

# Shannon Rankin

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<https://shannonrankin.github.io/me/>

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## Summary:

Accomplished wildlife research biologist (28 yr) with experience leading all aspects of complicated research projects from concept to completion. Experience in strategic planning, budget and time management, and positive team leadership. Seeking a rewarding experience leading collaborative science and conservation projects.

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## Work Experience:

**Wildlife Research Biologist**, Southwest Fisheries Science Center. La Jolla, CA.

Leader of Southwest Acoustic Ecology Lab. Responsible for strategic planning, writing proposals, leading field research, managing budgets, supervising scientists, data analysis and oral and written presentation of results (2000-present).

**Research Biologist**, International Whaling Commission

Research biologist studying blue whale acoustics as part of the Southern Ocean-Whale Ecosystem Research program (winter 2001, 2002).

**Research Biologist**, National Marine Fisheries Service

Field biologist during aerial surveys of right whales, included collection and editing of data collected during aerial visual surveys (spring 2000).

**Field Biologist**, Southwest Fisheries Science Center

Marine mammal observer on shipboard surveys of cetacean populations in the Pacific Ocean (summer/fall 1998-2000).

**Biology Instructor**, Early Academic Outreach Program, UC San Diego

Instructor for summer biology course for underprivileged high school students; designed syllabus and curricula, prepared and led lectures and biology labs following a high school text, prepared and graded exams (June - July 1999).

**Research Assistant**, Texas A&M University

Independent research studying the impact of noise associated with seismic exploration on the distribution of cetaceans in the Gulf of Mexico (1997-1998).

**Teaching Assistant**, Texas A&M University

Teaching assistant for undergraduate level Ichthyology and Ecology courses (1997).

**Marine Biology Instructor**, Communities & Youth Programs, Texas A&M University

Marine biology teacher in lecture, field, and lab formats, development of field guides and curricula (June 1996 - March 1999).

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## Education:

M.S. Wildlife and Fisheries Sciences (1999); Texas A&M University, Galveston, Texas

B.S. Aquatic Biology and Environmental Studies (1994), UC Santa Barbara, CA

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## Professional Skills:

- Successfully led complex multi-year projects from proposal to final report.
- Proficient and prolific professional writing including proposals, scientific publications, and reports.
- Experienced in using Github, Trello, and R to develop transparent and reproducible workflows, for team and project management.
- Effective oral and written communication skills ranging from stakeholder presentations to leading teams, trainings, & workshops.
- Strategic planning with a strong collaborative approach to identify and engage with stakeholders to meet a common goal.
- Open Science enthusiast and [Openscapes Mentor](#): I've led several national and international open science efforts including leading an international effort to create a [BioAcoustics Stack Exchange](#) crowd-sourced Q&A site.
- Extensive experience hosting trainings, workshops, and seminars.
- Southwest Fisheries Staff Awards: Staff of the Quarter (Q1 2024) and "Silver Sherman Award" recognizing accomplishments above and beyond normal duties and in fulfillment of NOAA's mission (2018).

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## Select Projects:

**Principle Investigator, *Adrift in the California Current*:** led team of 5 researchers on highly collaborative project studying marine mammal acoustics in the California Current, funded by Bureau of Ocean Energy Management (2000-2024)

**Co-Lead Passive Acoustics Monitoring Strategic Initiative:** Co-lead national effort to revolutionize our science, co-leading efforts related to PAM-Glider surveys and Open Science, funded by the Inflation Reduction Act (2023 - current)

**Openscapes Mentor:** Lead NOAA PAM Strategic Initiative to adopt open science organizational practices for efficient and transparent workflows. 2024 - current

**Free and Open Source Software for Acoustics:** Led development of a streamlined series of software packages (written in R by team members); these software are now being adopted nationally. 2018-2023.

**Vaquita Express:** Led one of three collaborative international research projects to study the critically endangered Vaquita in Baja California, Mexico.

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## Grants & Funding:

*ADRIFT: Spatial and Temporal Distribution of Cetaceans in the California Current Ecosystem Using Drifting Archival Passive Acoustic Monitoring*, funded by Bureau of Ocean Energy Management \$2,715,410. 2020-2024

*Biotic, Abiotic, and Anthropogenic Contributors to Soundscapes: Development of an Open-Source Method for Data Integration & Visualization*, funded by NOAA's Ocean Acoustics Program \$58,000. FY2022-2023

*Cooperative Research with Dungeness Crab Fishery to Assess Potential for Passive Acoustic Monitoring to Identify Entanglement Risk*, funded by NOAA's Cooperative Research Program \$33,800. 2021-2022

*Investigation into the Effect of Seal Bombs on Harbor Porpoise in Monterey Bay*, funded by NOAA's Ocean Acoustics Program. \$74,200. 2019-2020

*Quantifying human drivers of noise in the Channel Islands National Marine Sanctuary: a focus on seal bombs*, funded by NOAA's Ocean Acoustics Program. \$75,900. 2018

*Passive Acoustic Data Processing: Development of a standardized approach to automated analysis and summary of NMFS towed array survey data*, funded by NOAA's Advanced Sampling Technology Working Group \$288,800. 2018-2020

*Sally Connally Hardie Visiting Researcher Bursary (Fellowship)*, funded by University of St. Andrews, Scotland, UK £5000. 2017

*Passive acoustic density estimation of baleen whales: Using sonobuoys to estimate call-rate correction factors*, funded by Navy LMR \$242,730. 2014 - 2016

*Development of an automated system for acoustic identification of odontocetes in the California Current: Improving classification of dolphin groups*, funded by NOAA's Advanced Sampling Technology Working Group \$128,793. 2013-2015

*Developing standardized methods for passive acoustic data collection during NMFS shipboard cetacean surveys*, funded by NOAA's Advanced Sampling Technology Working Group \$138,471. 2011-12

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## Education & Outreach:

- [Eavesdropping on the Ocean](#) - partnered with Data Nuggets to develop K-12 classroom activity based on our Adrift in the California Current research. Data Nuggets are activities that bring real scientific data into the classroom. The project is free and publicly accessible to teachers via their website. 2023
- [Bringing Ocean Acoustics Data to Classrooms](#) - Partners include San Diego County Office of Education and UCSD's CREATE to co-host an educator workshop to develop K-12 lesson plans based on our passive acoustic datasets. 2020.
- ["Dolphin Speak"](#) Outreach video(s) by J. Oswald at University of St Andrews, Aug 2017.
- ["Caller ID for Dolphins"](#) by Rebecca Heisman, Hakai online magazine, Feb 2017.
- ["To Protect Fin Whales, Scientists Work on Their Listening Skills"](#), Rich Press NOAA Podcast, May 2013.
- Judge: Greater San Diego Science & Engineering Fair, 2013-2021
- Student and Intern Mentor to numerous students

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## Select Publications:

**Rankin, S.**, Sakai, T., Archer, F., Barlow, J., Cholewiak, D., DeAngelis, A., Keating, J., Oleson, E., Simonis, A., Soldevilla, M. Beaker Banter: a machine learning approach to acoustic classification of beaked whales. *Ecological Informatics* 80:102511.  
<https://doi.org/10.1016/j.ecoinf.2024.102511>

- Zahn, Marie J., **S. Rankin**, J.L.K. McCullough, J.C. Koblitz, F. Archer, M. H. Rasmussen, and K. L. Laidre. "Acoustic differentiation and classification of wild belugas and narwhals using echolocation clicks." *Scientific reports* 11, no. 1 (2021): 1-16.
- Greggor, A.L., Berger-Tal, O., Swaisgood, R., Cooke, S., DeVault, T., Fernandez-Juricic, E., Gienapp, A., Hall, S., Hostetter, C., Owen, M., **Rankin, S.**, Ruppert, K., Swaddle, J., Blumstein, D.T. 2020. A framework for cultural change in conservation science and practice. <https://doi.org/10.3389/fcosc.2021.653056>
- Rankin, S.**, Oedekoven, C. & Archer, F. 2020. Mark recapture distance sampling: using acoustics to estimate the fraction of dolphins missed by observers during shipboard line-transect surveys. *Environ Ecol Stat.* <https://doi.org/10.1007/s10651-020-00443-7>
- Simonis, A.E., Forney, K., **Rankin, S.**, Ryan, J.P., Zhang, Y., DeVogelaere, A., Margolina, T., Joseph, J., Krumpel, A. and Baumann-Pickering, S., 2020. Seal Bomb Noise as a Potential Threat to Monterey Bay Harbor Porpoise. *Frontiers in Marine Science*, 7, p.142. <https://doi.org/10.3389/fmars.2020.00142>
- Archer, F., **S. Rankin**, K. Stafford, M. Castellote, J. Delarue. 2019. Quantifying spatial and temporal variation of North Pacific fin whale (*Balaenoptera physalus*) acoustic behavior. *Marine Mammal Science* 2019, <https://doi.org/10.1111/mms.12640>
- Rankin, S.**, E. Archer, J. Keating, A. Curtis, J. Oswald, M. Oswald, and J. Barlow. 2017. Acoustic classification of delphinids in the California Current using whistles, echolocation clicks, and burst pulses. *Mar. Mamm. Sci.* 33:520-540.
- Soldevilla, M. S., S. Baumann-Pickering, D. Cholewiak, L. E. W. Hodge, E. M. Oleson, **S. Rankin**. 2017. Geographic variation in Risso's dolphin echolocation click spectra. *J. Acoust. Soc. Am.* 142(2):599-617.
- Rankin, S.**, J. N. Oswald, A. E. Simonis, and J. Barlow. 2015. Vocalizations of the rough-toothed dolphin, *Steno bredanensis*, in the Pacific Ocean. *Marine Mammal Science* 31(4):1538-1548.
- Rankin, S.**, F. Archer, J. Barlow. 2013. Vocal activity of tropical dolphins is inhibited by the presence of killer whales, *Orcinus orca*. *Mar. Mamm. Sci.* 29(4): 679-690.
- Rankin, S.**, S. Baumann-Pickering, T. Yack, J. Barlow. 2011. First sounds recorded from Longman's beaked whales, *Indopacetus pacificus*. *J. Acoust. Soc. Am.* 130(5):EL339-EL344.
- Gerrodette, T., B. L. Taylor, R. Swift, **S. Rankin**, A. M. Jaramillo-Legorreta, L. Rojas-Bracho. 2011. A combined visual and acoustic estimate of 2008 abundance, and change in abundance since 1997, for the vaquita, *Phocoena sinus*. *Mar. Mamm. Sci.* 27(2):E79-E100.
- VanParijs, S. M., C. W. Clark, R. S. Sousa-Lima, S. E. Parks, **S. Rankin**, D. Risch, and I. C. Van Opzeeland. 2009. Management and research applications of real-time and archival passive acoustic sensors over varying temporal and spatial scales. *Mar. Ecol. Prog. Ser.* 395:21-36.
- Rankin, S.**, J.N. Oswald, and J. Barlow. 2008. Acoustic behavior of dolphins in the Pacific Ocean: Implications for using passive acoustic methods for population studies. *Can. J. Acoustics*, 36(1):88-92
- Rankin, S.**, and J. Barlow. 2007. Vocalizations of the sei whale, *Balaenoptera borealis* off the Hawaiian Islands. *Bioacoustics* 16:137-145.

- Rankin, S.**, J. Oswald, J. Barlow and M. Lammers. 2007. Patterned burst-pulse vocalizations of the northern right whale dolphin, *Lissodelphis borealis*. *J. Acoust. Soc. Am.* 121(2):1213-1218.
- Rankin, S.** and J. Barlow. 2005. Source of the North Pacific “boing” sound attributed to minke whales. *J. Acoust. Soc. Am.* 118(5):3346-3351.
- Rankin, S.**, D. Ljungblad, C. Clark, and H. Kato. 2005. Vocalisations of Antarctic blue whales, *Balaenoptera musculus intermedia*, recorded during the 2001/2002 and 2002/2003 IWC/SOWER circumpolar cruises, Area V, Antarctica. *J. Cetacean res. Manage.* 7(1):13-20.
- Rankin, S.**, T. Sakai, and B. Stevenson. 2018. Final Report: Passive acoustic density estimation of baleen whales: using sonobuoys to estimate whale density. Final Report to the U.S. Navy Living Marine Resources. 27 pp.
- Rankin, S.**, J. Barlow, Y. Barkley, R. Valtierra. 2013. A guide to constructing hydrophone arrays for passive acoustic data collection during NMFS shipboard cetacean surveys. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-511. 33pp.