DAVID B. CARLON

Department of Biology

Bowdoin College

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Academic Positions

2020 - present Full Professor, Bowdoin College

2013 - 2022 Director, Bowdoin College Schiller Coastal Studies Center

2013 - 2020 Associate Professor, Bowdoin College

2008 - 2013 Associate Professor of Biology, University of Hawaii at Manoa

2003 - 2008 Assistant Professor of Zoology, University of Hawaii at Manoa

2003 Assistant Professor, Florida International University, Declined

2003 Adjunct Professor, Las Positas College, Livermore, CA

2001–2003 Postdoctoral Associate, University of California, Davis

1999–2001 Wrigley Institute for Environmental Studies Postdoctoral Fellow, University of Southern California

1997–1999 NSF Postdoctoral Research Fellow, University of California, Davis

1996–1997 Postdoctoral Associate, University of California, Riverside

**Education**

1995 Ph.D. Zoology, University of New Hampshire

1991 M.S. Biology, University of Massachusetts at Boston

1987 B.A. Biology/BUMP Program, Boston University

**Academic Development projects**

2015–2020 Schiller Coastal Studies Center. A $13.5 million expansion of the former “Coastal Studies Center” at 240 Bayview Road, Orr’s Island, Maine. The project includes new residential housing, a 100-seat meeting space, and a 5000 gsf laboratory. I worked with Bowdoin’s development to cultivate donors and have been involved with all phases of planning, including architect selection, design and development, and final drawings.

2015–2017 Experimental Seawater Laboratory at the Schiller Coastal Studies Center. A $264,361 expansion of the technical capacities of the existing seawater system. The project includes new infrastructure and equipment to manipulate seawater temperature and chemistry, and monitor carbonate parameters in nearby Harpswell Sound. I wrote the successful NSF FSML award, lead all phases of design and installation, and managed technical subcontracts.

2014 Marine Laboratory Renovation. A $500,000 upgrade of the Marine Laboratory seawater system at the Schiller Coastal Studies Center and addition of a 750 gsf dry laboratory space. I was involved in all phases of planning, including architect selection, design and development, and final drawings. Funded by the Cargill Foundation.

**Extramural Grants**

2021 Quahog Bay Foundation. $27,000. Coupling eelgrass restoration with expanding oyster aquaculture in a rapidly warming Gulf of Maine. PI: D. Carlon, Co-PI: K. DuBois.

2018–2020 Maine Sea Grant College. $147,264. Applying paleoceanography to policy: unlocking historical coastal pH baselines from long-lived shells and skeletons. PI: Michele LaVigne; Co-PIs: D. Carlon, A. Strong, A. Wanamaker, B. Williams.

2016-2019 Quahog Bay Conservancy. $5000/year. Quahog bay conservation research scholarship for Bowdoin students.

2016 Maine Sea Grant College. $3000. DV-16-04 The 45th Benthic Ecology Meeting PI: D. Carlon, Co-PI: Steve Allen.

2015–2018 NSF, Division of Biological Infrastructure $214,361. DBI 15-22545 RUI: Experimental seawater laboratory at the Coastal Studies Center, Bowdoin College. PI: D. Carlon, Co-PI: M. Lavigne.

2009–2010 NOAA Coral Reef Conservation Grant NA09NMF4630123 $46,000. How many have been lost? Using ancient DNA to develop baselines for coral reef conservation and management. PI: R. toonen, Co-PIs: D. Carlon and T. Hunt.

2006–2010 NSF Division of Environmental Biology $570,319. DEB 05-43661: A multidisciplinary approach to species boundaries in tropical reef corals. PI: D. Carlon, Co-PI: A. F. Budd.

2006–2007 NOAA-CSCOR Hawaiian Coral Reef Initiative Research Program $74,000

Of urchins and parrotfish: sources and sinks of keystone herbivores on Hawaiian reefs. PI: D. Carlon.

2005–2006 NOAA-CSCOR Hawaiian Coral Reef Initiative Research Program $77,125. Sources and sinks of a keystone herbivore on Hawaiian coral reefs. PI: D. Carlon.

2005–2006 Hawaii Sea Grant College $9,000. Developing microsatellite loci for a keystone herbivore on Hawaiian coral reefs: the parrotfish *Scarus rubroviolaceus*. PI: D. Carlon.

2003–2004 National Geographic Society Committee for Research and Exploration $18,800. The ecology of speciation in a neotropical coral. PI: D. Carlon.

1999–2000 University Research Expeditions Program, University of California $7000. Conservation of genetic diversity on coral reefs. PI: D. Carlon.

1994 PADI Foundation $4500. Spatial patterns in coral recruitment on Guana Island

1993 American Museum of Natural History, Lerner Grey Foundation. $2000.

**COMPETITIVE POSTDOCTORAL FELLOWSHIPS**

1999–2001 Wrigley Institute for Environmental Studies Postdoctoral fellowship $85,000.

Mating system evolution in temperate anemones.

1997–1999 National Science Foundation Postdoctoral Fellowship in Bioscences Related to the Environment $80,000. The adaptive value of fusion in a Caribbean reef coral.

**Institutional Grants**

2022-23 Bowdoin College Faculty Development Grant. The role of mitochondrial × nuclear interactions in temperature adaptation in a green crab hybrid zone. $3976.

2021-22 Bowdoin College Faculty Development Grant. A genomic test of hybrid speciation in a complex of distantly related parrotfishes in the Tropical Eastern Pacific. $3870.

2019 Bowdoin College Porter Award for Sabbatical Leave. 75% salary support & $4000 for travel and relocation expenses.

2012 University Research Council Faculty Travel Grant to present a paper at the 1st Joint Congress on Evolutionary Biology, Ottawa, Ontario $1,500

2011 College of Natural Science Grant to develop EST libraries for tropical parrotfish using next generation sequencing. $28,000

2011 University Research Council Faculty Travel Grant to present a paper at the Colloquium: A new chapter for marine time series in tropical America, Bocas del Toro, Panama $1,800

2010 University Research Council Faculty Travel Grant to present paper at the 39th Benthic Ecology Meeting, Wilmington, NC $2,000

2008 University Research Council Faculty Travel Grant to present paper at the 11th International Coral Reef Symposium, Fort Lauderdale, FL $2,000.

2005 University Research Council Faculty Travel Grant to present paper at the Annual Meeting of the Society for the Study of Evolution, Fairbanks, AK $3,000.

2004 University Research Council Faculty Travel Grant to present invited paper at 10th International Coral Reef Symposium, Okinawa, Japan $3,000.

1994–1995 University of New Hampshire, Dissertation Fellowship $12,000.

peer reviewed PaperS

32 published papers, 1192 Google scholar citations, h-index – 17

Bowdoin students underlined; University of Hawaii graduate students indicated by #

In review

1. **Carlon, D. B.**, M. Garcia, and A. Faucci. The positive phase of the El Nino Southern Oscillation (ENSO) negatively impacts larval fishes of the Hawaiian Islands. Accepted pending revisions to *PLOSone.*
2. DuBois, K., J. H. Baumann, E J. Charles, F. G. Ralph, and **D. B. Carlon**. Shifting seagrass-oyster interactions can alleviate and amplify species response to ocean warming and acidification. Accepted pending revisions to *Journal of Animal Ecology*

Published or In press

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| 32. | Genetic structuring and species boundaries in the Atlantic stony coral *Favia* (Scleractinia, Faviidae). Adam, C. L., R. J. Toonen, **D. B. Carlon**, C. Zilbergerg, and M. S. Barbeitos. Zoological Scripta. 2024. https://doi.org/10.1111/zsc.12652 |
| 31. | Two distinct population clusters of northern sand lance (*Ammodytes dubius*) on the northwest Atlantic shelf revealed by whole genome sequencing. 2022. Jones, L. F., R N. Lou, C. S. Murray,  D. Robert, C. M Bourne,  C. Bouchard,  M. Kučka,  Y. Frank Chan,  **D. B Carlon**, D. N. Wiley,  N. O. Therkildsen,  and H. Baumann. ICES Journal of Marine Science, fsac217, https://doi.org/10.1093/icesjms/fsac217 |
| 30. | Marchenko, J., M. Katolikova, R. Väinölä, S. E. Kingston, **D. B. Carlon**, M. Gantsevich, and P. Strelkov. 2022. Species identification based on a semi-diagnostic marker: evaluation of a simple conchological test for distinguishing blue mussels *Mytilus edulis* L. and *M. trossulus* Gould. Plos one **16**:e0249587 |
| 29. | **Carlon, D. B**., D. R. Robertson, R. L. Barron, J. H. Choat, D. J. Anderson, S. A. Schwartz, and C. A. Sánchez-Ortiz. 2021. The origin of the parrotfish species *Scarus compressus* in the Tropical Eastern Pacific: region-wide hybridization between ancient species pairs. BMC Ecology and Evolution 21, 7 (2021). https://doi.org/10.1186/s12862-020-01731-3 |
| 28. | Olsen, K. C., W. H. Ryan, A. A. Winn, E. T. Kosman, J. A. Moscoso, S. A. Krueger‐Hadfield, S. C. Burgess, **D. B. Carlon**, R. K. Grosberg, and S. Kalisz. 2020. Inbreeding shapes the evolution of marine invertebrates. Evolution 74:871-882. |
| 27. | Martino, P. A., **D. B. Carlon** and S. E. Kingston. 2019. Blue mussel (Genus *Mytilus*) transcriptome response to simulated climate change in the Gulf of Maine. Journal of Shellfish Research 38: 587-602. |
| 26. | Coyle, A., Voss, E., Tepolt, C.K., and **D. B. Carlon**. 2019. Mitochondrial genotype determines the response to cold stress in the European green crab, *Carcinus maenas*. Journal of Experimental Biology 222: jeb203521 doi: 10.1242/jeb.203521 |
| 25. | **Carlon, D. B.**, P. Warner, C. Starr, D. J. Anderson, Z. Bulmer, H. Cipparone, J. Dunn, C. Godfrey, C. Goffinet, M. Miller, and C. Nash, 2018. A first report of shell disease impacting *Cancer borealis* (Jonah Crab) in the Bay of Fundy. Northeastern Naturalist 25: 27-31. |
| 24. | Kingston, S. E., P. Martino, M. Melendy, F. A. Reed, and **D. B. Carlon**, 2017. Linking genotype to phenotype in a changing ocean: inferring the genomic architecture of a blue mussel stress response with genome‐wide association. Journal of Evolutionary Biology 31: 346-361. |
| 23. | Longenecker, K., Y. L. Chan, R. J. Toonen, **D. B. Carlon**, T. L. Hunt, A. M. Friedlander, and E. E. Demartini. 2014. Archaeological evidence of validity of fish populations on unexploited reefs as proxy targets for modern populations. Conservation Biology. doi: 10.1111/cobi.12287 |
| 22. | Baums, I. B., L. Scott Godwin, E. C. Franklin, **D. B. Carlon**, and R. J. Toonen. 2014. Discordant population expansions in four species of coral-associated Pacific hermit crabs (Anomura: Diogenidae) linked to habitat availability resulting from sea-level change. Journal of Biogeography 41: 339-352. |
| 21. | Halbert, K. M.#, E. Goetze, and **D. B. Carlon**. 2013. High cryptic diversity across the global range of the migratory planktonic copepods *Pleuromamma piseki* and *P. gracilis*. PLoS One 8: e77011. |
| 20. | Schwartz, S., Budd, A. F., and **D. B. Carlon**. 2012. Molecules and fossils reveal punctuated diversification in Caribbean "faviid" corals. BMC Evolutionary Biology. 12:123 doi:10.1186/1471-2148-12-123. |
| 19. | **Carlon, D. B.**, Budd, A. F., Lippé, C., and R. L. Andrew. 2011. The quantitative genetics of incipient speciation: heritability and genetic correlations of skeletal traits in populations of diverging *Favia fragum* ecomorphs. Evolution 65: 3428-3447. |
| 18. | Tice K.# and **Carlon, D. B.** 2011. Can AFLP genome scans detect small islands of differentiation? The case of shell sculpture variation in the periwinkle *Echinolittorina hawaiiensis*. Journal of Evolutionary Biology 24: 1814-1825. |
| 17. | **Carlon, D. B.** and C. Lippé. 2011. Estimation of the mating systems of the Tall and Short ecomorph of the coral *Favia fragum*. Molecular Ecology 20: 812-848 |
| 16. | Fitzpatrick, J.#, **Carlon, D. B.**, Lippé, C., and D. R. Robertson. 2011. The West Pacific diversity hotspot as a source or sink for new species? Population genetic insights from the Indo-Pacific parrotfish *Scarus rubroviolaceus*. Molecular Ecology 20: 219-234. |
| 15. | VanderWerf, E. A, #Young, L. C., #Yeung, N. W., and **D. B. Carlon.** 2009. Stepping stone speciation in Hawaii’s flycatchers: Molecular divergence supports new island endemics within the ‘elepaio. Conservation Genetics 11: 1283-1298 |
| 14 | #Yeung, N. W., **Carlon, D. B.**, and S. Conant. 2009. Testing subspecies hypothesis with molecular markers and morphometrics in the Pacific white tern complex. Biological Journal of the Linnean Society 98: 586–595. |
| 13. | **Carlon, D. B.** and C. Lippé. 2008. Fifteen new microsatellite markers for the reef coral *Favia fragum* and a new *Symbiodinium* microsatellite. Molecular Ecology Notes 8: 870-873. |
| 12. | **Carlon, D. B.** and C. Lippé. 2007. Eleven new microsatellite markers for the tropical sea urchin *Tripneustes gratilla* and cross-amplification in *Tripneustes ventricosa*. Molecular Ecology Notes 7: 1002-1004. |
| 11. | **Carlon, D. B.** and C. Lippé. 2007. Isolation and characterization of 17 new microsatellite markers for the Ember parrotfish (*Scarus rubroviolaceus*), and cross-amplification in four other parrotfish species. Molecular Ecology Notes 7: 613-616. |
| 10. | Crohn, D. M., Ruud, N. C, Decruyenaere, J. G., and **D. B. Carlon.** 2005. Goodness-of-fit test for modeling tracer breakthrough curves in wetlands. Journal of Environmental Engineering 131: 242-251. |
| 9. | Edmunds, P. J., Bruno, J. F., and **D. B. Carlon.** 2004. Effects of depth and microhabitat on growth and survivorship of juvenile corals in the Florida Keys. Marine Ecology Progress Series 278: 115-124. |
| 8. | **Carlon, D. B.** and A. F. Budd. 2002. Incipient speciation across a depth gradient in a scleractinian coral? Evolution 56: 2227–2242. |
| 7. | **Carlon, D. B.** 2002. Production and supply of larvae as determinants of zonation in a brooding tropical coral. Journal of Experimental Marine Biology and Ecology 268: 33-46. |
| 6. | **Carlon, D. B.** 2001. Depth-related patterns of coral recruitment and cryptic suspension-feeding invertebrates on Guana Island, British Virgin Islands. Bulletin of Marine Science 68: 525-541. |
| 5. | **Carlon, D. B.** 1999. The evolution of mating systems in tropical reef corals. Trends in Ecology & Evolution 14: 491-495. |
| 4. | **Carlon, D. B.** 1996. Calcification rates in corals. Science 274: 117. |
| 3. | **Carlon, D.B.** and J.P. Ebersole. 1995. Life history variation among three temperate hermit crabs: the importance of size in reproductive strategies. Biological Bulletin 188: 329-337. |
| 2. | **Carlon, D.B.** and R.R. Olson. 1993. Short distance dispersal as an explanation of spatial pattern in two Caribbean reef corals. Journal of Experimental Marine Biology and Ecology 173: 247-263. |
| 1. | Olson, R. and **D. Carlon.** 1993. Dispersal of Caribbean coral larvae. National Geographic Research and Exploration 9: 379-380. |
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**MARINE LABS and FIELD EXPERIENCE**

1987 BUMP program, Marine Biology Laboratory, Woods Hole

1989–1991 University of Massachusetts Field Station, Nantucket Island

1991 NOAA NURP Laboratory, Key Largo, Florida

1992–1995 Guana Island Wildlife Sanctuary, British Virgin Islands

1992 Discovery Bay Marine Laboratory, Jamaica

1992 Newfoundland, research diving

1992–1995 Gulf of Maine, research diving

1995 Aquarius Mission off Key Largo, Florida, Co-PI and Aquanaut

1992–1995 St. Croix, U. S. Virgin Islands, research diving

1997–1998 San Blas Field Station, Panama, Smithsonian Tropical Research Institute

1999–2015 Bocas del Toro Field Station, Panama, Smithsonian Tropical Research Institute

1999 Lee Stocking Island, Bahamas

1999–2001 Wrigley Institute for Environmental Sciences, Santa Catalina Island

2002 Great Barrier Reef, Australia

2004–2013 Hawaii Institute of Marine Biology, Coconut Island

2004 –2013 Kewalo Marine Laboratory, Honolulu

2008 Florida Keys, research diving

2010 Coral Bay Research Station, Murdoch University, Western Australia

2010 Abrolhos Islands, Western Australia, research diving

2010 Rottnest Island, Western Australia, research diving

2010–2011 Friday Harbor Laboratories, Helen Riaboff Whiteley Center Scholar

2013–2017 Baja California Sur, Gulf of California, research diving

2015 Pixvae, Panama, research diving

**Curriculum development & Teaching**

Bowdoin College

Biol 3310 Advanced Evolution – A senior seminar that explores current trends and topics of evolutionary biology through reading of the primary literature.

Biol 2130 Population Genomics & Laboratory – An introduction to the theory and data of population genomics. Laboratories include building molecular biology skills and the analysis of large “next generation” DNA data sets through the building of computer programming and pipeline skills.

Biol 3308 – Research Methods in Ecology, Evolution, and Marine Biology. A capstone, upper-level course designed to increase exposure to research projects in EEMB across the state of Maine and New England, while simultaneously building data analysis and grant writing skills.

The Bowdoin Marine Science Semester - I developed, administered, and co-taught this immersion semester based at the Schiller Coastal Studies Center in Harpswell, from 2015-2022. The semester emphasized ecosystem function, sampling and experimental design, statistical analyses of ecological data sets, and the systematics and taxonomy of marine organisms. Four courses were offered sequentially in modules. An independent research project was the capstone of the semester. Alumni.

Biol 2232 Benthic Ecology – A module in the BMSS, focusing on the ecological processes that structure benthic communities.

Biol 1090 Understanding Climate Change – A non-majors course introducing the science, policy, and politics of climate change.

University of Hawaii

ZOOL 487 Molecular Ecology. Introduction to the concepts and techniques of applying DNA sequence variation to understand ecological problems. Discussion and Lab. Taught at the senior undergraduate/graduate student level.

BIOL 404 Advanced Topics in Marine Biology. Senior capstone course for marine biology majors stressing critical thinking, writing, and oral communication.

BIOL 301/301L Marine Ecology and Evolution. Complimentary lecture and lab course for marine biology majors.

BIOL 375 Concepts of genetics. Team taught. I lecture on statistics, population, quantitative, and evolutionary genetics. Fall semester, 2010 & 2012

ZOOL 719 The Evolutionary Ecology of Adaptive Radiation. Graduate seminar featuring Dolph Schluter’s text of the same name, and Jerry Coyne and Allen Orr’s “Speciation.” Spring semester, 2005

ZOOL 619 Advanced Topics in Evolutionary Biology

Community college

ZOOL 1 & 1L Introductory Zoology. Lecture and lab course at Las Positas Community College. Spring, 2005

Field courses

Conservation Biology of Coral Reefs. Field course offered through H. Lavity Stoutt Community College, Tortola, and taught among the British Virgin Islands. Summer, 1994

200N Coastal Ecology. Field course offered through the University of Massachusetts and taught on Nantucket Island, MA. Summer,1990-91

Teaching Assistant

University of New Hampshire: Biological Oceanography, Ecology, Animal Behavior, Anatomy and Physiology. University of Massachusetts: Introductory Biology, Biology for Non-majors.

AWARDS

1994 Outstanding Contributions and Achievements Award, University of New Hampshire, Department of Zoology.

1993 Outstanding Teaching Award, University of New Hampshire, Department of Zoology.

1991 Outstanding Achievement Award, University of Massachusetts, Department of Biology.

Invited Presentations, last ten years

The evolutionary and ecological dimensions of rampant hybridization among parrotfishes in the Tropical Eastern Pacific. Scripps Institute of Oceanography, February 7, 2024

Coral mating systems in the Anthropocene.Mote Working Group on Mating Systems in the Sea, Florida State University, July 31, 2017

Hybridization among the parrotfishes of the Tropical Eastern Pacific: species breakdown or hybrid speciation? Plymouth State University, December 2, 2016.

Two marine hybrid zones and their evolutionary applications. Center for Population Biology Seminar Series, University of California, Davis, March 29, 2016.

Finding climate change genes in a blue mussel hybrid zone. Bodega Bay Marine Laboratory, Bodega Bay, CA, March 28, 2016.

Marine speciation on a small planet revisited. Smithsonian Tropical Research Institute, Panama, Earl Tupper Seminar Series, May 26, 2015

Climate change meets quantitative genetics – using genomic technology to map the targets of natural selection. Smithsonian Tropical Research Institute, Panama, Naos Marine Laboratory Seminar Series, May 27, 2015

Is gene flow the destroyer or creator of new species? Examples from tropical marine systems. University of Massachusetts at Lowell, Biology Department Seminar Series, Feb. 26, 2014.

**Meeting Presentations, last ten years**

Students underlined, oral presentation unless noted.

Carlon, D. B. and T. Ely. eDNA and compound specific stable isotopes reveal diet specialization and overlap in co-occurring parrotfishes of the Gulf of California. 11th Indo-Pacific Fish Conference, November 2- 24, 2024. Aukland, New Zealand.

DuBois, K., E., Charles, E., Ralph, F., Bauman, J., and D. B. Carlon. Positive eelgrass-oyster interactions lost under future ocean conditions. 50th Annual Benthic Ecology Meeting, March 27 - April 2, 2022. Portsmouth, NH.

Lynch, J. and D. B. Carlon. An application of RNAseq to characterize links between mitochondrial genotype and ecological phenotype in the European green crab (*Carcinus maenas*). 50th Annual Benthic Ecology Meeting, March 27 - April 2, 2022. Portsmouth, NH.

Carlon, D. B. and S. C. Burgess. Why mating systems matter in the sea: Predicting the ecological and evolutionary response to rapid environmental change. 48th Annual Benthic Ecology Meeting, April 3, 2019. St. John’s, Newfoundland, Canada.

Carlon, D.B, Fauci, A, and J. Mitchell. El Niño drives a larval bottleneck for coral reef fish. 47th Annual Benthic Ecology Meeting, March 30, 2018. Corpus Christi, Texas.

Cipparone, H. and D. B. Carlon. Wild crabs of the North: Optimal prey selection varies between genetic lineages of the European green crab (*Carcinus maenas*). 47th Annual Benthic Ecology Meeting, March 28, 2018. Corpus Christi, Texas

Walkes, S. and D. B. Carlon. The effects of mitochondrial genotype on the behavioral response to temperature stress in European green crabs *Carcinus maenus*. 47th Benthic Ecology Meeting, March 28, 2018. Corpus Christi, Texas.

Van Deusen, V, Carlon, D. B., and S. E. Kingston. A next generation approach to understanding diet of the European green crab *Carcinus maenas* in the Gulf of Maine. 47th Benthic Ecology Meeting, March 28, 2018. Corpus Christi, Texas.

Coyle, A. and D. B. Carlon. Some like it cold? links between genotype and freezing tolerance in a green crab hybrid zone. 46th Benthic Ecology Meeting, April 14, 2017, Myrtle Beach, SC. **Winner of the best undergraduate student paper award**.

Voss, E. and D. B. Carlon. Conflicting speeds of introgression among mitochondrial and nuclear genes suggest adaptive processes in a green crab hybrid zone. 46th Benthic Ecology Meeting, April 14, 2017, Myrtle Beach, SC.

Kingston S.E., Martino P., Melendy M., Reed, F., and D. B Carlon. Linking genotype to phenotype in a changing ocean: estimating standing genetic variation in a blue mussel stress response with genome wide association. Maine Sustainability and Water Conference, March 30, 2017, Augusta, ME.

Voss, E, and D. B. Carlon (Poster). When genomes collide – dynamics of hybridization after a green crab double invasion. Benthic Ecology Meeting, March 17, 2016, Portland, Maine.

Carlon, D. B., Budd, A., and R. Thomson. Is the tropical Atlantic an evolutionary hotspot for coral evolution? timing and diversification of the coral subfamilies Mussinae and Faviinae, Geological Society of America, Nov. 1-4, 2015, Baltimore, Maryland.

Short, A., Masland, D., and D. B. Carlon (Poster). A molecular analysis of green crab diets in Casco Bay, Maine. Benthic Ecology Meeting, March 4-7, 2015, Quebec City.

Kingston, S., Watling, J, Eisenberg, B, and D. B. Carlon. Genotype and phenotype in a changing ocean: can standing genetic variation in stress responses rescue mussel populations from climate change? Benthic Ecology Meeting, March 4-7, 2015, Quebec City.

**Students**

\*underrepresented minorities

Graduate (6 total: 1 PhD. Student, 2 PhD. Committees, 3 M.S. Students)

Aki Laruson, PhD. 2018. Morphological and genomic divergence with the tropical sea urchin *Tripneustes gratilla*. University of Hawaii. PhD Committee.

Raphael Ritson-Williams\*, PhD. 2017. The role of variability in the ecology and evolution of corals. University of Hawaii. PhD. Committee.

Kristin Halbert\*, M.S. 2013. High cryptic diversity across the global range of the migratory planktonic copepods *Pleuromamma piseki* and *P. gracilis*. Co-advised with E. Goetz, University of Hawaii

Sonja Schwartz, PhD. 2012. Species boundaries and speciation on coral reefs. Co-advised with G. Roderick, UC Berkeley.

Kimberly Tice, M.S. 2009. Against the grain? Morphometric and genomic investigation of the causes of shell variation in the Hawaiian periwinkle *Echinolittorina hawaiiensis*. Advisor, University of Hawaii.

John Fitzpatrick, M.S. 2008. Phylogeography predicts biogeography: a multi-locus test of vicariance and dispersal in a widespread Indo-Pacific parrotfish. Advisor, University of Hawaii.

Undergraduates

**Bowdoin College**

*Honors*

Eban Charles 2024. Super species or crypic lineages? A phylogenomic analysis of the wide-spread parrotfish *Scarus ghobban.*

Jared Lynch 2024. A Bioenergetic Investigation of the Link Between Mitochondrial Haplotype and Thermal Tolerance in the European green crab (*Carcinus maenas*)

Maria S. Garcia 2023 Functional redundancy of a non-native foundation species (eelgrass, *Zostera japonica*) across intertidal stress gradients.

Kellie Navarro 2023. Host and symbiont-specific patterns of gene expression in response to cold stress in the temperate coral *Astrangia poculata*.

Hannah Radazzo 2021. Impacts of climate change on arm regeneration in the sea star *Asterias forbesi*.

Sophie Walton 2021. The costs and benefits of inducible defenses in the blue mussel *Mytilus edulis*

Sam Walkes 2018. The effects of mitochondrial genotype on the behavioral response to temperature stress in European green crabs *Carcinus maenus.*

Robert Barron 2017. The dynamics in a parrotfish hybrid swarm in the Tropical Eastern Pacific

Aidan Coyle 2017. Some like it cold? – links between genotype and freezing tolerance in a green crab hybrid zone;

Erin Voss, 2016. Conflicting geography of mitochondrial and nuclear markers in a green crab hybrid zone in the Gulf of Maine.

*Summer fellowships and independent study*

Eva McKone, Summer Fellowship 2023. Long term population dynamics of green crabs in Harpswell Sound.

Jared Lynch, Summer Fellowship 2019. Molecular basis for temperature adaptation in the green crab *Carcinus maenus*.

Jesse Dunn, Summer Fellowship 2018 and Intermediate Independent Study 2019. Benthic surveys of demersal fishes in the northern reaches of Casco Bay, Prevalence of epizootic shell disease on Kent Island.

Alicia Edwards, Summer Fellowship 2018. Effects of habitat on the molting cycle of the European Green Crab (*Carcinus maenus*)

Jonathan Harrison, Intermediate Independent Study 2018. *Fundulus heteroclitus*lateralization efficacy in response to rising sea temperatures and ocean acidification.

Patrick Warner, Summer Fellowship 2018 and Intermediate Independent Study 2018. Benthic surveys of demersal fishes in the northern reaches of Casco Bay.

Robert Barron, Advanced Independent Study 2016. The dynamics in a parrotfish hybrid swarm in the Tropical Eastern Pacific.

Hugh Cipperone, Summer Fellowship 2016, Intermediate Independent Study 2016 & 2019. Wild Crabs of the North: Optimal prey selection and distinct populations of the European Green Crab (*Carcinus maenas)*

Aidan Short, Summer Fellowship 2014, Advanced Independent Study 2014 & 2016. Diet analysis of green crabs using next generation sequencing.

Jack Mitchell, Summer Fellowship 2014. DNA barcoding the ichthyoplankton of Hawaii.

*Other undergraduate projects*

Vanessa Van Deusen, Honors thesis, 2018. Barnard College. A next generation approach to understanding diet of the European green crab *Carcinus maenas* in the Gulf of Maine.

**University of Hawaii**

Emile Richards (2012-13). A multi-locus re-examination of the *Scarus rubrioviolaceus* parrotfish complex.

Christy Hammack (2008-09). Barcoding and identification of tropical fish larvae.

Jon Coloma (2007-08). Field studies, SCUBA support of field experiments, animal care, molecular lab work.

Narissa Bax (2007-08) Independent research: Divergent larval behavior between ecomorphs of the Caribbean coral *Favia fragum*.

Darlenis Vargas Cedeño (2006-07) Field studies, animal care, laboratory assistant.

Scott Walls (2006-07) Field studies, animal care, SCUBA support, field experiments

Sean Macduff (2006-07) Independent research: Estimates of fishing and fishing effort on herbivorous reef fishes in the Central Pacific.

Li-Chien Chen (2005-06) Independent research: Population structure and phylogeography of three common hermit crabs in the Hawaiian Islands.

John Fitzpatrick (2005-06) Independent research: The role of predation in structuring two ecomorphs of the coral *Favia fragum*.

Michael Dunford (2003-04) Independent research: A new tool for morphometric measurements in faviid scleractinian corals.

Alexis Jinbo-Doran (2004) Honors Research, Whitman College: Lunar periodicity in larval release in two morphotypes of *Pocillopora damicornis*.

Saipologa Toala (2004) URM UMEB Independent research: Where do zooxanthellae come from when the coral *Pocillopora damicornis* is recovering from bleaching?

Houston Lomae (2004) URM UMEB Independent research: Settlement plates for larvae of the scleractinian coral *Pocillopora damicornis* on four artificial substrates in a tank.

**University of Southern California**

Julie Diemler (2000) Animal care and assistance with molecular genotyping.

John Jiminez (2000) Animal care.

Stephanie Coe (1999) Animal care and assistance with molecular genotyping.

## SYNERGISTIC ACTIVITIES

President - National Association of Marine Laboratories 2021 – 2022.

Past President - Northeastern Association of Marine & Great Lakes Laboratories 2017 – 2018, Board Member 2019 – 2020.

Past President - Benthic Ecology Meeting Society 2016 – 2017. Organized and hosted the 45th Benthic Ecology Meeting in Portland Maine, March 15 – 19, 2016

Board Member – Northeastern Coastal Stations Alliance 2016 – present. A consortium of marine laboratories, field stations, and non-profit organizations operating in the Gulf of Maine that developed and manage an intertidal environmental network.

Lead organizer of the Albert Tester Symposium 2008 – 2009. Three-day graduate symposium at the University of Hawaii focusing on the biological and earth sciences. Featured guest speakers (Tyrone Hayes, ’08; Daniel Pauly, ’09).

Curriculum and course development – I designed and implemented the Bowdoin Marine Science Semester, an immersion experience featuring four course modules and integrated laboratory and fieldwork. I have designed and taught several inquiry-based courses in molecular ecology for graduate and undergraduate students. At the University of Hawaii, I have trained graduate students from the college of Natural Sciences, the School of Ocean and Earth Sciences, and the College of Tropical Agriculture.

Undergraduate research opportunities – At the University of Hawaii and Bowdoin College I have focused on recruiting and training under-represented students with research projects in molecular evolution and ecology, field ecology, and marine biology. Past undergraduates have been supported by NSF REU supplements, the C-MORE training grant at the University of Hawaii, an NSF UMEB & NRB awards to the University of Hawaii, and by endowed student fellowships at Bowdoin College.

**Service**

**Manuscript review**

American Naturalist, Biological Bulletin, Bulletin of Marine Science, BMC Evolutionary Biology, Coral Reefs, Ecology, Evolution, Evolutionary Applications, Hydrobiologia, Journal of Experimental Marine Biology and Ecology, Journal of Evolutionary Biology, Journal of Heredity, Journal of Marine Biological Association UK, Limnology and Oceanography, Marine Biology, Marine Ecology Progress Series, Molecular Ecology, Nature Communications, PLOS-1, Proceedings of the National Academy of Sciences*,* Scientific Reports, Journal of Fish Biology

**Panels and service**

National Science Foundation Panelist - Biological Oceanography 2018, Field Stations and Marine Laboratories 2017, Division of Environmental Biology Dissertation Improvement Grants 2005.

Adhoc reviewer - National Science Foundation Programs (DEB, OCE, and IOSE), National Oceanic and Atmospheric Association Ocean Exploration Program, California Sea Grant College.

**Bowdoin College & University of Hawaii committee work**

Bowdoin

Schiller Coastal Studies External Review Committee, 2019 – 2020; Institutional Animal Care and Use Committee (IACUC) 2018 – 2019; Joint Environmental Studies/Biology Search Committee – Environmental Scientist, 2017 – 2018; Biology Search Committee – Ecologist, 2017 – 2018; Three Doherty Marine Biology Postdoctoral Searches; Representatives to the Executive Committee of the Trustees, 2014 – 2015.

University of Hawaii at Manoa

2010: Evolutionary Biologist Search Committee (Chair); 2010: Population geneticist search committee; 2007-08: Albert Tester Memorial Symposium (Convener and Chair); 2008: Evolutionary Developmental Biologist Search Committee; 2005-06: EECB Student Grants Committee, 2006- Present: Molecular Biology Laboratory Development Committee (Chair); 2003-Present: Marine Biology Steering Committee, 2003- Present; 2006- Present: Curriculum Committee; 2005: Physiologist Search Committee; 2005 Zoology Seminar Series.

**Outside examiner**

PhD, University of Technology, Sydney

PhD, James Cook University, Townsville.

**PROFESSIONAL SOCIETIES and ASSOCIATIONS**

National Association of Marine Laboratories, Benthic Ecology Meeting Society, Society for the Study of Evolution