

# Ryan Ross Rykaczewski

---

Marine Science Program  
Department of Biological Sciences  
University of South Carolina  
Columbia, SC, USA 29208

Email: ryk @ sc.edu  
Tel: (803) 777-8159  
Fax: (803) 777-6610

## Education

---

- 2009 Ph.D., Oceanography  
University of California, San Diego; Scripps Institution of Oceanography; La Jolla, CA
- 2002 B.S., Marine Science, *summa cum laude*, Phi Beta Kappa  
B.S., Biology (with a minor in Chemistry)  
University of Miami, Coral Gables, FL

## Professional Experience

---

- Fall 2012-pres. **Assistant Professor** — Marine Science Program; Department of Biological Sciences; University of South Carolina; Columbia, SC, USA
- Spring 2012 **Lecturer** — Department of Geosciences; Princeton University; Princeton, NJ, USA.
- 2011-2012 **Associate Research Scholar, Nippon Foundation Senior Nereus Fellow** — Program in Atmospheric and Oceanic Sciences; Princeton University; Princeton, NJ, USA.  
Subject: Influence of climate variability and change on global fisheries
- Summer 2011 **Visiting Scientist** — Cooperative Institute for Marine Resource Studies, Hatfield Marine Science Center; Oregon State University; Newport, OR, USA.  
Subject: Impacts on large-scale climate on the pelagic ecosystem of the Oregon shelf.
- 2009-2011 **Postdoctoral Fellow** — University Corporation for Atmospheric Research; NOAA Geophysical Fluid Dynamics Laboratory; Princeton, NJ, USA  
Subject: Projected effects of climate change on fisheries of the Eastern North Pacific
- 2002-2003 **NOAA Fisheries Observer** — Alaska Fisheries Science Center; Northwest Observers, Inc.; Bering Sea and Gulf of Alaska; Sisters, OR

## Teaching Experience

---

- Spring 2013 University of South Carolina, MSCI 210 and 210L: "Oceans and Society" lecture and laboratory (206 and 82 undergraduate students, respectively; non-science majors).
- Spring 2012 Princeton University, GEO 202: "Ocean, Atmosphere, and Climate" lecture and laboratory (14 undergraduate students; Geosciences majors).
- Winter 2008 Teaching assistant for undergraduate course BIEB-134: "Introduction to Biological Oceanography." University of California, San Diego. Professor: Michael L. Landry.
- Spring 2002 Teaching assistant for "Biology." University of Miami. Professor: Yunqiu (Daniel) Wang.

## Publications

---

### *Peer reviewed, published/in press/accepted—*

García-Reyes, M, WJ Sydeman, SA Thompson, BA Black, RR Rykaczewski, JA Thayer, and SJ Bograd. 2013. Integrated assessment of wind effects on Central California's pelagic ecosystem. *Ecosystems*, doi: 10.1007/s10021-013-9643-6.

Beaulieu, C, SA Henson, JL Sarmiento, JP Dunne, SC Doney, RR Rykaczewski, and L Bopp. 2012. Factors challenging our ability to detect long-term trends in ocean chlorophyll. *Biogeosciences Discussions* **9**:16419-16456, doi:10.5194/bgd-9-16419-2012.

Hazen, EL, E Jorgensen, RR Rykaczewski, SJ Bograd, DG Foley, ID Jonsen, SA Shaffer, JP Dunne, DP Costa, LB Crowder, and BA Block. 2012. Predicted habitat shifts of Pacific top predators in a changing climate. *Nat. Clim. Change*. doi:10.1038/nclimate1686.

Sydeman, WJ, SA Thompson, JA Santora, JC Field, WT Peterson, RA Tanasichuk, HJ Freeland, SJ Bograd, and RR Rykaczewski. 2011. Does positioning of the North Pacific Current affect downstream ecosystem productivity? *Geophys. Res. Lett.* **38**:L12606, doi:10.1029/2011GL047212.

Rykaczewski, RR and JP Dunne. 2011. A measured look at ocean chlorophyll trends. *Nature* **472**:E5-E6 doi:10.1038/nature09952 [A comment arising from DG Boyce *et al.* *Nature* 466:591-296 (2010)].

Decima, M, MR Landry, and RR Rykaczewski. 2011. Broad-scale patterns in mesozooplankton biomass and grazing in the eastern equatorial Pacific. *Deep-Sea Res. II*. **58**:387-399, doi:10.1016/j.dsr2.2010.08.006.

Stock, CA, MA Alexander, NA Bond, K Brander, WWL Cheung, EN Curchitser, TL Delworth, JP Dunne, SM Griffies, MA Haltuch, JA Hare, AB Hollowed, P Lehodey, SA Levin, JS Link, KA Rose, RR Rykaczewski, JL Sarmiento, RJ Stouffer, FB Schwing, GA Vecchi, FE Werner. 2011. On the use of IPCC-class models to assess the impact of climate on living marine resources. *Prog. Oceanogr.* **88**:1-27, doi:10.1016/j.pocean.2010.09.00.

Rykaczewski, RR and JP Dunne. 2010. Enhanced nutrient supply to the California Current Ecosystem with global warming and increased stratification in an earth system model. *Geophys. Res. Lett.* **37**:L21606, doi:10.1029/2010GL045019.

Rykaczewski, RR and DM Checkley. 2008. Influence of ocean winds on the pelagic ecosystem in upwelling regions. *Proc. Nat. Acad. Sci. USA*. **105**:1965-1970.

### *Submitted/In preparation (with drafts available upon request)—*

M García-Reyes, WJ Sydeman, SA Thompson, BA Black, RR Rykaczewski, JA Thayer, and SJ Bograd. Integrated assessment of wind effects on Central California's pelagic ecosystem. *Ecosystems*. (*In review*).

Rykaczewski, RR, WT Peterson, WJ Sydeman, JP Dunne. Relationships among the position of the North Pacific Current, large-scale climate processes, and nutrient supply to the California Current. (*In prep.*).

Rykaczewski, RR and MD Ohman. Changes in mesozooplankton size structure along a trophic gradient and implications for small pelagic fish. (*In prep.*).

Österblom, B. and 19 other authors. Social-ecological scenarios for sustainable marine systems. (*In prep.* for *Frontiers in Ecology and the Environment*).

### *Thesis and Dissertation—*

Rykaczewski, RR. 2009. Influence of oceanographic variability on the planktonic prey and growth of sardine and anchovy in the California Current Ecosystem. Ph.D. Thesis. Scripps Institution of Oceanography, University of California, San Diego. La Jolla, CA.

Rykaczewski, RR. 2002. A food-web population model for three mid-Atlantic fish species. Undergraduate Honors Thesis. University of Miami. Coral Gables, FL.

## **Presentations**

---

*Scientific presentations, either at meetings or individual seminars—*

November 2012. Rykaczewski, RR. Linkages between the Carbon Cycle and Biota in the Global Ocean. Sea Around Youth Symposium. Yokosuka, Japan.

September 2012. \*Rykaczewski, RR and JP Dunne. Response of upwelling winds to a warming climate: IPCC model projections. Eastern Pacific Ocean Conference. Mt. Hood, OR, USA.  
\*Session co-chairman

May 2012. Rykaczewski, RR. Basin-scale processes influence local ecosystem response to increased upper-ocean stratification. Effects of Climate Change on the World's Oceans. Yeosu, Korea. Invited presentation.

April 2012. Rykaczewski, RR. Responses of the California Current Ecosystem to basin-scale increases in upper-ocean stratification. University of Connecticut. Groton, CT, USA. Invited presentation.

March 2012. Rykaczewski, RR. Processes considered when investigating effects of climate change on marine fisheries. Program in Atmospheric and Oceanic Sciences Seminar Series. Princeton, NJ, USA. Invited presentation.

February 2012. Rykaczewski, RR. Ecosystem responses to basin-scale increases in upper-ocean stratification. University of Southern California. Los Angeles, CA, USA. Invited presentation.

February 2012. Rykaczewski, RR. Ecosystem responses to basin-scale increases in upper-ocean stratification. School of Ocean and Earth Science and Technology, University of Hawai'i at Mānoa. Honolulu, HI, USA. Invited presentation.

January 2012. Rykaczewski, RR. Ecosystem responses to basin-scale increases in upper-ocean stratification. University of South Carolina Marine Science Program. Columbia, SC, USA. Invited presentation.

November 2011. Large-scale natural and anthropogenic forcing of marine ecosystems. University of St. Andrews. St. Andrews, Scotland, UK. Invited presentation.

October 2011. Rykaczewski, RR. Changes in source-water properties of the California Current in response to future basin-scale climate processes. PICES Annual Meeting: Mechanisms of Marine Ecosystem Reorganization in the North Pacific Ocean. Khabarovsk, Russia.

October 2011. \*Rykaczewski, RR. Relationships among interannual climate variability, latitude of the North Pacific Current bifurcation, and nutrient supply to the California Current. Eastern Pacific Ocean Conference. South Lake Tahoe, CA, USA.  
\*Session co-chairman

September 2011. Peterson, WT, H Bi, C Morgan, J Fisher, J Peterson, and RR Rykaczewski. Pacific Decadal Oscillation and gyre-ecosystem linkages in the Northern California Current (NCC): source waters which feed the NCC determine food web structure. International Council for the Exploration of the Seas, Annual Science Conference. Gdansk, Poland.

- September 2011. Rykaczewski, RR. Changes in source-water properties of the California Current in response to future basin-scale climate processes. International Council for the Exploration of the Seas, Annual Science Conference. Gdansk, Poland.
- September 2011. Rykaczewski, RR. Changes in source-water properties of the California Current in response to large-scale climate processes. Pacific Northwest Climate Science Conference. Seattle, WA, USA.
- August 2011. Rykaczewski, RR. Unexpected response of the California Current to future warming. College of Ocean and Atmospheric Sciences, Oregon State University. Corvallis, OR, USA. Invited presentation.
- March 2011. Rykaczewski, RR. Projected nutrient enrichment of the California Current with increased water-column stratification. Environmental Geology & Geochemistry Seminar Lecture Series, Princeton University, Princeton, NJ, USA. Invited presentation.
- March 2011. Rykaczewski, RR. Confusing model projections: Increased productivity of the California Current with increased ocean stratification and expansion of the subtropical gyre. Newport, OR, USA. Invited presentation.
- March 2011. Rykaczewski, RR and JP Dunne. Climate processes affecting productivity of the Northeast Pacific on decadal to centennial timescales during the 20<sup>th</sup> and 21<sup>st</sup> centuries. Salmon Ocean Ecology Meeting. Seattle, WA, USA.
- February 2011. Rykaczewski, RR and JP Dunne. Enhanced nutrient supply to the California Current Ecosystem with global warming and increased stratification in an earth system model. Horn Point Laboratory, University of Maryland. Cambridge, MD, USA. Invited presentation.
- November 2010. Rykaczewski, RR. Enhanced nutrient supply to the California Current Ecosystem with global warming and increased stratification in an earth system model. James J. Howard Marine Sciences Laboratory Seminar Series. Sandy Hook, NJ, USA. Invited presentation.
- October 2010. \*Rykaczewski, RR and JP Dunne. Decoupling of the temperature-nutrient relationship in the California Current ecosystem with global climate change. IMBER IMBIZO II: Integrating Biogeochemistry and Ecosystems in a Changing Ocean. Crete, Greece.  
*\*Best Young-Scientist Presentation*
- September 2010. \*Rykaczewski, RR and JP Dunne. Changes in the nutrient supply to the eastern North Pacific with global warming and increased stratification in a coarse-resolution earth system model. Eastern Pacific Ocean Conference. Mt. Hood, OR, USA.  
*\*Session co-chairman*
- August 2010. Rykaczewski, RR. Enhanced nutrient supply to the California Current Ecosystem with global warming and increased stratification. Auke Bay Laboratories; NOAA Alaska Fisheries Science Center. Auke Bay, AK, USA. Invited presentation.
- April 2010. Rykaczewski, RR and JP Dunne. Comparison of the ecosystem response to climate change in the mid-latitude North Pacific and California Current ecosystems. Climate Change Effects on Fish and Fisheries. Sendai, Japan.
- April 2010. Rykaczewski, RR. Changes in mesozooplankton size structure along a trophic gradient and implications for the growth of small pelagic fish. Climate Change Effects on Fish and Fisheries. Sendai, Japan.

- April 2010. Rykaczewski, RR. Propagation of ecological anomalies from the western to eastern North Pacific in a global earth system model. Climate Change Effects on Fish and Fisheries. Sendai, Japan.
- March 2010. Rykaczewski, RR and JP Dunne. Decoupling of the temperature-nutrient relationship in the California Current Ecosystem with global warming. NOAA Central Library. Silver Spring, MD, USA. Invited oral and webcast presentation.
- February 2010. Rykaczewski, RR and JP Dunne. Variation in the relationship among temperature, nutrient concentration, and productivity with climate change in the California Current ecosystem. Ocean Sciences Meeting. Portland, OR, USA.
- October 2008. Rykaczewski, RR and DM Checkley. From Physics to Fish: Influence of Ocean Winds on the Pelagic Ecosystem in Upwelling Regions. NOAA Geophysical Fluid Dynamics Laboratory. Princeton, NJ, USA. Invited oral and webcast presentation.
- June 2008. Rykaczewski, RR and DM Checkley. Influence of ocean winds on the pelagic ecosystem in upwelling regions. Eastern Boundary Upwelling Ecosystems. Las Palmas de Gran Canaria, Canary Islands, Spain.
- May 2008. \*Rykaczewski, RR. Influence of ocean winds on the pelagic ecosystem in upwelling regions. University of California-LTER Graduate Student and Post-doc Symposium. La Jolla, CA, USA.  
\*Conference organizer
- March 2008. Rykaczewski, RR and DM Checkley. From physics to fish: influence of ocean winds on the pelagic ecosystem in upwelling regions. Ocean Sciences Meeting. Orlando, FL, USA.
- June 2007. Rykaczewski, RR and DM Checkley. From physics to fish: Influence of wind stress curl on Pacific sardine. P/ICES Early Career Scientists Conference. Baltimore, MD, USA.
- September 2006. Rykaczewski, RR. Decadal-scale variability in upwelling processes in the California Current Ecosystem and potential biological responses. Long-term Ecological Research Program All-Scientists Meeting. Estes Park, CO, USA.
- October 2006. Rykaczewski, RR. Decadal-scale variability in upwelling processes in the California Current Ecosystem and potential biological responses. PICES 2006 Annual Meeting: Boundary Current Ecosystems. Yokohama, Japan. Invited oral and poster presentations.
- July 2006. Rykaczewski, RR. The influence of alongshore wind stress and wind-stress curl on production of Pacific sardine, northern anchovy, and the coastal-pelagic ecosystem of the California Current. NOAA/SWFSC Pacific Fisheries Environmental Laboratory. Pacific Grove, CA, USA. Invited presentation.
- General presentations for the public—*
- April 2011. Revkin, AC. Contributed to the Dot Earth blog of the New York Times. “On Plankton, Warming and Whiplash.” <http://dotearth.blogs.nytimes.com/2011/04/26/on-plankton-warming-and-whiplash/>.
- February 2008. Rykaczewski, RR and DM Checkley. “UCSD Researchers Discover Link Between Wind and Fish Populations.” Radio appearance. These Days with Tom Fudge, KPBS Radio, 89.5 FM San Diego, CA, USA.
- November 2007. Rykaczewski, RR. Food from the sea. Pacific Regent Comm. Center. La Jolla, CA, USA.
-

**Funded Scientific Research Proposals**

2012-2014	Interannual variability in the Northern California Current: the influence of ten El Niño events on salmon populations and pelagic ecosystem structure over the past 50 years. NOAA (FATE) with Co-I Bill T. Peterson (NWFSC).	~\$ 119 k
2011-2013	“History and future of coastal upwelling modes and biological responses in the California Current;” National Science Foundation, PIs: Sydeman (Farallon Inst.), Black (Oregon State Univ.)	8 months salary over 2 yrs.
2007-2009	NASA Earth and Space Science Fellowship	~ \$ 120 k
2004-2007	NSF Graduate Student Research Fellowship	~ \$ 180 k

**Funding Awards and Scholarships**

2007-2009	Achievement Rewards for College Scientists (ARCS), San Diego Chapter	~ \$ 23 k
2004	Michael M. Mullin Graduate Student Fellowship	\$ 1 k
2003-2004	UC Regents Fellowship	~ \$ 30 k
2001	National Security Education Program, Boren Scholar	~ \$ 8 k
1999-2003	Bowman Foster Ashe Scholarship	~ \$ 72 k
1999-2003	Florida Bright Futures Scholarship	~ \$ 12 k

**Honors and Awards**

Phi Beta Kappa Honor Society, University of Miami  
 Phi Kappa Phi Honor Society, University of Miami  
 Rho Rho Rho Honor Society, University of Miami  
 Outstanding Marine Science Graduate, 2002, University of Miami

**Research Cruises (two weeks duration and longer)****total scientific sea days: 283**

May 2008. *R/V Knorr*. North Atlantic Bloom Experiment. Reykjavik, Iceland to Reykjavik, Iceland. 22 days.

September-October 2008. *R/V Melville*. California Current Long-term Ecological Research Program Process Cruise (CCE-P0810). San Diego, USA to San Diego, USA. 30 days.

April 2007. *R/V Thomas G. Thompson*. California Current Long-term Ecological Research Program Process Cruise (CCE-P0704). San Diego, USA to San Diego, USA. 20 days.

May-June 2006. *R/V Knorr*. California Current Long-term Ecological Research Program Process Cruise (CCE-P0605). San Diego, USA to San Diego, USA. 32 days.

July 2004. *R/V David Starr Jordan*. California Cooperative Oceanic Fisheries Investigations Research Cruise (CalCOFI-0704). San Diego, USA to San Diego, USA. 17 days.

December 2004 – January 2005. *R/V Roger Revelle*. Equatorial Pacific Biocomplexity Research Cruise (EB04). San Diego, USA to Papette, French Polynesia. 30 days.

December 2002 – September 2003. Fisheries observer in the Bering Sea groundfish fishery. Akutan and Dutch Harbor, USA. About 120 days. Vessels include *F/Vs Viking Explorer, Bristol Explorer, Pegasus, Peggy Jo*, and *Cape Kiwanda*, *M/V Arctic Enterprise*, and *C/P Ocean Rover*.

**Workshops**

September 2011. Forum on copepod time series of the Pacific Northwest and other coherent biological variability. Newport, OR, USA.

- June 2011. Basin-wide Impacts of the Atlantic Multidecadal Oscillation. Woods Hole Oceanographic Institution. Woods Hole, MA, USA.
- March 2011. Forecasting the Impact of Climate Change on Primary and Secondary Production in the CINAR Region. The J. Erik Jonsson Center of the National Academy of Sciences and the Woods Hole Oceanographic Institution. Woods Hole, MA, USA.
- October 2010. “Dry Cruise” Workshop to enhance awareness of the need to establish data management procedures, the advantages arising from following these procedures, and to provide hand-on training on data management and data preservation. IMBER IMBIZO II. Crete, Greece.
- February 2010. Pacific Hake Project Workshop. University of Washington, NW Fisheries Science Center. Seattle, WA, USA.
- June 2009. Applying IPCC-class Models of Global Warming to Fisheries Prediction. Princeton University. Princeton, NJ, USA.
- June 2005. Satellite Oceanography for Biological Oceanographers. Cornell University. Ithaca, NY, USA.
- Summer 2001. Ecology, Language, and Culture of Lake Baikal and Irkutsk. Irkutsk and Bolshiye Koty, Irkutskaya Oblast, Russia.

### **Service/Outreach**

---

- Tsunami education and discussion with middle and high school classes. November 2012. Tohoku, Japan.
- Scientific career mentor for three undergraduate interns. January 2012. Swarthmore College Extern Program. Princeton University Program in Atmospheric and Oceanic Sciences.
- Volunteer at Children’s Aid Society with the Duke Alumni Association. April 2011. Harlem, New York City, NY, USA.
- Chairman of session: Potential Impacts of Climate Change on California Current Ecosystems—Physics, Chemistry, and Biology. Eastern Pacific Ocean Conference. September 2011. Fallen Leaf, CA, USA.
- Co-chairman with Nicholas A. Bond of session: Climate Change and Spatial Ecology. Eastern Pacific Ocean Conference. September 2010. Mt. Hood, Oregon, USA.
- Chairman and organizer of the University of California-LTER Graduate Student and Post-doc Symposium. May 2008. Scripps Institution of Oceanography, La Jolla, CA, USA.
- Marine Operations Committee representative. Scripps Institution of Oceanography, UCSD. 2006-2009.
- Student representative for the California Current Long-term Ecological Research Program. 2007-2009.
- Science Question/Answer writer. National Ocean Sciences Bowl. 2004.
- President. *Rho Rho Rho* (the undergraduate Marine Science Honor Society). University of Miami. 2001-2002.
- Co-captain. University of Miami Men’s Swim Team (NCAA Division I). 2002-2003 season.
- President. *Phi Kappa Phi* Honor Society. University of Miami. 2001-2002.

Peer reviews of manuscripts have been provided for the following scientific journals:

*Coral Reefs*

*Biogeosciences*

*Fisheries Oceanography*

*Geophysical Research Letters*

*Global Change Biology*

*ICES Journal of Marine Science*

*International Journal of Oceanography*  
*Journal of Physical Oceanography*  
*Limnology and Oceanography*  
*Marine Ecology Progress Series*

*Nature Scientific Reports*  
*PLoS ONE*  
*Progress in Oceanography*

Peer reviews of proposal have been provided for the following agencies/foundations:

Intergovernmental Panel on Climate Change Fifth Assessment Report;

Working Group II, Chapter 30: "Open Oceans"

National Oceanic and Atmospheric Administration (NOAA, United States)

National Science Foundation (NSF, United States)

National Commission for Scientific and Technological Research (FONDECYT, Chile)

North Pacific Research Board (NPRB, United States)

### Academic Advisors

---

John P. Dunne (postdoctoral co-advisor)  
 NOAA Geophysical Fluid Dynamics Laboratory  
 Princeton University Forrestal Campus  
 201 Forrestal Rd.  
 Princeton, NJ 08540-6649

Email: John.Dunne@noaa.gov  
 Tel: (609) 452-6596  
 Fax: (609) 987-5063

William T. Peterson (postdoctoral co-advisor)  
 Cooperative Institute for Marine Resources Studies, OSU  
 2030 SE Marine Science Dr.  
 Newport, OR 97365

Email: bill.peterson@noaa.gov  
 Tel: (541) 867-0201  
 Fax: (541) 867-0221

David M. Checkley (graduate advisor)  
 Scripps Institution of Oceanography, UCSD  
 9500 Gilman Dr.  
 La Jolla, CA 92093-0218

Email: dcheckley@ucsd.edu  
 Tel: (858) 534-4228  
 Fax: (858) 822-056

Donald B. Olson (undergraduate advisor)  
 Rosenstiel School of Marine & Atmospheric Science, UM  
 4600 Rickenbacker Causeway  
 Miami, FL 33149

Email: dolson@rsmas.miami.edu  
 Tel: (305) 421-4074

Additional references available upon request.

### Scientific and Professional Memberships

---

American Association for the Advancement of Science  
 Association for the Sciences of Limnology & Oceanography  
 South Carolina Marine Educators Association

American Geophysical Union  
 World Association of Copepodologists

### Technical Skills and Experience

---

Computer Languages/Applications: MatLab, Ferret, IDL, C++, and Fortran

Detailed instrument knowledge: ZooScan/Zoolmage, (Laser) Optical Plankton Counters, CTDs, rosettes, ADCP, fluorometers, Secchi disk, Niskin bottles, and several zooplankton/ichthyoplankton nets (*e.g.*, BONGO, ring, and MANTA nets).

Familiarity through use and assistance: SOLO floats, MOCNESS, drifter incubations, Oozeki trawl, PAIROVET nets, In Situ Ultraviolet Spectrophotometer (ISUS), and Moving Vessel Profiler.

Certifications: NAUI Advanced SCUBA rescue diver; trusty Shellback.

**Personal**

---

Birth: March 1982; California, USA

Citizenship: United States of America  
Selective Service reg. number: 82-0079794-5; date: 02/28/2000.

Languages: English (native); Russian (conversation)

webpage: <http://www.gfdl.noaa.gov/ryan-rykaczewski-homepage>