

Rebecca Ann Howard

Curriculum vitae

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EDUCATION

Ph.D. Ocean, Earth and Atmospheric Sciences, Oregon State University, Corvallis, OR, Jun. 2024
Minor in Statistics
Dissertation: "Predicting life-history specific species distributions in the North Pacific"
M.S. Marine Resource Management, Oregon State University, Corvallis, OR, Dec. 2020
Thesis: "Change in Oregon's nearshore groundfish trawl fishery: Perspectives from science and industry data"
B.S. Aquatic Biology, University of California, Santa Barbara, CA, Jun. 2015
Minor in Earth Science

RESEARCH EXPERIENCE

2021 – Present **National Science Foundation Graduate Research Assistant**
Oregon State University, College of Earth, Ocean, and Atmospheric Sciences
Evaluating the use of size-structured and size-aggregated species distribution models for projecting distributions of California Current System fish species under different climate scenarios.

2022 – 2023 **Cooperative Institute for Marine Ecosystem and Resources Studies Graduate Research Assistant**
Oregon State University, College of Earth, Ocean, and Atmospheric Sciences
Developed updated species distribution models for Alaskan snow crab (*Chionoecetes opilio*) in order to provide short term forecasts. Used machine learning methods to predict distributions of different sexes and sizes.

2020 - 2021 **North Pacific Research Board Graduate Research Assistant**
Oregon State University, College of Earth, Ocean, and Atmospheric Sciences
Hindcasted and forecasted eastern Bering Sea groundfish spawning distributions under future oceanographic conditions using the Bering 10K ROMS-NPZ. Used statistical modeling to hindcast distributions that then informed models used to forecast distributions during different emissions scenarios.

2018 – 2020 **Oregon Sea Grant Graduate Research Assistant**
Oregon State University, College of Earth, Ocean, and Atmospheric Sciences
Used statistical models to investigate the effects of oceanography and climate on groundfish long-term distribution and abundance in the northern California Current. Studied the overlap of fishery-independent (NOAA survey) and -dependent (logbook and landings) data sources on the Oregon continental shelf and their potential utility for assessment of nearshore flatfishes.

2014 – 2015 **Undergraduate Research Assistant**
Marine Science Institute, University of California Santa Barbara (Page/Dugan Lab)
Tested the swimming duration of *Watersipora subtorquata* to determine potential to spread as invasive species in the Santa Barbara Channel. Participated in SCUBA settlement plate surveys for presence of recently settled *W. subtorquata*. Conducted SCUBA surveys for eelgrass presence.

- 2014 **Undergraduate Research Assistant**
Earth Research Institute, University of California Santa Barbara (CEIN)
 Development of settlement plate frames and antifouling paint treatments to test effectiveness of zinc and copper on invertebrate fouling communities.
- 2013 – 2014 **Undergraduate Research Assistant**
EEMB Dept., University of California Santa Barbara (Collins Lab)
 Documented cabezon (*Scorpaenichthys marmoratus*) embryonic development with photomicroscopy. Assisted in larval rockfish laboratory hypoxia studies.

EMPLOYMENT

- 2016 – 2017 **AmeriCorps Member**
Watershed Stewards Program, placed at the NOAA Fisheries SWFSC
 Collected data for population assessment of endangered Central California Coho salmon and threatened steelhead trout by stream surveys, juvenile trapping, and tagging. Created maps using ArcGIS for conference poster and future publications. Archived historical biological samples. Taught watershed curriculum to 3rd grade students and put on restoration event at a state park.
- 2015 – 2017 **North Pacific Groundfish Observer**
Alaskan Observers, Inc., contracted for the NOAA Fisheries AFSC
 Collected biological, safety, and effort data aboard commercial bottom trawlers in the Bering Sea. Biological data included maturity scans, otoliths, and salmon genetic samples. Worked with observers, NOAA Fisheries scientists, fishermen, and processing plants.
- 2012 – 2015 **Aquarist** (2015), **Intern** (2013 – 2015), **Volunteer** (2012 – 2013)
 Research Experience and Education Facility, UCSB

PUBLICATIONS

- Vary, L, LA Rogers, MJ Harte, **RA Howard**, L Ciannelli. (2023). Temperature-dependent spawning behavior and larval thermohaline associations of Bering Sea groundfishes. *ICES Journal of Marine Science*, 80(7), 1881-1898.
<https://doi.org/10.1093/icesjms/fsad113>
- RA Howard**, L Ciannelli, WW Wakefield, MA Haltuch. (2023). Comparing fishery-independent and fishery-dependent data for analyzing the distributions of Oregon shelf groundfishes. *Fisheries Research*, 258, 106553. <https://doi.org/10.1016/j.fishres.2022.106553>
- RA Howard**, L Ciannelli, WW Wakefield, and MR Fewings. (2021). The effects of climate, oceanography, and habitat on the distribution and abundance of northern California Current continental shelf groundfishes. *Fisheries Oceanography*, 30(6), 707–725.
<https://doi.org/10.1111/fog.12553>

MANUSCRIPTS IN SUBMISSION & PREPARATION

- RA Howard**, L Ciannelli, ER Ryznar, MA Litzow. (In Review). Static and climate-linked habitat features explain the collapse of a well-managed fishery. *Nature Climate Change*.
- RA Howard**, LA Rogers, KA Kearney, LA Vary, L Ciannelli. (In Prep). Forecasting of marine species distributions during early life stages under future climate scenarios.

POSTERS & PRESENTATIONS

- RA Howard**, MA Litzow, L Ciannelli, ER Ryznar. (2023, October 23-27). *Sex- and maturity-specific distributions of eastern Bering Sea snow crab (Chionoecetes opilio)*. [Oral

presentation]. PICES-2023 Annual Meeting, Seattle, WA, USA.

RA Howard, L Ciannelli, JC Field, BK Wells, LAK Barnett, RG Asch. (2023, April 17-21). *The influence of ontogeny and size on the distribution of pelagic young-of-the-year fishes* [Oral presentation]. 5th International Symposium on Effects of Climate Change on the World's Ocean, Bergen, Norway.

RA Howard, L Ciannelli, JC Field, BK Wells, LAK Barnett, RG Asch. (2022, November 7-11). *The influence of ontogeny and size on the distribution of juvenile forage fishes*. [Poster presentation]. Symposium on Small Pelagic Fish, Lisbon, Portugal.

RA Howard, L Ciannelli, LA Rogers, KA Kearney, L Vary. (2022, February 27-March 4). *Effects of future climate variability on Bering Sea groundfish spawning distributions*. [Oral presentation]. Ocean Sciences Meeting, Virtual.

RA Howard, L Ciannelli, LA Rogers, KA Kearney, L Vary. (2022, January 24-27). *Effects of future climate variability on Bering Sea groundfish spawning distributions*. [Oral presentation]. Alaska Marine Science Symposium, Virtual.

RA Howard, L Ciannelli, and WW Wakefield (2020, December 1-2). *Visualization and overlap of fishery-independent and fishery-dependent data for assessment of the Oregon shelf flatfish fishery*. [Poster presentation]. CalCOFI Conference, Virtual.
https://calcofi.com/downloads/Posters2020/CalCOFI_Poster-Rebecca%20Howard.pdf

RA Howard, L Ciannelli, WW Wakefield, and MR Fewings. (2020, March 4-5). *Four decades of change in the Oregon nearshore flatfish fishery through the eyes of science and industry*. [Poster presentation]. Meeting of the Oregon American Fisheries Society, Bend, OR, USA.

RA Howard, L Ciannelli, WW Wakefield, and MR Fewings. (2019, November 8-9). *Four decades of change in the Oregon nearshore flatfish fishery through the eyes of science and industry*. [Poster presentation]. State of the Coast Conference, Gleneden Beach, OR, USA.

RA Howard, and HM Page. (2015, May 19). *Larval swimming duration of *Watersipora subtorquata**. [Poster presentation]. UCSB Undergraduate Research Colloquium, Santa Barbara, CA, USA.

RA Howard and PM Collins. (2014, May 20). *Embryonic development of the cabezon (*Scorpaenichthys marmoratus*)*. [Poster presentation]. UCSB Undergraduate Research Colloquium, Santa Barbara, CA, USA.

FELLOWSHIPS & AWARDS

- 2023 Wayne V. & Louise Burt Memorial Fellowship, Oregon State University
- 2023 CEOAS Outreach Accomplishment Award, Oregon State University
- 2022 Ocean Ecology of Nekton Research Scholarship, Oregon State University
- 2021 Kuhnel Regional Scholarship, Mensa Education and Research Foundation
- 2018 Provost's Distinguished Graduate Fellowship, Oregon State University
- 2017 Segal AmeriCorps Education Award, Corporation for National and Community Service
- 2015 B.S. Aquatic Biology Distinction in Major, UCSB
- 2014 Bradley Paul Nuremberg Memorial Scholarship, UCSB Diving Operations

FUNDING & GRANTS

- 2024 NCEAS Environmental Data Science Summit Travel Support, UCSB
- 2023 PICES Annual Meeting Travel Grant, NSF
- 2023 CEOAS Association of Graduate Students Travel Award, Oregon State University

2023 Scholarly Presentation Award, Oregon State University
2023 Effects of Climate Change on the World's Ocean Travel Grant, PICES
2022 NSF Travel Grant, WHOI & UMCES
2022 International Symposium on Small Pelagic Fish Travel Grant, PICES
2020 Thesis Completion Award, Oregon State University

FIELD EXPERIENCE

May/Jun 2023 **Volunteer Survey Biologist**
Pre-Recruit Survey and NCC Ecosystem Survey (NOAAS Bell M. Shimada)
July 2019 **Volunteer Survey Biologist**
West Coast Groundfish Bottom Trawl Survey (F/V Last Straw)
July 2019 **Mooring and Instrument Deployment Volunteer**
Partnership for the Interdisciplinary Studies of Coastal Oceans (R/V Elakha)
May 2017 **Volunteer Survey Biologist**
Rockfish Recruitment and Ecosystem Assessment Survey (NOAAS Reuben Lasker)

MENTORING & OUTREACH

2023 **Guess Who? Fish Edition**, *Oregon State University*
Developed fisheries activity for College of Earth, Ocean & Atmospheric Sciences
2019 – 2022 **National Ocean Sciences Bowls**, *Oregon State University*
Salmon Bowl event volunteer.
2019 – 2020 **Academic Mentoring Program (CEOAS AMP)**, *Oregon State University*
Mentor for four undergraduate students in environmental sciences.
2014 – 2015 **Graduate Biology Mentorship Association (BIOME)**, *UCSB*
Mentor for undergraduate students in biology.
2014 – 2015 **Hollister Ranch Tidepool Conservancy, Gaviota, CA**
Outdoor education for 3rd through 7th grade students.

TEACHING EXPERIENCE

Summer 2023 **Biological Oceanography**, *Oregon State University*
Guest Lecturer
Winter 2021 **Fishery Biology (online)**, *Oregon State University*
Graduate Teaching Assistant

UNIVERSITY & DEPARTMENTAL SERVICE

CEOAS 2022-2023 Ocean Ecology & Biogeochemistry Graduate Representative, Corvallis, OR
CEOAS 2022 Promotion and Tenure Student Committee, Corvallis, OR
CEOAS 2020 Promotion and Tenure Student Committee, Corvallis, OR