

*Bering Sea & Aleutian Islands - Marine Mammals*

**Haulout Usage Patterns of Steller Sea Lions using Time-Lapse Digital Photography on Round Island in Bristol Bay, Alaska**

**Cheryl A. Clark**, [cheryl.clark@alaska.gov](mailto:cheryl.clark@alaska.gov)  
Michael J. Rehberg, [michael.rehberg@alaska.gov](mailto:michael.rehberg@alaska.gov)  
Diane C. Okonek, [dbokonek@gci.net](mailto:dbokonek@gci.net)  
Brian Okonek, [dbokonek@gci.net](mailto:dbokonek@gci.net)  
Alaska Department of Fish and Game

In recent years extensive research has focused on the decreased numbers of Steller sea lions (*Eumetopias jubatus*; SSLs). Since SSLs typically inhabit remote areas over a broad range, they are difficult to study at a fine temporal scale. The lack of detailed haulout attendance and usage data in Bristol Bay, Alaska requires alternative methods to assess SSL activity. Recent technological advances in remote monitoring have made continuous data collection feasible. We hypothesize that by using the Steller Watch II remote time-lapse photo monitoring camera to photograph the Round Island haulout, we can test its efficacy and further examine fine temporal patterns in SSL haulout usage with respect to tide, diurnal changes, haulout arrival and departure times and trends throughout the season. Digital photographs were taken at 30 minute intervals for 78 days. A subset of these images (n=372) was imported to ArcGis, where a feature layer was created by manually digitizing a point feature at the location of each animal observed. This method avoided duplicating or missing animals, and permitted later inspection and count replication. Concurrent manual observer counts were made at sporadic intervals. The camera undercounted observer counts by  $38\pm 5\%$  (n=19 comparisons) because observers were able to look behind obstructions by moving around. This suggests that multiple cameras are required to completely observe this haulout. However, SSLs at this haulout did follow one of three daily patterns during daylight hours: 1) animals present continuously, 2) no animals present, or 3) animals present during some daylight hours with daylight arrivals and departures. Of the 23 haulout departures observed, 83% occurred when SSLs vacated the haulout within 30 minutes. These results suggest group foraging or travel. On a finer scale, SSL counts increased after sunrise and decreased after mid-evening, a characteristic suggested by previous SSL observational work to indicate nocturnal foraging. This study shows that the use of remote cameras may provide insight into fine-scale haulout usage patterns.



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