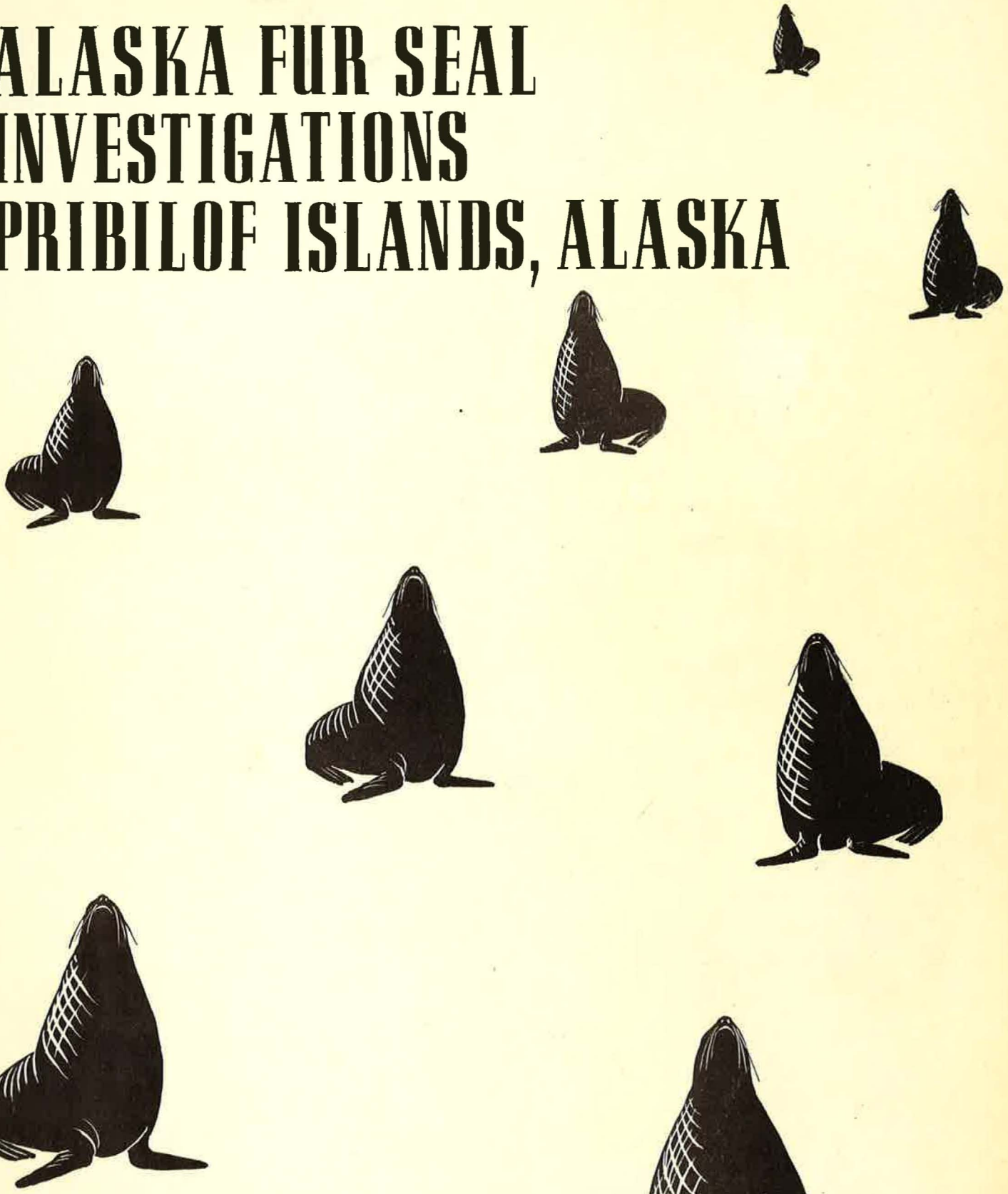
HIROSHI KAJIMURA

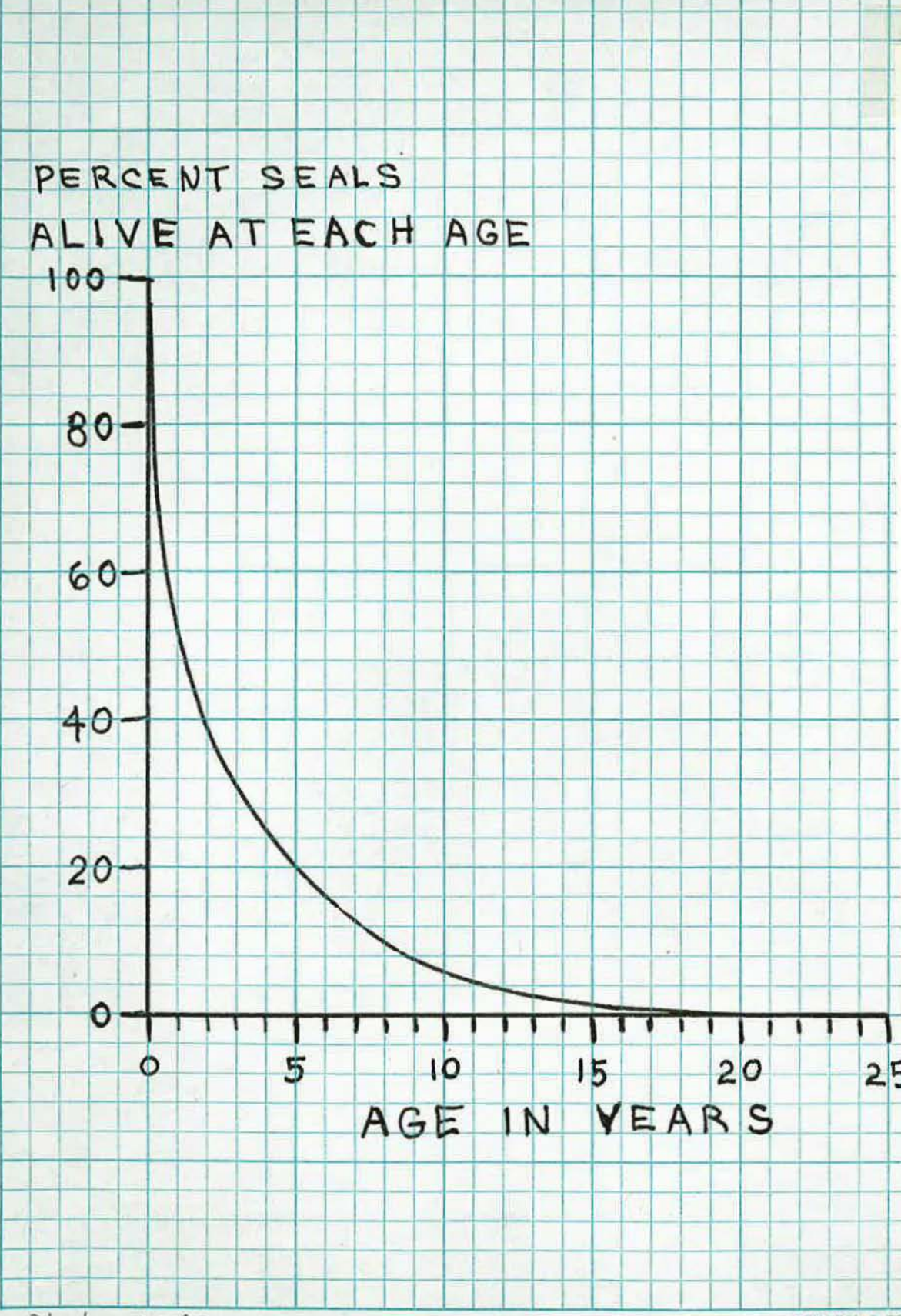
ALASKA FUR SEAL INVESTIGATIONS PRIBILOF ISLANDS, ALASKA



1958

ERRATA

Page	3	Line	2 . . .	Holmes returned to
"	11	"	21 . . .	of recovery
"	11	"	21 . . .	age of each seal
"	16	Figure	4 . . .	(Series: A-1947) 1/4" hole in
"	28	Line	10 . . .	while the females
"	44	"	4 . . .	relatively few pup deaths
"	45	"	19 . . .	area count has been
"	52	"	5 . . .	bility of the seal pups
"	53	"	3 . . .	Whole blood and serum were
"	53	"	11 . . .	for natural isoagglutinins
"	54	"	1 . . .	five readings averaged
"	54	"	13 . . .	female were composed
"	54	"	17 . . .	Phalacrocoran
"	58	Table	15 . . .	3/ USSR tag
"	68	Line	18 . . .	ceed that based



Female fur seal life table, after Abegglen, Roppel, and Wilke, 1960, fig. 19.

Photo 5798

ALASKA FUR SEAL INVESTIGATIONS

PRIBILOF ISLANDS, ALASKA

Report of Field Activities

June - September 1958

U. S. Fish and Wildlife Service
Bureau of Commercial Fisheries
Section of Marine Mammal Research
Seattle, Washington

Carl E. Abegglen
Alton Y. Roppel
Ford Wilke

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I. INTRODUCTION

A. Objectives

Continued use of the same objectives as the goal for fur seal research and management does not reflect a lack of originality. Much effort is continuously being put into developing new ideas and techniques which will enable research to effectively guide the steps required to achieve maximum sustained productivity. Population, reproduction, and mortality studies receive principal emphasis because the problem of fur seal research is largely ecological. In addition to the efforts made to understand the reaction of the fur seal herd to basic environmental factors, research must consider the commercial and economic aspect of the sealing operation.

The calendar year 1958 was a complete year of research in which both land and pelagic research was accomplished. Pelagic research started in January, with 3 chartered vessels and 12 biologists, and continued until late June. Some 1,500 seals were taken by the three vessels from the Channel Islands, California to the Pribilof Islands, Alaska. A report of the pelagic sealing results will be made separately.

This was the third season of comprehensive land research and the data from the pelagic research, coupled with the two previous years' information, provides a backlog of material for effective management analysis. However, the difficulties experienced by the statistician, in

obtaining population estimates that are consistent or for which reasonable explanation can be found for the inconsistencies, suggest that:

1. The intensive tagging carried on since 1955 will be useful and necessary for improved population estimates.

2. A more complete understanding of the behavior of seals, including their segregation according to age and sex, is essential for intelligent application of information on populations.

It is emphasized again that the return on time and money in research is cumulative. Time is required to develop an effective staff and program in addition to obtaining facts. The seasonal changes in fur seal numbers and movements, and the large quantities of data needed to accurately represent the Pribilof fur seal herd, require that an effective research must be sustained.

B. Personnel and facilities

Field season studies began 20 June, with the arrival of Biologist Alton Roppel, on St. Paul. In early July biological aides were transferred from pelagic research vessels to the Pribilof Islands where they worked until early September. Aides John George, Terence O'Brien, and Alan Tolmsoff were on St. Paul Island and Richard Holmes was on St. George Island. Biologist-in-Charge Ford Wilke arrived on St. Paul, 5 July, with Brian Scheffer, a biological aide. At mid-July, Roppel went to St. George Island where he spent the balance of the field season -- returning

to Seattle on the October Penguin. Biologist Carl Abegglen relieved Wilke on 3 August. Homes returned to St. Paul on the supply ship, USS Mathews, on 28 August and Biologist Victor Scheffer arrived to begin field work on a pelage study. Lavrenty Stepetin, resident on St. Paul Island, and Innokenty Lestenkof, resident on St. George Island, gave valuable assistance to the biologists on their respective islands.

In 1957, the St. George Island manager provided biological research with space in the "company house." Inasmuch as the 6 by 15-foot room was formerly used for photographic work, it was painted dark gray and was not equipped with a desk. The biological work was made more efficient and pleasant this year by painting the room with brighter colors and construction and installation of a desk and storage cabinet. In addition, an exhaust fan was installed to carry off steam and cooking odors. It is planned, next year, to install fluorescent lighting fixtures and remodel the old counter.

The tray system, used on St. Paul to process female canine teeth, was used on St. George also this year. This system effectively reduced the amount of time needed for cleaning the teeth.

Mr. Gordon Pike, official representative from Canada, was on St. Paul Island as an official observer from 20 July to 27 July. Mr. Fukuzo Nagasaki, official representative from Japan, was on St. Paul Island from 25 July to 16 August. Both Mr. Pike and Mr. Nagasaki

were invited to see all operations, examine all data, and to make full use of laboratory and library facilities.

The research staff appreciates the assistance and cooperation given to them throughout the season by Mr. Clarence L. Olson, General Manager; Mr. Roy Hurd, St. Paul Island Manager; and Mr. Dan Benson, St. George Island Manager.

II. POPULATION

A. Age classification of males

The standardized method of sampling (1956 report) was used to obtain 3,491 upper right male canine teeth for age determination on St. Paul Island and 1,090 male canine teeth on St. George Island.

The age composition of the male kill was considerably different from the four previous years. A comparison of 1958 with the four preceding years is made in table 1, showing the cumulative number of 3- and 4-year-old males at given dates. This change is also shown in table 2, percent age composition of male seals at various kill levels.

There are several plausible explanations for the decided change in 1958 age composition. The first is the rather poor showing of 3-year males in the 1957 kill which can be only partially explained by the high pup mortality on land in 1954. Additional evidence, indicative of a small surviving year class, was the appearance of only 166 3-year-olds in the 1957 sample of 8,615 females. Under these conditions, it was expected that the 1958 4-year-male kill would be at a minimum. Reason number two is nonbiological and rises from a management decision to keep the kill on St. Paul Island rather rigidly within prescribed limits, 41 to 45-3/4 inches, rather than to allow some freedom in taking animals on the fringes, particularly above 45-3/4 inches. As a result, a larger proportion of 4-year males was allowed to escape. A total of only 5,556 4-year-old males were killed by August, 1958.

Table 1. Cumulative number of male seals killed, St. Paul Island, 1958.

	1954		1955		1956		1957		1958	
	Age									
Date	3	4	3	4	3	4	3	4	3	4
July										
1	3367	3952	1574	1962	1079	3056	1360	1071	1991	732
6	5075	6258	3341	3643	2671	7060	2994	2161	3988	1383
11	9643	9667	5929	6248	6145	12677	4507	3296	8038	2658
16	15106	11561	10416	8999	9808	17954	6777	4651	12917	3912
21	22198	13301	15358	11648	14589	22159	9380	5602	17688	4839
26	30598	14995	21717	15638	20726	25999	13350	6784	22661	5279
31	32352	15365	30733	18083	26590	28560	16804	7547	27216	5556
August										
10					35502	30663	23473	8855		
15					38290	31448				

1954 sealing ended 27 July

1955 " " 31 July

1956 " " 15 August

1957 " " 20 August

1958 " " 20 August

Table 2. Percent age composition of male kill at various levels, St. Paul Island, 1954 - 1958.

Date	Kill level	Age 3	Age 4
1954		Percent	Percent
4 July	10,000	44	54
11	20,000	49	49
18	30,000	56	41
27	50,000	65	31
1955			
9 July	10,000	50	48
16	20,000	54	44
22	30,000	56	42
31	50,000	62	36
1956			
6 July	10,000	24	64
11	20,000	30	62
16	30,000	33	60
26	50,000	41	52
1957			
13 July	10,000	53	41
24	20,000	63	33
6 August	30,000	68	27
10	34,055	69	26
1958			
10 July	10,000	74	26
18	20,000	78	22
28	30,000	80	19
31	33,325	82	17

The number of 3-year-old males killed by 1 August 1958 indicates a normal year class when compared with the four previous years, table 1. It is logical to conclude that the 1959 4-year-old male kill will approach a normal proportion, or approximately 40 percent of the total male kill. This presumes that the usual selection of killable animals will be practiced. The 1955 year class suffered 21.5 percent less land mortality than the 1954 year class, which may have some influence on the 1959 4-year-old male contribution.

The instructions governing the 1958 sealing operation ended the take of males on 31 July to prevent an excessive kill of younger males. The killable size range for females killed in 1958 was identical to that for males. Experience has shown that 2- and 3-year-old animals are extremely difficult to sex during the killing operation. The inadvertent killing of 2,846 males on St. Paul and 1,406 on St. George during August 1958 shows that the clubbing crew will unavoidably take a substantial number of males when emphasis is placed on the taking of younger females. It is possible that accidental killings of males can be relied upon as a part of the season's quota. Figures 1 and 2 give a graphic indication of the percent of 3- and 4-year-old male seals in the cumulative commercial kill on both islands.

B. Tag recoveries

The standard practice of killing tagged male seals only, if they fell

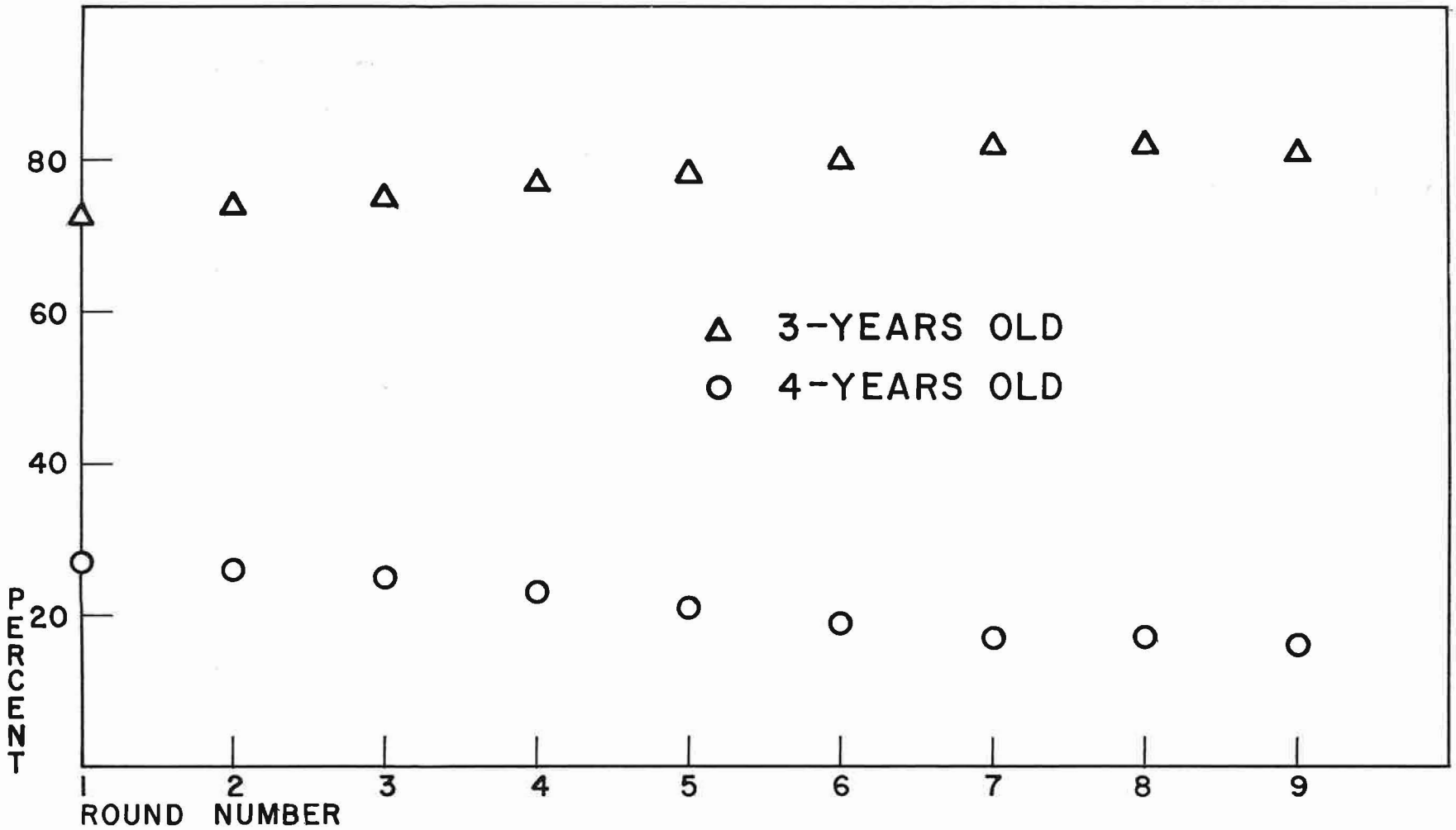


Figure 1. Percent 3- and 4-year-old male seals in cumulative commercial kill, by round, St. Paul Island, 1958.

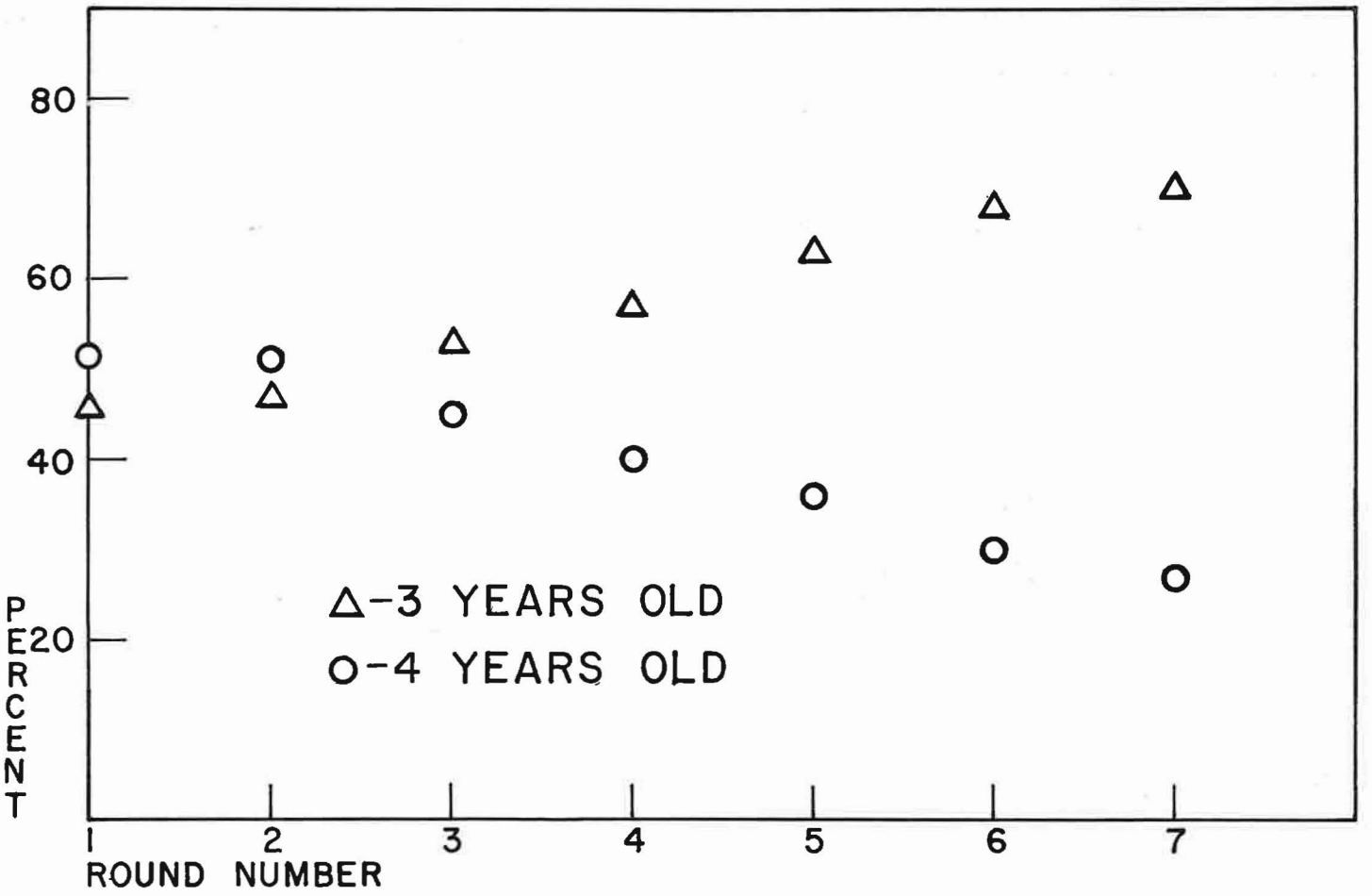


Figure 2. Percent 3- and 4-year-old male seals in cumulative commercial kill, by round, St. George Island, 1958.

within the prescribed size limits of 41 to 45-3/4 inches, was continued. Tag recoveries were primarily from year classes 1954 and 1955 in which 5,000 and 25,000 tags were applied, respectively, to males. Excluding 2-year-olds, which contributed a minor proportion of returns, male tag recoveries in 1958 were drawn from the survivors of 30,000 males tagged as pups, or 20,000 more than in 1957. This reservoir of tagged animals increased the recovery rate 114 percent in 1958, the largest increase coming from the 1955 year class. Table 3 lists 1958 tag recoveries by sex, age, and island.

The method used in tag recovery was similar to that used in previous years. As a row of ten seals was positioned for skinning, one man examined five animals for tags or check marks and another man, working from the opposite end of the row of seals, examined the remaining five. Each man removed tags or noted location and type of check marks, then recorded the tag numbers and check marks together with the field lengths and sex of the seals. On St. Paul, this work was done by Lavrenty Stepetin, an experienced and proficient Island resident, and by one of the biologists or biological assistants. Biologist Richard Holmes conducted the work on St. George.

Following each daily kill, the tag number, field length, sex, rookery of recover, rookery of tagging, date, and age or each seal were recorded on an IBM punch card.

Table 3. Tag recoveries from male and female seals in commercial kill, by age, Pribilof Islands, 1958.

Series	Age	Tags recovered: St. Paul ♂	St. Paul ♀	St. George ♂	St. George ♀	Total ♂	Total ♀	Combined total	Tags lost: St. Paul ♂	St. Paul ♀	St. George ♂	St. George ♀	Total ♂	Total ♀	Combined total	Grand total
J	1	1	-	-	-	1	-	1	-	-	-	-	-	-	-	1
I	2	97	11	39	4	136	15	151	4	1	6	1	10	1	11	163
H	3	1959	526	144	28	2103	554	2657	229	105	12	2	241	107	348	3005
G	4	81	127	8	3	89	130	219	13	10	1	-	14	10	24	243
F	5	1	53	-	4	1	57	58	3	6	-	-	3	6	9	67
E	6	1	181	-	3	1	184	185	-	15	-	-	-	15	15	200
D	7	-	12	-	1	-	13	13	-	-	-	-	-	-	-	13
CS	9	-	21	-	-	-	21	21	-	-	-	-	-	-	-	21
B	10	-	53	-	2	-	55	55	-	-	-	-	-	-	-	55
A	11	-	3	-	-	-	3	3	-	-	-	-	-	-	-	3
Total		2140	987	191	45	2331	1032	3363	249	137	19	3	268	139	407	3771

Sealing instructions for 1958 restricted the killing of females to the standard male limits of 41 to 45-3/4 inches. This necessarily reduced the kill of older females and resulted in a much smaller take of tagged females above five years of age, even though all tagged females were to be killed. No "USA" (1941 tagging) series tags were recovered nor were any tags recovered from the 1945 series (no letter).

The time-consuming job of segregating large from killable-size females slowed the sealing operation considerably during the period 1 to 20 August. However, the additional time allowed the tag-recovery crew to do a more thorough job than in the past. If the tag-recovery information is to approach maximum accuracy, at least one row of seals must intervene at all times between the slitters and the row on which the tallyman and biologists are working.

At Northeast Point rookery on 16 August, the first known Soviet tag recovered on the Pribilof Islands was taken from a female seal in the kill (figure 3). The tag was compared with other Soviet tags recovered by the Japanese during their pelagic research in previous years. Soviet tags do not seem to be standardized as yet.

Description of Soviet tag:

Greatest length, bent	26.5 mm.
Greatest width	7.0 mm.
Clinch side inscription	USSR - 5
Opposite side inscription	52

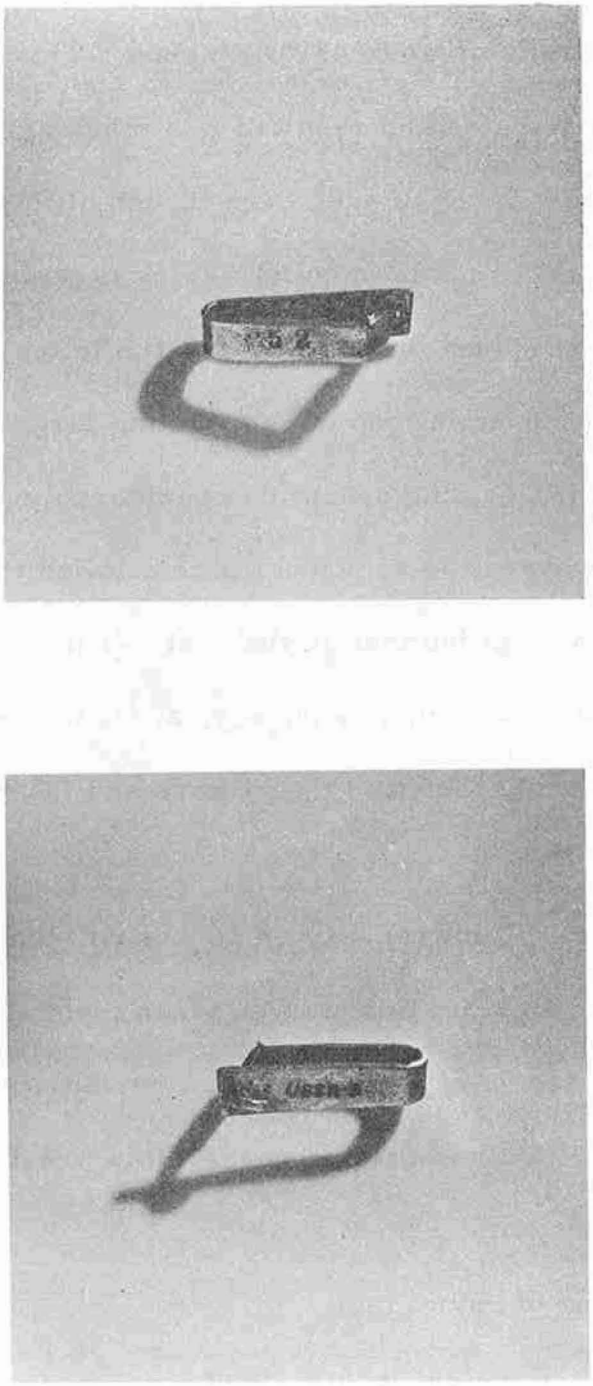


Figure 3. Soviet tag removed from female fur seal, St. Paul Island, 1958. (Two views.)

Detailed tag recoveries by sex, age, and rookery of recovery for both islands are given in appendix table EE.

Figure 4 shows the tag and check mark locations for each year's tagging.

C. Homing tendency

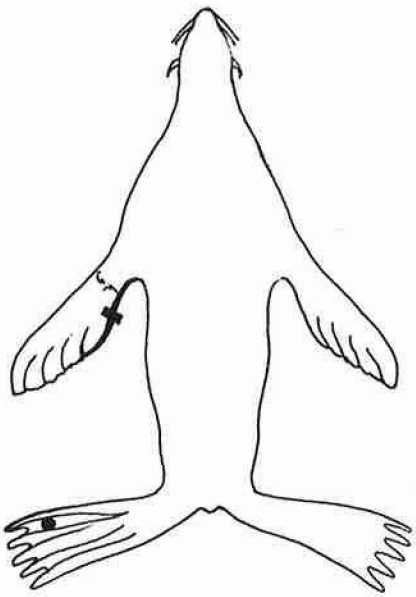
Homing tendency of male and female seals is given by rookery in table 4 and by age in table 5. Sexual differences in homing tendency are not as significant as they might at first appear.

1. Males

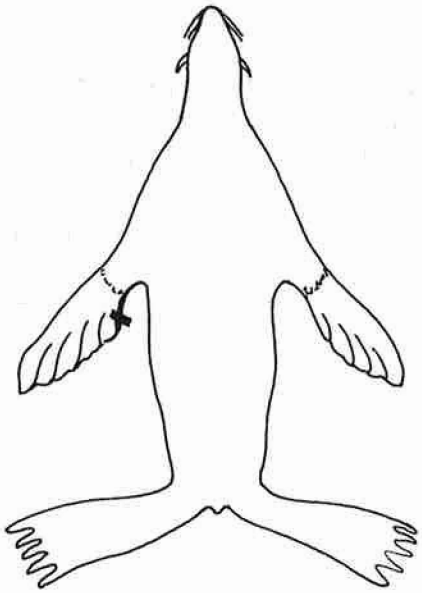
Four and 5-year-old males, as well as most 3-year-old males and some of the 2-year-olds, return to the islands during the organized breeding season. On many rookeries, they are prevented access to the hauling grounds because the harem bulls will not tolerate trespassing by males of any age. In addition, males under five years old are not usually physically capable of breeding. Under these conditions, the younger males would not be expected to confine themselves to their rookery of birth. Tag returns from males old enough to hold harems would probably show a homing tendency equal to that of females.

2. Females

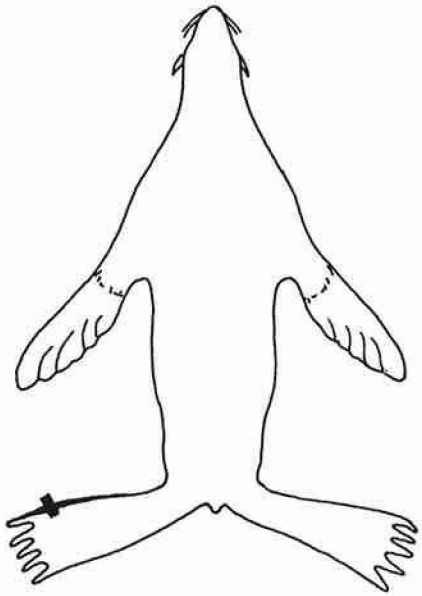
The young females arrive in greatest numbers in August, when organized breeding is nearly over. In any season, however, they would readily be accepted by the harem bulls. It is peculiar that, although some of the 3- and many of the 4-year-old females breed, they are not a part of the organized harem structure.



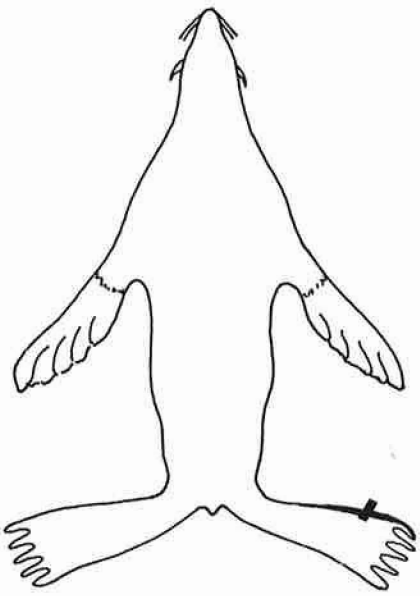
Series: A - 1947
Tag location: left front flipper
Check mark: 1/4" hold in hind left flipper
Number tagged: 19183



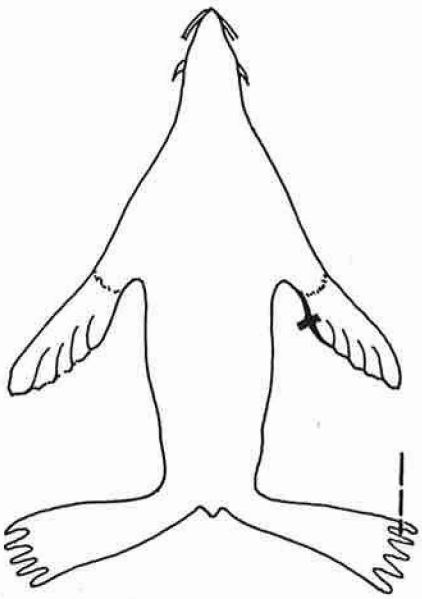
Series: B - 1948
Tag location: left front flipper
Check mark: none
Number tagged: 19532



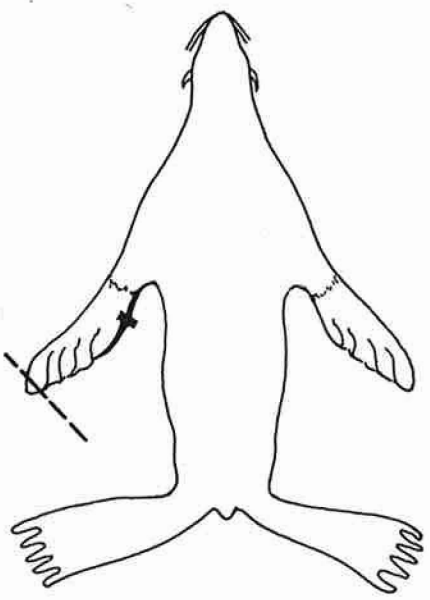
Series: CS - 1949
Tag location: left hind flipper
Check mark: none
Number tagged: 19960



Series: D - 1951
Tag location: right hind flipper
Check mark: none
Number tagged: 1000

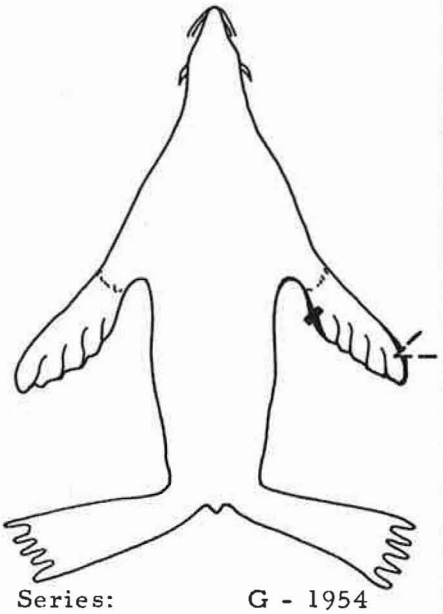


Series E - 1952
Tag location: right front flipper
Check mark: tip of digit on right hind flipper sliced off
Number tagged: 19979

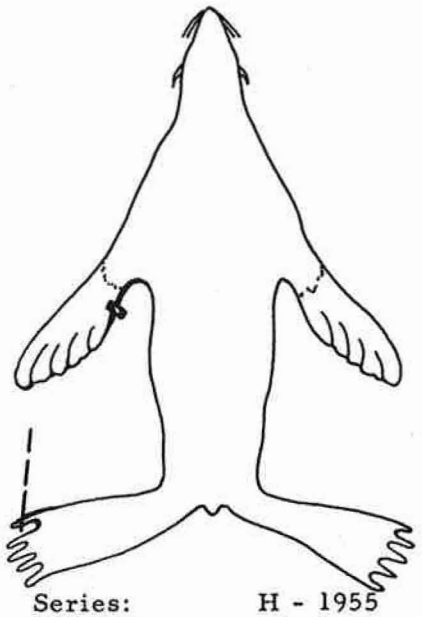


Series F - 1953
Tag location: left front flipper
Check mark: top of left front flipper sliced off
Number tagged: 10388
G-1953 7001-7400

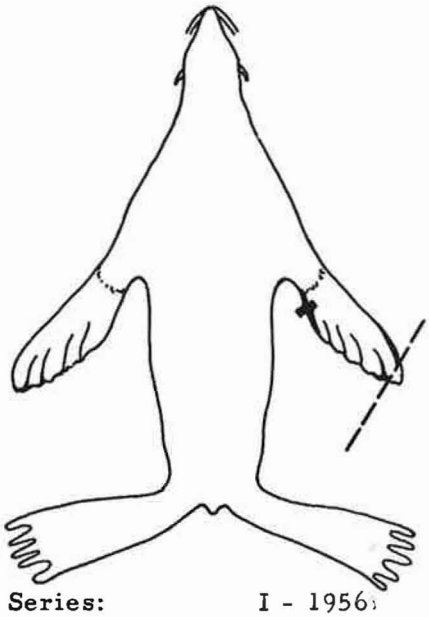
Figure 4. Tag and check mark locations, fur seal pup tagging, Pribilof Islands, 1947-1959.



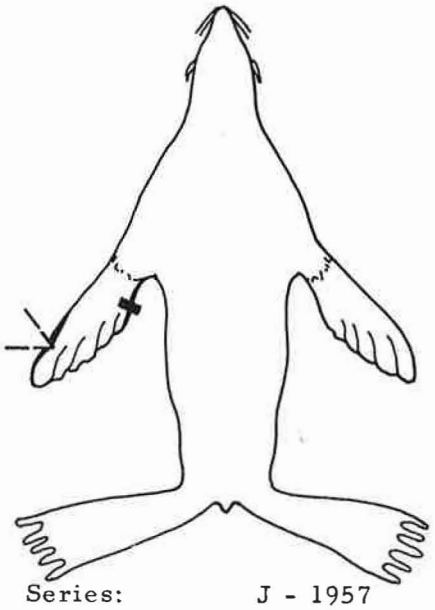
Series: G - 1954
Tag location: right front flipper
Check mark: "V" notch on right front flipper
Number tagged: 10000



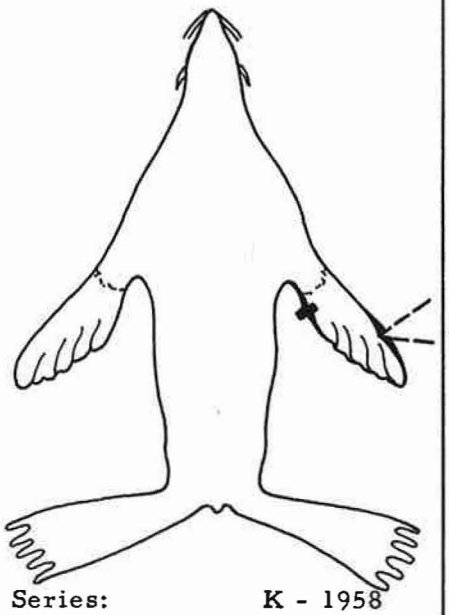
Series: H - 1955
Tag location: left front flipper
Check mark: tip of digit on left hind flipper sliced off
Number tagged: 49,870
H-1955 1-10000
No letter 10001-50000



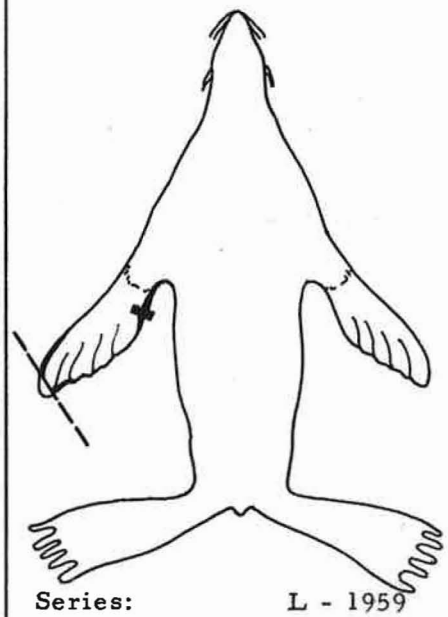
Series: I - 1956
Tag location: right front flipper
Check mark: top of right front flipper sliced off
Number tagged: 49900



Series: J - 1957
Tag location: left front flipper
Check mark: "V" notch on left front flipper
Number tagged: 49842



Series: K - 1958
Tag location: right front flipper
Check mark: "V" notch on right front flipper
Number tagged: 49917



Series: L - 1959
Tag location: left front flipper
Check mark: tip of left front flipper sliced off
Number tagged:

Figure 4. (continued)

Table 4. Homing tendency of male and female seals, by rookery, St. Paul Island, 1958 [1/]

Rookery of tagging	Males			Females		
	Total recoveries	Recovered home rookery number	Recovered home rookery percent	Total recoveries	Recovered home rookery number	Recovered home rookery percent
NEP	467	297	64	161	135	84
TOL	264	79	30	68	36	53
L-K	117	26	22	29	5	17
ZAP	462	290	63	139	106	76
REEF	639	134	21	259	171	66
POL	346	170	49	375	332	88
			Mean			Mean
Total	2295	996	43	1031	785	76

[1/] Of 37 (36 males and 1 female) seals taken, which were tagged on St. George rookeries, 13 or 35 percent returned to the home rookery. All were 2-year-olds.

* * * * *

Table 5. Homing tendency of male and female seals, by age, Pribilof Islands, 1958.

Males				Females			
Age	Total recoveries	Recovered home rookery number	Recovered home rookery percent	Age	Total recoveries	Recovered home rookery number	Recovered home rookery percent
1	1	0	0				
2	136	57	42	2	15	9	60
3	2103	900	43	3	554	402	72
4	89	50	56	4	130	96	74
5	1	1	100	5	57	40	70
6	1	1	100	6	184	141	77
				7	13	12	92
				8	No tagging in 1950		
				9	21	20	95
				10	55	48	87
				10+	3	3	100

D. Tagging

The year 1958 was the fourth consecutive season in which 50,000 seal pups were tagged and the third in which 10,000, or 20 percent, were applied to pups on St. George Island. Following the standard procedure, tags were allotted to each rookery according to the proportion of harem bulls counted on that rookery. A list of tagging locations and number of pups tagged at each is given in table 6.

All tags used in 1958 were of monel metal (Style 19M, National Band and Tag Company, Newport, Kentucky, 0.9 x 9.5 x 101 mm. before folding) and had the series designation "K" stamped ahead of the number. An improvement over previous years' tags was made in that the series designation and number were stamped on the clinch side of the tag, which was uppermost when in place on a pup. This method not only permitted a visual check of the clinch during what is a rather high-speed operation, but should prevent excessive wear of the identifying numbers as well. The lettering "Notify F & W Service, Washington, D. C." was stamped inside the tag and was, thus, also protected against wear. The tags were attached to the rear edge of the right foreflipper at the junction of fur and bare skin. To permit identification of individuals that have lost their tags, the front edge of the same flipper was notched with a "V" near the tip (figure 5).

Five-thousand pups were double-tagged to further check the tag-lost ratio, as agreed upon at the first meeting of the North Pacific Fur Seal

Table 6. Seal tagging on the Pribilof Islands, 1958.

Date	Rookery	Percent	Number and series allotment	Tags spoiled	Number seals tagged
August			St. Paul Island		
26 & 27	Reef	24.6	9800 K 17701-27500	16	9784
28	Polovina	11.1	4400 K 27501-31900	8	4392
28	Little Polovina	2.7	1100 K 31901-33000	-	1100
25 & 26	Northeast Point	24.2	9700 K 33001-42700	14	9686
24 & 26	Tolstoi	10.6	4300 K 42701-47000	20	4280
24 & 27	Lukanin-Kitovi	7.6	3000 K 47001-50000	7	2993
22 & 23	Zapadni	10.8	4300 K 10001-14300	12	4288
23 & 24	Zapadni Reef & Little Zapadni	8.4	3400 K 14301-17700	-	3400
Total				77	39923
			St. George Island		
22	Zapadni - South	25.0	2500 K 1-2500	2	2498
23	Staraya Artil	16.0	1600 K 2501-4100	2	1598
23	East Reef - East Cliffs	22.0	2200 K 4101-6300	-	2200
24	North	37.0	3700 K 6301-10000	2	3698
Total				6	9994
Grand total				83	49917

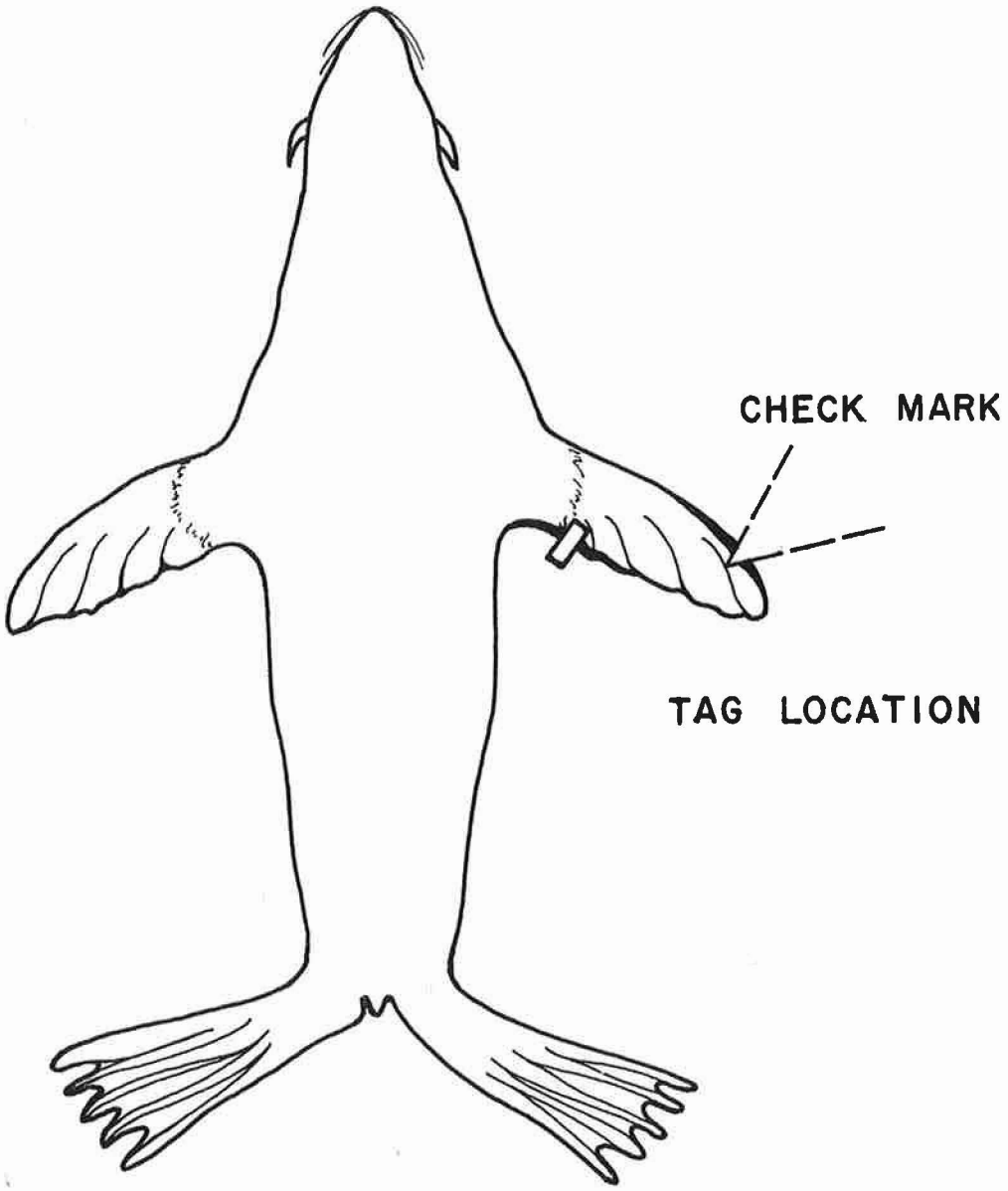


Figure 5. Tag and check mark location of 45,000 pups tagged on Pribilof Islands, 1958.

Commission held January 1958 in Washington, D. C. The double tagging was accomplished 22 and 23 August on Zapadni rookery, St. Paul Island. Duplicate tags, numbering 10,001 to 15,000 were used. A tag was attached to each foreflipper and, in addition, the front edge of the right foreflipper was notched with a "V" near the tip (figure 6). The number series (10,001 to 15,000) used will serve to identify a seal that has lost either tag. One that has lost both may still be identified by the presence of a tagging scar on each foreflipper.

Tagging on both islands began 22 August and was completed 28 August on St. Paul and 24 August on St. George.

A record of fur-seal pups tagged on the Pribilof Islands is given in table 7.

E. Bull counts

Research personnel accompanied General Manager, C. L. Olson, through the second and final season of training in bull-counting methods. Beginning with 1959, the biological staff will assume responsibility for the counts, cooperating with the General Manager or any of his staff who may want to participate.

The 1958 bull counts are listed in table 8. The trend of harem bulls was upward, with an increase of 4 percent over 1957 on St. Paul and 8 percent on St. George. Idle bulls dropped 5 percent on St. Paul but increased 12 percent on St. George.

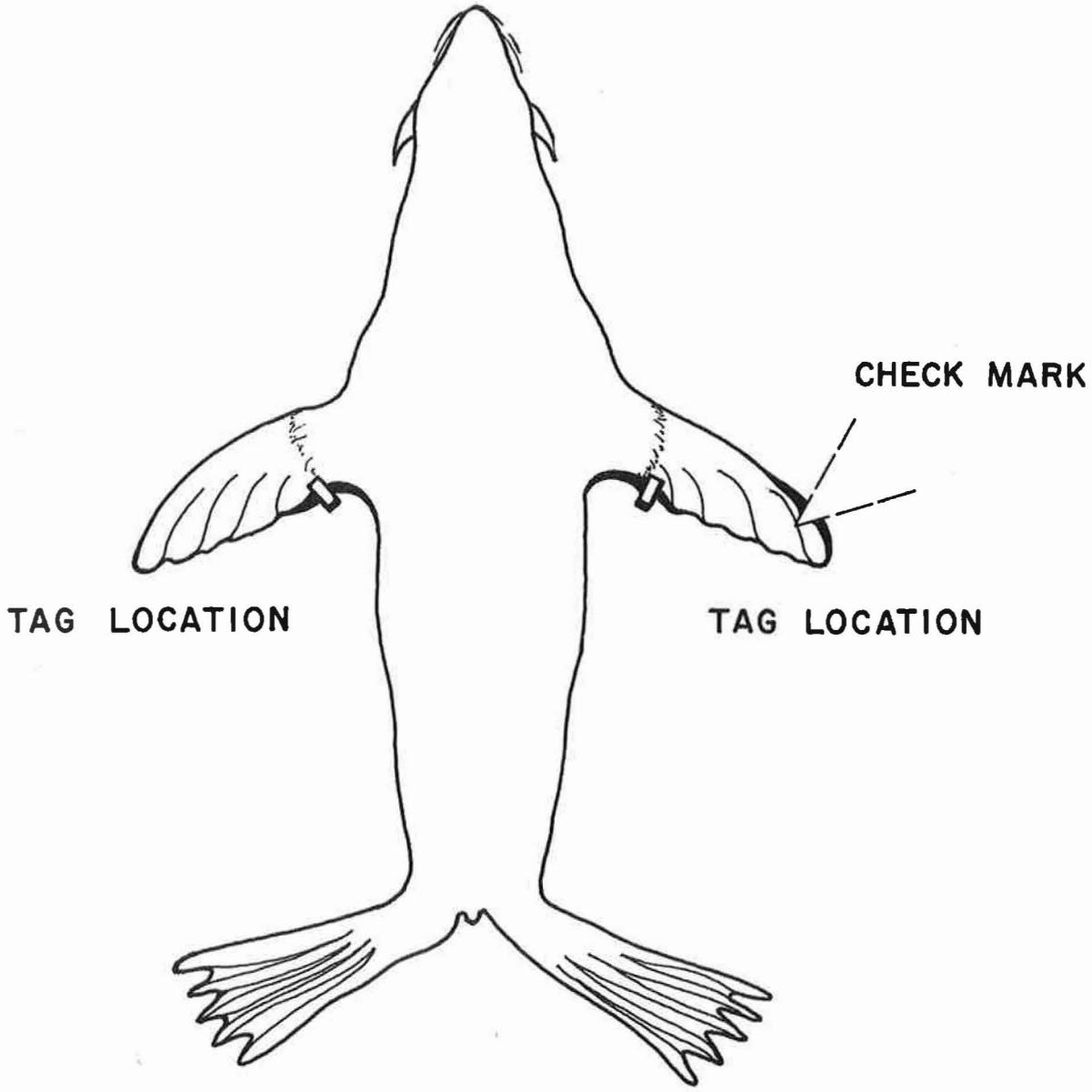


Figure 6. Tag and check mark locations of 5,000 double-tagged pups tagged on Zapadni Rookery, St. Paul Island, 1958.

Table 7. Record of fur seal pups tagged on Pribilof Islands.

Year	Series	Kind of metal	Number tagged on St. Paul	Number tagged on St. George	Marks
1941	1-5000	Monel	5000	-	Branded
"	5001-10000	Stainless	5000	-	Branded
1945	10001-11000	Monel	973	-	-
1947	A 1-20000	Monel	19183	-	Check
1948	B 1-20000	Monel	19532	-	-
1949	CS 1-20000	Monel	19960	-	-
1951	D 1-1000	Monel	1000	-	100 ear-clipped
1952	E 1-20000	Monel	19979	-	Check
1953	F 1-10000	Monel	10388	-	Check
"	G 7001-7400	"			"
1954	G 1-7000	Monel	10000	-	Check
"	G 7401-10400	"			"
1955	H 1-10000	Monel	49870	-	Check
"	10001-50000 (without prefix H)	"			"
1956	I 1-50000	Monel	39900	10000	Check
1957	J 1-50000	Monel	39870	9972	Check
1958	K 1-50000	Monel	39923	9994	Check

Table 8. Harem and idle bull count, by rookery, Pribilof Islands, 1958 [1/]

Date	Rookery	Bulls		Total
		harem	idle	
St. Paul Island				
10 July	Gorbatch	817	702	1519
	Ardiguen	112	60	172
	Reef	1528	1018	2546
	Total	2457	1780	4237
11 July	Polovina	384	575	959
	Polovina Cliffs	713	480	1193
	Little Polovina	270	555	825
	Total	1367	1610	2977
12 July	Morjovi	756	1415	2171
	Vostochni	1653	1615	3268
	Total	2409	3030	5439
13 July	Tolstoi	1058	888	1946
	Lukanin	206	240	446
	Kitovi	557	190	747
	Total	1821	1318	3139
14 July	Zapadni	1073	897	1970
	Little Zapadni	596	390	986
	Zapadni Reef	247	485	732
	Total	1916	1772	3688
	Grand total	9970	9510	19480
St. George Island				
15 July	East Reef	212	340	552
	East Cliffs	350	490	840
	Total	562	830	1392
15 July	Staraya Artil	426	615	1041
16 July	North	985	730	1715
17 July	Zapadni	370	570	940
	South	276	285	561
	Total	646	855	1501
	Grand total	2619	3030	5649

[1/] Count of Mr. C. L. Olson, General Manager, Pribilof Islands.

Bull counting is difficult on parts of some rookeries because of uneven terrain and lack of landmarks suitable for use as boundaries while the counter shifts his position. This condition was remedied this year on St. George by installing artificial landmarks on Staraya Artil, East, and North rookeries. Steel pipes, 2.5 inches in diameter by 10 feet in length, were painted white and anchored in concrete (figure 7). The boundaries were further outlined by applying white paint to conspicuous rocks between pipes.

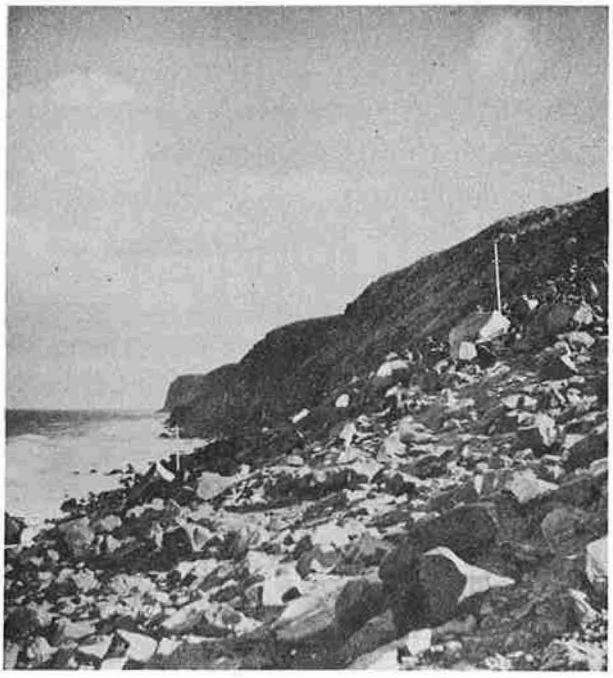


Figure 7. Artificial landmark, St. George Island. Typical of those installed on Staraya, East, and North rookeries.

F. Seal pup weighing

1. Condition factor

The year 1958 was the second season in which a series of live pup weights were gathered. It is hoped that the weights will provide a condition factor closely related to survival. Average weight changes in pups, from year to year, may show some correlation with the numbers of an age class harvested three and four years later.

Several changes in the pups, as compared with 1957, were noted during the latter part of the season. Foremost was a distinct decrease in the number of dead pups seen on the rookeries and secondly was the apparent tendency for early swimming. It could not be stated as more than an impression at the time but, during the tagging, the pups were very active and seemed larger than those tagged in 1956 or 1957.

Weighing was scheduled to be done at about the same date as in 1957 and on the same four rookeries. The first weighing was done at Northeast Point, 2 September. The container built for use in the 1957 weighings was not large enough to hold the pups this year nor was the capacity of the scale great enough to weigh the heaviest pups. Weights greater than 15 kilograms could not be weighed on the scales used and the constant bouncing of the pups, many weighing near the scale's limits, put a strain on the mechanism. After some 400 pups were weighed, the scales were checked and found to be out of order.

Weight data from 248 pups weighed at Northeast Point is listed below. The maximum weights are unknown.

Sex	Number	Mean weight (kilograms)
Males	127	11.4
Females	121	9.9
Total	248	10.7

Comparison of the 1958 Northeast Point figures with 1957 data shows an overall increase of 2.7 kilograms, or a 33.8 percent increase for the combined sexes. The males increased 2.9 kilograms (34.5 percent) which the females increased 2.3 kilograms, or 30.6 percent over the weights of pups in 1957.

2. Postnatal increase

Biologists weighed 9 male and 11 female pups on Kitovi and Polovina rookeries between 22 July and 26 August 1958 (table 9). After initial weighing, they were unable to find three of the males and three of the females; the weights of these pups are not included in the table. Only pups carrying fresh umbilical cords were sampled.

a. The mean weight, at first weighing for both males and females, was 4.8 kilograms. Scheffer and Wilke (1953) had previously reported the weights of newborn males and females as 5.4 and 4.8 kilograms, respectively.

b. At five days, 10 out of 11 pups showed an increase and one showed a slight decrease. It may be concluded that pups start feeding soon after birth and that they do not suffer an early postnatal loss in weight.

Table 9. Postnatal increase in weight of 14 pups, St. Paul Island, 1958.

Date when first weighed	First weight[1]	Weight in kilograms, at 5-day intervals						
		5 days	10 days	15 days	20 days	25 days	30 days	35 days
Males								
22 July	6.1	-	6.4	7.2	-	7.4[2]	-	7.6
27	4.7	5.0	5.3	6.1	5.2	5.5	5.5	-
27	4.3	4.4	-	4.3	4.3	-	-	-
27	5.3	5.6	6.1	5.3	-	5.2	-	-
27	4.8	5.5	-	4.3	-	-	-	-
27	3.6	-	6.4	5.9	6.9	6.1	-	-
Total	28.8					24.2		
Mean	4.8					6.0		
Females								
23 July	4.9	5.8	-	-	-	-	-	-
23	4.7	5.0	-	-	-	-	-	-
22	4.5	-	-	-	5.7	6.8	-	-
22	5.3	-	-	-	-	6.2	-	-
27	4.5	5.2	-	5.2	-	-	-	-
27	4.9	5.0	4.5	-	-	-	-	-
27	3.7	4.3	4.8	5.1	4.8	5.6	4.6	-
27	6.0	5.8	5.2	5.6	5.6	6.4[2]	7.3	-
Total	38.5					25.0		
Mean	4.8					6.2		

[1] Near newborn weight.

[2] Interpolated.

c. Three males and four females showed an increase in weight at 25 days; one male showed a slight decrease. The growth rate of both sexes was very nearly the same, representing an increment of 27 percent for the period.

d. One pup (no. 12070) lost weight soon after birth and did not recover it until 20 to 25 days later.

e. One pup (no. 12705) doubled its weight within 10 days.

f. Weights of the individual, during the first month of life, fluctuated widely. Quite certainly the length of time since the last feeding has an important bearing on the weight of the pup. Bartholomew and Hoel (1953) stated, with regard to the lactating mother, that the mean duration of her first trip to sea is five days; of her second and subsequent trips, eight days.

III. REPRODUCTION

A. Summary of previous studies

Information on fur-seal reproduction and age through 1957 was derived from 16,055 genital tracts and accompanying canine teeth from which age was determined by tooth ridge counts. Evidence was again found in 1957 that only a small number of 4-year females give birth to pups. The data also showed that just over one percent of the 2-year-old females breed. Indicated breeding among 2-year-olds may have been the result of errors in age determination or interpretation of reproductive condition from genital tracts. The method of obtaining females in 1957 differed, to a large degree, from 1956 as harem raids were resorted to throughout the season, primarily on Polovina but also on Reef Rookery and Northeast Point, after the harem structure relaxed. The 1958 season was similar to 1956 on St. Paul in that harem animals were not killed.

B. Current studies

1. Methods used in the female kill

The improved method of handling female canine teeth, started in 1957 on St. Paul, was inaugurated on St. George this year. Use of the stainless-steel tray on the killing field and in the laboratory, and the resultant timesaving, enabled the St. George Island staff to increase their proficiency in age determination and reproductive-tract examinations.

A brief review of the female killing pattern shows that the pilot year 1956 gave proof of female availability in commercially acceptable numbers. In 1957, the female kill was to be 50,000. The actual kill of 47,413 indicated that such a target figure was not unreasonable. An excessive rejection of the larger female skins (taken in 1956 and 1957) at the processing plant forced a reduction in the size of the 1958 female kill by limiting the maximum length of animals taken to 45-3/4 inches. It is anticipated that the selective killing methods used in 1958 will produce high-quality female skins, with relatively few rejections in an annual take of about 30,000.

2. Results

The 1958 collection of 5,933 female samples was taken during the latter half of the 55-day killing season lasting from 27 June through 20 August. The size restriction of 41 to 45-3/4 inches eliminated harem drives as a source of available females early in the season and the harvest of females was accomplished in August through normal hauling-ground drives.

On St. Paul Island, 4,041 females were examined. Thirty of the samples were not aged because of loss or questionable handling of teeth. On St. George Island, 1,922 females were examined. The frequency with which 3-year-old females were recorded as pregnant, 4-year-old females as multiparous pregnant, and 5-year-old females as multiparous nonpregnant, on both St. Paul and St. George Islands, was about the same as in

1957. There are occasional errors in judgment, both in age determination and in genital-tract examination. However, the breeding capability of a 2-year-old female fur seal cannot be entirely discounted. The appearance of twin fetuses, collected during 1958 pelagic sealing by both the United States and Japan, is cited as a case in point. This was also unheard of until irrefutable evidence was collected. Table 10 lists the reproductive condition, by age, of 4,011 St. Paul Island samples. Table 11 summarizes the reproductive condition of female samples on St. George Island, 1958.

The instructions to kill smaller females in 1958 were reflected in the age grouping and reproductive condition as determined from the samples. Females, ages 2 through 5, made up 81 percent of the total female kill on St. Paul Island and 60 percent on St. George Island.

The change in killing size caused some reduction in the sample pregnancy rate at all ages. The age of maximum productivity, for the St. Paul sample, was seven as in 1957. Maximum rates for 1957 and 1958 were 81 and 72 percent respectively. Little change was shown on St. George Island from 1957, except that the age of maximum productivity advanced to eight. Maximum rates on St. George, for ages seven and eight, in 1957 were 64 and 62 percent and in 1958, 56 and 65 percent respectively. Figures 8, 9, 10, and 11 show the reproductive condition of seals, by age and by round, for both islands.

Table 10. Summary of reproductive condition of female seals sampled from commercial kill, by age, St. Paul Island, 1958.

Reproductive condition	Age 2	3	4	5	6	7	8	9	10	10+	Total
Nullipara											
number	65	1477	1077	257	116	9	1	1	4	-	3007
percent	100	>99	93	48	25	7	2	3	6	-	75
Primipara											
Pregnant											
number	-	6	62	225	187	32	10	3	-	-	525
percent	-	<1	>5	43	41	26	18	8	-	-	13
Nonpregnant											
number	-	-	5	15	22	6	1	-	-	-	49
percent	-	-	<1	3	5	5	2	-	-	-	1
Multipara											
Pregnant											
number	-	1	7	25	110	55	27	23	38	14	300
percent	-	-	<1	5	24	46	47	60	61	35	8
Nonpregnant											
number	-	-	3	7	25	19	18	11	21	26	130
percent	-	-	-	1	5	16	31	29	33	65	3
Total	65	1484	1154	529	460	121	57	38	63	40	4011
Percent	2	37	29	13	11	3	1	1	2	1	
Percent pregnant	-	<1	6	48	65	72	65	68	61	35	

All females	number	percent
Pregnant	825	21
Nonpregnant	3186	79
Total	4011	

Primipara and multipara females	number	percent
Pregnant	825	82
Nonpregnant	179	18
Total	1004	

Sample size in percent of kill: 17

Table 11. Summary of reproductive condition of female seals sampled from commercial kill, by age, St. George Island, 1958.

Reproductive condition	Age 2	3	4	5	6	7	8	9	10	10+	Total
Nullipara											
number	23	390	386	178	61	23	6	4	2	2	1075
percent	100	100	89	53	24	14	8	8	5	2	56
Primipara											
Pregnant											
number	-	1	40	134	100	32	9	1	2	5	324
percent	-	1	9	40	40	20	13	2	5	3	17
Nonpregnant											
number	-	-	6	11	18	14	1	1	1	-	52
percent	-	-	1	3	7	8	2	2	3	-	2
Multipara											
Pregnant											
number	-	-	1	9	53	58	37	31	23	69	281
percent	-	-	<1	3	21	36	52	58	59	42	15
Nonpregnant											
number	-	-	1	2	20	35	18	16	11	87	190
percent	-	-	<1	1	8	22	25	30	28	53	10
Total	23	391	434	334	252	162	71	53	39	163	1922
Percent	1	20	22	17	13	9	4	3	2	9	
Percent pregnant	-	-	10	43	61	56	65	60	64	45	

All females	number	percent
Pregnant	605	31
Nonpregnant	1317	69
Total	1922	

Primipara and multipara females	number	percent
Pregnant	605	71
Nonpregnant	242	29
Total	847	

Sample size in percent of kill: 27

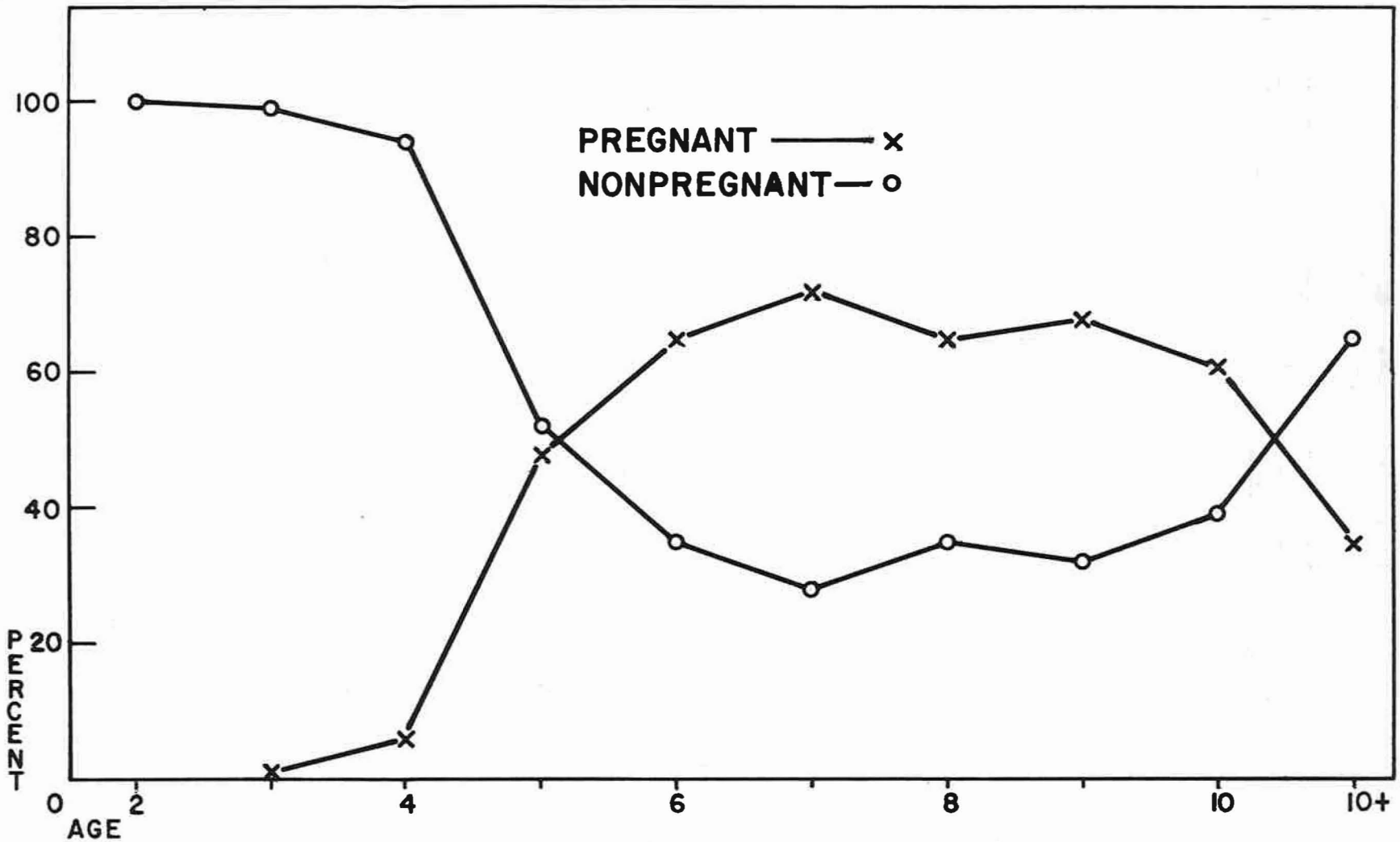


Figure 8. Reproductive condition of female seals sampled from commercial kill, by age, St. Paul Island, 1958.

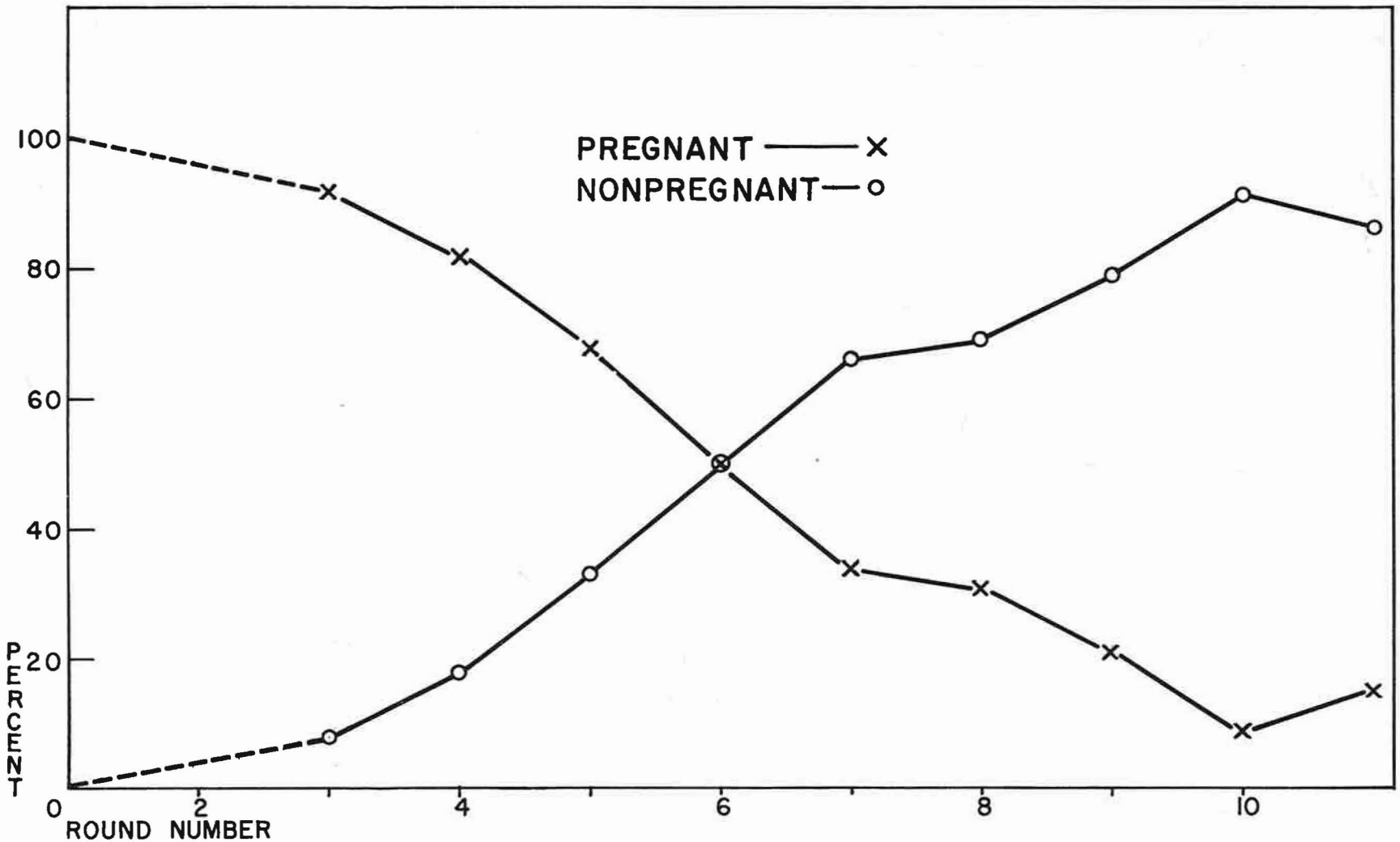


Figure 9. Reproductive condition of female seals sampled from commercial kill, by round, St. Paul Island, 1958.

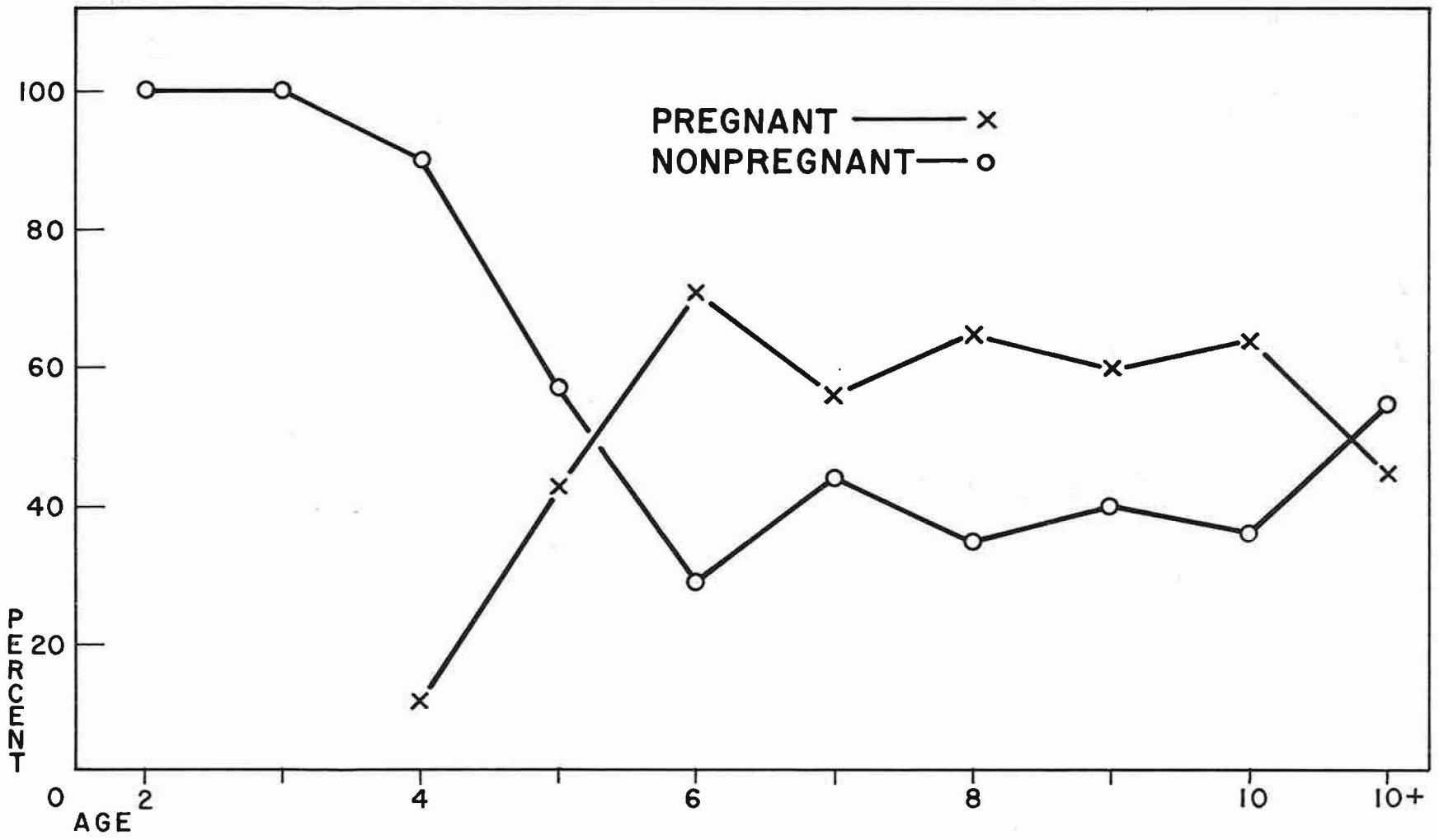


Figure 10. Reproductive condition of female seals sampled from commercial kill, by age, St. George Island, 1958.

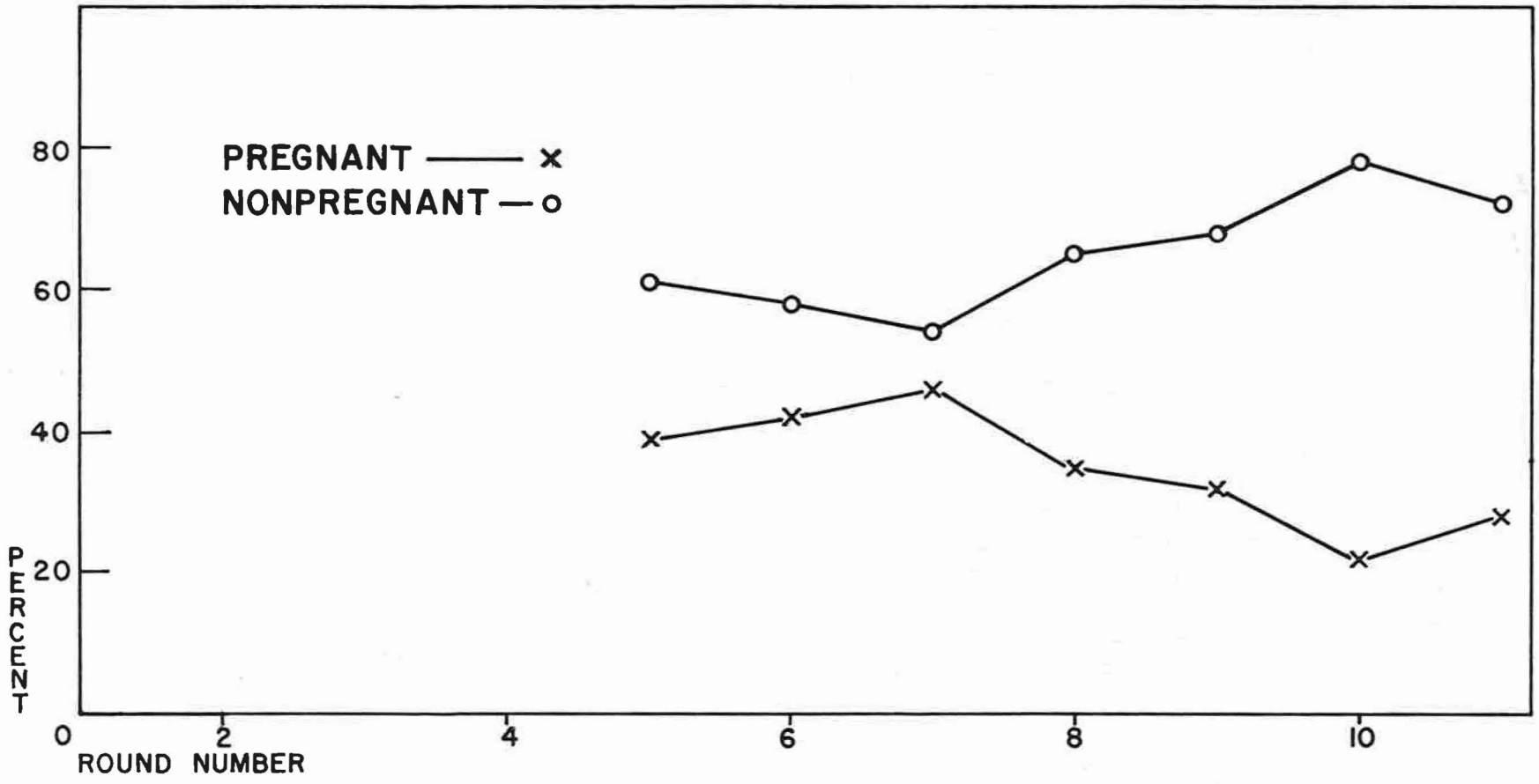


Figure 11. Reproductive condition of female seals sampled from commercial kill, by round, St. George Island, 1958.

According to the female samples, 86 percent of the females killed on St. Paul Island had a field length of 45 inches or less and on St. George 80 percent were 45 inches or less.

It is impractical to designate a dominant age class because of the selective killing, however, the large proportion of 3-year-old females may be indicative of a moderately strong year class.

The projected kill of 4-year-old females for the Pribilof Islands in 1957 was 5,800; the projected figure for 1958 is 3,961. This number may have been influenced by the restrictive upper limits of the killable size range.

Exclusion of harem females from the 1958 kill may be partly responsible for the reduced pregnancy rate, however, selective killing was the main factor. While the pregnancy rates, by age, were lower in 1958, the percent pregnant among primipara and multipara females increased over 1957. A smaller proportion of the older nonpregnant parous animals were killed, thereby increasing the percent pregnant among the remaining parous animals in the kill.

A comparison of 1957 and 1958 pregnancy rates, by age, shows the same pattern -- the most productive age being seven. Pregnancy rates rise rapidly from age 4 to 7, then begin to fall off in the older ages. The most extreme changes, between 1957 and 1958, were in numbers of 3-, 4-, and 5-year females killed. Within this age span, there was a complete reversal of the number of animals killed in the two years so

that the order of abundance, which was ages 3, 4, and 5 in 1957, was 5, 4, and 3 in 1958. Such major changes in age composition, as between 1957 and 1958, had little effect upon pregnancy rates and it again may reasonably be concluded that these pregnancy rates are indicative of the rates for females age 4 and 5 in the overall population.

Data from 1952 pelagic-sealing samples, of the United States and Japan, indicates a difference in mean lengths of pregnant and nonpregnant females of the same age. This same phenomena exists in the 1958 United States pelagic samples. To check this and determine if it exists within the land samples, the 1958 female data was analysed and the following conditions were noted. The mean lengths of females, age four and older, sampled from the commercial kill on St. Paul show no significant difference in length of pregnant and nonpregnant animals. A difference in age four would not have been surprising if size is the key factor for breeding, however, the data is conclusive in its evidence that there is no difference.

The data relating to nonpregnant females was separated in order to make possible consideration of the size of nulliparous, nonpregnant parous, and pregnant animals. Physical and/or physiological differences may exist between nulliparous and nonpregnant parous animals. Nonpregnant parous and pregnant animals would be expected to be and are about the same length. At age seven and older, when detection of differences between nulliparous and parous animals is possible, the nulliparous animals

are shorter than the parous individuals (figure 12). No reason is known for the smaller size or retarded sexual development of such seals.

C. Lactation

As in 1957, the presence or absence of milk in the mammary glands was noted during the gross examination of each specimen. Inconsistencies in removal of the skin cause discrepancies in the determination of lactation. Observation of field skinning has shown many instances in which the entire mammary gland, filled with milk, accompanies the skin leaving no indication of lactation on the carcass. Numerous instances appear of nulliparous and nonpregnant parous animals secreting quantities of milk or milk-like fluid. It is, then, unreliable to attempt, in field examinations, to relate lactation to reproductive condition.

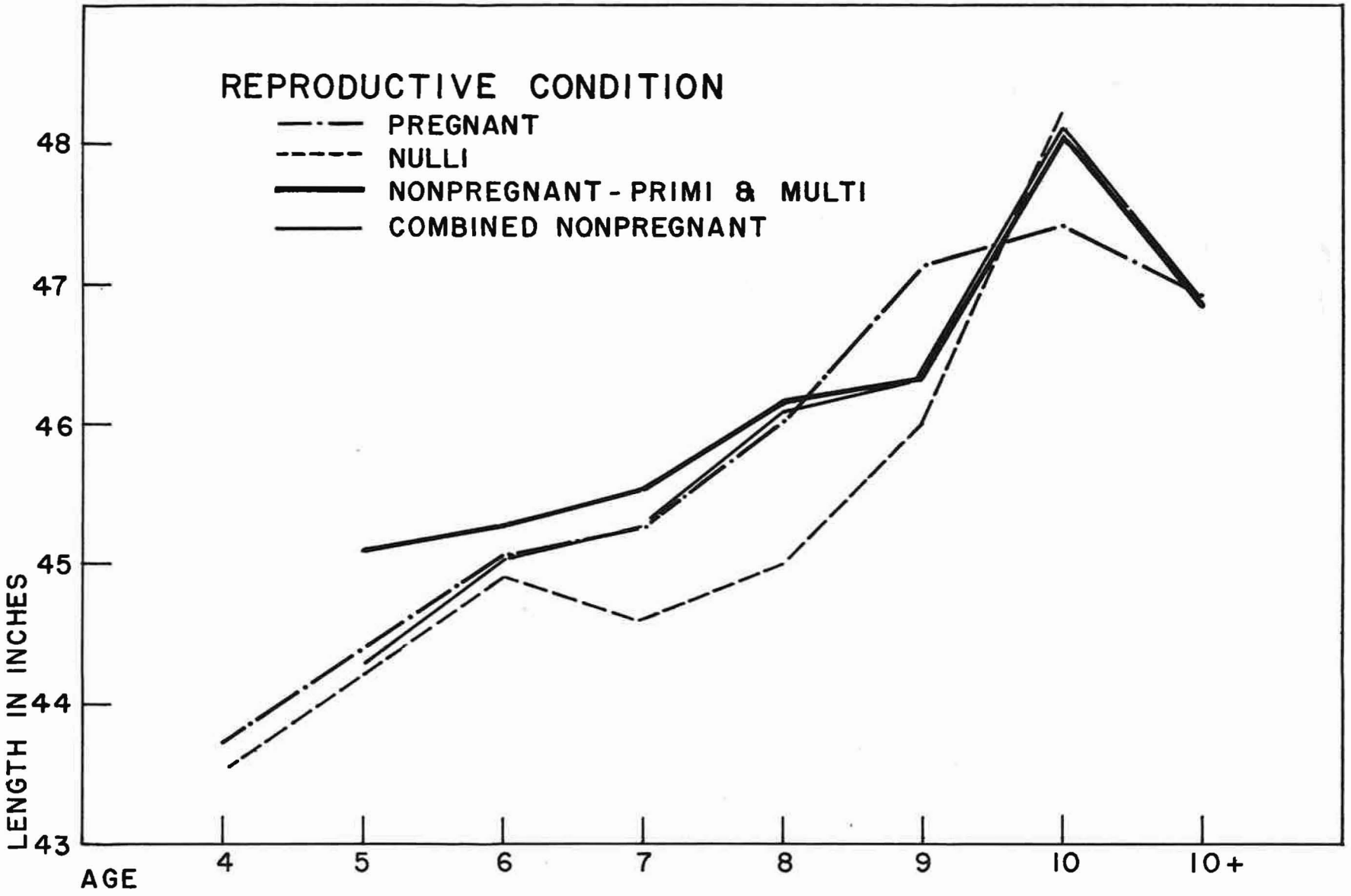


Figure 12. Mean length in inches of females sampled from the commercial kill, by age and reproductive condition, St. Paul Island, 1958.

IV. MORTALITY

A. Background

Prior to 1956 it had been the practice to begin the dead pup counts on about 15 August. Studies have shown that, when the commercial kill was confined to males, relatively few pups deaths occurred after this date. Mortality from hookworm, which accounts for about 55 percent of all pup deaths, usually drops rapidly between 10 and 15 August. During the era of male killing only, dead pup counts reflected only the natural mortality and were not affected to any great extent by carcass disappearance through decomposition and autumn storms.

Since female seals now compose a substantial proportion of the kill but are not available in any numbers during the male kill, it has been necessary to extend the killing season to 20 August. In 1956, harems were generally avoided but, in 1957, they were used to a great extent as a source of females. Data shows that most harem females give birth to pups. Therefore, the death of a harem female will usually result in the death of a pup from starvation. This starvation mortality continues for at least three weeks after the last killing. Dead pup counts are further complicated by the factor of carcass disappearance when they have to be delayed to include all mortality from starvation. In 1958, the killing of harem females was successfully avoided, thereby eliminating any significant die-off following the dead pup counts. Five percent of the total count

is customarily added to include pups that might have been missed and may, in some degree, cover carcass disappearance.

B. Dead pup counts

1. Total counts

Seal pup mortality declined for the second successive year. It was apparent, early in the season, that mortality of pups would be low. Few dead were seen on the beaches and harem fringes. The total of 31,187 dead pups on St. Paul was 61 percent less than the mean mortality during the years 1951 and 1953 to 1957. The St. George total of 4,756 was 56 percent less than the mean for 1953, 1954, 1956, and 1957. The total dead pup counts for both islands are listed by rookery in table 12. A decrease in mortality occurred on all rookeries.

2. Sample area counts

A dead pup census on the sample areas, outlined by permanent signs placed in position in 1956, was made made for the third year (table 13). The count of dead pups on sample plots was 37.8 percent of the total dead pup count. This compares favorably with the figure of 32 and 32.5 percent for 1956 and 1957 respectively. The relationship between total count and sample area count have been fairly constant for three successive years. The sample area counts are apparently a reliable mortality indicator if checked at intervals by complete counts. A comparison of the percent of the total rookery count represented by sample area counts

Table 12. Dead pup counts, Pribilof Islands, Alaska, 1958.

Rookery	1958	Mean mortality 1951 & 53-57	Decrease from mean in 1958 (percent)
St. Paul Island			
Northeast Point			
Morjovi	2290	5918	-61.3
Vostochni	7247	18481	-60.8
Polovina			
Little Polovina	975	2865	-65.9
Polovina Cliffs	1826	6078	-70.0
Polovina	2184	5909	-63.0
Reef			
Ardiguen	102	286	-64.3
Gorbatch	1655	4503	-63.2
Reef	5550	13079	-57.6
Sivutch	---	---	---
Kitovi, Lukanin, Tolstoi			
Kitovi	608	1995	-69.5
Lukanin	324	1107	-70.7
Tolstoi	2823	6446	-56.2
Zapadni			
Little Zapadni	1312	3453	-62.0
Zapadni Reef	246	1287	-80.9
Zapadni	4045	8754	-53.8
Actual total	31187	80161	-61.1
Add 5 percent	1559		
Estimated total	32746		
St. George Island		Mean mortality 1953-54 & 56-57	
North	1626		
Zapadni	844		
South	118		
Staraya Artil	1552		
Actual total	4756	11004	-56.8
Add 5 percent	238		
Estimated total	4994		
Summary, 1958			
Pribilof Islands	35943		
Add 5 percent	1797		
Estimated total	37740		

Table 13. Dead pup counts, study areas, St. Paul Island, 1958.

Rookery	Number
Northeast Point Rookeries	
Morjovi	682
Vostochni	1045
Polovina Rookeries	
Little Polovina	598
Polovina	1947
Reef Rookeries	
Gorbatch	1139
Reef area 1 (north)	1664
Reef area 2 (south)	908
Kitovi, Lukanin, Tolstoi Rookeries	
Tolstoi	1367
Zapadni Rookeries	
Little Zapadni	393
Zapadni	2059
Total	11802

for 1956, 1957, and 1958 is shown in table 14. The value of the sample plot counts can be appraised better when the data in table 14 is further analysed.

Table 14. Percent of complete rookery dead pup counts represented by study area counts.

Rookery	1956	1957	1958
	Percent		
Morjovi	42.0	33.1	29.8
Vostochni	20.6	25.1	14.4
Little Polovina	51.6	55.5	61.3
Polovina	26.3	36.6	48.5
Gorbatch	33.1	31.0	68.8
Reef	30.2	25.6	46.3
Tolstoi	52.3	43.8	48.4
Little Zapadni	39.2	28.3	30.0
Zapadni	51.3	52.2	50.9

C. Recent mortality trends

The statement was made in the 1956 report that seal pup mortality is now fluctuating on either side of a mean and that the mortality would vary between about 75,000 and 125,000 annually unless a man-created change in herd size takes place. A mortality decrease in 1957 brought the count to the minimum estimate of 75,000 and did not require any

explanation as it fit within the limits of the 1956 statement. A further decrease in mortality in 1958 resulted in a total count one-half the number of the original minimum estimate. Such extreme variation necessitates a change in the statement. A graphic illustration of recent trends is given in figure 13, showing the mortality count in thousands, by rookery, by year. One possible explanation for these fluctuations is given in the following section.

D. Factors involving mortality

The weather appears to be a very important factor in mortality fluctuations. Casual observation noted the low mortality of 1953 occurred with a high number of sunny days. A relatively dry season occurred again in 1955 and 1957, both years with a relatively low mortality.

To explore the relationship of weather and mortality, a preliminary study has been started. Detailed weather records, for St. Paul Island, have been kept since 1915. Beginning with 1950 and continuing through 1957, attempts were made to relate mortality to either precipitation or temperature or both. The ultimate relationship will undoubtedly be a combination of both and may well be related, also, to other factors such as food abundance. At this time, the most likely correlation exists between the mean air temperature of January, February, and March of each year and the pup mortality in the following July and August. This relationship is plotted for eight years in figure 14.

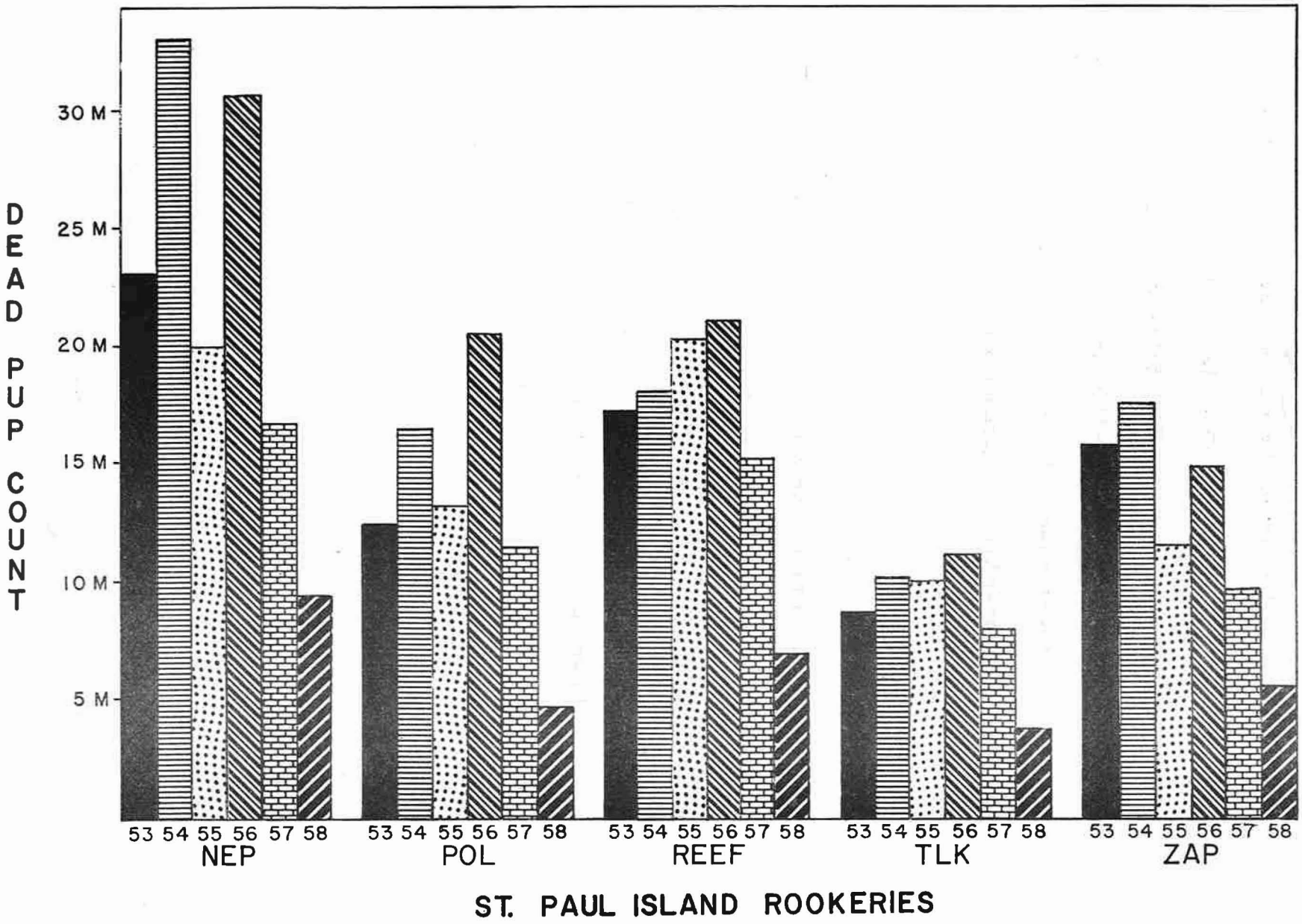


Figure 13. Pup mortality, St. Paul Island rookeries, 1953 - 1958.

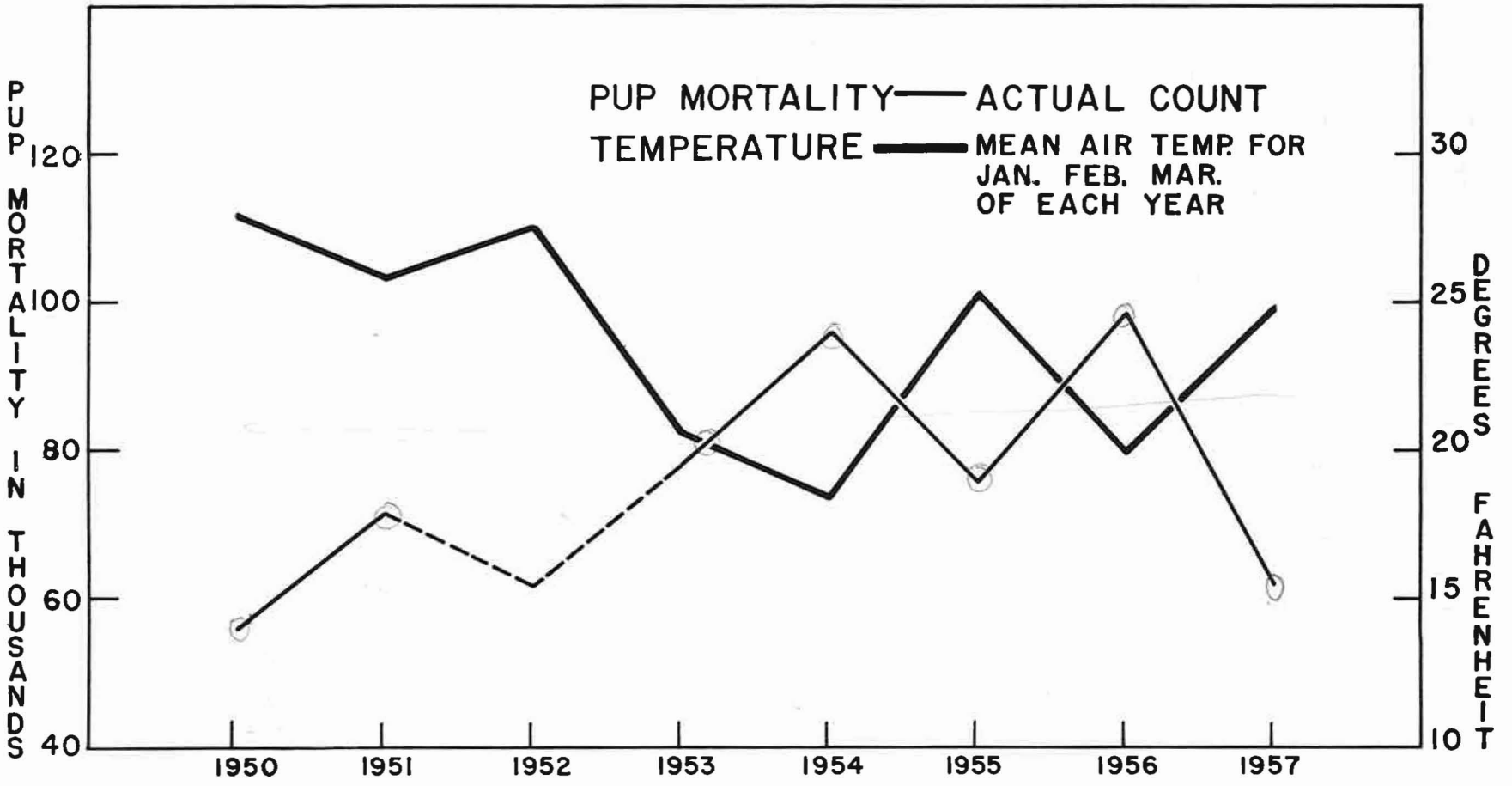


Figure 14. Pup mortality-temperature relationship, St. Paul Island, 1950-1957.

A relationship such as this inverse correlation has a plausible explanation. High mean temperatures may accelerate the development of the hookworm larval form and thereby cause peak abundance of the larval form to exist in its infectious stage prior to maximum susceptibiolty of the seal pups. Colder mean temperatures, however, may be inhibitive so that development might be delayed enough to coincide with the most susceptible state of pup life; this would obviously result in a high pup mortality.

Other results of the study show a relationship between the mean air temperature for the first three months of each year and the kill-per-unit effort. Kill-per-unit effort is defined here as the mean kill of male seals by age, by round, for period 1 July to 31 July for any year.

It is planned to resume investigations on hookworm mortality with emphasis on basic hookworm biology. Better knowledge of development stages may reveal a weak point in its life history. Increased knowledge would make possible an understanding of the fluctuations in intensity of the infection.

V. RELATED STUDIES

A. Blood studies

Whole blood and blood serum samples were collected for cooperative study by four different groups. Whole blood and serum was sent to the National Institute of Health, Bethesda Maryland, for study by Dr. Blumberg. Blood serum was sent to Dr. Kazuo Fujino of the Whales Research Institute, Tokyo, Japan, and to the University of Wisconsin where Dr. H. R. Wolfe is conducting a study on the comparative serology of carnivores. Dr. George Ridgway, U. S. Fish and Wildlife Service, Seattle, Washington, received whole blood samples from which the following results were obtained:

1. All samples were cross matched to test for natural isoaggultinins. None were found.

2. Aliquots were frozen in glycerol-citrate solution to test the applicability of this method of preservation.

3. Antisera were prepared against the red blood cells of five of the individual samples, two in chickens and one each in a rabbit, a goat, and a dog. The dog was found to have weak natural agglutinins for fur-seal blood cells.

4. Several absorption experiments were performed, one of which provided rather weak evidence for the existence of individual differences.

Fur seal hematocrits were taken by Dr. Yeager, Public Health

Officer, St. Paul Island, and five reading averaged 46.6 with a range of 45 to 51. The use of hematocrit readings provides a quick gross estimate of both the white and red cell count, although it actually is a measure of the volume of blood cells and serum. Human blood is approximately 50 percent cells and 50 percent serum.

B. Food habits

In 1954, Kenyon recorded 27 fur seal stomachs containing food, among the thousands of empty ones in the St. Paul Island fur seal harvest. They contained mostly sand fish (Trichodon trichodon) and sturgeon-like sea poacher (Agonus acipenserinus). The same species appeared in succeeding years. In 1958, the few stomachs with food contained 100 percent capelin (Mallotus villosus). The stomach contents of an adult female was composed of the remains of over 80 capelin.

The great colony of murres (Uria aalgae californica) on Walrus Island were, also, observed to feed principally on capelin but some sand lances (Ammodytes tobianus personatus) were brought to the island by both murres and cormorants (Pholacrocorax urile).

C. Female skins

During August, 248 skins from tagged females were marked with special fiber tags giving the age and length of the animal. These tags will remain attached to each skin throughout processing by the Fouke Fur Company. Fifty-nine of these skins had the field number on the tag

in addition to the known age and length. This field number will relate the finished grade and size of the skin to the reproductive condition. Complete field information on the 59 samples is given in table 15.

The bulk of the 248 skins, when finished for grade and size, will give an index of the value of harvesting females within certain age and size limits. A breakdown of the age and size of the entire sample is shown in table 16. Since 3-year females are mostly sexually immature, the sample of 120 marked skins, from this age, should be comparable to that of the 3-year males taken regularly. Samples of the older age classes will, in part, clarify ideas concerning the value of skins from pregnant animals.

Figure 15 gives the age-length relationship of animals whose skins were tagged and the age-length comparison of all tagged females. It appears that there is no significant difference between the two samples, therefore, it is justifiable to assume that the finished grade and size of the 1958 female kill would be represented by the sample. This information could provide a preliminary basis for determining the size limits of future harvests of 30,000 females.

D. Study of fur seal pelage

In connection with a study of fur seal pelage launched in 1957, a staff biologist was assigned to St. Paul Island from 28 August to 10 October 1958. Accomplishments:

Table 15. Grade and size[1/] of skins from female seals of known age, length, and reproductive condition[2/], St. Paul Island, 1958.

Date	Rookery	Field number	Grade	Size	Age	Length	Reproductive condition	Uterus	Ovaries	Lactation
August										
14	REEF	2631			6	45	POP	POR	-	N
		2500			6	44	PMO	POR	CAL	Y
		2662			5	45	POP	POL	-	Y
		2626			5	44	NON	-	-	N
		2539			3	44	NON	-	-	N
		2642			3	41	NON	-	-	N
		2521			3	41	NON	-	-	N
		2506			3	45	NON	-	-	N
		2496			3	43	NON	-	-	N
		2491			3	43	NON	-	-	N
		2492			3	43	NON	-	-	N
		2486			3	40	NON	-	-	N
		2668			2	39	NON	-	-	N
15	POL	2707			6	47	NON	-	-	N
		2719			6	48	PMO	POL	CAR	Y
		2765			6	44	NON	-	-	N
		2784			6	46	POP	POR	-	N
		2822			6	48	POP	POR	-	Y
		2741			5	44	NON	-	-	N
		2689			3	41	NON	-	-	N
		2700			3	40	NON	-	-	N
		2706			3	41	NON	-	-	N
		2715			3	43	NON	-	-	N
		2767			3	42	NON	-	-	N
		2769			3	44	NON	-	-	N
		2774			3	43	NON	-	-	N
		2727			2	40	NON	-	-	N

16	NEP	2985	6	46	NON	-	-	N
		2945	5	45	POP	POL	-	N
		3112	4	44	NON	-	-	N
		3153	4	43	NON	-	-	N
		3085	3	42	NON	-	-	N
		3108	3	45	NON	-	-	N
		3087	3	44	NON	-	-	N
		2934	3	43	NON	-	-	N
		3057	3	42	NON	-	-	N
		3052	3	42	NON	-	-	N
		3123	3	42	NON	-	-	N
		3165	6	45	NON	-	-	N
17	TLK	3206 3/	5	46	NON	-	-	N
		3212	5	45	NON	-	-	N
		3215	3	42	NON	-	-	N
		3228	2	40	NON	-	-	N
		3205	2	42	NON	-	-	N
18	ZAP	3483	6	46	NON	-	-	N
		3551	5	43	NON	-	-	N
		3480	5	45	NON	-	-	N
		3546	6	46	POP	POL	-	N
20	POL	3821	10	47	PMO	POL	-	Y
		3823	10	47	PMO	POR	CAL-R	Y
		3834	10	45	PMO	POR	CAL	N
		3844	10	51	PMO	POL	CAR	Y
		3853	10	46	PMO	POR	CAL	N
		3859	10	52	NMO	-	-	N
		3832	9	50	PMO	POL	CAR	N
		3934	7	46	NMO	-	-	N
		3939	7	48	PMO	POR	CAL	Y
		3797	6	48	POP	POL	-	N
		3809	6	47	POP	POL	-	Y

Table 15. Grade and size of skins from female seals of known age, length, and reproductive condition, St. Paul Island, 1958 (con.)

- -

1/ Grade and size furnished by Fouke Fur Company

Grade:	REGULARS	SCARRED	III'S
Size:	1. Extra Large	1. Extra Large	1. Ex. Ex. Large
	2. Large	2. Large	2. Extra Large
	3. Medium	3. Medium	3. Large (in black only)
	4. Small Medium	4. Small Medium	4. Medium
			5. Small Medium

2/ Key to reproductive condition:

POP = pregnant primiparous
PMO = pregnant multiparous
NON = nulliparous
NMO = nonpregnant multiparous
POR = post partum, right horn
POL = post partum, left horn
CAL = corpus albicans, left ovary
CAR = corpus albicans, right ovary

3/ USR tag Б 52

Table 16. Numbers of female sealskins, by age and length, marked for processing by the Fouke Fur Company.

Length in inches	Age									Total
	2	3	4	5	6	7	8	9	10	
39	1	-	-	-	-	-	-	-	-	1
40	2	12	-	-	-	-	-	-	-	14
41	1	32	1	-	-	-	-	-	-	34
42	1	31	5	1	-	-	-	-	-	38
43	-	24	3	1	4	1	-	-	-	33
44	-	14	6	3	13	1	-	-	-	37
45	-	6	3	8	13	-	-	1	1	32
46	-	1	2	6	14	3	-	-	2	28
47	-	-	2	3	2	-	-	2	2	11
48	-	-	-	1	6	1	-	1	1	10
49	-	-	-	-	1	-	-	3	-	4
50	-	-	-	-	2	-	-	1	-	3
51	-	-	-	-	1	-	-	-	1	2
52	-	-	-	-	-	-	-	-	1	1
Total	5	120	22	23	56	6	-	8	8	248

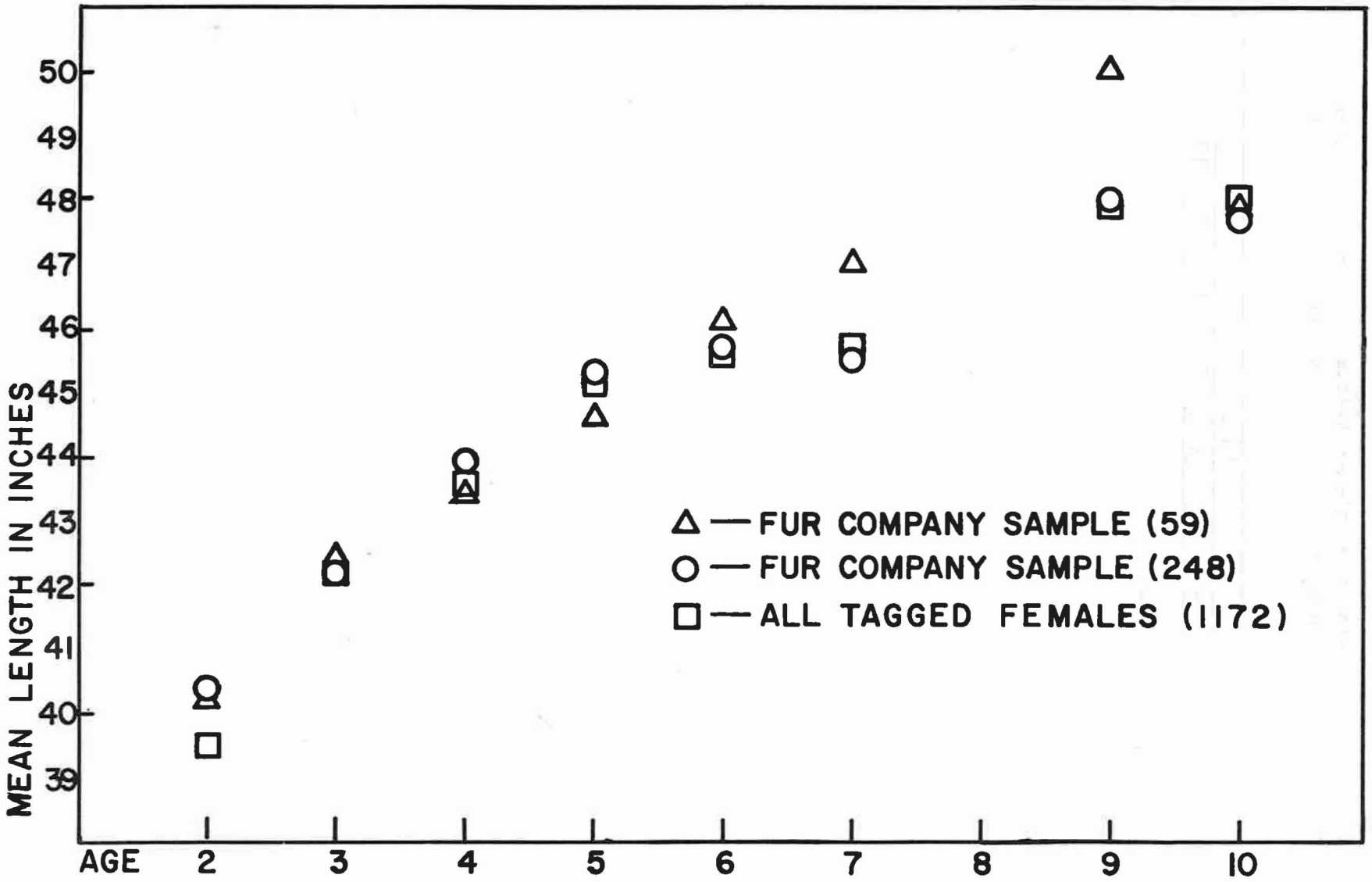


Figure 15. Age-length relationship of tagged females recovered in commercial kill, St. Paul Island, and samples of tagged females whose skins were marked for processing by Fouke Fur Company.

1. Three pelage samples (neck, back, and belly) were collected from each of 75 seals (24 males and 51 females). They ranged in age from newborn pups to those older than age 10. The samples, now in formalin, will be stained, sectioned, and mounted for microscopic study of the molting process. Upon analysis of the 1958 collection, plans will be made to study the molt during the fall months of 1959.

2. Detailed color notes (Munsell System) were obtained from a black pup, silver pup, yearling, subadult, and adult of each sex.

3. The mammary gland was studied, sketched, and photographed in fresh and embalmed specimens. (It had been noted previously that deterioration of fur quality is common over the belly region.)

4. Certain parts of the extremities: nose, ears, tail, and flippers were photographed and preserved for study.

VI. OTHER WILDLIFE SPECIES

A. Reindeer

A count of the reindeer herd on St. Paul Island was made, 12 August, by Carl Abegglen, Terence O'Brien, Brian Scheffer, and Lavrenty Stepetin.

The search for the reindeer herd began in the morning from the Southwest Point road toward the interior of the island. One party searched the area from Ridge Wall to Cone Hill and proceeded from that point according to plan. The second party started searching from Southwest Point to Rush Hill. A persistent cloud obscured the top of Rush Hill so the second party started to the east between Rush and Fox Hills. Reindeer, sighted by the first party from Cone Hill, were moving slowly to the west between Dot Hill and Fox Hill. Both parties remained in close contact with the herd for about three hours. Counts varied from 237 to 275 but were most consistently around 268. The herd milled slowly during the period of observation which increased the chance for error in counting, but the frequency of the counts and the resulting mean figure was considered to give a reliable estimate.

Both parties came in close contact with the herd when leaving the observation area; the herd did not stampede but moved south between Rush and Fox Hills and then east toward Cone Hill.

Herders were assigned and a repair program on the reindeer corral was started in September under the General Manager's and Island Manager's direction. A harvest of 27 males and 11 females took place 30 and 31 October. Mr. C. L. Olson reported that about 50 animals were not driven, 20 escaped during the drive, and 30 escaped from the corral. Of those animals corralled, 22 males and 101 females were released. The biologists' field estimate of 268 agreed closely with the total count of 271 reindeer obtained during the roundup.

During the summer, an additional exclosure was erected by Wilke, O'Brien, Tolmsoff, and Scheffer on the west side of the road at approximately half the distance to Marunich from the north Lake Hill junction. This was the fourth such exclosure erected on St. Paul Island.

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_____ and Ford Wilke. 1953. Relative growth in the northern fur seal. Growth, 17:129-145.

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Appendix A.
Population Estimates of Pribilof Fur Seal Pups Based on 1957 Data

Douglas G. Chapman

Summary

1. The combined estimate (based on all tag recoveries from 1950 through 1957 but excluding A-series females and F- and G-series males) of the average number of pups born on the Pribilofs is 600,000 (to the nearest 10,000).

2. The male recoveries from the F- and G-series yield a combined estimate of 721,600 which would imply the number of pups born in each of these years, on both islands, to have been about 938,000. Reasons are given that these anomalous estimates cannot be accepted. However, no explanation of the estimates themselves are apparent. These aberrant estimates indicate the need for continuing study of the tag-estimation procedure and continuing development of auxiliary estimation methods.

3. The average estimate of the St. Paul population, based on female recoveries, is about 16 percent less than the corresponding average based on male recoveries. The difference is fairly consistent and significant even aside from the large 1953 and 1954 male estimates. Some possible explanations of this are discussed.

References:

Chapman, D. G. 1954. A further note [on the Alaska fur seal population]. Manuscript.

Chapman, D. G. 1957. Population estimates of Pribilof fur seal pups. Report dated May 1957.

"KSC" = Kenyon, K. W., V. B. Scheffer, and D. G. Chapman. 1954. A population study of the Alaska fur seal herd. Special Scientific Report, Wildlife No. 12.

A. 1957 Petersen estimates

We give first the usual Petersen type estimates for St. Paul Island based on the formula $N = \frac{(n + 1)(t + 1)}{s + 1}$ where N is the population estimate [of the number of pups on St. Paul at the time of tagging].

n = number of seals from the specified age group in the commercial kill (estimated from tooth age analyses)

t = number of seal pups originally tagged in this year class

s = number of tagged seals recovered in the commercial kill (including tag-lost animals)

Table 1. Estimates based on 1957 recoveries only.

Male recoveries

Year class	n	t	s[1/]	N
1955	1,015	50,000	108	466,100
1954	23,473	10,000	320	731,400
1953	8,855	10,388	127	718,800
1952	675	19,979	20	643,200

Table 1. Estimates based on 1957 recoveries only (con.)

Female recoveries

Year class	n	t	s	N
1954	953	10,000	32	289,100
1953	4,551	10,388	113	414,800
1952	9,373	19,979	536	348,700
1951	4,747	1,000	24	190,100 [2/]
1949	2,880	19,963	134	426,000
1948	2,599	19,532	167	302,300
1947	1,389	19,183	34	761,900 [3/]

[1/] Tag recoveries up to the round ending August 10, after which no further samples of the accidental male kill were taken for age determination.

[2/] In 1951, pups were tagged only on one rookery and this year is generally disregarded in further analyses.

[3/] The A-series tags became detached quite easily (in 1951, of all A-tagged males recovered, 36 percent had lost their tags). It would, thus, appear that little reliability can be attached to further estimates based on A-series tag recoveries. This question of A-series tag loss was discussed in Chapman (1957), p. 13.

B. Combined estimates

Combining the recoveries of 1957 with those previously obtained yields the following estimates (estimates separated by sex of recovery).

Table 2. Sex of recovery.

Year class	♂		♀	
1947	425,800	(2316)	-	-
1948	428,100	(2085)	321,700	(243)
1949	453,700	(1792)	452,000	(210)
1950		No tagging		
1951	478,100	(111)	228,700	(35)
1952	475,200	(2642)	370,000	(799)
1953	718,800	(762)	421,000	(154)
1954	727,500	(362)	489,100	(32)
1955	466,100	(100)	-	-
Combined	447,400	(1953-54 excluded)	373,900	-

C. Analysis of population estimates

Two aspects of table 2 are immediately apparent.

1. The anomalous estimates based on male recoveries of the 1953 and 1954 year classes.

2. The estimates based on male recoveries in all instances exceeds that based on female recoveries.

The latter feature underlines the question raised in Chapman (1957) as to whether the estimates according to sex differ significantly.

To this latter question we first turn.

a. Comparison of estimates from male and female recoveries.

To make this comparison, it is necessary to estimate

Table 3. Estimates of St. Paul fall pup population, by year-class, sex, and round ('000's) (con.)

Year class	1956 Recoveries 1953	1952	1955 Recoveries 1952	1952
Round	Males	Males	Females	Males
1	510.0	459.2	-	614.4
2	570.6	394.2	-	528.3
3	859.5	473.6	-	637.5
4	656.2	477.6	624.0	538.2
5	605.8	428.8	-	457.4
6	619.0	428.7	-	479.6
7	725.3	422.3	-	494.7
8	603.4	404.0	-	572.1
9	564.2	395.2	629.4	-
10	536.5	392.6	375.7	-
11 [3/]	-	-	340.7	-
Mean [2/]	625.0	427.6	492.4	540.3

1/ It was necessary to combine recoveries of several early rounds in the female estimates so that no estimate is based on less than ten tag recoveries.

2/ The means differ from the Petersen estimates given in table 1. These are unweighted means; the Petersen estimates are, in effect, weighted means of the same items.

3/ The special round (September 4-8, 1956) for females only.

the variability of the estimates. This can be obtained by utilizing the fact that tag recoveries are recorded for each round (5 days) of the killing season and that in each round all hauling grounds are visited. Thus, it is possible to compute a population estimate from each round's recoveries of each tag series. These estimates are shown in table 3.

Table 3. Estimates of St. Paul fall pup population, by year-class, sex, and round ('000's)

1957 Recoveries

Year class	1955	1954	1953	1954[1/]	1953[1/]	1952[1/]	1949[1/]	1948[1/]
Round		Males				Females		
1	-	648.2	556.9	-	-	-	-	-
2	-	710.9	708.4	-	-	-	-	-
3	445.5	1009.4	983.5	-	-	179.8	242.4	199.0
4	-	554.0	782.6	-	-	-	-	-
5	-	744.1	618.1	242.3	524.2	183.2	-	-
6	188.5	794.3	512.1	-	-	273.1	449.8	174.1
7	550.0	705.2	863.5	-	-	313.3	-	-
8	629.3	839.0	-	-	-	365.9	647.9	293.0
9	355.1	449.4	571.4	-	336.0	355.9	436.4	282.7
10	-	-	-	297.5	367.7	412.1	416.9	360.6
11	-	-	-	284.0	459.3	322.8	344.6	383.1
Mean[2/]	433.7	717.2	699.6	274.6	424.0	300.8	423.0	282.1

Table 4 shows the variances of these estimates, together with some calculated in "A Further Note" and the corresponding average of tag recoveries upon which the estimates were based.

Table 4. Variances of population estimates by round.

Year class	Sex	Recovery year	Average number of tags (estimate)	Number of estimates	Variance ('000's)
1947-49	♂	1950-53	141	44	22,956
1952	♂	1955	149	8	4,105
1952	♂	1956	142	10	1,061
1953	♂	1956	62	10	10,512
1953	♂	1957	16	8	27,575
1954	♂	1957	36	9	26,196
1955	♂	1957	22	5	29,556
1952	♀	1956	66	4	24,240
1948	♀	1957	33	5	5,702
1949	♀	1957	22	6	18,056
1952	♀	1957	60	8	7,079
1953	♀	1957	23	4	7,089

These variances vary widely; there is no clear-cut association of variation with sex, year of recovery, or number of recoveries. However, if the 1947-49 estimates are excluded, the male estimates show a consistent inverse relationship with the number of tag recoveries as,

of course, is expected. There is also a slight indication that for a given level of tag recoveries male estimates are more variable than female ones. This question should be investigated as further data becomes available since it may throw light on the reliability of the different estimates.

We now proceed to compare the estimates based on male and female recoveries, using analysis of variance techniques.

Table 5. Analysis of variance of population estimates of 1952, 1953, and 1954 year classes.

Source	Sum of squares	d.f.	Mean square
1954 Year class 1957 Recoveries - ♂ vs. ♀			
Between sexes	441,306	1	441,306 1/
Within sexes (error)	211,226	10	21,123
F = 20.89 with (1, 10) d.f.			
1953 Year class 1957 Recoveries - ♂ vs. ♀			
Between sexes	202,419	1	202,419 2/
Within sexes (error)	214,293	10	21,429
F = 9.45 with (1, 10) d.f.			
1952 Year class 1955-6-7 Recoveries - ♂ vs. ♀			
Between sexes	91,950	1	91,950
Between years - within sexes	154,429	2	77,214.5
Within years (error)	160,547	26	6,174.9

F (for testing hypothesis of no difference between sexes) = 1.19 with (1, 2) d.f.

1/ 1954 difference is significant at 1 percent level

2/ 1953 difference is significant at 5 percent level

- -

The tests based on 1957 recoveries show a clear-cut significant difference -- the F-values are sufficiently large that significance is indicated even though there is some question because of possible heterogeneity of the variances. The test for the 1952 year class, where the recoveries took place in different years, is inconclusive (the F-value is far from significant).

It may be argued that this difference between male and female estimates is due only to the large estimates based on male recoveries for the 1953 and 1954 year classes. While these focus attention on the difference of estimation by sex, it should also be pointed out that excluding 1953 and 1954 male estimates, and estimates based on fewer than 10 tag recoveries, the largest remaining estimate in 1956 was the male estimate, the two largest remaining estimates in 1957 were male estimates. Also, all six combined estimates based on male recoveries exceeded the corresponding estimates based on female recoveries.

It may, therefore, be concluded that there is a tendency for the male estimates to exceed the female estimates.

What are some possible explanations of this discrepancy?

(1) The greater tendency of males to stray between the two islands.

(2) Tag-lost male seals are overlooked.

(3) Differential tagging mortality between the sexes.

b. Straying

The first fact (straying of males) is well known. For example, the following table compares the percent tag recoveries on St. George in 1956 and 1957.

Table 6. Percent tag recoveries on St. George Island in 1956 and 1957, by sex and age.

Age	Males	Females
	1956	
3	11.4	2.4
4	6.2	0.8
	1957	
3	10.5	8.6
4	8.5	1.7
5	11.5	0.2

This table indicates that the male straying exceeds the female at ages 3 and 4 by about six percent; thus, at least six percent of the excess of male estimates might be attributable to this factor. Since straying decreases with age, this might be more of a factor with respect to the recoveries at ages 7 to 10 of A, B, and CS tagged females.

c. Tag loss

As noted in Chapman (1957), tag loss itself is unimportant; what is important is possible oversight of tag-lost animals. We have no direct information on this but can analyse the tag-lost to tagged-recovery ratio for indirect evidence on this question. Data from 1955 and 1956 recoveries, showing tag-lost percentages, were presented on page 8 of that report. Additional data from 1957 recoveries and their analysis are presented in tables 7 and 8.

Table 7. Tag-lost recoveries in 1957, by sex and tag series.

Sex	Tag series	Year class	Tagged	Tag lost	Percentage tag-lost of total
♂	E	1952	21	2	8.7
♂	F	1953	115	14	10.9
♂	G	1954	315	10	3.1
♀	E	1952	487	49	9.1
♀	F	1953	100	13	11.5
♀	G	1954	27	5	15.6

Table 8. Chi-square tests of tag-lost ratio.

Comparison	Chi-square (adjusted)	d.f.	Prob. level
E-series males - 1955, 1956, and 1957 compared	3.74	2	.15
F-series males - 1956 vs. 1957	2.86	1	.08

Table 8. Chi-square tests of tag-lost ratio (con.)

Comparison	Chi-square (adjusted)	d.f.	Prob. level
E-series females - 1956 vs. 1957	25.14	1	<.001
F-series females - 1956 vs. 1957	.04	1	.84
E-series combined male vs. female	.08	1	.78
F-series combined male vs. female	2.40	1	.12
G-series 1957 male vs. female	8.99	1	.01
E- vs. F-series (sex and year combined)	21.88	1	<.001

The tag-lost ratio of the E-series among females is anomalous: not only is this the only year-to-year comparison that shows a significant difference but the tag-lost ratio of E-series females in 1956 was 22.4 percent and only 9.1 percent a year later. It is difficult to conceive how the animals in question could regain lost tags between their third and fourth summers. Yet, the average of the two years (13.5 percent) is very close to the average tag loss of the males in the E-series (13.1 percent).

To investigate this question further, the tag-loss ratio among E-tagged females was studied by hauling-ground areas in both 1956 and 1957. In both cases, the tag-lost ratio was homogeneous throughout the five areas (for 1956 Chi-square = 2.29, d.f. 4, P = .68; for 1957 Chi-square = 1.86, d.f. 4, P = .76). Thus, there is no explanation of the anomaly in this direction.

In any case, discrepancies in the tag-lost ratios of the E tag series (1952 year class) will not explain the unusually high 1953 and 1954 estimates based on male tag recoveries. In particular, the F tag-lost ratio (1953 year class) has been consistent between years and between sexes -- the combined tag-lost percentage being 7.6. Consequently, while it is still possible that males lose more tags than females and at the same time more tag-lost males are overlooked, there is no supporting evidence for such a conjecture.

d. Tagging mortality

There is no evidence as to the existence of any tagging mortality and any suggestion of a differential tagging mortality between sexes is pure speculation.

e. The 1953 and 1954 estimates based on male recoveries

There is, thus, no firm basis to explain the estimates in question, which are 50 percent or more greater than the other male estimates and differ even more widely from the estimates based on female recoveries for the same years.

It is pertinent to ask: are these estimates to be accepted as valid? As supporting evidence, there is the fact that the two estimates are consistent with each other; also, the estimates of the 1953 class in 1955, 1956, and 1957 and the estimates of the 1954 class from 2- and 3-year-old recoveries are all reasonably consistent. In particular, the result ot a t-test of comparison between 1953 and 1954 estimates, based on

1957 recoveries, is: t = 0.22 d.f. - 15 P - .84; the t-test of comparison between 1953 estimates in 1956 and 1957 is 1.17 (d.f. - 16) with P - .26. Furthermore, the estimates of these year classes by round (see table 3), while variable are not excessively so and the variances as shown in table 4 are not out of line with others in the table.

On the other hand, as evidence to contradict the reality of these estimates, are four points.

1. The direct disagreement with all other recent estimates and, particularly, the estimates from the female recoveries for the same years reversed at the same time is the primary difficulty.

2. The 1953 year class' contribution to the male kill was only 47,984, the lowest contribution since 1949 and much lower than the corresponding contribution of the 1952 class (62,916). Allowing for escapement, this would indicate survivorship of about 15 percent for the 1953 class in contrast to 30 percent or more for the 1952 class. Unfortunately, we have no information whether size of the pup class and survival of the pups are related, possibly inversely. However, variations of survival rate of this order of magnitude have not been observed before.

3. The female component of the population, consisting of many year classes, is quite stable. Thus, such a sudden increase in the number of pups born could have come about only through a sharp increase in the pregnancy rate. While we have no information as to the true pregnancy rate of the whole female component of the herd in different years, we do

have information on pregnancy rates, by age class, for cows sampled from rookeries and from hauling grounds respectively. Data on this is shown in table 9.

Table 9. Pregnancy rates - Percent pregnant[1/]

Year	Rookery samples (all ages)	Hauling-ground samples Ages 4	5	6	7-9	10 and 10+
1952[2/]	82.8	-	-	91	77	-
1953	88.6	7	76	90	73	67
1954	-	38	74	90	75	-
1955	-	16	64	83	76	-
1956	98.9	10	57	74	68	-
1957	97.7	13	54	78	77	-

1/ The pregnancy refers to the year completed, not the coming year, though the sampling may have taken place in late summer in many cases.

2/ Actually, a combination of miscellaneous samples from 1944 through 1952, some of which may have been taken from hauling grounds.

The 1953 rates are in some cases higher than others, in some cases lower -- there is no indication, whatsoever, that there might have been 50 percent more pups in 1953 than in 1952 or 1955. While no rookery females were taken in 1954, there is again no evidence of abnormal pregnancy rates in the hauling-ground sample.

Further, as was discusses in "A Further Note" (p. 36), a St. Paul pup population in excess of 700,000 would mean a St. Paul cow population of more than 1,100,000. Such a number is inconsistent with the past birth and mortality rates.

4. The dead-pup count in 1953 and 1954 was quite in line with the counts of other years during the 1950's. Consequently, if the 1953-54 male estimates were valid, it would, also, be true that the rate of pup mortality on land must have dropped sharply during these two years. To have the pup population increase sharply and the rate of pup mortality decrease sharply simultaneously seems unreasonable.

On the basis of these points of evidence, I regard the estimates of the 1953 and 1954 year classes, from male recoveries, as unacceptable.

D. Stratified population estimates

Tabled below are the estimates of fall pup population on St. Paul Island, by hauling-ground areas, using the method given in "KSC", Appendix F., pp. 67-69, and also in Chapman (1957), pp. 11-14.

Table 10. Estimates of fall pup population on St. Paul, by hauling-ground areas.

	F - series				
Area	1956 - ♂ recoveries	1957 - ♂ recoveries	1956-7 - ♂ recoveries	1957 - ♀ recoveries	1956-7 - ♀ recoveries
NEP	145,168	-30,347	134,612	487,957	458,904
TLK	78,527	-191,949	9,048	-61,911	-31,877
ZAP	123,073	640,859	232,194	161,575	176,522
REEF	268,206	1,384,087	424,102	137,354	141,644
POL	41,521	223,671	54,157	19,912	26,009
Total	656,495	2,026,321	854,113	744,887	771,202

Table 10. Estimates of fall pup population on St. Paul, by hauling-ground areas (con.)

Area	G - series 1957 - ♂ recoveries	G - series 1956-7 - ♂ recoveries	G - series 1957 - ♀ recoveries	H-series 1957 - ♀ recoveries
NEP	98,019	127,538	91,128	132,642
TLK	46,010	48,825	108,000	40,799
ZAP	175,789	177,769	58,616	139,378
REEF	234,780	213,993	64,728	50,312
POL	140,518	131,816	13,582	71,054
Total	695,116	699,941	336,054	434,185

The estimates of the F-series are highly erratic and, since numerous negative estimates appear, little value can be attached to the components or the totals. The G-series estimates agree with the Petersen-type estimate. So far, only the two-year-old returns from the H-series are available and yet the separate area estimates are more reasonably than those obtained from the F- and G-tag series.

It may be that separate estimates of the population, by areas, depends on a much larger tagging effort. It should also be emphasized that the hauling-ground areas correspond only loosely with the breeding rookeries; in particular, the TLK area is an artifact brought about by the considerations of the kill, not biological or natural factors.

In any case, this approach sheds no new light on any of the questions raised earlier.

E. All Pribilof pup-population estimates

Table 11 shows the estimates believed to be most reliable for each year through 1953.

St. Paul

Table 11. Fall pup-population estimate plus dead-pup count.

Year	Sex	Fall pup estimate	Dead-pup count
1947	♂	425,800	None
1948	Both	417,100	None
1949	Both	451,200	None
1950	-	None	None
1951	Both	420,300	55,041
1952	Both	450,900	None
1953	♀	421,000	83,173
1954	-	?	100,987
1955	♂	466,100	79,321
1956	-	Not yet available	103,642
1957	-	Not yet available	64,745

The weighted mean fall pup-population estimate is 435,600; the mean dead-pup count is 80,200 (to nearest 100).

The best estimate of the average number of pups born on St. Paul Island is 515,800.

To estimate the average number of pups born on both islands, this figure is multiplied by 1.17 (the basis of this procedure was discussed in Chapman [1957]) to yield an all-Pribilof estimate of 603,500.

Appendix B.
Estimate of Escapement of Fur Seal Bachelors from Commercial Harvest, 1957

D. G. Chapman

Summary

The estimate of the escapement for the Pribilofs for 1957 is (to nearest 100):

3-year males	12,900
4-year males	1,200

The estimated sampling errors of these two estimates are 3,000 and 500 respectively.

The negative bias noted in the estimates for 1956 was found again this year. It is therefore concluded that this bias is real and not simply sampling error. We have therefore applied a correction factor which is incorporated in the estimates shown above.

The same system of denoting references will be used as in the report "Population Estimates of Pribilof Fur Seal Pups based on 1957 data" (submitted July 1958)--see page 2. In addition we will have occasion to refer to last year's report on escapement which appeared as Appendix KK of Alaska Fur Seal Investigations, Pribilof Islands, Alaska, 1957 (pp. 143-162). This will be referred to hereafter as Appendix KK.

Introduction

The estimates of escapement of 3- and 4-year males from the

commercial harvest are obtained using the same procedures as in previous years--for a discussion of these see KSC pages 57-70, "A Further Note" pages 1-12, as well as Appendix KK. Some minor modifications and the correction for negative bias, noted in the summary, are introduced below.

A. Post-season escapement.

As in 1956 the male killing season was extended beyond the customary date of termination of earlier years. In 1956 the male kill terminated on August 15, in 1957 on August 10, though 997 males of all ages were killed accidentally after August 10. Since no age breakdown is available on these 997 animals (many of which could have been 2-year-olds) they are disregarded in further analysis. Further, by post-season escapement we will mean that group of seals that are of killable size and return to the islands after August 10.

Because of the extended season we have a check on the estimation of post-season escapement from the tail of a normal curve. The comparisons are shown in table 1.

Table 1. Comparison of estimates and observations of returns 1956-1957 1/

Age class and year	Estimate of total returns based on returns to					Actual returns to termination of kill
	July 26	July 31	Aug. 5	Aug. 10	Aug. 15	
Threes						
1956	30,479	35,787	39,741	40,316	40,743	38,270 (Aug. 15)
1957	24,860	25,694	26,083	30,484	-	23,473 (Aug. 10)
Fours						
1956	27,895	29,750	30,556	30,951	31,556	31,448 (Aug. 15)
1957	7,856	8,230	8,666	9,272	-	8,855 (Aug. 10)

1/ Returns in table 1 (and also in tables 2 and 3 below) means the kill plus similarly sized animals that return after the termination of the commercial harvest. While the harvest is set up to take males in the 41-45" length classes there is some overlap into adjoining length classes.

From table 1 it is seen that the estimates in both years were low, and the earlier the estimate the greater the deficiency. The estimates for 1956 were discussed in Appendix KK: it was there (p. 152) pointed out that the discrepancies were not incompatible with sampling error. However this bias is now observed again in the 1957 post-season escapement estimates. It was also shown that the estimate of total 3-year male escapement was negatively biased (Appendix KK, table 9, page 161). This conclusion was based on a comparison of 3-year male escapement with 4-year male returns of the following year. It therefore seems necessary that the estimation procedure be modified or that a correction be introduced for this bias.

The estimation procedure could be modified by discarding the normal distribution and trying other curves to fit the returns, for example the type III curves (KSC page 60). Alternatively it is worth while studying the pattern of the estimates of table 1 to determine an emperical extrapolation formula.

If the actual kill of 3-year males by round is studied, it is seen that there is an anomaly. The kill reached a maximum of 3,970 in the round of July 22-26, decreased in the two succeeding rounds, then increased again in the final round (Aug. 6-10). This "bi-modality", if real and not just an aberration due to weather, increases the complexity of fitting a suitable curve or of finding a suitable correction formula. This may be further seen in table 2 where the pattern of the successive estimates in 1956 and 1957 are compared.

Table 2. Early estimates of total returns expressed as percent of final estimate 3-year males 1956-57

	Date of early estimate			
Year	July 26	July 31	August 5	August 10
1956	74.8	87.8	97.5	99.0
1957	81.6	84.3	89.0	-

Whereas the 1956 estimates showed a rapid and regular tendency to approach the final estimate, this was not so in 1957 (due to the large final round kill).

It was shown in last year's report (Appendix KK, p. 161, top line) that the estimates of escapement of three-year males in the past were deficient on the average by 17 percent. Hence we will, for the present, adjust upward the estimate of the post-season escapement of 3-year-olds by 17 percent.

While this may serve as a useful interim approximate correction for the bias that has been found, it is desirable to search into the fundamental cause of this bias. Also, it must be recognized that there will still be large sampling errors. These are discussed later.

In table 3 the early estimates of 4-year male returns are expressed as a percentage of the final estimate.

Table 3. Early estimates of total returns as percentages of final estimate 4-year males, 1956-57

	Date of early estimate			
Year	July 26	July 31	August 5	August 10
1956	88.4	94.3	96.8	98.1
1957	84.7	88.8	93.5	-

These show more regularity than the similar percentages in table 2. However, it is difficult to use this table to get an exact correction for bias, for we are only expressing one estimate in terms of another estimate which may also have negative bias. Having no firm knowledge of the true value of total returns, this table at best suggests that the August 10 estimate in 1957 may be as much as five percent low. This

correction factor is used below.

B. Through-the-season escapement

The through-the-season escapement of undersize and oversize animals is estimated from the tail of the truncated normal frequency distribution of lengths. In applying this to the 3-year males it has to be recognized that there is escapement both of animals greater than 45" and of animals below the accepted size range, i.e., below 41". In the past analyses this double selection has been neglected; by using an iterative method, estimates can be made that do not neglect this. This extended procedure has been applied to the data from past years and this has resulted in changes in two cases. For this reason the complete set of estimates is recapitulated in tables 4a and 4b.

Table 4a. 3-year-male through-the-season escapement[1/]

Method year	Comparison of tagged and tag-lost recoveries	Comparison of tag recoveries and complete kill	Estimation of tail of size frequency distribution
1950	.09	.09	.15
1951	-	.08	.10
1952	-	-	.01
1955	-	-	.01
1956	-	-	.09
1957	-	-	.05
Average			.07

Table 4b. 4-year-male through-the-season escapement[1/]

Method year	Comparison of tagged and tag-lost recoveries	Comparison of tag recoveries and complete kill	Estimate of tail of size frequency distribution
1951	.15	.16	0
1952	-	-	.31
1953	-	-	.12
1956	-	-	.06
1957	-	-	0

1/ The figure table is the estimated proportion of the age class that returns prior to the end of the killing season but escapes the commercial harvest, due to size.

C. Total escapement estimates, 1957

We now put the above estimates together to determine an estimate of total escapement of 3-year and 4-year males respectively.

3-year-males

Estimate of total return (table 1) of killable sizes 30,484

On the basis of the estimate in table 4a, this is 95% of all 3-year males

$\therefore$ Total return of all 3-year males $= \frac{30,484}{.95}$

$= 32,088$

Kill $= 23,473$

Preliminary estimate of escapement (St. Paul) $= 8,615$

Add 17% correction for negative bias	=	1,464
Total		10,079
St. Paul kill of 3-year males was 77.9% of kill on both islands in 1957		
∴ Final estimate of escapement of 3-year males in 1957	=	10,079 ÷ .779
	=	12,938

4-year-males

Estimate of total return of killable sizes (table 1)		9,272
Add 5% correction for negative bias		464
Corrected estimate of total returns of killable sizes	=	9,736
On the basis of table 4b this is 100% of all 4-year males		
∴ Total returns	=	9,736
Kill	=	8,855
Estimate of escapement of 4-year males in 1957 on St. Paul	=	881
St. Paul 4-year-male kill was 72.7% of kill on both islands in 1957		
∴ Final estimate of escapement of 4-year males in 1957	=	881 ÷ 0.727
	=	1,212

D. Sampling error of estimates of 3-year male escapement

In the report on escapement last year a study was made of

estimates of escapement by hauling ground areas (Appendix KK, p. 150) to estimate the magnitude of the sampling errors. This approach however gave only information on errors of post-season escapement estimates. It was shown there that the sampling error of such estimates were extremely large and by implication the errors of the estimates of total escapement would be even larger.

An alternative approach can be based on the comparison of estimates of 3-year male escapement with the returns of 4-year males of the following year. Such comparisons for 1950 through 1955 (for years when the kill terminated at comparable dates) was given in table 9 of Appendix KK, page 161.

This table gives observed values for these years of the difference:

Estimates of 3-year escapement--(kill of 4-year males of following year and escapement of 4-year males of following year).

These six differences enable us to calculate a standard error of this combined quantity. However we are not comparing the estimate of 3-year male escapement with the true escapement but with something which is itself an estimate. Even the figure for kill contains some sampling error (though relatively small) since the proportion of 4-year-olds is estimated from tooth age readings.

To tackle the problem we have made the reasonable assumption that the sampling errors of the escapement estimates are proportional

to their magnitudes. This assumption plus an estimate of the sampling error of the kill estimates leads to an estimate of the sampling error of the 3-year-male escapement estimates for 1950-1955 to be approximately 6,000. That is, we may expect any single estimate to be within $\pm$ 12,000 of the true escapement with about 95 percent confidence.

Following through the assumption made in the last paragraph, the sampling error of the 1950-1955 4-year-male escapement estimate would be about 2,500. The sampling errors of the 1957 3- and 4-year male escapement estimates might then be in the neighborhood of 3,000 and 500 respectively.

E. Size comparison of 3- and 4-year males

The estimate of through-the-season escapement by calculating the missing tails of the size frequency distribution also yields estimates of the mean length and standard deviation of the whole age group of males [as distinct from the selected group in the kill]. The same extended or iterated method mentioned above in the section on the through-the-season escapement yields revised estimates of some values previously given [in table 7 of Appendix KK, page 158]. These revisions are incorporated in the complete table of length and standard deviations given below.

Table 5. Comparison of mean length and standard deviation for 3- and 4-year males 1950-1954.

Year class	3-year-olds mean	s.d.	4-year-olds mean	s.d.	Average increase in length
1947	41.90	1.39	44.93	2.00	3.03
1948	42.09	1.54	45.28	1.36	3.19
1949	42.68	1.16	44.85	1.29	2.17
1952	42.80	1.30	44.45	1.38	1.65
1953	42.53	1.55	44.33	1.47	1.80
1954	42.57	1.50	-	-	-

As pointed out in last year's report, these estimates of increase in length for the 1952 and 1953 year classes seem too low, not only in comparison with earlier figures but also when viewed in terms of the overall growth of the male fur seal. While it is true that the 4-year males are those left after the 3-year male kill, the estimates given above indicate that the bulk of 3-year male escapement is the post-season escapement. This group has not been subject to any size selection. With the advent in the kill of year classes that received 50,000 tags as pups, more reliable estimates will be available to check this and other aspects of the escapement studies.

Appendix Table C.
Age classification of male seals in commercial kill,
St. Paul Island, 27 June to 10 August 1958

Date	Rookery	Males killed	Tooth sample size	Percent in each age class				Estimated number killed from age class			
				2	3	4	5	2	3	4	5
27 June	NEP	893	88	-	73	27	-	-	653	240	-
28	TLK	353	35	-	80	20	-	-	282	71	-
29	ZAP	628	63	-	73	27	-	-	458	170	-
30	REEF	276	29	-	62	38	-	-	171	105	-
1 July	POL	585	59	2	73	25	-	12	427	146	-
Round total		2735	274					12	1991	732	-
2 July	NEP	893	93	-	84	15	1	-	750	134	9
3	TLK	408	40	-	62	38	-	-	253	155	-
4	ZAP	763	75	1	76	23	-	8	580	175	-
5	REEF	107	11	-	64	36	-	-	68	39	-
6	POL	494	47	-	70	30	-	-	346	148	-
Round total		2665	266					8	1997	651	9
7 July	NEP	1793	180	-	72	28	-	-	1291	502	-
8	TLK	980	96	-	77	23	-	-	755	225	-
9	ZAP	1377	137	-	76	24	-	-	1047	330	-
10	REEF	525	52	2	73	25	-	11	383	131	-
11	POL	668	71	1	86	13	-	7	574	87	-
Round total		5343	536					18	4068	1275	-

Appendix Table C. (con.)
Age classification of male seals in commercial kill,
St. Paul Island, 27 June to 10 August 1958

Date	Rookery	Males killed	Tooth sample size	Percent in each age class				Estimated number killed from age class			
				2	3	4	5	2	3	4	5
12 July	NEP	1378	132	1	80	19	-	14	1102	262	-
13	TLK	735	78	1	77	22	-	7	566	162	-
14	ZAP	2479	242	-	81	19	-	-	2008	471	-
15	REEF	474	48	2	69	29	-	10	327	137	-
16	POL	1109	120	-	79	20	1	-	876	222	11
Round total		6175	620					31	4910	1254	11
17 July	NEP	1779	193	-	84	16	-	-	1494	285	-
18	TLK	1188	120	1	81	16	2	12	962	190	24
19	ZAP	1524	154	2	84	14	-	31	1280	213	-
20	REEF	427	46	2	83	15	-	9	354	64	-
21	POL	873	91	2	78	20	-	17	681	175	-
Round total		5791	604					69	4771	927	24
22 July	NEP	1926	184	2	92	6	-	38	1772	116	-
23	TLK	1044	98	1	87	11	1	10	909	115	10
24	ZAP	1514	150	2	88	10	-	30	1332	152	-
25	REEF	430	44	-	91	9	-	-	391	39	-
26	POL	599	60	2	95	3	-	12	569	18	-
Round total		5513	536					90	4973	440	10

Appendix Table C. (con.)
Age classification of male seals in commercial kill,
St. Paul Island, 27 June to 10 August 1958

Date	Rookery	Males killed	Tooth sample size	Percent in each age class				Estimated number killed from age class			
				2	3	4	5	2	3	4	5
27 July	NEP	1199	129	8	81	11	-	96	971	132	-
28	TLK	839	87	5	93	2	-	42	780	17	-
29	ZAP	1853	196	4	91	5	-	74	1686	93	-
30	REEF	370	42	-	95	5	-	-	352	18	-
31	POL	842	86	7	91	2	-	59	766	17	-
Round total		5103	540					271	4555	277	-
1 August	NEP	42	12	25	75	-	-	32	10	-	-
2	TLK	12	-	25	75	-	-	3	9	-	-
3	ZAP	52	9	11	78	11	-	6	40	6	-
4	REEF	35	8	-	88	12	-	-	31	4	-
5	POL	185	- -	15	80	5	-	28	148	9	-
Round total		326	29					69	238	19	-
6 August	NEP	220	31	35	65	-	-	77	143	-	-
7	TLK	78	12	42	58	-	-	33	45	-	-
8	ZAP	235	28	39	57	4	-	92	134	9	-
9	REEF	128	15	53	40	7	-	68	51	9	-
10	POL	89	-	53	40	7	-	47	36	6	-
Round total		750	86					317	409	24	-
Season total		34401	3491					885	27912	5599	54

Appendix Table D.
Cumulative age classification of male seals in commercial kill, by day, St. Paul Island, 27 June to 10 August 1958

Date	Rookery	Estimated kill from each age class				Total kill	Percent kill from each age class			
		2	3	4	5		2	3	4	5
27 June	NEP	-	653	240	-	893	-	73	27	-
28	TLK	-	935	311	-	1246	-	75	25	-
29	ZAP	-	1393	481	-	1874	-	74	26	-
30	REEF	-	1564	586	-	2150	-	73	27	-
1 July	POL	12	1991	732	-	2735	-	73	27	-
2	NEP	12	2741	866	9	3628	-	76	24	-
3	TLK	12	2994	1021	9	4036	-	74	26	-
4	ZAP	20	3574	1196	9	4799	-	75	25	-
5	REEF	20	3642	1235	9	4906	-	75	25	-
6	POL	20	3988	1383	9	5400	-	74	26	-
7	NEP	20	5279	1885	9	7193	-	74	26	-
8	TLK	20	6034	2110	9	8173	-	74	26	-
9	ZAP	20	7081	2440	9	9550	-	75	25	-
10	REEF	31	7464	2571	9	10075	-	74	26	-
11	POL	38	8038	2658	9	10743	-	75	25	-
12	NEP	52	9140	2920	9	12121	-	75	25	-
13	TLK	59	9706	3082	9	12856	-	76	24	-
14	ZAP	59	11714	3553	9	15335	-	76	24	-
15	REEF	69	12041	3690	9	15809	-	76	24	-

Appendix Table D. (con.)
Cumulative age classification of male seals in commercial kill, by day, St. Paul Island, 27 June to 10 August 1958

Date	Rookery	Estimated kill from each age class				Total kill	Percent kill from each age class			
		2	3	4	5		2	3	4	5
16 July	POL	69	12917	3912	20	16918	-	77	23	-
17	NEP	69	14411	4197	20	18697	-	77	23	-
18	TLK	81	15373	4387	44	19885	-	78	22	-
19	ZAP	112	16653	4600	44	21409	1	78	21	-
20	REEF	121	17007	4664	44	21836	1	78	21	-
21	POL	138	17688	4839	44	22709	1	78	21	-
22	NEP	176	19460	4955	44	24635	1	79	20	-
23	TLK	186	20369	5070	54	25679	1	79	20	-
24	ZAP	216	21701	5222	54	27193	1	80	19	-
25	REEF	216	22092	5261	54	27623	1	80	19	-
26	POL	228	22661	5299	54	28222	1	80	19	-
27	NEP	324	23632	5411	54	29421	1	80	19	-
28	TLK	366	24412	5428	54	30260	1	80	19	-
29	ZAP	440	26098	5521	54	32113	1	81	18	-
30	REEF	440	26450	5539	54	32483	1	82	17	-
31	POL	499	27216	5556	54	33325	1	82	17	-
1 August	NEP	531	27226	5556	54	33367	1	82	17	-
2	TLK	534	27235	5556	54	33379	1	82	17	-
3	ZAP	540	27275	5562	54	33431	1	82	17	-

Appendix Table D. (con.)
Cumulative age classification of male seals in commercial kill, by day, St. Paul Island, 27 June to 10 August 1958

Date	Rookery	Estimated kill from each age class				Total kill	Percent kill from each age class			
		2	3	4	5		2	3	4	5
4 August	REEF	540	27306	5566	54	33466	1	82	17	-
5	POL	568	27454	5575	54	33651	1	82	17	-
6	NEP	645	27597	5575	54	33871	2	82	16	-
7	TLK	678	27642	5575	54	33949	2	82	16	-
8	ZAP	770	27776	5584	54	34184	2	82	16	-
9	REEF	838	27827	5593	54	34312	2	82	16	-
10	POL	885	27863	5599	54	34401	3	81	16	-

Appendix Table E.
Reproductive condition of female seals sampled from commercial kill, by date and age, St. Paul Island, 27 June to 20 August 1958

	Age										
	2	3	4	5	6	7	8	9	10	10+	Total
27 June											
Primipara pregnant				1	1						2
Multipara pregnant					1						1
29 June											
Primipara pregnant								1			1
3 July											
Multipara pregnant					1						1
6 July											
Nullipara				1							1
7 July											
Nullipara			2								2
Primipara pregnant				3	6	1	1	1			11
8 July											
Primipara pregnant				2	3						5
Multipara pregnant					4		1				5
9 July											
Primipara pregnant				1	1						2
12 July											
Nullipara			1	3							4
Primipara pregnant				3	2						5
Multipara pregnant				1	2	1	1				5
13 July											
Primipara pregnant					1	1	1				3
Multipara pregnant							1				1
14 July											
Nullipara			1								1
Primipara pregnant				3	1						4
Multipara pregnant						1	1				2

Appendix Table E. (con.)
Reproductive condition of female seals sampled from commercial kill, by date and age, St. Paul Island, 27 June to 20 August 1958

	Age										
	2	3	4	5	6	7	8	9	10	10+	Total
16 July											
Primipara											
pregnant					2						2
17 July											
Nullipara			2								2
Primipara											
pregnant				3	1	2	1				7
Multipara											
pregnant					4						4
18 July											
Nullipara				1							1
Primipara											
nonpregnant				1	1						2
Multipara											
pregnant						1					1
19 July											
Nullipara				1							1
21 July											
Nullipara			1								1
Primipara											
pregnant				2							2
22 July											
Nullipara		4	2	4	3						13
Primipara											
pregnant			1	10	3						14
nonpregnant					1						1
Multipara											
pregnant					3			1	1	1	6
nonpregnant									1	3	4
23 July											
Nullipara			2	2							4
Primipara											
pregnant				4	5						9
Multipara											
pregnant					2	1					3
24 July											
Nullipara		1	13	2							16
Primipara											
pregnant				1	3						4
nonpregnant			1								1
Multipara											
pregnant					2	1					3
nonpregnant			1								1

Appendix Table E. (con.)
Reproductive condition of female seals sampled from commercial kill, by date and age, St. Paul Island, 27 June to 20 August 1958

	Age										
	2	3	4	5	6	7	8	9	10	10+	Total
25 July											
Nullipara			1								1
26 July											
Nullipara			3								3
Primipara											
pregnant				1	2						3
Multipara											
pregnant							1		1		2
27 July											
Nullipara		7	37	10	5	1					60
Primipara											
pregnant				17	11	1					29
nonpregnant					2						2
Multipara											
pregnant					4	5	2	1		1	13
nonpregnant					2		5		2		9
28 July											
Nullipara			13	5	3						21
Primipara											
pregnant			1	6	8	1					16
Multipara											
pregnant			1		2	5	1			2	11
nonpregnant					2	2				3	7
29 July											
Nullipara		25	20	11	3			1			60
Primipara											
pregnant			3	3	5		1				12
Multipara											
pregnant				1	1	1	1				4
nonpregnant				1			2			5	8
30 July											
Nullipara		3	11	4	1						19
Primipara											
pregnant				4			1				5
nonpregnant			1	1							2
Multipara											
pregnant				1	1	1		1		1	5
nonpregnant				2		1	1			1	5

Appendix Table E. (con.)
Reproductive condition of female seals sampled from commercial kill, by date and age, St. Paul Island, 27 June to 20 August 1958

	Age										
	2	3	4	5	6	7	8	9	10	10+	Total
31 July											
Nullipara		3	31	2	2						38
Primipara											
pregnant				12	2						14
Multipara											
pregnant				2	3	2	3				10
1 August											
Nullipara		3	7	1	1						12
Primipara											
pregnant			1	2							3
nonpregnant					2	1					3
Multipara											
pregnant				2		2		1			5
2 August											
Nullipara		2	8	2							12
Primipara											
pregnant			1	2	2		1				6
nonpregnant				1	1	1					3
Multipara											
pregnant					2	1				1	4
nonpregnant					4	1					5
3 August											
Nullipara		14	18	5	2						39
Primipara											
pregnant			7	7	3	1					18
nonpregnant						1					1
Multipara											
pregnant					5				1		6
nonpregnant					1	2		1		1	5
4 August											
Nullipara		13	18	8	4						43
Primipara											
pregnant		1		5	1	3	1	1			12
nonpregnant				2	1						3
Multipara											
pregnant				1	4	1	1				7
nonpregnant					1	1			1		3

Appendix Table E. (con.)
Reproductive condition of female seals sampled from commercial kill, by date and age, St. Paul Island, 27 June to 20 August 1958

	Age										
	2	3	4	5	6	7	8	9	10	10+	Total
5 August											
Nullipara		38	55	10	11				2		116
Primipara											
pregnant		1	2	17	14	3					37
nonpregnant			2	1	3						6
Multipara											
pregnant					8	5			5		18
nonpregnant				1	1	5		1	4		12
6 August											
Nullipara	1	48	60	9	4						122
Primipara											
pregnant			1	9	3	2					15
nonpregnant				2			1				3
Multipara											
pregnant				2	4	1	4	1		1	13
nonpregnant			1		3		1			1	6
7 August											
Nullipara		10	30	10	6	2					58
Primipara											
pregnant			2	9	3	1					15
nonpregnant			1								1
Multipara											
pregnant				2	3	2	1				8
nonpregnant					3		1	1			5
8 August											
Nullipara	1	54	69	23	8	1					156
Primipara											
pregnant		1	5	7	12	7					32
nonpregnant				3		1					4
Multipara											
pregnant		1	1	3	5	6	2		4	1	23
nonpregnant			1	1		1	4	1	2	6[1/]	16
9 August											
Nullipara	3	78	70	18	7						176
Primipara											
pregnant			7	6	5						18
Multipara											
pregnant			2	1	5	4	1	1		1	15
nonpregnant				1	1	2		1	1	1	7

Appendix Table E. (con.)
Reproductive condition of female seals sampled from commercial kill, by date and age, St. Paul Island, 27 June to 20 August 1958

	Age										
	2	3	4	5	6	7	8	9	10	10+	Total
10 August											
Nullipara	1	92	43	12	6				2		156
Primipara											
pregnant			5	14	20	1					40
nonpregnant				1	5	1					7
Multipara											
pregnant				1	8			2	10	1 1/	22
nonpregnant						1		2	5		8
11 August											
Nullipara	5	112	62	11	4						194
Primipara											
pregnant			4	10	13						27
nonpregnant				1	1						2
Multipara											
pregnant				3	5		1	1		1	11
nonpregnant					1						1
12 August											
Nullipara	3	70	52	17	5	1					148
Primipara											
pregnant				8	1	1					10
nonpregnant				1	2						3
Multipara											
pregnant								1			1
nonpregnant								2			2
13 August											
Nullipara	3	120	70	10	3						206
Primipara											
pregnant			3	4	6						13
Multipara											
pregnant			1	3	1	2		1			8
nonpregnant					2		2	1		3	8
14 August											
Nullipara	2	119	44	7	8	1					181
Primipara											
pregnant		1	1	8	3	1					14
Multipara											
pregnant					3		2			1	6
nonpregnant							1				1

Appendix Table E. (con.)
Reproductive condition of female seals sampled from commercial kill, by date and age, St. Paul Island, 27 June to 20 August 1958

	Age										
	2	3	4	5	6	7	8	9	10	10+	Total
15 August											
Nullipara	7	136	35	15	5	2					200
Primipara											
pregnant			4	5	7	1	1				18
nonpregnant					1						1
Multipara											
pregnant				1	2	4	2	1	3		13
nonpregnant							1		2		3
16 August											
Nullipara	10	160	62	14	11						257
Primipara											
pregnant				6	3		1				10
Multipara											
pregnant				1	2				1		4
nonpregnant				1		1					2
17 August											
Nullipara	4	61	49	14	1		1				130
Primipara											
pregnant			2	6	6						14
nonpregnant				1							1
Multipara											
pregnant					1			1		1	3
18 August											
Nullipara	12	139	90	14	2	1					258
Primipara											
pregnant			5	9	3	1	1				19
nonpregnant						1					1
Multipara											
pregnant					4					1[1/]	5
nonpregnant								1	1	2	4
19 August											
Nullipara	3	64	45	7	4						123
Primipara											
pregnant		1	6	8	4	3					22
Multipara											
pregnant			1		5	2	1	1			10
nonpregnant					1						1

Appendix Table E. (con.)
Reproductive condition of female seals sampled from commercial kill, by date and age, St. Paul Island, 27 June to 20 August 1958

	Age										
	2	3	4	5	6	7	8	9	10	10+	Total
20 August											
Nullipara	10	101	50	4	7						172
Primipara											
pregnant		1	1	7	22	1					32
nonpregnant					2						2
Multipara											
pregnant			1		13	6		9	12		41
nonpregnant					3	2			2		7
Total	65	1484	1154	529	460	121	57	38	63	40	4011

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1/ One 11 year tagged animal.

Appendix Table F.
Reproductive condition of female seals sampled from commercial kill, by round and age, St. Paul Island, 1958

	Age											
	2	3	4	5	6	7	8	9	10	10+	Total	Percent
27 June-1 July												
Primipara												
Pregnant												
number				1	1			1			3	75
percent				100	50			100				
Multipara												
Pregnant												
number					1						1	25
percent					50							
Total				1	2			1			4	
2-6 July												
Nullipara												
number				1							1	50
percent				100								
Multipara												
Pregnant												
number					1						1	50
percent					100							
Total				1	1						2	
7-11 July												
Nullipara												
number			2								2	8
percent			100									
Primipara												
Pregnant												
number				6	9	1	1	1			18	72
percent				100	69	100	50	100				
Multipara												
Pregnant												
number					4		1				5	20
percent					31		51					
Total			2	6	13	1	2	1			25	

Appendix Table F. (con.)
Reproductive condition of female seals sampled from commercial kill, by round and age, St. Paul Island, 1958

	Age											
	2	3	4	5	6	7	8	9	10	10+	Total	Percent
12-16 July												
Nullipara												
number			2	3							5	18
percent			100	30								
Primipara												
Pregnant												
number				6	6	1	1				14	52
percent				60	75	33	25					
Multipara												
Pregnant												
number				1	2	2	3				8	30
percent				10	25	67	75					
Total			2	10	8	3	4				27	
17-21 July												
Nullipara												
number			3	2							5	24
percent			100	25								
Primipara												
Pregnant												
number				5	1	2	1				9	43
percent				62	17	67	100					
Nonpregnant												
number				1	1						2	9
percent				13	17							
Multipara												
Pregnant												
number					4	1					5	24
percent					66	33						
Total			3	8	6	3	1				21	
22-26 July												
Nullipara												
number		5	21	8	3						37	42
percent		100	88	33	12							
Primipara												
Pregnant												
number			1	16	13						30	34
percent			4	67	54							
Nonpregnant												
number			1		1						2	2
percent			4		5							

Appendix Table F. (con.)
Reproductive condition of female seals sampled from commercial kill, by round and age, St. Paul Island, 1958

	Age											
	2	3	4	5	6	7	8	9	10	10+	Total	Percent
22-26 July (con.)												
Multipara												
Pregnant												
number					7	2	1	1	2	1	14	16
percent					29	100	100	100	67	25		
Nonpregnant												
number			1						1	3	5	6
percent			4						33	75		
Total		5	24	24	24	2	1	1	3	4	88	
27-31 July												
Nullipara												
number		38	112	32	14	1		1			198	56
percent		100	95	39	24	5		33				
Primipara												
Pregnant												
number			4	42	26	2	2				76	22
percent			3	51	46	10	12					
Nonpregnant												
number			1	1	2						4	2
percent			1	1	4							
Multipara												
Pregnant												
number			1	4	11	14	7	2		4	43	12
percent			1	5	19	70	41	67		31		
Nonpregnant												
number				3	4	3	8		2	9	29	8
percent				4	7	15	47		100	69		
Total		38	118	82	57	20	17	3	2	13	350	
1-5 August												
Nullipara												
number		70	106	26	18				2		222	58
percent		97	89	39	25				15			
Primipara												
Pregnant												
number		2	11	33	20	7	2	1			76	20
percent		3	9	49	28	25	67	25				
Nonpregnant												
number			2	4	7	3					16	4
percent			2	6	10	11						

Appendix Table F. (con.)
Reproductive condition of female seals sampled from commercial kill, by round and age, St. Paul Island, 1958

	Age											
	2	3	4	5	6	7	8	9	10	10+	Total	Percent
1-5 August (con.)												
Multipara												
Pregnant												
number				3	19	9	1	1	6	1	40	11
percent				4	27	32	33	25	46	50		
Nonpregnant												
number				1	7	9		2	5	1	25	7
percent				2	10	32		50	39	50		
Total		72	119	67	71	28	3	4	13	2	379	
6-10 August												
Nullipara												
number	11	394	334	83	35	3			2		862	74
percent	100	>99	92	52	26	9			9			
Primipara												
Pregnant												
number		1	24	55	56	11					147	13
percent		<1	6	34	41	33						
Nonpregnant												
number			1	7	6	2	1				17	1
percent			<1	4	5	6	6					
Multipara												
Pregnant												
number		1	3	12	30	13	9	5	14	5[1/]	92	8
percent		<1	1	8	22	39	56	50	58	38		
Nonpregnant												
number			2	2	8	4	6	5	8	8[1/]	43	4
percent			<1	2	6	13	38	50	33	62		
Total	11	396	364	159	135	33	16	10	24	13	1161	
11-15 August												
Nullipara												
number	15	445	201	49	21	4					735	88
percent	100	>99	95	62	43	31						
Primipara												
Pregnant												
number		1	8	25	17	3	1				55	6
per cent		<1	>4	32	35	23	11					
Nonpregnant												
number				1	3						4	1
percent				1	6							

Appendix Table F. (con.)
Reproductive condition of female seals sampled from commercial kill, by round and age, St. Paul Island, 1958

	Age											
	2	3	4	5	6	7	8	9	10	10+	Total	Percent
11-15 August (con.)												
Multipara												
Pregnant												
number			1	4	6	6	4	3	3	1	28	3
percent			<1	5	12	46	>44	50	60	25		
Nonpregnant												
number					2		4	3	2	3	14	2
percent					4		>44	50	40	75		
Total	15	446	210	79	49	13	9	6	5	4	836	
16-20 August												
Nullipara												
number	39	525	296	53	25	1	1				940	84
percent	100	>99	95	58	27	6	25					
Primipara												
Pregnant												
number		2	14	36	38	5	2				97	9
percent		<1	4	39	40	27	50					
Nonpregnant												
number				1	2	1					4	-
percent				1	2	6						
Multipara												
Pregnant												
number			2	1	25	8	1	11	13	2 1/	63	6
percent			1	1	27	44	25	92	81	50		
Nonpregnant												
number				1	4	3		1	3	2	14	1
percent				1	4	17		8	19	50		
Total	39	527	312	92	94	18	4	12	16	4	1118	

1/ Includes one 11 year old animal.

Appendix Table G.

Age classification of females in commercial kill,
St. Paul Island, Alaska, 27 June to 20 August 1958

Date	Rookery	Females killed	Daily sample	Number in each age class of sample									Percent in each age class of sample									Estimated number killed from each age class								
				2	3	4	5	6	7	8	9	10	10+	2	3	4	5	6	7	8	9	10	10+	2	3	4	5	6	7	8	9	10	10+
27 June	NEP	3	3	-	-	-	1	2	-	-	-	-	-	-	-	-	33	67	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-
28	TLK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	ZAP	1	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	1	-	-
30	REEF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1 July	POL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Round total		4	4	-	-	-	1	2	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	1	-	-
2 July	NEP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	TLK	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	ZAP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	REEF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	POL	1	1	-	-	-	1	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Round total		2	2	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-
7 July	NEP	13	13	-	-	2	3	5	1	1	1	-	-	-	-	15	23	38	8	8	8	-	-	-	-	2	3	5	1	1	1	-	-
8	TLK	11	10	-	-	-	2	7	-	1	-	-	-	-	-	-	20	70	-	10	-	-	-	-	-	-	2	8	-	1	-	-	-
9	ZAP	2	2	-	-	-	1	1	-	-	-	-	-	-	-	-	50	50	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-
10	REEF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	POL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Round total		26	25	-	-	2	6	13	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	6	14	-	2	-	-	-
12 July	NEP	17	14	-	-	1	7	4	1	1	-	-	-	-	-	7	50	29	7	7	-	-	-	-	-	1	9	5	1	1	-	-	-
13	TLK	4	4	-	-	-	-	1	1	2	-	-	-	-	-	-	-	25	25	50	-	-	-	-	-	-	-	1	1	2	-	-	-
14	ZAP	10	7	-	-	1	3	1	1	1	-	-	-	-	-	14	44	14	14	14	-	-	-	-	-	1	6	1	1	1	-	-	-
15	REEF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	POL	2	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
Round total		33	27	-	-	2	10	8	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	15	9	3	4	-	-	-
17 July	NEP	14	13	-	-	2	3	5	2	1	-	-	-	-	-	15	23	39	15	8	-	-	-	-	-	2	3	6	2	1	-	-	-
18	TLK	5	4	-	-	-	2	1	1	-	-	-	-	-	-	-	50	25	25	-	-	-	-	-	-	-	3	1	1	-	-	-	-
19	ZAP	22	1	-	-	-	1	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	22	-	-	-	-	-	-
20	REEF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	POL	3	3	-	-	1	2	-	-	-	-	-	-	-	-	33	67	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-
Round total		44	21	-	-	3	8	6	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	30	7	3	1	-	-	-
22 July	NEP	44	38	-	4	3	14	10	-	-	1	2	4	-	11	8	37	26	-	-	2	5	11	-	5	4	16	11	1	2	5	-	-
23	TLK	15	16	-	-	2	5	7	1	-	-	-	-	-	-	12	38	44	6	-	-	-	-	-	-	2	6	7	1	-	-	-	-
24	ZAP	27	25	-	1	15	3	5	1	-	-	-	-	-	4	60	12	20	4	-	-	-	-	-	1	16	3	6	1	-	-	-	-
25	REEF	1	1	-	-	1	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
26	POL	8	8	-	-	3	1	2	-	1	-	1	-	-	-	38	12	26	-	12	-	12	-	-	-	3	1	2	-	1	-	1	-
Round total		95	88	-	5	24	24	24	2	1	1	3	4	-	-	-	-	-	-	-	-	-	-	-	6	26	26	26	3	3	5	1	-
27 July	NEP	131	113	-	7	37	27	24	7	7	1	2	1	-	6	33	24	21	6	6	1	2	1	-	8	43	31	28	8	8	1	3	1
28	TLK	63	55	-	-	15	11	15	8	1	-	-	5	-	-	27	20	27	15	2	-	-	9	-	-	17	13	17	9	1	-	-	6
29	ZAP	96	84	-	25	23	16	9	1	4	1	-	5	-	30	27	19	11	1	5	1	-	6	-	29	26	18	11	1	5	1	-	5
30	REEF	61	36	-	3	12	12	2	2	2	1	-	2	-	8	33	33	6	6	6	2	-	6	-	4	20	20	4	4	4	1	-	4
31	POL	83	62	-	3	31	16	7	2	3	-	-	-	-	5	50	26	11	3	5	-	-	-	-	4	42	22	9	2	4	-	-	-
Round total		434	350	-	38	118	82	57	20	17	3	2	13	-	-	-	-	-	-	-	-	-	-	-	45	148	104	69	24	22	3	3	16
1 August	NEP	87	23	-	3	8	5	3	3	-	1	-	-	-	13	35	22	13	13	-	4	-	-	-	11	31	19	11	11	4	-	-	-
2	TLK	164	30	-	2	9	5	9	3	1	-	-	-	-	7	30	17	30	10	3	-	-	3	-	12	49	28	49	16	5	-	-	5
3	ZAP	307	69	-	14	25	12	11	4	-	1	1	1	-	20	37	18	16	6	-	1	1	1	-	61	114	55	49	19	-	3	3	3
4	REEF	318	68	-	14	18	16	11	5	2	1	1	-	-	21	27	24	16	7	3	1	1	-	-	67	86	76	51	22	10	2	2	2
5	POL	1149	189	-	39	59	29	37	13	-	1	11	-	-	21	31	15	19	7	-	1	6	-	-	241	356	172	218	81	-	12	69	-
Round total		2025	379	-	72	119	67	71	28	3	4	13	2	-	-	-	-	-	-	-	-	-	-	-	392	636	350	378	149	19	17	74	10
6 August	NEP	1305	159	1	48	62	22	14	3	6	1	-	2	1	30	39	14	9	2	3	1	-	1	13	392	509	183	117	26	39	13	-	13
7	TLK	396	87	-	10	33	21	15	5	2	1	-	-1/	-	12	38	24	17	6	2	1	-	-	-	48	150	95	67	24	8	4	-	-
8	ZAP	1715	231	1	56	76	37	25	16	6	1	6	7 1/	1	24	33	16	11	7	2	1	2	3	17	412	566	275	189	120	34	17	34	51
9	REEF	1420	216	3	78	79	26	18	6	1	2	1	2	1	36	36	12	8	3	1	1	1	1	14	511	511	171	114	43	14	14	14	14
10	POL	1835	233	1	92	48	28	39	3	-	4	17	1 1/	1	39	20	12	17	1	-	2	7	1	18	716	367	220	312	18	-	37	129	18
Round total		6671	926	6	284	298	134	111	33	15	9	24	12	-	-	-	-	-	-	-	-	-	-	-	62	2079	2103	944	799	231	95	85	177	96
11 August	NEP	1367	235	5	112	66	25	24	-	1	1	-	1	2	47	28	10	10	-	1	1	-	1	27	643	384	137	137	-	13	13	-	13
12	TLK	794	164	3	70	52	26	8	2	-	3	-	-	2	43	31	16	5	1	-	2	-	-	16	341	246	127	40	8	-	16	-	-
13	ZAP	1706	235	3	120	74	17	12	2	2	2	-	3	1	51	32	7	5	1	1	1	-	1	17	870	546	119	86	17	17	17	-	17
14	REEF	1084	202	2	120	45	15	14	2	3	-	-	1	1	59	22	7	7	1	2	-	-	1	11	639	238	76	76	11	22	-	-	11
15	POL	1798	235	7	136	39	21	15	7	4	1	5	-	3	58	16	9	6	3	2	1	2	-	54	1043	287	162	108	54	36	18	36	-
Round total		6749	1071	20	558	276	104	73	13	10	7	5	5	-	-	-	-	-	-	-	-	-	-	-	125	3536	1701	621	447	90	88	64	36	41
16 August	NEP	1987	273	10	160	62	22	16	1	1	-	1	-	4	58	22	8	5	1	1	-	-	1	80	1152	437	159	99	20	20	-	-	20
17	TLK	846	148	4	61	51	21	8	-	1	1	-	1 1/	3	41	34	14	5	-	1	1	-	1	26	347	288	119	42	-	8	8	-	8
18	ZAP	2234	287	12	139	95	23	9	3	1	1	1	3 1/	4	48	32	8	3	1	1	1	1	1	90	1073	715	179	67	22	22	22	22	22
19	REEF	872	156	3	65	52	15	14	5	1	1	-	-	2	41	33	10	9	3	1	1	-	-	17	358	288	87	78	26	9	9	-	-
20	POL	1935	254	10	102	52	11	47	9	-	9	14	-	4	40	20	4	18	4	-	4	6	-	77	774	387	77	349	77	-	77	117	-
Round total		7874	1118	39	527	312	92	94	18	4	12	16	4	-	-	-	-	-	-	-	-	-	-	-	290	3704	2115	621	635	145	59	116	139	50
Season total		23957	4011	65	1484	1154	529	460	121	57	38	63	40	-	-	-	-	-	-	-	-	-	-	-	477	9762	6736	2719	2387	649	293	292	430	213

1/ One 11-year tagged animal

Appendix Table H.
Cumulative age classification of female seals in commercial kill, by day,
St. Paul Island, 27 June to 20 August 1958.

Date	Rookery	Number killed from age class										Total killed	Percent killed from age class									
		2	3	4	5	6	7	8	9	10	10+		2	3	4	5	6	7	8	9	10	10+
June																						
27	NEP	-	-	-	1	2	-	-	-	-	-	3	-	-	-	33	67	-	-	-	-	-
28	TLK	-	-	-	1	2	-	-	-	-	-	3	-	-	-	33	67	-	-	-	-	-
29	ZAP	-	-	-	1	2	-	-	1	-	-	4	-	-	-	25	50	-	-	25	-	-
30	REEF	-	-	-	1	2	-	-	1	-	-	4	-	-	-	25	50	-	-	25	-	-
July																						
1	POL	-	-	-	1	2	-	-	1	-	-	4	-	-	-	25	50	-	-	25	-	-
2	NEP	-	-	-	1	2	-	-	1	-	-	4	-	-	-	25	50	-	-	25	-	-
3	TLK	-	-	-	1	3	-	-	1	-	-	5	-	-	-	20	60	-	-	20	-	-
4	ZAP	-	-	-	1	3	-	-	1	-	-	5	-	-	-	20	60	-	-	20	-	-
5	REEF	-	-	-	1	3	-	-	1	-	-	5	-	-	-	20	60	-	-	20	-	-
6	POL	-	-	-	2	3	-	-	1	-	-	6	-	-	-	33	50	-	-	17	-	-
7	NEP	-	-	2	5	8	1	1	2	-	-	19	-	-	10	26	42	6	6	10	-	-
8	TLK	-	-	2	7	16	1	2	2	-	-	30	-	-	7	23	53	3	7	7	-	-
9	ZAP	-	-	2	8	17	1	2	2	-	-	32	-	-	6	25	54	3	6	6	-	-
10	REEF	-	-	2	8	17	1	2	2	-	-	32	-	-	6	25	54	3	6	6	-	-
11	POL	-	-	2	8	17	1	2	2	-	-	32	-	-	6	25	54	3	6	6	-	-
12	NEP	-	-	3	17	22	2	3	2	-	-	49	-	-	6	35	45	4	6	4	-	-
13	TLK	-	-	3	17	23	3	5	2	-	-	53	-	-	6	32	43	6	9	4	-	-
14	ZAP	-	-	4	23	24	4	6	2	-	-	63	-	-	6	37	38	6	10	3	-	-
15	REEF	-	-	4	23	24	4	6	2	-	-	63	-	-	6	37	38	6	10	3	-	-
16	POL	-	-	4	23	26	4	6	2	-	-	65	-	-	6	35	40	6	10	3	-	-
17	NEP	-	-	6	26	32	6	7	2	-	-	79	-	-	8	33	40	8	9	2	-	-
18	TLK	-	-	6	29	33	7	7	2	-	-	84	-	-	7	35	40	8	8	2	-	-
19	ZAP	-	-	6	51	33	7	7	2	-	-	106	-	-	5	48	31	7	7	2	-	-
20	REEF	-	-	6	51	33	7	7	2	-	-	106	-	-	5	48	31	7	7	2	-	-
21	POL	-	-	7	53	33	7	7	2	-	-	109	-	-	6	49	31	6	6	2	-	-
22	NEP	-	5	11	69	44	8	9	7	-	-	153	-	3	7	45	30	5	6	4	-	-
23	TLK	-	5	13	75	51	9	9	7	-	-	169	-	3	8	45	30	5	5	4	-	-
24	ZAP	-	6	29	78	57	10	9	7	-	-	196	-	3	15	40	29	5	4	4	-	-
25	REEF	-	6	30	78	57	10	9	7	-	-	197	-	3	15	40	29	5	4	4	-	-

Appendix Table H (con.)
Cumulative age classification of female seals in commercial kill, by day,
St. Paul Island, 27 June to 20 August 1948.

Date	Rookery	Number killed from age class										Total killed	Percent killed from age class									
		2	3	4	5	6	7	8	9	10	10+		2	3	4	5	6	7	8	9	10	10+
July																						
26	POL	-	6	33	79	59	10	10	7	1	-	205	-	3	16	38	29	5	5	3	1	-
27	NEP	-	14	76	110	87	18	18	8	4	1	336	-	4	23	33	27	5	5	2	1	-
28	TLK	-	14	93	123	104	27	19	8	4	7	399	-	4	23	31	25	7	5	2	1	2
29	ZAP	-	43	119	141	115	28	24	9	4	12	495	-	9	24	28	23	6	5	2	1	2
30	REEF	-	47	139	161	119	32	28	10	4	16	556	-	8	25	29	21	6	5	2	1	3
31	POL	-	51	181	183	128	34	32	10	4	16	639	-	8	28	29	20	5	5	2	1	2
Aug.																						
1	NEP	-	62	212	202	139	45	36	10	4	16	726	-	9	29	28	19	6	5	1	1	2
2	TLK	-	74	261	230	188	61	41	10	4	21	890	-	8	29	26	21	7	5	1	1	2
3	ZAP	-	135	375	285	237	80	41	13	7	24	1197	-	11	31	24	20	7	3	1	1	2
4	REEF	-	202	461	361	288	102	51	15	9	26	1515	-	13	30	24	19	7	3	1	1	2
5	POL	-	443	817	533	506	183	51	27	78	26	2664	-	17	30	20	19	7	2	1	3	1
6	NEP	13	835	1326	716	623	209	90	40	78	39	3969	1	21	33	18	16	5	2	1	2	1
7	TLK	13	883	1476	811	690	233	98	44	78	39	4365	-	20	34	19	16	5	2	1	2	1
8	ZAP	30	1295	2042	1086	879	353	132	61	112	90	6080	1	21	34	18	14	6	2	1	2	1
9	REEF	44	1806	2553	1257	993	396	146	75	126	104	7500	1	24	34	17	13	5	2	1	2	1
10	POL	62	2522	2920	1477	1305	414	146	112	255	122	9335	1	27	31	16	14	4	2	1	3	1
11	NEP	89	3165	3304	1614	1442	414	159	125	255	135	10702	1	30	31	15	14	4	2	1	2	1
12	TLK	105	3506	3550	1741	1482	422	159	141	255	135	11496	1	31	31	15	13	4	1	1	2	1
13	ZAP	122	4376	4096	1860	1568	439	176	158	255	152	13202	1	34	31	14	12	3	1	1	2	1
14	REEF	133	5015	4334	1936	1644	450	198	158	255	163	14286	1	35	30	14	12	3	1	1	2	1
15	POL	187	6058	4621	2098	1752	504	234	176	291	163	16084	1	38	29	13	11	3	1	1	2	1
16	NEP	267	7210	5058	2257	1851	524	254	176	291	183	18071	1	40	28	13	10	3	1	1	2	1
17	TLK	293	7557	5346	2376	1893	524	262	184	291	191	18917	2	40	28	12	10	3	1	1	2	1
18	ZAP	383	8630	6061	2555	1960	546	284	206	313	213	21151	2	41	29	12	9	3	1	1	1	1
19	REEF	400	8988	6349	2642	2038	572	293	215	313	213	22023	2	41	29	12	9	3	1	1	1	1
20	POL	477	9762	6736	2719	2387	649	293	292	430	213	23958	2	41	28	11	10	3	1	1	2	1

Appendix Table I.
Number pregnant and nonpregnant among female seals 4 or more years old and 5 or more years old, St. Paul Island, 1958

Date	Daily kill	Daily sample	Daily sample less 2 & 3 yr. olds	Ages 4-10+ preg.	Ages 4-10+ nonpreg.	Daily sample less 2, 3 & 4 yr. olds	Ages 5-10+ preg.	Ages 5-10+ nonpreg.
27 June	3	3	3	3	-	3	3	-
28	-	-	-	-	-	-	-	-
29	1	1	1	1	-	1	1	-
30	-	-	-	-	-	-	-	-
1 July	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-
3	1	1	1	1	-	1	1	-
4	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-
6	1	1	1	-	1	1	-	1
7	13	13	13	11	2	11	11	-
8	11	10	10	10	-	10	10	-
9	2	2	2	2	-	2	2	-
10	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-
12	17	14	14	10	4	13	10	3
13	4	4	4	4	-	4	4	-
14	10	7	7	6	1	6	6	-
15	-	-	-	-	-	-	-	-
16	2	2	2	2	-	2	2	-
17	14	13	13	11	2	11	11	-
18	5	4	4	1	3	4	1	3
19	22	1	1	-	1	1	-	1
20	-	-	-	-	-	-	-	-
21	3	3	3	2	1	2	2	-
22	44	38	34	20	14	31	19	12
23	15	16	16	12	4	14	12	2
24	27	25	24	7	17	9	7	2
25	-	1	1	-	1	-	-	-
26	8	8	8	5	3	5	5	-
27	131	113	106	42	64	69	42	27
28	63	55	55	27	28	40	25	15
29	96	84	59	16	43	36	13	23
30	61	36	33	10	23	21	10	11
31	83	62	59	24	35	28	24	4

Appendix Table I. (con.)
Number pregnant and nonpregnant among female seals 4 or more years old and 5 or more years old, St. Paul Island, 1958

Date	Daily kill	Daily sample	Daily sample less 2 & 3 yr. olds	Ages 4-10+		Daily sample less 2, 3 & 4 yr. olds	Ages 5-10+	
				preg.	nonpreg.		preg.	nonpreg.
1 August	87	23	20	8	12	12	7	5
2	164	30	28	10	18	19	9	10
3	307	69	55	24	31	30	17	13
4	318	68	54	18	36	36	18	18
5	1149	189	150	54	96	91	52	39
6	1305	159	110	28	82	48	27	21
7	396	87	77	23	54	44	21	23
8	1715	231	174	53	121	98	47	51
9	1420	216	135	32	103	56	24	32
10	1835	233	140	62	78	92	57	35
11	1367	235	118	38	80	52	34	18
12	794	164	91	11	80	39	11	28
13	1706	235	112	21	91	38	17	21
14	1084	202	80	19	61	35	18	17
15	1798	235	92	31	61	53	27	26
16	1987	273	103	14	89	41	14	27
17	846	148	83	17	66	32	15	17
18	2234	287	136	24	112	41	19	22
19	872	156	88	31	57	36	24	12
20	1935	254	142	72	70	90	70	20
Total	23956	4011	2462	818	1644	1308	749	559

Appendix Table J.
Length of female seals sampled from commercial kill, by age, St. Paul Island, 1958

Length in inches		Age 2	3	4	5	6	7	8	9	10	10+	Total
37	number	4	1	-	-	-	-	-	-	-	-	5
	percent	6	-	-	-	-	-	-	-	-	-	-
38	number	3	-	-	-	-	-	-	-	-	-	3
	percent	4	-	-	-	-	-	-	-	-	-	-
39	number	9	8	2	-	-	-	-	-	-	-	19
	percent	14	1	-	-	-	-	-	-	-	-	-
40	number	20	85	7	2	1	-	-	-	-	-	115
	percent	31	5	1	1	-	-	-	-	-	-	3
41	number	17	294	65	12	2	2	-	-	-	-	392
	percent	26	20	6	2	-	2	-	-	-	-	10
42	number	9	437	176	38	21	3	-	-	-	1	685
	percent	14	29	15	7	5	2	-	-	-	3	17
43	number	2	384	308	81	51	10	3	1	-	-	840
	percent	3	26	27	15	11	8	5	3	-	-	21
44	number	1	207	328	160	98	21	6	1	1	1	824
	percent	2	14	28	30	21	17	10	3	2	3	21
45	number	-	57	195	128	119	32	17	10	4	9	571
	percent	-	4	17	24	26	26	30	26	6	22	14
46	number	-	9	61	68	88	34	8	7	15	7	297
	percent	-	1	5	13	19	28	14	18	24	18	7
47	number	-	1	8	31	45	8	15	5	9	6	128
	percent	-	-	1	6	10	7	26	13	14	14	3
48	number	-	1	2	6	21	6	2	5	15	10	68
	percent	-	-	-	1	5	5	4	13	24	24	2
49	number	-	-	2	3	8	3	3	4	7	2	32
	percent	-	-	-	1	2	2	5	11	11	5	1
50	number	-	-	-	-	5	2	2	3	7	2	21
	percent	-	-	-	-	1	2	4	8	11	5	1
51	number	-	-	-	-	1	-	1	2	5	2	11
	percent	-	-	-	-	-	-	2	5	8	5	-
	Total	65	1484	1154	529	460	121	57	38	63	40	4011
	Percent	2	37	29	13	11	3	1	1	2	1	

Appendix Table K.
Reproductive condition of female seals sampled from commercial kill, by length, St. Paul Island, 1958

Length in inches		Nullipara	Primipara		Multipara		Total
			pregnant	nonpreg.	pregnant	nonpreg.	
37	number	5	-	-	-	-	5
	percent	-	-	-	-	-	-
38	number	3	-	-	-	-	3
	percent	-	-	-	-	-	-
39	number	19	-	-	-	-	19
	percent	1	-	-	-	-	-
40	number	113	2	-	-	-	115
	percent	4	-	-	-	-	3
41	number	385	7	-	-	-	392
	percent	13	1	-	-	-	10
42	number	639	34	3	6	3	685
	percent	21	7	6	2	2	17
43	number	722	85	8	21	4	840
	percent	24	16	16	7	3	21
44	number	610	140	5	56	13	824
	percent	20	27	10	19	10	21
45	number	342	118	15	71	25	571
	percent	11	23	31	23	19	14
46	number	118	81	14	54	30	297
	percent	4	15	29	18	23	7
47	number	35	35	3	35	20	128
	percent	1	7	6	12	16	3
48	number	11	10	1	27	19	68
	percent	1	2	2	9	15	2
49	number	3	7	-	15	7	32
	percent	-	1	-	5	5	1
50	number	2	4	-	11	4	21
	percent	-	1	-	4	3	1
51	number	-	2	-	4	5	11
	percent	-	-	-	1	4	-
	Total	3007	525	49	300	130	4011
	Percent	75	13	1	8	3	

Appendix Table L.

Length of tagged female seals recovered from commercial kill, by age, St. Paul Island, 1958

Length in inches		Age										
		2	3	4	5	6	7	8	9	10	11	Total
37	number	1	-	-	-	-	-	-	-	-	-	1
	percent	6	-	-	-	-	-	-	-	-	-	-
38	number	1	2	-	-	-	-	-	-	-	-	3
	percent	6	-	-	-	-	-	-	-	-	-	-
39	number	5	5	-	-	-	-	-	-	-	-	10
	percent	29	1	-	-	-	-	-	-	-	-	1
40	number	8	43	-	-	-	-	-	-	-	-	51
	percent	47	6	-	-	-	-	-	-	-	-	4
41	number	1	151	10	-	1	-	-	-	-	-	163
	percent	6	23	7	-	1	-	-	-	-	-	14
42	number	1	191	14	1	3	-	-	-	1	-	211
	percent	6	29	10	1	2	-	-	-	2	-	18
43	number	-	179	38	5	15	1	-	-	-	-	238
	percent	-	27	27	8	8	8	-	-	-	-	20
44	number	-	71	46	18	32	2	-	-	-	-	169
	percent	-	11	33	29	16	15	-	-	-	-	15
45	number	-	14	27	20	51	2	-	3	1	1	119
	percent	-	2	20	32	25	15	-	14	2	33	10
46	number	-	5	2	8	50	5	-	2	9	-	81
	percent	-	1	1	13	25	39	-	10	16	-	7
47	number	-	-	3	9	22	1	-	3	10	1	49
	percent	-	-	2	15	11	8	-	14	18	33	4
48	number	-	-	-	1	14	2	-	4	15	-	36
	percent	-	-	-	1	7	15	-	19	27	-	3
49	number	-	-	-	1	5	-	-	5	7	-	18
	percent	-	-	-	1	2	-	-	24	13	-	2
50	number	-	-	-	-	5	-	-	3	7	1	16
	percent	-	-	-	-	2	-	-	14	13	33	1
51	number	-	-	-	-	1	-	-	1	5	-	7
	percent	-	-	-	-	1	-	-	5	9	-	-
	Total	17	661	140	63	199	13	-	21	55	3	1172

Appendix Table M.
Vibrissal color of female seals sampled from commercial kill, by length, St. Paul Island, 1958

Length in inches		Vibrissal color: black	black & white	white	Total
37	number	5	-	-	5
	percent	-	-	-	-
38	number	3	-	-	3
	percent	-	-	-	-
39	number	19	-	-	19
	percent	1	-	-	1
40	number	108	7	-	115
	percent	5	1	-	3
41	number	333	56	3	392
	percent	16	4	-	10
42	number	545	116	24	685
	percent	26	9	4	17
43	number	527	250	63	840
	percent	26	20	9	21
44	number	354	349	121	824
	percent	17	28	18	20
45	number	140	276	155	571
	percent	7	22	22	14
46	number	39	132	126	297
	percent	2	11	18	7
47	number	6	37	85	128
	percent	-	3	12	3
48	number	1	8	59	68
	percent	-	1	9	2
49	number	-	6	26	32
	percent	-	1	4	1
50	number	-	-	21	21
	percent	-	-	3	1
51	number	-	1	10	11
	percent	-	-	1	-
	Total	2080	1238	693	4011
	Percent	52	31	17	

Appendix Table N.
Dead pup counts by rookery, St. Paul Island
1951, 1953-58

Rookery	1951	1953	1954	1955	1956	1957	1958	Total	Mean
Morjovi	3592	3764	8049	5571	10278	4253	2290	37797	5400
Vostochni	18450	19503	25233	14473	20498	12732	7247	118136	16876
Little Polovina	2208	2211	3852	2782	4443	1695	975	18166	2595
Polovina Cliff	5580	5451	6413	5964	8637	4425	1826	38296	5471
Polovina	6402	5036	6459	4660	7463	5432	2184	37636	5377
Ardiguen	242	189	282	387	364	249	102	1815	259
Gorbatch	3559	3679	4900	4789	6291	3801	1655	28674	4096
Reef	11007	13661	12959	15145	14399	11301	5550	84022	12003
Kitovi	1517	1695	1669	2610	2892	1588	608	12579	1797
Lukanin	712	1086	1129	1129	1718	870	324	6968	995
Tolstoi	6033	6154	7552	6489	6789	5659	2823	41499	5929
Little Zapadni	2804	2446	4979	3555	4611	2325	1312	22032	3148
Zapadni Reef	353	1116	2278	1383	1674	917	246	7967	1138
Zapadni	8204	12221	10424	6607	8650	6415	4045	56566	8081
Total	70663	78212	96178	75544	98707	61662	31187	512153	73165

Appendix Table O.
Age classification of male seals in commercial kill,
St. George Island, 27 June to 31 July 1958

Date	Rookery	Males killed	Tooth sample size	Percent in each age class				Estimated number killed from age class			
				2	3	4	5	2	3	4	5
27 June	ZAP	199	20	-	30	70	-	-	60	139	-
28	NOR	286	28	4	67	25	4	11	192	72	11
29	EAS	234	24	-	38	58	4	-	89	136	9
30	STAR	139	14	-	29	71	-	-	40	99	-
1 July	NOR	178	17	-	53	47	-	-	94	84	-
Round total		1036	103					11	475	530	20
2 July	ZAP	184	18	-	44	56	-	-	81	103	-
3	NOR	114	12	-	33	67	-	-	38	76	-
4	EAS	217	21	-	52	43	5	-	113	93	11
5	STAR	76	8	-	63	37	-	-	48	28	-
6	NOR	220	22	-	55	41	4	-	121	90	9
Round total		811	81					-	401	390	20
7 July	ZAP	475	48	-	52	48	-	-	247	228	-
8	NOR	215	21	-	71	24	5	-	153	51	11
9	EAS	346	35	-	57	40	3	-	197	138	11
10	STAR	173	18	-	50	44	6	-	87	76	10
11	NOR	190	19	-	79	21	-	-	150	40	-
Round total		1399	141					-	834	533	32

Appendix Table O. (con.)
Age classification of male seals in commercial kill,
St. George Island, 27 June to 31 July 1958

Date	Rookery	Males killed	Tooth sample size	Percent in each age class				Estimated number killed from age class			
				2	3	4	5	2	3	4	5
12 July	ZAP	436	44	-	61	39	-	-	266	170	-
13	NOR	148	15	13	74	13	-	19	110	19	-
14	EAS	586	57	2	60	38	-	12	351	223	-
15	STAR	211	22	-	77	23	-	-	162	49	-
16	NOR	478	48	-	77	21	-	-	368	100	-
Round total		1859	186					31	1257	561	-
17 July	ZAP	407	40	-	65	35	-	-	265	142	-
18	NOR	189	20	-	85	15	-	-	161	28	-
19	EAS	434	44	-	88	12	-	-	382	52	-
20	STAR	121	13	-	62	38	-	-	75	46	-
21	NOR	347	34	-	83	17	-	-	288	59	-
Round total		1498	151					-	1171	327	-
22 July	ZAP	618	64	3	81	16	-	19	500	99	-
23	NOR	269	28	-	89	11	-	-	239	30	-
24	EAS	624	67	5	80	13	2	31	499	81	13
25	STAR	124	13	-	92	8	-	-	114	10	-
26	NOR	315	33	3	91	3	3	10	285	10	10
Round total		1950	205					60	1637	230	23

Appendix Table Q. (con.)
Age classification of male seals in commercial kill,
St. George Island, 27 June to 31 July 1958

Date	Rookery	Males killed	Tooth sample size	Percent in each age class				Estimated number killed from age class			
				2	3	4	5	2	3	4	5
27 July	ZAP	702	69	3	84	13	-	21	590	91	-
28	NOR	210	30	3	94	3	-	6	198	6	-
29	EAS	414	54	7	78	15	-	29	323	62	-
30	STAR	86	18	-	88	6	6	-	76	5	5
31	NOR	330	52	4	86	10	-	13	284	33	-
Round total		1742	223					69	1471	197	5
Season total		10295	1090					171	7246	2768	100

Appendix Table P.
Cumulative age classification of male seals in commercial kill, by day, St. George Island, 27 June to 31 July 1958

Date	Rookery	Estimated kill from each age class				Total kill	Percent kill from each age class			
		2	3	4	5		2	3	4	5
27 June	ZAP	-	60	139	-	199	-	30	70	-
28	NOR	11	252	211	11	485	2	52	44	2
29	EAS	11	341	347	20	719	2	47	48	3
30	STAR	11	381	446	20	858	1	45	52	2
1 July	NOR	11	475	530	20	1036	1	46	51	2
2	ZAP	11	556	633	20	1220	1	46	51	2
3	NOR	11	594	709	20	1334	1	45	52	2
4	EAS	11	707	802	31	1551	1	45	52	2
5	STAR	11	755	830	31	1627	-	46	51	2
6	NOR	11	876	920	40	1847	-	47	51	2
7	ZAP	11	1123	1148	40	2322	-	48	50	2
8	NOR	11	1276	1199	51	2537	-	50	48	2
9	EAS	11	1473	1337	62	2883	-	51	47	2
10	STAR	11	1560	1413	72	3056	-	51	47	2
11	NOR	11	1710	1453	72	3246	-	53	45	2
12	ZAP	11	1976	1623	72	3682	-	54	44	2
13	NOR	30	2086	1642	72	3830	-	55	43	2
14	EAS	42	2437	1865	72	4416	1	55	42	2
15	STAR	42	2599	1914	72	4627	1	56	41	2

Appendix Table P. (con.)
Cumulative age classification of male seals in commercial kill, by day, St. George Island, 27 June to 31 July 1958

Date	Rookery	Estimated kill from each age class				Total kill	Percent kill from each age class			
		2	3	4	5		2	3	4	5
16 July	NOR	42	2967	2014	72	5105	1	57	40	2
17	ZAP	42	3232	2156	72	5512	1	59	39	1
18	NOR	42	3393	2184	72	5702	1	60	38	1
19	EAS	42	3775	2236	72	6136	1	62	36	1
20	STAR	42	3850	2282	72	6257	-	62	37	1
21	NOR	42	4138	2341	72	6604	-	63	36	1
22	ZAP	61	4638	2441	72	7222	1	64	34	1
23	NOR	61	4877	2471	72	7491	1	65	33	1
24	EAS	92	5376	2552	85	8115	1	66	32	1
25	STAR	92	5490	2562	85	8239	1	67	31	1
26	NOR	102	5775	2572	95	8554	1	68	30	1
27	ZAP	123	6365	2663	95	9256	1	69	29	1
28	NOR	129	6563	2669	95	9466	1	70	28	1
29	EAS	158	6886	2731	95	9880	2	70	27	1
30	STAR	158	6962	2736	100	9966	2	69	28	1
31	NOR	171	7246	2769	100	10286	2	70	27	1
		206	7207	278						

Appendix Table Q.
Reproductive condition of female seals sampled from commercial kill, by date and age, St. George Island, 27 June to 20 August 1958

	Age										
	2	3	4	5	6	7	8	9	10	10+	Total
30 June											
Primipara											
pregnant				1							1
14 July											
Nullipara			3			1					4
Primipara											
pregnant					2						2
Multipara											
pregnant					1					1	2
15 July											
Multipara											
pregnant							1				1
16 July											
Primipara											
pregnant			1								1
18 July											
Primipara											
pregnant			1								1
19 July											
Nullipara					1						1
Primipara											
pregnant				2	1						3
Multipara											
nonpregnant										1	1
20 July											
Multipara											
nonpregnant					1						1
21 July											
Nullipara			1								1
Multipara											
pregnant						1					1
nonpregnant					1					3	4
22 July											
Nullipara		1				1					2
Primipara											
pregnant				1							1
23 July											
Primipara											
pregnant					1						1
Multipara											
pregnant								1		1	2
nonpregnant										2	2

Appendix Table Q. (con.)
Reproductive condition of female seals sampled from commercial kill, by date and age, St. George Island, 27 June to 20 August 1958

	Age										
	2	3	4	5	6	7	8	9	10	10+	Total
24 July											
Nullipara			3	1							4
Primipara											
pregnant			1	1			1				3
nonpregnant				1		1					2
Multipara											
pregnant						1	1			2	4
nonpregnant				1	1					4	6
25 July											
Nullipara			1								1
Primipara											
pregnant				1							1
Multipara											
nonpregnant								1			1
26 July											
Nullipara		1	2	1			1				5
Primipara											
pregnant			2	2						2	6
nonpregnant						2					2
Multipara											
pregnant					2			1		1	4
nonpregnant					1	1				3	5
27 July											
Nullipara			1	1							2
Primipara											
pregnant				1		1					2
Multipara											
pregnant						3	1	2	2	6	14
nonpregnant					2	1	1		1	6	11
28 July											
Nullipara		1	3	3	3	2		1			13
Primipara											
pregnant			3	4	9						16
nonpregnant					1						1
Multipara											
pregnant				1		1	5	2	2	3	14
nonpregnant					1	2	3	1	1	5	13

Appendix Table Q. (con.)
Reproductive condition of female seals sampled from commercial kill, by date and age, St. George Island, 27 June to 20 August 1958

	Age										
	2	3	4	5	6	7	8	9	10	10+	Total
29 July											
Nullipara		4	5	6	5	2	1				23
Primipara											
pregnant			4	12	1	4	1				22
nonpregnant						1	1				2
Multipara											
pregnant					4	3	1	1	1	6	16
nonpregnant					3	4	1	2		9	19
30 July											
Nullipara		1	7	3							11
Primipara											
pregnant				3	4	1					8
nonpregnant					1						1
Multipara											
pregnant					3	2				4	9
nonpregnant						1		1		5	7
31 July											
Nullipara		5	11	5	3	2		1			27
Primipara											
pregnant			3	5	5						13
nonpregnant			1	1	1	1					4
Multipara											
pregnant					2	3	2			2	9
nonpregnant						1		1	1	4	7
1 August											
Nullipara		1	5	1	1						8
Primipara											
pregnant			1	1			1				3
nonpregnant				1							1
Multipara											
pregnant				1	1	1				2	5
nonpregnant						1		2	1	4	8
2 August											
Nullipara		14	10	7	4						35
Primipara											
pregnant			3	3	3	1	1				11
nonpregnant						1					1
Multipara											
pregnant					1	2		1	1		5
nonpregnant					1	2	1			2	6

Appendix Table Q. (con.)
Reproductive condition of female seals sampled from commercial kill, by date and age, St. George Island, 27 June to 20 August 1958

	Age										
	2	3	4	5	6	7	8	9	10	10+	Total
3 August											
Nullipara	1	8	12	9	7	3				1	41
Primipara											
pregnant				5	5	5	1				16
nonpregnant								1	1		2
Multipara											
pregnant						1		1	1		3
nonpregnant						1				2	3
4 August											
Nullipara		8	19	6		3					36
Primipara											
pregnant			2	9	8	2			1	1	23
nonpregnant						1					1
Multipara											
pregnant					1	2			1	3	7
nonpregnant						1			1	5	7
5 August											
Nullipara		15	27	10	6	3	1		2		64
Primipara											
pregnant			2	13	9	3	1			1	29
nonpregnant			1	2	2						5
Multipara											
pregnant				2	2	3	3	3	1	8	22
nonpregnant					2	4	3	1	1	7	18
6 August											
Nullipara		4	4	1	1	1		1			12
Primipara											
pregnant			1	1				1			3
nonpregnant					1						1
Multipara											
pregnant						1	1	3		1	6
nonpregnant					1		1	2		2	6
7 August											
Nullipara		11	14	6	2			1			34
Primipara											
pregnant				9	2	5	1				17
nonpregnant				1	2						3
Multipara											
pregnant					2	4	2	1	1	1	11
nonpregnant						3	2	1	2		8

Appendix Table Q. (con.)
Reproductive condition of female seals sampled from commercial kill, by date and age, St. George Island, 27 June to 20 August 1958

	Age										
	2	3	4	5	6	7	8	9	10	10+	Total
8 August											
Nullipara		7	8	7	2						24
Primipara											
pregnant			1	4	5		1				11
nonpregnant			1	1		1					3
Multipara											
pregnant					3	3	3	1	1	1	12
nonpregnant					2	3			1	1	7
9 August											
Nullipara		27	33	11	3	1	1				76
Primipara											
pregnant			1	6	5	2	1		1		16
nonpregnant					1						1
Multipara											
pregnant					4	1	1	3	1	2	12
nonpregnant					2	3	4	1		3	13
10 August											
Nullipara	2	24	14	8	5						53
Primipara											
pregnant			1	6	2						9
Multipara											
pregnant					4	2	1	2	4	2	15
nonpregnant				1	1	1				2	5
11 August											
Nullipara	1	20	21	6	3	1					52
Primipara											
pregnant			2	3	6	2				1	14
nonpregnant				2		1					3
Multipara											
pregnant				1	1	5	1		1	1	10
nonpregnant										4	4
12 August											
Nullipara	2	37	22	14	4	1					80
Primipara											
pregnant			1	7	6	1					15
nonpregnant						1					1
Multipara											
pregnant					3	3	2	3	1	6	18
nonpregnant					1	2	1			4	8

Appendix Table Q. (con.)
Reproductive condition of female seals sampled from commercial kill, by date and age, St. George Island, 27 June to 20 August 1958

	Age										
	2	3	4	5	6	7	8	9	10	10+	Total
13 August											
Nullipara	2	45	21	9	3						80
Primipara											
pregnant				2	2						4
nonpregnant			1		1						2
Multipara											
pregnant				1	3	3		1	1	1	10
nonpregnant						1			1	1	3
14 August											
Nullipara	5	33	38	10	1						87
Primipara											
pregnant			2	5	5						12
nonpregnant					3						3
Multipara											
pregnant					2	2	1	1	1	3	10
nonpregnant						2		2		4	8
15 August											
Nullipara	1	17	6	9		1					34
Primipara											
pregnant				6	1						7
nonpregnant					1	2					3
Multipara											
pregnant					3	1				1	5
nonpregnant										1	1
16 August											
Nullipara	3	26	29	17	1		1				77
Primipara											
pregnant			3	5	3						11
nonpregnant					1	2					3
Multipara											
pregnant					3	2	4		1	1	11
nonpregnant			1							1	2
17 August											
Nullipara	1	28	20	6	2	1					58
Primipara											
pregnant		1	1	7	1	1					11
nonpregnant			1	1							2
Multipara											
pregnant					1	1	2	1	1	5	11
nonpregnant										1	1

Appendix Table Q. (con.)
Reproductive condition of female seals sampled from commercial kill, by date and age, St. George Island, 27 June to 20 August 1958

	Age										
	2	3	4	5	6	7	8	9	10	10+	Total
18 August											
Nullipara	3	20	16	12	1		1				53
Primipara											
pregnant			1	5	4	1					11
nonpregnant				1	2						3
Multipara											
pregnant				1		5	2			1	9
nonpregnant								1	1		2
19 August											
Nullipara	2	15	14	3	2					1	37
Primipara											
pregnant			2	1	4	2					9
nonpregnant					1						1
Multipara											
pregnant			1	1	2	1	1	1		2	9
nonpregnant							1				1
20 August											
Nullipara		17	16	6	1						40
Primipara											
pregnant			1	3	6	1					11
nonpregnant			1								1
Multipara											
pregnant				1	5	1	2	2	1	2	14
nonpregnant						1				1	2
Total	23	391	434	334	252	162	71	53	39	163	1922

Appendix Table R.
Reproductive condition of female seals sampled from commercial kill by round and age, St. George Island, 1958

	Age											
	2	3	4	5	6	7	8	9	10	10+	Total	Percent
27 June-1 July												
Primipara												
Pregnant												
number				1							1	100
percent				100								
Total				1							1	
2-6 July	No females killed											
7-11 July												
Nullipara												
number			3			1					4	40
percent			75			100						
Primipara												
Pregnant												
number			1		2						3	30
percent			25		67							
Multipara												
Pregnant												
number					1		1			1	3	30
percent					33		100			100		
Total			4		3	1	1			1	10	
12-16 July	No females killed											
17-21 July												
Nullipara												
number			1		1						2	15
percent			50		25							
Primipara												
Pregnant												
number			1	2	1						4	31
percent			50	100	25							
Multipara												
Pregnant												
number						1					1	8
percent						100						
Nonpregnant												
number					2					4	6	46
percent					50					100		
Total			2	2	4	1				4	13	

Appendix Table R. (con.)
Reproductive condition of female seals sampled from commercial kill, by round and age, St. George Island, 1958

	Age											
	2	3	4	5	6	7	8	9	10	10+	Total	Percent
22-26 July												
Nullipara												
number		2	6	2		1	1				12	23
percent		100	67	22		16	33					
Primipara												
Pregnant												
number			3	5	1		1			2	12	23
percent			33	56	20		34			13		
Nonpregnant												
number				1		3					4	8
percent				11		50						
Multipara												
Pregnant												
number					2	1	1	2		4	10	19
percent					40	17	33	67		27		
Nonpregnant												
number				1	2	1		1		9	14	27
percent				11	40	17		33		60		
Total		2	9	9	5	6	3	3		15	52	
27-31 July												
Nullipara												
number		11	27	18	11	6	1	2			76	29
percent		100	71	40	23	17	6	16				
Primipara												
Pregnant												
number			10	25	19	6	1				61	23
percent			26	56	40	17	6					
Nonpregnant												
number			1	1	3	2	1				8	3
percent			3	2	6	6	6					
Multipara												
Pregnant												
number				1	9	12	9	5	5	21	62	23
percent				2	19	34	53	42	62	42		
Nonpregnant												
number					6	9	5	5	3	29	57	22
percent					12	26	29	42	38	58		
Total		11	38	45	48	35	17	12	8	50	264	

Appendix Table R. (con.)
Reproductive condition of female seals sampled from commercial kill, by round and age, St. George Island, 1958

	Age											
	2	3	4	5	6	7	8	9	10	10+	Total	Percent
1-5 August												
Nullipara												
number	1	46	73	33	18	9	1		2	1	184	51
percent	100	100	89	47	34	23	9		18	2		
Primipara												
Pregnant												
number			8	31	25	11	4		1	2	82	23
percent			10	45	47	26	33		9	6		
Nonpregnant												
number			1	3	2	2		1	1		10	2
percent			1	4	4	5		11	9			
Multipara												
Pregnant												
number				3	5	9	3	5	4	13	42	12
percent				4	9	23	25	56	37	36		
Nonpregnant												
number					3	9	4	3	3	20	42	12
percent					6	23	33	33	27	56		
Total	1	46	82	70	53	40	12	9	11	36	360	
6-10 August												
Nullipara												
number	2	73	73	33	13	2	1	2			199	55
percent	100	100	94	53	26	6	5	12				
Primipara												
Pregnant												
number			4	26	14	7	3	1	1		56	16
percent			5	42	28	23	16	5	9			
Nonpregnant												
number			1	2	4	1					8	2
percent			1	3	8	3						
Multipara												
Pregnant												
number					13	11	8	10	7	7	56	16
percent					26	36	42	59	64	48		
Nonpregnant												
number				1	6	10	7	4	3	8	39	11
percent				2	12	32	37	24	27	52		
Total	2	73	78	62	50	31	19	17	11	15	358	

Appendix Table R. (con.)
Reproductive condition of female seals sampled from commercial kill, by round and age, St. George Island, 1958

	Age											
	2	3	4	5	6	7	8	9	10	10+	Total	Percent
11-15 August												
Nullipara												
number	11	152	108	48	11	3					333	70
percent	100	100	95	64	22	11						
Primipara												
Pregnant												
number			5	23	20	3				1	52	11
percent			4	30	41	11				4		
Nonpregnant												
number			1	2	5	4					12	3
percent			1	3	10	13						
Multipara												
Pregnant												
number				2	12	14	4	5	4	12	53	11
percent				3	25	48	80	71	80	44		
Nonpregnant												
number					1	5	1	2	1	14	24	5
percent					2	17	20	19	20	52		
Total	11	152	114	75	49	29	5	7	5	27	474	
16-20 August												
Nullipara												
number	9	106	95	44	7	1	2			1	265	68
percent	100	99	89	63	18	5	14			7		
Primipara												
Pregnant												
number		1	8	21	18	5					53	14
percent		1	7	30	45	26						
Nonpregnant												
number			2	2	4	2					10	2
percent			2	3	10	11						
Multipara												
Pregnant												
number			1	3	11	10	11	4	3	11	54	14
percent			1	4	27	53	79	80	75	73		
Nonpregnant												
number			1			1	1	1	1	3	8	2
percent			1			5	7	20	25	20		
Total	9	107	107	70	40	19	14	5	4	15	390	

Age classification of females in commercial kill,
St. George Island, Alaska, 27 June to 20 August, 1958

Date	Rookery	Females killed	Daily sample	Number in each age class of sample										Percent in each age class of sample										Estimated number ...led from each age class									
				2	3	4	5	6	7	8	9	10	10+	2	3	4	5	6	7	8	9	10	10+	2	3	4	5	6	7	8	9	10	10+
27 June	ZAP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	NOR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	EAS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	STAR	1	1	-	-	-	1	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
1 July	NOR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Round total		1	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
2 July to 11 July		No females killed																															
12 July	ZAP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	NOR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	EAS	8	8	-	-	3	-	3	1	-	-	-	1	-	-	38	-	38	12	-	-	-	12	-	-	3	-	3	1	-	-	-	1
15	STAR	1	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	1	-	-
16	NOR	1	1	-	-	1	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Round total		10	10	-	-	4	-	3	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	4	-	3	1	-	1	-	1
17 July	ZAP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	NOR	1	1	-	-	1	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
19	EAS	5	5	-	-	-	2	2	-	-	-	-	1	-	-	-	40	40	-	-	-	-	20	-	-	-	2	2	-	-	-	-	1
20	STAR	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
21	NOR	6	6	-	-	1	-	1	1	-	-	-	3	-	-	17	-	17	17	-	-	-	49	-	-	1	-	1	1	-	-	-	3
Round total		13	13	-	-	2	2	4	1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	2	2	4	1	-	-	-	4
22 July	ZAP	3	3	-	1	-	1	-	1	-	-	-	-	-	33	-	34	-	33	-	-	-	-	-	1	-	1	-	1	-	-	-	-
23	NOR	5	5	-	-	-	-	1	-	-	1	-	3	-	-	-	-	20	-	-	20	-	60	-	-	-	-	1	-	-	1	-	3
24	EAS	20	19	-	-	4	4	1	2	2	-	-	6	-	-	21	21	6	10	10	-	-	32	-	-	4	4	2	2	2	-	-	6
25	STAR	3	3	-	-	1	1	-	-	-	1	-	-	-	-	34	33	-	-	-	33	-	-	-	-	1	1	-	-	-	1	-	-
26	NOR	22	22	-	1	4	3	3	1	1	-	-	6	-	4	18	14	14	14	4	4	-	28	-	1	4	3	3	3	1	1	-	6
Round total		53	52	-	2	9	9	5	6	3	3	-	15	-	-	-	-	-	-	-	-	-	-	-	2	9	9	6	6	3	3	-	15
27 July	ZAP	31	29	-	-	1	2	2	5	2	2	3	12	-	-	3	7	7	17	7	7	10	42	-	-	1	2	2	6	2	2	3	13
28	NOR	135	57	-	1	6	8	14	5	8	4	3	8	-	2	10	14	25	9	14	7	5	14	-	3	14	19	34	12	19	9	6	19
29	EAS	139	82	-	4	9	18	13	14	5	3	1	15	-	5	11	22	16	17	6	4	1	18	-	7	15	31	22	24	8	6	1	25
30	STAR	85	36	-	1	7	6	8	4	-	1	-	9	-	3	19	17	22	11	-	3	-	25	-	3	16	14	19	9	-	3	-	21
31	NOR	140	60	-	5	15	11	11	7	2	2	1	6	-	9	25	18	18	12	3	3	2	10	-	13	35	25	25	17	4	4	3	14
Round total		530	264	-	11	38	45	48	35	17	12	8	50	-	-	-	-	-	-	-	-	-	-	-	26	81	91	102	68	33	24	13	92
1 August	ZAP	91	25	-	1	6	4	2	2	1	2	1	6	-	4	24	16	8	8	4	8	4	24	-	4	22	14	7	7	4	7	4	22
2	NOR	254	58	-	14	13	10	9	6	2	1	1	2	-	24	23	17	16	10	3	2	2	3	-	61	58	43	41	25	8	5	5	8
3	EAS	92	65	1	8	12	14	12	10	1	2	2	3	2	12	18	22	18	15	2	3	3	5	2	11	16	20	16	14	2	3	3	5
4	STAR	313	74	-	8	21	15	9	9	-	-	3	9	-	11	28	20	12	12	-	-	5	12	-	34	88	63	37	38	-	-	16	37
5	NOR	573	138	-	15	30	27	21	13	8	4	4	16	-	11	22	20	15	9	6	3	3	11	-	63	126	115	86	52	34	17	17	63
Round total		1323	360	1	46	82	70	53	40	12	9	11	36	-	-	-	-	-	-	-	-	-	-	2	173	310	255	187	136	48	32	45	135
6 August	ZAP	107	28	-	4	5	2	3	2	2	7	-	3	-	14	18	7	11	7	7	25	-	11	-	15	19	7	13	7	7	27	-	12
7	NOR	288	73	-	11	14	16	8	12	5	3	3	1	-	15	19	22	11	17	7	4	4	1	-	43	55	63	31	49	20	12	12	3
8	EAS	231	57	-	7	10	12	12	7	4	1	2	2	-	12	18	21	21	12	7	2	3	4	-	28	42	48	48	28	16	5	7	9
9	STAR	500	118	-	27	34	17	15	7	7	4	2	5	-	23	29	14	13	6	6	3	2	4	-	115	145	70	65	30	30	15	10	20
10	NOR	363	82	2	24	15	15	12	3	1	2	4	4	2	30	18	18	15	4	1	2	5	5	7	109	65	65	55	15	4	7	18	18
Round total		1489	358	2	73	78	62	50	31	19	17	11	15	-	-	-	-	-	-	-	-	-	-	7	310	326	253	212	129	77	66	47	62
11 August	ZAP	369	83	1	20	23	12	10	9	1	-	1	6	1	24	28	15	12	11	1	-	1	7	4	89	103	55	44	40	4	-	4	26
12	NOR	531	122	2	37	23	21	14	8	3	3	1	10	2	30	19	17	12	7	2	2	1	8	11	159	101	90	64	37	11	11	5	42
13	EAS	428	99	2	45	22	12	9	4	-	1	2	2	2	46	22	12	9	4	-	1	2	2	9	197	94	51	38	17	-	4	9	9
14	STAR	446	120	5	33	40	15	11	4	1	3	1	7	4	28	33	13	9	3	1	2	1	6	18	125	147	58	41	13	4	9	4	27
15	NOR	227	50	1	17	6	15	5	4	-	-	-	2	2	34	12	30	10	8	-	-	-	4	5	77	27	68	23	18	-	-	-	9
Round total		2001	474	11	152	114	75	49	29	5	7	5	27	-	-	-	-	-	-	-	-	-	-	47	647	472	322	210	125	19	24	22	113
16 August	ZAP	493	104	3	26	33	22	8	4	5	-	1	2	3	25	32	21	7	4	5	-	1	2	15	123	158	104	34	20	24	-	5	10
17	NOR	347	83	1	29	22	14	4	3	2	1	1	6	1	35	27	17	5	4	2	1	1	7	3	122	95	59	17	14	7	3	3	24
18	EAS	329	78	3	20	17	19	7	6	3	1	1	1	4	26	22	24	9	8	4	1	1	1	13	86	73	79	30	26	13	3	3	3
19	STAR	252	57	2	15	17	5	9	3	2	1	-	3	3	26	30	9	16	5	4	2	-	5	8	66	75	22	40	13	10	5	-	13
20	NOR	303	68	-	17	18	10	12	3	2	2	1	3	-	25	26	15	18	4	3	3	2	4	-	76	79	45	55	12	9	9	6	12
Round total		1724	390	9	107	107	70	40	19	14	5	4	15	-	-	-	-	-	-	-	-	-	-	39	473	480	309	176	85	63	20	17	62
Season total		7144	1922	23	391	434	334	252	162	71	53	39	163	-	-	-	-	-	-	-	-	-	-	95	1631	1684	1242	900	551	243	170	144	484

Appendix Table T.
Cumulative age classification of female seals in commercial kill, by day,
St. George Island, 27 June to 20 August 1958.

Date	Rookery	Number killed from age class										Total killed	Percent killed from age class									
		2	3	4	5	6	7	8	9	10	10+		2	3	4	5	6	7	8	9	10	10+
June 27-29		No females killed																				
30	STAR	-	-	-	1	-	-	-	-	-	-	1	-	-	-	100	-	-	-	-	-	-
July																						
1	NORTH	-	-	-	1	-	-	-	-	-	-	1	-	-	-	100	-	-	-	-	-	-
2	ZAP	-	-	-	1	-	-	-	-	-	-	1	-	-	-	100	-	-	-	-	-	-
3	NORTH	-	-	-	1	-	-	-	-	-	-	1	-	-	-	100	-	-	-	-	-	-
4	EAST	-	-	-	1	-	-	-	-	-	-	1	-	-	-	100	-	-	-	-	-	-
5	STAR	-	-	-	1	-	-	-	-	-	-	1	-	-	-	100	-	-	-	-	-	-
6	NORTH	-	-	-	1	-	-	-	-	-	-	1	-	-	-	100	-	-	-	-	-	-
7	ZAP	-	-	-	1	-	-	-	-	-	-	1	-	-	-	100	-	-	-	-	-	-
8	NORTH	-	-	-	1	-	-	-	-	-	-	1	-	-	-	100	-	-	-	-	-	-
9	EAST	-	-	-	1	-	-	-	-	-	-	1	-	-	-	100	-	-	-	-	-	-
10	STAR	-	-	-	1	-	-	-	-	-	-	1	-	-	-	100	-	-	-	-	-	-
11	NORTH	-	-	-	1	-	-	-	-	-	-	1	-	-	-	100	-	-	-	-	-	-
12	ZAP	-	-	-	1	-	-	-	-	-	-	1	-	-	-	100	-	-	-	-	-	-
13	NORTH	-	-	-	1	-	-	-	-	-	-	1	-	-	-	100	-	-	-	-	-	-
14	EAST	-	-	3	1	3	1	-	-	-	1	9	-	-	33	11	34	11	-	-	-	11
15	STAR	-	-	3	1	3	1	-	1	-	1	10	-	-	30	10	30	10	-	10	-	10
16	NORTH	-	-	4	1	3	1	-	1	-	1	11	-	-	36	9	28	9	-	9	-	9
17	ZAP	-	-	4	1	3	1	-	1	-	1	11	-	-	36	9	28	9	-	9	-	9
18	NORTH	-	-	5	1	3	1	-	1	-	1	12	-	-	42	8	26	8	-	8	-	8
19	EAST	-	-	5	3	5	1	-	1	-	2	17	-	-	29	18	29	6	-	6	-	12
20	STAR	-	-	5	3	6	1	-	1	-	2	18	-	-	27	17	33	6	-	6	-	11
21	NORTH	-	-	6	3	7	2	-	1	-	5	24	-	-	25	13	29	8	-	4	-	21
22	ZAP	-	1	6	4	7	3	-	1	-	5	27	-	4	22	15	26	1	-	4	-	18
23	NORTH	-	1	6	4	8	3	-	2	-	8	32	-	8	19	13	25	9	-	6	-	25
24	EAST	-	1	10	8	10	5	2	2	-	14	52	-	2	19	15	19	10	4	4	-	27
25	STAR	-	1	11	9	10	5	2	3	-	14	55	-	2	20	16	18	9	5	4	-	26

Appendix Table T (con.)

Cumulative age classification of female seals in commercial kill, by day, St. George Island, 27 June to 20 August 1958.

Date	Rookery	Number killed from age class										Total killed	Percent killed from age class									
		2	3	4	5	6	7	8	9	10	10+		2	3	4	5	6	7	8	9	10	10+
July																						
26	NORTH	-	2	15	12	13	8	3	4	-	20	77	-	3	19	16	17	10	5	4	-	26
27	ZAP	-	2	16	14	15	14	5	6	3	33	108	-	2	15	13	14	13	5	5	3	30
28	NORTH	-	5	30	33	49	26	24	14	9	52	243	-	2	12	14	20	11	10	6	4	21
29	EAST	-	12	45	64	71	50	32	21	10	77	382	-	3	12	17	19	13	8	5	3	20
30	STAR	-	15	61	78	90	59	32	24	10	98	467	-	3	13	17	19	13	7	5	2	21
31	NORTH	-	28	96	103	115	76	36	28	13	112	607	-	5	16	17	19	12	6	5	2	18
Aug.																						
1	ZAP	-	32	118	117	122	83	40	35	17	134	698	-	5	17	17	17	12	6	5	2	19
2	NORTH	-	93	176	160	163	108	48	40	22	142	962	-	10	19	17	17	11	5	4	2	15
3	EAST	2	104	192	180	179	122	50	43	25	147	1044	-	10	19	17	17	12	5	4	2	14
4	STAR	2	128	280	243	216	160	50	43	41	184	1357	-	10	21	18	16	12	4	3	3	13
5	NORTH	2	201	408	358	302	212	84	60	58	247	1930	-	10	21	19	16	11	4	3	3	13
6	ZAP	2	216	425	365	315	219	91	87	58	259	2037	-	11	21	18	15	11	4	4	3	13
7	NORTH	2	259	480	428	346	268	111	99	70	262	2325	-	11	21	18	15	12	5	4	3	11
8	EAST	2	287	522	476	394	296	127	104	77	271	2556	-	11	20	19	15	12	5	4	3	11
9	STAR	2	402	667	546	459	326	157	119	87	291	3056	-	13	22	18	15	11	5	4	3	9
10	NORTH	9	511	732	611	514	341	161	126	105	309	3419	-	15	21	18	15	10	5	4	3	9
11	ZAP	13	600	835	666	558	381	165	126	109	335	3788	-	16	22	16	15	10	5	4	3	9
12	NORTH	24	759	936	756	622	418	176	137	114	377	4319	-	17	22	18	14	10	4	3	3	9
13	EAST	33	956	1030	807	660	435	176	141	123	386	4747	1	20	22	17	14	9	4	3	2	8
14	STAR	51	1081	1177	865	701	448	180	150	127	413	5193	1	21	23	17	13	9	3	3	2	8
15	NORTH	56	1158	1204	933	724	466	180	150	127	422	5420	1	22	22	17	13	9	3	3	2	8
16	ZAP	71	1281	1362	1037	758	486	204	150	132	432	5913	1	22	23	18	13	8	3	2	2	8
17	NORTH	74	1403	1457	1096	775	500	211	153	135	456	6260	1	23	23	18	12	8	3	2	2	8
18	EAST	87	1489	1530	1175	805	526	224	156	138	459	6589	1	23	24	18	12	8	3	2	2	7
19	STAR	95	1555	1605	1197	845	539	234	161	136	472	6841	1	23	24	17	12	8	4	2	2	7
20	NORTH	95	1631	1684	1242	900	551	243	170	144	484	7144	1	23	24	17	13	8	3	2	2	7

Appendix Table U.
Number pregnant and nonpregnant among female seals 4 or more years old and 5 or more years old, St. George Island, 1958

Date	Daily kill	Daily sample	Daily sample less 2 & 3 yr. olds	Ages 4-10+ preg.	Ages 4-10+ nonpreg.	Daily sample less 2, 3 & 4 yr. olds	Age 5-10+ preg.	Age 5-10+ nonpreg.
27-29 June		No females killed						
30 June	1	1	1	1	-	1	1	-
1-13 July		No females killed						
14 July	8	8	8	4	4	5	1	4
15	1	1	1	1	-	1	1	-
16	1	1	1	1	-	-	-	-
17	-	-	-	-	-	-	-	-
18	1	1	1	1	-	-	-	-
19	5	5	5	3	2	5	3	2
20	1	1	1	-	1	1	-	1
21	6	6	6	1	5	5	1	4
22	3	3	2	1	1	2	1	1
23	5	5	5	3	2	5	3	2
24	20	19	19	7	12	15	6	9
25	3	3	3	1	3	2	1	1
26	22	22	21	10	11	17	8	9
27	31	29	29	16	13	28	16	12
28	135	57	56	30	26	50	27	23
29	139	82	78	38	40	69	34	35
30	85	35	35	17	18	28	17	11
31	140	60	55	22	33	40	19	21
1 August	91	25	24	8	16	18	7	11
2	254	58	44	16	28	31	13	18
3	92	65	56	19	37	44	19	25
4	313	74	66	30	36	45	28	17
5	573	138	123	51	72	93	49	44
6	107	28	24	9	15	19	8	11
7	288	73	62	28	34	48	28	20
8	231	57	50	23	27	40	22	18
9	500	118	91	28	63	57	27	30
10	363	82	56	24	32	41	23	18
11	369	83	62	24	38	39	22	17
12	531	122	83	33	50	60	32	28
13	428	99	52	14	38	30	14	16
14	446	120	82	22	60	42	20	22

Appendix Table U. (con.)
Number pregnant and nonpregnant among female seals 4 or more years old and 5 or more years old, St. George Island, 1958

Date	Daily kill	Daily sample	Daily sample less 2 & 3 yr. olds	Ages 4-10+		Daily sample less 2, 3 & 4 yr. olds	Ages 5-10+	
				preg.	nonpreg.		preg.	nonpreg.
15 June	227	50	32	12	20	26	12	14
16	493	104	75	22	53	42	19	23
17	347	83	53	21	32	31	20	11
18	329	78	55	20	35	38	19	19
19	252	57	40	18	22	23	15	8
20	303	68	51	25	26	33	24	9
Total	7144	1922	1508	604	904	1074	563	511

Appendix Table V.
Length of female seals sampled from commercial kill,
by age, St. George Island, 1958

Length in inches		Age 2	3	4	5	6	7	8	9	10	10+	Total
37	number	4	1	-	-	-	-	-	-	-	-	5
	percent	17	-	-	-	-	-	-	-	-	-	-
38	number	4	2	-	-	-	-	-	-	-	-	6
	percent	17	1	-	-	-	-	-	-	-	-	-
39	number	3	-	-	-	-	-	-	-	-	-	3
	percent	13	-	-	-	-	-	-	-	-	-	-
40	number	9	37	5	2	1	-	-	-	-	-	54
	percent	39	10	1	1	-	-	-	-	-	-	3
41	number	2	113	36	4	2	-	1	-	1	1	160
	percent	9	29	8	1	1	-	1	-	3	1	8
42	number	-	158	110	48	8	9	-	2	1	-	336
	percent	-	40	25	14	3	5	-	4	3	-	18
43	number	1	53	107	56	32	11	2	2	1	8	273
	percent	5	13	25	17	12	6	3	4	3	5	14
44	number	-	24	115	114	70	34	20	9	5	19	410
	percent	-	6	26	34	28	21	28	17	12	12	21
45	number	-	2	48	67	77	50	20	12	9	28	313
	percent	-	1	11	20	31	31	28	22	23	17	16
46	number	-	-	7	29	35	27	12	8	8	39	165
	percent	-	-	2	9	14	17	18	15	20	24	9
47	number	-	1	4	10	23	20	7	10	5	29	109
	percent	-	-	1	3	9	12	10	19	12	18	6
48	number	-	-	2	3	2	8	7	4	1	17	44
	percent	-	-	1	1	1	5	10	8	3	10	2
49	number	-	-	-	1	2	3	1	5	7	15	34
	percent	-	-	-	-	1	2	1	9	18	9	2
50	number	-	-	-	-	-	-	-	1	1	6	8
	percent	-	-	-	-	-	-	-	2	3	3	1
51	number	-	-	-	-	-	-	1	-	-	1	2
	percent	-	-	-	-	-	-	1	-	-	1	-
	Total	23	391	434	334	252	162	71	53	39	163	1922
	Percent	1	20	22	17	13	9	4	3	2	9	

Appendix Table W.
Reproductive condition of female seals sampled from commercial kill, by length, St. George Island, 1958

Length in inches		Nullipara	Primipara		Multipara		Total
			pregnant	nonpreg.	pregnant	nonpreg.	
37	number	5	-	-	-	-	5
	percent	1	-	-	-	-	-
38	number	6	-	-	-	-	6
	percent	1	-	-	-	-	-
39	number	3	-	-	-	-	3
	percent	-	-	-	-	-	-
40	number	54	-	-	-	-	54
	percent	5	-	-	-	-	3
41	number	152	7	1	-	-	160
	percent	14	2	2	-	-	8
42	number	287	40	2	3	4	336
	percent	27	12	4	1	2	18
43	number	197	45	7	14	10	273
	percent	18	14	13	5	5	14
44	number	214	98	17	58	23	410
	percent	20	30	33	20	12	21
45	number	103	79	14	69	48	313
	percent	9	25	27	24	25	16
46	number	34	35	6	55	35	165
	percent	3	11	11	20	19	9
47	number	14	16	4	48	27	109
	percent	1	5	8	17	14	6
48	number	5	3	1	19	16	44
	percent	1	1	2	7	9	2
49	number	1	1	-	13	19	34
	percent	-	-	-	5	10	2
50	number	-	-	-	2	6	8
	percent	-	-	-	1	3	1
51	number	-	-	-	-	2	2
	percent	-	-	-	-	1	-
	Total	1075	324	52	281	190	1922
	Percent	56	17	2	15	10	

Appendix Table X.
Vibrissal color of female seals sampled from commercial kill, by length, St. George Island, 1958

Length in inches		Vibrissal color: black	black & white	white	Total
37	number	5	-	-	5
	percent	1	-	-	-
38	number	6	-	-	6
	percent	2	-	-	-
39	number	3	-	-	3
	percent	1	-	-	-
40	number	35	19	-	54
	percent	9	2	-	3
41	number	99	58	3	160
	percent	26	7	-	8
42	number	135	179	22	336
	percent	35	21	3	18
43	number	61	165	47	273
	percent	16	19	7	14
44	number	29	230	151	410
	percent	8	27	22	21
45	number	6	142	165	313
	percent	2	16	25	16
46	number	1	44	120	165
	percent	-	5	18	9
47	number	-	18	91	109
	percent	-	2	13	6
48	number	-	7	37	44
	percent	-	1	6	2
49	number	-	4	30	34
	percent	-	-	4	2
50	number	-	-	8	8
	percent	-	-	1	1
51	number	-	-	2	2
	percent	-	-	-	-
	Total	380	866	676	1922
	Percent	20	45	35	

Appendix Table Y.

Summary of length classes of tagged and tag-lost
3- and 4-year-old male seals, by rookery of recovery,
Pribilof Islands, Alaska, 1958

Length in inches	Tags recovered													Tags lost											
	St. Paul							St. George					Grand	St. Paul							St. George				Grand
	ZAP	TOL	L-K	REEF	POL	NEP	total	NOR	EAST	STAR	ZAP	total	total	ZAP	TOL	L-K	REEF	POL	NEP	total	NOR	EAST	STAR	ZAP	total	total
Age 3																									
38						1	1						1												
39	1						1						1												
40	4	3			1	6	14	1	3			4	18												
41	66	36	5	16	16	45	184	5	1		2	8	192	11	2		2	2	9	26					26
42	129	49	19	20	70	96	383	10	16	3	26	55	438	17	9	2	8	8	17	61		1		2	3	64
43	195	75	22	43	96	167	598	2	10	2	13	27	625	22	9	7	7	2	17	64		1		2	3	67
44	175	43	8	31	79	126	462	10	12	2	12	36	498	19	4	3	1	5	16	48		1	1	3	5	53
45	82	21	10	19	39	76	247		5	1	3	9	256	8	4	1		5	7	25				1	1	26
46	16	7	2	4	4	19	52		2		2	4	56	2					1	3						3
47	5	3	1	1	2	3	15				1	1	16	1			1			2						2
48			1	1			2						2													
Total	673	237	68	135	307	539	1959	28	49	8	59	144	2103	80	28	13	19	22	67	229		3	1	8	12	241
Age 4																									
41														1					1	2						2
42	1					2	3						3	1					1	2						2
43	4	4		2	1	4	15	1				1	16	2						2						2
44	5	2	2	2	2	6	19		1		3	4	23	1					2	3		1			1	4
45	6	4			8	7	25				1	1	26		1				1	2						2
46	1			1	1	5	8		1			1	9	1				1		2						2
47	2	2		1	1	2	8						8													
48				1	1		2						2													
49		1					1				1	1	2													
Total	19	13	2	7	14	26	81	1	2		5	8	89	6	1			1	5	13		1			1	14

Appendix Table Z.

Summary of length classes of tagged and tag lost
3- and 4-year-old female seals, by rookery of recovery,
Pribilof Islands, Alaska, 1958

Length in inches	Tags recovered													Tags lost										
	St. Paul							St. George					Grand	St. Paul							St. George				Grand
	ZAP	TOL	L-K	REEF	POL	NEP	total	NOR	EAST	STAR	ZAP	total	total	ZAP	TOL	L-K	REEF	POL	NEP	total	NOR	EAST	STAR	ZAP	total	total
Age 3																									
38								1				1	1						1	1						1
39	1				2		3						3						2	2						2
40	7		1	5	6	4	23			3	1	4	27	3	1		4	3	5	16						16
41	41	9		24	30	13	117	5	1	1	2	9	126	7		1	4	5	7	24				1	1	25
42	34	9	1	30	47	37	158	2	2	2		6	164	11	1		9	2	3	26				1	1	27
43	26	12		42	37	39	156	1		4		5	161	4	2		5	5	2	18						18
44	11	4	1	11	17	10	54		2		1	3	57	1	2	1	1	6	3	14						14
45	2			4	1	4	11						11	1			1		1	3						3
46	1			1	1	1	4						4						1	1						1
Total	123	34	3	117	141	108	526	9	5	10	4	28	554	27	6	2	24	21	25	105				2	2	107
Age 4																										
41	6	2		1		1	10						10													
42	4	1		2	1	5	13	1				1	14													
43	7	4	2	7	4	9	33						33				1	3	1	5						5
44	11	1		11	7	10	40	2				2	42	2			1		1	4						4
45	7	5		6	2	7	27						27													
46					1		1						1				1			1						1
47	2					1	3						3													
Total	37	13	2	27	15	33	127	3				3	130	2			3	3	2	10						10

Appendix Table AA.

Length classes of tagged and tag-lost 3-year-old male seals, by rookery of recovery and by round, Pribilof Islands, Alaska, 1958

Length in inches	Tags recovered													Tags lost										
	St. Paul							St. George					Grand total	St. Paul							St. George			Grand total
	ZAP	TOL	L-K	REEF	POL	NEP	Total	NOR	EAST	STAR	ZAP	Total		ZAP	TOL	L-K	REEF	POL	NEP	Total	NOR	EAST	STAR	ZAP	Total	
Round number 1																									
40					1		1						1												
41	15	2		1	1	5	24						24	1					1	4					4
42	10	4	2	2	19	11	48	3	3	2		8	56	1			2	3		6					6
43	8	4	1	3	11	12	39				1	1	40	1		2			1	4					4
44	5	1		1	4	7	18	1				1	19												
45			1		2	4	7						7												
Total	38	11	4	7	38	39	137	4	3	2	1	10	147	3		2	2	3	4	14					14
Round number 2																									
40	1	1				1	3						3												
41	7	6		1	1	10	25	2				2	27	2					2	4					4
42	11	5		2	4	8	30	1			1	2	32	2		1		1	4	8					8
43	8	5		2	5	10	30				1	1	31	1					3	4					4
44	6	1		1	5	4	17						17												
45	1					3	4						4												
Total	34	18		6	15	36	109	3			2	5	114	5		1		1	9	16					16
Round number 3																									
40		1					1		1			1	2												
41	2	5		2		5	14				1	1	15	1					1	2					2
42	20	6	1	2	4	15	48				2	2	50	1	4	1	1	1	3	11				1	1	12
43	27	10		6	10	24	77				1	1	78	3	2		1		3	9					9
44	16	6		5	5	20	52	1				1	53	5				1	1	7					7
45	11			2	3	14	30				1	1	31		1			1	2	4					4
46				1			1						1												
47	1	1			1		3						3												
Total	77	29	1	18	23	78	226	1	1		5	7	233	10	7	1	2	3	10	33				1	1	34
Round number 4																									
40	1					4	5	1	1			2	7												
41	8			2	7	14	31	1				1	32	2			2		3	7						7
42	28	7	1	1	14	10	61		2		2	4	65	4	2		3	1	2	12	1				1	13
43	33	15	7	8	21	26	110	1	1	2	1	5	115	11	1	1	2		2	17						17
44	50	8	1	4	21	13	97	1		1	2	4	101	3		1		3	4	11	1				1	12
45	14	2	2	1	8	5	32						32	3				2	1	6						6
46	4				1	2	7						7													
47	1	1				1	3						3													
Total	139	33	11	16	72	75	346	4	4	3	5	16	362	23	3	2	7	6	12	53	2				2	55
Round number 5																									
40		1					1						1												
41	6	16	2	7	4	1	36				1	1	37		1			2		3						3
42	12	10	8	8	14	15	67	2	3		7	12	79	3					2	5				1	1	6
43	29	14	2	5	17	30	97		1		2	3	100	1	2		1	1	2	7						7
44	35	7	2	1	20	34	99	1			1	2	101	6	1		1		5	13						13
45	18	2	2	2	6	19	49		1			1	50	2	2			1	2	7						7
46	6	3	1		1	6	17		1			1	18						1	1						1
47	1	1	1				3						3	1						1						1
48			1				1						1													
Total	107	54	19	23	62	105	370	3	6		11	20	390	13	6		2	4	12	37				1	1	38
Round number 6																									
38						1	1						1												
39	1						1						1												
40	1					1	2						2												
41	11	1			1	6	19	1	1			2	21	4						4						4
42	20	5	4	2	6	22	59	1	2		6	9	68	3				1	6	10						10
43	43	12	8	7	5	37	112		3		3	6	118	1	1	3		1	5	11	1			1	2	13
44	26	13	5	4	3	19	70	5	5		2	12	82	2	2	2		1	5	12				1	1	13
45	9	7	4	7	5	16	48		1	1		2	50	1		1			2	4				1	1	5
46	1	1	1	1	1	3	8						8	1						1						1
47	1					1	2				1	1	3				1			1						1
Total	113	39	22	21	21	106	322	7	12	1	12	32	354	12	3	6	1	3	18	43	1			3	4	47
Round number 7																									
40	1						1						1												
41	12	6	3	3	1	2	27	1				1	28	1	1					2						2
42	23	7	1	1	5	13	50	1	5		7	13	63	2	2					4						4
43	42	15	4	9	20	18	108		2		3	5	113	3	3	1	2		1	10				1	1	11
44	32	6		8	15	22	83		6		5	11	94	1	1					2				2	2	4
45	22	9	1	4	14	11	61		2		2	4	65	1	1			1		3						3
46	3	2				4	9				2	2	11	1						1						1
47	1			1		1	3						3													
48				1			1						1													
Total	136	45	9	27	55	71	343	2	15		19	36	379	9	8	1	2	1	1	22				3	3	25
Round number 8																									
41					1	1	2						2													
42	1				1		2	1				1	3	1						1						1
43				1	3	2	6						6													
44					2		2		1	1	1	3	5													
45					1	1	2						2													
46		1			1		2						2													
47					1		1						1													
Total	1	1		1	10	4	17	1	1	1	1	4	21	1						1						1
Round number 9																									
40									1			1	1													
41	1						1						1													
42	1	4	2	2			9	1				1	10		1		2			3						3
43	1			1	3	2	7		1			1	8	1			1			2						2
44	1			2	2	2	7						7						1	1						1
45	3						3						3	1						1						1
46	1			1		1	3						3													
Total	8	4	2	6	5	5	30	1	2			3	33	2	1		3		1	7						7
Round number 10																									
41	1					1	2						2													
42	2				2	1	5		1		1	2	7													
43	2			1	1	2	6	1	2		1	4	10					1		1						1
44	2				2	1	5				1	1	6	1						1				1		1	2
45	2	1		3		1	7		1			1	8													
46				1		1	2		1			1	3													
Total	9	1		5	5	7	27	1	5		3	9	36	1				1		2				1		3
Round number 11																									
41	3						3						3													
42	1	1			1	1	4			1		1	5													
43	2					4	6						6													
44	2	1		5		4	12	1				1	13	1						1						1
45	2					2	4						4													
46	1					2	3						3													
Total	11	2		5	1	13	32	1		1		2	34	1						1						1
Grand total	673	237	68	135	307	539	1959	28	49	8	59	144	2103	80	28	13	19	22	67	229	3	1	8	12	241	

Appendix Table BB.

Length classes of tagged and tag-lost 4-year-old male seals, by rookery of recovery and by round, Pribilof Islands, Alaska, 1958

Length in inches	Tags recovered													Tags lost										
	St. Paul							St. George					Grand	St. Paul							St. George				Grand
	ZAP	TOL	L-K	REEF	POL	NEP	total	NOR	EAST	STAR	ZAP	total	total	ZAP	TOL	L-K	REEF	POL	NEP	total	NOR	EAST	STAR	ZAP	total	total
Round number 1																									
41														1					1						1
42																									
43	2	1		1		1	5	1			1	6		1					1						1
44	1						1					1													
45					3	1	4					4													
46						1	1					1													
Total	3	1		1	3	3	11	1			1	12		2					2						2
Round number 2																									
41																			1	1					1
42						1	1					1							1	1					1
43	1					2	3					3													
44		1			1	1	3					3													
45						1	1					1													
46																									
47	1						1					1													
Total	2	1			1	5	9					9							2	2					2
Round number 3																									
43	1	1					2					2													
44	1		1				2				1	3													
45	1	1			1	1	4					4							1	1					1
46				1		2	3					3													
Total	3	2	1	1	1	3	11				1	12							1	1					1
Round number 4																									
42	1						1					1													
43		1		1		1	3					3		1					1	1					1
44	2	1	1		1		5					5		1					1	1		1			2
45	3	1				1	5					5				1			1	1					1
46					1		1		1		1	2		1					1	1					1
47	1				1	2	4					4													
48				1			1					1													
Total	7	3	1	2	3	4	20		1		1	21		3		1			4	1					5
Round number 5																									
44						2	2				1	3							1	1					1
45	1				3		4				1	5													
46						1	1					1					1			1					1
47		1					1					1													
48																									
49		1					1					1													
Total	1	2			3	3	9				2	11					1	1	2						2
Round number 6																									
42						1	1					1													
43																									
44				2		1	3				1	4													
45	1					3	4					4													
46	1					1	2					2													
47																									
48					1		1					1													
Total	2			2	1	6	11				1	12													
Round number 7																									
43		1			1		2					2													
44	1					2	3					3													
45		1					1					1													
46																									
47		1					1					1													
48																									
49											1	1													
Total	1	3			1	2	7				1	7													
Round number 8																									
45					1		1					1													
46																									
47				1			1					1													
Total				1	1		2					2													
Round number 9																									
44									1		1	1													
45		1					1					1													
Total		1					1		1		1	2													
Round number 11																									
42														1					1						1
43																									
44																			1	1					1
Total														1					1	2					2
Grand total	19	13	2	7	14	26	81	1	2		5	8	89	5	1		1	5	13		1			1	14

No recoveries made during Round 10.

Appendix Table CC.

Length classes of tagged and tag-lost 3-year-old female seals, by rookery of recovery and by round, Pribilof Islands, Alaska, 1958

Length in inches	Tags recovered													Tags lost										
	St. Paul							St. George					Grand	St. Paul							St. George				Grand
	ZAP	TOL	L-K	REEF	POL	NEP	total	NOR	EAST	STAR	ZAP	total	total	ZAP	TOL	L-K	REEF	POL	NEP	total	NOR	EAST	STAR	ZAP	total	total
Round number 6																									
41														1						1					1
42																									
43						1	1						1												
Total						1	1						1	1						1					1
Round number 7																									
41																			1	1					1
42				2			2						2												
Total				2			2						2						1	1					1
Round number 8																									
40					1		1						1	1						1					1
41	2			1	2		5						5	2						2					2
42		1			3		4	1				1	5												
43				1	1		2						2												
44					1		1						1					1		1					1
Total	2	1		2	8		13	1				1	14	3				1		4					4
Round number 9																									
38								1				1	1												
39					1		1						1												
40			1	1		1	3			1		1	4				3			3					3
41	5			12	12	2	31	2		1		3	34				1	3	1	5					5
42	7			9	11	6	33			1		1	34	4			4	2		10				1	1	11
43	5			12	9	2	28						28					3	1	4						4
44	1			2	3	1	7						7					2		2						2
45	1			1			2						2						1	1						1
46				1	1		2						2												
Total	19		1	38	37	12	107	3		3		6	113	4			8	10	3	25				1	1	26
Round number 10																									
39					1		1						1						1	1					1
40	5			3	3	2	13			1	1	2	15		1		1	2	2	6					6
41	13	7		7	12	3	42	1	1			2	44	3		1	1	1	5	11				1	1	12
42	11		1	7	17	18	54		1			1	55	2	1		4		4	11						11
43	8	2		18	17	9	54			2		2	56	3			5	2	1	11						11
44	4	2	1	6	10	3	26		1		1	2	28		1	1	1	1		4						4
45				3			3						3				1			1						1
46						1	1						1						1	1						1
Total	41	11	2	44	60	36	194	1	3	3	2	9	203	8	3	2	13	6	14	46				1	1	47
Round number 11																									
39	1						1						1												
40	2			1	2	1	6			1		1	7	2				1		3					3
41	21	2		4	4	8	39	2			2	4	43	1			2	1	1	5					5
42	16	8		12	16	13	65	1	1	1		3	68	5			1		2	8					8
43	13	10		11	10	27	71	1		2		3	74	1	2				1	4					4
44	6	2		3	3	6	20		1			1	21	1	1			2	3	7					7
45	1				1	4	6						6	1						1					1
46	1						1						1												
Total	61	22		31	36	59	209	4	2	4	2	12	221	11	3		3	4	7	28						28
Grand total	123	34	3	117	141	108	526	9	5	10	4	28	554	27	6	2	24	21	25	105				2	2	107

Appendix Table DD.

Length classes of tagged and tag-lost 4-year-old female seals, by rookery of recovery and by round, Pribilof Islands, Alaska, 1958.

Length in inches	Tags recovered												Tags lost										
	St. Paul							St. George					Grand	St. Paul						St. George				Grand
	ZAP	TOL	L-K	REEF	POL	NEP	total	NOR	EAST	STAR	ZAP	total	total	ZAP	TOL	L-K	REEF	POL	NEP	total	NOR	EAST	STAR	ZAP	total	total
Round number 7																									
43	1						1						1												
Total	1						1						1												
Round number 8																									
42				1		1	2						2												
43		1				1	2						2												
44				1	1		2						2												
45																									
46																									
47	1						1						1												
Total	1	1		2	1	2	7						7												
Round number 9																									
41		1					1						1												
42	1			1		2	4						4												
43		2	1	3			6						6												
44	2			5	3	5	15	1			1		16				1			1						1
45	3			4		3	10						10												
Total	6	3	1	13	3	10	36	1			1		37				1			1						1
Round number 10																									
41	1					1	2						2												
42	1	1				2	4	1			1		5												
43	4		1	3	2	5	15						15					1	1	2						2
44	1					2	3	1			1		4												
45	2			2	1	1	6						6												
46					1		1						1												
47	1						1						1												
Total	10	1	1	5	4	11	32	2			2		34					1	1	2						2
Round number 11																									
41	5	1		1			7						7												
42	2				1		3						3												
43	6	1		1	2	3	13						13				1	2		3						3
44	4	1		5	3	3	16						16	2					1	3						3
45	2	5			1	3	11						11												
46																	1			1						1
47						1	1						1												
Total	19	8		7	7	10	51						51	2			2	2	1	7						7
Grand total	37	13	2	27	15	33	127	3			3		130	2			3	3	2	10						10

Appendix Table EE.
Recovery location of tagged seals in commercial kill, Pribilof Islands, 1958

Rookery of tagging	Rookery of Recovery: St. Paul Island							St. George Island					Grand total
	ZAP-1	TOL	L-K	REEF	POL	NEP	total	NOR	EAST	STAR	ZAP-2	total	
J-series - 1-yr-old seals, males													
NEP	-	-	-	-	1	-	1	-	-	-	-	-	1
I-series - 2-yr-old seals, males													
ZAP-1	4	-	1	-	1	4	10	1	-	1	-	2	12
TOL	5	2	-	1	-	2	10	-	-	-	-	-	10
L-K	-	-	2	-	1	-	3	-	-	-	-	-	3
REEF	9	-	-	12	1	2	24	2	3	1	-	6	30
POL	1	1	-	-	8	4	14	-	1	3	-	4	18
NEP	6	-	-	-	2	16	24	-	1	2	-	3	27
NOR	3	-	1	-	1	1	6	4	3	1	1	9	15
EAST	1	-	-	-	-	1	2	1	4	-	1	6	8
STAR	-	-	-	1	-	-	1	-	-	1	1	2	3
ZAP-2	2	-	-	-	-	1	3	-	-	3	4	7	10
Total	31	3	4	14	14	31	97	8	12	12	7	39	136
H-series - 3-yr-old seals, males													
ZAP-1	273	35	13	1	21	58	401	4	9	4	16	33	434
TOL	101	69	6	5	8	36	225	2	5	-	9	16	241
L-K	16	4	24	3	27	24	98	4	5	-	3	12	110
REEF	196	93	10	116	52	75	542	11	12	4	15	42	584
POL	31	19	8	6	156	84	304	1	9	-	6	16	320
NEP	56	17	7	4	43	262	389	6	9	-	10	25	414
Total	673	237	68	135	307	539	1959	28	49	8	59	144	2103

G-series - 4-yr-old seals, males

ZAP-1	13	-	-	-	-	1	14	-	1	-	1	2	16
TOL	2	8	-	-	1	2	13	-	-	-	-	-	13
L-K	-	-	-	-	1	2	3	-	-	-	1	1	4
REEF	4	2	2	6	4	2	20	1	1	-	3	5	25
POL	-	-	-	-	6	2	8	-	-	-	-	-	8
NEP	-	3	-	1	2	17	23	-	-	-	-	-	23
Total	19	13	2	7	14	26	81	1	2	-	5	8	89

F-series - 5-yr-old seals, males

NEP	-	-	-	-	-	1	1	-	-	-	-	-	1

E-series - 6-yr-old seals, males

NEP	-	-	-	-	-	1	1	-	-	-	-	-	1

I-series - 2-yr-old seals, females

REEF	-	-	-	2	-	-	2	-	-	1	1	2	4
POL	-	1	-	-	5	-	6	-	-	-	-	-	6
NEP	1	-	-	-	-	1	2	-	-	-	-	-	2
EAST	-	1	-	-	-	-	1	-	-	-	-	-	1
ZAP-2	-	-	-	-	-	-	-	1	-	-	1	2	2
Total	1	2	-	2	5	1	11	1	-	1	2	4	15

H-series - 3-yr-old seals, females

ZAP-1	68	4	-	2	4	5	83	1	2	3	2	8	91
TOL	14	22	-	-	1	6	43	2	-	1	1	4	47
L-K	4	1	2	1	5	7	20	1	-	-	-	1	21
REEF	24	5	1	114	7	5	156	1	1	1	1	4	160
POL	3	-	-	-	120	9	132	2	2	4	-	8	140
NEP	10	2	-	-	4	76	92	2	-	1	-	3	95
Total	123	34	3	117	141	108	526	9	5	10	4	28	554

Appendix Table EE. (con.)
Recovery location of tagged seals in commercial kill, Pribilof Islands, 1958

Rookery of tagging	Rookery of Recovery: St. Paul Island ZAP-1	TOL	L-K	REEF	POL	NEP	total	St. George Island NOR	EAST	STAR	ZAP-2	total	Grand total
G-series - 4-yr-old seals, females													
ZAP-1	23	2	-	-	-	2	27	1	-	-	-	1	28
TOL	2	9	-	-	1	1	13	-	-	-	-	-	13
L-K	-	-	2	-	2	-	4	-	-	-	-	-	4
REEF	11	2	-	27	2	2	44	2	-	-	-	2	46
POL	-	-	-	-	10	3	13	-	-	-	-	-	13
NEP	1	-	-	-	-	25	26	-	-	-	-	-	26
Total	37	13	2	27	15	33	127	3	-	-	-	3	130
F-series - 5-yr-old seals, females													
ZAP-1	7	-	-	-	1	1	9	-	-	-	-	-	9
TOL	2	5	-	-	-	-	7	1	-	-	-	1	8
L-K	-	1	2	-	1	-	4	-	-	-	-	-	4
REEF	1	3	-	7	1	-	12	2	1	-	-	3	15
POL	1	-	-	-	13	1	15	-	-	-	-	-	15
NEP	-	-	-	-	-	6	6	-	-	-	-	-	6
Total	11	9	2	7	16	8	53	3	1	-	-	4	57
E-series - 6-yr-old seals, females													
ZAP-1	5	-	-	-	-	1	6	-	-	-	-	-	6
REEF	6	2	-	18	2	1	29	1	-	-	-	1	30
POL	1	-	-	-	110	6	117	-	-	2	-	2	119
NEP	-	-	-	1	4	24	29	-	-	-	-	-	29
Total	12	2	-	19	116	32	181	1	-	2	-	3	184

D-series - 7-yr-old seals, females													
POL	-	-	-	-	12	-	12	-	1	-	-	1	13
CS-series - 9-yr-old seals, females													
REEF	-	-	-	2	-	-	2	-	-	-	-	-	2
POL	-	-	-	-	15	1	16	-	-	-	-	-	16
NEP	-	-	-	-	-	3	3	-	-	-	-	-	3
Total	-	-	-	2	15	4	21	-	-	-	-	-	21
B-series - 10-yr-old seals, females													
ZAP-1	1	-	-	-	-	-	1	-	-	-	-	-	1
REEF	-	-	-	1	1	-	2	-	-	-	-	-	2
POL	2	-	-	1	46	1	50	1	-	-	1	2	52
Total	3	-	-	2	47	1	53	1	-	-	1	2	55
A-series - 11-yr-old seals, females													
ZAP-1	2	-	-	-	-	-	2	-	-	-	-	-	2
POL	-	-	-	-	1	-	1	-	-	-	-	-	1
Total	2	-	-	-	1	-	3	-	-	-	-	-	3

Appendix Table FF.
Recovery location of tagged seals in commercial kill, by round, Pribilof Islands, 1958

Rookery of tagging	Rookery of Recovery: St. Paul Island ZAP-1	TOL	L-K	REEF	POL	NEP	total	St. George Island NOR	EAST	STAR	ZAP-2	total	Grand total
Round 4 - 1-yr-old seals, males													
NEP	-	-	-	-	1	-	1	-	-	-	-	-	1
Round 2 - 2-yr-old seals, males													
ZAP-1	1	-	-	-	-	-	1	-	-	-	-	-	1
NEP	1	-	-	-	-	-	1	-	-	-	-	-	1
Total	2	-	-	-	-	-	2	-	-	-	-	-	2
Round 3 - 2-yr-old seals, males													
EAST	-	-	-	-	-	-	-	-	1	-	-	1	1
Round 4 - 2-yr-old seals, males													
ZAP-2	-	-	-	-	-	-	-	-	-	-	1	1	1
Round 5 - 2-yr-old seals, males													
ZAP-1	-	-	-	-	-	1	1	-	-	1	-	1	2
TOL	-	1	-	-	-	-	1	-	-	-	-	-	1
REEF	3	-	-	-	-	-	3	-	-	-	-	-	3
NEP	-	-	-	-	-	1	1	-	-	-	-	-	1
ZAP-2	-	-	-	-	-	-	-	-	-	-	2	2	2
Total	3	1	-	-	-	2	6	-	-	1	2	3	9

Round 6 - 2-yr-old seals, males

ZAP-1	2	-	-	-	-	-	2	-	-	-	-	-	2
TOL	1	-	-	-	-	1	2	-	-	-	-	-	2
POL	-	-	-	-	-	2	2	-	-	-	-	-	2
NEP	1	-	-	-	-	2	3	-	-	-	-	-	3
Total	4	-	-	-	-	5	9	-	-	-	-	-	9

Round 7 - 2-yr-old seals, males

ZAP-1	-	-	-	-	1	-	1	-	-	-	-	-	1
REEF	2	-	-	-	-	-	2	-	-	-	-	-	2
POL	-	-	-	-	-	-	-	-	1	-	-	1	1
NEP	-	-	-	-	-	1	1	-	-	-	-	-	1
NOR	-	-	-	-	1	-	1	1	1	-	1	3	4
EAST	1	-	-	-	-	1	2	-	-	-	-	-	2
STAR	-	-	-	-	-	-	-	-	-	-	1	1	1
Total	3	-	-	-	2	2	7	1	2	-	2	5	12

Round 8 - 2-yr-old seals, males

ZAP-1	-	-	-	-	-	1	1	-	-	-	-	-	1
POL	-	-	-	-	2	-	2	-	-	1	-	1	3
NEP	-	-	-	-	-	1	1	-	-	-	-	-	1
Total	-	-	-	-	2	2	4	-	-	1	-	1	5

Appendix Table FF. (con.)
Recovery location of tagged seals in commercial kill, by round, Pribilof Islands, 1958

Rookery of tagging	Rookery of Recovery: St. Paul Island ZAP-1	TOL	L-K	REEF	POL	NEP	total	St. George Island NOR	EAST	STAR	ZAP-2	total	Grand total
Round 9 - 2-yr-old seals, males													
ZAP-1	1	-	-	-	-	-	1	1	-	-	-	1	2
TOL	1	-	-	-	-	-	1	-	-	-	-	-	1
REEF	-	-	-	5	-	1	6	-	-	-	-	-	6
POL	-	-	-	-	2	1	3	-	-	1	-	1	4
NEP	1	-	-	-	-	2	3	-	-	1	-	1	4
NOR	-	-	-	-	-	-	-	1	-	-	-	1	1
STAR	-	-	-	1	-	-	1	-	-	-	-	-	1
ZAP-2	1	-	-	-	-	-	1	-	-	1	-	1	2
Total	4	-	-	6	2	4	16	2	-	3	-	5	21
Round 10 - 2-yr-old seals, males													
ZAP-1	-	-	1	-	-	-	1	-	-	-	-	-	1
TOL	-	-	-	1	-	-	1	-	-	-	-	-	1
L-K	-	-	2	-	1	-	3	-	-	-	-	-	3
REEF	-	-	-	6	1	1	8	-	1	1	-	2	10
POL	-	1	-	-	3	-	4	-	-	-	-	-	4
NEP	-	-	-	-	2	2	4	-	-	-	-	-	4
NOR	1	-	1	-	-	-	2	1	1	-	-	2	4
EAST	-	-	-	-	-	-	-	1	1	-	-	2	2
STAR	-	-	-	-	-	-	-	-	-	1	-	1	1
ZAP-2	-	-	-	-	-	-	-	-	-	2	-	2	2
Total	1	1	4	7	7	3	23	2	3	4	-	9	32

Round 11 - 2-yr-old seals, males

ZAP-1	-	-	-	-	-	2	2	-	-	-	-	-	2
TOL	3	1	-	-	-	1	5	-	-	-	-	-	5
REEF	4	-	-	1	-	-	5	2	2	-	-	4	9
POL	1	-	-	-	1	1	3	-	-	1	-	1	4
NEP	3	-	-	-	-	7	10	-	1	1	-	2	12
NOR	2	-	-	-	-	1	3	1	1	1	-	3	6
EAST	-	-	-	-	-	-	-	-	2	-	1	3	3
ZAP-2	1	-	-	-	-	1	2	-	-	-	1	1	3
Total	14	1	-	1	1	13	30	3	6	3	2	14	44

Round 1 - 3-yr-old seals, males

ZAP-1	20	1	-	1	5	4	31	-	1	1	-	2	33
TOL	4	5	-	1	1	2	13	1	1	-	-	2	15
L-K	-	-	1	-	5	1	7	2	-	-	-	2	9
REEF	10	5	2	4	5	5	31	1	1	1	1	4	35
POL	3	-	1	1	19	6	30	-	-	-	-	-	30
NEP	1	-	-	-	3	21	25	-	-	-	-	-	25
Total	38	11	4	7	38	39	137	4	3	2	1	10	147

Round 2 - 3-yr-old seals, males

ZAP-1	19	2	-	-	-	4	25	-	-	-	-	-	25
TOL	4	4	-	-	-	2	10	-	-	-	-	-	10
L-K	1	1	-	-	1	3	6	-	-	-	1	1	7
REEF	5	8	-	6	2	4	25	1	-	-	1	2	27
POL	2	1	-	-	12	7	22	-	-	-	-	-	22
NEP	3	2	-	-	-	16	21	2	-	-	-	2	23
Total	34	18	-	6	15	36	109	3	-	-	2	5	114

Appendix Table FF. (con.)
Recovery location of tagged seals in commercial kill, by round, Pribilof Islands, 1958

Rookery of tagging	Rookery of Recovery: St. Paul Island ZAP-1	TOL	L-K	REEF	POL	NEP	total	St. George Island NOR	EAST	STAR	ZAP-2	total	Grand total
Round 3 - 3-yr-old seals, males													
ZAP-1	34	-	-	-	1	9	44	-	-	-	1	1	45
TOL	11	9	-	2	1	12	35	-	-	-	-	-	35
L-K	1	1	-	1	-	5	8	-	1	-	1	2	10
REEF	19	9	1	11	6	14	60	1	-	-	3	4	64
POL	4	4	-	3	10	12	33	-	-	-	-	-	33
NEP	8	6	-	1	5	26	46	-	-	-	-	-	46
Total	77	29	1	18	23	78	226	1	1	-	5	7	233
Round 4 - 3-yr-old seals, males													
ZAP-1	51	1	4	-	7	7	70	1	1	2	1	5	75
TOL	21	11	3	-	1	1	37	-	-	-	1	1	38
L-K	2	-	1	-	5	5	13	-	-	-	-	-	13
REEF	40	16	1	16	12	4	89	2	-	1	3	6	95
POL	7	4	-	-	33	13	57	-	2	-	-	2	59
NEP	18	1	2	-	14	45	80	1	1	-	-	2	82
Total	139	33	11	16	72	75	346	4	4	3	5	16	362
Round 5 - 3-yr-old seals, males													
ZAP-1	52	11	2	-	3	14	82	-	1	-	1	2	84
TOL	15	13	2	1	2	4	37	-	-	-	5	5	42
L-K	2	1	7	-	7	2	19	1	-	-	-	1	20
REEF	30	22	2	21	10	16	101	2	2	-	2	6	107
POL	4	5	3	-	32	13	57	-	-	-	1	1	58
NEP	4	2	3	1	8	56	74	-	3	-	2	5	79
Total	107	54	19	23	62	105	370	3	6	-	11	20	390

Round 6 - 3-yr-old seals, males

ZAP-1	38	11	6	-	-	12	67	2	3	-	3	8	75
TOL	16	9	1	-	1	8	35	-	-	-	2	2	37
L-K	4	-	11	1	-	2	18	1	1	-	-	2	20
REEF	43	13	1	19	3	17	96	2	5	1	3	11	107
POL	2	2	3	1	13	18	39	-	2	-	-	2	41
NEP	10	4	-	-	4	49	67	2	1	-	4	7	74
Total	113	39	22	21	21	106	322	7	12	1	12	32	354

Round 7 - 3-yr-old seals, males

ZAP-1	52	7	1	-	3	5	68	-	2	-	8	10	78
TOL	19	15	-	-	1	4	39	-	3	-	1	4	43
L-K	6	1	2	1	9	2	21	-	2	-	1	3	24
REEF	40	17	3	24	8	10	102	1	3	-	3	7	109
POL	8	3	1	1	28	12	53	1	3	-	3	7	60
NEP	11	2	2	1	6	38	60	-	2	-	3	5	65
Total	136	45	9	27	55	71	343	2	15	-	19	36	379

Round 8 - 3-yr-old seals, males

TOL	1	-	-	-	-	-	1	-	-	-	-	-	1
L-K	-	-	-	-	-	1	1	-	-	-	-	-	1
REEF	-	1	-	1	5	-	7	-	-	1	-	1	8
POL	-	-	-	-	5	1	6	-	1	-	-	1	7
NEP	-	-	-	-	-	2	2	1	-	-	1	2	4
Total	1	1	-	1	10	4	17	1	1	1	1	4	21

Appendix Table FF. (con.)
Recovery location of tagged seals in commercial kill, by round, Pribilof Islands, 1958

Rookery of tagging	Rookery of Recovery: St. Paul Island ZAP-1	TOL	L-K	REEF	POL	NEP	total	St. George Island NOR	EAST	STAR	ZAP-2	total	Grand total
Round 9 - 3-yr-old seals, males													
ZAP-1	2	1	-	-	1	1	5	-	-	-	-	-	5
TOL	2	2	-	-	-	1	5	1	-	-	-	1	6
L-K	-	-	2	-	-	1	3	-	-	-	-	-	3
REEF	4	1	-	6	1	-	12	-	-	-	-	-	12
NEP	-	-	-	-	3	2	5	-	2	-	-	2	7
Total	8	4	2	6	5	5	30	1	2	-	-	3	33
Round 10 - 3-yr-old seals, males													
ZAP-1	2	-	-	-	1	2	5	-	1	-	1	2	7
TOL	3	-	-	1	-	-	4	-	1	-	-	1	5
L-K	-	-	-	-	-	1	1	-	1	-	-	1	2
REEF	3	1	-	3	-	1	8	1	1	-	-	2	10
POL	-	-	-	-	4	1	5	-	1	-	2	3	8
NEP	1	-	-	1	-	2	4	-	-	-	-	-	4
Total	9	1	-	5	5	7	27	1	5	-	3	9	36
Round 11 - 3-yr-old seals, males													
ZAP-1	3	1	-	-	-	-	4	1	-	1	-	2	6
TOL	5	1	-	-	1	2	9	-	-	-	-	-	9
L-K	-	-	-	-	-	1	1	-	-	-	-	-	1
REEF	2	-	-	5	-	4	11	-	-	-	-	-	11
POL	1	-	-	-	-	1	2	-	-	-	-	-	2
NEP	-	-	-	-	-	5	5	-	-	-	-	-	5
Total	11	2	-	5	1	13	32	1	-	1	-	2	34

Round 1 - 4-yr-old seals, males

ZAP-1	1	-	-	-	-	-	1	-	-	-	-	-	1
TOL	-	1	-	-	1	-	2	-	-	-	-	-	2
L-K	-	-	-	-	-	1	1	-	-	-	-	-	1
REEF	2	-	-	1	1	-	4	1	-	-	-	1	5
POL	-	-	-	-	1	-	1	-	-	-	-	-	1
NEP	-	-	-	-	-	2	2	-	-	-	-	-	2
Total	3	1	-	1	3	3	11	1	-	-	-	1	12

Round 2 - 4-yr-old seals, males

ZAP-1	2	-	-	-	-	-	2	-	-	-	-	-	2
TOL	-	1	-	-	-	-	1	-	-	-	-	-	1
REEF	-	-	-	-	1	1	2	-	-	-	-	-	2
NEP	-	-	-	-	-	4	4	-	-	-	-	-	4
Total	2	1	-	-	1	5	9	-	-	-	-	-	9

Round 3 - 4-yr-old seals, males

ZAP-1	2	-	-	-	-	1	3	-	-	-	-	-	3
L-K	-	-	-	-	-	-	-	-	-	-	1	1	1
REEF	1	1	1	1	-	-	4	-	-	-	-	-	4
POL	-	-	-	-	-	1	1	-	-	-	-	-	1
NEP	-	1	-	-	1	1	3	-	-	-	-	-	3
Total	3	2	1	1	1	3	11	-	-	-	1	1	12

Appendix Table FF. (con.)

Recovery location of tagged seals in commercial kill, by round, Pribilof Islands, 1958

Rookery of tagging	Rookery of Recovery: St. Paul Island ZAP-1	TOL	L-K	REEF	POL	NEP	total	St. George Island NOR	EAST	STAR	ZAP-2	total	Grand total
Round 4 - 4-yr-old seals, males													
ZAP-1	6	-	-	-	-	-	6	-	1	-	-	1	7
TOL	-	1	-	-	-	1	2	-	-	-	-	-	2
L-K	-	-	-	-	1	-	1	-	-	-	-	-	1
REEF	1	-	1	1	-	-	3	-	-	-	-	-	3
POL	-	-	-	-	1	-	1	-	-	-	-	-	1
NEP	-	2	-	1	1	3	7	-	-	-	-	-	7
Total	7	3	1	2	3	4	20	-	1	-	-	1	21
Round 5 - 4-yr-old seals, males													
TOL	1	1	-	-	-	-	2	-	-	-	-	-	2
REEF	-	1	-	-	1	1	3	-	-	-	2	2	5
POL	-	-	-	-	2	-	2	-	-	-	-	-	2
NEP	-	-	-	-	-	2	2	-	-	-	-	-	2
Total	1	2	-	-	3	3	9	-	-	-	2	2	11
Round 6 - 4-yr-old seals, males													
ZAP-1	1	-	-	-	-	-	1	-	-	-	-	-	1
TOL	1	-	-	-	-	1	2	-	-	-	-	-	2
L-K	-	-	-	-	-	1	1	-	-	-	-	-	1
REEF	-	-	-	2	-	-	2	-	-	-	1	1	3
POL	-	-	-	-	1	-	1	-	-	-	-	-	1
NEP	-	-	-	-	-	4	4	-	-	-	-	-	4
Total	2	-	-	2	1	6	11	-	-	-	1	1	12

Round 7 - 4-yr-old seals, males													
ZAP-1	1	-	-	-	-	-	1	-	-	-	1	1	2
TOL	-	3	-	-	-	-	3	-	-	-	-	-	3
REEF	-	-	-	-	1	-	1	-	-	-	-	-	1
POL	-	-	-	-	-	1	1	-	-	-	-	-	1
NEP	-	-	-	-	-	1	1	-	-	-	-	-	1
Total	1	3	-	-	1	2	7	-	-	-	1	1	8
Round 8 - 4-yr-old seals, males													
REEF	-	-	-	1	-	-	1	-	-	-	-	-	1
POL	-	-	-	-	1	-	1	-	-	-	-	-	1
Total	-	-	-	1	1	-	2	-	-	-	-	-	2
Round 9 - 4-yr-old seals, males													
TOL	-	1	-	-	-	-	1	-	-	-	-	-	1
REEF	-	-	-	-	-	-	-	-	1	-	-	1	1
Total	-	1	-	-	-	-	1	-	1	-	-	1	2
Round 9 - 5-yr-old seals, males													
NEP	-	-	-	-	-	1	1	-	-	-	-	-	1
Round 8 - 6-yr-old seals, males													
NEP	-	-	-	-	-	1	1	-	-	-	-	-	1
Round 9 - 2-yr-old seals, females													
REEF	-	-	-	1	-	-	1	-	-	-	-	-	1

Appendix Table FF. (con.)
Recovery location of tagged seals in commercial kill, by round, Pribilof Islands, 1958

Rookery of tagging	Rookery of Recovery												Grand total
	St. Paul Island							St. George Island					
	ZAP-1	TOL	L-K	REEF	POL	NEP	total	NOR	EAST	STAR	ZAP-2	total	
Round 10 - 2-yr-old seals, females													
REEF	-	-	-	1	-	-	1	-	-	1	-	1	2
POL	-	-	-	-	2	-	2	-	-	-	-	-	2
NEP	-	-	-	-	-	1	1	-	-	-	-	-	1
ZAP-2	-	-	-	-	-	-	-	1	-	-	-	1	1
Total	-	-	-	1	2	1	4	1	-	1	-	2	6
Round 11 - 2-yr-old seals, females													
REEF	-	-	-	-	-	-	-	-	-	-	1	1	1
POL	-	1	-	-	3	-	4	-	-	-	-	-	4
NEP	1	-	-	-	-	-	1	-	-	-	-	-	1
EAST	-	1	-	-	-	-	1	-	-	-	-	-	1
ZAP-2	-	-	-	-	-	-	-	-	-	-	1	1	1
Total	1	2	-	-	3	-	6	-	-	-	2	2	8
Round 6 - 3-yr-old seals, females													
POL	-	-	-	-	-	1	1	-	-	-	-	-	1
Round 7 - 3-yr-old seals, females													
REEF	-	-	-	2	-	-	2	-	-	-	-	-	2

Round 8 - 3-yr-old seals, females

ZAP-1	-	1	-	-	1	-	2	-	-	-	-	-	2
L-K	-	-	-	-	1	-	1	-	-	-	-	-	1
REEF	-	-	-	2	-	-	2	-	-	-	-	-	2
POL	2	-	-	-	6	-	8	-	-	-	-	-	8
NEP	-	-	-	-	-	-	-	1	-	-	-	1	1
Total	2	1	-	2	8	-	13	1	-	-	-	1	14

Round 9 - 3-yr-old seals, females

ZAP-1	12	-	-	-	1	1	14	1	-	1	-	2	16
TOL	5	-	-	-	-	-	5	1	-	-	-	1	6
L-K	-	-	1	-	-	2	3	-	-	-	-	-	3
REEF	2	-	-	38	4	-	44	-	-	-	-	-	44
POL	-	-	-	-	31	-	31	-	-	1	-	1	32
NEP	-	-	-	-	1	9	10	1	-	1	-	2	12
Total	19	-	1	38	37	12	107	3	-	3	-	6	113

Round 10 - 3-yr-old seals, females

ZAP-1	25	1	-	1	2	2	31	-	-	2	1	3	34
TOL	1	8	-	-	1	1	11	-	-	1	-	1	12
L-K	1	1	1	-	3	1	7	-	-	-	-	-	7
REEF	9	1	1	43	2	2	58	-	1	-	1	2	60
POL	-	-	-	-	51	3	54	1	2	-	-	3	57
NEP	5	-	-	-	1	27	33	-	-	-	-	-	33
Total	41	11	2	44	60	36	194	1	3	3	2	9	203

Appendix Table FF. (con.)

Recovery location of tagged seals in commercial kill, by round, Pribilof Islands, 1958

Rookery of tagging	Rookery of Recovery												Grand total
	St. Paul Island							St. George Island					
	ZAP-1	TOL	L-K	REEF	POL	NEP	total	NOR	EAST	STAR	ZAP-2	total	
Round 11 - 3-yr-old seals, females													
ZAP-1	31	2	-	1	-	2	36	-	2	-	1	3	39
TOL	8	14	-	-	-	5	27	1	-	-	1	2	29
L-K	3	-	-	1	1	4	9	1	-	-	-	1	10
REEF	13	4	-	29	1	3	50	1	-	1	-	2	52
POL	1	-	-	-	32	5	38	1	-	3	-	4	42
NEP	5	2	-	-	2	40	49	-	-	-	-	-	49
Total	61	22	-	31	36	59	209	4	2	4	2	12	221
Round 7 - 4-yr-old seals, females													
REEF	1	-	-	-	-	-	1	-	-	-	-	-	1
Round 8 - 4-yr-old seals, females													
TOL	-	1	-	-	-	-	1	-	-	-	-	-	1
REEF	-	-	-	2	-	-	2	-	-	-	-	-	2
POL	-	-	-	-	1	-	1	-	-	-	-	-	1
NEP	1	-	-	-	-	2	3	-	-	-	-	-	3
Total	1	1	-	2	1	2	7	-	-	-	-	-	7

Round 9 - 4-yr-old seals, females

ZAP-1	3	-	-	-	-	1	4	1	-	-	-	1	5
TOL	-	2	-	-	-	-	2	-	-	-	-	-	2
L-K	-	-	1	-	-	-	1	-	-	-	-	-	1
REEF	3	1	-	13	1	-	18	-	-	-	-	-	18
POL	-	-	-	-	2	1	3	-	-	-	-	-	3
NEP	-	-	-	-	-	8	8	-	-	-	-	-	8
Total	6	3	1	13	3	10	36	1	-	-	-	1	37

Round 10 - 4-yr-old seals, females

ZAP-1	8	-	-	-	-	-	8	-	-	-	-	-	8
TOL	-	-	-	-	-	1	1	-	-	-	-	-	1
L-K	-	-	1	-	1	-	2	-	-	-	-	-	2
REEF	2	1	-	5	-	1	9	2	-	-	-	2	11
POL	-	-	-	-	3	-	3	-	-	-	-	-	3
NEP	-	-	-	-	-	9	9	-	-	-	-	-	9
Total	10	1	1	5	4	11	32	2	-	-	-	2	34

Round 11 - 4-yr-old seals, females

ZAP-1	12	2	-	-	-	1	15	-	-	-	-	-	15
TOL	2	6	-	-	1	-	9	-	-	-	-	-	9
L-K	-	-	-	-	1	-	1	-	-	-	-	-	1
REEF	5	-	-	7	1	1	14	-	-	-	-	-	14
POL	-	-	-	-	4	2	6	-	-	-	-	-	6
NEP	-	-	-	-	-	6	6	-	-	-	-	-	6
Total	19	8	-	7	7	10	51	-	-	-	-	-	51

Round 5 - 5-yr-old seals, females

TOL	1	-	-	-	-	-	1	-	-	-	-	-	1

Appendix Table FF. (con.)
Recovery location of tagged seals in commercial kill, by round, Pribilof Islands, 1958

Rookery of tagging	Rookery of Recovery: St. Paul Island ZAP-1	TOL	L-K	REEF	POL	NEP	total	St. George Island NOR	EAST	STAR	ZAP-2	total	Grand total
Round 7 - 5-yr-old seals, females													
TOL	-	-	-	-	-	-	-	1	-	-	-	1	1
REEF	-	-	-	-	1	-	1	-	-	-	-	-	1
Total	-	-	-	-	1	-	1	1	-	-	-	1	2
Round 8 - 5-yr-old seals, females													
REEF	-	-	-	1	-	-	1	1	-	-	-	1	2
POL	-	-	-	-	3	-	3	-	-	-	-	-	3
Total	-	-	-	1	3	-	4	1	-	-	-	1	5
Round 9 - 5-yr-old seals, females													
ZAP-1	3	-	-	-	-	-	3	-	-	-	-	-	3
L-K	k -	-	-	-	1	-	1	-	-	-	-	-	1
REEF	-	1	-	2	-	-	3	-	-	-	-	-	3
POL	-	-	-	-	2	-	2	-	-	-	-	-	2
Total	3	1	-	2	3	-	9	-	-	-	-	-	9
Round 10 - 5-yr-old seals, females													
ZAP-1	-	-	-	-	-	1	1	-	-	-	-	-	1
TOL	-	3	-	-	-	-	3	-	-	-	-	-	3
L-K	-	-	2	-	-	-	2	-	-	-	-	-	2
REEF	-	-	-	2	-	-	2	1	1	-	-	2	4
POL	1	-	-	-	3	1	5	-	-	-	-	-	5
NEP	-	-	-	-	-	5	5	-	-	-	-	-	5
Total	1	3	2	2	3	7	18	1	1	-	-	2	20

Round 11 - 5-yr-old seals, females

ZAP-1	4	-	-	-	1	-	5	-	-	-	-	-	5
TOL	1	2	-	-	-	-	3	-	-	-	-	-	3
L-K	-	1	-	-	-	-	1	-	-	-	-	-	1
REEF	1	2	-	2	-	-	5	-	-	-	-	-	5
POL	-	-	-	-	5	-	5	-	-	-	-	-	5
NEP	-	-	-	-	-	1	1	-	-	-	-	-	1
Total	6	5	-	2	6	1	20	-	-	-	-	-	20

Round 4 - 6-yr-old seals, females

POL	-	-	-	-	1	-	1	-	-	-	-	-	1

Round 6 - 6-yr-old seals, females

REEF	-	1	-	-	-	-	1	-	-	-	-	-	1

Round 7 - 6-yr-old seals, females

NEP	-	-	-	-	1	-	1	-	-	-	-	-	1

Round 8 - 6-yr-old seals, females

REEF	2	1	-	1	1	-	5	-	-	-	-	-	5
POL	-	-	-	-	27	-	27	-	-	-	-	-	27
NEP	-	-	-	-	-	1	1	-	-	-	-	-	1
Total	2	1	-	1	28	1	33	-	-	-	-	-	33

Round 9 - 6-yr-old seals, females

REEF	1	-	-	5	-	-	6	-	-	-	-	-	6
POL	-	-	-	-	30	1	31	-	-	2	-	2	33
NEP	-	-	-	-	3	5	8	-	-	-	-	-	8
Total	1	-	-	5	33	6	45	-	-	2	-	2	47

Appendix Table FF. (con.)
Recovery location of tagged seals in commercial kill, by round, Pribilof Islands, 1958

Rookery of tagging	Rookery of Recovery: St. Paul Island ZAP-1	TOL	L-K	REEF	POL	NEP	total	St. George Island NOR	EAST	STAR	ZAP-2	total	Grand total
Round 10 - 6-yr-old seals, females													
ZAP-1	-	-	-	-	-	1	1	-	-	-	-	-	1
REEF	-	-	-	4	-	1	5	1	-	-	-	1	6
POL	-	-	-	-	9	4	13	-	-	-	-	-	13
NEP	-	-	-	-	-	11	11	-	-	-	-	-	11
Total	-	-	-	4	9	17	30	1	-	-	-	1	31
Round 11 - 6-yr-old seals, females													
ZAP-1	5	-	-	-	-	-	5	-	-	-	-	-	5
REEF	3	-	-	8	1	-	12	-	-	-	-	-	12
POL	1	-	-	-	43	1	45	-	-	-	-	-	45
NEP	-	-	-	1	-	7	8	-	-	-	-	-	8
Total	9	-	-	9	44	8	70	-	-	-	-	-	70
Round 8 - 7-yr-old seals, females													
POL	-	-	-	-	3	-	3	-	-	-	-	-	3
Round 9 - 7-yr-old seals, females													
POL	-	-	-	-	3	-	3	-	1	-	-	1	4
Round 10 - 7-yr-old seals, females													
POL	-	-	-	-	1	-	1	-	-	-	-	-	1

Round 11 - 7-yr-old seals, females													
POL	-	-	-	-	5	-	5	-	-	-	-	-	5
Round 6 - 9-yr-old seals, females													
NEP	-	-	-	-	-	1	1	-	-	-	-	-	1
Round 8 - 9-yr-old seals, females													
POL	-	-	-	-	1	-	1	-	-	-	-	-	1
NEP	-	-	-	-	-	1	1	-	-	-	-	-	1
Total	-	-	-	-	1	1	2	-	-	-	-	-	2
Round 9 - 9-yr-old seals, females													
REEF	-	-	-	1	-	-	1	-	-	-	-	-	1
POL	-	-	-	-	4	-	4	-	-	-	-	-	4
NEP	-	-	-	-	-	1	1	-	-	-	-	-	1
Total	-	-	-	1	4	1	6	-	-	-	-	-	6
Round 10 - 9-yr-old seals, females													
POL	-	-	-	-	1	1	2	-	-	-	-	-	2
Round 11 - 9-yr-old seals, females													
REEF	-	-	-	1	-	-	1	-	-	-	-	-	1
POL	-	-	-	-	9	-	9	-	-	-	-	-	9
Total	-	-	-	1	9	-	10	-	-	-	-	-	10

Appendix Table FF. (con.)
Recovery location of tagged seals in commercial kill, by round, Pribilof Islands, 1958

Rookery of tagging	Rookery of Recovery: St. Paul Island ZAP-1	TOL	L-K	REEF	POL	NEP	total	St. George Island NOR	EAST	STAR	ZAP-2	total	Grand total
Round 8 - 10-yr-old seals, females													
REEF	-	-	-	-	1	-	1	-	-	-	-	-	1
POL	-	-	-	1	8	-	9	-	-	-	-	-	9
Total	-	-	-	1	9	-	10	-	-	-	-	-	10
Round 9 - 10-yr-old seals, females													
ZAP-1	1	-	-	-	-	-	1	-	-	-	-	-	1
REEF	-	-	-	1	-	-	1	-	-	-	-	-	1
POL	2	-	-	-	17	-	19	1	-	-	-	1	20
Total	3	-	-	1	17	-	21	1	-	-	-	1	22
Round 10 - 10-yr-old seals, females													
POL	-	-	-	-	5	-	5	-	-	-	-	-	5
Round 11 - 10-yr-old seals, females													
POL	-	-	-	-	16	1	17	-	-	-	1	1	18
Round 9 - 11-yr-old seals, females													
ZAP-1	1	-	-	-	-	-	1	-	-	-	-	-	1
POL	-	-	-	-	1	-	1	-	-	-	-	-	1
Total	1	-	-	-	1	-	2	-	-	-	-	-	2

Round 11 - 11-yr-old seals, females

ZAP	1	-	-	-	-	-	1	-	-	-	-	-	1

Appendix Table GG.
Length of tagged 3-year-old male seals by date of recovery, Pribilof Islands, 1958

Date	Length in inches											Total
	38	39	40	41	42	43	44	45	46	47	48	
27 June	-	-	-	8	11	14	7	4	-	-	-	44
28	-	-	-	2	9	7	1	1	-	-	-	20
29	-	-	-	16	14	9	5	-	-	-	-	44
30	-	-	-	1	6	3	1	-	-	-	-	11
1 July	-	-	1	1	22	11	5	2	-	-	-	42
Total	-	-	1	28	62	44	19	7	-	-	-	161
2 July	-	-	1	12	13	14	4	3	-	-	-	47
3	-	-	1	6	6	5	1	-	-	-	-	19
4	-	-	1	9	13	9	6	1	-	-	-	39
5	-	-	-	1	2	2	1	-	-	-	-	6
6	-	-	-	3	6	5	5	-	-	-	-	19
Total	-	-	3	31	40	35	17	4	-	-	-	130
7 July	-	-	-	7	21	28	21	17	-	-	-	94
8	-	-	1	5	12	12	7	1	-	1	-	39
9	-	-	1	3	21	30	21	11	-	1	-	88
10	-	-	-	2	3	7	5	2	1	-	-	20
11	-	-	-	-	5	10	6	4	-	1	-	26
Total	-	-	2	17	62	87	60	35	1	3	-	267
12 July	-	-	4	17	14	29	19	6	2	1	-	92
13	-	-	1	1	10	24	10	4	-	1	-	51
14	-	-	2	10	35	45	54	17	4	1	-	168
15	-	-	-	4	4	12	5	1	-	-	-	26
16	-	-	-	7	15	22	25	10	1	-	-	80
Total	-	-	7	39	78	132	113	38	7	3	-	417
17 July	-	-	-	2	25	34	40	21	7	-	-	129
18	-	-	1	19	18	18	11	6	4	2	1	80
19	-	-	-	6	18	31	41	21	7	2	-	126
20	-	-	-	7	8	6	2	2	-	-	-	25
21	-	-	-	6	16	18	20	7	1	-	-	68
Total	-	-	1	40	85	107	114	57	19	4	1	428

Appendix Table GG. (con.)
Length of tagged 3-year-old male seals by date of recovery, Pribilof Islands, 1958

Date	Length in inches											Total
	38	39	40	41	42	43	44	45	46	47	48	
22 July	1	-	1	6	34	46	27	19	3	2	-	139
23	-	-	-	1	9	24	24	12	2	-	-	72
24	-	1	1	16	25	48	33	11	2	1	-	138
25	-	-	-	-	2	7	4	8	1	1	-	23
26	-	-	-	2	8	6	7	5	1	-	-	29
Total	1	1	2	25	78	131	95	55	9	4	-	401
27 July	-	-	-	2	20	23	29	13	6	1	-	94
28	-	-	-	10	10	23	7	11	2	-	-	63
29	-	-	1	13	30	47	39	25	4	1	-	160
30	-	-	-	3	1	11	8	4	-	1	1	29
31	-	-	-	2	6	20	15	15	-	-	-	58
Total	-	-	1	30	67	124	98	68	12	3	1	404
1 August	-	-	-	1	-	2	1	1	-	-	-	5
2	-	-	-	-	1	-	-	-	1	-	-	2
3	-	-	-	-	2	-	1	-	-	-	-	3
4	-	-	-	-	-	1	1	-	-	-	-	2
5	-	-	-	1	1	3	2	1	1	1	-	10
Total	-	-	-	2	4	6	5	2	2	1	-	22
6 August	-	-	-	-	-	2	3	-	1	-	-	6
7	-	-	-	-	7	-	-	-	-	-	-	7
8	-	-	1	1	1	3	1	4	1	-	-	12
9	-	-	-	-	4	2	2	-	1	-	-	9
10	-	-	-	-	1	3	2	-	-	-	-	6
Total	-	-	1	1	13	10	8	4	3	-	-	40
11 August	-	-	-	1	2	3	2	1	1	-	-	10
12	-	-	-	-	-	1	-	1	-	-	-	2
13	-	-	-	1	3	4	3	3	1	-	-	15
14	-	-	-	-	-	1	1	3	1	-	-	6
15	-	-	-	-	2	2	2	-	-	-	-	6
Total	-	-	-	2	7	11	8	8	3	-	-	39

Appendix Table GG. (con.)
Length of tagged 3-year-old male seals by date of recovery, Pribilof Islands, 1958

Date	Length in inches											Total
	38	39	40	41	42	43	44	45	46	47	48	
16 August	-	-	-	-	1	4	4	2	2	-	-	13
17	-	-	-	-	1	-	1	-	-	-	-	2
18	-	-	-	3	1	2	3	2	1	-	-	12
19	-	-	-	-	1	-	5	-	-	-	-	6
20	-	-	-	-	1	-	1	-	-	-	-	2
Total	-	-	-	3	5	6	14	4	3	-	-	35
Total	1	1	18	218	501	693	551	282	59	18	2	2344

Appendix Table HH.
Length of tagged 4-year-old male seals by date of recovery, Pribilof Islands, 1958

Date	Length in inches									Total
	41	42	43	44	45	46	47	48	49	
27 June	-	-	1	-	1	1	-	-	-	3
28	-	-	2	-	-	-	-	-	-	2
29	1	-	3	1	-	-	-	-	-	5
30	-	-	1	-	-	-	-	-	-	1
1 July	-	-	-	-	3	-	-	-	-	3
Total	1	-	7	1	4	1	-	-	-	14
2 July	1	2	2	1	1	-	-	-	-	7
3	-	-	-	1	-	-	-	-	-	1
4	-	-	1	-	-	-	1	-	-	2
6	-	-	-	1	-	-	-	-	-	1
Total	1	2	3	3	1	-	1	-	-	11
7 July	-	-	-	1	2	2	-	-	-	5
8	-	-	1	1	1	-	-	-	-	3
9	-	-	1	1	1	-	-	-	-	3
10	-	-	-	-	-	1	-	-	-	1
11	-	-	-	-	1	-	-	-	-	1
Total	-	-	2	3	5	3	-	-	-	13
12 July	-	-	1	-	1	-	2	-	-	4
13	-	-	1	2	2	-	-	-	-	5
14	-	1	1	4	3	2	1	-	-	12
15	-	-	1	-	-	-	-	1	-	2
16	-	-	-	1	-	1	1	-	-	3
Total	-	1	4	7	6	3	4	1	-	26
17 July	-	-	-	4	1	1	-	-	-	6
18	-	-	-	-	-	-	1	-	1	2
19	-	-	-	-	1	-	-	-	-	1
21	-	-	-	-	3	1	-	-	-	4
Total	-	-	-	4	5	2	1	-	1	13

Appendix Table HH. (con.)
Length of tagged 4-year-old male seals by date of recovery, Pribilof Islands, 1958

Date	Length in inches									Total
	41	42	43	44	45	46	47	48	49	
22 July	-	1	-	2	3	1	-	-	-	7
24	-	-	-	-	1	1	-	-	-	2
25	-	-	-	2	-	-	-	-	-	2
26	-	-	-	-	-	-	-	1	-	1
Total	-	1	-	4	4	2	-	1	-	12
27 July	-	-	-	2	-	-	-	-	1	3
28	-	-	1	-	1	-	1	-	-	3
29	-	-	-	1	-	-	-	-	-	1
31	-	-	1	-	-	-	-	-	-	1
Total	-	-	2	3	1	-	1	-	1	8
4 August	-	-	-	-	-	-	1	-	-	1
5	-	-	-	-	1	-	-	-	-	1
Total	-	-	-	-	1	-	1	-	-	2
7 August	-	-	-	-	1	-	-	-	-	1
8	-	-	-	1	-	-	-	-	-	1
Total	-	-	-	1	1	-	-	-	-	2
16 August	-	-	-	1	-	-	-	-	-	1
18	-	1	-	-	-	-	-	-	-	1
Total	-	1	-	1	-	-	-	-	-	2
Total	2	5	18	27	28	11	8	2	2	103

Appendix Table II.
Length of tagged 3-year-old female seals by date of recovery, Pribilof Islands, 1958

Date	Length in inches									Total
	38	39	40	41	42	43	44	43	46	
22 July	-	-	-	-	-	1	-	-	-	1
24	-	-	-	1	-	-	-	-	-	1
Total	-	-	-	1	-	1	-	-	-	2
27 July	-	-	-	1	-	-	-	-	-	1
30	-	-	-	-	2	-	-	-	-	2
Total	-	-	-	1	2	-	-	-	-	3
2 August	-	-	-	-	1	-	-	-	-	1
3	-	-	1	4	-	-	-	-	-	5
4	-	-	-	1	-	1	-	-	-	2
5	-	-	1	2	4	1	2	-	-	10
Total	-	-	2	7	5	2	2	-	-	18
6 August	-	-	1	3	7	3	1	1	-	16
7	1	-	1	2	-	-	-	-	-	4
8	-	-	-	5	11	5	1	1	-	23
9	-	-	5	14	14	12	2	1	1	49
10	-	1	-	15	13	12	5	-	1	47
Total	1	1	7	39	45	32	9	3	2	139
11 August	-	1	5	9	22	10	4	-	2	53
12	-	-	1	8	2	2	5	-	-	18
13	-	-	5	17	14	11	5	-	-	52
14	-	-	5	8	11	25	7	4	-	60
15	-	1	5	14	17	19	11	-	-	67
Total	-	2	21	56	66	67	32	4	2	250
16 August	-	-	1	11	15	28	9	4	-	68
17	-	-	-	3	9	12	3	-	-	27
18	-	1	4	22	22	14	8	2	1	74
19	-	-	2	6	14	13	3	-	-	38
20	-	-	3	6	16	11	5	1	-	42
Total	-	1	10	48	76	78	28	7	1	249
Total	1	4	40	152	194	180	71	14	5	661

Appendix Table JJ.
Length of tagged 4-year-old female seals by date of recovery, Pribilof Islands, 1958

Date	Length in inches 41	42	43	44	45	46	47	Total
29 July	-	-	1	-	-	-	-	1
Total	-	-	1	-	-	-	-	1
1 August	-	1	1	-	-	-	-	2
2	-	-	1	-	-	-	-	1
3	-	-	-	-	-	-	1	1
4	-	1	-	1	-	-	-	2
5	-	-	-	1	-	-	-	1
Total	-	2	2	2	-	-	1	7
6 August	-	2	-	5	3	-	-	10
7	1	-	3	-	-	-	-	4
8	-	1	-	2	3	-	-	6
9	-	1	3	6	4	-	-	14
10	-	-	-	4	-	-	-	4
Total	1	4	6	17	10	-	-	38
11 August	1	2	6	2	1	-	-	12
12	-	1	1	1	-	-	-	3
13	1	1	4	1	2	-	1	10
14	-	-	3	-	2	-	-	5
15	-	1	3	-	1	1	-	6
Total	2	5	17	4	6	1	1	36
16 August	-	-	3	4	3	-	1	11
17	1	-	1	1	5	-	-	8
18	5	2	6	6	2	-	-	21
19	1	-	2	5	-	1	-	9
20	-	1	4	3	1	-	-	9
Total	7	3	16	19	11	1	1	58
Total	10	14	42	42	27	2	3	140

Appendix Table KK.
Reproductive condition of female seals sampled from commercial kill, by rookery of recovery, Pribilof Islands, 1958

	ZAP	TOL	L-K	REEF	POL	NEP	Total
			St. Paul Island				
Pregnant							
number	156	109	7	114	254	185	825
percent	17	24	10	17	26	21	21
Nonpregnant							
number	786	339	64	565	733	699	3186
percent	83	76	90	83	74	79	79
Total	942	448	71	679	987	884	4011
Percent	23	11	2	17	25	22	

	ZAP	NOR	EAS	STAR	Total
		St. George Island			
Pregnant					
number	80	279	128	118	605
percent	30	34	31	29	32
Nonpregnant					
number	192	547	285	293	1317
percent	70	66	69	71	68
Total	272	826	413	411	1922
Percent	14	43	22	21	

Appendix Table LL.
Vibrissal color of female seals sampled from commercial kill, by age, Pribilof Islands, 1958

Vibrissal color	Age 2	3	4	5	6	7	8	9	10	10+	Total
St. Paul Island											
Black											
number	63	1349	575	79	12	2	-	-	-	-	2080
percent	3	65	27	4	1	-	-	-	-	-	52
Black and white											
number	2	131	540	324	211	22	6	1	1	-	1238
percent	-	11	44	26	17	2	-	-	-	-	31
White											
number	-	4	39	126	237	97	51	37	62	40	693
percent	-	1	6	18	34	14	7	5	9	6	17
Total	65	1484	1154	529	460	121	57	38	63	40	4011
Percent	2	37	29	13	11	3	1	1	2	1	
St. George Island											
Black											
number	21	253	84	18	3	1	-	-	-	-	380
percent	5	67	22	5	1	-	-	-	-	-	20
Black and white											
number	2	137	340	231	110	37	4	3	-	2	866
percent	-	16	39	27	13	4	1	-	-	-	45
White											
number	-	1	10	85	139	124	67	50	39	161	676
percent	-	-	2	13	20	18	10	7	6	24	35
Total	23	391	434	334	252	162	71	53	39	163	1922
Percent	1	20	23	17	13	8	4	3	2	9	

Appendix Table MM.
Vibrissal color of female seals sampled from commercial kill, by reproductive condition, Pribilof Islands, 1958

	Nullipara	Primipara pregnant	Primipara nonpreg.	Multipara pregnant	Multipara nonpreg.	Total
St. Paul Island						
Black						
number	2018	59	1	2	-	2080
percent	97	3	-	-	-	52
Black and white						
number	868	263	21	75	11	1238
percent	70	21	2	6	1	31
White						
number	121	203	27	223	119	693
percent	18	29	4	32	17	17
Total	3007	525	49	300	130	4011
Percent	75	13	1	8	3	
St. George Island						
Black						
number	368	11	1	-	-	380
percent	97	3	-	-	-	20
Black and white						
number	609	189	26	33	9	866
percent	70	22	3	4	1	45
White						
number	98	124	25	248	181	676
percent	14	18	4	37	27	35
Total	1075	324	52	281	190	1922
Percent	56	17	3	15	9	