Hannah Rachel Nelson

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Education

University of California, Davis, Ph.D. student, Population Biology	2017-present
California State University, Northridge, M.S. Biology with distinction	2016
Brown University, B.S. Marine Biology with honors, *magna cum laude*	2014
Northeastern University, Three Seas Program	2012-2103

Publications

Edmunds PJ, **Nelson HR**, Bramanti L. 2018. Density-dependence mediates coral community structure. *Ecology* (in press).

Guest JR, Edmunds PJ, Gates RD, Kuffner IB, Andersson AJ, Barnes BB, Chollett I, Courtney TA, Elahi R, Gross K, Lenz EA, Mitarai S, Mumby PJ, **Nelson HR**, Parker BA, Putnam HM, Rogers CS, Toth LT. A framework for identifying and characterising coral-reef "oases" against a backdrop of degradation. *Journal of Applied Ecology*, doi: 10.1111/1365-2664.13179.

Nelson HR, Kuempel CD, Altieri AH. 2016. The resilience of reef invertebrate biodiversity to coral mortality. *Ecosphere* 7(7): e01399.

Research Experience

Funding

Research

Thesis Support Award, California State University, Northridge ($1000)	2014
Brown International Scholars Program Award, Brown University ($5000)	2013
Undergraduate Teaching and Research Award, Brown University ($1500)	2011

Travel

Graduate Student Association (GSA) Travel Award, University of California, Davis ($500)	2018
Student Travel & Academic Research (STAR), California State University, Northridge ($400)	2016
Student Travel Award, Council on Ocean Affairs, Science, & Technology (COAST) ($1000)	2016
Graduate Studies Travel Award, California State University, Northridge ($400)	2016

Academic Honors & Awards

Golden Key International Honour Society, University of California, Davis	2018
Julie Gorchynski, M.D. Center for Cancer & Developmental Biology Graduate Research Award	2017
Honorable Mention, Best Student Presentation in Population & Organismal Biology, WSN Meeting	2015
Honorable Mention, NSF Graduate Research Fellowship Program	2015
2nd Place, Best Graduate Student Poster, CSUN Student Research & Creative Works Symposium	2015
Sigma Xi Honor Society, Brown University	2014
Phi Beta Kappa Honor Society, Brown University	2014
Finalist, Raymond B. Huey (DEE) Best Student Poster Presentation, SICB Meeting	2013
Dean's List, Spring 2013 Semester, Northeastern University	2013
Dean's List, Fall 2012 Semester, Northeastern University	2012
Best Poster Presentation, REU Program, UF Whitney Laboratory for Marine Bioscience	2012

Presentations

Nelson HR, Altieri AH. 2017. Coral reefs: Extreme oxygen environments? *Coastal & Estuarine Research Federation 24th Biennial Conference*. Providence, RI.*

Nelson HR, Edmunds PJ. 2016. The role of density-associated processes and shading in the structure and distribution of octocoral communities. *97th Annual Western Society of Naturalists Meeting*. Monterey, CA.*

Nelson HR, Edmunds PJ. 2016. Allometry and integration constrain Caribbean ocotocoral morphology. *13th International Coral Reef Symposium*. Honolulu, HI.*

Sternberg DR, **Nelson HR**, Edmunds PJ. 2015. Asexual budding and aggregated spatial distribution of fungiid corals from disturbed reefs in Moorea, French Polynesia. *Moorea Coral Reef Long Term Ecological Research Site 11th Annual All Investigators Meeting*. Santa Barbara, CA.*°

Nelson HR, Edmunds PJ. 2015. Allometry and integration constrain Caribbean ocotocoral morphology. *96th Western Society of Naturalists Meeting*. Sacramento, CA.*

Nelson HR, Altieri AH, Kuempel CD. 2015. Effects of coral mortality on reef invertebrate communities. *California State University, Northridge 19th Annual Student Research and Creative Works Symposium*. Northridge, CA.†

Nelson HR, Sternberg DR, and Edmunds PJ. 2015. Asexual budding and aggregated spatial distribution of fungiid corals from disturbed reefs in Moorea, French Polynesia. *9th Long Term Ecological Research All Scientists Meeting*. Estes Park, CO.†

Nelson HR, Altieri AH, Kuempel CD. 2014. Effects of coral mortality on reef invertebrate communities. *95th Annual Western Society of Naturalists Meeting*. Tacoma, WA.†

Nelson HR, Griffin J, McCoy M, Silliman B. 2013. Despite resource partition, multiple predators reduce mortality risk for foundation species. *Society for Integrative & Comparative Biology Annual Meeting*. San Francisco, CA.†

* *oral presentation*, † *poster presentation*, ° *co-presenter*

Teaching Experience

Graduate Assistant, Biometry, California State University, Northridge — Fall 2015, Fall 2016

Peer Learning Facilitator, Evolutionary Biology, California State University, Northridge — Fall 2016

Peer Learning Facilitator, Biological Principles, California State University, Northridge — Fall 2015

Professional Service

Academic Organizations

Equity in Science, Technology, Engineering, Math, and Entrepreneurship, University of California, Davis

Vice President of Outreach (2018-present), *STEM Squad Coordinator* (2017-present)

Biology Alumni Association Board, California State University, Northridge

Student Liason (2016)

Women in Science Club, California State University, Northridge

President (2015-2016), *Vice President* (2014-2015)

Marine Biology Graduate Student Association, California State University, Northridge

Vice President (2014-2015)

Professional Membership

Ecology Society of America

International Society for Reef Studies

Western Society of Naturalists

Society for Integrative and Comparative Biology

Working Groups

Participant. 2016. Local-scale ecosystem resilience amid global-scale ocean change: the coral reef example. USGS Powell Center for Analysis and Synthesis. Fort Collins, CO.

Outreach & Community Service

Volunteer facilitator, STEM Stars, Shirley Rominger Intermediate School, Winters, CA — 2018

Coordinator/Co-founder, STEM Squad, Winters Middle School, Winters, CA — 2017-present

https://estemestemsquad.weebly.com/

Coordinator/Co-founder, Girls in Science & Technology Club, Portola Middle School, Tarzana, CA — 2016

https://gistclub.weebly.com/

Volunteer facilitator, 7th grade field trip to Lake Solano, Winters Middle School, Winters, CA — 2018

Volunteer presenter, Multnomah Elementary School Career Day, Los Angeles, CA — 2016

Volunteer judge, Portola Middle School Highly Gifted Magnet Science Fair, Tarzana, CA — 2016

Volunteer alumni interviewer, Brown University — 2016

Guest lecturer, Viewpoint School, Calabasas, CA 2015-2016

Guest lecturer, Virgin Islands Environmental Resource Station, St. John, USVI 2014-2016

Mentor, Calabasas High School Marine Biology Club, Calabasas, CA 2014-2015

Skills

Programming: R (advanced), Python (basic), Java (basic)

Software: RevBayes, JMP, CPCe, ImageJ, GIS, Adobe Photoshop, Microsoft Office

Scuba Diving: AAUS Scientific Diver (>500 scientific dives), PADI Rescue Diver, CPR, O_2, First Aid

Boating: Washington State Boater Education Card, small motorboat operation

EDUCATION

Yale University, Ph.D. Mathematics 1934

Yale University, M.S. Mathematics 1930

Vassar College, B.S. Mathematics & Physics 1928

EMPLOYMENT

United States Naval Reserve:

Naval Reserve Midshipmen's School 1943–1944

Bureau of Ships Computation Project (Harvard):

Research Fellow 1945-1949 Lieutenant, Jr Grade 1944

Eckert–Mauchly Computer Corporation:

Senior Mathematician 1949—1967

Navy Programming Languages Group, Navy Office of Information Systems Planning:

Director (and promoted to Captain) 1967–1977

TEACHING

Associate Professor, Mathematics, Vassar 1931–1941

Teach students about math, began career in programming and largely developed design and implementation of a computer compiler.

Director, Navy Programming Languages Group 1967–1977

She developed validation software for COBOL and its compiler as part of a COBOL standardization program for the entire Navy. Hopper advocated for the Defense Department to replace large, centralized systems with networks of small, distributed computers. Any user on any computer node could access common databases located on the network. She developed the implementation of standards for testing computer systems and components, most significantly for early programming languages such as FORTRAN and COBOL. The Navy tests for conformance to these standards led to significant convergence among the programming language dialects of the major computer vendors. In the 1980s, these tests (and their official administration) were

assumed by the National Bureau of Standards (NBS), known today as the National Institute of Standards and Technology (NIST). (Source: https://en.wikipedia.org/wiki/Grace_Hopper)

PUBLICATIONS

Journal Articles

G. M. Hopper and O. Ore. 1934. "*New types of irreducibility criteria*." Bull. Amer. Math. Soc. 40 (216).

Books

Beyer, Kurt W. 2009. *Grace Hopper and the Invention of the Information Age*. Cambridge, Massachusetts: MIT Press. ISBN 978-0-262-01310-9.

Williams, Kathleen Broome. 2004. *Grace Hopper: Admiral of the Cyber Sea* (1st ed.). Annapolis, Maryland: Naval Institute Press. ISBN 978-1-55750-952-9.

PUBLIC MEDIA

"Nano-seconds" lecture by Grace Hopper. https://www.youtube.com/watch?v=JEpsKnWZrJ8

AWARDS

1964 *Society of Women Engineers Achievement Award*, the Society's highest honor, "In recognition of her significant contributions to the burgeoning computer industry as an engineering manager and originator of automatic programming systems."

1969 *Data Processing Management Association Man of the Year* (now called the Distinguished Information Sciences Award)

1973 *Distinguished Fellow of the British Computer Society*. First American and the first woman of any nationality to be given award.

1982 *American Association of University Women Achievement Award*

1987 *Computer History Museum Fellow Award Recipient* First to receive this award, for contributions to the development of programming languages, for standardization efforts, and for lifelong naval service.

1991: *National Medal of Technology*

1996: *USS Hopper (DDG-70) was launched*. Nicknamed Amazing Grace, it is on a very short list of U.S. military vessels named after women.

2009: The Department of Energy's National Energy Research Scientific Computing Center named its flagship system "Hopper"

2016: Posthumously awarded a *Presidential Medal of Freedom* for her accomplishments in the field of computer science