DAVID E. CADE – *CURRICULUM VITAE*

Hopkins Marine Station, Stanford University
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PROFESSIONAL SUMMARY

- **Scientist:** Oceanographer and marine scientist specializing in marine mid-trophic level ecology and predator/prey dynamics. 55+ peer-reviewed pubs. Specialist in a broad range of quantitative methodologies and designing and implementing new technologies
- **Educator:** Credentialed secondary math instructor with 6 years of classroom experience. Leads technical workshops. 25+ invited seminars. University teaching experience
- **Leader:** 25+ years leading/managing researchers, academics, students, and volunteers
- **Conservationist:** Lifelong personal and professional commitment to sustainability and conservation.

EDUCATION

Ph.D. Biology, **Stanford University** (2019)

M.Sc. Earth, Ocean and Atmospheric Sciences, **Oregon State University** (2014)

M.A. Education, **Stanford Univeristy** (2005)

B.A. Mathematics, **Brown University** (2002) C.V. Starr fellow for public service

RESEARCH & ACADEMIC HISTORY

Stanford University, Research Scientist, Hopkins Marine Station. 2025-present
Mid-trophic level marine ecology, filter feeding, and predatory/prey dynamics
MAC3 Antarctic Scholar

Hawai'i Pacific University, Assistant Professor of Marine Science. 2024 (declined)

Oregon State University, Courtesy Light Faculty, 2022-2025
Serve on student Ph.D. and Masters committees

Stanford University, Post-doc, Hopkins Marine Station. 2021-2025
Comparative studies of filtration feeding across taxa in marine megafauna
(PI: Jeremy Goldbogen)

University of California, Santa Cruz, Post-Doc, Institute of Marine Science, 2019-2021
Antarctic krill acoustic density estimation and mapping
Foraging and behavioral ecology of Antarctic minke whales
(PI: Ari Friedlaender)

Stanford University, Hopkins Marine Station. Ph.D. program, Dept. of Biology, 2014-2019
Multi-scale drivers of efficiency in rorqual whale engulfment filtration feeding.
(Advisor: Jeremy Goldbogen)

Oregon State University, M.Sc. program, College of Earth, Ocean, and Atmospheric Sciences, 2011-2014. Detection, classification and ecology of acoustic scattering layers.
(Advisor: Kelly Benoit-Bird)

Stanford University, M.A. program. California Teaching Credential in Mathematics, 2004-2005
Using metaphors to explore the properties of exponents
(Supervisor: Beth Injasoulian)

TEACHING EXPERIENCE *(listed by relevancy)*

University of San Francisco, San Francisco, CA. Adjunct Professor, Marine Biology, 2014

Stanford University, Palo Alto, CA. Guest instructor, Biologging, 2016,2025. TA for Pulse of the Ocean, 2023, Plant Biology, 2015.

Moss Landing Marine Labs (San Jose State University), Moss Landing, CA. Guest instructor, Biologging, 2024

UC Santa Cruz, Santa Cruz, CA. Inertial sensor workshop instructior (40 hrs, online), 2020

Summit Preparatory Charter High School, Redwood City, CA. Mathematics Teacher, All levels, 2006-2010

Cross-Cultural Environmental Leadership Academy (XCEL), San Francisco, CA. Mathematics Teacher, Algebra and Geometry, 2005-2006

Various, Experiential and environmental education instructor in New Hampshire, New Mexico, Washington and Utah wilderness areas, 1999-2004

Oregon State University, Corvallis, OR. Teaching Assistant, Introductory Biology, 2014

Mission High School, San Francisco, CA. Student teacher, Freshmen integrated math, 2004-2005

HONORS & AWARDS

Early Career Award, International Bio-logging Society, 2021, "Recognizes early-career researchers who are challenging themselves, or the field, and are making significant contributions to advancing bio-logging science through innovative projects"

Anne T. and Robert M. Bass Fellowship, Stanford University, 2014-2017

Outstanding Achievement Award, Hopkins Marine Station, 2014

C.V. Starr award for public service, Brown University 2002

PUBLICATIONS (google scholar profile) (pdf links)

1. Jourdain, E., Baumgartner, C., **Cade, D.E.**., Domenici, P. *In press*. Escalating competition in changing cseas: baleen whales exploit killer whale prey herding. **Philosophical Transactions of the Royal Scoiety B**
2. Krylova, A.*, Blawas, A.M., Fahlbusch, J.A., Clayton, H., Stimpert, A., Calamobokidis, J., Friedlaender, A.S., Goldbogen, J.A., **Cade, D.E.** *In press.* Foraging Efficiency of Fish-feeding Humpback whales in Mixed-Species Associations with California Sea Lions. **Philosophical Transactions of the Royal Scoiety B**

3. Payne, N.L., Snelling, E.P., Peralta-Maraver, I., **Cade, D.E.,** Chapple, T.K., McInturf, A.G., Watanabe, Y.Y., Sims, D.W., Queiroz, N., da Costa, I., Sousa, L.L., Goldbogen, J.A., Dolton, H.R., Jackson, A.L. (2026). Mesothermic fishes face high fuel demands and overheating risks in warming oceans **Science,** 392(6795) 301-305.
4. Martin-Lopez, L.M, Isojunno, S., **Cade, D.E.,** Colson, K., Paradinas, I., Miller, P.J.O., Fahlman, A., Hickmott, L.S., Visser, F. (2025). Naval sonar induces an anaerobic swimming gait in beaked whales. **Scientific Reports,** 15 (38686).
5. Blawas, A.M., Videsenn, S.K.A., **Cade, D.E.,** Calambokidis, J., Friedlaender, A.S., Johnston, D.W., Madsen, P.T., Goldbogen, J.A. (2025). Life in the slowest lane: Feeding allometry lowers metabolic rate scaling in the largest whales. **Science Advances,** 11(32), eadw2232.
6. Goldbogen, J.A. and **Cade, D.E.** (2025). How do feeding biomechanics, extreme predator-prey size ratios, and the rare enemy effect determine energetics at the largest scale? **Journal of Experimental Biology,** jeb247875
7. McHeron, E.A., **Cade, D.E.,** Shero, M. *In press. Marine Mammal Research in the 21st Century - emerging technologies and applications for the field and laboratory,* Ch. 7: Emerging approaches to investigating marine mammal physiology and bioenergetics.
8. Li, T., Schindler, M., Paskin, M., Surapaneni, V., Scott, E., Hauert, S., Payne, N., **Cade, D.E.**, Goldbogen, J.A., Mollen, F.H., Baum, D., Hanna, S., Dean, M.N. (2025). Functional models from limited data: a parametric and multimodal approach to anatomy and 3D kinematics of feeding in basking sharks (*Cetorhinus maximus*). **The Anatomical Record,** https://doi.org/10.1002/ar.25693
9. Chapple, T., **Cade, D.E.**, Goldbogen, J.A., Massett, N., Payne, N.L., McInturf, A.G. (2024). Behavioral response of megafauna to boat collision measured via animal-borne camera and IMU. **Frontiers in Marine Science**, 11:1430961.
10. Colson, K.M., Pirotta, E., New, L, **Cade, D.E.**, Calambokidis, J., Bierlich, K.C., Bird, C.N., Ajo, A.F., Hildebrand, L., Trites, A.W., Torres, L.G. (2024). Using accelerometry tags to quantify gray whale foraging behavior. ***Marine Mammal Science.*** e13210
11. Fahlbusch, J.A., **Cade, D.E.,** Hazen, E., Elliott, M., Saenz, B., Goldbogen, J.A., & Jahncke, J. (2024). Submesoscale physical-biological coupling between krill and cetaceans in the CCS. ***Proceedings of the Royal Society B: Biological Sciences,*** 291(2017), 20232461.
12. Allen, J.A., **Cade, D.E.,** Casey, C.E., Weindor, S., Linsky, J.M.J., Goldbogen, J.A., Nowacek, D.P., & Friedlaender, A.S. (2024). Evidence of sociality and group foraging in Antarctic minke whales (*Balaenoptera bonaerensis*). ***Behavioral Ecology and Sociobiology,*** 78(5), 61.
13. Price, S. E., Savoca, M.S., Kumar, M., Czapanskiy, M. F. , McDermott, D., Litvin, S.Y., **Cade, D.E.**, Goldbogen, J.A. (2024). Energy densities of key prey species in the California Current Ecosystem. ***Frontiers in Marine Science,*** 10:1345525.
14. **Cade, D.E.,** Kahane-Rapport, S.R., Gough, W.T., Bierlich, K. Linsky, J., Johnson, D., Goldbogen, J.A.,, & Friedlaender, A.S. (2023) Minke whale feeding rate limitations suggest constraints on the minimum body size for engulfment filtration feeding. ***Nature: Ecology & Evolution,*** 7(4) 535-546

15. Clayton, H., **Cade, D.E.,** Burnham, R., Calambokidis, J. & Goldbogen, J.A. (2023) Acoustic behavior of gray whales tagged with biologging devices on foraging grounds. ***Frontiers in Marine Science***, 10, 1111666.
16. Fahlbusch J.A., Czapanskiy M, Calambokidis J, **Cade D.E.**, Abrahms B, Hazen E.L., Goldbogen J.A., (2022). Blue whales increase feeding rates at fine-scale ocean features. **Proceedings of the Royal Society B: Biological Sciences**, 289(1981), 20221180.
17. Ryan, J., Benoit-Bird, K., Oestreich, W.k., Leary, P., Smith, K., Waluk, C.P., **Cade, D.E.**, Fahlbusch, J.A., Southall, B., Joseph, J., Margolina, T., Calambokidis, J., DeVogelaere, A. & Goldbogen, J.A. (2022) Oceanic giants dance to atmospheric rhythms: Ephemeral wind-driven resource tracking by blue whales. ***Ecology Letters***.
18. Nazario, E., **Cade, D.E.**, Bierlich, K.C., Czapanskiy, M.F., Goldbogen, J.A., Kahane-Rapport, S.R., van der Hoop, J.M., San Luis, M.T. & Friedlaender, A.S. (2022) Baleen whale inhalation variability revealed using animal-borne video tags. ***PeerJ,*** 10.
19. Gough, W.T., **Cade, D.E.,** Czapanskiy, M.F., Potvin, J., Fish, F.E., Kahane-Rapport, S.R., Savoca, M.S., Bierlich, K., Johnston, D.W. & Friedlaender, A.S. (2022) Fast and Furious: Energetic Tradeoffs and Scaling of High-Speed Foraging in Rorqual Whales. ***Integrative Organismal Biology***.
20. **Cade, D.E.,** Kahane-Rapport, S.R., Wallis, B., Goldbogen, J. A.. & Friedlaender, A.S. (2022) Evidence for size-selective predation by Antarctic humpback whales. ***Frontiers in Marine Science*** 9 (747788).
21. Casey C, Weindorf S, Levy E, Linsky J.M.J., **Cade D.E.**, Goldbogen J.A., Nowacek D.P., & Friedlaender A.S. (2022). Acoustic signaling and associated behavior of Antarctic minke whales. ***Royal Society Open Science***.
22. Nichols, R.C., **Cade, D.E.,** Kahane-Rapport, S.R., Goldbogen, J.A., Stimpert , A.K., Nowacek, D.P., Read, A.J., Johnston, D.W. & Friedlaender, A.S. (2022) Intra-seasonal variation in feeding rates and diel foraging behavior in a seasonally fasting mammal, the humpback whale. ***Royal Society Open Science***.
23. Matika, A.F., Jourdain, E., **Cade, D.E.**, Karoliussen, R., & Hammond, P.S. (2022) Diving characteristics, energetics and prey profitability in herring-feeding killer whales (*Orcinus orca*) in northern Norway. ***Marine Mammal Science*.**
24. Segre, P.S., Gough, W.T., Roualdes, E.A., **Cade, D.E.**, et al. (2022) Scaling of maneuvering performance in baleen whales. ***Journal of Experimental Biology,*** 225: jeb243224 .
25. Mastick, N., Wiley, D., **Cade, D.E.**, Ware, C., Parks, S.E. & Friedlaender, A.S. (2022) The effect of group size on individual behavior of bubble-net feeding humpback whales in the southern Gulf of Maine. ***Marine Mammal Science***, 2020: 1-16.
26. **Cade, D.E.,** Fahlbusch, J.A., Oestreich, W., Ryan, J., Calmbokidis, J., Findlay, K.P., Friedlaender, A.S., Hazen, E., Seakamela, S.M. & Goldbogen, J.A. (2021) Social exploitation of extensive, ephemeral, environmentally controlled prey patches by super-groups of rorqual whales. ***Animal Behaviour***, 182: 251-256.

27. **Cade, D.E.,** Gough, W.T., Czapanskiy, M.F., Fahlbusch, J.A., Kahane-Rapport, S.R., Linsky, J.L., Nichols, R.C., Oestreich, W.K., Wisniewska, D.M., Friedlaender, A.S. & Goldbogen, J.A. (2021) Tools for integrating accelerometry data with video bio-loggers, including estimation of animal orientation, motion, and position. ***Animal Biotelemetry***, 9(34).

28. **Cade, D.E.,** Seakamela, S. M., Findlay, K. P., Fukunaga, J.*, Kahane-Rapport, S.R., Warren, J., Calmbokidis, J., Fahlbusch, J., Friedlaender, A. S., Hazen, E., Kotze, D., McCue, S., Meyer, M., Oestreich, W., Oudejans, M., Wilke, C. & Goldbogen, J. A. (2021) Predator-scale spatial analysis of intra-patch prey distribution reveals the energetic drivers of rorqual whale super-group formation. ***Functional Ecology***, 35 (4): 894-908

29. Czapanskiy, M.F., Savoca, M.S., Gough, W.T., Segre, P.S., Wisniewska, D.M., **Cade, D.E**. & Goldbogen, J.A. (2021) Modeling short-term energetic costs of sonar disturbance to cetaceans using high resolution foraging data. ***Journal of Applied Ecology***.

30. Gough, W.T., Smith, H.J., Savoca, M.S., Czapanskiy, M.F., Fish, F.E., Potvin, J., Bierlich, K.C., **Cade, D.E.,** Di Clemente, J., Kennedy, J., Segre, P.S., Stanworth, A., Weir, C. & Goldbogen, J.A. (2021) Scaling of oscillatory kinematics and propulsive efficiency in baleen whales. ***Journal of Experimental Biology.***

31. Potvin, J., **Cade, D.E.,** Werth, A.J., Shadwick, R.E. & Goldbogen, J.A. (2021) Baleen whale lunge-feeding energetics near and away from the kinematic threshold of optimal efficiency. ***Integrative and Organismal Biology***, 3 (1): obab005.

32. Pirotta, E., Booth, C., **Cade, D.E.**, Calambokidis, J., Costa, D.P., Fahlbusch, J.A., Friedlaender, A.S., Goldbogen, J.A., Harwood, J., Hazen, E.L., New, L. & Southall, B.L. (2021) Context-dependent variability in the predicted daily energetic costs of disturbance in blue whales. ***Conservation Physiology***, 9, coaa137**.**

33. **Cade, D.E.,** Carey, N., Domenici, P., Potvin, J. & Goldbogen, J.A. (2020) Predator-informed looming stimulus experiments reveal how large filter feeding whales capture highly maneuverable forage fish. ***Proceedings of the National Academy of Sciences****,* 117, 472-478.

34. Flammang, B.E., Marras, S., Lehmkuhl, O., Anderson, E.J., Mukherjee, A., **Cade, D.E**., Beckert, M., Nadler, J.H., Houzeaux, G., Vazquez, M., Amplo, H.E., Calambokidis, J., Friedlaender, A.S. & Goldbogen, J.A. (2020) Remoras pick where they stick and surf on blue whales. ***Journal of Experimental Biology.*** 223.

35. Linsky, J.M.J., Wilson, N., **Cade, D.E.,** Goldbogen, J.A., Johnston, D.W. & Friedlaender, A.S. (2020) The scale of the whale: using video-tag data to evaluate sea ice concentration from the perspective of individual Antarctic minke whales. ***Animal Biotelemetry*****.** 8:1-12.

36. Oestreich, W.K., Fahlbusch, J.A., **Cade, D.E.**, Calambokidis, J., Margolina, T., Joseph, J., Friedlaender, A.S., McKenna, M.F., Stimpert, A.K., Southall, B.L., Goldbogen, J.A. & Ryan, J.P. (2020) Animal-borne measures of behavior enable acoustic detection of migration in dispersed populations. ***Current Biology***. 30:1-7

37. Kahane-Rapport, S.R., Savoca, M.S., **Cade, D.E.**, Segre, P.S., Bierlich, K.C., Calambokidis, J., Dale, J., Friedlaender, A.S., Johnston, D., Werth, A.J. & Goldbogen, J.A.

(2020) Lunge filter feeding biomechanics constrain rorqual foraging ecology across scale. ***Journal of Experimental Biology***, jeb.224196.

38. Bamford, C.C.G., Kelly, N., Dalla Rosa, L., **Cade, D.E**., Fretwell, P., Trathan, P.N., Cubaynes, H., Mesquita, A., Gerrish, L., Friedlaender, A.S. & Jackson, J.A. (2020) A comparison of baleen whale density estimates derived from overlapping satellite imagery and a shipborne survey. ***Scientific Reports***, 10, 12985.
39. **Cade, D.E.,** Levenson, J.J., Cooper, B., de la Parra, R., Webb, D.H. & Dove, A. (2020) Whale sharks increase swimming effort while filter feeding, but appear to maintain high foraging efficiencies. ***Journal of Experimental Biology****,* 223, jeb224402.
40. Hein, A.M., Altshuler, D.L., **Cade, D.E.**, Liao, J.C., Martin, B.T. & Taylor, G.K. (2020) An algorithmic approach to natural behavior. ***Current Biology***, 30, R663-675.
41. Potvin, J., **Cade, D.E.,** Werth, A.J., Shadwick, R.E. & Goldbogen, J.A. (2020). A Perfectly Inelastic Collision: Bulk Prey Engulfment by Baleen Whales and Dynamical Implications for the World's Largest Cetaceans. ***American Journal of Physics,*** 88:851-863.
42. Segre, P.S., Potvin, J., **Cade, D.E.**, Calambokidis, J., Di Clemente, J, Fish, F.E., Friedlaender, A.S., Gough, W.T., Johnson, M, Kahane-Rapport, S.R., Oliveira, C., Parks, S.E., Penry, G.S., Simon, M., Stimpert, A.K., Wiley, D.N., Madsen, P.T., Goldbogen J.A. (2020) Energetic and physical limitations on the breaching performance of large whales. ***eLife,*** 9, e51760.
43. Tackaberry, J.E., **Cade, D.E.**, Goldbogen, J., Wiley, D., Friedlaender, A.S., Stimpert, A. (2020) From a calf's perspective: Humpback whale nursing behavior on two US feeding grounds. ***PeerJ****,* 8:e8538.
44. Goldbogen, J.A., **Cade, D.E**., Wisniewska, D.M., Potvin, J., Segre, P.S., Savoca, M.S., Hazen, E.L., Czapanskiy, M.F., Kahane-Rapport, S.R., DeRuiter, S.L., Gero, S., Tønnesen, P., Gough, W.T., Hanson, M.B., Holt, M., Jensen, F.H., Simon, M., Stimpert, A.K., Arranz, P., Johnston, D.W., Nowacek, D.P., Parks, S.E., Visser, F., Friedlaender, A.S., Tyack, P.L., Madsen, P.T. & Pyenson, N.D. (2019a) Why whales are big but not bigger: Physiological drivers and ecological limits in the age of ocean giants. ***Science****,* 366**,** 1367-1372.
45. Goldbogen, J.A., **Cade, D.E.**, Calambokidis, J., Czapanskiy, M.F., Fahlbusch, J., Friedlaender, A.S., Gough, W.T., Kahane-Rapport, S.R., Savoca, M.S. & Ponganis, K.V. (2019b) Extreme bradycardia and tachycardia in the world's largest animal. ***Proceedings of the National Academy of Sciences***, 116, 25329-25332.
46. Calambokidis, J., Fahlbusch, J.A., Szesciorka, A.R., Southall, B.L., **Cade, D.E.**, Friedlaender, A.S. & Goldbogen, J.A. (2019) Differential Vulnerability to Ship Strikes between Day and Night for Blue, Fin, and Humpback Whales Based on Dive and Movement Data from Medium Duration Archival Tags. ***Frontiers in Marine Science****,* 6.
47. Southall, B.L., DeRuiter, S.L., Friedlaender, A., Stimpert, A.K., Goldbogen, J.A., Hazen, E., Casey, C., Fregosi, S., **Cade, D.E.** & Allen, A.N. (2019) Behavioral responses of individual blue whales (Balaenoptera musculus) to mid-frequency military sonar. ***Journal of Experimental Biology****,* 222**,** jeb190637.

48. Friedlaender, A.S., Bowers, M.T., **Cade, D.E.**, Hazen, E.L., Stimpert, A.K., Allen, A.N., Calambokidis, J., Fahlbusch, J., Segre, P. & Visser, F. (2019) The advantages of diving deep: Fin whales quadruple their energy intake when targeting deep krill patches. ***Functional Ecology*.**

49. Gough, W.T., Segre, P.S., Bierlich, K., **Cade, D.E**., Potvin, J., Fish, F.E., Dale, J., di Clemente, J., Friedlaender, A.S., Johnston, D.W., Kahane-Rapport, S.R., Kennedy, J., Long, J., Oudejans, M., Penry, G.S., Savoca, M.S., Simon, M., Videsen, S., Visser, F., Wiley, D. & Goldbogen, J.A. (2019) Scaling of swimming performance in baleen whales. ***Journal of Experimental Biology***, 222, jeb. 204172..

50. Segre, P.S., **Cade, D.E.**, Calambokidis, J., Fish, F.E., Friedlaender, A.S., Potvin, J. & Goldbogen, J.A. (2019) Body flexibility enhances maneuverability in the world's largest predator. ***Integrative and comparative biology***, 59, 48-60.

51. **Cade, D.E.**, Barr, K.R., Calambokidis, J., Friedlaender, A.S. & Goldbogen, J.A. (2018) Determining forward speed from accelerometer jiggle in aquatic environments. ***Journal of Experimental Biology**,* 221**,** jeb. 170449.

52. Werth, A.J., Potvin, J., Shadwick, R.E., Jensen, M.M., **Cade, D.E.** & Goldbogen, J.A. (2018) Filtration area scaling and evolution in mysticetes: trophic niche partitioning and the curious cases of sei and pygmy right whales. ***Biological Journal of the Linnean Society*,** 125**,** 264-279.

53. Goldbogen, J.A., **Cade, D.E.**, Calambokidis, J., Friedlaender, A.S., Potvin, J., Segre, P.S. & Werth, A.J. (2017a) How Baleen Whales Feed: The Biomechanics of Engulfment and Filtration. ***Annual Review of Marine Science**,* 9**,** 1-20.

54. Goldbogen, J.A., **Cade, D.E.**, Boersma, A.T., Calambokidis, J., Kahane-Rapport, S.R., Segre, P.S., Stimpert, A.K. & Friedlaender, A.S. (2017b) Using Digital Tags With Integrated Video and Inertial Sensors to Study Moving Morphology and Associated Function in Large Aquatic Vertebrates. ***The Anatomical Record**,* 300**,** 1935-1941.

55. Findlay, K.P., Seakamela, S.M., Meÿer, M.A., Kirkman, S.P., Barendse, J., **Cade, D.E.**, Hurwitz, D., Kennedy, A., Kotze, P.G.H., McCue, S.A., Thornton, M., Vargas-Fonseca, O.A. & Wilke, C.G. (2017) Humpback whale "super-groups" – A novel low-latitude feeding behaviour of Southern Hemisphere humpback whales (*Megaptera novaeangliae*) in the Benguela Upwelling System. ***PloS one**,* 12, e0172002.

56. Friedlaender, A.S., Herbert-Read, J.E., Hazen, E.L., **Cade, D.E.**, Calambokidis, J., Southall, B.L., Stimpert, A.K. & Goldbogen, J.A. (2017) Context-dependent lateralized feeding strategies in blue whales. ***Current Biology**,* 27**,** R1206-R1208.

57. **Cade, D.E.**, Friedlaender, A.S., Calambokidis, J. & Goldbogen, J.A. (2016) Kinematic Diversity in Rorqual Whale Feeding Mechanisms. ***Current Biology**,* 26**,** 2617-2624.

58. Segre, P.S., **Cade, D.E.**, Fish, F.E., Potvin, J., Allen, A.N., Calambokidis, J., Friedlaender, A.S. & Goldbogen, J.A. (2016) Hydrodynamic properties of fin whale flippers predict maximum rolling performance. ***Journal of Experimental Biology**,* 219**,** 3315-3320.

59. **Cade, D.E.** & Benoit-Bird, K.J. (2015) Depths, migration rates and environmental associations of acoustic scattering layers in the Gulf of California. ***Deep Sea Research Part I: Oceanographic Research Papers**,* 102**,** 78-89.

60. **Cade, D.E.** & Benoit-Bird, K.J. (2014) An automatic and quantitative approach to the detection and tracking of acoustic scattering layers. ***Limnology and Oceanography: Methods****,* 12**,** 742-756.

***** supervised student

PUBLICATIONS (submitted)

Ackermann, I.A., **Cade, D.E.**, Goldbogen, J.A., Denny, M.W. Constraints on lunge feeding: Krill can clog the baleen of filter-feeding whales. *In review.* **Journal of Experimental Biology: Theory and Modeling**.

Cade, D.E., Martin-Lopez, L.M., Isojunno, S., Visser, F. Differential diving air volume of *Ziphiid* beaked whales estimated from descent thrust force production. *In revision*. **Journal of Experimental Biology**

Clayton, H., **Cade, D.E.**, Fahlbusch, J., Calambokidis, J., Pyenson, N., & Goldbogen, J.A., Kinematics of gray whale (*Eschrichtius robustus*) intertidal foraging on ghost shrimp (*Neotrypnea californeinsis*). *In review.* **Journal of Experimental Biology.**

Fahlbusch, J., Calambokidis, J., **Cade, D.E.,** Hazen, E., Thomas, L., Goldbogen, J.A. Foraging blue whales use submesoscale fronts to guide search strategies. *In review*. **Proceedings of the Royal Society B.**

Levenson, J.J., Davies, A., Neal, L., Latini, C., Stitt, A., Schwitters-Bauby, L., Ramey, C, **Cade, D.E.,** Piatkowski, D., Hansen, D., Rasser, M., Alberts, E., Hoopes, L.A., Dove, A., Blythe, B., Weissman, A., Herman, K.B. Open-source, non-invasive active vacuum biologging tag for capturing fine scale animal movement data of oceanic manta rays. *In review.* **Hardware X**.

Wiley, D.N., **Cade, D.E**., Friedlaender, A.S., Goldbogen, J.A., Kendall-Barr, J., Parks, S.E., Thompson, M.A., Weinrich, M., Silva, T.L. Meet me in the middle: Collaborative benthic-hunting in humpback whales (*Megaptera novaeangliae*). *In review*. **Behavioral Ecology and Sociobiology.**

MANUSCRIPTS in preparation

Cade, D.E., McInturf, A., Chapple, T. Payne, N., Dolton, H., Png, Y., Dean, M. & Goldbogen, J.A. Efficiency of basking shark swimming mechanics in echelon formation.

Cade, D.E., Leitner, A., McInturf, A., Chapple, T. Payne, N., & Goldbogen, J.A. Copepod density determines basking shark behavior in SW Ireland.

Cade, D.E & Goldbogen, J.A. Convergent evolution of gigantic filter feeders- examining the limits of body size in marine environments

Colson, K., **Cade, D.E.**, Pirotta, E., New, L., Calambokidis, J., Bierlich, K.C., Bird, C.N., Fernandez Ajo, A., Hildebrand, L., Trites, A.W., Torres, L. Gray whale foraging tactics appear costly when compared with other baleen whales.

Scott, E., **Cade, D.E.,** Payne, N., Hauert, S. Designing a system for underwater imaging and monitoring of Basking Sharks (*Cetorhinus maximus).*

Silva, T.L., **Cade, D.E.**, Tackaberry, J.E., Thompson, M.A., Friedlaender, A.S., Parks, S.E., Shorter, A.K., Wiley, D.N., in prep. Low energy behavior of humpback whales on a northern hemisphere foraging ground using video biologging tags

Tackaberry JE, Bérubé M, **Cade, D.E.**, Friedlaender A.S., Goldbogen J.A., McDonald B.I., Palsbøll P.J., Parks S.E., Robbins J, Weinrich M.T., Wiley D.N., Stimpert A.K., in prep. Humpback whale, *Megaptera novaeangliae*, feeding dynamics from the perspective of the individual: Insights from demography, life history, and bio-logging.

ACADEMIC MENTORING

Academic Committee Member:

Kate Colson, M.Sc. candidate, University of British Columbia, 2021-2023
Lisa Hildebrand, Ph.D. candidate, Oregon State University, 2022-2025

Direct supervision:

Anna Krylova, Northeastern University Master's Student, 2024 *
Jen Valenzuela, California Ocean Alliance, 2023
Holly Hoffbauer, University of Alaska, SE, 2022
Julie Fukunaga, Stanford Undergraduate, 2017 *
Kaela Montano, Ashley Guido, Salinas High School students, 2016-2017
Julianne Eitoku, Sandra Bautista, Salinas High School students, 2015-2016
Marisa Roth, Stanford Undergraduate, 2015

Indirect supervision:

Manage small and large scale research projects for graduate and undergraduate students

*contributed to published paper as author

PEER REVIEW

90+ peer reviews. See Web of Science profile. Journals:

Antarctic Science
Aquatic Mammals
Biological Reviews
Deep Sea Research part I
Endangered Species Research
Frontiers in Marine Science
Functional Ecology
ICES Journal of Marine Science
Iscience
Journal of Experimental Biology
Journal of Marine Science and Engineering
Marine Ecology Progress Series
Marine Mammal Science
Methods in Ecology and Evolution
Movement Ecology
Oceanography
PeerJ
Plos One
Polar Biology
Proceedings B: Biological Sciences
Progress in Oceanography
Royal Society Open Science
Scientific Reports
Zoology

INVITED LECTURES & SYMPOSIA

Stanford University – Sophomore College Guest Speaker	2024/2025
Hawai'i Pacific University – Marine Biology Department Seminar	2024
Mountan View High School – Guest speaker STEM week	2024
CSU Monterey Bay – Biology Department Seminar	2024
Stanford University – Hopkins Marine Station Invited Seminar	2023
American Cetacean Society Monterey Bay – Invited Seminar	2016/2023
California Science Center – Invited speaker for IMAX premiere	2023
NASA Ames – Earth Science Division Seminar	2022
University of British Columbia – Zoology Department Seminar	2022
Trinity College, Dublin – Zoology Department Seminar	2022
Oregon State University – Hatfield Research Seminar Series	2022
University of Washington – School of Applied Fisheries Sciences Seminar	2022
CSU Monterey Bay – Biology Department Seminar	2022
Inertial sensing workshop, lead presenter/organizer	2020
Cabrillo Whale Watch Naturalist – Invited Seminar	2020
Oregon State University – Marine Mammal Institute Invited Seminar	2020
Pacific Grove Museum of Natural History – Invited Seminar	2017/2020
UC Santa Cruz – Biology of Marine Mammals Guest Lecture	2018
Moss Landing Marine Labs – Invited Seminar	2017
Aarhus University – Inertial Sensing Workshop Guest Lecture	2017
Weber State University Arts Integration Conference – Co-keynote speaker	2017
Lincoln High School (San Francisco) Marine Biology – Guest Lecture	2017
Cal State University-Monterey Bay – Polar ICE symposium panel member	2017
Point Reyes National Seashore Docent Training – Invited Seminar	2016
Biennial International American Cetacean Society Conference – Invited Talk	2016
Cal State University-Monterey Bay – Invited Seminar	2016
American Cetacean Society SF Bay – Invited Seminar	2016
Cal State University-Monterey Bay – Marine Conservation Guest Lecture	2015
Moss Landing Marine Labs – Marine Acoustics Guest Lecture	2014

CONFERENCE PROCEEDINGS (SELECTED)

First author presentations

A Resilient Pacific: Building Connections, Envisioning Solutions	2024
Filters in biology + Biomimetics, Berlin, GE	2023
Society for Marine Mammalogy, Florida, Virtual	2022
The 7th International Bio-logging Science Symposium, Virtual	2021

Ocean Sciences meeting, San Diego, CA	2020
Society for Integrative and Comparative Biology, Austin, TX	2020
World Marine Mammal Conference, Barcelona, SP	2019
Society for Integrative and Comparative Biology, San Francisco, CA	2018
Biennial Conference of the Biology of Marine Mammals, Halifax, NS	2017
CA Student Chapter of the Society for Marine Mammalogy, Moss Landing, CA	2017
Biennial Conference of the Biology of Marine Mammals, San Francisco, CA	2015
NW Student Chapter of the Society for Marine Mammalogy, Corvallis, OR	2015
Acoustics Society of America, Indianapolis, IN	2014

First author posters

Gordon research seminar on Predator-Prey Interactions, Ventura, CA	2024
The 6th International Bio-logging Science Symposium, Konstanz, Germany	2017

Co-authored presentations

(7) The 7th International Bio-logging Science Symposium, Virtual	
(4) Ocean Sciences meeting, San Diego, CA	2020
Society for Integrative and Comparative Biology, Austin, TX	2020
(13) World Marine Mammal Conference, Barcelona, SP	2019
(2) Society for Integrative and Comparative Biology, San Francisco, CA	2018
(6) Biennial Conference of the Biology of Marine Mammals, Halifax, NS	2017
Acoustics Society of America, Honolulu, HI	2016

SELECTED OUTREACH

NSF proposal reviewer comment regarding broader impacts (2020):
"*This proposal has the strongest educational and outreach components of any proposal I read. Maybe ever…. it is unreasonable to expect more from any proposal*."

Hopkins Marine Station coordinator, Bridge Builders visit, 2024, 2025
Consultant and education collaborator: California Science Center/IMAX, 2023
American Museum of Natural History (curriculum) (videos), 2019-2022
California Ocean Alliance – Marine Mammal Scientist Training Program (x5). 2018-2025
Salinas High School/Hopkins Marine Station Mentoring Program Coordinator, 2015-2019
High school and elementary school site visits (x4) 2014-2025

Selected media appearances and consultations:

Dynamic Planet, PBS, 2024, principal investigator
Consultant: Herschel the sea lion, slate.com, 2022
Giants of the sea, Titan films, 2022, principal investigator
Consultant: Our Great National Parks: Monterey Bay (Netflix, April 2022)
Consultant: Wild Kratts (PBS, 2022)

OceanX (collaborating investigator, 2022)
The loneliest whale (collaborating investigator) (IMDB)
Media for PNAS anchovy manuscript: (NPR) (phys.org) (others)
Media for PNAS heart rate manuscript: (quirks and quarks) (San Jose Mercury news) (>200 other)
Media for Cade et al 2016: (video abstract) (Stanford) (Daily Planet Canada) (Gizmodo)
Others: (Monterey local) (Santa Cruz local) (Science Magazine for SMM 2017) (Monga Bay)
Passive acoustics work with MBNMS: (local news link) (outreach video)

ACTIVE COLLABORATIONS

Currently working on separate projects with:

Stanford University (2014-)
UC Santa Cruz (2019-)
Bur. of Ocean En. Mngmt (BOEM) (2019-)
Trinity College Dublin (2022-)
Oregon State University (2021-)
Cascadia Research Collective (2014-)
Kelp Marine Research (Amsterdam), (2015-)
California Ocean Alliance (2019-)

RESEARCH GRANTS

NSF proposal (2020) reviewer feedback: "The PI has a unique combination of quantitative skills, field research skills, and teaching experience and interest."

CATS (2025), Animal-borne detection of planktonic prey patches, AUS$96K (+ donor matching as MAC3 Antarctic Scholar).

BWRI (2025), support of animal tagging operations, $50K.

BWRI (2024), Echosounder Tag Engineering, Research & Development, $60K.

Discovery Grant (2023-2025), Animal-borne detection of planktonic prey patches, $150K

BOEM, project collaborator – Indefinite Quantity (IDIQ) for telemetry, scientific, and engineering support services for "Whale Shark Movement Ecology", $770K

ONR, project collaborator, 2022- Quantifying the effect of anthropogenic noise sources on cetacean fine-scale diving biomechanics and its energetic and physiological implications, $117K

NSF-OPP grant # 1643877, project collaborator

San Francisco and Monterey American Cetacean Society Research Grants, 2017, 2016, 2015, $6k

Defense University Research Instrumentation Program, project collaborator, 2016, $350K

Meyers Ocean Trust Student Research Award, 2016, $3K

RELEVANT FIELD EXPERTISE

Specific skills include:

- boat operation/handling/launching
- oceanographic equipment usage from both small vessels (RHIBs) and research ships including fisheries acoustics systems, CTDs, plankton nets
- large animal approaches and handling

- Advanced proficiency in Matlab, R, GIS and echoview software

CI on US NMFS marine mammal permits 23095, 26602, and 28850, and Republic of Ireland wildlife license no. 006/2023

- Authorized to conduct cetacean field research in US and Antarctic waters, fish research in Republic of Ireland
- 11+ years experience with operating and supervising suction cup and dart-attached tagging, biopsy sampling, UAV work, behavioral observation and small boat operation around protected marine mammals
- Placed, processed and/or supervised over 400 video/accelerometer tag deployments
- Level II disentanglement response training

Chief scientist/PI for field studies

Antarctic, 2020,2022
SW Ireland, 2022-2024
Monterey Bay, 2016-2025

Fifteen years of field studies in diverse environments collaborating with 15+ institutions including:

Antarctic (6 seasons) 2018-2023
Washington (4 seasons) 2015-2021
Cape Cod, MA (3 seasons) 2015-2017
Svalbard, Norway (1 season) 2016
Western South Africa (1 season) 2015
Oregon Coast (5 seasons) 2012--2023
SW Ireland (3 seasons) 2022-2024
Monterey Bay, CA (9 seasons) 2014-2023
Azores, Portugal (4 seasons) 2015-2021
So. California (5 seasons) 2013-2017
Andenes, Norway (1 season) 2016
Newfoundland Coast (1 season) 2015
Gulf of California (1 season) 2011

Wilderness First Responder (WFR) and CPR certification (WMI), exp June 2021

SCUBA certification (assistant instructor, NAUI)

4 seasons research diving with REEF check (2008-2010, 2015)

REFERENCES

Jeremy Goldbogen, Associate Professor of Oceans, Stanford University
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Fleur Visser, Scientist, Royal Netherlands Institute for Sea Research
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John Calambokidis, Director, Cascadia Research Collective
Email: calambokidis@cascadiaresearch.org

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Jean Potvin, Professor of Physics, St. Louis University
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