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MEMORANDUM FOR: The Record

FROM: Rod Towell, Rolf Ream, John Bengtson and Jeremy Sterling

SUBJECT: 2014 northern fur seal pup production and adult male counts on the Pribilof Islands, Alaska.

Numbers of northern fur seal, *Callorhinus ursinus*, pups were estimated using a mark-recapture method, shear-sampling, on the Pribilof Islands during August 2014. We estimated 91,737 (SE = 769, Table 1) pups were born on St. Paul Island and 18,937 (SE = 308, Table 1) pups were born on St. George Island. To minimize disturbance, dead pup counts were conducted at 4 sample rookeries on St. Paul Island and 3 sample rookeries on St. George Island. Since 2006 this dead pup counting procedure resulted in a ratio estimation protocol for the calculation of the estimate of the total number of pups born. The observed pup mortality rates were 3.0% on St. Paul Island and 2.7% on St. George Island. Pup production was estimated on Sea Lion Rock, a small island approximately 500 m from St. Paul Island in 2014 resulting in an estimate of 5,250 (SE = 293) pups born. The 2014 Sea Lion Rock estimate was 22.1% lower than the previous estimate in 2008. The 2014 pup production estimate for St. Paul Island is 5.2% less than the estimate in 2012 (Figure 1). The 2014 pup production estimate for St. George Island is 17.0% greater than the estimate in 2012. Overall pup production for the Pribilof Islands decreased approximately 2.1% from 2012 to 2014. Since 1998 pup production on St. Paul Island declined 49.0%, or at an annual rate of 4.25% (SE = 0.48), while pup production on the Pribilof Islands (St. Paul and St. George Islands combined) declined 45.0%, or at an annual rate of 3.7% (SE = 0.48).

Adult male northern fur seals on St. Paul and St. George Islands (Table 2) were counted over the period July 7 to 15, 2014. Counts of territorial males with females (class 3; "harem" males) on St. George Island decreased by 8.1% compared to 2013. Idle males (classes 2 and 5, Table 2) on St. George Island increased in comparison to 2013 by 21.1%. On St. Paul Island the "harem" males decreased by 11.4% and the idle males decreased by 13.3% (Figure 2). Overall, the total number of adult males counted on the Pribilof Islands in 2014 decreased by 8.8% from 2013 to 8,850. The total number of "harem" males decreased by 10.7% on the Pribilof Islands.

Table 1. Numbers of northern fur seal, *Callorhinus ursinus*, pups born on the Pribilof Islands, Alaska in 2014 by rookery. Estimates are shown for the numbers alive at the time of shearing and the estimated total number of pups born.

Rookery	Live	Born ¹
<u>St. Paul Island</u>		
Lukanin	2,975	3,066
Kitovi	3,486	3,593
Reef	11,309	11,655
Gorbatch	7,806	8,045
Ardiguen	778	802
Morjovi	9,159	9,439
Vostochni	15,000	15,459
Polovina	3,052	3,145
Little Polovina ²	0	0
Polovina Cliffs	7,530	7,760
Tolstoi	8,835	9,105
Zapadni Reef	3,901	4,020
Little Zapadni	5,890	6,070
Zapadni	9,294	9,578
Total	89,015	91,737
Sea Lion Rock	5,094	5,250
<u>St. George Island</u>		
South	3,451	3,545
North	5,546	5,697
East Reef	2,356	2,420
East Cliffs	4,442	4,563
Staraya Artil	720	740
Zapadni	1,920	1,972
Total	18,435	18,937

¹ Pups born is calculated for each rookery using the live pup estimates and a ratio estimator for mortality and the total pups born estimates.

² No harem males were counted on Little Polovina in 2014.

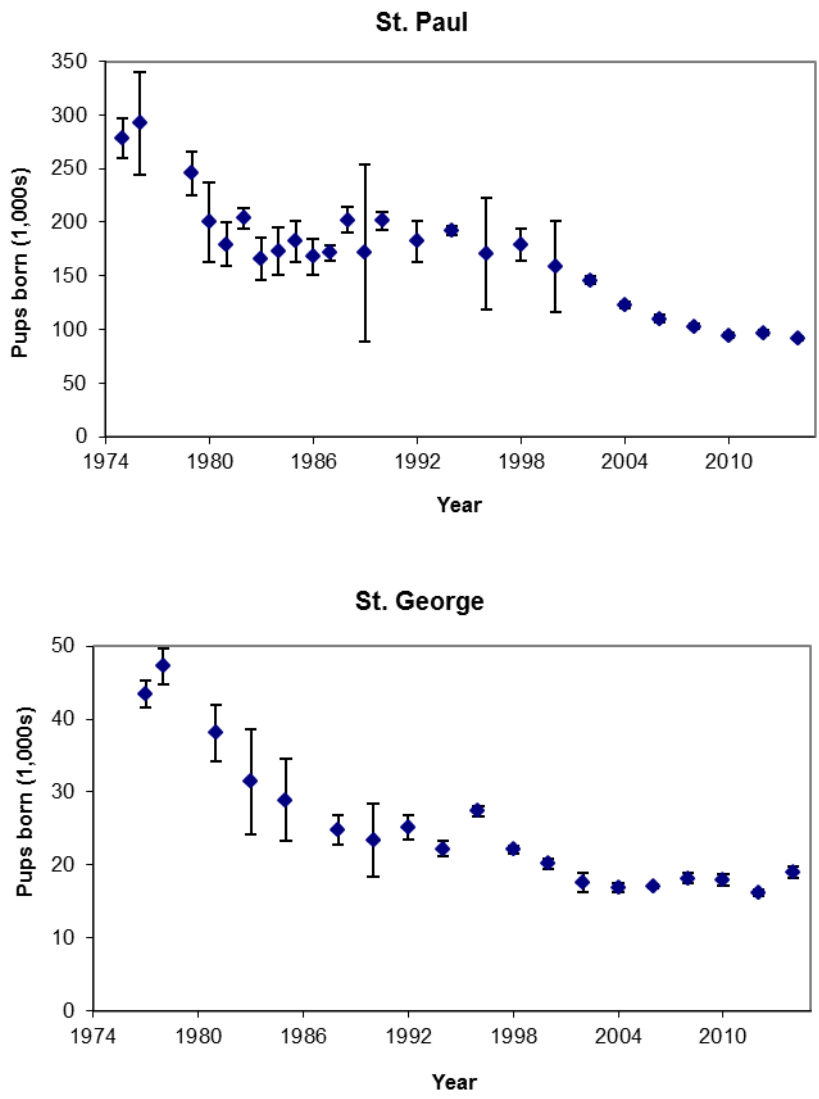


Figure 1. Northern fur seal pups born on the Pribilof Islands 1975-2014. Error bars are approximate 95% confidence intervals. Note that St. Paul Island estimates do not include pups born on Sea Lion Rock.

Table 2. Number of adult male northern fur seals counted, by rookery, Pribilof Islands, Alaska, July 2014.

Rookery	Date (July)	Class of adult male*			Total
		2	3	5	
<u>St. Paul Island</u>					
Lukanin	7	58	95	81	234
Kitovi	7	90	130	90	310
Reef	10	143	429	263	835
Gorbatch **	10/15	99	306	287	692
Ardiguen	10	5	36	6	47
Morjovi	13	96	317	282	695
Vostochni	13	138	631	311	1,080
Polovina	9	23	99	96	218
Little Polovina	9	0	0	68	68
Polovina Cliffs	9	76	265	66	407
Tolstoi	8	140	260	166	566
Zapadni Reef **	11/12	69	158	126	353
Little Zapadni **	12	86	256	191	533
Zapadni	11/12	135	380	313	828
Island total		1,158	3,362	2,346	6,866
<u>St. George Island</u>					
South	9	55	164	94	313
North	11	102	285	270	657
East Reef	13	50	105	79	234
East Cliffs	12	54	212	165	431
Staraya Artil	12	17	39	64	120
Zapadni	9	29	71	129	229
Island total		307	876	801	1,984

* Adult males are assumed to be equal to or greater than 7 years of age. Class 2 – territorial without females; Class 3 – territorial with females; Class 5 – hauling ground males.

** Haulouts adjacent to the rookery were counted on a different day than the rookery area.

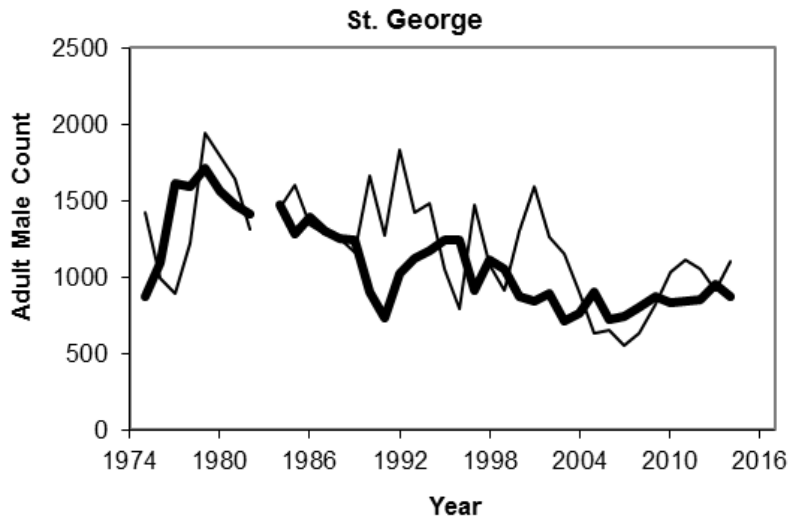
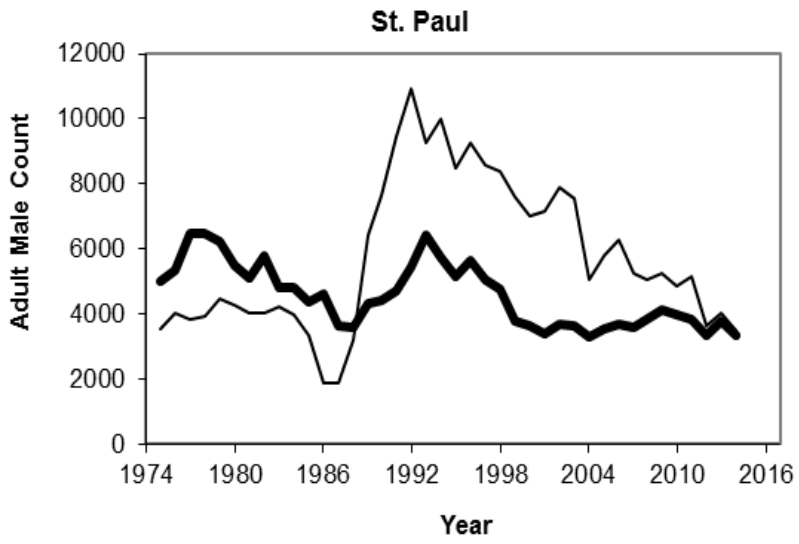


Figure 2. Northern fur seal adult males (harem, class 3 – thick line; idle, classes 2 and 5 – thin) counted on the Pribilof Islands 1975-2014.