

Final Report: Aerial Surveys of Pinniped Haulout Sites in Pacific Northwest Inland Waters

Report for Contract No. N62470-10-D-3011 - CTO JP02



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Cover Photo: Harbor seals and one weaned elephant seal pup hauled out on Kanem Spit, Protection Island during March 21, 2013 aerial survey. Taken by Steven Jeffries, WDFW, under NOAA Permit No. 13430.

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Acronyms and Abbreviations

NAVFAC	Naval Facilities Engineering Command
NBK	Naval Base Kitsap
NTR	Navy Technical Representative
NMFS	National Marine Fisheries Service
NWR	Northwest Region
SAR	Stock Assessment Report
TO	Task Order
U.S.	United States
WDFW	Washington Department of Fish and Wildlife

Aerial Surveys of Pinniped Haulout Sites

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2.1 Introduction

The Washington Department of Fish and Wildlife (WDFW), under subcontract to HDR, Inc., conducted United States (U.S.) Navy-funded aerial surveys of pinniped haulout sites in the inland waters of Washington state. Aerial surveys being conducted under this Task Order (TO) represent the first pinniped assessments to be done in the region of activity (Figure 1) over all four seasons, and will therefore will provide much-needed information about seasonal variation of harbor seal, California sea lion and Steller sea lion distribution and abundance in the inland waters of Washington.

The objectives of this TO are to conduct aerial surveys of the study area in order to: 1) provide estimates of seasonal abundance for seals and sea lions, 2) identify seasonal distribution patterns for seals and sea lions, 3) collect data to determine seal and sea lion densities, and 4) provide harbor seal abundance data needed by NMFS to prepare a Stock Assessment Report (SAR) for the Washington inland waters harbor seal stock. Additionally, the atlas showing pinniped haulouts for these waters (Jeffries et al. 2000) has not been updated in 13 years and will be revised as well.

The National Marine Fisheries Service, Northwest Region (NMFS NWR) has partially funded the current effort by supporting summer-only aerial surveys in the U.S. waters of the Strait of Juan de Fuca (Cape Flattery to Port Angeles) as well as the San Juan Islands. This collaborative approach between the Navy and NMFS will allow NMFS to update the SAR for the Pacific harbor seal (Washington Inland Waters Stock). The current SAR is derived from population estimates from 1999, and abundance information from current surveys will provide NMFS with required data to revise this outdated stock assessment.

The following is a summary of aerial survey activities conducted by WDFW in March and April 2013 under this TO.

2.2 Methods

Aerial surveys were conducted in a Cessna 206 chartered from Rite Bros. Aviation in Port Angeles, Washington. Surveys were flown at an altitude of 600 to 800 feet. Surveys were flown during low tide windows when maximum numbers of harbor seals were expected to be hauled out (Jeffries et al. 2003). For aerial surveys, flight crew consisted of a pilot (Jeff Well, Rite Bros. Aviation, Port Angeles, Washington) in the left front, a primary observer/photographer in the right front and a secondary observer/data recorder in the right rear.

The Naval Facilities Engineering Command (NAVFAC) Navy Technical Representative (NTR) was provided 7 day advance notice with specific details to be communicated with the 24-hour Command Center of the survey schedule and plans including dates, times, aircraft tail number, aircraft description, and flight crew contact information.

Aerial surveys covered all haulout sites in the study region and are described in Jeffries et al. (2000) and correspond to atlas Regions 7, 8, 9, and 10. Specifically, haulout sites in Washington were surveyed in the following atlas regions:

- Region 7-Strait of Juan de Fuca-East (east of Port Angeles to Whidbey Island), (Includes NAVMAG Indian Island)
- Region 8-Hood Canal & Dabob Bay (includes Naval Base Kitsap [NBK] Bangor and vicinity)
- Region 9-Eastern Bays (from Drayton Harbor to Port Gardner) (includes Naval Station [NAVSTA] Everett & Crescent Harbor)
- Region 10-Puget Sound (Whidbey Island to Olympia) (includes Bremerton Shipyard and NBK Bremerton).

Note: The National Marine Fisheries Service, Northwest Region (NMFS NWR) has partially funded summer-only aerial surveys in the U.S. waters of atlas Region 6-Strait of Juan de Fuca-West (west of Port Angeles to Cape Flattery) and Regions 11, 12 and 13 (San Juan Islands) to complete surveys needed for the Washington inland waters harbor seal stock assessment. (See **Appendix A** for a comparison of regions as defined in Jeffries et al. 2000, and regions depicted in **Figure 1**, adapted from Jeffries et al. 2003.)

Seals or sea lions in the water were recorded when encountered. Data collected in the survey logs included date, time, location, visual best estimate of seal numbers, digital images of hauled out animals and in-flight comments. Small groups of less than 25 animals were generally counted visually and not photographed. Sea lions on navigation buoys and the floating security fences around Navy facilities were counted but not generally photographed.

Aerial photographs were taken of seals and sea lions on all major haulout sites by the primary observer in the right front seat, using a handheld 35-millimeter single-lens reflex camera with a 200 millimeter lens, and shutter speeds of 1/500 to 1/1000 seconds.

Pinniped counts from restricted areas (e.g., Bangor, Bremerton, and Everett) were provided by the Navy, but not all locations were surveyed on the day of the aerial surveys. For future surveys during the remaining seasons, all efforts will be made to coordinate the restricted area counts with the aerial surveys.

Incidental information on other marine mammal species observed during the aerial surveys were collected on all aerial surveys to provide supplementary data regarding usage levels for other marine mammal species within the project region (**Figure 1**).

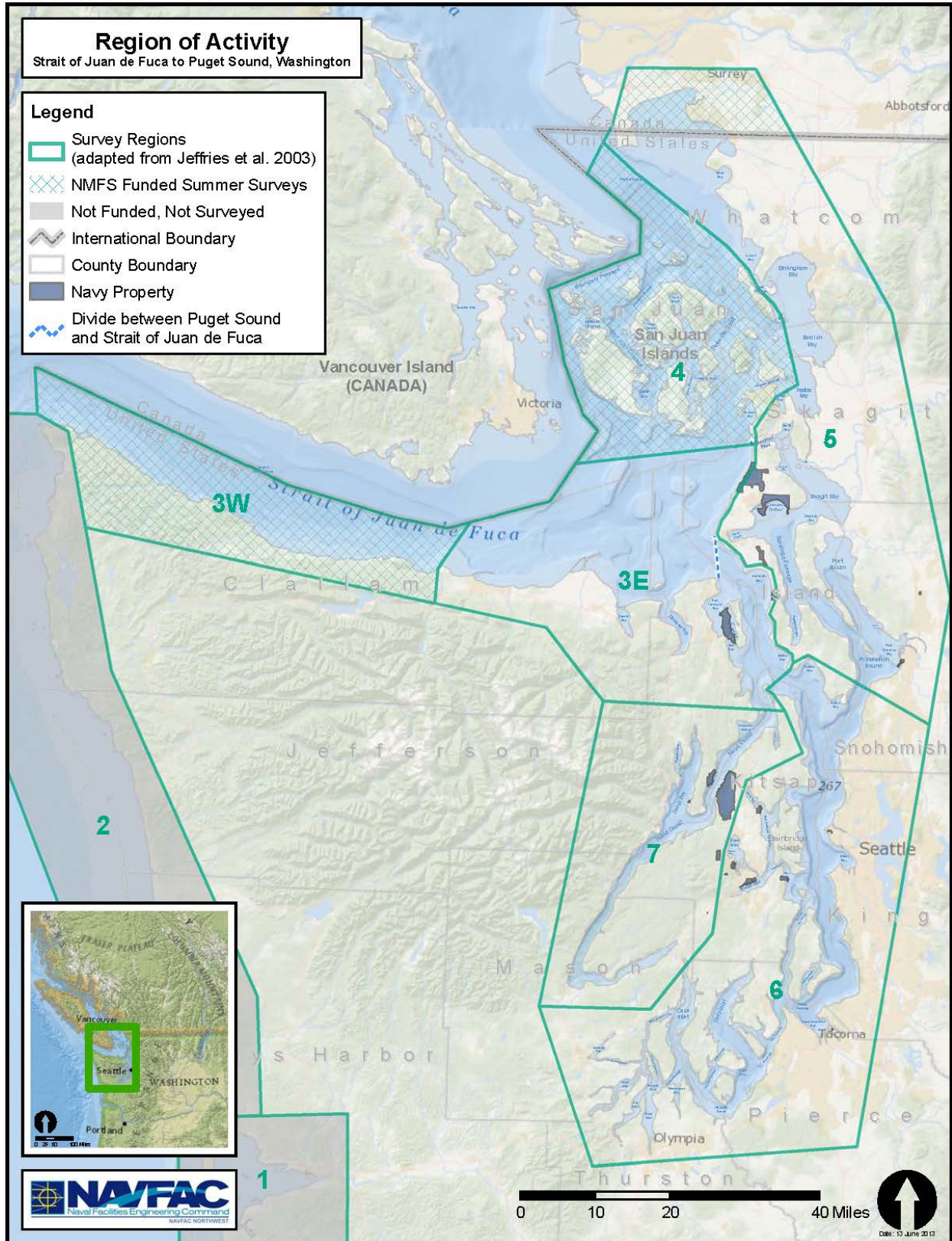


Figure 1: Survey Area (adapted from Jeffries et al. 2003).

2.3 Results

WDFW conducted six aerial surveys of each region in the study area (**Figure 1**) during March and April flights. Three additional survey days were scheduled but cancelled due to weather. Survey dates and effort are listed in **Table 1**.

Table 1: WDFW aerial surveys conducted during the reporting period.

Survey Date	Survey Window	Survey Effort (hours)	Digital Images Taken	Species Recorded / Comments
11 March 2013	10:13-14:40	4.5	1-54	Harbor seals, Steller sea lions and CA sea lions
12 March 2013	--	--		Cancelled due to weather
13 March 2013	09:46-14:19	4.6	1-67	Harbor seals, Steller sea lions, CA sea lions and gray whale
20 March 2013	--	--		Cancelled due to weather
21 March 2013	11:25-15:36	4.2	1-114	Harbor seals, Steller sea lions and CA sea lions
22 March 2013	12:33-16:46	4.2	1-69	Harbor seals, Steller sea lions, CA sea lions and gray whale
8 April 2013	10:20-15:27	5.1	1-169	Harbor seals, elephant seals, Steller sea lions, CA sea lions and gray whale
9 April 2013	10:22-15:27	5.1	1-181	Harbor seals, elephant seals, Steller sea lions and CA sea lions
10 April 2013	--	--		Cancelled due to weather

Marine mammal species recorded during aerial surveys included harbor seals, northern elephant seals, Steller sea lions, California sea lions and gray whales (Table 1). Gray whales were seen on 3 out of 6 survey days near Point Gardner and in Saratoga Passage.

2.4 Discussion

Digital images from aerial photos will be counted to record total seal (and pups) and sea lion numbers for each haulout site. Counts will be entered into the WDFW seal and sea lion aerial survey database. WDFW will incorporate counts from restricted areas with counts from other areas when made available by the NTR. Schedules for aerial surveys for the proposed summer 2013 window in late July and early August coinciding with low tide cycles during the harbor seal pupping season and will be transmitted to the NTR when finalized.

2.5 Acknowledgements

Thanks are due to Andrea Balla-Holden (NAVFAC NW) for support and coordination of ground counts at Navy facilities and assisting with report preparation; pilot Jeff Well and Rite Bros. Aviation in Port Angeles for providing aerial survey support; Josh Oliver and Bethany

Diehl with WDFW for assisting with aerial surveys and data processing; and Kristen Ampela (HDR) for assisting with contract management and report preparation.

2.6 Literature Cited

Jeffries, S.J., P.J. Gearin, H.R. Huber, D.L. Saul, and D.A. Pruett. 2000. Atlas of Seal and Sea Lion Haulout Sites in Washington. Washington Department of Fish and Wild life, Wildlife Science Division, 600 Capitol Way North, Olympia WA. pp. 150.

Jeffries, S.J., H.R. Huber, J. Calambokidis, J. Laake. 2003. Trends and status of harbor seals in Washington State: 1978-1999. *Journal of Wildlife Management* 67(1): 207-218.

Appendix A:
Comparison of Regions between Jeffries et al. 2000
and Jeffries et al. 2003

Regions in Jeffries et al. 2000: Atlas of Seal & Sea Lion Haulout Sites in Washington State	Regions in Jeffries et al. 2003: Trends & Status of Harbor Seals in Washington State
1-Columbia River	No corresponding region. Not included in Jeffries et al. 2003
2-Willapa Bay	1-Coastal Estuaries
3-Grays Harbor	
4-Olympic Coast-South	2-Olympic Coast
5-Olympic Coast-North	
6-Strait of Juan de Fuca-West	3-Strait of Juan de Fuca
7-Strait of Juan de Fuca-East	
8-Hood Canal	7-Hood Canal
9-Eastern Bays	5-Eastern Bays
10-Puget Sound	6-Puget Sound
11-San Juan Islands (Rosario Strait)	4-San Juan Islands
12-San Juan Islands (San Juan Channel)	
13-San Juan Islands (Haro Strait)	
14-British Columbia (Fraser River to Race Rocks)	No corresponding region. Not included in Jeffries et al. 2003