

James R. Watson

Education and Academic Positions

2017–onwards **College of Ocean, Earth and Atmospheric Sciences, Oregon State University, USA.**

Assistant Professor

2014–2017 **Stockholm Resilience Centre, Stockholm University, Sweden.**

Forskare / Researcher

and Princeton University, USA.

Department of Ecology and Evolutionary Biology: Visiting Research Scholar

2011–2013 **Princeton University, USA.**

Department of Ecology and Evolutionary Biology: Post-doctoral Research Scholar

Mentors: Jorge Sarmiento, Charles Stock, Simon Levin

2006–2011 **University of California Santa Barbara, USA.**

Ph.D., Marine Sciences

Dissertation: *Ocean Connectivity and Nearshore Marine Species Populations Dynamics*

Committee: David A. Siegel (advisor), Bruce E. Kendall, Steve D. Gaines, Kim A. Selkoe

2003–2004 **National Oceanography Center, Southampton, UK.**

M.Sc., Oceanography (1st class Honors)

Thesis: *Global phytoplankton connectivity and the tempo of evolution*

Advisor: Debora. M. Iglesias-Rodriguez

1998–2001 **University of Bristol, UK.**

B.Sc., Biochemistry and Molecular Genetics

Awards and Funding

2014–2017 **Principal Investigator, Social-Environmental Research Network (SEReNe),** Stockholm University, Princeton University, University of Oslo, Ca'Foscari University of Venice (\$150,000).

<http://www.princeton.edu/pei/initiatives/serene/>

2012–2017 **Lead Investigator*, NSF: Dynamics of Coupled Natural-Human Systems, Social-Ecological Adaptation and Complexity in Marine Systems, Princeton University (\$1,500,000).**

*I was the principal author of the proposal, and currently lead the group, but at the time of funding I was too junior to be given a Principal Investigator title.

2011–2013 **Nippon Foundation Post-doctoral Fellowship, The Nereus Program in Climate and Fisheries Modeling, Princeton University (\$180,000).**

2008–2011 **NASA PhD Fellowship, Integrating Satellite Observations into Fisheries Science: Quantifying abiotic and in-flight biotic larval from ocean color, University of California, Santa Barbara (\$200,000).**

2007–2009 **Luce Environmental Science to Solutions Fellowship, University of California, Santa Barbara, \$6000.**

2007 **Best use of Technology in Fisheries Science, American Fisheries Society.**

Publications

- In review **Watson JR** & Jonnson B. *The Timescales of Global Surface-Ocean Connectivity*. *Nature GeoSciences*.
- Tilman A, **Watson JR** and Levin S. *When Second Best is Best: Maintaining Cooperation in the Commons*. *Journal of Environmental Economics and Management (JEEM)*.
 - Pellegrini A, **Watson JR**, et al. *Poaching and Climate variability: Interacting stochastic drivers of elephant population dynamics across Africa*. *Theoretical Ecology*.
 - Cheung WWL, et al., and **Watson JR**. *Projecting changes to living marine resources in an uncertain future*. *Trends In Ecology and Evolution*.
- 2012-now **Watson JR**, Stock C, Sarmiento J. *Exploring the role of movement in determining the global distribution of marine biomass using a coupled hydrodynamic – size-based ecosystem model*. *Progress in Oceanography*, 2014, DOI.10.1016/j.pocean.2014.09.001
- Thompson D, Castruccio F, Kleypas J, **Watson JR**, et al. *Variability in reef connectivity in the Coral Triangle*. *Reef Encounter*, 2014, 29(2), 46-51
 - Osterblöm H, Merrie A, Metian M, Boonstra W, Blenckner T, **Watson JR**, et al. *Modeling social-ecological scenarios in marine systems*. *BioScience*, 2013, 63(9):735-744.
 - **Watson JR**, BE Kendall, DA Siegel, S Mitarai. *Changing seascapes, stochastic connectivity and marine metapopulation dynamics*. *The American Naturalist*, 2012, 180 (1) 990-112. Identified as important by the Faculty 1000: <http://f1000.com/717948573>.
- 2009-2011 **Watson JR**, Siegel D, Kendall B, Mitarai S, Rassweiler A, Gaines S. *Identifying critical regions in small-world marine metapopulations*. *PNAS*, 2011, 108(43) E907-E913.
- Alberto F, Raimond P, Reed D, **Watson JR**, et al. *Isolation by oceanographic distance accounts for high proportion of genetic differentiation for *Macrocystis pyrifera* in the Santa Barbara Channel*. *Molecular Ecology*, 2011, 20(12), 2543-2554.
 - **Watson JR**, Hays C, Raimondi P, Siegel D, Mitarai S, Dong C, McWilliams J, Blanchette C. *Currents connecting communities: a study of nearshore marine species in the Southern California Bight*. *Ecology*, 2011, 92(6), 1193-1200.
 - **Watson JR**, Mitarai S, Siegel D, Caselle J, Dong C, McWilliams J. *Realized and potential larval connectivity in the Southern California Bight*. *Marine Ecology Progress Series*, 2010, 401, 31-48.
 - White C, Selkoe K, **Watson JR**, Siegel D, Zacherl D, Toonen R. *Ocean currents help explain population genetic structure*. *Proc. R. Soc. B*, 2010, 277, 1685-1694.
 - Selkoe K, **Watson JR**, et al. *Taking the chaos out of genetic patchiness: revealing ecological and oceanographic drivers of seascape genetics in Southern California kelp forests*. *Molecular Ecology*, 2010, 19, 3708-3726.
 - Mitarai S, Siegel D, **Watson JR**, et al. *Quantifying connectivity in the coastal ocean with application to the Southern California Bight*. *Journal of Geophysical Research*, 2009, 114, C10026, doi:10.1029/2008JC005166.
- To be submitted **Watson JR**, B Favetta, C Stock. *On Modeling the Macroecology of Baleen Whale Migration*, in preprint here: <http://biorxiv.org/content/early/2014/09/28/009753>.

Selected Presentations

- To be in 2015 *The Effect of Turbulence on the Spatial Dynamics of Fish Populations*, **The Radcliffe Institute for Advanced Study, Harvard University**, Life in a Turbulent Environment: How the dynamic ocean shapes the distribution, diversity and growth of microorganisms workshop (invited).
- *Understanding the Emergence of Cooperation in Coupled Natural-Human Systems*, The Centennial **Ecological Society of America** meeting, keynote talk at the Coupled Natural and Human Systems Science: The Need, Challenges and Rewards symposium (invited).
 - *The Timescales of Global Surface Ocean Connectivity*, **The American Society of Limnology and Oceanography** annual meeting.
- 2014 *Complex Adaptive Problems in Nature and Society*, **The Woodrow Wilson School of Public and International Affairs at Princeton University**, The David Bradford Seminars in Science, Technology and Environmental Policy (invited).
- *Complexity and Adaptation in Phytoplankton, Fish and Fishers*, **Stockholm University**, Department of Ecology, Environmental and Plant Sciences (invited).
- 2013 *Phytoplankton, Fish and Fishing; An analysis of the links between physics, ecology and human behavior in marine systems*, **Massachusetts Institute of Technology**, Department of Earth, Atmospheric and Planetary Sciences (invited).
- *Analyzing the links between physics, ecology and human behavior in marine systems: three examples*, **Rutgers University**, Institute of Marine and Coastal Science (invited).
 - *Currents Connecting Communities*, **Rutgers University**, Haskin Shellfish Research Laboratory (invited).
- 2012 *Flow, Fish and Fishing; An analysis of the links between physics, ecology and human behavior in marine systems*, **McGill University**, Earth and Planetary Sciences (invited).
- *Earth System Modeling and Global Marine Food-security*, **American Fisheries Society**, St. Paul, Minnesota.
 - *Changing Seascapes, Stochastic Connectivity and Marine Metapopulation Dynamics*, **Ecological Society of America**, Portland, Oregon.
 - *Quantifying the distribution and dynamics of forage fish using a size-based ecosystem model*, **PICES annual meeting**, Yeosu, Korea.
 - *Modeling the Spatial Dynamics of Baleen Whales and Forage Fish*, American Association for the Advancement of Science (**AAAS**), Vancouver, CA.
- 2008-2010 *Evidence for dispersal at the community level*, **Ocean Sciences Annual Meeting**, Portland, Oregon.
- *Currents connecting communities*, **Western Society of Naturalists**, Monterey, California.
 - *Spatial connections amongst nearshore marine species*, The California Current Ecosystem Long Term Ecological Research site meeting (**LTER**), San Diego, California (invited).
 - *Simulating the impact of El Niño on the gene flow of marine species in the Southern California Bight*, **Ocean Sciences Annual Meeting**, Orlando, Florida.
 - *Simulating the dispersal of nearshore marine species larvae*, Department of Atmospheric and Oceanic Sciences, University of California Los Angeles (**UCLA**), Los Angeles, California (invited).

Teaching and Mentorship

- Courses *Course organizer and principal teacher:* Quantitative Methods for Social-Ecological Scientists. Graduate course run at the Stockholm Resilience Centre (Spring 2015).
- *Class organizer and principle teacher:* Communicating Complexity. Workshop Graduate students on science communication at the Stockholm Resilience Centre (Fall 2014).
 - *Teaching assistant,* The Geography of the World's Oceans, Department of Geography, University of California Santa Barbara (2009).
 - *English Teacher,* The Japan Exchange and Teaching (JET) program, Moritake, Akita, Japan (2001-2002).
- Mentorship **Undergraduate:** Alexander Ahn (Swarthmore Col.); Christina Healy, Bruna Favetta, Jennifer Zhao, Angela Zhou (all at Princeton Uni.)
- **Masters:** Roweena Patel, Laura Elsler (both Stockholm Uni.)
 - **Ph.D.:** Emma Fuller, Andrew Tilman, Lisa McManus (all at Princeton Uni.)
 - **Post-doc:** Matthieu Barbier and Emily Klein (both Princeton Uni.); Susa Niiranen (Stockholm Uni.)

Service

- Journal Reviewer Ecology, Molecular Ecology, Limnology and Oceanography, Conservation Letters, The American Naturalist, Ecology Letters, Journal of Theoretical Biology, Marine Ecology Progress Series, Ecography, PloS ONE, The Royal Society Biology Letters.
- Proposal Reviewer The UK's Natural Environment Research Council, The Natural Sciences and Engineering Research Council of Canada, The EUR-OCEANS Consortium.
- Conference session organization *The Centennial Ecological Society of America* meeting, Coupled Natural and Human Systems Science: The Need, Challenges and Rewards, Baltimore, USA. Session organizer and chair (to be in August 2015).
- *The Integrated Marine Biogeochemistry and Ecosystem Research (IMBER)* annual meeting, Approaches to predicting fish from physics: strengths, weaknesses and ways forward, Bergen, Norway. Session organizer and chair (2014).
 - *American Fisheries Society* annual meeting, Climate and Fisheries: Responses of a Socio-Ecological System to Global Change, Minneapolis, Minnesota, USA. Session organizer and chair (2012)
 - *Ecological Society of America's* annual meeting, Population Dynamics: Modeling, Portland, Oregon USA. Session chair (2012).
 - *Ocean Sciences* annual meeting, Spatial Dynamics of Species Abundance and Interactions Across Trophic Levels, Portland, Oregon, USA. Session chair (2011).
- Workshop participation *The Radcliffe Institute for Advanced Study, Harvard University,* Life in a Turbulent Environment: How the dynamic ocean shapes the distribution, diversity and growth of microorganisms, Harvard, USA (invited; to be in Feb 2015).
- *The National Socio-Environmental Synthesis Center (SESYNC),* Managing Recreational Fisheries as Complex Adaptive Socio-Ecological Systems, SESYNC, Maryland, USA (invited; 2014).

- *Kellogg Biological Station Summer Educational Program*, Enhancing Linkages between Mathematics and Ecology: Adaptive Dynamics, Kalamazoo, Michigan, USA (2012).
- *The Abdus Salam International Centre for Theoretical Physics*, Advanced school on complexity, adaptation and emergence in marine ecosystems, Trieste, Italy (2011)