

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

- 2024-present Professor of Biology, Oregon Institute of Marine Biology, University of Oregon, Eugene, OR
- 2021-present Alec and Kay Keith Professor
- 2018-2024 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 *)

62. Hiebert TC, Aasjord AE, Chourrout DM, Thompson AW, **Sutherland KR** (2025) Particle surface property mediates differential selection by the appendicularian *Oikopleura dioica*. *Limnology and Oceanography*. <http://doi.org/10.1002/lno.12819>

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61. Kerkar A, **Sutherland KR**, Thompson AW (2024) Non-viral predators of marine picocyanobacteria. *Trends in Microbiology*. <https://doi.org/10.1016/j.tim.2024.11.010>
60. Steinman M, Schmid M, Cowen RK, Sponaugle S, **Sutherland KR**, Thompson AW (2024) Doliolids shape microbial community structure via selective feeding. *Limnology and Oceanography*. <https://doi.org/10.1002/lno.12748>
59. Child T, Costello JH, Gemmell BJ, **Sutherland KR**, Colin SP (2024) High prey capture efficiencies of oceanic epipelagic lobate and cestid ctenophores. *Journal of Plankton Research*. fbae044, <https://doi.org/10.1093/plankt/fbae044>
58. **Sutherland KR**, Damian-Serrano A*, Du Clos KT*, Gemmell BJ, Colin SP, Costello JH (2024) Spinning and corkscrewing of oceanic macroplankton revealed through in situ imaging. *Science Advances*. 10(20), p.eadm9511 (featured image)
57. Damian-Serrano A*, **Sutherland KR** (2024) A developmental ontology for the colonial architecture of salps. *Biological Bulletin*. <https://doi.org/10.1086/730459> (cover image)
56. Thompson AW, Nyerges G, Brevick K, **Sutherland KR** (2024) Ubiquitous filter feeders shape open ocean microbial community structure and function. *PNAS Nexus* 3(3), <https://doi.org/10.1093/pnasnexus/pgae091>
55. Hiebert TC*, Gemmell BJ, von Dassow G, Conley KR, **Sutherland KR** (2023) The hydrodynamics and kinematics of the appendicularian tail underpin peristaltic pumping. *Journal of the Royal Society Interface*. <https://doi.org/10.1098/rsif.2023.0404>
54. Schmid MS, Sponaugle S, **Sutherland KR**, Cowen RK (2023) Drivers of plankton community structure in intermittent and continuous coastal upwelling systems—from microscale in-situ imaging to large scale patterns. *Frontiers in Marine Science*. Vol. 10, doi: 10.3389/fmars.2023.1166629
53. Damian-Serrano A*, Hughes M, **Sutherland KR** (2023) A new molecular phylogeny of salps (Tunicata: Thaliacea: Salpida) and the evolutionary history of their colonial architecture. *Integrative Organismal Biology*. 5(1), obad037, <https://doi.org/10.1093/iob/obad037>
52. Swieca K, Sponaugle S, Schmid MS, Ivory J, Corrales-Ugalde M, **Sutherland KR**, Cowen RK (2023) Growth and diet of a larval myctophid across distinct upwelling regimes in the California Current. *ICES Journal of Marine Science*
51. Potter B, Corrales-Ugalde M, Townsend JP, Colin SP, **Sutherland KR**, Costello JH, Colins R, Gemmell BJ (2023) Quantifying the feeding behavior and trophic impact of a widespread oceanic ctenophore. *Scientific Reports* 13, 2292. <https://doi.org/10.1038/s41598-023-27955-z>
50. Dadon-Pilosof A, Conley KR, Lombard F, **Sutherland KR**, Genin A, Richter M, Glöckner FO, Yahel G (2023) Differential clearance rates of microbial phylotypes by four appendicularian species. *Marine Ecology Progress Series* 706: 73–89. <https://doi.org/10.3354/meps14233>

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49. 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
48. 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.
47. Cordeiro M, Costello JH, Gemmell BJ, **Sutherland KR**, Colin SP (2022) Oceanic lobate ctenophores possess feeding mechanics similar to the impactful coastal species *Mnemiopsis leidyi*. *Limnology and Oceanography*. <https://doi.org/10.1002/lno.12232>
46. 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. <https://doi.org/10.1093/plankt/fbac006>
45. **Sutherland KR**, Thompson AW (2022) Pelagic tunicate grazing on marine microbes revealed by integrative approaches. *Limnology and Oceanography*. 67(1), pp.102-121.
44. 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. <https://doi.org/10.1093/plankt/fbab059>
43. 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
42. 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>
41. 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>
40. 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>
39. Costello JH, Colin SP, Dabiri JO, Gemmell BJ, Lucas KN, **Sutherland KR** (2021) The hydrodynamics of jellyfish swimming. *Annual Review of Marine Science* 13.
38. Corrales-Ugalde M, **Sutherland KR** (2021) Fluid mechanics of feeding determines the trophic niche of the hydromedusa *Clytia gregaria*. *Limnology and Oceanography* 66: 939-953. <https://doi.org/10.1002/lno.11653>

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37. McKenna V, Archibald JM, Beinart R, Dawson MN, Hentschel U, Keeling PJ, ...**Sutherland KR**..., Blaxter M (2021). The aquatic symbiosis genomics project: probing the evolution of symbiosis across the tree of life. *Wellcome Open Research*, 6(254), 254.
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*. 10(1): 17790.
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*. 238(3): 206-213
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

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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.

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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, Breitbart 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.

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PUBLICATIONS IN REVIEW

Damian-Serrano A*, Walton KA, Bishop-Perdue A, Bagoye S, Du Clos KT*, Gemmell BJ, Colin SP, Costello JH, **Sutherland KR** (In Revision) Colonial architecture modulates the speed and efficiency of multi-jet swimming in salp colonies. *Journal of Experimental Biology*

Hiebert TC*, Thompson AW, **Sutherland KR** (Revised, Resubmitted) Diverse microbial prey in the guts of mucous mesh grazers revealed by microscopy. *Marine Biology*

Irvine T, Costello JH, Gemmell BJ, **Sutherland KR**, Colin SP (In Review) Impactful feeding ecology of a predatory guild of oceanic jellies. *Science Advances*

Sweeney CP, Harman A, Kerkar AU, Aasjord AE, Chourouff DM, Hiebert TC*, **Sutherland KR**, Thompson TC (In Review) Prochlorococcus predation by a globally abundant filter feeder. *mBio*

EXTERNAL FUNDING

(Sutherland portion—direct plus indirect costs— listed for collaborative grants)

2025-2028: NSF Biological Oceanography, “Collaborative research: Tentaculate ambush predators in 3D: Trophic effects of tentacle arrangement and morphology in an understudied group” (\$402,395; co-PI: K Du Clos) **[PENDING; RECOMMENDED FOR FUNDING]**

2024-2029: ONR, “Hydrodynamics and electromechanics of multifunctional biohybrid propulsors” (Lead PI: John Dabiri; KR Sutherland subcontract: \$95,000)

2024-2027: NSF Biological Oceanography, “Collaborative research: Are all cell surfaces the same? The effects of particle surface property on predator-prey interactions in the microbial loop” (KR Sutherland, T Hiebert, \$634,663; co-PI: AW Thompson)

2023-2027: ONR, “Fundamental research in underwater locomotion and distributed coordination” (Lead PI: Geoff Hollinger, Oregon State Univ.; KR Sutherland subcontract: \$150,000)

2021-2025: NSF Biological Oceanography, “Collaborative research: Plankton size spectra and trophic links in a dynamic ocean” (\$349,438; co-PIs: R Cowen, S Sponaugle)

2020-2024: Moore Foundation Science Program, “Propulsive advantages of coordinating multiple jets by colonial marine organisms” (\$1,108,875)

2019-2024: NSF Biological Oceanography, “Collaborative research: Short-circuiting the microbial loop: Comparative feeding by gelatinous grazers on microbial prey” (\$396,702; co-PI: AW Thompson)

2018-2022: NSF Biological Oceanography, “Collaborative research: Quantifying the trophic roles of epipelagic ctenophores” (\$139,007; co-PIs: J Costello, S Colin, B Gemmell,)

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2017-2021: NSF Biological Oceanography, “Collaborative research: Meso-zooplankton food webs in intermittent upwelling systems: An overlooked link in a productive ocean” (\$345,846; co-PIs: R Cowen, S Sponaugle,)

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” (KR Sutherland, R Brodeur, \$205,162)

2016-2023: 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” (\$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” (\$244,000; co-PIs: G Yahel, Y Tikochinski,)

2012-2015: NSF Biological Oceanography, “Influence of organism-scale turbulence on the predatory impacts of a suite of cnidarian medusae” (\$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

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)

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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

2024-2025: Williams Instructional Award at UO with Mark Blaine (\$11,000)
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 Sally Ride, northern California Current, Co-PI, 2023, 14 days
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, 2022, 2023, 2024, 5 visits, 32 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

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Introductory Biology Lab, Bridgewater State College, Fall 2007

Graduate

Scientific Writing (BI610, 4 cr.), Spring 2020, 2021, 2022, 2023, 2024
Plankton Journal Club (BI607, 1 cr.), Fall 2014-2017, 2019-2023

Guest lectures and other teaching

Guest lecturer for UO courses including Women in Science ARC (1), 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, 2021-2024

Kevin Du Clos, 2020-2022

GRADUATE STUDENTS ADVISED

Elizabeth Wallace, MSc, 2023-

Farzana Yesmin, PhD, 2022-

Jessie Masterman, PhD, Biology, 2018-2023

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

Carey Sweeney, MSc, Portland State University, 2023-2024

Christina Ellison (Chair), PhD, UO Biology, 2020-

Caitlin Plowman (Chair), PhD, UO Biology, 2018-2024

Ross Whippo, PhD, UO Biology, 2019-2023

Jake Bevis, MSc, UO Journalism, 2019-2020

Reyn Yoshioka, PhD, UO Biology, 2017- 2021

Ryan Cahalan, PhD, UO Earth Sciences 2018-2020

Ella Lamont, MSc, UO Biology, 2015-2017

Eric Carbonnier, PhD, UO Architecture, 2013-2017

Jenna Valley, PhD, UO Biology, 2012- 2016

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Marie Hunt, MSc, UO Biology, 2014- 2016
Terra Hiebert, PhD, UO Biology, 2012-2016
Maya Rommwatt, MSc, UO Environmental Studies, 2014- 2015
Tristan Hormel, PhD, UO Physics, 2013- 2015
Amy Burgess, PhD student, UO Biology, 2012- 2015

UNDERGRADUATE RESEARCH MENTOR

Ezra Bergson-Michelson, 2024-
Will Bird, 2024-
Audrey Lillie, 2024-
Sophie Bagoye, 2023-
Hannah Rosenfeld, Biology, 2024
Madison Finney, Summer REU, 2023
Randi Navarro, Summer REU, 2023
Eliza Aronson, Summer Journalism Intern, 2023
Anneliese Bishop-Perdue, 2022-2024
Kai Walton, 2022-2023
Ascensy Perez, Biology, 2022-2023
Carmen Sanchez-Reddick, Summer Journalism Intern, 2022-2023
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

Propulsive advantages of coordinating multiple jets by colonial marine organisms, University of Pennsylvania, Mechanical Engineering, 2024

Form, Function and Flow in the Ocean: Zooplankton ecology from the organism to the ecosystem scale. Hatfield Marine Science Center, Oregon State University, 2024

Kelly Rakow Sutherland

Propulsive advantages of colonial marine organisms. Scripps Institution of Oceanography, UCSD, 2023

Propulsive advantages of coordinating multiple jets by colonial marine organisms. Oregon State University, Robotics, 2023

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, UCSD, 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

All together now? The coordination of multiple swimming jets by salps and siphonophores, Oregon Institute of Marine Biology, 2017

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

Kelly Rakow Sutherland

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, Pimentel D (2024) Inclusive ocean science engagement and education through social virtual reality, Ocean Sciences Meeting, New Orleans, LA

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)

Kelly Rakow Sutherland

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

Kelly Rakow Sutherland

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

Organizing Committee for 7th Jellyfish Blooms Symposium (JBS7), 2022-2023

Building a Better Fieldwork Future workshop at UO, 2022

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

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; Israel Science Foundation

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; Journal of Plankton Research; Marine Ecology Progress Series; Nature; Proceedings of the National Academy of Sciences

University of Oregon community

Budget Advisory Group to President, 2024

Kelly Rakow Sutherland

Oregon 360 Virtual Excursions for Science Learning (VESL) with D. Pimentel, May 2023
Mentoring graduate writing workshop, 2022-2023
Panelist, New Faculty Success program, 2022, 2023
SOJC Center for Science Communication Research Associate & Board Member, 2022-
OVPRI Research Advisory Board, 2021-2024
ION Review Committee chair, 2022
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-present
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

UO Department of Biology (BI), 2018-present

OIMB faculty search committee, 2024-
Personnel Committee, 2024-
Teaching Awards Committee (BI), 2021-2024
Graduate Affairs Committee (BI), 2021-2023
Personnel Committee (BI), 2019-2021
Undergraduate Research Committee (BI), 2019-2020

UO Clark Honors College (CHC), 2012-2018

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

Symbiosis Film Competition (one artist, one scientist, one week to make a film), October 2023
Lab showcase for Edison Elementary 5th grade during Ocean Week, May, 2023, 2024
Video research display, Charleston Marine Life Center, OR, 2023-
SFFILM Sloan Science Cinema Fellowship Advisory Board, 2021-
Music and the Environment panelist, webinar, December 2022
Artist-at-sea collaboration, hosted artists on research expeditions, 2018-2019; 2021-

Kelly Rakow Sutherland

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 Future Designs”, Eugene, OR, 2019
Invited speaker at Edison Elementary School Ocean Week, Eugene, OR, 2019
Are Jellyfish Picky Eaters?, Charleston Marine Life Center exhibit, OR, 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 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 and film

Life in the Deep Blue (2024) Kelly Sutherland. American Scientist 112 (6). p.377. doi: 10.1511/2024.112.6.377

Influence (5 min. film) (2023) Evan Luchkow and Kelly Sutherland

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 divin