Emma Reed

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EDUCATION

Boston University 2016 -

Ph.D., Earth Sciences

Advisor: Dr. Diane Thompson

University of Arizona 2014 - 2016

M.S., Geosciences

Advisor: Dr. Julia Cole

Thesis: "Linking Climate Variability and Coral Health through Great Barrier Reef Coral Records" • GPA: 4.0

Cornell University 2010 - 2014

B.A., Science of Earth Systems (Geology concentration)

B.A., English (Science in Literature concentration)

Minor, Marine Biology

Magna cum laude • Dean's List • GPA: 3.6 • Honors Thesis: "Dead Snails Do Tell Tales: Invasive Rat Predation Recorded in Fossil Endemic Snails at Makauwahi Cave, Kaua'i"

AWARDS

NSF Graduate Research Fellowship 2016-2021

Boston University Dean's Fellowship 2016

Galileo Circle Scholarship 2016

NASA/University of Arizona Space Grant Fellowship 2015-2016

R. Wilson Thompson Scholarship 2015

NSF East Asia & Pacific Summer Institute Fellowship 2015

American Geosciences Institute Harriet Evelyn Wallace Scholarship 2015–2016

Paul S. Martin Scholarship Fall 2014

Einhorn Discovery Grant, two-time recipient Spring, Fall 2013

Arts & Sciences Undergraduate Research Fund, two-time recipient Spring, Fall 2013

Michael W. Mitchell Prize 2013

Martijn Zwart Prijs 2013

New York State Scholarship for Academic Excellence 2010 – 2014

RESEARCH EXPERIENCE

Paleoclimate & Coral Paleoecology Lab Boston, MA

Graduate Assistant 2016 –

- Geochemical coral analysis, including U/Th dating, stable isotopes ($\delta^{18}O$, $\delta^{13}C$, Sr/Ca)
- Coral growth banding and luminescence analysis

Paleoclimate Variability Lab Tucson, AZ

Graduate Assistant 2014 – 2016

- Conducted geochemical analysis of climate records from Great Barrier Reef corals
- Compared $\delta^{18}O$ and Sr/Ca ratios with growth banding proxies to test the relationships of temperature, salinity, and sedimentation to coral growth
- Presented a high-resolution record used to assess El Niño-Southern Oscillation (ENSO) variability and predict regional reactions to climate-related stress
- Results presented at 2016 International Coral Reef Symposium, and prepared for publication in *Coral Reefs*

Australian Institute of Marine Science Townsville, QLD, Australia

Visiting Researcher 2015

- Performed growth banding and luminescence measurements of Great Barrier Reef corals
- Tested how well growth banding and geochemical coral proxies correspond, and the impact of environmental change on coral health

Makauwahi Cave Reserve Kaua'i, HI

Honors Thesis Research Summer 2013, 2014

- An independently-developed project to determine whether the decline of Kaua'i's endemic land snails resulted from foreign rat introduction
- Conducted excavations in 2013 and 2014 and used bulk samples to assess ecological changes in fossil snails that followed Polynesian colonization
- Presented results at 2014 GSA Northeast Section, 2014 Island Biology, and 2014 National GSA conferences, and prepared manuscript for *Biological Invasions*

Paleontological Research Institution Ithaca, NY

Assistant to the Director of Collections 2012 – 2014

- Explored the applications of predation scars to the paleoecology of fossil shells
- Used the Antarctic fossil collection to track changes in marine predation associated with Eocene cooling

Alaskan Glacier Research Ithaca, NY

Undergraduate Research Assistant Fall 2013

- Examined archived photos from 1905/1911 survey expeditions to assess glacier change
- Targeted glaciers that have not been visited since 1911 for future expeditions
- Prepared collected photographs for 2014 centennial of seminal *Alaskan Glacier Studies* work, creating exhibits for Cornell Rare Books Library and Ithaca's Museum of the Earth

Biogeochemistry Field Research Kamuela, HI

Undergraduate Research Assistant Spring 2013

- Measured changes in pH, soil moisture, CO_2 efflux, and soil temperature along a 6-km transect extending from an arid environment (550 m elevation) to rain forest (1560 m)
- Presented "The relationship between carbon fluxes, precipitation, and soil properties along a climate gradient, Kohala Volcano, Hawai'i" at the 2013 GSA Annual Meeting

Cornell University Field Program in Earth and Environmental Systems Kamuela, HI

Spring 2013

- Semester-long field program exploring the geology and ecosystems of Hawai'i
- Assisted efforts to conserve and restore Hawaiian endemic species

PUBLICATIONS & PRESENTATIONS

Reed E.V., Cole J.E., Lough J.M., Cantin N.E. 2017. Linking climate variability and growth in coral skeletal records from the Great Barrier Reef. In preparation for submission to *Coral Reefs*.

Cole J.E., Lough J.M., **Reed E.V.**, Schrag D.P. Two centuries of climate variability from a Gulf of Papua coral confirms a coherent, widespread multidecadal signal. Presented at the American Geophysical Union Conference, December 2016.

Reed E.V., Cole J.E., Lough J.M. Linking climate variability and coral health through Great Barrier Reef Coral Records. Poster presented at the International Coral Reef Symposium, June 2016.

Reed E.V., Cole J.E., Lough J.M. Linking climate variability and coral health through Great Barrier Reef Coral Records. Talk given at the Geodaze Symposium, University of Arizona, 2016.

Reed E.V., Dietl G.P., Burney D.A., Pigott Burney L. Invasive rat predation recorded in fossil endemic snails at Makauwahi Cave, Kaua'i. Poster presented at the GSA Annual Conference, 2014.

Reed E.V., Dietl G.P., Burney D.A., Pigott Burney L. Invasive rat predation recorded in fossil endemic snails at Makauwahi Cave, Kaua'i. Poster presented at Island Biology, 2014.

TEACHING EXPERIENCE

Introduction to Climate & Earth System Science (ES 107) Boston University

Teaching Fellow Spring 2017

Ocean Science (GEOS 412A,B) University of Arizona

Teaching Assistant Spring 2015

Life on Earth (GEOS 170C) University of Arizona

Teaching Assistant Fall 2014

Introduction to Dutch (DUTCH 1210) Cornell University/Yale University

Teaching Assistant, Pilot Distance Learning Program Fall 2012

OUTREACH EXPERIENCE

NSF Expert Witness Training Academy Mitchell Hamline School of Law, St. Paul, MN

Participant Summer 2016

Biosphere 2 Ocean Sciences Biosphere 2, AZ

Curriculum Developer & Teacher 2015 - 2016

- Funded by NASA/UA Space Grant Fellowship
- Developed and taught hands-on lessons in the Biosphere 2 ocean for K-12 students
- Topics include: the ocean's influence on desert climate, marine ecology, marine pollution
- Lead Biosphere 2 tours and open house activities
- Published articles on Biosphere 2 in Planet Experts (planetexperts.com)

College of Science Outreach Program University of Arizona

Volunteer 2014 - 2016

- American Indian Science and Engineering Society (AISES) Geoscience Outreach
- GeoDaze student symposium
- Tucson Gem & Mineral Show demonstration booth

Makauwahi Cave Reserve Kaua'i, HI

Volunteer Summer 2013, 2014

- Gave tours and excavation demonstrations to visiting students and groups
- Led native species conservation and excavation activities with visitors
- Monitored experimental tortoises and their efficacy in replacing the niche of Hawai'i's extinct flightless birds

ReefTeach Kona, HI

Volunteer Spring 2013

- Helped to minimize the human impact on fragile reefs through outreach, educating visitors on marine ecosystems
- Helped visitors identify reef species
- Monitored water quality, nutrients, and turbidity
- Performed reef clean-ups, removing fishing gear, tires and large debris from sensitive reefs

Expanding Your Horizons Cornell University

Project Coordinator 2011, 2012

- Presented research and field experience to middle-school girls to encourage career exploration in science and mathematics
- Led paleontology activities, including an overview of New York's geologic history, and fossil excavation and identification

ADDITIONAL SKILLS

- AAUS Scientific Diver (30 ft), PADI/NAUI Rescue Diver, NAUI Nitrox certification
- First Aid, CPR & O_2 certified
- Conversational written and oral fluency in Dutch
- Python, MATLAB, R, Java, Photoshop, Illustrator