The field of biomechanics uses the principles of engineering and physics to understand how plants and animals function. I was raised as a biomechanic, beginning as an undergraduate at Duke University where I was recruited by two of the influential leaders of the field, Steve Wainwright and Steve Vogel. After my doctoral work at the University of British Columbia (where I explored the mechanics of gastropod locomotion with John Gosline), I began to wonder how biomechanics could be used in an ecological context, and I have been exploring this question ever since. Two years as a postdoc with Bob Paine at the University of Washington introduced me to the ecology of wave-swept shores, and it is in that uniquely stressful environment that my current research strives to advance our understanding of ecological mechanics.

ACADEMIC APPOINTMENTS

- Professor, Biology

LINKS

- My Lab Site: http://web.stanford.edu/group/denny/cgi-bin/wordpress/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Biomechanics, ecology, and ecological physiology

Teaching

COURSES

2018-19

- Ecological Mechanics: BIOHOPK 150H, BIOHOPK 250H (Spr)
- Introduction to Research in Ecology and Ecological Physiology: BIOHOPK 47 (Spr)

2017-18

- Introduction to Research in Ecology and Ecological Physiology: BIOHOPK 47 (Spr)
- Oceanic Biology: BIOHOPK 163H, BIOHOPK 263H (Win)
- Physiology: BIOHOPK 84 (Spr)

2016-17

- Career Development for Graduate Students: BIOHOPK 315H (Aut)
• Oceanic Biology: BIOHOPK 163H, BIOHOPK 263H (Win)

2015-16

• Ecological Mechanics: BIOHOPK 150H, BIOHOPK 250H (Spr)
• Oceanic Biology: BIOHOPK 163H (Win)
• Physical Biology: BIOHOPK 320H (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)
Shirel Kahane-Rapport, Ju Lee

Doctoral Dissertation Advisor (AC)
Ben Burford, David Cade, Rachel Crane

Doctoral (Program)
Ben Burford, Rachel Crane

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

• Biology (School of Humanities and Sciences) (Phd Program)

Publications

PUBLICATIONS

• The extraordinary joint material of an articulated coralline alga. II. Modeling the structural basis of its mechanical properties JOURNAL OF EXPERIMENTAL BIOLOGY
Denny, M. W., King, F. A.
2016; 219 (12): 1843-1850

• The extraordinary joint material of an articulated coralline alga. I. Mechanical characterization of a key adaptation JOURNAL OF EXPERIMENTAL BIOLOGY
Denny, M. W., King, F. A.
2016; 219 (12): 1833-1842

• Ecological Mechanics: Principles of Life's Physical Interactions
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• Experimental determination of the hydrodynamic forces responsible for wave impact events JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY
Jensen, M. M., Denny, M. W.
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• Thermal variation, thermal extremes and the physiological performance of individuals JOURNAL OF EXPERIMENTAL BIOLOGY
Dowd, W. W., King, F. A., Denny, M. W.
2015; 218 (12): 1956-1967

• Thermal variation, thermal extremes and the physiological performance of individuals. journal of experimental biology
Dowd, W. W., King, F. A., Denny, M. W.
2015; 218: 1956-1967

• Warm microhabitats drive both increased respiration and growth rates of intertidal consumers MARINE ECOLOGY PROGRESS SERIES
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• United We Fail: Group versus Individual Strength in the California Sea Mussel, Mytilus californianus BIOLOGICAL BULLETIN
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- **United we fail: Group versus individual strength in the California sea mussel, Mytilus californianus.** *Biological bulletin*

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- **Aperture effects in squid jet propulsion** *JOURNAL OF EXPERIMENTAL BIOLOGY*

  Staaf, D. J., Gilly, W. F., Denny, M. W. 2014; 217 (9): 1588-1600

- **Indefatigable: an erect coralline alga is highly resistant to fatigue.** *Journal of experimental biology*

  Denny, M., Mach, K., Tepler, S., Martone, P. 2013; 216: 3772-3780

- **Interaction of waves and currents with kelp forests (Macrocystis pyrifera): Insights from a dynamically scaled laboratory model** *LIMNOLOGY AND OCEANOGRAPHY*


- **Natural intrusions of hypoxic, low pH water into nearshore marine environments on the California coast** *CONTINENTAL SHELF RESEARCH*


- **Biophysics, environmental stochasticity, and the evolution of thermal safety margins in intertidal limpets** *JOURNAL OF EXPERIMENTAL BIOLOGY*


- **The fine art of surfacing: Its efficacy in broadcast spawning** *JOURNAL OF THEORETICAL BIOLOGY*

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- **Scaling Up in Ecology: Mechanistic Approaches** *ANNUAL REVIEW OF ECOLOGY, EVOLUTION, AND SYSTEMATICS, VOL 43*

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- **Anchor Ice and Benthic Disturbance in Shallow Antarctic Waters: Interspecific Variation in Initiation and Propagation of Ice Crystals** *BIOLOGICAL BULLETIN*


- **Grand Opportunities: Strategies for Addressing Grand Challenges in Organismal Animal Biology** *INTEGRATIVE AND COMPARATIVE BIOLOGY*


- **Importance of Behavior and Morphological Traits for Controlling Body Temperature in Littorinid Snails** *BIOLOGICAL BULLETIN*


- **Failure by fatigue in the field: a model of fatigue breakage for the macroalga Mazzaella, with validation** *JOURNAL OF EXPERIMENTAL BIOLOGY*


- **An inexpensive instrument for measuring wave exposure and water velocity** *LIMNOLOGY AND OCEANOGRAPHY-METHODS*

  Figurski, J. D., Malone, D., Lacy, J. R., Denny, M. 2011; 9: 204-214

- **Spreading the risk: Small-scale body temperature variation among intertidal organisms and its implications for species persistence** *JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY*

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