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| Kevin T. Du Clos Curriculum Vitae May 6, 2022 | Postdoctoral Researcher Oregon Institute of Marine Biology University of Oregon Cell: 858-245-7125 E-mail: duclos@uoregon.edu URL: kevinduclos.com |
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Research interests

Biological fluid mechanics, phytoplankton biology and ecology, suspension feeding, imaging, scientific programming.

Education

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| 2016 | Ph.D. in Biological Oceanography, University of Maine Dissertation: Fluid dynamics of active suspension feeding Advisors: Pete Jumars and Damian Brady |
| 2012 | M.S. in Biological Oceanography, University of Maine Thesis: Polychaete burrowing behavior in sand and mud Advisors: Pete Jumars and Sara Lindsay |
| 2007 | B.S. in Microbiology with a Photography minor, University of California at San Diego |

Professional appointments

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| 2020–Present | Postdoctoral associate, University of Oregon Advisor: Kelly Sutherland |
| 2019–2020 | Adjunct instructor, University of South Florida |
| 2017–2020 | Postdoctoral researcher, University of South Florida Advisor: Brad Gemmell |

Publications

- [16] David M Durieux, Kevin T Du Clos, David B Lewis, and Brad J Gemmell. Benthic jellyfish dominate water mixing in mangrove ecosystems. *Proceedings of the National Academy of Sciences*, 118(30), 2021
- [15] Nimish Pujara, Kevin T Du Clos, Stephanie Ayres, Evan A Variano, and Lee Karp-Boss. Measurements of trajectories and spatial distributions of diatoms (*Coscinodiscus* spp.) at dissipation scales of turbulence. *Experiments in Fluids*, 62(7):1–15, 2021
- [14] Nils B Tack, Kevin T Du Clos, and Brad J Gemmell. Anguilliform locomotion across a natural range of swimming speeds. *Fluids*, 6(127), 2021
- [13] Kevin T Du Clos, Lee Karp-Boss, and Brad J Gemmell. Diatoms rapidly alter sinking behavior in response to changing nutrient concentrations. *Limnology and Oceanography*, 66:892–900, 2021
- [12] Brad J Gemmell, Kevin T Du Clos, Sean P Colin, Kelly R Sutherland, and John H Costello. The most efficient metazoan swimmer creates a ‘virtual wall’ to enhance performance. *Proceedings of the Royal Society B*, 288(1942):20202494, 2021
- Featured in *The New York Times* and on the *Quirks and Quarks* radio show (CBC).
- [11] Sean P Colin, John H Costello, Kelly R Sutherland, Brad J Gemmell, John O Dabiri, and Kevin T Du Clos. The role of suction thrust in the metachronal paddles of swimming invertebrates. *Scientific Reports*, 10:17790, 2020
- [10] Sara M Garcia, Olivia H Hawkins, Kevin T Du Clos, and Brad J Gemmell. Sublethal effects of crude oil and chemical dispersants on the eastern oyster: Are later life history stages more vulnerable? *Journal of Marine Science and Engineering*, 8(10):808, 2020

- [9] Kevin T Du Clos, Lee Karp-Boss, Tracy A Villareal, and Brad J Gemmill. *Coscinodiscus wailesii* mutes unsteady sinking in dark conditions. *Biology Letters*, 15(3):20180816, 2019
- [8] Kevin T Du Clos, John O Dabiri, John H Costello, Sean P Colin, Jennifer R Morgan, Stephanie M Fogerson, and Brad J Gemmill. Thrust generation during steady swimming and acceleration from rest in anguilliform swimmers. *Journal of Experimental Biology*, 222(22), 2019
- [7] Kevin T Du Clos, Amy Lang, Sean Devey, Philip J Motta, Maria Laura Habegger, and Brad J Gemmill. Passive bristling of mako shark scales in reversing flows. *Journal of The Royal Society Interface*, 15(147), 2018
- Featured in *The Independent*, *Ars Technica*, *New Scientist News*, and *Fox News* articles.
- [6] Kevin T Du Clos and Houshuo Jiang. Overcoming hydrodynamic challenges in suspension feeding by juvenile *Mya arenaria* clams. *Journal of The Royal Society Interface*, 15(138):20170755, 2018
- [5] Kevin T Du Clos, Ian T Jones, Tyler J Carrier, Damian C Brady, and Peter A Jumars. Model-assisted measurements of suspension-feeding flow velocities. *Journal of Experimental Biology*, 220:2096–2107, 2017
- Featured in the 2018 *Journal of Experimental Biology* calendar.
- [4] Kevin T Du Clos. Visualizing subsurface burrowing by the polychaete *Alitta virens* with particle image velocimetry. *Limnology and Oceanography: Methods*, 12:703–712, 2014
- [3] T L Ogden and Kevin T Du Clos. ‘SWeRF–A Method for Estimating the Relevant Fine Particle Fraction in Bulk Materials for Classification and Labelling Purposes’ by Pensis, Luetzenkirchen, and Friede. *Annals of Occupational Hygiene*, 58(6):784–787, 2014
- [2] Kevin T Du Clos, Sara M Lindsay, and Peter A Jumars. Spatial distribution of *Alitta virens* and *Clymenella torquata* with respect to rigid boundaries in mud and sand. *Journal of Marine Research*, 71(3):211–226, 2013
- [1] Ranhy Bang, Lorraine Marnell, Carolyn Mold, Mary-Pat Stein, Kevin T Du Clos, Corinn Chivington-Buck, and Terry W Du Clos. Analysis of binding sites in human C-reactive protein for Fc γ RI, Fc γ RIIA, and C1q by site-directed mutagenesis. *Journal of Biological Chemistry*, 280(26):25095–25102, 2005

Submitted manuscripts

Kevin T Du Clos, Brad J Gemmill, Sean P Colin, John H Costello, , John O Dabiri, and Kelly R Sutherland. Distributed propulsion enables fast and efficient swimming modes in physonect siphonophores. *Proceedings of the National Academy of Sciences*, in revision

Janet R Voight, Phillip Heck, and Kevin T Du Clos. Competition in the deep sea: phylogeny determines destructive impact of wood-boring xylophagoids (mollusca: Bivalvia). *Marine Biodiversity*, in revision

Funding

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| 2021-2024 | Co-PI, NSF GEO-NERC Collaborative Research: Novel imaging, physiology and numerical approaches for understanding biologically mediated, unsteady sinking in marine diatoms. PIs: Brad Gemmill, Lee Karp-Boss, and Glen Wheeler. Du Clos portion: \$102,756. |
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Pending proposals

Co-PI, NSF EEID: A predictive framework of parasite transmission to explore climate change impacts on biodiversity-disease relationships. PI: Lisa McManus. Du Clos portion: \$55,923.

Invited seminars

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| Apr. 2022 | Microscale Ocean Biophysics Seminar Series – Virtual Unsteady sinking behavior in diatoms |
| Feb. 2022 | National Museum of Natural History, Department of Invertebrate Zoology – Virtual <i>Nanomia bijuga</i> : a complex, colonial swimmer |

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| May 2021 | University of Oregon, Oregon Institute of Marine Biology – Virtual Biomechanics of swimming in diverse marine organisms |
| Mar. 2020 | University of South Florida, Department of Integrative Biology – Tampa, FL Sink or swim: Insight into aquatic locomotion |
| Jan. 2018 | University of South Florida, College of Marine Sciences – St. Petersburg, FL Biomechanics of swimming and suspension feeding |

Honors, awards, and fellowships

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| Jan. 2018 | Postdoc Travel Award Office of Graduate Studies, University of South Florida |
| Aug. 2016 | Chase Distinguished Research Assistantship Graduate School, University of Maine |
| May 2016 | Faculty Choice oral presentation School of Marine Sciences Graduate Student Symposium, University of Maine |
| Apr. 2016 | Graduate Research Excellence Award College of Natural Sciences, Forestry, and Agriculture, University of Maine |

Teaching and mentorship

Courses taught

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| Spring 2019 – Fall 2019 | Biology Skills – University of South Florida Primary instructor for three semesters |
| Spring 2018 | Independent study: Research skills – University of South Florida |

Guest lectures

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| Feb. 2021 | University of South Florida, Mechanical Engineering Department Biofluids and Bioinspired Design Class Biomechanics of swimming in sharks and siphonophores |
| Feb. 2021 | University of Oregon, Institute of Ecology and Evolution Marine Biology Course Benthic Communities |
| Jan. 2019 | University of South Florida, Integrative Biology Department Marine Biology Course Adaptations for the chemical and physical environment |
| Oct. 2018 | University of South Florida, Mechanical Engineering Department Biological Fluid Mechanics Course Biomechanics of swimming and suspension feeding |
| Oct. 2018 | University of South Florida, Integrative Biology Department Marine Ecosystem Dynamics Course Coastal processes |
| June 2014 | Darling Marine Center, University of Maine MATLAB for Marine Scientists Image processing |

Undergraduate students mentored

- 2021 Kayla Nease: Siphonophore morphometrics.
- 2019 Hailley Nieves: Effects of crude oil on marine snow communities.
- 2018 Hailley Nieves: Thrust and drag forces associated with accelerating lamprey swimming.
Edward Goode: Effects of oil exposure on copepod escape responses.
Received 'Excellence in Research' award from USF for project.
- 2017 Marcos Martinez: Effects of oil droplet exposure on oyster suspension feeding.
- 2013–2015 Ian Jones, Tyler Carrier, and Carolyn Garrity: Quantification of suspension feeding flow using particle image velocimetry (PIV)
- 2011 Alexander Borsky: Tracer study of bioturbation activity.

Conference presentations

- Jan. 2022 Society for Integrative and Comparative Biology Meeting – Phoenix, AZ
Oral presentation: Mapping siphonophore capture surfaces
- Jan. 2021 Society for Integrative and Comparative Biology Meeting – Virtual
Poster presentation: Synchronous swimming in siphonophores yields higher maximum speeds but lower efficiency and higher cost of transport
- Jan. 2020 Ocean Sciences Meeting – San Diego, CA
Oral presentation: Dynamic Unsteady Sinking Behavior in Marine Diatoms: Rapid Responses to Changing Nutrient Conditions.
- Jan. 2020 Gulf of Mexico Oil Spill & Ecosystem Science Conference – Tampa, FL
Poster presentation: Microzooplankton Communities Associate with Oiled Marine Snow.
- Jan. 2019 Microscale Ocean Biophysics Meeting – Whistler, Canada
Poster presentation: Effects of light and nutrients on unsteady diatom sinking.
- Jan. 2019 Society for Integrative and Comparative Biology Meeting – Tampa, FL
Oral presentation: Flexible scales of the mako shark respond to drag inducing small-scale flow features.
- Feb. 2018 Ocean Sciences Meeting – Portland, OR
Oral presentation: The Pressure's On, Then Off: Sea Lampreys Rapidly Switch from Push to Pull Thrust When Accelerating from Rest.
- Nov. 2016 Microscale Ocean Biophysics Meeting – Eilat, Israel
Oral presentation: Suspension-feeding rates of juvenile clams
- Feb. 2016 Ocean Sciences Meeting – New Orleans, LA
Oral presentation: Particle image velocimetry (PIV) measurements of suspension-feeding velocities
- Jan. 2015 Microscale Ocean Biophysics Meeting – Aspen, CO
Poster presentation: Modeling pipette capture regions.
- Feb. 2014 Ocean Sciences Meeting – Honolulu, HI
Poster presentation: Factors affecting refiltration by model filter feeders.
- Mar. 2013 Benthic Ecology Meeting – Savannah, GA
Oral presentation: Particle image velocimetry for surface visualization of *Alitta virens* burrowing.
- Mar. 2012 Benthic Ecology Meeting – Norfolk, VA
Poster presentation: Preferential burrowing of *Alitta virens* at rigid boundaries in mud but not sand.

Professional service and outreach

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| Oct. 2021 | Organized and taught MATLAB workshop for graduate students, Oregon Institute of Marine Biology, University of Oregon |
| 2021-2022 | Postdoctoral representative, Diversity, Equity, and Inclusion Committee, Biology Department, University of Oregon |
| Nov. 2020 | Postdoc Panel, University of South Florida, Department of Integrative Biology |
| Jan. 2019 | Session co-chair, "Swimming: It's a Drag", Society for Integrative and Comparative Biology Meeting, Tampa, FL |
| Aug. 2019 | Grant proposal reviewer <i>USC Sea Grant Program</i> |
| May 2016 | Darling Marine Center Open House, University of Maine |
| April 2016 | Elementary school presentation on the scientific method, Great Salt Bay Community School, Damariscotta, ME |

Journal reviewer

Limnology and Oceanography; *Journal of Experimental Biology*, *Journal of the Royal Society Interface*; *Integrative and Comparative Biology*; *Physics of Fluids*; *Estuarine, Coastal, and Shelf Science*; *Frontiers in Marine Science*; *Bioinspiration and Biomimetics*; *Annals of Occupational Hygiene*; *Frontiers in Bioengineering and Biotechnology*; *Invertebrate Biology*

Research cruises and field experience

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| Apr. 2022 | Field research – Kona coast of Hawaii Salp and siphonophore swimming and morphology. |
| Mar. 2022 | Research cruise – Oregon and Washington coast, R/V Sikuliaq Collection and analysis of gelatinous zooplankton for size spectrum analysis |
| Sep. 2021 | Field research – Kona coast of Hawaii Salp and siphonophore swimming and morphology. |
| May 2021 | Field research – Friday Harbor Laboratories Siphonophore swimming and morphology. |
| June 2017 | Field research – Keys Marine Laboratory Distribution of the upside-down jellyfish <i>Cassiopea</i> . |
| Sep. 2012 | Research cruise – Gulf of Maine, R/V Cape Hatteras Assisted with zooplankton sampling (e.g., rosette casts and net tows) on deck and with the processing of chlorophyll samples. |
| Jul. 2010 | Field research – Friday Harbor Laboratories, University of Washington Assisted in setting up and maintaining a field experiment on <i>Abarenicola</i> polychaete bioturbation with Sara Lindsay while performing additional independent research. |