

Megan L. Vandenberg
Megan@vdbergs.com | megvdb4@uw.edu | 425.229.8223

EDUCATION

2023 - Pres. University of Washington and Friday Harbor Laboratories
Ph.D. student in the Summers Lab.

2018 - 2022 University of Washington, Seattle WA
B.S. Biology, 2022

FIRST-AUTHOR PEER-REVIEWED PUBLICATIONS

Megan L. Vandenberg, Olivia H. Hawkins, Eric Chier, Shirel R. Kahane-Rapport, Adam P. Summers, Cassandra M. Donatelli. (2024). How rugose can you go? Spiny Agonidae armour decreases boundary layer separation. *Biological Journal of the Linnean Society*.

M.L. Vandenberg*, K.E. Cohen*, R. Rubin, J.A. Goldbogen, A.P. Summers, E.W.M. Paig-Tran, S.R. Kahane-Rapport. (2023). Formation of a fringe: A look inside baleen morphology using a multimodal visual approach. *Journal of Morphology*, 284, e21574.
<https://doi.org/10.1002/jmor.21574> *Co-first authors

OTHER PUBLICATIONS

Megan L. Vandenberg, Bart Boom, Olivia H. Hawkins, Adam P. Summers, Cassandra M. Donatelli. (2025). Drag reduction tools for soft robots inspired by fish armor. *IEEE Soft Robotics* - extended abstract.

Karly E. Cohen, **Megan L. Vandenberg**, Eric Chier, Adam P. Summers, Cassandra M. Donatelli. (2025). Characterization of the mechanical performance of fish inspired armor composites. *IEEE Soft Robotics* - extended abstract.

PRESENTATIONS

(U = Undergraduate student, H = High School student, * = co-first authors)

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| 1/3-1/7 2025 | Society for Integrative and Comparative Biology
M.L. Vandenberg , O.H. Hawkins, B. Boom, A.P. Summers, C.M. Donatelli.
<i>Simply the best; how armor morphologies reduce drag in poachers (Agonidae).</i> |
| 11/25 2024 | American Physical Society, Division of Fluid Dynamics
M.L. Vandenberg , B.A.R. Boom, O.H. Hawkins, A.P. Summers, C.M. Donatelli. <i>Morphologically complex biological armor acts as drag reducing agents in benthic fishes.</i> |
| 1/2-1/6 2024 | Society for Integrative and Comparative Biology
M.L. Vandenberg , O.H. Hawkins, E. Chier ^U , J.O.A. Cervone ^H , C.M. Donatelli, A.P. Summers. <i>From Tip to Tail: A Story of Armor Diversity.</i> |
| 9/28-10/1 2023 | Gilbert Ichthyology Society Annual Meeting
M.L. Vandenberg , O.H. Hawkins, C.M. Donatelli, A.P. Summers. <i>The effect of armor morphology on hydrodynamic performance.</i> |

- 1/3-1/8 2023** **Society for Integrative and Comparative Biology**
M.L. Vandenberg, K.E. Cohen, A.P. Summers, E.W.M Paig-Tran, S.R. Kahane-Rapport. *Bundles of bristles; a look inside baleen morphology using a multimodal visual approach. (Poster)*
- July 14 2022** **Friday Harbor Laboratories Speaker**
M.L. Vandenberg. *Armored Poachers; It's their strong suit.* In-person and virtual meetings.
- May 22 2022** **Undergraduate Research Symposium - University of Washington, Seattle, WA**
M.L. Vandenberg, K.E. Cohen, A.P. Summers, E.W.M Paig-Tran, S.R. Kahane-Rapport. *Variation in Baleen Morphology; From Cell to Structure.*

CO-AUTHORED PRESENTATIONS

(U = Undergraduate student, * = co-first authors)

Society for Integrative and Comparative Biology 2025 Annual Meeting:

J.C.Sobol, Y.Sequeria, O.H.Hawkins, C.El Khoury, S.Truman, C.M.Donatelli, **M.L.Vandenberg**. *Sink or Swim? Size-mediated buoyancy regulation in a fish without a swim bladder (Agonopsis vulsa)*

C.M.Donatelli, K.E.Cohen, **M.L.Vandenberg**, A.P.Summers. *Accessible bio-inspired models in science and engineering research*

S.M.Burruso, J.M.Huie, **M.L.Vandenberg**, O.H.Hawkins, C.M.Donatelli, G.Short. *Scaling of head morphology and the four bar linkage in seahorses.*

H.Ko, **M.L.Vandenberg**, O.H.Hawkins, A.P.Summers, R.Nagpal, C.M.Donatelli. *Vibrating with the flow: flexible bodies of dead fish enable passive undulation behind obstacles*

L. Martinez^U, **M.L.Vandenberg**, A.P.Summers, K.E.Cohen, C.M.Donatelli. *Testing the limits: functional strengths and weaknesses of poacher (Agonidae) armor.*

M.Van Gorp, C.M.Donatelli, **M.L.Vandenberg**, S.Truman, C.El Khoury, S.Arnette, M.A.Kolmann. *How does head shape affect burial performance in swamp eels (Synbranchidae).*

A.Perez^U, **M.L.Vandenberg**, A.P.Summers, E.Habtour, B.Boom. *Diving into the Functional Morphology of the Northern Gannet, Morus bassanus, Cervical Vertebrae*

Society for Integrative and Comparative Biology 2024 Annual Meeting:

C.M.Donatelli, E.Chier^U, **M.L.Vandenberg**, M.A.Kolmann, A.P.Summers. *How armor shape and arrangement affects the mechanics of a composite system.*

A.P.Summers, C.M.Donatelli, M.A.Kolmann, **M.L.Vandenberg**. *Fish armor - evidence of assaults and conflicting demands.*

O.H.Hawkins, **M.L.Vandenberg**, E.D.Tytell, C.M.Donatelli. *The impact of caudal fin shape on the hydrodynamic performance of elongate foils.*

F.Lee^U, **M.L.Vandenberg**, K.E.Cohen, C.M.Donatelli, S.R.Kahane-Rapport. *Splitting Hairs: The biomechanics of baleen in gray whales (Eschrichtius robustus).*

O.E.Safford, K.Hinnen, M.Shafer, **M.L.Vandenberg**, K.Jackson. *Imaging snake cephalic glands and venom-delivery system components using diceCT.*

K.Hinnen, O.E.Safford, **M.L.Vandenberg**, M.Shafer, K.Jackson. *Duvernoy's gland and associated structures in rear-fanged snakes (Lamprophiidae and Colubridae).*

International Congress for Vertebrate Morphology Meeting 2023:

C.M. Donatelli, **M.L. Vandenberg**, A.P. Summers, M.A. Kolmann. *More than just a platey face; the versatile role of armor in fishes.*

S.R. Kahane-Rapport, **M.L. Vandenberg**, K.E. Cohen, R.D. Rubin, J.A. Goldbogen, A.P. Summers, E.M. Paig-Tran. *Fantastic filters; comparative morphology of rorqual whale baleen.*

Filters in Biology + Biomimetics Conference Berlin 2023:

M.L. Vandenberg, K.E. Cohen, A.P. Summers, E.W.M Paig-Tran, S.R.Kahane-Rapport. (presented by S.R. Kahane-Rapport). *Formation and function of a fringe: examining baleen morphology using a multimodal visual approach.*

K.E. Cohen, **M.L. Vandenberg**, A.P. Summers, E.W.M Paig-Tran, S.R. Kahane-Rapport. *A new method of quantifying pore diameter in rorqual whales.*

Southern California Academy of Sciences Conference 2023:

O. Armstrong^{*U}, E. Chier^{*U}, **M. L. Vandenberg**, C. M. Donatelli. *Bent Into Shape: Fish Armor Inspired Bio-Braces*

Society for Integrative and Comparative Biology Annual Meeting 2023:

O.H. Hawkins, D. Kennedy, **M.L. Vandenberg**, R.C. Hoover, C. Crawford, T. Clardy, E.A. Kane, C.M. Donatelli. *To eel or not to eel: functional diversity of control surfaces in elongate fishes.*

AWARDS AND FUNDING

2025 Friday Harbor Laboratories Research Endowment Fellowship - **\$3,200**

2024 UW Biology WRF Hall Fellowship - **Quarter of support & \$1,159**

2024 NSF GRFP Honorable Mention

2024 Frederic H. and Kirstin C. Nichols Endowed Graduate Fellowship - **\$3,484.92**

2024 UW Biology Riddiford-Truman Award for Physiology - **\$4,373**

2023 NSF GRFP Honorable Mention

2023 UW Hall International Recruitment Award - **Spring 2024 Quarter of support**

2023 Stephen and Ruth Wainwright Endowed Fellowship FHL - **\$2,400**

2022 Katharina Casey Leadership Award - UW - **\$500**

ACADEMIC SERVICE

2024 - Pres. UW Biology Research Committee
2024 Salish Sea Sciences mentor and fieldwork leader
2024 SICB session chair
2024 SICB Safety Ally
2023 - Pres. Broadening Participation Committee FHL
2021 - Pres. Trained researchers how to micro-CT scan at FHL
2021 - Pres. Trained researchers how to SEM at FHL

PEER REVIEWER

2024 Manuscript reviewer for IEEE Soft Robotics Journal
2024 Manuscript reviewer for *Proceedings of the Royal Society Biological Sciences*

MENTORING

(U = Undergraduate student, H = High School student)

2022 J.M. Racy^H - Bio-inspired design project using Fusion 360
2023 O. Armstrong^U (Chapman University) - Bio-inspired 3D printed braces
2023 E. Chier^U (Chapman University) - 3D printing armor-inspired models
2023 A. Herner^U (Chapman University) - Fractal dimension slicer module
2023 K. Price^U (Chapman University) - 3D slicer and armor overlap
2023 F. Lee^U (NC State University) - Gray whale Baleen material testing
2023 J.O.A. Cervone^H - 3D slicer and armor morphology
2024 L. Martinez^U - REU
2024 E. De La Cruz^U - REU
2024 Soren Hecimovich^H - Salish Sea Sciences - Preservation methods study
2024 A. Perez^U - Gannet neck morphology

PROFESSIONAL SOCIETIES

2021 - Pres. Society of Integrative and Comparative Biology
2022 American Society of Ichthyologists and Herpetologists
2022 - 2023 Society for Marine Mammalogy
2023 - Pres. International Society for Vertebrate Morphology
2023 - Pres. Gilbert Ichthyology Society
2023 - Pres. PADI Open Water
2024 - Pres. American Physical Society - Division of Fluid Dynamics

PRESS AND POPULAR WRITINGS

M.L. Vandenberg. *Baleen; Looking at the largest mammals in the world on the smallest scale.*
 FieldNotes UW Biology (2022)

RESEARCH EXPERIENCE

4/23-8/23 **Research Technician III** - Friday Harbor Laboratories, University of Washington
 CT scanning, Digital Particle Image Velocimetry, SEM imaging, Organized and oversaw daily lab scheduling. Mentored undergraduate and high school students.

9/22-12/22 **Cascadia Research Collective Internship** - Olympia, WA

West Coast Intern, working on photo-identification of humpback, blue, and fin whales. Performed Harbor Seal, population counts. Participated in marine mammal stranding responses. Participated in marine mammal necropsies and specimen collection. Collaborating on a project with the Goldbogen Lab focusing on gray whale feeding behavior using aerial imagery, drone footage, R, and Matlab.

- 06/22-07/22 Functional Morphology and Ecology of Marine Fishes** - Friday Harbor Laboratories, San Juan Islands, WA Research course culminating in a research paper and presentation. Participated in a research trawl in the Salish Sea, bailing at Dead Man's Bay, San Juan Island, WA, and Seining at Jackson's Beach, San Juan Island, WA.
M.L. Vandenberg, J.M. Racy, O.H. Hawkins, A.P. Summers, C.M. Donatelli
It's their strong suit: drag vs armor morphology in Agonidae (class paper).
- 01/22-06/22 Undergraduate Research** - University of Washington, Seattle, WA.
CT scanned and SEM imaged baleen of rorqual whales. Used R for statistical analysis. Wrote a manuscript for scientific publication.
- 9/21-12/21 Friday Harbor Laboratories Research Apprenticeship** - Friday Harbor, San Juan Islands, WA. Worked on a personal research project under mentorship. Used micro-CT scanners, histology, and SEM machines to image specimens for research. Prepared scientific images for publication. Presented research projects. Participated in a research trawl in the Salish Sea.