

## **Nicholas P. Burnett, PhD**

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### **Summary of qualifications**

- PhD in Integrative Biology from UC Berkeley
- 5 years of postdoctoral experience at UC Davis
- 22 peer-reviewed publications (20 as first or senior author)
- Grant development: Successfully applied for \$360k in funding
- Teaching: 7 university courses as teaching assistant or guest lecturer, training & experience in course development, co-organized pedagogical study
- Mentoring: 15 undergraduate students, 6 publications co-authored with students
- Commitment to diversity: involved in 8 diversity-focused committees and service groups, published 3 diversity-focused papers, conducted outreach to underserved schools, mentored students from underrepresented groups

### **Research area**

Biomechanics of plant-animal interactions

### **Education and training**

2022 – Present	<b>Postdoctoral Researcher</b> , Bodega Marine Laboratory University of California, Davis; Advisor: Dr. Brian Gaylord
2017 – Present	<b>Postdoctoral Researcher</b> , Dept. Neurobiology, Physiology, & Behavior University of California, Davis; Advisor: Dr. Stacey Combes
2012 – 2017	<b>PhD, Integrative Biology</b> University of California, Berkeley; Advisor: Dr. Mimi Koehl
2008 – 2012	<b>BS, Biological Sciences</b> University of South Carolina; Advisors: Dr. David Wethey, Dr. Brian Helmuth

### **Awarded funds and fellowships**

2022	UC Davis Open Access Publication Fund (\$1,000)
2021	UC Davis Leaders for the Future Fellowship
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 co-author

22. **Burnett, N.P.**, M.A.R. Koehl (2022) Ecological biomechanics of damage to macroalgae. *Frontiers in Plant Science* 13:981904.
21. **Burnett, N.P.**, E. Keliher\*, S.A. Combes (2022) An evaluation of common methods for comparing the scaling of vertical force production in flying insects. *Current Research in Insect Science* 2:100042.
20. **Burnett, N.P.**, M.A. Badger, S.A. Combes (2022) Wind and route choice affect performance of bees flying above versus within a cluttered obstacle field. *PLoS ONE* 17(3): e0265911.
19. **Burnett, N.P.**, A.M. Hernandez, E.E. King, R.L. Tanner, K. Wilsterman (2022) A push for inclusive data collection in STEM organizations. *Science* 376(6588): 37-39.
18. **Burnett, N.P.**, B. Gaylord (2022) Flow, form and force: methods and frameworks for field studies of macroalgal biomechanics. *Journal of Experimental Botany* 73(4): 1122-1138.
17. **Burnett, N.P.**, E. Armstrong, R. Romero, C. Runzel\*, R.L. Tanner (2021) Kelp morphology and herbivory are maintained across latitude despite geographic shift in kelp-wounding herbivores. *Biological Bulletin* 241(2): 168-184.
16. **Burnett, N.P.**, M.A.R. Koehl (2021) Age affects the strain-rate dependence of mechanical properties of kelp tissues. *American Journal of Botany* 108(5): 1-8.
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.
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.

**Publications (continued)**

2. **Burnett, N.P.**, 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.

**Invited presentations**

- 2021 Biomechanical traits shape plant-animal interactions in moving fluids. Ecology & Evolutionary Biology Winter 2021 Seminar Series. University of California, Santa Cruz.
- 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 co-author

- 2022 Keliher, E.\*, **N.P. Burnett**, S.A. Combes. A comparative study of common methods for measuring maximum vertical force production and body size in bumblebees and mason bees. Society for Integrative & Comparative Biology (SICB). Oral.
- 2021 **Burnett, N.P.**, M.A. Badger, S.A. Combes. Shooting the gap: how bees protect their wings in windy, dynamic obstacle courses. SICB. Oral.
- 2020 **Burnett, N.P.**, M.A. Badger, S.A. Combes. Wind and canopy height affect honey bee flight performance in cluttered environments. 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 *Egrecia menziesii* to damage from different types of herbivores. SICB. Poster.

**Contributed presentations (continued)**

- 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.
- 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**

- 2022 *KCRA-TV Sacramento, CA News Station* (May 6, 2022). “UC Davis biologist is working to help open doors for minority communities in STEM” by Heather Waldman.
- 2022 *Chemistry World* (April 1, 2022). “Scientific societies fail to capture members’ true diversity” by Katrina Krämer.
- 2022 *Optica – Optics & Photonics News* (April 1, 2022). “Study: STEM Organizations Are Collecting Insufficient Diversity Data” by Karen Kwon.
- 2020 *Slate Magazine – France* (July 1, 2020). “Comment font les abeilles pour ne jamais se prendre d'obstacles” by Mathieu Barrère.
- 2020 *New York Times* (June 26, 2020) “How bees avoid bumping into nature’s obstacle course” by Cara Giaimo.
- 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.

**Teaching experience**

Spring 2022	Co-Instructor of undergraduate biomechanics course, UC Davis Lead Instructor: Dr. Stacey Combes
Fall 2021	Guest lecture, “Biomechanics in challenging habitats” Environmental Science 101, Chapman University; Instructor: Dr. Richelle Tanner
Fall 2021	Training: “Instructional design of large series classes”, UC Davis Seminar series for designing undergraduate biology courses
Fall 2021	Training: UC Davis Summer Institute on Teaching and Technology Two-day symposium on integrating technology into the classroom
Fall 2020 – 2022	Co-organizer for pedagogical research study, “The role of hybrid and virtual research experiences in student sense-of-belonging in ecology” PI: Dr. Richelle Tanner, Chapman University & UC Davis
Spring – Fall 2020	Curriculum development, “DIY Biomechanics Experiments” Undergraduate biomechanics course, UC Davis; Instructor: Dr. Stacey Combes
Fall terms 2018, 2020 – Present	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, 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 – 2022	Emily Keliher*, UC Davis; Load lifting ability of bumblebees and mason bees

### Outreach and service

2022 – Present	Chair, Broadening Participation Committee, SICB
2021 – 2022	UC Davis Staff Diversity Administrative Advisory Committee
2021	Member, SICB Division of Comparative Biomechanics Gans Award Committee
2020 – Present	Member, Working Group for Broadening Participation in Academia
2020 – Present	Postdoctoral Member, UC Davis College of Biological Sciences DEI Committee
2020 – 2021	Postdoctoral Member, UC Davis Graduate Studies Anti-Racist Working Group
2020	Member, Advisory Sub-Committee for Demographics Survey
2019	Member, Master’s Degree Defense Committee, Sonoma State University
2017 – 2022	Postdoctoral Member, Broadening Participation Committee, SICB
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 experience

2021 – Present	Assistant Editor for <i>Integrative &amp; Comparative Biology</i>
2020 – 2021	Guest Associate Editor for <i>Integrative &amp; Comparative Biology</i>
2020 – 2021	<i>Ad hoc</i> reviewer for National Science Foundation

### Peer-reviewing experience

<i>Acta Oecologica</i>	<i>Journal of Experimental Biology</i>
<i>Animal Behaviour</i>	<i>Journal of Phycology</i>
<i>Apidologie</i>	<i>Limnology and Oceanography</i>
<i>Biology Letters</i>	<i>Marine Ecology Progress Series</i>
<i>Frontiers Ecology and Evolution</i>	<i>Marine Environmental Research</i>
<i>Integrative Organismal Biology</i>	<i>New Phytologist</i>
<i>Insect Science</i>	

### Commitment to diversity and equity

#### 1. Research:

- Publications
  - **Burnett, N.P.**, A.M. Hernandez, E.E. King, R.L. Tanner, K. Wilsterman (2022) A push for inclusive data collection in STEM organizations. *Science* 376(6588): 37-39.
  - **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:

- Broadening Participation Committee (Postdoc rep, 2017 – 2021; Chair, 2022 – Present)
  - Committee within the Society for Integrative & Comparative Biology that aims to increase the diversity, equity, and inclusivity of SICB’s annual meetings.

**Commitment to diversity and equity (continued)**

- Roundtable for DEI in Ocean Sciences (Invited panelist, Dec. 2021)
    - Two-day event to discuss and elevate factors of success in advancing DEI in California's ocean science academic community
  - UC Davis Staff Diversity Administrative Advisory Committee (2021-Present)
    - Advisory body to the Provost and Chancellor through the Associate Executive Vice Chancellor of Campus Community Relations
  - SySTEM, A working group for broadening participation in STEM (2020 – Present)
    - Group dedicated to identifying, analyzing, and solving institutional practices that impede justice, equity, diversity, and inclusivity in STEM.
  - UC Davis College of Biological Sciences DEI Committee (Postdoc rep, 2020 – Present)
    - Group dedicated to establishing goals, guidelines, and actions to improve DEI within the College of Biological Sciences
  - UC Davis Graduate Studies Anti-Racist Working Group (2020 – 2021)
    - 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.
  - 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