

# Stanford

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## Jeremy Goldbogen

Assistant Professor of Biology

### Bio

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#### ACADEMIC APPOINTMENTS

- Assistant Professor, Biology
- Member, Bio-X

#### HONORS AND AWARDS

- Terman Fellowship, Stanford University (2017-2020)
- Young Investigator Award, Office of Naval Research (2016-2020)
- Hoagland Award for Teaching Innovation, Vice Provost for Undergraduate Education, Humanities and Sciences Dean's Office, Stanford University (2015)

#### PROFESSIONAL EDUCATION

- BSc, University of Texas at Austin , Zoology (2002)
- MSc, Scripps Institution of Oceanography, University of California - San Diego , Marine Biology (2005)
- PhD, University of British Columbia , Zoology (2010)

#### LINKS

- My Lab Site: <http://goldbogen.stanford.edu/>

### Teaching

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#### COURSES

##### 2017-18

- Bio-logging and Bio-telemetry: BIOHOPK 14 (Spr)
- Physiology: BIOHOPK 84 (Spr)
- Topics in Comparative and Environmental Physiology: BIOHOPK 234H (Spr)

##### 2016-17

- Physiological Ecology of Marine Megafauna: BIOHOPK 179H, BIOHOPK 279H (Spr)
- Topics in Comparative and Environmental Physiology: BIOHOPK 234H (Spr)

##### 2015-16

- Bio-logging and Bio-telemetry: BIO 14 (Win)

## STANFORD ADVISEES

### Doctoral Dissertation Reader (AC)

Ben Burford, Rachel Crane, William Oestreich

### Postdoctoral Faculty Sponsor

Matthew Savoca, Paolo Segre

### Doctoral Dissertation Advisor (AC)

David Cade, Max Czapanskiy, James Fahlbusch, Will Gough, Shirel Kahane-Rapport

### Doctoral (Program)

David Cade, James Fahlbusch, Will Gough, Shirel Kahane-Rapport

## Publications

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### PUBLICATIONS

- **Memory and resource tracking drive blue whale migrations** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Abrahms, B., Hazen, E. L., Aikens, E. O., Savoca, M. S., Goldbogen, J. A., Bograd, S. J., Jacox, M. G., Irvine, L. M., Palacios, D. M., Mate, B. R.  
2019; 116 (12): 5582–87
- **Memory and resource tracking drive blue whale migrations.** *Proceedings of the National Academy of Sciences of the United States of America*  
Abrahms, B., Hazen, E. L., Aikens, E. O., Savoca, M. S., Goldbogen, J. A., Bograd, S. J., Jacox, M. G., Irvine, L. M., Palacios, D. M., Mate, B. R.  
2019
- **Physiological constraints on marine mammal body size** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Goldbogen, J. A.  
2018; 115 (16): 3995–97
- **Context-dependent lateralized feeding strategies in blue whales** *CURRENT BIOLOGY*  
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; 27 (22): R1206–R1208
- **A hydrodynamically active flipper-stroke in humpback whales** *CURRENT BIOLOGY*  
Segre, P. S., Seakamela, S., Meyer, M. A., Findlay, K. P., Goldbogen, J. A.  
2017; 27 (13): R636–R637
- **Independent evolution of baleen whale gigantism linked to Plio-Pleistocene ocean dynamics.** *Proceedings. Biological sciences*  
Slater, G. J., Goldbogen, J. A., Pyenson, N. D.  
2017; 284 (1855)
- **How Baleen Whales Feed: The Biomechanics of Engulfment and Filtration.** *Annual review of marine science*  
Goldbogen, J. A., Cade, D. E., Calambokidis, J., Friedlaender, A. S., Potvin, J., Segre, P. S., Werth, A. J.  
2017; 9: 367-386
- **Physical trade-offs shape the evolution of buoyancy control in sharks.** *Proceedings. Biological sciences*  
Gleiss, A. C., Potvin, J., Goldbogen, J. A.  
2017; 284 (1866)
- **Kinematic Diversity in Rorqual Whale Feeding Mechanisms** *CURRENT BIOLOGY*  
Cade, D. E., Friedlaender, A. S., Calambokidis, J., Goldbogen, J. A.  
2016; 26 (19): 2617-2624
- **Blue whales (*Balaenoptera musculus*) optimize foraging efficiency by balancing oxygen use and energy gain as a function of prey density.** *Science advances*  
Hazen, E. L., Friedlaender, A. S., Goldbogen, J. A.

2015; 1 (9)

- **Stretchy nerves are an essential component of the extreme feeding mechanism of rorqual whales** *CURRENT BIOLOGY*  
Vogl, A. W., Lillie, M. A., Piscitelli, M. A., Goldbogen, J. A., Pyenson, N. D., Shadwick, R. E.  
2015; 25 (9): R360-R361
- **Diving Behavior and Fine-Scale Kinematics of Free-Ranging Risso's Dolphins Foraging in Shallow and Deep-Water Habitats** *FRONTIERS IN ECOLOGY AND EVOLUTION*  
Arranz, P., Benoit-Bird, K. J., Friedlaender, A. S., Hazen, E. L., Goldbogen, J. A., Stimpert, A. K., DeRuiter, S. L., Calambokidis, J., Southall, B. L., Fahlman, A., Tyack, P. L.  
2019; 7
- **Behavioral responses of individual blue whales (*Balaenoptera musculus*) to mid-frequency military sonar.** *The Journal of experimental biology*  
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., Harris, C. M., Schorr, G., Moretti, et al  
2019; 222 (Pt 5)
- **Behavioral responses of individual blue whales (*Balaenoptera musculus*) to mid-frequency military sonar** *JOURNAL OF EXPERIMENTAL BIOLOGY*  
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., Harris, C. M., Schorr, G., Moretti, et al  
2019; 222 (5)
- **Grouping reduces the metabolic demand of a social squid** *Marine Ecology Progress Series*  
Burford, B. P., Carey, N., Gilly, W. F., Goldbogen, J. A.  
2019; 612: 141-150
- **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*  
Werth, A. J., Potvin, J., Shadwick, R. E., Jensen, M. M., Cade, D. E., Goldbogen, J. A.  
2018; 125 (2): 264-79
- **Allometric scaling of morphology and engulfment capacity in rorqual whales.** *Journal of morphology*  
Kahane-Rapport, S. R., Goldbogen, J. A.  
2018
- **A Dynamic State Model of Migratory Behavior and Physiology to Assess the Consequences of Environmental Variation and Anthropogenic Disturbance on Marine Vertebrates** *AMERICAN NATURALIST*  
Pirota, E., Mangel, M., Costa, D. P., Mate, B., Goldbogen, J. A., Palacios, D. M., Huckstadt, L. A., McHuron, E. A., Schwarz, L., New, L.  
2018; 191 (2): E40-E56
- **Determining forward speed from accelerometer jiggle in aquatic environments.** *The Journal of experimental biology*  
Cade, D. E., Barr, K. R., Calambokidis, J., Friedlaender, A. S., Goldbogen, J. A.  
2018; 221 (Pt 2)
- **The evolution of foraging capacity and gigantism in cetaceans** *Journal of Experimental Biology*  
Goldbogen, J. A., Madsen, P. T.  
2018; 221
- **Resource partitioning facilitates coexistence in sympatric cetaceans in the California Current** *ECOLOGY AND EVOLUTION*  
Fossette, S., Abrahms, B., Hazen, E. L., Bograd, S. J., Zilliacus, K. M., Calambokidis, J., Burrows, J. A., Goldbogen, J. A., Harvey, J. T., Marinovic, B., Tershy, B., Croll, D. A.  
2017; 7 (21): 9085-97
- **Comparative Three-Dimensional Morphology of Baleen: Cross-Sectional Profiles and Volume Measurements Using CT Images** *ANATOMICAL RECORD-ADVANCES IN INTEGRATIVE ANATOMY AND EVOLUTIONARY BIOLOGY*  
Jensen, M. M., Saladrigas, A. H., Goldbogen, J. A.  
2017; 300 (11): 1942-52
- **Structure and Function in the Lunge Feeding Apparatus: Mechanical Properties of the Fin Whale Mandible** *ANATOMICAL RECORD-ADVANCES IN INTEGRATIVE ANATOMY AND EVOLUTIONARY BIOLOGY*  
Shadwick, R. E., Goldbogen, J. A., Pyenson, N. D., Whale, J. A.

2017; 300 (11): 1953–62

- **Avoidance responses of minke whales to 1-4kHz naval sonar.** *Marine pollution bulletin*  
Kvadshheim, P. H., DeRuiter, S., Sivle, L. D., Goldbogen, J., Roland-Hansen, R., Miller, P. J., Lam, F. A., Calambokidis, J., Friedlaender, A., Visser, F., Tyack, P. L., Kleivane, L., Southall, et al  
2017
- **A MULTIVARIATE MIXED HIDDEN MARKOV MODEL FOR BLUE WHALE BEHAVIOUR AND RESPONSES TO SOUND EXPOSURE** *ANNALS OF APPLIED STATISTICS*  
DeRuiter, S. L., Langrock, R., Skirbutas, T., Goldbogen, J. A., Calambokidis, J., Friedlaender, A. S., Southall, B. L.  
2017; 11 (1): 362-392
- **Kinematics of ram filter feeding and beat–glide swimming in the northern anchovy *Engraulis mordax*** *Journal of Experimental Biology*  
Carey, N., Goldbogen, J. A.  
2017; 220: 2717-2725
- **Hydrodynamic properties of fin whale flippers predict maximum rolling performance.** *journal of experimental biology*  
Segre, P. S., Cade, D. E., Fish, F. E., Potvin, J., Allen, A. N., Calambokidis, J., Friedlaender, A. S., Goldbogen, J. A.  
2016; 219: 3315-3320
- **How to tag a jellyfish? A methodological review and guidelines to successful jellyfish tagging** *JOURNAL OF PLANKTON RESEARCH*  
Fossette, S., Katija, K., Goldbogen, J. A., Bograd, S., Patry, W., Howard, M. J., Knowles, T., Haddock, S. H., Bedell, L., Hazen, E. L., Robison, B. H., Mooney, T. A., Shorter, et al  
2016; 38 (6): 1347-1363
- **Studying cetacean behaviour: new technological approaches and conservation applications** *ANIMAL BEHAVIOUR*  
Nowacek, D. P., Christiansen, F., Bejder, L., Goldbogen, J. A., Friedlaender, A. S.  
2016; 120: 235-244
- **Development of an automated method of detecting stereotyped feeding events in multisensor data from tagged rorqual whales** *ECOLOGY AND EVOLUTION*  
Allen, A. N., Goldbogen, J. A., Friedlaender, A. S., Calambokidis, J.  
2016; 6 (20): 7522-7535
- **Discrimination of fast click-series produced by tagged Risso's dolphins (*Grampus griseus*) for echolocation or communication** *JOURNAL OF EXPERIMENTAL BIOLOGY*  
Arranz, P., DeRuiter, S. L., Stimpert, A. K., Neves, S., Friedlaender, A. S., Goldbogen, J. A., Visser, F., Calambokidis, J., Southall, B. L., Tyack, P. L.  
2016; 219 (18): 2898-2907
- **Prey-mediated behavioral responses of feeding blue whales in controlled sound exposure experiments** *ECOLOGICAL APPLICATIONS*  
Friedlaender, A. S., Hazen, E. L., Goldbogen, J. A., Stimpert, A. K., Calambokidis, J., Southall, B. L.  
2016; 26 (4): 1075-1085
- **Multiple-stage decisions in a marine central-place forager** *ROYAL SOCIETY OPEN SCIENCE*  
Friedlaender, A. S., Johnston, D. W., Tyson, R. B., Kaltenberg, A., Goldbogen, J. A., Stimpert, A. K., Curtice, C., Hazen, E. L., Halpin, P. N., Read, A. J., Nowacek, D. P.  
2016; 3 (5)
- **Development of an automated method of detecting stereotyped feeding events in multisensor data from tagged rorqual whales.** *Ecology and evolution*  
Allen, A. N., Goldbogen, J. A., Friedlaender, A. S., Calambokidis, J.  
2016; 6 (20): 7522–35
- **Using morphology to infer physiology: case studies on rorqual whales (Balaenopteridae)** *CANADIAN JOURNAL OF ZOOLOGY*  
Goldbogen, J. A., Shadwick, R. E., Lillie, M. A., Piscitelli, M. A., Potvin, J., Pyenson, N. D., Vogl, A. W.  
2015; 93 (9): 687-700
- **Prey density and distribution drive the three-dimensional foraging strategies of the largest filter feeder** *FUNCTIONAL ECOLOGY*  
Goldbogen, J. A., Hazen, E. L., Friedlaender, A. S., Calambokidis, J., DeRuiter, S. L., Stimpert, A. K., Southall, B. L.  
2015; 29 (7): 951-961
- **Mechanical challenges to freshwater residency in sharks and rays.** *journal of experimental biology*

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- Gleiss, A. C., Potvin, J., Keleher, J. J., Whitty, J. M., Morgan, D. L., Goldbogen, J. A.  
2015; 218: 1099-1110
- **Feeding performance by sympatric blue and fin whales exploiting a common prey resource** *MARINE MAMMAL SCIENCE*  
Friedlaender, A. S., Goldbogen, J. A., Hazen, E. L., Calambokidis, J., Southall, B. L.  
2015; 31 (1): 345-354
  - **Formal Comment on Schorr GS, Falcone EA, Moretti DJ, Andrews RD (2014) First Long-Term Behavioral Records from Cuvier's Beaked Whales (Ziphius cavirostris) Reveal Record-Breaking Dives. PLoS ONE 9(3): e92633. doi:10.1371/journal.pone.0092633. PloS one**  
Tyack, P. L., Calambokidis, J., Friedlaender, A., Goldbogen, J., Southall, B.  
2015; 10 (12): e0142287
  - **Simultaneous tracking of blue whales and large ships demonstrates limited behavioral responses for avoiding collision** *ENDANGERED SPECIES RESEARCH*  
McKenna, M. F., Calambokidis, J., Oleson, E. M., Laist, D. W., Goldbogen, J. A.  
2015; 27 (3): 219-232
  - **Acoustic and foraging behavior of a Baird's beaked whale, *Berardius bairdii*, exposed to simulated sonar** *SCIENTIFIC REPORTS*  
Stimpert, A. K., DeRuiter, S. L., Southall, B. L., Moretti, D. J., Falcone, E. A., Goldbogen, J. A., Friedlaender, A., Schorr, G. S., Calambokidis, J.  
2014; 4
  - **Feeding rates and under-ice foraging strategies of the smallest lunge filter feeder, the Antarctic minke whale (*Balaenoptera bonaerensis*).** *journal of experimental biology*  
Friedlaender, A. S., Goldbogen, J. A., Nowacek, D. P., Read, A. J., Johnston, D., Gales, N.  
2014; 217: 2851-2854
  - **Using accelerometers to determine the calling behavior of tagged baleen whales.** *journal of experimental biology*  
Goldbogen, J. A., Stimpert, A. K., DeRuiter, S. L., Calambokidis, J., Friedlaender, A. S., Schorr, G. S., Moretti, D. J., Tyack, P. L., Southall, B. L.  
2014; 217: 2449-2455
  - **The device that revolutionized marine organismal biology.** *journal of experimental biology*  
Goldbogen, J. A., Meir, J. U.  
2014; 217: 167-168
  - **Tracking fitness in marine vertebrates: current knowledge and opportunities for future research** *MARINE ECOLOGY PROGRESS SERIES*  
Crossin, G. T., Cooke, S. J., Goldbogen, J. A., Phillips, R. A.  
2014; 496: 1-17