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MEMORANDUM FOR: The Record

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

SUBJECT: 2012 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 2012. We estimated 96,828 (SE = 1,260, Table 1) pups were born on St. Paul Island and 16,184 (SE = 155, 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 3.7% on St. Paul Island and 3.1% on St. George Island. Pup production was not estimated on Sea Lion Rock, a small island approximately 500 m from St. Paul Island in 2012. The 2012 pup production estimate for St. Paul Island is 2.5% greater than the estimate in 2010 (Figure 1). The 2012 pup production estimate for St. George Island is 9.9% less than the estimate in 2010. Overall pup production for the Pribilof Islands increased approximately 0.5% from 2010 to 2012, marking the first year since 1998 that estimated pup production did not decline (overall or on St. Paul Island). During this time, however, pup production on St. Paul Island declined 46.0%, or at an annual rate of 4.8% (SE = 0.49), while pup production on the Pribilof Islands (St. Paul and St. George Islands combined) declined 43.8%, or at an annual rate of 4.3% (SE = 0.46).

Adult male northern fur seals on St. Paul and St. George Islands (Table 2) were counted over the period July 9 to 15, 2012. Counts of territorial males with females ("harem" males) on St. George Island increased by 1.2% compared to 2011. Idle males on St. George Island decreased in comparison to 2011 by 5.1%. On St. Paul Island the "harem" males decreased by 12.9% and the idle males decreased by 28.8% (Figure 2). Overall, the total number of adult males counted on the Pribilof Islands in 2012 decreased by 18.5% from 2011 to 8,900. The total number of "harem" males decreased by 10.3% on the Pribilof Islands.

Table 1. Numbers of northern fur seal, *Callorhinus ursinus*, pups born on the Pribilof Islands, Alaska in 2012 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	2,780	2,888
Kitovi	3,861	4,011
Reef	12,420	12,903
Gorbatch	8,106	8,421
Ardiguen	872	906
Morjovi	8,635	8,971
Vostochni	14,669	15,239
Polovina	2,983	3,099
Little Polovina ²	0	0
Polovina Cliffs	8,279	8,601
Tolstoi	9,020	9,371
Zapadni Reef	4,327	4,495
Little Zapadni	7,214	7,495
Zapadni	10,038	10,428
Total	93,204	96,828
<u>St. George Island</u>		
South	3,541	3,653
North	4,347	4,485
East Reef	1,578	1,628
East Cliffs	3,648	3,764
Staraya Artil	826	852
Zapadni	1,747	1,802
Total	15,687	16,184

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 and no pups were sighted on Little Polovina in 2012.

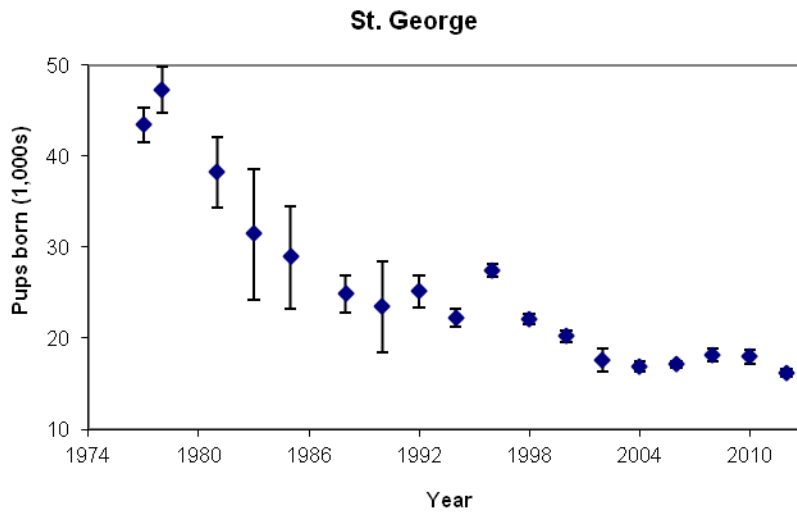
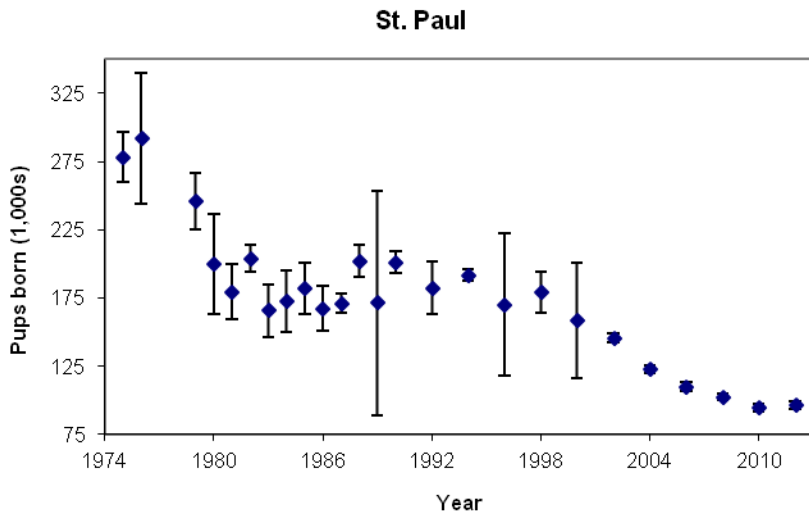


Figure 1. Northern fur seal pups born on the Pribilof Islands 1975-2012. Error bars are approximate 95% confidence intervals.

Table 2. Number of adult male northern fur seals counted, by rookery, Pribilof Islands, Alaska, July 2012.

Rookery	Date (July)	Class of adult male*			Total
		2	3	5	
<u>St. Paul Island</u>					
Lukanin	12	32	116	92	240
Kitovi	12	60	169	98	327
Reef	13	170	465	278	913
Gorbachch **	13/15	108	305	218	631
Ardiguen	13	7	50	7	64
Morjovi	11	105	302	176	583
Vostochni	11	167	604	337	1,108
Polovina	14	23	107	168	298
Little Polovina	14	0	0	121	121
Polovina Cliffs	14	79	296	65	440
Tolstoi	9	142	286	199	627
Zapadni Reef	10	58	129	135	322
Little Zapadni	10	99	209	132	440
Zapadni	10	210	298	371	879
Island total		1,260	3,336	2,397	6,993
<u>St. George Island</u>					
South	11	55	174	84	313
North	10	120	268	197	585
East Reef	12	55	95	88	238
East Cliffs	12	60	213	199	472
Staraya Artil	11	25	34	71	130
Zapadni	11	28	68	73	169
Island total		343	852	712	1,907

* 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 – idle males.

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

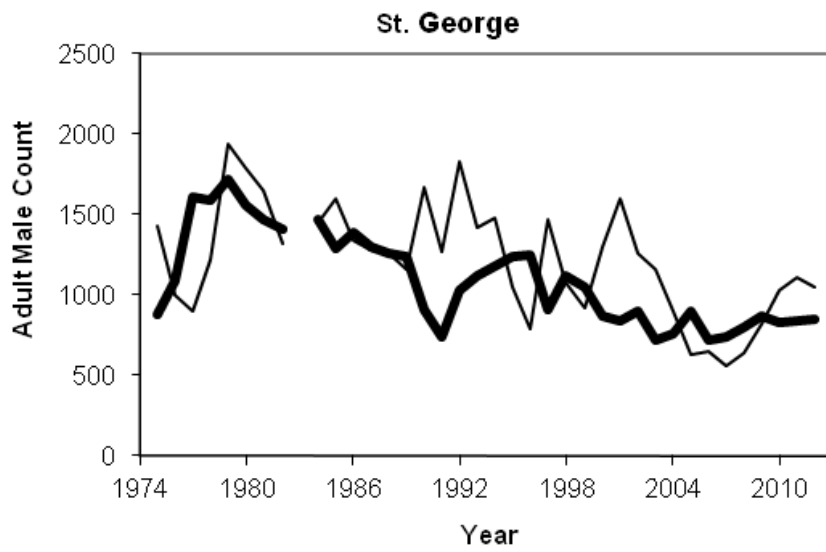
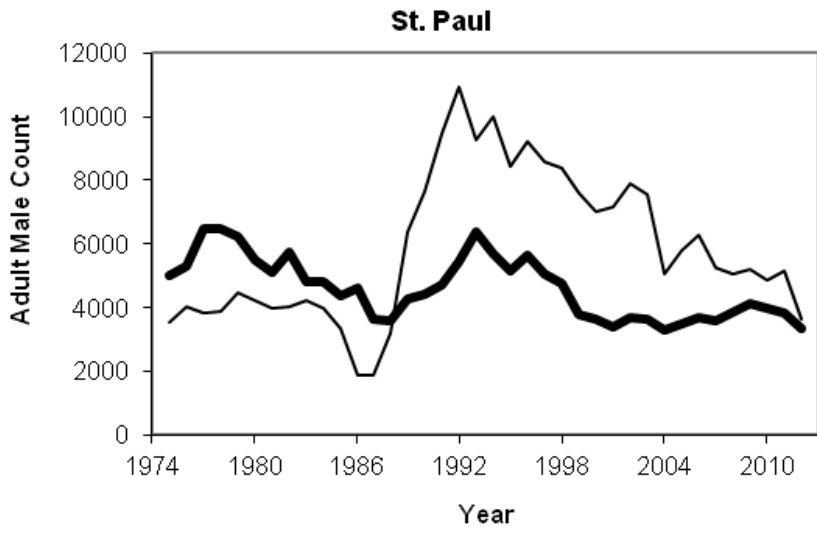


Figure 2. Northern fur seal adult males (harem – thick line, idle – thin) counted on the Pribilof Islands 1975-2012.