

University of Oregon, Eugene, OR USA
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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

PROFESSIONAL EXPERIENCE

- 2012- Assistant Professor of Biology, Clark Honors College; Oregon Institute of Marine Biology, University of Oregon, Eugene, OR (start date: 9/16/2012)
- 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

(Students are underlined; Last author indicates work that came out of the Sutherland lab)

Costello JH, Colin SP, Gemmell BJ, Dabiri JO, **Sutherland KR** (2015) Multi-jet propulsion organized by clonal development in a colonial siphonophore. *Nature Communications*. doi: 10.1038/ncomms9158

Conley KR, **Sutherland KR** (2015) Commercial fishers' perceptions of jellyfish interference in the northern California Current. *ICES Journal of Marine Science*. doi: 10.1093/icesjms/fsv007

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.

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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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.

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. e72683.

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. doi: 10.1073/pnas.1210920110.

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.

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.

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.

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

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

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

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

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

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

EXTERNAL FUNDING

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

2015-2018: NSF BIO. OCE., “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 BIO. OCE., “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, “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)

INTERNAL FUNDING

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)

PENDING AWARDS

2016-2018: Sloan Research Fellowship in Ocean Sciences (\$55,000)

CRUISE AND FIELD EXPERIENCE

Sars International Centre for Molecular Ecology, Bergen, Norway, co- PI, 2015, 5 days

Friday Harbor Labs, WA, Principal Investigator, 2012-2015, 4 visits, 115 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

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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
Numerous small boat trips for collecting and observing zooplankton

TEACHING

Undergraduate

Applied Science Communication (BI410/510, 4 cr.), Winter 2016
How Marine Organisms Work (HC207, with Lab, 4 cr.), CHC, Fall 2015, 2014, 2013
Writing About Marine Biology (HC209, 4 cr.), CHC, Winter 2014
Bioinspired Design (HC441, 4 cr.), CHC, Winter 2014, Spring 2013, 2014
Clark Honors Introductory Program faculty mentor (HC199, 1 cr.), Fall 2015, 2014, 2013, 2012
Marine Biology (BI357, with Lab, 4 cr.), UO, Winter 2012
Introductory Biology Lab, Bridgewater State College, Fall 2007

Graduate

Plankton Journal Club (BI607, 1 cr.), UO, Fall 2015, 2014

Guest lectures and other experience

Guest lecturer for UO courses including Oceanography (2), Environmental Science (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

GRADUATE STUDENTS ADVISED

Keats Conley, PhD candidate, Biology, UO, 2013-
Marco Corrales-Ugalde, MSc candidate, Biology, UO, 2014-
Samantha Zeman, MSc, Biology, UO, 2012- 2015
Keats Conley, MSc, Environmental Science, UO, 2011- 2013

GRADUATE THESIS COMMITTEE MEMBER

Terra Hiebert, PhD candidate, Biology, UO, 2012- present
Jenna Valley, PhD candidate, Biology, UO, 2012- present
Amy Burgess, PhD candidate, Biology, UO, 2012- present
Eric Carbonnier, PhD candidate, Architecture, UO, 2013- present
Marie Hunt, MSc candidate, Biology, UO, 2014- present
Tristan Hormel, PhD candidate, Physics, UO, 2013- 2015
Maya Rommwatt, MSc candidate, Environmental Studies, UO, 2014- 2015

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UNDERGRADUATE RESEARCH ADVISING

Natalie Carrigan, Biology, CHC, 2014-2015

Hanna McIntosh, Biology, Environmental Science, CHC, 2014- 2015

Alex Poje, Biology, CHC, 2013-2015

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)

INVITED LECTURES

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.

Oceanography of Oregon, Coastal Master Naturalist course at the Oregon Coast Aquarium, Newport, OR, 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, WHOI, 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.

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

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 Micro-Environments 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

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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]

STUDENT PRESENTATIONS (where student, underlined, presented and is my direct advisee)
Corrales-Ugalde, M, Sutherland KR (2016) The role of morphology and behavior in prey capture by hydromedusae. Society for Integrative and Comparative Biology, Seattle, WA. [oral]

Conley KR, Sutherland KR (2015) Latticework and Slime: The Unseen Geometries of Mucus. Conference of the Coastal and Estuarine Research Federation, Portland, OR.[oral]

Zeman S, Sutherland KR, Brodeur RD, Daly EA (2014) Feeding Patterns and Predation Impact of a Large Scyphomedusae in the Northern California Current. Western Society of Naturalists, Tacoma, WA. [poster]

Conley KR, Sutherland KR (2013) Substrate selection preferences by planulae of the Pacific Sea Nettle, *Chrysaora fuscescens*. Conference of the Coastal and Estuarine Research Federation, San Diego, CA.[oral]

Conley KR, Sutherland KR (2013) Socioeconomic impacts of jellyfish blooms on fishers in the northern California Current. Fourth International Jellyfish Blooms Symposium, Hiroshima, Japan. [poster]

PROFESSIONAL SERVICE AND OUTREACH

Scientific community

Organizing committee for 'State of the Coast' meeting, Coos Bay, OR, 2015
Alan Alda Communicating Science Workshop participant, 2015

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Poster judge at scientific meetings: Association for the Sciences of Limnology and Oceanography, Western Society of Naturalists, 2010-present
Member of National Center for Ecological Analysis and Synthesis (NCEAS) working group on jellyfish 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

National Science Foundation proposals (Ocean Sciences, Polar Programs); Sea Grant proposals (TX); Biological Bulletin; Deep-Sea Research; Estuarine, Coastal and Shelf Science; Hydrobiologia; 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; Proceedings of the National Academy of Sciences

University of Oregon community

Alan Alda affiliate for science communication steering committee member, 2015-present
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

Clark Honors College community

Curriculum Committee, 2012-2014; 2015-2016
Executive Committee, 2014-2015
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

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

PROFESSIONAL SOCIETIES

American Society of Limnology and Oceanography
Society of Integrative and Comparative Biology

SKILLS

AAUS Research SCUBA certified with experience blue water and dry-suit diving
Conversant in Spanish