SAMUEL STETSON URMY

Monterey Bay Aquarium Research Institute
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Education

2012 – 2017: PhD, Marine and Atmospheric Sciences
Stony Brook University, Stony Brook, NY
Quantitative foraging ecology of terns at Great Gull Island, New York: Theory, models, and remote sensing of collective behavior in a dynamic habitat
Advisor: Dr. Joseph D. Warren

2009 – 2012: MS, Aquatic and Fishery Sciences
University of Washington, Seattle, WA
Temporal variability and bio-physical coupling in the pelagic fauna of Monterey Bay
Advisor: Dr. John K. Horne

2004 – 2008: BS, Earth Systems, Oceans Track
Stanford University, Stanford, CA
Advisor: Dr. Fiorenza Micheli

Employment

2018 – Postdoctoral Fellow, Monterey Bay Aquarium Research Institute, Moss Landing, CA
Supervisor: Dr. Kelly Benoit-Bird

Publications

In prep

Urmy, S.S. *Visual trail-following in colonial seabirds.*

Urmy, S.S. and J.D. Warren. *Tracking individual terns near their breeding colony with a marine radar.*

Urmy, S.S. and J.D. Warren. *Indirect calibration of hull-mounted ADCPs to measure Antarctic krill biomass: procedures, limitations, and potential benefits.*

In revision

Urmy, S.S. and J.D. Warren. *Seasonal changes in the abundance, distribution, and patchiness of zooplankton and fish in four lakes in the Sierra Nevada, California*.

2018

Urmy, S.S. and J.D. Warren. *Feeding hotspots of common and roseate terns: the influence of tidal currents, bathymetry, and prey density.* Marine Ecology Progress Series 590, 227-245. doi:10.3354/meps12451

2017

Urmy, S.S. and J.D. Warren. *Quantitative ornithology with a commercial marine radar: standard-target calibration, target detection and tracking, and measurement of echoes from individuals and flocks*. Methods in Ecology and Evolution 8 (7), 860-869. http://dx.doi.org/10.1111/2041-210X.12699

2016

Parker-Stetter, S.L., **S.S. Urmy**, J.K. Horne, L. Eisner, E. Farley. *Factors affecting summer distributions of Bering Sea forage fish species: assessing competing hypotheses.* Deep Sea Research II 134, 255-269. http://dx.doi.org/10.1016/j.dsr2.2016.06.013.

Urmy, S.S. , C.E. Williamson, T.H. Leach, S.G. Schladow, E.P. Overholt, J.D. Warren (2016). *Vertical redistribution of zooplankton in an oligotrophic lake associated with reduction in ultraviolet radiation by wildfire smoke*. Geophysical Research Letters 43, 3746–3753.

Urmy, S.S. and J.K. Horne (2016). *Multi-scale responses of micronekton to environmental variability in Monterey Bay, California*. Deep Sea Research I 113, 22-32.

2015

Williamson, C.E., E.P. Overholt, J.A. Brentrup, R.M. Pilla, T.H. Leach, S.G. Schladow, J.D. Warren, **S.S. Urmy**, S. Sadro, S. Chandra, P.J. Neale (2016). *Sentinel responses to droughts, wildfires, and floods: effects of UV radiation on lakes and their ecosystem services*. Frontiers in Ecology and the Environment 14 (2), 102-109.

Parker-Stetter, S.L., J.K. Horne, **S.S. Urmy**, R.A. Heintz, L.B. Eisner, E.V. Farley (2015). *Vertical distribution of age-0 pollock during late summer: biophysical coupling or ontogenic shift?* Marine and Coastal Fisheries 7 (1) 349-369.

2012

Urmy, S.S., J.K. Horne, D.H. Barbee (2012). *Measuring the vertical distributional variability of pelagic fauna in Monterey Bay.* ICES Journal of Marine Science 69 (2), 184-196.

2010

Horne, J.K., **S.S. Urmy**, D.H. Barbee (2010). *Using sonar to describe temporal patterns of oceanic organisms from the MARS Observatory.* IEEE Oceans2010.

Presentations (* indicates speaker)

2018

Urmy, S.S.*, K.J. Benoit-Bird, J.P. Ryan, D.E. Cline. *Continuous monitoring of odontocete clicks from an ocean observatory.* Acoustical Society of America Meeting, Victoria BC, November 2018.

Urmy, S.S.* *Air-traffic control for angry birds: New insights into seabird foraging behavior and habitat from marine radar.* San Francisco State University Estuarine and Ocean Sciences Center, April 2018.

Urmy, S.S.* and J.D. Warren. *Individual and Collective Foraging Behaviors of Common Terns: New Insights from Habitat Models and High-Resolution Radar.* Association for the Sciences of Limnology and Oceanography Ocean Sciences Meeting, Portland OR February 2018.

2017

Urmy, S.S.* *Quantitative Foraging ecology of terns at Great Gull Island, New York: Theory, models, and remote sensing of collective behavior in a dynamic habitat.* Dissertation oral defense, Stony Brook University, October 2017.

2016

Urmy, S.S.* and J.D. Warren. *Confronting models of central-place foraging in seabirds with data from a high-resolution radar.* North American Ornithological Conference, Washington, DC, August 2016.

Urmy, S.S.* and J.D. Warren. *The influence of tidal currents, bathymetry, and prey density on the feeding hotspots of common and roseate terns (Sterna hirundo and S. dougallii)*. Ecological Society of America, Ft. Lauderdale, FL, August 2016.

Urmy, S.S.* *Tidal currents, bathymetry, and foraging hotspots for terns*. Stony Brook University School of Marine and Atmospheric Sciences Graduate Student Symposium, June 2016.

Urmy, S.S.* C.W. Williamson, T.D. Leach, S.G. Schladow, E.P. Overholt, and J.D. Warren. *Wildfire smoke changes the vertical distribution of zooplankton in an oligotrophic lake by reducing ultraviolet radiation*. Association for the Sciences of Limnology and Oceanography, Santa Fe, NM, June 2016.

Urmy, S.S.* *Marine and atmospheric foraging ecology: Seabirds and fish on radar and sonar*. Stony Brook University School of Marine and Atmospheric Sciences Recruitment Symposium, March 2016.

2014

Urmy, S.S.* *Animal movement in the field of desire: Theory and measurements for population-level movement models.* Workshop on movement ecology, Smithsonian Conservation Biology Institute, Front Royal, VA, September 2014.

Urmy, S.S.* and J.D. Warren. *Indirect calibration of backscatter measurements from acoustic Doppler current profilers, with application to Antarctic krill biomass estimation.* ICES Working Group on Fisheries Acoustics Science and Technology, New Bedford, MA, May 2014.

Urmy, S.S.* and J.D. Warren. *Model-based and in-situ observations of high-frequency (10s-*

100s kHz) acoustic scattering from multiple targets. Acoustical Society of America, Providence, RI, May 2014.

2012

Urmy, S.S.* *Deterministic behavior in a stochastic environment can yield animal trajectories with Lévy flight properties.* Stony Brook University School of Marine and Atmospheric Sciences Graduate Student Symposium, January 2012.

Parker-Stetter, S.L.,* J.K. Horne, E. Farley, **S.S. Urmy**, L. Eisner. *Evolving perceptions of forage fish distributions in the SE Bering Sea*. Alaska Marine Science Symposium, Anchorage, AK, January 2012.

2011

Urmy, S.S.,* J.K. Horne, and D.H. Barbee. *Metrics to characterize vertical distributions of aquatic animals in large acoustic datasets*. Acoustical Society of America, Workshop on Acoustic Challenges in Aquatic Ecosystem Assessment, Seattle, WA, May 2011.

Barbee, D.H.,* J.K. Horne, **S.S. Urmy**, and R.B. Kreisberg. *Interfacing a scientific echosounder with a cabled ocean observatory*. Acoustical Society of America, Seattle, WA, May 2011.

Urmy, S.S.,* J.K. Horne, and D.H. Barbee. *Pelagic bio-physical coupling in Monterey Bay*. ICES Working Group on Fisheries Acoustics Science and Technology, Reykjavik, Iceland, May 2011.

2010

Urmy, S.S.,* J.K. Horne, and D.H. Barbee. *Temporal variability in the vertical distribution of pelagic animals in Monterey Bay*. School of Aquatic and Fishery Sciences Graduate Student Symposium, Seattle, WA, November 2010.

Horne, J.K., **S.S. Urmy**,* and D.H. Barbee. *Using sonar to describe temporal patterns of oceanic organisms from the MARS Observatory*, IEEE Oceans 2010, Seattle, WA, September 2010.

Urmy, S.S.,* J.K. Horne, and D.H. Barbee. *Temporally-indexed patterns of pelagic fauna in Monterey Bay*. ICES Working Group on Fisheries Acoustics Science and Technology, San Diego, CA, April 2010.

2009

Urmy, S.S.* *Monterey Bay midwater ecology: Long-term observations of the mesopelagic from the DEIMOS sonar observatory*. School of Aquatic and Fishery Sciences Graduate Student Symposium, Seattle, WA, November 2009.

Posters

Urmy, S.S., J.K. Horne, D.H. Barbee, and R.B. Kreisberg. *A year in the life of Monterey Bay*. School of Aquatic and Fishery Sciences Graduate Student Symposium, Seattle, WA, November 2010.

Urmy, S.S., J. McNally, J. Bartz, and R. Dubar. *The role of intra-island temperature variability at Palmyra Atoll in mass coral bleaching events.* American Geophysical Union Fall Meeting, San Francisco, CA, December 2008.

Technical Reports

Urmy, S.S., B. Lucca, H. Blair, and J.D. Warren. *Seafloor habitat characterization around Montauk Point*. Prepared for Seatuck Environmental Association, Islip, NY, October 2017.

Urmy, S.S. *Troubleshooting the R/V* Western Flyer's *echosounder*. Prepared for the Monterey Bay Aquarium Research Institute, Moss Landing, CA, November 2010.

Awards and Honors

Participant, Ecological Dissertations in the Aquatic Sciences (Eco-DAS) 2018, Honolulu HI

Stony Brook University SoMAS J.R. Schubel Graduate Fellowship 2016 ($3,000)

SBU Marine and Atmospheric Sciences Travel Award 2016 ($300)

American Museum of Natural History Frank M. Chapman Memorial Grant 2015 ($1,200)

American Museum of Natural History Frank M. Chapman Memorial Grant 2014 ($2,000)

Stony Brook University Graduate Council Fellowship ($50,000)

UW Fisheries Interdisciplinary Network of Students Travel Award ($150)

UW Graduate School Fund for Excellence and Innovation Travel Award ($1,000)

UW Graduate and Professional Student Senate Travel Award ($525)

UW Aquatic & Fisheries Sciences Victor and Tamara Loosanof Endowed Fellowship ($11,704)

UW Aquatic & Fisheries Sciences Claire L. and Evelyn S. Egtvedt Fellowship ($4,293)

UW Aquatic & Fisheries Sciences H. Mason Keeler Endowment for Excellence ($6,652)

Stanford School of Earth Sciences Dean's Award for Outstanding Academic Achievement

Professional Service

Peer reviewer: Limnology and Oceanography

Peer reviewer: Ecography

Peer reviewer: PLOS One

Peer reviewer: Avian Conservation and Ecology

Peer reviewer: Canadian Journal of Aquatic and Fishery Sciences

Peer reviewer: ICES Journal of Marine Science

Peer reviewer: Climatic Change

Open-Source Software

StateSpace.jl: Julia package for state-space modeling (i.e. Kalman, extended Kalman, and particle filters) for time series and dynamic systems.

https://github.com/ElOceanografo/StateSpace.jl

SDWBA.jl: Julia package implementing the stochastic distorted-wave Born approximation for sound scattering from fluid-like zooplankton, such as copepods and krill. Used to estimate target strengths for use in biomass estimation.

https://github.com/ElOceanografo/SDWBA.jl

Echometrics: Python package implementing a set of metrics to concisely describe the vertical distribution of acoustic backscatter in the water column.
https://github.com/ElOceanografo/EchoMetrics

PyCWT: Python module for continuous wavelet and cross-wavelet transforms, with significance testing. https://github.com/ElOceanografo/PyCWT

At-Sea Experience

Midwater Ecology Expedition, Monterey Bay, CA, August 2010
One week midwater ecology and respirometry cruise aboard Monterey Bay Aquarium Research Institute ship R/V Western Flyer. Diagnostic troubleshooting of ship's scientific echosounder. Chief Scientist: Bruce Robison, <robr@mbari.org>

Gulf of the Farallones/Cordell Bank National Marine Sanctuary Survey, April 2008
At-sea technician for Point Reyes Bird Observatory. Nine days aboard NOAA Ship McArthur II, mapping distribution of euphausiids with acoustics and Tucker trawls. Co-Chief Scientist: Jaime Jahnke, <jjahncke@prbo.org>

Sea Education Association Cruise S-211, Honolulu to Line Islands, May-June 2007
Research project relating coral health to water circulation at Chistmas Island and Palmyra Atoll, using temperature loggers and visual surveys. Sail- handling, steering, basic navigation, and deployment of oceanographic instruments. Co-Chief Scientist: Rob Dunbar, <dunbar@stanford.edu >

Other Field Work and Research Experience

Acoustic, ROV, and Autonomous Vehicle field work, Monterey Bay, CA, 2018
Assisted with a variety of local field work in Montery Bay, including shipboard acoustic surveys, ROV dives, and deployment/recovery of autonomous underwater and surface vehicles. PI: Kelly Benoit-Bird, <kbb@mbari.org>

Acoustic Surveys of Atlantic Menhaden, Long island, NY, 2015-2016
Assisted with multi-frequency acoustic surveys of menhaden in Long Island's Peconic Bay and in New York Bight. PI: Joe Warren, <joe.warren@stonybrook.edu>

Whale necropsies, Long Island, NY, 2014, 2016
Assisted Riverhead Foundation for Marine Research and Preservation with necropsies of one adult fin and one juvenile humpback whale which washed up dead on Long Island Beaches.

Radar Ornithology on Great Gull Island, NY, 2014-2015
Designed and executed program of visual and radar observations of common tern foraging behavior over two summers. Also designed hydroacoustic surveys for forage fish. Ad-hoc radar engineering, avoidance of bird attacks.

Response of Lakes to the Rim Wildfire, Tuolomne Co., CA, Sept. 2013-October 2014
Acoustic and net sampling of zooplankton from Zodiac in alpine lakes in the wildfire burn zone, near and inside Yosemite National Park. Field Leader: Brant Allen, <bcallen@ucdavis.edu>

Observations of Zooplankton Vertical Migration, Pocono Mts., PA, May 2013
Acoustic and net sampling of zooplankton in small lakes. Co-PI: Joe Warren, <joe.warren@stonybrook.edu>

Research Assistant/Analyst, University of Washington, September 2011- June 2012
Statistical modeling of juvenile pollock and forage fish distributions with respect to oceanography in the Eastern Bering Sea, as part of the North Pacific Research Board's Bering

Sea Integrated Ecological Research Program. Supervisor: Sandra Parker-Stetter, <slps@u.washington.edu>

Acoustic and seabird surveys, San Juan Islands, WA, August 2011
Aided labmate in 4-frequency acoustic survey of Cattle Pass in San Juan Is. from 13-foot Boston Whaler. Researcher: Emily Runnells, <esr4@u.washington.edu>

NOPP Tidal Energy Site Survey, Puget Sound, WA, June 2011
One day aboard R/V Centennial, acoustic/trawl survey of proposed tidal turbine site at Admiralty Inlet in Puget Sound. PI: John Horne, <jhorne@u.washington.edu>

Effects of Geoduck Aquaculture, South Puget Sound, WA, 2010-2011
Helped measure ecological impact of geoduck farming on benthic infauna and nearshore fish communities with core samples and beach seines. Kate McPeek, <katemcpeek@gmail.com>

Hydroacoustic Data Processing, Stanford University, December 2007- June 2008
Undergraduate research assistantship in Kevin Arrigo's Ocean Biogeochemistry Lab, Department of Geophysics. Organization and quality control of 5 years of northern California krill surveys using Echoview. Supervisor: Ben Saenz, <blsaenz@stanford.edu>

Intern, Penobscot East Resource Center, Stonington, ME, July-September 2007
Researched history of commercial groundfishing in Maine. Compilation of National Marine Fisheries Service landings data, interviews of fishermen, and literature review. Preparation of written report. Supervisor: Aaron Dority, <aaron@penobscoteast.org>

Teaching

Workshop on Scientific Teaching . Attended training workshop on scientific teaching strategies, including active learning and inclusive education. Cabrillo College, September 2018.

Lecture on ocean acoustics. Guest lecture for undergraduate class on physical oceanography. Stony Brook University, Fall 2017.

Lecture on fundamentals of active fisheries acoustics. Guest lecture for graduate/undergraduate class on bioacoustics. Stony Brook University, Spring 2017.

Lectures on statistics and epidemiology. Two guest lectures for undergraduate class, "World Health and Disease," Dowling College, Fall 2015.

Lecture on spatial dependence, variograms, and kriging. Guest lecture for graduate class, "Modern Methods of Data Analysis in Marine and Atmospheric Sciences." Stony Brook University, Spring 2015.

Field trip and computer lab on internal waves, for undergraduate Physical Oceanography class. Planned and supervised field trip on R/V *Paumanok* to collect hydrographic data in Long Island Sound. Wrote and graded lab assignment based on analysis of this data. Stony Brook University, November 2014.

Lecture on dimensional analysis. Guest lecture for undergraduate Physical Oceanography class. Stony Brook University, Fall 2013.

Teaching Assistant, undergraduate Physical Oceanography. Grading, office hours, supervised laboratory and field trips on university research vessel. Stony Brook University, Fall 2012.

Lecture on Good Coding Style and Practice. University of Washington graduate student R seminar, May 2011.

Lecture on Time Series Analysis. University of Washington graduate student R seminar, April 2011.

Public Outreach

How to study dolphins (without really trying). October 2018. Center for Excellence in Education "Bite of Science" presentation (https://www.cee.org/bite-science) to high-school teachers, Moss Landing, CA.

Air-traffic control for hangry birds. September 2018. General-audience talk on seabird foraging, radar ornithogy, and movement ecology at the Crepe Place, Santa Cruz Ca

Air-traffic control for hangry birds. September 2017. General-audience talk on seabird foraging, radar ornithogy, and movement ecology at Moustache Brewery, Riverhead, NY.

Marine and Atmospheric Foraging Ecology: Seabirds and fish on radar and sonar. October 2016. New York State Marine Educators' Association Conference, Southampton, NY.

Host/curator of @Biotweeps Twitter account, July 2016. This twitter account features rotating biologists for week-long stands to explain their research and answer questions from the general public.

Quoted in *The Innermost Orbit*, by Carmen Winant. Article on Rossby waves in urban surf-culture magazine *WAX*, Issue 2, Fall 2012.

Blog: Oceanographer's Choice. General-interest blog on ocean science and research, maintained since May 2009. Three posts selected as "Editor's Choices" by Seed Media Group's ResearchBlogging.org. http://www.oceanographerschoice.com/

Seeing ecosystems: pattern, chaos, and scale. November 2010. General-audience talk at Salon Fremont, Seattle, WA (http://www.kaschaandjohn.com/salon/).

Professional Groups and Societies

Acoustical Society of America

Ecological Society of America

Association for the Sciences of Limnology and Oceanography

American Ornithological Society

ICES Working Group on Fisheries Acoustics Science and Technology

Skills

Computing: Linux, Macintosh, Windows

Programming: Python, R, and Julia

Statistics: Classical statistics, regression, spatio-temporal statistics, Bayesian analysis

Echoview Fisheries Acoustics Software

PADI Open-Water Diver certification

Small-craft seamanship, piloting and navigation

Birth and Citizenship

January 3, 1986, Boston, MA, USA

Languages: English, conversational French, elementary Spanish

Other Work Experience

Line Cook, Vutera Restaurant, New York, NY, 2009

Line Cook, Little Giant Restaurant, New York, NY, 2008

Technical Intern, Opera House Arts, Stonington, ME, 2003 and 2007

Line Cook/Caterer, Cachagua Store/A Moveable Feast, Carmel Valley, CA, 2006-2007

Camp counselor, Camp Timanous, Raymond, ME, 2001-2006.