

Nicholas P. Burnett, PhD

Department of Neurobiology, Physiology, & Behavior
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SUMMARY OF QUALIFICATIONS

- PhD in Integrative Biology with 3 years of postdoctoral experience
- 15 peer-reviewed publications (13 as first or senior author, 1 in review, 2 in revision)
- Awarded ~ \$360k in funding
- Teaching experience: 7 university courses as teaching assistant or guest lecturer
- Mentoring experience: 15 undergraduate students (3 resulting in publications)
- Commitment to diversity: involved in 6 diversity-focused committees and service groups, published 2 diversity-focused papers, conducted outreach to underserved schools, mentored students from underrepresented groups

RESEARCH AREA

Ecological biomechanics

POSTDOCTORAL TRAINING

2017 – Present Department of Neurobiology, Physiology, & Behavior
University of California, Davis
Advisor: Dr. Stacey Combes

EDUCATION

2012 – 2017 **PhD, Integrative Biology**
University of California, Berkeley
Advisor: Dr. Mimi Koehl

2008 – 2012 **BS, Biological Sciences**
University of South Carolina
Advisors: Dr. David Wethey, Dr. Brian Helmuth

AWARDS AND FELLOWSHIPS

2020 UC Davis Postdoctoral Scholar Association Travel Award (\$400)
2019 UC Davis Open Access Publication Fund (\$1,000)
2017 UC Berkeley Research Impact Initiative Open Access Publication Fund (\$1,560)
2017 – 2019 NSF Postdoctoral Fellowship in Biology (\$138,000)
2016 UC Berkeley, Integrative Biology Summary Research Fund (\$1,750)
2014 Point Reyes Marine Science Fund (\$1,000)
2013 – 2017 NSF Graduate Research Fellowship (\$132,000)
2013 Phycological Society of America Croasdale Fellowship (\$1,443)
2012 – 2014 NSF Interdisciplinary Graduate Education & Research Traineeship (\$60,000)
2011 University of South Carolina, Magellan Scholars Research Award (\$3,000)

PUBLICATIONS

*Undergraduate mentee co-authors

15. **Burnett, N.P.**, E.E. King, M.K. Salcedo, R.L. Tanner, K. Wilsterman (2020) Conference scheduling undermines diversity efforts. *Nature Ecology & Evolution* 4: 1283-1284.
14. **Burnett, N.P.**, M.A. Badger, S.A. Combes (2020) Wind and obstacle motion affect honeybee flight strategies in cluttered environments. *Journal of Experimental Biology* 223: jeb222471.
 - Coverage by Slate Magazine – France (July 1, 2020)
 - Coverage by New York Times (June 26, 2020)
13. **Burnett, N.P.**, M.A.R. Koehl (2020) Thallus pruning does not enhance survival or growth of a wave-swept kelp. *Marine Biology* 167(52): 1-12.
12. Sirison, N.*, **N.P. Burnett** (2020) *Turbinaria ornata* (Phaeophyta) varies size and strength to maintain environmental safety factor across flow regimes. *Journal of Phycology* 56: 233-237.
11. Collins, C.L., **N.P. Burnett**, M.J. Ramsey, K. Wagner, M.L. Zippay (2020) Physiological responses to heat stress in an invasive mussel *Mytilus galloprovincialis* depend on tidal habitat. *Marine Environmental Research* 154: 104849.
10. **Burnett, N.P.**, S.A. Combes (2019) Post-doc interviews in the life sciences: An often-overlooked process that is susceptible to bias. *Integrative Organismal Biology* 1: 1-7.
9. **Burnett, N.P.**, G. Sarà (2019) Functional responses of intertidal bivalves to repeated sub-lethal, physical disturbances. *Marine Environmental Research* 147: 32-36.
8. **Burnett, N.P.**, M.A.R. Koehl (2019) Mechanical properties of the wave-swept kelp, *Egregia menziesii*, change with season, growth rate, and herbivore wounds. *Journal of Experimental Biology* 222: jeb.190595.
7. **Burnett, N.P.**, M.A.R. Koehl (2018) Knots and tangles weaken kelp fronds while increasing drag forces and epifauna on the kelp. *Journal of Experimental Marine Biology and Ecology* 508: 13-20.
6. **Burnett, N.P.**, A. Belk* (2018) Compressive strength of *Mytilus californianus* shell is time-dependent and can influence the potential foraging strategies of predators. *Marine Biology* 165: 42.
5. **Burnett, N.P.**, M.A.R. Koehl (2017) Pneumatocysts provide buoyancy with minimal effect on drag for kelp in wave-driven flow. *Journal of Experimental Marine Biology and Ecology* 497: 1-10.
4. Kothari, A.R.*, **N.P. Burnett** (2017) Herbivores alter plant-wind interactions by acting as a point mass on leaves and by removing leaf tissue. *Ecology and Evolution* 7: 6884-6893.
3. **Burnett, N.P.**, K.A. Villarta, G.A. Williams (2014) Rasping patterns of the high-shore limpet *Cellana grata*. *Journal of Molluscan Studies* 80: 456-459.
2. **Burnett, N.P.**, R. Seabra, M. de Pirro, D.S. Wetthey, S. Woodin, B. Helmuth, M.L. Zippay, G. Sarà, C. Monaco, F.P. Lima (2013) An improved non-invasive method for measuring heartbeat of intertidal animals. *Limnology and Oceanography: Methods* 11 (2): 91-100.
1. Lima, F.P., **N.P. Burnett**, B. Helmuth, K. Aveni-Deforge, N. Kish, D.S. Wetthey (2011) Monitoring the intertidal environment with bio-mimetic devices. Chapter 18 in *Advances in Biomimetics* ISBN 978-953-7619-X-X. INTECH publishing.

PUBLICATIONS IN REVIEW

1. **Burnett, N.P.**, E. Armstrong, R. Romero, C. Runzel, R. Tanner. Kelp morphology and herbivory are maintained across latitude despite geographic shift in kelp-wounding herbivores. Submitted to *The Biological Bulletin* 10/16/2020.

PUBICATIONS IN REVISION

1. **Burnett, N.P.**, M.A. Badger, S.A. Combes. Wind condition and route choice affect performance of honeybees flying through versus over an obstacle field.
2. **Burnett, N.P.**, M.A.R. Koehl. Age affects the strain-rate dependence of mechanical properties of kelp tissues.

INVITED PRESENTATIONS

- 2019 Biomechanics and ecology of organisms in habitats with challenging flow conditions. Biology Colloquium Fall 2019. Sonoma State University.
- 2019 Physical and biological factors in the environment affect the form of kelp. GFS follow on: Mathematic of form in active and inactive media. Isaac New Institute for Mathematical Sciences. University of Cambridge, Cambridge, UK.

CONTRIBUTED PRESENTATIONS

*Undergraduate presenter

- 2020 **Burnett, N.P.**, M.A. Badger, S.A. Combes. Wind and canopy height affect honey bee flight performance in cluttered environments. Society for Integrative & Comparative Biology (SICB). Oral.
- 2019 **Burnett, N.P.**, M.A. Badger, S.A. Combes. Flight planning on the wing: Honeybees assess obstacle motion from afar before deciding to land on or pass through wind-blown clutter. SICB. Oral.
- 2018 **Burnett, N.P.**, M.A.R. Koehl. The strength of kelp tissue depends on age, season, and herbivore activity. SICB. Oral.
- 2017 **Burnett, N.P.**, M.A.R. Koehl. Kelp epifauna depend on and affect kelp structure and growth. SICB. Oral.
- 2017 **Burnett, N.P.**, M.A.R. Koehl. Knots and tangles weaken kelp fronds while increasing drag forces and herbivore loads on the kelp. Society for Experimental Biology (SEB). Oral.
- 2016 Kothari, A.R.*, **N.P. Burnett**. Effect of herbivore damage on broad leaf motion in wind. SICB. Poster.
- 2016 **Burnett, N.P.**, M.A.R. Koehl. Effects of herbivory on the biomechanics of kelp in wave-swept environments. SICB. Oral.
- 2016 **Burnett, N.P.**, M.A.R. Koehl. The strength of kelp tissue depends on age, season, and herbivore activity. Western Society of Naturalists (WSN). Oral.
- 2015 **Burnett, N.P.**, A.R. Kothari. Effect of herbivore damage on broad leaf motion in wind. American Physical Society Division of Fluid Dynamics, Oral.
- 2015 **Burnett, N.P.**. Growth responses of the kelp *Egregia menziesii* to damage from different types of herbivores. SICB. Poster.
- 2014 **Burnett, N.P.** Effects of floats on the movement by and water velocities experienced by flexible seaweeds. SEB. Oral.
- 2014 **Burnett, N.P.** The effects of floats on the movement of *Egregia menziesii*. SICB. Oral.

CONTRIBUTED PRESENTATIONS (continued)

- 2013 **Burnett, N.P.**, K.A. Villarta, B. Helmuth, G.A. Williams. Feeding rates and their implications for energy budgets of tropical limpets. SICB. Oral.
- 2012 **Burnett, N.P.**, M.L. Zippay, B. Helmuth. Cardiac responses of two species of intertidal bivalve mollusks to near-lethal body temperatures. Benthic Ecology Meetings (BEM). Oral.
- 2012 **Burnett, N.P.**, K.A. Villarta, B. Helmuth, G.A. Williams. Feeding rates and their implications for energy budgets of tropical limpets. WSN. Oral.
- 2012 **Burnett, N.P.**, M.L. Zippay, B. Helmuth. Effects of heating rate in air on the cardiac responses of intertidal mussels. Climate Change and Intertidal Communities Workshop, Xiamen, China. Oral.
- 2012 **Burnett, N.P.**, D.S. Wethey, M.L. Zippay, B. Helmuth, F.P. Lima. Sensibly sensing cardiac activity of intertidal animals. University of South Carolina Discovery Day. Poster.
- 2011 Burge E.J., **N.P. Burnett**, D.M. DeLorenzo, E.J. Fedewa. *MarSci*: online journal for undergraduate research in the marine and aquatic sciences. Coastal and Estuarine Research Federation. Poster.
- 2011 **Burnett, N.P.**, F.P. Lima, D.S. Wethey. Biomimetic desiccation loggers for intertidal mollusks. International Temperature Reefs Symposium, Plymouth UK. Poster.
- 2011 **Burnett, N.P.**, F.P. Lima, D.S. Wethey. Biomimetic desiccation loggers for intertidal mollusks. Sensor Development for the Study of Global Climate Change in Intertidal Ecosystems. Oral.
- 2011 **Burnett, N.P.**, F.P. Lima, D.S. Wethey. Biomimetic desiccation loggers for intertidal mollusks. SICB. Poster.
- 2010 **Burnett, N.P.**, D.S. Wethey. A biomimetic data logger to estimate soft tissue desiccation in intertidal bivalve mollusks. BEM. Poster.
- Received Best Student Presentation Award.

PRESS COVERAGE

- 2020 Slate Magazine – France (July 1, 2020). “Comment font les abeilles pour ne jamais se prendre d'obstacles” by Mathieu Barrère. Link: <http://www.slate.fr/story/192189/comment-abeilles-voler-eviter-obstacles-air-nature>
- 2020 New York Times (June 26, 2020) “How Bees Avoid Bumping Into Nature’s Obstacle Course” by Cara Giaimo. Link: <https://www.nytimes.com/2020/06/26/science/bees-obstacles-collisions.html>
- 2016 The Graduates, KALX 90.7 FM Radio Interview (September 27, 2016) “Biomechanics of Kelp” by Tesla Monson.
- 2016 *Marin Independent Journal* (December 29, 2016) “Marin kelp plays key role in marine environment” by Mark Prado. Link: <http://www.marinij.com/article/NO/20161229/NEWS/161229816>

TEACHING EXPERIENCE

- Spring – Fall 2020 Curriculum development, “DIY Biomechanics Experiments”
Undergraduate biomechanics course, UC Davis
Instructor: Dr. Stacey A. Combes
- Fall 2018, 2020 Guest lecture, “Biomechanics and Climate Change”
Environmental Physiology, Sonoma State University
Instructor: Dr. Mackenzie Zippay
- Fall 2018 Guest lecture, “Animal Communication”
Animal Behavior, UC Davis
Instructor: Dr. Stacey A. Combes
- Spring 2017 Co-Instructor, “R for Beginners”
Graduate workshop, UC Berkeley
- Fall 2016 Instructor, “R for Beginners”
Graduate workshop, Sonoma State University
- Fall 2016 Graduate Student Instructor, discussion section instructor
Bio-Inspired Design, UC Berkeley
Instructor: Dr. Robert Full
- Fall 2013, Fall 2014 Graduate Student Instructor, discussion section instructor
Oceans, UC Berkeley
Instructor: Dr. Jim Bishop

UNDERGRADUATE STUDENTS MENTORED

*work published

- 2014 Emma Chen, UC Berkeley; Behavior of snails on leaves in wind
- 2014 – 2016 *Adit Kothari, UC Berkeley; Effects of herbivory on leaf-wind interactions
- 2015 Katelyn Horton, UC Berkeley; Herbivore-kelp dynamics in wave-swept habitats
- 2015 Reina Carissa, UC Berkeley; Herbivore-kelp dynamics in wave-swept habitats
- 2015 Wenhao Liao, UC Berkeley; Fluid-structure interactions of knotted fibers
- 2015 – 2016 Charlotte Runzel, UC Berkeley; Herbivore-kelp dynamics in wave-swept habitats
- 2015 – 2017 *Anna Belk, UC Berkeley; Effects of compression rate on mussel shell strength
- 2016 Yandi Wu, UC Berkeley; Effects of wind on hair tangling
- 2016 – 2017 Blair Conklin, UC Berkeley; Temporal patterns in beach sedimentation
- 2017 – 2018 Kathleen Pugh, UC Davis; Flight behavior of honeybees in wind
- 2019 *Nannaphat Sirison, UC Berkeley; Biomechanics of tropical seaweed
- 2020 Kelly Fong, UC Davis; Developing a method to measure load-lifting in bees
- 2020 Emma Griffis, UC Davis; Developing a method to measure load-lifting in bees
- 2020 Clarissa Serna, UC Davis; Behavioral responses of bees to flight space size
- 2020 Emily Keliher, UC Davis; Load lifting ability of blue orchard bees

OUTREACH AND SERVICE

- 2020 – Present Member, Working Group for Broadening Participation in Academia
- 2020 – Present Postdoctoral Member, UC Davis Graduate Studies Anti-Racist Working Group
- 2020 – Present Member, Advisory Sub-Committee for Demographics Survey
Society for Integrative & Comparative Biology

OUTREACH AND SERVICE (continued)

2019	Member, Master's Degree Defense Committee Sonoma State University
2017 – Present	Postdoctoral Member, Broadening Participation Committee Society for Integrative & Comparative Biology
2016	Radio interview on “Biomechanics of Kelp”, The Graduates, Radio show. KALX 90.7 FM, Host: Tesla Monson
2012 – 2017	Volunteer, Bay Area Scientists in Schools, Oakland, CA
2012 – 2015	Co-Organizer, Women in Science, UC Berkeley
2010 – 2012	Magellan Ambassador, Office of Undergraduate Research University of South Carolina

EDITORIAL AND PEER-REVIEWING EXPERIENCE

2020 Guest Editor for *Integrative & Comparative Biology*

Peer-reviewing history:

- *Acta Oecologica*
- *Biology Letters*
- *Frontiers Ecology and Evolution*
- *Journal of Phycology*
- *Limnology and Oceanography*
- *Marine Ecology Progress Series*
- *Marine Environmental Research*
- *New Phytologist*

COMMITMENTS TO DIVERSITY IN ACADEMIA

1. Research:

- Publications
 - **Burnett, N.P.**, E.E. King, M.K. Salcedo, R.L. Tanner, K. Wilsterman (2020) Conference scheduling undermines diversity efforts. *Nature Ecology & Evolution* 4: 1283-1284.
 - **Burnett, N.P.**, S.A. Combes (2019) Post-doc interviews in the life sciences: An often-overlooked process that is susceptible to bias. *Integrative Organismal Biology* 1: 1-7.
- Asking Different Questions Program, UC Davis Feminist Research Institute (2020)
 - Training program to conduct DEI research responsibly and respectfully.

2. Diversity-focused committees and service groups:

- Working Group for Broadening Participation in Academia (2020 – Present)
 - Group dedicated to identifying, analyzing, and solving institutional practices that impede justice, equity, diversity, and inclusivity in academia.
- UC Davis Graduate Studies Anti-Racist Working Group (2020 – Present)
 - Group dedicated to establishing goals, guidelines, and actions to improve DEI at UC Davis through recruitment and retention.
- Advisory Sub-Committee for Demographics Survey (2020)
 - Committee within the Society for Integrative & Comparative Biology to assess the impact of an online conference on SICB's diversity and inclusion.
- Broadening Participation Committee (2017 – Present)
 - Committee within the Society for Integrative & Comparative Biology that aims to increase the diversity, equity, and inclusivity of SICB's annual meetings.

COMMITMENTS TO DIVERSITY IN ACADEMIA (continued)

- Women in Science, UC Berkeley (2012 – 2015)
 - Professional group promoting women’s issues in science
- Bay Area Scientists in Schools, Oakland, CA (2012 – 2017)
 - Outreach group giving science lessons in underserved schools
- 3. Mentoring of students from underrepresented groups (URG) in science
 - Undergraduate URGs mentored in research apprenticeships
 - Graduate students mentored in peer-mentoring networks at SICB meetings