

Physical data (sex, weight, tag ID number) from Harbor Seals tagged in the San Juan Islands, 2007-2008

Website: <https://www.bco-dmo.org/dataset/3794>

Data Type: Other Field Results

Version: 1

Version Date: 2012-11-26

Project

» [Responses of Seals and Sea Lions to Increased Rockfish Density](#) (Seal_response_to_pre)

Contributors	Affiliation	Role
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Abstract

Physical and identifying info for Harbor Seals tagged and tracked in the San Juan Islands from 2007 to 2008; includes sex, length, weight, pelage description, and tag ID numbers.

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Coverage

Temporal Extent: 2007-04-04 - 2008-03-13

Dataset Description

Physical and identifying info for Harbor Seals tagged and tracked in the San Juan Islands from 2007 to 2008, includes sex, length, weight, pelage description, and tag ID numbers.

Acquisition Description

The methods below are further described in Peterson et al. (2012), Ward et al. (2012), and Thomas et al. (2011):

To estimate the movement behavior of Harbor Seals, adult seals were captured in 2007 to 2008 at several sites in the San Juan Islands: Padilla Bay, Bird Rocks, Belle Chain, and Protection Island. Several methods were used to capture seals, including boat rushes, beach seines, and tangle-nets. Captured seals were sexed, weighed, and measured. Seals were classified as adults if they weighed more than 50 kg. All animals were flipper-tagged with unique ID numbers. Adult seals were tagged with time-depth recorders, and satellite tags were glued to the animals.

References:

- Peterson**, S., Lance, M. M., Jeffries, S. J. & Acevedo-Gutierrez, A. 2012. Long distance movements and disjunct spatial use of harbor seals (*Phoca vitulina*) in the inland waters of the Pacific Northwest. PLoS ONE 7: e39046. DOI: [10.1371/journal.pone.0039046](https://doi.org/10.1371/journal.pone.0039046)
- Thomas**, AC; Lance, MM; Jeffries, SJ; Miner, BG; Acevedo-Gutierrez, A. 2011. Harbor seal foraging response to a seasonal resource pulse, spawning Pacific herring. Marine Ecology-Progress Series, v.441. p. 225. DOI: [10.3354/meps09370](https://doi.org/10.3354/meps09370)
- Ward**, EJ; Levin, PS; Lance, MM; Jeffries, SJ; Acevedo-Gutierrez, A. 2012. Integrating diet and movement data to identify hot spots of predation risk and areas of conservation concern for endangered species. Conservation Letters, v.5, p. 37. DOI: [10.1111/j.1755-263X.2011.00210.x](https://doi.org/10.1111/j.1755-263X.2011.00210.x)

Processing Description

BCO-DMO made the following modifications to the dataset:

- Changed parameter names to conform with BCO-DMO conventions;
- Replaced blanks with 'nd';
- Replaced commas with semi-colons in the comments column.

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Related Publications

Peterson, S. H., Lance, M. M., Jeffries, S. J., & Acevedo-Gutiérrez, A. (2012). Long Distance Movements and Disjunct Spatial Use of Harbor Seals (*Phoca vitulina*) in the Inland Waters of the Pacific Northwest. PLoS ONE, 7(6), e39046. doi:[10.1371/journal.pone.0039046](https://doi.org/10.1371/journal.pone.0039046)

Thomas, A., Lance, M., Jeffries, S., Miner, B., & Acevedo-Gutiérrez, A. (2011). Harbor seal foraging response to a seasonal resource pulse, spawning Pacific herring. Marine Ecology Progress Series, 441, 225–239. doi:[10.3354/meps09370](https://doi.org/10.3354/meps09370)

Ward, E. J., Levin, P. S., Lance, M. M., Jeffries, S. J., & Acevedo-Gutiérrez, A. (2011). Integrating diet and movement data to identify hot spots of predation risk and areas of conservation concern for endangered species. Conservation Letters, 5(1), 37–47. doi:[10.1111/j.1755-263X.2011.00210.x](https://doi.org/10.1111/j.1755-263X.2011.00210.x)

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Parameters

Parameter	Description	Units
seal_id	Unique seal identification.	unitless
season	Season: spring, winter, or fall.	text
date	Date of capture. format: mm/dd/YYYY	unitless
month	2-digit month when captured. format: mm (01 to 12)	unitless
day	2-digit day of month when captured. format: dd (01 to 31)	unitless
year	Year of capture. format: YYYY	unitless
region	Name of the geographic region.	text
site	Name of the site where captured.	text
age	A or AD = adult; SAD = small adult.	text
weight	Weight of the animal, in kilograms.	kg
length	Length of the animal, in centimeters.	cm
pelage	Description of the animal's pelage (coat).	text
pregnant	Yes/no indicator of whether or not the animal was pregnant.	Y / N
lactating	Yes/no indicator of whether or not the animal was lactating.	Y / N
molt	Yes/no indicator of whether or not the animal was molting.	Y / N
blood	Yes/no indicator of whether or not blood was drawn.	Y / N
biopsy	Yes/no indicator of whether or not a sample was taken for biopsy.	Y / N
inst	Model of the TDR (time-depth recorder) attached to the animal.	unitless
serial_num	inst serial number.	unitless
inst2	Model of the tracking device attached to animal.	unitless
serial_num2	inst2 serial number.	unitless
pttno	PTT tag number.	unitless
inst3	Model of 3rd instrument associated with the animal.	unitless
serial_num3	inst3 serial number.	unitless
comment	Free-text comments.	text
sex	Sex; M = male; F = female.	M or F

Deployments

Seal_Captures

Website	https://www.bco-dmo.org/deployment/58849
Platform	shoreside San_Juan_Islands
Start Date	2007-04-04
End Date	2009-08-03
Description	Locations of seal captures and tagging for the project 'Responses of Seals and Sea Lions to Increased Rockfish Density' (PI: Alejandro Acevedo-Gutiérrez) In 2007 - 2008, seals were captured in Padilla Bay (approx. 48.5165, -122.5168), Bird/Belle Rocks (approx. 48.4860, -122.7602), and Protection Island (approx. 48.1278, -122.9306). In 2009, seals were captured on Protection Island . References: Thomas, AC; Lance, MM; Jeffries, SJ; Miner, BG; Acevedo-Gutierrez, A. 2011. Harbor seal foraging response to a seasonal resource pulse, spawning Pacific herring. Marine Ecology-Progress Series, v.441. p. 225. DOI: 10.3354/meps09370Ward, EJ; Levin, PS; Lance, MM; Jeffries, SJ; Acevedo-Gutierrez, A. 2012. Integrating diet and movement data to identify hot spots of predation risk and areas of conservation concern for endangered species. Conservation Letters, v.5, p. 37. DOI: 10.1111/j.1755-263X.2011.00210.x

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Project Information

Responses of Seals and Sea Lions to Increased Rockfish Density (Seal_response_to_pre)

Website: <http://biol.wvu.edu/mbel/?page=research>

Coverage: Salish Sea, USA and Canada

From NSF proposal: This project is a collaborative study of the responses of harbor seals and other mammalian predators to changes in prey density in Puget Sound. The general study approach will involve multi-year field estimates to observe the responses of predators to rockfish density in protected areas, candidate marine reserves, and unprotected sites. The

collaborating investigators will estimate 1) rockfish density using visual and mark and recapture techniques; 2) predator abundance using aerial surveys and dedicated land observations; and 3) predator food consumption using scat to describe diet, tagging of harbor seals to describe individual foraging sites, and population-based and individual bioenergetics models to describe consumption of rockfish. The investigators will also take into account confounding factors that might explain predator behavior, such as environmental variables and alternative prey, by creating a GIS database from available information from the area. The different field observations and database estimates are explicitly linked through a common hypothesis and coordinated methodologies, and their results will be integrated into a model describing the impact of predation on rockfish populations. The responses of top predators to changes in prey density and their impact on fish populations of interest are unknown. This study will evaluate the effectiveness of MPAs as fish refugia, offer a framework for the management and conservation of marine resources, and provide an exciting opportunity for students to participate in ecological and conservation research. Hypotheses: 1) Harbor seals and other pinniped species show aggregative responses to changes in prey density. Hence, their abundance will increase with fish density. 2) Harbor seals and other pinniped species show Type 2 or 3 functional responses to changes in prey density. Thus, their consumption rate of a particular prey type follows an asymptotic or sigmoidal curve relative to the prey's density, respectively. 3) Predation by harbor seals and other pinniped species is sufficiently intense that it impedes recovery of depleted fish populations. Objectives: 1) Quantify the number of harbor seals and other pinniped species in relation to rockfish density and other environmental (confounding) factors. 2) Estimate the consumption rate of harbor seals and other pinniped species in relation to rockfish density and other prey species. 3) Correlatively estimate the influence of predation by harbor seals and other pinniped species on survivorship and population size of rockfish. Publications resulting from this NSF award: Bjorland, R. H., Pearson, S. F., Jeffries, S. J., Lance, M. M., Acevedo-Gutiérrez, A. & Ward, E. J. 2015. Stable isotope mixing models elucidate sex and size effects on the diet of a generalist marine predator. *Marine Ecology Progress Series* 526: 213-225. DOI: 10.3354/meps11230Bromaghin, J. F., Lance, M. M., Elliott, E. W., Jeffries, S. J., Acevedo-Gutierrez, A. & Kennish, J. M. 2013. New insights into the diets of harbor seals in the Salish Sea of western North America revealed by quantitative fatty acid signature analysis. *Fishery Bulletin* 111: 13-26. DOI: 10.7755/FB.111.1.2 Buzzell, B. J., Lance, M. & Acevedo-Gutiérrez, A. 2014. Spatial and temporal variation in river otter (*Lontra canadensis*) diet and predation on rockfish (Genus *Sebastes*) in the San Juan Islands, Washington. *Aquatic Mammals* 40: 150- 161. DOI: 10.1578/AM.40.2.2014.150 Howard, S., Lance, M., Jeffries, S. & Acevedo-Gutierrez, A. 2013. Fish consumption by harbor seals (*Phoca vitulina*) in the San Juan Islands, WA. *Fishery Bulletin* 111: 27-41. DOI: 10.7755/FB.111.1.3 Lance, M. M., Chang, W.-Y., Jeffries, S. J., Pearson, S. F. & Acevedo-Gutierrez, A. 2012. Harbor seal diet in northern Puget Sound: implications for the recovery of depressed fish stocks. *Marine Ecology Progress Series* 464:257-271. DOI:10.3354/meps09880 Luxa, K. & Acevedo-Gutierrez, A. 2013. Food habits of

harbor seals (*Phoca vitulina*) in two estuaries in the central Salish Sea. *Aquatic Mammals* 39: 10- 22. DOI: 10.1578/AM.39.1.2013.10

Peterson, S., Lance, M. M., Jeffries, S. J. & Acevedo-Gutierrez, A. 2012. Long distance movements and disjunct spatial use of harbor seals (*Phoca vitulina*) in the inland waters of the Pacific Northwest. *PLoS ONE* 7: e39046. DOI: 10.1371/journal.pone.0039046

Thomas, AC; Lance, MM; Jeffries, SJ; Miner, BG; Acevedo-Gutierrez, A. 2011. Harbor seal foraging response to a seasonal resource pulse, spawning Pacific herring. *Marine Ecology-Progress Series*, v.441. p. 225. DOI: 10.3354/meps09370

Ward, EJ; Levin, PS; Lance, MM; Jeffries, SJ; Acevedo-Gutierrez, A. 2012. Integrating diet and movement data to identify hot spots of predation risk and areas of conservation concern for endangered species. *Conservation Letters*, v.5, p. 37. DOI: 10.1111/j.1755-263X.2011.00210.x

Wilson, K.2, Lance, M., Jeffries, S. & Acevedo-Gutiérrez, A. 2014. Fine-scale variability in harbor seal foraging behavior. *PLoS ONE* 9: e92838. DOI: 10.1371/journal.pone.0092838.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0550443

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