Evan W. Barba

Curriculum Vitae

University of Hawai‘i at Mānoa, Honolulu, HI 96822

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Education

2015 – present **University of Hawai‘i at Mānoa** — Honolulu, HI  
PhD Candidate: Marine Biology  
Toonen-Bowen (ToBo) Lab  
*Advisor: Dr. Rob Toonen*

2010 – 2014 **University of California, Santa Barbara** — Santa Barbara, CA  
Bachelor of Science in Aquatic Biology

*Distinction in the Major*

Professional Experience

2018-present **Graduate Trainee** — “Investigating the origin and impact of sedimentation on the health of Hawaiian mesophotic reefs for sustainable coastal development”. Sea Grant |University of Hawai‘i.  
*Principle Investigator: Rob Toonen*

2017-2018 **Graduate Research Fellow**— He‘eia National Estuarine Research Reserve System Graduate Research Fellowship (NERRS-GRF)  
Hawai*‘*i Institute of Marine Biology | UH Mānoa  
*Principle Investigator: Rob Toonen*

2015-2017 **Graduate Research Assistant** — “Ocean Acidification: Coral reef adaptation and acclimatization to global change: resilience to hotter, more acidic oceans”  
Hawai*‘*i Institute of Marine Biology | UH Mānoa  
*Principle Investigators: Christopher Jury, Rob Toonen*

2014-2015 **Laboratory Technician** — Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO), Hofmann Lab, and Santa Barbara Coastal Long Term Ecological Research (SBC-LTER)  
Marine Science Institute | UC Santa Barbara  
*Principle Investigators: Dr. Carol Blanchette, Dr. Gretchen Hofmann, Dr. Dan Reed.*

2014-2015 **Field Operations Analyst** for ipHat deployments and seawater chemistry for the PISCO and OMEGAS groups   
Marine Science Institute | UC Santa Barbara  
*Principle Investigators: Dr. Carol Blanchette, Dr. Gretchen Hofmann*

2010-2014 **Undergraduate Intern and Research Diver** — SBC-LTER  
Senior honors thesis: “Macronutrient variation in purple sea urchin, *Strongylocentrotus purpuratus,* gonads by sex and seasonality”  
Marine Science Institute | UC Santa Barbara  
*Principle Investigator: Dr. Dan Reed  
Graduate Student Mentor: Dr. Daniel Okamoto*

2010-2014 **Undergraduate Intern and Research Diver** — Mo'orea Coral Reef-LTER  
Gump Station, Mo'orea, French Polynesia | UC Berkeley  
*Principle Investigators: Dr. Russ Schmitt, Dr. Sally Holbrook,  
Direct Supervisors: Samantha Davis, Keith Seydel*

2013 **Field Research Assistant** — *Sargassum horneri* invasion on Catalina Island  
USC Wrigley Institute | Wrigley Marine Science Center   
*Advisor: Dr. Lindsay Marks, UC Santa Barbara*

2011-2012 **Laboratory Assistant** — Long term larval marine invertebrate settlement project   
Marine Science Institute | UC Santa Barbara  
*Principle Investigator: Dr. Stephen Schroeter*

Freelance

2019 Data Management – Moss  
Temporary position developing scripts to produce macro enabled Excel tempates, and wrangle input data of serial numbers from over one million solar panels.

Research Cruises

2018 American Samoa Reef Assessment and Monitoring Program (ASRAMP)   
*ARMS Team Lead*  
NOAA Ecosystem Sciences Division: Ocean and Climate Change Team  
*Team Lead:* *Dr. Tom Oliver*  
American Samoa and Line Islands (Tutuila, Ofu & Olosega, Ta’u, Rose Atoll, Jarvis, Palmyra, Kingman) — 52 Days  
Vessel: NOAA *R/V Hi‘ialakai  
Chief Scientist: Dr. Bernardo* *Vargas-Angel*

2017 Mariana Archipelago Reef Assessment and Monitoring Program (MARAMP)   
NOAA Coral Reef Ecosystem Program: Ocean and Climate Change Team. *Team Lead: Dr. Tom Oliver*   
Guam, CNMI (Rota, Tinian, Aguejan, Saipan) — 22 Days  
Vessel: NOAA *R/V Hi‘ialakai  
Chief Scientist: Dr. Tom Oliver*

2016 Hawaiian Archipelago Reef Assessment and Monitoring Program (HARAMP)   
NOAA Coral Reef Ecosystem Program: Ocean and Climate Change   
*Team Lead: Dr. Tom Oliver*Papahanāumokuākea Marine National Monument, Hawai*ʻ*i — 33 Days  
Vessel: NOAA *R/V Hi‘ialakai  
Chief Scientist: Dr. Brett Schumacher*

2015 Channel Islands Research Cruise on Acidification Studies (CIRCAS)   
Hofmann Lab: Seawater Chemistry and Plankton Sampling Team — 3 Days  
Santa Barbara Channel Islands, California  
Vessel: NOAA *R/V Shearwater*  
*Chief Scientist: Dr. Gretchen Hofmann*

Teaching Experience

2016 **Graduate Teaching Assistant**Biology 301L: Marine Ecology and Evolution Lab   
Department of Biology | UH Mānoa

Awards and Fellowships

2019 **Asia-Pacific Marine Biotechnology Conference Travel Grant** – Hawai*‘*i Institute of Marine Biology

2019 **The Colonel Willys E. Lord, DVM & Sandina L. Lord Endowed Scholarship** Hawai*‘*i Institute of Marine Biology

2018 **Department of Biology**, UH Mānoa — 43rd Annual Albert L. Tester Symposium “Best Graduate Student Poster, Honorable Mention” recipient

2018 **The Colonel Willys E. Lord, DVM & Sandina L. Lord Endowed Scholarship** Hawai*‘*i Institute of Marine Biology

2016 **Department of Biology**, UH Mānoa — 41st Annual Albert L. Tester Symposium “Best Graduate Student Rapid Fire Talk, Honorable Mention” recipient

2014 **National Science Foundation** ­— Research Experiences for Undergraduates (NSF-REU) recipient   
Hofmann Lab | UC Santa Barbara, California

2014 **Department of Ecology, Evolution, and Marine Biology**, UC Santa Barbara Dean Bazzi Memorial Award

2014 **Department of Ecology, Evolution, and Marine Biology**, UC Santa Barbara Distinction on the Major Award

2013 **National Science Foundation** — Research Experiences for Undergraduates (NSF-REU) recipient   
MCR-LTER | Mo'orea, French Polynesia

2012 **National Science Foundation** — Research Experiences for Undergraduates (NSF-REU) recipient   
SBC-LTER | UC Santa Barbara

Grants in Support of Research

2013 **Undergraduate Research and Creative Activities Grant** (UCSB), “*Macronutrient variation in purple sea urchin (Strongylocentrotus purpuratus) gonads by sex and seasonality*”

Publications

2018 Mora, C., Spirandelli, D., [et al. **Barba, EW.**]. 2018. Broad Threat to Humanity from Cumulative Climate Hazards Intensified by Greenhouse Gas Emissions. Nature Climate Change. Vol 8(12):1062.

Presentations and Meetings

2019 **Barba, EW.**, Conklin, EE., Kraft, DW., Seale, AP., Toonen, RJ. *ASSESSPOOL: a flexible pipeline for population genomic analyses of pooled sequencing data. Aquaculture applications on salinity acclimation*. 12th International Marine Biotechnology Conference — Shizuoka, Japan.

2019 **Barba, EW.**, Toonen, R. *Investigating the Origin and Impact of Sedimentation on the Health of Hawaiian Reefs for Sustainable Coastal Development*. Hawaiʻi Sea Grant Research Symposium — Honolulu, HI

2019 **Barba, EW.**, Conklin, E., Toonen, R. *AssessPool: A Flexible Pipeline for Pooled Population Genomics*. 44th Annual Albert L. Tester Memorial Symposium — Honolulu, HI

2019 **Barba, EW.**, Conklin, E., Kraft, D., Forsman, Z., Toonen, R. *AssessPool: A Flexible Pipeline for Pooled Population Genomics*. HIMB Scholarship Symposium — Moku o Loʻe, Kāneʻohe, HI

2018 **Barba, EW.**, Toonen, R. *Population Genomics at the Archipelago Scale: Applications, (Reduced) Costs, and Value to Conservation of Hawaiian Biodiversity*. Symposium on Science in Support of Archipelagic Management — Honolulu, HI

2018 **Barba, EW.**, Timmers, M, Toonen, RJ. *Cryptofaunal community responses to reefscape changes: A case study of Jarvis Island’s 2015 bleaching event*. Hanauma Bay Educational Lecture Series — Hanauma Bay, HI

2018 **Barba, EW.**, Conklin, E., Kraft, D., Whitney, J., Toonen, RJ. *Introducing assessPool: a flexible pipeline for population genetic analyses of pooled sequencing data*. 43rd Annual Albert L. Tester Memorial Symposium — Honolulu, HI  
*Best Graduate Student Poster - Honorable Mention*

2018 **Barba, EW.**, Timmers, M, Toonen, RJ. *Cryptofaunal community responses to reefscape changes: A case study of Jarvis Island’s 2015 bleaching event*. HIMB Scholarship Symposium — Moku o Loʻe, Kāneʻohe, HI

2017 **Barba, EW** and Toonen, RJ. *Evolutionary and Physiological Responses of Urchins, Tripnuestes gratilla, under changing seas*. Future Leaders in Marine Science Student Research Symposium — Moku o Loʻe, Kāneʻohe, HI

2016 **Barba, EW** and Toonen, RJ. *Physiological and Evolutionary Responses of a Keystone Coral Reef Herbivore Under Changing Seas.* 41st Annual Albert L. Tester Memorial Symposium — Honolulu, HI   
*Best Graduate Student Rapid Fire Talk - Honorable Mention*

2015 **Barba EW**, Bitter, MB, Casorani, MCN, Hofmann GH, Blanchette CA, and Reed, DC. *Observations of Early Life Stage Phyllospadix torreyi under elevated CO2 conditions.* Western Society of Naturalists (WSN) —Sacramento, CA

2014 **Barba, EW**, Okamoto, DK, Rivest, EB, and Reed, DC. *Differences in purple sea urchin mass specific protein and lipid value by sex.* UCSB Undergraduate Research Colloquium — Santa Barbara, CA

Invitational Talks and Lectures

2017 **Lecture and Open Discussion —** Union Mine High School, CA. *Discussion on evolutionary genetics, marine biology and careers in science*

2013 **Upper Division Courses Panel Speaker** — Society of Undergraduate Biologists (SUB), UC Santa Barbara

2013 **Undergraduate Research Panel Speaker** — Society of Undergraduate Biologists (SUB), UC Santa Barbara

Outreach and Informal Public Education

2016 **Volunteer** — Department of Biology booth, Mānoa Experience Day (Honolulu, HI)

2014 Mandoske, J., **Barba, E**. A Field Guide to the Invertebrates of Mo'orea, French Polynesia. *Photographer and species identification*

2013 **Volunteer** — MCR LTER Outreach booth, Earth Day Festival (Santa Barbara, CA)

2013-2014 **Research Support Committee Lead** — Society of Undergraduate Biologists (SUB), UC Santa Barbara

2010-2011 **Docent** — Research Experience Education Facility (REEF)

Relevant Coursework

* **Introduction to Programming and Statistics in R**
* **Advanced Statistics in R**
* **Techniques in Genetics: R and Biostatistics**
* Marine Ecology
* Marine Conservation Biology
* Macroevolution
* Writing Science
* Introduction to Genetics
* Research Reviews in Aquatic Ecology
* Biology of Fishes
* Physical Oceanography
* Writing for Science and Technology
* Invertebrate Zoology: Higher Invertebrates
* Environmental Processes in Oceans and Lakes
* Applied Marine Ecology
* Field Studies in Marine Ecological Physiology
* Aquatic Communities
* Invertebrate Zoology: Lower Invertebrates
* Introduction to Ecology
* Advanced Placement Statistics

Affiliated Skills

**Field**  Scientific diving:

American Academy of Underwater Sciences (AAUS) (*100ft depth certification*)

NOAA Scientific Diver (*130ft depth certification*)

*500+ dives, 350+ hours logged*)  
NAUI: open water, advanced open water, rescue diver, dive master  
Extensive subtidal and intertidal survey experience  
First Aid, CPR, and O­­2 Certifications  
Boat US Foundation certification  
Small craft and research vessel piloting and trailering   
Instrument deployment and retrieval  
Exceptional invertebrate, fish, and algal taxonomic identification

**Laboratory** Protein, lipid, and carbohydrate extraction and assays; western blotting; agarose gel electrophoresis; DNA extractions; PCR; NanoDrop spectroscopy; Qubit fluorometric quantitation; respirometry; UV-VIS spectrophotometry; IR Spectroscopy; light, stereo, and fluorescence microscopy; aquarium care of marine organisms; equivalence point titrations for the determination of total alkalinity in seawater; maintenance, operations, and repairs to autonomous pH sensors (iphats)

**Software** Highly proficient: R (including Rstudio/server, Shiny, Plotly), Linux (Ubuntu), BASH, and Windows OS, Unix shell, Adobe Photoshop, Adobe Premiere, Geneious, Docker, Git, Jupyter, Server administration.  
Proficient: Python, MacOS, pandas.

**Bioinformatics** Development: assessPool (*Lead dev - in prep for publication*)  
Proficient: dDocent, iPyrad, SPAdes, Velvet, Mauve, Mothur, Chewbacca (in dev), Insect (in dev), vcfTools, Freebayes, BWA, samtools, FastQC, Bowtie, anvio.

Memberships and Affiliations

* [ToBo Lab Development Team](https://github.com/ToBoDev) (2018-present)
* American Academy of Underwater Sciences (2012-present)
* Mo'orea Coral Reef Long Term Ecological Research (MCR LTER) Project (2011-2016)
* Santa Barbara Coastal Long Term Ecological Research (SBC LTER) Project (2010-2015)
* Divers Alert Network (2010-present)
* Scuba and Freediving Club at UCSB, *2013-14 Vice President* (2010-2014)
* Society of Undergraduate Biologists, *Research Committee Lead* (2013)