

Jessica Veneris Redfern, Ph.D.

Curriculum Vitae

Anderson Cabot Center for Ocean Life, New England Aquarium
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PROFESSIONAL EXPERIENCE

- 2019-present Senior Scientist and Chair of the Spatial Ecology, Mapping, and Assessment Program (EcoMap), Anderson Cabot Center for Ocean Life, New England Aquarium, Boston, MA
- 2013-2019 Program Leader, Marine Mammal Spatial Habitat and Risk Program, Marine Mammal and Turtle Division, Southwest Fisheries Science Center, NOAA Fisheries, La Jolla, CA
- 2010-2013 Program Leader, Ecosystem Studies Program, Protected Resources Division, Southwest Fisheries Science Center, NOAA Fisheries, La Jolla, CA
- 2004-2010 Marine Ecologist, Protected Resources Division, Southwest Fisheries Science Center, NOAA Fisheries, La Jolla, CA
- 2003-2004 Postdoctoral Associate, National Research Council, Protected Resources Division, Southwest Fisheries Science Center, NOAA Fisheries, La Jolla, CA
- 2002-2003 Postdoctoral Researcher, Environmental Science, Policy, and Management, College of Natural Resources, University of California, Berkeley

EDUCATION

- Ph.D. University of California, Berkeley, May 2002
Department of Environmental Science, Policy, and Management
- Best Presentation, Research in GIS at Berkeley, Conference at the University of California, Berkeley
 - National Science Foundation Dissertation Enhancement Grant
 - Departmental Fellowships
- B.A. The Colorado College, May 1995
Mathematics
- Graduated Magna Cum Laude
 - Graduated with Distinction in Mathematics
 - Phi Beta Kappa Honor Society

SELECTED PROFESSIONAL SERVICE

- 2021 Member of the Regional Wildlife Science Entity's Marine Mammal Working Group
- 2021 Invited expert for NOAA Fisheries Gulf of Mexico Bryde's Whale Recovery Planning Workshop
- 2020 Member of the Marine Mammals Workgroup for the New York State Environmental Technical Working Group's State of the Science Workshop on Wildlife and Offshore Wind Energy 2020: Cumulative Impacts
- 2019 Member of ICES Working Group on Shipping Impacts in the Marine Environment
- 2019 Topic editor for a special issue of *Frontiers in Marine Science* that focuses on the impacts of shipping on marine fauna
- 2018 Member of NOAA Fisheries' humpback whale critical habitat team
- 2018 Member of the steering committee for NOAA Fisheries' second Protected Species Assessment Workshop
- 2017 Invited participant at the IWC Scientific Committee meeting. My paper on predicting cetacean distributions in data-poor marine ecosystems was presented and discussed in three IWC working groups
- 2016 Co-convenor of a workshop to share information regarding whale entanglements occurring along the US West Coast and to brainstorm future collaborations to address this threat
- 2015 Co-convenor of a workshop to develop best practices for collecting data to estimate marine mammal abundance on the Pacific Coast of South America, Salinas, Ecuador
- 2015 Co-convenor of a workshop on ensemble averaging of cetacean distribution models, IWC Scientific Committee meeting, San Diego, CA

PEER-REVIEWED PUBLICATIONS

- Redfern, J. V., K. A. Kryc, L. Weiss, B. C. Hodge, O. O'Brien, S. D. Kraus, E. Quintana-Rizzo, and P. J. Auster. 2021. Opening a Marine Monument to Commercial Fishing Compromises Species Protections. *Frontiers in Marine Science* 8.
- Samhouri, J. F., B. E. Feist, M. C. Fisher, O. Liu, S. M. Woodman, B. Abrahms, K. A. Forney, E. L. Hazen, D. Lawson, J. V. Redfern, and L. E. Saez. 2021. Marine heatwave challenges solutions to human-wildlife conflict. *Proceedings of the Royal Society B: Biological Sciences* 288:20211607.
- Redfern, J.V., Becker, E.A., Moore, T.J. 2020. Effects of variability in ship traffic and whale distributions on the risk of ships striking whales. *Frontiers in Marine Science* 6:1-14.
- Pendleton, D. E., E. E. Holmes, J. V. Redfern, and J. Zhang. 2020. Using modelled prey to predict the distribution of a highly mobile marine mammal. *Diversity and Distributions* 26:1612-1626.
- Smith, J.N., Kelly, N., Childerhouse, S., Redfern, J.V., Moore, T.J., Peel, D. 2020. Quantifying ship strike risk to breeding whales in a multiple-use marine park: the Great Barrier Reef. *Frontiers in Marine Science* 7:1-15.

- Erbe, C., J.N. Smith, J.V. Redfern, and D. Peel. 2020. Editorial: Impacts of shipping on marine fauna. *Frontiers in Marine Science* 7: 1-5.
- Becker, E. A., Carretta, J. V., Forney, K. A., Barlow, J., Brodie, S., Hoopes, R., Jacox, M. G., Maxwell, S. M., Redfern, J. V., Sisson, N. B., Welch, H., Hazen, E. L. 2020. Performance evaluation of cetacean species distribution models developed using generalized additive models and boosted regression trees. *Ecology and Evolution* 00:1–21.
- Hassellöv, I.M., Koski, M., Broeg, K., Marin-Enriquez, O., Tronczynski, J., Dulière, V., Murray, C., Bailey, S., Redfern, J.V., de Jong, K., Ponzevera, E., Belzunce-Segarra, M.J., Mason, C., Iacarella, J.C., Lyons, B., Fernandes, J.A., Parmentier, K. 2020. ICES Viewpoint background document: Impact from exhaust gas cleaning systems (scrubbers) on the marine environment (Ad hoc). *ICES Scientific Reports*. 2:86. 40 pp.
- Redfern, J.V., Moore, T.J., Becker, E.A., Calambokidis, J., Hastings, S.P., Irvine, L.M., Mate, B.R., Palacios, D.M. 2019. Evaluating stakeholder-derived strategies to reduce the risk of ships striking whales. *Diversity and Distributions* 25: 1575-1585.
- Becker, E.A., Forney, K.A., Redfern, J.V., Barlow, J., Jacox, M.G., Roberts, J.J., Palacios, D.M., 2019. Predicting cetacean abundance and distribution in a changing climate. *Diversity and Distributions* 25:626-643.
- Woodman, S.M., K.A. Forney, E.A. Becker, M.L. DeAngelis, E.L. Hazen, D.M. Palacios, and J.V. Redfern. 2019. esdm: A tool for creating and exploring ensembles of predictions from species distribution and abundance models. *Methods in Ecology and Evolution* 10:1923-1933.
- Fiedler, P.C., Redfern, J.V., Forney, K.A., Palacios, D.M., Sheredy, C., Rasmussen, K., García-Godos, I., Santillán, L., Tetley, M.J., Félix, F., Ballance, L.T., 2018. Prediction of large whale distributions: a comparison of presence–absence and presence-only modeling techniques. *Frontiers in Marine Science* 5: 1-15.
- Fleming, A.H., Yack, T., Redfern, J.V., Becker, E.A., Moore, T.J., Barlow, J., 2018. Combining acoustic and visual detections in habitat models of Dall’s porpoise. *Ecological Modelling* 384: 198-208.
- Moore, T.J., Redfern, J.V., Carver, M., Hastings, S., Adams, J.D., Silber, G.K., 2018. Exploring ship traffic variability off California. *Ocean & Coastal Management* 163: 515-527.
- Redfern, J.V., Moore, T.J., Fiedler, P.C., de Vos, A., Brownell, R.L., Forney, K.A., Becker, E.A. & Ballance, L.T. 2017 Predicting cetacean distributions in data-poor marine ecosystems. *Diversity and Distributions* 23: 394-408.
- Redfern, J.V., Hatch, L.T., Caldow, C., DeAngelis, M.L., Gedamke, J., Hastings, S., Henderson, L., McKenna, M.F., Moore, T.J. & Porter, M.B. 2017. Assessing the risk of chronic shipping noise to baleen whales off Southern California, USA. *Endangered Species Research* 32: 153-167.
- Van Noord, J. E., R. J. Olson, J. V. Redfern, L. M. Duffy, and R. S. Kaufmann. 2016. Oceanographic influences on the diet of 3 surface-migrating myctophids in the eastern tropical Pacific Ocean. *Fishery Bulletin* 114:274-287.
- Becker, E. A., K. A. Forney, P. C. Fiedler, J. Barlow, S. J. Chivers, C. A. Edwards, A. M. Moore, and J. V. Redfern. 2016. Moving towards dynamic ocean management: how well do modeled ocean products predict species distributions? *Remote Sensing* 8:149.

- Edwards, E. F., C. Hall, T. J. Moore, C. Sheredy, and J. V. Redfern. 2015. Global distribution of fin whales *Balaenoptera physalus* in the post-whaling era (1980–2012). *Mammal Review* 45:197-214.
- Jensen, C. M., E. Hines, B. A. Holzman, T. J. Moore, J. Jahncke, and J. V. Redfern. 2015. Spatial and temporal variability in shipping traffic off San Francisco, California. *Coastal Management* 43:575-588.
- Redfern, J. V., M. F. McKenna, T. J. Moore, J. Calambokidis, M. L. DeAngelis, E. A. Becker, J. Barlow, K. A. Forney, P. C. Fiedler, and S. J. Chivers. 2013. Assessing the risk of ships striking large whales in marine spatial planning. *Conservation Biology* 27:292-302.
- Fiedler, P. C., J. V. Redfern, J. Van Noord, C. Hall, R. L. Pitman, and L. T. Ballance. 2013. Effects of a tropical cyclone on a pelagic ecosystem from the physical environment to top predators. *Marine Ecology Progress Series* 484:1-16.
- Staaf, D. J., J. V. Redfern, W. F. Gilly, W. Watson, and L. T. Ballance. 2013. Distribution of ommastrephid paralarvae in the eastern tropical Pacific. *Fishery Bulletin* 111:78–89.
- Van Noord, J. E., R. J. Olson, J. V. Redfern, and R. S. Kaufmann. 2013. Diet and prey selectivity in three surface-migrating myctophids in the eastern tropical Pacific. *Ichthyological Research* 60:287-290.
- Becker, E. A., D. G. Foley, K. A. Forney, J. Barlow, J. V. Redfern, and C. L. Gentemann. 2012. Forecasting cetacean abundance patterns to enhance management decisions. *Endangered Species Research* 16:97-112.
- Forney, K. A., M. C. Ferguson, E. A. Becker, P. C. Fiedler, J. V. Redfern, J. Barlow, I. L. Vilchis, and L. T. Ballance. 2012. Habitat-based spatial models of cetacean density in the eastern Pacific Ocean. *Endangered Species Research* 16:113-133.
- Noren, S. R., J. V. Redfern, and E. F. Edwards. 2011. Pregnancy is a drag: hydrodynamics, kinematics and performance in pre- and post-parturition bottlenose dolphins (*Tursiops truncatus*). *The Journal of Experimental Biology* 214:4151-4159.
- Archer F. I., J. V. Redfern, T. Gerrodette, S. J. Chivers, and W.F. Perrin. 2010. Estimation of relative exposure of dolphins to fishery activity. *Marine Ecology Progress Series* 410: 245-255.
- Becker E. A., K. A. Forney, M. C. Ferguson, D. G. Foley, R. C. Smith, J. Barlow, and J. V. Redfern. 2010. Comparing California Current cetacean-habitat models developed using *in situ* and remotely sensed sea surface temperature data. *Marine Ecology Progress Series* 413: 163-183.
- Redfern, J. V., J. Barlow, L. T. Ballance, T. Gerrodette, and E.A. Becker. 2008. Absence of scale dependence in dolphin-habitat models for the eastern tropical Pacific Ocean. *Marine Ecology Progress Series* 163: 1-14.
- Noren, S. R., G. Biedenbach, J. V. Redfern, and E. F. Edwards. 2008. Hitching a ride: the formation locomotion strategy of dolphin calves. *Functional Ecology* 22: 278-288.
- Redfern, J. V., M. C. Ferguson, E. A. Becker, K. D. Hyrenbach, C. Good, J. Barlow, K. Kaschner, M. F. Baumgartner, K. A. Forney, L. T. Ballance, P. Fauchald, P. Halpin, T. Hamazaki, A.J. Pershing, S.S. Qian, A. Read, S.B. Reilly, L. Torres, and F. Werner. 2006. Techniques for cetacean-habitat modeling. *Marine Ecology Progress Series* 310:271-295.
- Redfern, J. V., S. J. Ryan, and W. M. Getz. 2006. Defining herbivore assemblages in the Kruger National Park: A correlative coherence approach. *Oecologia* 146 (4): 632-640.

- Redfern, J. V. and W. M. Getz. 2005. Surface water availability and the management of herbivore distributions in an African savanna ecosystem. *Journal of Arid Environments* 63: 406-424.
- Redfern, J. V., C. C. Grant, H. C. Biggs, and W. M. Getz. 2003. Surface water constraints on herbivore foraging in the Kruger National Park, South Africa. *Ecology* 84(8): 2092-2107.
- Redfern, J. V., J. M. Kruger, P. C. Viljoen, and W. M. Getz. 2002. Biases in estimating population size from an aerial census: A case study in the Kruger National Park, South Africa. *South African Journal of Science* 98(9/10): 455-461.

OTHER PUBLICATIONS

- O'Brien, O., K. McKenna, D. Pendleton, L. Ganley, and J. V. Redfern. 2022. Megafauna Aerial Surveys in the Wind Energy Areas of Massachusetts and Rhode Island with Emphasis on Large Whales: Final Report Campaign 6B, 2020-2021. Final report to the Massachusetts Clean Energy Center.
- O'Brien, O., K. McKenna, B. Hodge, D. Pendleton, M. Baumgartner, and J. Redfern. 2021. Megafauna Aerial Surveys in the Wind Energy Areas of Massachusetts and Rhode Island with Emphasis on Large Whales: Summary Report Campaign 5, 2018-2019. BOEM 2021-033.
- Pendleton, D. E., O. O'Brien, L. Ganley, K. McKenna, and J. V. Redfern. 2020. Large whale habitat use in Southern New England wind energy areas: demographic analysis, abundance estimation, and species distribution modeling. Final report prepared for The Massachusetts Clean Energy Center.
- Fiedler, P. C., J. V. Redfern, and L. T. Ballance. 2017. Oceanography and cetaceans of the Costa Rica Dome Region. NOAA Technical Memorandum NMFS-SWFSC-590. U.S. Department of Commerce, National Marine Fisheries Service, Southwest Fisheries Science Center, La Jolla, CA.
- Henry, A., B. Taylor, L. Rojas-Bracho, S. Rankin, A. Jaramillo-Legoretta, T. Akamatsu, J. Barlow, T. Gerrodette, C. Hall, A. Jackson, J. V. Redfern, R. Swift, and N. Tregenza. 2012. Cruise report for the Vaquita Expedition in 2008 conducted aboard NOAA Ship David Starr Jordan, R/V Koipai Yu-Xa, and the Vaquita Express. Page 41. NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-495, U.S. Department of Commerce, National Marine Fisheries Service, Southwest Fisheries Science Center, La Jolla, CA.
- Becker, E. A., K. A. Forney, M. C. Ferguson, J. Barlow, and J.V. Redfern. 2012. Predictive Modeling of Cetacean Densities in the California Current Ecosystem based on Summer/Fall Ship Surveys in 1991- 2008. Page 45. NOAA Technical Memorandum NMFS-SWFSC-499, U.S. Department of Commerce, National Marine Fisheries Service, Southwest Fisheries Science Center, La Jolla, CA.
- Barlow, J., A. Henry, J. V. Redfern, T. Yack, A. Jackson, C. Hall, E. Archer, and L. Ballance. 2010. Oregon, California and Washington line-transect and ecosystem (ORCAWALE) 2008 cruise report. Page 33. NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-465, U.S. Department of Commerce, National Marine Fisheries Service, Southwest Fisheries Science Center, La Jolla, CA.
- Chivers, S. J., W. L. Perryman, N. M. Kellar, J. V. Carretta, F. I. Archer, J. V. Redfern, A. E. Henry, M. S. Lynn, C. Hall, A. Jackson, G. Serra-Valente, T. J. Moore, C. Surrey-

- Marsden, and L. T. Ballance. 2010. Ecosystem survey of Delphinus species cruise report. Page 54. NOAA Technical Memorandum NMFS-SWFSC-464, U.S. Department of Commerce, National Marine Fisheries Service, Southwest Fisheries Science Center, La Jolla, CA.
- Barlow, J., M. C. Ferguson, E. A. Becker, J. V. Redfern, K. A. Forney, I. L. Vilchis, P. C. Fiedler, T. Gerrodette, and L. T. Ballance. 2009. Predictive modeling of cetacean densities in the eastern Pacific Ocean. Page 206. NOAA Technical Memorandum NMFS-SWFSC-444, U.S. Department of Commerce, National Marine Fisheries Service, Southwest Fisheries Science Center, La Jolla, CA.
- Hamilton, T. A., J. V. Redfern, J. Barlow, L. T. Ballance, T. Gerrodette, R. S. Holt, K. A. Forney, and B. L. Taylor. 2009. Atlas of cetacean sightings for Southwest Fisheries Science Center cetacean and ecosystem surveys: 1986-2005. Page 70. NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-440, U.S. Department of Commerce, National Marine Fisheries Service, Southwest Fisheries Science Center, La Jolla, CA.
- Gaylard, A., N. Owen-Smith, and J. Redfern. 2003. Surface water availability: Implications for heterogeneity and ecosystem processes. Pages 171-188 in J. du Toit, H. Biggs, and K. Rogers, editors. *The Kruger Experience: Ecology and Management of Savanna Heterogeneity*. Island Press, California, USA. 519pp.

SELECTED PRESENTATIONS

- 2020 Invited panelist, Afloat 2020 American Floating Offshore Wind Technical Summit. Redfern, J.V. Tools to identify and minimize risks to marine mammals.
- 2020 Invited panelist, American Wind Energy Association (AWEA) Offshore Windpower conference and exhibition. Redfern, J.V. Tools to identify and minimize risks to marine mammals.
- 2020 Invited panelist, Pacific Ocean Energy Trust webinar. Redfern, J. V. Identifying risks to marine mammals.
- 2019 Speaker, American Fisheries Society and The Wildlife Society Joint Annual Conference, Reno, Nevada. Redfern, J. V., E. A. Becker, and T. J. Moore. Effects of variability in ship traffic and whale distributions on the risk of ships striking whales.
- 2018 Invited speaker, Scripps Institution of Oceanography Ecology Seminar Series, UC San Diego, CA. Redfern, J.V. Assessing risks to whales from commercial shipping.
- 2017 Invited participant and speaker, Cetacean abundance and distribution in the North Atlantic, Halifax, Canada. Redfern, J.V. Cetacean-Habitat Relationships: From basic science to conservation and management.
- 2016 Invited panelist and speaker, Southern California Marine Mammal Conference, Newport Beach, California. Status of Blue Whales in the Eastern North Pacific and Current Threats. Redfern, J. V., J. Calambokidis, and T. J. Moore. Assessing the risk of ships striking blue whales.
- 2016 Invited speaker, CAnMove International Symposium: Bridging the Gap Between Modelling and Tracking Data, Lund University, Sweden. Redfern, J. V. Cetacean habitat modeling and risk assessment in the eastern Pacific Ocean.
- 2015 Invited participant and speaker, Ship Strike Risk to Large Whales in the Great Barrier Reef, Hobart, Australia. Redfern, J. V. Assessing Risks to Whales in the Southern California Bight.

- 2014 Invited participant and speaker, Joint IWC and SPAW/UNEP Workshop to Address Collisions between Marine Mammals and Ships with a Focus on the Wider Caribbean, Gamboa, Panama. Redfern, J. V. Assessing the risk of ships striking large whales.
- 2013 Invited speaker, Marine Mammal Commission Annual Meeting, San Diego, CA. Redfern et al. 1) Cetacean habitat modeling in the eastern Pacific Ocean. 2) Assessing vessel-strike risk off Southern California. 3) Revisiting stock structure through incorporation of ecosystem data.
- 2013 Invited speaker, Pacific Scientific Review Group Meeting, San Diego, CA. Redfern et al. Whales and Ships in the Southern California Bight.
- 2012 Invited speaker, Mapping Cetaceans and Sound: Modern Tools for Ocean Management, Washington, DC. Redfern, J. V. Cetacean Mapping Applications: Identification of Priority Habitat and Risk Assessment.
- 2011 Invited panelist and speaker, Second International Conference on Marine Mammal Protected Areas, Fort de France and Les Trois Ilets, Martinique. Redfern et al. Approaches to defining critical habitat.
- 2011 Panel co-moderator and speaker, Southern California Marine Mammal Conference, Newport Beach, CA. Redfern, J. V., M. F. McKenna, and T. J. Moore. Whales and Ships in the Southern California Bight.
- 2010 Invited speaker, Environmental Science, Policy, and Management Department Seminar Series, University of California, Berkeley, CA. Redfern, J. V. Ecosystem-based assessments of protected marine species: working at the crossroads of environmental science, policy, and management.
- 2009 Keynote speaker, Science, Mathematics, Articulation, Resource, and Technology Conference, Southwestern Community College, San Diego, CA. Redfern, J. V. Using Ecology and Mathematics to Unravel a Dolphin Conservation Mystery.
- 2008 Invited speaker, Mathematics, Science, and Engineering Faculty Lecture Series, Southwestern Community College, San Diego, CA. Redfern, J. V. Using Statistical Modeling to Explore Marine Mammal-Habitat Relationships.
- 2007 Speaker, Climate Impacts on Top Predators. GLOBEC. La Paz, Baja California. Redfern et al. The Effect of Spatial Resolution and Extent on Cetacean-Habitat Relationships in the Eastern Pacific Ocean.
- 2007 Invited speaker, Moss Landing Marine Lab Seminar Series, Moss Landing, CA. Redfern, et al. The Effect of Spatial Scale on Cetacean-Habitat Models.
- 2006 Speaker, International Meeting of the Society for Conservation Biology, San Jose, CA. Redfern et al. The effect of spatial scale on cetacean-habitat models.
- 2006 Invited speaker, Marine Biodiversity and Conservation Program Seminar, Scripps Institution of Oceanography, La Jolla, CA. Redfern, J. V. Using GIS in the Development of Cetacean-Habitat Models.
- 2006 Invited speaker, Scripps Institution of Oceanography Ecology Seminar Series, UC San Diego, CA. Redfern et al. The effect of spatial scale on cetacean-habitat models.
- 2005 Speaker, 16th Biennial Conference of the Society for Marine Mammalogy, San Diego, CA. Redfern et al. The effect of spatial scale on cetacean-habitat models.