

# William K. Oestreich

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## EDUCATION

### Stanford University

PhD Candidate: Dept. of Biology, Hopkins Marine Station  
Advisors: Dr. Larry Crowder and Dr. Jeremy Goldbogen

Pacific Grove, CA, USA

*In progress*

### Northwestern University

Master of Science in Environmental Engineering  
Advisor: Dr. Luisa Marcelino

Evanston, IL, USA

2015

### Northwestern University

Bachelor of Science in Environmental Engineering

Evanston, IL, USA

2015

## SELECT PROFESSIONAL EXPERIENCE

### Stanford University

Pacific Grove, CA, USA  
Graduate Research Fellow

Aug 2017 - Present

### Woods Hole Oceanographic Institution

Woods Hole, MA, USA  
Research Assistant III, Computational Biogeochemistry Group (PI: Dr. Scott Doney)

Aug 2015 - July 2017

### Jal Bhagirathi Foundation + Northwestern University

Jodhpur, Rajasthan, India  
Field Research Technician

June 2015 - Aug 2015

### Natural Resources Defense Council

Chicago, IL, USA  
Litigation Team Intern

Jan 2015 - June 2015

## PEER-REVIEWED PUBLICATIONS

- Cade, DE, Seakamela, SM, Findlay, K, Fukunaga, J, Kahane-Rapport, S, Warren, J, Calambokidis, J, Fahlbusch, JA, Friedlaender, AS, Hazen, EL, Kotze, D, McCue, S, Meyer, M, **Oestreich, WK**, Oudejans, M, Wilke, C, Goldbogen, JA (2021). Predator-scale spatial analysis of intra-patch prey distribution reveals energetic drivers of rorqual whale super-group formation. *Functional Ecology* (In Press).
- Green, KM, Selgrath, JS, Frawley, TH, **Oestreich, WK**, Mansfield, EJ, Urteaga, J, Swanson, SS, Santana, FS, Green, SJ, Naggea, J, and Crowder, LB (2021). How adaptive capacity shapes the Adapt, React, Cope Response to climate impacts: insights from small-scale fisheries. *Climatic Change* (In Press).
- Oestreich, WK**, Fahlbusch, JA, Cade, DE, Calambokidis, J, Margolina, T, Joseph, J, Friedlaender, AS, McKenna, M, Stimpert, AK, Southall, BL, Goldbogen, JA, and Ryan, JP (2020). Animal-borne metrics enable acoustic detection of blue whale migration. *Current Biology* 30, 4773-4779.
- Haver, SM, Rand, Z, Hatch, LT, Lipski, D, Dziak, RP, Gedamke, J, Haxel, J, Heppell, SA, Jahncke, J, McKenna, MF, Mellinger, DK, **Oestreich, WK**, Roche, L, Ryan, JP, and Van Parijs, SM, 2020 : Seasonal trends and primary contributors to the low frequency soundscape of the Cordell Bank National Marine Sanctuary. *Journal of the Acoustical Society of America* 148, 845-858.
- Oestreich, WK**, Chapman, MS, and Crowder, LB (2020). A comparative analysis of dynamic management in marine and terrestrial systems. *Frontiers in Ecology and the Environment* 18, 496-504.

4. **Oestreich, WK**, Frawley, TH, Mansfield, EJ, Green, KM, Green, SJ, Naggea, J, Selgrath, JC, Swanson, SS, Urteaga, J, White, TD, and Crowder, LB (2019). The impact of environmental change on small-scale fishing communities: Moving beyond adaptive capacity to community response in Cisneros-Montemayor, AM, Cheung, W, and Ota, Y (ed). Predicting future oceans: Sustainability of social-ecological systems under climate change. Elsevier. New York, NY.
3. Glover, DM, Doney, SC, **Oestreich, WK**, and Tullo, A (2018). Geostatistical analysis of mesoscale spatial variability and error in SeaWiFS and MODIS/Aqua global ocean color data. *Journal of Geophysical Research: Oceans* 123, 22-39.
2. Swain, TD, Vega-Perkins, JB, **Oestreich, WK**, Triebold, C, DuBois, E, Henss, J, Baird, A, Siple, M, Backman, V, and Marcelino, L (2016). Coral Bleaching Response Index: a new tool to standardize and compare susceptibility to thermal bleaching. *Global Change Biology* 22, 2475-2488.
1. **Oestreich, WK**, Ganju, NK, Pohlman, JW, and Suttles, SE (2016). Colored dissolved organic matter in eutrophic estuaries: relationships between carbon sources and light attenuation. *Biogeosciences* 13, 583-595.

## MANUSCRIPTS IN REVIEW (\* denotes co-first authorship)

Chapman, MS\*, **Oestreich, WK\*** et al. Promoting equity in scientific recommendations for high seas governance. (*In review*).

Cade, DE, et al. including **Oestreich, WK**. Group exploitation of extensive, ephemeral, environmentally controlled prey patches. (*In review*).

Kitzes, J et al. including **Oestreich, WK**. Expanding the National Ecological Observatory Network (NEON) biodiversity surveys with new instrumentation and machine learning models. (*In review*).

*PhD thesis chapters to be submitted before completion of degree (Spring 2022):*

**Oestreich, WK** et al. Blue whales display population-level phenological flexibility under variable upwelling conditions

**Oestreich, WK** et al. Patterns of anomalous foraging-associated call production in blue whales.

## FELLOWSHIPS, GRANTS, AND RESEARCH AWARDS

○ Bio Futures Fellowship - Stanford Ethics, Society, and Technology Hub (\$3000)	2020-2021
○ NSF Graduate Research Fellowship (\$138,000)	2018-2021
○ David & Lucile Packard Foundation Stanford Graduate Fellowship (\$275,000)	2017-2020
○ SPICE (Student Projects for Intellectual Community Engagement) Grant (\$10,000)	2019-2021
○ Fieldwork Grant - California Ocean Alliance (\$1000)	2019
○ Best Research Talk - Stanford Woods Institute Young Environmental Scholar Conference (\$250)	2019
○ Conference Travel Grants - Stanford Univ. Office of Graduate Education (\$1800)	2018-2019
○ Whelan Grant - Woods Hole Oceanographic Institution (\$1000)	2016
○ Jimmie E. Quon Memorial Award for Env. Eng. Senior - Northwestern Univ. (\$1000)	2015
○ Conference Travel Grant - Woods Hole Oceanographic Institution (\$1000)	2014
○ Summer Student Fellowship - Woods Hole Oceanographic Institution & US Geological Survey	2014

## TEACHING EXPERIENCE

○ CSUMB REU Program: Co-instructor, Fellowship and Proposal Writing	2019-2020
○ Stanford University: Teaching Assistant, Marine Conservation Biology	2019
○ Stanford University: Teaching Assistant, Intro to Research in Ecology and Evolutionary Biology	2018
○ Northwestern University: Teaching Assistant, Public and Environmental Health	2015

## STUDENTS ADVISED

○ Mojca Sebanc, Stanford University guest student from University of Ljubljana	2020
○ Stephanie Cortes, Salinas High School - Hopkins Marine Station Internship Program	2020
○ Alex Khieu, Salinas High School - Hopkins Marine Station Internship Program	2019

## ACADEMIC JOURNAL REVIEWING

Reviewer for the following journals: *Scientific Reports*, *Proceedings of the Royal Society B*, *Marine Mammal Science*, *Integrative Zoology*

## ACADEMIC SERVICE, VOLUNTEER, AND OUTREACH ACTIVITIES

○ Stanford University Biology PhD Preview Program, <i>Co-organizer</i>	2020
○ Salinas High School - Hopkins Marine Station Internship Program, <i>Co-director</i>	2019-2020
○ Pacific Grove Museum of Natural History Science Saturdays, <i>Volunteer</i>	2019
○ Hopkins Marine Station Open House, <i>Volunteer</i>	2018-2020
○ Pacific Grove Public Schools Marine Science Curriculum, <i>Guest Speaker</i>	2018
○ Mt. Pleasant Elementary School (DE), <i>Marine Science Pen Pal</i>	2017-2019
○ Stanford High School to PhD (HyPE), <i>Volunteer</i>	2017
○ Bourne (MA) High School Science and Engineering Expo <i>Volunteer Judge</i>	2016
○ North Branch Restoration Project (Chicago, IL), <i>Prairie restoration volunteer</i>	2013-2015

## ACADEMIC LEADERSHIP EXPERIENCE

○ Friends of Hopkins Marine Station Board, <i>Graduate student representative</i>	2019-2020
○ Stanford Biology Dept. Surf 'n' Turf Research Symposium, <i>Treasurer &amp; co-organizer</i>	2018-2020
○ Monterey Area Research Institutions Network for Education (MARINE), <i>Institution representative</i>	2018-2020

## WORKSHOPS AND WORKING GROUPS

○ OceanHackWeek, University of Washington	2019
○ ACKME Mathematical Ecology Working Group, Woods Hole Oceanographic Institution	2017
○ MARINE Ocean Policy Course, Stanford University Center for Ocean Solutions	2017
○ Structured Population Models, Woods Holes Oceanographic Institution	2017
○ Modeling Methods for Marine Science, Woods Hole Oceanographic Institution	2016
○ Satellite Remote Sensing for Biological Oceanography, Cornell University	2016

## INVITED SEMINARS, CONFERENCE PRESENTATIONS, AND POSTERS

**Oestreich, WK\***, Chapman, MS, and Crowder, LB "Scales of dynamic management across marine and terrestrial ecosystems." NOAA/NOS Science Seminar Series, Mar 2021 (scheduled). Oral presentation.

**Oestreich, WK\*** "Environmental and social drivers of flexible migration phenology in blue whales." Stanford-UC Santa Cruz Species Interactions Workshop, Dec 2020. Oral presentation.

**Oestreich, WK**, Cline, DE, Cade, DE, Calambokidis, J, Fahlbusch, JA\*, Joseph, JE, Margolina, T, Southall, BA, Goldbogen, JA, and Ryan, JP "Temporal variation in blue whale call types in the Northeast Pacific at diel, seasonal, and interannual time scales with tag-derived behavioral context." Ocean Sciences Meeting, San Diego, CA, Feb 2020. Oral presentation.

Cade, DE\*, Seakamela, M, Findlay, K, Fahlbusch, J, Fukunaga, J, Kahane-Rapport, S, **Oestreich, WK**, Warren, J, Calambokidis, J, Hazen, E, Friedlaender, A, Kirkman, S, Kotze, D, McCue, S, Mejer, M, Ryan, J, Wilke, C, and Goldbogen, JA "The patchy distribution of krill within large swarms drives collective exploitation by super groups of rorqual whales." Ocean Sciences Meeting, San Diego, CA, Feb 2020. Oral presentation.

Calambokidis, J\*, Fahlbusch, JA, Szesciorka, AR, Sirovic, A, Southall, BL, Cade, DE, Friedlaender, AS, **Oestreich, WK**, and Goldbogen, JA "New insights into blue, fin, and humpback whale feeding, movements, and impacts of human activities from medium duration archival tags." Ocean Sciences Meeting, San Diego, CA, Feb 2020. Oral presentation.

Crowder, LB\*, **Oestreich, WK**, Chapman, MS, and Hazen, EL "The emergence of dynamic management approaches in ocean ecosystems with a comparison to management of terrestrial ecosystems." Ocean Sciences Meeting, San Diego, CA, Feb 2020. Oral presentation.

Green, KM\*, et al. including **Oestreich, WK** "Adaptation of Small Scale Fisheries to Environmental Change: A Meta-analysis of Community Response." Ocean Sciences Meeting, San Diego, CA, Feb 2020. Poster.

Haver, S\*, Rand, Z, Hatch, L, Lipski, D, Dziak, RP, Gedamke, J, Haxel, J, Heppell, SA, Jahncke, J, McKenna,

M, Mellinger, D, **Oestreich, WK**, Roche, L, Ryan, JP, and Van Parijs, SM "Passive acoustic monitoring reveals seasonal trends and primary contributors to the low frequency ambient soundscape of the Cordell Bank National Marine Sanctuary." Ocean Sciences Meeting, San Diego, CA, Feb 2020. Poster.

**Oestreich, WK\***, Cade, DE, Calambokidis, J, and Goldbogen, JA "Context of blue whale vocalizations as determined via tag-mounted accelerometers." World Marine Mammal Conference, Barcelona, Spain, Dec 2019. Oral presentation.

Ryan, JP\*, Cline, DE, Benoit-Bird, KJ, Chavez, FP, Raanan, BY, Urmy, SS, Zhang, Y, **Oestreich, WK**, Goldbogen, JA, Joseph, JE, Margolina, T, DeVogelaere, A, Forney, K, Kudela, RM, and Santora, JA "Integrative passive acoustic monitoring in Monterey Bay National Marine Sanctuary." Acoustical Society of America Annual Meeting, San Diego, CA, Dec 2019. Oral presentation.

**Oestreich, WK\***, Cline, DE, Cade, DE, Calambokidis, J, Goldbogen, JA, Crowder, LB, and Ryan, JP "Synthesis of acoustic, biologging, and machine learning methods enhances monitoring of blue whales from individual to population scales." Joint Meeting of the American Fisheries Society and The Wildlife Society, Reno, NV, Sept 2019. Oral presentation.

**Oestreich, WK\***, Chapman, MS, and Crowder, LB "Scales of forecasting for dynamic management: gaps in marine and terrestrial systems." Joint Meeting of the American Fisheries Society and The Wildlife Society, Reno, NV, Sept 2019. Oral presentation.

Haulsee, DE\*, Blondin, H, **Oestreich, WK**, and Crowder, LB "Seasonal occurrence and distributions of billfish related to climate variability in the Eastern Pacific Ocean." Joint Meeting of the American Fisheries Society and The Wildlife Society, Reno, NV, Sept 2019. Oral presentation.

**Oestreich, WK\***, Frawley, TH, Mansfield, EJ, Green, KM, Green, SJ, Naggea, J, Selgrath, JC, Swanson, SS, Urteaga, J, White, TD, and Crowder, LB "The impact of environmental change on small-scale fishing communities: Moving beyond adaptive capacity to community response." Nippon Foundation Nereus Science Conference, Princeton, NJ, Sept 2019. Oral presentation.

**Oestreich, WK\*** "Connecting behavior across individual, population, and ecosystem scales: ecological and management implications for the blue whale." Monterey Area Research Institutions Network for Education (MARINE) Annual Colloquium, Moss Landing, CA, May 2019. Oral presentation.

**Oestreich, WK\*** "Enhancing cetacean monitoring using a novel synthesis of passive acoustics, machine learning, and biologging." Bay Area Conservation Biology Symposium, Berkeley, CA, Apr 2019. Oral presentation.

Chapman, MS\*, **Oestreich, WK**, Beytell, P "Impacts of ephemeral water availability and human infrastructure on elephant herd movement." Bay Area Conservation Biology Symposium, Berkeley, CA, Apr 2019. Oral presentation.

**Oestreich, WK\*** "Integrating blue whale behavior from individual to ecosystem scales." Hopkins Marine Station, Stanford University, Pacific Grove, CA, Feb 2019. Oral presentation.

Southall, BL\*, Ryan, JP\*, **Oestreich, WK\***, Urmy, SS\*, Joseph, JE\*, Stimpert, AK\*, Cline, DE\*, Cade, DE\*, Goldbogen, JA\* "Discussion of sound related research in Monterey Bay National Marine Sanctuary." Monterey Bay National Marine Sanctuary Research Activity Panel (RAP) Meeting, Moss Landing Marine Laboratories, Moss Landing, CA, Nov 2018.

**Oestreich, WK\*** "Harnessing dynamic animal behavior data to inform dynamic management practices." Biology Department Surf 'n' Turf Symposium, Stanford University, Palo Alto, CA, Oct 2018. Oral presentation.

Cline, DE\*, **Oestreich, WK\***, McGill, P\*, and Ryan, JP\* "Blue whale acoustic detection and classification workflow." MARS Soundscape Research Symposium, Monterey Bay Aquarium Research Institute, Moss Landing, CA, Oct 2018. Oral presentation.

**Oestreich, WK\*** "Listen and learn: Exploring patterns of cetacean behavior via passive acoustics and machine learning." Hopkins Marine Station, Stanford University, Pacific Grove, CA, June 2018. Oral presentation.

**Oestreich, WK\*** "Listen up: Learning about whale and human behavior in the oceans using acoustics and machine learning." GenerationSci Conference, Stanford University, Palo Alto, CA, April 2018. Oral presentation.

Glover, DM, Doney, SC, **Oestreich, WK\***, and Tullo, A "Geostatistical Analysis to Quantify Mesoscale Spatial Variability, Patchiness, and Error in SeaWiFS and MODIS/Aqua Global Ocean Color Data." Ocean Sciences Meeting, Portland, OR, February 2018. Poster.

**Oestreich, WK\***, Grimes, T\*, Spies, N\*, Zuercher, R\*, and Zweig, C\* "Socioeconomic data collection in the National Marine Sanctuaries." Center for Ocean Solutions Ocean Policy Workshop, Monterey Bay Aquarium, Monterey, CA, July 2017. Oral presentation.

Doney, SC\*, Lima, I, **Oestreich, WK**, Kavanaugh, MT, and Glover, DM "Biogeochemical Modeling and Remote Sensing." North Atlantic Aerosols and Marine Ecosystems Study (NAAMES) PI Meeting II, Hampton, VA, May 2017. Oral presentation.

Doney, SC\*, Lima, I, **Oestreich, WK**, Kavanaugh, MT, and Glover, DM "Biogeochemical Modeling and Remote Sensing." North Atlantic Aerosols and Marine Ecosystems Study (NAAMES) PI Meeting I, Corvallis, OR, July 2016. Oral presentation.

**Oestreich, WK\*** "Coral reefs and climate change: Understanding drivers and patterns of coral bleaching." Natural Resources Defense Council Chicago Litigation Team Retreat, May 2015. Oral presentation.

**Oestreich, WK\***, Ganju, NK, Pohlman, JW, and Suttles, SE "Colored dissolved organic matter in shallow estuaries: the effect of source on quantification." Northwestern University Research Arts Expo, Evanston, IL, May 2015. Poster.

**Oestreich, WK\***, Ganju, NK, Pohlman, JW, and Suttles, SE "Colored dissolved organic matter in shallow estuaries: the effect of source on quantification." American Geophysical Union Fall Meeting, San Francisco, CA, December 2014. Poster.