

# JESSICA M. LINDSAY

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University of Washington School of Aquatic and Fishery Sciences

1122 NE Boat Street Rm 223, Seattle, WA 98195

## EDUCATION

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### Doctoral Candidate in Aquatic and Fishery Sciences, University of Washington, Sept. 2017 - present

- Supervised by Drs. Kristin Laidre (UW Applied Physics Lab – Polar Science Center) and Peter Boveng (NOAA Marine Mammal Lab – Polar Ecosystems Program)

### Bachelors of Science in Wildlife Biology (High Honors), University of Montana, 2015

- Minors in Climate Change Studies and Mathematics
- University Scholar through the Davidson Honors College
- Undergraduate Honors Thesis
- Dean’s List Autumn 2011 through Spring 2015

## FELLOWSHIPS & AWARDS

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- National Science Foundation Graduate Research Fellow (2019-2024)
- North Pacific Research Board Graduate Student Research Award recipient (2019)
- Achievement Rewards for College Scientists (ARCS) Foundation Fellow (2017-2020)
- School of Aquatic and Fishery Sciences (SAFS) Fellow (2017-2018)
- University of Montana Presidential Leadership Scholar, Gold level (2011-2015)

## PUBLICATIONS

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**Lindsay, J.M.**, D.D.W. Hauser, A.R. Mahoney, K.L. Laidre, J. Goodwin, C. Harris, R.J. Schaeffer, R. Schaeffer Sr., A.V. Whiting, P.L. Boveng, N.J.M. Laxague, S. Betcher, A. Subramaniam, C.R. Witte, and C.J. Zappa (2023). Characteristics of ringed seal *Pusa hispida* (‘natchiq’) denning habitat in Kotzebue Sound, Alaska, during a year of limited sea ice and snow. *Marine Ecology Progress Series* 705:1-20.  
doi: [10.3354/meps14252](https://doi.org/10.3354/meps14252)

**Lindsay, J.M.**, K.L. Laidre, P.B. Conn, E.E. Moreland, and P.L. Boveng (2021). Modeling ringed seal (*Pusa hispida*) habitat selection and lair emergence timing in the eastern Bering and Chukchi Seas. *Endangered Species Research* 46:1-17.  
doi: [10.3354/esr01140](https://doi.org/10.3354/esr01140)

Witte, C.R., C.J. Zappa, A.R. Mahoney, J. Goodwin, C. Harris, R.J. Schaeffer, R. Schaeffer Sr., S. Betcher, D.D.W. Hauser, N.J.M. Laxague, **J.M. Lindsay**, V. Schaeffer, A. Subramaniam, K.E. Turner, and A.V. Whiting (2021). The winter heat budget of sea ice in Kotzebue Sound: Residual ocean heat and the seasonal roles of river outflow. *Journal of Geophysical Research: Oceans* 126, e2020JC016784.  
doi: [10.1029/2020JC016784](https://doi.org/10.1029/2020JC016784)

Hauser, D.D.W, A.V. Whiting, A.R. Mahoney, J. Goodwin, C. Harris, R.J. Schaeffer, R. Schaeffer Sr, N.J.M. Laxague, A. Subramaniam, C.R. Witte, S. Betcher, **J.M. Lindsay**, and C.J. Zappa. (2021) Co-production of knowledge reveals loss of Indigenous hunting opportunities in the face of accelerating Arctic climate change. *Environmental Research Letters* 16, 095003. doi:[10.1088/1748-9326/ac1a36](https://doi.org/10.1088/1748-9326/ac1a36)

Mahoney, A.R., K.E. Turner, D.D.W. Hauser, N.J.M. Laxague, **J.M. Lindsay**, A.V. Whiting, C.R. Witte, J. Goodwin, C. Harris, R.J. Schaeffer, R. Schaeffer Sr., S. Betcher, A. Subramaniam, and C.J. Zappa (2021). Thin ice, deep snow and surface flooding in Kotzebue Sound: Landfast ice mass balance during two anomalously warm winters and implications for marine mammals and subsistence hunting. *Journal of Glaciology*, 1-15. doi:[10.1017/jog.2021.49](https://doi.org/10.1017/jog.2021.49)

## PROFESSIONAL PRESENTATIONS

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- 2021 *Quantifying characteristics of ringed seal (natchiq) lair habitat through knowledge co-production in Kotzebue Sound, Alaska*  
Alaska Marine Science Symposium, Anchorage, AK, virtual poster
- 2020 *Quantifying characteristics of natchiq (ringed seal) lair habitat through knowledge co-production in Kotzebue Sound, Alaska*  
Arctic Change, Laval, Quebec, Canada, virtual talk
- 2020 *Natchiq (ringed seal) denning habitat in Kotzebue Sound*  
Alaska Forum on the Environment, Anchorage, AK, talk
- 2020 *Quantifying ringed seal lair habitat and emergence timing in the eastern Bering and Chukchi Seas*  
Alaska Marine Science Symposium, Anchorage, AK, poster
- 2019 *Quantifying ringed seal lair habitat and emergence timing in the eastern Bering and Chukchi Seas (Poster)*  
World Marine Mammal Conference, Barcelona, Spain, poster
- 2018 *Overcoming Predation: Caterpillars that Whistle (Invited speaker)*  
Wildlife Diversity Conference, Columbus, OH, talk
- 2017 *Whistling Caterpillars Mimic the Alarm Calls of Birds*  
Acoustic Communication by Animals: 4<sup>th</sup> International Symposium, Omaha, NE, talk
- 2015 *Whistling Caterpillars Mimic the Alarm Calls of Birds*  
Animal Behavior Society Annual Conference, Anchorage, AK, talk
- 2015 *Why do caterpillars whistle? Acoustic mimicry of bird alarm calls in the *Amorpha juglandis* caterpillar*, talk  
University of Montana Conference of Undergraduate Research, Missoula, MT

## RESEARCH EXPERIENCE

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**Dissertation Research: Ringed Seal Habitat in the Alaskan Arctic** Sept. 2017 – present  
Advisor: Dr. Kristin Laidre; Seattle, WA

- Co-designing a study on the relationship between ringed seal denning habitat and snow characteristics in Kotzebue, AK using unmanned aerial surveys

- Conducting on-ice sampling of snow and sea ice, including depth measurements, ice coring, salinity measurements, CTD casts, and topography surveys
- Measuring characteristics of ringed seal breathing holes and lairs
- Collecting non-invasive samples of ringed seal blood, hair, and skin
- Mapping observations of ringed seals (2012-2013 Bering and Okhotsk Seal Surveys; 2016 Chukchi & East Siberian Surveys) using ArcGIS and QGIS
- Analyzing changes in Chukchi Sea snow melt onset dates derived from satellite passive microwave data
- Analyzing trends in ringed seal detections in the southern Chukchi Sea related to reanalysis products and satellite-based measures of snow depth and snow melt onset
- Conducting a literature review of ringed seal ecology, survey methods, predation, and Arctic climate change
- Collaborating with Kotzebue residents and scientists from University of Alaska Fairbanks, Columbia University, Alaska Department of Fish and Game, and the Polar Ecosystems Program at NOAA's Marine Mammal Laboratory

**Marine Mammal Observer aboard the USCGC Healy**

Aug. 2018

Supervisor: Dr. Kate Stafford; Nome, AK

- Surveyed and identified marine mammals in the Bering, Chukchi, and Beaufort Seas
- Developed proficiency in WinCruz survey software
- Made daily weather reports to assist with USGS aerial survey planning

**Trinidadian Guppy Intern**

June – Sept. 2016

Supervisor: Jack Torresdal; Arima, Trinidad & Tobago

- Conducted monthly censuses of guppy populations in mountain streams
- Anesthetized guppies for measuring and marking
- Gave guppies unique subcutaneous color marks
- Took scale samples for DNA analysis

**Honors Thesis Research: Caterpillar Mimicry of Bird Alarm Calls**

Feb. 2015 – Feb. 2016

Advisor: Dr. Erick Greene; Missoula, MT

- Co-designed a study on caterpillar acoustic mimicry of bird alarm calls
- Conducted field experiments and recorded songbird alarm calls made in response to caterpillar whistles
- Categorized songbird behavioral responses to acoustic stimuli
- Analyzed audio recordings in Raven Pro
- Trained and supervised undergraduate acoustic analysts
- Performed statistical analysis in Program R

**Raptor View Research Institute Volunteer** (2011-2014), **Technician** (May – Aug. 2015)

Supervisor: Rob Domenech; Missoula, MT

- Banded American Kestrel adults and nestlings
- Took and recorded raptor measurements
- Conducted nest searches
- Handled and released Golden Eagles, Swainson's Hawks, and Cooper's Hawks
- Assisted with blood samples and trapping

**Bird Alarm Call Study Volunteer**

Nov. 2014 – Feb. 2015

Supervisor: Dr. Erick Greene; Missoula, MT

- Recorded songbird alarm calls made in response to robotic raptors
- Identified Montana songbirds

**Forest Service Lynx Study Intern**

May – Aug. 2012

Supervisor: Megan Kosterman; Missoula, MT

- Used radio telemetry to monitor Canada lynx and locate dens
- Handled and measured lynx kittens
- Identified plants for habitat analysis
- Recorded and entered telemetry, habitat, and morphometric data

**TEACHING & MENTORING**

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Mentor in SAFS Peer Mentoring Program

Sept. 2019 – present

Mentor in CoEnv Interdisciplinary Mentoring Program

Sept. 2020 – 2021

Mentor in NSF Graduate Research Fellowship Workshop

Sept. – Oct. 2019, 2020, 2021

Teaching Assistant: Arctic Marine Vertebrate Ecology

Jan. – Mar. 2019

## Guest Lectures

2023

*Ice-associated seals in Arctic Alaska*

Guest Lecture for Arctic Marine Vertebrate Ecology, University of Washington, Seattle, WA

2022

*Ringed seal lair habitat, emergence timing, and reproductive ecology in relation to snow characteristics in a changing Arctic*

Guest Seminar for NOAA Marine Mammal Laboratory Seminar Series, Seattle, WA

2021

*Ice seals in Arctic Alaska*

Guest Seminar for Polar Science and Arctic Indigenous Communities, University of Washington, Seattle, WA

2019

*Quantifying ringed seal (Phoca hispida) habitat and emergence timing in relation to snow conditions in Arctic Alaska*

Guest Seminar at University of Alaska Fairbanks, Fairbanks, AK

2019

*An introduction to Arctic marine mammals and ringed seal denning habitat*

Guest Lecture for Environmental Science, Seattle University, Seattle, WA

2019

*Research in Kotzebue, Alaska: Ikaagvik Sikukun “Ice Bridges”*

Guest Lecture for Indigenous Diplomacy &amp; International Relations in the Arctic, University of Washington, Seattle, WA

2019

*Example of current ringed seal research: Quantifying ringed seal denning habitat in relation to snow properties*

Guest Lecture for Arctic Marine Vertebrate Ecology, University of Washington, Seattle, WA

## **OUTREACH ACTIVITIES**

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SAFS Open House: Arctic Marine Mammals & Narwhal Mysteries	May 2021 & 2022
Skype a Scientist	Mar. 2020
Polar Science Weekend, Pacific Science Center	Apr. 2018 & 2019, Feb. 2020
Classroom visits in Kotzebue public schools	Oct. 2017, May 2018, Nov. 2019
KOTZ Radio Interviews, Kotzebue	Oct. 2017, May 2018, Oct. 2018
Discover Science Weekend, Seattle Aquarium	Nov. 2017
Wildlife Extravaganza, Montana Natural History Center	May 2015
Be Bear Aware, Rattlesnake & Franklin Elementary Schools	Apr. 2015
Job Skills Weekend, University of Montana	Apr. 2015

## **SOFTWARE PROFICIENCIES**

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- Statistical analysis in Program R, Microsoft Excel, and MATLAB
- Spatial pattern analysis in ArcGIS and QGIS
- Image analysis in Streams and Pix4D
- Bioacoustic analysis in Raven Pro
- Version control and website maintenance with GitHub
- Database management and querying in PostgreSQL