Ryan Ross Rykaczewski

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Education

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

Professional Experience

2020-present	***Supervisory Research Marine Scientist*** **—** Ecosystem Sciences Division; NOAA Pacific Islands Fisheries Science Center; Honolulu, HI, USA
2020-present	***Affiliate Graduate Faculty*** **—** Department of Oceanography; University of Hawai'i at Mānoa; Honolulu, HI, USA
Fall 2019	***Research Ecologist*** **—** Ecosystem Sciences Division; NOAA Pacific Islands Fisheries Science Center; Honolulu, HI, USA
Fall 2012-pres.	***Research Associate*** **—** Baruch Institute; University of South Carolina; Columbia, SC, USA
2018-2019	***Associate Professor*** *(with tenure)* **—** Department of Biological Sciences and School of the Earth, Ocean, & Environment; University of South Carolina; Columbia, SC, USA
2012-2018	***Assistant Professor*** **—** Department of Biological Sciences and School of the Earth, Ocean, & Environment; 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
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

Visiting Positions

Summer 2018	***Visiting Scientist*** **—** Atmosphere and Ocean Research Institute, University of Tokyo; Tokyo, Japan Subject: Ecosystem drivers of fish migration in the North Pacific
Summer 2013	***Visiting Scientist*** **—** Department of Zoology and the Marine Research Institute, University of Cape Town; Cape Town, South Africa. Subject: Climate forcing of upwelling ecosystems

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

Honors and Awards

2017-2019 Peter and Bonnie McCausland Fellow of Biological Sciences (University of South Carolina)
2016 Distinguished Undergraduate Research Mentor Award (University of South Carolina)
2016 "Breakthrough Star" award (for junior faculty at the University of South Carolina)
2003 Outstanding Marine Science Graduate (University of Miami)
2002 Phi Beta Kappa Honor Society (University of Miami)
2001 Phi Kappa Phi Honor Society (University of Miami)
2000 Rho Rho Rho Honor Society (University of Miami)

Publications ([†]undergraduate and [*]graduate student lead authors under direct supervision)

Articles in Peer-Reviewed Journals—

2023

52. Bograd, SJ, MG Jacox, EL Hazen, E Lovecchio, I Montes, M Pozo Buil, LJ Shannon, WJ Sydeman, and RR Rykaczewski. 2023. Climate change impacts on eastern boundary upwelling systems. *Annu. Rev. Mar. Sci.* **15:**1 doi:10.1146/annurev-marine-032122-021945.

2022

51. Sakamoto, T, M Takahashi, MT Chung, RR Rykaczewski, K Komatsu, K Shirai, T Ishimura, and T Higuchi. 2022. Contrasting life-history responses to climate variability in eastern and western North Pacific sardine populations. *Nat. Commun.* **13:**5298, doi:10.1038/s41467-022-33019-z.

50. Minobe, S, A Capotondi, MG Jacox, M Nonaka, and RR Rykaczewski. 2022. Toward regional marine ecological forecasting using global climate model predictions from subseasonal to decadal timescales: bottlenecks and recommendations. *Front. Mar. Sci.* **9:**855965, doi:10.3389/fmars.2022.855965.

49. Nam, SH, Y Wu, J Hwang, RR Rykaczewski, and G Kim. 2022. Editorial: Physics and biogeochemistry of the East Asian marginal seas. *Front. Mar. Sci.* **9:**945814, doi:10.3389/fmars.2022.945814.

48. Shi, H, F Jin, RCJ Wills, MG Jacox, DJ Amaya, BA Black, RR Rykaczewski, SJ Bograd, M García-Reyes, and WJ Sydeman. 2022. Global decline in ocean memory over the 21st century. *Sci. Adv.* **8:**18, doi:10.1126/sciadv.abm3468.

47. van der Sleen, P, PA Zuidema, J Morrongiello, KLJ Ong, RR Rykaczewski, WJ Sydeman, E Di Lorenzo, and BA Black. 2022. Interannual temperature variability is a principal driver of low-frequency fluctuations in marine fish populations. *Commun. Biol.* **5:**28, doi:10.1038/s42003-021-02960-y.

2021

46. Politikos, DV, KA Rose, EN Curchitser, DM Checkley, RR Rykaczewski, and J Fiechter. 2021. Climate variation and anchovy recruitment in the California Current: a cause-and-effect analysis of an end-to-end model simulation. *Mar. Ecol. Prog. Ser.* **680:**111-136, doi:10.3354/meps13853.

45. Shi, H, M García-Reyes, MG Jacox, RR Rykaczewski, BA Black, SJ Bograd, and WJ Sydeman. 2021. Co-occurrence of California drought and northeast Pacific marine heatwaves under climate change. *Geophys. Res. Lett.*, doi:1029/2021GL092765.

44. Cimino, MA, MG Jacox, SJ Bograd, S Brodie, G Carroll, EL Hazen, BE Lavaniegos, MM Morales, E Satterthwaite, and RR Rykaczewski. 2021. Anomalous poleward advection facilitates episodic range

expansions of pelagic red crabs in the eastern North Pacific. *Limnol. Oceanogr.* **66(8):**3176-3189, doi:10.1002/lno.11870.

43. Pozo Buil M, MG Jacox, J Fiechter, MA Alexander, SJ Bograd, EN Curchitser, CA Edwards, RR Rykaczewski, and CA Stock. 2021. A dynamically downscaled ensemble of future projections for the California Current System. *Front. Mar. Sci.* **8:**612874, doi:10.3389/fmars.2021.612874.

42. Peck, MA, J Alheit, A Bertrand, IA Catalán, S Garrido, M Moyano, RR Rykaczewski, A Takasuka, and CD van der Lingen. 2021. Small pelagic fish in the new millennium: a bottom-up view of global research effort. *Prog. Oceanogr.* **191:**102494, doi:10.1016/j.pocean.2020.102494.

41. Eddy, TD, JR Bernhardt, JL Blanchard, WWL Cheung, M Colléter, H du Pontavice, EA Fulton, D Gascuel, KA Kearney, CM Petrik, T Roy, RR Rykaczewski, R Selden, CA Stock, CCC Wabnitz, and RA Watson. 2021. Energy flow through marine ecosystems: confronting transfer efficiency. *Trends Ecol. Evol.* **36:**76-86, doi:10.1016/j.tree.2020.09.006.

2020

40. Jacox, MG, MA Alexander, S Siedlecki, K Chen, Y Kwon, S Brodie, I Ortiz, D Tommasi, MJ Widlansky, D Barrie, A Capotondi, W Cheng, E Di Lorenzo, C Edwards, J Fiechter, P Fratantoni, EL Hazen, AJ Hermann, A Kumar, AJ Miller, D Pirhalla, M Pozo Buil, S Ray, SC Sheridan, A Subramanian, P Thompson, L Thorne, H Annamalai, K Aydin, SJ Bograd, RB Griffis, K Kearney, H Kim, A Mariotti, M Merrifield, and RR Rykaczewski. 2020. Seasonal-to-interannual prediction of U.S. coastal marine ecosystems: Forecast methods, mechanisms of predictability, and priority developments. *Prog. Oceanogr.* **183**, doi:10.1016/j.pocean.2020.102307.

2019

39. *Turley, BD and RR Rykaczewski. 2019. Influence of wind events on larval fish mortality rates in the Southern California Current Ecosystem. *Can. J. Fish. Aquat. Sci.* **76:**2418-2432, doi:10.1139/cjfas-2018-0458.

38. Stammer, D, A Bracco, K AchutaRao, L Beal, N Bindoff, P Braconnot, W Cai, D Chen, M Collins, G Danabasoglu, B Dewitte, R Farneti, B Fox-Kemper, J Fyfe, S Griffies, SR Jayne, A Lazar, M Lengaigne, X Lin, S Marsland, S Minobe, P Monteiro, W Robinson, R Mathew Koll, RR Rykaczewski, S Speich, I Smith, A Solomon, A Storto, K Takahashi, T Tonazzo, and J Vialard. 2019. Ocean climate observing requirements in support of climate research and climate information. *Front. Mar. Sci.* **6:**444, doi:10.3389/fmars.2019.00444.

37. Todd, RE, FP Chavez, S Clayton, SE Cracatte, MP Goes, MI Graco, X Lin, J Sprintall, NV Zilberman, M Archer, J Arístegui, MA Balmaseda, JM Bane, MO Baringer, JA Barth, LM Beal, P Brandt, PHR Calil, E Campos, LR Centurioni, MP Chidichimo, M Cirano, MF Cronin, EN Curchitser, RE Davis, M Dengler, B DeYoung, S Dong, R Escribano, AJ Fassbender, SE Fawcett, M Feng, GJ Goni, AR Gray, D Gutiérrez, D Hebert, R Hummels, S Ito, M Krug, F Lacan, L Laurindo, A Lazar, CM Lee, M Lengaigne, N Levine, J Middleton, I Montes, M Muglia, T Nagai, HI Palevsky, JB Palter, HE Phillips, AR Piola, AJ Plueddemann, B Qiu, RR Rodrigues, T Rossby, M Roughan, DL Rudnick, RR Rykaczewski, M Saraceno, H Seim, AS Gupta, L Shannon, BM Sloyan, AJ Sutton, L Thompson, AK van der Plas, D Volkov, J Wilkin, D Zhang, and L Zhang. 2019. Global perspectives on observing ocean boundary current systems. *Front. Mar. Sci.* **6:**423, doi:10.3389/fmars.2019.00423.

36. Litzow, MA, L Ciannelli, P Puerta, JJ Wettstein, RR Rykaczewski, and M Opiekun. 2019. Nonstationary environmental and community relationships in the North Pacific Ocean. *Ecology* **100(8):**e02760, doi:10.1002/ecy.2760.

35. Bograd, SJ, S Kang, E Di Lorenzo, T Horii, ON Katugin, JR King, VB Lobanov, M Makino, G Na, RI Perry, F Qiao, RR Rykaczewski, H Saito, TW Therriault, S Yoo, and H Batchelder. 2019. Developing a social-ecological environmental system framework to address climate change impacts in the North Pacific. *Front. Mar. Sci.* **6**, doi:10.3389/fmars.2019.00333.

34. Rykaczewski, RR. 2019. Changes in mesozooplankton size structure along a trophic gradient in the California Current Ecosystem and implications for small pelagic fish. *Mar. Ecol. Prog. Ser.* **617-618:**165-182, doi:10.3354/meps12554.

33. Puerta, P, L Ciannelli, RR Rykaczewski, M Opiekun, and MA Litzow. 2019. Do Gulf of Alaska fish and crustacean populations show synchronous non-stationary responses to climate? *Prog. Oceanogr.* **175:**161-170, doi:10.1016/j.pocean.2019.04.002.

32. Roberts, SM, AM Boustany, PN Halpin, and RR Rykaczewski. 2019. Cyclical climate oscillation alters species statistical relationships with local habitat. *Mar. Ecol. Prog. Ser.* **614:**159-171, doi:10.3354/meps12890.

31. Alheit, J, E Di Lorenzo, RR Rykaczewski, and S Sundy. 2019. Drivers of dynamics of small pelagic fish resources: environmental control of long-term changes. *Deep-Sea Res. Part II Top. Stud. Oceanogr.* **159:**1-3, doi:10.1016/j.dsr2.2018.12.005.

2018

30. Litzow, MA, L Ciannelli, P Puerta, JJ Wettstein, RR Rykaczewski, and MJ Opiekun. 2018. Non-stationary climate-salmon relationships in the Gulf of Alaska. *Proc. R. Soc. B* **285:**20181855, doi:10.1098/rspb.2018.1855.

29. van der Sleen, P, RR Rykaczewski, BD Turley, WJ Sydeman, M García-Reyes, SJ Bograd, CD van der Lingen, JC Coetzee, T Lamont, and BA Black. 2018. Non-stationary responses in anchovy (*Engraulis encrasicolus)* recruitment to coastal upwelling in the Southern Benguela. *Mar. Ecol. Prog. Ser.* **596:**155-164, doi:10.3354/meps12567.

28. García-Reyes, M, T Lamont, WJ Sydeman, BA Black, RR Rykaczewski, SA Thompson, and SJ Bograd. 2018. A comparison of modes of upwelling-favorable wind variability in the Benguela and California current ecosystems. *J. Marine Syst.* **188:**17-26, doi:10.1016/j.jmarsys.2017.06.002.

27. Black, BA, P van der Sleen; E Di Lorenzo, D Griffin, WJ Sydeman, JB Dunham, RR Rykaczewski, M García-Reyes, M Safeeq, I Arismendi, and SJ Bograd. 2018. Rising synchrony controls western North American ecosystems. *Glob. Change Biol*. **24(6):**2305-2314, doi:10.1111/gcb.14128.

2017

26. Lynch, AL, RG Asch, WWL Cheung, CP Paukert, RR Rykaczewski, and WHH Sauer. 2017. Editorial: Impacts of climate change on marine and inland fishes and fisheries. *Rev. Fish Biol. Fisher.* **27(2):**293-296, doi:10.1007/s11160-017-9483-0.

25. *Brady, RX, MA Alexander, NS Lovenduski, and RR Rykaczewski. 2017. Emergent anthropogenic trends in California Current upwelling. *Geophys. Res. Lett.* **44:**5044-5052, doi:10.1002/2017GL072945.

24. Tommasi, D, CA Stock, AJ Hobday, R Methot, IC Kaplan, JP Eveson, K Holsman, TJ Miller, S Gaichas, M Gehlen, A Pershing, GA Vecchi, R Msadek, T Delworth, CM Eakin, MA Haltuch, R Sefarian, CM Spillman, JR Hartog, S Siedlecki, JF Samhouri, B Muhling, RG Asch, ML Pinsky, VS Saba, SB Kapnick, CF Gaitan, RR Rykaczewski, MA Alexander, Y Xue, KV Pegion, P Lynch, MR Payne, T Kristiansen, P Lehodey, and FE Werner. 2017. Managing living marine resources in a dynamic environment: the

role of seasonal to decadal climate forecasts. *Prog. Oceanogr.* **152:**15-49, doi:10.1016/j.pocean.2016.12.011.

23. Stock, CA, JG John, RR Rykaczewski, RG Asch, WWL Cheung, JP Dunne, KD Friedland, VWY Lam, JL Sarmiento, and RA Watson. 2017. Reconciling fisheries catch and ocean productivity. *Proc. Natl. Acad. Sci. USA.* **114:**E1441-E1449, doi:10.1073/pnas.1610238114.

22. Checkley, DM Jr., RG Asch, and RR Rykaczewski. 2017. Climate, anchovy, and sardine. *Annu. Rev. Mar. Sci.* **9:**469-493, doi:10.1146/annurev-marine-122414-033819.

2016

21. †Grieve, BD, EN Curchitser, and RR Rykaczewski. 2016. Range expansion of the invasive lionfish in the Northwest Atlantic with climate change. *Mar. Ecol. Prog. Ser.* **546:**225-237, doi:10.3354/meps11638.

20. Cheung, WWL, TL Frölicher, RG Asch, M Jones, ML Pinsky, G Reygondeau, KB Rodgers, RR Rykaczewski, JL Sarmiento, CA Stock, and JR Watson. 2016. Building confidence in projections of the responses of living marine resources to climate change. *ICES J. Mar. Sci.* **73:**1283-1296, doi:10.1093/icesjms/fsv250.

2015

19. García-Reyes, M, WJ Sydeman, DS Schoeman, RR Rykaczewski, BA Black, AJ Smit, and SJ Bograd. 2015. Under pressure: Climate change, upwelling and eastern boundary upwelling ecosystems. *Front. Mar. Sci.* **2:**109, doi:10.3389/fmars.2015.00109.

18. Fisher, JL, WT Peterson, and RR Rykaczewski. 2015. The impact of El Niño events on the pelagic food chain in the northern California Current. *Glob. Change Biol*. **21:**4401–4414, doi:10.1111/gcb.13054.

17. Rykaczewski, RR, JP Dunne, WJ Sydeman, M García-Reyes, BA Black, and SJ Bograd. 2015. Poleward displacement of coastal upwelling-favorable winds in the ocean's eastern boundary currents through the 21st century. *Geophys. Res. Lett*. **42:**6424–6431, doi:10.1002/2015GL064694.

16. Bakun, A, BA Black, SJ Bograd, M García-Reyes, AJ Miller, RR Rykaczewski, and WJ Sydeman. 2015. Anticipated effects of climate change on coastal upwelling ecosystems. *Curr. Clim. Change Rep.* **1:**85-93, doi:10.1007/s40641-015-0008-4.

15. *Willis-Norton, E, EL Hazen, S Fossette, G Shillinger, RR Rykaczewski, DG Foley, JP Dunne, and SJ Bograd. 2015. Climate change impacts on leatherback turtle pelagic habitat in the southeast Pacific. *Deep-Sea Res. Part II Top. Stud. Oceanogr*. **113:**260-267, doi:10.1016/j.dsr2.2013.12.019.

14. McOwen, CJ, WWL Cheung, RR Rykaczewski, RA Watson, and LJ Wood. 2015. Is fisheries production within Large Marine Ecosystems determined by bottom-up or top-down forcing? *Fish Fish.* **16:**623–632, doi:10.1111/faf.12082.

2014

13. Black, BA, WJ Sydeman, DC Frank, D Griffin, DW Stahle, M García-Reyes, RR Rykaczewski, SJ Bograd, and WT Peterson. 2014. Six centuries of variability and extremes in a coupled marine-terrestrial ecosystem. *Science* **345**:1498-1502, doi:10.1126/science.1253209.

12. Sydeman, WJ, M García-Reyes, DS Schoeman, RR Rykaczewski, SA Thompson, BA Black, and SJ Bograd. 2014. Climate change and wind intensification in coastal upwelling ecosystems. *Science* **345:**77-80, doi:10.1126/science.1251635.

2013

11. García-Reyes, M, WJ Sydeman, BA Black, RR Rykaczewski, DS Schoeman, SA Thompson, and SJ Bograd. 2013. Relative influence of oceanic and terrestrial pressure systems in driving upwelling-favorable winds. *Geophys. Res. Lett*. **40:**5311-5315, doi:10.1002/2013GL057729.

10. Österblom, H, A Merrie, M Metian, WJ Boonstra, T Blenckner, JR Watson, RR Rykaczewski, Y Ota, JL Sarmiento, V Christensen, M Schlüter, S Birnbaum, BG Gustavsson, C Humborg, C Mörth, B Müller-Karulis, MT Tomczak, M Troel, and C Folke. 2013. Modeling social-ecological scenarios in marine systems. *BioScience* **63:**735-744, doi:10.1525/bio.2013.63.9.9.

9. 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* **16(5):**722-735, doi:10.1007/s10021-013-9643-6.

8. Beaulieu, C, SA Henson, JL Sarmiento, JP Dunne, SC Doney, RR Rykaczewski, and L Bopp. 2013. Factors challenging our ability to detect long-term trends in ocean chlorophyll. *Biogeosciences* **10:**2711-2724, doi:10.5194/bg-10-2711-2013.

7. Hazen, EL, S Jorgensen, RR Rykaczewski, SJ Bograd, DG Foley, ID Jonsen, SA Shaffer, JP Dunne, DP Costa, LB Crowder, and BA Block. 2013. Predicted habitat shifts of Pacific top predators in a changing climate. *Nat. Clim. Change.* **3**:234-238, doi:10.1038/nclimate1686.

2011

6. Sydeman, WJ, SA Thompson, JA Santora, JC Field, WT Peterson, RW 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.

5. Rykaczewski, RR and JP Dunne. 2011. A measured look at ocean chlorophyll trends. *Nature* **472:**E5-E6, doi:10.1038/nature09952.

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

3. 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, and 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.2010.09.001.

2010

2. 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.

2008

1. Rykaczewski, RR and DM Checkley. 2008. Influence of ocean winds on the pelagic ecosystem in upwelling regions. *Proc. Natl. Acad. Sci. USA*. **105**:1965-1970, doi:10.1073/pnas.0711777105.

Non Peer-Reviewed Publications

Rykaczewski, RR and A Takasuka. 2021. PICES-2020 VW6 Workshop - Research priorities for understanding the population dynamics of small pelagic fish in the North Pacific. Newsletter of the North Pacific Marine Science Organization. PICES Press **29(1)**:25-27.

Keith, DA, et al. 2020. Indicative distribution maps for Ecological Functional Groups - Level 3 of IUCN Global Ecosystem Typology, doi:10.5281/zenodo.3958934.

Rykaczewski, RR, M Peck, IA Catalan, A Takasuka. 2020. Identifying research priorities for understanding the dynamics of small pelagic fish. Newsletter of the North Pacific Marine Science Organization. PICES Press **28(2)**:40-42.

Rykaczewski, RR and A Capotondi. 2020. "Towards an integrated approach to understanding ecosystem predictability in the North Pacific." Newsletter of the North Pacific Marine Science Organization. PICES Press **28(1)**:51-53.

Singh, G, A Cisneros-Montemayor, W Cheung, Y Ota, P Halpin, J Sarmiento, C Stock, H Österblom, C Folke, C McOwen, M Bithell, T Spencer, E Molenaar, AO Eferink, D Gascuel, J Kittinger, E Sunderland, A Boustany, M Pinsky, T Frölicher, L Chan, R Rykaczewski, H Hosein, W Hanich, R Asch, R Caddell, M Colléter, L Dellmuth, D Dunn, H du Pontavice, L Geffert, N Henschke, T Kenny, V Lam, J Mason, A Merrie, M de Oca, G Ortuno-Crespo, M Oyinlola, M Petersson, C Petrik, G Reygondeau, R Seary, R Selden, J Spijkers, C Thackray, P Underwood, J Jose Alava, T Eddy, S von der Porten, L Teh, M Vierros, and C Wabnitz. 2017. *Oceans and the Sustainable Development Goals: Co-Benefits, Climate Change and Social Equity*. The Nippon Foundation-University of British Columbia Nereus Program, Vancouver, BC.

Rykaczewski, RR, J Alheit, E Di Lorenzo, and S Sundby. 2017. PICES/ICES Workshop on "Environmental control of spatio-temporal changes in population size, distribution and migration of small pelagic fish in an ecosystem context." Newsletter of the North Pacific Marine Science Organization. *PICES Press* **25(2):**13-15.

Hazen, EL, MA Alexander, SJ Bograd, AJ Hobday, RR Rykaczewski, and KL Scales. 2017. Modeling to aid management of marine top predators in a changing climate. *US CLIVAR Variations* **15(1):**33-40.

Cheung, W, Y Ota, W Swartz, V Christensen, P Halpin, J Sarmiento, C Stock, C Folke, H Österblom, L Wood, C McOwen, T Spencer, M Bithell, AO Eferink, E Molenaar, R Asch, A Boustany, R Caddell, A Cisneros-Montemayor, M Colléter, L Dellmuth, D Dunn, T Frölicher, L Geffert, N Henschke, K Kearney, M Jones, V Lam, M Metian, A Merrie, M de Oca, M Oyinlola, C Petrik, G Reygondeau, R Rykaczewski, P Underwood, A Valls and J Watson. 2015. *Predicting Future Oceans: Climate Change, Oceans, and Fisheries*. The Nippon Foundation-University of British Columbia Nereus Program, Vancouver, BC. doi:10.13140/RG.2.1.3492.7444.

Clarke, L, R He, S Arnott, J Ballenger, M Karnauskas, K. Lindeman, R Mordecai, J Morley, P Ortner, C Paris, M Pinsky, M Reichert, M Roffer, R Rykaczewski, P Sheng, G Voulgaris, and W White. 2016. Policy Considerations for South Atlantic Climate Variability, Fisheries and Essential Fish Habitats. (A report prepared for the South Atlantic Fishery Management Council.)

Rykaczewski, RR and E Di Lorenzo. 2014. Workshop on "Identifying Mechanisms Linking Physical Climate and Ecosystem Change: Observed Indices, Hypothesized Processes, and "Data Dreams" for the Future." Newsletter of the North Pacific Marine Science Organization. *PICES Press* **22(1):**12-14.

Funded Scientific Research Proposals

2020-2022	"Understanding the Variability and Projecting Future Changes of Biogeochemistry in the California Current Upwelling System;" NOAA Climate Program Office; PIs: M. Pozo Buil, M. Jacox, J. Fiechter, S. Bograd, D. Tommasi, and R. Rykaczewski. $166,782 (UH portion)	~$ 500k

On this project, I am responsible for guiding the analysis of North Pacific climate properties as represented by the CMIP6 models and mentoring a graduate student.

2020-2021 "Future Climate Impacts on the Pelagic and Coastal Fisheries of Hawai'i;" ~$ 510k
NOAA Climate Program Office; PI: B. Powell; Co-Is: R. Rykaczewski, P. Woodworth-Jefcoats, and M. Weijerman, M. Stuecker and T. Friedrich. $509,864 (UH portion)
On this project, I am responsible for advising model configuration to develop results that are relevant for fisheries in the Central North Pacific.

2019-2022 "Coupled Climate Stressors along the West Coast of North America: Drought, Marine Heat Waves, HABs, and Hypoxia;" ~$ 149k
NOAA Climate Program Office, PIs: R. Rykaczewski, M. Jacox, M. García-Reyes. $48,316 (USC portion)
On this project, I am responsible for guiding the analysis of CMIP6 data and mentoring a postdoctoral researcher.

2017-2020 "From Physics to Fisheries: A Social-Ecological Management Strategy Evaluation for the California Current Large Marine Ecosystem;" NOAA Climate Program Office, PIs: M. Jacox, E. Curchister, M. Alexander, and R. Rykaczewski. $85,771 (USC portion) ~$ 1.99 M
On this project, I am responsible for interpreting the impact of large-scale changes in the ocean interior on ecosystem predictions for the California Current.

2017-2019 Nippon Foundation, "Nereus Program Expansion." Cheung, W., Y. Ota, D. Pauly, W. Swartz, D. Gascuel, T. Frölicher, E. Sunderland, J. Kittinger, A. Boustany, M. Pinsky, R. Rykaczewski, H. Hosein, and Q. Hanich. $140,000 (USC portion) ~$ 140 k
On this project, I am mentoring a postdoctoral researcher examining the sensitivity of upwelling ecosystems to climate change.

2016-2018 "No-analogue Ecosystem States in the Gulf of Alaska;" National Science Foundation, Co-PIs: Michael Litzow (Farallon Inst.), Lorenzo Ciannelli (OSU), and Ryan Rykaczewski. $109,314 (USC portion). ~$ 336 k
On this project, I am responsible for examining the historical climate factors that may have influenced biological processes in the Gulf of Alaska as simulated by coupled physical-biological models. I am also responsible for advising the one graduate student funded by the effort.

2014-2017 "Climate Change and Upwelling -- Comparative Analysis of Current & Future Responses of the California and Benguela Ecosystems;" National Science Foundation, Co-PIs: Ryan Rykaczewski, Bryan Black, Steven Bograd and William Sydeman. $149,946 (USC portion). ~$ 643 k
On this project, I am responsible for research considering the impacts of anthropogenic change on the dynamics of upwelling ecosystems. This is performed largely through comparison of historical observations and pre-historical proxies. I am also responsible for the supervision of the graduate students associated with the project. Dr. Black is responsible for developing proxies of historical upwelling rates using tree-ring records, fish otoliths, and shells of clams. Black is supervising a postdoctoral researcher. Dr. Sydeman is responsible for examining the current relationships between higher predators and physical properties of upwelling systems, and he supervises the work of the staff researcher, Dr.

García-Reyes. Dr. Bograd is responsible for integrating observations of physical (atmospheric and oceanic) processes with biogeochemistry and lower-tropic-level populations. On this project, there is no "Lead" PI; we are co-PIs.

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.
2010-2011	"Interannual variability in the northern California Current: the influence of El Nino events on salmon populations and pelagic ecosystem structure over the past 50 years;" NOAA Fisheries and the Environment Program, PIs: Ryan Rykaczewski and Bill Peterson	
2007-2009	NASA Earth and Space Science Fellowship	~ $ 120 k
2004-2007	NSF Graduate Student Research Fellowship	~ $ 180 k

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

Teaching Experience

Even springs at USC	University of South Carolina, BIOL 757/MSCI 758, 599: "Fisheries Ecology" lecture (3-5 graduate students and 20 undergraduate students; Marine Science majors)
All falls at USC	University of South Carolina, MSCI/BIOL 450: "Biological Oceanography" lecture (55 undergraduate students; Biology and Marine Science majors)
Odd springs at USC	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)

Professional Service (e.g., meeting and session chairmanship, editorial activities, reviewing)

Current Positions—

Editorial positions: *Fisheries Oceanography* (associate editor since 2015), *Progress in Oceanography* (associate editor since 2016), *Frontiers in Marine Science* (guest editor since 2019), and the AGU suite of journals (associate editor since 2020)

PICES FUTURE Scientific Steering Committee, member (since 2017)

PICES Advisory Panel on Circulation Research in East Asian Marginal Seas (AP-CREAMS; since 2018)

ICES/PICES Working Group on Small Pelagic Fish, co-chair (since 2019)

PICES Working Group on Climate and Ecosystem Predictability, co-chair (WG-CEP; since 2017)

Past Service—

CLIVAR Research Focus Group on Upwelling Systems, panel member (2016-2019; co-chair 2018-2019)

Journal referee: *Biogeosciences*, *Bioscience, Climate, Continental Shelf Research*, *Coral Reefs*, *CalCOFI Reports*, *Deep-Sea Research Part I*, *Ecology*, *Ecosystem Health and Sustainability, Fisheries Oceanography*, *Fisheries Research*, *Geophysical Research Letters*, *Global Change Biology*, *ICES Journal of Marine Science, Journal of Marine Systems*, *International Journal of Oceanography*, *Journal of Biogeography, Journal of Geophysical Research-Biogeosciences, Journal of Geophysical Research-Oceans*, *Journal of Marine Systems*, *Journal of Physical Oceanography*, *Limnology and Oceanography*, *Marine Biology*, *Marine Ecology Progress Series*, *Nature Communications*, *Oceanologia*, *Ocean Modelling*, *Ocean Science*, *Philosophical Transactions of the Royal Society of London A*, *PLoS ONE*, *Proceedings of the Royal Society of London B*, *Progress in Oceanography*, *Reviews in Fish Biology and Fisheries*, *Scientific Reports*

Proposal referee: California Ocean Science Trust; German Federal Ministry of Education and Research; Hudson River Foundation; Intergovernmental Panel on Climate Change Fifth Assessment Report Working Group II, Chapter 30: "Open Oceans;" National Oceanic and Atmospheric Administration National Ocean Service; National Science Foundation Division of Ocean Sciences; National Commission for Scientific and Technological Research (Chile); North Pacific Research Board; Sêr Cymru National Research Network (Wales, UK); Texas Sea Grant College Program

Peer reviews of proposal have been provided for the following University of South Carolina Programs: ASPIRE, USC Magellan Scholars Program, SPARC (Support to Promote Advancement of Research and Creativity)

Session organizer: Joint PICES (WG-40) and CLIVAR (Pacific Regional Panel) Predictions of extreme events in the North Pacific and their incorporation into management strategies. October 2021. Online.

Workshop organizer: PICES (WG-43) Research priorities for understanding the population dynamics of small pelagic fish in the North Pacific. October 2020. Online.

Workshop organizer: Joint PICES (WG-40) and CLIVAR (Pacific Region Panel) discussion of ecosystem prediction in the North Pacific. October 2019. Victoria, Canada.

Workshop organizer: Eastern Boundary Upwelling Systems. June 2019. Trieste, Italy.

Summer school organizer: ICTP-CLIVAR Summer School on Oceanic Eastern Boundary Upwelling Systems. July 2019. Trieste, Italy.

Workshop organizer: Towards an integrated approach to understanding ecosystem predictability in the North Pacific. June 2019. Qingdao, China.

SECOORA (Southeast Coastal Ocean Observing Regional Association), representative for the University of South Carolina, College of Arts and Sciences. 2017-2019.

Member of "Climate Variability and Fisheries Technical Working Group" for the Southeast Fishery Management Council. 2015-2016. Charleston, SC, USA.

Session co-chair: Fish production through food web dynamics in the boundary current systems. PICES 2019 Annual Meeting: Toward Integrated Understanding of Ecosystem Variability in the North Pacific. October 2018. Yokohama, Japan.

Session co-chair: Ecological responses to variable climate changes and their applicability to ecosystem predictions. PICES 2018 Annual Meeting: Toward Integrated Understanding of Ecosystem Variability in the North Pacific. October 2018. Yokohama, Japan.

Session chair: Closing the gap between wind stress and ecosystem productivity in eastern boundary upwelling regions. AGU/ASLO/TOS Ocean Sciences Meeting. February 2018. Portland, OR, USA.

Session co-chair: Ocean extremes and their impact on marine ecosystems. 4th International Symposium on the Effects of Climate Change on the World's Oceans. June 2018. Washington, DC, USA.

Session chair: Environmental and ecological responses to climate forcing in eastern boundary upwelling ecosystems. 4th International Symposium on the Effects of Climate Change on the World's Oceans. June 2018. Washington, DC, USA.

Session co-chair: Environmental control of spatio-temporal changes in population size, distribution and migration of small pelagic fish in an ecosystem context. Drivers of Dynamics of Small Pelagic Fish Resources. March 2017. Victoria, BC, Canada.

Session co-chair: Future of Marine Fisheries under Climate Change: Exploring Uncertainties, Future Scenarios and Multi-Scale Transformative Pathways. World Fisheries Congress. May 2016. Busan, Korea.

Session co-chair: Ecosystem responses to climate variability in eastern boundary upwelling ecosystems. AGU/ASLO/TOS Ocean Sciences Meeting. February 2016. New Orleans, LA, USA.

Lecturer at the *School on Ocean Climate Modeling: Physical and Biogeochemical Dynamics of Semi-Enclosed Seas* organized by the International Center for Theoretical Physics and hosted by the Middle Eastern Technical University. September-October 2015. Ankara, Turkey.

Session co-chair: Mesoscale ocean processes and their representation in earth system models. AGU/ASLO/TOS Ocean Sciences Meeting. February 2014. Honolulu, HI, USA.

Meeting co-chair and organizer of 60th Annual Eastern Pacific Ocean Conference. September 2013. Fallen Leaf, CA, USA.

Session co-chair: Potential Impacts of Climate Change on California Current Ecosystems—Physics, Chemistry, and Biology. Eastern Pacific Ocean Conference. September 2011. Fallen Leaf, CA, USA.

Session co-chair: Climate Change and Spatial Ecology. Eastern Pacific Ocean Conference. September 2010. Mt. Hood, OR, USA.

Meeting chair and organizer of the University of California-LTER Graduate Student and Post-doc Symposium. May 2008. Scripps Institution of Oceanography, La Jolla, CA, USA.

Research Cruises (one week duration and longer) **total scientific sea days: 314**

June 2019. R/V Atlantic Explorer. Bermuda Atlantic Time-series Study. St. George's, Bermuda to St. George's, Bermuda. 7 days.

July 2011. *F/V Frosti*. Pacific Coastal Ocean Observing System survey. San Francisco, USA to Newport, USA. 11 days.

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*.

April 2003. R/V *F.G. Walton Smith*. Florida Bay physical oceanography survey and instrument deployment. Ft. Myers, USA to Miami, USA. 9 days.

In addition, I served as co-Chief Scientist on a UNOLS Chief-Scientist Training Cruise in October 2014 aboard the R/V Pt. Sur.

Outreach and Community Involvement

2019	Lecturer at the ICTP-CLIVAR Summer School on Eastern Boundary Upwelling Systems. July 2019. Trieste, Italy.
2017	Guest Lecturer at Far Eastern Federal University. September 2017. Vladivostok, Russia.
2017	Presenter at the Columbia Urban League's 7th Annual STEM Expo. August 2017. Keenan High School, Columbia, SC, USA.
2016-2017	Science advisor for one senior high school students at Dutch Fork High School. Teacher: Brittany Holden. Fall 2016-Spring 2017. Lexington County, SC, USA.
2015-2016	Science advisor for two senior high school students at River Bluff High School. Teacher: Haze Weinspach. Fall 2015-Spring 2016. Lexington County, SC, USA.
2015-2016	Member of the Rocky Branch Citizens Advisory Committee. Richland County, SC, USA.
2014	What to expect your first year as a faculty member? University of South Carolina Postdoctoral Association & Office of the Vice President for Research. March 2014. Columbia, SC, USA.
2012	Tsunami education and discussion with middle and high school classes. November 2012. Tōhoku, Japan.
2012	Scientific career mentor for three undergraduate interns. January 2012. Swarthmore College Extern Program. Princeton University Program in Atmospheric and Oceanic Sciences. Princeton, NJ, USA.
2011	Volunteer at Children's Aid Society with the Duke Alumni Association. April 2011. Harlem, New York City, NY, USA.
2006-2009	Marine Operations Committee representative. Scripps Institution of Oceanography, UCSD.
2007-2009	Student representative for the California Current Long-term Ecological Research Program.
2004	Science Question/Answer writer. National Ocean Sciences Bowl.
2001-2002	President. *Rho Rho Rho* (the undergraduate Marine Science Honor Society). University of Miami.
2002-2003	Co-captain. University of Miami Men's Swim Team (NCAA Division I).
2001-2002	President. *Phi Kappa Phi* Honor Society. University of Miami.

Service at the Department, College, and University of South Carolina

2017-2018 Preston Faculty Associate
2017-2018 Faculty search committee Aquatic Ecology in Biological Sciences, member
2017 Faculty search committee for Resource Economics in SEOE, member
2016-2017 Faculty search committee for Discipline-Based Education Research in SEOE, member
2016 Faculty search committee for Director of the Baruch Institute, member
2015-pres. Faculty advisor for Phi Sigma Pi, a co-educational national honor fraternity
2014-pres. USC Udall Scholarship committee, member
2014-pres. USC Boren Scholarship committee, member
2014-pres. Graduate committee for Marine Sciences, member
2014-pres. Future hires committee for Biological Sciences, member
2014-2016 Qualifying exam committee for Ecology, Evolution, and Biology, member
2013-2016 Future hires committee for Marine Sciences, member
2013-pres. Website committee for Biological Sciences, chairperson
2013-2015 Faculty Senator for the Department of Biological Sciences
2013-2015 Scientific Diving Control Board at USC
2013 Marine Science Program Director search committee, member
2012-2013 Global Change Oceanography faculty search committee, member
2012-pres. Library Representative for the Marine Sciences Program

Student Committees at the University of South Carolina and University of Hawai'i at Mānoa (*major advisor, †committee chairmanship)

Graduated

2021 †Michelle Passerotti (Ph.D., Department of Biological Sciences)
2019 *†Brendan Turley (Ph.D., Marine Science Program)
2019 *†Christine Cobb (B.S. w/Honors, MSCI)
2019 *†Lev Looney (B.S. w/Honors, MSCI)
2018 Zac Cannizzo (Ph.D., Department of Biological Sciences)
2018 *†Michael Opiekun (M.S., Marine Science Program)
2017 Natalie Umling (Ph.D., Earth and Ocean Sciences)
2017 Ben Belgrad (Ph.D., Marine Science Program)
2017 †Michael Arendt (Ph.D., Department of Biological Sciences)
2016 Conor Ofsthun (M.S., Earth and Ocean Sciences)
2016 *†Riley Brady (B.S. w/Honors, MSCI)
2016 Brady Cunningham (Ph.D., Marine Science Program)
2015 *†John Bartlett (M.S., Marine Science Program)
2015 *Brian Grieve (M.S., Department of Biological Sciences)
2015 *†Steven Vega (M.S., Marine Science Program)
2014 Drew DeLorenzo (B.S. w/Honors, MSCI)

Current

Douglas Cahl (Ph.D., Earth and Ocean Sciences)
*†Dianne Deauna (Ph.D., Marine Science Program at USC and SOEST at UH)
Keith Fuller (M.S., Department of Biological Sciences)

Student Committee or Examination Service at other Institutions

Raquel Flynn (M.S., University of Cape Town)
Moagabo Ragoasha (Ph.D., University of Cape Town)
Sarah Roberts (Ph.D., Duke University)

Johannes Röhrs (Ph.D., University of Bergen)

Undergraduate Mentees at the University of South Carolina

Shannon Amiot (’15, REU from Univ. of Tampa)
*Riley Brady (’16, Marine Science)
Casey Brayton (’19, Marine Science)
Alicia Cheripka (’16, Marine Science)
Raina Datt (’16, REU from College of Charleston)
Evans Humphries (’16, Marine Sceince)
Julia Hogan (’17, Marine Science)
Sarah Hylton (’16, Marine Science)
Viki Knapp (’15, Marine Science)
Lev Looney (’19, Marine Science)
Patricia Perez (’15, Marine Science)
Connor West (’16, Marine Science)
Craig Raffenberg (’14, Marine Science)

**Riley was awarded a prestigious Computational Science Graduate Fellowship from the US Department of Energy to support his graduate education.*

Academic Advisors

Jorge L. Sarmiento (postdoctoral co-advisor)
AOS Program, Princeton University
Sayre Hall, Forrestal Campus
300 Forrestal Rd.
Princeton, NJ 08540-6654
Email: jls@princeton.edu
Tel: (609) 258-6585
Fax: (609) 258-2850

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

David M. Checkley (graduate advisor)
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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/ZooImage, (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.

Scientific Presentations

Scientific presentations, either at meetings or individual seminars—

November 2021. Abecassis M and RR Rykaczewski. OceanWatch Central Pacific - a multi-pronged approach to disseminating ocean remote sensing data. The Eleventh Asia-Oceania Meteorological Satellite Users' Conference held in conjunction with the 2021 FengYun Satellite User Conference. Beijing, China.

October 2021. Navarra, GG, E Di Lorenzo, and RR Rykaczewski. Predictability and Empirical Dynamics of Fish Indicators in the North Pacific. PICES 2021 Annual Meeting. Online. Research seminar.

October 2021. Shi H, M García-Reyes, MG Jacox, RR Rykaczewski, BA Black, SJ Bograd, and WJ Sydeman. Co-occurrence of California drought and Northeast Pacific marine heatwaves under climate change. PICES 2021 Annual Meeting. Online. Research seminar.

October 2021. Rykaczewski, RR. Impacts of climate variability and change on productive Pacific fisheries. Pacific International Training Desk. Online. Research seminar.

June 2021. Shi H, M García-Reyes, MG Jacox, RR Rykaczewski, BA Black, SJ Bograd, and WJ Sydeman. Co-occurrence of California drought and Northeast Pacific marine heatwaves under climate change. Bodega Marine Laboratory John & Mary Louise Riley Seminar Series. Online.

October 2020. Rykaczewski, RR. Projected impacts of anthropogenic climate change of pelagic ecosystems in the northeast Pacific. Institute for the Oceans and Fisheries Seminar. University of British Columbia, Vancouver, Canada. Research seminar.

February 2020. John, JG, CA Stock, RR Rykaczewski, E Drenkard, JY Luo, and JP Dunne. Response of the California Current Ecosystem to Mitigation of Carbon Dioxide. AGU/ASLO Ocean Sciences Meeting. San Diego, USA.

February 2020. JDL Deauna, AE Yankovsky, and RR Rykaczewski. Evaluation of the historical and future biogeochemical boundary conditions from earth system models for the California Current System. AGU/ASLO Ocean Sciences Meeting. San Diego, USA.

February 2020. Stone, J, BD Turley, and RR Rykaczewski. Characterizing zooplankton vertical distribution in the Sargasso Sea using an Underwater Vision Profiler. AGU/ASLO Ocean Sciences Meeting. San Diego, USA.

February 2020. Rykaczewski, RR, H Shi, M Garcia-Reyes, WJ Sydeman, B Black, SJ Bograd, and M Jacox. Coupled Climate Stressors along the West Coast of North America: Drought, Marine Heat Waves, HABs, and Hypoxia. AGU/ASLO Ocean Sciences Meeting. San Diego, USA.

February 2020. BD Turley and RR Rykaczewski. The effects of episodic wind-event mixing on vertical chlorophyll structure in the southern California Current Ecosystem. AGU/ASLO Ocean Sciences Meeting. San Diego, USA.

February 2020. Jacox M, MA Alexander, S Siedlecki, K Chen, YO Kwon, S Brodie, I Ortiz, D Tommasi, MJ Widlansky, D Barrie, A Capotondi, W Cheng, ED Lorenzo, CA Edwards, J Fiechter, PS Fratantoni, EL Hazen, AJ Hermann, A Kumar, AJ Miller, D Pirhalla, M Pozo Buil, S Ray, SC Sheridan, A Subramanian, PR Thompson, LH Thorne, H Annamalai, SJ Bograd, R Griffis, H Kim, A Mariotti, MA Merrifield, and RR Rykaczewski. Seasonal-to-interannual prediction of U.S. coastal marine ecosystems: Forecast methods, mechanisms of predictability, and priority developments. AGU/ASLO Ocean Sciences Meeting. San Diego, USA.

October 2019. Turley, BD and RR Rykaczewski. Revisiting Lasker's stable Ocean hypothesis: The influence of wind events on larval fish mortality in the southern California Current Ecosystem. PICES 2019 Annual Meeting. Victoria, Canada. Research seminar.

October 2019. Rykaczewski, RR. Conflicting hypotheses regarding the response of the California Current Ecosystem to future climate change. Oceanography Seminar. University of Hawai'i, Honolulu, HI, USA. Research seminar.

December 2018. Rykaczewski, RR. Responses of Eastern North Pacific Ecosystems to Anthropogenic Climate Change. NOAA Pacific Islands Fisheries Science Center. Honolulu, HI, USA. Research seminar.

December 2018. Ciannelli, L, MA Litzow, P Puerta, B Johnson, RR Rykaczewski, JJ Wettestein, and M Opiekun. Nonstationary climate effects on the productivity of marine fish in the Northeast Pacific. CalCOFI Conference 2018. La Jolla, CA, USA.

November 2018. Eddy, TD, RX Brady, SC Harrison, and RR Rykaczewski. The future of nutrients, fish, and fisheries in the California and Kuroshio Currents: A multi-model approach. PICES 2019 Annual Meeting: Toward Integrated Understanding of Ecosystem Variability in the North Pacific. Yokohama, Japan.

October 2018. Rykaczewski, RR. Impacts of climate variability and change on the ocean's most productive fisheries. University of South Carolina-Sumter. Sumter, SC, USA. Research seminar.

July 2018. Rykaczewski, RR. Consequences of Bioenergetic Differences between Sardine and Anchovy in Eastern Boundary Upwelling Systems. Atmosphere and Ocean Research Institute, University of Tokyo. Tokyo, Japan. Research seminar.

April 2018. Rykaczewski, RR, JG John, CA Stock, JP Dunne, and WT Peterson. Variability in the transport and latitude of the North Pacific Current: Consequences for northeastern Pacific ecosystems. PICES International Symposium: Understanding Changes in Transitional Areas of the Pacific. La Paz, Mexico.

March 2018. Rykaczewski, RR. Responses of small pelagic fishes and upwelling ecosystems to climate change. University of South Carolina-Aiken. Aiken, SC, USA. Research seminar.

February 2018. Turley, B and RR Rykaczewski. Storms and stratification: Potential drivers of larval fish mortality. AGU/ASLO Ocean Sciences Meeting. Portland, OR, USA.

February 2018. Bograd, SJ, García-Reyes, T Lamont, WJ Sydeman, B Black, RR Rykaczewski, and SA Thompson. A comparison of modes of upwelling-favorable wind variability in the Benguela and California Current Ecosystems. AGU/ASLO Ocean Sciences Meeting. Portland, OR, USA.

February 2018. Looney, L, B Hamlington, and RR Rykaczewski. Utilizing cyclostationary empirical orthogonal functions to explore upwelling variability in the California Current. AGU/ASLO Ocean Sciences Meeting. Portland, OR, USA.

February 2018. Opiekun, M, RR Rykaczewski, L Ciannelli, P Puerta, and M Litzow. Seeking new directions: Exploring the decay of statistical relationships between sea surface temperature and salmon productivity in the Gulf of Alaska. AGU/ASLO Ocean Sciences Meeting. Portland, OR, USA.

February 2018. Rykaczewski, RR, BD Turley, and RG Asch. Scales of variability in forage fish populations: Comparing interpretations of ichthyoplankton and sedimentary records. AGU/ASLO Ocean Sciences Meeting. Portland, OR, USA.

February 2018. Puerta, P, B Johnson, L Ciannelli, RR Rykaczewski, M Opiekun, and M Litzow. Understanding non-Stationary climate effects on Pacific salmon productivity. AGU/ASLO Ocean Sciences Meeting. Portland, OR, USA.

December 2017. Turley, BD and RR Rykaczewski. Storms and mixed-layer dynamics: Potential drivers of larval anchovy mortality. California Cooperative Oceanic Fisheries Investigations Annual Conference 2017: Forage in the California Current Ecosystem. La Jolla, CA, USA.

December 2017. Rykaczewski, RR, BD Turley, and RG Asch. Scales of variability in forage fish populations: Comparing interpretations of ichthyoplankton and sedimentary records. California Cooperative Oceanic Fisheries Investigations Annual Conference 2017: Forage in the California Current Ecosystem. La Jolla, CA, USA.November 2017. Rykaczewski, RR. Using Numerical Models in Management Strategies for the California Current Ecosystem. East Carolina University. Research seminar.

November 2017. Rykaczewski, RR. Using Numerical Models in Management Strategies for the California Current Ecosystem. East Carolina University. Research seminar.

October 2017. Rykaczewski, RR. Response of the Northeast Pacific Upwelling Ecosystem to Anthropogenic Climate Change. Nicholas School of the Environment, Duke University. Research seminar.

September 2017. Rykaczewski, RR. Propagation of biogeochemical anomalies across the North Pacific in a global earth-system model. PICES 2017 Annual Meeting: Environmental changes in the North Pacific and impacts on biological resources and ecosystem services. Vladivostok, Russia.

September 2017. Rykaczewski, RR, BD Turley, and RG Asch. Scales of variability in forage fish populations: comparing interpretations of ichthyoplankton and paleoecological records. PICES 2017 Annual Meeting: Environmental changes in the North Pacific and impacts on biological resources and ecosystem services. Vladivostok, Russia.

June 2017. Rykaczewski, RR. Response of the Northeast Pacific Upwelling Ecosystem to Anthropogenic Climate Change. University of Hamburg Institute for Geology. Hamburg, Germany. Research seminar.

June 2017. Rykaczewski, RR. Response of the Northeast Pacific Upwelling Ecosystem to Anthropogenic Climate Change. Helmholtz-Center Geesthacht. Geesthacht, Germany. Research seminar.

June 2017. Rykaczewski, RR, JG John, CA Stock, and JP Dunne. Variability in the transport and latitude of the North Pacific Current: Consequences for northeastern Pacific ecosystems. ESSAS Open Science Meeting. Tromsø, Norway. Invited keynote speaker.

March 2017. Rykaczewski, RR. Climate impacts on upwelling and the planktonic prey of anchovy and sardine in eastern boundary currents. Scripps Institution of Oceanography (UCSD). La Jolla, CA, USA. Research seminar.

March 2017. Rykaczewski, RR. Climate impacts on upwelling and the planktonic prey of anchovy and sardine in eastern boundary currents. ICES/PICES Symposium on Drivers of dynamics of small pelagic fish resources. Victoria, BC, Canada. Invited plenary speaker.

December 2016. Bograd, SJ, B Black, M García-Reyes, RR Rykaczewski, SA Thompson, BD Turley, P van der Sleen, WJ Sydeman. On the past, present, and future of eastern boundary upwelling systems. 2016 AGU Fall Meeting. San Francisco, CA, USA. Invited presentation.

November 2016. García-Reyes, M, WJ Sydeman, T Lamont, RR Rykaczewski, BA Black, and SJ Bograd. Regional and global drivers of upwelling variability in the Benguela and California EBUS. Benguela: Opportunity, Challenge, and Change. Cape Town, South Africa.

November 2016. Turley, BD, T Lamont, M García-Reyes, P van der Sleen, BA Black, SJ Bograd, SA Thompson, WJ Sydeman, C van der Lingen, and RR Rykaczewski. Reconsidering the optimal environmental window in the southern Benguela: Opportunity, Challenge, and Change. Cape Town, South Africa.

November 2016. Rykaczewski, RR. Wind stress, stratification, and source waters: How will eastern boundary current upwelling processes respond to climate change? Benguela: Opportunity, Challenge, and Change. Cape Town, South Africa. Invited presentation.

November 2016. Rykaczewski, RR. Projecting ecosystem consequences of climate variability and change: Aspirations for the next 25 years of PICES. PICES 2016 Annual Meeting: Celebrating the Past, Imagining the Future. San Diego, CA, USA. Keynote address.

November 2016. Rykaczewski, RR. Wind stress, stratification, and source waters: How will eastern boundary current upwelling processes respond to climate change? PICES 2016 Annual Meeting: Celebrating the Past, Imagining the Future. San Diego, CA, USA. Invited presentation.

November 2016. Stock, CA, JG John, RR Rykaczewski, RG Asch, WWL Cheung, JP Dunne, KD Friedland, VWY Lam, JL Sarmiento, and RA Watson. Trophodynamic drivers of global fisheries catch. PICES 2016 Annual Meeting: Celebrating the Past, Imagining the Future. San Diego, CA, USA.

November 2016. Litzow, M, L Ciannelli, R Rykaczewski, E di Lorenzo, M Opiekun, P Puerta, and M Stachura. Non-analogue ecosystem states in the Gulf of Alaska. PICES 2016 Annual Meeting: Celebrating the Past, Imagining the Future. San Diego, CA, USA.

November 2016. Barceló, C, L Ciannelli, R Rykaczewski, B Wright, RD Brodeur, and L Torres. Integrating habitat, prey and predators over space and time to assess distributional responses to environmental variability and climate change. PICES 2016 Annual Meeting: Celebrating the Past, Imagining the Future. San Diego, CA, USA.

September 2016. García-Reyes, M, T Lamont, WJ Sydeman, SJ Bograd, RR Rykaczewski, SA Thompson, and BA Black. Eastern Boundary Upwelling Systems (EBUS): Seasonal modes of upwelling variability in the California & Benguela Systems. CLIVAR Open Science Conference. Qingdao, China.

September 2016. RR Rykaczewski, JP Dunne, WJ Sydeman, M García-Reyes, Ba Black, and SJ Bograd. Eastern boundary upwelling systems (EBUS): Poleward displacement of coastal upwelling-favorable winds through the 21st century. CLIVAR Open Science Conference. Qingdao, China.

June 2016. Brady, RX, RR Rykaczewski, and MA Alexander. Emergence of anthropogenic trends in California Current upwelling in the presence of internal climate variability. CESM Workshop. Breckenridge, CO, USA.

March 2016. RR Rykaczewski. Responses of Eastern Boundary Current Ecosystems to Anthropogenic Climate Change. School of Marine Science & Policy, University of Delaware. Lewes, DE, USA. Research seminar.

February 2016. Rafter, PA, KR Mackey, RR Rykaczewski, and DM Sigman. Surviving a High Nutrient-Low Chlorophyll (HNLC) region: insights to the internal cycling of nitrogen and iron in the eastern equatorial Pacific. AGU/ASLO Ocean Sciences Meeting. New Orleans, LA, USA.

February 2016. Garcia-Reyes, M, T Lamont, SJ Bograd, BA Black, RJM Crawford, C van der Lingen, SA Thompson, RR Rykaczewski, and WJ Sydeman. Modes of upwelling variability in the Benguela Current System and how they relate to ecosystem productivity. AGU/ASLO Ocean Sciences Meeting. New Orleans, LA, USA.

February 2016. Stock, CA, JG John, V Lam, RR Rykaczewski, WWL Cheung, JP Dunne, RG Asch, and JL Sarmiento. Plankton production, fish catch, and the potential for sharp regional catch trends under climate change. AGU/ASLO Ocean Sciences Meeting. New Orleans, LA, USA.

February 2016. Brady, RX, RR Rykaczewski, and MA Alexander. Emergence of anthropogenic trends in California Current upwelling in the presence of natural climate variability. AGU/ASLO Ocean Sciences Meeting. New Orleans, LA, USA.

February 2016. Rykaczewski, RR, JP Dunne, WJ Sydeman, M Garcia-Reyes, BA Black, and SJ Bograd. Poleward displacement of coastal upwelling-favorable winds through the 21st century. AGU/ASLO Ocean Sciences Meeting. New Orleans, LA, USA.

December 2015. Brady, R, RR Rykaczewski, and MA Alexander. The influence of natural variability on future California Current upwelling. 2015 AGU Fall Meeting. San Francisco, CA, USA.

October 2015. Samhouri, JF, L Earl, C Barcelo, S Bograd, R Brodeur, L Cianelli, E Fuller, E Hazen, M Jacox, I Kaplan, R Rykaczewski, M Dickinson Sheridan, GD Williams. Social-ecological vulnerability of forage fish and fishermen to climate change. PICES 2015 Annual Meeting: Change and Sustainability of the North Pacific. Qingdao, China.

September 2015. Brady, RX, MA Alexander, and RR Rykaczewski. Quantifying natural and anthropogenic variation in California Current upwelling. Eastern Pacific Ocean Conference. Fallen Leaf Lake, CA, USA.

May 2015. Rykaczewski, RR and E Di Lorenzo. Recent changes in Pacific climate and North American salmon. North Pacific Anadromous Fish Commission International Symposium on "Recent changes in Pacific climate and North American salmon." Kobe, Japan. Invited keynote presentation.

October 2014. Cheung, WWL, R Asch, M Jones, RR Rykaczewski, JL Sarmiento, and C Stock. Global vulnerability of fish recruitment to climate change: insights from Hjort's legacy. Johan Hjort Symposium on Recruitment Dynamics and Stock Variability. Institute of Marine Research, Bergen, Norway. Invited presentation.

October 2014. Rykaczewski, RR. Impacts of climate change and acidification on small pelagic fisheries. Annual Conference of the IFFO/Marine Ingredients Organisation. Vancouver, BC, Canada. Invited presentation.

September 2014. Rykaczewski, RR. Considering responses of upwelling ecosystems to future climate change. Duke University Marine Lab. Beaufort, NC, USA. Research seminar.

June 2014. Rykaczewski, RR, JP Dunne, CA Stock, WJ Sydeman, M García-Reyes, BA Black, and SJ Bograd. Investigating the upwelling intensification hypothesis using climate-change simulations. 2014 IMBER Open Science Conference. Bergen, Norway.

April 2014. Raffenberg, CA and RR Rykaczewski. Climate influence on the phenology of larval shrimp in a South Carolina estuary. Discovery Day 2014. Columbia, SC, USA.

April 2014. Wiant, K and RR Rykaczewski. American shad program at SC DNR Campbell Hatchery. Discovery Day 2014. Columbia, SC, USA.

March 2014. Raffenberg, CA and RR Rykaczewski. Climate influence on the phenology of larval shrimp in a South Carolina estuary. Benthic Ecology Meeting. Jacksonville, FL, USA.

February 2014. *Brady, RX and RR Rykaczewski. Consequences of shifting high pressure zones on future coastal upwelling. AGU/ASLO/TOS Ocean Sciences Meeting, Honolulu, HI, USA. Poster presentation. **Undergraduate Student presenter; Award for "Outstanding Student Presentation."*

November 2013. Rykaczewski, RR. The influence of anthropogenic climate change on the hydrography and biogeochemistry of pelagic North Pacific ecosystems. Second JIMAR/PIFSC Symposium: Climate and Change. Joint Institute for Marine and Atmospheric Research, Honolulu, HI, USA. Invited presentation.

November 2013. Rykaczewski, RR. Responses of subtropical North Pacific ecosystems to future climate change. Fort Johnson Marine Science Seminar Series. Grice Marine Lab, Charleston, SC, USA. Research seminar.

October 2013. Rykaczewski, RR, JP Dunne, CA Stock, WJ Sydeman, M García-Reyes, BA Black, and SJ Bograd. Investigating the upwelling intensification hypothesis using climate-change simulations. PICES 2013 Annual Meeting: Communicating forecasts, uncertainty and consequences of ecosystem change. Nanaimo, Canada.

October 2013. Wiener, AR, M García-Reyes, RR Rykaczewski, SJ Bograd, and WJ Sydeman. Statistical downscaling of an ensemble of Global Climate Models output for the California upwelling region. PICES 2013 Annual Meeting: Communicating forecasts, uncertainty and consequences of ecosystem change. Nanaimo, Canada.

October 2013. Sydeman, WJ, M Garcia-Reyes, DS Schoeman, RR Rykaczewski, BA Black, SA Thompson, and SJ Bograd. Meta-analysis: a tool for communicating complexity to informed general audiences. PICES 2013 Annual Meeting: Communicating forecasts, uncertainty and consequences of ecosystem change. Nanaimo, Canada.

October 2013. Black, BA, WJ Sydeman, DC Frank, D Griffin, DW Stahle, M García-Reyes, RR Rykaczewski, SJ Bograd, and WT Peterson. Six centuries of variability and extremes in a coupled marine-terrestrial ecosystem. PICES 2013 Annual Meeting: Communicating forecasts, uncertainty and consequences of ecosystem change. Nanaimo, Canada.

October 2013. García-Reyes, M, WJ Sydeman, RR Rykaczewski, AW, I Schroeder and SJ Bograd. What do global climate models say about increasing variance in the California Current upwelling ecosystem? PICES 2013 Annual Meeting: Communicating forecasts, uncertainty and consequences of ecosystem change. Nanaimo, Canada.

July 2013. Rykaczewski, RR. The potential influence of wind-stress curl on ecosystem structure in the California Current upwelling system. Marine Research Institute; University of Cape Town. Cape Town, South Africa. Research seminar.

July 2013. Rykaczewski, RR. Consequences of large-scale climate change on the nutrients supplied to upwelling ecosystems. Marine Research Institute, University of Cape Town. Cape Town, South Africa. Research seminar.

April 2013. Brady, RX and RR Rykaczewski. The future of coastal upwelling in marine ecosystems. 2013 Discovery Day. Columbia, SC, USA.

March 2013. Rykaczewski, RR. Responses of the California Current Ecosystem to basin-scale increases in upper-ocean stratification. Department of Earth, Ocean and Atmospheric Sciences; University of British Columbia. Vancouver, BC, Canada. Research seminar.

February 2013. Rykaczewski, RR, JP Dunne, and CA Stock. Climate change and marine ecosystems: Issues of scale and challenges for the community. ICES Working Group on Interactive Physical-biological and Ecosystem Modeling. Paris, France. Invited presentation.

February 2013. Rykaczewski, RR. Responses of ecosystem processes to long-term climate Change. American Association for the Advancement of Science, Annual Meeting. Boston, MA, USA.

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. Research seminar.

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. Research seminar.

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

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. Research seminar.

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

November 2011. Rykaczewski, RR. Large-scale natural and anthropogenic forcing of marine ecosystems. University of St. Andrews. St. Andrews, Scotland, UK. Research seminar.

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

October 2011. Hazen, EL, SA Shaffer, MA Kappes, RR Rykaczewski, DG Foley, SJ Bograd, and DP Costa. Oceanographic habitat segregation among postbreeding Hawaiian albatrosses and predicted changes from 2001-2100. PICES 2011 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. Fallen Leaf Lake, 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. Invited presentation.

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. Research seminar.

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. Research seminar.

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. Research seminar.

March 2011. Rykaczewski, RR and JP Dunne. Climate processes affecting productivity of the Northeast Pacific on decadal to centennial timescales during the 20th and 21st 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. Research seminar.

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. Research seminar.

October 2010. Bograd, SJ, CG Castro, FP Chavez, CA Collins, V Combes, E Di Lorenzo, M Ohman, R Rykaczewski, and F Whitney. The California Undercurrent: 1949-2009 and Beyond. PICES 2010 Annual Meeting: North Pacific Ecosystems Today, and Challenges in Understanding and Forecasting Change. Portland, OR, USA.

October 2010. Hazen, EL, S Jorgensen, R Rykaczewski, J Dunne, S Bograd, D Foley, I Jonsen, A Winship, D Costa, and B Block. Potential habitat shifts in Pacific top predators in a changing climate. PICES 2010 Annual Meeting: North Pacific Ecosystems Today, and Challenges in Understanding and Forecasting Change. Portland, OR, USA.

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. Research seminar.

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. Research seminar and webcast.

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. AGU/ASLO/TOS 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. Research seminar and webcast.

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. AGU/ASLO/TOS 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.

February 2006. Decima, M, MR Landry, and RR Rykaczewski. Mesozooplankton grazing in the Equatorial Pacific. AGU/ASLO/TOS Ocean Sciences Meeting. Honolulu, HI, USA.

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. Research seminar.

General presentations for the public—

December 2013. Rykaczewski, RR. Responses of marine upwelling ecosystems to future climate change. USC Biological Sciences "Data Dinner." University of South Carolina, Columbia, SC, USA.

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.

Presentations for policymakers—

May 2014. Rykaczewski, RR. The impact of climate change on small pelagic fisheries. 2014 United Nations Open-Ended Informal Consultative Process on Oceans and the Law of the Sea. New York, NY, USA. Invited presentation.

Workshops *(not updated since 2016)*

April 2016. Expert reviewer for "West Coast Climate Vulnerability Assessment," NOAA NWFSC/SWFSC. Monterey, CA, USA.

December 2015. South Atlantic Climate Variability and Fisheries Writing Team for the South Atlantic Fishery Management Council, Fishery Ecosystem Plan II. Charleston, SC, USA.

October 2015. Upwelling Research Focus Planning Workshop organized by CLIVAR (Climate and Ocean Variability, Predictability, and Change). Ankara, Turkey.

October 2013. Identifying mechanisms linking physical climate and ecosystem change: Observed indices, hypothesized processes, and "data dreams" for the future. PICES 2013 Annual Meeting. Nanaimo, BC, Canada. **Meeting co-chairman*.

September 2012. GLOBEC/PICES/ICES Workshop on "Forecasting ecosystem indicators with process-based models". Friday Harbor Laboratories, Friday Harbor, WA, USA.

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 State Technical University. Irkutsk and Bolshiye Koty, Irkutskaya Oblast, Russia.