

Bianca Silva Santos

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EDUCATION:

PhD Environment and Resources
Stanford University, Palo Alto, CA

2019 - Present

M.S. Marine Science, concentrations in Fisheries Science and Marine Policy
Virginia Institute of Marine Science (VIMS), College of William and Mary (WM), Virginia

2017

B.S. Honors in Marine Vertebrate Biology, minor in Ecosystems and Human Impact, *magna cum laude*
Stony Brook University, New York

2014

- Study abroad: Discovery Bay Marine Laboratory, The University of the West Indies, Jamaica (Winter 2012)
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WORK AND RESEARCH EXPERIENCE:

Intern, Fisheries and Aquaculture Department

02/2019 – 05/2019

Food and Agriculture Organization of the United Nations (FAO), Rome, Italy

- Helped organize an “other effective conservation measures (OECMs) in the marine fisheries sector” expert meeting, including production of a 100+ page background document and final meeting report
- Conducted a literature review, analyzed data, and drafted a report on the socio-economic outcomes of worldwide quota share programs to highlight the roles of FAO fisheries guidelines
- Drafted content and designed scope to update FAO’s marine protected areas webpage
- Drafted FAO position paper on using multiple types of spatial management to meet global biodiversity goals

International Activities Analyst, John A. Knauss Marine Policy Fellowship

02/2018 – 01/2019

National Oceanic and Atmospheric Administration (NOAA), Silver Spring, MD

- Served as the office staff lead for programmatic matters involving environmental science and research activities covering Australia, New Zealand, Africa, China, India and the Arctic.
- Prepared briefing materials, talking points and position papers, and provided full staffing support to the Assistant Administrator (AA) of NOAA Research at the U.S.-India Science Colloquium and Business Meeting, streamlining the AA’s ability to negotiate the next decade of collaborative ocean research priorities
- Developed meeting process for the 1st meeting of the U.S.-China Joint Scientific Experts Group, serving as an advisor to the U.S. interagency delegation and facilitated discussions on areas of bilateral collaboration
- Conduct literature reviews, draft narratives and maintain database on 50+ sea turtle population segments for NOAA’s National Marine Fisheries Services’ Sea Turtle Climate Vulnerability Assessment

Graduate Research Assistant

08/2014 – 08/2017

Marine Population Dynamics Laboratory, Virginia Institute of Marine Science, Gloucester Point, VA

- Independently designed and led field experiments to parameterize the drift characteristics of dead stranded sea turtles, using information to develop an oceanographic sea turtle carcass drift simulation tool
- Performed extensive spatial analyses in RStudio and ArcGIS to determine potential locations and drivers of sea turtle mortality to provide focus areas for management
- Built and installed beach sensors to study sea turtle nesting behavior in relation to climate change, managing and interpreting large datasets of environmental information
- Trained 40+ hours in sea turtle stranding response and necropsy techniques through the VA Stranding Center, independently responding to and administering post-mortem examinations on local stranding events
- Conducted 55+ hours of nighttime beach patrols to collect data on loggerhead and green nesting female sea turtles and hatchlings as an invited scientist to the Archie Carr National Wildlife Refuge, FL

- Molecular and Genetic Undergraduate Research Assistant*** 08/2012 – 05/2014
Marine Animal Disease Laboratory, Stony Brook University, Stony Brook, NY
- Mastered molecular and genetic techniques to study gene regulation in diseased oysters to curb mortality in the shellfish industry
 - Developed a novel protocol for a cell motility assay to observe interactions between oysters and parasites
 - Spearheaded undergraduate honors thesis on *P. marinus* apoptosis regulation and awarded a National Science Foundation Research Experience for Undergraduates Supplement Grant to fund summer research
- Marine Mammal Intern*** 08/2012 – 12/2012
The Riverhead Foundation for Marine Research & Preservation, Riverhead, NY
- Responsible for basic animal care of various marine mammals, including sea lions, seals, and otters, through food preparation, exhibit upkeep, training sessions and animal enrichment
- Fisheries Research Assistant, Research Experience for Undergraduates*** 06/2012 – 08/2012
Alaska Salmon Program, University of Washington, Aleknagik, AK
- Over 250+ hours collecting and analyzing data from daily fisheries and ecosystem research surveys for a variety of fisheries population, genetic, diet, and reproductive studies.
 - Designed and conducted an independent research project investigating the effects of temperature on the diet and growth of juvenile coho salmon to assess species response to climate change
- Marine Biology Summer Intern*** 05/2011 – 06/2011
The River Project, New York, NY
- Assisted with data collection and analyses on local water quality in the Hudson River ecosystem
 - Responsible for the care of marine organisms and maintenance of wet laboratory and aquarium tanks
 - Educated walk-in individuals and groups on program initiatives and research efforts
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TEACHING AND COMMUNICATION:

- Science Mentor, Letters to a Pre-Scientist*** 08/2018 – Present
- Exchange personalized letters with a student pen-pal from a minority, low income community to mentor and motivate interest in STEM
- World Bank U.S. Youth Delegate, SustainUS*** 03/2018 – 05/2018
- Spearheaded media and communication for a U.S. Youth Delegation to the 2018 World Bank Meetings
 - Designed social media strategy and managed accounts (Facebook, Twitter, Instagram) to maintain strong brand presence across platforms during the campaign, strengthening online presence and user relationships
- National Ocean Sciences Bowl (NOSB) Question Writer, Consortium for Ocean Leadership*** 08/2017 & 08/2018
- Researched and created 150+ multiple choice buzzer questions and 6 open-ended team challenge questions on a variety of ocean science topics with ranging levels of difficulty for the 2018 & 2019 NOSB
- Student Research Advisor, Virginia Institute of Marine Science*** 01/2017 – 05/2017
- Directly supervised the independent research project of an international undergraduate student from Silpakorn University (Thailand) analyzing environmental conditions of sea turtle nests
 - Taught fundamentals of RStudio and assisted with developing and executing data analysis protocols
- Graduate Lesson Plan Program, Virginia Scientists and Education Alliance*** 09/2016 – 05/2017
- Developed and published a classroom-tested, inquiry-based science lesson plan on protected species biology
 - Successful completion of lesson plan development program and best practices for communicating research

Graduate Teaching Assistant, Virginia Institute of Marine Science

01/2016 – 12/2016

- Independently designed and taught weekly recitation section to reinforce challenging concepts to 10+ undergraduate students in a graduate-level biological oceanography course
- Led weekly hands-on laboratory activities and taught introductory quantitative fisheries modeling in RStudio to 15+ graduate-level students in an advanced marine fisheries course

Advanced Science Communication Seminar, Virginia Sea Grant & George Mason University 08/2015 – 12/2015

- Designed several infographics as a communication product to translate research to non-scientists
- Shared product with stakeholders at the 2017 Virginia Sea Grant Symposium

Student Summer Research Advisor, Virginia Institute of Marine Science

06/2015 – 08/2015

- Directly supervised the execution of a summer research project by a WM undergraduate student on sea turtle stranding distribution in the Chesapeake Bay using ArcGIS
- Mentored student in research best practices and pursuing graduate studies in STEM fields

Visiting Scientist, VIMS GK-12 Scholar, Page Middle School

05/2015 – 12/2015

- 140+ hours mentoring, assisting, and directing hands-on class and field instruction to 180+ students
- Involved partner teachers with 20+ hours of summer research experience
- Trained 30+ hours in teaching theory and techniques for effective student science communication
- Developed appropriate teaching materials and engaging activities incorporating my graduate research and other science topics relevant to the needs of the classroom students and teachers

PUBLICATIONS:

- Santos, B.S.**, Friedrichs, M.A.M., Rose, S., Barco, S.G., Kaplan, D.M. 2018. Likely locations of sea turtle stranding mortality using experimentally-calibrated, time and space-specific drift models. *Biological Conservation* 226:127-143. <https://doi.org/10.1016/j.biocon.2018.06.029>
- Santos, B.S.**, Kaplan, D.M., Friedrichs, M.A.M., Barco, S.G., Mansfield, K.L., Manning, J.P. 2018. Consequences of drift and carcass decomposition for estimating sea turtle mortality hotspots. *Ecological Indicators* 84:319-336, <https://doi.org/10.1016/j.ecolind.2017.08.064>
- Lau, Y.T., Gambino, L., **Santos, B.**, Espinosa, E.P., Allam, B. 2018. Transepithelial migration of *Crassostrea virginica* hemocytes and potential role in *Perkinsus marinus* pathogenesis. *Journal of Invertebrate Pathology* 154:122-129. <https://doi.org/10.1016/j.jip.2018.03.004>
- Lau, Y.T., **Santos, B.**, Barbosa, M., Espinosa, E.P., Allam, B. 2018. Regulation of apoptosis-related genes during interactions between oyster hemocytes and the alveolate parasite *Perkinsus marinus*. *Fish and Shellfish Immunology* 83:180-189. <https://doi.org/10.1016/j.fsi.2018.09.006>
- Santos, B.** 2017. Sea Turtle CSI: A Graphing Activity [Lesson Plan]. Virginia Scientists & Educators Alliance, a collaboration of the Chesapeake Bay National Estuarine Research Reserve in Virginia (NERR Science Collaborative, NOAA) and the Marine Advisory Program, Virginia Institute of Marine Science, College of William & Mary. <https://tinyurl.com/VASEA-Lessons>
- Smits, A.P., Schindler, D.E., Armstrong, J.B., Brett, M.T., Carter, J.L., **Santos, B.S.** 2016. Thermal constraints on stream consumer responses to a marine resource subsidy. *Canadian Journal of Fisheries and Aquatic Sciences* 73(11):1661-1671. <https://doi.org/10.1139/cjfas-2015-0420>

CONFERENCE PRESENTATIONS:

- Santos, B.S.**, Kaplan, D.M., Friedrichs, M.A.M., Barco, S.G., Rose, S. 2018. Development of an experimentally-calibrated drift model to determine likely locations of sea turtle stranding mortality. 6th Mediterranean Conference on Marine Turtles. Porec, Croatia.

- Santos, B.S.,** Kaplan, D.M., Friedrichs, M.A.M., Manning, J.P., Barco, S.G. 2017. Identifying locations of and mechanisms for sea turtle mortality. 16th Annual William and Mary Arts and Sciences Graduate Research Symposium. Williamsburg, VA.
- Santos, B.S.** Kaplan, D.M., Friedrichs, M.A.M., Barco, S.G., Rose, S. 2017. Consequences of drift and decay of sea turtle carcasses for the estimation of turtle mortality locations from stranding data in the Chesapeake Bay. 37th Annual Symposium on Sea Turtle Biology and Conservation. Las Vegas, Nevada. **Runner-up for the Archie Carr Best Student Oral Presentation in Conservation*
- Santos, B.S.,** Kaplan, D.M., Friedrichs, M.A.M., Manning, J.P., Barco, S.G. 2017. Identifying locations of and mechanisms for sea turtle mortality from stranding data using ocean drift models. 31st Annual Meeting of the American Fisheries Society, Tidewater Chapter. Virginia Beach, VA.
- Santos B.S.,** Barco S.G., Mansfield K.L., Friedrichs M.A.M, Manning J.P., Upite C., Kaplan D.M. 2016. Identifying locations and mechanisms for sea turtle mortality from stranding data. 36th Annual Symposium on Sea Turtle Biology and Conservation. Lima, Peru.

COMMUNITY/PUBLIC PRESENTATIONS:

- Santos, B.S.** 2018. Frankenturtles: The Science Behind the Monsters. National Oceanic and Atmospheric Administration's Brown Bag Seminar. Silver Spring, MD.
- Santos, B.S.** 2017. Using ocean drift models to infer locations of sea turtle mortality. Virginia Institute of Marine Science Fisheries Department Seminar. Gloucester Point, VA.
- Santos, B.S.** 2016. Identifying locations of and mechanisms for sea turtle mortality from stranding data using ocean drift models. VIMS Fisheries Department Seminar. Gloucester Point, VA.
- Santos, B.S.** 2017. Sea Turtles. Virginia Institute of Marine Science/Chesapeake Bay National Estuarine Research Reserve Monthly Discovery Lab Series for Community Outreach. Gloucester Point, VA. **Invited speaker*
- Santos, B.S.** 2016. Sea Turtles in Virginia. Scientists & Educators Workshop, Virginia Institute of Marine Science Coastal Ecosystems Field Course. Wachapreague, VA. **Invited speaker*
- Santos, B.S.** 2016. Sea Turtle CSI. Conference of Southern Graduate Schools Three Minute Thesis® Regional Competition. Charlotte, NC. **Semi-Finalist*
- Santos, B.S.** 2016. Sea Turtle CSI. College of William and Mary's Arts & Sciences Journal Club. Williamsburg, VA. **Invited speaker*
- Santos, B.S.** 2015. Sea Turtle CSI. Virginia Institute of Marine Science Three Minute Thesis® Competition. Gloucester Point, VA. **1st Place Winner and People's Choice Award*
- Santos B.S.** 2015. Sea Turtles and Sustainability. College of William and Mary's 3rd Sustainability Summit, Williamsburg, VA. **Invited speaker*

SELECTED FELLOWSHIPS AND GRANTS (8/16):

Enhancing Diversity in Graduate Education Doctoral Fellowship Program , Stanford University (\$12,800)	2019
Stanford Graduate Fellowship in Science and Engineering , Stanford University	2019
National Sea Grant Knauss Marine Policy Fellowship , NOAA (\$62,000)	2018
Support Program Travel Grant , Southern Association of Marine Laboratories (\$300)	2016
Norfolk Southern Fellowship , VIMS Foundation (\$2,000)	2016
Program Development Grant , Virginia Sea Grant (\$5,000)	2016
Shelton Short Trust GK-12 Fellowship , VIMS (\$12,500)	2015
Green Fee Funding , Committee on Sustainability, College of William and Mary (\$8,500)	2015