

SELENE FREGOSI, PHD

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Updated: January 29, 2024

EDUCATION

Ph.D. Wildlife Science, Oregon State University 2020
Dissertation: Applications of slow-moving platforms for passive acoustic monitoring and density estimation of marine mammals

M.Sc. Wildlife Science, Oregon State University 2015
Thesis: Development and evaluation of an animal-borne active acoustic tag to conduct minimally invasive behavioral response studies on marine mammals

B.A. Marine Science, University of San Diego 2009
Concentration: Biology. Minor: Chemistry. Honors: *magna cum laude*

PROFESSIONAL EXPERIENCE

Cetacean Survey Scientist/Scientist 2 November 2020 - present
Ocean Associates, Inc. *contracted in support of*
Cetacean Research Program, NOAA Pacific Islands Fisheries Science Center, Honolulu, HI, USA

Postdoctoral Research Associate September 2022 - present
Associate Scientist I April 2011 - August 2022
Southall Environmental Associates, Inc., Aptos, CA, USA

Research Affiliate April 2022 - June 2023
Cooperative Institute for Marine Ecosystem and Resources Studies
Oregon State University and NOAA Pacific Marine Environmental Laboratory, Newport, OR, USA

Postdoctoral Researcher July - November 2020
Cooperative Institute for Marine Ecosystem and Resources Studies
Oregon State University and NOAA Pacific Marine Environmental Laboratory, Newport, OR, USA

Graduate Research Fellow April 2013 - June 2020
Cooperative Institute for Marine Ecosystem and Resources Studies
Oregon State University and NOAA Pacific Marine Environmental Laboratory, Newport, OR, USA *and*
Department of Fisheries and Wildlife, Corvallis, OR, USA

Wildlife Biologist May - October 2012 & May - August 2011
Duckworth Lab, University of Arizona, Missoula, MT, USA

Research Assistant November 2011 - April 2012
Intern October 2010 - March 2011
Pinniped Cognition and Sensory Systems Lab
University of California, Santa Cruz, Santa Cruz, CA, USA

FIELD RESEARCH EXPERIENCE

Cooperative Institute for Marine Ecosystem and Resources Studies, Oregon State University/NOAA Pacific Marine Environmental Laboratory Total piloting time to date: 17 months; total ship time to date: 15 weeks

- *AUV piloting*: Apr-Jun 2023, SG639 & SG679 - Main Hawaiian Islands; Apr-Jun 2022, SG639 & SG680 - Main Hawaiian Islands; Feb-Mar 2020, SG607 & SG639 - Southern California; May-Jun 2018, SG639 - Gulf of Mexico; Jun-Jul 2017, SG607 - Gulf of Mexico; May 2017, SG607 & SG639 - Oregon; Jul-Aug

2016, SG607 & Q003 – Southern California; Dec 2015 – Jan 2016, SG158, Q001 & Q002 – Southern California; Jun-Jul 2015, SG608 – Gulf of Mexico; May 2015, SG607 & SG608 – Oregon; Apr 2015, SG607 & Q003 – Washington; Oct 2014, SG607 – Oregon; Mar 2014, SG158 – Oregon

- *Ship-based activities*: day trips 2013-2018, Newport, OR – glider deployments; 18 July – 3 August 2016, *M/V Horizon*, San Diego, CA, *M/V Vibrio*, Two Harbors, CA - Glider, float, moored hydrophone, and buoy deployment, daily re-positioning, and recovery; 20-23 December 2015 and 4-6 January 2016, *U.S. Navy RSC-4*, Point Loma, CA – Glider and float deployment and recovery
- *Shore-based activities*: visual surveys and theodolite tracking of migrating grey whales, Newport, OR, Feb-Mar 2013; Northern elephant seal telemetry tagging and translocation experiments, Año Nuevo, CA, Mar-Apr 2012

Southall Environmental Associates, Inc. - *Ship-based activities*: *M/V Truth*, Santa Barbara, CA, *M/V Magician*, San Pedro, CA, *R/V Ziphid* and *Musculus* (RHIBs) – tagging, focal follow, photo id, passive/active acoustics, 2-4 weeks/yr 2012-2023 - *Shore-based activities*: theodolite tracking of delphinid species during controlled exposure experiments, Two Harbors, CA, Oct-Dec 2022, Oct 2023

University of Arizona - Passerine bird nest monitoring, banding, hormone sampling, and behavioral monitoring, Missoula, MT, May-Oct 2012, May-Aug 2011

University of California, Santa Cruz - Rookery composition and behavioral assessment, passive acoustic recording, animal tracking, and playback experiments with Northern elephant seals, Año Nuevo, CA and Piedras Blancas, CA, Dec-Mar 2012, Dec-Mar 2011

PUBLICATIONS

*indicates undergraduate mentee

1. McCullough, JKL, Henderson, EE, Trickey, JS, Barlow, J, Baumann-Pickering, S, Manzano-Roth, R, Alongi, G, Martin, S, **Fregosi, S**, Mellinger, DK, Klinck, H, Szesciorka, AR, & Oleson, EM. (2024) Geographic distribution of Cross Seamount beaked whale based on acoustic detections. *Marine Mammal Science*, 40(1):164-183. doi:10.1111/mms.13061
2. Southall, BL, Allen, AN, Calambokidis, J, Casey, C, DeRuiter, SL, **Fregosi, S**, Friedlaender, AS, Goldbogen, JA, Harris, CM, Hazen, EL, Popov, V. (2023). Behavioural responses of fin whales to military mid-frequency active sonar. *Royal Society Open Science*. 10(12):231775. doi:10.1098/rsos.231775
3. **Fregosi, S**, Harris, DV, Matsumoto, H, Mellinger, DK, Martin, SW, Matsuyama, B, Barlow, J, and Klinck, H. (2022). Detection probability and density estimation of fin whales by a Seaglider. *Journal of the Acoustical Society of America*, 152(4):2277-2291. doi:10.1121/10.0014793
4. Durban, JW, Southall, BL, Calambokidis, J, Casey, C, Fearnbach, H, Joyce, TW, Fahlbusch, JA, Oudejans, MG, **Fregosi, S**, Friedlaender, AS, Keller, NM, Visser, F. (2022). Integrating remote sensing methods during controlled exposure experiments to quantify group responses of dolphins to navy sonar. *Marine Pollution Bulletin*, 174:113194. doi:10.1016/j.marpolbul.2021.113194
5. Oswald, JN, Walmsley, SF, Casey, C, **Fregosi, S**, Southall, BL, Janik, VM. (2021). Species information in whistle frequency modulation patterns of common dolphins. *Philosophical Transactions of the Royal Society B*, 376(1836): 20210046. doi:10.1098/rstp.2021.0046
6. Barlow, J, **Fregosi, S**, Thomas, L, Harris, D, Griffiths, ET. (2021). Acoustic detection range and population density of Cuvier's beaked whales estimated from near-surface hydrophones. *Journal of the Acoustical Society of America*, 149(1): 111-125. doi:10.1121/10.0002881
7. **Fregosi, S**, Harris, DV, Matsumoto, H, Mellinger, DK, Barlow, J, Baumann-Pickering, S, & Klinck, H. (2020). Detections of whale vocalizations by simultaneously deployed bottom-moored and deep-water mobile autonomous hydrophones. *Frontiers in Marine Science*, 7: 721.

[doi:10.3389/fmars.2020.00721](https://doi.org/10.3389/fmars.2020.00721)

8. **Fregosi, S**, Harris, DV, Matsumoto, H, Mellinger, DK, Negretti*, C, Moretti, DJ, Martin, SW, Matsuyama, B, Dugan, P, Klinck, H. (2020). Comparable detections of fin whale 20 Hz calls by mobile and stationary autonomous recorders. *Journal of the Acoustical Society of America*, 147(2): 961-977. [doi:10.1121/10.0000617](https://doi.org/10.1121/10.0000617)
9. Southall, BL, DeRuiter, S, Friedlaender, AS, Stimpert, AK, Goldbogen, J, Hazen, E, Casey, C, **Fregosi, S**, Cade, D, Allen, A, Harris, C, Falcone, E, Schorr, G, Moretti, DJ, Gailey, G, Guan, S, Calambokidis, J. (2019). Behavioral responses of individual blue whales (*Balaenoptera musculus*) to mid-frequency military sonar. *Journal of Experimental Biology*, 222(5): jeb190637. [doi:10.1242/jeb.190637](https://doi.org/10.1242/jeb.190637)
10. Nieuwkerk, SL, **Fregosi, S**, Mellinger, DK, & Klinck, H. (2016). A complex baleen whale call recorded in the Marianas Trench Marine National Monument. *Journal of the Acoustical Society of America*, 140(3): EL1-6. [doi:10.1121/1.4962377](https://doi.org/10.1121/1.4962377)
11. **Fregosi, S**, Klinck, H, Horning, M, Mellinger, DK, Costa, DP, Mann, DA, Sexton, K, Hückstädt, L & Southall, BL. (2016). An animal-borne active acoustic tag for minimally invasive behavioral response studies on marine mammals. *Animal Biotelemetry*, 4: 9. [doi:10.1186/s40317-016-0101-z](https://doi.org/10.1186/s40317-016-0101-z)
12. Klinck, H, **Fregosi, S**, Matsumoto, H, Turpin, A, Mellinger, DK, Erofeev, A, Barth, JA, Shearman, RK, Jafarmadar, K, & Stelzer, R. (2016). Mobile autonomous platforms for passive-acoustic monitoring of high-frequency cetaceans, in A. Friebe and F. Haug (Eds.), *Robotic Sailing 2015*, Springer International Publishing, pp. 29–37. [doi:10.1007/978-3-319-23335-2_3](https://doi.org/10.1007/978-3-319-23335-2_3)
13. Matsumoto, H, Haxel, J, Turpin, A, **Fregosi, S**, Klinck, H, Klinck, K, Baumann-Pickering, S, Erofeev, A, Barth, JA, Dziak, RP, & Jones, C. (2015). Simultaneous operation of mobile acoustic recording systems off the Washington Coast for cetacean studies: System noise level evaluations, *Oceans 2015 MTS/IEEE, 19-22 October 2015*, Washington, D.C. [doi: 10.23919/OCEANS.2015.7401830](https://doi.org/10.23919/OCEANS.2015.7401830)

In Revision or Review

Casey, CC, **Fregosi, S**, Oswald, J, Janik, V, Visser, F, Southall, BL. (*In review*). Common dolphin whistle response to experimental mid-frequency sonar. *PLoS ONE*

Harris, DV, **Fregosi, S**, Klinck, H, Mellinger, DK, Thomas, L. (*In Revision*). Assessing the effect of ocean glider movement on distance sampling assumptions. *Remote Sensing in Ecology and Conservation*

Simonis, AE, **Fregosi, S**, Oleson, EO. (*In internal review*). Fishing vessel generated 'dinner bell' linked to higher rates of false killer whale presence and catch depredation. *Target: Aquatic Conservation: Marine and Freshwater Ecosystems*

PEER-REVIEWED REPORTS

1. **Fregosi, S**, Mellinger DK, & Ampela, K. (2020) Passive acoustic monitoring of large whales on and off the continental shelf of Southern California using autonomous underwater vehicles. Draft Report. Prepared for Commander, U.S. Pacific Fleet, Environmental Readiness Division, San Diego, CA. Submitted to Naval Facilities Engineering Command Pacific (NAVFAC PAC), Pearl Harbor, HI under Contract No. N6247015D8006, Task Order 18F0147, issued to HDR Inc., San Diego, CA. November 2020.
2. Mellinger, DK & **Fregosi, S**. (2019). Assessment of ocean ambient sound levels in the northern Gulf of Mexico, May – June 2018. Preliminary Report. Prepared for the Bureau of Ocean Energy Management (BOEM), United States Department of the Interior under Contract No. M17PC00001, Task Order M17PD00011, issued to HDR Inc., Vienna, VA, USA. Prepared by Oregon State University, Newport, OR, USA. February 2019.

3. Klinck, H, Nieukirk, SL, **Fregosi, S**, Klinck, K, Mellinger, DK, Lastuka, S, Shilling, GB, & Luby, JC. (2016). Cetacean Studies on the Kona Coast in March 2010: Passive Acoustic Monitoring of Marine Mammals Using Gliders – Results from an Engineering Test. Final Report. Prepared for Commander, U.S. Pacific Fleet, Environmental Readiness Division, Pearl Harbor, HI. Submitted to Naval Facilities Engineering Command (NAVFAC) Pacific, Pearl Harbor, HI under Contract No. N62470-10-D-3011, Task Order KB25, issued to HDR Inc., Honolulu, HI. Prepared by Oregon State University, Newport, OR, and the Applied Physics Laboratory of the University of Washington, Seattle, WA. April 2016. 36 pages.
4. Klinck, H, Nieukirk, SL, **Fregosi, S**, Klinck, K, Mellinger, DK, Lastuka, S, Shilling, GB, & Luby, JC. (2016). Cetacean Studies in the Gulf of Alaska Temporary Maritime Activities Area in July-August 2015: Passive Acoustic Monitoring of Marine Mammals Using Gliders. Final Report. Prepared for Commander, U.S. Pacific Fleet, Environmental Readiness Division, Pearl Harbor, HI. Submitted to Naval Facilities Engineering Command (NAVFAC) Pacific, Pearl Harbor, HI under Contract No. N62470-10-D-3011, Task Order KB25, issued to HDR Inc., Honolulu, HI. Prepared by Oregon State University, Newport, OR, and the Applied Physics Laboratory of the University of Washington, Seattle, WA. March 2016. 44 pages.
5. Klinck, H, Nieukirk, SL, **Fregosi, S**, Klinck, K, Mellinger, DK, Lastuka, S, Shilling, GB, & Luby, JC. (2016). Cetacean Studies on the Mariana Islands Range Complex in March-April 2015: Passive Acoustic Monitoring of Marine Mammals Using Gliders. Final Report. Prepared for Commander, U.S. Pacific Fleet, Environmental Readiness Division, Pearl Harbor, HI. Submitted to Naval Facilities Engineering Command (NAVFAC) Pacific, Pearl Harbor, HI under Contract No. N62470-10-D-3011, Task Order KB25, issued to HDR Inc., Honolulu, HI. Prepared by Oregon State University, Newport, OR, and the Applied Physics Laboratory of the University of Washington, Seattle, WA. March 2016. 52 pages.
6. Klinck, H, Nieukirk, SL, **Fregosi, S**, Klinck, K, Mellinger, DK, Lastuka, S, Shilling, GB, & Luby, JC. (2015). Cetacean Studies on the Quinault Range Site in June 2012: Passive Acoustic Monitoring of Marine Mammals Using Gliders – Results from an Engineering Test. Final Report. Prepared for Commander, U.S. Pacific Fleet, Environmental Readiness Division, Pearl Harbor, HI. Submitted to Naval Facilities Engineering Command (NAVFAC) Pacific, Pearl Harbor, HI under Contract No. N62470-10-D-3011, Task Order KB25, issued to HDR Inc., Honolulu, HI. Prepared by Oregon State University, Newport, OR, and the Applied Physics Laboratory of the University of Washington, Seattle, WA. November 2015. 33 pages.
7. Klinck, H, Nieukirk, SL, **Fregosi, S**, Klinck, K, Mellinger, DK, Lastuka, S, Shilling, GB, & Luby, JC. (2015). Cetacean Studies in the Hawaii Range Complex in December 2014–January 2015: Passive Acoustic Monitoring of Marine Mammals Using Gliders. Final Report. Prepared for Commander, U.S. Pacific Fleet, Environmental Readiness Division, Pearl Harbor, HI. Submitted to Naval Facilities Engineering Command (NAVFAC) Pacific, Pearl Harbor, HI under Contract No. N62470-10-D-3011, Task Order KB23, issued to HDR Inc., Honolulu, HI. Prepared by Oregon State University, Newport, OR, and the Applied Physics Laboratory of the University of Washington, Seattle, WA. October 2015. 58 pages.
8. Klinck, H, Nieukirk, SL, **Fregosi, S**, Klinck, K, Mellinger, DK, Lastuka, S, Shilling, GB, & Luby, JC. (2015). Cetacean Studies on the Mariana Islands Range Complex in September-November 2014: Passive Acoustic Monitoring of Marine Mammals Using Gliders. Final Report. Prepared for Commander, U.S. Pacific Fleet, Environmental Readiness Division, Pearl Harbor, HI. Submitted to Naval Facilities Engineering Command (NAVFAC) Pacific, Pearl Harbor, HI under Contract No. N62470-10-D-3011, Task Order KB25, issued to HDR Inc., Honolulu, HI. Prepared by Oregon State University, Newport, OR, and the Applied Physics Laboratory of the University of Washington, Seattle, WA. August 2015. 50 pages

SELECTED PRESENTATIONS

Invited

Fregosi, S, Harris, D, Mellinger DK, Barlow, J, Thomas, L, Klinck, H. Detection probability of Cuvier's beaked whale clicks from a glider and a deep-water float. 174th Meeting of the Acoustical Society of America, Victoria, BC, Canada, 4-10 Nov 2018

Contributed

Fregosi, S, Norris, E, Wood, M, Mellinger, DK, & Oleson, E. Advancing remote marine mammal stock assessment with passive acoustic gliders. *Underwater Glider User Group (UG2) Workshop*, Oral presentation. Seattle, WA, USA, 20-22 Sep 2022

Fregosi, S, Harris, DV, Matsumoto, H, Mellinger, DK, Martin, SW, Matsuyama, BM, Barlow, J, & Klinck, H. Detection probability and density estimation of fin whales by a Seaglider. *179th Meeting of the Acoustical Society of America*, Oral presentation. Virtual, 7-11 Dec 2020

Fregosi, S, Klinck, H., Matsumoto, H, Turpin, A, Martin, SW, Matsuyama, BM, Helble, TA, Henderson, EE, Moretti, DJ, Morrissey, RP, and Mellinger, DK. (2016). Simultaneous recordings of marine mammal calls by a glider, float, and cabled hydrophone array. *172nd meeting of the Acoustical Society of America*, Oral presentation. Honolulu, HI, USA, 28 Nov-3 Dec 2016

Fregosi, S, Klinck, H, Horning, M, Mellinger, DK, Costa, DP, Mann, DA, Sexton, K, Hückstädt, L & Southall, BL. Turn down for what: Animal-borne controlled exposure as an innovative tool for dive manipulation in free-ranging marine mammals. *21st Biennial Conference on the Biology of Marine Mammals*, Oral presentation. San Francisco, CA, USA, 12-18 December 2015

Fregosi, S, Klinck, H, Matsumoto, H, Turpin, A, Mellinger, DK, & Baumann-Pickering, S. Field comparison of PAM capabilities between a commercially available glider, a float, and a bottom-moored system. *The 7th International Detection, Classification, Localization, and Density Estimation Workshop*, Oral presentation. La Jolla, CA, USA, 13-16 July 2015

Fregosi, S, Klinck, H, Horning, M, Mellinger, DK, Costa, DP, Mann, DA, Sexton, K, Hückstädt, L & Southall, BL. (2014). Integration of an active acoustic playback system with an animal-borne sensor suite for behavioral response studies. *5th International Bio-logging Science Symposium*, Poster presentation. Strasbourg, France, 22-27 September 2014

Fregosi, S, Klinck, H, Horning, M, Mellinger, DK, Costa, DP, Mann, DA, Sexton, K, & Hückstädt, L. Use of an animal-borne active acoustic tag to conduct minimally-invasive behavioral response studies. *166th Meeting of the Acoustical Society of America*, Oral presentation. San Francisco, CA, USA, 2-6 December 2013

Fregosi, S, Klinck, H, Mellinger, DK, Bogue, NM, & Luby, JC. Acoustic observations of mid-frequency cetaceans in the eastern North Pacific using a glide. *Sixth International Workshop on Detection, Classification, Localization, and Density Estimation of Marine Mammals using Passive Acoustics*, Poster presentation, St. Andrews, Scotland, UK, 12-15 June 2013

ORGANIZED WORKSHOP SESSIONS

Connect the dots: Multi-target tracking in acoustics

March 2022

Co-organizer with P. Gruden and Y. Barkley. The 9th International Workshop on Detection, Classification, Localization, and Density Estimation of Marine Mammals Using Passive Acoustics, Honolulu, Hawai'i, USA

RESEARCH GRANTS

2021 Advancing remote marine mammal stock assessment with passive acoustic gliders, NOAA Applications of Uncrewed Systems Technology **\$830k**

2019 Autonomous Underwater Vehicle Passive Acoustic Monitoring of Beaked Whales in the Southern California Area, NAVFAC HDR Contract \$260k

FELLOWSHIPS, HONORS & AWARDS

2019	Briggs Scholarship in Biogeography, Oregon State University	\$1000
2018	Oregon Lottery Graduate Scholarship, Oregon State University	\$2000
	Bob Moch Memorial Endowment Service Award, Hatfield Student Organization	\$1000
	Robert Anthony Graduate Scholarship in Population Ecology, Oregon State University	\$2000
	Graduate Student Travel Award, Oregon State University	\$1000
	Student Travel Subsidy, Acoustical Society of America	\$200
	GoMRI Scholar, Gulf of Mexico Research Initiative	
2017	Mamie L. Markham Research Award, Hatfield Marine Science Center	\$8000
	Thomas G. Scott Grant Scholarship, outstanding PhD student, Oregon State University	\$2000
	Lylian Brucefield Reynolds Scholarship Fund Award, Hatfield Marine Science Center	\$1000
	Hatfield Student Organization Travel Award, Hatfield Marine Science Center	\$400
2016	Chairman's Leadership Award, OSU Department of Fisheries and Wildlife	\$500
	Student Travel Subsidy, Acoustical Society of America	\$175
	Mastin Student Travel Award, Oregon State University, Dec 2016	\$1000
	Hatfield Student Organization Travel Award, HMSC, OSU, Dec 2015	\$250
2015	Student Travel Support, DCLDE Workshop	\$1200
2014	National Defense Science and Engineering Graduate Fellowship, American Society for Engineering Education & Office of Naval Research, 3 years	\$142k
	Dr. Nancy Foster Scholarship, NOAA, declined	
2014	Student Travel Support, 5th Biologging Science Symposium	\$1400
	Mastin Student Travel Award, Oregon State University	\$2000
	Hatfield Student Organization Travel Award, Hatfield Marine Science Center	\$250
2013	Provost Distinguished Graduate Fellowship, Oregon State University	\$36k
	Markham First Year Award, Hatfield Marine Science Center	\$6000
	Laurel's Block Grant Tuition Scholarship, Oregon State University	\$6800
	Student Travel Award, DCLDE Workshop	\$1200
	Student Travel Award, Acoustical Society of America	\$120
2009	Trustee Scholarship, University of San Diego	\$48k
2005	Valedictorian, St. Patrick- St. Vincent High School	

SERVICE AND OUTREACH

Peer Review Activity

NOAA: Research Article Internal Review (1), Hollings Scholar Applications

Scientific manuscripts: *Animal Biotelemetry* (1), *Conservation Science and Practices* (1), *Deep-Sea Research Part I* (1), *Endangered Species Research* (1), *Frontiers in Marine Science* (2), *Journal of the Acoustical Society of America* (2), *Marine Biology* (1), *Marine Ecology Progress Series* (2), *Marine Technology Society Journal* (1), *Scientific Reports* (1)

Professional Membership

Acoustical Society of America, Animal Bioacoustics Technical Committee; Marine Technology Society; Underwater Glider User Group

Commitment to Diversity, Equity, and Inclusion

I am committed to promoting and enhancing diversity, equity, and inclusion (DEI) in the sciences. I actively work to educate myself and provide research and learning opportunities to historically excluded groups and implement and promote open science practices in my research.

NOAA-led DEI Trainings

- White Allyship DEI Training 2020
- Unconscious Bias DEI Training 2020
- Practical Ways to be an Ally DEI Training 2020

Participation in K-12 Outreach Programs

- Mentor, Girls in Engineering and Marine Science, Oregon Coast STEM Hub, Hatfield Marine Science Center 2016 - 2018
- Mentor, Designing our World: A community Envisioning Girls as Enginners, Oregon Coast STEM Hub, Hatfield Marine Science Center 2016-2017
 - NSF-funded program, included two-part training workshop for mentors

Selected Public Talks

- The How and Why of Using Underwater Gliders to Listen for Whales, Oregon Chapter of the American Cetacean Society, Newport Public Library, Newport, OR, USA 2018
- #SciComm: The Social Media – Science Connection. Monday Tech Talk, Hatfield Marine Science Center, Newport, OR, USA 2015
- Do you speak whale? Oregon Chapter of the American Cetacean Society, Newport Public Library, Newport, OR, USA 2014
- Bioacoustics of northern elephant seals. Año Nuevo State Park Docent Seminar, Año Nuevo, CA, USA 2012

Selected Community Involvement and Leadership

- Organizer, Wild About Wildlife Summer Camp, Oregon State University 2017-2018
- Hatfield Student Organization, Treasurer 2017 – 2018
- Hatfield Student Organization, Community Outreach Coordinator 2014 – 2017
- Fisheries and Wildlife Graduate Student Organization, Communication's Officer 2014 – 2017
- Volunteer, Marine Science Day, Hatfield Marine Science Center 2013-2017

SPECIAL COURSES

Openscapes Champions NOAA SWFSC/PIFSC Fall Cohort 2022
10-week course in professional development and leadership in open science practices

Summer Course in Acoustic Communication, University of Southern Denmark 2017
Advanced theoretical and practical course covering topics of terrestrial and marine animal acoustic communication

Seaglider Pilot Training, Kongsberg UTI, Lynnwood, WA, USA 2014
Intensive hands-on training course for piloting Kongsberg Seagliders

SeaBASS (BioAcoustics Summer School), National Conference Center, Leesburg, VA, USA 2014
One-week foundational graduate course on marine animal biology and acoustics

Introduction to Animal Bioacoustics, Oregon State University, Corvallis, OR, USA 2013
Graduate special topics course covering range of bioacoustics topics including sound recording and analysis, source-medium receiver theory, animal behavior and acoustic communication

Methods in Marine Bioacoustics, Duke University Marine Laboratory, Beaufort, NC, USA 2012
Two-week course on basics of active and passive marine bioacoustics methodology including theory and hands on equipment and software training

SKILLS/CERTIFICATIONS

Experienced MATLAB and R programmer

Acoustic analysis of low and high-frequency data, using various software and automated detection and classification (Osprey, Ishmael, Raven, Triton, Pamguard, Adobe Audition)

Spatial analyses in ArcGIS and Matlab

Pilot for underwater AUV's including Seaglider and APEX float

American Boating Certification; experience with small boat driving, maintenance, and towing (including open ocean research activities)

Physiological sample collection for avian and pinniped species including blood collection

Captive marine mammal husbandry, behavioral observation, and health assessment