



Monitoring the small and remote population of harbor seals on Otter Island in the Pribilof



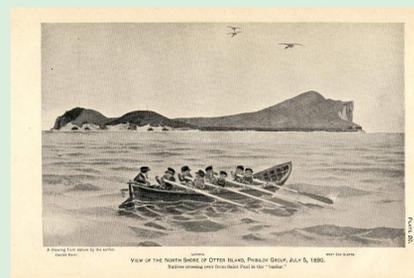
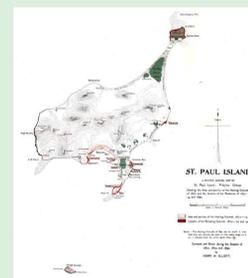
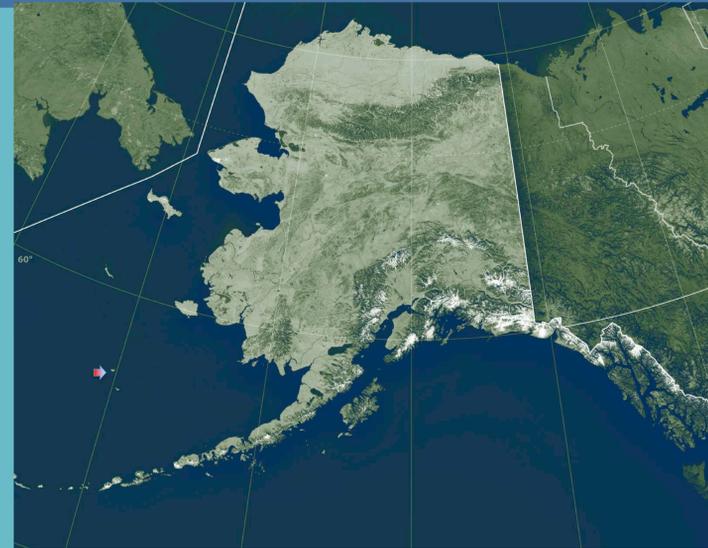
David Withrow

National Marine Mammal Laboratory, Alaska Fisheries Science Center
National Marine Fisheries Service, NOAA, 7600 Sand Point Way N.E.,
Seattle, Washington 98115

Lauri Jemison

Alaska Department of Fish and Game
546 Kenny Wren Rd, Dillingham, Alaska 99576

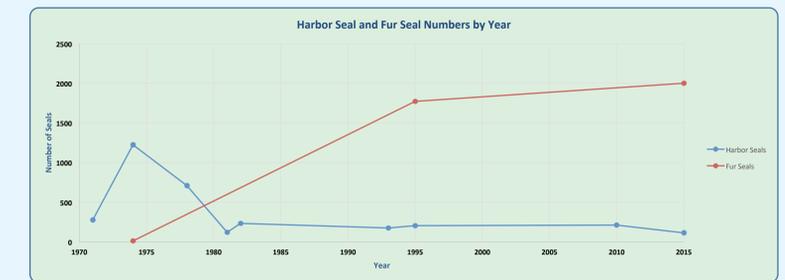
- ◆ The Pribilof Islands stock of harbor seals, the smallest of 12 stocks in Alaska, includes seals from St. Paul, St. George, Walrus, and Otter Islands, with Otter comprising the largest segment. Due to its small size and isolation, this stock has not been regularly surveyed.
- ◆ Daily counts were first conducted during the pupping season on Otter Island in 1974. At that time, more than 1,250 harbor seals utilized the island, and were the predominant marine mammal species.
- ◆ From 1974 to 1978, harbor seal numbers on the island declined by about 40%.
- ◆ The decline continued and by 1995, numbers were reduced by 83% over the 21-year period, based on maximum counts. Conversely, northern fur seal *Callorhinus ursinus* numbers increased from fewer than 10 animals in 1974 to 1,774 in 1995 and are even higher now.
- ◆ By 1995, the maximal count of harbor seals was only 202 non-pups and 42 pups. Seven dead pups were found that year with trampling by fur seals indicated as the likely cause.
- ◆ Fifteen years later we surveyed the island again on July 16, 2010. From shore we observed 185 non-pups and 27 pups.
- ◆ We returned this year on July 18, 2015. Unfortunately, some seals entered the water before we were able to land our skiff on shore. We counted 98 non-pups (both hauled out and in the water) along with 13 pups.
- ◆ Undisturbed and repeated counts over several days are needed to understand daily variability and to determine whether the number of harbor seals using Otter Island has stabilized at a lower level, or continues to decline.



Counts over time

Previous Counts - Otter Island					
Year	Non-Pups	Pups	Total	Date	Researchers
1971	250-300		250-300	8/17/1971	Terrell Newby, NMML
1974	1224	228	1224*	8/16/1974	Brian Johnson and Patty Johnson, UAF/ADF&G
1978	707	114	707*	7/16/1978	Brendan Kelly & Eileen Kelly, UAF
1981	119	18	119	6/26/1981	Craig Hansen NMFS
1982	232	40	232	7/25/1982	Tom Loughlin and Mike Perez, NMML
1993	150-200		150-200	7/3/1993	Art Sowls (USFWS) and Steve Ensley (NMFS)
1995	202	42	202*	7/11/1995	Lauri Jemison UAF for NMML
2010	212	27	212	7/16/2010	Dave Withrow, NMML
2015	98	15	113	7/18/2015	Dave Withrow, NMML

*Counts made over multiple days (Best)



Use of Unmanned Aerial System (Drone)



Results

- After ground counts were performed we examined the seal's reaction to a small unmanned aerial system (UAS; drone) which flew along shore at various altitudes.
- There was no visible reaction by the seals to the drone at any altitude.
- Image quality from the drone was quite good .
- When estimates were compared simultaneously between shore based observers and photos from the drone at one selected haulout site, the drone was able to detect more seals (23 compared to 19 by land observers). The drone had an unobstructed downward view compared to shore observes.
- UAS could be a valuable tool for monitoring harbor seals in this population.

Acknowledgments

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