**ZACHARY A.** **BENGTSSON**

ZBENGT@UW.EDU

**E D U C A T I O N**

**University of Washington**: 2021-Present

Graduate Student, Masters of Science

School of Aquatic & Fishery Science

**Boston University**: 2013-2015

B.A., Biology – Specialization in Ecology and Conservation Biology

Minor: Marine Science

Cumulative GPA: 3.58, *Cum Laude*

**The George Washington University**: 2011-2013

Full-Time Undergraduate Student (Transferred)

**E M P L O Y M E N T H I S T O R Y**

**University of Washington • School of Aquatic & Fishery Science**

Graduate Research Assistant (September 2021 - Present)

• Research coral epigenetic-environmental linkages in the Mo’orea coral reef under the framework of the NSF E5 Coral project (https://e5coral.org/).

• Create annotation and analysis pipelines for the processing of coral genomic data.  
• Explore the application of field-based and remotely-sensed environmental data to energetic models.

**NASA Applied Remote Sensing Training Program (ARSET) • NASA Ames Research Center**

Research Associate (October 2020 – August 2021)

• Assisted in all portions of content creation and delivery of online environmental remote sensing trainings for ARSET’s land and coastal management application area.  
• Led the creation and delivery of five trainings related to vegetation-based wildfire risk assessment and Google Earth Engine for land management applications.  
• Coordinated across NASA Earth Applied Sciences to complete capacity building activities and improve public access to satellite remote sensing data products for environmental management.

**NASA DEVELOP • NASA Ames Research Center**

Project Coordination Fellow (September 2019 – September 2020)

• Supported Earth science projects across 11 locations and developed partnerships to highlight the scientific applications of NASA satellite sensors for environmental and public policy issues.  
• Edited proposals, technical deliverables, and science communication materials.  
• Assisted DEVELOP locations with scoping and generation of novel research projects in areas such as water resources, ecological forecasting, food security & agriculture, and health & air quality.

**NASA DEVELOP • Boston University**

Center Lead (April 2018 – August 2019) + Project Lead (January 2018 – March 2018)

• Proposed remote sensing and GIS projects that utilize NASA Earth observations.  
• Carried out remote sensing data processing and analysis using geospatial and statistical analysis platforms (i.e. Google Earth Engine, SeaDAS, ACOLITE, R).  
• Managed project team members as well as participant selections and developed partnerships with environmental and public policy organizations.

**The Nature Conservancy • Pulaski, NY**

Environmental DNA Project Coordinator (June 2017 – October 2017)

• Sampled aquatic ecosystems for environmental DNA analysis and operated underwater video surveillance equipment.  
• Coordinated Cornell University laboratory staff, volunteers, TNC staff members, and U.S. Fish and Wildlife officials.  
• Managed, analyzed, and stored eDNA data and video files.  
• Contributed to a final technical report and eDNA citizen science reference guide made available to the public.

**Exosome Diagnostics, Inc. • Cambridge, MA**

Clinical Laboratory Technologist (November 2016 – April 2017)

• Completed RNA extractions and qPCR analysis as a part of a clinical prostate cancer testing procedure.  
• Managed testing work flow and results using laboratory information management systems.  
• Assisted with sample accessioning and laboratory safety.

**Microarray and Sequencing Resource Laboratory • Boston University School of Medicine**

Research Technician (August 2015 – October 2016)

• Completed genetics and genomics experiments using Affymetrix microarray processing, Illumina sequencing, and Ion Proton sequencing.  
• Contributed to various projects related to osteology, rheumatology, and cancer biology as well as projects outside of the medical school related to general biology and marine ecology.  
• Assisted with project management and client communications.

**P U B L I C A T I O N S**

**Bengtsson, Z.**, Kuhn, K., Battaglino, A., Li, A., Talbot, M., Wafapoor, M., Atta, C., Kowalski, M.,

Margolis, S., Rar, E., Burmester, E., Lesneski, K., Scavo Lord, K., Kaufman, L., Stewart, N., and Finnerty, J. (2019). *Corals of the genus Porites are a locally abundant component of the epibiont community on mangrove prop roots at Calabash Caye, Turneffe Atoll, Belize*. Caribbean Naturalist, Volume 67.

Lord, K.S., Lesneski, K., **Bengtsson, Z.**, Kuhn, K., Madden, J., Cheung, B., Ewa, R., Taylor, J.,

Burmester, E., Morey, J., Kaufman, L., Finnerty, J. (2020). *Multi-year viability of a reef coral population living on mangrove roots suggests an important role for mangroves in the broader habitat mosaic of corals*. Frontiers in Marine Science, Volume 7.

Zhang, X., Fichot, C. G., Baracco, C., Guo, R., Neugebauer, S., **Bengtsson, Z.**, Ganju, N.,

Fagherazzi, S. (2020). *Determining the drivers of suspended sediment dynamics in tidal marsh-influenced estuaries using high-resolution ocean color remote sensing*. Remote Sensing of Environment, Volume 240.

**S E L E C T E D P R O J E C T S**

**Citizen Science, Environmental DNA, and Underwater Video Surveillance in Eastern Lake Ontario**

The Nature Conservancy • June 2017 – October 2017

• Utilized environmental DNA and underwater video surveillance to detect invasive aquatic species in Lake Ontario and surrounding rivers.

• Identified DNA from an invasive fish species thought not to be present in the Lake Ontario region.

• Examined the feasibility of this technology for use by citizen scientists at a community level for waterbody management.

**Corals of the Genus *Porites* are a Locally Abundant Component of the Epibiont Community on Mangrove Prop Roots at Calabash Caye, Turneffe Atoll, Belize**

Boston University Undergraduate Research • October 2015 – August 2015

• Collected data in the field to examine the abundance and distribution of *Porites* corals in the mangrove ecosystems of Calabash Cay, Turneffe Atoll, Belize.

• Analyzed colony photography and spatial data to determine relative age and clustering distribution trends.

• Handed off research to be continued by a Boston University graduate student.

**Examining Tick-Borne Illness Risk by Evaluating Land Cover and Tick Habitat Suitability in Southern Maine**

NASA DEVELOP, Boston University • June 2019 – August 2019

• Analyzed Landsat 8 OLI imagery to assess land cover classes relevant to tick-human encounter.

• Utilized simple Bayesian statistical models to assess the relationship between environmental parameters and Lyme disease incidence.

• Communicated tick-borne illness risk to community partners in Cumberland County, Maine.

**Employing Remote Sensing Techniques to Evaluate Flood Extent and Environmental Parameters that Contribute to High Water Levels in Lake Ontario's Coastal New York Communities**

NASA DEVELOP, Boston University • January 2019 – April 2019

• Created a user-friendly tool to compile and visually display precipitation, soil moisture, and snow/ice cover remote sensing data.

• Examined the feasibility of using current urban flood mapping methods to target frequently flooded areas in the Niagara Falls, NY area.

• Coordinated with municipal offices and universities to establish use of this data in future flood modeling efforts.

**Employing Remote Sensing Techniques to Quantify Sediment Supply and Evaluate Marsh Vulnerability in the Plum Island Estuary**

NASA DEVELOP, Boston University • January 2018 – August 2018

• Led the team at DEVELOP Massachusetts in the use of Landsat 8 OLI and Sentinel-2 MSI imagery to calculate suspended sediment concentration (SSC) in the Plum Island Estuary.

• Developed a local algorithm for the conversion of remote sensing reflectance to SSC.

• Coordinated with partners at the USGS and Boston University to incorporate results into sediment flux modeling and marsh vulnerability assessment.

**P R E S E N T A T I O N S**

**Narrowing the Gap in Environmental Problem Solving: Connecting with Communities Using Emerging Geospatial and Communications Technologies**.American Geophysical Union Fall Meeting, December 2020. eLightning & Poster Session Convener.

**Wildlife CSI: Using Environmental DNA and Remote Sensing to Solve Ecological Crimes**. Ignite@AGU (<https://youtu.be/VP-W-xVp4OY>), December 2019. Oral presentation.

**Using NASA Earth Observations within the DEVELOP National Program to Address Environmental Issues in Bhutan**. NASA Ames Research Center Earth Science Presentations for His Majesty Jigme Khesar Namgyel Wangchuck, King of Bhutan, Novermber 2019. Oral presentation.

**Employing Remote Sensing Techniques to Quantify Sediment Supply and Evaluate Marsh Vulnerability in the Plum Island Estuary**.William T. Pecora Memorial Remote Sensing Symposium (Pecora 21) and the International Symposium on Remote Sensing of Environment (ISRSE 38), October 2019. Oral presentation.

**Examining Tick-Borne Illness Risk by Evaluating Land Cover and Tick Habitat Suitability in Southern Maine**.NASA Applied Sciences Health & Air Quality Program Review, September 2019. Oral presentation.

**Applying the Lens of NASA Earth Observations to Flood Conditions Monitoring Along the Coast of Lake Ontario**. Great Lakes and St. Lawrence Cities Initiative Annual Meeting, June 2019. Oral presentation.

**Employing Remote Sensing Techniques to Evaluate Flood Extent and Environmental Parameters that Contribute to High Water Levels in Lake Ontario's Coastal New York Communities**. Goddard Space Flight Center Mid-Atlantic DEVELOP Closeout Symposium, April 2019. Oral and poster presentation.

**Employing Remote Sensing Techniques to Quantify Sediment Supply and Evaluate Marsh Vulnerability in the Plum Island Estuary**. NASA Annual Earth Science Applications Showcase, August 2018. Poster presentation.

**H O N O R S A N D A W A R D S**

**Latin Honors: *Cum Laude***, Boston University (2015)

**BU Marine Program Convocation Speaker**, Boston University (2015)

**Dean’s List**, Boston University (2014-2015)

**Trustee Scholar**, The George Washington University (2011-2013)