.5	05/11
Mile Days	**0.0**	**72.0**	**NS**	**NS**	**1.5**	**73.5**	**Total**
Shoreline Miles	0.0	37.8	0.0	0.0	1.5	39.3	Total

a Dates displayed are for actual survey days.
NS = Not Surveyed



Appendix F.3. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1977.



Appendix F.4. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1977.

Appendix F.5. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound , 1977.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1976	1	0			0.0	0.0%	0.0	0.0%
1975	2	0			0.0	0.0%	0.0	0.0%
1974	3	34	66	177	0.0	4.3%	0.0	7.9%
1973	4	39	85	190	0.0	6.3%	0.0	9.1%
1972	5	104	110	206	0.0	21.8%	0.0	24.2%
1971	6	84	130	215	0.0	20.9%	0.0	19.6%
1970	7	142	142	219	0.0	38.5%	0.0	33.1%
1969	8	20	160	228	0.0	6.1%	0.0	4.7%
1968	9	6	179	234	0.0	2.1%	0.0	1.4%
1967	10	0			0.0	0.0%	0.0	0.0%
1966	11	0			0.0	0.0%	0.0	0.0%
1965	12	0			0.0	0.0%	0.0	0.0%
1964	13+	0			0.0	0.0%	0.0	0.0%
Total		**429**	**122**	**210**	**16,830.0**	**100.0%**	**125,149.0**	**100.0%**

Northeast Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1976	1	0			0.0	0.0%	0.0	0.0%
1975	2	0			0.0	0.0%	0.0	0.0%
1974	3	12	71	183	464.5	2.8%	6,003.9	5.0%
1973	4	21	92	194	1,053.2	6.3%	10,446.9	8.7%
1972	5	64	117	207	4,082.0	24.3%	31,820.9	26.5%
1971	6	51	131	216	3,642.1	21.7%	25,336.7	21.1%
1970	7	79	146	221	6,287.7	37.4%	45,269.8	37.7%
1969	8	12	153	226	1,000.9	6.0%	6,003.9	5.0%
1968	9	3	171	234	279.7	1.7%	1,440.9	1.2%
1967	10	0			0.0	0.0%	0.0	0.0%
1966	11	0			0.0	0.0%	0.0	0.0%
1965	12	0			0.0	0.0%	0.0	0.0%
1964	13+	0			0.0	0.0%	0.0	0.0%
Total		**242**	**127**	**212**	**16,810.0**	**100.0%**	**120,079.0**	**100.0%**

-Continued-

Appendix F.5. (page 2 of 2)

North Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1976	1	0			0.0	0.0%	0.0	0.0%
1975	2	0			0.0	0.0%	0.0	0.0%
1974	3	22	63	174	0.0	6.5%	0.0	11.9%
1973	4	18	77	184	0.0	6.5%	0.0	9.7%
1972	5	40	103	203	0.0	19.4%	0.0	21.6%
1971	6	32	128	214	0.0	19.3%	0.0	17.3%
1970	7	62	135	217	0.0	39.5%	0.0	33.5%
1969	8	8	162	231	0.0	6.1%	0.0	4.3%
1968	9	3	187	233	0.0	2.6%	0.0	1.6%
1967	10	0			0.0	0.0%	0.0	0.0%
1966	11	0			0.0	0.0%	0.0	0.0%
1965	12	0			0.0	0.0%	0.0	0.0%
1964	13+	0			0.0	0.0%	0.0	0.0%
Total		**185**	**115**	**206**	**0.0**	**100.0%**	**0.0**	**100.0%**

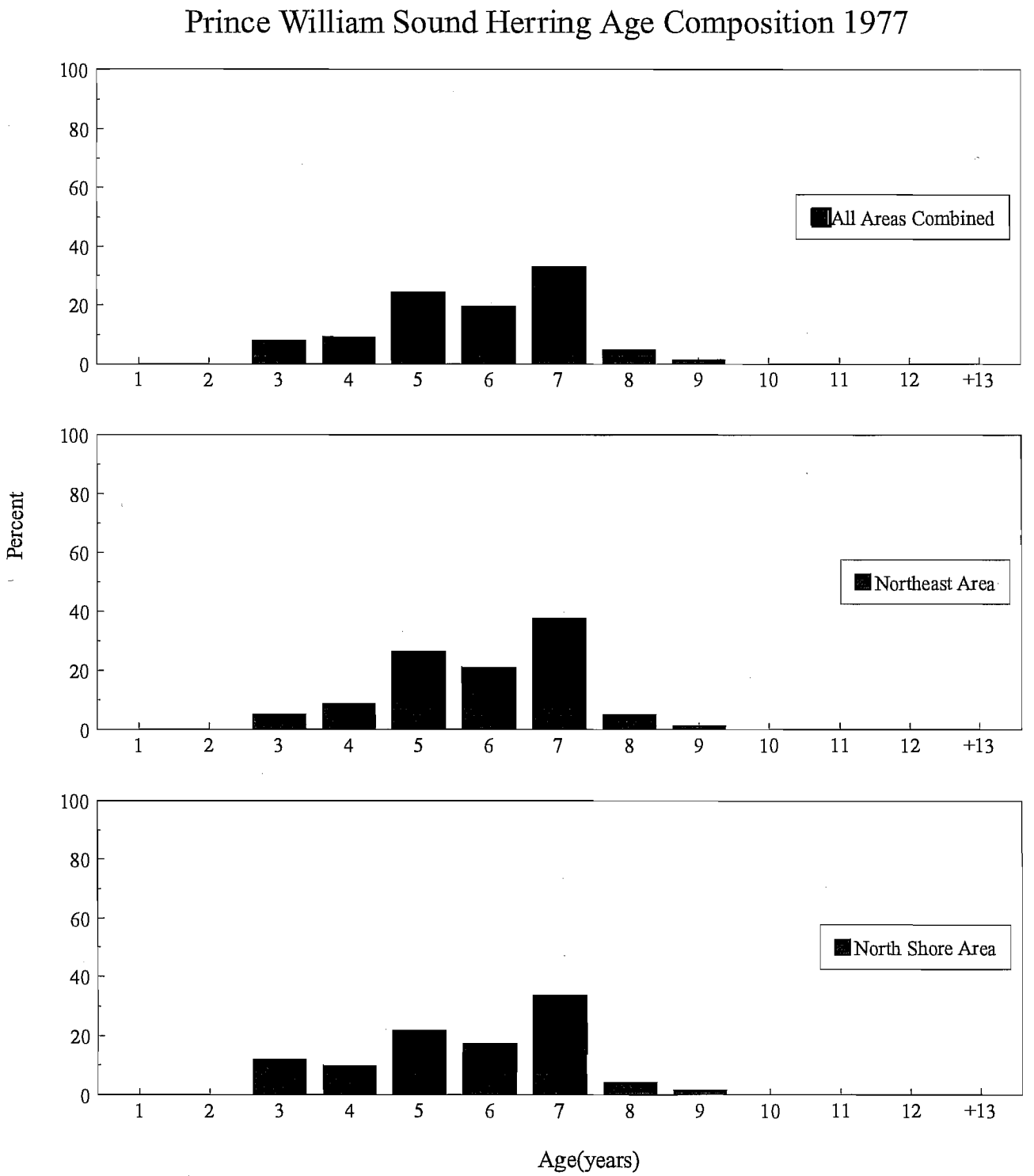
Montague Island Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1976	1	0			0.0	0.0%	0.0	0.0%
1975	2	0			0.0	0.0%	0.0	0.0%
1974	3	0			0.0	0.0%	0.0	0.0%
1973	4	0			0.0	0.0%	0.0	0.0%
1972	5	0			0.0	0.0%	0.0	0.0%
1971	6	0			0.0	0.0%	0.0	0.0%
1970	7	0			0.0	0.0%	0.0	0.0%
1969	8	0			0.0	0.0%	0.0	0.0%
1968	9	0			0.0	0.0%	0.0	0.0%
1967	10	0			0.0	0.0%	0.0	0.0%
1966	11	0			0.0	0.0%	0.0	0.0%
1965	12	0			0.0	0.0%	0.0	0.0%
1964	13+	0			0.0	0.0%	0.0	0.0%
Total		**0**			**20.0**	**0.0%**	**0.0**	**0.0%**

Appendix F.6. Age sex and size composition of Pacific herring from the purse seine sac roe fishery, Prince William Sound, 1977.

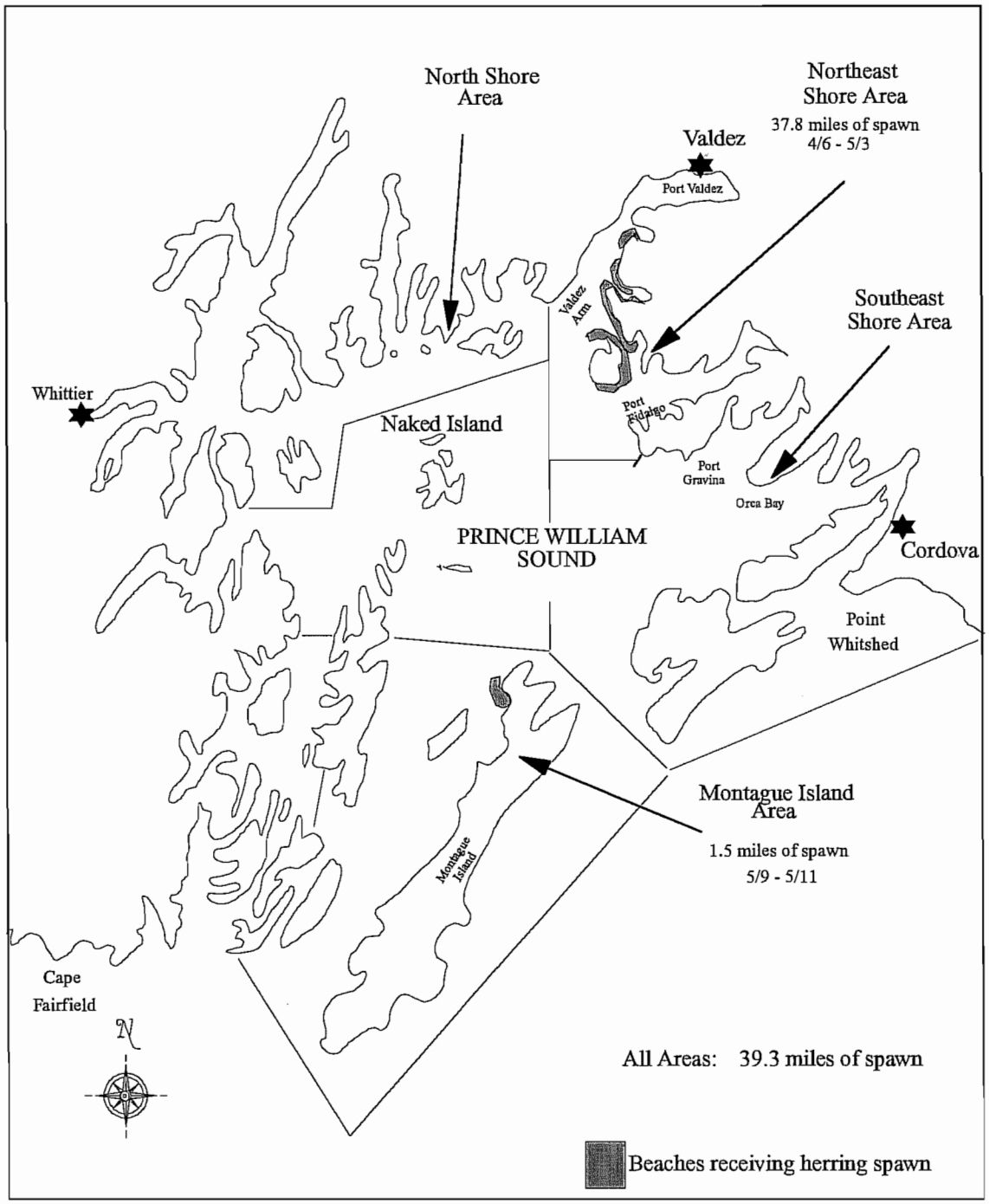
Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	-	-	-	-	-	-	-	-	-	-
	3	15	7	0	22	11.89	63	-	22	174	-	22
Columbia Bay,	4	11	7	0	18	9.7	77	-	18	184	-	18
North Shore	5	23	17	0	40	21.6	103	-	40	203	-	40
Spring, 1977	6	15	17	0	32	17.3	128	-	32	214	-	32
Purse Seine	7	30	32	0	62	33.51	135	-	62	217	-	62
Sac Roe Harvest	8	2	6	0	8	4.32	162	-	8	231	-	8
	9	1	2	0	3	1.6	187	-	3	233	-	3
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**97**	**88**	**0**	**185**	**100.0**	**96**	**-**	**185**	**172**	**-**	**185**
	2	-	-	-	-	-	-	-	-	-	-	-
	3	7	5	0	12	5.0	71	-	12	183	-	12
Galena Bay,	4	6	15	0	21	8.7	92	-	21	194	-	21
Northeast Area	5	26	38	0	64	26.5	117	-	64	207	-	64
Spring, 1977	6	25	26	0	51	21.1	131	-	51	216	-	51
Purse Seine	7	30	49	0	79	37.7	146	-	79	221	-	79
Test Fishery	8	3	9	0	12	5.0	153	-	12	226	-	12
	9	2	1	0	3	1.2	171	-	3	234	-	3
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13											
Total		**99**	**143**	**0**	**242**	**100.0**	**89**	**-**	**242**	**212**	**-**	**242**

Indicates dominant age class.



Appendix F.7. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1977.

Historical Herring Spawn and Shoreline Mileage



Appendix F.8. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys for 1977.

APPENDIX G: SUMMARY FOR 1978

Appendix G.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1978.[a]

DATE		SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
04/11		NS	380	NS	NS	NS	380	04/11
04/12		NS	90	NS	NS	NS	90	04/12
04/14		NS	10	NS	NS	NS	10	04/14
04/15		NS	2,890	NS	NS	0	2,890	04/15
04/16		NS	5,910	NS	NS	NS	5,910	04/16
04/17		NS	7,290	NS	NS	NS	7,290	04/17
04/18		NS	3,960	NS	NS	NS	3,960	04/18
04/19		NS	1,470	NS	NS	NS	1,470	04/19
05/01		NS	1,890	30	NS	NS	1,920	05/01
05/02		NS	NS	NS	NS	60	60	05/02
05/03		NS	5,380	NS	NS	NS	5,380	05/03
06/12	b	NS	3,570	1,700	NS	NS	5,270	06/12
06/14	b	NS	1,750	160	NS	NS	1,910	06/14
AREA TOTAL		**NS**	**34,590**	**1,890**	**NS**	**60**	**36,540**	**TOTAL**
PEAK ESTIMATES		**NS**	**11,650**	**1,700**	**NS**	**60**	**13,410**	**PEAK**

[a]Dates displayed are for actual survey days.
[b]Possible Forage Fish? May not be Herring.
NS = Not Surveyed

Appendix G.2. Herring spawn mile days from aerial surveys by area and date for Prince William Sound, 1978.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
04/11	NS	0.8	NS	NS	NS	0.8	04/11
04/12	NS	1.5	NS	NS	NS	1.5	04/12
04/14	NS	5.0	NS	NS	NS	5.0	04/14
04/15	NS	1.5	NS	NS	NS	1.5	04/15
04/16	NS	2.8	NS	NS	NS	2.8	04/16
04/17	NS	7.6	NS	NS	NS	7.6	04/17
04/18	NS	8.1	NS	NS	NS	8.1	04/18
04/19	NS	4.9	NS	NS	NS	4.9	04/19
05/01	NS	2.7	NS	NS	NS	2.7	05/01
05/02	NS	NS	NS	NS	0.2	0.2	05/02
05/03	NS	1.2	NS	NS	NS	1.2	05/03
06/12	NS	0.0	NS	NS	NS	0.0	06/12
06/14	NS	0.0	NS	NS	NS	0.0	06/14
Miles Days	**NS**	**36.1**	**NS**	**NS**	**0.2**	**36.3**	**Total**
Shoreline Miles	0.0	28.5	0.0	0.0	0.2	28.7	Total

a Dates displayed are for actual survey days.
NS = Not Surveyed

Appendix G.3. Herring biomass estimates from aerial surveys by sub-area and date for Prince William Sound, 1978.

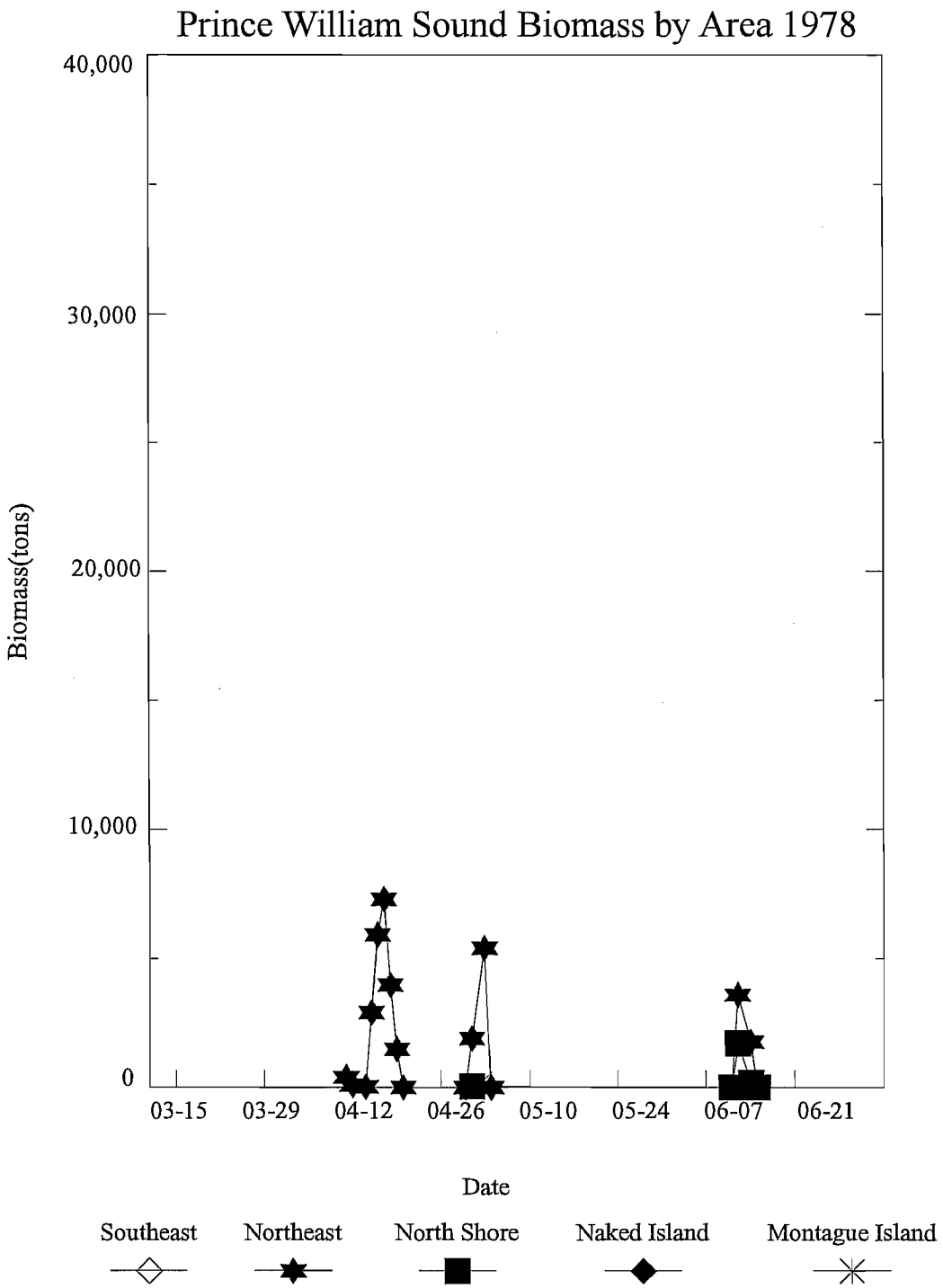
DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
4/11			0	380	0						380	4/11
4/12			0	90	0						90	4/12
4/14			0	0	10						10	4/14
4/15			0	120	2,770						2,890	4/15
4/16			0	420	5,490						5,910	4/16
4/17			0	0	7,290						7,290	4/17
4/18			0	530	3,430						3,960	4/18
4/19			0	100	1,370						1,470	4/19
5/1			0	1,000	890	30					1,920	5/1
5/2										60	60	5/2
5/3			3,210	1,150	1,020						5,380	5/3
6/12			1,090	880	1,600	1,700					5,270	6/12
6/14			780	430	540	160					1,910	6/14
Area Total	NS	NS	**5,080**	**5,100**	**24,410**	**1,890**	NS	NS	NS	**60**	**36,540**	**Total**
Peak Estimates	NS	NS	3,210	1,150	7,290	1,700	NS	NS	NS	60	13,410	Peak

Note: Data displayed only for dates that surveys were flown.

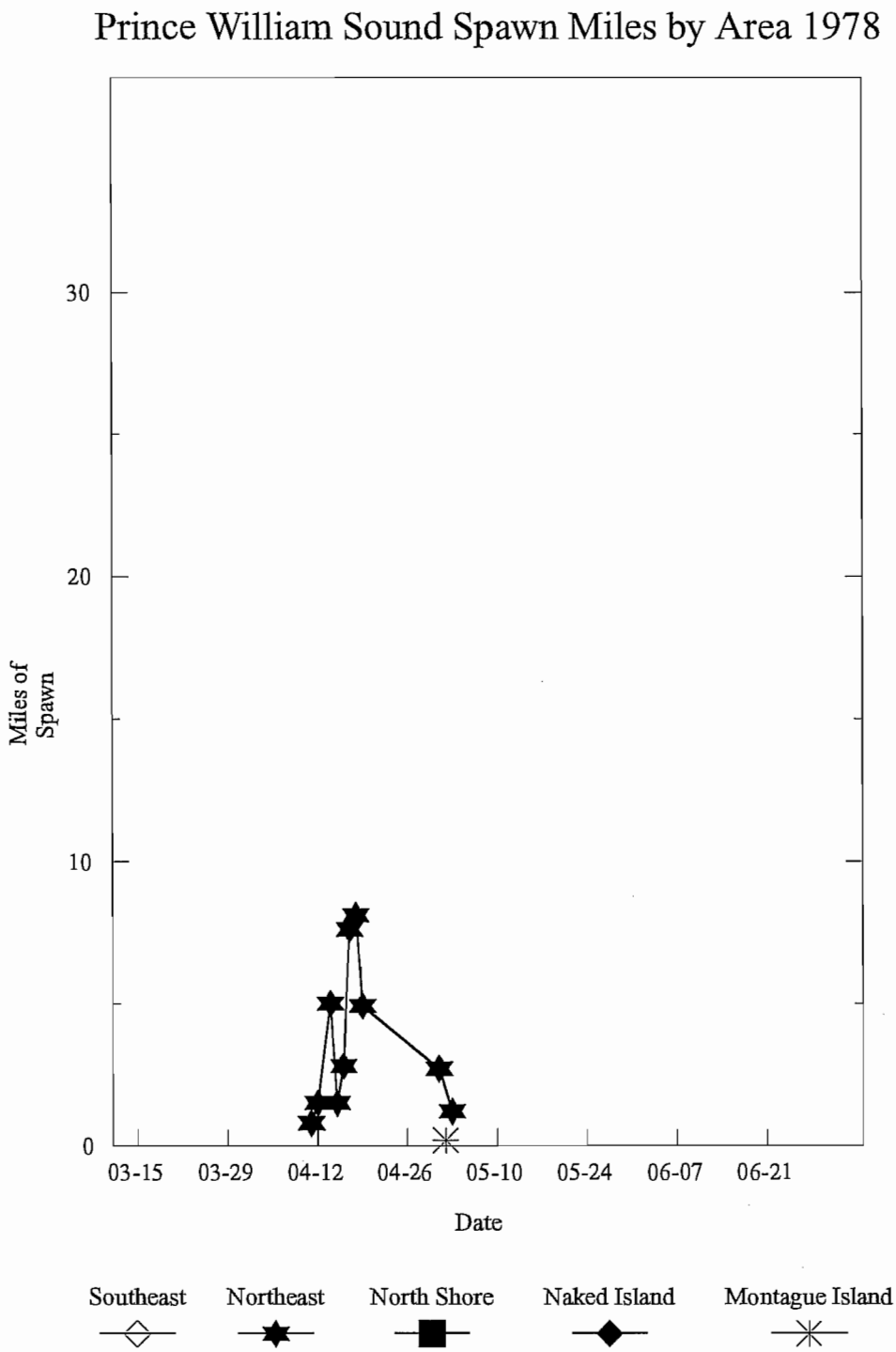
Appendix G.4. Estimated miles of herring spawn by sub-area and date from aerial surveys for Prince William Sound, 1978.

DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
4/11			0.0	0.8							0.8	4/11
4/12			0.0	1.5							1.5	4/12
4/14			0.0	5.0	0.0						5.0	4/14
4/15			0.0	0.5	1.0						1.5	4/15
4/16			0.0	1.8	1.0						2.8	4/16
4/17			0.0	7.5	0.1						7.6	4/17
4/18			0.0	7.9	0.2						8.1	4/18
4/19			0.0	0.4	4.5						4.9	4/19
5/1			1.0	0.0	1.7	0.0					2.7	5/1
5/2			NS	NS	NS					0.2	0.2	5/2
5/3			0.0	1.2	0.0						1.2	5/3
6/12			0.0	0.0	0.0	0.0					0.0	6/12
6/14			0.0	0.0	0.0	0.0					0.0	6/14
Area Total	NS	NS	1	**26.6**	**8.5**	**0.0**	NS	NS	NS	**0.2**	**36.3**	**Total**

Note: Data displayed only for dates that surveys were flown.



Appendix G.5. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1978.



Appendix G.6. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1978.

Appendix G.7. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound , 1978.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1977	1	0			0.0	0.0%	0.0	0.0%
1976	2	9	34	135	0.0	0.8%	0.0	2.2%
1975	3	28	54	156	0.0	4.0%	0.0	6.8%
1974	4	86	80	181	0.0	18.1%	0.0	20.9%
1973	5	111	91	186	0.0	26.6%	0.0	26.9%
1972	6	111	98	191	0.0	28.6%	0.0	26.9%
1971	7	45	119	203	0.0	14.1%	0.0	10.9%
1970	8	17	134	215	0.0	6.0%	0.0	4.1%
1969	9	4	128	216	0.0	1.3%	0.0	1.0%
1968	10	0			0.0	0.0%	0.0	0.0%
1967	11	1	152	215	0.0	0.4%	0.0	0.2%
1966	12	0			0.0	0.0%	0.0	0.0%
1965	13+	0			0.0	0.0%	0.0	0.0%
Total		**412**	**92**	**186**	**13,410.0**	**100.0%**	**132,234.3**	**100.0%**

Northeast Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1977	1	0			0.0	0.0%	0.0	0.0%
1976	2	0			0.0	0.0%	0.0	0.0%
1975	3	14	68	170	459.3	3.9%	6,085.1	5.7%
1974	4	69	83	185	2,762.9	23.7%	30,212.1	28.3%
1973	5	70	94	190	3,174.5	27.2%	30,639.1	28.7%
1972	6	36	108	200	1,875.7	16.1%	15,799.9	14.8%
1971	7	33	123	207	1,958.2	16.8%	14,412.1	13.5%
1970	8	17	134	215	1,099.0	9.4%	7,437.9	7.0%
1969	9	4	128	216	247.0	2.1%	1,708.1	1.6%
1968	10	0			0.0	0.0%	0.0	0.0%
1967	11	1	152	215	73.3	0.6%	427.0	0.4%
1966	12	0			0.0	0.0%	0.0	0.0%
1965	13+	0			0.0	0.0%	0.0	0.0%
Total		**244**	**99**	**193**	**11,650.0**	**100.0%**	**106,756.4**	**100.0%**

-Continued-

Appendix G.7. (page 2 of 2)

North Shore Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1977	1	0			0.0	0.0%	0.0	0.0%
1976	2	9	34	135	13.7	2.2%	1,003.4	5.4%
1975	3	14	40	141	68.7	4.0%	1,542.2	8.3%
1974	4	17	68	167	141.8	8.3%	1,876.7	10.1%
1973	5	41	87	180	437.5	25.7%	4,533.8	24.4%
1972	6	75	93	187	855.5	50.3%	8,287.2	44.6%
1971	7	12	108	193	159.0	9.4%	1,319.3	7.1%
1970	8	0			0.0	0.0%	0.0	0.0%
1969	9	0			0.0	0.0%	0.0	0.0%
1968	10	0			0.0	0.0%	0.0	0.0%
1967	11	0			0.0	0.0%	0.0	0.0%
1966	12	0			0.0	0.0%	0.0	0.0%
1965	13+	0			0.0	0.0%	0.0	0.0%
Total		**168**	**83**	**186**	**1,700.0**	**100.0%**	**18,581.2**	**100.0%**

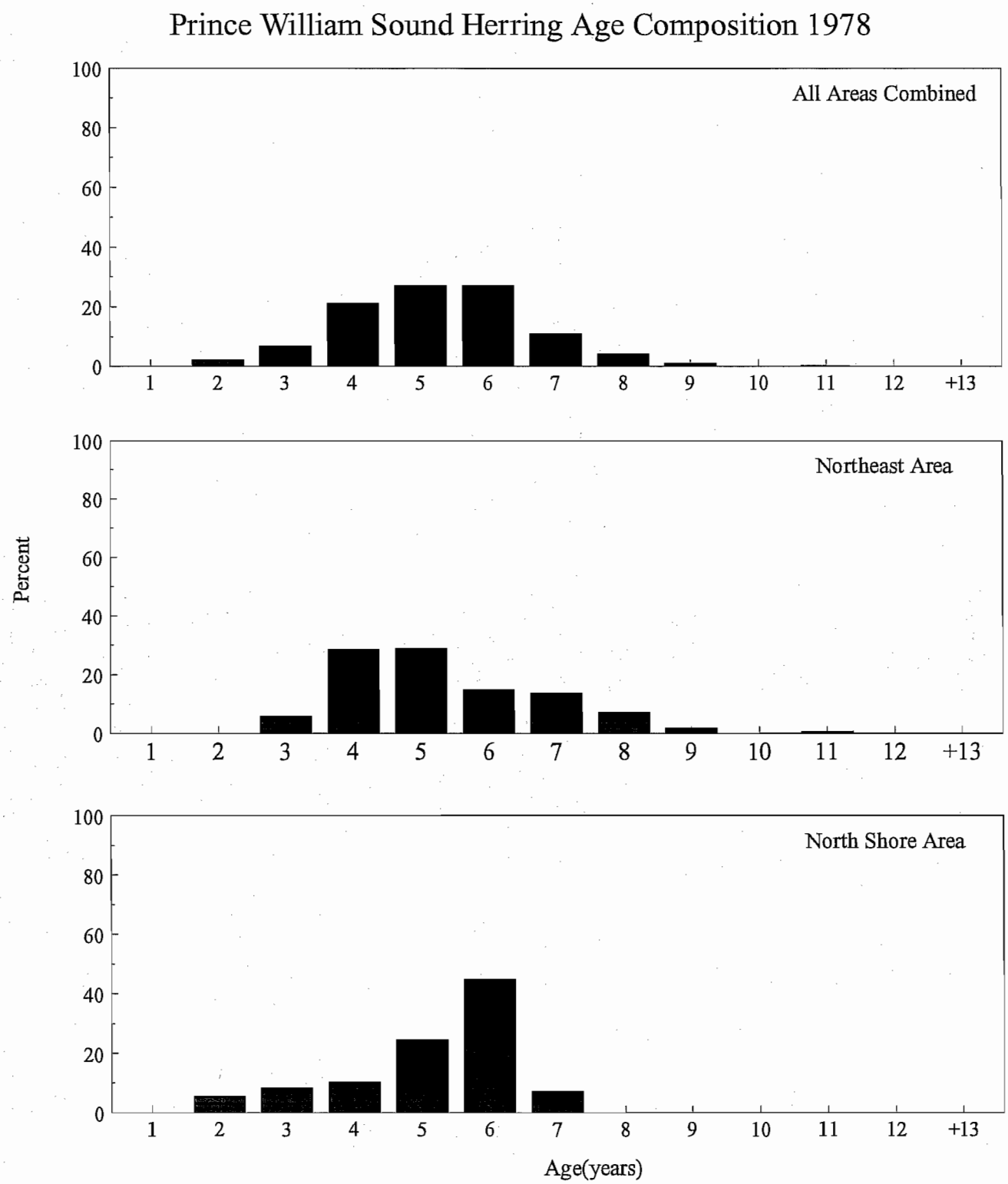
Montague Island Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1977	1	0			0.0	0.0%	0.0	0.0%
1976	2	0			0.0	0.0%	0.0	2.2%
1975	3	0			0.0	0.0%	0.0	6.8%
1974	4	0			0.0	0.0%	0.0	20.9%
1973	5	0			0.0	0.0%	0.0	26.9%
1972	6	0			0.0	0.0%	0.0	26.9%
1971	7	0			0.0	0.0%	0.0	10.9%
1970	8	0			0.0	0.0%	0.0	4.1%
1969	9	0			0.0	0.0%	0.0	1.0%
1968	10	0			0.0	0.0%	0.0	0.0%
1967	11	0			0.0	0.0%	0.0	0.2%
1966	12	0			0.0	0.0%	0.0	0.0%
1965	13+	0			0.0	0.0%	0.0	0.0%
Total		**0**			**60.0**	**100.0%**		**100.0%**

Appendix G.8. Age, sex and size composition of Pacific herring from the purse seine sac roe fishery, Prince William Sound, 1978.

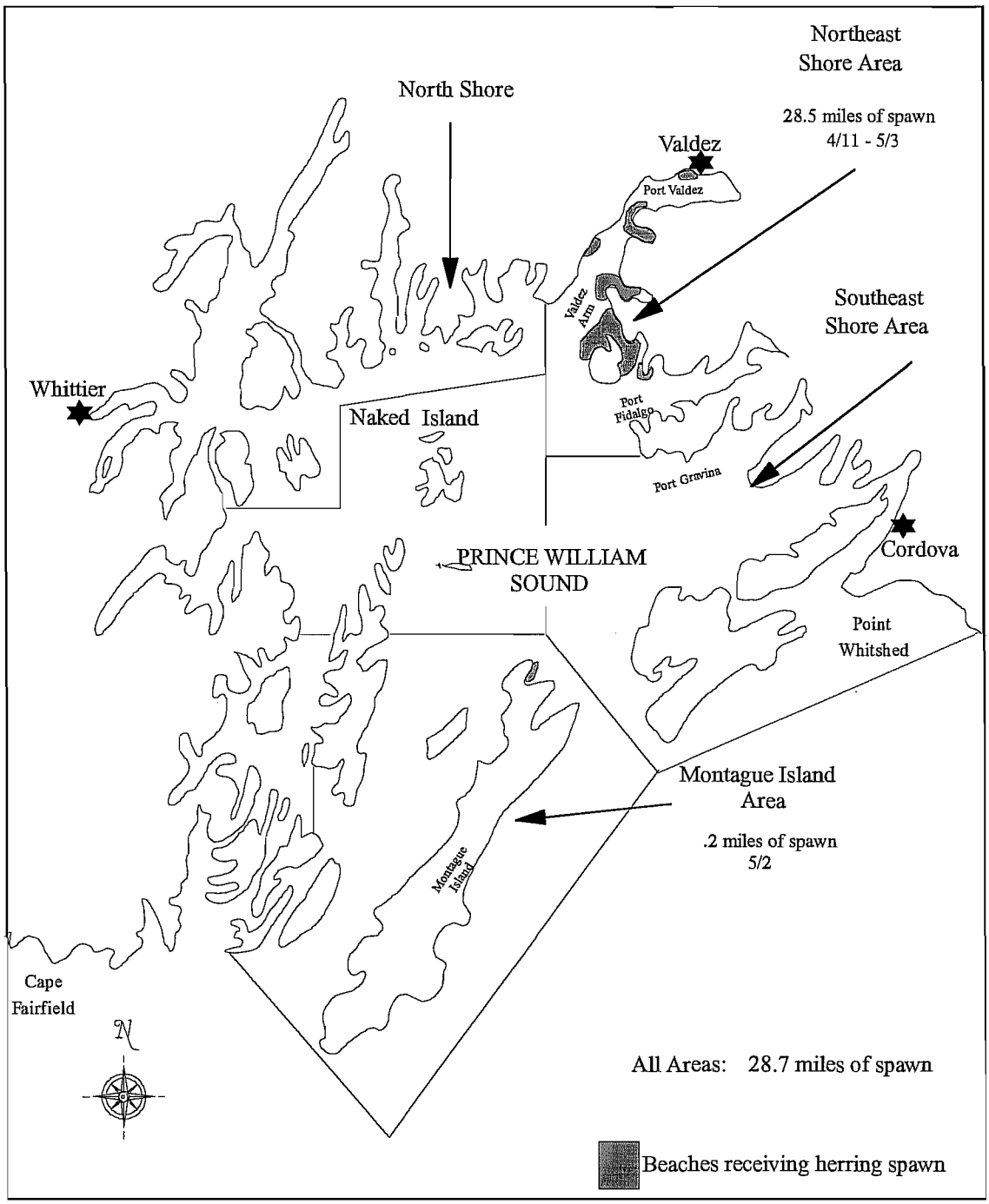
Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	14	14	5.7	68	-	14	170	-	14
Galena Bay,	4	-	-	69	69	28.3	83	-	69	185	-	69
Northeast Area	5	-	-	70	70	28.7	94	-	70	190	-	70
April, 1978	6	-	-	36	36	14.8	108	-	36	200	-	36
Purse Seine	7	-	-	33	33	13.5	123	-	33	207	-	33
Sac Roe Harvest	8	-	-	17	17	7.0	134	-	17	215	-	17
	9	-	-	4	4	1.6	128	-	4	216	-	4
	10	-	-	-	-	-	-	-	-		-	-
	11	-	-	1	1	0.4	152	-	1	215	-	1
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-		-	-
Total		-	-	**244**	**244**	**100.0**	**99**	-	**244**	**193**	-	**244**
	2	-	-	9	9	5.4	34	-	9	135	-	9
	3	-	-	14	14	8.3	40	-	14	[illegible]	-	14
Long Bay,	4	-	-	17	17	10.1	68	-	17	167	-	17
North Shore	5	-	-	41	41	24.4	87	-	41	180	-	41
June, 1978	6	-	-	75	75	44.6	93	-	75	187	-	75
Purse Seine	7	-	-	12	12	7.1	108	-	12	193	-	12
Sac Roe Harvest	8		-	-	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		-	-	**168**	**168**	**100.0**	**83**	-	**168**	**177**	-	**168**

Indicates dominant age class.



Appendix G.9. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1978.

Historical Herring Spawn and Shoreline Mileage



Appendix G.10. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys for 1978.

APPENDIX H: SUMMARY FOR 1979

Appendix H.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1979.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
04/07	NS	0	0	NS	NS	0	04/07
04/08	NS	0	0	NS	NS	0	04/08
04/09	NS	60	0	NS	NS	60	04/09
04/10	0	70	NS	NS	NS	70	04/10
04/11	0	80	NS	NS	NS	80	04/11
04/13	NS	930	390	NS	NS	1,320	04/13
04/14	NS	8,670	NS	NS	NS	8,670	04/14
04/16	10,520	130	NS	NS	NS	10,650	04/16
04/17	15,310	490	NS	NS	NS	15,800	04/17
04/18	17,860	150	NS	NS	NS	18,010	04/18
04/19	7,000	1,830	NS	NS	NS	8,830	04/19
04/20	11,850	10,220	NS	NS	NS	22,070	04/20
04/23	5,720	5,620	NS	NS	NS	11,340	04/23
04/26	0	0	NS	NS	NS	0	04/26
04/28	1,590	120	NS	NS	1,000	2,710	04/28
04/30	930	570	NS	NS	NS	1,500	04/30
05/02	NS	630	NS	NS	NS	630	05/02
06/12 [b]	5,640	10	NS	NS	NS	5,650	06/12
AREA TOTAL	**76,420**	**29,580**	**390**	**NS**	**1,000**	**107,390**	**TOTAL**
PEAK ESTIMATES	**20,040**	**20,670**	**390**	**NS**	**1,000**	**42,100**	**PEAK**

[a]Dates displayed are for actual surveys days.

[b]Juvenile herring or capelin?

NS = Not Surveyed

Appendix H.2. Herring spawn mile days from aerial surveys by area and date for Prince William Sound, 1979.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
04/07	NS	0.0	0.0	NS	NS	0.0	04/07
04/08	NS	0.0	0.0	NS	NS	0.0	04/08
04/09	NS	0.0	0.0	NS	NS	0.0	04/09
04/10	0.0	0.0	NS	NS	NS	0.0	04/10
04/11	0.0	0.0	NS	NS	NS	0.0	04/11
04/13	NS	0.0	0.0	NS	NS	0.0	04/13
04/14	NS	0.0	NS	NS	NS	0.0	04/14
04/16	0.0	0.0	NS	NS	NS	0.0	04/16
04/17	2.6	1.4	NS	NS	NS	4.0	04/17
04/18	10.7	1.4	NS	NS	NS	12.1	04/18
04/19	3.0	3.8	NS	NS	NS	6.8	04/19
04/20	4.0	11.7	NS	NS	NS	15.7	04/20
04/23	4.6	17.8	NS	NS	NS	22.4	04/23
04/26	0.0	0.2	NS	NS	NS	0.2	04/26
04/28	1.1	0.4	NS	NS	1.0	2.5	04/28
04/30	6.0	1.5	NS	NS	NS	7.5	04/30
05/02	0.0	2.0	NS	NS	NS	2.0	05/02
06/12	0.0	0.0	NS	NS	NS	0.0	06/12
Mile Days	**32**	**40.2**	**NS**	**NS**	**1**	**73.2**	**Total**
Shoreline Miles	21.0	32.5	0.0	0.0	1.0	54.5	Total

a Dates displayed are for actual survey days.
NS = Not Surveyed

Appendix H.3. Herring biomass estimates from aerial surveys by sub-area and date for Prince William Sound, 1979.

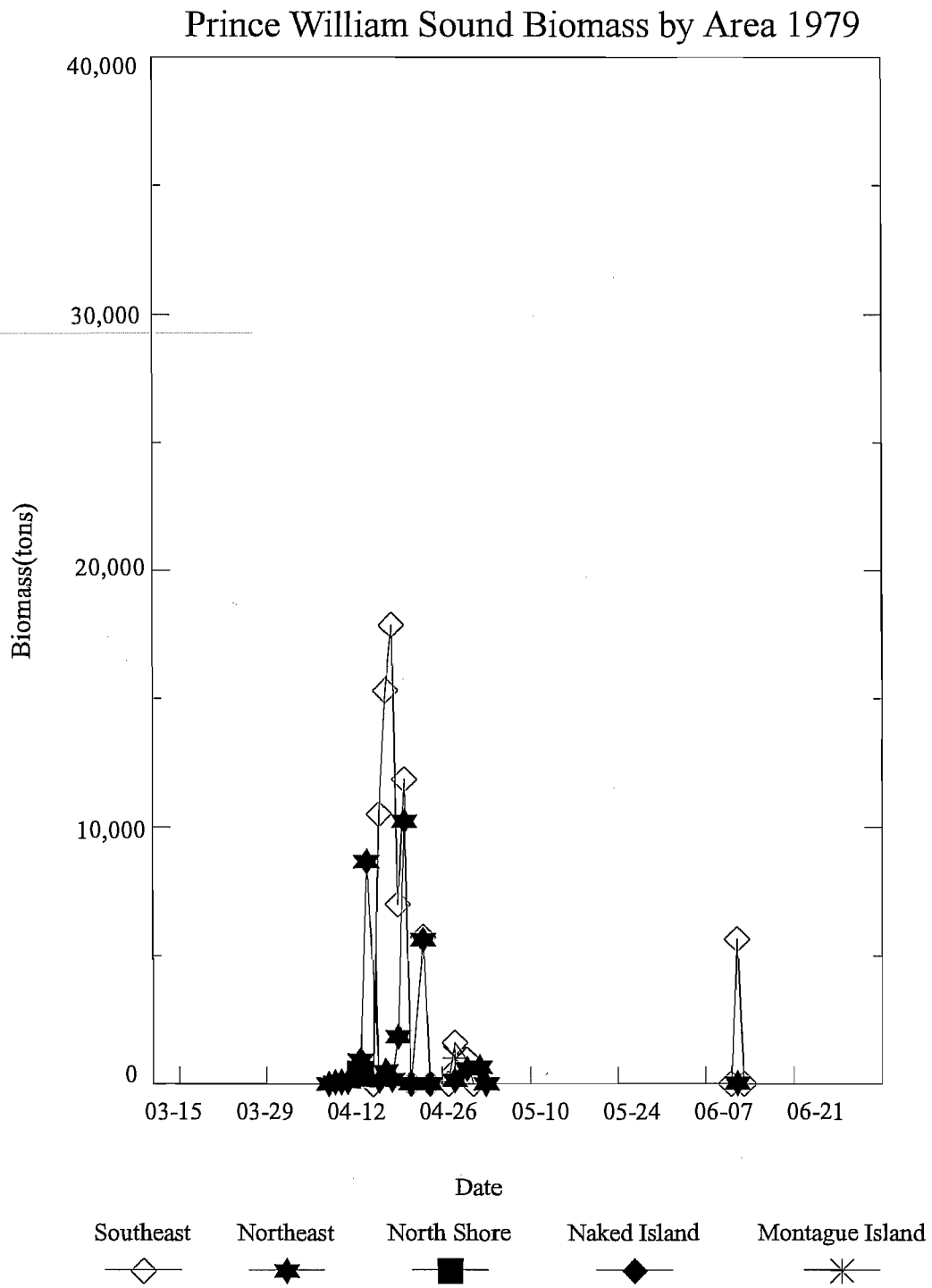
DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
4/7				0	0	0					0	4/7
4/8				0	0	0					0	4/8
4/9			40	0	20	0					60	4/9
4/10			20	50	0						70	4/10
4/11			60	0	20						80	4/11
4/13			60	730	140	390					1,320	4/13
4/14			60	50	8,560						8,670	4/14
4/16		10,520	10	30	90						10,650	4/16
4/17	6,920	8,390	400	40	50						15,800	4/17
4/18	9,520	8,340	0	60	90						18,010	4/18
4/19	4,920	2,080	10	1,670	150						8,830	4/19
4/20	8,470	3,380	10	1,460	8,750						22,070	4/20
4/23	5,330	390	10	1,830	3,780						11,340	4/23
4/26	0			0	0						0	4/26
4/28	1,590				120					1,000	2,710	4/28
4/30	930	0	80	440	50						1,500	4/30
5/2			400	90	140						630	5/2
6/12	260	5,380	10								5,650	6/12
Area Total	**37,940**	**38,480**	**1,170**	**6,450**	**21,960**	**390**	**NS**	**NS**	**NS**	**1,000**	**107,390**	**Total**
Peak Estimates	**9,520**	**10,520**	**800**	**2,560**	**17,310**	**390**	**NS**	**NS**	**NS**	**1,000**	**42,100**	**Peak**

1./ Juvenile herring or capelin.
Note: Data displayed only for dates that surveys were flown.

Appendix H.4. Estimated miles of herring spawn by sub-area and date from aerial surveys for Prince William Sound, 1979.

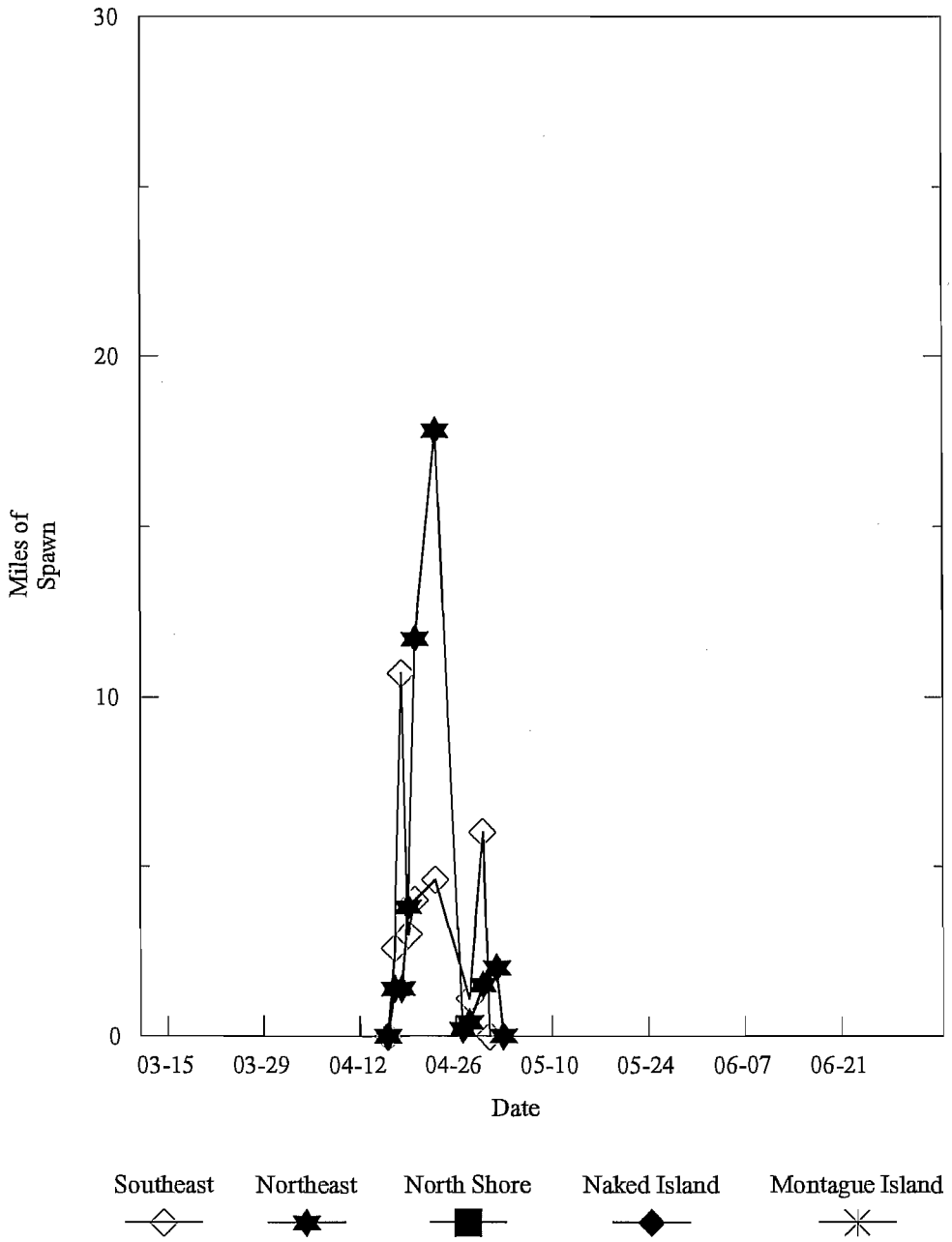
DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
4/07				0.0	0.0	0.0					0.0	4/07
4/08				0.0	0.0	0.0					0.0	4/08
4/09			0.0	0	0.0	0.0					0.0	4/09
4/10			0.0	0.0	0.0						0.0	4/10
4/11			0.0	0	0.0						0.0	4/11
4/13			0.0	0.0	0.0	0.0					0.0	4/13
4/14			0.0	0.0	0.0						0.0	4/14
4/16		0.0	0.0	0.0	0.0						0.0	4/16
4/17	0.5	2.1	1.4	0.0	0.0						4.0	4/17
4/18	0.0	10.7	0.1	1.0	0.3						12.1	4/18
4/19	0.0	3.0	0.0	3.6	0.2						6.8	4/19
4/20	4.0	0.0	1.0	7.0	3.7						15.7	4/20
4/23	1.0	3.6	0.0	7.3	10.5						22.4	4/23
4/26	0.0				0.2						0.2	4/26
4/28	1.1			0.2	0.2					1.0	2.5	4/28
4/30	6.0	0.0	0.0	0.0	1.5						7.5	4/30
5/02			0.0	0.0	2.0						2.0	5/2
6/12	0.0	0.0	0.0								0.0	6/12
Area Total	**12.6**	**19.4**	**2.5**	**19.1**	**18.6**	**0.0**	**NS**	**NS**	**NS**	**1.0**	**73.2**	**Total**

Note: Data displayed only for dates that surveys were flown.



Appendix H.5. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1979.

Prince William Sound Spawn Miles by Area 1979



Appendix H.6. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1979.

Appendix H.7. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound , 1979.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1978	1	0			0.0	0.0%	0.0	0.0%
1977	2	1	28	129	20.3	0.0%	ERR	ERR
1976	3	620	74	182	33,401.3	79.3%	ERR	ERR
1975	4	78	76	183	4,306.0	10.2%	ERR	ERR
1974	5	30	103	202	2,249.6	5.3%	ERR	ERR
1973	6	13	110	201	1,036.4	2.5%	ERR	ERR
1972	7	5	145	218	524.8	1.2%	ERR	ERR
1971	8	5	155	229	561.7	1.3%	ERR	ERR
1970	9	0			0.0	0.0%	0.0	0.0%
1969	10	0			0.0	0.0%	0.0	0.0%
1968	11	0			0.0	0.0%	0.0	0.0%
1967	12	0			0.0	0.0%	0.0	0.0%
1966	13+	0			0.0	0.0%	0.0	0.0%
Total		**752**	**77**	**183**	**42,100.0**	**100.0%**	**496,014.5**	**100.0%**

Southeast Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1978	1	0			0.0	0.0%	0.0	0.0%
1977	2	1	28	129	14.9	0.1%	454.5	0.2%
1976	3	447	75	180	17,874.8	89.2%	202,710.2	89.2%
1975	4	38	76	180	1,539.8	7.7%	16,362.3	7.2%
1974	5	7	98	197	365.8	1.8%	3,181.6	1.4%
1973	6	3	100	194	160.0	0.8%	1,363.5	0.6%
1972	7	1	159	227	84.8	0.4%	454.5	0.2%
1971	8	0			0.0	0.0%	0.0	0.0%
1970	9	0			0.0	0.0%	0.0	0.0%
1969	10	0			0.0	0.0%	0.0	0.0%
1968	11	0			0.0	0.0%	0.0	0.0%
1967	12	0			0.0	0.0%	0.0	0.0%
1966	13+	0			0.0	0.0%	0.0	0.0%
Total		**501**	**80**	**189**	**20,040.0**	**0.0%**	**227,253.6**	**0.0%**

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Appendix H.7. (page 2 of 3)

Northeast Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1978	1	0			0.0	0.0%	0.0	0.0%
1977	2	0			0.0	0.0%	0.0	0.0%
1976	3	65		181	0.0	0.0%	188,230.3	79.3%
1975	4	14		178	0.0	0.0%	40,589.4	17.1%
1974	5	2		187	0.0	0.0%	5,696.8	2.4%
1973	6	0			0.0	0.0%	0.0	0.0%
1972	7	1		234	0.0	0.0%	2,848.4	1.2%
1971	8	0			0.0	0.0%	0.0	0.0%
1970	9	0			0.0	0.0%	0.0	0.0%
1969	10	0			0.0	0.0%	0.0	0.0%
1968	11	0			0.0	0.0%	0.0	0.0%
1967	12	0			0.0	0.0%	0.0	0.0%
1966	13+	0			0.0	0.0%	0.0	0.0%
Total		**82**		**181**	**20,670.0**	**0.0%**	**237,364.9**	**100.0%**

Note: Weights were not collected for the Northeast Area sample.

North Shore Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1978	1	0			0.0	0.0%	0.0	0.0%
1977	2	0			0.0	0.0%	0.0	0.0%
1976	3	173	73	186	244.3	62.7%	3,085.7	68.9%
1975	4	40	77	187	59.6	15.3%	712.1	15.9%
1974	5	23	105	205	46.7	12.0%	412.0	9.2%
1973	6	6	115	204	13.4	3.4%	107.5	2.4%
1972	7	4	142	212	11.0	2.8%	71.7	1.6%
1971	8	5	155	229	15.0	3.8%	89.6	2.0%
1970	9	0			0.0	0.0%	0.0	0.0%
1969	10	0			0.0	0.0%	0.0	0.0%
1968	11	0			0.0	0.0%	0.0	0.0%
1967	12	0			0.0	0.0%	0.0	0.0%
1966	13+	0			0.0	0.0%	0.0	0.0%
Total		**251**	**79**	**190**	**390.0**	**100.0%**	**4,478.6**	**100.0%**

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Appendix H.7. (page 3 of 3)

Montague Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1978	1	0			0.0	0.0%	0.0	0.0%
1977	2	0			0.0	0.0%	0.0	0.0%
1976	3	0			0.0	0.0%	0.0	0.0%
1975	4	0			0.0	0.0%	0.0	0.0%
1974	5	0			0.0	0.0%	0.0	0.0%
1973	6	0			0.0	0.0%	0.0	0.0%
1972	7	0			0.0	0.0%	0.0	0.0%
1971	8	0			0.0	0.0%	0.0	0.0%
1970	9	0			0.0	0.0%	0.0	0.0%
1969	10	0			0.0	0.0%	0.0	0.0%
1968	11	0			0.0	0.0%	0.0	0.0%
1967	12	0			0.0	0.0%	0.0	0.0%
1966	13+	0			0.0	0.0%	0.0	0.0%
Total		**0**			**1,000.0**	**0.0%**	**0.0**	**0.0%**

Appendix H.8. Age, sex and size composition of Pacific herring from the purse seine sac roe fishery, Prince William Sound, 1979.

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	-	-	-	-	-	-	-	-	-	-
	3	97	74	2	173	68.9	73	10.3	122	186	8	173
Glacier Island,	4	231	19	0	40	15.9	77	11.1	26	187	8.5	40
North Shore	5	13	10	0	23	9.2	105	17.1	12	205	11.7	23
Spring, 1979	6	5	1	0	6	2.4	115	-	1	204	13.4	6
Purse Seine	7	3	1	0	4	1.6	142	4.2	2	212	17.9	4
Sac Roe Harvest	8	3	2	0	5	2.0	155	12.5	4	229	2.3	5
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**142**	**107**	**2**	**251**	**100.0**	**79**	**19.6**	**167**	**190**	**12.2**	**251**
	2	-	1	0	1	0.2	28	-	1	129	-	1
	3	228	219	0	447	89.2	75	13.3	447	180	8.6	447
Parshas and Simpson Bays,	4	20	16	0	38	7.2	76	15.7	36	180	10.6	36
Southeast Area	5	2	5	0	7	1.4	98	10.2	7	197	5.9	7
Spring, 1979	6	1	2	0	3	0.6	100	27.3	3	194	21.1	3
Purse Seine	7	1	-	0	1	0.2	159	-	1	227	-	1
Sac Roe Harvest	8	-	-	-	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**252**	**243**	**0**	**501**	**100.0**	**80**	**51.4**	**501**	**189**	**75.6**	**501**

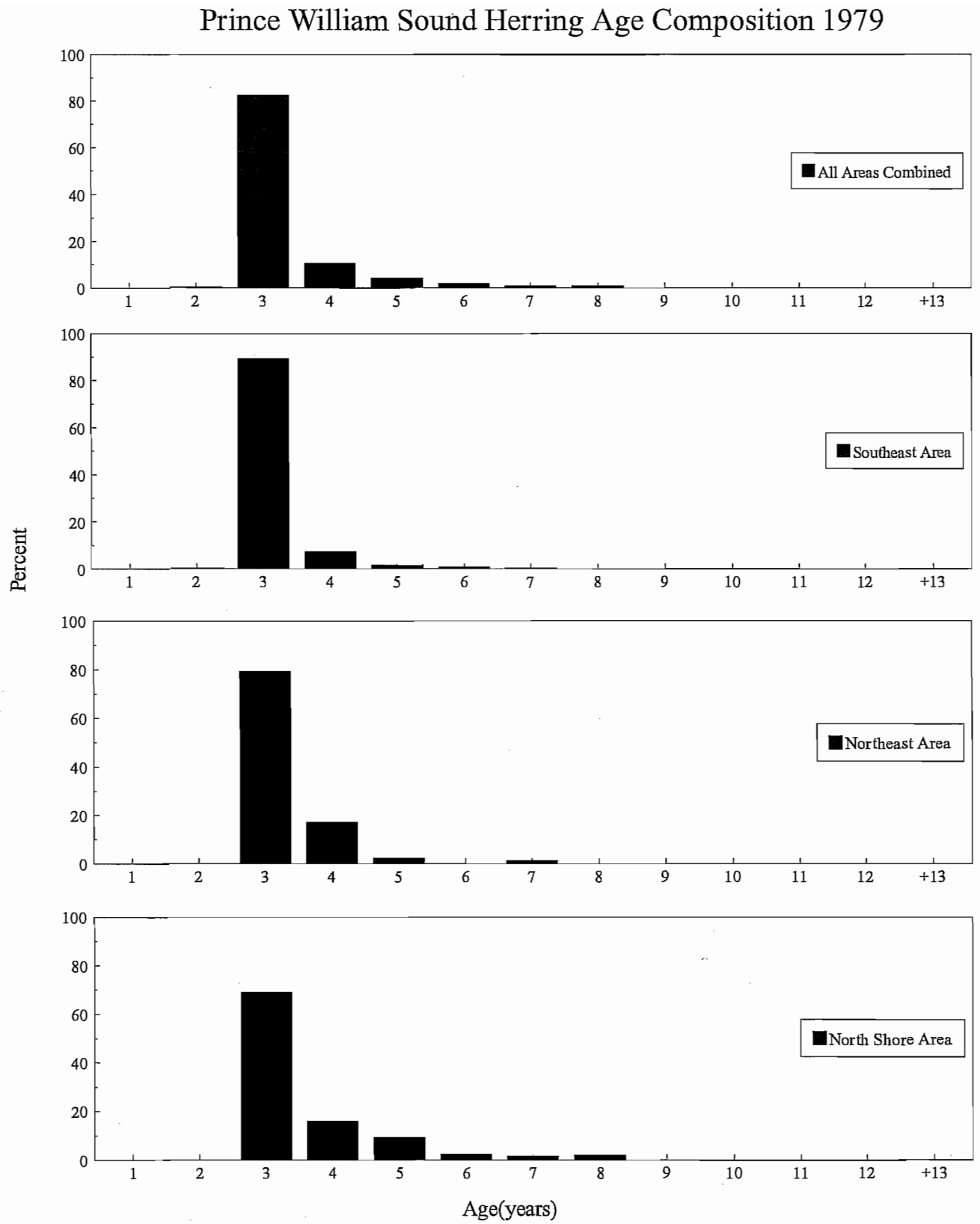
Indicates dominant age class.

-Continued-

Appendix H.8. (page 2 of 2)

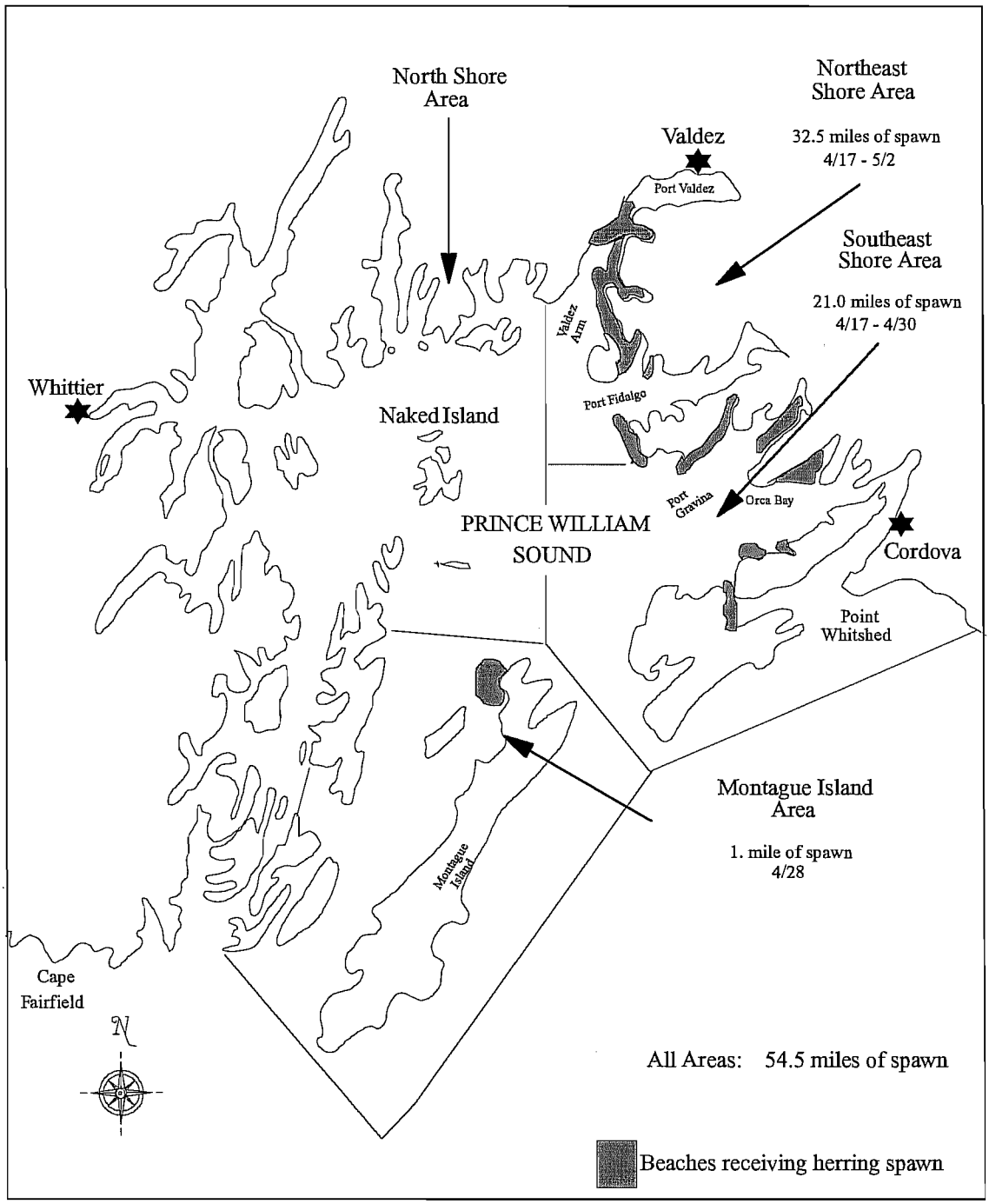
Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	-	-	-	-	-	-	-	-	-	-
	3	40	25	0	65	79.3	-			181	9.9	65
Landlocked Bay,	4	9	5	0	14	17.1	-	-	-	178	13.2	14
Northeast Area	5	1	1	0	2	2.4	-	-	-	187	12.7	2
Spring, 1979	6	-	-	0	0	0.0	-	-	-	-	-	-
Purse Seine	7	1	-	0	1	1.2	-	-	-	234	-	1
Sac Roe Harvest	8	-	-	0	0	0.0	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**51**	**31**	**0**	**82**	**100.0**			**0**	**181**	**12**	**82**

Indicates dominant age class.



Appendix H.9. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1979.

Historical Herring Spawn and Shoreline Mileage



Appendix H.10. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys for 1979.

APPENDIX I: SUMMARY FOR 1980

Appendix I.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1980.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
04/03	0	0	0	NS	NS	0	04/03
04/04	0	NS	NS	NS	NS	0	04/04
04/05	3,380	NS	0	NS	6,390	9,770	04/05
04/06	1,310	NS	NS	NS	NS	1,310	04/06
04/08	NS	NS	NS	NS	11,840	11,840	04/08
04/09	NS	NS	NS	NS	20,400	20,400	04/09
04/10	220	0	NS	NS	NS	220	04/10
04/12	0	NS	NS	NS	0	0	04/12
04/14	10	8,770	0	NS	100	8,880	04/14
04/15	0	19,650	NS	NS	NS	19,650	04/15
04/16	40	18,570	10	NS	NS	18,620	04/16
04/17	0	15,900	NS	NS	80	15,980	04/17
04/18	0	2,770	0	NS	NS	2,770	04/18
04/19	0	2,390	0	NS	0	2,390	04/19
04/20	0	2,820	NS	NS	80	2,900	04/20
04/22	NS	0	NS	NS	NS	0	04/22
04/23	NS	0	NS	NS	NS	0	04/23
04/24	30	2,760	NS	NS	NS	2,790	04/24
04/28	140	610	NS	NS	NS	750	04/28
04/29	0	0	NS	NS			04/29
04/30	90	3,430	NS	NS	NS	3,520	04/30
05/01	260	0	NS	NS	0	260	05/01
05/02	NS	0	NS	NS	NS	0	05/02
05/08	0	NS	NS	NS	NS	0	05/08
AREA TOTAL	**5,480**	**77,670**	**10**	**NS**	**38,890**	**122,050**	**TOTAL**
PEAK ESTIMATES	**3,520**	**38,180**	**10**	**NS**	**20,400**	**62,110**	**PEAK**

[a]Dates displayed are for actual survey days.
NS = Not Surveyed

Appendix I.2. Herring spawn mile days from aerial surveys by area and date for Prince William Sound, 1980.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
04/03	0.0	0.0	0.0	NS	NS	0.0	04/03
04/04	0.8	0.0	NS	NS	NS	0.8	04/04
04/05	0.5	0.0	0.0	NS	NS	0.5	04/05
04/06	1.0	NS	NS	NS	NS	1.0	04/06
04/08	0.0	NS	NS	NS	1.6	1.6	04/08
04/09	0.0	NS	NS	NS	1.5	1.5	04/09
04/10	3.5	0.0	NS	NS	NS	3.5	04/10
04/12	2.5	NS	NS	NS	1.5	4.0	04/12
04/14	0.0	NS	NS	NS	0.0	0.0	04/14
04/15	NS	0.3	NS	NS	NS	0.3	04/15
04/16	NS	3.3	0.0	NS	NS	3.3	04/16
04/17	NS	3.0	NS	NS	0.0	3.0	04/17
04/18	NS	5.1	0.0	NS	NS	5.1	04/18
04/19	0.0	5.5	0.0	NS	NS	5.5	04/19
04/20	NS	11.2	NS	NS	0.0	11.2	04/20
04/22	NS	0.0	NS	NS	NS	0.0	04/22
04/23	NS	3.6	NS	NS	NS	3.6	04/23
04/24	NS	2.8	NS	NS	NS	2.8	04/24
04/28	2.0	6.4	NS	NS	NS	8.4	04/28
04/29	1.2	2.5	NS	NS	NS	3.7	04/29
04/30	1.5	0.8	NS	NS	NS	2.3	04/30
05/01	NS	5.2	NS	NS	NS	5.2	05/01
05/02	NS	2.2	NS	NS	NS	2.2	05/02
05/08	0.5	0.0	NS	NS	NS	0.5	05/08
Mile Days	**13.5**	**51.8**	**0.0**	NS	**4.6**	**69.9**	**Total**
Shoreline Miles	10.3	34.8	0.0	0.0	5.5	50.5	Total

a Dates displayed are for actual survey days.
NS = Not Surveyed

Appendix I.3. Herring biomass estimates from aerial surveys by sub-area and date for Prince William Sound, 1980.

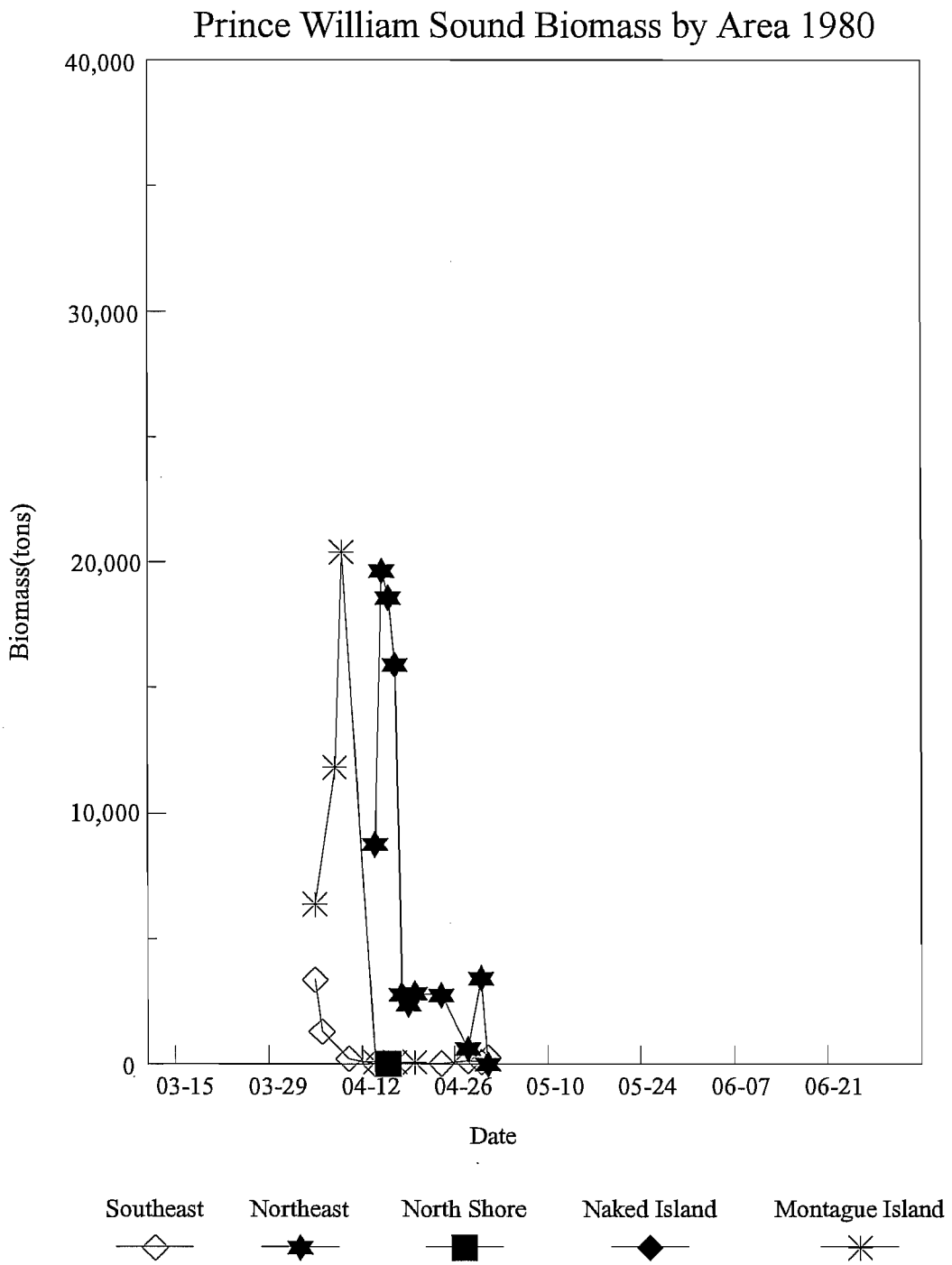
DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
4/3	0	0	0	0	0	0					0	4/3
4/4	0	0									0	4/4
4/5	3,380									6,390	9,770	4/5
4/6	1,310										1,310	4/6
4/8										11,840	11,840	4/8
4/9										20,400	20,400	4/9
4/10	210	10									220	4/10
4/12	0									0	0	4/12
4/14	0	10	8,540	230						100	8,880	4/14
4/15	0	0	3,300	16,350	0						19,650	4/15
4/16	40		2,590	9,060	6,920	10					18,620	4/16
4/17	0		3,520	4,380	8,000					80	15,980	4/17
4/18	0	0	1,790	880	100	0					2,770	4/18
4/19			210	450	1,730	0					2,390	4/19
4/20			910	1,860	50					80	2,900	4/20
4/23			0	0	0						0	4/23
4/24	30		180	190	2,390						2,790	4/24
4/28	0		10	120	480						610	4/28
4/29		140	0		0						140	4/29
4/30		90	0	0	3,430						3,520	4/30
5/01	260	0	0	0	0						260	5/1
5/02					0						0	5/2
5/08		0									0	5/8
Area Total	**5,230**	**250**	**21,050**	**33,520**	**23,100**	**10**	**NS**	**NS**	**NS**	**38,890**	**122,050**	**Total**
Peak Estimates	**3,380**	**140**	**8,540**	**18,210**	**11,430**	**10**	**NS**	**NS**	**NS**	**20,400**	**62,110**	**Peak**

Note: Data displayed only for dates that surveys were flown.

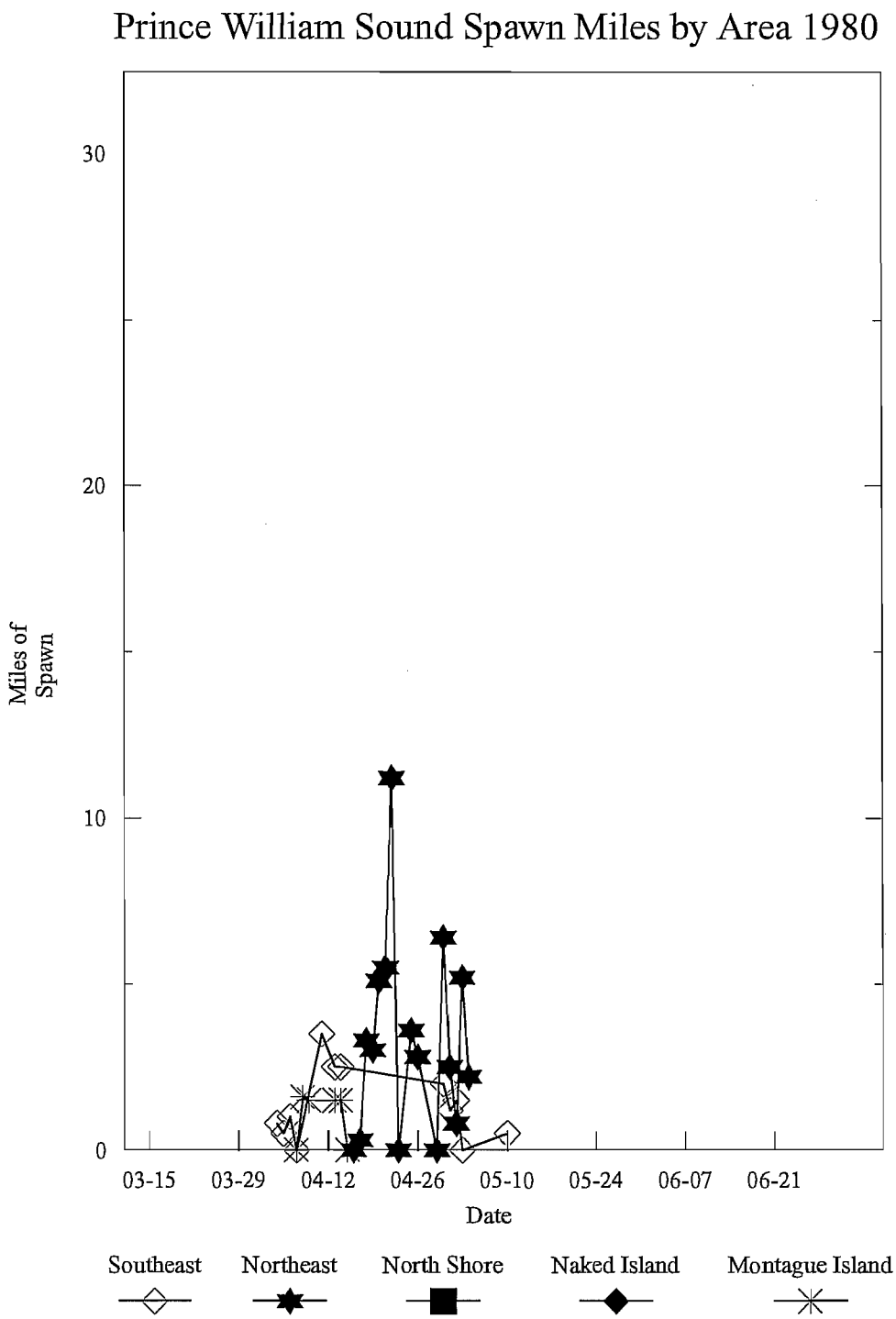
Appendix I.4. Estimated miles of herring spawn by sub-area and date from aerial surveys for Prince William Sound, 1980.

DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
4/03	0.0	0.0	0.0	0.0	0.0	0.0					0.0	4/03
4/4	0.5	0.3									0.8	4/4
4/5	0.5					0.0				0.0	0.5	4/5
4/6	1.0										1.0	4/6
4/8										1.6	1.6	4/8
4/9										1.5	1.5	4/9
4/10	3.5	0.0									3.5	4/10
4/12	2.5									1.5	4.0	4/12
4/14	0.0	0.0	0.0	0.0							0.0	4/14
4/15	0.0	0.0	0.3	0.0	0.0						0.3	4/15
4/16	0.0		0.3	3.0	0.0	0.0					3.3	4/16
4/17	0.0		0.3	2.5	0.2					0.0	3.0	4/17
4/18	0.0	0.0	2.9	2.0	0.2	0.0					5.1	4/18
4/19			2.0	2.0	1.5	0.0					5.5	4/19
4/20			2.9	2.8	5.5					0.0	11.2	4/20
4/23			1.0	1.3	1.3						3.6	4/23
4/24	0.0		1.4	0.8	0.6						2.8	4/24
4/28	2.0		0.2	2.0	4.2						8.4	4/28
4/29		1.2	0.5		2.0						3.7	4/29
4/30		1.5	0.0	0.8	0.0						2.3	4/30
5/01	0.0	0.0	0.0	0.0	5.2						5.2	5/01
5/02					2.2						2.2	5/02
5/08		0.5									0.5	5/08
Area Total	**10.0**	**3.5**	**11.8**	**17.1**	**22.9**	**0.0**	**NS**	**NS**	**NS**	**4.6**	**69.9**	**Total**

Note: Data displayed only for dates that surveys were flown.



Appendix I.5. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1980.



Appendix I.6. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1980.

Appendix I.7. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound , 1980.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1979	1	0			0.0	0.0%	0.0	0.0%
1978	2	1	42	150	52.7	0.1%	1,937.2	0.3%
1977	3	67	79	180	6,619.7	10.7%	83,425.8	13.9%
1976	4	389	98	191	47,906.4	77.1%	462,839.8	77.0%
1975	5	47	106	197	6,251.0	10.1%	47,188.3	7.8%
1974	6	4	149	216	746.1	1.2%	3,989.4	0.7%
1973	7	3	142	222	534.2	0.9%	2,052.2	0.3%
1972	8	0			0.0	0.0%	0.0	0.0%
1971	9	0			0.0	0.0%	0.0	0.0%
1970	10	0			0.0	0.0%	0.0	0.0%
1969	11	0			0.0	0.0%	0.0	0.0%
1968	12	0			0.0	0.0%	0.0	0.0%
1967	13+	0			0.0	0.0%	0.0	0.0%
Total		**511**	**97**	**191**	**62,110.0**	**100.0%**	**601,432.6**	**100.0%**

Southeast Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1979	1	0			0.0	0.0%	0.0	0.0%
1978	2	1	42	150	7.5	0.2%	162.9	0.5%
1977	3	30	81	181	434.0	12.3%	4,855.2	14.9%
1976	4	157	100	190	2,804.0	79.7%	25,449.0	78.1%
1975	5	12	115	198	246.5	7.0%	1,955.1	6.0%
1974	6	1	157	224	28.0	0.8%	162.9	0.5%
1973	7	0			0.0	0.0%	0.0	0.0%
1972	8	0			0.0	0.0%	0.0	0.0%
1971	9	0			0.0	0.0%	0.0	0.0%
1970	10	0			0.0	0.0%	0.0	0.0%
1969	11	0			0.0	0.0%	0.0	0.0%
1968	12	0			0.0	0.0%	0.0	0.0%
1967	13+	0			0.0	0.0%	0.0	0.0%
Total		**201**	**98**	**189**	**3,520.0**	**100.0%**	**32,585.1**	**100.0%**

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Appendix I.7. (page 2 of 3)

Northeast Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1979	1	0			0.0	0.0%	0.0	0.0%
1978	2	0			81.4	0.0%	0.0	0.0%
1977	3	6	64	167	2,075.5	5.4%	31,053.8	7.8%
1976	4	64	93	188	32,169.8	84.3%	330,842.1	83.1%
1975	5	7	104	195	3,934.7	10.3%	36,229.4	9.1%
1974	6	0			0.0	0.0%	0.0	0.0%
1973	7	0			0.0	0.0%	0.0	0.0%
1972	8	0			0.0	0.0%	0.0	0.0%
1971	9	0			0.0	0.0%	0.0	0.0%
1970	10	0			0.0	0.0%	0.0	0.0%
1969	11	0			0.0	0.0%	0.0	0.0%
1968	12	0			0.0	0.0%	0.0	0.0%
1967	13+	0			0.0	0.0%	0.0	0.0%
Total		77	**87**	**187**	**38,180.0**	**100.0%**	**398,125.2**	**100.0%**

North Shore Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1979	1	0			0.0	0.0%	0.0	0.0%
1978	2	0			0.0	0.0%	0.0	0.0%
1977	3	0			0.0	0.0%	0.0	0.0%
1976	4	0			0.0	0.0%	0.0	0.0%
1975	5	0			0.0	0.0%	0.0	0.0%
1974	6	0			0.0	0.0%	0.0	0.0%
1973	7	0			0.0	0.0%	0.0	0.0%
1972	8	0			0.0	0.0%	0.0	0.0%
1971	9	0			0.0	0.0%	0.0	0.0%
1970	10	0			0.0	0.0%	0.0	0.0%
1969	11	0			0.0	0.0%	0.0	0.0%
1968	12	0			0.0	0.0%	0.0	0.0%
1967	13+	0			0.0	0.0%	0.0	0.0%
Total		**0**			**10.0**	**0.0%**	**0.0**	**0.0%**

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Appendix I.7. (page 3 of 3)

Montague Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1979	1	0			0.0	0.0%	0.0	0.0%
1978	2	0			0.0	0.0%	0.0	0.0%
1977	3	37	77	179	1,948.9	9.6%	25,310.2	11.9%
1976	4	232	97	192	15,394.1	75.5%	158,701.6	74.8%
1975	5	35	103	197	2,466.0	12.1%	23,942.1	11.3%
1974	6	3	146	213	299.6	1.5%	2,052.2	1.0%
1973	7	3	142	222	291.4	1.4%	2,052.2	1.0%
1972	8	0			0.0	0.0%	0.0	0.0%
1971	9	0			0.0	0.0%	0.0	0.0%
1970	10	0			0.0	0.0%	0.0	0.0%
1969	11	0			0.0	0.0%	0.0	0.0%
1968	12	0			0.0	0.0%	0.0	0.0%
1967	13+	0			0.0	0.0%	0.0	0.0%
Total		**310**	**96**	**192**	**20,400.0**	**100.0%**	**212,058.2**	**100.0%**

Appendix I.8. Age, sex and size composition of Pacific herring from the purse seine sac roe fishery, Prince William Sound, 1980.

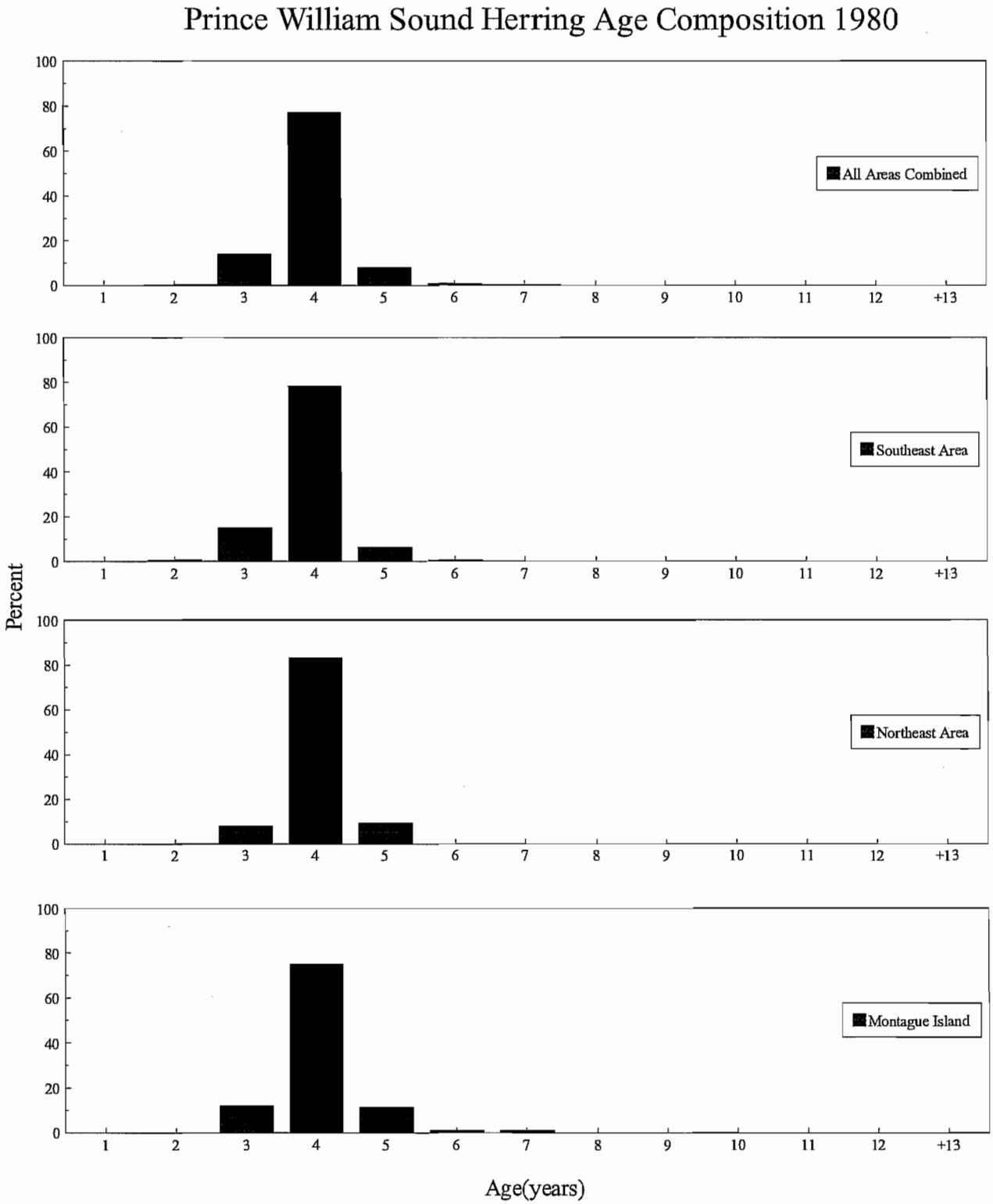
Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2											
	3	-	-	37	37	11.9	77	-	37	179	-	37
	4	-	-	232	232	74.8	97	-	232	192	-	232
Montague Island	5	-	-	35	35	11.3	103	-	35	197	-	35
Spring, 1980	6	-	-	3	3	1.0	146	-	3	213	-	3
Purse Seine	7	-	-	3	3	1.0	142	-	3	222	-	3
Sac Roe Harvest	8	-	-	-	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13											
Total		-	-	**310**	**310**	**100.0**	**96**	-	**310**	**192**	-	**310**
	2	-	-	1	1	0.5	42	-	1	150	-	1
Port Gravina,	3	-	-	30	30	14.9	81	-	30	181	-	30
Southeast Area	4	-	-	157	157	78.1	100	-	157	190	-	157
Spring, 1980	5	-	-	12	12	6.0	115	-	12	198	-	12
Purse Seine	6	-	-	1	1	0.5	157	-	1	224	-	1
Sac Roe Harvest	7	-	-	-	-	-	-	-	-	-	-	-
	8	-	-	-	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11											
	12											
	+13											
Total		-	-	**201**	**201**	**100.0**	**98**	-	**201**	**189**	-	**201**

Indicates dominant age class.

-Continued-

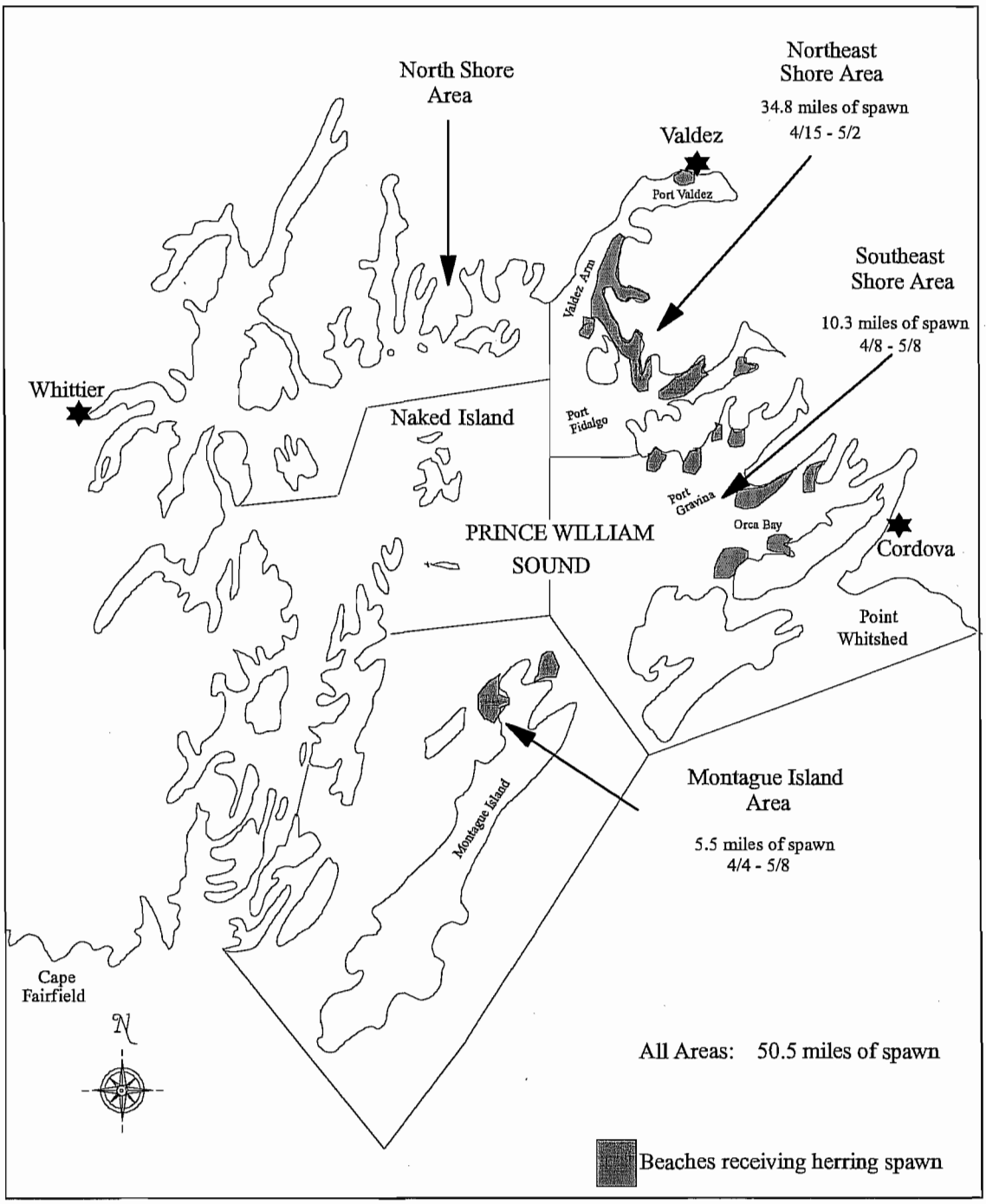
Appendix I.8. (page 2 of 2)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2											
	3	-	-	6	6	7.8	64	-	6	167	-	6
	4	-	-	64	64	83.1	93	-	64	188	-	64
Northeast Area	5	-	-	7	7	9.1	104	-	7	195	-	7
Spring, 1980	6	-	-	-	-	-	-	-	-	-	-	-
Purse Seine	7	-	-	-	-	-	-	-	-	-	-	-
Pound Fishery Harvest	8	-	-	-	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13											
Total		**-**	**-**	**77**	**77**	**100.0**	**87**	**-**	**77**	**187**	**-**	**77**



Appendix I.9. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1980.

Historical Herring Spawn and Shoreline Mileage



Appendix I.10. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys for 1980.

APPENDIX J: SUMMARY FOR 1981

Appendix J.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1981.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/20	0	0	0	0	0	0	03/20
03/24	5,290	0	NS	NS	NS	5,290	03/24
03/25	7,180	0	0	NS	NS	7,180	03/25
03/27	6,280	0	0	NS	0	6,280	03/27
03/29	4,450	0	NS	NS	0	4,450	03/29
03/31	1,280	110	0	NS	0	1,390	03/31
04/02	30	0	0	NS	0	30	04/02
04/03	0	80	0	NS	0	80	04/03
04/04	0	0	10	NS	13,350	13,360	04/04
04/05	0	0	0	NS	90	90	04/05
04/06	0	1,170	0	NS	410	1,580	04/06
04/07	0	0	NS	NS	0	0	04/07
04/08	80	430	0	NS	0	510	04/08
04/11	0	6,200	0	NS	0	6,200	04/11
04/12	0	16,780	1,940	NS	0	18,720	04/12
04/13	0	11,960	80	NS	NS	12,040	04/13
04/14	NS	6,220	430	NS	NS	6,650	04/14
04/15	0	5,160	0	NS	10	5,170	04/15
04/16	20	6,420	NS	NS	0	6,440	04/16
04/17	0	1,350	0	NS	0	1,350	04/17
04/18	NS	1,600	NS	NS	NS	1,600	04/18
04/20	0	60	0	NS	430	490	04/20
04/21	10	1,090	NS	NS	NS	1,100	04/21
04/22	0	1,550	0	NS	18,950	20,500	04/22
04/23	NS	1,320	0	NS	25,080	26,400	04/23
04/24	160	110	NS	NS	120	390	04/24
04/25	NS	4,670	NS	NS	NS	4,670	04/25
04/26	40	640	NS	NS	120	800	04/26
04/27	40	320	NS	NS	1,760	2,120	04/27
04/28	NS	420	NS	NS	2,270	2,690	04/28
04/30	0	180	0	NS	2,820	3,000	04/30
05/01	NS	180	NS	NS	NS	180	05/01
05/05	NS	940	NS	NS	NS	940	05/05
AREA TOTAL	**24,860**	**68,960**	**2,460**	**0**	**65,410**	**161,690**	**TOTAL**
PEAK ESTIMATES	**7,340**	**27,200**	**2,020**	**0**	**41,250**	**77,810**	**PEAK**

[a]Dates displayed are for actual survey days.

NS = Not Surveyed

Appendix J.2. Herring spawn mile days from aerial surveys by area and date for Prince William Sound, 1981.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/20	0	0	0	0	0	0.0	03/20
03/24	0	NS	NS	NS	NS	0.0	03/24
03/25	2.6	NS	NS	NS	NS	2.6	03/25
03/27	0	0	0	NS	0	0.0	03/27
03/29	2.0	NS	NS	NS	NS	2.0	03/29
03/31	1.0	NS	NS	NS	NS	1.0	03/31
04/02	2.2	0.0	NS	NS	NS	2.2	04/02
04/03	0	0	0	NS	0	0.0	04/03
04/04	0	0	0	NS	0	0.0	04/04
04/05	0	0	0	NS	0	0.0	04/05
04/06	0	0	0	NS	0	0.0	04/06
04/07	0	0	0	NS	0	0.0	04/07
04/08	0	0	0	NS	0	0.0	04/08
04/11	NS	1.0	NS	NS	NS	1.0	04/11
04/12	NS	1.2	5.8	NS	NS	7.0	04/12
04/13	NS	3.3	2.0	NS	NS	5.3	04/13
04/14	NS	2.3	NS	NS	NS	2.3	04/14
04/15	NS	3.5	NS	NS	NS	3.5	04/15
04/16	NS	2.8	NS	NS	NS	2.8	04/16
04/17	NS	6.6	NS	NS	NS	6.6	04/17
04/18	NS	4.8	NS	NS	NS	4.8	04/18
04/20	NS	1.7	NS	NS	NS	1.7	04/20
04/21	9.5	6.1	NS	NS	NS	15.6	04/21
04/22	2.5	2.4	NS	NS	4.5	9.4	04/22
04/23	NS	0.3	NS	NS	19.0	19.3	04/23
04/24	NS	1.5	NS	NS	23.0	24.5	04/24
04/25	NS	1.5	NS	NS	NS	1.5	04/25
04/26	NS	4.8	NS	NS	0.1	4.9	04/26
04/27	NS	2.0	NS	NS	0.6	2.6	04/27
04/28	NS	0.5	NS	NS	13.1	13.6	04/28
04/30	NS	1.5	NS	NS	3.1	4.6	04/30
05/01	NS	0.5	NS	NS	NS	0.5	05/01
05/05	NS	0	NS	NS	NS	0.0	05/05
Mile Days	**19.8**	**48.1**	**7.8**	**0.0**	**63.4**	**139.1**	**Total**
Shoreline Miles	**13.9**	**29.0**	**5.8**	**0.0**	**36.8**	**85.3**	**Total**

a Dates displayed are for actual survey days.

NS = Not Surveyed

Appendix J.3. Herring biomass estimates from aerial surveys by sub-area and date for Prince William Sound, 1981.

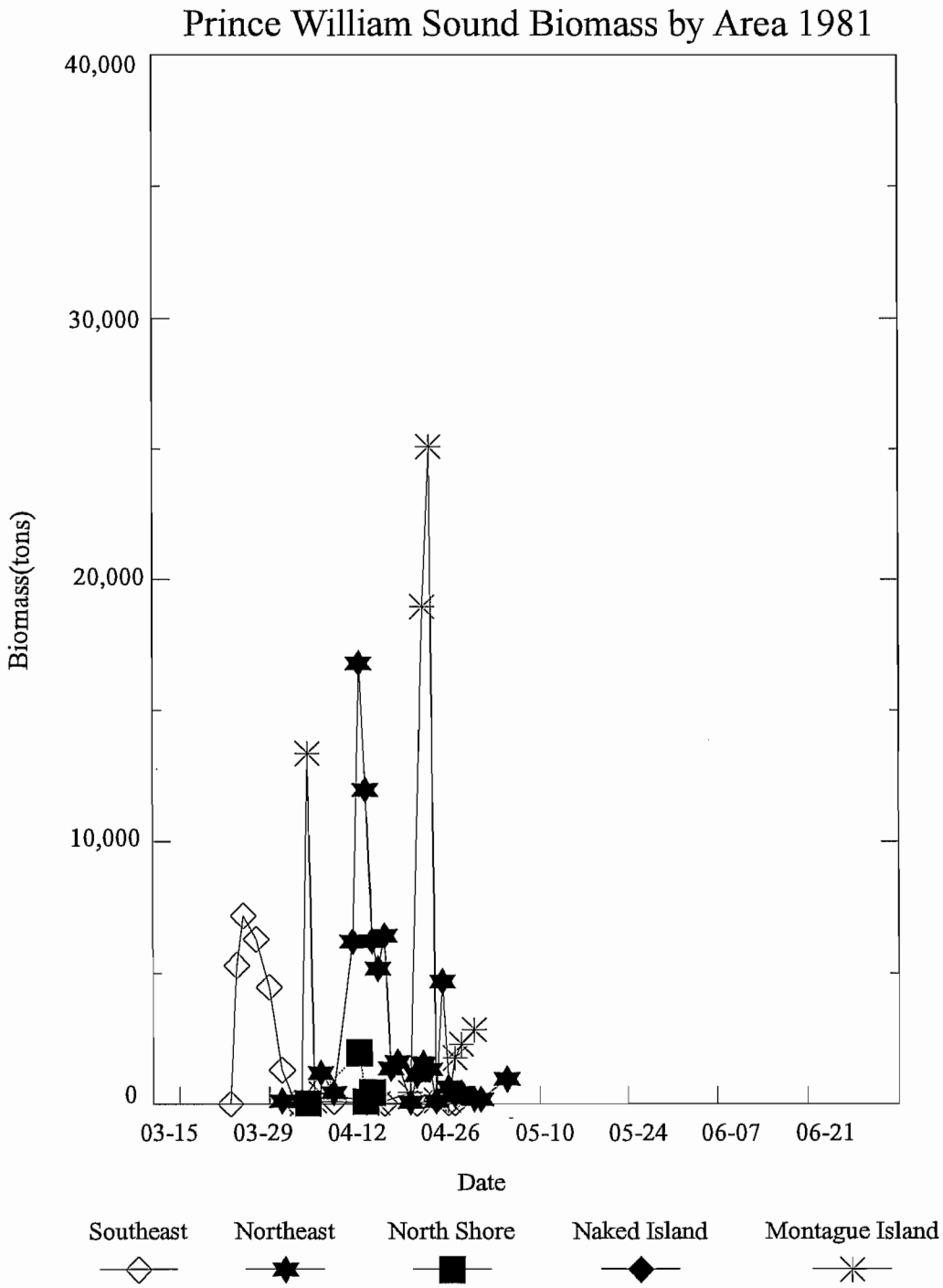
DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTALS	DATE
03/20	0	0	0	0	0	0		0		0		3/20
3/24		5,290									5,290	3/24
3/25	40	7,140	0	0	0	0					7,180	3/25
3/27	0	6,280	0	0						0	6,280	3/27
3/29	0	4,450	0	0						0	4,450	3/29
3/31	0	1,280	0	0	110	0				0	1,390	3/31
4/2	0	30	0								30	4/2
4/3		0	10	0	70	0				0	80	4/3
4/4	0	0	0	0		10				13,350	13,360	4/4
4/5										90	90	4/5
4/6		0	0	0	1,170	0				410	1,580	4/6
4/7	0	0	0	0						0	0	4/7
4/8		80	0	0	430					0	510	4/8
4/11	0	0	0	1,260	4,940					0	6,200	4/11
4/12		0	350	2,680	13,750	0	1,940			0	18,720	4/12
4/13		0	0	8,430	3,530	80	0				12,040	4/13
4/14			0	50	6,170		430				6,650	4/14
4/15		0	0	2,230	2,930					10	5,170	4/15
4/16		20	290	3,860	2,270						6,440	4/16
4/17	0	0	0	440	910					0	1,350	4/17
4/18			0	440	1,160						1,600	4/18
4/20		0		0	60					430	490	4/20
4/21		10	70	960	60						1,100	4/21
4/22	0	0	40	410	1,100	0				18,950	20,500	4/22
4/23	0		470	40	810					25,080	26,400	4/23
4/24		160	40	10	60					120	390	4/24
4/25			790	1,110	2,770						4,670	4/25
4/26		40	0	40	600	0				120	800	4/26
4/27	0	40	10	0	310					1,760	2,120	4/27
4/28			0	0	420					2,270	2,690	4/28
4/30		0	60		180					2,820	3,060	4/30
5/01			0	0	180						180	5/01
5/05	10				930						940	5/05
Area Total	**50**	**24,820**	**2,130**	**21,960**	**44,920**	**90**	**2,370**	**NS**	**NS**	**65,410**	**161,750**	**Total**
Peak Estimates	**40**	**7,300**	**1,140**	**9,540**	**16,520**	**80**	**1,940**	**NS**	**NS**	**41,250**	**77,810**	**Peak**

Note: Data displayed only for dates that surveys were flown.

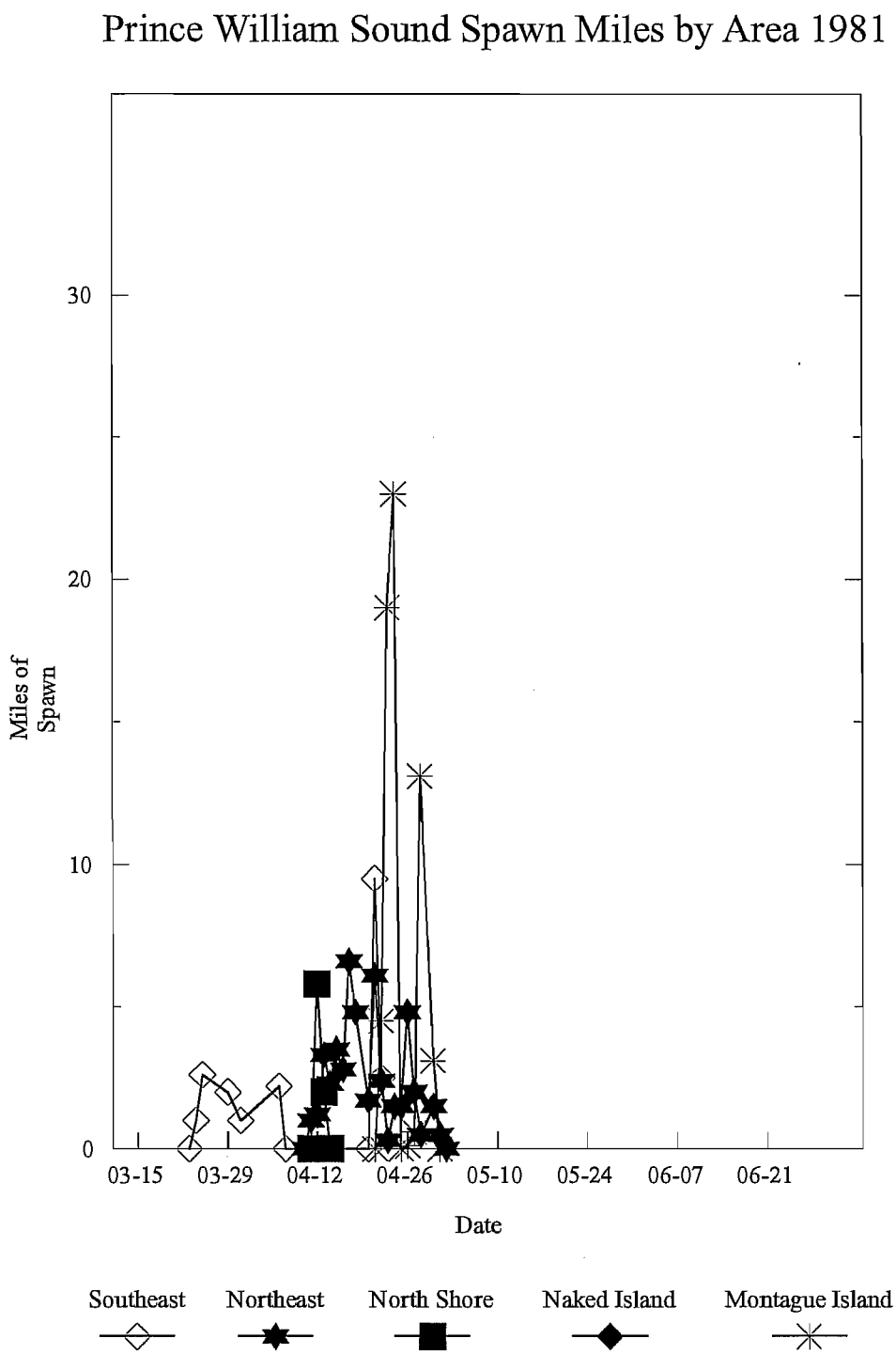
Appendix J.4. Estimated miles of herring spawn by sub-area and date from aerial surveys for Prince William Sound, 1981.

DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
3/20	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	3/20
3/24		1.0									1.0	3/24
3/25	0.0	2.6	0.0	0.0	0.0	0.0					2.6	3/25
3/27	0.0	0.0	0.0	0.0						0.0	0.0	3/27
3/29	0.0	2.0	0.0	0.0						0.0	2.0	3/29
3/31	0.0	1.0	0.0	0.0	0.0	0.0				0.0	1.0	3/31
4/02	0.0	0.0	0.0								0.0	4/2
4/3		0.0	0.0	0.0	0.0	0.0				0.0	0.0	4/3
4/4	0.0	0.0	0.0	0.0		0.0				0.0	0.0	4/4
4/5										0.0	0.0	4/5
4/6		2.2	0.0	0.0	0.0	0.0				0.0	2.2	4/6
4/7	0.0	0.0	0.0	0.0						0.0	0.0	4/7
4/8		0.0	0.0	0.0	0.0					0.0	0.0	4/8
4/11	0.0	0.0	0.0	0.5	0.5					0.0	1.0	4/11
4/12		0.0	0.0	1.0	0.2	0.0	5.8			0.0	7.0	4/12
4/13		0.0	0.0	3.3	0.0	0.0	2.0				5.3	4/13
4/14			0.0	2.3	0.0		0.0				2.3	4/14
4/15		0.0	0.0	2.8	0.7					0.0	3.5	4/15
4/16		0.0	1.3	1.5	0.0						2.8	4/16
4/17	0.0	0.0	0.5	5.5	0.6					0.0	6.6	4/17
4/18			0.3	3.6	0.9						4.8	4/18
4/20		0.0		1.5	0.2					0.0	1.7	4/20
4/21		9.5	1.0	2.8	2.3						15.6	4/21
4/22	0.0	2.5	2.0	0.2	0.2	0.0				4.5	9.4	4/22
4/23	0.0		0.3	0.0	0.0					19.0	19.3	4/23
4/24		0.0	1.5	0.0	0.0					23.0	24.5	4/24
4/25			0.0	1.5	0.0						1.5	4/25
4/26		0.0	0.0	4.8	0.0	0.0				0.1	4.9	4/26
4/27	0.0	0.0	0.0	1.0	1.0					0.6	2.6	4/27
4/28			0.0	0.5	0.0					13.1	13.6	4/28
4/30		0.0	0.0		1.5					3.1	4.6	4/30
5/1			0.0	0.0	0.5						0.5	5/1
5/5	0.0				0.0						0.0	5/5
Area Total	**0.0**	**20.8**	**6.9**	**32.7**	**8.5**	**0.0**	**7.8**	**NS**	**NS**	**63.4**	**140.1**	**Total**

Note: Data displayed only for dates that surveys were flown.



Appendix J.5. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1981.



Appendix J.6. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1981.

Appendix J.7. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound , 1981.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1980	1	0			0.0	0.0%	0.0	0.0%
1979	2	0			0.0	0.0%	0.0	0.0%
1978	3	6	73	179	803.1	1.0%	14,668.8	2.3%
1977	4	43	100	195	12,089.7	15.5%	117,898.1	18.7%
1976	5	167	112	201	55,582.9	71.4%	445,614.5	70.8%
1975	6	19	120	205	6,237.0	8.0%	45,960.1	7.3%
1974	7	2	161	222	2,515.5	3.2%	5,380.8	0.9%
1973	8	0			581.9	0.7%	0.0	0.0%
1972	9	0			0.0	0.0%	0.0	0.0%
1971	10	0			0.0	0.0%	0.0	0.0%
1970	11	0			0.0	0.0%	0.0	0.0%
1969	12	0			0.0	0.0%	0.0	0.0%
1968	13+	0			0.0	0.0%	0.0	0.0%
Total		**237**	**110**	**200**	**77,810.0**	**100.0%**	**629,522.3**	**100.0%**

Southeast Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1980	1	0			0.0	0.0%	0.0	0.0%
1979	2	0			0.0	0.0%	0.0	0.0%
1978	3	4	77	181	162.4	2.2%	1,902.5	3.2%
1977	4	20	107	197	1,128.2	15.4%	9,572.1	16.1%
1976	5	86	113	200	5,123.2	69.8%	41,261.1	69.4%
1975	6	13	123	208	843.0	11.5%	6,242.7	10.5%
1974	7	1	158	215	83.3	1.1%	475.6	0.8%
1973	8	0			0.0	0.0%	0.0	0.0%
1972	9	0			0.0	0.0%	0.0	0.0%
1971	10	0			0.0	0.0%	0.0	0.0%
1970	11	0			0.0	0.0%	0.0	0.0%
1969	12	0			0.0	0.0%	0.0	0.0%
1968	13+	0			0.0	0.0%	0.0	0.0%
Total		**124**	**112**	**200**	**7,340.0**	**100.0%**	**59,454.0**	**0.0%**

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Appendix J.7. (page 2 of 3)

Northeast Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1980	1	0			0.0	0.0%	0.0	0.0%
1979	2	0			0.0	0.0%	0.0	0.0%
1978	3	1	78	188	181.2	0.7%	1,938.0	0.8%
1977	4	17	82	192	3,238.0	11.9%	34,883.5	14.4%
1976	5	78	102	203	18,480.2	67.9%	160,125.0	66.1%
1975	6	13	97	204	2,929.1	10.8%	26,647.1	11.0%
1974	7	7	111	208	1,804.8	6.6%	14,292.6	5.9%
1973	8	2	122	232	566.8	2.1%	4,118.2	1.7%
1972	9	0			0.0	0.0%	0.0	0.0%
1971	10	0			0.0	0.0%	0.0	0.0%
1970	11	0			0.0	0.0%	0.0	0.0%
1969	12	0			0.0	0.0%	0.0	0.0%
1968	13+	0			0.0	0.0%	0.0	0.0%
Total		**124**	**99**	**202**	**27,200.0**	**100.0%**	**242,246.6**	**100.0%**

North Shore Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1980	1	0			0.0	0.0%	0.0	0.0%
1979	2	0			0.0	0.0%	0.0	0.0%
1978	3	0			0.0	0.0%	0.0	0.0%
1977	4	0			0.0	0.0%	0.0	0.0%
1976	5	0			0.0	0.0%	0.0	0.0%
1975	6	0			0.0	0.0%	0.0	0.0%
1974	7	0			0.0	0.0%	0.0	0.0%
1973	8	0			0.0	0.0%	0.0	0.0%
1972	9	0			0.0	0.0%	0.0	0.0%
1971	10	0			0.0	0.0%	0.0	0.0%
1970	11	0			0.0	0.0%	0.0	0.0%
1969	12	0			0.0	0.0%	0.0	0.0%
1968	13+	0			0.0	0.0%	0.0	0.0%
Total		**0**			**2,020.0**	**0.0%**	**0.0**	**0.0%**

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Appendix J.7. (page 3 of 3)

Montague Island Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1980	1	0			0.0	0.0%	0.0	0.0%
1979	2	0			0.0	0.0%	0.0	0.0%
1978	3	2	64	176	438.7	1.1%	6,854.4	1.8%
1977	4	23	94	193	7,409.6	18.0%	78,826.0	20.4%
1976	5	81	110	202	30,536.5	74.0%	277,604.7	71.7%
1975	6	6	112	199	2,303.1	5.6%	20,563.3	5.3%
1974	7	1	164	228	562.1	1.4%	3,427.2	0.9%
1973	8	0			0.0	0.0%	0.0	0.0%
1972	9	0			0.0	0.0%	0.0	0.0%
1971	10	0			0.0	0.0%	0.0	0.0%
1970	11	0			0.0	0.0%	0.0	0.0%
1969	12	0			0.0	0.0%	0.0	0.0%
1968	13+	0			0.0	0.0%	0.0	0.0%
Total		**113**	**107**	**200**	**41,250.0**	**100.0%**	**387,275.7**	**100.0%**

Appendix J.8. Age, sex and size composition of Pacific herring from the purse seine sac roe fishery, Prince William Sound, 1981.

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	2	2	1.8	64	-	2	176	-	2
	4	-	-	23	23	20.4	94	-	23	193	-	23
Montague Island	5	-	-	81	81	71.7	110	-	81	202	-	81
Spring, 1981	6	-	-	6	6	5.3	112	-	6	199	-	6
Purse Seine	7	-	-	1	1	0.9	164	-	1	228	-	1
Sac Roe Harvest	8	-	-	-	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13											
Total		**-**	**-**	**113**	**113**	**100.0**	**107**	**-**	**113**	**200**	**-**	**113**
	2	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	4	4	3.2	77	-	4	181	-	4
Port Gravina,	4	-	-	20	20	16.1	107	-	20	197	-	20
Southeast Area	5	-	-	86	86	69.4	113	-	86	200	-	86
Spring, 1981	6	-	-	13	13	10.5	123	-	13	208	-	13
Purse Seine	7	-	-	1	1	0.8	158	-	1	215	-	1
Sac Roe Harvest	8	-	-	-	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	10											
	11											
	12											
	+13											
Total		**-**	**-**	**124**	**124**	**100.0**	**112**	**-**	**124**	**200**	**-**	**124**

Indicates dominant age class.

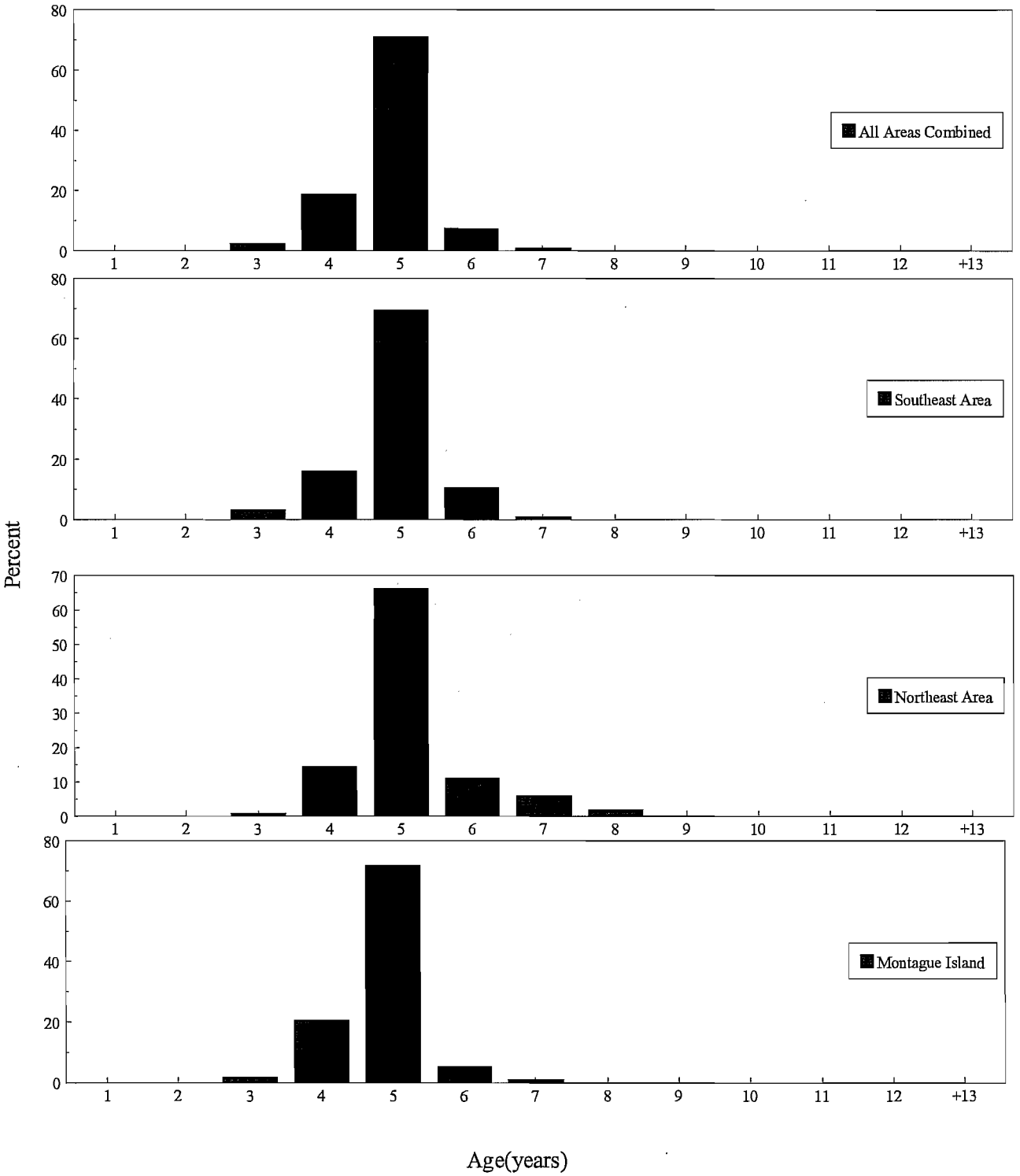
-Continued-

Appendix J.8. (page 2 of 2)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	-	-	-	-	-	-	-	-	-	-
	3	1	-	0	1	0.8	78	-	1	188	-	1
Galena Bay,	4	13	4	0	17	14.4	82	20.2	17	192	12.4	17
Northeast Area	5	51	27	0	78	66.1	102	17.8	78	203	13.7	78
Spring, 1982	6	11	2	0	13	11.0	97	16.4	13	204	10	13
Purse Seine	7	4	3	0	7	5.9	111	26.9	7	208	15.8	7
Pound Fishery Harvest	8	1	1	0	2	1.7	122	8.5	2	232	9.9	2
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13											
Total		**81**	**37**	**0**	**118**	**100.0**	**99**	**20**	**118**	**202**	**14.3**	**118**

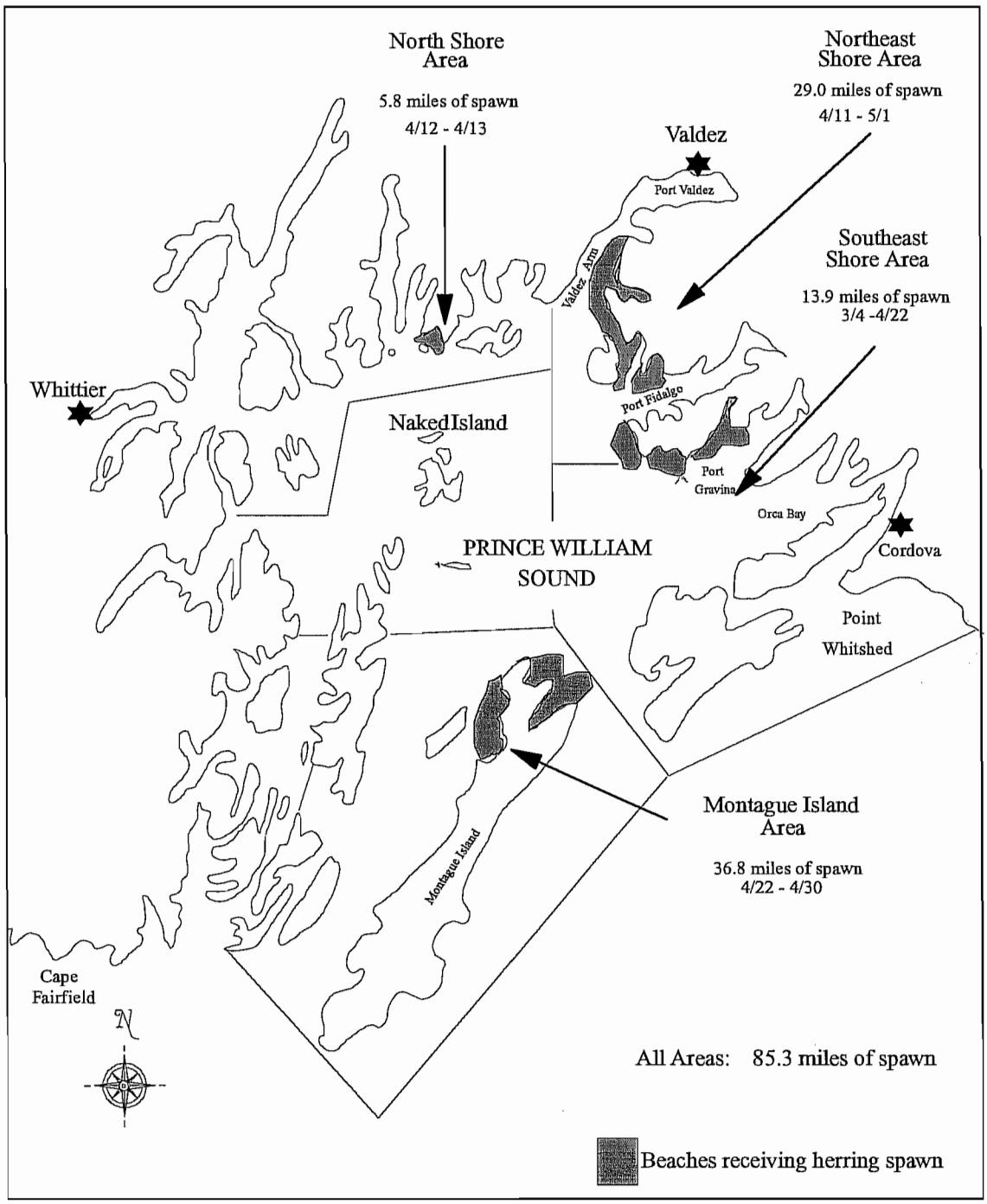
Indicates dominant age class.

Prince William Sound Herring Age Composition 1981



Appendix J.9. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1981.

Historical Herring Spawn and Shoreline Mileage



Appendix J.10. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys for 1981.

APPENDIX K: SUMMARY FOR 1982

Appendix K.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1982.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/25	0	0	0	NS	0	0	03/25
03/30	0	0	NS	NS	NS	0	03/30
03/31	0	0	0	NS	0	0	03/31
04/01	0	0	NS	NS	NS	0	04/01
04/04	0	0	0	NS	0	0	04/04
04/05	NS	0	NS	NS	0	0	04/05
04/06	0	0	0	NS	0	0	04/06
04/07	0	0	NS	NS	NS	0	04/07
04/09	NS	0	NS	NS	0	0	04/09
04/11	0	0	NS	NS	0	0	04/11
04/13	0	0	NS	NS	0	0	04/13
04/16	0	0	NS	NS	0	0	04/16
04/18	0	40	0	1,160	5,260	6,460	04/18
04/21	0	40	660	350	0	1,050	04/21
04/22	0	390	6,850	25,840	170	33,250	04/22
04/23	NS	0	NS	NS	NS	0	04/23
04/26	NS	12,330	7,860	410	NS	20,600	04/26
04/28	NS	0	0	NS	580	580	04/28
04/29	NS	19,410	6,590	100	NS	26,100	04/29
04/30	0	NS	0	NS	0	0	04/30
05/01	260	2,470	2,310	0	0	5,040	05/01
05/02	NS	0	NS	NS	NS	0	05/02
05/03	0	1,950	80	NS	1,690	3,720	05/03
05/04	70	400	NS	NS	110	580	05/04
05/05	NS	20	NS	NS	140	160	05/05
05/07	NS	80	0	NS	NS	80	05/07
AREA TOTAL	**330**	**37,130**	**24,350**	**27,860**	**7,950**	**97,620**	**TOTAL**
PEAK ESTIMATES	**310**	**25,090**	**10,600**	**25,840**	**6,950**	**68,790**	**PEAK**

[a]Dates displayed are for actual survey days
NS = Not Surveyed

Appendix K.2. Herring spawn mile days from aerial surveys by area and date for Prince William Sound, 1982.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/25	0.0	0.0	0.0	NS	0.0	0.0	03/25
03/30	0.0	0.0	NS	NS	NS	0.0	03/30
03/31	0.0	0.0	NS	NS	0.0	0.0	03/31
04/01	0.0	0.0	NS	NS	NS	0.0	04/01
04/04	0.0	0.0	0.0	NS	0.0	0.0	04/04
04/05	0.0	0.0	0.0	NS	0.0	0.0	04/05
04/06	0.0	0.0	0.0	NS	0.0	0.0	04/06
04/07	0.0	0.0	NS	NS	NS	0.0	04/07
04/09	0.0	0.0	NS	NS	0.0	0.0	04/09
04/11	0.0	0.0	0.0	0.0	0.0	0.0	04/11
04/13	0.0	0.0	NS	NS	0.0	0.0	04/13
04/16	0.0	0.0	NS	NS	0.0	0.0	04/16
04/18	0.0	0.0	0.0	0.0	0.0	0.0	04/18
04/21	0.0	0.0	0.0	0.0	0.0	0.0	04/21
04/22	NS	0.0	0.0	0.0	0.0	0.0	04/22
04/23	NS	0.0	NS	NS	NS	0.0	04/23
04/26	NS	0.0	2.2	3.5	NS	5.7	04/26
04/28	NS	0.0	NS	NS	0.0	0.0	04/28
04/29	NS	0.2	3.0	0.0	NS	3.2	04/29
04/30	NS	7.5	NS	NS	0.0	7.5	04/30
05/01	0.3	12.0	12.7	0.0	0.0	25.0	05/01
05/02	NS	5.5	NS	NS	NS	5.5	05/02
05/03	0.0	2.7	2.0	NS	0.5	5.2	05/03
05/04	0.0	0.0	NS	NS	10.0	10.0	05/04
05/05	NS	0.0	NS	NS	2.0	2.0	05/05
05/07	NS	1.0	0.0	NS	NS	1.0	05/07
Mile Days	**0.3**	**28.9**	**19.9**	**3.5**	**12.5**	**65.1**	**TOTAL**
Shoreline Miles	0.3	18.9	15.8	3.5	10.5	49.0	TOTAL

a Dates displayed are for actual survey days.

NS = Not Surveyed

Note: 5 miles of herring spawn were reported off Kayak Is. and 2.5 miles off Wingham Is. for a total of 7.5 miles on 5/14-5/15.

Appendix K.3. Herring biomass estimates from aerial surveys by sub-area and date for Prince William Sound, 1982.

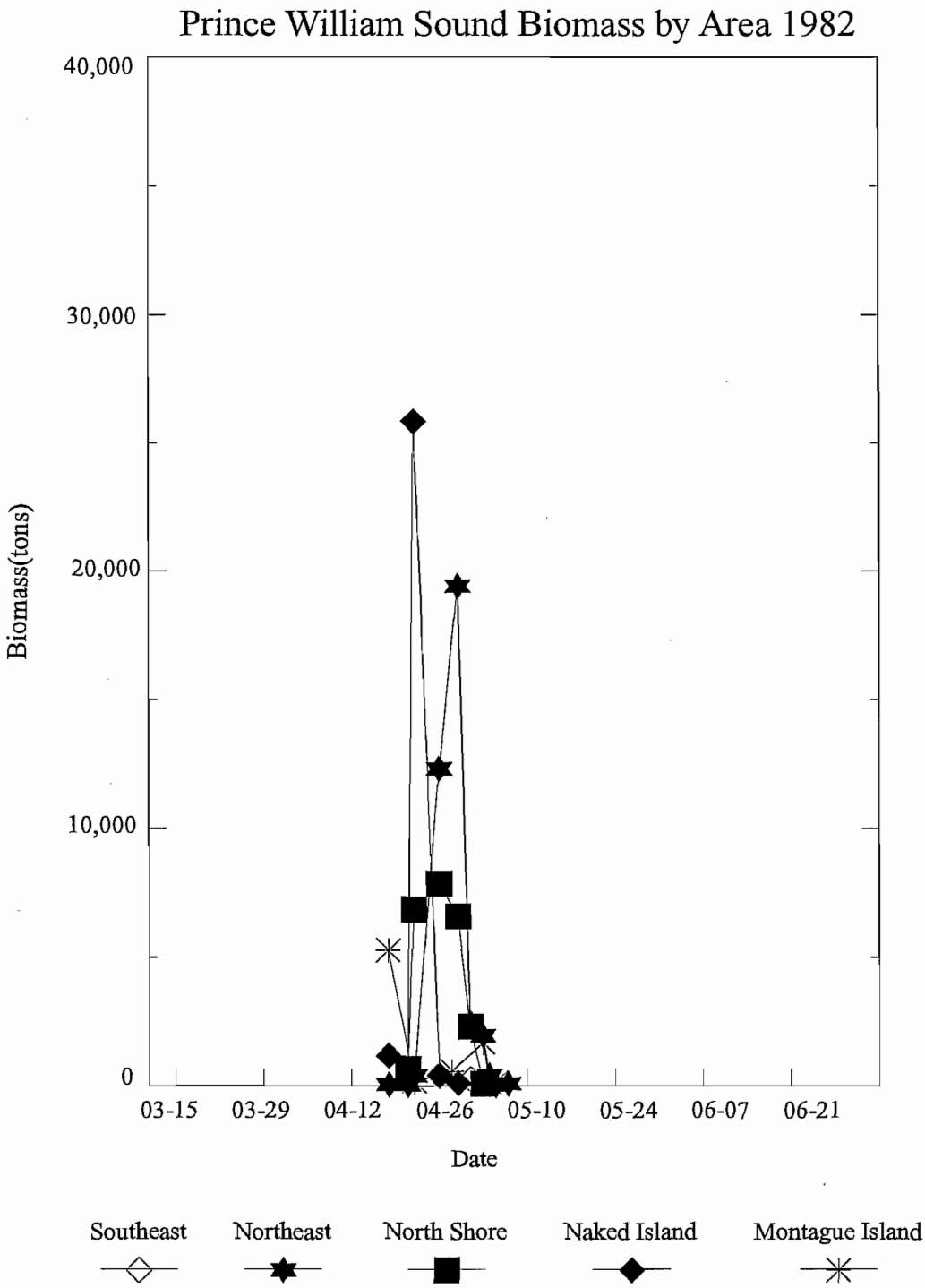
DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
3/25	0	0	0	0	0	0				0	0	3/25
3/30	0	0	0								0	3/30
3/31		0	0							0	0	3/31
4/1	0	0	0	0	0						0	4/1
4/4	0	0	0	0		0				0	0	4/4
4/5		0	0	0	0	0				0	0	4/5
4/6		0	0	0	0	0				0	0	4/6
4/7		0	0	0							0	4/7
4/9		0	0	0	0					0	0	4/9
4/11	0	0	0	0		0		0		0	0	4/11
4/13		0	0	0						0	0	4/13
4/16		0	0	0						0	0	4/16
4/18		0	0	40	0	0		1,160		5,260	6,460	4/18
4/21	0	0	40	0		660		350		0	1,050	4/21
4/22			390			2,680	4,170	25,800	40	170	33,250	4/22
4/23			0	0	0						0	4/23
4/26			0	40	12,290	6,370	1,490	410			20,600	4/26
4/28			0	0						580	580	4/28
4/29			10	10,500	8,900	6,430	160	100			26,100	4/29
4/30				0	0					0	0	4/30
5/1		260	2,300	120	50	2,290	20	0		0	5,040	5/1
5/2			0	0							0	5/2
5/3	0	0	750	490	710	60	20			1,690	3,720	5/3
5/4	50	20	80	60	260					110	580	5/4
5/5			0	0	20					140	160	5/5
5/7			40	40		0					80	5/7
Area Total	**50**	**280**	**3,610**	**11,290**	**22,230**	**18,490**	**5,860**	**27,820**	**40**	**7,950**	**97,620**	**Total**
Peak Estimates	**50**	**260**	**2,300**	**10,500**	**12,290**	**6,430**	**4,170**	**25,800**	**40**	**6,950**	**68,790**	**Peak**

Note: Data displayed only for dates that surveys were flown.

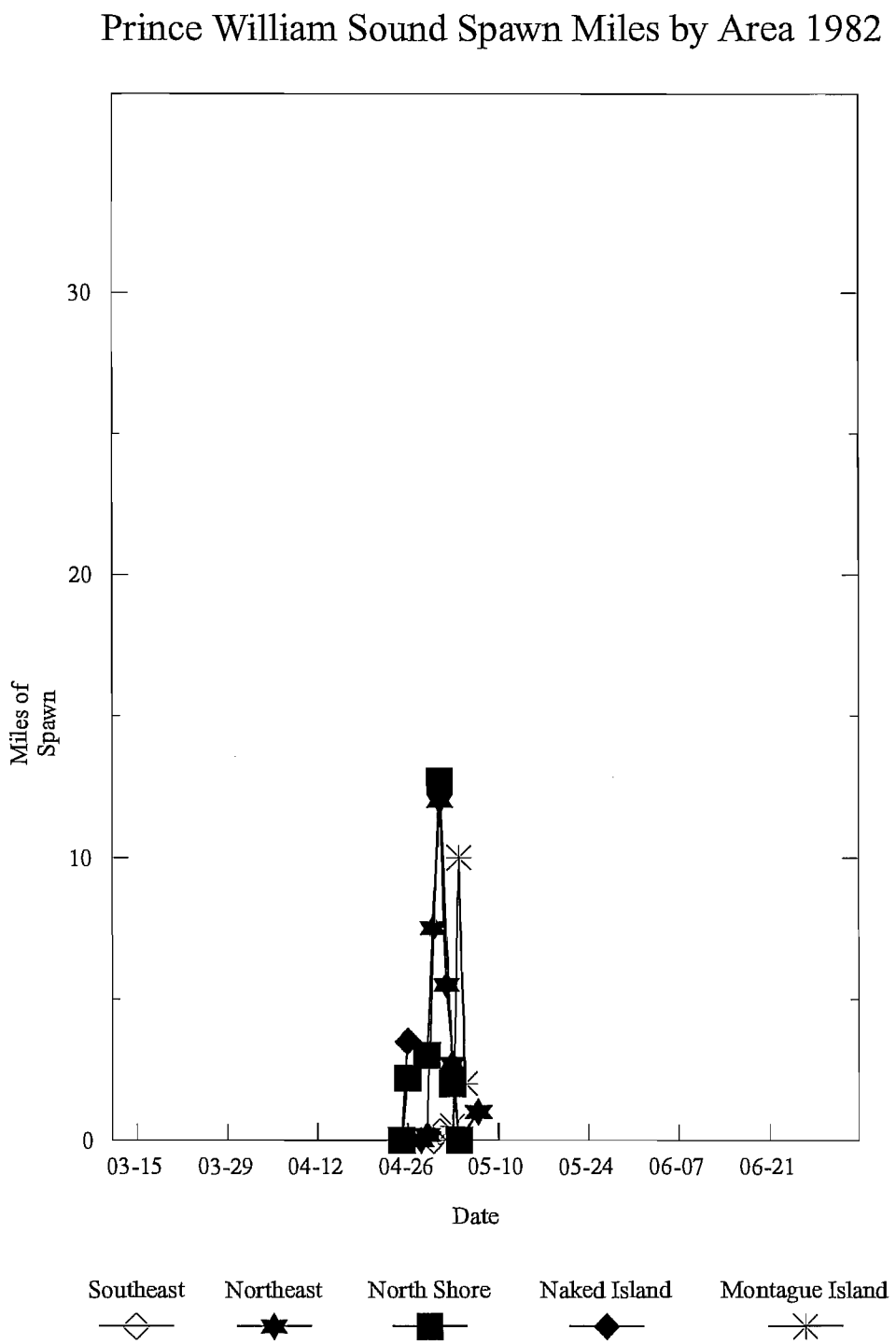
Appendix K.4. Estimated miles of herring spawn by sub-area and date from aerial surveys for Prince William Sound, 1982.

DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
3/25	0	0	0	0	0	0				0	0.0	3/25
3/30	0	0	0								0.0	3/30
3/31		0	0							0	0.0	3/31
4/1	0	0	0	0	0						0.0	4/1
4/4	0	0	0	0		0				0	0	4/4
4/5		0	0	0	0	0				0	0.0	4/5
4/6		0	0	0	0	0				0	0	4/6
4/7		0	0	0							0.0	4/7
4/9		0	0	0	0					0	0.0	4/9
4/11	0	0	0	0		0		0			0.0	4/11
4/13		0	0	0						0	0.0	4/13
4/16		0	0	0						0	0.0	4/16
4/18		0	0	0	0	0		0		0	0.0	4/18
4/21	0	0	0	0		0		0		0	0.0	4/21
4/22			0			0	0	0	0	0	0.0	4/22
4/23			0	0	0						0.0	4/23
4/26			0	0	0	2.2	0	3.5			5.7	4/26
4/28			0	0						0	0.0	4/28
4/29			0	0.2	0	3.0	0	0			3.2	4/29
4/30				4.2	3.3					0	7.5	4/30
5/1		0.3	0	7.0	5.0	12.7	0	0		0	25.0	5/1
5/2			2.5	3.0							5.5	5/2
5/3	0	0	1.0	1.2	0.5	2.0	0			0.5	5.2	5/3
5/4	0	0	0	0	0					10.0	10.0	5/4
5/5			0	0	0					2.0	2.0	5/5
5/7			1.0	0		0					1.0	5/7
Area Total	**0.0**	**0.3**	**4.5**	**15.6**	**8.8**	**19.9**	**0.0**	**3.5**	**0.0**	**12.5**	**65.1**	**Total**

Note: Data displayed only for dates that surveys were flown.



Appendix K.5. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1982.



Appendix K.6. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1982.

Appendix K.7. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound, 1982.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1981	1	0			0.0	0.0%	0.0	0.0%
1980	2	6	35	145	218.6	0.3%	5,683.7	1.0%
1979	3	104	60	167	6,495.9	9.4%	98,517.7	17.2%
1978	4	95	80	184	7,911.7	11.5%	89,992.1	15.7%
1977	5	113	115	203	13,527.9	19.7%	107,043.3	18.7%
1976	6	235	136	213	33,270.7	48.4%	222,612.1	38.8%
1975	7	49	136	214	6,937.3	10.1%	46,417.0	8.1%
1974	8	3	137	220	427.9	0.6%	2,841.9	0.5%
1973	9	0			0.0	0.0%	0.0	0.0%
1972	10	0			0.0	0.0%	0.0	0.0%
1971	11	0			0.0	0.0%	0.0	0.0%
1970	12	0			0.0	0.0%	0.0	0.0%
1969	13+	0			0.0	0.0%	0.0	0.0%
Total		**605**	**109**	**198**	**68,790.0**	**100.0%**	**573,107.9**	**100.0%**

Note: The all area age composition is from the purse seine sac roe harvest catch.

Southeast Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1981	1	0			0.0	0.0%	0.0	0.0%
1980	2	0			0.0	0.0%	0.0	0.0%
1979	3	0			0.0	0.0%	0.0	0.0%
1978	4	0			0.0	0.0%	0.0	0.0%
1977	5	0			0.0	0.0%	0.0	0.0%
1976	6	0			0.0	0.0%	0.0	0.0%
1975	7	0			0.0	0.0%	0.0	0.0%
1974	8	0			0.0	0.0%	0.0	0.0%
1973	9	0			0.0	0.0%	0.0	0.0%
1972	10	0			0.0	0.0%	0.0	0.0%
1971	11	0			0.0	0.0%	0.0	0.0%
1970	12	0			0.0	0.0%	0.0	0.0%
1969	13+	0			0.0	0.0%	0.0	0.0%
Total		**0**			**310.0**	**0.0%**	**0.0**	**0.0%**

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Appendix K.7. (page 2 of 3)

Northeast Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1981	1	0			0.0	0.0%	0.0	0.0%
1980	2	2	45	151	81.1	0.3%	1,597.3	0.8%
1979	3	35	81	183	2,556.1	10.2%	28,551.9	14.3%
1978	4	46	94	192	3,898.6	15.5%	37,736.4	18.9%
1977	5	41	118	206	4,362.0	17.4%	33,543.5	16.8%
1976	6	99	131	211	11,693.0	46.6%	81,063.4	40.6%
1975	7	21	132	213	2,499.3	10.0%	17,171.1	8.6%
1974	8	0			0.0	0.0%	0.0	0.0%
1973	9	0			0.0	0.0%	0.0	0.0%
1972	10	0			0.0	0.0%	0.0	0.0%
1971	11	0			0.0	0.0%	0.0	0.0%
1970	12	0			0.0	0.0%	0.0	0.0%
1969	13+	0			0.0	0.0%	0.0	0.0%
Total		**244**	**114**	**202**	**25,090.0**	**100.0%**	**199,663.6**	**100.0%**

North Shore Area

Year Class	Age Class	Number Sampled	Mean Weigbt (g)	Mean Standard Length (mm)	Biomass by Age Class: Weigbt (ton)	Percent by Weigbt	Number of Fisb (x 1,000)	Percent by Number
1981	1	0			0.0	0.0%	0.0	0.0%
1980	2	0			0.0	0.0%	0.0	0.0%
1979	3	3	83	183	112.0	1.1%	1,552.8	1.6%
1978	4	10	101	198	454.2	4.3%	5,337.7	5.5%
1977	5	38	121	206	2,067.9	19.5%	20,186.2	20.8%
1976	6	104	133	211	6,220.8	58.7%	55,123.8	56.8%
1975	7	26	139	216	1,625.4	15.3%	13,781.0	14.2%
1974	8	2	133	218	119.6	1.1%	1,067.5	1.1%
1973	9	0			0.0	0.0%	0.0	0.0%
1972	10	0			0.0	0.0%	0.0	0.0%
1971	11	0			0.0	0.0%	0.0	0.0%
1970	12	0			0.0	0.0%	0.0	0.0%
1969	13+	0			0.0	0.0%	0.0	0.0%
Total		**183**	**129**	**209**	**10,600.0**	**100.0%**	**97,049.0**	**100.0%**

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Appendix K.7. (page 3 of 3)

Naked Island Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1981	1	0			0.0	0.0%	0.0	0.0%
1980	2	0			0.0	0.0%	0.0	0.0%
1979	3	11	89	188	842.7	3.3%	8,589.5	4.8%
1978	4	26	103	197	2,305.2	8.9%	20,400.0	11.4%
1977	5	56	125	208	6,025.5	23.3%	43,842.0	24.5%
1976	6	119	142	217	14,545.6	56.3%	93,052.4	52.0%
1975	7	16	145	216	1,997.0	7.7%	12,526.3	7.0%
1974	8	1	144	224	124.0	0.5%	715.8	0.4%
1973	9	0			0.0	0.0%	0.0	0.0%
1972	10	0			0.0	0.0%	0.0	0.0%
1971	11	0			0.0	0.0%	0.0	0.0%
1970	12	0			0.0	0.0%	0.0	0.0%
1969	13+	0			0.0	0.0%	0.0	0.0%
Total		**229**	**131**	**211**	**25,840.0**	**100.0%**	**178,946.9**	**100.0%**

Montague Island Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1981	1	0			0.0	0.0%	0.0	0.0%
1980	2	0			0.0	0.0%	0.0	0.0%
1979	3	14	65	169	195.4	2.8%	2,741.3	5.0%
1978	4	23	81	183	400.0	5.8%	4,495.8	8.2%
1977	5	53	108	205	1,229.0	17.7%	10,307.4	18.8%
1976	6	170	124	212	4,526.3	65.1%	33,060.3	60.3%
1975	7	21	127	212	572.7	8.2%	4,057.2	7.4%
1974	8	1	124	216	26.6	0.4%	219.3	0.4%
1973	9	0			0.0	0.0%	0.0	0.0%
1972	10	0			0.0	0.0%	0.0	0.0%
1971	11	0			0.0	0.0%	0.0	0.0%
1970	12	0			0.0	0.0%	0.0	0.0%
1969	13+	0			0.0	0.0%	0.0	0.0%
Total		**282**	**115**	**206**	**6,950.0**	**100.0%**	**54,826.4**	**100.0%**

Note: This age composition was collected from a variable mesh gillnet which may vary in sample bias from the purse seines.

Appendix K.8. Age, sex and size composition of Pacific herring from the purse seine sac roe fishery, Prince William Sound, 1982.

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	2	-	0	2	0.8	45	2.1	2	151	1.4	2
	3	24	11	0	35	14.3	81	13	35	183	9	35
	4	23	23	0	46	18.9	94	12.3	46	192	8.2	46
Landlocked, Boulder Bays	5	20	21	0	41	16.8	118	18.2	41	206	7.6	41
Northeast Area	6	42	57	0	99	40.6	131	16.5	99	211	9.2	99
Spring, 1982	7	13	8	0	21	8.6	132	16.7	21	213	9.9	21
Purse Seine	8	-	-	-	-	-	-	-	-	-	-	-
Pound Fishery Harvest	9	-	-	-	-	-	-	-	-	-	-	-
4/30-5/02	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13											
Total		**124**	**120**	**0**	**244**	**100**	**114**	**25.5**	**244**	**202**	**14.6**	**244**
	2	-	-	-	-	-	-	-	-	-	-	-
	3	2	1	-	3	1.6	83	6.5	3	183	6.9	3
	4	4	6	-	10	5.5	101	18.3	10	198	9.8	10
	5	21	17	-	38	20.8	121	15.1	38	206	9.1	38
Fairmont Island,	6	56	48	-	104	56.8	133	15.2	104	211	7.7	104
North Shore Area	7	9	17	-	26	14.2	139	10.3	26	216	6.3	26
Purse Seine	8	1	1	-	2	1.1	133	16.3	2	218	2.1	2
Sac Roe Harvest	9	-	-	-	-	-	-	-	-	-	-	-
4/23/1982	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**93**	**90**	**0**	**183**	**100.0**	**129**	**18.1**	**183**	**209**	**9.5**	**183**

Indicates dominant age class

-Continued-

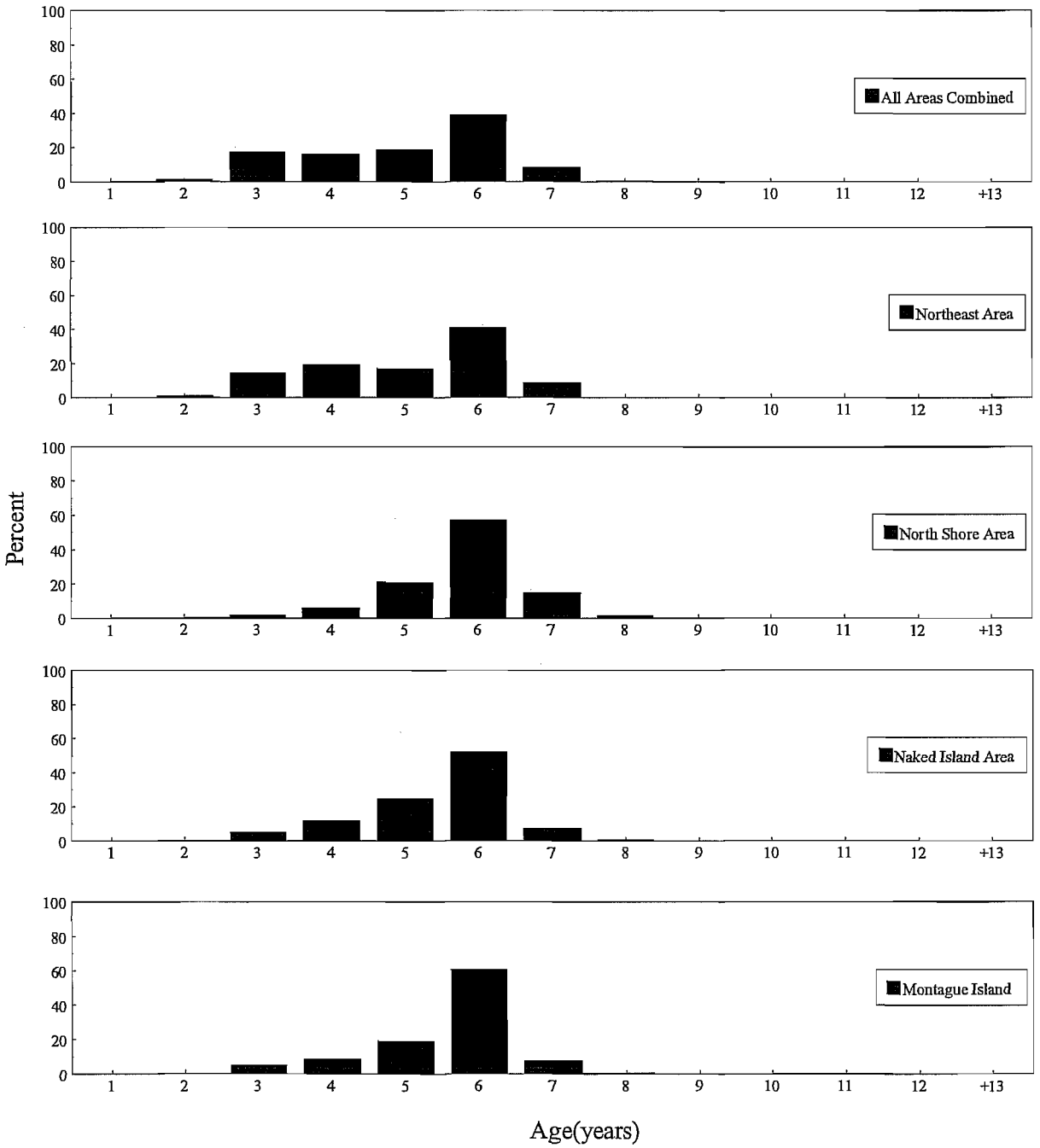
Appendix K.8. (Page 2 of 2)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	-	-	-	-	-	-	-	-	-	-
	3	5	6	-	11	4.8	89	14.9	11	188	11.6	11
	4	11	15	-	26	11.4	103	14	26	197	9.5	26
Naked Island,	5	24	32	-	56	24.5	125	14.1	56	208	8	56
Naked Island Area	6	53	66	-	119	52.0	142	16.7	119	217	8.1	119
Purse Seine	7	5	11	-	16	7.0	145	18.5	16	216	8	16
Sac Roe Harvest	8	-	1	-	1	0.4	144	-	1	224	-	1
4/23/82	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**98**	**131**	**0**	**229**	**100.0**	**131**	**22.4**	**229**	**211**	**11.7**	**229**
	2	-	-	-	-	-	-	-	-	-	-	-
	3	12	2	-	14	5.0	65	13.4	14	169	9.7	14
	4	16	7	-	23	8.2	81	14.3	23	183	10.8	23
	5	32	21	-	53	18.8	108	14.3	53	205	9.9	53
Variable	6	107	63	-	170	60.3	124	17.2	170	212	8.5	170
Mesh Gillnet	7	11	10	-	21	7.4	127	16.0	21	212	8.5	21
Rocky Bay (227-20)	8	1	-	-	1	0.4	124	-	1	216	-	1
Montague Is.	9	-	-	-	-	-	-	-	-	-	-	-
4/23/1982	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**179**	**103**	**0**	**282**	**100.0**	**115**	**23.3**	**282**	**206**	**14.8**	**282**

Indicates dominant age class

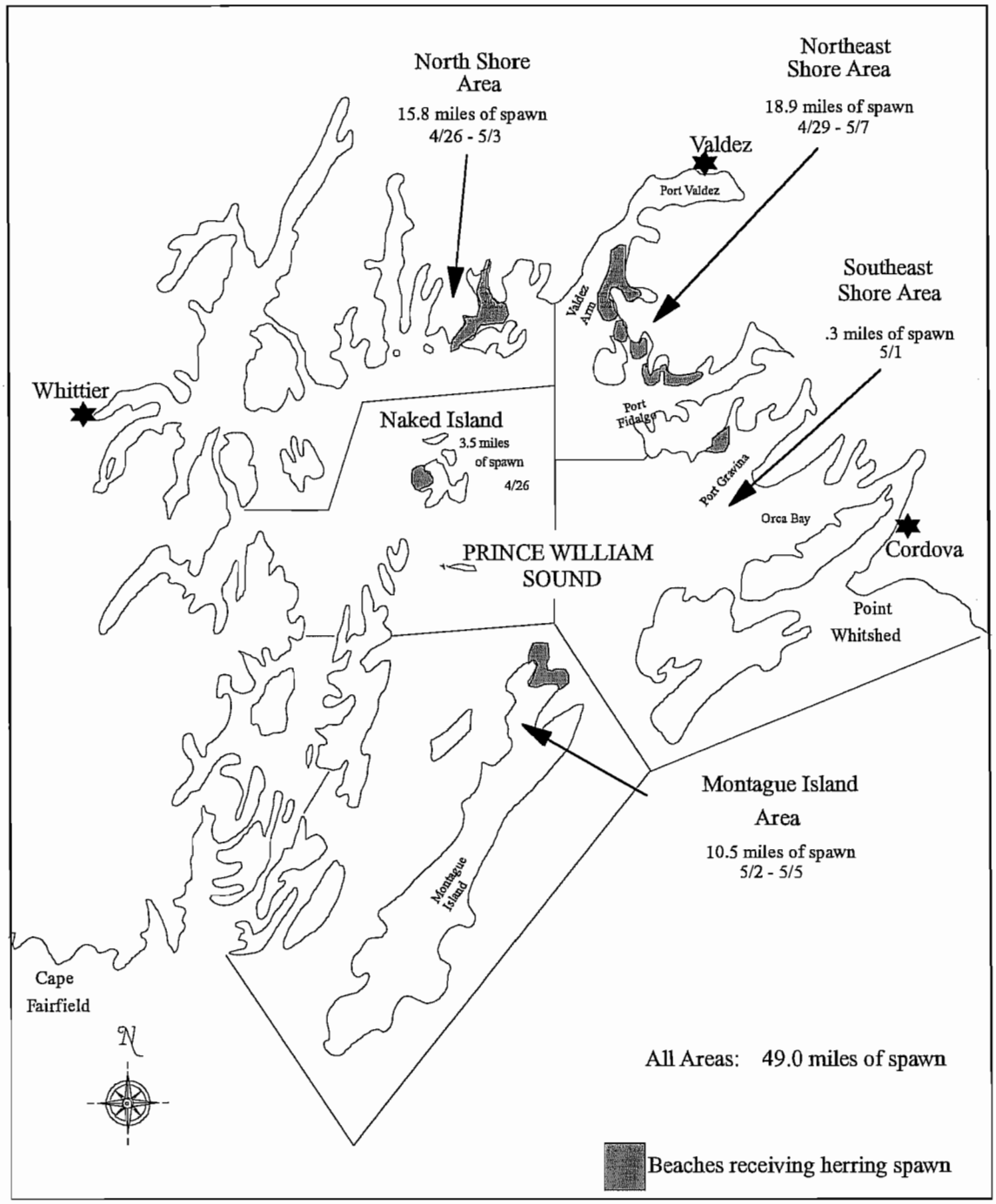
Note: Should not be used for age composition since gillnet is selective gear.

Prince William Sound Herring Age Composition 1982



Appendix K.9. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1982.

Historical Herring Spawn and Shoreline Mileage



Appendix K.10. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys for 1982.

APPENDIX L: SUMMARY FOR 1983

Appendix L.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1983.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/23	0	NS	NS	NS	0	0	03/23
03/24	NS	NS	0	0	0	0.	03/24
03/29	0	0	0	0	0	0	03/29
04/01	0	0	0	0	0	0	04/01
04/05	NS	NS	0	0	0	0	04/05
04/06	0	40	NS	NS	0	40	04/06
04/07	NS	NS	370	450	11,410	12,230	04/07
04/08	540	0	160	2,290	5,800	8,790	04/08
04/09	150	NS	1,700	2,870	19,800	24,520	04/09
04/10	NS	NS	1,130	2,980	5,840	9,950	04/10
04/12	20	10	310	9,960	2,700	13,000	04/12
04/14	0	0	0	2,580	2,140	4,720	04/14
04/17	NS	1,100	0	460	570	2,130	04/17
04/18	NS	220	NS	NS	NS	220	04/18
04/19	NS	20	NS	2,520	NS	2,540	04/19
04/20	NS	710	NS	2,910	60	3,680	04/20
04/21	NS	0	NS	0	80	80	04/21
04/22	NS	150	NS	420	360	930	04/22
04/23	NS	NS	NS	2,070	30	2,100	04/23
04/24	NS	110	NS	1,390	NS	1,500	04/24
04/25	NS	550	150	570	60	1,330	04/25
04/26	NS	1,100	20	450	540	2,110	04/26
04/27	NS	1,010	NS	0	NS	1,010	04/27
04/28	NS	920	960	850	220	2,950	04/28
04/29	NS	1,860	0	1,290	710	3,860	04/29
04/30	NS	0	NS	NS	NS	0	04/30
05/01	NS	0	NS	NS	4,430	4,430	05/01
05/02	NS	NS	NS	NS	0	0	05/02
05/03	NS	NS	NS	0	130	130	05/03
05/04	NS	400	NS	NS	1,940	2,340	05/04
05/06	NS	120	NS	NS	0	120	05/06
05/10	NS	810	NS	NS	620	1,430	05/10
05/21	NS	NS	1570	NS	NS	1570	05/21
AREA TOTAL	**710**	**9,130**	**6,370**	**34,060**	**57,440**	**107,710**	**TOTAL**
PEAK ESTIMATES	**540**	**2,970**	**2,660**	**11,450**	**24,230**	**41,850**	**PEAK**

[a]Dates displayed are for actual survey days.

NS = Not Surveyed

Appendix L.2. Herring spawn mile days from aerial surveys by area and date for Prince William Sound, 1983.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/23	0.0	NS	NS	NS	0.0	0.0	03/23
03/24	NS	NS	0.0	0.0	0.0	0.0	03/24
03/29	0.0	0.0	0.0	0.0	0.0	0.0	03/29
04/01	0.0	0.0	0.0	0.0	0.0	0.0	04/01
04/05	NS	NS	0.0	0.0	0.0	0.0	04/05
04/06	0.0	0.0	NS	NS	0.0	0.0	04/06
04/07	NS	NS	0.0	0.0	0.8	0.8	04/07
04/08	1.1	0.2	1.7	0.0	0.0	3.0	04/08
04/09	0.0	NS	0.0	0.0	0.0	0.0	04/09
04/10	NS	NS	0.0	0.0	0.0	0.0	04/10
04/12	1.8	0.0	3.0	1.5	0.0	6.3	04/12
04/14	0.0	0.0	7.6	1.0	0.2	8.8	04/14
04/17	NS	1.5	0.0	4.0	0.0	5.5	04/17
04/18	NS	0.5	NS	NS	NS	0.5	04/18
04/19	NS	0.0	NS	0.0	NS	0.0	04/19
04/20	NS	2.0	NS	4.0	0.0	6.0	04/20
04/21	NS	0.0	NS	0.0	0.5	0.5	04/21
04/22	NS	2.8	NS	1.8	0.0	4.6	04/22
04/23	NS	NS	NS	3.0	0.0	3.0	04/23
04/24	NS	0.1	NS	2.0	NS	2.1	04/24
04/25	NS	0.0	0.0	1.5	0.0	1.5	04/25
04/26	NS	3.0	0.0	3.0	0.0	6.0	04/26
04/27	NS	0.5	NS	1.3	NS	1.8	04/27
04/28	NS	3.5	0.0	3.5	1.3	8.3	04/28
04/29	NS	5.0	0.0	2.6	1.3	8.9	04/29
04/30	NS	3.5	NS	NS	NS	3.5	04/30
05/01	NS	3.1	NS	NS	1.5	4.6	05/01
05/02	NS	NS	NS	NS	5.2	5.2	05/02
05/03	NS	NS	NS	0.0	5.2	5.2	05/03
05/04	NS	5.0	NS	NS	5.5	10.5	05/04
05/06	NS	0.3	NS	NS	0.0	0.3	05/06
05/10	NS	1.0	NS	NS	1.6	2.6	05/10
05/21	NS	NS	0.5	NS	NS	0.5	05/21
Mile Days	**2.8**	**32.0**	**12.8**	**29.2**	**23.1**	**99.8**	**Total**
Shoreline Miles	2.8	13.3	10.5	17.7	23.1	67.4	Total

a Dates displayed are for actual survey days.
NS = Not Surveyed

Appendix L.3. Herring biomass estimates from aerial surveys by sub-area and date for Prince William Sound, 1983.

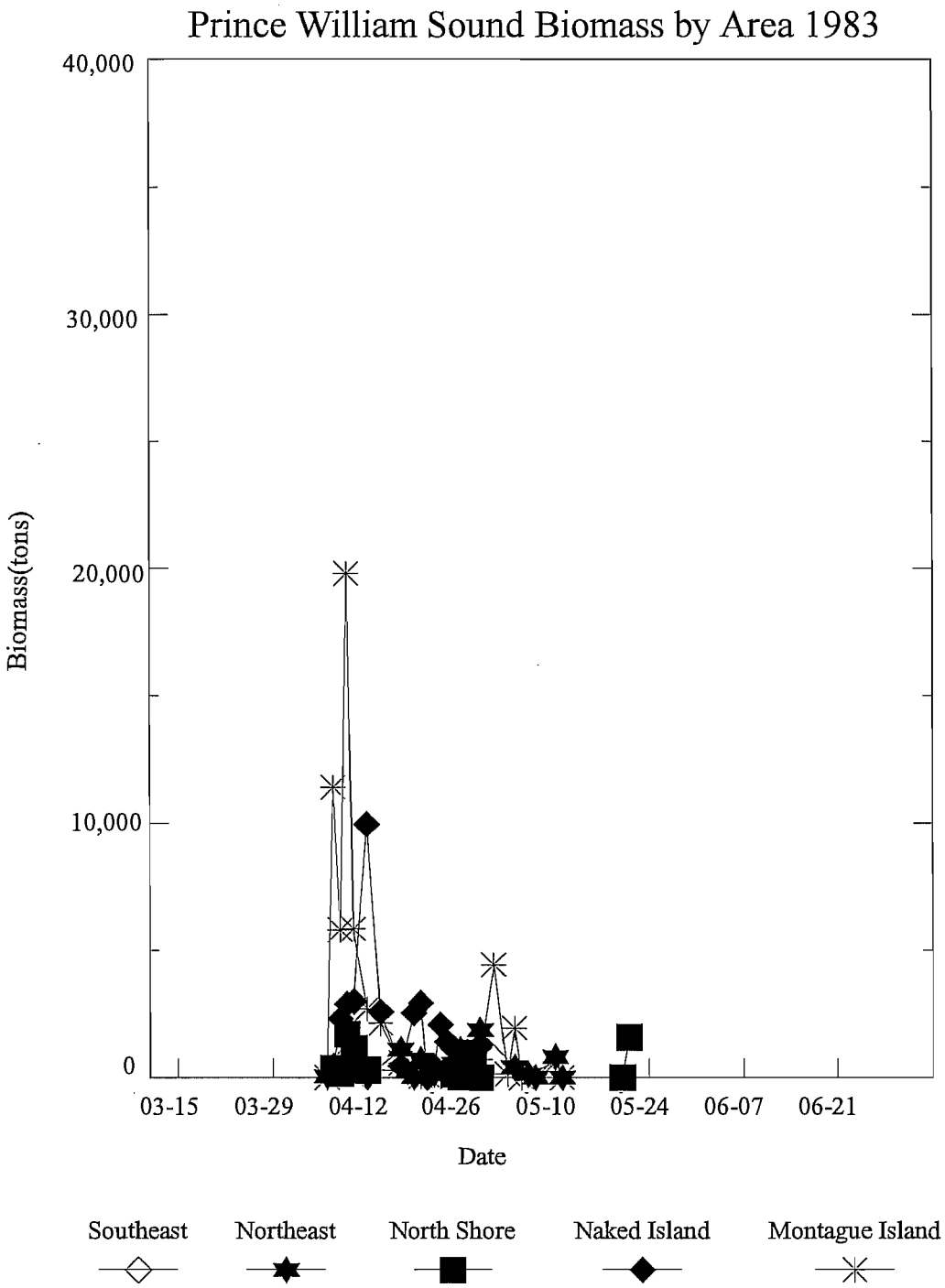
DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
3/23	0									0	0	3/23
3/24							0	0	0	0	0	3/24
3/29	0	0	0			0		0	0	0	0	3/29
4/1		0	0	0	0	0		0	0	0	0	4/1
4/5						0		0	0	0	0	4/5
4/6		0	0	40	0					0	40	4/6
4/7						100	270	450		11,410	12,230	4/7
4/8		540	0	0	0	0	160	2,290		5,800	8,790	4/8
4/9		150				240	1,460	2,870		19,800	24,520	4/9
4/10							1,130	2,980		5,840	9,950	4/10
4/12		20	0	0	10	0	310	9,960		2,700	13,000	4/12
4/14		0	0	0	0	0	0	2,580		2,140	4,720	4/14
4/17			0	820	280		0	460		570	2,130	4/17
4/18				220							220	4/18
4/19			0	20	0			2,520			2,540	4/19
4/20			0	410	300			2,910		60	3,680	4/20
4/21			0	0	0			0		80	80	4/21
4/22			0	10	140			420		360	930	4/22
4/23								2,070		30	2,100	4/23
4/24			0	10	100			1,390			1,500	4/24
4/25			0	100	450	20	130	570		60	1,330	4/25
4/26			0	340	760		20	450		540	2,110	4/26
4/27			0	230	780			0			1,010	4/27
4/28			0	270	650	440	520	850	0	220	2,950	4/28
4/29				50	1,810	0	0	1,290	200	510	3,860	4/29
4/30				0	0						0	4/30
5/1					0					4,430	4,430	5/1
5/02										0	0	5/2
5/3								0		130	130	5/3
5/4			0	60	340					1,940	2,340	5/4
5/6			0	0	120					0	120	5/6
5/10					810					620	1,430	5/10
5/21							1,570				1,570	5/21
Area Total	0	710	0	2,580	6,550	800	5,570	34,060	200	57,240	107,710	Total
Peak Estimates	0	540		1,160	1,810	680	1,980	11,250	200	24,230	41,850	Peak

Note: Data displayed only for dates that surveys were flown.

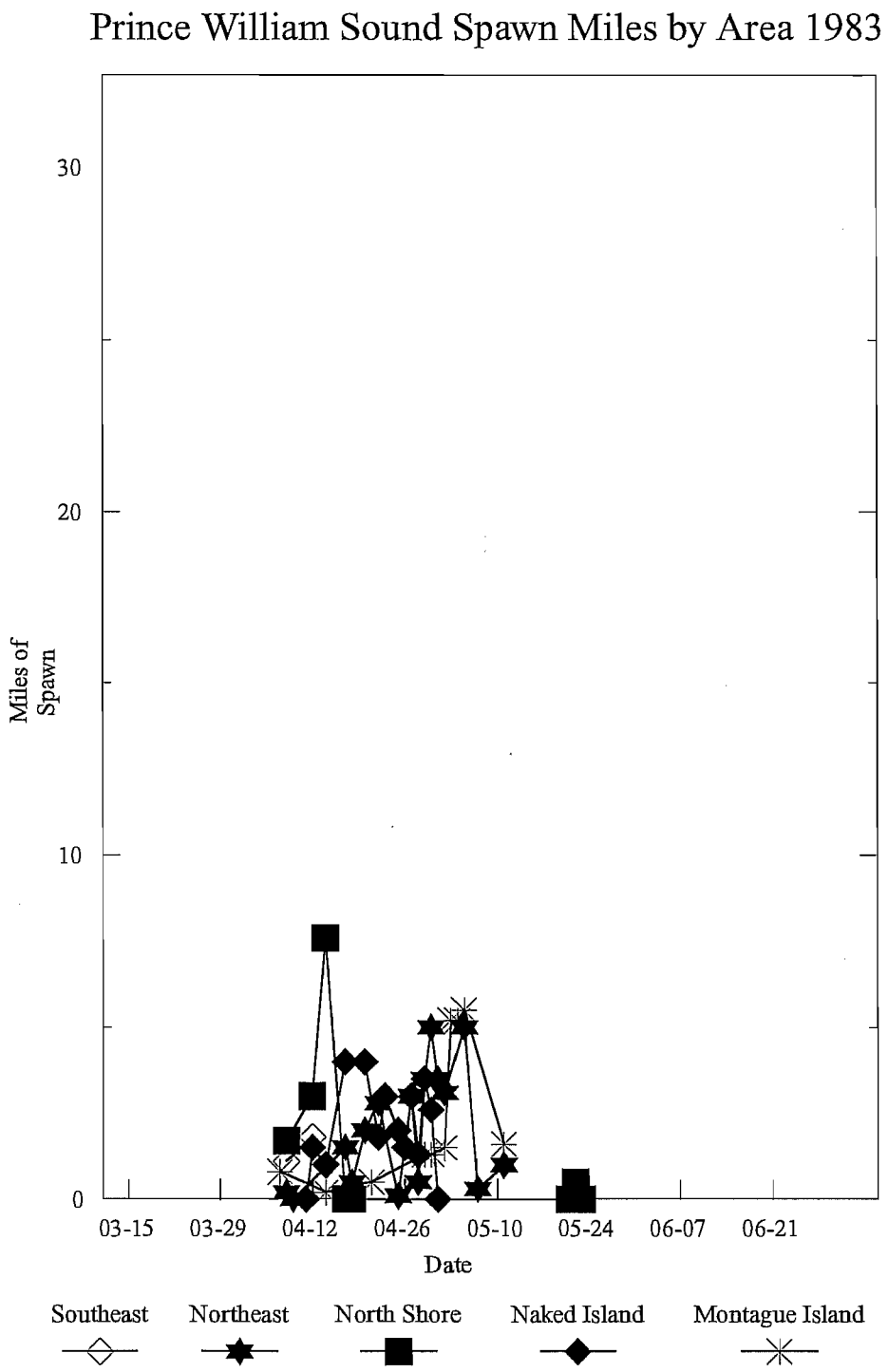
Appendix L.4. Estimated miles of herring spawn by sub-area and date from aerial surveys for Prince William Sound, 1983.

DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
3/23	0									0	0	3/23
3/24							0	0	0	0	0	3/24
3/29	0	0	0			0		0	0	0	0	3/29
4/01		0	0	0	0	0		0	0	0	0	4/1
4/05						0		0	0	0	0	4/5
4/6		0	0	0	0					0	0.0	4/6
4/7						0.0	0.0	0.0		0.8	0.8	4/7
4/8		1.1	0.0	0.0	0.2	0.0	1.7	0.0		0.0	3.0	4/8
4/9		0				0	0	0		0	0.0	4/9
4/10							0.0	0.0		0.0	0.0	4/10
4/12		1.8	0.0	0.0	0.0	0.0	3.0	1.5		0.0	6.3	4/12
4/14		0.0	0.0	0.0	0.0	0.0	7.6	1.0		0.2	8.8	4/14
4/17			0.0	1.5	0.0		0.0	4.0		0.0	5.5	4/17
4/18				0.5							0.5	4/18
4/19			0.0	0.0	0.0			0.0			0.0	4/19
4/20			0.0	2.0	0.0			4.0		0.0	6.0	4/20
4/21			0.0	0.0	0.0			0.0		0.5	0.5	4/21
4/22			0.0	0.0	2.8			1.8		0.0	4.6	4/22
4/23								3.0		0.0	3.0	4/23
4/24			0.0	0.0	0.1			2.0			2.1	4/24
4/25			0.0	0.0	0.0	0.0	0.0	1.5		0.0	1.5	4/25
4/26			0.0	3.0	0.0		0.0	3.0		0.0	6.0	4/26
4/27			0.0	0.5	0.0			1.3			1.8	4/27
4/28			0.0	0.0	3.5	0.0	0.0	3.0	0.5	1.3	8.3	4/28
4/29				2.0	3.0	0.0	0.0	1.1	1.5	1.3	8.9	4/29
4/30				0.5	3.0						3.5	4/30
5/1					3.1					1.5	4.6	5/1
5/2										5.2	5.2	5/2
5/3									0.0	5.2	5.2	5/3
5/4			0.0	0.0	5.0					5.5	10.5	5/4
5/6			0.0	0.0	0.3					0.0	0.3	5/6
5/10					1.0					1.6	2.6	5/10
5/21							0.5				0.5	5/21
Area Total	**0.0**	**2.8**	**0.0**	**10.0**	**22.0**	**0.0**	**12.8**	**27.1**	**2.0**	**23.1**	**99.8**	**Total**

Note: Data displayed only for dates that surveys were flown.



Appendix L.5. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1983.



Appendix L.6. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1983.

Appendix L.7. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound , 1983.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1982	1	0			0.0	0.0%	0.0	0.0%
1981	2	0			0.0	0.0%	0.0	0.0%
1980	3	120	84	182	3,912.0	9.3%	42,082.7	14.7%
1979	4	89	101	192	3,462.1	8.3%	31,211.3	10.9%
1978	5	90	126	205	4,367.7	10.4%	31,562.0	11.1%
1977	6	138	144	214	7,667.4	18.3%	48,395.1	17.0%
1976	7	344	154	218	20,414.7	48.8%	120,637.1	42.3%
1975	8	28	159	221	1,721.6	4.1%	9,819.3	3.4%
1974	9	5	158	223	304.4	0.7%	1,753.4	0.6%
1973	10	0			0.0	0.0%	0.0	0.0%
1972	11	0			0.0	0.0%	0.0	0.0%
1971	12	0			0.0	0.0%	0.0	0.0%
1970	13+	0			0.0	0.0%	0.0	0.0%
Total		**814**	**133**	**208**	**41,850.0**	**100.0%**	**285,461.1**	**100.0%**

Southeast Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1982	1	0			0.0	0.0%	0.0	0.0%
1981	2	0			0.0	0.0%	0.0	0.0%
1980	3	0			0.0	0.0%	0.0	0.0%
1979	4	0			0.0	0.0%	0.0	0.0%
1978	5	0			0.0	0.0%	0.0	0.0%
1977	6	0			0.0	0.0%	0.0	0.0%
1976	7	0			0.0	0.0%	0.0	0.0%
1975	8	0			0.0	0.0%	0.0	0.0%
1974	9	0			0.0	0.0%	0.0	0.0%
1973	10	0			0.0	0.0%	0.0	0.0%
1972	11	0			0.0	0.0%	0.0	0.0%
1971	12	0			0.0	0.0%	0.0	0.0%
1970	13+	0			0.0	0.0%	0.0	0.0%
Total		**0**			**540.0**	**0.0%**	**0.0**	**0.0%**

-Continued-

Appendix L.7. (page 2 of 3)

Northeast Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1982	1	0			0.0	0.0%	0.0	0.0%
1981	2	0			0.0	0.0%	0.0	0.0%
1980	3	96	82	181	539.6	18.2%	6,237.0	25.0%
1979	4	67	94	189	431.7	14.5%	4,341.0	17.4%
1978	5	23	110	198	173.4	5.8%	1,496.9	6.0%
1977	6	52	124	206	442.0	14.9%	3,368.0	13.5%
1976	7	130	136	212	1,211.9	40.8%	8,457.4	33.9%
1975	8	13	158	222	140.8	4.7%	848.2	3.4%
1974	9	3	149	218	30.6	1.0%	199.6	0.8%
1973	10	0			0.0	0.0%	0.0	0.0%
1972	11	0			0.0	0.0%	0.0	0.0%
1971	12	0			0.0	0.0%	0.0	0.0%
1970	13+	0			0.0	0.0%	0.0	0.0%
Total		**384**	**108**	**199**	**2,970.0**	**100.0%**	**24,948.0**	**100.0%**

North Shore Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1982	1	0			0.0	0.0%	0.0	0.0%
1981	2	0			0.0	0.0%	0.0	0.0%
1980	3	0			0.0	0.0%	0.0	0.0%
1979	4	0			0.0	0.0%	0.0	0.0%
1978	5	0			0.0	0.0%	0.0	0.0%
1977	6	0			0.0	0.0%	0.0	0.0%
1976	7	0			0.0	0.0%	0.0	0.0%
1975	8	0			0.0	0.0%	0.0	0.0%
1974	9	0			0.0	0.0%	0.0	0.0%
1973	10	0			0.0	0.0%	0.0	0.0%
1972	11	0			0.0	0.0%	0.0	0.0%
1971	12	0			0.0	0.0%	0.0	0.0%
1970	13+	0			0.0	0.0%	0.0	0.0%
Total		**0**			**2,660.0**	**0.0%**		**0.0%**

-Continued-

Appendix L.7. (page 3 of 3)

Naked Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1982	1	0			0.0	0.0%	0.0	0.0%
1981	2	0			0.0	0.0%	0.0	0.0%
1980	3	59	85	182	963.8	8.4%	10,283.7	13.6%
1979	4	38	114	195	832.6	7.3%	6,623.4	8.7%
1978	5	43	131	204	1,082.6	9.5%	7,494.9	9.9%
1977	6	70	144	214	1,937.3	16.9%	12,201.0	16.1%
1976	7	205	153	217	6,028.0	52.6%	35,731.6	47.1%
1975	8	17	157	218	513.0	4.5%	2,963.1	3.9%
1974	9	3	161	223	92.8	0.8%	522.9	0.7%
1973	10	0			0.0	0.0%	0.0	0.0%
1972	11	0			0.0	0.0%	0.0	0.0%
1971	12	0			0.0	0.0%	0.0	0.0%
1970	13+	0			0.0	0.0%	0.0	0.0%
Total		**435**	**137**	**209**	**11,450.0**	**100.0%**	**75,820.7**	**100.0%**

Appendix L.8. Age, sex and size composition of Pacific herring from the purse seine sac roe fishery, Prince William Sound, 1983.

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	61	61	16.1	84	-	61	182	-	61
Rocky Bay,	4	-	-	51	51	13.5	91	-	51	189	-	51
Montague Island	5	-	-	47	47	17.4	121	-	47	206	-	47
Spring, 1983	6	-	-	68	68	17.9	144	-	68	215	-	68
Purse Seine	7	-	-	139	139	36.7	155	-	139	220	-	139
Sac Roe Harvest	8	-	-	11	11	2.9	163	-	11	225	-	11
	9	-	-	2	2	0.5	153	-	2	222	-	2
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**-**	**-**	**379**	**379**	**100.0**	**129**	**-**	**379**	**207**	**-**	**379**
	2	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	59	59	13.6	85	-	59	182	-	59
Naked Island,	4	-	-	38	38	8.7	114	-	38	195	-	38
Naked Island Area	5	-	-	43	43	9.9	131	-	43	204	-	43
Spring, 1983	6	-	-	70	70	16.1	144	-	70	214	-	70
Purse Seine	7	-	-	205	205	47.1	153	-	205	217	-	205
Sac Roe Harvest	8	-	-	17	17	3.9	157	-	17	218	-	17
	9	-	-	3	3	0.7	161	-	3	223	-	3
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**-**	**-**	**435**	**435**	**100.0**	**137**	**-**	**435**	**209**	**-**	**435**

Indicates dominant age class.

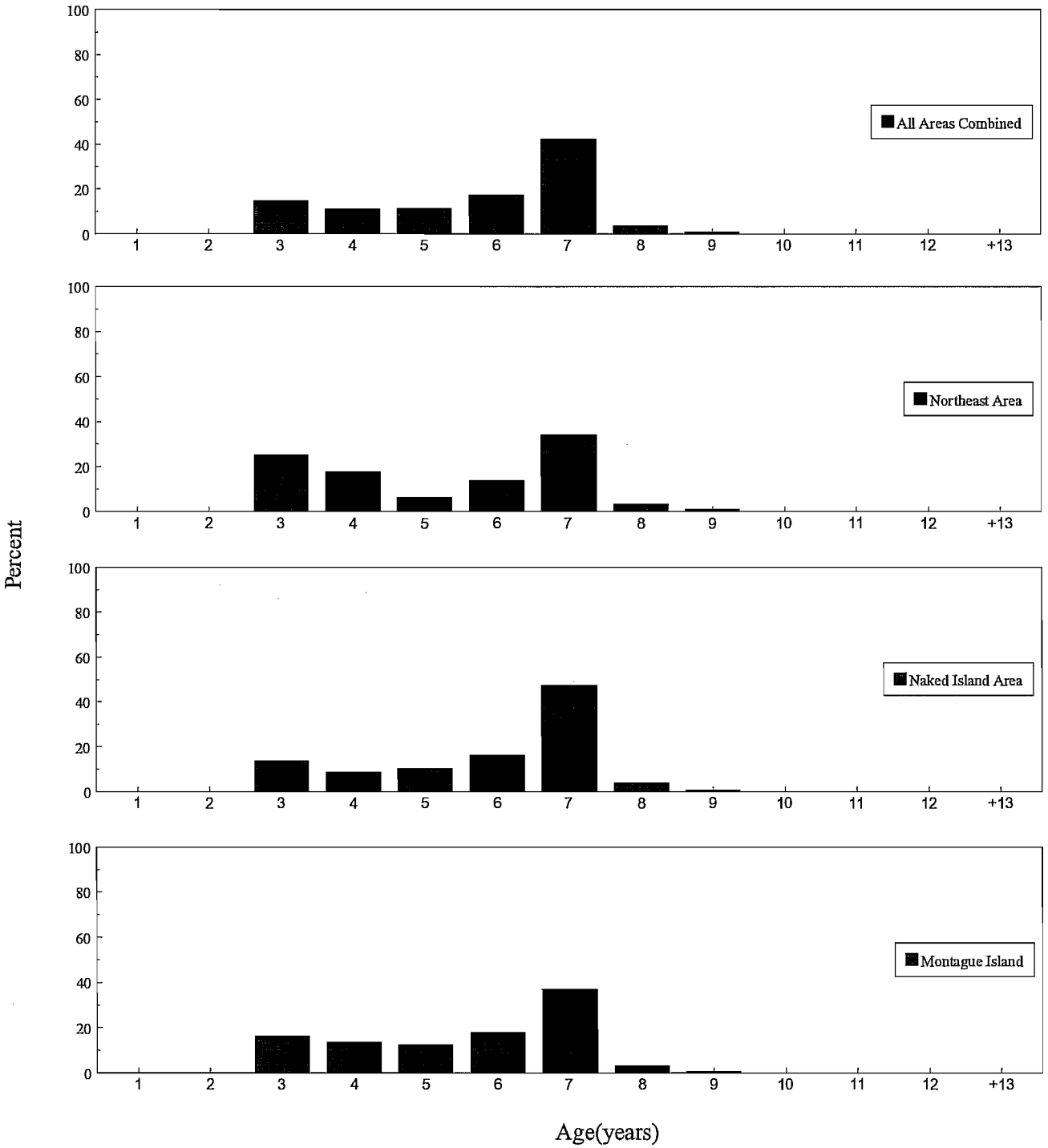
- Continued -

Appendix L.8. (page 2 of 2)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2											
	3	-	-	96	96	25.0	82	-	96	181	-	96
Galena Bay, Ellamar,	4	-	-	67	67	17.4	94	-	67	189	-	67
Northeast Area	5	-	-	23	23	6.0	110	-	23	198	-	23
Spring, 1983	6	-	-	52	52	13.5	124	-	52	206	-	52
Purse Seine	7	-	-	130	130	33.9	136	-	130	212	-	130
Pound Fishery Harvest	8	-	-	13	13	3.4	158	-	13	222	-	13
	9	-	-	3	3	0.8	149	-	3	218	-	3
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13											
Total		**-**	**-**	**384**	**384**	**100.0**	**108**	**-**	**384**	**199**	**-**	**384**

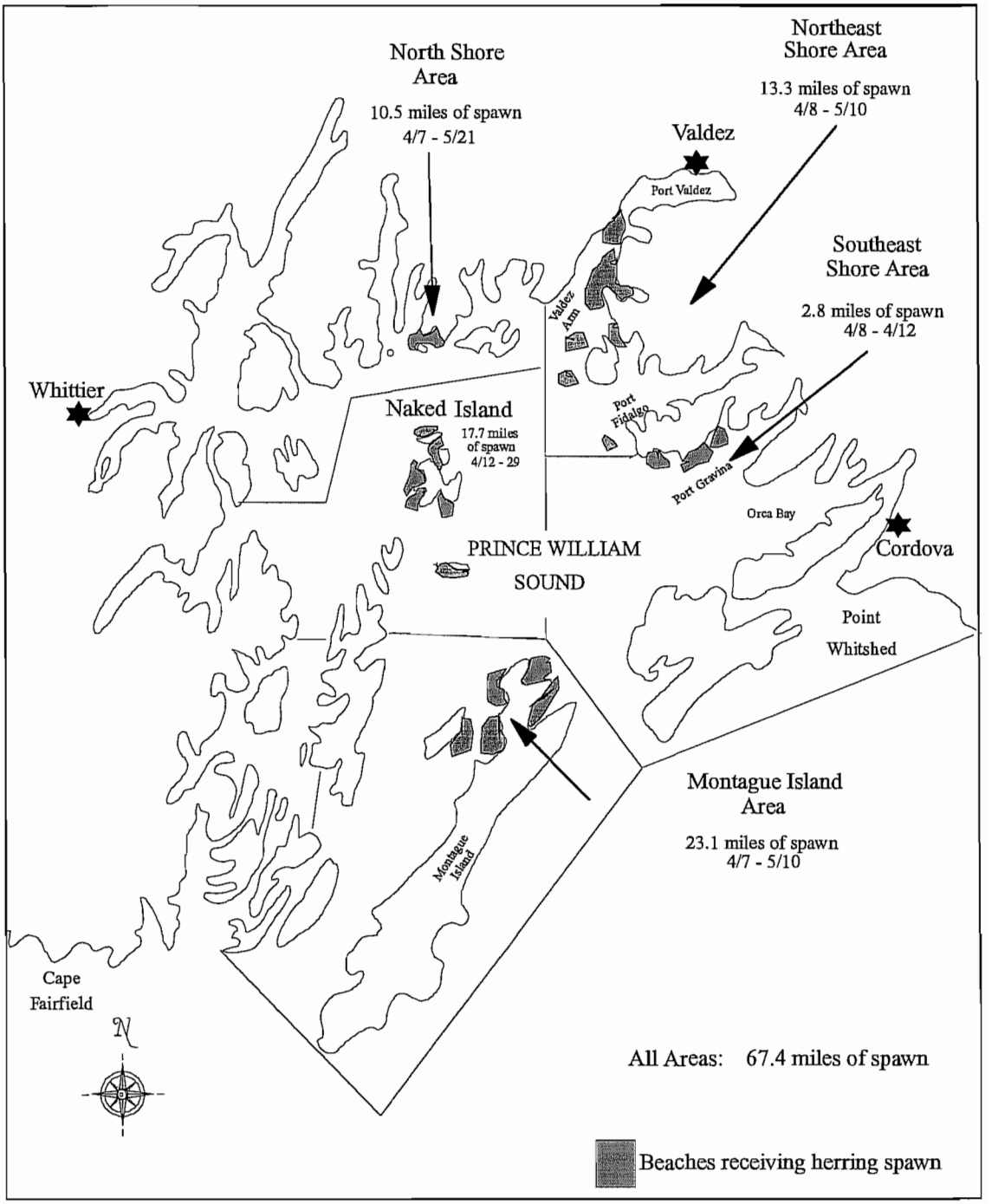
Indicates dominant age class.

Prince William Sound Herring Age Composition 1983



Appendix L.9. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1983.

Historical Herring Spawn and Shoreline Mileage



Appendix L.10. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys for 1983.

APPENDIX M: SUMMARY FOR 1984

Appendix M.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1984.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/15	20	NS	NS	NS	NS	20	03/15
03/19	0	0	0	0	0	0	03/19
03/21	0	NS	NS	NS	NS	0	03/21
03/27	180	NS	NS	0	0	180	03/27
03/28	840	0	0	0	0	840	03/28
03/29	610	NS	NS	NS	NS	610	03/29
03/30	130	200	NS	0	0	330	03/30
04/02	2,250	0	0	0	50	2,300	04/02
04/03	2,730	50	0	NS	NS	2,780	04/03
04/04	3,830	0	NS	0	80	3,910	04/04
04/05	6,090	NS	NS	NS	NS	6,090	04/05
04/06	2,140	0	0	0	0	2,140	04/06
04/07	3,540	NS	NS	0	10	3,550	04/07
04/08	640	0	0	40	3,240	3,920	04/08
04/09	380	NS	0	10	2,670	3,060	04/09
04/10	100	0	0	0	240	340	04/10
04/11	40	NS	10	20	6,690	6,760	04/11
04/12	50	490	300	0	23,900	24,740	04/12
04/13	40	1,900	840	NS	11,770	14,550	04/13
04/14	0	5,580	140	0	8,920	14,640	04/14
04/15	0	2,730	2,190	60	5,970	10,950	04/15
04/17	100	2,360	510	NS	4,890	7,860	04/17
04/18	0	1,840	80	5,190	2,020	9,130	04/18
04/19	120	2,630	4,740	7,630	1,840	16,960	04/19
04/21	NS	6,470	1,570	1,410	200	9,650	04/21
04/22	0	120	1,860	170	0	2,150	04/22
04/23	NS	130	880	70	70	1,150	04/23
04/24	0	0	290	0	0	290	04/24
04/25	NS	10	3,900	0	0	3,910	04/25
04/26	NS	100	330	NS	NS	430	04/26
04/27	NS	0	NS	NS	NS	0	04/27
04/28	NS	0	NS	NS	NS	0	04/28
04/29	NS	0	0	NS	NS	0	04/29
05/01	0	0	130	NS	NS	130	05/01
05/02	NS	0	1,210	NS	NS	1,210	05/02
05/04	NS	120	NS	NS	NS	120	05/04
05/05	NS	210	910	0	NS	1,120	05/05
05/06	NS	230	0	NS	NS	230	05/06
05/07	NS	390	1,310	NS	NS	1,700	05/07
05/08	NS	10	NS	NS	NS	10	05/08
05/09	NS	560	0	NS	NS	560	05/09
05/10	NS	NS	440	NS	NS	440	05/10
AREA TOTAL	**23,830**	**26,130**	**21,640**	**14,600**	**72,560**	**158,760**	**TOTAL**
PEAK ESTIMATES	**6,140**	**15,150**	**6,050**	**7,630**	**23,900**	**58,870**	**PEAK**

[a]Dates displayed are for actual survey days.

NS = Not Surveyed

Appendix M.2. Herring spawn mile days from aerial surveys by area and date for Prince William Sound, 1984.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/15	0	NS	NS	NS	NS	0.0	03/15
03/19	0	0	0	0	0	0.0	03/19
03/21	0	NS	NS	NS	NS	0.0	03/21
03/27	0.3	NS	NS	0.0	0.0	0.3	03/27
03/28	0	0	0	0	0	0.0	03/28
03/29	0	NS	NS	NS	NS	0.0	03/29
03/30	0.1	0.0	NS	NS	NS	0.1	03/30
04/02	0.2	0.0	NS	NS	NS	0.2	04/02
04/03	0	0	0	NS	NS	0.0	04/03
04/04	0.6	0.0	NS	NS	NS	0.6	04/04
04/05	0	NS	NS	NS	NS	0.0	04/05
04/06	3.0	0.0	NS	NS	NS	3.0	04/06
04/07	2.5	0.0	NS	NS	NS	2.5	04/07
04/08	2.0	0.0	NS	NS	NS	2.0	04/08
04/09	1.5	0.0	NS	NS	NS	1.5	04/09
04/10	0.2	0.3	NS	NS	0.2	0.7	04/10
04/11	0	NS	0	0	0	0.0	04/11
04/12	0.0	0.2	NS	NS	NS	0.2	04/12
04/13	0.0	0.3	NS	NS	NS	0.3	04/13
04/14	0.0	0.4	NS	NS	NS	0.4	04/14
04/15	0.0	1.0	NS	NS	2.5	3.5	04/15
04/17	0.0	0.7	NS	NS	2.5	3.2	04/17
04/18	NS	2.7	NS	2.6	9.0	14.3	04/18
04/19	0.0	1.4	NS	5.3	15.5	22.2	04/19
04/21	NS	1.0	NS	0.7	NS	1.7	04/21
04/22	NS	NS	NS	2.7	NS	2.7	04/22
04/23	NS	NS	NS	0.1	0.9	1.0	04/23
04/24	0	0	0	0	0	0.0	04/24
04/25	NS	NS	1.5	0.3	NS	1.8	04/25
04/26	NS	NS	3.9	NS	NS	3.9	04/26
04/27	NS	NS	4.6	NS	NS	4.6	04/27
04/28	NS	NS	0.2	NS	NS	0.2	04/28
04/29	NS	0	0	NS	NS	0.0	04/29
05/01	NS	NS	0.6	NS	NS	0.6	05/01
05/02	NS	0.0	0.8	NS	NS	0.8	05/02
05/04	NS	0	NS	NS	NS	0.0	05/04
05/05	NS	2.1	4.4	NS	NS	6.5	05/05
05/06	NS	0.6	NS	NS	NS	0.6	05/06
05/07	NS	1.3	1.0	NS	NS	2.3	05/07
05/08	NS	0.1	NS	NS	NS	0.1	05/08
05/09	NS	0.5	2.5	NS	NS	3.0	05/09
05/10	NS	NS	2.0	NS	NS	2.0	05/10
Mile Days	**10.4**	**12.6**	**21.5**	**11.7**	**30.6**	**86.8**	**Total**
Shoreline Miles	8.7	12.1	16.3	7.6	15.5	60.1	Total

a Dates displayed are for actual survey days.

NS = Not Surveyed

Appendix M.3. Herring biomass estimates from aerial surveys by sub-area and date for Prince William Sound, 1984.

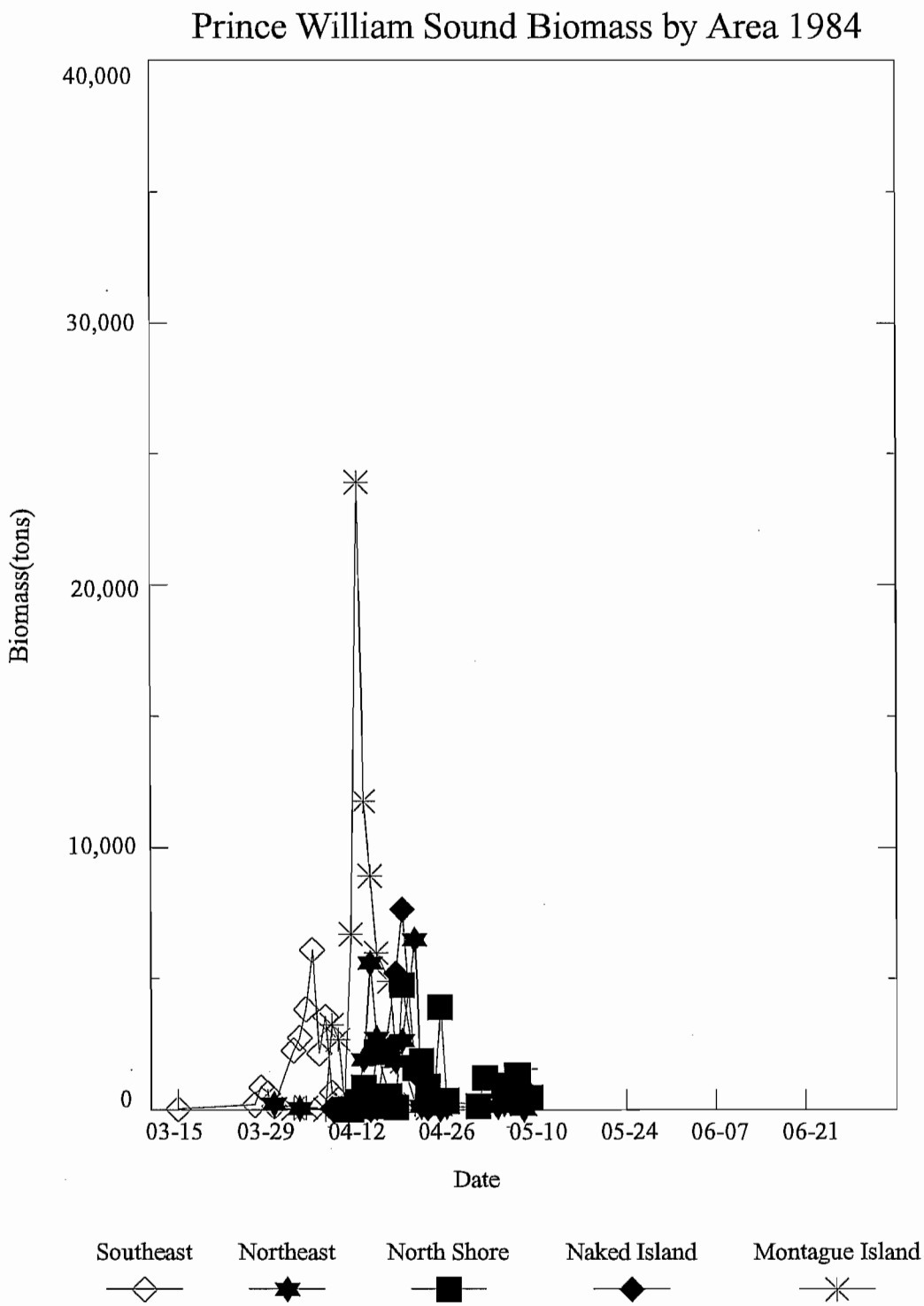
DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
3/15	0	20									20	3/15
3/19	0	0	0	0	0	0		0		0	0	3/19
3/21	0	0									0	3/21
3/27	0	180						0		0	180	3/27
3/28	0	840	0	0		0	0		0	0	840	3/28
3/29	0	610									610	3/29
3/30		130	0	200	0			0		0	330	3/30
4/2	0	2,250	0	0	0			0		50	2,300	4/2
4/3		2,730	0	0	50	0	0				2,780	4/3
4/4	0	3,830						0		80	3,910	4/4
4/5		6,090									6,090	4/5
4/6	0	2,140	0	0	0	0	0	0		0	2,140	4/6
4/7	0	3,540				0	0	0		10	3,550	4/7
4/8	0	640						40		3,240	3,920	4/8
4/9	0	380				0	0	10		2,670	3,060	4/9
4/10	0	100	0	0	0	0	0	0		240	340	4/10
4/11	40						10	20		6,690	6,760	4/11
4/12	50	0	0	360	130	0	300	0		23,900	24,740	4/12
4/13		40	0	1,490	410	0	840		0	11,770	14,550	4/13
4/14		0	0	4,920	660	0	140	0		8,920	14,640	4/14
4/15				270	2,460	20	2,170	60		5,970	10,950	4/15
4/17		100	0	1,580	780	0	510			4,890	7,860	4/17
4/18		0	550	640	650		80	5,190		2,020	9,130	4/18
4/19		120	10	1,470	1,150	260	4,480	7,630		1,840	16,960	4/19
4/21			10	6,410	60	0	1,570	1,410		200	9,660	4/21
4/22		0	0	120	0	0	1,860	170		0	2,150	4/22
4/23			0		10	0	880	70		70	1,030	4/23
4/24				120	0	0	290	0			410	4/24
4/25				10	0	0	3,900	0		0	3,910	4/25
4/26							330				330	4/26
4/27							0				0	4/27
4/28							0				0	4/28
4/29			0	0	0	0	0				0	4/29
5/1		0	0	90	10	0	130				230	5/1
5/2				0	0	0	1,210				1,210	5/2
5/4			0	0	120						120	5/4
5/5			0	0	210		910				1,120	5/5
5/6				0	230						230	5/6
5/7					390	0	1,310				1,700	5/7
5/8				0	10						10	5/8
5/9					560	20	420				1,000	5/9
5/10							0				0	5/10
Area Total	**90**	**23,740**	**560**	**17,680**	**7,890**	**300**	**21,340**	**14,600**	**0**	**72,560**	**158,760**	**Total**
Peak Estimates	**50**	**6,090**	**550**	**11,530**	**3,070**	**260**	**5,790**	**7,630**	**0**	**23,900**	**58,870**	**Peak**

Note: Data displayed only for dates that surveys were flown.

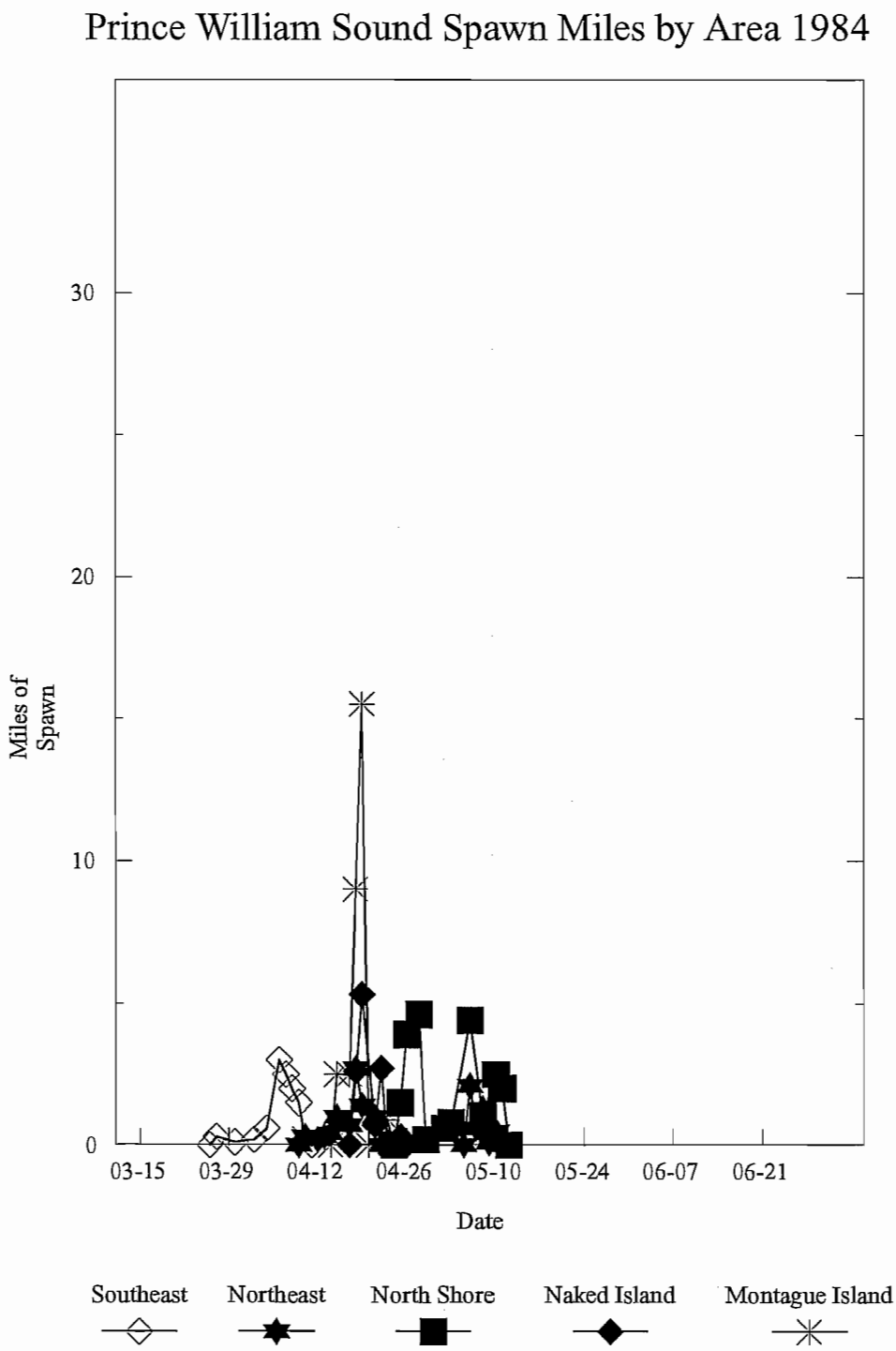
Appendix M.4. Estimated miles of herring spawn by sub-area and date from aerial surveys for Prince William Sound, 1984.

DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
3/15	0.0	0.0									0.0	3/15
3/19	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	3/19
3/21	0.0	0.0									0.0	3/21
3/27	0.0	0.3						0.0		0.0	0.3	3/27
3/28	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	3/28
3/29	0.0	0.0									0.0	3/29
3/30		0.1	0.0	0.0	0.0			0.0		0.0	0.1	3/30
4/2	0.0	0.2	0.0	0.0	0.0			0.0		0.0	0.2	4/2
4/3		0.0	0.0	0.0	0.0	0.0	0.0				0.0	4/3
4/4	0.0	0.6						0.0		0.0	0.6	4/4
4/5		0.0									0.0	4/5
4/6	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	3.0	4/6
4/7	0.0	2.5				0.0	0.0	0.0		0.0	2.5	4/7
4/8	0.0	2.0						0.0		0.0	2.0	4/8
4/9	0.0	1.5				0.0	0.0	0.0		0.0	1.5	4/9
4/10	0.0	0.2	0.0	0.3	0.0	0.0	0.0	0.0		0.2	0.7	4/10
4/11	0.0						0.0	0.0		0.0	0.0	4/11
4/12	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0		0.0	0.2	4/12
4/13		0.0	0.0	0.1	0.2	0.0	0.0		0.0	0.0	0.3	4/13
4/14		0.0	0.0	0.2	0.2	0.0	0.0	0.0		0.0	0.4	4/14
4/15				0.7	0.3	0.0	0.0	0.0		2.5	3.5	4/15
4/17		0.0	0.0	0.5	0.2	0.0	0.0			2.5	3.2	4/17
4/18		0.0	0.0	2.5	0.2		0.0	2.6		9.0	14.3	4/18
4/19		0.0	0.0	0.4	1.0	0.0	0.0	5.3		15.5	22.2	4/19
4/21			0.0	0.8	0.2	0.0	0.0	0.7		0.0	1.7	4/21
4/22		0.0	0.0	0.0	0.0	0.0	0.0	2.7		0.0	2.7	4/22
4/23			0.0		0.0	0.0	0.0	0.1		0.9	1.0	4/23
4/24				0.0	0.0	0.0	0.0	0.0		0.0	0.0	4/24
4/25				0.0	0.0	0.0	1.5	0.3		0.0	1.8	4/25
4/26							3.9				3.9	4/26
4/27							4.6				4.6	4/27
4/28							0.2				0.2	4/28
4/29			0.0	0.0	0.0	0.0	0.0				0.0	4/29
5/1		0.0	0.0	0.0	0.0	0.0	0.6				0.6	5/1
5/2				0.0	0.0	0.0	0.8				0.8	5/2
5/4		0.0	0.0	0.0	0.0						0.0	5/4
5/5			0.0	0.0	2.1		4.4				6.5	5/5
5/6				0.0	0.6						0.6	5/6
5/7					1.3	0.0	1.0				2.3	5/7
5/8				0.0	0.1						0.1	5/8
5/9					0.5	0.0	2.5				3.0	5/9
5/10							2.0				2.0	5/10
Area Total	**0.0**	**10.4**	**0.0**	**5.7**	**6.9**	**0.0**	**21.5**	**11.7**	**0.0**	**30.6**	**86.8**	**Total**

Note: Data displayed only for dates that surveys were flown.



Appendix M.5. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1984.



Appendix M.6. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1984.

Appendix M.7. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound, 1984.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1983	1	0			0.0	0.0%	0.0	0.0%
1982	2	2	35	146	15.1	0.0%	398.2	0.1%
1981	3	502	75	178	12,898.9	22.0%	157,783.0	28.4%
1980	4	796	91	190	24,837.1	42.4%	250,189.8	45.0%
1979	5	216	107	201	7,975.2	13.6%	67,890.7	12.2%
1978	6	80	128	211	3,526.8	6.0%	25,144.7	4.5%
1977	7	90	150	222	4,642.6	7.9%	28,287.8	5.1%
1976	8	73	164	227	4,117.8	7.0%	22,944.5	4.1%
1975	9	9	166	230	515.2	0.9%	2,828.8	0.5%
1974	10	1	240	0	82.7	0.1%	314.3	0.1%
1973	11	0			0.0	0.0%	0.0	0.0%
1972	12	0			0.0	0.0%	0.0	0.0%
1971	13+	0			0.0	0.0%	0.0	0.0%
Total		**1,769**	**96**	**192**	**58,620.0**	**100.0%**	**555,781.8**	**100.0%**

Southeast Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1983	1	0			0.0	0.0%	0.0	0.0%
1982	2	1	32	141	4.8	0.1%	151.3	0.2%
1981	3	166	72	179	1,808.9	29.5%	25,123.6	35.4%
1980	4	215	85	189	2,765.9	45.0%	32,539.6	45.8%
1979	5	54	106	201	866.3	14.1%	8,172.7	11.5%
1978	6	14	117	209	247.9	4.0%	2,118.9	3.0%
1977	7	8	139	223	168.3	2.7%	1,210.8	1.7%
1976	8	10	166	232	251.2	4.1%	1,513.5	2.1%
1975	9	1	176	234	26.6	0.4%	151.3	0.2%
1974	10	0			0.0	0.0%	0.0	0.0%
1973	11	0			0.0	0.0%	0.0	0.0%
1972	12	0			0.0	0.0%	0.0	0.0%
1971	13+	0			0.0	0.0%	0.0	0.0%
Total		**469**	**86**	**189**	**6,140.0**	**100.0%**	**70,981.8**	**100.0%**

-Continued-

Appendix M.7. (page 2 of 3)

Northeast Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1983	1	0			0.0	0.0%	0.0	0.0%
1982	2	0			0.0	0.0%	0.0	0.0%
1981	3	106	80	178	2,986.2	19.7%	34,065.0	24.5%
1980	4	193	92	189	6,252.7	41.3%	62,024.0	44.7%
1979	5	64	107	199	2,411.5	15.9%	20,567.5	14.8%
1978	6	22	129	210	999.4	6.6%	7,070.1	5.1%
1977	7	20	141	218	993.1	6.6%	6,427.4	4.6%
1976	8	25	158	222	1,391.0	9.2%	8,034.2	5.8%
1975	9	2	165	233	116.2	0.8%	642.7	0.5%
1974	10	0			0.0	0.0%	0.0	0.0%
1973	11	0			0.0	0.0%	0.0	0.0%
1972	12	0			0.0	0.0%	0.0	0.0%
1971	13+	0			0.0	0.0%	0.0	0.0%
Total		**432**	**99**	**192**	**15,150.0**	**100.0%**	**138,830.9**	**100.0%**

North Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1983	1	0			0.0	0.0%	0.0	0.0%
1982	2	0			0.0	0.0%	0.0	0.0%
1981	3	0			0.0	0.0%	0.0	0.0%
1980	4	0			0.0	0.0%	0.0	0.0%
1979	5	0			0.0	0.0%	0.0	0.0%
1978	6	0			0.0	0.0%	0.0	0.0%
1977	7	0			0.0	0.0%	0.0	0.0%
1976	8	0			0.0	0.0%	0.0	0.0%
1975	9	0			0.0	0.0%	0.0	0.0%
1974	10	0			0.0	0.0%	0.0	0.0%
1973	11	0			0.0	0.0%	0.0	0.0%
1972	12	0			0.0	0.0%	0.0	0.0%
1971	13+	0			0.0	0.0%	0.0	0.0%
Total		**0**			**6,050.0**	**0.0%**	**0.0**	**0.0%**

-Continued-

Appendix M.7. (page 3 of 3)

Naked Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1983	1	0			0.0	0.0%	0.0	0.0%
1982	2	0			0.0	0.0%	0.0	0.0%
1981	3	0			0.0	0.0%	0.0	0.0%
1980	4	0			0.0	0.0%	0.0	0.0%
1979	5	0			0.0	0.0%	0.0	0.0%
1978	6	0			0.0	0.0%	0.0	0.0%
1977	7	0			0.0	0.0%	0.0	0.0%
1976	8	0			0.0	0.0%	0.0	0.0%
1975	9	0			0.0	0.0%	0.0	0.0%
1974	10	0			0.0	0.0%	0.0	0.0%
1973	11	0			0.0	0.0%	0.0	0.0%
1972	12	0			0.0	0.0%	0.0	0.0%
1971	13+	0			0.0	0.0%	0.0	0.0%
Total		**0**			**7,630.0**	**0.0%**	**0.0**	**0.0%**

Montague Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1983	1	0			0.0	0.0%	0.0	0.0%
1982	2	1	37	151	10.2	0.0%	275.9	0.1%
1981	3	230	74	178	4,696.5	19.7%	63,466.2	26.5%
1980	4	388	93	191	9,957.0	41.7%	107,064.8	44.7%
1979	5	98	108	202	2,920.6	12.2%	27,042.1	11.3%
1978	6	44	131	213	1,590.5	6.7%	12,141.4	5.1%
1977	7	62	154	223	2,634.7	11.0%	17,108.3	7.1%
1976	8	38	167	229	1,751.1	7.3%	10,485.7	4.4%
1975	9	6	165	228	273.2	1.1%	1,655.6	0.7%
1974	10	1	240		66.2	0.3%	275.9	0.1%
1973	11	0			0.0	0.0%	0.0	0.0%
1972	12	0			0.0	0.0%	0.0	0.0%
1971	13+	0			0.0	0.0%	0.0	0.0%
Total		**868**	**100**	**194**	**23,900.0**	**100.0%**	**239,516.0**	**100.0%**

Appendix M.8. Age, sex and size composition of Pacific herring from the purse seine test fishery, sac roe fishery and pound fishery, Prince William Sound, 1984.

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	1	0	0	1	0.1	37	0	1	151	0	1
	3	133	97	0	230	26.5	74	11	230	178	8	230
Montague Island	4	197	191	0	388	44.7	93	17	388	191	10	388
Summary Table	5	50	48	0	98	11.3	108	17	98	202	10	98
1984	6	21	23	0	44	5.1	131	22	44	213	10	44
	7	32	30	0	62	7.1	154	22	62	223	11	62
	8	21	17	0	38	4.4	167	19	38	229	8	38
	9	3	3	0	6	0.7	165	20	6	228	7	6
	10	0	1	0	1	0.1	240	0	1	-		1
	11	0	0	0	0	0.0	-	-	0	-		0
	12	0	0	0	0	0.0	-	-	0	-		0
	+13	0	0	0	0	0.0	-	-	0	-		0
Total		**458**	**410**	**0**	**868**	**100.0**	**100**	**30**	**868**	**194**	**17**	**868**
	2	0	0	0	0	0.0	-	-	0	-	-	0
	3	62	44	0	106	24.5	80	25	95	178	11	106
	4	117	76	0	193	44.7	92	18	172	189	11	193
Northeast Shore	5	40	24	0	64	14.8	107	21	56	199	12	64
Summary Table	6	16	6	0	22	5.1	129	16	18	210	9	22
1984	7	16	4	0	20	4.6	141	31	19	218	14	20
	8	13	12	0	25	5.8	158	19	18	222	11	25
	9	0	2	0	2	0.5	165	13	2	233	0	2
	10	0	0	0	0	0.0	-	-	0	-	-	0
	11	0	0	0	0	0.0	-	-	0	-	-	0
	12	0	0	0	0	0.0	-	-	0	-	-	0
	+13	0	0	0	0	0.0	-	-	0	-	-	0
Total		**264**	**168**	**0**	**432**	**100.0**	**99**	**30**	**380**	**192**	**17**	**432**

Indicates dominant age class.

-Continued-

Appendix M.8. (page 2 of 4)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2											
	3	44	42	-	86	24.5	74	9.9	86	177	8.3	86
	4	76	90	-	166	47.3	94	18.0	166	191	10.2	166
Montague Island	5	16	25	-	41	11.7	110	16.3	41	203	11.1	41
Stockdale Harbor,	6	8	10	-	18	5.1	129	22.5	18	211	10.3	18
Sac Roe	7	5	18	-	23	6.6	158	16.9	23	224	6.8	23
14 April, 1984	8	10	3	-	13	3.7	159	19.1	13	225	7.9	13
	9	1	2	-	3	0.9	173	29.8	3	232	11.2	3
	10	-	1	-	1	0.3	240	-	1	252	-	1
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**160**	**191**	**-**	**351**	**100.0**	**100**	**30.9**	**351**	**194**	**17.5**	**351**
	2											
	3	69	46	-	115	34.6	74	12.3	115	178	9.1	115
	4	83	63	-	146	44.0	89	14.7	146	189	10.0	146
Montague Island	5	23	14	-	37	11.1	103	16.1	37	199	10.0	37
Stockdale Harbor,	6	8	1	-	9	2.7	118	20.5	9	211	12.4	9
Sac Roe	7	13	5	-	18	5.4	148	28.5	18	221	16.8	18
10 April, 1984	8	1	5	-	6	1.8	184	13.9	6	232	9.6	6
13 April, 1984	9	1	-	-	1	0.3	169	-	1	230	-	1
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**198**	**134**	**-**	**332**	**100.0**	**91**	**26.9**	**332**	**190**	**16.2**	**332**

Indicates dominant age class.

-Continued-

Appendix M.8. (page 3 of 4)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	1	-	-	1	0.5	37	-	1	151	-	1
	3	20	9	-	29	15.7	76	8.7	29	180	6.6	29
	4	38	38	-	76	41.1	98	20.8	76	195	11.4	76
Montague Island	5	11	9	-	20	10.8	115	21.9	20	207	9.6	20
Rocky Bay	6	5	12	-	17	9.2	139	23.4	17	217	9.7	17
Sac roe	7	14	7	-	21	11.4	154	22.6	21	224	11.8	21
14 April, 1984	8	10	9	-	19	10.3	168	21.2	19	230	8.2	19
	9	1	1	-	2	1.1	151	14.8	2	220	4.2	2
	10	-	-	-	-	-	-	-	-	-	-	-
	11											
	12											
	+13											
Total		**100**	**85**	**-**	**185**	**100.0**	**114**	**36.2**	**185**	**203**	**19.2**	**185**
	2											
	3	11	10	-	21	28.8	75	20.8	21	184	13.7	21
	4	22	10	-	32	43.8	85	13.9	32	192	9.3	32
Northeast Shore	5	7	1	-	8	11.0	96	9.4	8	203	9.3	8
Boulder Bay	6	2	-	-	2	2.7	127	19.8	2	224	4.9	2
Pound Fish	7	2	1	-	3	4.1	122	21.7	3	215	7.0	3
27 April, 1984	8	4	3	-	7	9.6	144	16.8	7	226	4.9	7
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13											
Total		**48**	**25**		**73**	**100.0**	**92**	**26.4**	**73**	**196**	**16.7**	**73**

Indicates dominant age class.

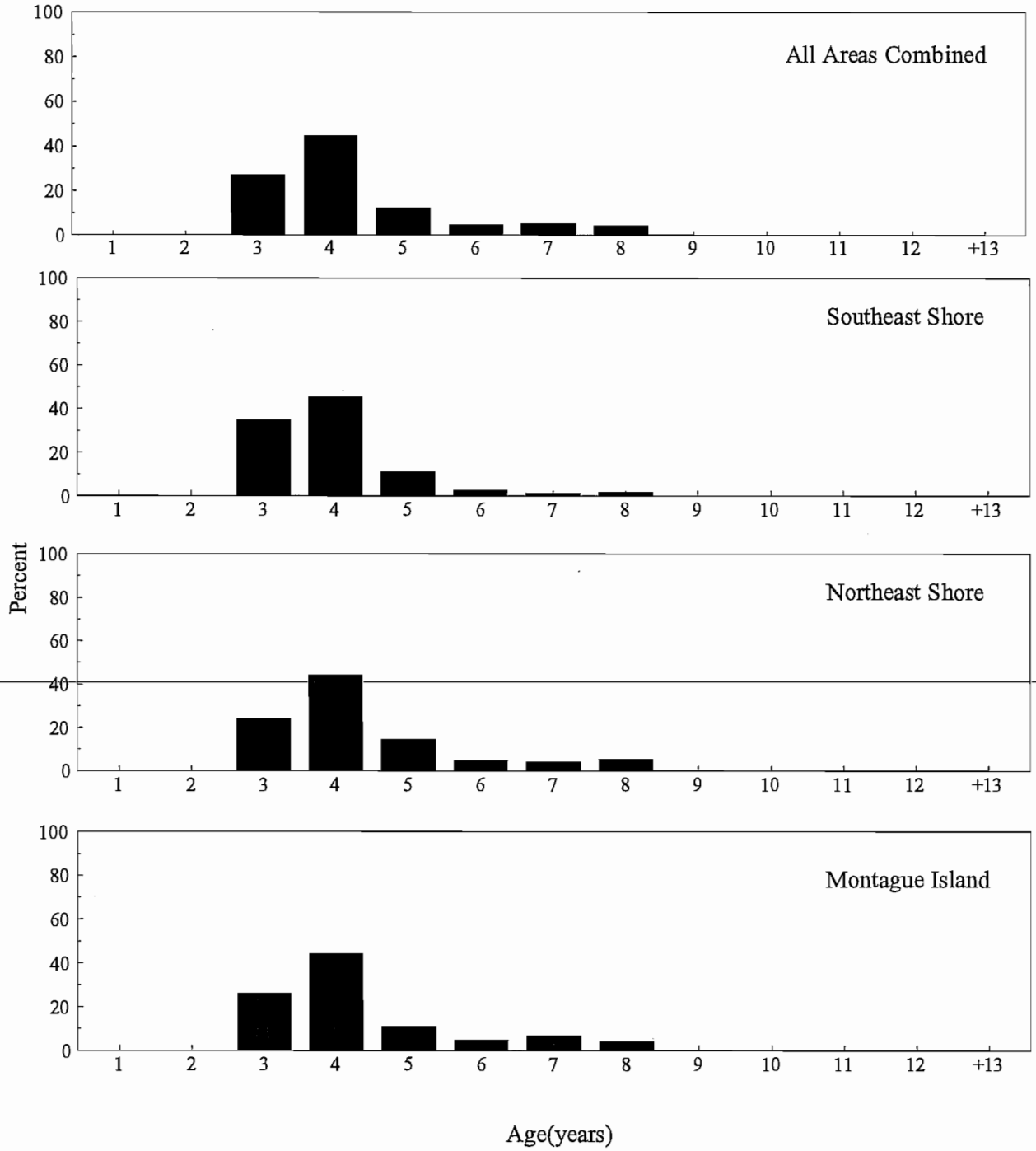
-Continued-

Appendix M.8. (page 4 of 4)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2											
	3	51	34	-	85	23.7	82	26.5	74	177	10.1	85
	4	95	66	-	161	44.8	94	19.1	140	188	11.5	161
Northeast Shore	5	33	23	-	56	15.6	109	22.9	48	198	12.4	56
Galena Bay	6	14	6	-	20	5.6	129	15.8	16	209	9.0	20
Pound Fish	7	14	3	-	17	4.7	145	33.0	16	218	15.8	17
02 May, 1984	8	9	9	-	18	5.0	167	20.0	11	221	12.9	18
06 May, 1984	9	-	2	-	2	0.6	165	13.4	2	233	0	2
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**216**	**143**	**-**	**359**	**100.0**	**101**	**30.6**	**307**	**191**	**17.2**	**359**
	2	-	1	-	1	0.2	32	-	1	141	-	1
	3	77	89	-	166	35.4	72	12.6	166	179	9.9	166
	4	103	112	-	215	45.8	85	14.0	215	189	9.3	215
Southeast Shore	5	26	28	-	54	11.5	106	22.9	54	201	12.4	54
Port Gravina	6	9	5	-	14	3.0	117	18.4	14	209	10.0	14
Test Fishery	7	5	3	-	8	1.7	139	26.3	8	223	11.4	8
03 April, 1984	8	6	4	-	10	2.1	166	18.6	10	232	9.6	10
06 April, 1984	9	1	-	-	1	0.2	176	-	1	234	-	1
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13											
Total		**227**	**242**	**-**	**469**	**100.0**	**86**	**24.2**	**469**	**189**	**15.1**	**469**

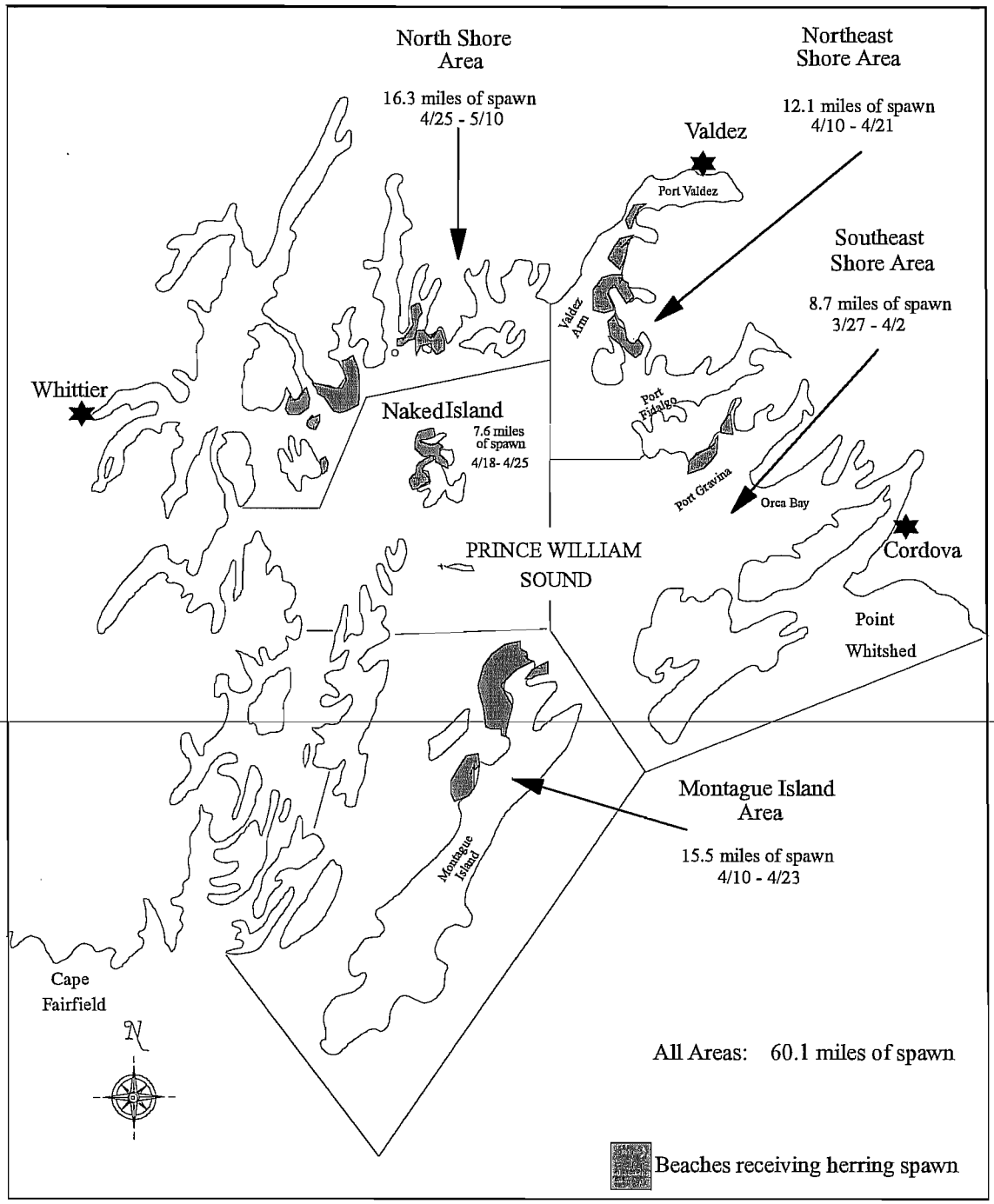
Indicates dominant age class.

Prince William Sound Herring Age Composition 1984



Appendix M.9. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1984.

Historical Herring Spawn and Shoreline Mileage



Appendix M.10. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys for 1984.

APPENDIX N: SUMMARY FOR 1985

Appendix N.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1985.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/24	0	0	0	0	0	0	03/24
03/26	0	0	0	0	0	0	03/26
03/31	220	15	0	NS	0	235	03/31
04/03	0	0	NS	NS	NS	0	04/03
04/05	0	NS	NS	NS	NS	0	04/05
04/11	NS	NS	NS	NS	0	0	04/11
04/12	NS	NS	NS	NS	0	0	04/12
04/13	0	0	0	0	NS	0	04/13
04/16	0	0	0	NS	NS	0	04/16
04/17	0	0	0	0	0	0	04/17
04/18	0	140	NS	NS	NS	140	04/18
04/19	NS	30	0	0	0	30	04/19
04/20	NS	0	NS	NS	NS	0	04/20
04/21	40	180	NS	NS	NS	220	04/21
04/22	0	110	15	20	0	145	04/22
04/23	0	50	0	0	0	50	04/23
04/24	0	580	710	0	20	1,310	04/24
04/25	0	1,940	380	NS	NS	2,320	04/25
04/26	0	3,340	8,120	NS	NS	11,460	04/26
04/27	170	2,210	4,190	820	150	7,540	04/27
04/28	NS	1,430	6,520	1,580	8,110	17,640	04/28
04/29	NS	NS	NS	0	7,680	7,680	04/29
04/30	0	200	2,210	1,420	370	4,200	04/30
05/01	0	590	770	470	1,870	3,700	05/01
05/02	NS	130	1,920	790	890	3,730	05/02
05/03	NS	10	NS	1,000	0	1,010	05/03
05/04	0	80	140	910	60	1,190	05/04
05/05	NS	0	60	50	0	110	05/05
05/06	NS	0	NS	0	NS	0	05/06
05/07	NS	NS	NS	0	NS	0	05/07
AREA TOTAL	**430**	**11,035**	**25,035**	**7,060**	**19,150**	**62,710**	**TOTAL**
PEAK ESTIMATES	**390**	**4,230**	**6,520**	**1,580**	**8,110**	**20,830**	**PEAK**

[a]Dates displayed are for actual survey days.
NS = Not Surveyed

Appendix N.2. Herring spawn mile days from aerial surveys by area and date for Prince William Sound, 1985.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/24	0.0	0.0	0.0	0.0	0.0	0.0	03/24
03/26	0.0	0.0	0.0	0.0	0.0	0.0	03/26
03/31	0.0	0.0	0.0	NS	0.0	0.0	03/31
04/03	0.0	0.0	NS	NS	NS	0.0	04/03
04/05	0.0	NS	NS	NS	NS	0.0	04/05
04/11	NS	NS	NS	NS	0.0	0.0	04/11
04/12	NS	NS	NS	NS	0.0	0.0	04/12
04/13	0.0	0.0	0.0	0.0	NS	0.0	04/13
04/16	0.0	0.0	0.0	NS	NS	0.0	04/16
04/17	0.0	0.0	0.0	0.0	0.0	0.0	04/17
04/18	0.0	0.0	NS	NS	NS	0.0	04/18
04/19	NS	3.5	0.0	0.0	0.0	3.5	04/19
04/20	NS	0.0	NS	NS	NS	0.0	04/20
04/21	2.5	0.5	NS	NS	NS	3.0	04/21
04/22	0.0	1.5	0.0	0.0	0.0	1.5	04/22
04/23	0.0	2.6	0.0	0.0	0.0	2.6	04/23
04/24	0.0	3.5	0.0	0.0	0.0	3.5	04/24
04/25	0.5	1.6	0.0	NS	NS	2.1	04/25
04/26	0.0	3.4	0.0	NS	NS	3.4	04/26
04/27	0.0	8.6	0.5	2.7	3.0	14.8	04/27
04/28	NS	10.2	2.5	1.2	6.0	19.9	04/28
04/29	NS	NS	NS	1.3	7.1	8.4	04/29
04/30	0.0	5.9	23.9	2.6	6.2	38.6	04/30
05/01	0.0	9.5	11.1	2.0	3.5	26.1	05/01
05/02	NS	0.9	0.8	1.6	1.5	4.8	05/02
05/03	NS	0.0	NS	1.1	0.0	1.1	05/03
05/04	0.0	0.4	1.8	5.4	0.0	7.5	05/04
05/05	NS	0.0	0.0	4.2	0.2	4.4	05/05
05/06	NS	0.5	NS	2.5	NS	3.0	05/06
05/07	NS	NS	NS	1.3	NS	1.3	05/07
Mile Days	**3.0**	**52.5**	**40.5**	**25.9**	**27.5**	**149.3**	**Total**
Shoreline Miles	3.2	35.0	33.5	16.4	13.2	101.3	Total

a Dates displayed are for actual survey days.
NS = Not Surveyed

Appendix N.3. Herring biomass estimates from aerial surveys by sub-area and date for Prince William Sound, 1985.

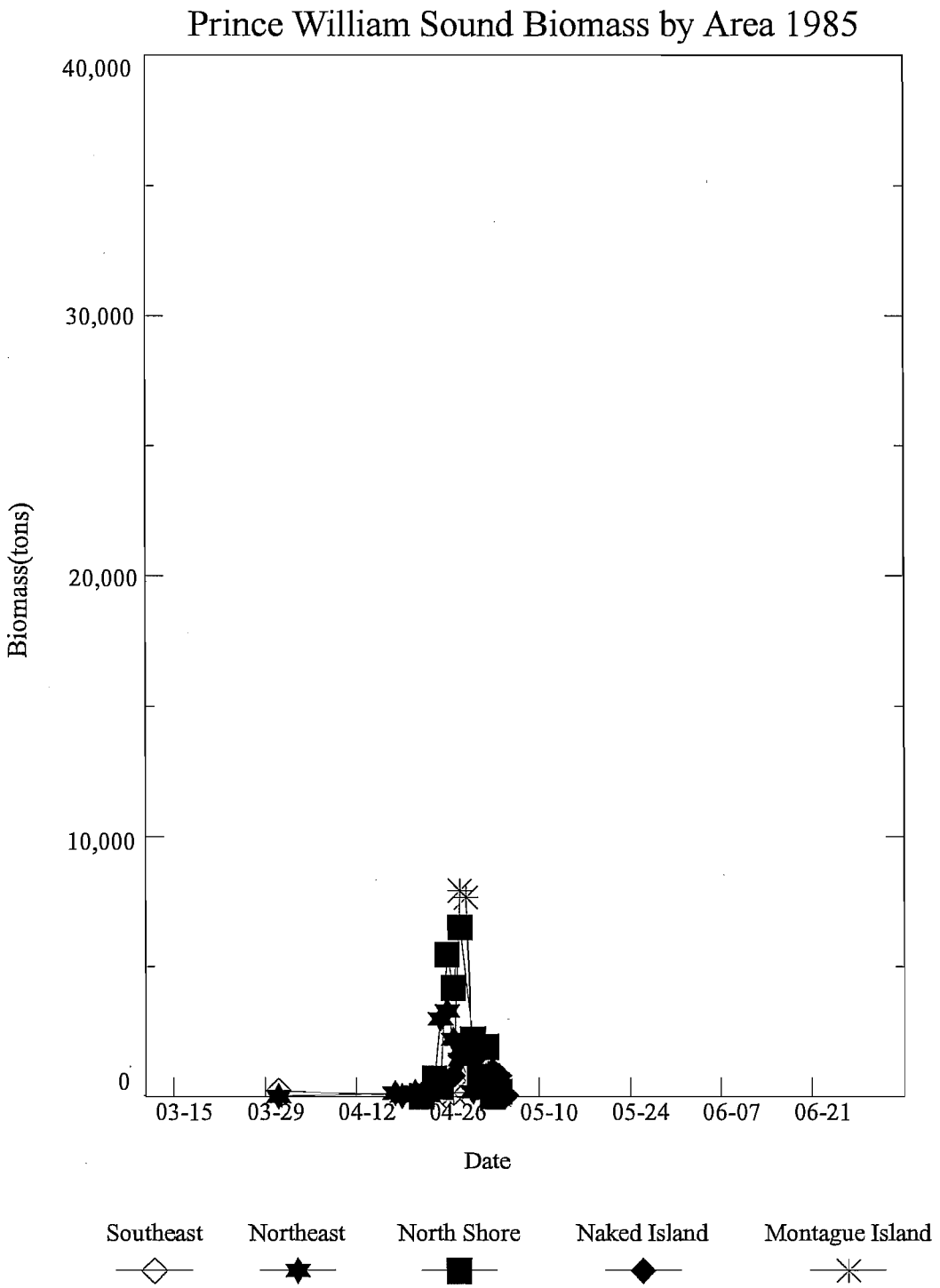
DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
3/24		0	0	0	0	0	0	0		0	0	3/24
3/26	0	0	0	0	0	0	0	0		0	0	3/26
3/31	0	220	0	0	15	0	0			0	235	3/31
4/3	0	0	0	0	0						0	4/03
4/5	0										0	4/05
4/11									0	0	0	4/11
4/12										0	0	4/12
4/13		0			0	0		0			0	4/13
4/16		0	0	0	0	0					0	4/16
4/17	0	0	0	0	0	0	0	0		0	0	4/17
4/18	0	0	120	0	20						140	4/18
4/19			30	0	0	0		0		0	30	4/19
4/20			0								0	4/20
4/21	0	40	150	30	0						220	4/21
4/22	0	0	50	60	0		15	20		0	145	4/22
4/23	0	0	0	50	0	0	0	0	0	0	50	4/23
4/24		0	30	110	440	0	710	0		20	1,310	4/24
4/25		0	70	1,290	580		380				2,320	4/25
4/26		0	0	2,200	1,140	0	8,120				11,460	4/26
4/27	170	0	340	310	1,560		4,190	820		150	7,540	4/27
4/28			0	130	1,300	370	6,150	1,580	170	7,940	17,640	4/28
4/29								0		7,680	7,680	4/29
4/30		0	0	180	20	80	2,130	1,420		370	4,200	4/30
5/1	0	0	0	510	80	20	750	470		1,870	3,700	5/1
5/2				40	90	80	1,840	790		890	3,730	5/2
5/3				0	10			1,000			1,010	5/3
5/4		0		0	80	0	140	910		60	1,190	5/4
5/5					0		60	50		0	110	5/5
5/6								0			0	5/6
5/7								0			0	5/7
Area Total	**170**	**260**	**790**	**4,910**	**5,335**	**550**	**24,485**	**7,060**	**170**	**18,980**	**62,710**	**Total**
Peak Estimates	**170**	**220**	**340**	**2,330**	**1,560**	**370**	**6,150**	**1,580**	**170**	**7,940**	**20,830**	**Peak**

Note: Data displayed only for dates that surveys were flown.

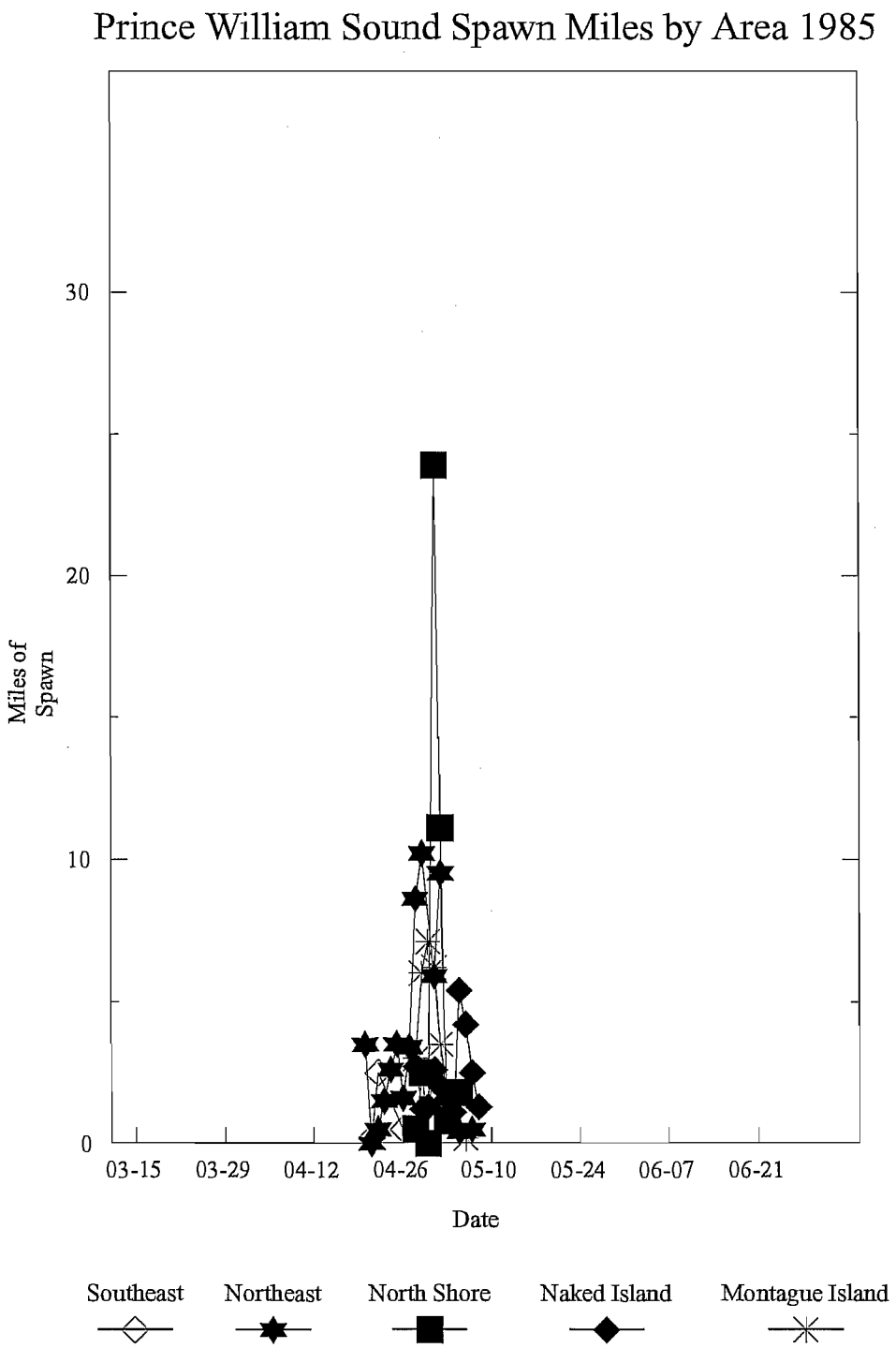
Appendix N.4. Estimated miles of herring spawn by sub-area and date from aerial surveys for Prince William Sound, 1985.

DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
3/24		0	0	0	0	0	0	0		0	0	3/24
3/26	0	0	0	0	0	0	0	0		0	0	3/26
3/31	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0	3/31
4/3	0	0	0	0	0						0	4/3
4/5	0										0	4/5
4/11									0.0	0.0	0	4/11
4/12										0.0	0.0	4/12
4/13		0.0			0.0	0.0		0.0			0.0	4/13
4/16		0.0	0.0	0.0	0.0	0.0					0.0	4/16
4/17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	4/17
4/18	0.0	0.0	0.0	0.0	0.0						0.0	4/18
4/19			3.5	0.0	0.0	0.0		0.0		0.0	3.5	4/19
4/20			0.0								0.0	4/20
4/21	0.0	2.5	0.5	0.0	0.0						3.0	4/21
4/22	0.0	0.0	0.5	1.0	0.0		0.0	0.0		0.0	1.5	4/22
4/23	0.0	0.0	2.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	2.6	4/23
4/24		0.0	2.4	1.1	0.0	0.0	0.0	0.0		0.0	3.5	4/24
4/25		0.5	1.0	0.5	0.1		0.0				2.1	4/25
4/26		0.0	1.0	2.4	0.0	0.0	0.0				3.4	4/26
4/27	0.0	0.0	0.0	6.1	2.5		0.5	2.7		3.0	14.8	4/27
4/28			0.0	4.7	5.5	0.0	2.5	1.0	0.2	6.0	19.9	4/28
4/29								1.3		7.1	8.4	4/29
4/30		0.0	0.0	3.3	2.6	0.0	23.9	2.6		6.2	38.6	4/30
5/1	0.0	0.0	0.0	7.5	2.0	0.5	10.6	2.0		3.5	26.1	5/1
5/2				0.6	0.3	0.0	0.8	1.6		1.5	4.8	5/2
5/3				0.0	0.0			1.1			1.1	5/3
5/4		0.0		0.0	0.4	0.5	1.3	5.4		0.0	7.5	5/4
5/5					0.0		0.0	4.2		0.2	4.4	5/5
5/6					0.5			2.5			3.0	5/6
5/7								1.3			1.3	5/7
Area Total	**0.0**	**3.2**	**10.9**	**27.7**	**13.9**	**1.0**	**39.5**	**25.7**	**0.2**	**27.5**	**149.5**	**Total**

Note: Data displayed only for dates that surveys were flown.



Appendix N.5. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1985.



Appendix N.6. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1985.

Appendix N.7. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound , 1985.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1984	1	1	74	179	1.8	0.0%	23.9	0.0%
1983	2	30	78	177	70.9	0.3%	1,009.9	0.6%
1982	3	290	87	180	952.4	4.6%	10,637.5	6.8%
1981	4	841	102	191	4,307.1	20.7%	39,197.8	25.2%
1980	5	913	117	199	6,635.3	31.9%	51,876.0	33.4%
1979	6	329	129	203	2,750.4	13.2%	19,287.3	12.4%
1978	7	152	157	222	1,448.2	7.0%	8,775.3	5.6%
1977	8	151	175	232	1,364.7	6.6%	7,496.3	4.8%
1976	9	232	183	232	3,112.4	14.9%	16,252.1	10.5%
1975	10	8	193	233	124.8	0.6%	625.1	0.4%
1974	11	4	187	234	62.1	0.3%	323.4	0.2%
1973	12	0			0.0	0.0%	0.0	0.0%
1972	13+	0			0.0	0.0%	0.0	0.0%
Total		**2,951**	**121**	**200**	**20,830.0**	**100.0%**	**155,504.6**	**100.0%**

Southeast Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1984	1	0			0.0	0.0%	0.0	0.0%
1983	2	0			0.0	0.0%	0.0	0.0%
1982	3	22			0.0	0.0%	0.0	13.7%
1981	4	58			0.0	0.0%	0.0	36.0%
1980	5	55			0.0	0.0%	0.0	34.2%
1979	6	22			0.0	0.0%	0.0	13.7%
1978	7	3			0.0	0.0%	0.0	1.9%
1977	8	0			0.0	0.0%	0.0	0.0%
1976	9	1			0.0	0.0%	0.0	0.6%
1975	10	0			0.0	0.0%	0.0	0.0%
1974	11	0			0.0	0.0%	0.0	0.0%
1973	12	0			0.0	0.0%	0.0	0.0%
1972	13+	0			0.0	0.0%	0.0	0.0%
Total		**161**			**390.0**	**0.0%**	**0.0**	**100.0%**

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Appendix N.7. (page 2 of 3)

Northeast Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1984	1	0			0.0	0.0%	0.0	0.0%
1983	2	2	43	159	5.5	0.1%	127.6	0.4%
1982	3	63	74	184	297.4	7.0%	4,018.8	11.1%
1981	4	179	103	203	1,176.1	27.8%	11,418.5	31.4%
1980	5	201	119	211	1,525.8	36.1%	12,821.9	35.3%
1979	6	58	133	217	492.1	11.6%	3,699.8	10.2%
1978	7	13	148	223	122.7	2.9%	829.3	2.3%
1977	8	19	176	235	213.3	5.0%	1,212.0	3.3%
1976	9	33	177	234	372.6	8.8%	2,105.1	5.8%
1975	10	0			0.0	0.0%	0.0	0.0%
1974	11	2	192	242	24.5	0.6%	127.6	0.4%
1973	12	0			0.0	0.0%	0.0	0.0%
1972	13+	0			0.0	0.0%	0.0	0.0%
Total		**570**	**116**	**208**	**4,230.0**	**100.0%**	**36,360.5**	**100.0%**

North Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1984	1	0			0.0	0.0%	0.0	0.0%
1983	2	3	47	161	6.4	0.1%	135.7	0.3%
1982	3	56	82	189	207.7	3.2%	2,532.6	4.9%
1981	4	313	107	204	1,514.6	23.2%	14,155.3	27.6%
1980	5	401	122	211	2,212.5	33.9%	18,135.1	35.4%
1979	6	150	137	218	929.4	14.3%	6,783.7	13.2%
1978	7	64	157	227	454.4	7.0%	2,894.4	5.6%
1977	8	46	174	233	362.0	5.6%	2,080.3	4.1%
1976	9	98	182	235	806.6	12.4%	4,432.0	8.6%
1975	10	3	195	237	26.5	0.4%	135.7	0.3%
1974	11	0			0.0	0.0%	0.0	0.0%
1973	12	0			0.0	0.0%	0.0	0.0%
1972	13+	0			0.0	0.0%	0.0	0.0%
Total		**1,134**	**127**	**212**	**6,520.0**	**100.0%**	**51,284.8**	**100.0%**

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Appendix N.7. (page 3 of 3)

Naked Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weigbt	Number of Fish (x 1,000)	Percent by Number
1984	1	1	74	179	1.8	0.1%	23.9	0.2%
1983	2	23	88	182	48.5	3.1%	550.8	4.4%
1982	3	142	109	203	370.7	23.5%	3,400.9	27.3%
1981	4	201	119	210	572.9	36.3%	4,813.9	38.7%
1980	5	56	144	220	193.1	12.2%	1,341.2	10.8%
1979	6	12	147	221	42.2	2.7%	287.4	2.3%
1978	7	27	171	232	110.6	7.0%	646.6	5.2%
1977	8	57	173	232	236.2	14.9%	1,365.1	11.0%
1976	9	1	170	235	4.1	0.3%	23.9	0.2%
1975	10	0			0.0	0.0%	0.0	0.0%
1974	11	0			0.0	0.0%	0.0	0.0%
1973	12	0			0.0	0.0%	0.0	0.0%
1972	13+	0			0.0	0.0%	0.0	0.0%
Total		**520**	**127**	**212**	**1,580.0**	**100.0%**	**12,454.0**	**100.0%**

Montague Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1984	1	0			0.0	0.0%	0.0	0.0%
1983	2	2	46	156	9.2	0.1%	195.8	0.4%
1982	3	7	84	184	58.8	0.7%	685.2	1.2%
1981	4	90	107	200	962.9	11.9%	8,810.0	15.9%
1980	5	200	129	210	2,579.6	31.8%	19,577.9	35.3%
1979	6	87	142	215	1,235.2	15.2%	8,516.4	15.4%
1978	7	45	163	223	733.4	9.0%	4,405.0	8.0%
1977	8	29	182	230	527.7	6.5%	2,838.8	5.1%
1976	9	99	189	231	1,870.8	23.1%	9,691.0	17.5%
1975	10	5	192	230	96.0	1.2%	489.4	0.9%
1974	11	2	182	226	36.4	0.4%	195.8	0.4%
1973	12	0			0.0	0.0%	0.0	0.0%
1972	13+	0			0.0	0.0%	0.0	0.0%
Total		**566**	**143**	**215**	**8,110.0**	**100.0%**	**55,405.4**	**100.0%**

Appendix N.8. Age, sex and size composition of Pacific herring from the purse seine test fishery, sac roe fishery and pound fishery, Prince William Sound, 1985.

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	1	1	1	3	0.3	47	5	3	161	2	3
	3	30	26	0	56	4.9	82	8	56	189	6	56
	4	141	171	1	313	27.6	107	8	313	204	6	313
North Shore	5	194	204	3	401	35.4	122	10	401	211	6	401
Summary Table	6	72	77	1	150	13.2	137	10	150	218	4	150
1985	7	35	29	0	64	5.6	157	9	64	227	4	64
	8	24	22	0	46	4.1	174	14	46	233	6	46
	9	56	42	0	98	8.6	182	12	98	235	8	98
	10	2	1	0	3	0.3	195	0	3	237	0	3
	11	0	0	0	0	0.0			0			0
	12	0	0	0	0	0.0			0			0
	+13	0	0	0	0	0.0			0			0
Total		**555**	**573**	**6**	**1134**	**100.0**	**127**	**16**	**1134**	**212**	**8**	**1134**
	2	-	1	-	1	0.2	46	-	1	157	-	1
	3	11	15	-	26	4.5	80	14.0	26	186	10.2	26
	4	71	88	-	159	27.7	107	17.1	159	202	16.0	159
North Shore	5	106	94	-	200	34.9	123	20.8	200	209	15.7	200
Granite Bay	6	42	40	-	82	14.3	137	25.5	82	217	11.1	82
Test Fishery	7	24	11	-	35	6.1	155	27.8	35	226	10.1	35
25 April, 1985	8	16	9	-	25	4.4	177	20.3	25	232	9.2	25
	9	28	15	-	43	7.5	184	28.3	43	233	10.4	43
	10	1	1	-	2	0.3	207	9.2	2	239	4.2	2
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13											
Total		**299**	**274**	**-**	**573**	**100.0**	**127**	**33.5**	**573**	**211**	**18.2**	**573**

Indicates dominant age class.

-Continued-

Appendix N.8. (page 2 of 4)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	1	-	1	2	0.4	48	7.8	2	163	3.5	2
	3	19	11	-	30	5.3	84	15.8	30	191	10.9	30
	4	70	83	1	154	27.5	106	16.8	154	206	11.8	154
North Shore	5	88	110	3	201	35.8	121	19.0	201	213	12.3	201
Fairmont Bay,	6	30	37	1	68	12.1	137	21.6	68	219	9.2	68
Wells Bay and	7	11	18	-	29	5.2	159	19.4	29	229	8.8	29
Unakwik	8	8	13	-	21	3.7	171	30.7	21	234	13.9	21
Sac Roe	9	28	27	-	55	9.8	181	20.9	55	236	14.8	55
28 April, 1985	10	1	-	-	1	0.2	170	-	1	232	-	1
	11											
	12											
	+13											
Total		**256**	**299**	**6**	**561**	**100.0**	**127**	**32.4**	**561**	**214.0**	**16.6**	**561**
	2	2	-	-	2	0.4	46	0.0	2	156	0.7	2
	3	4	3	-	7	1.2	84	7.7	7	184	7.7	7
	4	45	45	-	90	15.9	107	15.7	90	200	8.3	90
Montague Island	5	77	123	-	200	35.3	129	18.7	200	210	9.6	200
Test Fish	6	41	46	-	87	15.4	142	21.7	87	215	8.9	87
29 April, 1985	7	27	18	-	45	8.0	163	19.4	45	223	7.4	45
	8	9	20	-	29	5.1	182	15.3	29	230	7.1	29
	9	43	56	-	99	17.5	189	20.5	99	231	8.1	99
	10	2	3	-	5	0.9	192	19.9	5	230	7.7	5
	11	2	-	-	2	0.4	182	23.3	2	226	0.7	2
	12											
	+13											
Total		**252**	**314**	**-**	**566**	**100.0**	**143**	**34.7**	**566**	**215**	**14.5**	**566**

Indicates dominant age class.

-Continued-

Appendix N.8. (page 3 of 4)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	2	-	-	2	0.4	43	9.2	2	159	13.4	2
	3	28	34	1	63	11.1	74	11.6	63	184	10.4	63
	4	88	8	3	179	31.4	103	17.0	179	203	11.4	179
Galena Bay	5	101	100	-	201	35.3	119	20.4	201	211	9.6	201
Northeast	6	22	36	-	58	10.2	133	29.2	58	217	13.9	58
25 April, 1985	7	7	6	-	13	2.3	148	30.2	13	223	13.8	13
	8	12	7	-	19	3.3	176	22.5	19	235	8.4	19
	9	20	13	-	33	5.8	177	22.5	33	234	8.0	33
	10	-	-	-	-	-	-	-	-	-	-	-
	11	2	-	-	2	0.4	192	6.4	2	242	15.6	2
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**282**	**284**	**4**	**570**	**100.0**	**116**	**33.0**	**570**	**208**	**16.6**	**570**
	2	-	1	-	1	0.2	74	-	1	179	-	1
	3	12	11	-	23	4.4	88	21.9	23	182	27	23
	4	66	76	-	142	27.3	109	18.5	142	203	9.5	142
Naked Island	5	104	96	1	201	38.7	119	15.5	201	210	9.9	200
Pound Fish	6	29	27	-	56	10.8	144	27.1	56	220	13.2	56
05 May, 1985	7	3	9	-	12	2.3	147	21.6	12	221	10.4	12
	8	10	17	-	27	5.2	171	21.9	27	232	10.4	27
	9	29	28	-	57	11.0	173	26.1	57	232	10.7	57
	10	1	-	-	1	0.2	170	-	1	235	-	1
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**254**	**265**	**1**	**520**	**100.0**	**127**	**31.4**	**520**	**212**	**16.5**	**519**

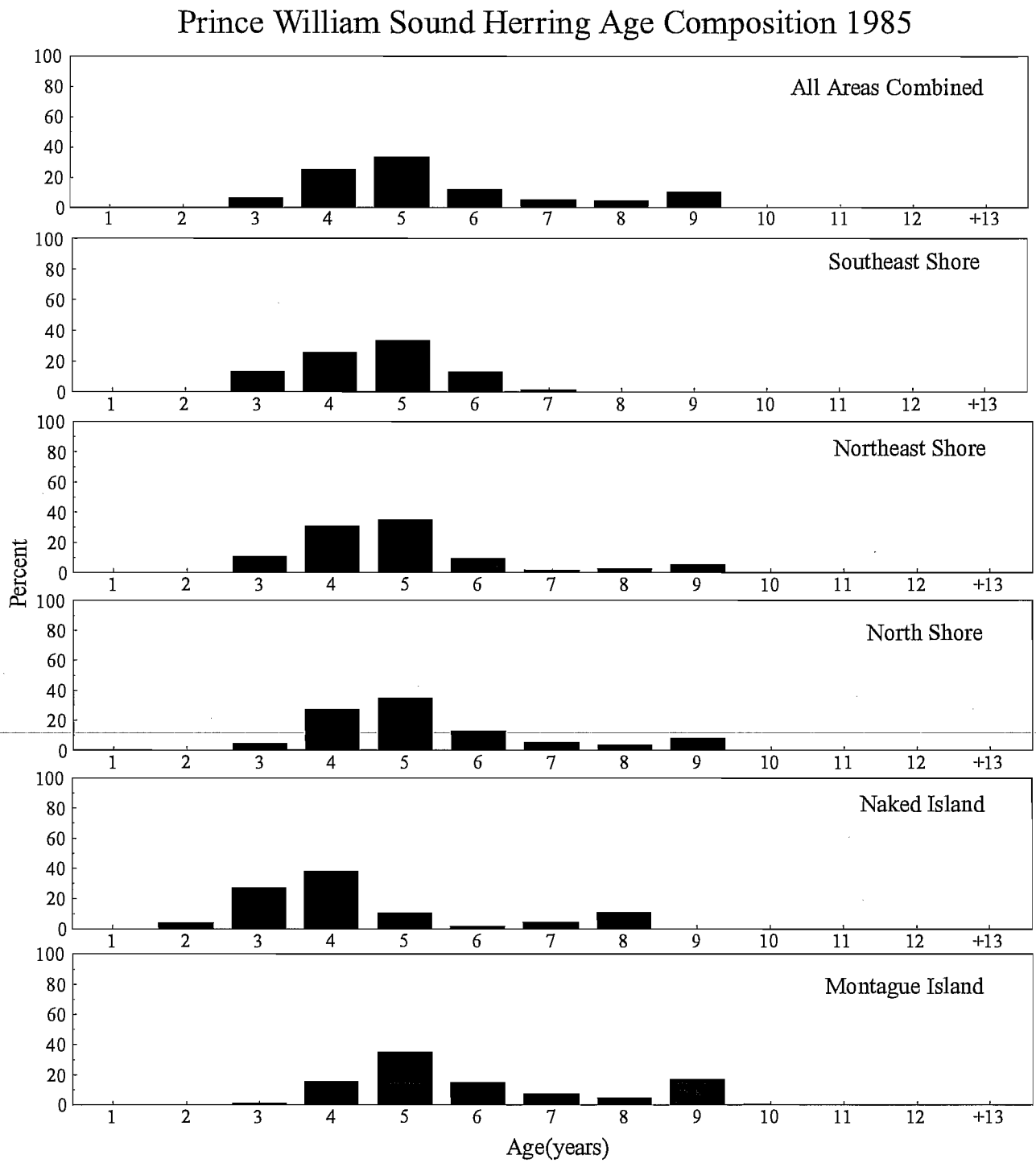
Indicates dominant age class.

-Continued-

Appendix N.8. (page 4 of 4)

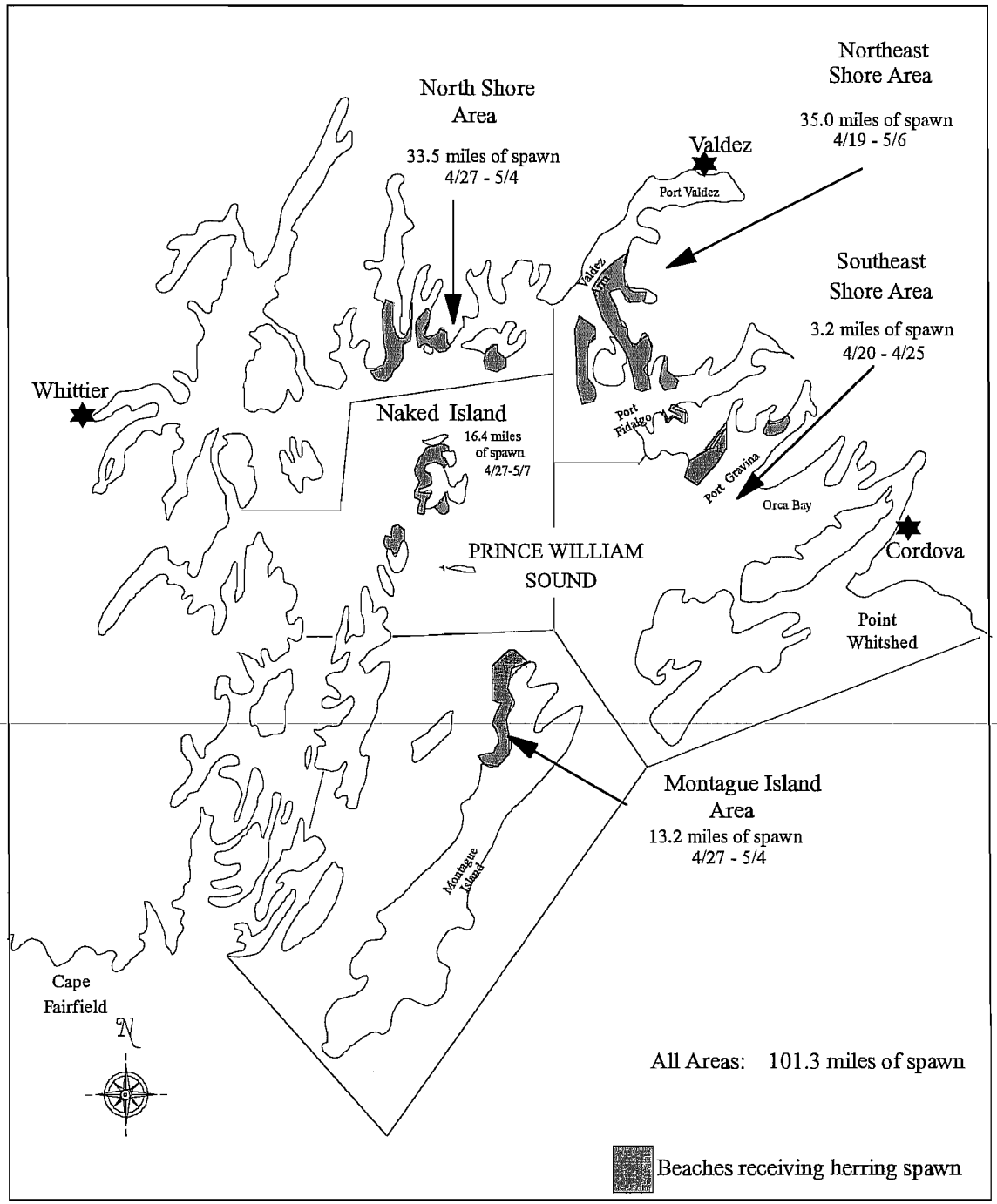
Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	-	-	-	-	-	-	-	-	-	-
	3	11	11	-	22	13.7	-	-	-	-	-	-
	4	27	31	-	58	26.0	-	-	-	-	-	-
Southeast Shore	5	27	28	-	55	34.2	-	-	-	-	-	-
St. Matthews Bay,	6	13	9	-	22	13.7	-	-	-	-	-	-
Test Fishery	7	2	1	-	3	1.9	-	-	-	-	-	-
21 April, 1985	8	-	-	-	-	-	-	-	-	-	-	-
	9	1	-	-	1	0.6	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**81**	**80**	**-**	**161**	**100.00**						

Indicates dominant age class.



Appendix N.9. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1985.

Historical Herring Spawn and Shoreline Mileage



Appendix N.10. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys for 1985.

APPENDIX O: SUMMARY FOR 1986

Appendix O.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1986.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/17	0	0	NS	NS	NS	0	03/17
03/20	0	0	NS	NS	NS	0	03/20
03/25	0	0	NS	NS	NS	0	03/25
03/31	0	0	0	0	0	0	03/31
04/03	0	0	NS	0	0	0	04/03
04/08	0	0	0	0	0	0	04/08
04/09	0	0	NS	NS	NS	0	04/09
04/10	0	90	1,350	0	NS	1,440	04/10
04/11	0	0	2,320	0	0	2,320	04/11
04/12	0	0	1,830	0	0	1,830	04/12
04/13	0	0	6,870	0	NS	6,870	04/13
04/15	0	0	5,030	0	0	5,030	04/15
04/16	0	0	7,220	0	0	7,220	04/16
04/17	0	160	7,930	0	NS	8,090	04/17
04/18	0	60	1,860	0	0	1,920	04/18
04/19	NS	50	1,590	0	0	1,640	04/19
04/20	NS	360	250	0	NS	610	04/20
04/21	0	440	0	0	280	720	04/21
04/22	0	2,880	370	0	NS	3,250	04/22
04/23	0	2,320	300	0	180	2,800	04/23
04/24	140	640	300	0	440	1,520	04/24
04/25	20	1,960	1,650	90	400	4,120	04/25
04/26	60	670	1,110	0	0	1,840	04/26
04/27	0	310	730	NS	0	1,040	04/27
04/28	NS	130	70	0	0	200	04/28
04/29	150	260	290	NS	0	700	04/29
04/30	NS	110	210	NS	NS	320	04/30
05/01	0	110	150	NS	0	260	05/01
05/02	NS	260	710	NS	NS	970	05/02
05/03	NS	30	40	NS	NS	70	05/03
05/04	NS	0	0	NS	NS	0	05/04
05/05	NS	0	0	0	0	0	05/05
05/07	NS	0	NS	NS	NS	0	05/07
05/09	0	40	NS	NS	NS	40	05/09
AREA TOTAL	**370**	**10,880**	**42,180**	**90**	**1,300**	**54,820**	**TOTAL**
PEAK ESTIMATES	**290**	**3,930**	**10,430**	**90**	**440**	**15,180**	**PEAK**

[a]Dates displayed are for actual survey days.
NS = Not Surveyed

Appendix O.2. Herring spawn mile days from aerial surveys by area and date for Prince William Sound, 1986.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/17	3.3	0.0	NS	NS	NS	3.3	03/17
03/20	0.0	0.0	NS	NS	NS	0.0	03/20
03/25	0.0	0.0	NS	NS	NS	0.0	03/25
03/31	0.0	0.0	0.0	0.0	0.0	0.0	03/31
04/03	0.0	0.0	NS	0.0	0.0	0.0	04/03
04/08	0.0	0.0	0.0	0.0	0.0	0.0	04/08
04/09	0.0	0.0	NS	NS	NS	0.0	04/09
04/10	0.0	0.0	0.0	0.0	NS	0.0	04/10
04/11	0.0	0.0	0.0	0.0	0.0	0.0	04/11
04/12	0.0	0.0	0.0	0.0	0.0	0.0	04/12
04/13	0.0	0.0	0.0	0.0	NS	0.0	04/13
04/15	0.0	0.0	1.1	0.0	0.0	1.1	04/15
04/16	0.0	0.0	0.0	0.0	0.0	0.0	04/16
04/17	0.0	0.0	0.4	0.0	NS	0.4	04/17
04/18	0.0	0.0	13.0	0.0	0.2	13.2	04/18
04/19	NS	0.1	17.2	0.0	0.0	17.3	04/19
04/20	NS	1.0	16.0	0.0	NS	17.0	04/20
04/21	0.0	0.5	5.8	0.0	0.0	6.3	04/21
04/22	0.0	2.6	5.6	0.0	NS	8.2	04/22
04/23	0.0	8.0	0.8	0.0	0.5	9.3	04/23
04/24	0.0	11.4	0.9	0.0	6.2	18.5	04/24
04/25	1.5	5.5	3.1	0.0	6.0	16.1	04/25
04/26	0.5	4.8	5.0	0.0	3.0	13.2	04/26
04/27	0.0	5.9	6.1	NS	0.0	12.0	04/27
04/28	NS	2.5	2.4	0.0	0.0	4.9	04/28
04/29	0.0	2.5	0.4	NS	0.0	2.9	04/29
04/30	NS	0.6	1.1	NS	NS	1.7	04/30
05/01	0.0	0.3	1.9	NS	0.0	2.2	05/01
05/02	NS	0.7	1.5	NS	NS	2.2	05/02
05/03	NS	0.1	1.0	NS	NS	1.1	05/03
05/04	NS	0.1	0.0	NS	NS	0.1	05/04
05/05	NS	NS	0.0	0.0	0.0	0.0	05/05
05/07	NS	1.6	NS	NS	NS	1.6	05/07
05/09	0.0	0.0	NS	NS	NS	0.0	05/09
Mile Days	**5.3**	**47.8**	**83.3**	**0.0**	**15.9**	**152.3**	**Total**
Shoreline Miles	**2.8**	**25.5**	**37.1**	**0.0**	**7.0**	**72.4**	**Total**

a Dates displayed are for actual survey days.
NS = Not Surveyed

Appendix O.3. Herring biomass estimates from aerial surveys by sub-area and date for Prince William Sound, 1986.

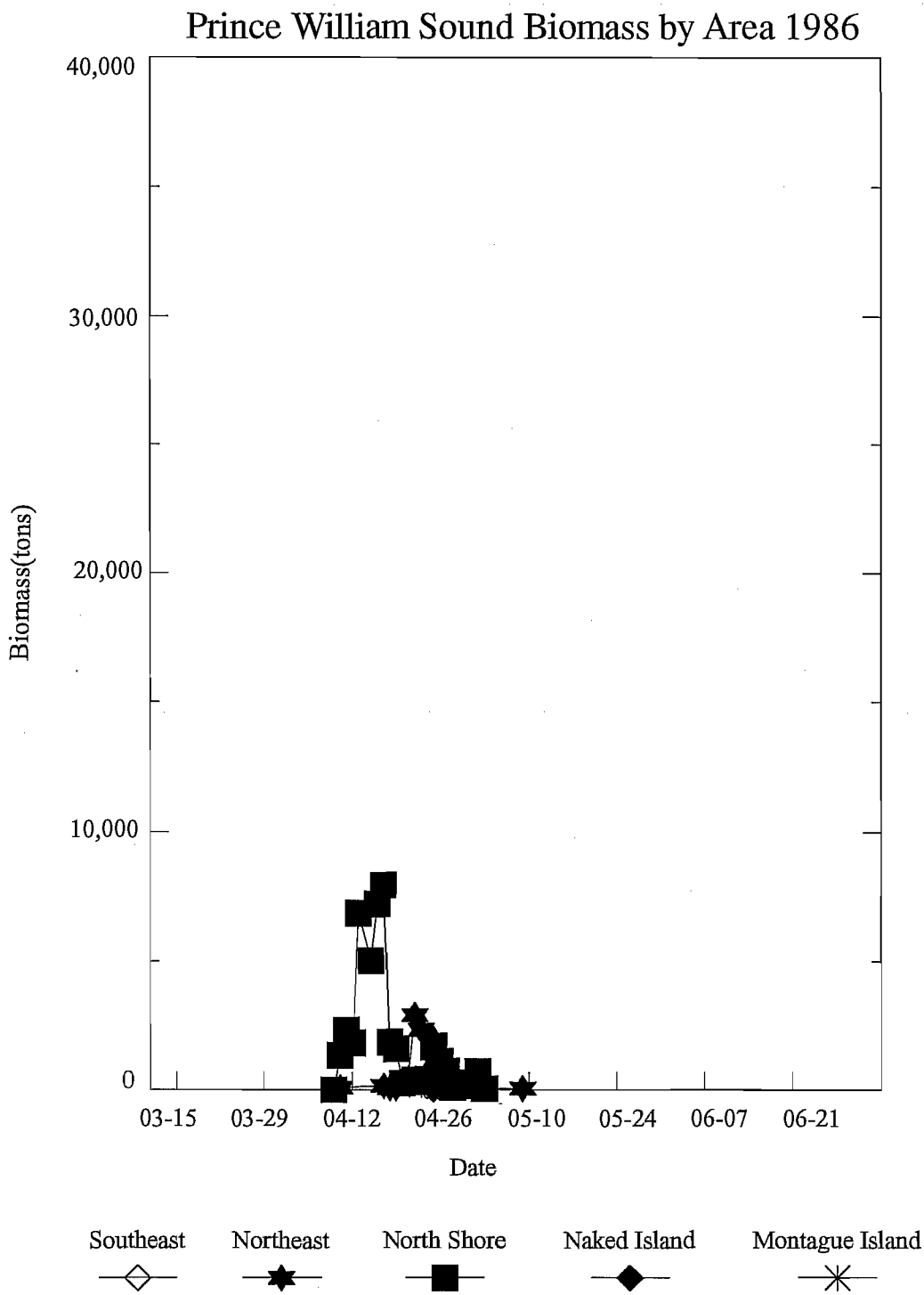
DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
3/17		0	0	0	0						0	3/17
3/20		0	0	0	0						0	3/20
3/25	0	0	0	0	0						0	3/25
3/31				0	0	0	0	0		0	0	3/31
4/3	0	0	0	0	0			0	0	0	0	4/3
4/8	0			0	0	0	0	0	0	0	0	4/8
4/9		0	0								0	4/9
4/10	0	0	0	90	0	0	1,350	0			1,440	4/10
4/11	0	0	0	0	0	0	2,320	0	0	0	2,320	4/11
4/12	0	0	0	0	0	0	1,830	0	0	0	1,830	4/12
4/13	0	0	0	0	0	0	6,870	0	0		6,870	4/13
4/15	0	0	0	0	0	0	5,030	0	0	0	5,030	4/15
4/16	0	0	0	0	0	0	7,220	0		0	7,220	4/16
4/17		0	0	0	160	0	7,930	0			8,090	4/17
4/18		0	0	0	60		1,860	0		0	1,920	4/18
4/19				0	50	140	1,450	0		0	1,640	4/19
4/20				0	360	0	250	0			610	4/20
4/21			30	0	410		0	0		280	720	4/21
4/22			1,930	130	820	0	370	0	0		3,250	4/22
4/23			1,430	220	670	60	240	0		180	2,800	4/23
4/24		140	200	180	260	0	300			440	1,520	4/24
4/25		20		310	1,650		1,650	90	0	400	4,120	4/25
4/26		60	10	200	460		1,110	0		0	1,840	4/26
4/27			50	70	190	0	730			0	1,040	4/27
4/28				60	70	0	70			0	200	4/28
4/29	150			30	230	0	290			0	700	4/29
4/30				0	110		210				320	4/30
5/1				60	50		150			0	260	5/1
5/2				60	200		710				970	5/2
5/3				0	30		40				70	5/3
5/4				0	0	0					0	5/4
5/5				0	0	0		0		0	0	5/5
5/7				0							0	5/7
5/9	0		0	20	0						20	5/9
Area Total	**150**	**220**	**3,650**	**1,430**	**5,780**	**200**	**41,980**	**90**	**0**	**1,300**	**54,800**	**Total**
Peak Estimates	**150**	**140**	**1,930**	**350**	**1,650**	**140**	**10,290**	**90**	**0**	**440**	**15,180**	**Peak**

Note: Data displayed only for dates that surveys were flown.

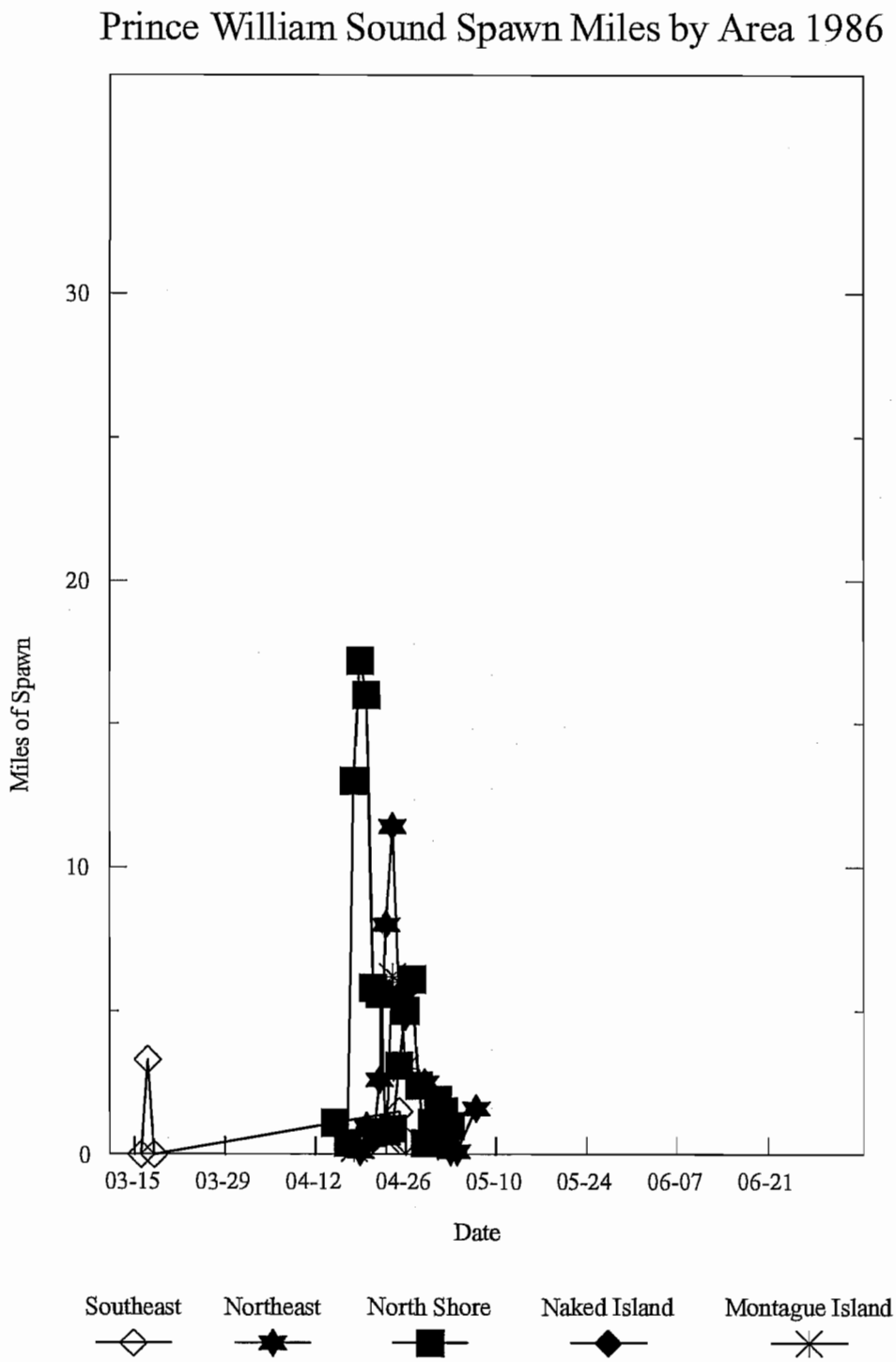
Appendix O.4. Estimated miles of herring spawn by sub-area and date from aerial surveys for Prince William Sound, 1986.

DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
3/17		3.3	0.0	0.0	0.0						3.3	3/17
3/20		0.0	0.0	0.0	0.0						0.0	3/20
3/25	0.0	0.0	0.0	0.0	0.0						0.0	3/25
3/30		0.0	0.0								0.0	3/30
3/31				0.0	0.0	0.0	0.0	0.0		0.0	0.0	3/31
4/3	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	4/03
4/8	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4/08
4/9		0.0	0.0								0.0	4/09
4/10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	4/10
4/11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4/11
4/12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4/12
4/13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	4/13
4/15	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	1.1	4/15
4/16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	4/16
4/17		0.0	0.0	0.0	0.0	0.0	0.4	0.0			0.4	4/17
4/18		0.0	0.0	0.0	0.0		13.0	0.0		0.2	13.2	4/18
4/19			0.0	0.0	0.1	0.0	17.2	0.0		0.0	17.3	4/19
4/20				0.0	1.0	0.0	16.0	0.0			17.0	4/20
4/21			0.0	0.0	0.5		5.8	0.0		0.0	6.3	4/21
4/22			0.8	0.2	1.6	0.0	5.6	0.0	0.0		8.2	4/22
4/23			3.0	0.0	5.0	0.0	0.8	0.0		0.5	9.3	4/23
4/24		0.0	5.0	0.6	5.8	0.0	0.9			6.2	18.5	4/24
4/25		1.5	1.0	1.0	3.5		3.1	0.0	0.0	6.0	16.1	4/25
4/26		0.5	0.0	0.0	4.8		5.0	0.0		3.0	13.2	4/26
4/27			0.2	1.0	4.7	0.0	6.1	0.0		0.0	12.0	4/27
4/28				0.5	2.0	0.0	2.4			0.0	4.9	4/28
4/29	0.0			0.0	2.5	0.0	0.4			0.0	2.9	4/29
4/30				0.0	0.6		1.1				1.7	4/30
5/1				0.0	0.3		1.9			0.0	2.2	5/01
5/2				0.0	0.7		1.5				2.2	5/02
5/3				0.0	0.1		1.0				1.1	5/03
5/4				0.0	0.1	0.0					0.1	5/04
5/5				0.0	0.0	0.0	0.0	0.0		0.0	0.0	5/05
5/7			1.5		0.1						1.6	5/07
5/9	0.0			0.0	0.0						0.0	5/09
Area Total	**0.0**	**5.3**	**11.5**	**3.3**	**33.1**	**0.0**	**83.3**	**0.0**	**0.0**	**15.9**	**152.3**	**Total**

Note: Data displayed only for dates that surveys were flown.



Appendix O.5. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1986.



Appendix O.6. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1986.

Appendix O.7. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound , 1986.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1985	1	0			0.0	0.0%	0.0	0.0%
1984	2	4	33	148	2.4	0.0%	65.2	0.1%
1983	3	709	91	181	1,161.6	7.7%	11,563.8	11.6%
1982	4	681	113	191	1,377.6	9.1%	11,107.1	11.2%
1981	5	1,964	132	204	4,660.6	30.7%	32,032.9	32.2%
1980	6	1,781	152	212	4,854.9	32.0%	29,048.2	29.2%
1979	7	398	168	217	1,201.1	7.9%	6,491.4	6.5%
1978	8	121	183	223	397.5	2.6%	1,973.5	2.0%
1977	9	114	191	228	390.9	2.6%	1,859.3	1.9%
1976	10	316	190	231	1,076.6	7.1%	5,154.0	5.2%
1975	11	13	168	231	39.3	0.3%	212.0	0.2%
1974	12	5	195	209	17.5	0.1%	81.6	0.1%
1973	13+	1		237	0.0	0.0%	0.0	0.0%
Total		**6,107**	**132**	**205**	**15,180.0**	**100.0%**	**99,589.1**	**100.0%**

Southeast Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1985	1	0			0.0	0.0%	0.0	0.0%
1984	2	0			0.0	0.0%	0.0	0.0%
1983	3	0			0.0	0.0%	0.0	0.0%
1982	4	0			0.0	0.0%	0.0	0.0%
1981	5	0			0.0	0.0%	0.0	0.0%
1980	6	0			0.0	0.0%	0.0	0.0%
1979	7	0			0.0	0.0%	0.0	0.0%
1978	8	0			0.0	0.0%	0.0	0.0%
1977	9	0			0.0	0.0%	0.0	0.0%
1976	10	0			0.0	0.0%	0.0	0.0%
1975	11	0			0.0	0.0%	0.0	0.0%
1974	12	0			0.0	0.0%	0.0	0.0%
1973	13+	0			0.0	0.0%	0.0	0.0%
Total		**0**			**290.0**	**0.0%**	**0.0**	**0.0%**

-Continued-

Appendix O.7. (page 2 of 3)

Northeast Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1985	1	0			0.0	0.0%	0.0	0.0%
1984	2	3	44	146	2.4	0.1%	48.8	0.2%
1983	3	443	86	179	683.4	17.4%	7,208.7	23.4%
1982	4	353	100	187	633.2	16.1%	5,744.2	18.6%
1981	5	589	121	198	1,278.4	32.5%	9,584.5	31.1%
1980	6	378	138	206	935.7	23.8%	6,151.0	20.0%
1979	7	53	159	214	151.2	3.8%	862.4	2.8%
1978	8	8	178	220	25.5	0.6%	130.2	0.4%
1977	9	15	173	224	46.5	1.2%	244.1	0.8%
1976	10	51	190	227	173.8	4.4%	829.9	2.7%
1975	11	0			0.0	0.0%	0.0	0.0%
1974	12	0			0.0	0.0%	0.0	0.0%
1973	13+	0			0.0	0.0%	0.0	0.0%
Total		**1,893**	**116**	**195**	**3,930.0**	**100.0%**	**30,803.9**	**100.0%**

North Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1985	1	0			0.0	0.0%	0.0	0.0%
1984	2	1	52	152	1.1	0.0%	18.7	0.0%
1983	3	195	87	182	349.3	3.3%	3,642.7	5.3%
1982	4	281	105	194	607.5	5.8%	5,249.2	7.7%
1981	5	1,189	130	206	3,182.8	30.5%	22,210.9	32.5%
1980	6	1,238	139	213	3,543.4	34.0%	23,126.2	33.8%
1979	7	316	158	218	1,028.1	9.9%	5,903.0	8.6%
1978	8	103	172	223	364.8	3.5%	1,924.1	2.8%
1977	9	92	186	229	352.4	3.4%	1,718.6	2.5%
1976	10	230	196	232	928.2	8.9%	4,296.5	6.3%
1975	11	13	191	231	51.1	0.5%	242.8	0.4%
1974	12	5	168	209	17.3	0.2%	93.4	0.1%
1973	13+	1	195	237	4.0	0.0%	18.7	0.0%
Total		**3,664**	**141**	**210**	**10,430.0**	**100.0%**	**68,444.6**	**100.0%**

-Continued-

Appendix O.7. (page 3 of 3)

Naked Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1985	1	0			0.0	0.0%	0.0	0.0%
1984	2	0			0.0	0.0%	0.0	0.0%
1983	3	0			0.0	0.0%	0.0	0.0%
1982	4	0			0.0	0.0%	0.0	0.0%
1981	5	0			0.0	0.0%	0.0	0.0%
1980	6	0			0.0	0.0%	0.0	0.0%
1979	7	0			0.0	0.0%	0.0	0.0%
1978	8	0			0.0	0.0%	0.0	0.0%
1977	9	0			0.0	0.0%	0.0	0.0%
1976	10	0			0.0	0.0%	0.0	0.0%
1975	11	0			0.0	0.0%	0.0	0.0%
1974	12	0			0.0	0.0%	0.0	0.0%
1973	13+	0			0.0	0.0%	0.0	0.0%
Total		**0**			**90.0**	**0.0%**	**0.0**	**0.0%**

Montague Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1985	1	0			0.0	0.0%	0.0	0.0%
1984	2	0			0.0	0.0%	0.0	0.0%
1983	3	71	85	186	38.6	8.8%	454.5	12.9%
1982	4	47	102	196	30.7	7.0%	300.9	8.5%
1981	5	186	122	206	145.3	33.0%	1,190.7	33.8%
1980	6	165	135	213	142.6	32.4%	1,056.2	30.0%
1979	7	29	139	215	25.8	5.9%	185.6	5.3%
1978	8	10	153	222	9.8	2.2%	64.0	1.8%
1977	9	7	159	228	7.1	1.6%	44.8	1.3%
1976	10	35	179	233	40.1	9.1%	224.0	6.4%
1975	11	0			0.0	0.0%	0.0	0.0%
1974	12	0			0.0	0.0%	0.0	0.0%
1973	13+	0			0.0	0.0%	0.0	0.0%
Total		**550**	**125**	**207**	**440.0**	**100.0%**	**3,520.8**	**100.0%**

Appendix O.8. Age, sex and size composition of Pacific herring from the purse seine test fishery, sac roe fishery and pound fishery, Prince William Sound, 1986.

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	3	0	0	3	0.2	44	10	3	146	12	3
	3	224	216	3	443	23.4	86	17	443	179	10	443
	4	152	200	1	353	18.6	100	18	353	187	10	353
Summary Table	5	257	332	0	589	31.1	121	20	589	198	11	589
Northeast Area	6	174	203	1	378	20.0	138	23	378	206	10	378
1986	7	20	33	0	53	2.8	159	30	53	214	11	53
	8	4	4	0	8	0.4	178	24	8	220	3	8
	9	7	8	0	15	0.8	173	17	15	224	6	15
	10	20	31	0	51	2.7	190	26	51	227	10	51
	11	0	0	0	0	0.0			0			0
	12	0	0	0	0	0.0			0			0
	13	0	0	0	0	0.0			0			0
Total		**861**	**1,027**	**5**	**1,893**	**100.0**	**116**	**29**	**1,893**	**195**	**14**	**1,893**
	2	1	0	0	1	0.0		0	1	152	0	1
	3	102	92	0	195	5.3	87	12	195	182	11	195
	4	153	128	0	281	7.7	105	16	281	194	10	281
Summary Table	5	615	574	1	1,189	32.5	130	18	1,190	206	10	1,190
North Shore Area	6	680	555	0	1,235	33.7	139	21	1,235	213	9	1,082
1986	7	159	157	0	316	8.6	158	24	286	218	10	316
	8	54	49	0	103	2.8	172	26	103	223	10	103
	9	54	38	0	92	2.5	186	26	92	229	9	92
	10	129	101	0	230	6.3	196	27	230	232	10	230
	11	10	3	0	13	0.4	191	25	13	231	11	12
	12	4	1	0	5	0.1	168	31	5	209	23	5
	13	0	1	0	1	0.0	195	0	1	237	0	1
Total		**1,961**	**1,699**	**1**	**3,661**	**100.0**	**141**	**32**	**3,873**	**210**	**15**	**3,873**

Indicates dominant age class.

-Continued-

Appendix O.8. (page 2 of 6)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	-	-	-	-	-	-	-	-	-	-
	3	39	32	-	71	12.9	85	13.4	71.0	186	8.3	71
	4	24	23	-	47	8.5	102	18.1	47.0	196	9.5	47
Montague Island	5	100	86	-	186	33.8	122	17.5	186	206	7.6	186
Port Chalmers	6	73	92	-	165	30	135	24.4	165	213	9.8	165
Test fishery	7	18	11	-	29	5.3	139	26.6	29	215	9.8	29
25 April, 1986	8	5	5	-	10	1.8	153	32.4	10	222	15.1	10
	9	5	2	-	7	1.3	159	11.2	7	228	5.7	7
	10	16	19	-	35	6.4	179	25.9	35	233	9.2	35
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	13	-	-	-	-	-	-	-	-	-	-	-
Total		**280**	**270**	**-**	**550**	**100.0**	**125**	**30.7**	**550**	**207**	**14.5**	**550**
	2	-	-	-	-	-	-	-	-	-	-	-
	3	70	88	-	158	27.3	91	20.4	158	181	11.0	158
	4	55	62	-	117	20.2	100	20.0	117	187	10.9	117
Northeast Area	5	72	115	-	187	32.3	118	21.4	187	196	12.5	187
Fish Bay	6	41	56	-	97	16.8	129	23.5	97	202	11.5	97
Test Fishery	7	4	3	-	7	1.2	139	27.3	7	207	14.1	7
23 April, 1986	8	1	2	-	3	0.5	192	26.9	3	219	4.6	3
	9	1	2	-	3	0.5	139	7.4	3	213	11.0	3
	10	4	3	-	7	1.2	174	17.1	7	224	8.1	7
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	13	-	-	-	-	-	-	-	-	-	-	-
Total		**248**	**331**	**-**	**579**	**100.0**	**110**	**27.3**	**579**	**192**	**14.5**	**579**

Indicates dominant age class.

-Continued-

Appendix O.8. (page 3 of 6)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	-	-	-	-	-	-	-	-	-	-
	3	25	18	-	43	6.4	87	13.2	43	181	9.9	43
	4	35	60	-	95	14.2	109	22.0	95	193	12.3	95
Northeast Area	5	111	123	-	234	34.9	129	19.7	234	203	9.2	234
Galena Bay	6	105	103	-	208	31.0	144	23.3	208	210	9.0	208
Pound Fish	7	13	26	-	39	5.8	164	31.3	39	217	11.0	39
21 April, 1986	8	2	2	-	4	0.6	171	28.1	4	221	2.1	4
	9	5	6	-	11	1.6	181	21.8	11	226	5.0	11
	10	14	22	-	36	5.4	199	25.0	36	230	9.2	36
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	13	-	-	-	-	-	-	-	-	-	-	-
Total		**310**	**360**	**-**	**670**	**100.0**	**135**	**32.8**	**670**	**205**	**14.5**	**670**
	2	3	-	-	3	0.5	44	9.5	3	146	12.4	3
	3	129	110	3	242	37.6	83	15.6	242	178	8.9	242
	4	62	78	1	141	21.9	95	13.9	141	184	8.8	141
Northeast Area	5	74	94	-	168	26.1	113	19.8	168	195	10.4	168
Irish Cove	6	28	44	1	73	11.3	134	21.3	73	202	12.8	73
Test Fishery	7	3	4	-	7	1.1	148	24.8	7	206	9.2	7
23 April, 1986	8	1	-	-	1	0.2	162	-	1	218	-	1
	9	1	-	-	1	0.2	189	-	1	228	-	1
	10	2	6	-	8	1.2	164	39.0	8	215	16.3	8
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	13	-	-	-	-	-	-	-	-	-	-	-
Total		**303**	**336**	**5**	**644**	**100.0**	**101**	**26.5**	**644**	**187**	**14.1**	**644**

Indicates dominant age class.

-Continued-

Appendix O.8. (page 4 of 6)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	1	-	-	1	0.2	52	-	1	152	-	1
	3	15	11	-	26	4.3	95	15.8	26	188	9.4	26
	4	23	16	-	39	6.5	113	14.8	39	200	7.1	39
North Shore Area	5	87	89	-	176	29.3	136	17.9	176	209	7.2	176
Fairmont Bay	6	109	101	-	210	35.0	155	21.5	210	217	8.6	210
Sac Roe	7	22	29	-	51	8.5	167	22.6	51	223	9.7	51
17 April, 1986	8	13	8	-	21	3.5	169	25.4	21	223	10.9	21
	9	10	5	-	15	2.5	201	23.3	15	233	6.0	15
	10	28	30	-	58	9.7	204	26.7	58	234	9.3	58
	11	-	2	-	2	0.3	203	15.6	2	232	9.2	2
	12	1	-	-	1	0.2	197	-	1	215	-	1
	13											
Total		**309**	**291**	**-**	**600**	**100.0**	**152**	**33.4**	**600**	**215**	**13.6**	**600**
	2	-	-	-	-	-	-	-	-	-	-	-
	3	21	22	-	43	6.6	89	9.1	43	185	6.9	43
	4	31	29	-	60	9.2	103	15.4	60	194	10.7	60
North Shore Area	5	121	122	-	243	37.3	128	16.9	243	206	10.1	243
Fairmont Bay	6	103	110	-	213	32.7	145	21.7	213	213	8.7	213
Test Fishery	7	15	19	-	34	5.2	153	27.1	34	215	12.0	34
15 April, 1986	8	1	4	-	5	0.8	183	30.5	5	226	7.3	5
	9	9	12	-	21	3.2	195	21.8	21	231	9.5	21
	10	16	14	-	30	4.6	197	23.3	30	233	8.8	30
	11	1	-	-	1	0.2	188	-	1	228	-	1
	12	1	-	-	1	0.2	220	-	1	209	-	1
	13	-	-	-	-	-	-	-	-	-	-	-
Total		**319**	**332**	**-**	**651**	**100.0**	**136**	**31.6**	**651**	**209**	**14.3**	**651**

Indicates dominant age class.

-Continued-

Appendix O.8. (page 5 of 6)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	-	-	-	-	-	-	-	-	-	-
	3	17	9	-	26	4.3	88	9.3	26.0	182	6.7	26
	4	34	31	-	65	10.7	104	19.1	65	193	10.50	65
North Shore Area	5	104	95	-	199	32.8	132	19.3	199	206	8.2	199
Olsen Bay	6	105	88	-	193	31.8	105	23.7	193	212	9.5	193
Test Fishery	7	36	28	-	64	10.5	148	21	64	214	9.5	64
12 April, 1986	8	6	4	-	10	1.6	159	28.5	10	218	11.5	10
	9	8	7	-	15	2.5	185	26.9	15	229	9.5	15
	10	15	14	-	29	4.8	206	35.1	29	235	15.5	29
	11	5	-	-	5	0.8	197	20.0	5	233	11.4	5
	12	-	1	-	1	0.2	241	-	1	209		1
	13	-	-	-	0							
Total		**330**	**277**	**-**	**607**	**100.0**	**140**	**32.9**	**607**	**209**	**14.4**	**607**
	2	-	-	-	-	-	-	-	-	-	-	-
	3	10	12	-	22	4.7	86	13.5	22	183	9.2	22
	4	17	20	-	37	7.9	114	20.8	37	200	9.7	37
North Shore Area	5	67	93	-	160	34.1	133	19.5	160	209	7.5	160
Mueller Cove	6	93	79	-	172	36.7	146	19.1	172	214	7.5	19.1
Sac Roe	7	23	14	-	37	7.9	160	27.3	37	221	10.5	37
17 April, 1986	8	8	3	-	11	2.3	187	16.9	11	231	4.9	11
	9	2	2	-	4	0.9	178	39.3	4	227	14.0	4
	10	18	7	-	25	5.3	203	19.6	25	237	4.9	25
	11	1	-	-	1	0.2	182	0.0	1	239	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	13	-	-	-	-	-	-	-	-	-	-	-
Total		**239**	**230**	**-**	**469**	**100.0**	**143**	**30.5**	**680**	**211**	**13.6**	**680**

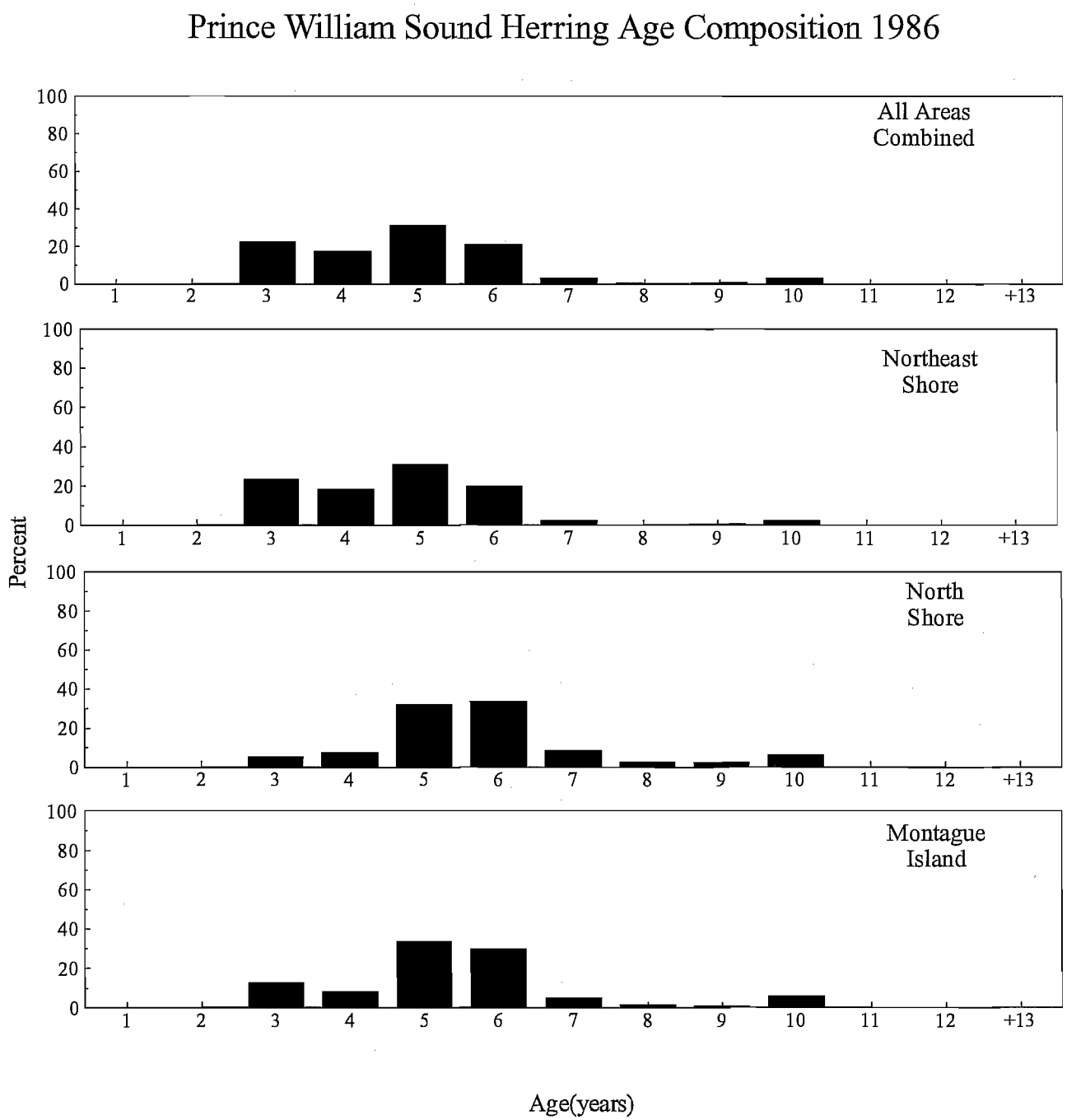
Indicates dominant age class.

-Continued-

Appendix O.8. (page 6 of 6)

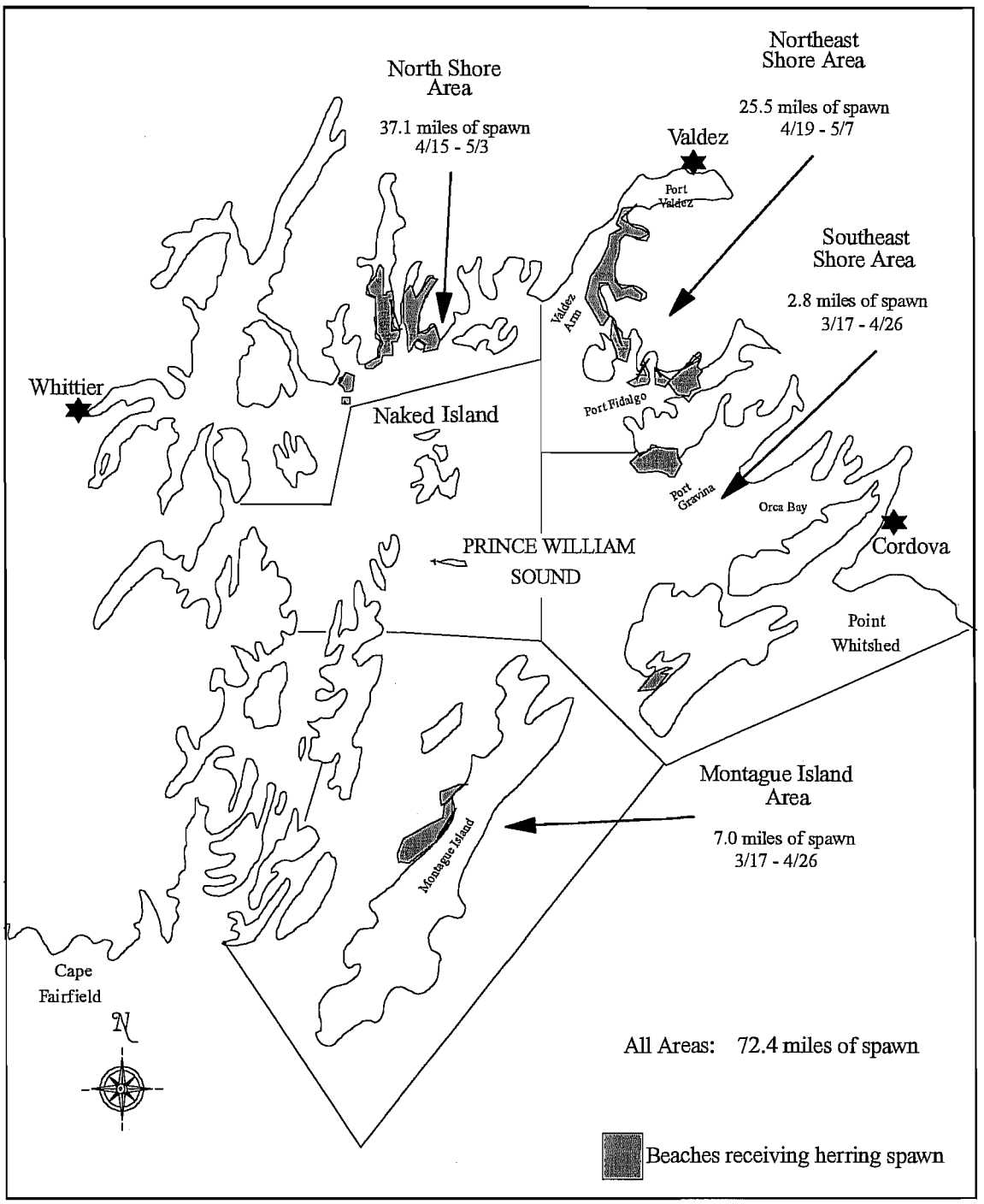
Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	-	-	-	-	-	-	-	-	-	-
	3	33	31	-	64	9.5	80	12.1	64	178	12.4	64
	4	30	24	-	54	8	95	13.8	54	188	14.4	54
North Shore Area	5	128	81	-	208	31	117	17.5	209	203	15.2	209
Payday Pt. (Unakwik)	6	129	76	-	205	30.4	129	20.9	205	210	12.1	205
Test Fishery	7	26	31	-	57	8.5	139	22.7	27	214	11.1	57
27 April, 1986	8	15	11	-	26	3.9	153	30.6	26	221	10.9	26
	9	11	8	-	19	2.8	165	28.2	19	225	8.5	19
	10	24	12	-	36	5.3	171	25.4	36	227	10.4	36
	11	2	-	-	2	0.3	173	28.3	2	223	7.1	2
	12	2	-	-	2	0.3	91	77.8	2	205	58.0	2
	13											
Total		**400**	**274**	**-**	**673**	**100.0**	**123**	**30.0**	**674**	**205**	**18.2**	**674**
	2	-	-	-	-	-	-	-	-	-	-	-
	3	6	7	-	14	2.1	92	14.2	14	177	27.3	14
	4	18	8	-	26	3.9	110	14.2	26	196	8.0	26
North Shore Area	5	108	94	1	203	30.7	136	19.1	203	203	8.2	203
Wells Bay	6	141	101	-	242	36.6	152	21.2	242	213	8.7	242
Sac Roe	7	37	36	-	73	11.0	169	24.2	73	219	8.5	73
16 April, 1986	8	11	19	-	30	4.5	187	25.7	30	224	11.0	30
	9	14	4	-	18	2.7	190	26.0	18	227	10.4	18
	10	28	24	-	52	7.9	194	27.9	52	227	10.9	52
	11	1	1	-	2	0.3	189	66.5	2	235	19.8	2
	12	-	-	-	-	-	-	-	-	-	-	-
	13	-	1	-	1	0.2	195	-	1	237	-	1
Total		**364**	**295**	**1**	**661**	**100.0**	**152**	**31.1**	**661**	**212**	**13.3**	**661**

Indicates dominant age class.



Appendix O.9. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1986.

Historical Herring Spawn and Shoreline Mileage



Appendix O.10. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys for 1986.

APPENDIX P: SUMMARY FOR 1987

Appendix P.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1987.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/18	0	0	NS	0	0	0	03/18
03/25	30	0	NS	0	0	30	03/25
03/27	120	60	NS	NS	NS	180	03/27
03/31	10	60	0	0	0	70	03/31
04/01	0	0	0	NS	NS	0	04/01
04/02	0	170	410	0	0	580	04/02
04/03	0	480	40	0	0	520	04/03
04/06	60	770	3,510	70	NS	4,410	04/06
04/07	370	510	12,200	0	70	13,150	04/07
04/08	100	1,140	6,070	0	10	7,320	04/08
04/09	70	1,640	2,300	0	NS	4,010	04/09
04/10	0	820	980	NS	NS	1,800	04/10
04/11	0	690	140	410	170	1,410	04/11
04/12	0	460	580	1,670	NS	2,710	04/12
04/13	0	580	1,170	590	0	2,340	04/13
04/16	0	160	90	0	NS	250	04/16
04/17	0	40	50	0	160	250	04/17
04/18	220	20	90	0	0	330	04/18
04/20	0	170	90	0	0	260	04/20
04/21	0	950	280	NS	0	1,230	04/21
04/23	0	810	160	0	20	990	04/23
04/24	30	240	40	90	130	530	04/24
04/26	NS	0	NS	NS	NS	0	04/26
04/27	0	30	60	90	590	770	04/27
04/28	50	30	30	40	1,070	1,220	04/28
05/02	30	130	NS	42	10	212	05/02
05/04	30	550	NS	490	0	1,070	05/04
05/05	0	150	NS	140	NS	290	05/05
05/07	NS	240	5,220	10	270	5,740	05/07
05/08	NS	30	190	NS	NS	220	05/08
05/09	NS	NS	300	NS	NS	300	05/09
05/10	NS	NS	0	0	NS	0	05/10
AREA TOTALS	**1,120**	**10,930**	**34,000**	**3,642**	**2,500**	**52,192**	**TOTAL**
PEAK ESTIMATES	**600**	**4,010**	**18,480**	**2,200**	**1,240**	**26,530**	**PEAK**

[a]Dates displayed are for actual survey days.

NS = Not Surveyed

Appendix P.2. Herring spawn mile days from aerial surveys by area and date for Prince William Sound, 1987.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/18	0.0	0.0	NS	0.0	0.0	0.0	03/18
03/25	0.0	0.0	NS	0.0	0.0	0.0	03/25
03/27	0.0	0.0	NS	NS	NS	0.0	03/27
03/31	0.0	0.0	0.0	0.0	0.0	0.0	03/31
04/01	0.0	0.0	0.0	NS	NS	0.0	04/01
04/02	0.0	0.0	0.0	0.0	0.0	0.0	04/02
04/03	0.0	0.0	0.0	0.0	0.0	0.0	04/03
04/06	0.0	0.9	0.3	0.0	NS	1.2	04/06
04/07	0.0	0.4	2.1	0.0	0.0	2.5	04/07
04/08	0.0	0.0	3.2	0.0	0.0	3.2	04/08
04/09	0.0	1.9	14.3	0.0	NS	16.2	04/09
04/10	0.0	4.0	17.0	NS	NS	21.0	04/10
04/11	0.0	6.0	17.0	0.0	0.0	23.0	04/11
04/12	0.0	5.1	7.3	0.0	NS	12.4	04/12
04/13	0.0	0.3	7.3	0.0	0.0	7.6	04/13
04/16	0.0	7.7	0.5	0.0	NS	8.2	04/16
04/17	0.0	1.3	0.5	0.0	0.0	1.8	04/17
04/18	0.0	2.4	0.5	0.0	1.0	3.9	04/18
04/20	0.0	0.8	0.0	0.0	1.5	2.3	04/20
04/21	0.0	2.1	0.5	NS	1.5	4.0	04/21
04/23	0.0	4.9	0.1	0.0	0.1	5.1	04/23
04/24	0.0	3.6	0.0	0.0	0.0	3.6	04/24
04/26	NS	1.0	NS	NS	NS	1.0	04/26
04/27	0.0	0.2	0.0	0.0	3.4	3.6	04/27
04/28	0.0	0.0	0.0	0.0	0.0	0.0	04/28
05/02	4.0	NS	NS	0.0	2.5	6.5	05/02
05/04	1.8	3.5	NS	0.2	0.0	5.5	05/04
05/05	1.1	2.0	NS	0.3	NS	3.4	05/05
05/07	NS	1.5	4.5	0.5	1.0	7.5	05/07
05/08	NS	1.8	6.5	NS	NS	8.3	05/08
05/09	NS	NS	2.3	NS	NS	2.3	05/09
05/10	NS	NS	0.1	2.0	NS	2.1	05/10
Mile Days	**6.9**	**51.2**	**83.9**	**3.0**	**11.0**	**155.9**	**Total**
Shoreline Miles	6.9	21.3	26.3	2.3	8.5	65.3	Total

a Dates displayed are for actual survey days.
NS = Not Surveyed

Appendix P.3. Herring biomass estimates from aerial surveys by sub-area and date for Prince William Sound, 1987.

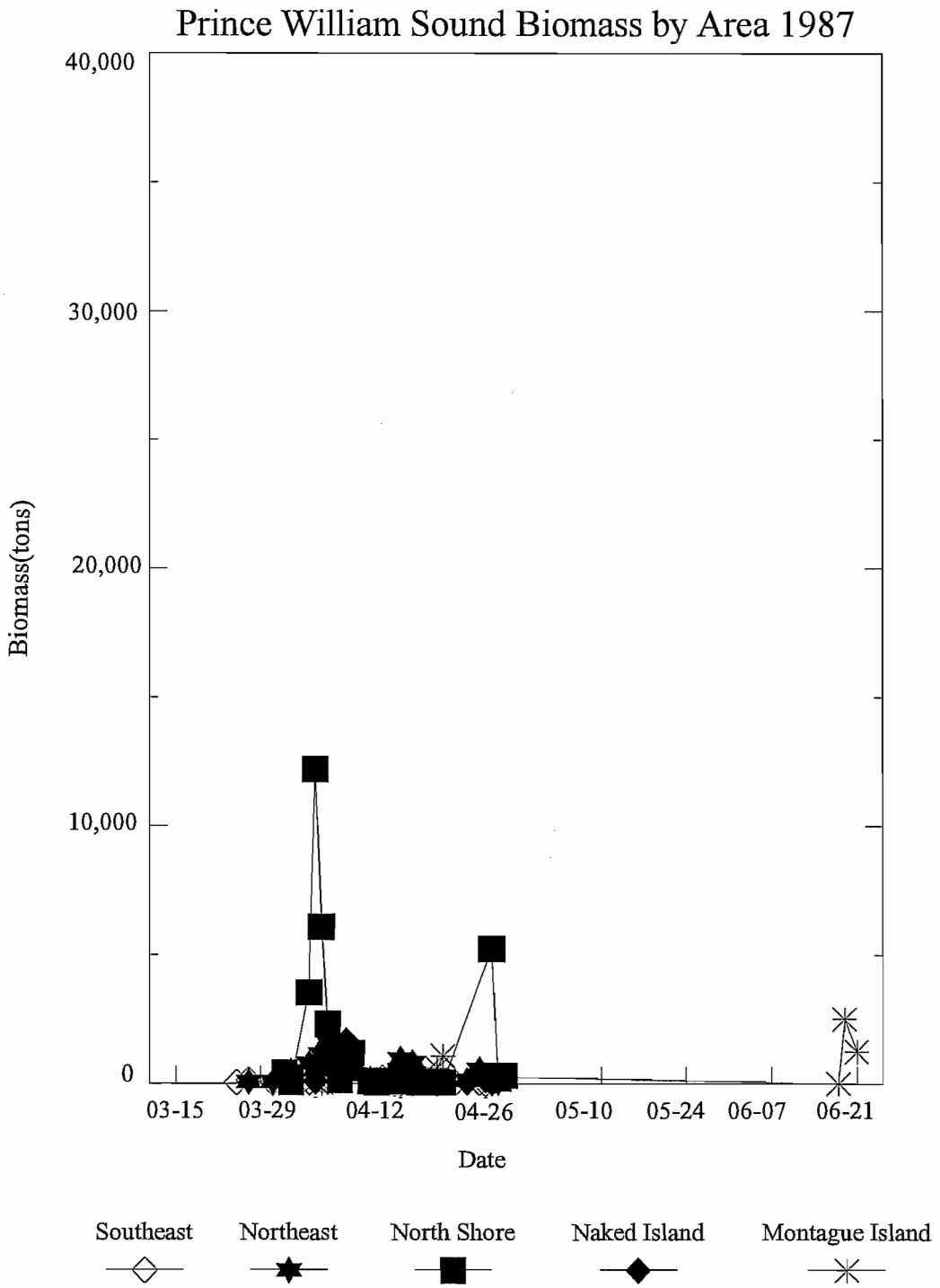
DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/18		0	0	0	0			0	0	0	0	03/18
03/25		30	0	0	0			0	0	0	30	03/25
03/27		120	0	60	0						180	03/27
03/31		10	0	0	60	0		0	0	0	70	03/31
04/01	0	0	0	0		0	0				0	04/01
04/02		0	30	40	100	90	320	0		0	580	04/02
04/03	0	0	0	350	130	0	40	0		0	520	04/03
04/06		60	0	300	470	160	3,350	0			4,340	04/06
04/07	10	360	0	380	130	0	12,200	0		70	13,150	04/07
04/08	0	100	20	200	920	40	6,030	70		10	7,390	04/08
04/09	0	70	40	1,130	470	0	2,300	0			4,010	04/09
04/10		0		780	40		980				1,800	04/10
04/11		0	150	420	120	90	50	410		170	1,410	04/11
04/12		0	310	150	0	250	330	1,670			2710	04/12
04/13			350	120	110	830	340	590		0	2340	04/13
04/16		0	90	30	40	50	40	0			250	04/16
04/17	0		40	0	0	0	50	0		160	250	04/17
04/18		220	0	0	20	30	60	0		0	330	04/18
04/20	0	0	30	0	140	90	0	0		0	260	04/20
04/21			390	190	370	50	230			0	1230	04/21
04/23		0	130	10	670		160	0		20	990	04/23
04/24	10	20	20	30	190	0	40	90		130	530	04/24
04/26				0							0	04/26
04/27		0	10	20	0	40	20	90		590	770	04/27
04/28		50	0	30	0	0	30		40	1,070	1220	04/28
05/02		30	0	130				42		10	212	05/02
05/04	0	30		510	40			490		0	1070	05/04
05/05				150				140			290	05/05
05/07				200	40	180	5,040	10		270	5740	05/07
05/08				30	0		190				220	05/08
05/09						0	300				300	05/09
05/10							0	0			0	05/10
Area Total	**20**	**1,100**	**1,610**	**5,260**	**4,060**	**1,900**	**32,100**	**3,602**	**40**	**2,500**	**52,192**	**Total**
Peak Estimates	**20**	**580**	**740**	**1,640**	**1,630**	**1,010**	**17,470**	**2,160**	**40**	**1,240**	**26,530**	**Peak**

Note: Data displayed only for dates that surveys were flown.

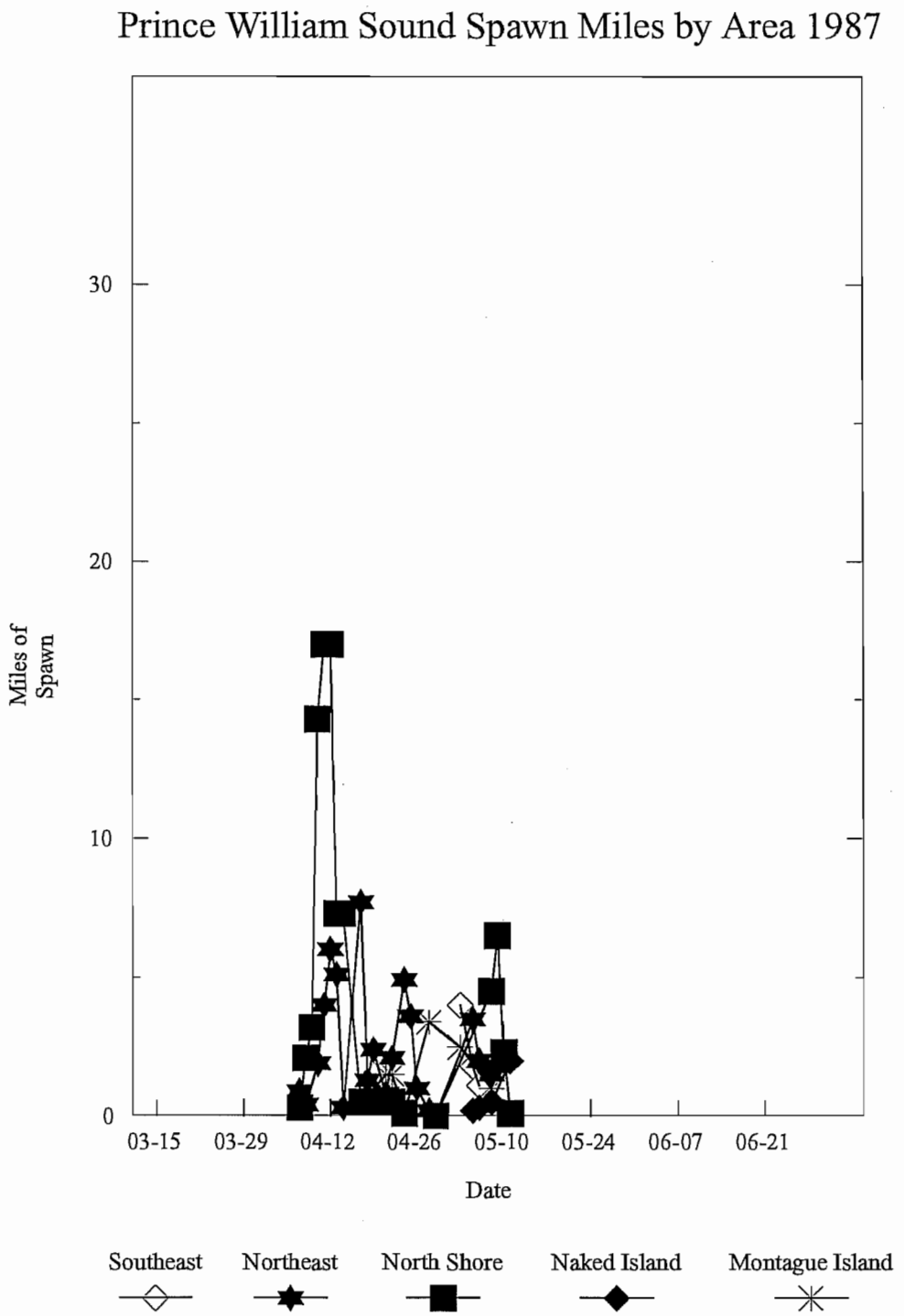
Appendix P.4. Estimated miles of herring spawn by sub-area and date from aerial surveys for Prince William Sound, 1987.

DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/18		0	0					0	0	0	0	03/18
03/25		0	0					0	0	0	0	03/25
03/27		0	0	0	0						0	03/27
03/31		0	0	0	0	0		0	0	0	0	03/31
04/01	0	0	0	0		0	0				0	04/01
04/02		0	0	0	0	0	0	0		0	0	04/02
04/03	0	0	0	0	0	0	0	0		0	0	04/03
04/06		0	0	0.5	0.4	0	0.3	0			1.2	04/06
04/07	0	0	0	0.3	0.1	0	2.1	0		0	2.5	04/07
04/08	0	0	0.0	0	0	0	3.2	0		0	3.2	04/08
04/09	0	0	0.0	1.0	0.9	0	14.3	0			16.2	04/09
04/10		0		2.0	2.0		17.0				21.0	04/10
04/11		0	0.0	2.3	3.7	0	17.0	0		0	23.0	04/11
04/12		0	0.0	3.1	2.0	0	7.3	0			12.4	04/12
04/13			0	0.3	0	0.2	7.1	0		0	7.6	04/13
04/16		0	5.5	1.2	1.0	0.5	0	0			8.2	04/16
04/17	0		1.0	0.3	0	0.5	0	0		0	1.8	04/17
04/18		0.0	1.5	0.7	0.2	0.5	0	0		1.0	3.9	04/18
04/20	0	0.0	0.8	0.0	0	0.0	0	0		1.5	2.3	04/20
04/21			1.8	0.0	0.3	0.3	0.2			1.5	4.0	04/21
04/23		0	2.7	2.2	0		0.1	0		0.1	5.1	04/23
04/24	0	0.0	3.0	0.6	0	0	0	0		0	3.6	04/24
04/26				1.0	0						1.0	04/26
04/27		0	0	0.2	0	0	0	0		3.4	3.6	04/27
04/28		0	0	0	0.0	0	0		0	0	0.0	04/28
05/02		4.0	0	0				0		2.5	6.5	05/02
05/04	0	1.8		3.5	0			0.2		0	5.5	05/04
05/05		1.1		2				0.3			3.4	05/05
05/07				0.5	1	0	4.5	0.5		1	7.5	05/07
05/08				0.5	1.3		6.5				8.3	05/08
05/09						0	2.25				2.3	05/09
05/10							0.1	2			2.1	05/10
Area Total		**6.9**	**16.2**	**22.1**	**12.9**	**2.0**	**82.0**	**3.0**	**0.0**	**11.0**	**155.9**	**Total**

Note: Data displayed only for dates that surveys were flown.



Appendix P.5. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1987.



Appendix P.6. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1987.

Appendix P.7. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound , 1987.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weigbt (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1987	1	0			0.0	0.0%	0.0	0.0%
1986	2	14	52	155	26.4	0.1%	460.8	0.2%
1985	3	2,517	99	173	9,014.3	34.0%	82,841.0	42.1%
1984	4	492	98	190	1,752.3	6.6%	16,193.0	8.2%
1983	5	427	119	205	1,841.4	6.9%	14,053.7	7.1%
1982	6	1,247	140	215	6,347.9	23.9%	41,042.0	20.9%
1981	7	901	155	221	5,074.3	19.1%	29,654.2	15.1%
1980	8	165	165	228	988.8	3.7%	5,430.6	2.8%
1979	9	79	181	232	520.1	2.0%	2,600.1	1.3%
1978	10	79	198	236	566.9	2.1%	2,600.1	1.3%
1977	11	54	189	238	370.9	1.4%	1,777.3	0.9%
1976	12	5	147	236	26.7	0.1%	164.6	0.1%
1975	13+	0			0.0	0.0%	0.0	0.0%
Total		**5,980**	**118**	**200**	**26,530.0**	**100.0%**	**196,817.2**	**100.0%**

Southeast Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weigbt (ton)	Percent by Weight	Number of Fisb (x 1,000)	Percent by Number
1986	1	0			0.0	0.0%	0.0	0.0%
1985	2	0			0.0	0.0%	0.0	0.0%
1984	3	0			0.0	0.0%	0.0	0.0%
1983	4	0			0.0	0.0%	0.0	0.0%
1982	5	0			0.0	0.0%	0.0	0.0%
1981	6	0			0.0	0.0%	0.0	0.0%
1980	7	0			0.0	0.0%	0.0	0.0%
1979	8	0			0.0	0.0%	0.0	0.0%
1978	9	0			0.0	0.0%	0.0	0.0%
1977	10	0			0.0	0.0%	0.0	0.0%
1976	11	0			0.0	0.0%	0.0	0.0%
1975	12	0			0.0	0.0%	0.0	0.0%
1974	13+	0			0.0	0.0%	0.0	0.0%
Total		**0**			**600.0**	**0.0%**	**0.0**	**0.0%**

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Northeast Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1986	1	0			0.0	0.0%	0.0	0.0%
1985	2	11	49	152	11.2	0.3%	208.3	0.5%
1984	3	1,685	65	170	2,285.9	57.0%	31,904.7	72.5%
1983	4	180	95	181	356.9	8.9%	3,408.2	7.7%
1982	5	91	111	198	210.8	5.3%	1,723.0	3.9%
1981	6	196	142	215	580.9	14.5%	3,711.2	8.4%
1980	7	107	157	221	350.6	8.7%	2,026.0	4.6%
1979	8	20	181	232	75.6	1.9%	378.7	0.9%
1978	9	12	184	235	46.1	1.1%	227.2	0.5%
1977	10	12	191	235	47.8	1.2%	227.2	0.5%
1976	11	9	216	243	40.6	1.0%	170.4	0.4%
1975	12	1	169	227	3.5	0.1%	18.9	0.0%
1974	13+	0			0.0	0.0%	0.0	0.0%
Total		**2,324**	**86**	**182**	**4,010.0**	**100.0%**	**44,003.8**	**100.0%**

North Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1986	1	0			0.0	0.0%	0.0	0.0%
1985	2	3	63	167	6.5	0.0%	93.3	0.1%
1984	3	832	167	178	4,762.5	25.8%	25,871.7	22.8%
1983	4	312	100	195	1,069.4	5.8%	9,701.9	8.5%
1982	5	336	121	207	1,393.6	7.5%	10,448.2	9.2%
1981	6	1,051	140	215	5,043.5	27.3%	32,681.7	28.7%
1980	7	794	155	221	4,218.4	22.8%	24,690.1	21.7%
1979	8	145	163	227	810.1	4.4%	4,508.9	4.0%
1978	9	67	181	232	415.7	2.2%	2,083.4	1.8%
1977	10	67	199	236	457.0	2.5%	2,083.4	1.8%
1976	11	45	184	237	283.8	1.5%	1,399.3	1.2%
1975	12	4	142	238	19.5	0.1%	124.4	0.1%
1974	13+	0			0.0	0.0%	0.0	0.0%
Total		**3,656**	**139**	**212**	**18,480.0**	**100.0%**	**113,686.3**	**100.0%**

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Appendix P.7. (page 3 of 3)

Naked Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1986	1	0			0.0	0.0%	0.0	0.0%
1985	2	0			0.0	0.0%	0.0	0.0%
1984	3	0			0.0	0.0%	0.0	0.0%
1983	4	0			0.0	0.0%	0.0	0.0%
1982	5	0			0.0	0.0%	0.0	0.0%
1981	6	0			0.0	0.0%	0.0	0.0%
1980	7	0			0.0	0.0%	0.0	0.0%
1979	8	0			0.0	0.0%	0.0	0.0%
1978	9	0			0.0	0.0%	0.0	0.0%
1977	10	0			0.0	0.0%	0.0	0.0%
1976	11	0			0.0	0.0%	0.0	0.0%
1975	12	0			0.0	0.0%	0.0	0.0%
1974	13+	0			0.0	0.0%	0.0	0.0%
Total		**0**			**2,200.0**	**0.0%**	**0.0**	**0.0%**

Montague Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1986	1	0			0.0	0.0%	0.0	0.0%
1985	2	0			0.0	0.0%	0.0	0.0%
1984	3	0			0.0	0.0%	0.0	0.0%
1983	4	0			0.0	0.0%	0.0	0.0%
1982	5	0			0.0	0.0%	0.0	0.0%
1981	6	0			0.0	0.0%	0.0	0.0%
1980	7	0			0.0	0.0%	0.0	0.0%
1979	8	0			0.0	0.0%	0.0	0.0%
1978	9	0			0.0	0.0%	0.0	0.0%
1977	10	0			0.0	0.0%	0.0	0.0%
1976	11	0			0.0	0.0%	0.0	0.0%
1975	12	0			0.0	0.0%	0.0	0.0%
1974	13+	0			0.0	0.0%	0.0	0.0%
Total		**0**			**1,240.0**	**0.0%**	**0.0**	**0.0%**

Appendix P.8. Age, sex and size composition of Pacific herring from the purse seine test fishery, sac roe fishery and pound fishery, Prince William Sound, 1987.

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	3	6	2	11	0.5	49	12	9	152	12	9
	3	689	491	505	1,685	72.5	65	10	1,180	170	9	1,180
	4	83	61	36	180	7.7	95	17	554	181	13	144
Summary Table	5	43	35	13	91	3.9	111	22	78	198	13	78
Northeast Area	6	92	93	11	196	8.4	142	20	185	215	9	185
1987	7	54	47	6	107	4.6	157	23	101	221	10	101
	8	10	9	1	20	0.9	181	21	19	232	6	19
	9	8	3	1	12	0.5	184	24	11	235	5	11
	10	8	4	0	12	0.5	191	24	12	235	11	12
	11	2	6	1	9	0.4	216	21	8	243	7	8
	12	1	0	0	1	0.0	169	0	1	227	0	1
	+13	0	0	0	0	0.0			0			0
Total		**993**	**755**	**576**	**2,324**	**100.0**	**86**	**26**	**1,748**	**182**	**15**	**1,748**
	2	1	2	0	3	0.1	63	3	3	167	1	3
	3	520	311	0	832	22.8	167	11	832	178	9	832
	4	164	148	0	312	8.5	100	17	312	195	11	312
Summary Table	5	165	171	0	336	9.2	121	17	336	207	9	336
North Shore Area	6	535	516	0	1,051	28.7	140	20	1,051	215	9	1,044
1987	7	379	415	0	794	21.7	155	24	794	221	10	794
	8	75	70	0	145	4.0	163	32	145	227	10	145
	9	40	27	0	67	1.8	181	20	67	232	9	67
	10	37	30	0	67	1.8	199	15	67	236	9	67
	11	24	21	0	45	1.2	184	16	45	237	9	45
	12	2	2	0	4	0.1	142	0	4	238	0	4
	+13	0	0	0	0	0.0			0			0
Total		**1,942**	**1,713**	**0**	**3,656**	**100.0**	**139**	**36**	**3,093**	**212**	**17**	**3,093**

Indicates dominant age class.

-Continued-

Appendix P.8. (page 2 of 5)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	-	2	2	0.2	-	-	-	-	-	-
	3	107	83	505	695	59.8	72	12.3	190	177	8.6	190
	4	22	20	36	78	6.7	99	17.4	452	194	11.1	42
Northeast Area	5	25	26	13	64	5.5	119	22.5	51	204	12.2	51
Boulder Bay	6	75	82	11	168	14.5	146	19.9	157	217	8.8	157
Pound Fish	7	49	46	6	101	8.7	159	23.4	95	222	9.8	95
11 April,1987	8	10	9	1	20	1.7	181	20.6	19	232	6.1	19
23 April, 1987	9	8	3	1	12	1.0	184	24.3	11	235	5.4	11
	10	8	4	-	12	1.0	191	24.2	12	235	10.9	12
	11	2	6	1	9	0.8	216	21.4	8	243	6.6	8
	12	1	-	-	1	0.1	169	-	1	227	-	1
	+13											-
Total		**307**	**279**	**576**	**1162**	**100.0**	**122**	**44.6**	**586**	**204**	**22.7**	**586**
	2	3	5	-	8	1.4	48	13.2	8	151	13.2	8
	3	294	212	-	506	85.6	62	9.4	506	168	8.6	506
	4	29	16	-	45	7.6	75	16.6	45	177	13.5	45
Northeast Area	5	9	4	-	13	2.2	96	25.7	13	187	17.7	13
Port Fidalgo	6	11	6	-	17	2.9	120	24.5	17	204	12.2	17
Pound Fish	7	2	-	-	2	0.3	139	9.2	2	215	0.7	2
13 April, 1987	8	-	-	-	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**348**	**243**	**-**	**591**	**100.0**	**66**	**16.5**	**591**	**170**	**12.2**	**591**

Indicates dominant age class.

-Continued-

Appendix P.8. (page 3 of 5)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	1	-	1	0.2	58	-	1	160	-	1
	3	288	196	-	484	84.8	66	10.4	484	169	8.4	484
	4	32	25	-	57	10.0	75	17.3	57	174	13.1	57
Northeast Area	5	9	5	-	14	2.5	97	15.9	14	188	10.6	14
Two Moon Bay	6	6	5	-	11	1.9	117	20.5	11	201	11.8	11
Pound Fish	7	3	1	-	4	0.7	126	27.8	4	209	16.3	4
16 April, 1987	8	-	-	-	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-
	+13											
Total		**338**	**233**	**-**	**571**	**100.0**	**69**	**15.4**	**571**	**171**	**11.0**	**571**
	2	1	1	-	2	0.2	58	4.2	2	165	1	2
	3	315	162	-	477	38.9	72	10.9	477	174	9.1	477
	4	72	39	-	111	9.1	86	14.9	111	189	15.4	111
North Shore Area	5	47	40	-	87	7.1	106	17.0	87	204	11.1	87
Fairmont Bay	6	120	131	-	251	20.5	125	25.0	251	213	9.5	251
Test Fishery	7	101	111	-	212	17.3	138	28.4	212	219	9.5	212
16 April, 1987	8	22	23	-	45	3.7	150	47.2	45	225	10.7	45
08 May, 1987	9	8	7	-	15	1.2	161	12.2	15	227	9.1	15
	10	8	5	-	13	1.1	220	-	13	233	9.4	13
	11	6	6	-	12	1.0	143	-	12	237	10.4	12
	12	-	1	-	1	0.1	-	-	1	225	-	1
	+13											-
Total		**700**	**526**	**-**	**1226**	**100.0**	**141**	**36.7**	**663**	**213**	**16.5**	**663**

Indicates dominant age class.

-Continued-

Appendix P.8. (page 4 of 5)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	-	-	-	-	-	-	-	-	-	-
	3	48	41	-	89	13.4	81	14.5	89	185	8.8	89
	4	29	33	-	62	9.4	113	21.1	62	200	8.8	62
North Shore Area	5	29	47	-	76	11.5	134	19.1	76	211	8.5	76
Cedar Bay	6	117	113	-	230	34.7	148	21.4	230	217	9.2	220
Sac Roe	7	48	84	-	132	19.9	164	22.9	132	223	9.4	132
07 April, 1987	8	24	16	-	40	6.0	168	30.7	40	227	10.0	40
	9	6	6	-	12	1.8	200	27.2	12	238	11.2	12
	10	9	6	-	15	2.3	197	16.3	15	237	7.1	15
	11	3	3	-	6	0.9	205	20.7	6	235	9.7	6
	12	1	-	-	1	0.2	142	-	1	227	-	1
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**314**	**349**	**-**	**663**	**100.0**	**141**	**36.7**	**663**	**213**	**16.5**	**663**
	2	-	-	-	-	-	-	-	-	-	-	-
	3	38	24	-	63	10.7	80	13.0	63	183	7.4	63
	4	15	21	-	36	6.1	106	17.7	36	199	8.4	36
North Shore Area	5	28	33	-	61	10.4	126	18.0	61	208	9.2	61
Cedar Bay	6	103	92	-	195	33.2	143	19.0	195	215	8.2	195
Sac Roe	7	80	75	-	155	26.4	158	24.8	155	220	10.2	155
08 April, 1987	8	12	9	-	21	3.6	171	13.1	21	229	7.0	21
	9	11	7	-	18	3.1	183	25.0	18	232	8.3	18
	10	11	11	-	22	3.7	189	18.6	22	235	8.2	22
	11	9	6	-	15	2.6	196	26.6	15	238	7.9	15
	12	1	-	-	1	0.2	203	-	1	250	-	1
	+13	-	-	-	-	-	-	-	-	-	-	-
Total		**308**	**278**	**-**	**587**	**100.0**	**142**	**35.2**	**587**	**214**	**16.1**	**587**

Indicates dominant age class.

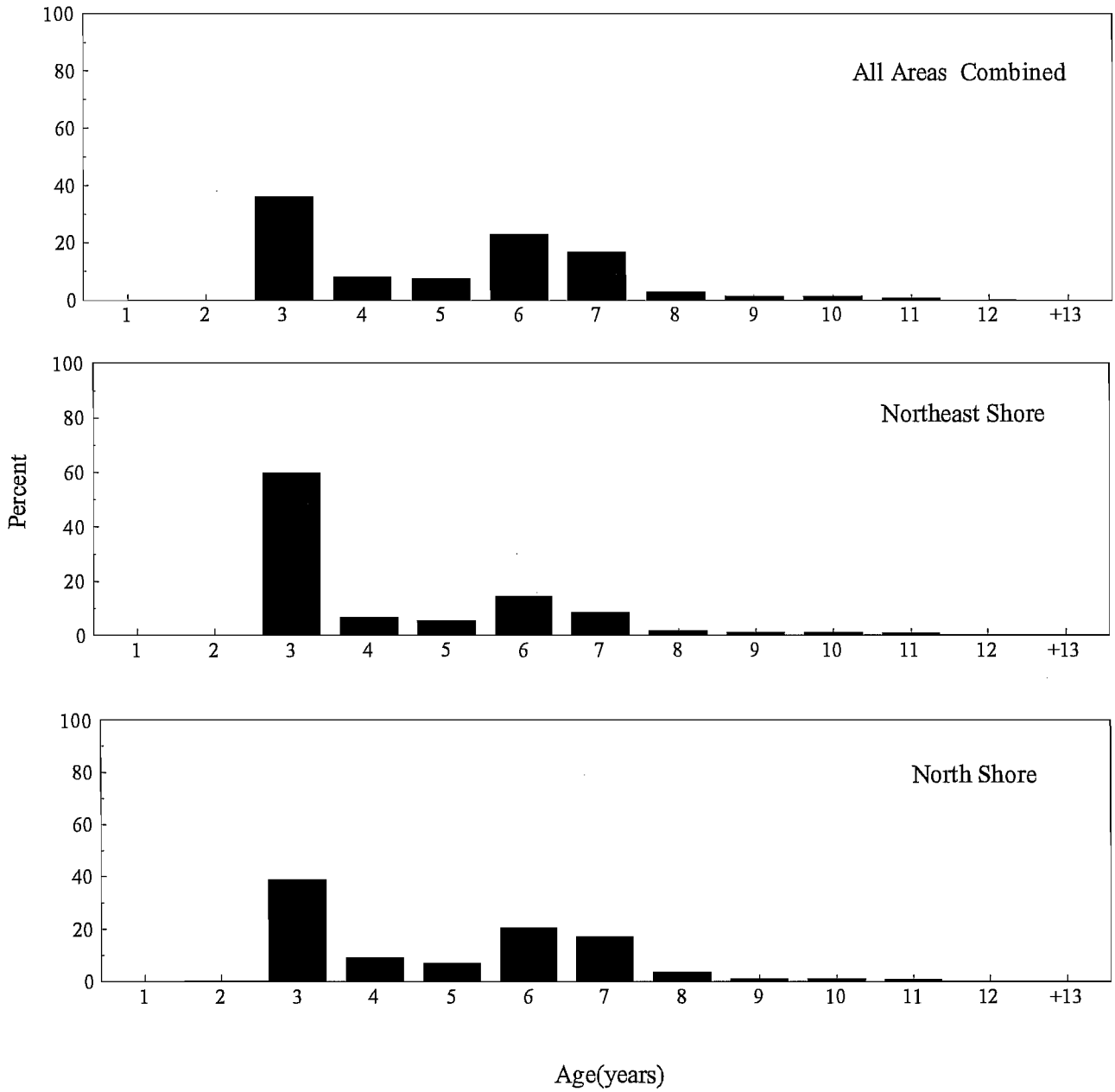
-Continued-

Appendix P.8. (page 5 of 5)

Sample Location Sample Date	Age Years	Male	Female	Unknown	Total	Percent Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
	2	-	1	-	1	0.2	73	-	1	171	-	1
	3	60	41	-	101	17.0	836	11.4	101	185	7.0	101
	4	20	27	-	47	7.9	107	16.6	47	200	9.6	47
North Shore Area	5	28	30	-	58	9.7	124	17.7	58	207	8.5	58
Unakwik Pt.	6	99	84	-	183	30.8	146	18.1	183	216	8.0	186
Sac Roe	7	80	74	-	154	25.9	164	21.0	154	225	8.9	154
08 April, 1987	8	8	13	-	21	3.5	171	26.2	21	232	9.3	21
	9	11	3	-	14	2.4	186	17.9	14	235	10.1	14
	10	7	3	-	10	1.7	201	21.3	10	239	12.0	10
	11	2	3	-	5	0.8	211	20.4	5	245	12.1	5
	12		1	-	1	0.2	222	-	1	250		1
	+13	-	-	-	-	-	-	-	-	-		-
Total		**315**	**280**	**-**	**595**	**100.0**	**138**	**36.8**	**595**	**212**	**17.7**	**595**
	2	-	-	-	-	-	-	-	-	-	-	-
	3	59	43	-	102	17.4	80	10.1	102	179	8.3	102
	4	28	28	-	56	9.6	105	15.7	56	195	9.2	56
North Shore Area	5	33	21	-	54	9.2	120	14.4	54	203	7.8	54
Wells Bay	6	96	96	-	192	32.8	142	16.3	192	212	8.6	192
Sac Roe	7	70	71	-	141	24.1	157	20.0	141	218	9.7	141
09 April, 1987	8	9	9	-	18	3.1	165	24.2	18	221	11.6	18
	9	4	4	-	8	1.4	177	15.1	8	227	6.7	8
	10	2	5	-	7	1.2	196	16.1	7	236	10.2	7
	11	4	3	-	7	1.5	192	14	7	233	6.8	7
	12											-
	+13											-
Total		**305**	**280**	**-**	**585**	**100.0**	**132**	**34.1**	**585**	**206**	**17.1**	**585**

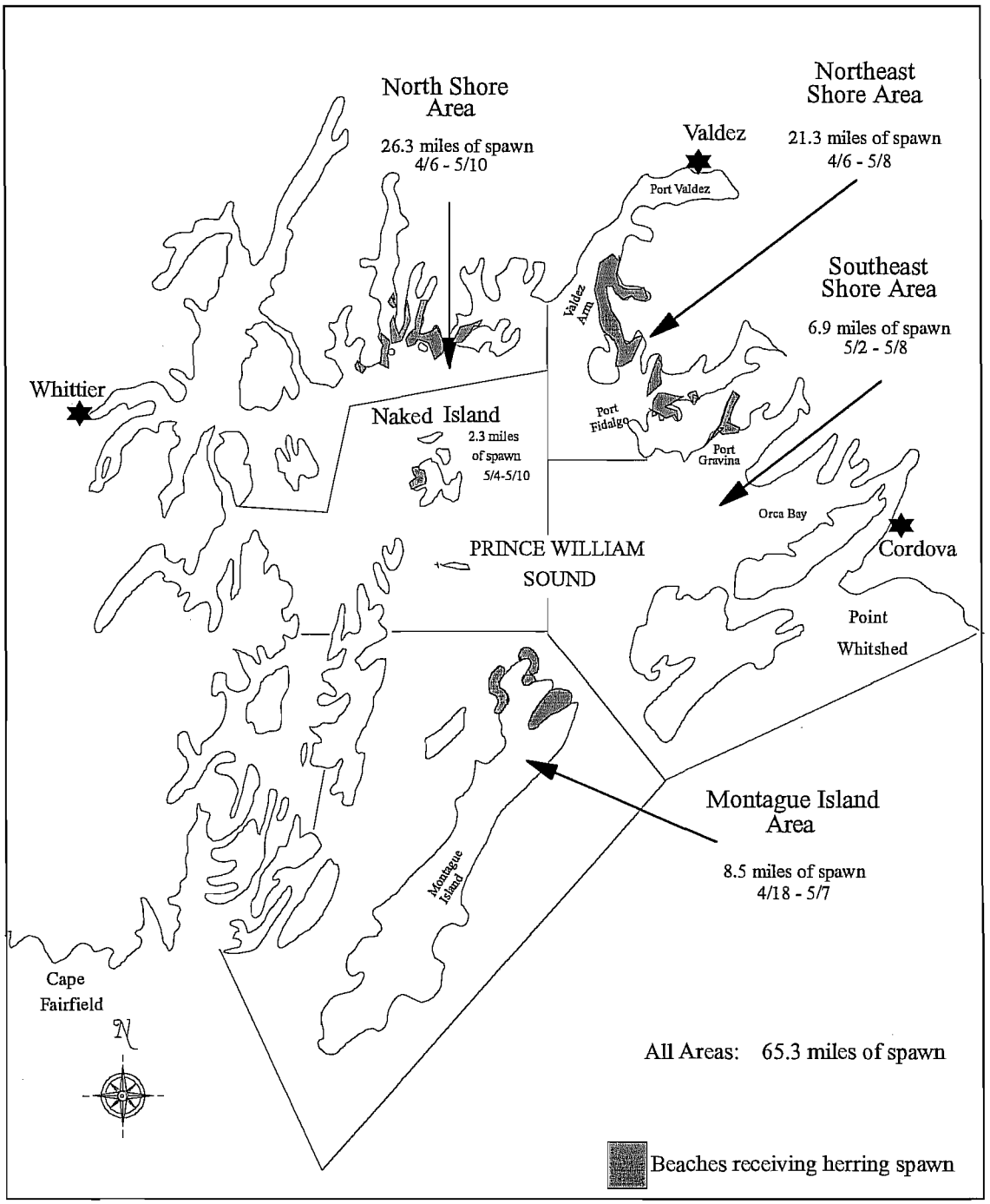
Indicates dominant age class.

Prince William Sound Herring Age Composition 1987



Appendix P.9. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1987.

Historical Herring Spawn and Shoreline Mileage



Appendix P.10. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys for 1987.

APPENDIX Q: SUMMARY FOR 1988

Appendix Q.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1988.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/25	0	0	0	0	0	0	03/25
03/28	580	0	10	0	0	590	03/28
03/30	20	0	0	NS	NS	20	03/30
03/31	110	0	NS	NS	NS	110	03/31
04/02	0	0	0	0	0	0	04/02
04/05	0	80	0	0	0	80	04/05
04/06	10	100	180	NS	NS	290	04/06
04/08	0	90	1,880	NS	NS	1,970	04/08
04/09	NS	10	1,100	NS	NS	1,110	04/09
04/13	NS	0	40	0	NS	40	04/13
04/14	NS	80	0	0	4,040	4,120	04/14
04/16	NS	0	0	80	705	785	04/16
04/17	0	70	0	60	850	980	04/17
04/18	NS	0	720	200	1,130	2,050	04/18
04/19	NS	120	100	1,450	9,440	11,110	04/19
04/20	0	390	6,720	930	2,290	10,330	04/20
04/21	NS	3,120	6,760	1,140	1,770	12,790	04/21
04/22	0	5,750	10,280	0	40	16,070	04/22
04/23	NS	0	3,310	0	0	3,310	04/23
04/24	NS	60	1,100	NS	0	1,160	04/24
04/28	NS	NS	0	NS	0	0	04/28
04/29	NS	30	110	0	100	240	04/29
04/30	NS	0	0	0	0	0	04/30
05/01	NS	0	130	0	0	130	05/01
AREA TOTALS	**720**	**9,900**	**32,440**	**3,860**	**20,365**	**67,285**	**TOTAL**
PEAK ESTIMATES	**580**	**6,460**	**12,300**	**1,450**	**13,480**	**34,270**	**PEAK**

[a]Dates displayed are for actual survey days

NS = Not Surveyed

Appendix Q.2. Herring spawn mile days from aerial surveys and shoreline miles from ground surveys by area and date for Prince William Sound, 1988.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/25	0.0	0.0	0.0	0.0	0.0	0.0	03/25
03/28	2.6	0.0	0.0	0.0	0.0	2.6	03/28
03/30	1.6	0.0	0.0	NS	NS	1.6	03/30
03/31	0.3	0.0	NS	NS	NS	0.3	03/31
04/02	0.0	0.2	0.0	0.0	0.0	0.2	04/02
04/05	0.0	0.9	0.0	0.0	0.0	0.9	04/05
04/06	0.0	0.5	0.0	NS	NS	0.5	04/06
04/08	0.0	0.7	0.0	NS	NS	0.7	04/08
04/09	NS	2.0	0.0	NS	NS	2.0	04/09
04/13	NS	1.4	0.0	0.0	NS	1.4	04/13
04/14	NS	1.0	0.0	0.0	0.0	1.0	04/14
04/16	NS	1.3	0.0	0.0	0.0	1.3	04/16
04/17	0.0	0.0	0.0	0.0	0.0	0.0	04/17
04/18	NS	2.5	0.0	0.0	0.0	2.5	04/18
04/19	NS	3.4	0.0	0.0	2.0	5.4	04/19
04/20	0.0	6.3	1.7	1.0	7.7	16.7	04/20
04/21	NS	4.9	2.3	4.0	10.8	22.0	04/21
04/22	0.2	18.0	0.0	3.9	12.7	34.8	04/22
04/23	NS	30.8	5.7	10.4	17.5	64.4	04/23
04/24	NS	22.6	14.7	NS	4.1	41.4	04/24
04/28	NS	NS	0.6	NS	19.7	20.3	04/28
04/29	NS	0.0	1.3	0.0	4.4	5.7	04/29
04/30	NS	1.2	1.8	0.0	0.0	3.0	04/30
05/01	NS	1.2	3.0	0.0	0.0	4.2	05/01
Mile Days	**4.7**	**98.9**	**31.1**	**19.3**	**78.9**	**232.9**	**Total**
Shoreline Miles	3.8	56.8	15.4	18.3	72.0	166.3	Total

a Dates displayed are for actual survey days.
NS = Not Surveyed

Appendix Q.3. Herring biomass estimates from aerial surveys by sub-area and date for Prince William Sound, 1988.

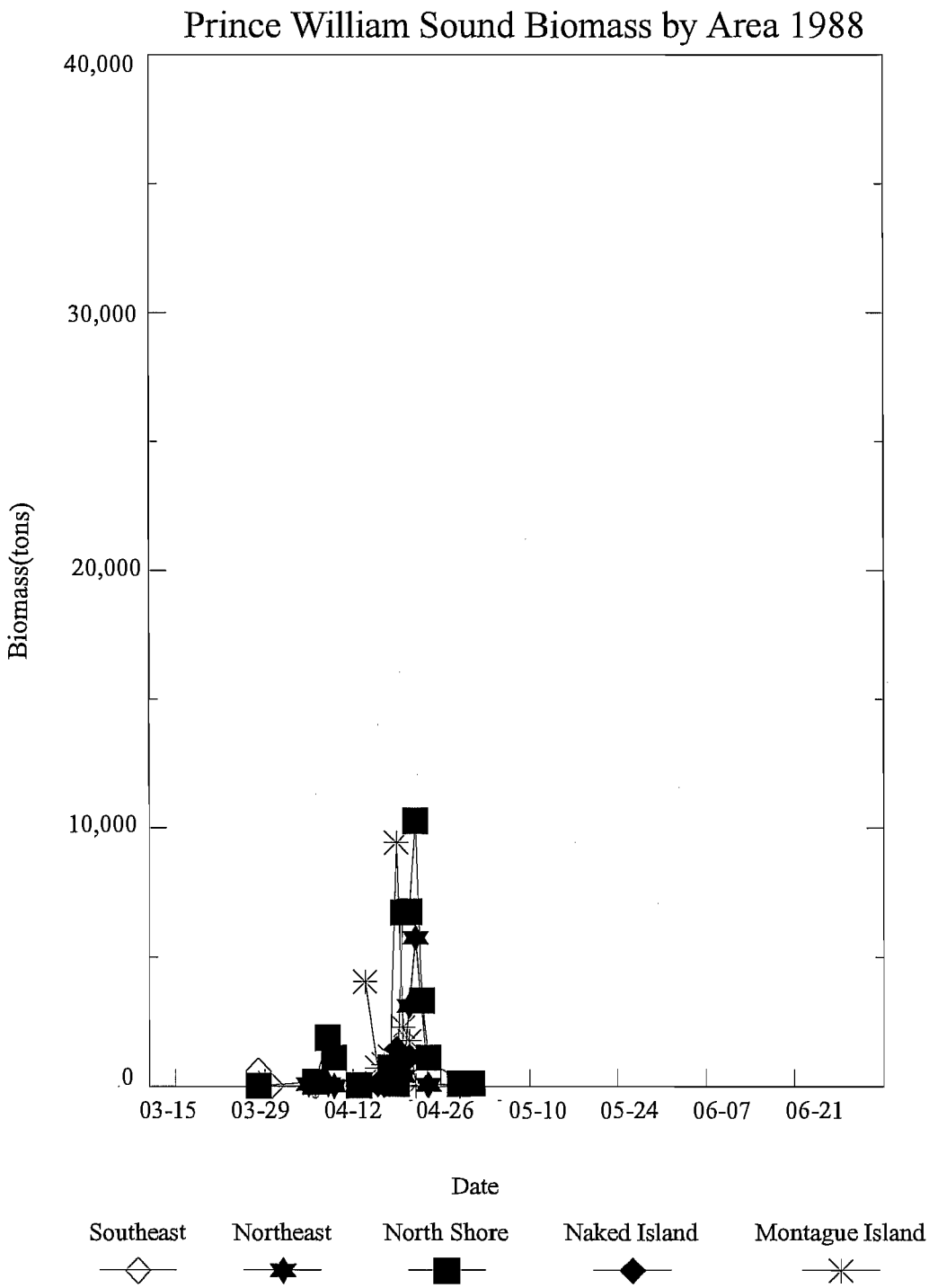
DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
3/25		0	0	0	0	0	0	0		0	0	3/25
3/28	0	580		0	0	10	0	0		0	590	3/28
3/30		20	0	0	0	0					20	3/30
3/31		110	0	0	0						110	3/31
4/2		0	0	0	0	0	0	0		0	0	4/2
4/5		0	0	0	80	0	0	0		0	80	4/5
4/6		10	80	0	20	0	180				290	4/6
4/8		0	20	0	70	400	1480				1,970	4/8
4/9			0	0	10	140	960				1,110	4/9
4/13			0	0	0	0	40	0			40	4/13
4/14			0	80	0	0	0	0		4040	4,120	4/14
4/16				0	0	0	0	80		705	785	4/16
4/17		0	0	70	0	0	0	60		850	980	4/17
4/18				0	0		720	200		1130	2,050	4/18
4/19			0	80	40		100	1450		9440	11,110	4/19
4/20		0	0	90	300	0	6720	930		2290	10,330	4/20
4/21			0		2660		6760	1140		1770	12,330	4/21
4/22		0	0	0	5750	540	9740	0	0	40	16,070	4/22
4/23				0	0		3310	0	0	0	3,310	4/23
4/24			60	0	0	0	1100			0	1,160	4/24
4/28						0	0			0	0	4/28
4/29				30	0	0	110	0		100	240	4/29
4/30				0	0	0	0	0	0	0	0	4/30
5/1					0		130	0	0	0	130	5/1
Area Total	0	720	160	810	8,930	1,090	31,350	3,860	0	20,365	66,825	Total
Peak Estimate	0	580	140	490	5,830	950	11,350	1,450	0	13,480	34,270	Peak

Note: Data displayed only for dates that surveys were flown.

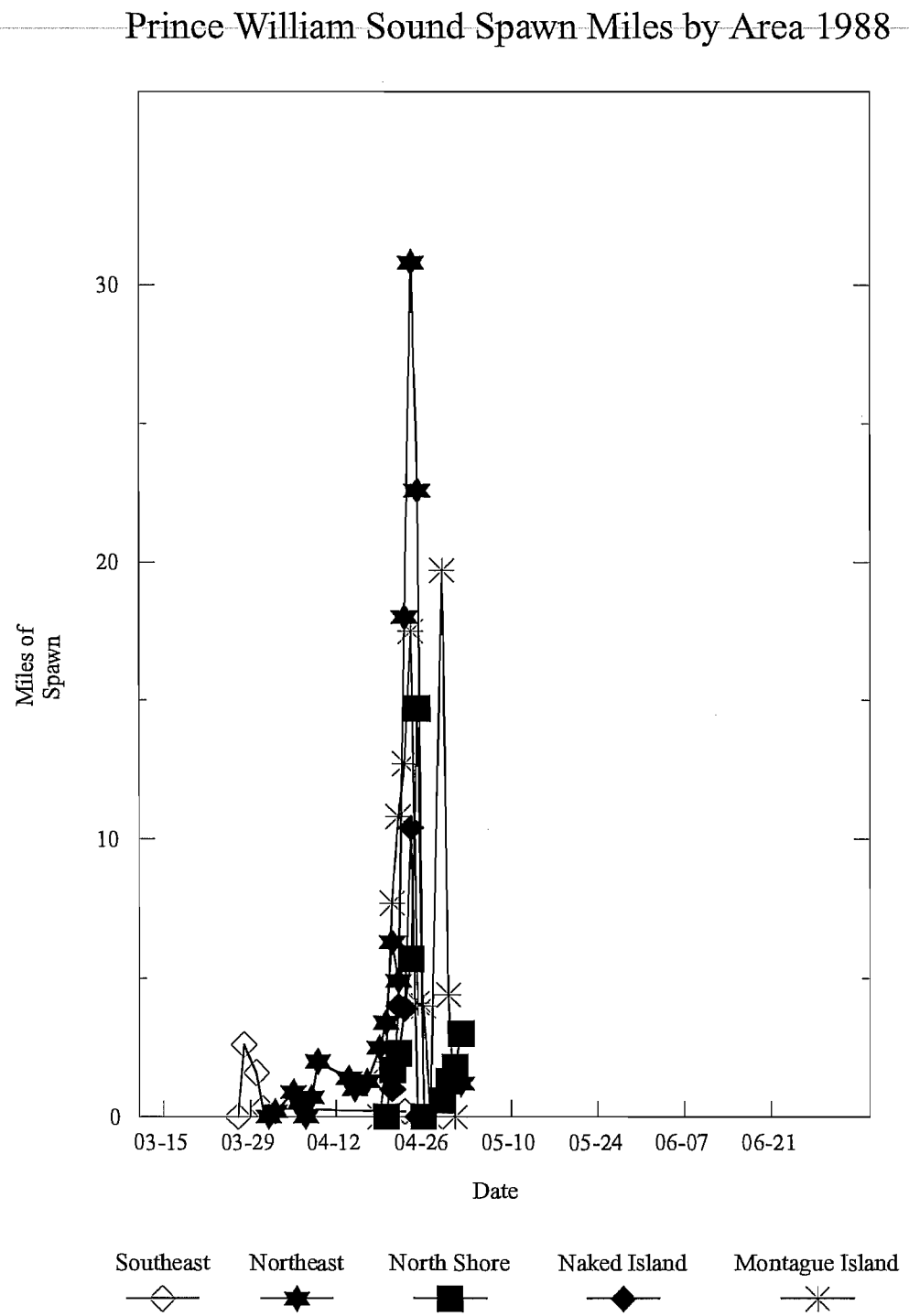
Appendix Q.4. Estimated miles of herring spawn by sub-area and date from aerial surveys for Prince William Sound, 1988.

DATE	SIMPSON SHEEP & ISLANDS	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
3/25		0	0	0	0	0	0	0		0	0	3/25
3/28	0	2.6		0	0	0	0	0		0	2.6	3/28
3/30		1.6	0	0	0	0					1.6	3/30
3/31		0.3	0	0	0						0.3	3/31
4/2		0	0	0.2	0	0	0	0		0	0.2	4/2
4/5		0	0.3	0.6	0	0	0	0		0	0.9	4/5
4/6		0	0	0.5	0	0	0				0.5	4/6
4/8		0	0.5	0.2	0	0	0				0.7	4/8
4/9			2	0	0	0	0				2.0	4/9
4/13			0	1.4	0	0	0	0			1.4	4/13
4/14			0	1	0	0	0	0		0	1.0	4/14
4/16				0.8	0.5	0	0	0		0	1.3	4/16
4/17		0	0	0	0	0	0	0		0	0.0	4/17
4/18				1.5	1		0	0		0	2.5	4/18
4/19			0	2.2	1.2		0	0		2	5.4	4/19
4/20		0	0.2	2.1	4	0	1.7	1		7.7	16.7	4/20
4/21			0	2.4	2.5		2.3	4		10.8	22.0	4/21
4/22		0.2	0	10	8	0	0	3.3	0.6	12.7	34.8	4/22
4/23				15.5	15.3		5.7	10.4	0	17.5	64.4	4/23
4/24			0	6.2	16.4	3	11.7			4.1	41.4	4/24
4/28						0	0.6			19.7	20.3	4/28
4/29							1.3	0		4.4	5.7	4/29
4/30				1.2	0	0	1.8	0	0	0	3.0	4/30
5/1				1.2			3.0	0	0	0	4.2	5/1
Area Total	**0**	**4.7**	**3**	**47**	**48.9**	**3**	**28.1**	**18.7**	**0.6**	**78.9**	**232.9**	**Total**

Note: Data displayed only for dates that surveys were flown.



Appendix Q.5. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1988.



Appendix Q.6. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1988.

Appendix Q.7. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound , 1988.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (Ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1987	1	0			0.0	0.0%	0.0	0.0%
1986	2	0			0.0	0.0%	0.0	0.0%
1985	3	72	69		861.8	1.5%	11,259.5	2.1%
1984	4	2,824	93		45,192.6	76.2%	442,138.8	82.2%
1983	5	180	110		3,395.6	5.7%	28,126.6	5.2%
1982	6	86	140		2,073.3	3.5%	13,410.1	2.5%
1981	7	136	154		3,612.2	6.1%	21,320.9	4.0%
1980	8	92	167		2,660.7	4.5%	14,421.1	2.7%
1979	9	21	183		671.7	1.1%	3,326.3	0.6%
1978	10	6	140		136.2	0.2%	885.5	0.2%
1977	11	8	157		227.9	0.4%	1,313.7	0.2%
1976	12	13	217		477.7	0.8%	1,997.7	0.4%
1975	13+	0			0.0	0.0%	0.0	0.0%
Total		**3,438**	**100**		**59,309.7**	**100.0**	**538,200.2**	**100.0%**

Northeast Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (Ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1987	1	0			0.0	0.0	0.0	0.0
1986	2	0			0.0	0.0	0.0	0.0
1985	3	8	71	176	76.1	1.0	972.5	1.4
1984	4	489	90	189	5,897.4	80.0	59,444.5	84.7
1983	5	28	103	198	386.5	5.2	3,403.8	4.9
1982	6	9	105	186	126.6	1.7	1,094.1	1.6
1981	7	22	155	222	456.9	6.2	2,674.4	3.8
1980	8	16	148	217	317.3	4.3	1,945.0	2.8
1979	9	4	163	222	87.4	1.2	486.3	0.7
1978	10	1	187	185	25.1	0.3	121.6	0.2
1977	11	0			0.0	0.0	0.0	0.0
1976	12	0			0.0	0.0	0.0	0.0
1975	13+	0			0.0	0.0	0.0	0.0
Total		**577**	**95**	**191**	**7,373.2**	**100.0**	**70,142.0**	**100.0**

-Continued-

Appendix Q.7. (page 2 of 3)

North Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (Ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1987	1	0			0.0	0.0	0.0	0.0
1986	2	0			0.0	0.0	0.0	0.0
1985	3	22	70	176	41.5	0.8	538.4	1.3
1984	4	1,174	95	193	3,008.9	56.3	28,733.4	67.2
1983	5	123	118	205	391.6	7.3	3,010.4	7.0
1982	6	66	146	221	260.0	4.9	1,615.3	3.8
1981	7	177	158	224	754.5	14.1	4,332.0	10.1
1980	8	132	169	230	601.8	11.3	3,230.7	7.6
1979	9	20	185	239	99.8	1.9	489.5	1.1
1978	10	9	201	245	48.8	0.9	220.3	0.5
1977	11	14	198	242	74.8	1.4	342.6	0.8
1976	12	11	203	244	60.2	1.1	269.2	0.6
1975	13+	0			0.0	0.0	0.0	0.0
Total		**1,748**	**113**	**202**	**5,342.0**	**100.0**	**42,781.9**	**100.0**

Naked Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (Ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1987	1	0			0.0	0.0	0.0	0.0
1986	2	0			0.0	0.0	0.0	0.0
1985	3	10	63	170	148.4	1.1	2,136.9	1.8
1984	4	397	93	192	8,696.8	63.1	84,834.5	72.8
1983	5	38	115	205	1,029.4	7.5	8,120.2	7.0
1982	6	17	143	218	572.6	4.2	3,632.7	3.1
1981	7	39	158	225	1,451.5	10.5	8,333.9	7.2
1980	8	28	173	231	1,141.0	8.3	5,983.3	5.1
1979	9	11	187	236	484.5	3.5	2,350.6	2.0
1978	10	0			0.0	0.0	0.0	0.0
1977	11	2	222	248	104.6	0.8	427.4	0.4
1976	12	3	221	246	156.2	1.1	641.1	0.6
1975	13+	0			0.0	0.0	0.0	0.0
Total		**545**	**107**	**199**	**13,784.9**	**100.0**	**116,460.4**	**100.0**

-Continued-

Appendix Q.7. (page 3 of 3)

Montague Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (Ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1987	1	0			0.0	0.0	0.0	0.0
1986	2	0			0.0	0.0	0.0	0.0
1985	3	14	71	176	595.7	1.8	7,611.7	2.5
1984	4	495	93	193	27,589.5	84.1	269,126.5	87.1
1983	5	25	106	202	1,588.2	4.8	13,592.2	4.4
1982	6	13	143	219	1,114.1	3.4	7,068.0	2.3
1981	7	11	144	221	949.3	2.9	5,980.6	1.9
1980	8	6	167	227	600.5	1.8	3,262.1	1.1
1979	9	0			0.0	0.0	0.0	0.0
1978	10	1	104	205	62.3	0.2	543.7	0.2
1977	11	1	81	188	48.5	0.1	543.7	0.2
1976	12	2	218	245	261.3	0.8	1,087.4	0.4
1975	13+	0			0.0	0.0	0.0	0.0
Total		**568**	**96**	**195**	**32,809.5**	**100.0**	**308815.8**	**100.0**

Appendix Q.8. Age, sex and size composition of Pacific herring from the purse seine test fishery, sac roe fishery and pound fishery, Prince William Sound, 1988.

Sample		MALES						FEMALES						SEXES COMBINED					
				LENGTH		WEIGHT				LENGTH		WEIGHT				LENGTH		WEIGHT	
Date	AGE	NUMBER	PERCENT	MEAN	STD	MEAN	STD	NUMBER	PERCENT	MEAN	STD	MEAN	STD	NUMBER	PERCENT	MEAN	STD	MEAN	STD
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	10	1.7	176	6	65	9	7	1.2	173	8	63	9	17	2.9	175	7	64	9
	4	269	46.6	191	9	86	14	227	39.3	195	8	94	15	496	86.0	193	9	89	15
Montague Island	5	14	2.4	198	8	94	10	14	2.4	198	12	100	24	28	4.9	198	10	97	19
Green Island,	6	3	0.5	207	13	111	18	4	0.7	198	18	98	24	7	1.2	202	17	104	22
Test Fishery	7	4	0.7	218	3	142	14	7	1.2	224	11	163	24	11	1.9	222	10	156	23
14 April, 1988	8	7	1.2	221	12	158	37	9	1.6	228	9	164	24	16	2.8	225	11	161	30
	9	0	0.0	NA	NA	NA	NA	1	0.2	240	0	182	0	1	0.2	240	0	182	0
	10	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	11	1	0.2	247	0	200	0	0	0.0	NA	NA	NA	NA	1	0.2	247	0	200	0
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		308	53.4	192	11	88	21	269	46.6	197	13	98	24	577	100.0	194	12	93	23
UNAGED		13	56.5	189	7	83	10	10	43.5	205	17	115	35	23	100.0	196	15	97	29
	2	1	0.2	140	0	35	0	2	0.3	150	7	43	4	5	0.9	148	9	41	7
	3	113	19.5	164	9	56	9	57	9.8	164	9	55	10	184	31.8	164	9	55	10
	4	243	42.0	178	9	71	10	87	15.0	181	11	76	14	339	58.5	179	9	72	12
Montague Island	5	12	2.1	188	5	83	7	9	1.6	181	18	77	21	22	3.8	183	15	79	17
Port Chalmers and	6	5	0.9	218	8	141	20	1	0.2	217	0	131	0	7	1.2	216	9	134	23
Stockdale Harbor	7	7	1.2	214	16	140	35	5	0.9	216	14	138	30	12	2.1	215	15	139	33
Test Fishery	8	5	0.9	230	5	162	18	3	0.5	235	7	194	13	8	1.4	232	7	174	23
16 April, 1988	9	1	0.2	239	0	193	0	1	0.2	239	0	212	0	2	0.3	239	0	203	10
	10	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	11	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		387	66.8	176	15	71	22	165	28.5	177	18	74	29	579	100.0	176	16	71	24
UNAGED		14	66.7	176	16	72	27	4	19.0	195	20	104	45	21	100.0	178	19	74	34

Indicates dominant age class.

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Appendix Q.8. (page 2 of 6)

Sample Date	AGE	MALES NUMBER	MALES PERCENT	MALES LENGTH MEAN	MALES LENGTH STD	MALES WEIGHT MEAN	MALES WEIGHT STD	FEMALES NUMBER	FEMALES PERCENT	FEMALES LENGTH MEAN	FEMALES LENGTH STD	FEMALES WEIGHT MEAN	FEMALES WEIGHT STD	SEXES COMBINED NUMBER	SEXES COMBINED PERCENT	SEXES COMBINED LENGTH MEAN	SEXES COMBINED LENGTH STD	SEXES COMBINED WEIGHT MEAN	SEXES COMBINED WEIGHT STD
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	8	1.4	175	14	68	23	6	1.1	179	16	76	26	14	2.5	176	15	71	25
	4	212	37.1	192	8	89	13	283	49.8	194	9	95	15	495	87.1	193	9	93	14
Montague Island	5	13	2.3	198	8	98	14	12	2.1	207	11	115	18	25	4.4	202	11	106	18
Hanning Bay,	6	7	1.2	215	5	137	16	6	1.1	225	11	150	29	13	2.3	219	10	143	24
Test Fishery	7	4	0.7	210	11	113	15	7	1.2	227	14	162	34	11	1.9	221	16	144	37
17 April, 1988	8	2	0.4	220	1	148	8	4	0.7	230	5	177	14	6	1.1	227	6	167	19
	9	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	10	0	0.0	NA	NA	NA	NA	1	0.2	205	0	104	0	1	0.2	205	0	104	0
	11	1	0.2	188	0	81	0	0	0.0	NA	NA	NA	NA	1	0.2	188	0	81	0
	12	2	0.4	245	4	218	26	0	0.0	NA	NA	NA	NA	2	0.4	245	4	218	26
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		249	43.8	193	12	92	21	319	56.2	196	12	99	23	568	100.0	195	12	96	22
UNAGED		21	65.6	192	9	88	13	11	34.4	202	17	110	37	32	100.0	195	13	96	26
	2	1	0.2	153	0	40	0	0	0.0	NA	NA	NA	NA	1	0.2	153	0	40	0
	3	51	8.8	165	8	54	6	10	1.7	170	5	55	5	61	10.5	166	8	54	6
	4	220	37.9	182	10	73	14	84	14.5	183	11	79	16	304	52.4	182	10	75	15
Olsen Bay	5	34	5.9	191	12	87	20	25	4.3	192	11	93	19	59	10.2	192	12	90	19
Northeast	6	31	5.3	203	11	109	22	15	2.6	210	12	121	26	46	7.9	205	12	113	24
Test Fishery	7	56	9.7	212	12	129	27	25	4.3	215	9	135	20	81	14.0	213	11	131	25
30 March, 1988	8	16	2.8	223	8	146	20	9	1.6	218	10	140	19	25	4.3	221	9	144	20
	9	3	0.5	223	8	155	21	0	0.0	NA	NA	NA	NA	3	0.5	223	8	155	21
	10	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	11	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		412	71.0	188	19	85	31	168	29.0	193	18	95	31	580	100.0	189	19	88	31
UNAGED		14	70.0	184	12	77	19	6	30.0	194	18	99	30	20	100.0	187	15	84	25

Indicates dominant age class.

-Continued-

Appendix Q.8. (page 3 of 6)

Sample Date	AGE	MALES NUMBER	MALES PERCENT	MALES LENGTH MEAN	MALES LENGTH STD	MALES WEIGHT MEAN	MALES WEIGHT STD	FEMALES NUMBER	FEMALES PERCENT	FEMALES LENGTH MEAN	FEMALES LENGTH STD	FEMALES WEIGHT MEAN	FEMALES WEIGHT STD	SEXES COMBINED NUMBER	SEXES COMBINED PERCENT	SEXES COMBINED LENGTH MEAN	SEXES COMBINED LENGTH STD	SEXES COMBINED WEIGHT MEAN	SEXES COMBINED WEIGHT STD
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	8	1.0	167	12	66	13	11	1.4	166	6	68	7	19	2.5	167	9	67	10
	4	153	19.9	187	9	93	14	173	22.5	191	9	102	17	328	42.7	189	9	98	16
Galena Bay,	5	27	3.5	200	9	118	21	29	3.8	201	9	119	17	56	7.3	201	9	118	19
Northeast	6	26	3.4	210	9	138	18	32	4.2	211	9	144	18	58	7.6	210	9	141	18
Test Fishery	7	77	10.0	215	10	149	22	52	6.8	221	8	167	21	129	16.8	218	9	156	23
08 April, 1988	8	69	9.0	222	8	168	21	58	7.6	225	10	176	26	128	16.7	223	9	171	24
09 April, 1988	9	10	1.3	222	10	167	21	8	1.0	230	10	185	33	18	2.3	226	10	175	28
	10	8	1.0	234	7	195	18	7	0.9	233	8	198	27	15	2.0	233	8	196	22
	11	5	0.7	228	4	181	21	5	0.7	237	8	198	21	10	1.3	233	8	189	22
	12	2	0.3	239	3	224	27	5	0.7	238	7	224	28	7	0.9	238	6	224	25
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		385	50.1	204	18	128	39	380	49.5	205	19	132	41	768	100.0	204	19	130	40
UNAGED		18	42.9	211	18	145	33	24	57.1	215	17	155	40	42	100.0	214	17	151	37
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	5	0.9	178	8	73	7	3	0.5	173	10	66	9	8	1.4	176	8	70	8
	4	234	40.6	188	11	88	18	250	43.3	189	11	94	18	489	84.7	189	10	91	19
Galena Bay and	5	13	2.3	197	16	102	28	15	2.6	198	10	104	16	28	4.9	198	13	103	22
Virgin Bay	6	5	0.9	178	35	101	20	3	0.5	193	27	113	50	9	1.6	187	31	105	29
Pound Fish	7	9	1.6	216	11	136	24	13	2.3	226	11	168	27	22	3.8	222	12	155	30
Northeast	8	11	1.9	213	21	143	45	5	0.9	224	16	158	35	16	2.8	217	20	148	41
16 April, 1988	9	1	0.2	233	NA	192	NA	3	0.5	217	30	152	63	4	0.7	221	26	162	55
	10	0	0.0	NA	NA	NA	NA	1	0.2	185	NA	87	NA	1	0.2	185	NA	87	NA
	11	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		278	48.2	191	14	93	25	293	50.8	192	14	99	27	577	100.0	191	14	96	26
UNAGED		13	56.5	198	18	102	30	10	43.5	196	8	101	19	23	100.0	197	15	102	25

Indicates dominant age class.

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Appendix Q.8. (page 4 of 6)

Sample Date	AGE	MALES NUMBER	MALES PERCENT	MALES LENGTH MEAN	MALES LENGTH STD	MALES WEIGHT MEAN	MALES WEIGHT STD	FEMALES NUMBER	FEMALES PERCENT	FEMALES LENGTH MEAN	FEMALES LENGTH STD	FEMALES WEIGHT MEAN	FEMALES WEIGHT STD	SEXES COMBINED NUMBER	SEXES COMBINED PERCENT	SEXES COMBINED LENGTH MEAN	SEXES COMBINED LENGTH STD	SEXES COMBINED WEIGHT MEAN	SEXES COMBINED WEIGHT STD
	2	1	0.2	164	0	50	0	0	0.0	NA	NA	NA	NA	1	0.2	164	0	50	0
	3	3	0.6	168	3	57	3	2	0.4	179	17	67	19	5	1.1	172	12	61	13
	4	202	42.6	192	9	81	12	122	25.7	195	8	89	14	327	69.0	193	9	84	13
Valdez Arm	5	22	4.6	199	11	91	16	18	3.8	200	8	96	12	40	8.4	199	10	93	14
Northeast	6	10	2.1	213	8	115	15	2	0.4	218	3	118	8	12	2.5	214	7	116	14
Test Fishery	7	21	4.4	224	12	135	21	12	2.5	229	9	158	20	33	7.0	226	11	144	23
24 April, 1988	8	26	5.5	225	13	135	24	12	2.5	227	8	144	23	39	8.2	226	11	137	24
	9	2	0.4	239	6	180	20	3	0.6	223	12	154	22	5	1.1	229	13	164	25
	10	4	0.8	239	6	163	15	3	0.6	236	13	176	37	7	1.5	238	10	169	28
	11	2	0.4	237	7	154	10	1	0.2	250	0	183	0	3	0.6	241	8	163	16
	12	2	0.4	238	3	167	8	0	0.0	NA	NA	NA	NA	2	0.4	238	3	167	8
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		295	62.2	200	17	94	29	175	36.9	201	16	101	30	474	100.0	200	17	96	29
UNAGED		4	66.7	206	22	111	42	2	33.3	208	14	107	27	6	100.0	207	20	110	38
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	4	0.7	171	5	65	5	6	1.1	170	9	63	7	10	1.8	170	7	63	6
	4	201	36.9	191	8	91	12	196	36.0	192	8	95	16	397	72.8	192	8	93	14
Mcpherson Passage	5	16	2.9	208	13	110	23	22	4.0	207	9	119	17	38	7.0	205	11	115	20
Naked Island	6	9	1.7	216	10	136	23	8	1.5	219	9	150	19	17	3.1	218	10	143	23
Test Fishery	7	18	3.3	222	9	152	23	21	3.9	227	11	164	24	39	7.2	225	10	158	24
19 April, 1988	8	14	2.6	229	8	163	30	14	2.6	233	10	183	17	28	5.1	231	9	173	26
	9	3	0.6	234	9	182	16	8	1.5	236	5	189	19	11	2.0	236	6	187	19
	10	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	11	0	0.0	NA	NA	NA	NA	2	0.4	248	2	222	3	2	0.4	248	2	222	3
	12	3	0.6	246	8	221	20	0	0.0	NA	NA	NA	NA	3	0.6	246	8	221	20
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		268	49.2	197	16	104	31	277	50.8	200	18	111	36	545	100.0	199	17	107	34
UNAGED		5	33.3	199	18	109	36	10	66.7	194	12	92	19	15	100.0	196	14	98	27

Indicates dominant age class.

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Appendix Q.8. (page 5 of 6)

Sample Date	AGE	MALES NUMBER	MALES PERCENT	MALES LENGTH MEAN	MALES LENGTH STD	MALES WEIGHT MEAN	MALES WEIGHT STD	FEMALES NUMBER	FEMALES PERCENT	FEMALES LENGTH MEAN	FEMALES LENGTH STD	FEMALES WEIGHT MEAN	FEMALES WEIGHT STD	SEXES COMBINED NUMBER	SEXES COMBINED PERCENT	SEXES COMBINED LENGTH MEAN	SEXES COMBINED LENGTH STD	SEXES COMBINED WEIGHT MEAN	SEXES COMBINED WEIGHT STD
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	1	0.2	146	0	42	0
	3	14	2.5	170	7	69	11	9	1.6	167	5	65	6	23	4.1	169	6	67	10
	4	241	43.0	182	8	85	12	222	39.6	186	9	93	14	466	83.2	184	9	88	13
Wells Bay	5	7	1.3	196	7	112	12	19	3.4	194	11	107	18	26	4.6	194	10	109	16
North Shore	6	9	1.6	213	12	126	11	5	0.9	193	12	112	29	14	2.5	206	16	121	20
Test Fishery	7	9	1.6	212	8	140	20	8	1.4	212	8	141	24	17	3.0	212	8	140	22
08 April, 1988	8	4	0.7	223	5	151	18	4	0.7	212	9	153	21	8	1.4	217	9	152	20
	9	0	0.0	NA	NA	NA	NA	1	0.2	234	0	175	0	1	0.2	234	0	175	0
	10	0	0.0	NA	NA	NA	NA	1	0.2	223	0	197	0	1	0.2	223	0	197	0
	11	1	0.2	220	0	169	0	1	0.2	249	0	222	0	2	0.4	235	15	196	27
	12	1	0.2	240	0	191	0	0	0.0	NA	NA	NA	NA	1	0.2	240	0	191	0
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		286	51.1	185	13	89	21	270	48.2	187	12	97	22	560	100.0	186	13	93	22
UNAGED		20	50.0	193	19	103	31	20	50.0	185	12	92	19	40	100.0	189	16	98	27
04/18/88	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	2	0.4	174	5	63	5	2	0.4	205	10	104	19	4	0.7	190	17	84	25
	4	148	27.0	195	10	95	17	144	26.3	200	9	105	17	292	53.3	198	9	100	18
Fairmont Bay	5	22	4.0	205	8	111	17	27	4.9	201	36	116	17	49	8.9	203	27	114	17
North Shore	6	9	1.6	222	12	142	30	19	3.5	226	11	155	23	28	5.1	225	11	151	26
Test Fish	7	44	8.0	227	10	160	23	28	5.1	226	11	161	23	72	13.1	227	10	161	23
18 April, 1988	8	41	7.5	228	11	161	25	32	5.8	231	11	172	26	73	13.3	229	11	166	26
	9	7	1.3	234	23	172	49	4	0.7	251	5	200	20	11	2.0	240	20	182	43
	10	4	0.7	247	8	206	10	0	0.0	NA	NA	NA	NA	4	0.7	247	8	206	10
	11	3	0.5	241	2	193	11	4	0.7	248	10	217	15	7	1.3	245	9	207	18
	12	3	0.5	240	15	180	23	5	0.9	244	6	208	9	8	1.5	243	11	198	21
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		283	51.6	209	19	123	40	265	48.4	211	21	129	38	548	100.0	210	20	125	39
UNAGED		6	50.0	198	17	104	32	6	50.0	211	17	131	37	12	100.0	204	18	117	37

Indicates dominant age class.

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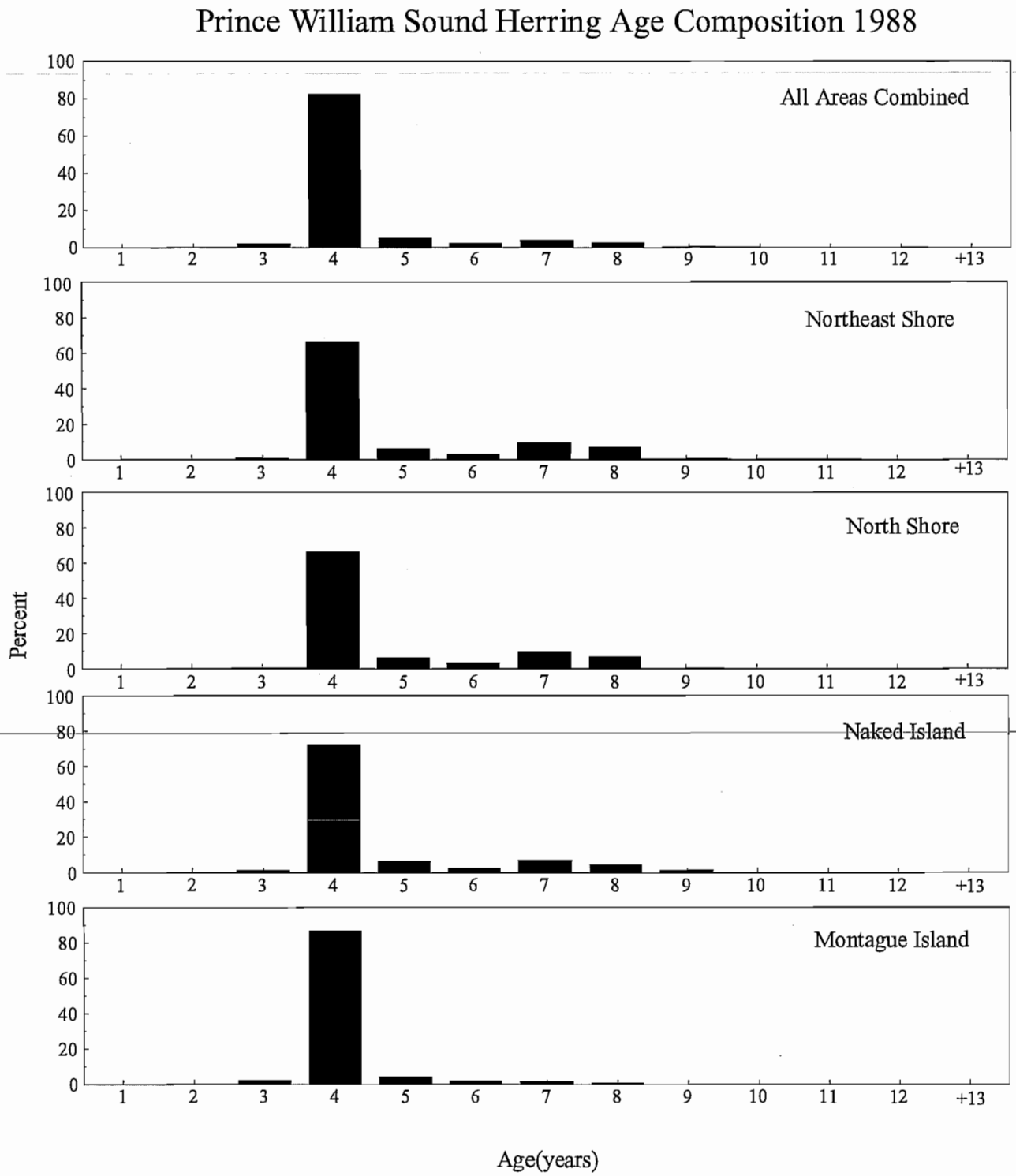
Appendix Q.8. (page 6 of 6)

Sample Date	AGE	MALES NUMBER	MALES PERCENT	MALES LENGTH MEAN	MALES LENGTH STD	MALES WEIGHT MEAN	MALES WEIGHT STD	FEMALES NUMBER	FEMALES PERCENT	FEMALES LENGTH MEAN	FEMALES LENGTH STD	FEMALES WEIGHT MEAN	FEMALES WEIGHT STD	SEXES COMBINED NUMBER	SEXES COMBINED PERCENT	SEXES COMBINED LENGTH MEAN	SEXES COMBINED LENGTH STD	SEXES COMBINED WEIGHT MEAN	SEXES COMBINED WEIGHT STD
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	7	0.8	170	8	64	8	3	0.3	173	4	69	9	10	1.1	171	7	66	8
	4	327	37.2	191	8	93	13	285	32.5	193	8	100	14	612	69.7	192	8	96	14
Granite, Cedar	5	33	3.8	206	11	123	23	34	3.9	205	10	121	18	67	7.6	206	10	122	20
and Unakwik	6	20	2.3	219	9	148	24	15	1.7	223	8	154	24	35	4.0	220	9	150	24
North Shore	7	49	5.6	220	11	154	25	30	3.4	224	8	164	18	79	9.0	222	10	157	23
Sac Roe	8	26	3.0	224	11	159	22	30	3.4	228	8	177	21	56	6.4	226	10	168	23
21 April, 1988	9	5	0.6	232	6	182	13	0	0.0	NA	NA	NA	NA	5	0.6	232	6	182	13
	10	2	0.2	248	6	203	17	0	0.0	NA	NA	NA	NA	2	0.2	248	6	203	17
	11	5	0.6	238	7	191	22	1	0.1	227	NA	160	NA	6	0.7	237	8	186	24
	12	3	0.3	242	10	202	31	3	0.3	243	11	209	34	6	0.7	242	10	205	29
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		477	54.3	199	17	110	33	401	45.7	201	16	115	32	878	100.0	200	16	112	33
UNAGED		12	54.5	207	13	124	33	10	45.5	214	18	143	40	22	100.0	210	16	133	37
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	6	1.0	174	6	65	10	2	0.3	182	3	76	2	8	1.3	176	6	68	10
	4	225	36.6	192	9	90	13	219	35.6	195	9	97	14	444	72.2	193	9	93	14
Granite, Fairmont,	5	15	2.4	208	7	115	14	15	2.4	212	9	129	20	30	4.9	210	9	122	19
Unakwik and Cedar	6	6	1.0	220	10	142	20	11	1.8	221	6	145	20	17	2.8	220	8	144	20
North Shore	7	32	5.2	223	8	154	16	32	5.2	226	9	161	21	64	10.4	225	8	158	19
Sac Roe	8	18	2.9	233	7	171	16	18	2.9	237	8	182	25	36	5.9	235	8	177	21
22 April, 1988	9	4	0.7	238	2	177	11	3	0.5	242	7	206	30	7	1.1	240	5	190	26
	10	3	0.5	241	3	193	11	0	0.0	NA	NA	NA	NA	3	0.5	241	3	193	11
	11	3	0.5	238	6	179	32	1	0.2	247	0	243	0	4	0.7	241	7	195	39
	12	0	0.0	NA	NA	NA	NA	2	0.3	252	9	217	25	2	0.3	252	9	217	25
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		312	50.7	200	18	106	33	303	49.3	203	17	115	35	615	100.0	202	18	110	35
UNAGED		7	46.7	205	15	112	30	8	53.3	198	20	110	37	15	100.0	201	18	111	34

Indicates dominant age class.



Appendix Q.9. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1988.

Appendix Q.10. Herring fecundity data from the spring purse seine test fishery and pound fishery for Prince William Sound, 1988.

Montague Island

Purse seine sac roe test fish from Green Island, 04/14/88.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE[a]	EGGS/G	FECUNDITY
3	1	216	126	29.68	18	435.29	12,920
3	2	204	102	19.86	4	703.53	13,972
3	3	191	88	16.22	4	592.63	9,617
3	4	205	97	20.55	4	267.44	5,524
3	7	197	96	20.60	4	268.37	5,545
3	14	192	86	13.63	4	350.00	4,771
3	15	191	85	13.82	4	948.00	13,101
3	16	186	84	16.43	4	531.25	8,777
3	17	186	72	15.78	4	787.14	12,425
3	19	199	105	23.58	4	865.35	20,436
3	20	207	106	23.10	4	488.76	11,302
6	6	232	169	43.76	7	426.00	18,664
6	10	195	96	18.56	4	514.94	9,566
6	15	196	84	14.53	4	804.40	11,693
6	16	203	99	17.28	4	694.19	12,008
6	19	195	88	19.92	4	403.80	8,066
6	20	192	87	17.58	4	683.10	12,014
6	29	203	91	13.66	4	398.78	5,453
6	30	206	122	27.20	4	735.44	20,008
7	3	202	106	19.92	4	518.64	10,336
7	20	232	157	36.80	8	545.13	20,066
7	24	189	77	13.66	5	872.29	11,922
7	25	186	80	15.75	4	559.65	8,817
8	1	182	79	14.45	4	650.55	9,400
8	2	164	55	6.86	3	1036.84	7,118
8	3	201	99	18.89	4	497.67	9,426
8	6	186	80	10.92	3	1533.33	16,755
8	7	184	67	12.73	4	820.37	10,448
8	9	177	68	12.62	4	811.11	10,241
8	30	204	100	20.71	4	618.07	12,805
9	1	202	96	16.03	4	1218.99	19,588
9	8	241	201	49.02	8	485.11	23,874
9	13	189	88	17.21	4	372.37	6,410
9	25	216	130	32.13	4	748.72	24,056
10	5	187	78	14.67	4	436.73	6,439
10	18	186	76	13.96	4	291.78	4,085
10	21	234	177	43.24	5	486.75	21,047
10	25	180	70	12.98	3	759.72	9,861
11	8	190	77	12.58	4	875.00	11,083
11	10	223	153	38.58	8	672.94	25,972
11	12	240	182	39.73	9	810.59	32,250
11	28	221	124	24.64	6	784.95	19,341

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Montague Island

Purse seine sac roe test fish from Green Island, 04/14/88.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
12	21	217	159	37.44	7	717.39	26,871
13	1	217	140	31.10	4	736.99	22,937
13	11	213	132	29.12	4	735.14	21,462
14	11	238	194	48.52	7	653.73	31,719
14	22	170	59	6.85	3	801.28	5,489
14	27	229	149	35.76	8	853.85	30,534
15	1	211	138	31.53	18	844.78	26,648
16	22	178	69	12.05	3	787.21	9,486
16	28	236	201	54.54	8	646.58	35,269
17	7	217	165	41.18	7	593.51	24,476
17	10	164	55	8.01	3	987.72	7,918
17	18	175	74	14.03	4	1096.83	15,400
17	23	228	183	47.94	7	766.67	36,759
18	15	174	72	11.43	4	813.51	9,298
18	22	170	68	11.15	4	858.93	9,577
18	24	178	75	11.22	4	729.41	8,190
19	16	178	74	12.70	5	826.14	10,497
19	20	173	67	11.52	4	832.47	9,601
19	23	234	160	33.88	7	758.75	25,716
20	2	224	178	42.08	8	688.46	28,975
20	11	230	166	36.45	4	676.39	24,654
20	22	174	74	14.80	4	751.69	11,130
20	29	166	55	3.83	3	1721.82	6,595

Northeast Shore

Purse seine pound fish from Galena Bay, 04/16/88.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	2	179	80	16.43	4	819.59	13,469
1	3	200	105	20.78	4	621.54	12,916
1	6	201	115	23.07	4	732.58	16,902
1	7	203	110	22.91	4	508.64	11,653
1	10	192	93	16.76	4	673.74	11,294
1	18	192	88	13.49	4	632.26	8,529
1	20	195	97	16.42	4	601.59	9,879
1	24	177	70	11.44	3	787.32	9,009
1	25	197	100	17.86	4	804.21	14,365
1	26	189	71	9.29	4	787.14	7,313
1	27	198	96	17.37	4	749.21	13,016
1	28	194	102	18.22	4	400.00	7,288
2	1	197	101	21.78	4	649.38	14,144
2	2	193	106	21.45	4	639.62	13,725
2	3	201	104	16.42	4	760.71	12,494
2	5	184	80	15.22	4	828.57	12,612

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Northeast Shore

Purse seine pound fish from Galena Bay, 04/16/88.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
2	10	191	109	22.31	4	726.88	16,217
2	11	180	79	14.89	4	787.23	11,723
2	15	175	71	12.58	4	950.70	11,961
2	21	189	95	19.55	4	810.77	15,857
2	23	190	87	18.05	4	582.14	10,509
2	25	188	87	14.48	4	714.81	10,353
2	28	226	181	42.04	7	444.29	18,678
2	30	234	207	50.88	9	529.09	26,920
3	7	205	116	23.38	4	790.16	18,478
3	8	213	115	18.72	5	681.54	12,758
3	13	210	124	27.94	4	783.84	21,900
3	15	205	122	32.51	4	723.21	23,512
3	16	202	104	16.96	4	583.33	9,900
3	22	188	86	16.42	4	671.43	11,025
3	24	188	92	17.00	4	1029.41	17,500
3	28	185	99	22.45	4	754.67	16,942
4	4	179	76	7.74	4	640.00	4,954
4	6	169	71	10.81	4	875.00	9,459
4	11	204	120	24.51	4	686.42	16,855
4	19	179	73	12.08	4	922.97	11,155
4	21	205	119	23.29	18	691.57	16,139
4	25	180	77	10.46	4	831.71	8,711
5	6	177	100	20.38	4	706.76	14,404
5	15	232	184	51.70	8	713.04	36,864
5	18	232	193	50.58	7	708.25	35,860
5	29	207	136	26.87	4	984.13	26,578
6	12	228	185	48.92	7	750.55	36,743
6	13	237	183	48.67	8	696.23	33,896
6	21	222	155	33.42	8	733.75	24,525
7	1	227	180	40.10	7	429.79	17,245
8	24	232	182	46.64	7	779.03	36,334
9	20	230	187	50.37	7	772.34	38,928
10	9	239	182	41.53	7	818.29	34,054
10	11	226	173	38.77	7	732.84	28,417
10	27	178	80	14.81	4	862.86	12,783

Northeast Shore

Purse seine pound fish from Virgin Bay, 04/16/88.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	2	166	59	10.54	4	ERR	ERR
1	4	183	84	16.20	5	ERR	ERR
1	5	183	84	14.19	9	ERR	ERR

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Northeast Shore

Purse seine pound fish from Virgin Bay, 04/16/88.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	6	182	82	15.61	4	ERR	ERR
1	7	197	104	20.83	4	ERR	ERR
1	9	191	106	27.10	4	ERR	ERR
1	13	192	94	18.68	4	ERR	ERR
1	18	197	85	12.19	4	ERR	ERR
1	19	180	74	13.98	4	ERR	ERR
1	21	171	77	15.71	4	ERR	ERR
1	23	197	99	19.75	18	ERR	ERR
1	24	205	125	27.35	4	ERR	ERR
1	25	189	97	19.69	4	ERR	ERR
1	26	203	124	32.83	4	ERR	ERR
1	27	181	68	12.39	4	ERR	ERR
1	30	176	66	10.94	4	ERR	ERR
2	1	186	81	15.50	18	ERR	ERR
2	2	194	92	14.24	4	ERR	ERR
2	3	195	111	25.04	4	ERR	ERR
2	4	182	76	14.70	4	ERR	ERR
2	5	192	92	14.23	4	ERR	ERR
2	6	241	209	55.04	4	ERR	ERR
2	13	179	73	14.68	4	ERR	ERR
2	19	177	82	14.93	4	ERR	ERR
2	21	198	108	20.59	4	ERR	ERR
2	25	185	88	16.27	4	ERR	ERR
2	30	183	88	17.81	4	ERR	ERR
3	5	162	57	7.92	4	ERR	ERR
3	9	163	55	9.05	4	ERR	ERR
3	15	169	65	10.06	4	ERR	ERR
3	28	162	56	8.85	6	ERR	ERR
4	11	173	70	15.08	4	ERR	ERR
4	24	180	71	13.94	4	ERR	ERR
4	28	210	122	30.18	4	ERR	ERR
5	6	171	61	10.45	4	ERR	ERR
5	15	202	106	22.19	5	ERR	ERR
5	18	174	66	10.92	4	ERR	ERR
5	22	224	161	38.90	7	ERR	ERR
5	30	236	175	41.08	7	ERR	ERR
6	1	180	81	19.06	4	ERR	ERR
6	4	177	75	16.66	4	ERR	ERR
6	10	242	207	54.23	4	ERR	ERR
6	19	206	123	24.74	4	734.29	18,204
7	7	170	61	8.06	4	ERR	ERR
7	17	202	113	25.17	4	ERR	ERR
8	27	205	108	21.39	4	ERR	ERR

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Northeast Shore

Purse seine pound fish from Virgin Bay, 04/16/88.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
10	11	207	105	16.29	4	ERR	ERR
10	13	227	154	36.75	7	ERR	ERR
10	23	201	110	22.43	18	ERR	ERR
10	29	162	61	11.26	4	ERR	ERR

Northeast Shore

Purse seine sac roe test fish from Jonhson Cove, Sawmill Bay and Pt. Freemantle, 04/21/88.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	9	189	82	14.31	4	825.29	11,841
1	14	185	78	7.31	4	734.21	5,379
1	15	199	98	19.10	5	930.61	17,775
1	19	201	100	15.65	4	738.71	11,573
1	24	192	88	15.16	4	668.00	10,139
1	27	233	163	27.59	7	718.75	19,830
1	30	194	94	20.38	4	726.14	14,825
2	2	201	98	17.55	4	728.13	12,795
2	4	207	117	22.47	4	696.05	15,667
2	6	196	95	16.78	4	774.55	12,997
2	10	220	126	25.92	6	951.90	24,722
2	19	239	203	55.28	8	403.33	22,296
2	20	186	84	13.56	5	655.22	8,895
2	21	235	155	27.84	8	601.52	16,746
2	27	210	108	16.56	5	1035.90	17,166
3	1	205	110	21.40	4	893.33	19,128
3	4	186	79	12.00	4	936.71	11,302
3	6	225	151	28.85	8	654.55	18,903
3	11	213	125	23.87	4	670.79	16,026
3	13	204	112	13.02	5	604.44	7,870
3	14	202	109	18.07	4	719.18	13,005
3	22	199	92	3.00	4	503.45	1,510
4	6	207	115	22.60	4	862.20	19,514
4	12	200	99	17.19	4	938.89	16,161
4	19	207	96	18.09	5	637.66	11,535
4	20	204	102	11.71	5	828.38	9,700
4	23	196	103	21.09	4	742.86	15,672
4	29	199	92	17.01	4	923.08	15,717
4	30	201	87	6.98	4	746.67	5,212
5	10	238	180	12.89	9	696.39	8,976
5	17	234	154	31.27	7	790.38	24,728
6	22	175	67	6.71	4	698.75	4,691
6	23	184	79	15.66	4	527.14	8,258

-Continued-

Northeast Shore

Purse seine sac roe test fish from Jonhson Cove, Sawmill Bay and Pt. Freemantle, 04/21/88.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
7	6	190	79	8.60	4	433.90	3,768
7	13	218	129	24.33	4	843.75	20,550
7	14	221	146	30.59	10	696.81	21,362
7	16	215	110	10.07	6	641.76	6,561
7	20	253	228	49.07	10	402.08	19,739
7	23	179	70	12.55	4	686.57	8,673
8	1	188	84	14.83	4	755.32	11,221
8	3	189	78	12.90	4	855.95	11,044
8	9	227	145	24.07	7	761.11	18,359
8	14	243	206	42.38	7	458.67	19,444
8	15	211	122	24.83	4	657.41	16,345
8	29	186	88	18.17	4	709.30	12,917
9	2	184	80	13.31	4	860.49	11,456
9	18	233	165	45.78	7	467.71	21,414
10	8	211	102	13.33	5	797.06	10,627
10	16	230	188	37.41	7	714.13	26,727
10	23	180	76	12.39	4	616.36	7,646
11	10	180	73	6.67	4	643.04	4,301
11	26	221	155	35.85	9	746.15	26,815
12	18	219	123	11.18	8	694.23	7,763
13	6	174	68	10.19	4	804.17	8,234
13	22	233	155	31.14	10	789.04	24,573
14	12	217	125	20.08	8	792.86	15,939
14	21	221	155	39.72	7	680.72	27,051
14	26	238	164	33.92	8	623.23	21,186
15	5	222	146	36.74	7	686.96	25,257
15	27	221	133	31.45	18	730.59	22,981
16	18	250	183	19.7	11	571.59	11,273
17	1	220	137	23.75	7	603.33	14,333
17	2	230	184	42.75	8	738.95	31,602
17	3	238	178	38.24	8	904.55	34,619
17	4	173	69	13.45	4	505.36	6,836
17	6	239	224	61.79	9	650.00	40,170
17	7	214	128	12.95	7	549.09	7,169
17	8	220	165	35.61	7	662.30	23,596
17	9	243	205	45.47	10	600.00	27,337

-Continued-

North Shore

Purse seine test fish from Cedar Bay, Granite Bay and Unakwik Inlet, 04/21/88.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	8	205	115	22.30	5	589.23	13,140
1	9	223	166	40.09	7	743.33	29,800
1	15	214	141	36.82	7	725.00	26,757
1	16	205	115	18.32	4	808.96	14,828
1	19	220	159	40.55	6	765.38	31,047
1	21	174	78	13.07	4	845.45	11,059
1	22	207	125	29.14	5	862.96	25,179
1	25	195	105	20.79	4	719.44	14,998
1	27	223	133	24.15	6	712.50	17,207
2	1	202	125	27.87	4	626.26	17,454
2	4	188	87	15.37	4	788.16	12,114
2	5	204	121	27.30	5	872.00	23,806
2	6	190	96	17.18	4	878.95	15,185
2	12	197	109	16.77	4	747.67	12,539
2	13	175	77	14.74	4	827.06	12,191
2	14	194	101	18.96	4	729.41	13,855
2	17	190	98	16.70	4	714.63	11,934
2	20	197	107	18.47	4	859.09	15,867
2	21	178	77	11.52	4	775.38	8,942
2	23	197	105	23.86	4	703.23	16,788
2	25	195	99	18.93	4	977.78	18,560
2	27	238	216	54.53	8	943.04	51,456
2	29	180	79	15.20	4	788.52	12,087
3	3	185	95	15.62	4	808.93	12,635
3	4	210	137	26.36	5	741.03	19,608
3	5	187	85	12.68	4	822.54	10,430
3	6	195	101	16.97	4	620.25	10,544
3	16	180	92	22.39	4	730.61	16,399
3	22	191	97	17.20	4	777.50	13,381
3	23	206	116	23.20	4	770.13	17,888
3	24	198	102	22.80	4	715.07	16,304
3	27	216	165	45.38	8	490.74	22,270
4	5	224	157	28.81	6	737.93	21,266
4	17	202	114	22.37	5	814.47	18,220
4	22	184	96	18.45	4	905.26	16,702
4	25	230	178	37.77	4	696.67	26,328
4	29	189	87	16.84	4	807.04	13,603
4	30	184	74	9.98	4	669.64	6,693
5	1	231	173	42.24	7	577.01	24,429
5	7	190	94	21.30	4	590.91	12,609
5	12	186	88	17.22	4	786.32	13,545
5	13	185	95	16.90	4	727.54	12,334
5	14	229	191	51.28	18	576.09	29,563
5	15	225	171	41.26	7	644.94	26,619

-Continued-

North Shore

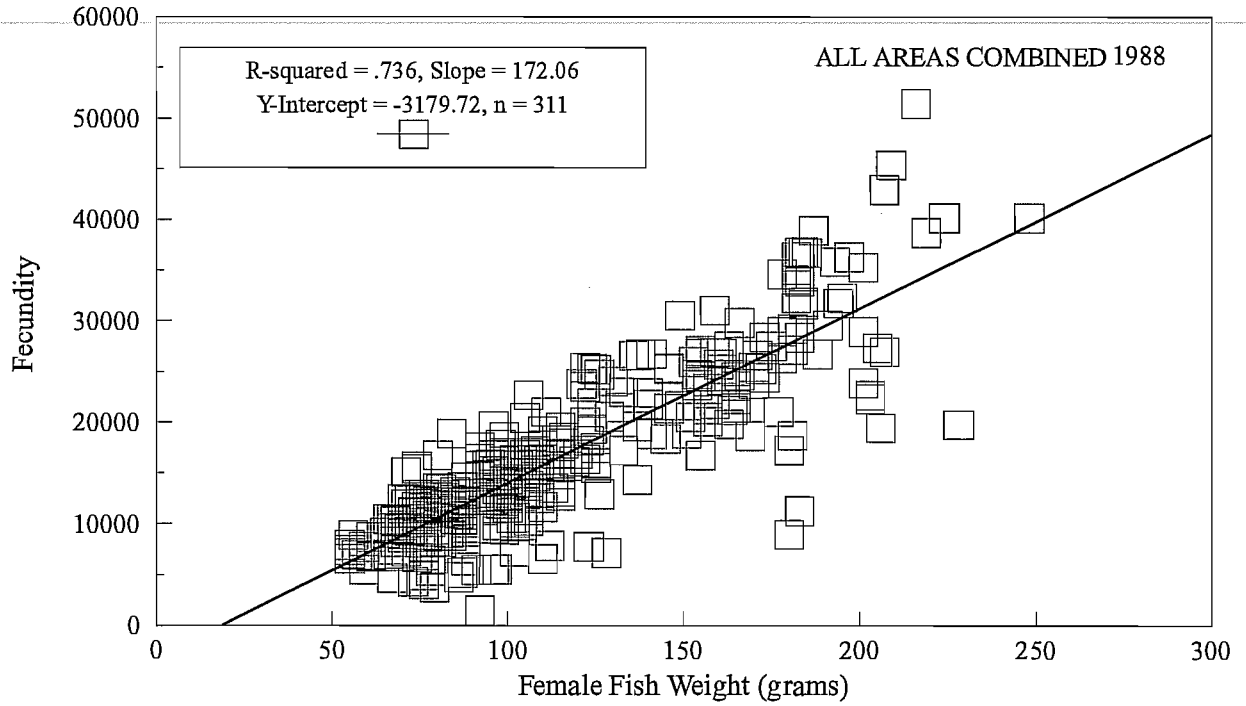
Purse seine test fish from Cedar Bay, Granite Bay and Unakwik Inlet, 04/21/88.

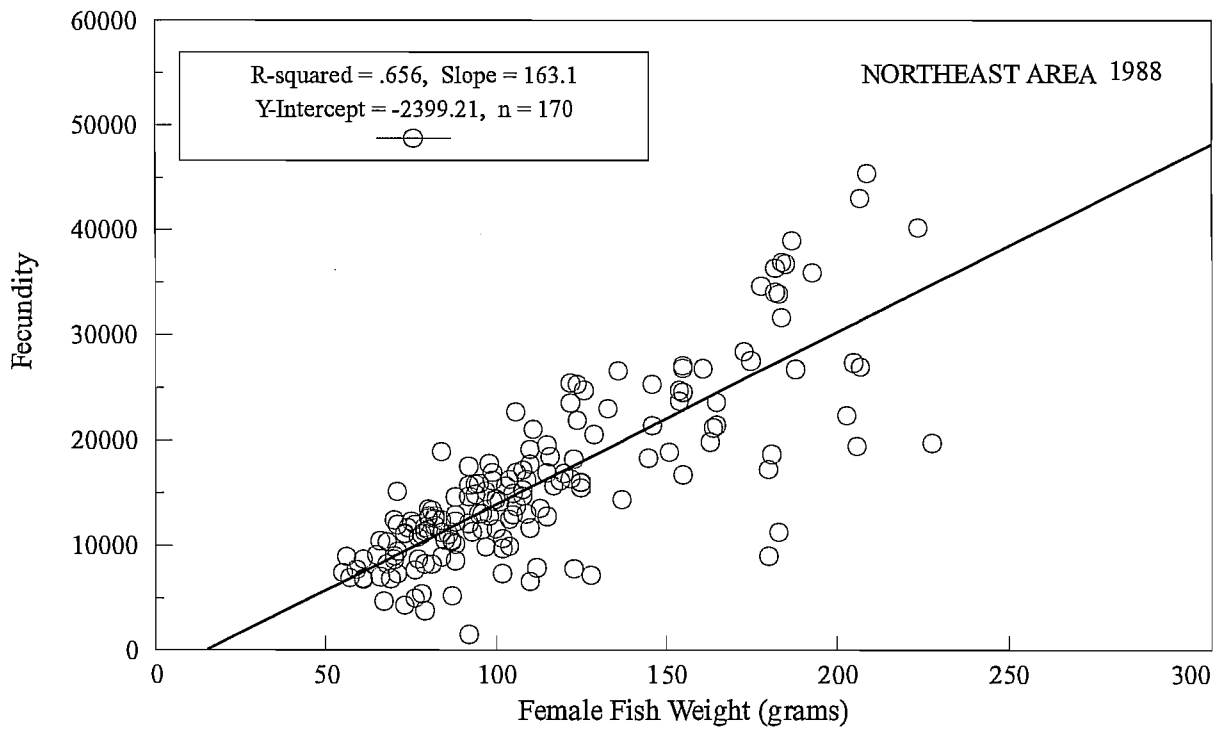
AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
5	18	178	77	11.79	4	756.25	8,926
5	25	203	114	24.17	5	696.43	16,860
6	12	223	152	32.86	7	624.39	20,517
6	21	227	170	40.77	7	623.53	25,452
6	22	214	146	37.86	6	669.33	25,370
6	26	231	170	35.45	8	671.21	23,806
6	30	179	78	11.89	4	860.00	10,225
7	4	229	181	47.72	7	612.50	29,229
7	7	225	161	28.11	8	858.82	24,164
7	13	176	76	11.02	3	1168.75	12,885
7	22	201	112	24.63	4	637.21	15,694
7	25	211	140	27.94	5	779.10	21,787
8	8	176	76	15.64	4	738.33	11,548
9	6	178	83	13.24	4	687.80	9,128
10	1	220	149	32.55	8	664.62	21,633
11	14	168	74	13.86	4	1127.40	15,626
11	23	220	159	35.68	5	610.91	21,797
12	4	220	157	38.92	8	598.77	23,307
14	10	233	163	35.29	8	777.11	27,502
15	12	217	141	30.38	7	619.77	18,838
15	16	169	59	8.29	3	932.86	7,735
17	2	237	203	50.33	8	450.00	22,656
17	17	217	161	38.54	8	655.21	25,259
18	21	234	197	56.12	6	647.19	36,324
19	22	234	172	35.87	6	704.17	25,286
20	12	241	195	48.20	7	668.42	32,241
20	25	241	183	38.92	8	727.45	28,363
23	4	235	201	44.97	8	643.28	28,933
23	8	233	184	45.53	12	700.00	31,871
24	6	237	181	44.68	8	607.53	27,144
25	18	245	219	57.45	8	673.68	38,703
25	25	255	248	56.65	12	708.70	40,169

[a]An (18) in the age column represents a regenerated scale that cannot be aged correctly,

and a (19) in the age column represents an illegible scale that cannot be read.

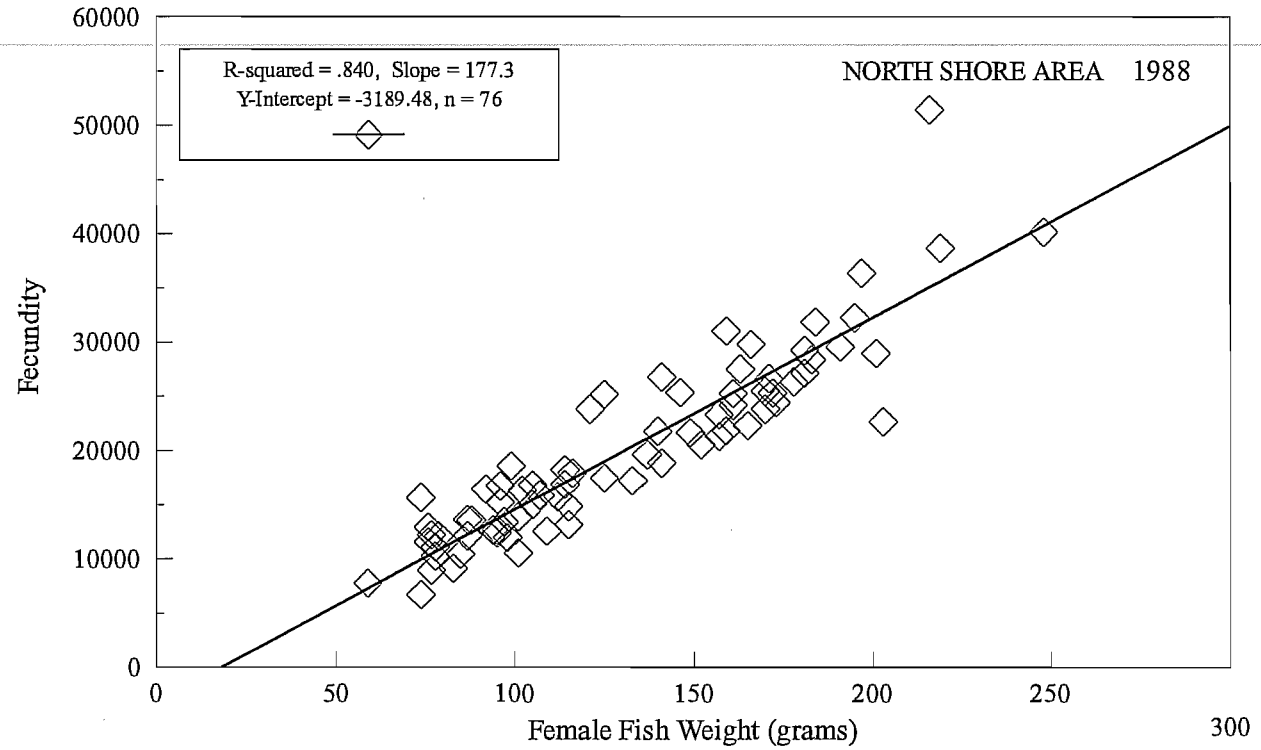
1988 Fecundity Data For Prince William Sound

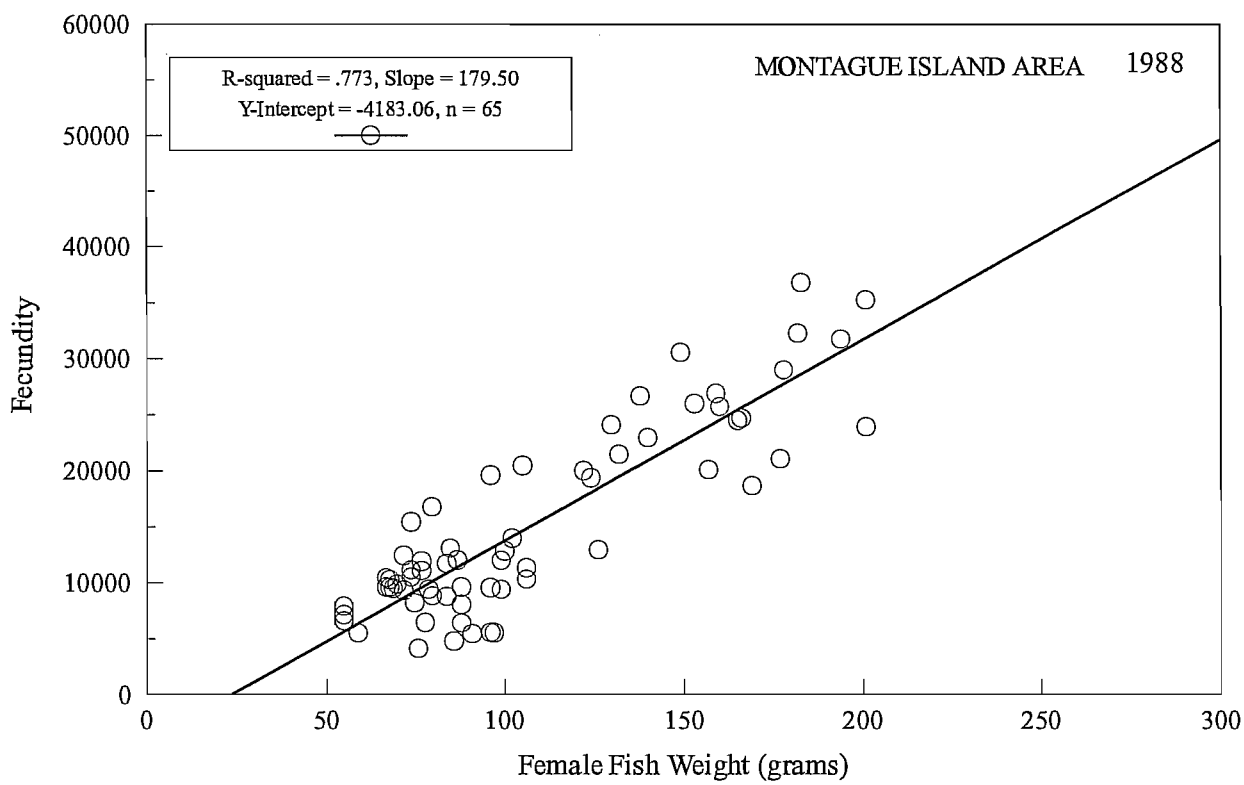




Appendix Q. 11. Herring fecundity data from the spring purse seine test fishery and pound fishery for Prince William Sound, 1988.

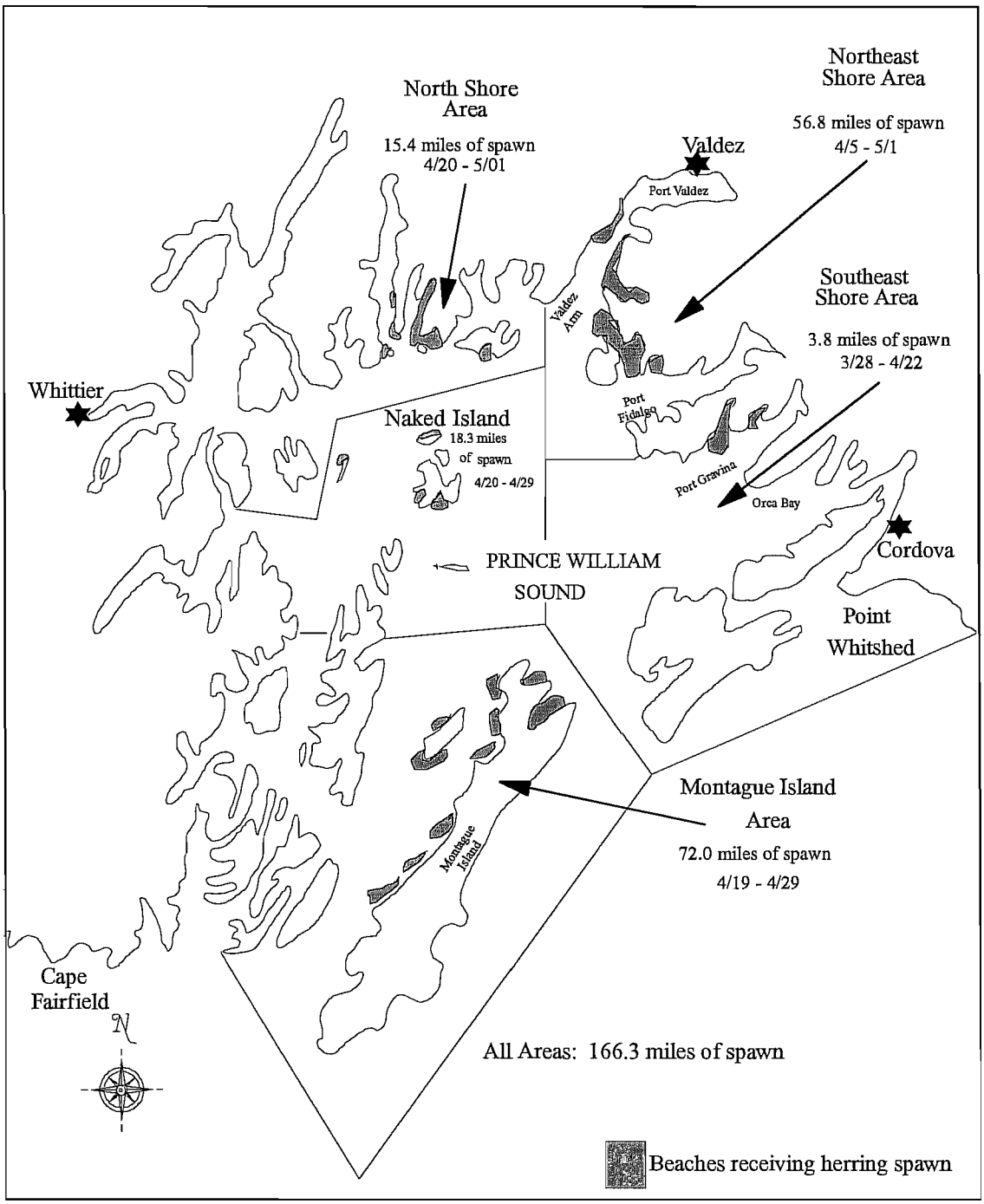
1988 Fecundity Data For Prince William Sound





Appendix Q.11. (page 2 of 2)

Historical Herring Spawn and Shoreline Mileage



Appendix Q.12. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys and skiff surveys and the delineation of the five spawning areas used in the calculation of the spawn deposition biomass estimates 1988.

APPENDIX R: SUMMARY FOR 1989

Appendix R.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1989.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/30	0	150	NS	0	NS	150	03/30
03/31	0	210	0	0	0	210	03/31
04/01	0	480	1,050	NS	0	1,530	04/01
04/02	0	80	1,460	250	0	1,790	04/02
04/03	0	435	1,305	160	NS	1,900	04/03
04/04	0	400	2,060	210	0	2,670	04/04
04/05	80	2,380	4,690	550	0	7,700	04/05
04/06	0	1,600	8,190	1,060	0	10,850	04/06
04/07	10	1,915	13,790	1,510	NS	17,225	04/07
04/08	0	6,100	9,350	2,190	0	17,640	04/08
04/09	0	1,260	9,525	1,625	0	12,410	04/09
04/11	NS	4,570	2,070	3,070	0	9,710	04/11
04/12	0	4,350	3,000	4,785	27,500	39,635	04/12
04/13	NS	900	830	1,050	20,560	23,340	04/13
04/14	0	610	260	710	14,805	16,385	04/14
04/15	20	50	20	720	13,430	14,240	04/15
04/17	20	48	30	150	1,870	2,118	04/17
04/18	70	10	0	380	5,290	5,750	04/18
04/19	NS	NS	5	160	970	1,135	04/19
04/20	NS	0	0	140	0	140	04/20
04/21	NS	NS	NS	130	0	130	04/21
04/22	0	0	0	60	0	60	04/22
04/27	NS	NS	NS	0	0	0	04/27
AREA TOTAL	**200**	**25,548**	**57,635**	**18,910**	**84,425**	**186,718**	**TOTAL**
PEAK ESTIMATES	**170**	**10,460**	**13,790**	**4,995**	**27,500**	**56,915**	**PEAK**

[a]Dates displayed are for actual survey days.
NS = Not Surveyed

Appendix R.2. Herring spawn mile days from aerial surveys and shoreline miles from ground surveys by area and date for Prince William Sound, 1989.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/30	0.0	0.0	NS	0.0	NS	0.0	03/30
03/31	0.0	0.2	0.0	0.0	0.0	0.2	03/31
04/01	0.0	0.0	0.0	NS	0.0	0.0	04/01
04/02	1.0	0.0	0.0	0.0	0.0	1.0	04/02
04/03	0.0	0.2	0.4	0.0	NS	0.6	04/03
04/04	0.0	0.0	0.0	0.0	0.0	0.0	04/04
04/05	0.0	0.0	0.0	0.0	0.0	0.0	04/05
04/06	0.0	0.0	0.0	0.0	0.0	0.0	04/06
04/07	0.0	1.4	1.2	0.0	NS	2.6	04/07
04/08	0.0	1.5	0.0	0.0	0.0	1.5	04/08
04/09	1.0	6.4	3.2	1.3	0.0	11.9	04/09
04/11	NS	7.0	8.0	5.0	0.0	20.0	04/11
04/12	0.0	6.3	10.0	6.0	0.2	22.5	04/12
04/13	NS	19.9	13.0	6.0	2.2	41.1	04/13
04/14	0.0	1.9	7.9	0.9	2.6	13.3	04/14
04/15	NS	4.9	9.8	0.0	2.8	17.5	04/15
04/17	0.0	0.0	0.0	0.4	17.1	17.5	04/17
04/18	0.0	0.0	0.2	1.5	19.0	20.7	04/18
04/19	0.0	NS	0.6	0.0	6.2	6.8	04/19
04/20	NS	0.0	0.5	0.0	7.0	7.5	04/20
04/21	NS	NS	NS	0.0	0.0	0.0	04/21
04/22	0.0	0.0	0.0	0.0	0.0	0.0	04/22
04/27	NS	NS	NS	0.0	0.0	0.0	04/27
Mile Days	**2.0**	**49.7**	**54.8**	**21.1**	**57.1**	**184.7**	**Total**
Shoreline Miles	3.5	21.6	30.7	13.7	28.9	98.4	Total

a Dates displayed are for actual survey days.

NS = Not Surveyed

Appendix R.3. Herring biomass estimates from aerial surveys by sub-area and date for Prince William Sound, 1989.

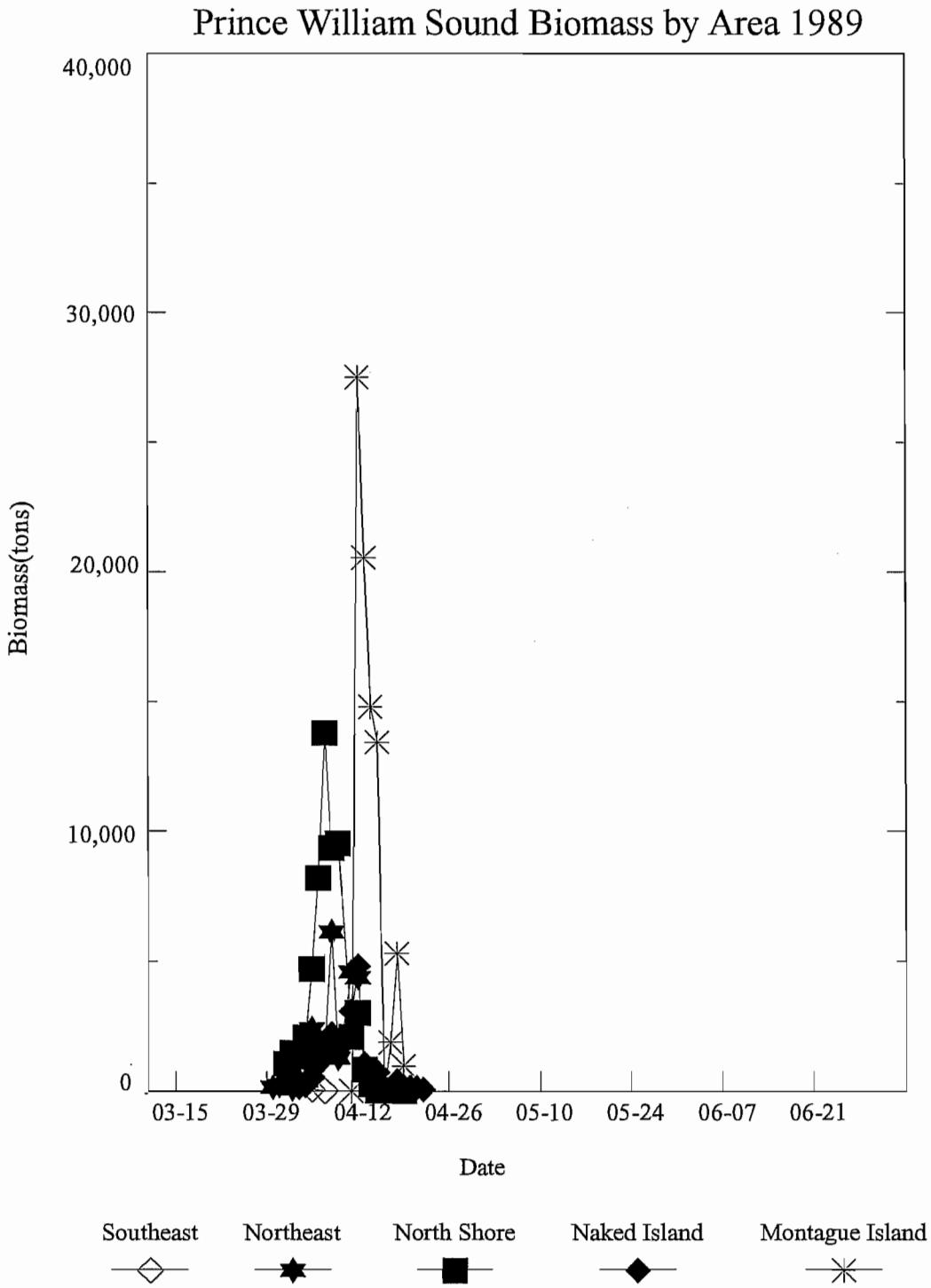
DATE	SIMPSON SHEEP & ISLANDS	HINCHIN-BROOK ISLAND	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	BLIGH ISLAND	VALDEZ ARM & PORT	FREE-MANTLE GRANITE	GRANITE/ ESTHER PASSAGE	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	SURVEY TOTAL	DATE
03/30	0		0	0	150		0			0			150	03/30
03/31	0		0	10	200	0	0	0	0	0	0	0	210	03/31
04/01	0			100	380		0	0	1,050				1,530	04/01
04/02	0		0	0	60		20	0	1,460	250	0	0	1,790	04/02
04/03	0		0	10	370		55	0	1,305	160	0		1,900	04/03
04/04	0		0	400	0		0	0	2,060	130	80	0	2,670	04/04
04/05	10		30	1,800	580		0	30	4,660	550	0	0	7,700	04/05
04/06	0		0	300	990	0	310	320	7,870	1,060	0	0	10,850	04/06
04/07	10	0	0	830	630		455	4,110	9,680	1,510			17,225	04/07
04/08	0		0	90	480	20	5,510	1,910	7,440	2,100	90	0	17,640	04/08
04/09	0	0		195	310		755	1,215	8,310	1,625		0	12,410	04/09
04/11				1,070	340	260	2,900	110	1,960	3,070	0	0	9,710	04/11
04/12	0	0		1,900	410	0	2,040	930	2,070	4,785		27,500	39,635	04/12
04/13				230	100	180	390	540	290	970	80	20,560	23,340	04/13
04/14	0			180	10	125	295	155	105	630	80	14,805	16,385	04/14
04/15			20	40	0	0	10	0	20	510	210	13,430	14,240	04/15
04/17	0	0	20	15	0	0	33	0	30	0	150	1,870	2,118	04/17
04/18		70	0	0	0	0	10	0	0	210	170	5,290	5,750	04/18
04/19	0			0				0	5	0	160	970	1,135	04/19
04/20			0	0	0	0	0	0	0	0	140	0	140	04/20
04/21								0		0	130	0	130	04/21
04/22		0								0	60	0	60	04/22
04/27										0	0	0	0	04/27
Area Totals	**20**	**70**	**110**	**7,170**	**5,010**	**585**	**12,783**	**9,320**	**48,315**	**17,560**	**1,350**	**84,425**	**186,718**	**Total**
Peak Estimates	10	70	90	3,700	990	260	5,510	4,110	9,680	4,785	210	27,500	56,915	Peak

Note: Data displayed only for dates that surveys were flown.

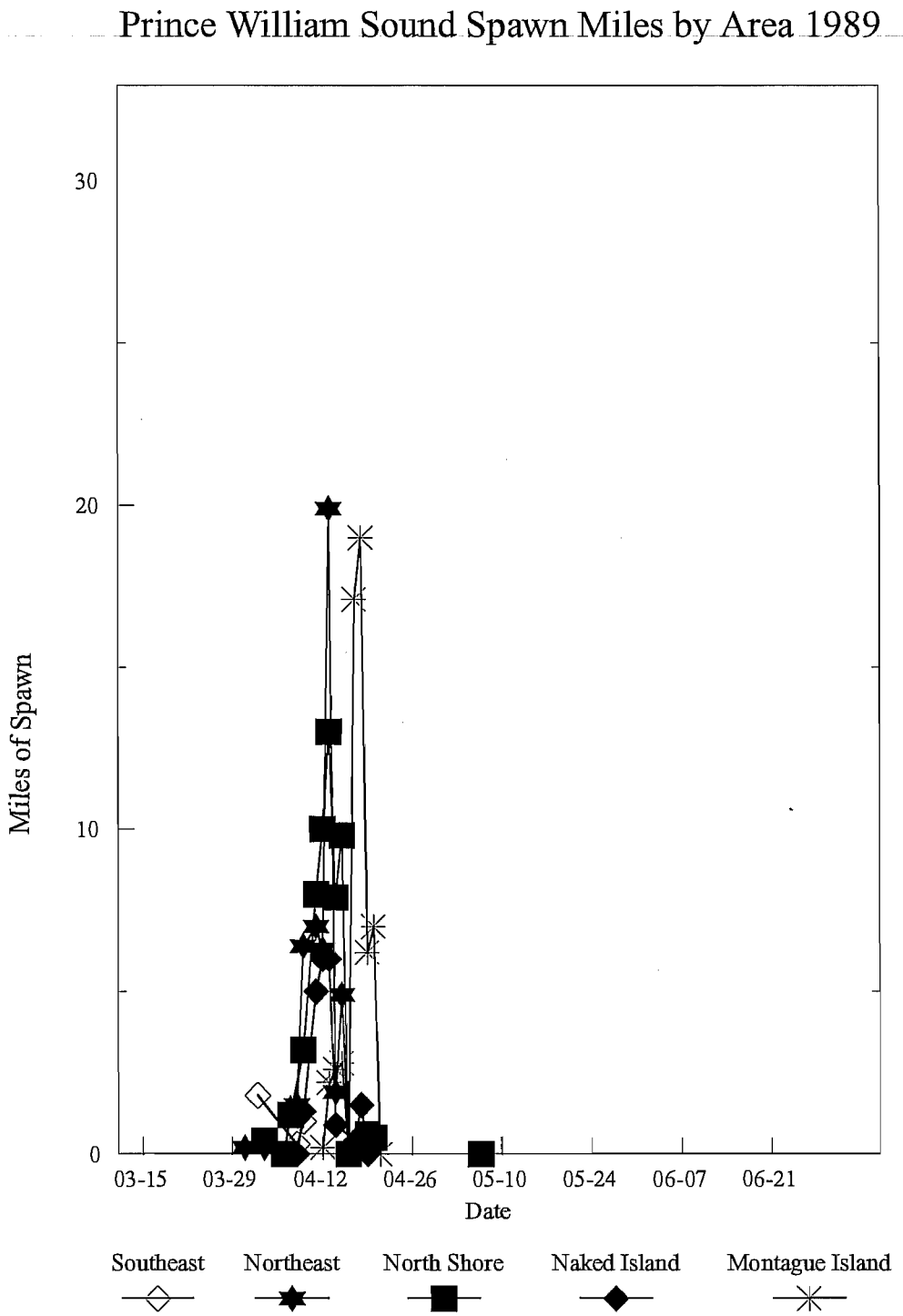
Appendix R.4. Estimated miles of herring spawn by sub-area and date from aerial surveys for Prince William Sound, 1989.

DATE	SIMPSON SHEEP & ISLANDS	HINCHIN-BROOK ISLAND	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	BLIGH ISLAND	VALDEZ ARM & PORT	FREE-MANTLE GRANITE	GRANITE/ ESTHER PASSAGE	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	SURVEY TOTAL	DATE
03/30	0.0		0.0	0.0	0.0		0.0			0.0			0.0	03/30
03/31	0.0		0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	03/31
04/01	0.0			0.0	0.0		0.0	0.0	0.0				0.0	04/01
04/02	0.8		0.3	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	1.0	04/02
04/03	0.0		0.0	0.0	0.2		0.0	0.0	0.4	0.0	0.0		0.6	04/03
04/04	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	04/04
04/05	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	04/05
04/06	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	04/06
04/07	0.0	0.0	0.0	0.0	1.4		0.0	0.0	1.2	0.0			2.6	04/07
04/08	0.0		0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	04/08
04/09	1.0	0.0		0.4	6.0		0.0	0.0	3.2	1.3		0.0	11.9	04/09
04/11				0.0	5.0	2.0	0.0	0.0	8.0	5.0	0.0	0.0	20.0	04/11
04/12	0.0	0.0		0.1	1.0	5.2	0.0	0.0	10.0	6.0		0.2	22.5	04/12
04/13				0.0	15.3	4.3	0.3	0.0	13.0	6.0	0.0	2.2	41.1	04/13
04/14	0.0			0.0	1.3	0.5	0.1	1.3	6.6	0.9	0.0	2.6	13.3	04/14
04/15			0.0	1.1	2.0	1.0	0.8	2.1	7.7	0.0	0.0	2.8	17.5	04/15
04/17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	17.1	17.5	04/17
04/18		0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	1.5	0.0	19.0	20.7	04/18
04/19	0.0							0.4	0.2	0.0	0.0	6.2	6.8	04/19
04/20			0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	7.0	7.5	04/20
04/21								0.0		0.0	0.0	0.0	0.0	04/21
04/22		0.0								0.0	0.0	0.0	0.0	04/22
04/27										0.0	0.0	0.0	0.0	04/27
Area Totals	**1.8**	**0.0**	**0.3**	**1.6**	**33.9**	**13.0**	**1.2**	**4.4**	**50.4**	**21.0**	**0.1**	**57.1**	**184.7**	**Total**

Note: Data displayed only for dates that surveys were flown.



Appendix R.5. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1989.



Appendix R.6. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1989.

Appendix R.7. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound , 1989.

All Areas Combined

Year Class	Age Class	Mean Weight (g)	Biomass by Age Class: Weight (Ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1988	1		0.0	0.0%	0.0	0.0%
1987	2		0.0	0.0%	0.0	0.0%
1986	3	71	168.4	0.3%	2,160.5	0.5%
1985	4	88	3,084.2	5.4%	31,833.1	7.1%
1984	5	112	43,277.2	75.2%	351,952.2	78.4%
1983	6	132	3,163.4	5.5%	21,771.3	4.8%
1982	7	158	2,004.1	3.5%	11,500.5	2.6%
1981	8	171	3,042.6	5.3%	16,188.7	3.6%
1980	9	186	1,959.8	3.4%	9,539.2	2.1%
1979	10	201	460.5	0.8%	2,076.0	0.5%
1978	11	190	234.7	0.4%	1,122.2	0.3%
1977	12	224	184.9	0.3%	749.2	0.2%
1976	13+		0.0	0.0%	0.0	0.0%
Total		**116**	**57,579.7**	**100.0%**	**448,892.9**	**100.0%**

Southeast Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (Ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1988	1	0			0.0	0.0%	0.0	0.0
1987	2	0			0.0	0.0%	0.0	0.0
1986	3	4	72	177	0.2	0.4%	2.4	0.8
1985	4	34	93	192	2.1	4.7%	20.6	6.4
1984	5	348	120	209	27.9	62.2%	210.8	65.9
1983	6	45	130	214	3.9	8.7%	27.3	8.5
1982	7	28	148	222	2.8	6.2%	17.0	5.3
1981	8	45	169	231	5.1	11.3%	27.3	8.5
1980	9	17	171	233	1.9	4.3%	10.3	3.2
1979	10	4	201	246	0.5	1.2%	2.4	0.8
1978	11	1	183	243	0.1	0.3%	0.6	0.2
1977	12	2	192	242	0.3	0.6%	1.2	0.4
1976	13+	0			0.0	0.0%	0.0	0.0
Total		**528**	**122**	**212**	**44.8**	**100.0%**	**319.8**	**100.0**

-Continued-

Appendix R.7. (page 2 of 3)

Northeast shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (Ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1988	1	0			0.0	0.0%	0.0	0.0
1987	2	0			0.0	0.0%	0.0	0.0
1986	3	4	64	176	42.0	0.5%	595.6	0.9
1985	4	37	87	191	528.3	6.7%	5,508.9	8.5
1984	5	346	110	205	6,246.5	79.3%	51,516.0	79.9
1983	6	27	126	215	558.3	7.1%	4,020.0	6.2
1982	7	5	145	222	119.0	1.5%	744.5	1.2
1981	8	9	160	228	236.3	3.0%	1,340.0	2.1
1980	9	3	175	232	86.2	1.1%	446.7	0.7
1979	10	2	192	244	63.0	0.8%	297.8	0.5
1978	11	0			0.0	0.0%	0.0	0.0
1977	12	0			0.0	0.0%	0.0	0.0
1976	13+	0			0.0	0.0%	0.0	0.0
Total		**433**	**111**	**205**	**7,879.7**	**100.0%**	**64,469.4**	**100.0**

North Shore

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (Ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1988	1	0			0.0	0.0%	0.0	0.0
1987	2	0			0.0	0.0%	0.0	0.0
1986	3	2	81	185	20.0	0.1%	224.1	0.2
1985	4	58	95	193	680.7	3.4%	6,499.9	4.7
1984	5	866	119	205	12,730.5	63.6%	97,049.7	69.7
1983	6	86	140	217	1,487.3	7.4%	9,637.7	6.9
1982	7	60	163	227	1,208.1	6.0%	6,724.0	4.8
1981	8	91	175	232	1,967.3	9.8%	10,198.1	7.3
1980	9	61	192	236	1,446.8	7.2%	6,836.1	4.9
1979	10	10	213	248	263.1	1.3%	1,120.7	0.8
1978	11	6	179	239	132.7	0.7%	672.4	0.5
1977	12	3	225	251	83.4	0.4%	336.2	0.2
1976	13+	0			0.0	0.0%	0.0	0.0
Total		**1,243**	**95**	**191**	**20,019.9**	**100.0%**	**139,298.9**	**100.0**

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Appendix R.7. (page 3 of 3)

Naked Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (Ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1988	1	0			0.0	0.0%	0.0	0.0
1987	2	0			0.0	0.0%	0.0	0.0
1986	3	0			0.0	0.0%	0.0	0.0
1985	4	30	92	193	626.4	5.6%	6,177.0	7.2
1984	5	335	113	206	8,591.8	76.8%	68,977.0	80.0
1983	6	18	132	217	539.3	4.8%	3,706.2	4.3
1982	7	13	156	228	460.3	4.1%	2,676.7	3.1
1981	8	13	175	235	516.4	4.6%	2,676.7	3.1
1980	9	5	190	235	215.6	1.9%	1,029.5	1.2
1979	10	2	176	237	79.9	0.7%	411.8	0.5
1978	11	1	229	254	52.0	0.5%	205.9	0.2
1977	12	2	223	257	101.2	0.9%	411.8	0.5
1976	13+	0			0.0	0.0%	0.0	0.0
Total		**419**	**117**	**208**	**11,182.9**	**100.0%**	**86,272.7**	**100.0**

Montague Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (Ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1988	1	0			0.0	0.0%	0.0	0.0
1987	2	0			0.0	0.0%	0.0	0.0
1986	3	11	72	178	106.2	0.6%	1,338.3	0.8
1985	4	112	83	186	1,246.7	6.8%	13,626.7	8.6
1984	5	1,103	106	200	15,680.4	85.0%	134,198.7	84.7
1983	6	36	119	208	574.5	3.1%	4,380.0	2.8
1982	7	11	145	223	213.9	1.2%	1,338.3	0.8
1981	8	16	148	222	317.6	1.7%	1,946.7	1.2
1980	9	10	156	234	209.2	1.1%	1,216.7	0.8
1979	10	2	201	245	53.9	0.3%	243.3	0.2
1978	11	2	186	240	49.9	0.3%	243.3	0.2
1977	12	0			0.0	0.0%	0.0	0.0
1976	13+	0			0.0	0.0%	0.0	0.0
Total		**1,303**	**106**	**200**	**18,452.4**	**100.0%**	**158,532.1**	**100.0**

Appendix R.8. Age, sex and size composition of Pacific Herring from the spring purse seine test fishery, Prince William Sound, 1989.

Sample Date	AGE	MALES NUMBER	MALES PERCENT	MALES LENGTH MEAN	MALES LENGTH STD	MALES WEIGHT MEAN	MALES WEIGHT STD	FEMALES NUMBER	FEMALES PERCENT	FEMALES LENGTH MEAN	FEMALES LENGTH STD	FEMALES WEIGHT MEAN	FEMALES WEIGHT STD	SEXES COMBINED NUMBER	SEXES COMBINED PERCENT	SEXES COMBINED LENGTH MEAN	SEXES COMBINED LENGTH STD	SEXES COMBINED WEIGHT MEAN	SEXES COMBINED WEIGHT STD
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	2	0.4	192	4	84	4	3	0.7	184	10	79	16	5	1.1	187	9	81	12
	4	19	4.1	190	10	83	16	16	3.5	192	12	87	16	35	7.6	191	11	85	16
Rocky Bay,	5	205	44.8	204	9	103	15	179	39.1	205	12	113	18	385	84.1	204	10	109	17
Montague	6	11	2.4	210	10	114	18	12	2.6	221	11	145	24	23	5.0	216	12	130	26
13 April, 1989	7	4	0.9	225	11	140	18	1	0.2	237	NA	145	NA	5	1.1	227	11	141	16
Purse Seine Test Fish	8	3	0.7	219	10	126	8	1	0.2	241	NA	194	NA	4	0.9	224	14	143	35
	9	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	10	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	11	1	0.2	244	NA	186	NA	0	0.0	NA	NA	NA	NA	1	0.2	244	NA	186	NA
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		245	53.5	204	11	105	18	212	46.3	205	13	113	22	458	100.0	204	12	108	21
UNAGED		1	14.3	216	NA	125	NA	6	85.7	202	12	106	24	7	100.0	204	12	109	23
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	4	0.5	171	8	63	10	3	0.3	171	4	70	7	7	0.8	171	6	66	9
	4	57	6.6	184	8	81	10	24	2.8	184	7	85	9	81	9.4	184	8	82	10
Stockdale Harbor,	5	418	48.6	198	10	101	15	300	34.9	199	10	110	17	723	84.1	199	10	105	17
Ziakoff Bay	6	11	1.3	200	11	106	17	7	0.8	209	8	134	26	18	2.1	203	11	117	25
Montague	7	3	0.3	225	16	159	49	3	0.3	213	1	137	5	6	0.7	219	12	148	33
17 April, 1989	8	7	0.8	215	9	141	23	4	0.5	225	11	161	39	12	1.4	220	12	150	29
18 April, 1989	9	6	0.7	229	8	161	15	4	0.5	220	16	150	29	10	1.2	226	12	157	21
Purse Seine Test Fish	10	0	0.0	NA	NA	NA	NA	2	0.2	245	10	201	19	2	0.2	245	10	201	19
	11	1	0.1	235	NA	185	NA	0	0.0	NA	NA	NA	NA	1	0.1	235	NA	185	NA
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		507	59.0	197	12	100	20	347	40.3	199	12	111	22	860	100.0	198	12	104	21
UNAGED		21	52.5	199	13	102	21	19	47.5	200	14	114	23	40	100.0	199	14	108	23

Indicates dominant age class.

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Appendix R.8. (page 2 of 4)

Sample Date	AGE	MALES NUMBER	MALES PERCENT	MALES LENGTH MEAN	MALES LENGTH STD	MALES WEIGHT MEAN	MALES WEIGHT STD	FEMALES NUMBER	FEMALES PERCENT	FEMALES LENGTH MEAN	FEMALES LENGTH STD	FEMALES WEIGHT MEAN	FEMALES WEIGHT STD	SEXES COMBINED NUMBER	SEXES COMBINED PERCENT	SEXES COMBINED LENGTH MEAN	SEXES COMBINED LENGTH STD	SEXES COMBINED WEIGHT MEAN	SEXES COMBINED WEIGHT STD
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	2	0.4	171	1	67	7	2	0.4	182	3	78	13	4	0.8	177	7	72	11
	4	17	3.2	189	16	89	25	17	3.2	195	9	97	13	34	6.4	192	13	93	20
Two Moon	5	144	27.3	206	10	113	16	204	38.6	210	8	125	16	348	65.9	209	9	120	17
Northeast	6	21	4.0	211	17	121	27	23	4.4	216	12	139	24	45	8.5	214	15	130	27
05 April, 1989	7	18	3.4	219	11	140	21	10	1.9	228	10	163	26	28	5.3	222	11	148	25
Purse Seine Test Fish	8	22	4.2	230	9	163	22	22	4.2	231	8	176	20	45	8.5	231	8	169	22
	9	6	1.1	239	9	179	19	11	2.1	230	10	167	18	17	3.2	233	11	171	19
	10	0	0.0	NA	NA	NA	NA	4	0.8	246	8	201	22	4	0.8	246	8	201	22
	11	1	0.2	243	NA	183	NA	0	0.0	NA	NA	NA	NA	1	0.2	243	NA	183	NA
	12	2	0.4	242	18	192	10	0	0.0	NA	NA	NA	NA	2	0.4	242	18	192	10
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		233	44.1	210	16	122	28	293	55.5	213	13	132	27	528	100.0	212	14	127	28
UNAGED		15	53.6	213	23	134	44	13	46.4	207	17	121	28	28	100.0	210	20	128	37
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	3	0.7	175	5	63	3	1	0.2	179	NA	68	NA	4	0.9	176	5	64	4
	4	18	4.2	191	7	86	10	18	4.2	191	6	88	9	37	8.5	191	7	87	9
	5	183	42.3	204	8	106	15	162	37.4	205	8	114	14	346	79.9	205	8	110	15
	6	17	3.9	214	8	120	15	10	2.3	216	7	135	12	27	6.2	215	8	126	16
Galena Bay,	7	2	0.5	216	3	137	8	3	0.7	226	7	151	16	5	1.2	222	8	145	14
Johnson Cove	8	4	0.9	228	7	156	27	5	1.2	228	13	162	32	9	2.1	228	10	160	28
Northeast	9	3	0.7	232	1	175	14	0	0.0	NA	NA	NA	NA	3	0.7	232	1	175	14
12 April, 1989	10	1	0.2	236	NA	165	NA	1	0.2	252	NA	218	NA	2	0.5	244	11	192	37
Purse Seine Test Fish	11	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		231	53.3	204	11	108	20	200	46.2	206	11	115	21	433	100.0	205	11	111	21
UNAGED		15	39.5	207	12	110	21	21	55.3	204	11	112	20	38	100.0	205	11	110	20

Indicates dominant age class.

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Appendix R.8. (page 3 of 4)

Sample Date	AGE	MALES NUMBER	MALES PERCENT	MALES LENGTH MEAN	MALES LENGTH STD	MALES WEIGHT MEAN	MALES WEIGHT STD	FEMALES NUMBER	FEMALES PERCENT	FEMALES LENGTH MEAN	FEMALES LENGTH STD	FEMALES WEIGHT MEAN	FEMALES WEIGHT STD	SEXES COMBINED NUMBER	SEXES COMBINED PERCENT	SEXES COMBINED LENGTH MEAN	SEXES COMBINED LENGTH STD	SEXES COMBINED WEIGHT MEAN	SEXES COMBINED WEIGHT STD
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	4	16	3.8	192	8	89	13	14	3.3	195	12	97	17	30	7.2	193	10	92	15
Outside Bay,	5	172	41.1	205	8	109	15	162	38.7	206	8	117	15	335	80.0	206	8	113	16
Naked Island	6	13	3.1	217	7	130	11	5	1.2	216	16	137	31	18	4.3	217	10	132	18
11 April, 1989	7	6	1.4	226	8	151	14	7	1.7	230	9	159	21	13	3.1	228	9	156	18
Purse Seine Test Fish	8	10	2.4	232	11	168	26	3	0.7	244	7	198	6	13	3.1	235	11	175	26
	9	3	0.7	232	3	187	15	2	0.5	239	21	195	52	5	1.2	235	11	190	29
	10	1	0.2	226	NA	159	NA	1	0.2	248	NA	193	NA	2	0.5	237	16	176	24
	11	1	0.2	254	NA	229	NA	0	0.0	NA	NA	NA	NA	1	0.2	254	NA	229	NA
	12	0	0.0	NA	NA	NA	NA	2	0.5	257	6	223	18	2	0.5	257	6	223	18
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		222	53.0	207	12	114	25	196	46.8	208	13	121	26	419	100.0	208	13	117	26
UNAGED		12	38.7	206	12	108	22	19	61.3	210	12	127	29	31	100.0	209	12	120	27
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	0	0.0	NA	NA	NA	NA	1	0.1	188	NA	86	NA	1	0.1	188	NA	86	NA
	4	16	2.0	192	7	89	12	19	2.3	197	8	100	15	35	4.3	195	8	95	14
Olsen Cove,	5	248	30.4	206	9	116	16	278	34.0	208	10	123	17	528	64.6	207	10	120	17
Unakwik Inlet	6	22	2.7	219	11	140	16	37	4.5	216	10	141	21	59	7.2	217	10	140	19
North Shore	7	29	3.5	227	7	157	19	15	1.8	227	7	165	22	44	5.4	227	7	159	20
04 April, 1989	8	28	3.4	231	9	171	26	48	5.9	234	9	178	22	76	9.3	233	9	176	24
Purse Seine Test Fish	9	30	3.7	236	10	184	26	28	3.4	239	6	194	16	58	7.1	237	8	189	22
	10	4	0.5	245	6	197	16	4	0.5	248	5	215	12	8	1.0	247	5	206	16
	11	4	0.5	240	9	189	42	2	0.2	237	13	179	25	6	0.7	239	10	185	35
	12	0	0.0	NA	NA	NA	NA	2	0.2	248	1	212	6	2	0.2	248	1	212	6
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		381	46.6	213	15	130	32	434	53.1	215	15	137	32	817	100	214	15	134	32
UNAGED		39	43.8	208	15	120	29	50	56.2	209	26	131	35	89	100.0	209	21	126	33

Indicates dominant age class.

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Appendix R.8. (page 4 of 4)

Sample Date	AGE	MALES NUMBER	MALES PERCENT	MALES LENGTH MEAN	MALES LENGTH STD	MALES WEIGHT MEAN	MALES WEIGHT STD	FEMALES NUMBER	FEMALES PERCENT	FEMALES LENGTH MEAN	FEMALES LENGTH STD	FEMALES WEIGHT MEAN	FEMALES WEIGHT STD	SEXES COMBINED NUMBER	SEXES COMBINED PERCENT	SEXES COMBINED LENGTH MEAN	SEXES COMBINED LENGTH STD	SEXES COMBINED WEIGHT MEAN	SEXES COMBINED WEIGHT STD
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	1	0.2	181	NA	76	NA	0	0.0	NA	NA	NA	NA	1	0.2	181	NA	76	NA
	4	14	3.3	190	6	88	9	9	2.1	187	10	88	12	23	5.4	189	8	88	10
Cedar Bay,	5	193	45.3	202	8	108	15	141	33.1	206	8	122	16	338	79.3	203	8	114	17
North Shore	6	14	3.3	215	8	130	24	13	3.1	217	7	145	16	27	6.3	216	8	137	22
13 April, 1989	7	9	2.1	226	9	154	14	7	1.6	227	6	163	9	16	3.8	227	7	158	13
Purse Seine Test Fish	8	8	1.9	226	12	154	21	7	1.6	230	10	167	16	15	3.5	228	11	160	19
	9	1	0.2	228	NA	161	NA	2	0.5	223	21	149	49	3	0.7	225	15	153	36
	10	1	0.2	253	NA	209	NA	1	0.2	247	NA	202	NA	2	0.5	250	4	206	5
	11	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	12	0	0.0	NA	NA	NA	NA	1	0.2	258	NA	252	NA	1	0.2	258	NA	252	NA
	13	0	0	NA	NA	NA	NA	0	0	NA	NA	NA	NA	0	0	NA	NA	NA	NA
TOTAL		241	56.6	204	12	112	22	181	42.5	208	12	127	24	426	100.0	206	12	118	24
UNAGED		14	58.3	206	15	118	29	10	41.7	205	7	118	18	24	100.0	206	12	118	25

Indicates dominant age class.

Appendix R.10. Herring fecundity data from the spring purse seine test fishery and pound fishery for Prince William Sound, 1989.

Montague Island

Purse seine test fish from Rocky Bay, 04/13/89.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE[a]	EGGS/G	FECUNDITY
1	3	203	121	24.51	5	836.44	20,509
1	5	202	108	25.74	5	747.37	19,248
1	7	189	88	13.49	5	822.08	11,105
1	8	206	109	23.70	5	687.31	16,291
1	9	201	110	21.36	5	690.58	14,756
1	11	214	141	21.47	18	585.42	12,587
1	13	208	115	20.98	5	692.98	14,581
1	14	204	99	20.08	5	828.98	16,646
1	17	189	78	13.83	5	650.38	8,996
1	18	214	123	23.05	5	762.58	17,591
1	19	202	105	30.09	5	487.39	14,667
1	24	193	96	20.17	5	768.34	15,536
1	25	217	133	27.40	18	595.31	16,323
1	26	212	118	26.07	5	816.52	21,295
1	29	213	130	28.30	5	728.42	20,643
2	5	237	145	24.62	7	626.55	15431
2	12	194	92	22.13	5	656.25	14,524
2	13	205	120	24.94	5	565.61	14,112
2	14	209	138	31.37	5	813.48	25,524
2	21	192	86	11.28	5	848.42	9,572
2	22	199	109	22.85	5	693.82	15,864
2	23	205	117	27.93	5	665.52	18,588
2	24	216	146	37.88	5	666.25	25,240
2	25	203	98	24.61	5	691.25	17,018
2	26	195	94	15.75	5	754.49	11,899
2	29	191	82	15.95	5	813.10	12,980
2	30	216	132	41.27	5	740.48	30,571
3	1	202	90	12.91	5	1045.17	13,510
3	2	202	114	21.81	5	638.39	13,932
3	4	195	91	16.59	5	513.25	8,518
3	5	200	111	25.50	5	831.55	21,207
3	6	202	101	18.39	5	648.15	11,919
3	8	189	95	19.80	5	794.28	15,730
3	10	198	102	18.05	4	751.70	13,568
3	11	221	141	30.33	5	694.38	21,067
3	14	195	105	20.89	5	656.93	13,724
3	16	214	128	30.51	5	834.23	25,452
3	17	194	87	15.12	5	785.68	11,883
3	20	202	99	19.42	5	698.10	13,562
3	22	196	96	18.51	5	504.37	9,400
3	23	187	89	20.37	5	704.76	14,356
3	25	197	101	17.08	5	848.08	14,513

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Montague Island
Purse seine test fish from Rocky Bay, 04/13/89.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
3	27	197	102	23.69	5	737.88	17,507
4	1	187	95	19.54	5	633.71	12,390
4	2	215	132	25.28	5	962.23	24,325
4	5	191	93	17.37	18	382.84	6,650
4	6	199	105	25.58	5	692.27	17,710
4	7	199	100	21.17	5	590.67	12,555
4	8	195	106	25.66	5	499.58	12,858
4	10	225	162	41.25	5	818.29	33,771
4	13	194	90	14.88	5	565.71	8,418
4	14	206	113	23.62	5	723.52	17,096
4	15	216	117	28.06	5	595.08	16,706
4	16	214	128	26.93	6	722.89	19,477
4	17	219	122	16.33	6	737.26	12,050
4	18	218	129	27.74	5	544.51	15,120
4	19	210	129	31.16	5	627.99	19,570
4	20	220	143	36.27	5	872.07	31,684
4	24	231	154	37.13	5	530.36	19,692
4	25	196	97	16.47	5	522.01	8,600
4	27	216	141	35.55	5	706.59	25,119
4	29	186	84	15.77	5	702.79	11,094
5	2	204	111	20.64	5	505.90	10,442
5	3	181	67	10.73	4	762.75	8,191
5	5	203	105	17.45	5	641.14	11,254
5	6	189	86	15.77	5	634.73	10,010
5	9	218	149	33.84	5	681.31	23,056
5	12	203	101	18.00	5	645.44	11,642
5	14	210	119	21.50	5	883.26	19,019
5	15	225	146	33.26	5	581.57	19,366
5	19	214	135	31.35	5	721.09	22,606
5	20	212	110	27.71	5	527.50	14,617
5	30	189	83	14.04	4	655.44	9,202
6	11	221	139	26.10	6	716.93	18,765
6	19	187	87	13.54	5	910.00	12,353
6	21	225	142	28.17	5	718.67	20,293
7	26	221	163	39.04	6	538.90	21,048
9	18	185	89	16.37	5	558.75	9,168
10	2	188	81	16.43	5	573.94	9,442
10	26	224	145	28.67	6	718.67	20,641
11	2	178	69	12.66	3	812.55	10,288
11	19	228	139	26.62	5	763.86	20,356
12	2	178	73	14.53	4	784.28	11,398
13	1	225	148	32.94	5	720.30	23,732
13	6	241	194	43.98	8	627.05	27,603
14	14	175	72	13.73	4	675.31	9,272

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Montague Island

Purse seine test fish from Rocky Bay, 04/13/89.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
15	4	227	146	34.65	5	754.63	26,176
15	27	183	85	16.63	5	771.57	12,838
16	1	188	79	13.93	4	544.77	7,589
16	2	190	83	15.50	5	799.62	12,436
16	3	183	82	14.11	5	860.77	12,145
16	4	184	68	9.32	4	868.71	8,098
16	5	184	74	11.29	4	1004.90	11,361
16	6	189	87	14.86	5	989.56	14,717
16	7	178	70	11.83	3	969.89	11,475
16	8	180	76	14.79	4	821.54	12,161
16	9	236	179	41.74	6	744.39	31,098
16	10	227	158	34.92	6	672.57	23,488
16	11	223	147	26.86	6	808.44	21,720
16	12	221	143	29.22	5	707.99	20,698
16	13	223	139	31.62	5	982.50	31,073
16	14	232	174	43.82	6	776.42	34,030
16	15	233	164	39.69	6	657.14	26,085

Northeast Shore

Purse seine test fish from Galena Bay, 04/12/89.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	3	252	218	52.80	10	557.47	29,473
1	5	205	106	18.73	5	687.98	12,886
1	6	210	102	20.47	5	797.31	16,334
1	8	212	134	31.00	18	694.53	21,545
1	10	235	178	39.80	8	728.38	29,006
1	11	215	116	23.89	5	723.80	17,291
1	14	199	108	25.68	5	763.57	19,608
1	15	208	129	28.28	5	626.76	17,745
1	16	198	102	28.50	5	719.79	20,514
1	18	215	135	26.24	5	640.65	16,847
1	21	209	125	25.23	5	746.78	18,877
1	23	239	191	45.10	8	686.36	30,995
1	25	209	116	26.80	5	718.46	19,263
1	27	201	90	14.70	5	753.48	11,076
1	28	211	115	22.73	5	722.32	16418
1	29	207	104	22.13	5	921.65	20,416
1	30	209	109	21.72	5	517.44	11,239
2	5	217	144	35.49	5	679.56	24,118
2	6	224	144	31.50	5	692.43	21,836
2	10	212	131	29.57	5	681.55	20,153
2	12	218	127	54.20	5	692.01	15,944

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Northeast Shore

Purse seine test fish from Galena Bay, 04/12/89.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
2	13	219	139	17.67	5	729.66	12,904
2	16	189	90	18.85	5	818.97	15,442
2	18	214	144	32.75	5	972.51	31,860
2	20	211	121	27.12	5	771.07	20,911
2	25	217	129	28.35	5	667.96	18,944
2	27	203	101	18.93	5	750.22	14,202
2	28	214	123	20.45	5	861.42	17,616
2	30	226	138	34.12	6	677.65	23,121
3	3	220	147	31.37	5	720.44	22,600
3	7	191	88	13.08	5	981.98	12,865
3	8	207	122	28.92	5	709.58	20,536
3	9	212	122	28.74	5	572.80	16,452
3	10	212	114	21.78	5	757.14	16,499
3	11	195	92	17.64	5	751.87	13,263
3	12	214	128	25.60	5	710.46	18,193
3	19	202	103	18.87	5	1140.42	21,520
3	21	212	114	20.74	5	802.75	16,649
3	24	213	133	31.60	5	685.10	21,649
3	25	199	99	22.05	4	832.68	18,374
3	29	212	128	30.31	5	728.83	22,091
3	30	203	106	23.49	5	706.21	16,599
4	3	203	103	20.14	4	669.58	13,495
4	4	202	109	21.06	5	611.55	14,579
4	5	204	117	22.88	5	804.98	14,579
4	6	212	122	26.85	5	724.52	19,456
4	9	207	112	25.03	5	711.63	17,824
4	10	209	106	20.42	5	623.91	12,743
4	16	206	113	27.80	5	639.09	17,769
4	18	199	115	24.02	5	615.26	14,778
4	25	198	99	16.84	18	759.55	12,807
4	29	200	92	16.99	5	763.53	12,972
4	30	206	116	24.09	5	779.77	18,794
5	5	205	111	15.62	5	894.28	919
5	8	207	119	23.11	18	761.74	17,606
5	18	197	92	16.26	5	1284.85	20,906
5	25	226	155	30.58	18	742.87	22,729
5	29	200	108	24.29	5	912.97	22,180
6	10	197	124	27.23	5	678.88	18,506
6	12	192	101	21.35	5	750.98	16,045
6	16	194	116	22.78	5	631.18	14,384
6	17	199	112	23.31	5	707.19	16,511
6	20	192	95	17.58	5	604.95	10,648
6	21	191	103	21.11	5	702.29	14,827
6	28	198	98	21.53	5	520.42	11,227

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Northeast Shore
Purse seine test fish from Galena Bay, 04/12/89.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
6	29	197	111	20.56	5	574.96	11,837
7	1	193	95	25.17	5	691.14	17,422
7	2	222	143	37.40	6	730.71	27,335
7	3	222	140	30.74	6	779.13	23,962
7	4	170	62	10.32	4	819.32	8,463
7	5	185	88	20.90	4	602.37	12,590
7	6	183	78	13.68	4	428.15	5,873
7	7	222	146	25.69	6	686.22	17,629
7	8	223	154	36.99	7	770.41	28,503
7	9	224	153	39.86	18	697.05	27,788
7	10	231	176	38.00	7	577.68	21,960
7	11	242	213	54.76	8	711.35	38,960
7	12	223	171	41.59	7	635.67	26,438

Northeast Shore
Purse seine test fish from Johnson Cove, 04/12/89.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	14	182	74	13.45	4	765.22	10,297
2	3	186	92	17.31	5	653.95	11,322
2	9	188	89	15.66	4	675.48	10,578
2	16	185	80	13.11	18	791.57	10,377
4	19	187	85	17.28	4	897.75	15,513
6	9	187	89	14.74	4	629.91	9,285
6	25	187	80	13.01	4	709.06	9,225
7	5	180	77	11.60	4	700.64	8,169
8	1	178	74	14.95	4	736.70	11,014
8	2	181	71	9.79	4	850.65	8,332
8	3	185	80	17.98	4	803.49	14,459

Northeast Shore
Purse seine test fish from Two Moon Bay, 04/05/89.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
7	11	222	144	24.20	5	764.32	18,511
7	18	219	138	29.96	5	747.13	22,386
7	22	196	93	17.64	4	1328.98	23,457
7	26	180	68	10.50	3	875.52	9,207
7	27	213	131	26.62	5	798.04	21,249
10	23	213	112	18.91	5	711.84	13,467
10	30	208	106	17.07	5	805.91	13,766
11	8	198	107	23.28	5	775.06	18,063

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Northeast Shore

Purse seine test fish from Two Moon Bay, 04/05/89.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
11	27	236	176	34.95	9	781.37	27,319
13	7	227	158	36.89	5	619.36	22,848
13	8	215	138	30.67	5	752.27	23,087
13	10	198	110	17.85	5	846.82	15,126
13	17	208	116	25.25	18	824.62	20,830
13	21	212	130	20.34	5	942.50	19,174
16	14	205	109	13.09	5	980.38	12,835
16	22	200	107	21.29	6	780.68	16,643
16	29	194	87	11.30	5	957.73	14,527
16	30	213	123	20.84	5	774.76	16,149
17	6	240	175	33.07	10	870.54	28,801

Naked Island

Purse seine test fish from Naked Island, 04/11/89.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	3	218	133	26.17	18	98.79	117
1	4	209	126	22.61	18	93.90	112
1	7	211	157	30.02	5	100.76	106
1	10	204	112	22.50	5	85.88	91
1	13	195	101	15.92	5	79.23	84
1	14	217	122	21.57	7	91.89	99
1	18	261	235	54.80	12	140.70	153
1	19	191	86	14.33	4	73.83	78
1	20	214	142	35.09	5	99.02	104
1	22	209	120	23.65	5	89.41	94
1	24	181	85	17.62	5	72.16	77
1	27	203	102	17.14	18	85.04	103
2	2	204	128	30.72	5	91.93	102
2	3	206	122	29.27	5	90.57	101
2	6	206	113	22.49	5	86.62	97
2	7	189	89	16.91	6	75.23	87
2	8	185	89	18.19	4	74.05	82
2	9	201	117	26.99	5	87.50	97
2	11	183	70	29.97	4	71.74	80
2	12	198	108	21.89	5	83.22	93
2	13	233	159	35.57	7	108.64	123
2	14	188	86	13.08	5	73.02	83
2	15	186	84	16.08	5	72.77	83
2	21	197	105	26.78	5	83.45	93
3	1	197	103	24.80	5	82.45	97
3	2	195	99	18.79	4	79.20	91
3	5	195	88	18.45	5	76.61	92

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Naked Island

Purse seine test fish from Naked Island, 04/11/89.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
3	7	205	116	29.39	5	88.85	104
3	9	191	90	13.64	5	74.91	90
3	10	208	131	29.86	5	93.47	108
3	11	201	103	22.03	5	82.76	98
3	13	203	109	16.70	5	83.43	98
3	17	211	125	24.50	5	854.64	20,949
3	18	209	126	27.09	5	91.77	107
3	19	198	106	15.33	5	81.08	96
3	20	196	114	25.26	5	85.07	100
3	24	191	97	17.24	4	77.31	89
3	28	202	117	26.22	5	87.56	103
3	29	209	118	25.23	5	89.31	104
4	1	197	107	19.08	4	81.77	98
4	3	200	116	26.78	5	86.95	107
4	4	206	115	21.06	5	86.77	107
4	6	190	96	19.60	5	77.65	98
4	11	194	94	21.65	5	78.66	99
4	12	216	137	30.05	5	97.01	117
4	13	209	109	22.13	5	86.28	106
4	14	217	151	36.63	18	105.66	178
4	16	215	121	24.46	5	91.37	111
4	18	214	146	35.65	5	100.16	120
4	20	216	130	27.31	5	94.58	115
4	21	208	118	19.63	5	87.66	108
4	27	219	134	25.79	5	95.95	116
4	30	216	139	32.10	5	98.03	118
5	10	198	91	16.12	5	77.53	103
5	12	223	164	36.55	7	107.64	143
5	29	253	210	55.91	12	132.73	193
5	30	230	165	38.46	6	109.87	140
6	2	197	92	17.77	5	77.94	108
6	5	195	95	19.59	5	78.65	109
6	6	211	120	28.01	5	667.34	18,692
6	7	196	94	19.04	4	78.26	102
6	8	213	149	31.75	18	102.94	211
6	12	214	132	23.03	5	93.51	124
6	17	199	110	23.89	5	84.47	114
6	18	199	107	20.16	5	82.79	113
6	20	200	104	22.10	5	82.78	113
6	23	216	124	25.48	6	92.87	129
6	25	212	147	36.98	5	100.25	130
7	7	224	146	32.41	5	101.85	137
7	18	254	232	58.04	9	138.26	201
7	27	224	158	36.60	9	106.90	170

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Naked Island

Purse seine test fish from Naked Island, 04/11/89.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
7	28	226	158	37.15	7	107.04	156
7	29	236	201	51.71	8	124.18	180
8	1	213	129	28.23	5	93.81	134
8	11	234	197	48.37	18	124.34	268
8	13	236	161	30.31	7	738.72	22,406
8	29	246	195	42.68	7	122.67	179
9	24	177	84	13.09	4	69.52	106
11	18	225	157	38.01	6	106.50	173
13	1	250	239	55.89	12	139.22	295
13	2	244	200	41.08	8	123.27	227
13	3	232	198	47.52	18	123.88	358
13	4	249	195	40.45	8	123.11	227
13	5	222	151	30.48	6	102.37	180
13	6	232	207	43.51	18	125.13	359
13	7	234	214	49.59	18	128.90	363
13	8	171	91	22.95	3	772.40	17,732
13	9	180	79	14.08	4	69.27	121
13	10	182	81	16.60	4	70.90	123
13	11	172	84	16.44	3	68.86	108
13	12	184	103	22.33	18	81.83	316
13	13	182	84	8.75	4	69.69	122
13	14	181	80	11.45	4	69.11	121
13	15	187	97	22.60	5	77.90	143
13	16	175	75	19.38	4	68.35	120
13	17	175	77	15.65	18	71.41	305
13	18	181	89	19.17	19	77.04	324
13	19	181	91	13.95	4	72.49	124

North Shore

Purse seine test fish from Cedar Bay, 04/13/89.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	1	210	120	22.26	5	707.06	15,814
1	4	209	127	26.19	5	840.60	22,185
1	7	217	126	21.43	18	773.74	16,634
1	9	222	135	28.54	5	952.08	27,188
1	10	196	93	15.89	18	799.63	12,726
1	11	195	97	18.89	18	909.91	17,195
1	12	210	118	19.07	5	599.58	11,453
1	13	206	113	22.53	5	798.86	17,998
1	14	196	108	20.97	5	777.24	16,311
1	15	206	172	47.71	5	824.00	39,313
1	22	215	136	29.09	5	726.41	21,133

-Continued-

North Shore

Purse seine test fish from Cedar Bay, 04/13/89.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
2	1	228	161	33.35	6	673.78	22,511
2	2	216	133	28.21	5	741.13	20,986
2	4	195	93	15.30	4	838.47	12,850
2	7	214	142	30.06	5	732.76	22,027
2	12	210	122	26.12	5	711.93	18,633
2	16	207	116	23.45	5	895.62	21,026
2	17	201	111	2.37	5	598.99	13,429
2	18	198	103	17.84	5	760.17	13,564
2	22	209	126	28.85	5	599.82	17,313
2	28	210	128	29.25	5	582.97	17,056
2	29	238	184	47.02	9	736.53	21,512
3	1	211	146	33.27	5	875.15	29,116
3	2	200	114	23.78	5	1072.15	25,550
3	3	204	124	25.53	5	614.61	15,696
3	8	195	91	11.69	5	1087.17	12,732
3	9	220	140	33.35	6	752.09	25,086
3	23	217	140	35.49	8	604.58	21,463
3	26	210	135	28.01	5	738.75	20,719
3	29	216	124	29.20	6	557.96	16,297
4	1	194	95	17.34	5	515.63	8,941
4	4	208	114	22.45	9	797.22	17,902
4	9	218	134	24.59	6	916.24	22,540
4	13	234	179	42.02	6	390.15	16,430
4	14	201	107	17.34	18	428.96	7,448
4	15	206	109	17.18	5	764.26	13,163
4	16	216	125	23.93	5	594.91	14,247
4	19	218	124	22.70	5	868.59	19,733
4	27	206	111	29.46	5	488.20	14,408
5	1	227	165	41.21	7	809.46	33,384
5	2	194	94	19.35	5	357.67	6,990
5	11	225	155	39.39	5	486.35	19,172
5	12	187	81	15.86	4	828.47	13,149
5	13	235	175	37.23	7	748.76	28,006
5	16	207	119	26.44	5	473.08	12,510
5	22	219	149	36.92	5	769.00	28,450
5	25	216	123	21.52	5	866.77	18,672
5	29	231	173	43.61	5	664.13	28,965
5	30	212	120	22.35	6	762.99	17,088
6	1	211	136	31.75	5	596.66	18,955
6	3	202	118	26.84	5	604.06	16,228
6	7	200	99	20.10	5	770.05	15,493
6	9	210	121	28.12	5	709.28	19,958
6	13	211	145	34.55	5	533.30	18,476
6	15	212	133	26.76	6	661.66	17,709

-Continued-

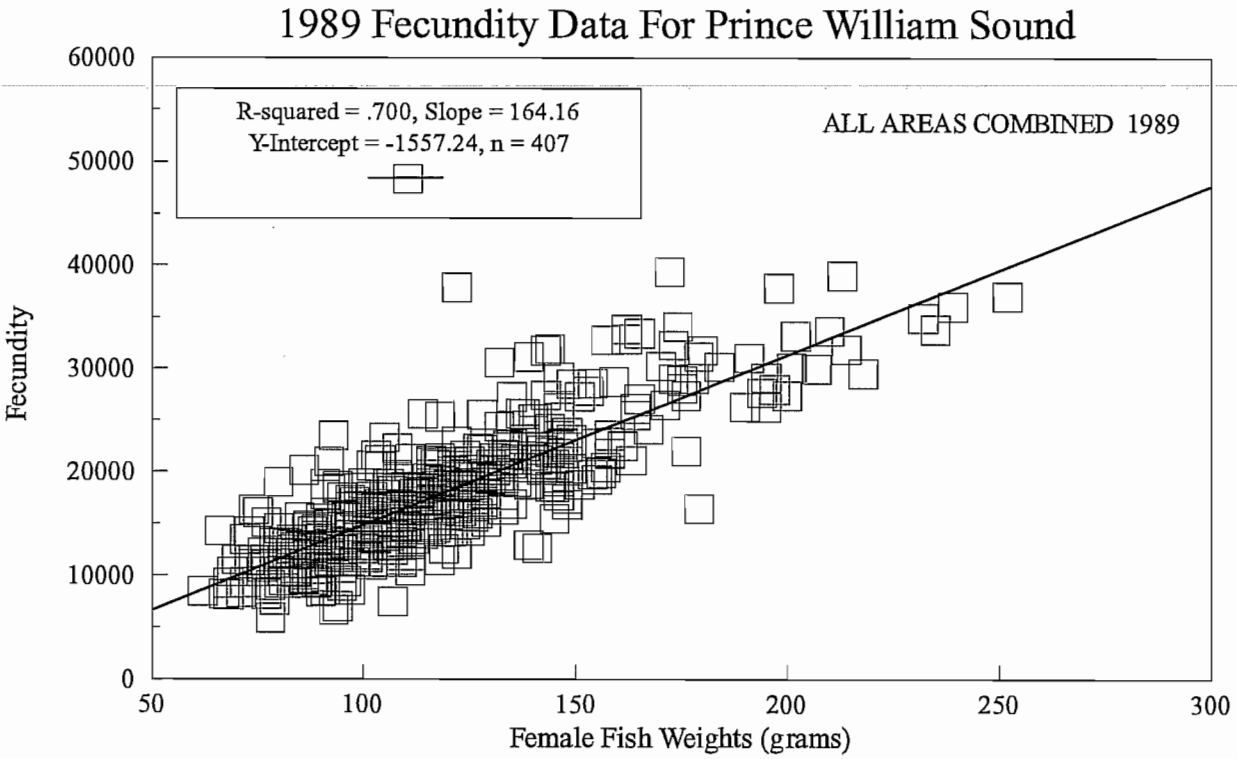
North Shore

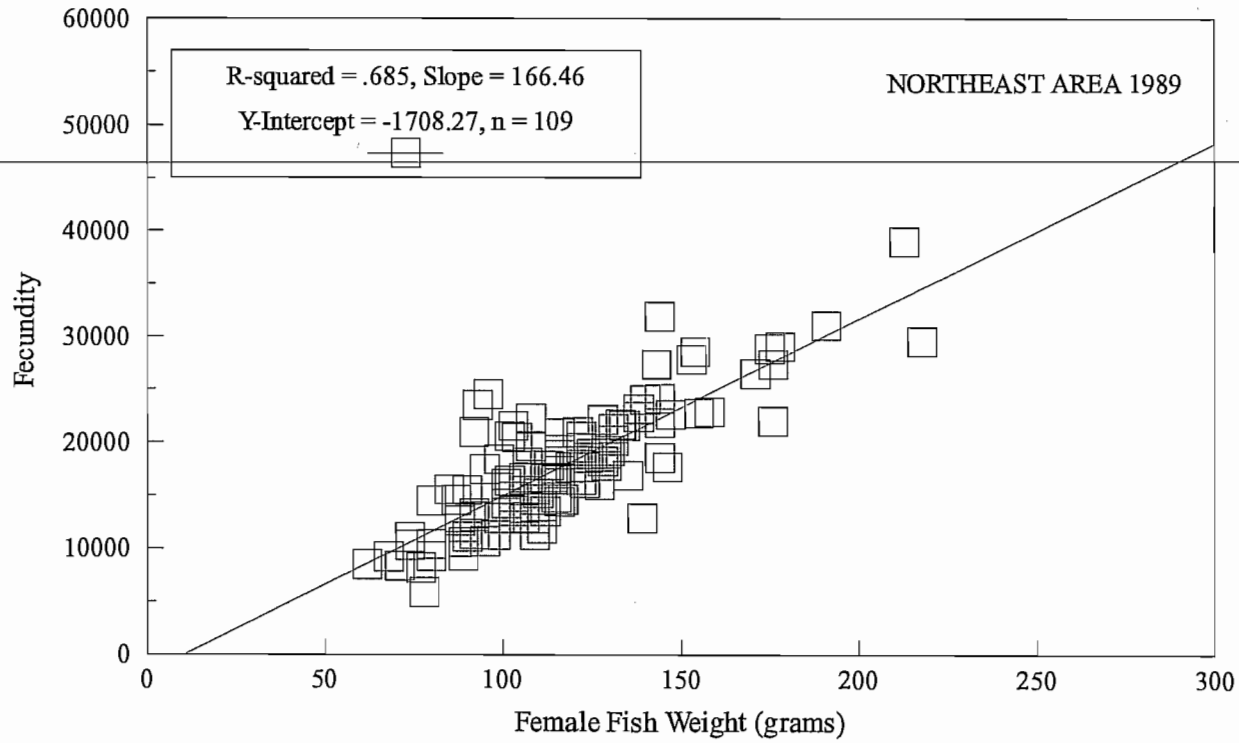
Purse seine test fish from Cedar Bay, 04/13/89.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
6	18	220	148	34.58	5	646.43	22,356
6	20	210	124	22.37	5	663.11	14,892
6	23	250	173	37.52	8	858.70	32,238
6	24	247	202	54.47	10	607.49	33,120
6	25	206	125	27.78	5	668.67	18,611
6	26	207	116	29.47	5	637.45	18,809
6	27	198	108	24.91	5	736.18	18,338
7	6	235	190	50.15	8	523.31	26,244
7	7	185	81	14.59	5	780.60	11,419
7	10	197	111	22.88	5	565.60	12,954
7	22	197	107	22.59	5	664.37	15,014
7	23	200	109	24.29	5	467.02	11,397
8	2	181	84	15.44	4	689.40	10,644
8	3	223	148	30.22	5	554.57	16,770
8	8	225	118	27.57	5	692.74	19,099
8	10	197	100	21.58	5	870.36	18,807
8	12	193	100	22.32	5	738.86	16,491
8	13	197	115	24.53	5	783.81	19,327
8	14	225	162	37.29	8	878.97	32,812
8	27	193	104	24.62	5	851.60	21,096
9	21	179	77	18.60	4	808.80	15,044
9	23	223	156	30.92	7	640.23	19,853
10	2	230	170	37.80	7	798.54	30,185
10	3	258	252	62.79	12	587.99	36,950
10	8	194	102	18.18	5	798.46	14,543
10	9	194	102	19.11	5	816.94	15,637
10	13	190	96	16.65	4	772.54	12,875
10	24	221	148	22.12	5	783.20	17,329
11	9	226	180	47.18	8	672.42	31,725
11	21	227	167	34.02	8	706.85	24,062
12	4	188	109	26.23	5	620.76	16,284
16	1	181	73	12.55	4	1128.75	14,188
16	2	188	83	14.47	4	922.49	13,374
16	3	187	79	17.56	4	744.08	13,066
16	4	183	88	14.05	5	1006.24	14,161
16	5	181	74	18.62	4	874.21	16,290
16	6	185	83	16.67	4	771.29	12,875
16	7	174	66	15.39	4	925.33	14,263
16	8	180	76	14.97	4	718.88	10,762
16	9	190	91	25.38	5	737.22	18,716
16	11	180	72	17.20	4	779.73	13,411
16	12	189	86	20.70	4	969.60	20,088

[a]An (18) in the age column represents a regenerated scale that cannot be aged correctly.

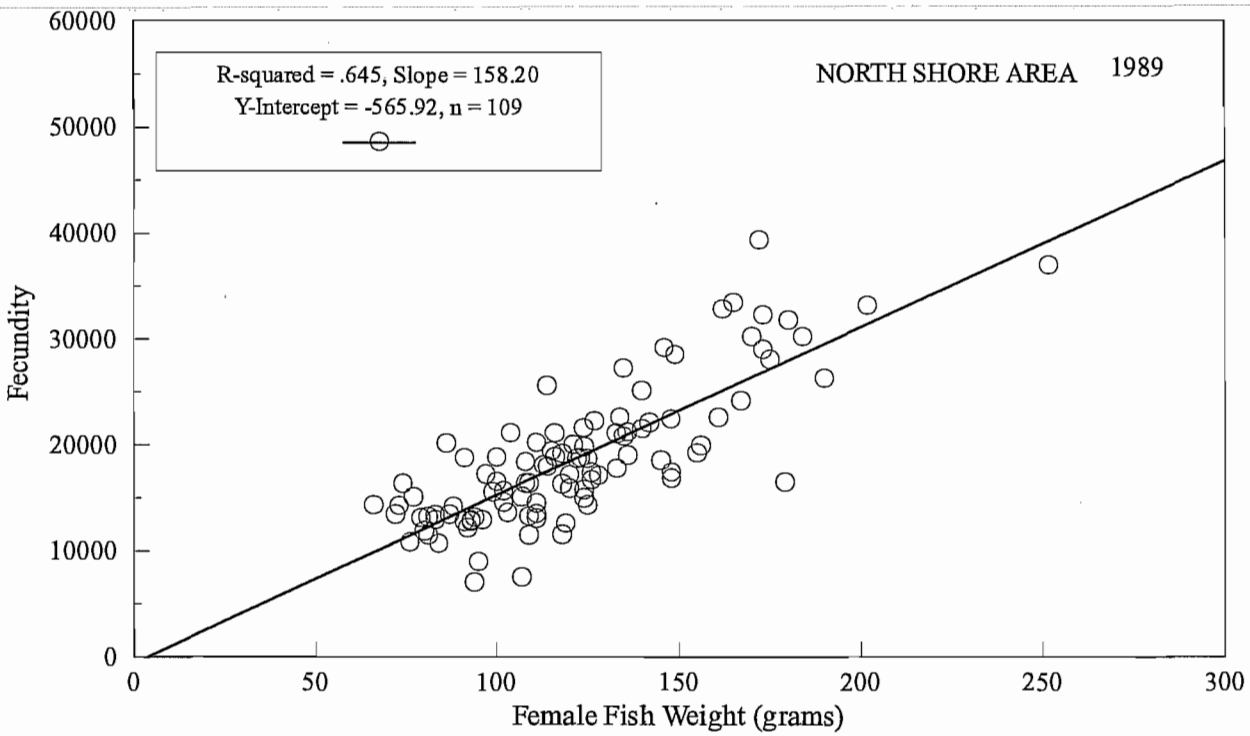
A (19) in the age column represents an illegible scale that cannot be read.

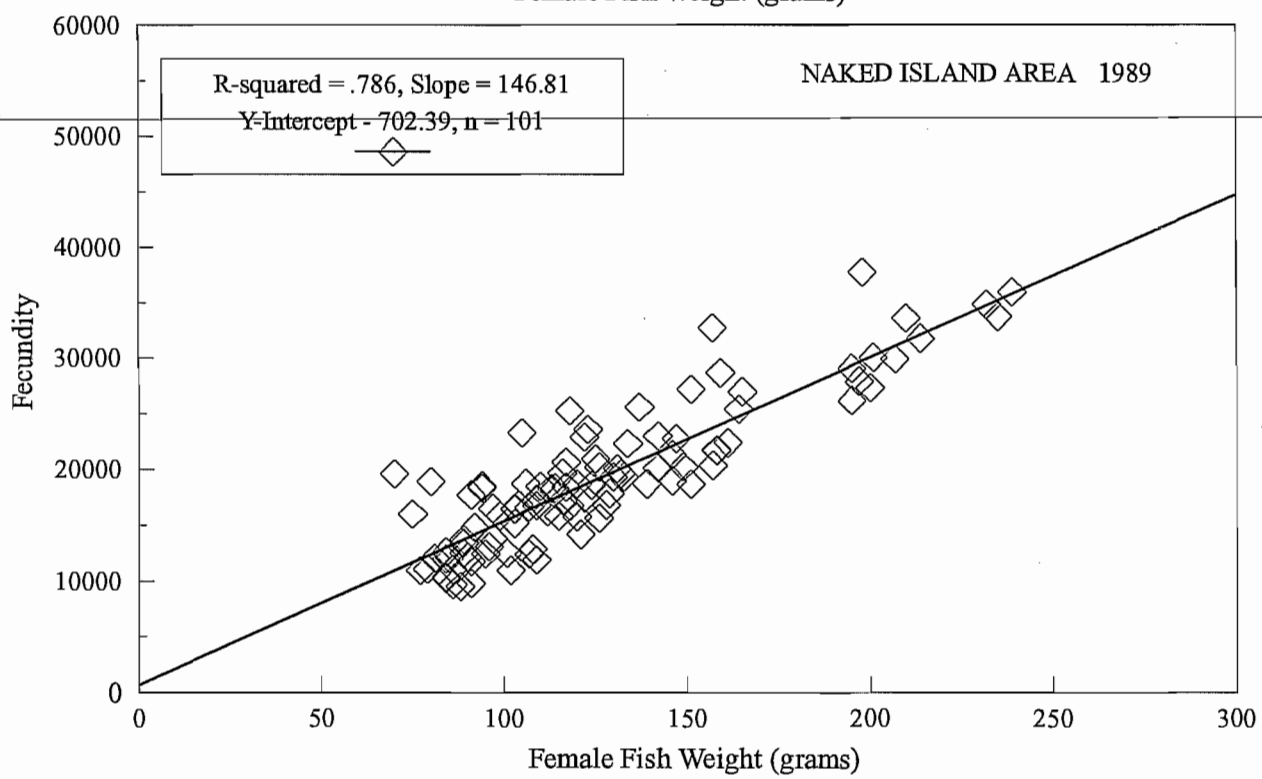




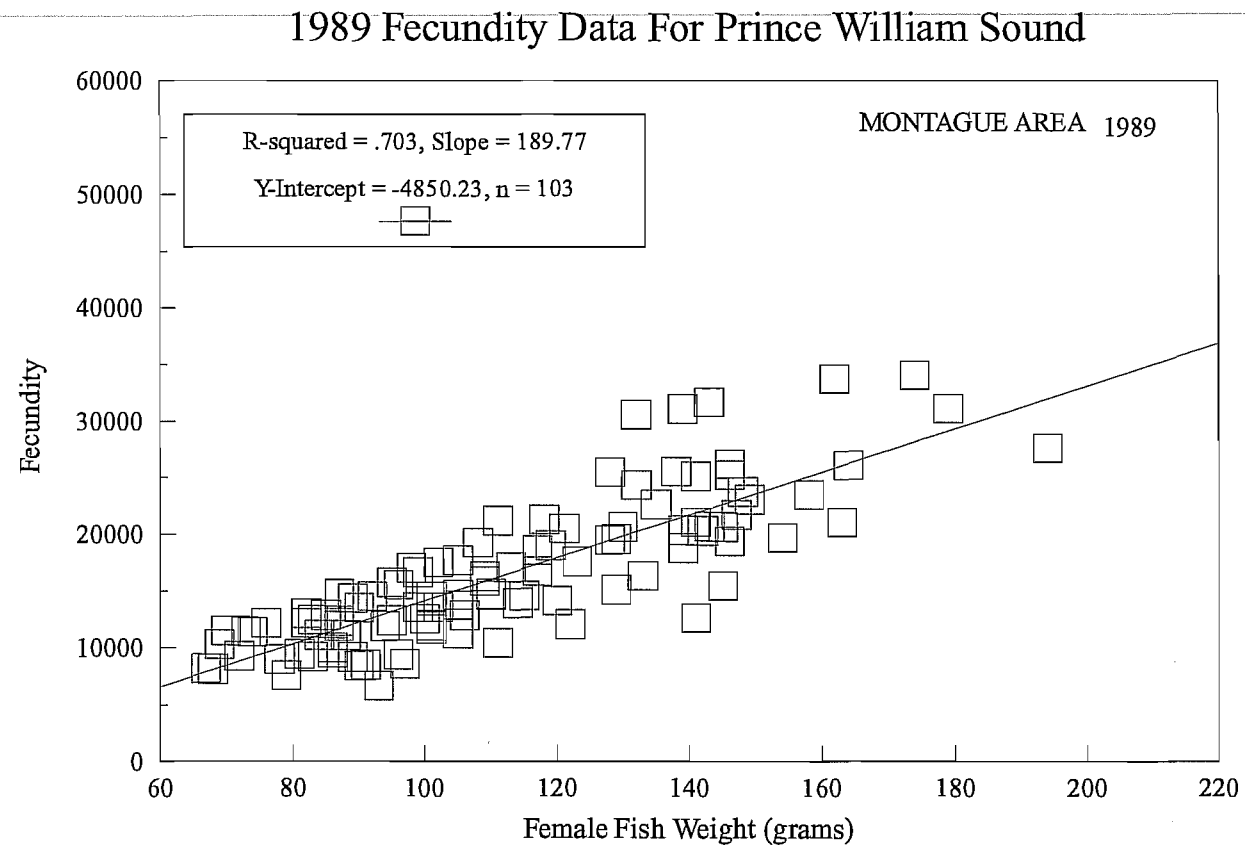
Appendix R.11. Herring fecundity data from the spring purse seine test fishery and pound fishery for Prince William Sound, 1989.

1989 Fecundity Data For Prince William Sound

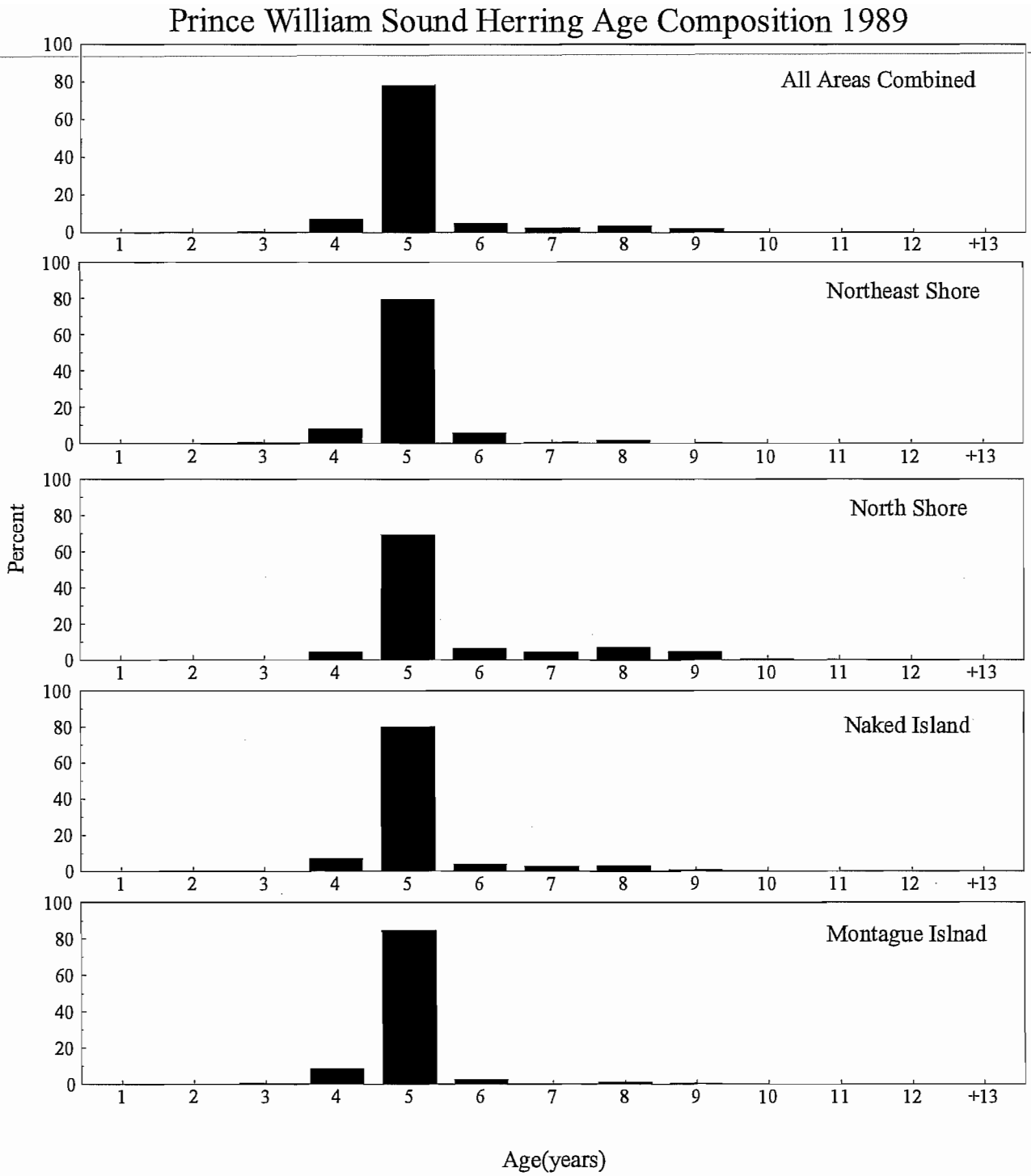




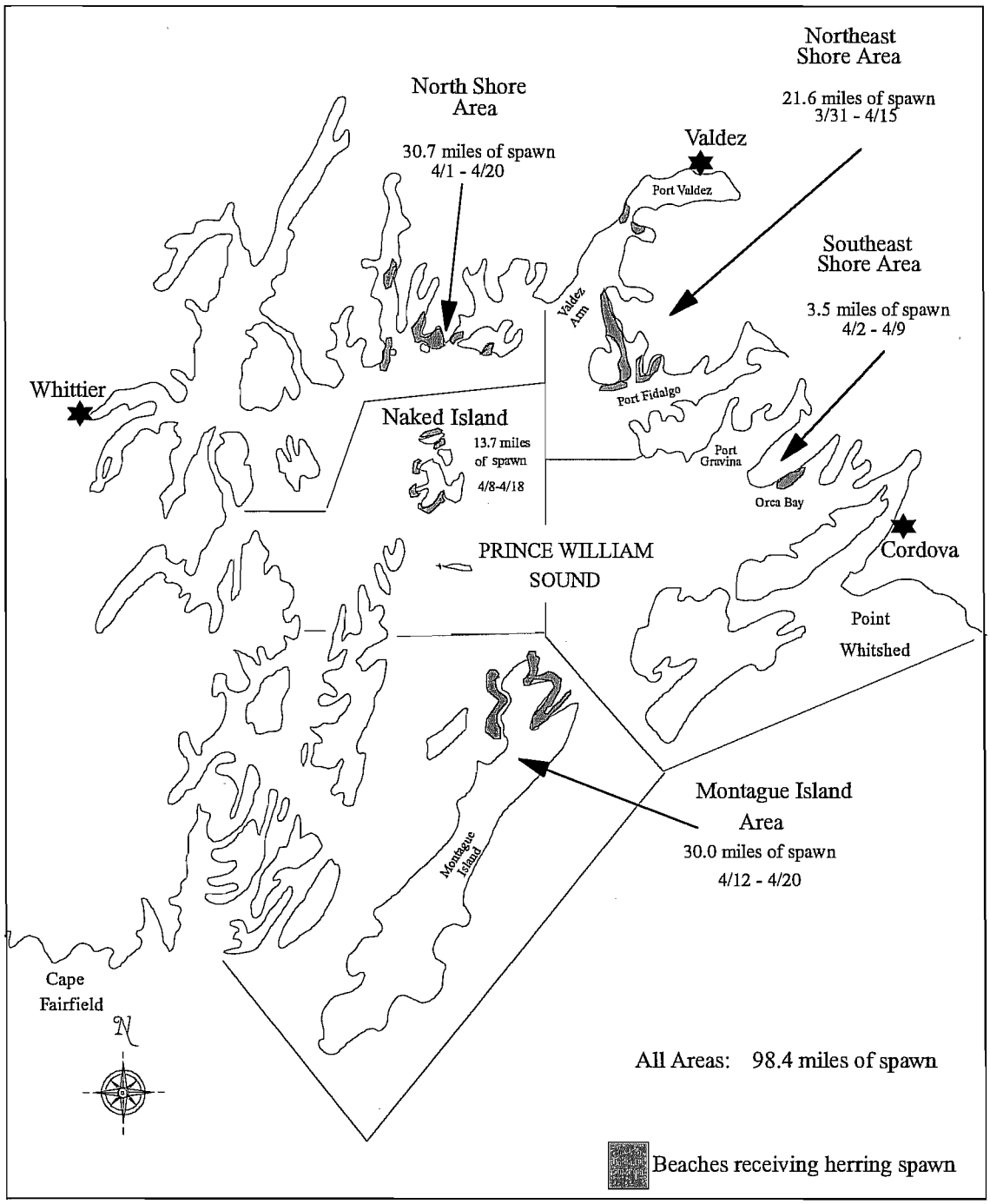
Appendix R.11. (page 2 of 3)



Appendix R.11. (page 3 of 3)



Appendix R.9. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1989.



Appendix R. 12. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys and skiff surveys and the delineation of the five spawning areas used in the calculation of the spawn deposition biomass estimates, 1989.

APPENDIX S: SUMMARY FOR 1990

Appendix S.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1990.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/31	240	0	NS	0	0	240	03/31
04/01	30	3	0	0	0	33	04/01
04/02	NS	0	0	NS	0	0	04/02
04/05	NS	NS	NS	0	0	0	04/05
04/06	40	230	0	0	260	530	04/06
04/07	80	600	0	NS	170	850	04/07
04/08	20	250	0	2,620	30	2,920	04/08
04/09	NS	2,015	7,490	5,010	NS	14,515	04/09
04/10	NS	45,010	2,220	3,330	0	50,560	04/10
04/11	NS	22,320	6,200	390	0	28,910	04/11
04/12	NS	10,710	2,770	7,570	0	21,050	04/12
04/13	NS	2,040	8,410	205	1,220	11,875	04/13
04/14	0	6,230	2,430	20	100	8,780	04/14
04/15	NS	635	NS	NS	NS	635	04/15
04/16	70	20	80	10	2,600	2,780	04/16
04/17	NS	40	NS	0	950	990	04/17
04/18	NS	NS	NS	10	110	120	04/18
04/19	NS	0	0	0	0	0	04/19
04/20	NS	0	0	0	0	0	04/20
04/21	NS	0	0	NS	NS	0	04/21
04/22	NS	170	0	0	0	170	04/22
04/23	NS	5	0	0	0	5	04/23
AREA TOTAL	**480**	**90,278**	**29,600**	**19,165**	**5,440**	**144,963**	**TOTAL**
PEAK ESTIMATES	**310**	**30,720**	**13,110**	**10,900**	**2,860**	**57,900**	**PEAK**

[a]Dates displayed are for actual survey days.

NS = Not Surveyed

Appendix S.2. Herring spawn mile days from aerial surveys and shoreline miles from ground surveys by area and date for Prince William Sound, 1990.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/31	0.0	0.0	NS	0.0	0.0	0.0	03/31
04/01	1.4	0.0	0.0	0.0	0.0	1.4	04/01
04/02	NS	0.0	0.0	NS	0.0	0.0	04/02
04/05	NS	NS	NS	0.0	0.0	0.0	04/05
04/06	0.0	1.0	NS	0.0	0.0	1.0	04/06
04/07	0.5	0.2	0.0	NS	0.0	0.7	04/07
04/08	0.0	0.2	NS	0.0	3.0	3.2	04/08
04/09	NS	0.5	0.0	0.0	NS	0.5	04/09
04/10	NS	0.0	0.0	0.0	NS	0.0	04/10
04/11	NS	0.0	0.3	0.0	0.0	0.3	04/11
04/12	NS	0.0	0.6	0.0	0.0	0.6	04/12
04/13	NS	8.9	3.3	0.1	0.0	12.3	04/13
04/14	0.8	16.7	4.0	1.0	0.0	22.5	04/14
04/15	NS	15.0	NS	NS	NS	15.0	04/15
04/16	0.0	15.5	9.3	1.8	1.6	28.1	04/16
04/17	NS	3.8	3.0 [b]	0.5	11.0	18.3	04/17
04/18	NS	NS	0.8 [b]	0.0	12.0	12.8	04/18
04/19	NS	0.1	0.0	0.1	21.3	21.5	04/19
04/20	NS	0.7	0.0	0.0	0.0	0.7	04/20
04/21	NS	0.1	0.8	NS	NS	0.9	04/21
04/22	NS	0.0	0.0	0.0	2.0	2.0	04/22
04/23	NS	0.0	0.0	0.0	2.0	2.0	04/23
Mile Days	**2.7**	**62.7**	**21.9**	**3.5**	**52.9**	**143.6**	**Total**
Shoreline Miles	**2.6**	**43.7**	**18.2**	**5.4**	**24.2**	**94.1**	**Total**

a Dates displayed are for actual survey days.

b Shoreline milaege as recorded from ground surveys.

NS = Not Surveyed

Appendix S.3. Herring biomass estimates from aerial surveys by sub-area and date for Prince William Sound, 1990.

DATE	SIMPSON SHEEP & ISLANDS	HINCHIN-BROOK ISLAND	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREE-MANTLE GRANITE	GRANITE/ ESTHER PASSAGE	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	SURVEY TOTAL	DATE
03/31			240	0	0	0			0		0	240	03/31
04/01			30	3	0	0	0	0	0		0	33	04/01
04/02				0	0	0	0	0			0	0	04/02
04/05									0		0	0	04/05
04/06			40	0	40	190		0	0		260	530	04/06
[a]04/07			80	0	80	360	0	0	0	0	170	690	[a]04/07
04/08			20	0	180	70			2,620		30	2,920	04/08
[b]04/09				0	120	1,670	760	3,220	2,580		0	8,350	[b]04/09
[c]04/10					12,840	11,510	1,060	1,160	3,330		0	29,900	[c]04/10
04/11					12,980	9,340	160	6,040	390		0	28,910	04/11
04/12					7,710	3,000	20	2,750	7,570		0	21,050	04/12
04/13				2,040	0	0	30	8,380	205		1,220	11,875	04/13
04/14		0	0	5,700	0	530	450	1,980	20		100	8,780	04/14
04/15				590	10	35						635	04/15
04/16		70		10	0	10	0	80	10	0	2,600	2,780	04/16
04/17				20	20	0		0	0		950	990	04/17
04/18								0	10		110	120	04/18
04/19				0	0	0		0	0	0	0	0	04/19
04/20				0	0	0		0	0		0	0	04/20
04/21				0	0	0		0				0	04/21
04/22				0	0	170		0	0		0	170	04/22
04/23				0	0	5		0	0		0	5	04/23
Area Totals	**NS**	**70**	**410**	**8,363**	**33,980**	**26,890**	**2,480**	**23,610**	**16,735**	**0**	**5,440**	**117,978**	**Total**
Peak Estimates	**0**	**70**	**240**	**5,700**	**12,980**	**12,040**	**1,510**	**11,600**	**10,900**	**0**	**2,860**	**57,900**	**Peak**

[a]Two surveys flown 04/07.
[b]Two surveys flown 04/09.
[c]Three surveys flown 04/10.
Note: Data displayed only for dates that surveys were flown.

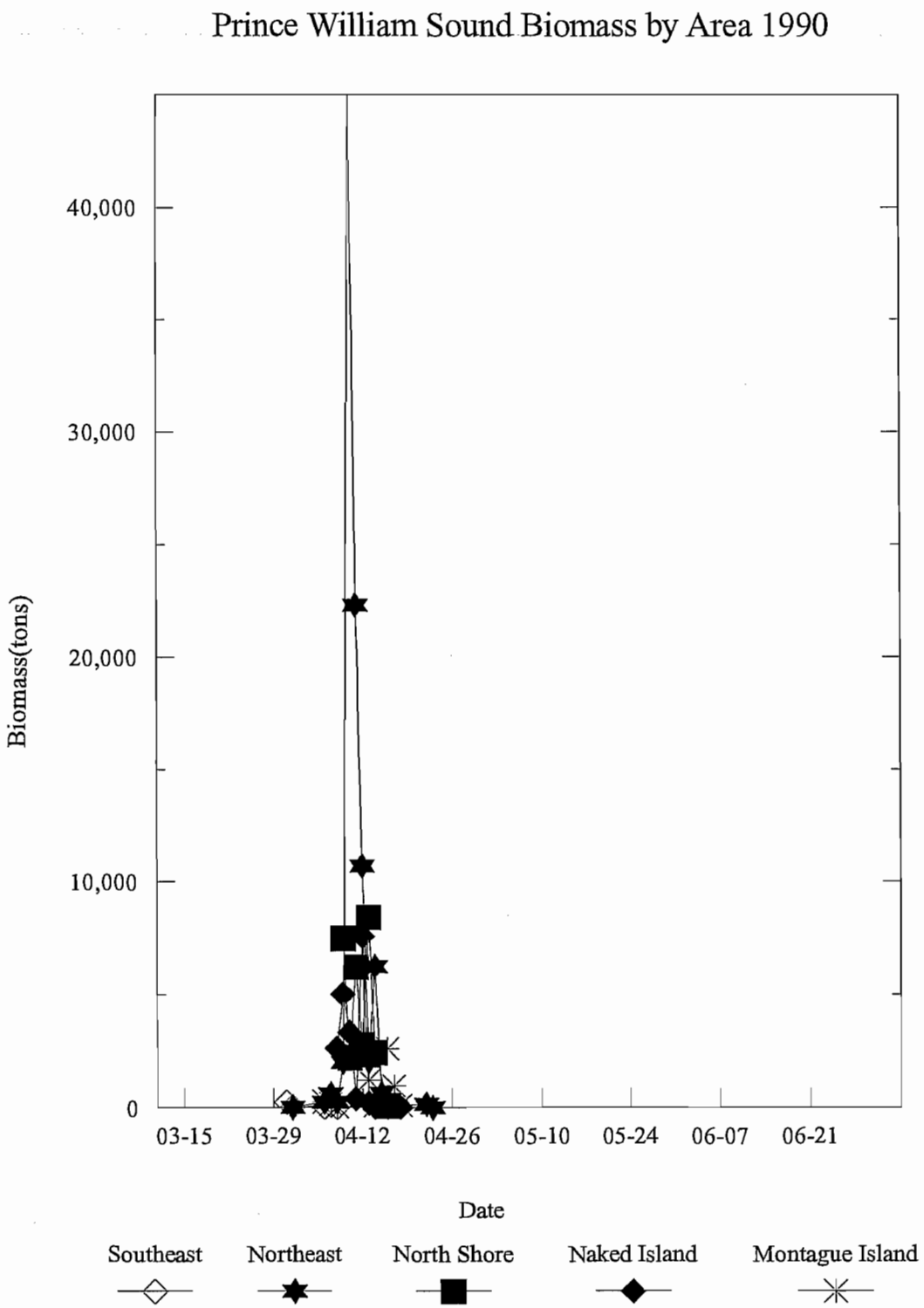
DATE	SIMPSON SHEEP & ISLANDS	HINCHIN-BROOK ISLAND	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREE-MANTLE GRANITE	GRANITE/ ESTHER PASSAGE	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	SURVEY TOTAL	DATE
[a2]04/07			50		50	110						210	[a2]04/07
[b2]04/09				105	120	540	2970	2430				6165	[b2]04/09
[c2]04/10				4990	10810							15800	[c2]04/10
[c3]04/10				4000	860							4860	[c3]04/10

Appendix S.4. Estimated miles of herring spawn by sub-area and date from aerial surveys for Prince William Sound, 1990.

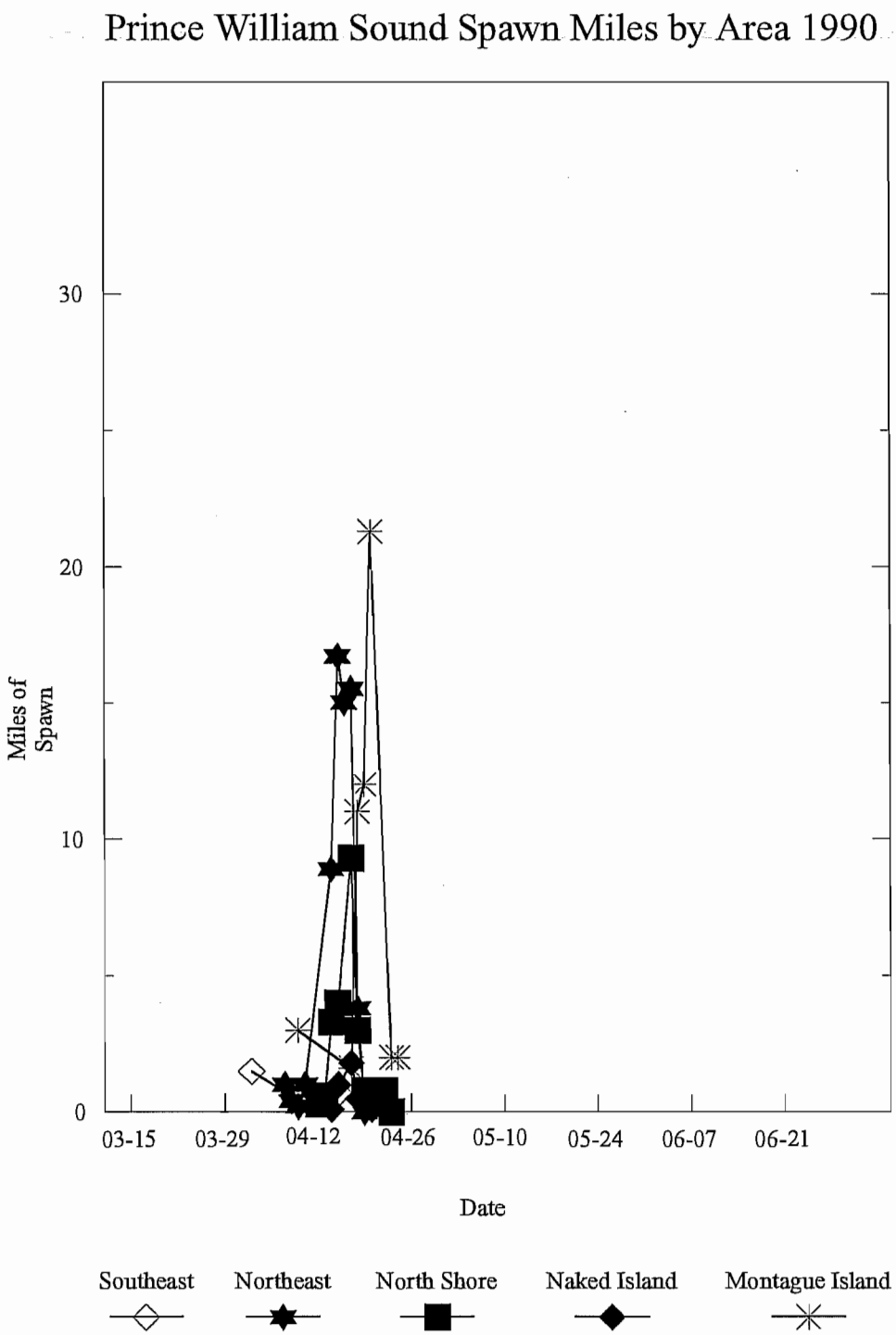
DATE	SIMPSON SHEEP & ISLANDS	HINCHIN-BROOK ISLAND	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/31			0.0	0.0	0.0	0.0			0.0		0.0	0.0	03/31
04/01			1.4	0.0	0.0	0.0	0.0	0.0	0.0		0.0	1.4	04/01
04/02				0.0	0.0	0.0	0.0	0.0			0.0	0.0	04/02
04/05									0.0		0.0	0.0	04/05
04/06			0.0	0.0	1.0	0.0		0.0	0.0		0.0	1.0	04/06
[a]04/07			0.5		0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.7	[a]04/07
04/07			0.1	0.0	0.2	0.0						0.3	04/07
04/08			0.0	0.0	0.2	0.0			0.0		3.0	3.2	04/08
04/09					0.5	0.0	0.0	0.0	0.0		0.0	0.5	04/09
04/10					0.0	0.0	0.0	0.0	0.0		0.0	0.0	04/10
04/11					0.0	0.0	0.0	0.3	0.0		0.0	0.3	04/11
04/12					0.0	0.0	0.0	0.6	0.0		0.0	0.6	04/12
04/13				1.0	6.2	1.7	0.8	2.5	0.1		0.0	12.3	04/13
04/14		0.8	0.0	3.5	10.5	2.7	1.0	3.0	1.0		0.0	22.5	04/14
04/15				5.5	6.8	2.7						15.0	04/15
04/16		0.0		9.5	2.5	3.5	2.0	7.3	1.8	0.0	1.6	28.1	04/16
04/17				3.5	0.0	0.3		3.0	0.5		11.0	18.3	04/17
04/18								0.8	0.0		12.0	12.8	04/18
[b]04/19				0.1	0.0	0.0		0.0	0.0	0.1	13.8	14.0	[b]04/19
04/20				0.5	0.0	0.2		0.0	0.0		0.0	0.7	04/20
04/21				0.0	0.0	0.1		0.8				0.9	04/21
04/22				0.0	0.0	0.0		0.0	0.0		2.0	2.0	04/22
04/23				0.0	0.0	0.0		0.0	0.0		2.0	2.0	04/23
Area Totals		**0.8**	**2.0**	**23.6**	**28.1**	**11.2**	**3.8**	**18.1**	**3.4**	**0.1**	**45.4**	**136.4**	**Total**
Peak Estimates		0.75	1.9	11.0	12.0	3.6	2.0	8.0	1.8		15.8	56.9	Peak

[a]Two surveys flown 04/07
[b]Two surveys flown 04/19.
Note: Data displayed only for dates that surveys were flown.

Date	Simpson Sheep & Islands	Hinchin-Brook Island	Port Gravina	Port Fidalgo	Tatitlek Area	Valdez Arm & Port	Freemantle Granite Pt.	Granite Pt. Esther Pass.	Naked Island	Knight Island	Montague Island	Daily Total	Date
[a2]04/07			0.1		0.2							0.3	[a2]04/07
[b2]04/19									0.0		7.5	7.5	[b2]04/19



Appendix S.5. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1990.



Appendix S.6. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1990.

Appendix S.7. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound , 1990.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1989	1	0			0.0	0.0%	0.0	0.0%
1988	2	535	75		2,680.8	2.3%	20,862.8	2.8%
1987	3	75	94		569.9	0.5%	5,120.3	0.7%
1986	4	64	128		903.2	0.8%	8,050.8	1.1%
1985	5	679	149		9,978.4	8.7%	74,109.4	9.9%
1984	6	5,476	163		81,957.7	71.3%	541,545.2	72.5%
1983	7	570	175		7,709.8	6.7%	45,170.7	6.0%
1982	8	339	196		4,078.0	3.5%	19,953.3	2.7%
1981	9	312	204		4,131.6	3.6%	20,104.5	2.7%
1980	10	171	206		2,084.9	1.8%	9,845.1	1.3%
1979	11	29	223		274.1	0.2%	1,123.1	0.2%
1978	12	13	201		120.3	0.1%	512.4	0.1%
1977	13+	9	230		90.2	0.1%	359.8	0.0%
Total		**8,272**	**102**	**178**	**114,998.0**	**100.0%**	**746,757.4**	**100.0%**

Northeast Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1989	1	0			0.0	0.0%	0.0	0.0%
1988	2	267	20	131	2,669.7	5.0%	20,379.5	8.0%
1987	3	34	43	149	386.7	0.7%	2,595.1	1.0%
1986	4	24	88	193	353.6	0.7%	1,831.9	0.7%
1985	5	258	113	209	4,115.8	7.6%	19,692.6	7.7%
1984	6	2,131	130	217	35,296.1	65.5%	162,654.7	63.8%
1983	7	237	141	223	4,034.0	7.5%	18,089.7	7.1%
1982	8	154	163	234	2,750.6	5.1%	11,754.5	4.6%
1981	9	136	177	237	2,460.2	4.6%	10,380.6	4.1%
1980	10	75	179	240	1,373.9	2.5%	5,724.6	2.2%
1979	11	14	200	245	261.8	0.5%	1,068.6	0.4%
1978	12	6	165	242	110.8	0.2%	458.0	0.2%
1977	13+	4	204	250	76.3	0.1%	305.3	0.1%
Total		**3,340**	**126**	**221**	**53,889.4**	**100.0%**	**254,935.2**	**100.0%**

-Continued-

Appendix S.7. (page 2 of 3)

North Shore Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1989	1	0			0.0	0.0%	0.0	0.0%
1988	2	0			0.0	0.0%	0.0	0.0%
1987	3	0			0.0	0.0%	0.0	0.0%
1986	4	1	109	203	28.0	0.2%	256.5	0.2%
1985	5	45	112	207	1,292.8	8.8%	11,543.0	10.6%
1984	6	315	132	217	10,665.7	73.0%	80,800.9	74.3%
1983	7	36	150	225	1,385.2	9.5%	9,234.4	8.5%
1982	8	11	167	234	471.2	3.2%	2,821.6	2.6%
1981	9	14	189	244	678.7	4.6%	3,591.2	3.3%
1980	10	2	177	245	90.8	0.6%	513.0	0.5%
1979	11	0			0.0	0.0%	0.0	0.0%
1978	12	0			0.0	0.0%	0.0	0.0%
1977	13+	0			0.0	0.0%	0.0	0.0%
Total		**424**			**14,612.4**	**100.0%**	**108,760.6**	**100.0%**

Naked Island Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1989	1	0			0.0	0.0%	0.0	0.0%
1988	2	0			0.0	0.0%	0.0	0.0%
1987	3	2	85	193	9.3	0.3%	108.9	0.5%
1986	4	3	105	202	17.2	0.5%	163.4	0.7%
1985	5	33	120	212	215.7	6.8%	1,797.2	7.8%
1984	6	318	133	218	2,303.3	72.6%	17,318.3	75.2%
1983	7	26	144	223	203.9	6.4%	1,416.0	6.1%
1982	8	10	179	236	97.5	3.1%	544.6	2.4%
1981	9	15	187	240	152.8	4.8%	816.9	3.5%
1980	10	13	192	244	135.9	4.3%	708.0	3.1%
1979	11	1	226	259	12.3	0.4%	54.5	0.2%
1978	12	1	174	241	9.5	0.3%	54.5	0.2%
1977	13+	1	254	265	13.8	0.4%	54.5	0.2%
Total		**423**			**3,171.1**	**100.0%**	**23,036.6**	**100.0%**

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Appendix S.7. (page 3 of 3)

Montague Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1989	1	0			0.0	0.0%	0.0	0.0%
1988	2	1	23	132	11.1	0.0%	483.3	0.1%
1987	3	5	72	183	174.0	0.4%	2,416.3	0.7%
1986	4	12	87	195	504.5	1.2%	5,799.1	1.6%
1985	5	85	106	208	4,354.1	10.1%	41,076.7	11.4%
1984	6	581	120	214	33,692.5	78.5%	280,771.2	78.0%
1983	7	34	127	218	2,086.7	4.9%	16,430.7	4.6%
1982	8	10	157	236	758.7	1.8%	4,832.6	1.3%
1981	9	11	158	236	839.9	2.0%	5,315.8	1.5%
1980	10	6	167	236	484.2	1.1%	2,899.5	0.8%
1979	11	0			0.0	0.0%	0.0	0.0%
1978	12	0			0.0	0.0%	0.0	0.0%
1977	13+	0			0.0	0.0%	0.0	0.0%
Total		**746**	**119**	**214**	**42,905.8**	**100.0%**	**360,025.0**	**100.0%**

Appendix S.8. Age, sex and size composition of Pacific Herring from the purse seine test fishery, sac roe fishery and pound fishery, Prince William Sound, 1990.

Sample Date	AGE	MALES NUMBER	MALES PERCENT	MALES LENGTH MEAN	MALES LENGTH STD	MALES WEIGHT MEAN	MALES WEIGHT STD	FEMALES NUMBER	FEMALES PERCENT	FEMALES LENGTH MEAN	FEMALES LENGTH STD	FEMALES WEIGHT MEAN	FEMALES WEIGHT STD	SEXES COMBINED NUMBER	SEXES COMBINED PERCENT	SEXES COMBINED LENGTH MEAN	SEXES COMBINED LENGTH STD	SEXES COMBINED WEIGHT MEAN	SEXES COMBINED WEIGHT STD
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	1	0.1	132	NA	23	NA
	3	4	0.5	181	7	70	6	1	0.1	191	NA	82	NA	5	0.7	183	7	72	8
	4	10	1.3	194	16	84	20	2	0.3	203	6	101	16	12	1.6	195	15	87	20
Port Chalmers,	5	39	5.2	208	8	107	12	46	6.2	208	9	106	16	85	11.4	208	9	106	14
Green Is.,	6	303	40.9	214	9	116	17	276	37.0	215	9	124	19	581	77.9	214	9	120	18
Graveyard Pt.	7	13	1.7	219	11	127	18	21	2.8	217	7	126	18	34	4.6	218	9	127	18
Montague	8	6	0.8	237	6	153	31	4	0.5	236	10	163	14	10	1.3	236	7	157	25
Test Fishery	9	6	0.8	229	12	144	28	5	0.7	243	11	176	38	11	1.5	236	13	158	36
08 April, 1990	10	4	0.5	229	5	147	20	2	0.3	249	1	205	13	6	0.8	236	11	167	34
17 April, 1990	11	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
18 April, 1990	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		387	51.9	213	11	116	20	358	48.0	215	11	123	22	746	100.0	214	11	119	22
UNAGED		15	44.1	216	18	121	38	18	52.9	215	15	123	32	34	100.0	214	19	119	37
	2	8	1.1	137	10	31	8	1	0.1	132	NA	26	NA	189	25.3	129	9	24	5
	3	2	0.3	171	30	66	33	1	0.1	182	NA	77	NA	15	2.0	135	24	31	22
	4	3	0.4	179	29	73	31	3	0.4	195	15	92	27	6	0.8	187	22	83	28
Galena Bay,	5	17	2.3	208	7	111	12	19	2.5	212	9	124	19	37	5.0	208	14	116	22
Tatitlek Nar.	6	180	24.1	217	12	132	19	178	23.8	219	9	140	20	358	47.9	218	11	136	20
Northeast	7	31	4.1	220	11	139	24	25	3.3	228	12	153	23	56	7.5	223	12	146	24
Test Fishery	8	24	3.2	232	15	164	32	19	2.5	239	14	178	36	43	5.8	235	15	170	34
07 April, 1990	9	14	1.9	236	8	173	22	11	1.5	244	17	202	42	25	3.3	240	13	186	35
10 April, 1990	10	8	1.1	241	12	188	36	7	0.9	242	12	196	29	15	2.0	242	12	192	32
	11	1	0.1	235	NA	152	NA	0	0.0	NA	NA	NA	NA	1	0.1	235	NA	152	NA
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	1	0.1	249	NA	209	NA	0	0.0	NA	NA	NA	NA	1	0.1	249	NA	209	NA
TOTAL		289	38.7	217	20	134	33	264	35.3	222	15	146	31	747	100.0	196	43	110	58
UNAGED		19	26.4	225	16	146	35	32	44.4	220	15	144	36	72	100.0	195	43	110	62

Indicates dominant age class.

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Appendix S.8. (page 2 of 4)

Sample Date	AGE	MALES NUMBER	MALES PERCENT	MALES LENGTH MEAN	MALES LENGTH STD	MALES WEIGHT MEAN	MALES WEIGHT STD	FEMALES NUMBER	FEMALES PERCENT	FEMALES LENGTH MEAN	FEMALES LENGTH STD	FEMALES WEIGHT MEAN	FEMALES WEIGHT STD	SEXES COMBINED NUMBER	SEXES COMBINED PERCENT	SEXES COMBINED LENGTH MEAN	SEXES COMBINED LENGTH STD	SEXES COMBINED WEIGHT MEAN	SEXES COMBINED WEIGHT STD
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	4	1	0.2	205	NA	97	NA	1	0.2	213	NA	120	NA	2	0.3	209	6	109	16
Jack, Busby	5	25	4.3	210	8	112	16	20	3.5	211	8	119	15	45	7.8	210	8	115	16
and Galena Bay	6	184	31.9	217	8	129	16	222	38.5	221	9	141	19	406	70.4	219	9	136	19
Northeast	7	27	4.7	226	9	144	18	26	4.5	225	14	147	28	53	9.2	226	12	146	23
Pound Fish	8	13	2.3	232	9	157	28	14	2.4	237	10	175	20	27	4.7	235	10	166	25
10 April, 1990	9	16	2.8	233	9	170	30	16	2.8	242	9	187	25	32	5.5	237	10	178	29
11 April, 1990	10	2	0.3	248	14	207	13	5	0.9	253	6	221	19	7	1.2	252	8	217	18
	11	0	0.0	NA	NA	NA	NA	3	0.5	243	12	194	25	3	0.5	243	12	194	25
	12	1	0.2	236	NA	152	NA	0	0.0	NA	NA	NA	NA	1	0.2	236	NA	152	NA
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL	TOTAL	269	46.6	219	11	133	23	308	53.4	224	12	147	27	577	100.0	222	12	140	26
UNAGED	UNAGED	12	52.2	222	13	139	26	11	47.8	223	11	147	25	23	100.0	223	12	143	25
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	4	1	0.1	190	NA	78	NA	1	0.1	206	NA	106	NA	2	0.3	198	11	92	20
Sawmill, Galena	5	31	4.1	208	9	116	22	29	3.8	213	10	126	16	60	7.9	210	10	121	20
Boulder, Tatitlek	6	288	38.1	215	9	130	17	244	32.3	218	9	137	18	532	70.4	216	9	133	18
Landlocked	7	39	5.2	219	8	139	19	20	2.6	220	10	142	20	59	7.8	219	9	140	19
Northeast	8	29	3.8	230	9	155	20	10	1.3	234	14	166	17	39	5.2	231	11	158	20
Pound Fish	9	21	2.8	231	22	172	23	14	1.9	243	9	197	23	35	4.6	236	19	182	26
11 April, 1990	10	12	1.6	238	9	170	28	10	1.3	237	19	185	48	22	2.9	237	14	176	38
12 April, 1990	11	1	0.1	250	NA	211	NA	2	0.3	249	11	222	7	3	0.4	249	8	218	8
	12	2	0.3	235	0	174	9	0	0.0	NA	NA	NA	NA	2	0.3	235	0	174	9
	13	1	0.1	239	NA	189	NA	0	0.0	NA	NA	NA	NA	1	0.1	239	NA	189	NA
TOTAL		426	56.3	217	12	135	24	330	43.7	220	12	141	26	756	100.0	218	12	138	25
UNAGED		24	44.4	219	10	135	23	30	55.6	218	9	138	19	54	100.0	218	9	137	21

Indicates dominant age class.

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Appendix S.8. (page 3 of 4)

Sample Date	AGE	MALES NUMBER	MALES PERCENT	MALES LENGTH MEAN	MALES LENGTH STD	MALES WEIGHT MEAN	MALES WEIGHT STD	FEMALES NUMBER	FEMALES PERCENT	FEMALES LENGTH MEAN	FEMALES LENGTH STD	FEMALES WEIGHT MEAN	FEMALES WEIGHT STD	SEXES COMBINED NUMBER	SEXES COMBINED PERCENT	SEXES COMBINED LENGTH MEAN	SEXES COMBINED LENGTH STD	SEXES COMBINED WEIGHT MEAN	SEXES COMBINED WEIGHT STD
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	1	0.2	191	NA	73	NA	1	0.2	181	NA	71	NA	3	0.7	186	5	72	1
	4	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	1	0.2	202	NA	109	NA
Virgin Bay,	5	9	2.1	209	8	109	17	13	3.1	210	7	114	18	27	6.3	211	7	114	18
Landlocked,	6	142	33.3	217	9	125	18	133	31.2	219	8	129	16	313	73.5	218	8	128	16
Two Moon	7	7	1.6	218	10	125	18	11	2.6	230	9	144	18	22	5.2	227	11	139	20
Northeast	8	7	1.6	224	16	139	29	10	2.3	243	12	169	31	19	4.5	234	16	156	33
Pound Fish	9	11	2.6	238	9	168	26	9	2.1	240	9	187	19	22	5.2	238	9	176	24
14 April, 1990	10	9	2.1	237	8	165	23	4	0.9	245	14	200	41	15	3.5	240	10	176	31
	11	1	0.2	246	NA	197	NA	1	0.2	264	NA	264	NA	3	0.7	257	9	229	34
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	1	0.2	254	NA	222	NA	0	0.0	NA	NA	NA	NA	1	0.2	254	NA	222	NA
TOTAL		188	44.1	219	12	130	25	182	42.7	222	12	136	28	426	100.0	221	12	133	27
UNAGED		7	29.2	223	10	129	15	13	54.2	223	11	140	27	24	100.0	222	10	133	23
	2	6	0.7	141	10	30	6	0	0.0	NA	NA	NA	NA	78	9.2	137	8	29	6
	3	7	0.8	174	20	66	22	1	0.1	171	NA	61	NA	16	1.9	156	23	48	23
	4	8	0.9	192	12	82	14	4	0.5	193	10	93	9	13	1.5	193	10	85	13
Galena Bay	5	51	6.0	207	8	102	15	35	4.1	208	10	110	17	89	10.5	208	8	105	16
Northeast	6	290	34.3	214	12	117	20	220	26.0	217	9	125	19	522	61.8	215	10	120	20
Pound Fish	7	25	3.0	221	14	128	26	21	2.5	222	13	141	26	47	5.6	221	13	131	31
15 April, 1990	8	12	1.4	231	15	151	25	12	1.4	237	14	170	33	26	3.1	234	14	159	30
20 April, 1990	9	16	1.9	232	9	154	22	6	0.7	239	8	173	23	22	2.6	234	9	159	23
	10	7	0.8	233	9	148	15	9	1.1	238	15	162	33	16	1.9	236	12	156	27
	11	3	0.4	236	8	176	35	1	0.1	240	NA	198	NA	4	0.5	237	7	181	31
	12	3	0.4	249	10	164	11	0	0.0	NA	NA	NA	NA	3	0.4	249	10	164	11
	13	0	0.0	NA	NA	NA	NA	1	0.1	259	NA	194	NA	1	0.1	259	NA	194	NA
TOTAL		428	50.7	214	17	117	27	311	36.8	218	13	128	27	845	100.0	207	28	112	39
UNAGED		12	36.4	224	9	134	18	17	51.5	215	13	116	25	33	100.0	213	22	116	32

Indicates dominant age class.

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Appendix S.8. (page 4 of 4)

Sample Date	AGE	MALES NUMBER	MALES PERCENT	MALES LENGTH MEAN	MALES LENGTH STD	MALES WEIGHT MEAN	MALES WEIGHT STD	FEMALES NUMBER	FEMALES PERCENT	FEMALES LENGTH MEAN	FEMALES LENGTH STD	FEMALES WEIGHT MEAN	FEMALES WEIGHT STD	SEXES COMBINED NUMBER	SEXES COMBINED PERCENT	SEXES COMBINED LENGTH MEAN	SEXES COMBINED LENGTH STD	SEXES COMBINED WEIGHT MEAN	SEXES COMBINED WEIGHT STD
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	1	0.2	191	NA	85	NA	1	0.2	194	NA	84	NA	2	0.5	193	2	85	1
	4	1	0.2	209	NA	116	NA	2	0.5	199	3	100	8	3	0.7	202	6	105	11
Bass Harbor	5	17	4.0	214	10	121	18	16	3.8	210	7	120	12	33	7.8	212	9	120	15
Naked Island	6	140	33.1	216	8	128	16	178	42.1	220	8	137	17	318	75.2	218	8	133	17
Test Fish	7	11	2.6	222	8	139	15	15	3.5	225	10	148	24	26	6.1	223	9	144	21
10 April, 1990	8	4	0.9	226	11	151	20	6	1.4	242	7	198	14	10	2.4	236	12	179	29
	9	5	1.2	232	13	172	9	10	2.4	243	8	195	22	15	3.5	240	11	187	21
	10	5	1.2	243	7	186	20	8	1.9	245	14	196	35	13	3.1	244	12	192	29
	11	0	0.0	NA	NA	NA	NA	1	0.2	259	NA	226	NA	1	0.2	259	NA	226	NA
	12	1	0.2	241	NA	174	NA	0	0.0	NA	NA	NA	NA	1	0.2	241	NA	174	NA
	13	0	0.0	NA	NA	NA	NA	1	0.2	265	NA	254	NA	1	0.2	265	NA	254	NA
TOTAL		185	43.7	218	10	131	21	238	56.3	222	12	143	28	423	100.0	220	12	138	26
UNAGED		12	44.4	220	8	134	18	15	55.6	219	13	136	26	27	100.0	219	11	135	23
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	4	0	0.0	NA	NA	NA	NA	1	0.2	203	NA	109	NA	1	0.2	203	NA	109	NA
Wells Bay	5	22	5.2	203	10	104	12	23	5.4	211	8	120	17	45	10.6	207	10	112	17
North Shore	6	122	28.8	215	8	125	14	193	45.5	219	8	136	17	315	74.3	217	8	132	16
Test Fish	7	14	3.3	221	7	143	23	22	5.2	227	9	155	19	36	8.5	225	9	150	21
11 April, 1990	8	5	1.2	235	14	161	21	6	1.4	233	12	172	29	11	2.6	234	12	167	25
	9	5	1.2	239	5	176	21	9	2.1	246	5	196	23	14	3.3	244	6	189	24
	10	1	0.2	246	NA	163	NA	1	0.2	244	NA	190	NA	2	0.5	245	1	177	19
	11	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		169	39.9	215	11	126	21	255	60.1	220	11	139	23	424	100.0	218	11	134	23
UNAGED		11	42.3	221	16	141	37	15	57.7	218	9	133	21	26	100.0	219	12	137	29

Indicates dominant age class.

Appendix S.10. Herring fecundity data from the spring purse seine test fishery and pound fishery for Prince William Sound, 1990.

Montague Island

Purse seine test fish from Rocky Bay, 04/17/90.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE[a]	EGGS/G	FECUNDITY
1	11	222	140	29.94	6	570.49	17,081
1	23	214	120	24.92	6	494.59	12,325
1	25	229	150	36.25	8	479.22	17,372
1	27	212	116	25.01	6	602.14	15,059
1	28	218	130	33.01	6	636.01	20,995
1	29	235	142	24.81	6	519.43	12,887
2	1	220	122	29.15	7	614.90	17,924
2	5	209	113	26.15	5	857.55	22,425
2	11	236	150	27.41	6	512.52	14,048
2	12	222	122	26.77	18	445.26	11,920
2	13	218	134	32.30	6	607.86	19,634
2	22	226	153	27.91	6	582.85	16,267
2	26	214	133	32.20	6	692.05	22,284
2	27	217	125	23.98	6	780.61	18,719
2	28	212	106	18.44	6	891.36	16,437
2	29	208	118	28.64	6	554.06	15,868
3	1	210	107	16.04	6	596.62	9,570
3	3	246	181	46.66	8	689.22	32,159
3	5	212	123	29.13	6	614.44	17,899
3	6	214	113	21.50	6	693.85	14,918
3	16	221	122	23.04	6	710.00	16,358
3	21	210	109	22.06	6	692.41	15,275
4	3	220	133	30.34	6	548.73	16,649
4	6	215	124	29.44	6	745.33	21,942
4	9	204	114	23.85	5	463.42	11,053
4	10	212	123	21.59	6	757.92	16,363
4	14	218	133	30.14	6	593.85	17,899
4	19	237	171	44.79	6	529.53	23,718
4	20	209	132	30.04	6	604.48	18,159
4	23	211	117	22.45	6	517.38	11,615
4	26	222	132	25.39	6	490.06	12,443
4	27	217	107	18.33	6	568.36	10,418
5	3	210	113	23.74	6	552.59	13,118
5	6	229	150	34.63	6	472.85	16,375
5	21	197	82	12.25	5	483.46	5,922
6	4	232	136	29.13	6	402.29	11,719
6	6	200	99	21.46	6	457.64	9,821
6	23	223	131	28.32	7	427.80	12,115
6	24	199	99	30.49	6	592.70	18,071
7	17	240	176	36.77	6	557.55	20,501
7	19	224	127	28.88	6	661.34	19,099

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Montague Island
Purse seine test fish from Rocky Bay, 04/17/90.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
7	23	234	143	32.68	6	599.24	19,583
8	4	225	143	30.52	5	677.08	20,665
8	6	226	131	27.63	6	544.55	15,046
8	7	224	154	38.49	6	572.70	22,043

Montague Island
Purse seine test fish from Port Chalmers, 04/08/90.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	2	209	122	25.15	5	592.26	14,895
1	3	214	128	31.40	18	647.54	20,333
1	4	205	122	30.96	6	561.80	17,393
1	6	208	120	25.88	6	672.22	17,397
1	7	208	109	28.05	6	534.02	14,979
1	8	217	128	26.63	6	589.76	15,705
1	13	220	120	18.57	5	730.24	13,561
1	15	213	118	27.74	6	501.86	13,922
1	22	206	93	17.82	6	882.01	15,717
1	23	214	113	22.87	6	880.88	20,146
1	24	211	108	25.97	6	763.20	19,820
1	26	214	124	27.01	6	796.67	21,518
1	28	209	108	19.28	6	796.30	15,353
2	2	207	123	30.94	6	842.38	26,063
2	3	205	102	18.04	6	946.13	17,068
2	17	220	145	21.56	6	841.34	18,139
2	19	223	144	18.39	6	1037.38	19,077
3	8	214	136	26.16	6	891.81	23,330
3	9	224	159	42.46	7	548.90	23,306
3	10	226	145	32.00	6	548.90	23,306
3	14	186	84	16.20	5	836.71	13,555
3	27	224	140	37.24	6	742.44	27,648
3	30	220	136	23.63	6	636.50	15,040
4	8	215	126	26.90	7	580.00	15,602
4	9	212	131	25.86	6	584.43	15,113
4	11	212	111	17.01	5	632.26	10,755
4	18	214	123	26.49	6	504.96	13,376
4	22	216	150	27.37	6	530.36	14,516
4	24	213	120	28.69	6	565.73	16,231
4	30	213	131	33.46	6	479.31	16,038
5	3	198	99	16.95	6	1062.12	18,003
5	17	212	118	20.43	6	640.96	13,095
5	22	224	136	29.84	7	604.20	18,029
5	23	216	117	27.75	6	653.75	18,142

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Montague Island

Purse seine test fish from Port Chalmers, 04/08/90.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
5	28	211	105	21.08	5	489.74	10,324
5	30	227	155	40.25	6	501.04	20,167
6	5	198	90	16.39	4	782.43	12,824
6	17	200	95	15.46	6	592.60	9,162
6	19	197	101	16.67	6	1004.41	16,744
6	25	192	80	22.49	5	493.12	11,090
6	29	196	94	17.64	6	510.98	9,014
6	30	224	154	36.02	6	652.52	23,504
7	2	251	202	49.71	9	569.15	28,292
7	5	224	148	35.55	7	479.75	17,055
7	8	224	151	36.51	6	617.77	22,555
7	28	179	71	7.17	18	1118.38	8,019
7	30	220	127	30.36	18	486.20	14,761
8	8	225	131	26.08	5	586.91	15,307
8	17	194	99	22.71	5	616.40	13,998
8	29	191	83	14.20	5	572.37	8,128
9	9	225	126	23.41	18	497.29	11,642
9	29	225	156	38.56	7	550.86	21,241
9	30	232	144	27.03	18	516.70	13,966
10	9	237	168	36.69	6	456.32	16,742
10	12	231	160	35.81	6	615.52	22,042
10	13	224	134	21.49	6	782.65	16,819
11	6	204	98	17.69	5	515.14	9,113

Northeast Shore

Purse seine test fish from Galena Bay, 04/07/90.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	15	208	135	33.70	5	767.16	25,853
5	1	213	131	30.57	18	610.99	18,678
5	3	223	150	37.32	6	613.81	22,908
5	4	205	104	15.23	6	1163.10	17,714
5	5	231	154	37.33	7	613.10	22,887
5	7	214	133	30.91	6	593.59	18,348
5	8	224	150	29.75	7	800.52	23,816
5	11	203	109	23.74	6	657.14	15,601
5	13	238	184	49.95	9	686.50	34,291
5	14	237	181	45.94	19	598.77	27507
5	15	220	120	25.55	19	722.23	18453
5	16	227	156	38.09	18	615.37	23,439
5	22	216	141	30.70	6	596.30	18,306
5	24	211	123	21.23	6	644.28	13,678
5	28	218	134	25.29	6	617.69	15,621

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Northeast Shore

Purse seine test fish from Galena Bay, 04/07/90.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
6	8	224	150	33.49	6	674.87	22,601
6	16	235	179	39.88	18	579.84	23,124
6	25	222	137	39.07	7	719.13	28,096
6	27	235	174	39.37	7	548.40	21,591
7	8	232	175	43.52	6	617.10	26,856
7	12	222	132	26.84	6	661.76	17,762
7	24	230	175	43.21	6	555.16	23,988
7	25	226	161	39.83	6	597.86	23,813
8	1	215	150	37.60	6	956.77	35,974
8	4	212	134	29.98	6	643.74	19,299
8	8	222	128	31.80	6	709.97	22,577
8	9	225	152	40.46	6	574.00	23,224
8	14	197	106	21.84	6	860.08	18,784
8	16	211	126	28.32	6	646.35	18,305
8	19	225	150	34.00	18	683.62	23,243
8	20	221	135	29.94	18	919.85	27,540
8	23	217	134	25.51	6	867.58	22,132
8	24	250	197	48.70	8	762.13	37,116
8	30	224	159	32.17	6	724.55	23,309
9	1	212	136	29.04	6	808.90	23,490
9	2	198	102	23.00	7	598.41	13,763
9	3	212	136	27.13	6	685.80	18,606
9	7	196	91	21.56	5	681.59	14,695
9	9	219	141	29.87	6	789.84	23,593
9	10	218	134	21.94	6	733.92	16,102
9	11	217	139	28.88	6	658.95	19,031
9	12	222	153	31.14	7	603.58	18,795
9	15	246	174	35.70	7	849.41	30,324
9	18	227	161	35.21	19	710.53	25,018
9	21	228	155	39.96	18	526.00	21,019
9	24	224	153	38.81	6	822.93	31,938
9	27	225	155	36.91	6	673.06	24,843
10	1	236	161	33.97	6	613.40	20,837
10	7	241	178	41.38	9	622.16	25,745
10	13	243	186	35.35	7	665.43	23,523
11	5	227	159	38.46	6	737.51	28,364
11	12	244	206	48.35	10	674.17	32,596
11	14	234	145	27.26	8	683.70	18,638
11	27	256	221	47.64	10	592.82	28,242
12	5	239	176	43.03	7	559.23	24,064
12	9	253	199	46.71	9	494.74	23,109
13	1	256	201	35.57	7	588.00	20,915
13	3	240	201	50.76	8	505.80	25,675
13	4	236	181	43.29	7	632.46	27,379

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Northeast Shore

Purse seine test fish from Galena Bay, 04/07/90.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
13	23	238	200	48.66	10	619.97	30,168
13	24	237	165	34.78	7	727.69	25,309
14	18	232	165	31.91	6	698.08	22,276
14	25	231	164	39.21	6	631.44	24,759
15	23	255	227	54.28	8	587.16	31,871
15	26	252	228	64.17	8	577.48	37,057
15	27	232	171	43.75	6	757.78	33,153
15	28	258	245	61.55	9	691.11	42,538
17	15	178	66	9.14	4	1360.28	12,433
21	7	244	185	35.38	9	697.72	24,685
21	19	234	180	44.38	6	619.08	27,475
22	11	236	192	40.27	18	738.08	29,722
22	14	231	140	24.14	6	851.14	20,546
22	18	235	151	29.35	8	640.06	18,786
23	1	246	197	47.50	8	577.38	27,425
23	9	241	193	49.02	10	594.73	29,154
23	17	198	90	14.80	18	823.56	12,189
23	19	200	99	19.35	5	886.96	17,163

Northeast Shore

Purse seine test fish from the Tatitlek Narrows, 04/10/90.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
2	12	238	171	31.22	8	866.81	27,062
2	19	234	182	45.02	8	729.24	32,830
2	27	250	231	60.26	9	509.43	30,698
3	15	255	225	52.52	18	558.79	29,347
3	21	243	198	55.19	8	488.72	26,972
4	10	250	211	46.35	8	471.40	21,849
4	14	251	247	64.60	9	476.56	30,786
4	28	182	77	11.77	3	741.01	8,722
5	17	255	223	56.95	10	546.14	31,103

Naked Island

Purse seine test fish from Naked Island, 04/10/90.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	1	223	177	47.61	6	438.23	20,864
1	2	201	102	16.52	5	530.54	8,765
1	3	217	149	35.70	6	570.93	20,382
1	6	210	121	30.44	6	398.79	12,139
1	8	211	118	24.11	18	605.72	14,604

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Naked Island

Purse seine test fish from Naked Island, 04/10/90.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	9	216	134	28.78	6	443.33	12,759
1	10	223	142	34.57	6	528.91	18,285
1	11	224	149	37.39	6	457.52	17,107
1	15	218	147	30.65	6	534.63	16,386
1	16	227	150	36.01	6	485.02	17,465
1	17	223	156	37.77	6	567.86	21,448
1	19	229	170	37.17	6	497.93	18,508
1	21	219	133	29.15	5	481.06	14,023
1	22	222	132	23.49	6	571.59	13,427
1	23	211	110	23.65	6	533.01	12,606
1	25	221	136	32.30	6	623.52	20,140
1	26	245	191	43.61	10	466.29	20,335
1	27	201	106	23.73	4	509.08	12,080
1	29	218	146	29.48	6	622.52	18,352
2	2	206	123	34.71	5	599.01	20,792
2	3	211	106	21.32	6	576.38	12,288
2	4	224	152	39.74	6	621.96	24,716
2	5	217	129	34.31	6	479.02	16,435
2	9	228	151	34.56	7	579.50	20,027
2	10	210	124	28.58	6	500.11	14,293
2	22	221	127	28.55	6	450.13	12,851
2	23	216	141	36.89	6	528.33	19,490
2	24	220	131	30.84	6	434.03	13,385
2	25	222	129	27.27	6	511.79	13,957
2	26	227	147	36.74	6	494.60	18,172
2	27	224	155	30.76	6	652.37	20,067
2	28	209	116	18.38	6	602.19	11,068
3	5	250	217	46.60	8	464.96	21,667
3	6	222	150	37.51	6	560.82	21,037
3	7	238	178	30.78	8	578.18	17,796
3	8	229	157	31.21	6	494.69	15,439
3	9	205	107	25.91	7	522.78	13,545
3	12	201	118	28.34	6	646.18	18,313
3	13	205	102	22.25	6	444.86	9,898
3	14	235	153	16.17	9	1659.72	26,838
3	16	222	156	36.53	7	509.29	18,604
4	1	202	114	25.53	5	706.26	18,031 [b]
4	4	204	118	25.53	5	657.35	16,782 [b]
4	9	218	133	34.35	6	719.23	24,705 [b]
4	10	226	149	31.10	6	547.18	17,017
4	13	221	138	30.73	6	549.69	16,892 [b]
4	14	231	154	40.06	6	633.58	25,381 [b]
4	18	217	137	29.38	6	531.65	15,620 [b]

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Naked Island

Purse seine test fish from Naked Island, 04/10/90.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
4	20	219	138	28.23	6	677.26	19,119 [b]
4	21	209	120	28.25	6	533.53	15,072
4	22	222	138	20.28	6	663.82	13,462
4	28	216	132	34.45	19	622.69	21,452
5	1	199	98	19.00	6	658.26	12,507
5	14	240	163	42.46	18	573.02	24,330
5	20	236	177	21.55	9	629.44	13,564
5	25	243	194	46.88	9	589.20	27,622
6	7	237	196	44.89	8	562.56	25,253
7	9	239	185	47.71	7	665.29	31,741
7	19	198	105	24.25	6	452.70	10,978
7	20	232	141	30.58	6	609.05	18,625
7	28	197	94	19.43	4	751.78	14,607
8	24	247	186	41.64	7	637.63	26,551
8	26	262	235	62.28	9	578.03	36,000
9	8	259	226	56.44	11	506.00	28,559
9	19	242	185	45.58	9	517.73	23,598
9	22	231	161	41.04	6	622.63	25,553
9	24	231	158	37.54	6	525.05	19,710
10	1	232	159	32.45	6	571.54	18,546
10	6	194	84	18.12	3	665.80	12,064
10	7	248	190	40.62	10	765.53	31,096
10	19	232	140	29.44	6	692.54	20,388
10	21	265	254	61.36	13	614.38	37,698
10	26	231	149	31.94	6	745.57	23,813
10	29	200	111	27.78	5	627.08	17,420
11	10	231	172	43.34	19	627.79	27,208
11	15	233	144	23.06	19	665.77	15,353
11	17	231	154	36.20	6	477.04	17,269
11	29	246	200	51.59	9	541.92	27,958
12	5	236	172	32.22	6	531.63	17,129
15	10	197	99	20.21	19	367.63	7,430

North Shore

Purse seine test fish from Wells Bay, 04/11/90.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	3	224	159	36.83	6	587.30	21,630
1	4	209	125	26.40	6	471.24	12,441
1	5	212	131	38.77	6	621.38	24,091
1	7	231	161	36.29	6	751.00	27,254
1	10	214	162	31.42	6	706.67	22,203
1	12	224	141	33.20	6	575.24	19,098

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North Shore

Purse seine test fish from Wells Bay, 04/11/90.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	13	216	132	27.49	5	586.21	16,115
1	14	214	134	29.61	6	562.74	16,663
1	16	249	186	40.85	9	555.21	22,680
1	17	215	127	28.56	6	610.23	17,428
1	18	223	152	36.19	6	583.43	21,114
1	20	220	133	31.01	7	608.13	18,858
1	21	192	103	23.66	6	533.03	12,611
1	23	214	147	33.47	6	560.81	18,770
1	25	214	143	34.76	6	478.47	16,632
1	26	216	135	33.32	6	518.87	17,289
1	28	228	157	38.61	7	525.90	20,305
1	30	210	124	32.49	6	592.78	19,259
2	1	210	114	21.34	6	487.22	10,397
2	3	206	124	32.03	6	459.39	14,714
2	5	224	146	32.62	6	499.24	16,285
2	6	222	138	28.80	18	516.56	14,877
2	10	225	140	24.55	5	533.96	13,109
2	11	243	179	37.72	9	462.32	17,439
2	12	232	165	43.18	6	401.49	17,336
2	13	219	145	30.60	19	596.62	18,257
2	16	224	140	33.25	5	665.62	22,132
2	17	242	184	46.75	7	570.00	26,648
2	21	228	141	34.98	6	502.64	17,582
2	22	210	114	25.62	18	648.96	16,626
2	24	213	114	18.52	6	584.87	10,832
2	25	219	149	35.23	6	655.28	23,085
2	29	202	104	19.38	5	743.22	14,404
3	1	216	137	30.52	6	688.11	21,001
3	3	197	97	21.95	6	601.63	13,206
3	4	218	130	30.29	6	574.98	17,416
3	5	224	142	27.98	18	447.90	12,532
3	7	226	136	27.05	6	604.41	16,349
3	8	254	226	54.90	9	438.85	24,093
3	9	223	135	35.41	6	454.28	16,086
3	10	223	147	33.73	6	465.61	15,705
3	12	219	124	26.77	19	565.54	15,140
3	13	215	125	27.73	6	596.23	16,534
3	14	248	204	53.56	7	407.16	21,808
3	15	216	129	27.30	8	510.52	13,937
3	16	237	162	34.26	6	467.57	16,019
3	18	217	124	27.42	6	495.04	13,574
3	19	218	127	25.47	6	463.77	11,812
3	20	205	100	22.35	6	511.12	11,424
4	1	224	149	35.83	7	678.07	24,295

-Continued-

North Shore

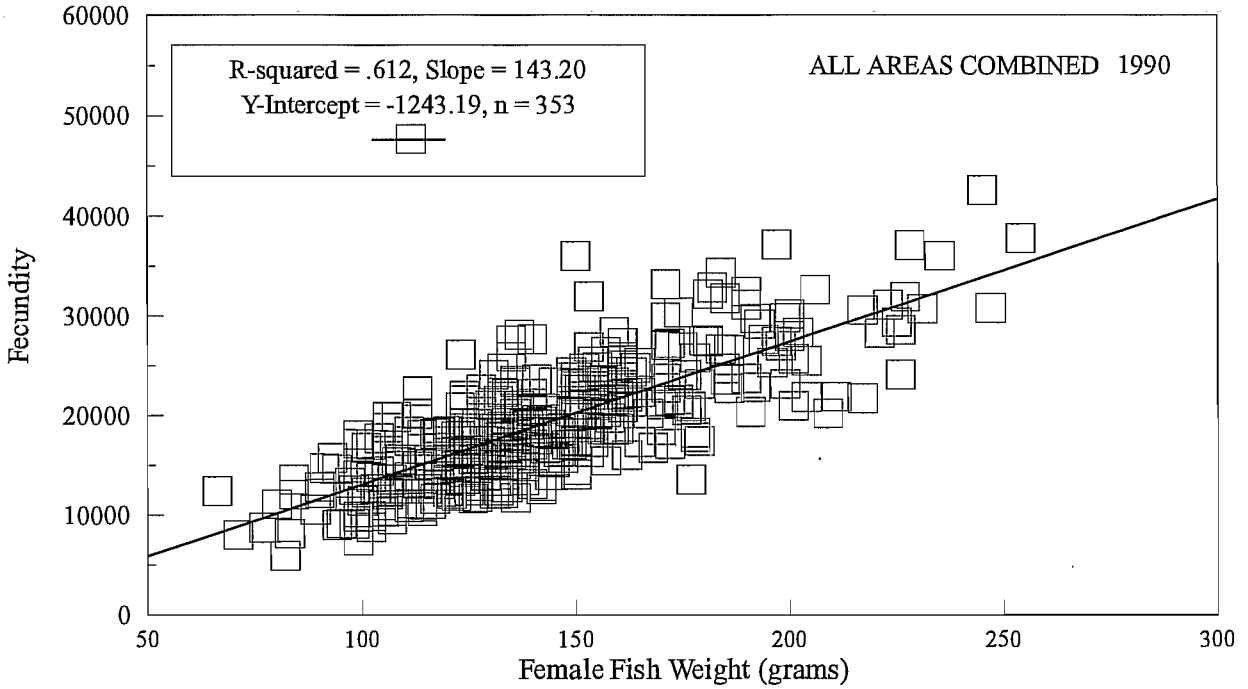
Purse seine test fish from Wells Bay, 04/11/90.

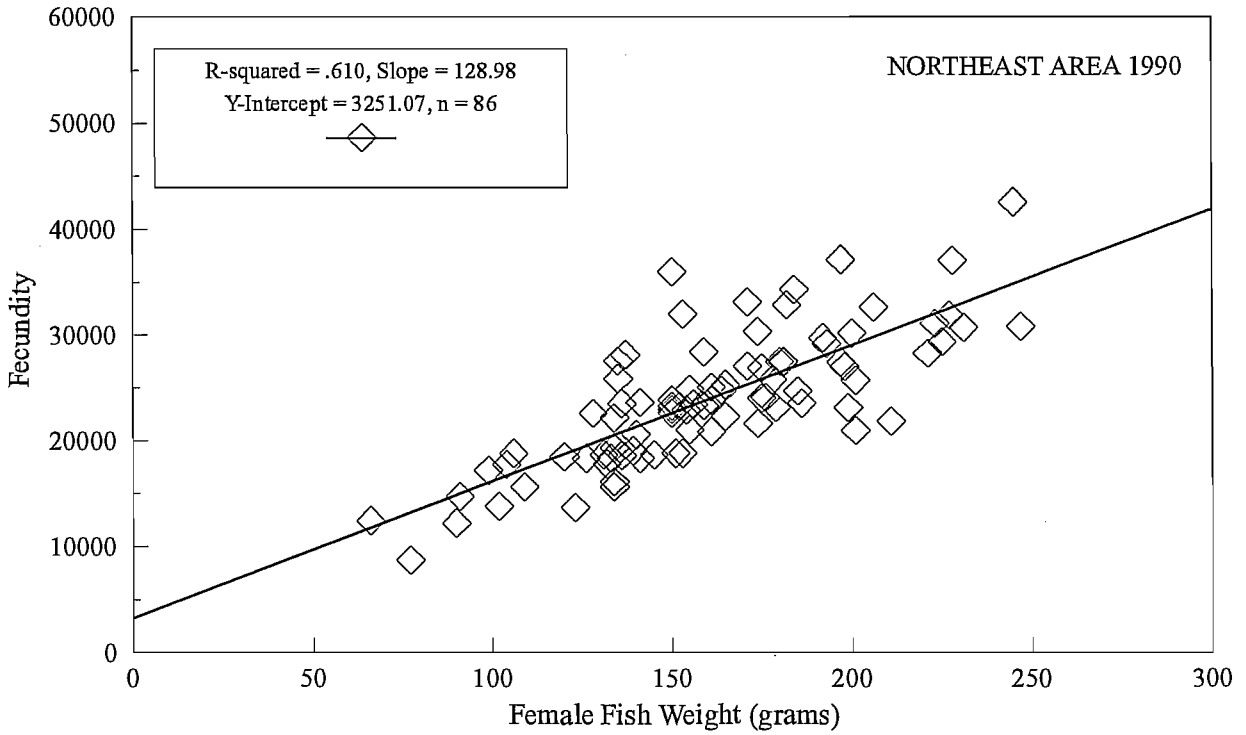
AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
4	9	210	111	26.99	6	679.88	18,350
4	10	201	106	18.67	6	1062.98	19,846
4	11	224	140	33.38	6	635.36	21,208
4	14	228	145	29.30	18	526.24	15,419
4	15	206	124	28.26	6	569.85	16,104
4	18	209	111	21.11	18	655.44	13,836
4	21	207	115	21.73	5	579.94	12,602
4	22	215	133	21.13	6	575.19	12,154
4	23	231	172	39.06	6	549.04	21,446
4	24	229	145	21.59	6	706.09	15,244
5	13	231	142	29.59	6	654.18	19,357
5	16	237	174	36.38	6	583.45	21,226
6	11	234	161	42.12	6	614.12	25,867
6	12	244	190	48.73	10	665.18	32,414
6	16	233	171	38.58	7	589.37	22,738
6	17	231	157	37.32	6	706.51	26,367
6	19	246	192	45.92	8	496.64	22,806
6	26	198	97	21.03	5	563.66	11,854
7	2	250	217	47.48	9	642.92	30,526
7	15	236	190	44.57	8	531.71	23,698
8	2	235	178	36.46	7	500.92	18,253
10	1	234	163	38.21	7	557.92	21,318
10	14	231	161	36.87	6	563.32	20,769
10	21	234	170	39.78	8	530.17	21,090
10	22	241	199	56.27	9	528.95	29,764
10	29	235	171	48.01	6	620.76	29,802
11	6	240	204	49.61	9	513.14	25,457
11	17	245	209	32.50	9	620.45	20,165
12	8	240	167	33.88	7	595.07	20,161
13	12	200	101	21.76	18	563.04	12,252
13	15	235	162	37.35	6	584.98	21,849
13	16	231	156	34.77	7	620.08	21,560
14	15	198	89	18.22	6	576.82	10,510
14	19	232	160	37.19	6	502.25	18,679

[a]An (18) in the age column represents a regenerated scale that cannot be aged correctly. A (19) in the age column represents an illegible scale that cannot be read.

[b]Samples processed in boiling water.

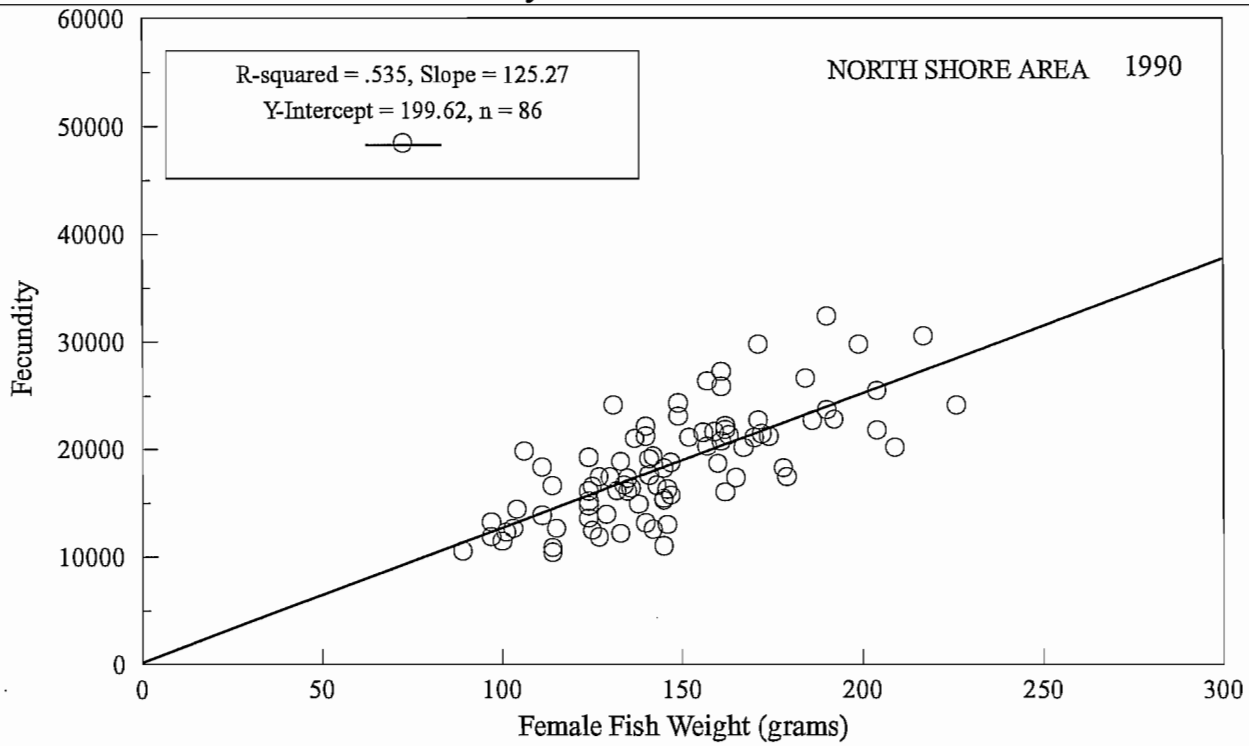
1990 Fecundity Data For Prince William Sound

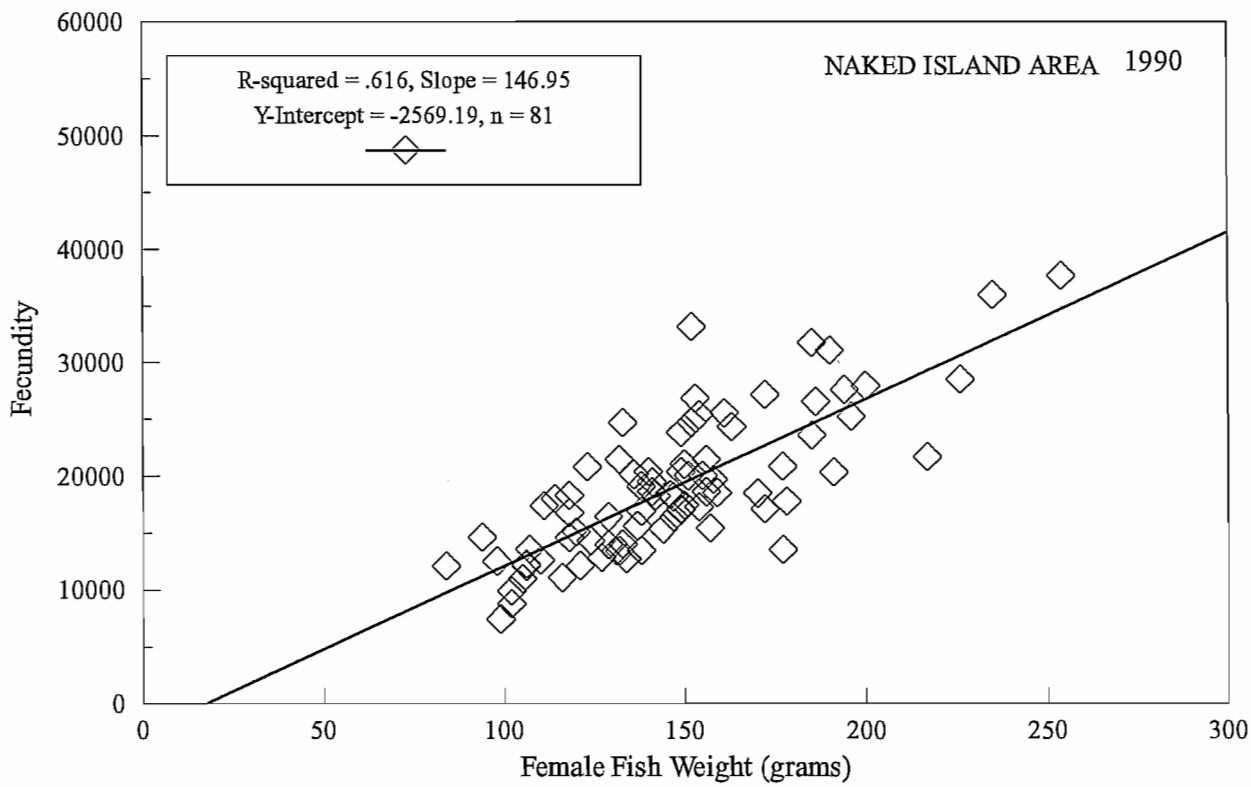




Appendix S.11. Herring fecundity data from the spring purse seine test fishery and pound fishery for Prince William Sound, 1990.

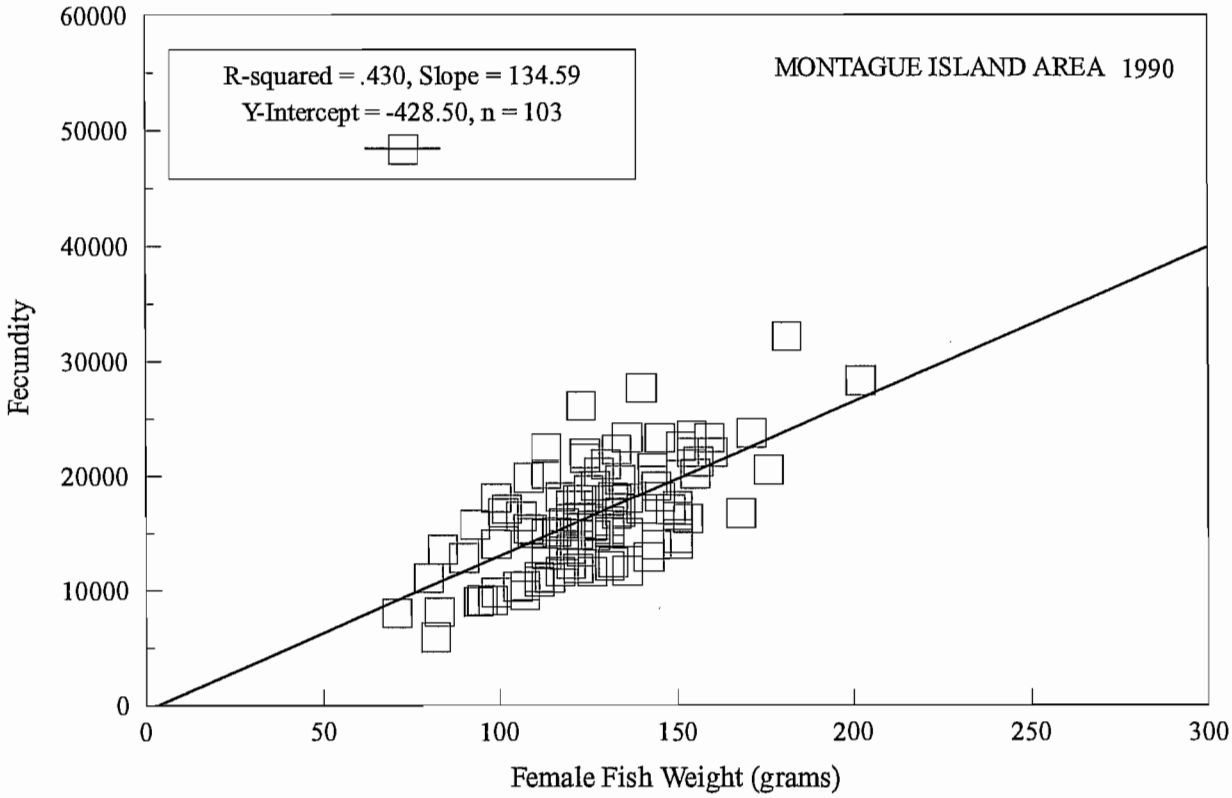
1990 Fecundity Data For Prince William Sound



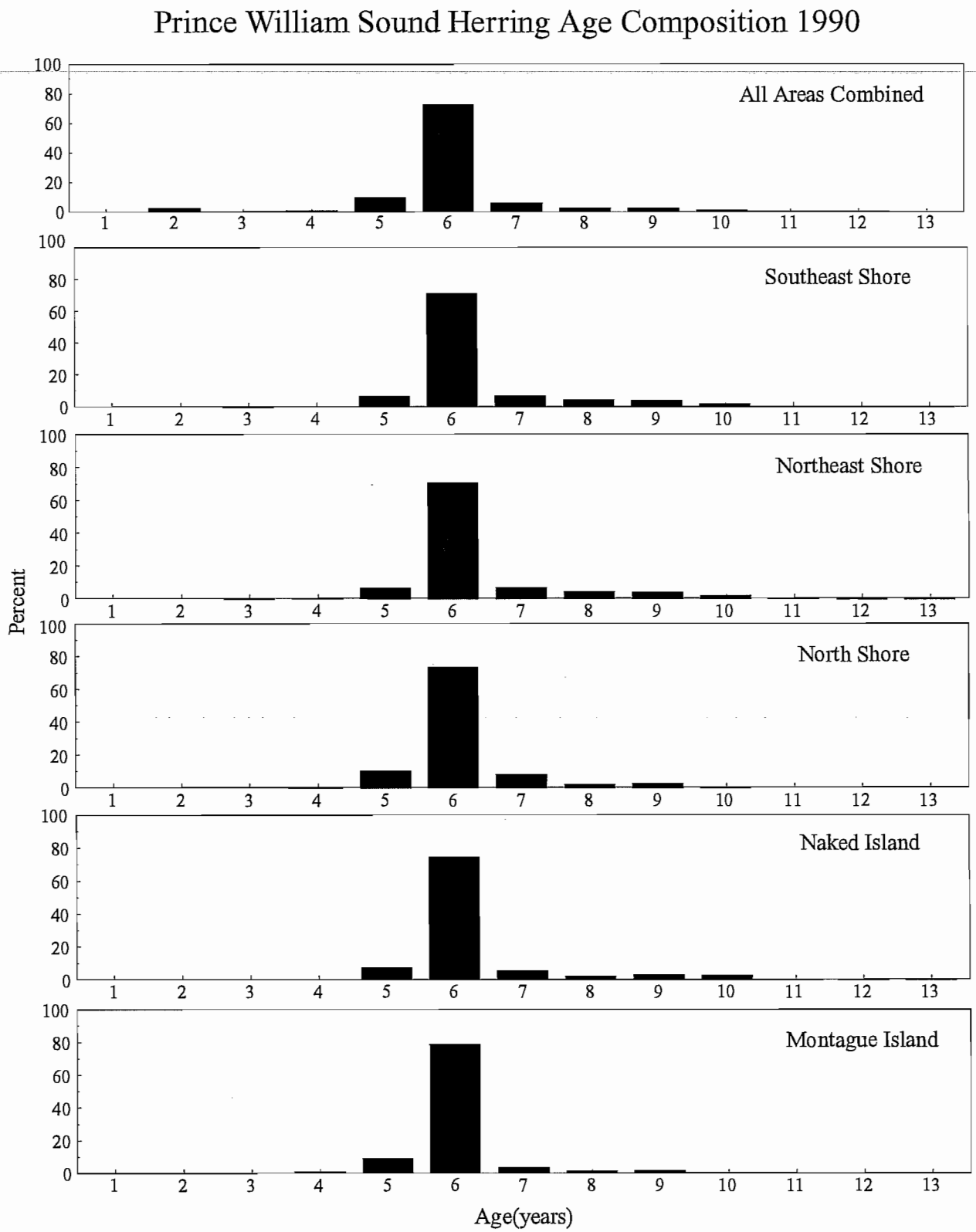


Appendix S.11. (page 2 of 3)

1990 Fecundity Data For Prince William Sound

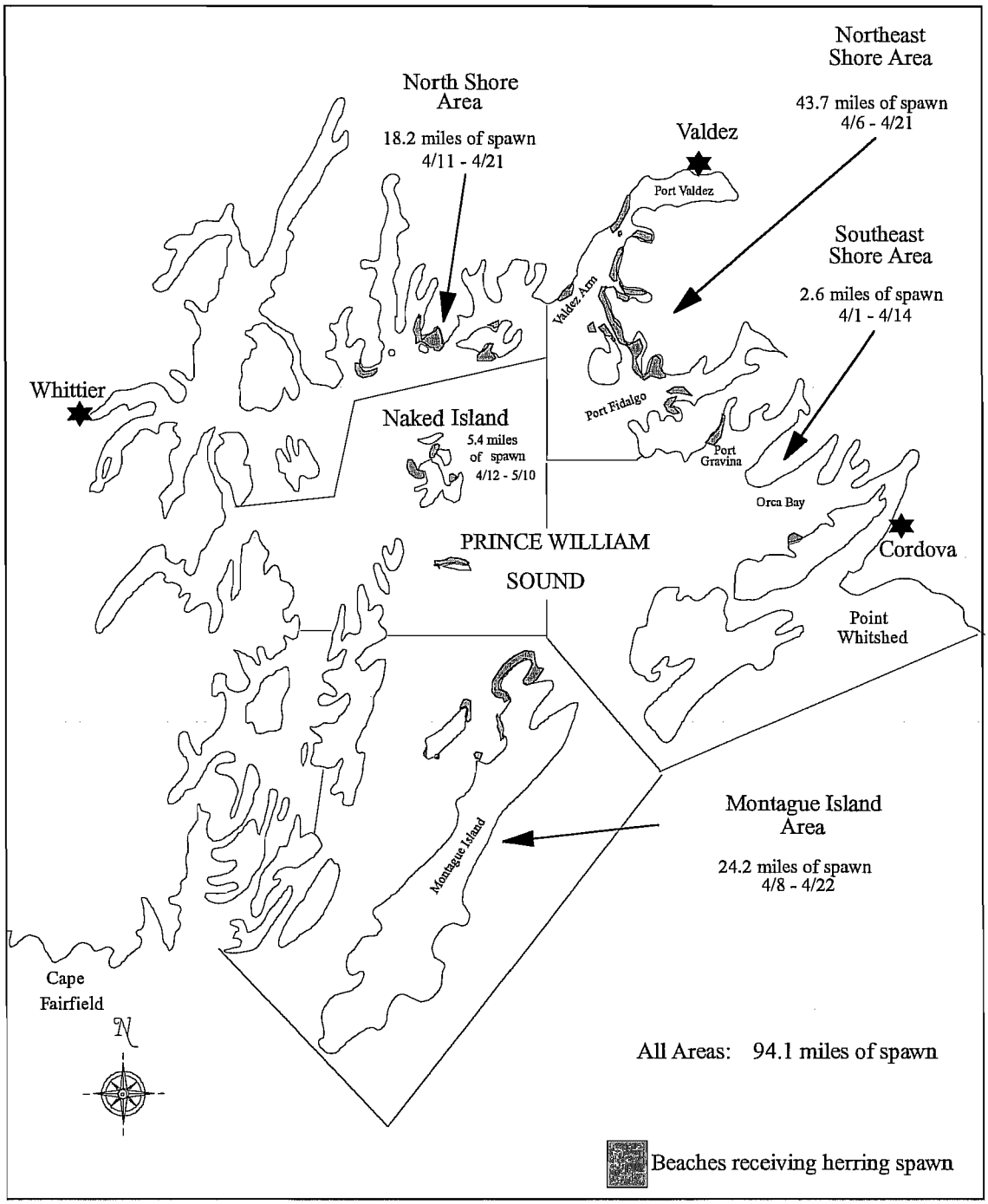


Appendix S.11. (page 3 of 3)



Appendix S.9. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1990.

Historical Herring Spawn and Shoreline Mileage



Appendix S. 12. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys and skiff surveys and the delineation of the five spawning areas used in the calculation of the spawn deposition biomass estimates, 1990.

APPENDIX T: SUMMARY FOR 1991

Appendix T.1. Herring biomass estimates from aerial surveys by area and date for Prince William Sound, 1991.

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/30	0	20	55	0	NS	75	03/30
04/01	0	595	0	0	NS	595	04/01
04/02	140	1,930	0	0	120	2,190	04/02
04/03	20	3,210	0	0	0	3,230	04/03
04/04	0	3,200	0	0	2,000	5,200	04/04
04/05	0	4,895	20	0	1,020	5,935	04/05
04/06	0	8,180	0	0	3,240	11,420	04/06
04/07	0	11,600	330	0	200	12,130	04/07
04/08	15	10,160	120	0	400	10,695	04/08
04/09	0	16,150	0	0	700	16,850	04/09
04/10	NS	6,670	20	0	2,750	9,440	04/10
04/11	0	7,100	10	0	3,320	10,430	04/11
04/12	NS	3,480	0	0	1,590	5,070	04/12
04/13	NS	0	0	NS	NS	0	04/13
04/15	NS	5	NS	NS	NS	5	04/15
04/17	NS	NS	0	0	0	0	04/17
04/19	NS	NS	NS	NS	8,500	8,500	04/19
04/20	NS	0	NS	NS	5,300	5,300	04/20
04/21	10	325	0	0	NS	335	04/21
04/22	0	190	0	0	8,520	8,710	04/22
04/23	0	10	0	0	0	10	04/23
04/24	NS	120	960	365	11,530	12,975	04/24
04/25	NS	560	170	480	3,040	4,250	04/25
04/26	NS	2,000	800	0	100	2,900	04/26
04/27	NS	1,840	800	0	440	3,080	04/27
04/29	200	190	0	NS	NS	390	04/29
05/01	0	0	0	0	0	0	05/01
05/03	NS	80	0	0	1,000	1,080	05/03
05/05	0	160	0	0	170	330	05/05
05/06	NS	NS	NS	NS	0	0	05/06
05/07	NS	0	0	0	0	0	05/07
05/08	NS	NS	NS	NS	0	0	05/08
05/12	NS	250	NS	NS	NS	250	05/12
AREA TOTAL	**385**	**82,920**	**3,285**	**845**	**53,940**	**141,375**	**TOTAL**
PEAK ESTIMATES	**340**	**20,890**	**1,965**	**480**	**19,090**	**42,765**	**PEAK**

NS = Not Surveyed

Appendix T.2. Herring spawn mile days from aerial surveys and shoreline miles from ground surveys by area and date for Prince William Sound, 1991.[a]

DATE	SOUTHEAST	NORTHEAST	NORTH SHORE	NAKED ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/30	0.0	0.0	0.0	0.0	NS	0.0	03/30
04/01	1.0	0.0	0.0	0.0	NS	1.0	04/01
04/02	2.7	0.0	0.0	0.0	0.0	2.7	04/02
04/03	0.0	0.0	0.0	0.0	0.0	0.0	04/03
04/04	0.0	0.0	0.0	0.0	0.0	0.0	04/04
04/05	1.4	0.3	0.0	0.0	0.0	1.7	04/05
04/06	0.4	0.0	0.0	0.0	0.0	0.4	04/06
04/07	0.2	0.0	0.3	0.0	0.0	0.5	04/07
04/08	0.0	0.3	0.0	0.0	0.0	0.3	04/08
04/09	0.0	0.8	0.0	0.0	0.0	0.8	04/09
04/10	NS	1.8	0.0	0.0	0.0	1.8	04/10
04/11	0.2	2.4	0.0	0.0	0.0	2.6	04/11
04/12	NS	1.1	0.0	0.0	0.0	1.1	04/12
04/13	NS	1.3	0.0	NS	NS	1.3	04/13
04/15	NS	0.9	NS	NS	NS	0.9	04/15
04/17	NS	NS	0.0	0.0	0.3	0.3	04/17
04/19	NS	NS	NS	NS	0.0	0.0	04/19
04/20	NS	0.3	NS	NS	1.8	2.0	04/20
04/21	0.0	0.3	0.0	0.0	NS	0.3	04/21
04/22	0.0	2.8	0.0	0.0	8.0	10.8	04/22
04/23	0.0	1.1	0.6	0.0	2.0	3.7	04/23
04/24	NS	3.3	0.7	0.0	0.8	4.7	04/24
04/25	NS	0.2	0.0	0.0	2.3	2.5	04/25
04/26	NS	1.5	0.2	0.0	3.3	5.0	04/26
04/27	NS	1.0	0.0	0.0	4.2	5.2	04/27
04/29	0.0	4.7	0.0	NS	NS	4.7	04/29
05/01	0.0	0.1	0.0	0.0	0.0	0.1	05/01
05/03	NS	0.2	0.0	0.0	0.3	0.5	05/03
05/05	0.0	0.1	0.0	0.0	3.1	3.2	05/05
05/06	NS	NS	NS	NS	6.8	6.8	05/06
05/07	NS	0.0	0.0	0.0	0.0	0.0	05/07
05/08	NS	NS	NS	NS	0.3	0.3	05/08
05/12	NS	0.0	NS	NS	NS	0.0	05/12
Mile Days	**5.9**	**24.2**	**1.8**	**0.0**	**33.0**	**64.8**	**Total**
Shoreline Miles	3.9	28.5	1.2	0.0	24.4	58.0	Total

a Dates displayed are for actual survey days.

NS = Not Surveyed

Appendix T.3. Herring biomass estimates from aerial surveys by sub-area and date for Prince William Sound, 1991.

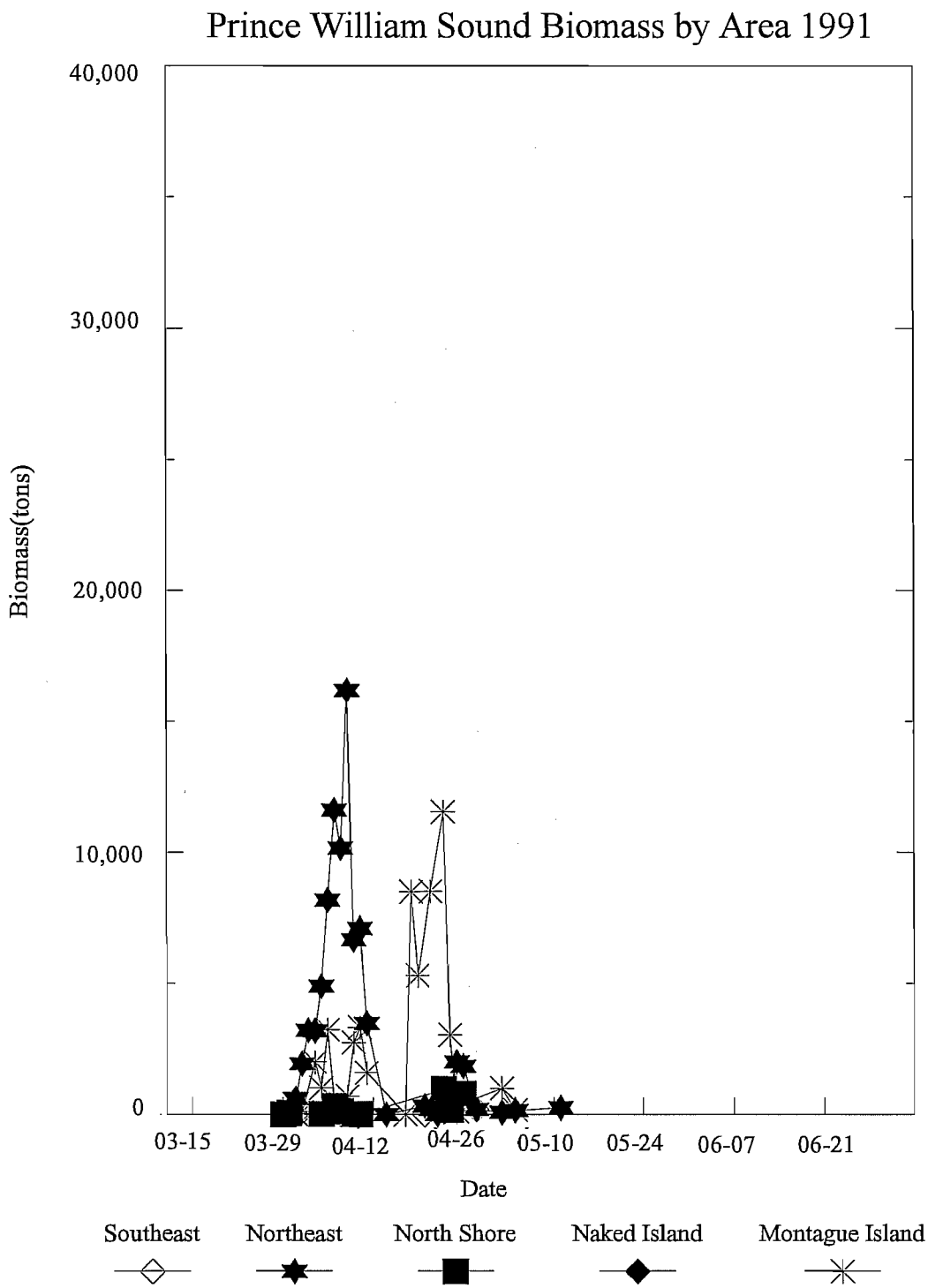
DATE	SIMPSON SHEEP & ISLANDS	HINCHIN-BROOK ISLAND	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/30	-	-	0	20	0	0	20	35	0	-	-	75	03/30
04/01	0	-	0	20	550	25	0	0	0	-	-	595	04/01
04/02	0	-	140	10	890	1030	0	0	0	-	120	2190	04/02
04/03	0	-	20	50	1670	1490	0	0	0	-	0	3230	04/03
04/04	-	-	0	140	1530	1530	0	0	0	-	2000	5200	04/04
04/05	0	-	-	65	3120	1710	-	20	0	-	1020	5935	04/05
04/06	0	-	0	490	5160	2530	0	0	0	-	3240	11420	04/06
04/07	0	-	0	4020	5980	1600	0	330	0	-	200	12130	04/07
04/08	-	-	15	1960	8000	200	0	120	0	0	400	10695	04/08
04/09	-	-	-	5650	10500	0	0	0	0	0	700	16850	04/09
04/10	-	-	-	2910	3760	0	0	20	0	0	2750	9440	04/10
04/11	0	-	-	3080	4020	0	0	10	0	-	3320	10430	04/11
04/12	-	-	-	2800	680	0	0	0	0	-	1590	5070	04/12
04/13	-	-	-	-	0	-	-	-	-	-	-	0	04/13
04/15	-	-	-	0	5	0	-	-	-	-	-	5	04/15
04/17	-	-	-	-	-	-	-	0	0	-	0	0	04/17
04/19	-	-	-	-	-	-	-	-	-	-	8500	8500	04/19
04/20	-	-	-	-	-	-	-	-	-	-	5300	5300	04/20
04/21	-	-	10	0	140	185	0	0	0	-	-	335	04/21
04/22	-	-	0	0	90	100	0	0	0	-	8520	8710	04/22
04/23	-	-	0	0	0	10	0	0	0	0	0	10	04/23
04/24	-	-	-	0	0	120	80	880	365	0	11530	12975	04/24
04/25	-	-	-	80	0	480	90	80	480	-	3040	4250	04/25
04/26	-	-	-	220	1040	740	700	100	0	-	100	2900	04/26
04/27	-	-	-	170	720	950	800	0	0	-	440	3080	04/27
04/29	-	-	200	0	0	190	0	0	-	-	-	390	04/29
05/01	-	-	0	0	0	0	0	0	0	0	0	0	05/01
05/03	-	-	-	80	0	0	0	0	0	0	1000	1080	05/03
05/05	-	-	0	0	0	160	0	0	0	-	170	330	05/05
05/06	-	-	-	-	-	-	-	-	-	-	0	0	05/06
05/07	-	-	-	0	0	0	0	0	0	-	0	0	05/07
05/08	-	-	-	-	-	-	-	-	-	-	0	0	05/08
05/12	-	-	-	120	80	50	-	-	-	-	-	250	05/12
Area Totals	**0**	**0**	**385**	**21885**	**47935**	**13100**	**1690**	**1595**	**845**	**0**	**53940**	**141375**	**Total**
Peak Estimates	**0**	**0**	**340**	**5870**	**11540**	**3480**	**720**	**1245**	**480**	**0**	**19090**	**42765**	**Peak**

Note: Data displayed only for dates that surveys were flown.

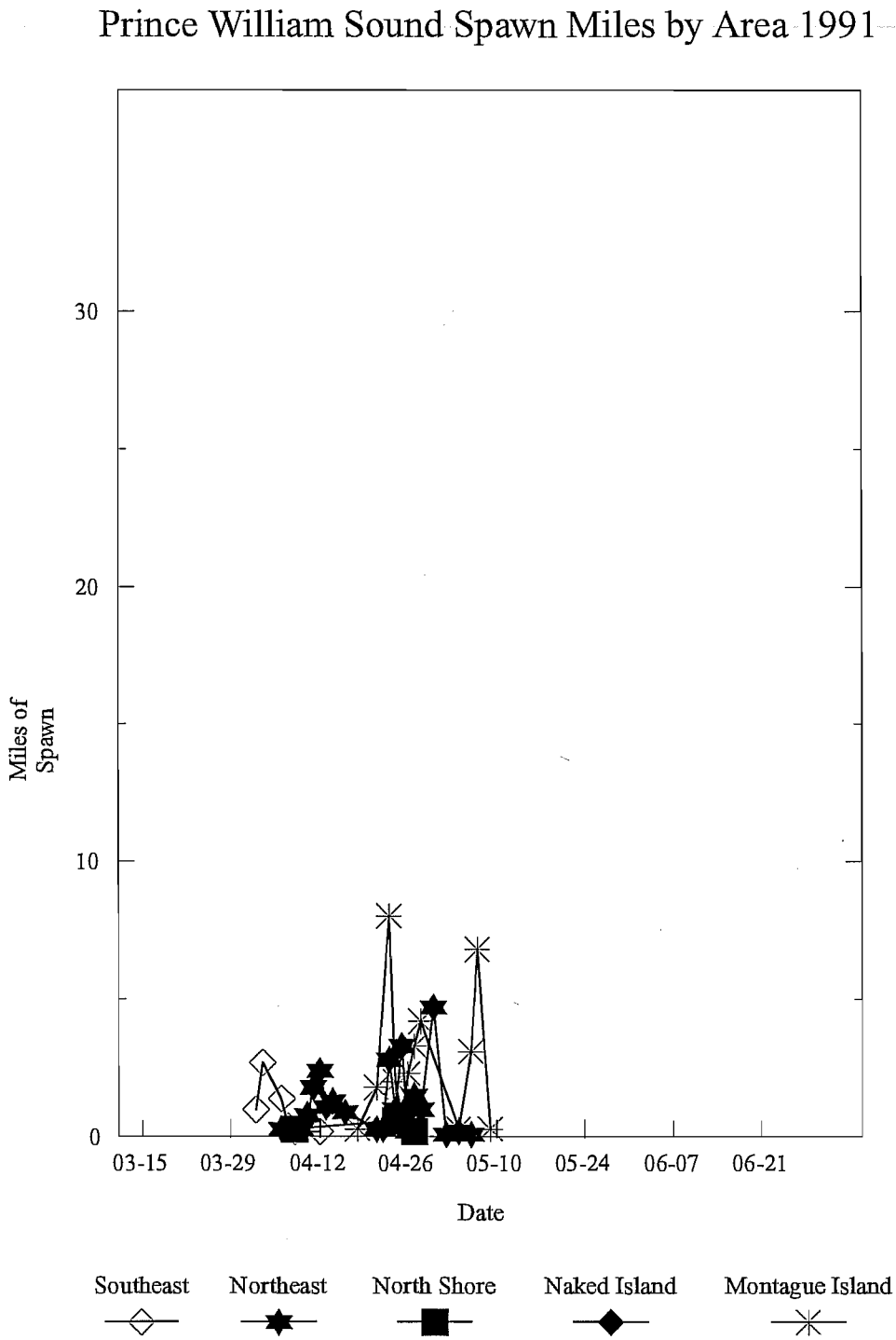
Appendix T.4. Estimated miles of herring spawn by sub-area and date from aerial surveys for Prince William Sound, 1991.

DATE	SIMPSON SHEEP & ISLANDS	HINCHIN-BROOK ISLAND	PORT GRAVINA	PORT FIDALGO	TATITLEK AREA	VALDEZ ARM & PORT	FREEMANTLE GRANITE PT.	GRANITE PT. ESTHER PASS.	NAKED ISLAND	KNIGHT ISLAND	MONTAGUE ISLAND	DAILY TOTAL	DATE
03/30	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-	0.00	03/30
04/01	0.00	-	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-	1.00	04/01
04/02	0.00	-	2.70	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	2.70	04/02
04/03	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	04/03
04/04	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	04/04
04/05	1.40	-	-	0.00	0.25	0.00	-	0.00	0.00	-	0.00	1.65	04/05
04/06	0.40	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.40	04/06
04/07	0.20	-	0.00	0.00	0.00	0.00	0.00	0.25	0.00	-	0.00	0.45	04/07
04/08	-	-	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.25	04/08
04/09	-	-	-	0.00	0.20	0.60	0.00	0.00	0.00	0.00	0.00	0.80	04/09
04/10	-	-	-	0.00	1.50	0.30	0.00	0.00	0.00	0.00	0.00	1.80	04/10
04/11	0.20	-	-	0.20	2.00	0.20	0.00	0.00	0.00	-	0.00	2.60	04/11
04/12	-	-	-	0.50	0.45	0.20	0.00	0.00	0.00	-	0.00	1.15	04/12
04/13	-	-	-	-	1.30	-	-	-	-	-	-	1.30	04/13
04/15	-	-	-	0.10	0.80	0.00	-	-	-	-	-	0.90	04/15
04/17	-	-	-	-	-	-	-	0.00	0.00	-	0.30	0.30	04/17
04/19	-	-	-	-	-	-	-	-	-	-	0.00	0.00	04/19
04/20	-	-	-	0.10	0.20	-	-	-	-	-	1.75	2.05	04/20
04/21	-	-	0.00	0.10	0.10	0.10	0.00	0.00	0.00	-	-	0.30	04/21
04/22	-	-	0.00	0.00	0.25	2.50	0.00	0.00	0.00	-	8.00	10.75	04/22
04/23	-	-	0.00	0.25	0.25	0.50	0.10	0.50	0.00	0.00	2.00	3.60	04/23
04/24	-	-	-	0.00	0.25	3.00	0.20	0.50	0.00	0.00	0.75	4.70	04/24
04/25	-	-	-	0.00	0.00	0.20	0.00	0.00	0.00	-	2.30	2.50	04/25
04/26	-	-	-	0.00	0.00	1.50	0.20	0.00	0.00	-	3.30	5.00	04/26
04/27	-	-	-	0.20	0.10	0.70	0.00	0.00	0.00	-	4.20	5.20	04/27
04/29	-	-	0.00	0.50	0.40	3.75	0.00	0.00				4.65	04/29
05/01	-	-	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.10	05/01
05/03	-	-	-	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.25	0.45	05/03
05/05	-	-	0.00	0.00	0.10	0.00	0.00	0.00	0.00	-	3.10	3.20	05/05
05/06	-	-	-	-	-	-	-	-	-	-	6.75	6.75	05/06
05/07	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	05/07
05/08	-	-	-	-	-	-	-	-	-	-	0.25	0.25	05/08
05/12	-	-	-	0.00	0.00	0.00	-	-	-	-	-	0.00	05/12
Area Totals	**2.20**	**0.00**	**3.70**	**1.95**	**8.60**	**13.65**	**0.50**	**1.25**	**0.00**	**0.00**	**32.95**	**64.80**	**Total**

Note: Data displayed only for dates that surveys were flown.



Appendix T.5. Biomass estimates from aerial surveys by area and date for Prince William Sound, 1991.



Appendix T.6. Miles of shoreline herring spawn from aerial surveys by area and date for Prince William Sound, 1991.

Appendix T.7. Estimates of the contributions of each age and year class to the estimated spawning biomass (from aerial surveys) of Pacific herring in Prince William Sound , 1991.

All Areas Combined

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1990	1	0			0.0	0.0%	0.0	0.0%
1989	2	33	51		222.6	0.2%	5,902.5	0.6%
1988	3	2,475	77		28,883.5	24.7%	440,720.3	41.3%
1987	4	246	108		2,334.3	2.0%	30,512.7	2.9%
1986	5	136	153		1,109.5	0.9%	9,207.8	0.9%
1985	6	960	159		8,565.9	7.3%	65,450.3	6.1%
1984	7	7,230	171		64,816.1	55.3%	450,541.6	42.2%
1983	8	567	182		4,771.9	4.1%	29,946.9	2.8%
1982	9	332	195		2,809.7	2.4%	16,405.0	1.5%
1981	10	312	205		2,554.6	2.2%	13,690.1	1.3%
1980	11	99	201		832.9	0.7%	4,626.5	0.4%
1979	12	10	203		146.4	0.1%	793.2	0.1%
1978	13+	17	233		96.1	0.1%	404.0	0.0%
Total		**12,417**	**85**	**148**	**117,143.4**	**100.0%**	**1,068,200.8**	**100.0%**

Southeast Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1990	1	0			0.0	0.0%	0.0	0.0%
1989	2	3	59	164	0.3	0.0%	4.3	0.1%
1988	3	228	78	183	25.6	3.2%	327.6	5.8%
1987	4	56	101	197	8.1	1.0%	80.5	1.4%
1986	5	52	120	209	9.0	1.1%	74.7	1.3%
1985	6	342	129	215	63.4	8.0%	491.4	8.6%
1984	7	2,732	141	221	553.5	70.1%	3,925.5	69.0%
1983	8	226	153	225	49.7	6.3%	324.7	5.7%
1982	9	135	169	234	32.8	4.1%	194.0	3.4%
1981	10	132	180	239	34.1	4.3%	189.7	3.3%
1980	11	41	175	237	10.3	1.3%	58.9	1.0%
1979	12	3	185	244	0.8	0.1%	4.3	0.1%
1978	13+	8	217	255	2.5	0.3%	11.5	0.2%
Total		**3,958**	**126**	**221**	**790.0**	**100.0%**	**5,687.1**	**100.0%**

-Continued-

Appendix T.7. (page 2 of 3)

Northeast Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1990	1	0			0.0	0.0%	0.0	0.0%
1989	2	3	59	164	9.5	0.0%	145.6	0.1%
1988	3	228	78	183	951.6	3.2%	11,067.6	5.8%
1987	4	56	101	197	302.6	1.0%	2,718.4	1.4%
1986	5	52	120	209	333.9	1.1%	2,524.2	1.3%
1985	6	342	129	215	2,360.7	8.0%	16,601.5	8.6%
1984	7	2,732	141	221	20,611.8	70.1%	132,617.5	69.0%
1983	8	226	153	225	1,850.2	6.3%	10,970.6	5.7%
1982	9	135	169	234	1,220.8	4.1%	6,553.2	3.4%
1981	10	132	180	239	1,271.3	4.3%	6,407.6	3.3%
1980	11	41	175	237	383.9	1.3%	1,990.2	1.0%
1979	12	3	185	244	29.7	0.1%	145.6	0.1%
1978	13+	8	217	255	92.9	0.3%	388.3	0.2%
Total		**3,958**	**126**	**221**	**29,418.9**	**100.0%**	**192,130.3**	**100.0%**

North Shore Area

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1990	1	0			0.0	0.0%	0.0	0.0%
1989	2	0			0.0	0.0%	0.0	0.0%
1988	3	4	80	184	1.3	0.5%	16.5	0.9%
1987	4	4	97	198	1.6	0.6%	16.5	0.9%
1986	5	1	118	206	0.5	0.2%	4.1	0.2%
1985	6	50	129	216	26.7	10.5%	206.7	11.8%
1984	7	298	143	220	176.2	69.5%	1,231.9	70.3%
1983	8	28	151	224	17.5	6.9%	115.8	6.6%
1982	9	17	179	237	12.6	5.0%	70.3	4.0%
1981	10	15	188	243	11.7	4.6%	62.0	3.5%
1980	11	5	196	242	4.1	1.6%	20.7	1.2%
1979	12	1	201	245	0.8	0.3%	4.1	0.2%
1978	13+	1	183	245	0.8	0.3%	4.1	0.2%
Total		**424**	**145**	**221**	**253.6**	**100.0%**	**1,752.8**	**100.0%**

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Appendix T.7. (page 3 of 3)

Montague Island

Year Class	Age Class	Number Sampled	Mean Weight (g)	Mean Standard Length (mm)	Biomass by Age Class: Weight (ton)	Percent by Weight	Number of Fish (x 1,000)	Percent by Number
1990	1	0			0.0	0.0%	0.0	0.0%
1989	2	27	37	149	212.8	0.2%	5,752.5	0.7%
1988	3	2,015	65	174	27,905.1	32.2%	429,308.5	49.4%
1987	4	130	73	180	2,021.9	2.3%	27,697.3	3.2%
1986	5	31	116	201	766.2	0.9%	6,604.7	0.8%
1985	6	226	127	213	6,115.1	7.1%	48,150.7	5.5%
1984	7	1,468	139	218	43,474.6	50.2%	312,766.7	36.0%
1983	8	87	154	227	2,854.5	3.3%	18,535.9	2.1%
1982	9	45	161	233	1,543.6	1.8%	9,587.5	1.1%
1981	10	33	176	235	1,237.4	1.4%	7,030.9	0.8%
1980	11	12	170	233	434.6	0.5%	2,556.7	0.3%
1979	12	3	180	243	115.1	0.1%	639.2	0.1%
1978	13+	0			0.0	0.0%	0.0	0.0%
Total		**4,077**	**100**	**195**	**86,680.9**	**100.0%**	**868,630.6**	**100.0%**

Appendix T.8. Age, sex and size composition of Pacific herring from the purse seine test fishery, sac roe fishery and pound fishery, Prince William Sound, 1991.

Sample Date		MALES						FEMALES						SEXES COMBINED					
				LENGTH		WEIGHT				LENGTH		WEIGHT				LENGTH		WEIGHT	
	AGE	NUMBER	PERCENT	MEAN	STD	MEAN	STD	NUMBER	PERCENT	MEAN	STD	MEAN	STD	NUMBER	PERCENT	MEAN	STD	MEAN	STD
	2	1	0.0	176	NA	72	NA	3	0.1	169	4	57	2	27	0.7	149	11	37	11
	3	1,231	30.2	174	11	65	14	610	15.0	176	11	70	16	2,015	49.4	174	12	69	15
	4	72	1.8	180	17	71	21	46	1.1	185	15	81	20	130	3.2	180	17	73	22
Montague Island	5	15	0.4	195	25	108	21	16	0.4	207	16	124	26	31	0.8	201	21	116	25
Purse/Beach Seine	6	120	2.9	212	10	126	19	106	2.6	214	11	129	18	226	5.5	213	10	127	19
Test Fish	7	757	18.6	217	11	135	20	710	17.4	220	11	144	21	1,468	36.0	218	11	139	21
All Samples Combined	8	50	1.2	228	12	154	23	37	0.9	225	13	153	27	87	2.1	227	12	154	25
April and May, 1991	9	21	0.5	229	8	146	24	24	0.6	237	13	175	27	45	1.1	233	12	161	29
	10	15	0.4	228	19	162	40	18	0.4	241	11	187	24	33	0.8	235	17	176	34
	11	8	0.2	228	22	162	45	4	0.1	243	10	186	15	12	0.3	233	20	170	38
	12	2	0.0	237	4	174	21	1	0.0	256	NA	192	NA	3	0.1	243	12	180	18
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		2,292	56.2	193	24	95	39	1,575	38.6	202	25	113	42	4,077	100.0	195	26	100	42
UNAGED		82	56.2	205	22	113	35	53	36.3	214	18	130	32	146	100.0	204	29	114	39
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	3	0.7	201	13	109	21	1	0.2	177	NA	81	NA	4	0.9	195	16	102	22
	4	2	0.5	197	11	98	2	3	0.7	195	11	95	11	5	1.2	196	10	96	8
Virgin Bay	5	2	0.5	211	4	117	12	6	1.4	209	5	115	5	8	1.9	209	5	115	6
Northeast Area	6	32	7.5	217	11	133	19	23	5.4	219	8	137	16	55	12.9	218	10	134	18
Test Fish	7	132	30.9	220	14	139	19	157	36.8	223	13	150	23	289	67.7	222	13	145	22
03 April, 1991	8	10	2.3	228	13	160	30	12	2.8	226	12	156	27	22	5.2	227	12	158	28
	9	13	3.0	237	9	169	24	6	1.4	239	15	176	18	19	4.4	237	11	171	22
	10	7	1.6	238	12	184	19	12	2.8	244	10	192	23	19	4.4	242	11	189	22
	11	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	12	1	0.2	250	NA	182	NA	1	0.2	244	NA	185	NA	2	0.5	247	4	184	2
	13	0	0.0	NA	NA	NA	NA	2	0.5	262	12	227	33	2	0.5	262	12	227	33
TOTAL		203	47.5	222	15	142	25	224	52.5	224	15	151	28	427	100.0	223	15	146.7	27
UNAGED		12	52.2	222	15	148	30	11	47.8	227	14	150	29	23	100.0	224	14	149	29

Indicates dominant age class.

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Appendix T.8. (page 2 of 4)

Sample Date	AGE	MALES NUMBER	MALES PERCENT	MALES LENGTH MEAN	MALES LENGTH STD	MALES WEIGHT MEAN	MALES WEIGHT STD	FEMALES NUMBER	FEMALES PERCENT	FEMALES LENGTH MEAN	FEMALES LENGTH STD	FEMALES WEIGHT MEAN	FEMALES WEIGHT STD	SEXES COMBINED NUMBER	SEXES COMBINED PERCENT	SEXES COMBINED LENGTH MEAN	SEXES COMBINED LENGTH STD	SEXES COMBINED WEIGHT MEAN	SEXES COMBINED WEIGHT STD
	2	2	0.3	160	23	60	30	0	0.0	NA	NA	NA	NA	2	0.3	160	23	60	30
	3	37	4.7	182	20	71	8	38	4.8	183	20	79	NA	77	9.7	182	20	75	18
	4	3	0.4	192	3	108	19	10	1.3	198	7	107	NA	13	1.6	196	7	107	18
Galena and	5	7	0.9	201	13	118	40	0	0.0	NA	NA	NA	NA	7	0.9	201	13	118	40
Jack Bays	6	42	5.3	214	9	129	16	25	3.2	218	7	138	19	67	8.5	215	9	132	15
Northeast Area	7	263	33.2	224	117	139	19	283	35.8	220	8	146	28	546	69.0	222	81	143	19
Purse Seine	8	22	2.8	219	10	143	20	22	2.8	227	10	166	20	44	5.6	223	11	154	23
Test Fish	9	15	1.9	236	9	180	24	5	0.6	226	14	162	25	20	2.5	234	11	175	26
04 April, 1991	10	6	0.8	233	11	171	13	6	0.8	232	15	178	19	12	1.5	232	13	175	14
	11	2	0.3	247	16	212	44	0	0.0	NA	NA	NA	NA	2	0.3	247	16	212	44
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	0	0.0	NA	NA	NA	NA	1	0.1	267	NA	246	NA	1	0.1	267	NA	246	NA
TOTAL		399	50.4	219	96	133	30	390	49.3	216	16	140	30	791	100.0	217	69	136.5	30
UNAGED		10	41.7	215	5	132	14	14	58.3	220	11	148	29	24	100.0	218	9	141	25
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	41	3.3	185	11	80	20	22	1.8	186	8	84	16	63	5.0	185	10	81	18
	4	8	0.6	211	16	117	29	9	0.7	188	29	98	13	17	1.4	198	26	107	23
Picnic Cove and	5	7	0.6	207	11	112	17	9	0.7	210	9	122	22	16	1.3	209	10	118	20
Boulder, Galena,	6	49	3.9	211	7	122	17	53	4.2	217	9	130	17	102	8.2	214	8	126	17
and Landlocked Bays.	7	406	32.5	219	10	135	19	482	38.6	222	11	145	19	888	71.0	220	11	141	20
Northeast Area	8	30	2.4	223	11	147	26	37	3.0	226	20	154	26	67	5.4	224	16	151	26
Pound Fishery	9	20	1.6	235	12	165	24	18	1.4	233	13	168	27	38	3.0	234	13	166	25
07 April, 1991	10	16	1.3	232	9	173	21	17	1.4	245	10	195	21	33	2.6	239	12	184	24
10 April, 1991	11	14	1.1	237	10	180	23	9	0.7	237	8	171	29	23	1.8	237	9	176	25
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	3	0.2	246	13	209	27	0	0.0	NA	NA	NA	NA	3	0.2	246	13	209	27
TOTAL		594	47.5	217	14	134	28	656	52.5	221	15	144	26	1,250	100.0	219	15	139	27
UNAGED		57	54.8	221	14	139	27	47	45.2	222	10	145	23	104	100.0	221	13	142	25

Indicates dominant age class.

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Appendix T.8. (page 3 of 4)

Sample Date	AGE	MALES NUMBER	MALES PERCENT	MALES LENGTH MEAN	MALES LENGTH STD	MALES WEIGHT MEAN	MALES WEIGHT STD	FEMALES NUMBER	FEMALES PERCENT	FEMALES LENGTH MEAN	FEMALES LENGTH STD	FEMALES WEIGHT MEAN	FEMALES WEIGHT STD	SEXES COMBINED NUMBER	SEXES COMBINED PERCENT	SEXES COMBINED LENGTH MEAN	SEXES COMBINED LENGTH STD	SEXES COMBINED WEIGHT MEAN	SEXES COMBINED WEIGHT STD
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	13	3.0	183	7	79	13	5	1.2	174	17	77	7	18	4.2	180	11	78	12
	4	5	1.2	196	5	85	17	4	0.9	201	6	103	9	9	2.1	198	6	93	16
Port Fidalgo and	5	2	0.5	218	15	111	11	3	0.7	204	6	114	6	5	1.2	210	11	113	7
Tatitlek Narrows	6	14	3.3	216	12	133	17	20	4.7	216	9	132	14	34	7.9	216	10	132	15
Northeast Area	7	155	36.0	219	12	140	16	142	33.0	220	14	145	22	297	69.1	219	13	142	19
Purse Seine	8	13	3.0	229	11	156	24	15	3.5	224	8	142	23	28	6.5	226	10	149	24
Commercial Catch	9	6	1.4	236	14	178	35	7	1.6	237	15	198	27	13	3.0	237	14	189	32
09 April, 1991	10	12	2.8	239	12	177	22	9	2.1	240	12	180	24	21	4.9	239	11	178	22
	11	3	0.7	246	4	174	39	2	0.5	232	15	172	35	5	1.2	240	11	173	33
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
TOTAL		223	51.9	219	16	139	27	207	48.1	220	16	144	28	430	100.0	219	16	141.3	28
UNAGED		9	45.0	203	34	136	25	11	55.0	222	14	149	27	20	100.0	213	26	143	26
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	20	3.2	182	25	80	34	12	1.9	187	20	95	54	32	5.1	184	23	86	42
	4	3	0.5	192	21	90	24	5	0.8	201	12	109	17	8	1.3	198	15	102	20
Tatitlek Narrows,	5	4	0.6	208	7	139	41	6	0.9	217	6	133	14	10	1.6	213	8	136	26
Fidalgo and Two Moon	6	19	3.0	207	16	118	25	32	5.1	218	8	137	19	51	8.1	214	12	130	23
Northeast Area	7	192	30.4	219	13	141	20	230	36.4	221	16	148	21	422	66.8	220	14	145	21
Purse Seine	8	25	4.0	224	10	154	18	14	2.2	231	10	172	25	39	6.2	227	10	161	22
Commercial Fishery	9	19	3.0	229	12	159	25	11	1.7	238	10	175	15	30	4.7	232	12	165	23
10 April, 1991	10	12	1.9	239	8	184	18	21	3.3	240	11	183	23	33	5.2	239	10	183	21
	11	4	0.6	242	7	185	17	1	0.2	240	NA	205	NA	5	0.8	241	6	189	17
	12	1	0.2	239	NA	187	NA	0	0.0	NA	NA	NA	NA	1	0.2	239	NA	187	NA
	13	1	0.2	254	NA	223	NA	0	0.0	NA	NA	NA	NA	1	0.2	254	NA	223	NA
TOTAL		300	47.5	218	18	140	31	332	52.5	221	17	149	28	632	100.0	219	18	144.3	30
UNAGED		18	41.9	216	12	137	22	25	58.1	224	14	152	23	43	100.0	221	13	146	23

Indicates dominant age class.

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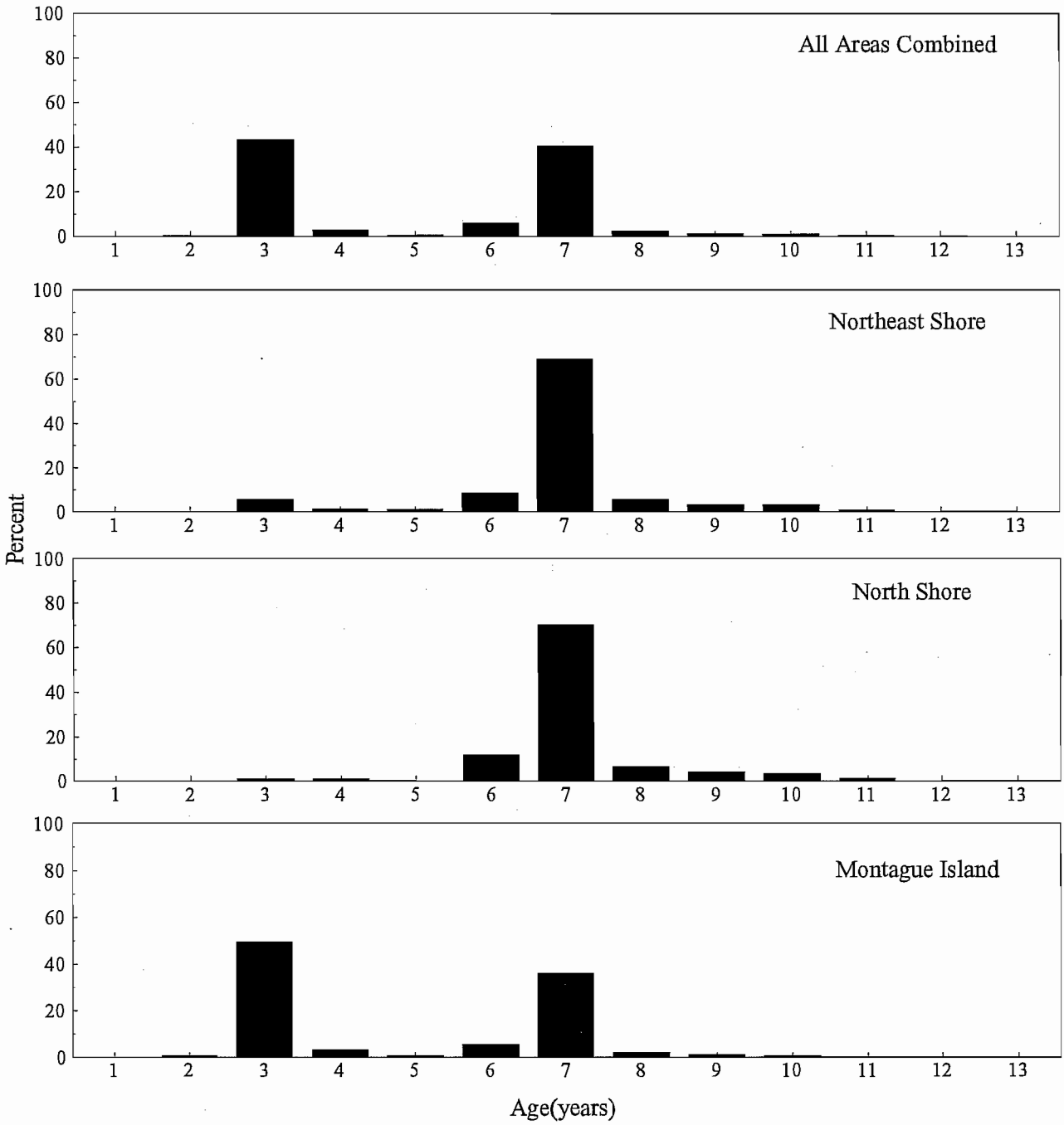
Appendix T.8. (page 4 of 4)

Sample Date	AGE	MALES NUMBER	MALES PERCENT	MALES LENGTH MEAN	MALES LENGTH STD	MALES WEIGHT MEAN	MALES WEIGHT STD	FEMALES NUMBER	FEMALES PERCENT	FEMALES LENGTH MEAN	FEMALES LENGTH STD	FEMALES WEIGHT MEAN	FEMALES WEIGHT STD	SEXES COMBINED NUMBER	SEXES COMBINED PERCENT	SEXES COMBINED LENGTH MEAN	SEXES COMBINED LENGTH STD	SEXES COMBINED WEIGHT MEAN	SEXES COMBINED WEIGHT STD
	2	1	0.2	173	NA	58	NA	0	0.0	NA	NA	NA	NA	1	0.2	173	NA	58	NA
	3	23	5.3	181	8	65	8	11	2.6	176	12	68	15	34	7.9	179	9	66	11
	4	4	0.9	190	13	77	18	0	0.0	NA	NA	NA	NA	4	0.9	190	13	77	18
Galena Bay	5	3	0.7	208	6	106	14	3	0.7	214	5	115	25	6	1.4	211	6	110	19
Northeast Area	6	17	4.0	215	10	120	24	16	3.7	219	7	125	13	33	7.7	217	9	123	19
Pound Fish	7	173	40.2	219	8	124	16	117	27.2	222	8	137	19	290	67.4	220	8	129	19
24 April, 1991	8	12	2.8	227	8	134	18	14	3.3	228	9	148	25	26	6.0	228	9	141	23
	9	8	1.9	235	8	156	23	7	1.6	234	7	162	33	15	3.5	235	8	159	27
	10	8	1.9	235	14	151	27	6	1.4	241	8	164	22	14	3.3	238	12	157	25
	11	2	0.5	228	22	127	44	4	0.9	233	9	165	34	6	1.4	231	12	152	38
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	1	0.2	257	NA	185	NA	0	0.0	NA	NA	NA	NA	1	0.2	257	NA	185	NA
TOTAL		252	58.6	216	16	120	27	178	41.4	221	15	135	28	430	100.0	218	15	125.9	28
UNAGED		6	30.0	224	5	128	6	14	70.0	223	8	139	30	20	100.0	224	7	135	26
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	2	0.5	180	0	74	5	2	0.5	189	4	87	4	4	0.9	184	5	80	8
	4	2	0.5	198	11	97	16	2	0.5	198	0	96	4	4	0.9	198	7	97	9
Granite and Cedar Bays	5	1	0.2	206	NA	118	NA	0	0.0	NA	NA	NA	NA	1	0.2	206	NA	118	NA
North Shore	6	28	6.6	217	7	131	13	22	5.2	215	6	127	12	50	11.8	216	6	129	13
Test Fish	7	138	32.5	219	7	139	16	160	37.7	221	8	147	18	298	70.3	220	8	143	18
07 April, 1991	8	12	2.8	222	10	145	15	16	3.8	225	9	156	20	28	6.6	224	10	151	19
	9	3	0.7	240	8	173	17	14	3.3	236	10	180	23	17	4.0	237	9	179	21
	10	7	1.7	244	12	188	19	8	1.9	241	11	188	33	15	3.5	243	11	188	26
	11	4	0.9	243	3	158	15	1	0.2	238	NA	186	NA	5	1.2	242	3	196	14
	12	1	0.2	245	NA	201	NA	0	0.0	NA	NA	NA	NA	1	0.2	245	NA	201	NA
	13	0	0.0	NA	NA	NA	NA	1	0.2	245	NA	183	NA	1	0.2	245	NA	183	NA
TOTAL		198	46.7	220	11	141	23	226	53.3	222	11	148	24	424	100.0	221	11	144.6	24
UNAGED		14	53.8	218	9	134	16	12	46.2	217	7	138	17	26	100.0	217	8	136	16

Indicates dominant age class.

Prince William Sound Herring Age Composition 1991



Appendix T.9. Percent contribution by age class in the purse seine herring sac roe fishery, Prince William Sound 1991.

Appendix T.10. Herring fecundity data from the spring purse seine test fishery and pound fishery for Prince William Sound, 1991.

Montague Island

Purse seine test fish from Rocky Bay, 04/06/91.

AWL #	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE[a]	EGGS/G	FECUNDITY
4	25	216	136	34.96	7	762.86	26,705
4	29	216	131	28.03	7	615.97	17,326
4	30	240	197	42.60	10	674.18	29,315
5	1	235	199	26.90	8	908.46	24,458
5	5	227	155	33.71	7	699.40	23,587
5	16	223	170	44.83	7	691.01	31,008
5	17	235	184	47.56	18	555.25	26,428
5	19	192	92	17.84	4	910.52	16,594
5	21	242	204	46.87	7	532.05	25,152
5	23	228	155	30.65	7	967.99	30,199
5	27	215	142	26.38	9	641.50	16,943
5	28	213	120	33.54	6	856.23	28,733
5	29	219	144	31.91	6	524.77	16,776
6	3	227	175	39.10	7	655.59	26,164
6	12	217	124	27.46	7	825.26	22,672
6	15	231	154	30.84	7	717.41	22,345
6	17	217	145	28.67	7	709.85	20,386
6	21	218	148	36.65	7	704.14	25,882
6	27	226	141	21.71	7	691.67	15,046
7	1	206	141	33.56	18	694.39	23,314
7	3	223	156	36.21	7	666.07	24,133
7	6	233	175	38.64	18	881.44	34,074
7	14	225	165	36.93	7	610.05	22,749
7	16	223	155	40.55	7	655.42	26,594
7	24	217	128	19.96	6	705.80	14,118
7	26	228	165	45.59	7	664.83	30,529
7	29	233	183	45.67	7	726.57	33,192
8	1	205	112	24.56	6	760.54	18,700
8	4	230	160	37.61	9	676.58	25,496
8	5	221	154	32.33	7	701.86	22,718
8	6	223	149	38.06	7	653.69	24,940
8	7	224	130	28.57	7	729.82	20,881
8	8	230	166	35.97	9	707.52	25,474
8	9	237	187	43.71	7	737.18	32,232
8	14	223	162	38.66	7	682.59	26,402
8	18	214	153	38.75	7	577.71	22,406
8	21	229	168	38.57	7	622.31	24,533
8	22	221	155	38.81	7	691.16	26,849
8	23	222	141	31.82	7	654.17	20,846
8	24	234	174	38.44	7	768.30	29,578
8	30	232	156	33.30	7	616.90	20,593
9	5	229	173	37.48	6	681.34	25,587

-Continued-

Montague Island
Purse seine test fish from Rocky Bay, 04/06/91.

AWL #	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
9	6	207	130	29.33	7	853.64	25,073
9	13	224	163	33.16	7	651.47	21,633
9	17	218	141	31.45	7	714.61	22,494
9	18	217	144	37.44	7	724.38	27,171
9	19	194	103	19.47	7	874.15	17,135
12	2	235	180	36.16	8	559.91	20,463
12	3	211	118	23.82	7	715.31	17,052
12	9	237	143	34.87	6	537.30	18,759
12	15	232	169	41.83	7	565.44	23,710
12	16	243	228	56.53	10	444.17	25,325
12	21	238	179	44.24	8	492.94	21,883
12	24	211	132	25.50	6	485.42	12,392
13	4	243	204	47.67	7	582.22	27,775
13	26	215	138	31.55	6	406.86	12,843
13	30	232	177	40.62	7	490.72	20,058
14	2	205	127	31.36	7	666.34	21,223
14	7	208	122	22.96	18	605.39	14,440
14	10	205	118	24.36	7	669.42	16,837
14	21	239	170	42.00	7	560.33	23,574
15	3	209	131	30.21	7	548.41	16,578
15	4	218	136	28.41	7	749.29	21,811
15	9	242	198	46.35	7	645.87	29,961
15	15	182	77	15.93	3	871.81	13,908
15	22	208	118	27.90	18	814.65	22,749
15	27	210	133	31.02	7	724.23	22,506
16	16	209	110	22.88	7	730.17	17,046
16	20	210	132	23.79	7	662.89	16,293
17	9	198	102	14.87	3	676.23	10,106
17	13	208	124	25.50	7	668.43	17,070
17	19	205	111	21.15	7	717.86	15,265
17	24	205	116	20.01	6	694.52	13,931
19	28	181	73	12.43	3	928.09	11,576

Northeast Shore
Purse seine test fish from Galena Bay, 04/04/91.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	1	213	144	40.58	7	622.14	22,762
1	2	225	157	39.44	7	582.80	20,474
1	3	220	136	27.88	7	530.13	12,585
1	5	209	130	33.39	7	604.97	17,743
1	10	208	125	33.16	7	740.51	21,431
1	11	225	186	48.18	7	633.56	27,871

-Continued-

Northeast Shore
Purse seine test fish from Galena Bay, 04/04/91.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
1	17	221	162	44.95	7	657.17	26,558
1	19	222	140	38.71	7	646.29	22,251
1	20	228	160	25.41	7	588.34	12,504
2	3	221	152	38.77	7	672.85	23,357
2	6	222	140	32.26	6	670.07	18,789
2	7	225	159	44.08	7	649.55	25,892
2	14	206	121	42.68	7	665.46	25,419
2	26	210	129	28.19	6	582.32	13,630
3	6	230	180	43.36	7	543.87	21,139
3	14	245	229	53.38	18	607.48	30,289
3	18	210	130	28.72	7	745.96	18,407
3	20	207	112	26.60	7	572.01	12,789
3	23	232	174	47.26	10	515.07	22,103
3	27	230	174	37.83	7	636.01	21,359
4	14	234	170	37.08	9	615.72	20,196
4	17	233	176	49.48	7	566.19	25,554
4	18	197	111	22.74	4	522.88	9,725
4	19	237	186	46.18	7	506.83	21,553
5	3	181	79	18.59	3	828.17	12,122
5	13	236	200	46.70	9	458.37	19,491
5	24	209	140	41.25	7	395.23	14,565
5	25	211	129	30.91	7	550.14	15,160
5	26	239	161	37.21	8	444.26	14,693
6	1	190	84	20.92	3	935.00	15,793
6	7	234	183	46.56	7	730.89	30,802
6	28	193	77	14.87	4	1080.64	11,419
7	16	184	78	16.68	3	1199.90	15,009
7	24	234	165	39.02	7	621.69	21,792
8	1	193	87	17.60	3	1209.93	16,288
8	11	267	246	58.57	13	837.47	45,433
9	10	231	143	26.84	6	828.12	18,646
9	26	232	168	42.07	7	536.46	20,234
9	29	231	163	36.39	7	837.78	26,552
10	4	232	177	41.44	7	871.01	32,164
10	14	245	190	54.72	7	595.26	29,716

Northeast Shore
Purse seine test fish from Jack Bay, 04/04/91.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
2	2	216	145	36.89	7	624.43	20,442
2	3	211	127	34.90	7	720.90	22,032
2	5	211	140	34.63	7	628.10	19,505
2	13	208	133	23.00	4	667.04	12,492

-Continued-

Northeast Shore

Purse seine test fish from Jack Bay, 04/04/91.

AWL#	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
2	22	212	121	27.68	6	792.09	18,529
2	24	212	133	29.20	7	797.75	19,689
2	27	226	147	32.12	7	574.63	16,023
3	4	214	144	32.53	7	777.92	21,673
3	9	220	149	36.55	7	888.05	28,342
3	10	226	174	49.49	7	714.19	32,333
3	13	208	119	26.96	7	614.21	13,882
3	16	184	86	20.16	3	813.61	12,801
3	17	201	133	32.12	7	883.55	24,244
3	18	220	165	43.32	7	722.03	28,196
3	24	217	146	37.13	7	694.06	22,892
3	28	219	146	37.82	6	673.08	22,402
3	30	218	151	37.87	8	940.95	31,673
4	1	212	133	38.95	7	380.46	13,310
4	2	227	166	43.41	7	715.55	27,750
4	3	218	138	36.97	7	485.66	15,861
4	6	214	149	38.15	7	673.19	22,741
4	8	220	131	36.36	7	677.03	21,751
4	9	215	154	40.62	7	814.67	29,517
4	16	233	153	38.95	8	744.78	25,910
4	21	207	126	32.87	7	706.31	19,816
4	26	223	168	36.28	7	586.02	18,723
4	28	223	143	35.52	7	598.74	18,429
5	3	221	145	38.12	7	765.69	26,287
5	4	224	162	39.91	7	708.35	25,352
5	8	222	156	44.39	8	841.25	33,832
5	9	204	116	27.65	18	754.50	17,736
5	12	212	153	44.13	7	595.13	23,673
5	13	213	133	35.63	7	526.99	16,618
5	14	204	116	30.92	7	748.20	19,943
5	16	228	155	36.39	7	732.14	23,252
5	17	242	180	48.13	7	527.78	22,926
5	27	207	122	34.63	7	585.52	17,852

North Shore

Purse seine test fish from Granite Bay and Cedar Bay, 04/04/91.

AWL #	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
2	1	213	130	27.73	7	650.84	18,073
2	3	227	145	29.39	9	616.82	18,141
2	5	227	157	30.03	7	497.63	14,964
2	10	228	159	37.03	7	600.96	22,302
2	13	220	147	38.06	7	560.04	21,348

-Continued-

North Shore

Purse seine test fish from Granite Bay and Cedar Bay, 04/04/91.

AWL #	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
2	14	217	129	28.80	6	563.85	16,328
2	18	227	156	33.16	7	635.54	21,119
2	19	230	171	40.47	7	486.33	19,722
2	20	234	170	33.35	7	651.11	21,735
2	21	219	147	36.67	7	561.43	20,598
2	24	216	135	29.68	6	542.90	16,463
2	27	202	112	24.64	7	483.97	11,953
2	28	225	149	30.76	7	664.78	20,514
2	30	218	132	27.12	7	505.42	13,737
3	1	220	137	31.24	7	820.52	25,657
3	2	240	190	39.10	7	717.95	28,099
3	4	207	122	26.28	7	616.41	16,213
3	8	226	151	37.78	7	714.55	23,453
3	9	229	155	31.84	7	689.20	21,964
3	10	219	134	29.44	7	671.99	19,798
3	12	238	186	43.45	11	705.63	30,783
3	13	227	157	35.88	7	658.89	23,681
3	15	252	208	45.25	10	600.44	27,200
3	21	211	113	23.81	18	616.32	14,690
3	22	229	169	37.77	9	675.64	25,599
3	24	210	123	22.56	7	601.41	13,668
3	25	205	107	18.11	6	672.71	12,243
3	26	223	165	40.32	8	596.30	24,059
3	28	218	148	35.07	7	560.41	19,672
3	29	230	162	38.00	7	604.22	23,050
4	3	252	230	50.74	10	514.14	26,097
4	5	245	201	53.41	12	723.99	38,738
4	6	214	116	25.43	7	654.27	16,738
4	8	215	139	31.37	7	585.36	18,403
4	11	245	202	48.27	9	535.51	25,903
4	13	210	163	28.52	7	555.83	15,882
4	15	215	148	38.73	7	527.15	20,436
4	16	198	99	20.61	4	755.59	15,590
4	17	222	139	26.05	7	535.94	14,019
4	21	223	156	38.95	7	526.32	20,530
4	23	198	93	15.30	4	512.93	7,893
4	27	241	168	40.09	10	704.26	28,257
4	29	218	137	29.97	7	622.33	18,781
9	1	244	201	51.43	7	724.55	37,289
9	6	240	179	39.77	8	729.68	29,029
9	7	240	180	41.65	8	703.73	29,340
9	8	225	152	34.47	8	750.00	26,075
9	9	222	146	36.79	7	515.20	18,994

-Continued-

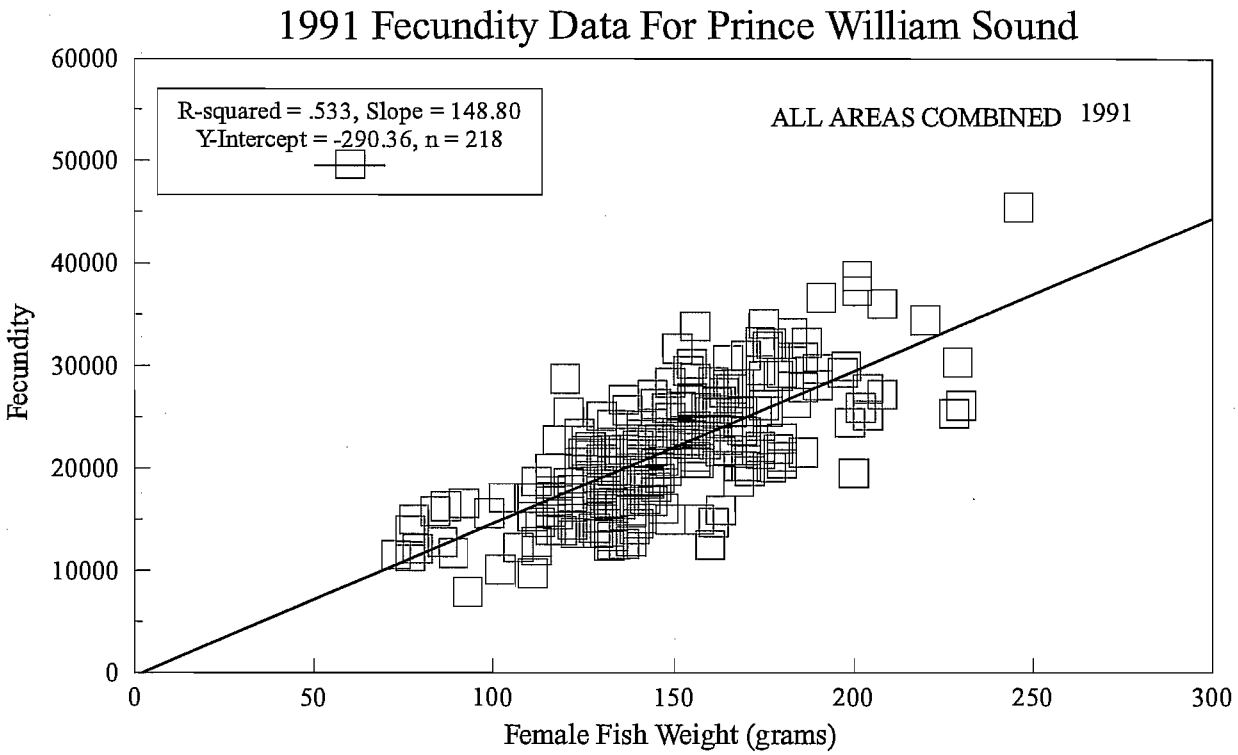
North Shore

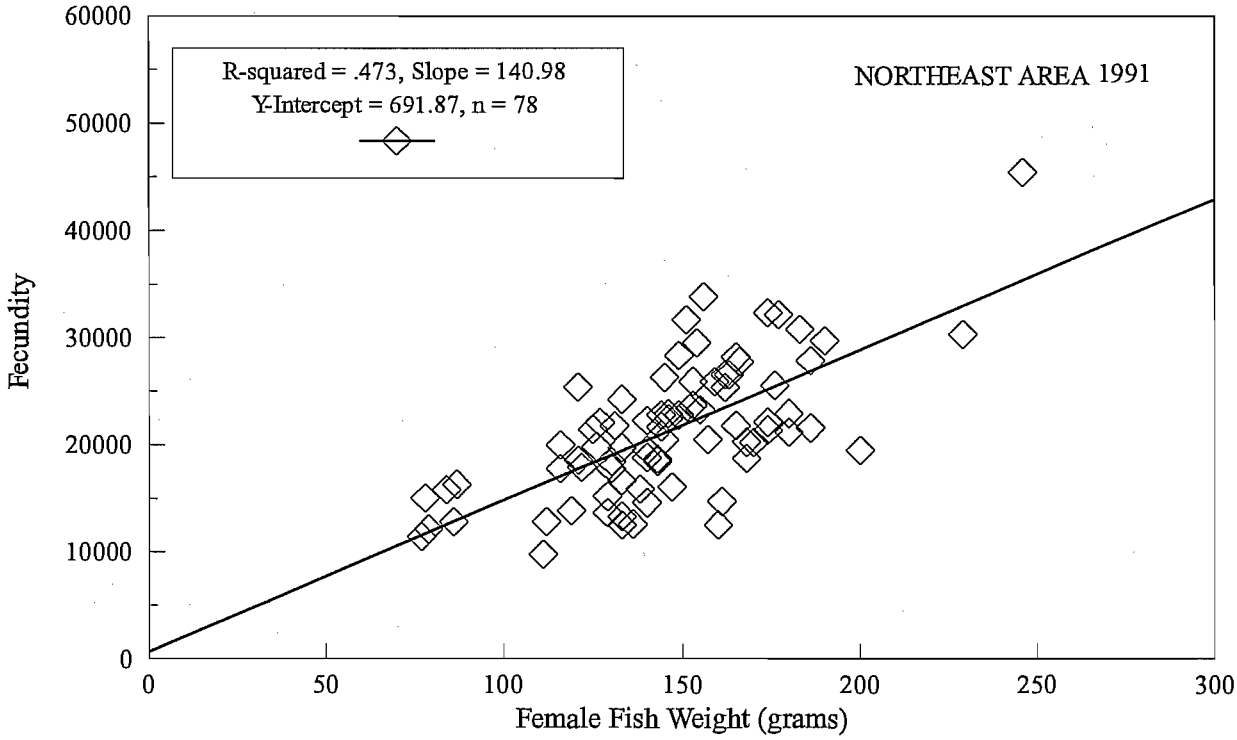
Purse seine test fish from Granite Bay and Cedar Bay, 04/04/91.

AWL #	F#	LEN	FISH WEIGHT	SAC ROE WEIGHT	AGE	EGGS/G	FECUNDITY
9	10	211	132	27.50	7	681.45	18,750
9	15	219	149	32.22	7	463.34	14,985
9	20	222	156	35.88	7	799.73	28,724
9	21	212	131	30.62	7	670.44	20,568
9	23	224	161	40.76	7	697.12	28,445
9	24	232	175	39.50	7	734.14	29,013
9	27	216	138	31.75	7	716.73	22,782
10	12	233	191	46.85	9	779.19	36,585
10	15	231	164	41.84	7	648.89	27,370
10	21	191	89	16.46	3	707.82	11,726
10	24	206	126	27.92	6	775.49	21,702
10	25	232	176	45.53	7	699.22	31,845
11	6	250	220	53.78	9	639.29	34,426
11	25	245	208	47.19	9	762.18	36,015
12	3	206	124	28.76	7	811.15	23,355
12	4	218	141	35.90	7	671.80	24,174
12	24	209	118	22.91	6	671.88	15,463
12	26	209	116	22.49	7	695.76	15,696

[a]An (18) in the age column represents a regenerated scale that cannot be aged correctly.

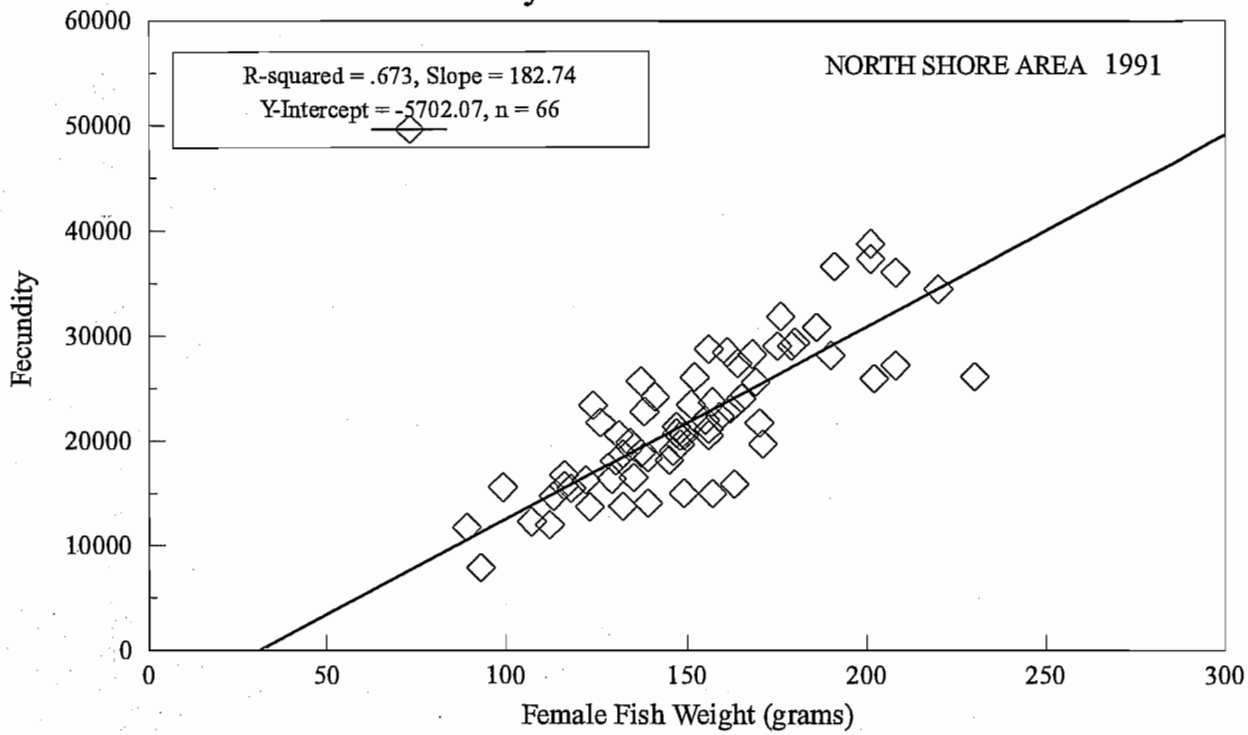
A (19) in the age column represents an illegible scale that cannot be read.

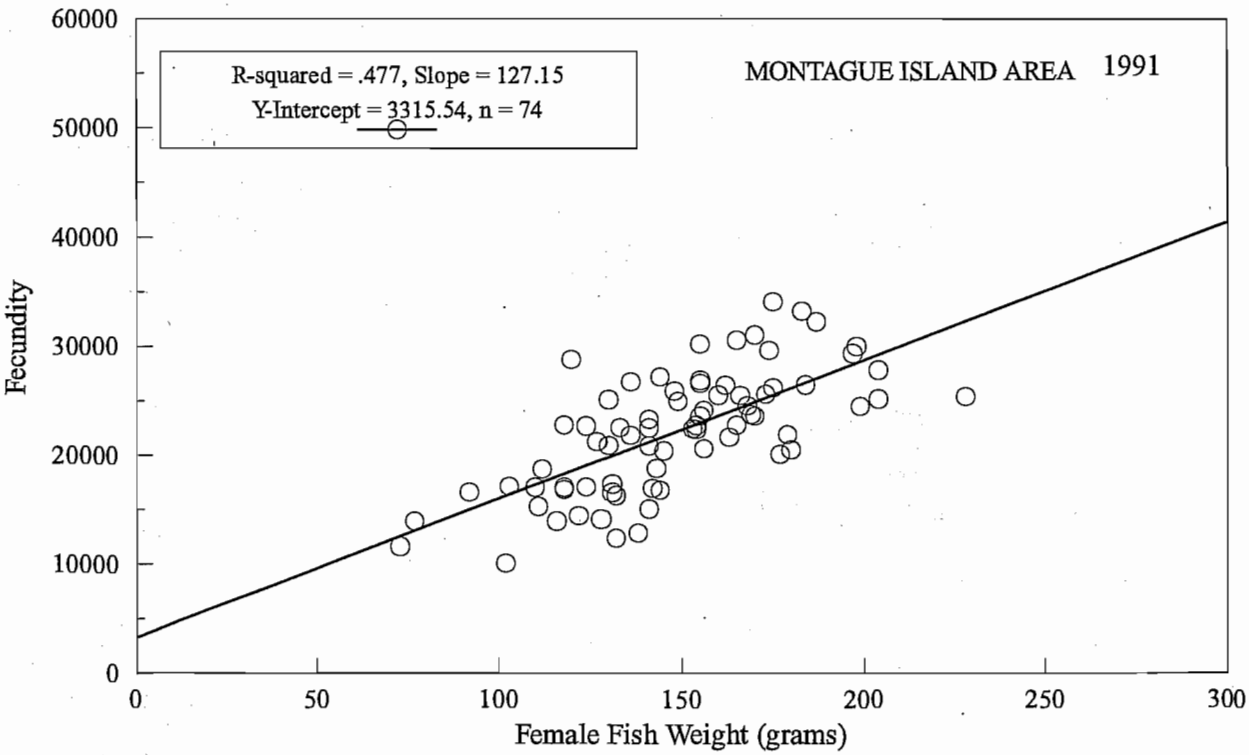




Appendix T.11. Herring fecundity data from the spring purse seine test fishery and pound fishery for Prince William Sound, 1991.

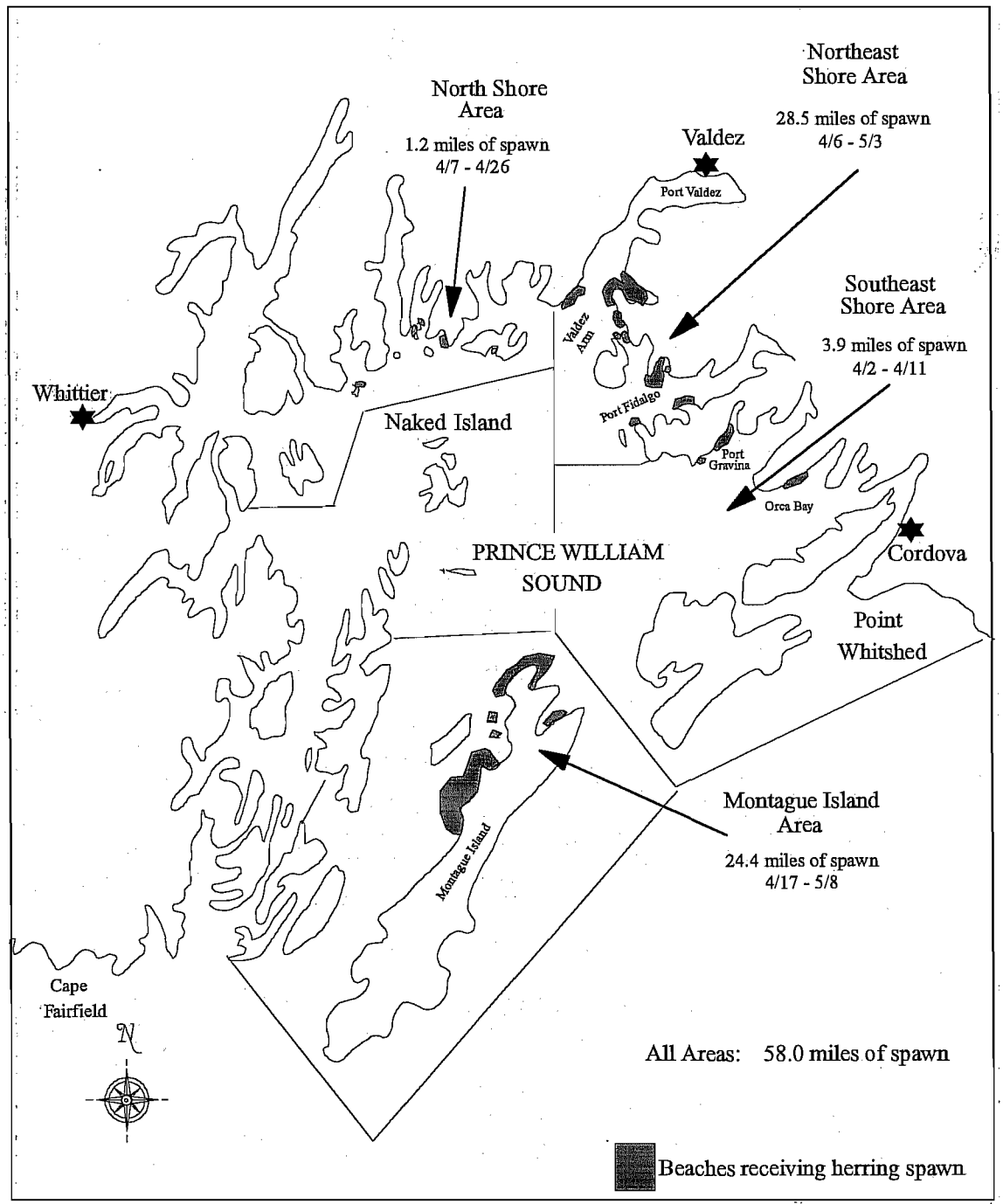
1991 Fecundity Data For Prince William Sound





Appendix T.11. (page 2 of 2)

Historical Herring Spawn and Shoreline Mileage



Appendix T. 12. Prince William Sound herring spawn and shoreline mileage mapped by aerial surveys and skiff surveys and the delineation of the five spawning areas used in the calculation of the spawn deposition biomass estimates, 1991.