# Kelly Rakow Sutherland

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**EDUCATION**

2010 Massachusetts Institute of Technology, Cambridge, MA
Woods Hole Oceanographic Institution, Woods Hole, MA
PhD Biological Oceanography: *Form function and flow in the plankton: Jet propulsion and filtration by pelagic tunicates.* Advisor: Larry Madin

2004 University of South Alabama, Mobile, AL
Dauphin Island Sea Lab, Dauphin Island, AL
MSc Marine Sciences: *Oriented swimming by the scyphomedusa* Aurelia *against shear flow*. Advisor: Monty Graham

1999 Tufts University, Medford, MA
B.S. Biology and Child Development

**ACADEMIC APPOINTMENTS**

2021-present Alec and Kay Keith Professor

2018-present Associate Professor of Biology, Oregon Institute of Marine Biology, University of Oregon, Eugene, OR

Fall 2018 Visiting Scholar, Scripps Institution of Oceanography/UCSD, La Jolla, CA

2012-2018 Assistant Professor of Biology, Clark Honors College; Oregon Institute of Marine Biology, University of Oregon, Eugene, OR

2011-2012 Research Associate and Adjunct Instructor, Institute of Ecology and Evolution and Biology Dept., University of Oregon, Eugene, OR

2009-2011 Postdoctoral Scholar, Bioengineering, California Institute of Technology, Pasadena, CA, Mentor: John Dabiri

**PEER REVIEWED PUBLICATIONS**
(Sutherland lab students are underlined, postdocs are *)

50. Potter B, Corrales-Ugalde M, Townsend JP, Colin SP, **Sutherland KR**, Costello JH, Colins R, Gemmell BJ (In Revision) Quantifying Trophic Impact of a Widespread Oceanic Comb Jelly (Ctenophore). Scientific Reports

49. Dadon-Pilosof A, Conley KR, Lombard F, **Sutherland KR**, Genin A, Richter M, Glöckner FO, Yahel G (Accepted) Natural diet of appendicularians: effects of prey size and taxonomy. Marine Ecology Progress Series

48. Thompson AW, Sweeney-Ton CP, **Sutherland KR** (2023) Selective and differential feeding on marine prokaryotes by mucus mesh feeders. Environmental Microbiology. doi: 10.1111/1462-2920.16334

47. Du Clos KT*, Gemmell BJ, Colin SP, Costello JH, Dabiri JO, **Sutherland KR** (2022) Distributed propulsion enables fast and efficient swimming modes in physonect siphonophores. Proceedings of the National Academy of Sciences. 119(49), e2202494119.

46. Cordeiro M, Costello JH, Gemmell BJ, **Sutherland KR**, Colin SP (2022) Oceanic lobate ctenophores possess feeding mechanics similar to the impactful coastal species *Mnemiopis leidyi.* Limnology and Oceanography. https://doi.org/10.1002/lno.12232

45. Lyle JT, Cowen RC, Sponaugle S, **Sutherland KR** (2022) Fine-scale vertical distribution and diel migrations of *Pyrosoma atlanticum* in the Northern California Current. Journal of Plankton Research. 44(2), pp.288-302.

44. **Sutherland KR**, Thompson AW (2022) Pelagic tunicate grazing on marine microbes revealed by integrative approaches. Limnology and Oceanography. 67(1), pp.102-121.

43. Corrales- Ugalde M, Sponaugle S, Cowen R, **Sutherland KR** (2021) Seasonal hydromedusan feeding patterns in an Eastern Boundary Current show consistent predation on primary consumers. Journal of Plankton Research. 43(5), 712-724

42. Gemmell BJ, Dabiri JO, Colin SP, Costello JH, Townsend JP, **Sutherland KR** (2021) Cool Your Jets: Biological Jet Propulsion in Marine Invertebrates. Journal of Experimental Biology. 224(12), jeb222083

41. Thompson AW, Ward AC, Sweeney CP, **Sutherland KR** (2021) Host-specific symbioses and the microbial prey of a pelagic tunicate (*Pyrosoma atlanticum*). ISME Communications. 1, 11. https://doi.org/10.1038/s43705-021-00007-1

40. Ben Tal A, Shenkar N, Paz A, Conley K, **Sutherland K**, Yahel G (2021) High mucous-mesh production by the ascidian *Herdmania momus*. Marine Ecology Progress Series. 663:223-228. https://doi.org/10.3354/meps13631

39. Gemmell BJ, Du Clos KT*, Colin SP, **Sutherland KR**, Costello JH (2021) The most efficient metazoan swimmer creates a 'virtual wall' to enhance performance. Royal Society Proc B. 288: 1942. https://doi.org/10.1098/rspb.2020.2494

38. Costello JH, Colin SP, Dabiri JO, Gemmell BJ, Lucas KN, **Sutherland KR** (2021) The hydrodynamics of jellyfish swimming. Annual Review of Marine Science 13.

37. Corrales-Ugalde M, **Sutherland KR** (2021) Fluid mechanics of feeding determines the trophic niche of the hydromedusa *Clytia gregaria*. Limnology and Oceanography

36. Colin SP, Costello JH, **Sutherland KR**, Gemmell BJ, Dabiri JO, Du Clos K (2020) The role of suction thrust in the metachronal paddles of swimming invertebrates. Scientific Reports

35. Schram JB, Sorensen HL, Brodeur RD, Galloway AWE, **Sutherland KR** (2020) Abundance, distribution, and feeding ecology of *Pyrosoma atlanticum* in the Northern California Current. Marine Ecology Progress Series. 651:97-110. https://doi.org/10.3354/meps13465

34. Heimbichner Goebel WL, Colin SP, Costello JH, Gemmell BJ, **Sutherland KR** (2020) Scaling of ctenes and consequences for swimming performance in the ctenophore *Pleurobrachia bachei*. Invertebrate Biology. 139:3. e12297. https://doi.org/10.1111/ivb.12297

33. Townsend JP, Gemmell BJ, **Sutherland KR**, Colin SP, Costello JH (2020) Ink release and swimming behavior in an oceanic ctenophore, *Eurhamphaea vexilligera* Gegenbaur, 1856. Biological Bulletin

32. **Sutherland KR**, Gemmell BJ, Colin SP, Costello JH (2019) Maneuvering performance in the colonial siphonophore, *Nanomia bijuga*. Biomimetics. 4 (3), 62

31. Dadon-Pilosof A, Lombard F, Genin A, **Sutherland KR**, Yahel G (2019) Prey taxonomy rather than size determines salp diets. Limnology and Oceanography 64(5), 1996-2010.

30. **Sutherland KR**, Colin SP, Costello JH, Gemmell BJ (2019) Propulsive design principles in a multi-jet siphonophore. Journal of Experimental Biology 222 (6), jeb198242

29. Gemmell BJ, Colin SP, Costello JH, **Sutherland KR** (2019) A ctenophore (comb jelly) employs vortex rebound dynamics and outperforms other gelatinous swimmers. Royal Society Open Science 6(3), p.181615.

28. Zeman SM, Corrales-Ugalde M, Brodeur R, **Sutherland KR** (2018) Trophic ecology of the neustonic cnidarian *Velella velella* in the northern California Current during an extensive bloom year: insights from gut contents and stable isotope analysis. Marine Biology. 165: 150.

27. **Sutherland KR**, Sorensen HL, Blondheim ON, Brodeur RD, Galloway AWE (2018) Range expansion of tropical pyrosomes in the northeast Pacific Ocean. Ecology. 99, 2397-2399

26. Conley KR, Lombard F, **Sutherland KR** (2018) Mammoth grazers on the ocean's minuteness: a review of selective feeding using mucous meshes. Journal of the Royal Society Proc. B. 285

25. Conley KR, Ben-Tal A, Jacobi Y, Yahel G, **Sutherland KR** (2018) Not-so-simple sieving by ascidians: Re-examining particle capture at the mesh and organismal scales. Marine Biology. 165: 45

24. Conley KR, Gemmell B, Bouquet JM, Thompson EM, **Sutherland KR** (2018) A self-cleaning biological filter: how appendicularians mechanically control particle adhesion and removal. Limnology and Oceanography 63: 927-938.

23. Jaspers C, Costello JH, **Sutherland KR**, Gemmell B, Lucas KN, Tackett J, Dodge K, Colin SP (2018) Resilience in moving water: Effects of turbulence on the predatory impact of the lobate ctenophore *Mnemiopsis leidyi*. Limnology and Oceanography 63: 445-458.

22. Dadon-Pilosof A, Conley KR, Jacobi Y, Haber M, Lombard F, **Sutherland K**, Stendler L, Tikochinski Y, Richter M, Glöckner FO, Suzuki MT, West NJ, Genin A, Yahel G (2017) Surface properties of SAR11 bacteria facilitate grazing avoidance. Nature Microbiology 2: 1608.

21. Conley KR, **Sutherland KR** (2017) Particle shape impacts export and fate in the ocean through interactions with the globally abundant appendicularian *Oikopleura dioica*. PLoS ONE 12 (8): e0183105.

20. **Sutherland KR**, Weihs D (2017) Hydrodynamic advantages of swimming by salp chains. Journal of the Royal Society Interface 14: 20170298. (Cover image)

19. Corrales-Ugalde M, Colin SP, **Sutherland KR** (2017) Nematocyst distribution corresponds to prey capture location in hydromedusae with different predation modes. Marine Ecology Progress Series 568:101-110.

18. Zeman SM, Brodeur RD, Daly EA, **Sutherland KR** (2016) Prey selection patterns of *Chrysaora fuscescens* in the northern California Current. Journal of Plankton Research. 38: 1433-1443

17. **Sutherland KR**, Gemmell BJ, Colin SP, Costello JH (2016) Prey capture by the cosmopolitan hydromedusa, *Obelia* sp., in the viscous regime. Limnology and Oceanography. 61: 2309-2317.

16. Costello JH, Colin SP, Gemmell BJ, Dabiri JO, **Sutherland KR** (2015) Multi-jet propulsion organized by clonal development in a colonial siphonophore. Nature Communications 6: 1858.

15. Conley KR, **Sutherland KR** (2015) Commercial fishers' perceptions of jellyfish interference in the northern California Current. ICES Journal of Marine Science. 72: 1565-1575.

14. Colin SP, MacPherson R, Gemmell B, Costello JH, **Sutherland KR**, Jaspers C (2015) Elevating the impact: Sensory-scanning foraging strategy by the lobate ctenophore *Mnemiopsis leidyi*. Limnology and Oceanography. 60: 100-109.

13. Graham WM, Gelcich S, Robinson KL, Duarte CM, Brotz L, Purcell JE, Madin LP, Mianzan H, **Sutherland KR**, Uye S, Pitt KA, Lucas CH, Bogeberg M, Brodeur R, Condon RH (2014) Linking human well-being and jellyfish: ecosystem services, impacts and societal responses. Frontiers in Ecology and the Environment. 12: 515–523.

12. **Sutherland KR**, Costello JH, Colin SP, Dabiri JO (2014) Ambient fluid motions influence swimming and feeding by the ctenophore *Mnemiopsis leidyi*. Journal of Plankton Research. 36(5): 1310 – 1322.

11. Pitt KA, Duarte CM, Lucas CH, **Sutherland KR**, Condon RH, Mianzan H, Purcell JE, Robinson KL, Uye S (2013) Jellyfish body plans provide allometric advantages beyond low carbon content. PLOS ONE. 8: 1-3.

10. Condon RH., Duarte CM., Pitt KA, Robinson KL, Lucas CH, **Sutherland KR**, Mianzan H, Bogeberg M, Purcell JE, Decker MB, Uye S, Madin LM, Brodeur RD, Haddock SHD, Malej A, Parry GD, Eriksen E, Quiñones J, Acha M, Harvey M, Arthur JM, Graham WM (2012) Recurrent jellyfish blooms are a consequence of global oscillations. Proceedings of the National Academy of Sciences 110: 1000-1005.

9. Prairie JC, **Sutherland KR,** Nickols KJ, Kaltenberg AM (2012) Biophysical interactions in the plankton: A cross-scale review. Limnology & Oceanography: Fluids & Environments 2: 121-145.

8. Duarte CM, Pitt CA, Lucas CH, Purcell JE, Uye S, Robinson KL, Brotz, L, Decker MB, **Sutherland KR**, Malej A, Madin LM, Mianzan H, Gili, J-M, Fuentes V, Atienza D, Pages F, Breitburg D, Malek J, Graham M, and Condon R (2012) Is global ocean sprawl a cause of jellyfish blooms? Frontiers in Ecology and the Environment 11: 91- 97.

7. Condon RH, Graham WM, Duarte CM, Pitt KA, Lucas CH, Haddock SHD, **Sutherland KR**, Robinson KL, Dawson MN, Decker MB, Mills CE, Purcell JE, Malej A, Mianzan H, Uye S, Gelcich S, Madin LM (2012) Questioning the rise of gelatinous zooplankton in the world's oceans. BioScience.62:160-169.

6. **Sutherland KR,** Dabiri JO, Koehl MAR (2011) Simultaneous field measurements of ostracod swimming behavior and background flow. Limnology & Oceanography: Fluids & Environments 1: 135-146.

5. **Sutherland KR,** Beet AR, Solow AR (2010) Re-analysis of a salp population time-series. Marine Ecology Progress Series 418: 147-150.

4. **Sutherland KR,** Madin LP, Stocker R (2010) Filtration of submicrometer particles by pelagic tunicates. Proceedings of the National Academy of Sciences 34: 15129-15134.

3. **Sutherland KR,** Madin LP (2010) Jet wake structure and swimming performance of pelagic tunicates. Journal of Experimental Biology 213: 2967- 2975.

2. **Sutherland KR**, Madin LP (2010) A comparison of filtration rates among pelagic tunicates using kinematic measurements. Marine Biology 157: 755-764.

1. **Rakow KC,** Graham WM (2006) Orientation and swimming mechanics by the scyphomedusa *Aurelia* sp. in shear flow. Limnology and Oceanography 51(2) 1097-1106.

**PUBLICATIONS IN REVIEW**

**EXTERNAL FUNDING**
(Sutherland portion--direct plus indirect costs-- listed for collaborative grants)

2021-2024: NSF Biological Oceanography, "Plankton size spectra and trophic links in a dynamic ocean" (PIs: R Cowen, S Sponaugle, KR Sutherland, $349,438)

2020-2023: Moore Foundation Science Program, "Propulsive advantages of coordinating multiple jets by colonial marine organisms" (PI: Kelly Sutherland, $1,108,875)

2019-2023: NSF Biological Oceanography, "Short-circuiting the microbial loop: Comparative feeding by gelatinous grazers on microbial prey" (PIs: KR Sutherland, AW Thompson, $396,702)

2018-2022: NSF Biological Oceanography, "Quantifying the trophic roles of epipelagic ctenophores" (PIs: J Costello, S Colin, B Gemmell, KR Sutherland, $139,007)

2017-2021: NSF Biological Oceanography, "Meso-zooplankton food webs in intermittent upwelling systems: An overlooked link in a productive ocean" (PIs: R Cowen, S Sponaugle, KR Sutherland, $345,846)

2018-2019: Oregon Sea Grant Project Development Grant, "Distribution and ecology of the pelagic tunicate *Pyrosoma atlanticum* in the northern California Current during the 2017 bloom" (KR Sutherland, A Galloway, $18,680)

2016-2018: Oregon Sea Grant, "Predatory impacts of large medusae on ichthyoplankton in the Northern California Current" (PIs: KR Sutherland, R Brodeur, $205,162)

2016-2019: NSF Education & Human Resources (Ocean Sciences), "REU Site: Exploration of marine biology on the Oregon coast" (I am a collaborator and REU mentor on this grant)

2015-2018: NSF Biological Oceanography, "More than size matters: Selection mechanisms by appendicularians grazing on picoplankton" (KR Sutherland, $239,488)

2014-2015: Oregon Sea Grant Project Development Grant, "Trophic interactions between jellyfish and ichthyoplankton at biological hot spots off the Oregon coast" (KR Sutherland, R Brodeur, $13,328)

2013-2017: US-Israel Binational Science Foundation, "Interactions between marine picoplankton and mucous-net filter feeders" (KR Sutherland, G Yahel, Y Tikochinski, $244,000)

2012-2015: NSF Biological Oceanography, "Influence of organism-scale turbulence on the predatory impacts of a suite of cnidarian medusae" (KR Sutherland, $304,007)

2011-2014: NSF subaward, "Turbulence and suspension feeding: a new approach using the lobate ctenophore *Mnemiopsis leidyi*" (PIs: JO Dabiri, JO Costello, SP Colin; KR Sutherland subaward: $15,065)

2007-2010: NSF Biological Oceanography, "Form, function and flow in the plankton: Jet propulsion and filtration by pelagic tunicates" (PI: LP Madin; I assisted with both grant writing and grant administration, $196,467)

**PENDING PROPOSALS**

2024-2027: NSF STEM Education, "Virtual Excursions for Science Learning (VESL): Social Virtual Reality as a Tool for Inclusive STEM Participation and Education" (PIs: D Pimentel, KR Sutherland: $1,817,884)

2023-2027: ONR, "Fundamental research in underwater locomotion and distributed coordination" (Lead PI: Geoff Hollinger; KR Sutherland subcontract: $150,000)

**INTERNAL UO FUNDING**

2022: Environment Initiative seed funding award, ""Virtual Excursions for Science Learning (VESL)" (D Pimentel, KR Sutherland: $49,891)

2018: College of Arts and Science program grant, "UO Bioinspired Design Symposium" (KR Sutherland: $3,000)

2016: College of Arts and Science program grant, "UO Bioinspired Design Symposium" (KR Sutherland: $1,000)

2014- 2015: UO Faculty Research Award, Office of Research, Innovation and Graduate Education, "Distribution and predation potential of jellyfish at biological hot spots off the Oregon coast" (KR Sutherland: $5,500)

**AWARDS & HONORS**
2021- : Alec and Kay Keith Professorship at UO
2021: James Kezer Teaching Award at UO Department of Biology
2020: Fund for Faculty Excellence at UO ($20,000)
2018: Outstanding Early Career Research Award at UO ($1,000)
2016-2018: Sloan Research Fellowship in Ocean Sciences ($55,000)

**SEA-GOING AND FIELD EXPERIENCE**
R/V Langseth, northern California Current, Co-PI, 2022, 14 days
R/V Sikuliaq, northern California Current, Co-PI, 2022, 14 days
Kona Coast of Hawaii, Bluewater diving, PI, 2021, 7 days
R/V Atlantis, northern California Current, Co-PI, 2019, 12 days
West Palm Beach (Gulf Stream), Florida, Co-PI, 2019, 2021, 17 days
R/V Sally Ride, northern California Current, Co-PI, 2018, 10 days
R/V Sikuliaq, northern California Current, Co-PI, 2018 and 2019, 20 days
Veraguas Province, Panama, Co-PI, 2017, 8 days
Sars International Centre for Molecular Ecology, Bergen, Norway, Co-PI, 2015, 5 days
Friday Harbor Labs, WA, Principal Investigator, 2012-2018, 2021, 8 visits, 147 days
Villefranche Oceanographic Laboratory, France, Co-PI, 2014, 10 days
Liquid Jungle Lab, Panama, Principal Investigator, 2006–2012, 7 visits, 125 days
R/V Tioga, Vineyard Sound, Co-chief Scientist, Aug–Sept 2008, 5 1-day trips
R/V Naše More, Adriatic Sea, Chief Scientist: J. Costello, May 2008, 4 days
R/V L. M. Gould, Southern Ocean, Chief Scientist: L. Madin, Feb-March 2006, 33 days
R/V Pelican, Gulf of Mexico, Chief Scientist: M. Graham, Aug 2002, 13 days
R/V Walton Smith, Gulf of Mexico, Chief Scientist: M. Graham, July 2002, 14 days
R/V Oceanus, North Atlantic, Chief Scientist: L. Madin, Sept 2001, 13 days
R/V Oceanus, North Atlantic, Chief Scientist: L. Madin, July 2001, 14 days

**TEACHING**
*Member of UO Provost's Teaching Academy (2017-present)*

**Undergraduate**
Marine Biology (BI357, with Lab, 4 cr.), Winter 2012, 2017, 2020, 2021, Fall 2022
Scientific Communication (BI510, 4 cr.), Winter 2016
How Marine Organisms Work (HC207, with Lab, 4 cr.), Fall 2013-2017
Bioinspired Design (HC441, 4 cr.), Winter 2012, Spring 2013, 2014, 2016
Writing About Marine Biology (HC209, 4 cr.), Winter 2014
CHC Thesis Orientation (HC408, 1 cr.), Spring 2015

Clark Honors Introductory Program faculty mentor (HC199, 1 cr.), Fall 2012-2017
Introductory Biology Lab, Bridgewater State College, Fall 2007

**Graduate**
Scientific Writing (BI610, 4 cr.), Spring 2020, 2021, 2022
Plankton Journal Club (BI607, 1 cr.), Fall 2014-2017, 2019-2022

**Guest lectures and other teaching experience**
Guest lecturer for UO courses including Science Narratives (1), Oceanography (2), Environmental Science (2), Biomimicry & Parametric Design (2), Green Product Design (1), Marine Microbiology (1), College Scholars Science Colloquium (1), 2011- present
Faculty-led 'Science in the Field', Clark Honors College, 3 trips, 2012-2013
Guest lecturer at University of Washington, Fluid Mechanics, Winter 2011
Guest lecturer at Caltech, Biomechanics, Spring 2010
Teaching assistant at Sea Education Association, Oceanography, 2006, 2007
Teaching assistant at WHOI, Marine Invertebrates, 2005

**POSTDOCS AND RESEARCH ASSOCIATES MENTORED**
Terra Hiebert, 2022-
Alejandro Damian Serrano, 2021-
Kevin Du Clos, 2020-2022

**GRADUATE STUDENTS ADVISED**
Farzana Yesmin, PhD, 2022-
Jessie Masterman, PhD, Biology, 2018-
Marco Corrales-Ugalde, PhD, Biology, 2016-2022
Jess O'Loughlin, MSc student, Biology, 2021
Joanna Lyle, MSc, Biology, 2019-2021
Anna Ward, MSc, Biology, 2019-2021
Aliza Karim, MSc, Biology, 2016-2018
Hilarie Sorensen, MSc, Biology, 2016-2018
Keats Conley, PhD, Biology, 2013-2017
Marco Corrales-Ugalde, MSc, Biology, 2014-2016
Samantha Zeman, MSc, Biology, 2012- 2015
Keats Conley, MSc, Environmental Science, 2011- 2013

**GRADUATE COMMITTEE MEMBER**
Christina Ellison (Chair), PhD, Biology, 2020-
Ross Whippo, PhD, Biology, 2019-
Caitlin Plowman (Chair), PhD, Biology, 2018-
Jake Bevis, MSc, Journalism, 2019-2020
Reyn Yoshioka, PhD, Biology, 2017- 2021
Ryan Cahalan, PhD, Earth Sciences 2018-2020
Ella Lamont, MSc, Biology, 2015-2017
Eric Carbonnier, PhD, Architecture, 2013-2017
Jenna Valley, PhD, Biology, 2012- 2016
Marie Hunt, MSc, Biology, 2014- 2016
Terra Hiebert, PhD, Biology, 2012-2016

Maya Rommwatt, MSc, Environmental Studies, 2014- 2015
Tristan Hormel, PhD, Physics, 2013- 2015
Amy Burgess, PhD student, Biology, 2012- 2015

**UNDERGRADUATE RESEARCH MENTOR**
Ascensy Perez, Marine Biology, 2022
Carmen Sanchez-Reddick, Summer Journalism Intern, 2022
Dominic Eastburn, Summer REU, 2021
Alina Grossweiner, Marine Biology (postbac), 2020-2022
Kayla Nease, Marine Biology, 2020-2021
Jenna Travers, Marine Biology, 2020
Yalin Li, Biology & Environmental Science, SCORE intern, 2019-21
Joanna Lyle, Biology, 2018-2019
Isabella Garcia, Summer Journalism Intern, 2018
Matthew Gimpelevich, Summer REU, 2018
Wyatt Heimbichner Goebel, Summer REU, 2018
Sandra Dorning, Marine Biology, 2017
Olivia Blondheim, co-advised with Ric Brodeur, NOAA Hollings Scholar, 2017
Elijah Meyer, Physics, 2016-2017
Justin Culman, Environmental Science, UO, 2016-2017 (Honors Thesis)
Alex Poje, Biology, CHC, 2013-2016 (Honors Thesis)
Natalie Carrigan, Biology, CHC, 2014-2015
Hanna McIntosh, Biology, Environmental Science, CHC, 2014- 2015
Aaron Nelson, COSEE Summer Intern, Lane Community College, summer 2013, 2014
Amelia Fitch, Biology, Environmental Science, CHC, 2013-2014
Susan Brush, Marine Biology, UO, 2012-2013 (Honors Thesis)
Clare Chisholm, Environmental Science, UO, 2011- 2013 (Honors Thesis)
Served on ~50 Honors College thesis committees across disciplines, 2012-2018

**INVITED LECTURES**
How do jellyfish swim? Performance insights from Earth's oldest jet-propelled swimmers. Oregon Institute of Marine Biology, Fall Public Lecture, 2022

Pelagic tunicates are picky eaters: insights from small-scale imaging, feeding studies and field observations, University of Georgia and Skidaway Institute of Oceanography, 2022

Animal-fluid interactions in the ocean from the microscale to the macroscale, UO Department of Physics, 2022

Gelatinous zooplankton ecology from the organism to the ecosystem scale, Scripps Institution of Oceanography, 2019

Pelagic tunicates are picky eaters: insights from small-scale imaging, feeding incubations and field observations, University of San Diego, 2018

Small-scale physical worlds of gelatinous zooplankton: Big implications for feeding ecology, Portland State University, 2018

Are jellyfish taking over the oceans? Eugene Natural History Society Public Lecture, 2017

Small-scale physical worlds of gelatinous zooplankton: implications for feeding ecology, Microscale Ocean Biophysics, Eilat, Israel, 2016

Science and the liberal arts, Commencement speaker at Clark Honors College, University of Oregon, 2016

Swimming, feeding and flow in the plankton: case studies from three gelatinous predators. School of Oceanography, University of Washington, 2015

Jellyfish feeding ecology from the global scale to the organism scale. Department of Integrative Biology, Oregon State University, 2015

Are jellyfish taking over the oceans? Oregon Institute of Marine Biology, Summer Public Lecture, 2015

Are jellyfish taking over the oceans? Environmental Studies Brown Bag Series, University of Oregon, 2014

Organism-scale turbulence and effects on predator-prey interactions in the ocean. Biomechanics Seminar, UC Berkeley, 2012

Plankton-fluid interactions in the ocean: Jet-propelled swimming and filtration by pelagic tunicates. Hatfield Marine Science Center, Oregon State University, 2011

Plankton-fluid interactions in the ocean: Jet-propelled swimming and filtration by pelagic tunicates. Oregon Institute of Marine Biology, University of Oregon, 2011

How does organism-scale turbulence influence predation by the invasive ctenophore *Mnemiopsis leidyi*? Coastal Ocean Fluid Dynamics Laboratory Talk, Woods Hole Oceanographic Inst., 2011

How does organism-scale turbulence influence predation by the invasive ctenophore *Mnemiopsis leidyi*? Fluid Mechanics Research Conference, Caltech, 2011

Swimming and filtration in the ocean by jet-propelled salps. Department of Mechanical Engineering, UC Santa Barbara, 2010

*In situ* filtration rates of pelagic tunicates from morphometric measurements. Biology Department, Woods Hole Oceanographic Institution, 2008

Blue water diving with gelatinous zooplankton. New England Aquarium, Boston, MA, 2002

**PRESENTATIONS** (where I presented; co-author conference presentations not listed here)

**Sutherland KR,** Du Clos KT, Damian-Serrano A, Gemmell BJ, Colin SP, Costello JH (2022) Helical swimming by a pelagic tunicate (*Weelia cylindrica*) revealed with in situ stereo videography. SICB Annual Meeting, Virtual

**Sutherland KR,** Du Clos KT, Damian-Serrano A, Gemmell BJ, Colin SP, Costello JH (2021) Helical swimming by jet-propelled salp colonies in the ocean. APS Annual Meeting, Phoenix, AZ

**Sutherland KR,** Gemmell BJ, Colin SP, Costello JH (2020) Hydrodynamics of swimming and maneuvering with multiple jets by a colonial siphonophore. Ocean Sciences Meeting, San Diego, CA

**Sutherland KR,** Colin SP, Costello JH, Gemmell BJ (2019) Propulsive design principles in a multi-jet siphonophore. Microscale Ocean Biophysics, Whistler, Canada

**Sutherland KR,** Conley KR, Karim A (2018) Microbe shape governs particle selection by abundant marine grazers. American Society of Limnology and Oceanography Summer Meeting, Victoria, Canada (Invited)

**Sutherland KR,** Gemmell BJ, Colin SP, Costello JH (2018) Individual zooid kinematics underlying agility and maneuverability in the siphonophore *Nanomia bijuga*. Society for Integrative Biology, San Francisco, CA

**Sutherland KR,** Gemmell BJ, Colin SP, Costello JH (2016) Individual nectophore kinematics during multi-jet swimming by the siphonophore *Nanomia bijuga*. American Physical Society Division of Fluid Dynamics, Portland, OR

**Sutherland KR**, Conley KR, Gemmell BJ, Thompson E, Bouquet J (2016) Quantitative analysis of flow through free-swimming appendicularians. Ocean Sciences, New Orleans, LA

**Sutherland KR,** Gemmell BJ, Colin SP, Costello JH (2016) Predation by the hydromedusa *Obelia*: it's a sticky problem. Society for Integrative and Comparative Biology, Portland, OR

**Sutherland KR**, Dabiri JO, Costello JH, Colin SP (2014) Swimming and feeding behaviors of gelatinous predators in response to moderate levels of turbulence. Fluid Dynamics of Living Systems, Arlington, VA

**Sutherland KR**, Costello JH, Colin SP, Dabiri JO (2014) Ambient fluid motions influence swimming and feeding by the ctenophore *Mnemiopsis leidyi.* Ocean Sciences, Honolulu, HI

**Sutherland KR** (2013) Ambient fluid motions influence swimming behavior of coexistent hydromedusae. Western Society of Naturalists, Oxnard, CA

Muenchinger KL, **Sutherland KR** (2012) Understanding science and understanding design through lessons and labs in biomimicry. Biomimicry Education Summit, Portland, OR

**Sutherland KR**, Dabiri JO, Costello JH, Colin SP, Menden-Deuer S (2012) Fluid interactions during predation by the invasive ctenophore *Mnemiopsis leidyi.* Ocean Sciences, Salt Lake City, UT

**Sutherland KR**, Dabiri JO, Costello JH, Colin SP (2011) Swimming and feeding in turbulence by the invasive ctenophore, *Mnemiopsis leidyi*. Western Society of Naturalists, Vancouver, WA

**Sutherland KR**, Dabiri JO, Costello JH, Colin SP (2011) How does organism-scale turbulence influence predation by the invasive ctenophore *Mnemiopsis leidyi*? Physical MicroEnvironments Modulating Biological Interactions in the Ocean, Aspen Center for Physics, Aspen, CO [poster]

**Sutherland KR**, Dabiri JO, Koehl MAR (2010) Marine ostracod swimming behavior in the benthic boundary layer under different field flow conditions. American Physical Society Division of Fluid Dynamics, Long Beach, CA

**Sutherland KR,** Madin L, Stocker R (2010) Filtration of submicrometer particles by pelagic tunicates. American Society of Limnology and Oceanography Summer Meeting, Santa Fe, NM

**Sutherland KR,** Madin L (2010) Comparative jet wake structure and swimming performance of pelagic tunicates. Southern California Symposium on Flow Physics, Los Angeles, CA

**Sutherland KR,** Madin L (2010) Form, function and flow in the plankton: jet wake structure and swimming performance of pelagic tunicates. Society for Integrative and Comparative Biology, Seattle, WA

**Sutherland KR,** Madin L (2009) *In situ* filtration rates of pelagic tunicates: results from morphometric measurements. Society for Integrative and Comparative Biology, Boston, MA [Best poster runner-up, Division of Comparative Biomechanics]

**Sutherland KR,** Techet A, Madin L (2008) *In situ* visualization of the propulsive jet wakes produced by pelagic tunicates. American Physical Society Division of Fluid Dynamics, Minneapolis, MN

**Rakow K** (2008) Trade-offs between propulsion and filter feeding among three species of pelagic tunicates. Society for Integrative and Comparative Biology, San Antonio, TX

**Rakow K,** Graham WM (2004) Swimming mechanics by jellyfish in shear flow. American Society of Limnology and Oceanography summer meeting, Savannah, GA

**Rakow K,** Graham WM (2004) Oriented swimming by jellyfish in flow. Southeastern Ecology and Evolution Conference, Atlanta, GA [Best oral presentation]

**PROFESSIONAL SERVICE AND OUTREACH**

**Scientific community**

NSF Panelist, 2017, 2020
Guest editor for Marine Ecology Progress Series- Jellyfish Blooms theme section, 2016-2017
Summer Institute on Scientific Teaching- Teaching Fellow (Funded by NSF and HHMI), 2016
Organizing committee for 'State of the Coast' meeting, OR, 2015 (Coos Bay), 2017 (Florence)
Alan Alda Communicating Science Workshop participant, 2015
Poster judge at scientific meetings: Association for the Sciences of Limnology and Oceanography, Western Society of Naturalists, 2010-present
National Center for Ecological Analysis and Synthesis (NCEAS) working group on jelly blooms, 2009- 2012
Ecological Dissertations in Aquatic Sciences (Eco-DAS) symposium participant, 2010
Mentor to SOARS intern (Significant Opportunities in Atmospheric Research in Science), 2006

**Peer review**

Proposals: National Science Foundation (Ocean Sciences, Polar Programs, Biological Sciences); Sea Grant
Journals: Biological Bulletin; Deep-Sea Research; Estuarine, Coastal and Shelf Science; Hydrobiologia; Journal of Experimental Biology; Journal of Geophysical Research – Oceans; Journal of the Marine

Biological Association of the United Kingdom; Journal of Sea Research; Limnology and Oceanography; Marine Biology; Marine Ecology Progress Series; Nature; Proceedings of the National Academy of Sciences

**University of Oregon community**
Center for Science Communication Research Associate, 2022-
ION Review Committee chair, 2022
OVPRI Research Advisory Board, 2021-
University Senate, College of Arts and Sciences senator, 2020-2022
Goldwater Scholarship Nomination committee, 2020-2021; 2021-2022
Co-lead of mentoring group for women in science, 2019-
Leadership Academy, 2019-2020
Queer Ally training, 2019
OIMB Strategic Planning Committee, 2018-2019
Imaging Core Director Search Committee, 2017-2018
Undergraduate STEM Advisory Committee, 2017-2018
Convener of Interdisciplinary Bioinspired Design Symposium (w/ K. Muenchinger), 2016, 2018
Review Committee for UO Women in Graduate Science Awards, 2016
Alan Alda affiliate for science communication steering committee member, 2015-2018
Panelist on "dual-career couples" for UO Postdoctoral Association, 2014
OIMB faculty search committee, 2014-2105
OIMB faculty search committee, 2013-2014
UO Undergraduate council, 2013-2014
Science Literacy Program journal club, 2012- present

**Department of Biology (BI)/ UO Clark Honors College (CHC)**
Graduate Affairs Committee (BI), 2021-
Teaching Awards Committee (BI), 2021-
Personnel Committee (BI), 2019-2021
Undergraduate Research Committee (BI), 2019-2020
Curriculum Committee (CHC), 2012-2014; 2015-2016; 2017-2018
College Life Committee (CHC), 2016-2017
Executive Committee (CHC), 2014-2015, 2015-2016
Professor social with CHC students, 2016
Faculty TED talk, 2015
CHC Common Reading Lecture (with Sara Hodges), "The Emotional Life of Your Brain", 2014
CHC faculty search committee, 2014-2015
"Lunch and Learn" with CHC students, 2014

**K-12 and public outreach**
SFFILM Sloan Science Cinema Fellowship Advisory Board, 2021-
Artist-at-sea collaboration, hosted artists on research expeditions, 2018-2019; 2021-
Polytechnic High School alumni career talk, Pasadena, CA (virtual event), 2020
UO Women in STEM career talk, Eugene, OR (virtual event), 2020
Quack Chat: "How Jellyfish May Propel the Future Design of Underwater Devices", Eugene, OR, 2019
Invited speaker at Edison Elementary School Ocean Week, Eugene, OR, 2019
Are Jellyfish Picky Eaters?, Charleston Marine Life Center exhibit, 2016-2019

Latticework and Slime: The Unseen Geometries of Mucus, Oregon Museum of Science and Industry video exhibit, 2016-2018
Oceanography of Oregon, Coastal Master Naturalist course at the Oregon Coast Aquarium, 2014
Job shadowing with Eugene area high school students, 2011, 2012, 2013
Guest lecturer at Children's Science School, Woods Hole, MA, Marine Biology, 2007, 2008
Ocean scientist liaison for Plymouth, MA middle schools, COSEE-NE, 2005- 2007
Science fair judge at Falmouth high school, 2005, 2007, 2008
Women in Science workshop leader for middle school girls, 2003, 2004
Aquarium Educator at the New England Aquarium, 2000- 2001

**Popular publications**
Pocket Field Guide: Oregon jellies (2018) S Zeman, R Brodeur, C Hansen, K Sutherland

Meet the ocean creatures that use a mesh of mucus to catch their food (2018). Sutherland KR, Conley KC. The Conversation. May 2, 2018

Dye sheds light on jet-propelled salps (2009) Sutherland KR. Oceanus Magazine 47 (3) 20-22.

**PROFESSIONAL SOCIETIES**
Association for the Sciences of Limnology and Oceanography; Society of Integrative and Comparative Biology**;** American Association for the Advancement of Science

**SKILLS**
AAUS Research SCUBA certified with experience blue water and dry-suit diving