# EDUCATION

**Ph.D. Candidate**, Biological Oceanography (Expected Jan 2017) (GPA 4.8 / 5.0) 2010 - Present

Massachusetts Institute of Technology (MIT) & Woods Hole Oceanographic Institution (WHOI)

Dissertation Advisor: Dr. Timothy Shank

**Bachelor of Arts**, Biology major and Politics minor (GPA 3.72 / 4.0) 2004 - 2009

**Bachelor of Music**, Cello Performance major 2004 - 2009

Oberlin Collegeand Oberlin Conservatory of Music Double Degree Program

# SELECT HONORS AND AWARDS

**NOAA Knauss Fellow** 2017

**Fulbright Fellowship** awarded by the US Department of State and Fulbright New Zealand 2011

**NSF Graduate Research Fellowship** for ~$120,000 towards graduate research 2010 - 2015

**MIT Emerson Music Fellowship** to fund private study and annual recitals 2012 - 2015

**Hope Hibbard Memorial Scholarship in Biology** awarded by Oberlin College 2009

**Oberlin Conservatory of Music Dean’s Scholarship** 2004 - 2009

# RELEVANT EXPERIENCE

**Graduate Student** *MIT - Woods Hole Oceanographic Institution Joint Program* 2010- present

Dissertation research focused on the population genomics of rapid range expansion in lionfish

(*Pterois volitans*) and Asian shrimp (*Palaemon macrodactylus*). Extensive experience working with

molecular biology techniques, non-model species genomics, RAD-sequencing, Illumina data, and

SNP analysis. Competent with Unix and Python programming for bioinformatics analysis.

**Fulbright Researcher** *National Institute of Water and Atmospheric Research, Wellington, NZ* 2011

Conducted independent research on deep-sea population genetics and protected area placement

in New Zealand waters.

**Science Volunteer** *Reef Doctor, Ifaty, Madagascar* 2010

Engaged in coral reef monitoring, fish surveys, and outreach to communities in rural southwest Madagascar. Earned PADI diving certifications and emergency first responder training on site.

**Consultant Research Assistant** *WHOI, Woods Hole MA* 2009 - 2010

**Ocean Program Intern** *Conservation Law Foundation, Boston MA* 2009

Researched and composed internal reports regarding National Ocean Policy and northeast fisheries.

**Summer Student Fellow** and **Guest Student** *WHOI, Woods Hole MA* Summers 2008, 2009

**NSF Research Experience for Undergraduates** *Mount Desert Island Biological Laboratory, ME* 2007

Conducted independent research on the neuroendocrine system of the invasive green crab.

# PUBLICATIONS

# **Bors EK**, Morris JA, Herrera SM, Shank TM (in prep; dissertation chapter) Non-equilibrium population

# genomics of the rapidly invading lionfish, *Pterois volitans*: range expansion signals in the absence of

# genetic structure. Target journal: *Molecular Ecology*. Expected submission: November 2016.

# **Bors EK**, Carlton JT, Shank TM (in prep; dissertation chapter) Genome-wide SNP markers are unable to

# resolve the invasion pathway of the invasive shrimp *Palaeman macrodactylus* in the US Northeast.

# Expected submission: February 2017.

**Bors EK** and Solomon S (2013) How a nested framework illuminates the challenges of comparative

environmental analysis. *PNAS* 110 (19): 7531-7532.

# Raineault NA, Ramey-Balci PA, Shank TM, **Bors EK**, *et al.,* (2013) Exploration of the Anaximander

Mountains: Mud Volcanoes, Cold-Seep Communities, and Cold Water Corals. *Oceanography*

*Supplement* 26 (1): 30-35.

**Bors EK**, *et al.* (2012) Patterns of Deep-Sea Genetic Connectivity in the New Zealand Region:

Implications for Management of Benthic Ecosystems. PLoS ONE 7(11): e49474.

Ma M, **Bors EK**, *et al.*, (2009) Characterization of the *Carcinus maenas* neuropeptidome by mass

spectrometry and functional genomics. *General and Comparative Endocrinology* 161 (3): 320-334.

Ma M, Chen RB, Sousa GL, **Bors EK**, *et al.*, (2008) Mass spectral characterization of peptide

transmitters/hormones in the nervous system and neuroendocrine organs of the American lobster

*Homarus americanus*. *General and Comparative Endocrinology* 156 (2): 395-409.

PRESENTATIONS

# **Department Seminar,** Biology Department, Woods Hole Oceanographic Institution 2016

# “Population genomics of the rapidly invading lionfish, Pterois volitans”

# **Conference Presentation,** *International Congress on Conservation Biology, Montpellier, France* 2015

# “Population genomics of the invasive lionfish, Pterois volitans: impacts of drift and selection on

# genetic diversity during rapid range expansions”

# **Invited Seminar**, *Bauer Forum, Department of Systems Biology, Harvard University* 2015

# **“Genetic drift and natural selection during rapid range expansions: population genomics of the**

# **invasive lionfish** Pterois volitans **and invasive shrimp** Palaemon macrodactylus”

# **Poster Presentation,** *Invasion Genetics:**The Baker Stebbins Legacy, Asilomar, CA* 2014

# **Conference Presentation,** *International Deep Sea Biology Symposium, Wellington, New Zealand* 2012

# “Implications of Deep-Sea Genetic Connectivity Patterns for the Management of Benthic Ecosystems

# in the New Zealand Region: Recent Work and Future Directions.” \***Best Student Talk**, runner-up.

# **Department Seminar,** *Biology Department, Woods Hole Oceanographic Institution* 2012

# “Patterns of deep-water connectivity in the New Zealand region: implications for management of

# dee-sea habitats.”

# **Conference Presentation,** *New Zealand Marine Science Society, New Zealand* 2011

# “Patterns of genetic connectivity among benthic fauna on the Chatham Rise and the Challenger

# Plateau.”

# **Poster Presentation**, *Ocean Sciences meeting, Portland OR* 2010

# **Department Seminar,** *Biology Department, Oberlin College, Oberlin, OH* 2009

# “Under Pressure: An introduction to deep sea biology at hydrothermal vents.”

COMMUNICATION, TEACHING, AND OUTREACH

**Non-Resident Fellow** writer for “Sense and Sustainability” policy blog 2016

Create monthly online content on subjects pertaining to biodiversity and environmental management.

**Science Writing Course**at the *Marine Biological Laboratory*, *Woods Hole MA*2015

**Guest Lecturer**, *Sea Education Association* and *New England Aquarium* 2013 - Present

Lectured on fish genetics, invasive marine species, and population genetics to undergraduate students.

**Scientist** with **“***Synergy: An Experiment in Art and Science Collaboration”* 2013

Communicated science through art while collaborating with artist Laurie Kaplowitz. Final exhibition

shown at the Museum of Science, Boston, including public presentation and discussion panel. [[video]](https://www.youtube.com/watch?v=1MPWHagW03s)

**Teaching Assistant** and **Biology Tutor**, *Oberlin College Biology Department* 2006 - 2009

Biology 120 (Genetics, Evolution, and Ecology) and Biology 119 (Organismal Biology Lab)

# NON-ACADEMIC PUBLICATIONS AND OTHER MEDIA

# “Of Genes and Vacuums [Part 1]” May 2016

# A **blog** post on Sense and Sustainability’s website about gene drive technologies.

# “When to Surrender and When to Fight” April 2016

# A **blog** post on Sense and Sustainability’s website about invasive species regulation, the difficulty of

# defining an invasive species, and the importance of different definitions for policy decisions.

# “Weighty Water” January 2016

# A **blog** post on Sense and Sustainability’s website (www.SenseandSustainability.net) on ballast water

# regulation and technology forcing.

# “A Future That is Hard to Predict” September 2015

# A **blog** post on Invasivore.org highlighting my research on rapid evolution in invasive lionfish.

# “This is the shore to ship, over.” July 2012

# A **blog** post for StrictlyFishwrap.com about telepresence expeditions in oceanography.

# “Exploring the Deep Unknown: Working Towards Habitat Assessment and Protection,” July 2010

# **Cruise log entry** for a telepresence cruise to Indonesia with NOAA’s *Okeanos Explorer*.

ADDITIONAL POLICY-RELATED EXPERIENCE

**Certificate in Science, Technology, and Policy** from MIT 2012 - 2016

Coursework and written capstone project pertaining to science policy (Expected Dec 2016)

**Science Policy Boot Camp,** a two week intensive course at MIT2012

**Congressional Visit Day** with MIT Science Policy Initiative 2012, 2016

**Future Partners Forum Participant,** US-NZ partnership forum**,** Christchurch, NZ February 2011

INVOLVEMENT IN THE BROADER PROFESSIONAL COMMUNITY

**Steering Committee** for the Society for Women in Marine Science 2015 - Present

Orchestrated the 2015 and 2016 Symposiums featuring female Oceanographers in the northeast.

**Secretary**, MIT-WHOI Joint Program Student Representative Body 2013 - 2014

**Student Representative**, WHOI Diversity Committee 2012 - 2014

**Peer Reviewer,** PLoS ONE and Deep-Sea Research 2013 - Present

**Educational Workshops**

Workshop on Genomics, Cesky Krumlov, Czech Republic 2014

Non-Model Genomics Workshop, Cornell University, Ithaca, New York 2013

# AWARDED GRANTS AND RESEARCH FUNDING

**WHOI Ocean Exploration Institute,** $15,000 2016

Robert James Fund for Invasive Genomics

**PADI Foundation,** $6,514 2015

“Temporal population genomics of the invasive lionfish: what fixed-point genetics can tell us about

invasive species biology and management.”

**Sea Grant New Initiative Award:** $4,637 2016

“Population genomics of *Palaemon macrodactylus*, a rapidly invading marine crustacean in New

England waters”

**WHOI Ocean Ventures Fund,** $6,000 2014

“Population genomics of the invasive lionfish *Pterois volitans*: impacts of natural selection and

genetic drift in a rapidly expanding invasive species.”

**WHOI Coastal Ocean Institute:** $1,464 2013

# “Population Genomics of the Rapidly Invading Lionfish, *Pterois volitans*.”

RESEARCH EXPEDITIONS

# **Scientist and Data Logger** 2014

# *NOAA Survey Vessel Henry Bigelow*, ROV ROPOS. Dates: June and July 2014. Location: Northwest Atlantic Ocean, canyon habitats. Chief Scientists: Martha Nizinski (NOAA), Anna Metaxas (Dalhausie University), Tim Shank (WHOI).

# **Shore-based Scientist and Event Logger** (participation via telepresence) 2013

# *R/V Okeanos Explorer*, ROV Deep Discoverer, “EX1304 Leg 2: Northeast US Canyons Expedition 2013.” Dates: August, 2013. Location: Northwest Atlantic Ocean. Chief Scientists: Amanda Demopolus (USGS) and Martha Nizinski (NOAA).

# **Lead Biologists and Watch Leader** 2012

# *E/V Nautilus*, ROV Hercules. “NA022: Exploration of the Anaximander Seamounts.” Date: July-August, 2012. Location: Northeast Mediterranean Sea. Chief Scientist: Nicole Raineault (URI, Institute For Exploration). [[Live interview from sea](http://www.nautiluslive.org/video/2012/08/03/meet-team-scientist-ellie-bors), [Crew profile](http://www.nautiluslive.org/people/ellie-bors)]

# **Shore-based Scientist and Event Logger** (participation via telepresence) 2012

# *R/V Okeanos Explorer*, ROV Little Hercules, “EX1202 leg 2 and 3: GoMEX 2012, Gulf of Mexico Expedition.” Dates: March 19-April 28th, 2012. Location: Gulf of Mexico. Chief Scientists: Tim Shank (WHOI) and Jamie Austen (UTexas).

# **Field Assistant** 2011

# *R/V Tangaroa*, “TAN1113 Biophys 22.” Dates: October 2011. Location: New Zealand Continental Shelf. Chief Scientist: Scott Nodder (NIWA, NZ).

# **Shore-based Scientist and Event Logger** (participation via telepresence) 2010

# *R/V Okeanos Explorer*, ROV Little Hercules, “EX1004 leg 2 and 3: INDEX-SATAL 2010, Indonesia-USA exploration of the Sangihe Telaud Region.” Dates: July 21st-August 6th, 2010. Location: Indonesia. Chief Scientist: Tim Shank (WHOI).

# **Biology Assistant** 2009

# *R/V Kilo Moana*, HROV Nereus, “Engineering Field Trials for the Hybrid ROV Nereus.” Dates: May-June, 2009. Location: Mariana Trench, Western Pacific Ocean. Chief Scientist: Andy Bowen (WHOI DSL) and Louis Witcomb (Johns Hopkins University). [[Press Release](http://www.whoi.edu/page.do?pid=7545&tid=3622&cid=57586)]

# EXTRACURRICULAR ACTIVITIES AND PERSONAL INTERESTS

**MIT Chamber Music Society** 2010 - Present

**PADI Advanced Open Water SCUBA diver** 2010 - Present

**Sailing Crew**, *Woods Hole Yacht Club Summer and Fall Knockabout Racing Series* 2009 - Present

**Principal Cellist**, *Quincy Symphony, Quincy, MA* 2009

**Contemporary Music Ensemble,** *Oberlin Conservatory* *of Music* 2008 - 2009

**Founding Member**, *Isis String Quartet* 2005 - 2007

**US Sailing certified skipper** for 25-foot keelboats 2004 - Present