

Curriculum Vitae

MYKLE HOBAN

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EDUCATION

University of Hawai'i at Mānoa

PhD, Marine Biology, Advisor: Brian W. Bowens

2022

Thesis title:

Dimensions in marine biodiversity: Traditional and molecular approaches to unraveling the mysteries of the deep. [[link](#)]

University of California, Santa Cruz

B.Sc. Marine Biology

2012

Honors: *summa cum laude*

RESEARCH INTERESTS

Origins and patterns of tropical marine biodiversity. Ocean exploration. Technology development for biodiversity and exploration, particularly environmental DNA (eDNA). Molecular biogeography and biodiversity methods. Biodiversity, connectivity, and evolution of mesophotic coral ecosystems (MCEs). Biodiversity infrastructure development and improvement, including collections management, DNA barcoding, and genome skimming. Systematics, biogeography, and phylogeography of Indo-Pacific coral reef fishes. Bioinformatics and development of analysis pipelines for molecular ecology and biodiversity research. Technical diving and exploration of new and unexplored habitat.

PUBLICATIONS (*shared first authorship)

Hoban, ML*, Walsh, CAJ*, Kosaki, RK, Bowen, BW 2026. Origins and relationships of endemic Hawaiian saber-toothed blennies in the genus *Plagiotremus* (Blennioidei: Blenniidae). *Journal of Fish Biology*. *In review*

Hoban, ML*, Hurley, KKC*, Reardon, K, Skillings, DJ, Timmers, MA, Toonen, RJ 2025. Cryptobenthic crab assemblages are more distinct across a 90 m depth gradient than 2500 km of shallow marine habitat in the Hawaiian archipelago. *Scientific Reports* 15, 27419. <https://doi.org/10.1038/s41598-025-10232-6>

Wishingrad, V, **Hoban, ML**, Walsh, CA, Angulo, C, Timmers, MA, Whitney, JL, Toonen, RJ, Bowen, BW 2025. Metabarcoding Primers for Indo-Pacific Fishes. *Environmental DNA*, 7(5), e70205. <https://doi.org/10.1002/edn3.70205>

Timmers, MA, Viehl, K, Angulo, C, **Hoban, ML**, Toonen, RJ, Walsh, CAJ, Wishingrad, V, Bowen, BW 2024. Proteinase K is not essential for marine eDNA metabarcoding. *Environmental DNA*, 6, e523. <https://doi.org/10.1002/edn3.523>

Hoban, ML, Bunce, M, Bowen, BW 2023. Plumbing the depths with environmental DNA (eDNA): Metabarcoding reveals biodiversity zonation at 45–60 m on mesophotic coral reefs. *Molecular Ecology*, 32, 5590–5608. <https://doi.org/10.1111/mec.17140>

Coleman, R, Kraft, DW, **Hoban, ML**, Toonen, RJ, Bowen, BW 2023. Genomic assessment of the larval odyssey: Self-recruitment and biased settlement in the Hawaiian surgeonfish *Acanthurus triostegus sandvicensis*. *Journal of Fish Biology*, 1– 15. <https://doi.org/10.1111/jfb.15294>

Copus JM, Walsh CAJ, **Hoban ML**, Lee AM, Pyle RL, Kosaki RK, Toonen RJ, Bowen BW 2022. Phylogeography of Mesophotic Coral Ecosystems: Squirrelfish and Soldierfish (Holocentriformes: Holocentridae). *Diversity* 14:691. <https://doi.org/10.3390/d14080691>.

Hoban ML, Whitney J, Collins AG, Meyer C, Murphy KR, Reft AJ, Bemis KE 2022. Skimming for barcodes: rapid production of mitochondrial genome and nuclear ribosomal repeat reference markers through shallow shotgun sequencing. *PeerJ* 10:e13790. <https://doi.org/10.7717/peerj.13790>.

Hoban ML, Williams JT 2020. *Cirripectes matatakaro*, a new species of combtooth blenny from the Central Pacific, illuminates the origins of the Hawaiian fish fauna. *PeerJ* 8:e8852. <https://doi.org/10.7717/peerj.8852>.

Bowen BW, Forsman ZH, Whitney JL, Faucci A, **Hoban ML**, Canfield SJ, Johnston EC, Coleman RR, Copus JM, Vicente J, Toonen RJ 2020. Species Radiations in the Sea: What the Flock? *Journal of Heredity* 111:70–83. <https://doi.org/10.1093/jhered/esz075>.

Beas-Luna R, Novak M, Carr MH, Tinker MT, Black A, Caselle JE, **Hoban ML**, Malone D, Iles A 2014. An Online Database for Informing Ecological Network Models: <http://kelpforest.ucsc.edu>. *PLOS ONE* 9:e109356. <https://doi.org/10.1371/journal.pone.0109356>.

PROFESSIONAL EXPERIENCE

Contract scientist	2025
National Geographic Pristine Seas	
Duties and projects: Two-month research cruise conducting comprehensive biodiversity inventory for reefs and deep-sea habitat of Rotuma and Tuvalu. Deep-sea submersible-based environmental DNA sampling. Performed biodiversity surveys as observer-scientist in crewed submersible. Deployed pelagic baited remote underwater video systems (BRUVS) and deep sea autonomous baited cameras. Participated in expedition planning and logistics.	
Postdoctoral researcher	2023–2026
Hawai‘i Institute of Marine Biology, Kāne‘ohe, HI	
Duties and projects: Development of bioinformatic pipelines for processing of high throughput metabarcoding datasets, phylogeography/systematics of Indo-Pacific reef fishes, connectivity and community composition of mesophotic reef communities across the Hawaiian Archipelago, server and information infrastructure maintenance and administration, eDNA methods development, mentoring of students and interns.	
Research Assistant: various projects	2014–2023
Hawai‘i Institute of Marine Biology, Kāne‘ohe, HI	
Duties: Performed underwater coral reef surveys using scuba and technical mixed-gas rebreather diving, deployed and recovered instrumentation, operated small vessels (to 24’), collected specimens for genetics and taxonomy (marine fishes and invertebrates), prepared sequencing libraries according to molecular laboratory protocols, developed and maintained complex bioinformatic pipelines to analyze large molecular datasets, maintained and administered advanced Linux server infrastructure to support bioinformatic analysis.	
Kelp Forest Survey Technician	2013
Channel Islands National Park, Ventura, CA	
Duties: Performed multi-species, multiple protocol community monitoring of kelp forest ecosystems at the Channel Islands using SCUBA. Entered and analyzed data and maintained large (30+ year) dataset of kelp forest community survey data.	
Field technician / Laboratory Assistant	2012–2013
Partnership for the Interdisciplinary Study of Coastal Oceans, Santa Cruz, CA	
Duties: Performed multi-species, multiple protocol community monitoring of Central California kelp forest ecosystems using SCUBA. Operated small vessels (to 24’). Managed and developed comprehensive species interaction database and developed web-based tools for species interaction modeling, geolocation, and tagging.	

ROV Technician**2008-2009**

Schilling Robotics, Davis, CA

Duties: Assembled, inspected, and troubleshot complex mechanical, electronic, and hydraulic systems aboard deep submersible Remote Operated Vehicles. Participated in integration and deployment of complete work-class ROV systems.

Marine Science and Network Technician**2007-2008**

United States Antarctic Program (R/V Icebreaker Nathaniel B. Palmer)

Duties: Administered shipboard computer network and serviced crew/science party IT needs. Maintained and operated scientific data collection instruments while underway. Assisted science parties with technical and logistical concerns aboard ship. Assisted marine technicians with over-the-side deployments and off-ship field operations.

Communications / Computer Technician**2005-2007**

United States Antarctic Program (McMurdo Station, Antarctica)

Duties: Maintained, deployed, and configured computer systems and related peripherals among contractors at McMurdo Station (~1000 users). Assisted NSF science grantees with technical requirements. Assisted in deep-field maintenance of computer and communications equipment including repeater/transmitter deployment, antenna installation, tower rigging, and field-party logistics.

FELLOWSHIPS

National Science Foundation Graduate Research Fellowship	2016-2020
Hawai'i Sea Grant graduate traineeship	2015-2020

AWARDS AND HONORS

NSF Graduate Research Internship Program (GRIP), Smithsonian NMNH (\$5000)	2019
NSF Graduate Research Opportunities Worldwide (GROW), Western Australia (\$5000)	2018-2019
The Explorers Club Expedition Grant (\$3000)	2017
Colonel Willys E. Lord, DVM & Sandina L. Lord Endowed Scholarship (\$5000)	2015,2017-2020
Manoa Opportunity Grant (\$4000)	2015-2017
UH Marine Biology Graduate Program Departmental Award (\$1821)	2015
Honorable Mention, NSF Graduate Research Fellowship Program	2014 & 2015
Inductee, Phi Beta Kappa Honors Society	2012
Osher Lifelong Learning Institute Silvia Miller Scholarship (\$500)	2012
University of California Regents Scholarship (\$6000)	2011-2012
National SMART Grant (\$2666)	2011-2012
NOAA Ernest F. Hollings Scholarship (\$22,500)	2010-2012
Our World-Underwater Scholarship Society AAUS Scientific Diving Internship	2010
National Science Foundation S-STEM Scholarship (\$4000)	2009-2010
Sacramento City College Emeriti Affiliates Scholarships (\$2500)	2009

QUALIFICATIONS AND SKILLS

Extensive knowledge of Hawaiian reef fishes and experience with Hawaiian coral reef habitat
 Knowledge of Indo-Pacific coral reef fishes
 Genetic & genomic molecular laboratory methods
 Metabarcoding & environmental DNA methods
 Bioinformatics for metabarcoding, phylogenomics, & population genomics
 Extensive experience with underwater visual census methods for ecosystem survey
 Experience at sea aboard research vessels for extended periods in tropical and polar conditions

Fish and marine invertebrate taxonomy and systematics
 Strong written communication skills
 Natural history specimen collection and preservation
 Maintenance, deployment, and operation of common oceanographic instrumentation.
 Small vessel operation (U.S. Department of Interior Motorboat Operator certified)
 R Software for statistical analysis, modeling and data visualization
 American Academy of Underwater Sciences (AAUS) scientific diver: 300' certification
 Ambient Pressure Diving Inspiration closed-circuit rebreather mixed gas/extended range/decompression certified
 Computer programming and software design (C/C++, HTML, JavaScript, Perl, Python, PHP, etc.)

 EXPEDITIONS AND FIELDWORK

<p>National Geographic Pristine Seas Global Expedition Rotuma and Tuvalu, South Pacific Duration: 67 days Activities: conduct submersible-based visual and eDNA surveys, deploy pelagic baited remote underwater video systems (BRUVS), deploy autonomous deep-sea baited camera systems (500m, 1000m, 2000m).</p>	<p>2025</p>
<p>Hawai'i Island mesophotic eDNA surveys Hawai'i Island, Hawai'i Duration: 2 weeks Activities: technical rebreather diving (to ~120m) for eDNA sample collection in support of comprehensive mesophotic reef biodiversity survey.</p>	<p>2019</p>
<p>Papahānaumokuākea Marine National Monument mesophotic survey cruise Northwestern Hawaiian Islands Duration: 27 days Activities: technical rebreather diving (to ~100m) in support of eDNA collection, fish and benthic surveys, and fish specimen collection.</p>	<p>2018</p>
<p>American Sāmoa Reef Assessment and Monitoring Program (ASRAMP) American Sāmoa, Pacific Remote Islands, Northern Line Islands Duration: 63 days Activities: deployment, recovery, and breakdown/investigation of Autonomous Reef Monitoring Structures (ARMS), stationary point count coral reef fish surveys.</p>	<p>2018</p>
<p>Maui black coral survey project Maui Nui, Hawai'i Duration: 1 week Activities: technical rebreather diving (to ~60m) to survey abundance, growth, condition, and size structure of endemic Hawaiian black coral colonies in 'Au'au Channel, Maui Nui.</p>	<p>2018</p>
<p>Okinawa mesophotic reef expedition Okinawa, Japan Duration: 2 weeks Activities: Open-circuit scuba and technical rebreather diving (to ~80m) to collect specimens of shallow and mesophotic coral reef fishes for evolutionary and population genetic analyses.</p>	<p>2017</p>
<p>New Caledonia biodiversity inventory Province Sud, New Caledonia</p>	<p>2017</p>

Duration: 3 weeks

Activities: extensive coral reef biodiversity survey targeting marine invertebrates.

MarineGEO Kāneʻohe Bay BioBlitz

2017

Kāneʻohe Bay, Oʻahu, Hawaiʻi

Duration: 1 week

Activities: extensive coral reef biodiversity survey targeting fishes, algae, and marine invertebrates.

Kiribati expedition

2017

Kiritimati, Kiribati

Duration: 1 week

Activities: Open-circuit scuba to collect specimens of shallow coral reef fishes for evolutionary and population genetic analyses.

Collaborative Hawaiian fish life-history

2014–2016

Oʻahu / Hawaiʻi Institute of Marine Biology, Hawaiʻi

Duration: periodic over 2 years

Activities: collection of *Acanthurus triogstegus* (convict tang) for large-scale genetic parentage analysis and analysis of life history traits.

Corsica marine ecology field course

2012

Station de Recherches Sous Marine et Océanographiques, Calvi, Corsica

Duration: 6 weeks

Activities: Marine ecological field course and independent research investigating ecological habitat associations of Mediterranean cardinalfish *Apogon imberbis*.

Various undergraduate field/research internships

2009–2012

Activities: Subtidal kelp forest survey, specimen collection, urchin size structure analysis, pelagic ecology in Puget Sound, surface pelagic net tows, stable isotope data collection and analysis, scientific diving operations and logistics, ecological network modeling.

TEACHING EXPERIENCE

Hawaiʻi Institute of Marine Biology

Linux command line and basic programming workshop

Summer 2017

University of Hawaiʻi at Mānoa

Teaching Assistant – Ecology and Evolution Laboratory

Fall 2015, 2016

University of Hawaiʻi at Mānoa

Teaching Assistant – Marine Ecology and Evolution Laboratory

Spring 2015, 2016

University of Hawaiʻi at Mānoa

Teaching Assistant – Introduction to Biology Laboratory

Fall 2014

University of California, Santa Cruz

Teaching Assistant – Invertebrate Zoology

Winter 2014

SERVICE

Peer review: Conservation Genetics, Conservation Letters, Environmental DNA, Genetica, Journal of Biogeography, Marine Ecology Progress Series, Molecular Ecology, Molecular Ecology Resources, Oceanology

and Limnology, Open Research Europe, Organism Diversity & Evolution, PeerJ, Proceeding of the Royal Society B, Scientific Reports, Thalassas

Internship/scholarship application review: Our World-Underwater Scholarship Society (OW-USS) Rolex Scholarship, OW-USS National Park Service Internship, OW-USS American Academy of Underwater Sciences Scientific Diving Internship

Outreach/service: Nerd Nite Honolulu, Hanalani Schools science fair, Exploring By The Seat of your Pants YouTube series, Rotuma/Tuvalu community ship day events, American Sāmoa community engagement workshops, Kiritimati community engagement meetings, Voice of the Sea television program, Hawai'i Sea Grant podcast, Point Lobos parks day public outreach events

PRESENTATIONS (†invited speaker, ‡coauthored)

‡Santos MEA, Dudoit A, Vicente J, Reimer JD, **Hoban ML**, Wishingrad V, Toonen RJ, Bowen BW 2025. Biogeography of zoantharians (=zoanthids) in Hawai'i and across the Pacific Ocean. Japanese Coral Reef Society – Naha, Okinawa, Japan

†**Hoban ML**, Bunce M, Hurley KKC, Bowen BW, Toonen RJ 2025. Biodiversity and connectivity of mesophotic reefs in Hawai'i. Departmental seminar, Hawai'i Institute of Marine Biology – Kāne'ohe, HI, USA

†**Hoban ML** 2024. Biodiversity, connectivity, and conservation of (mostly) Hawaiian mesophotic coral ecosystems. Coastal Oceanography Seminar, Universidad Autónoma de Baja California – Ensenada, Baja California, Mexico

‡Whitney J, Gove J, Burns J, Asner G, Teague C, Pugh A, Pascoe K, Schmidt A, Nishida T, Fukunaga A, Shelton AO, Kelly R, Samhuri J, Diana A, Martin R, Hennessey S, Gibson V, **Hoban ML**, Suca J, 2024. Molecules to ecosystems: exploring whole-reef biodiversity and fish ecology with integrated eDNA, visual, and remote sensing surveys in Hawai'i. American Geophysical Union, Ocean Sciences Meeting – New Orleans, LA, USA

Hoban ML, Bowen BW, Copus JM, Kosaki RK, Lee AM, Pyle RL, Toonen RJ, Walsh CAJ 2023. Habitat persistence? Phylogeography of mesophotic holocentrids reveals younger than expected populations. Indo-Pacific Fish Conference – Auckland, New Zealand

†**Hoban ML** 2023. An introduction to mesophotic coral ecosystems. Indonesian-American Kavli Frontiers of Science Symposium – Balikpapan, East Kalimantan, Indonesia

Hoban ML, Bunce M, Bowen BW, Hurley KKC, Toonen RJ 2023. Depth and distance: Zonation and habitat connectivity on shallow & mesophotic reefs in Hawai'i. 2023 Gordon Research Conference on Mesophotic Coral Reef Ecosystems – Ventura, CA, USA

†**Hoban ML**, Bunce M, Bowen BW 2023. Plumbing the depths with environmental DNA: Metabarcoding reveals biodiversity breaks at 45–60 m on mesophotic coral reefs. 2023 Gordon Research Seminar on Mesophotic Coral Reef Ecosystems – Ventura, CA, USA

†**Hoban ML** 2022 The other 66%: an introduction to mesophotic coral ecosystems. Northeastern University Three Seas Field Program – Kāne'ohe, Hawai'i, USA

Hoban ML, Bunce M, Bowen BW 2021. Plumbing the depths: Assessing biodiversity gradients on Hawaiian mesophotic reefs using environmental DNA. International Coral Reef Symposium (virtual) – Bremen, Germany

†**Hoban ML**, Williams JT, Bowen BW 2019. Origins of Hawaiian reef fauna: evidence from sister pairs of Pacific blennies. San Francisco State University – San Francisco, CA, USA

†**Hoban ML**, Williams JT, Bowen BW 2019. *Cirripectes matatakaro*, a new species of Pacific combtooth blenny, indicates a southern origin for Hawaiian endemic reef species. University of Guam Marine Lab – Guam, Mariana Islands

†**Hoban ML**, Ka'apu-Lyons C, Bowen BW 2018. Harnessing Environmental DNA for Healthy Reefs. Hanauma Bay Public Outreach Lecture Series – Honolulu, HI, USA

Hoban ML, Kosaki RK, Bowen BW 2016. Origins of Hawaiian reef fauna: evidence from sister pairs of Pacific blennies. Indo-Pacific Fish Conference – Tahiti, French Polynesia

†**Hoban ML**. Plumbing the depths: using environmental DNA to assess diversity patterns on Hawaiian mesophotic reefs. HIMB Scholarship Symposium – Kāne'ohe, HI, USA

Hoban ML, Kosaki RK, Bowen BW 2016. Origins of Hawaiian reef fauna: evidence from sister pairs of Pacific blennies. Western Society of Naturalists (WSN) – Monterey, CA, USA

Hoban ML, Kosaki RK, Bowen BW 2016. Origins of Hawaiian reef fauna: preliminary new data from three sister pairs of Pacific blennies. International Coral Reef Symposium (ICRS) – Honolulu, HI, USA

MEDIA

Diving Deep for Coral Reefs with Mykle Hoban, Exploring by the Seat of your Pants, YouTube Series, 2024
<https://www.youtube.com/watch?v=G9OTN3hGOLA&t=2042s>

New species of Combtooth blenny found in the Central Pacific: Author interview with Mykle Hoban, PeerJ blog, 2020
<https://peerj.com/blog/post/115284882230/new-species-of-combtooth-blenny-found-in-the-central-pacific-author-interview-with-mykle-hoban>

Hawai'i Sea Grant 3-2-1 Podcast - Season 2, #11: DNA Detection, 2019
<https://www.youtube.com/watch?v=-AEPR8an0gk>

U.S. government shutdown starts to take a bite out of science, Science Magazine, 2019
<https://www.sciencemag.org/news/2019/01/us-government-shutdown-starts-take-bite-out-science>

Shutdown Headaches for University Researchers, Inside Higher Ed, 2019
<https://www.insidehighered.com/news/2019/01/08/ongoing-shutdown-means-scrambled-travel-plans-collaboration-higher-ed-researchers>

Fish Origins Revealed in DNA, Voice of the Sea VOS5-3, 2018
<https://www.youtube.com/watch?v=7n13RLwV58g>

Hawai'i Sea Grant 321 Podcast #1 - Fish Flow, 2017
<https://www.youtube.com/watch?v=MsMjkk8xpTg>

The Kiritimati to Hawai'i Connection, Voice of the Sea VOS4-12, 2017
<https://www.youtube.com/watch?v=4jPITfQIFcM>