# Nicholas P. Burnett, PhD

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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
- Awarded ~ $360k in funding
- Teaching experience: 7 university courses as teaching assistant or guest lecturer
- Mentoring experience: 14 undergraduate students (3 resulting in publications)
- Commitment to diversity: involved in 5 diversity-focused committees and service groups, published 2 diversity-focused papers, conducted outreach to under-served schools, mentored students from underrepresented groups

## RESEARCH AREA

Ecological biomechanics of life in moving fluids

## 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. **N.P. Burnett**, E.E. King, M.K. Salcedo, R.L. Tanner, K. Wilsterman (**2020**) Conference scheduling undermines diversity efforts. *Nature Ecology & Evolution* doi:10.1038/s41559-020-1276-5.
14. **N.P. Burnett**, 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. **N.P. Burnett**, 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. N. Sirison*, **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. C.L. Collins, **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. **N.P. Burnett,** 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. **N.P. Burnett**, G. Sarà (**2019**) Functional responses of intertidal bivalves to repeated sub-lethal, physical disturbances. *Marine Environmental Research* 147: 32-36.
8. **N.P. Burnett**, 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. **N.P. Burnett**, 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. **N.P. Burnett**, 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. **N.P. Burnett**, 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. A.R. Kothari*, **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. **N.P. Burnett**, K.A. Villarta, G.A. Williams (**2014**) Rasping patterns of the high-shore limpet *Cellana grata*. *Journal of Molluscan Studies* 80: 456-459.
2. **N.P. Burnett**, R. Seabra, M. de Pirro, D.S. Wethey, 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. Wethey (**2011**) Monitoring the intertidal environment with bio-mimetic devices. Chapter 18 in *Advances in Biomimetics* ISBN 978-953-7619-X-X. INTECH publishing.

## PUBICATIONS IN REVIEW

16. **N.P. Burnett,** M.A. Badger, S.A. Combes. Wind condition and route choice affect performance of honeybees flying through versus over an obstacle field. Submitted to the *Journal of Experimental Biology* on July 31, 2020.

## 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 **N.P. Burnett**, 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 **N.P. Burnett**, 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 **N.P. Burnett**, M.A.R. Koehl. The strength of kelp tissue depends on age, season, and herbivore activity. SICB. Oral.

2017 **N.P. Burnett**, M.A.R. Koehl. Kelp epifauna depend on and affect kelp structure and growth. SICB. Oral.

2017 **N.P. Burnett**, 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 A.R. Kothari*, **N.P. Burnett**. Effect of herbivore damage on broad leaf motion in wind. SICB. Poster.

2016 **N.P. Burnett**, M.A.R. Koehl. Effects of herbivory on the biomechanics of kelp in wave-swept environments. SICB. Oral.

2016 **N.P. Burnett**, M.A.R. Koehl. The strength of kelp tissue depends on age, season, and herbivore activity. Western Society of Naturalists (WSN). Oral.

2015 **N.P. Burnett**, A.R. Kothari. Effect of herbivore damage on broad leaf motion in wind. American Physical Society Division of Fluid Dynamics, Oral.

2015 **N.P. Burnett**. Growth responses of the kelp *Egregia menziesii* to damage from different types of herbivores. SICB. Poster.

2014 **N.P. Burnett**. Effects of floats on the movement by and water velocities experienced by flexible seaweeds. SEB. Oral.

2014 **N.P. Burnett**. The effects of floats on the movement of *Egregia menziesii*. SICB. Oral.

## CONTRIBUTED PRESENTATIONS (continued)

2013 **N.P. Burnett**, K.A. Villarta, B. Helmuth, G.A. Williams. Feeding rates and their implications for energy budgets of tropical limpets. SICB. Oral.

2012 **N.P. Burnett**, 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 **N.P. Burnett**, K.A. Villarta, B. Helmuth, G.A. Williams. Feeding rates and their implications for energy budgets of tropical limpets. WSN. Oral.

2012 **N.P. Burnett**, 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 **N.P. Burnett**, 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 E.J. Burge, **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 **N.P. Burnett**, F.P. Lima, D.S. Wethey. Biomimetic desiccation loggers for intertidal mollusks. International Temperature Reefs Symposium, Plymouth UK. Poster.

2011 **N.P. Burnett**, 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 **N.P. Burnett**, F.P. Lima, D.S. Wethey. Biomimetic desiccation loggers for intertidal mollusks. SICB. Poster.

2010 **N.P. Burnett**, 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

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

## UNDERGRADUATE STUDENTS MENTORED

*work published

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|---|---|
| 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 |

## OUTREACH AND SERVICE

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| 2020 – Present | Member, Working Group for Justice, Equity, Diversity, & Inclusivity |
| 2020 | Member, Advisory Sub-Committee for Demographics Survey<br>Society for Integrative & Comparative Biology |
| 2019 | Member, Master's Degree Defense Committee<br>Sonoma State University |

## OUTREACH AND SERVICE (continued)

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| 2017 – Present | Postdoctoral Member, Broadening Participation Committee<br>Society for Integrative & Comparative Biology |
| 2016 | Radio interview on "Biomechanics of Kelp", The Graduates, Radio show.<br>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<br>University of South Carolina |

## EDITORIAL AND PEER-REVIEWING EXPERIENCE

2020 Guest Editor for *Integrative & Comparative Biology*

Peer-reviewing history:

- *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. Scholarly work published:
   - **N.P. Burnett**, E.E. King, M.K. Salcedo, R.L. Tanner, K. Wilsterman (**2020**) Conference scheduling undermines diversity efforts. *Nature Ecology & Evolution* doi:10.1038/s41559-020-1276-5.
   - **N.P. Burnett,** 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.
2. Diversity-focused committees and service groups:
   - Working Group for Justice, Equity, Diversity, & Inclusivity (2020 – Present)
     - Group dedicated to identifying, analyzing, and solving institutional practices that impede justice, equity, diversity, and inclusivity in academia.
   - Advisory Sub-Committee for Demographics Survey (2020)
     - Committee within the Society for Integrative & Comparative Biology that designed a demographic survey to help quantify and advocate for the diversity of the SICB membership
   - 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.
   - 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 under-served 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