

BRENDAN SHEA

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EDUCATION

Virginia Tech, Blacksburg, VA

August 2020 – Present

PhD Student, Department of Fish and Wildlife Conservation

Interfaces of Global Change Fellow, Global Change Center

Advisor: Dr. Francesco Ferretti

Northeastern University, Boston, MA

September 2017 – December 2018

Master of Science, Marine Biology – Northeastern Three Seas Program

Thesis Advisor: Dr. Austin Gallagher, Beneath the Waves

- Thesis: *Swimming scared: Exposure to white sharks affects the behavior of mobile fish species along a dynamic coastal landscape.*

Colorado College, Colorado Springs, CO

September 2007 – May 2011

Bachelor of Arts, Environmental Science

- Thesis: *Influence of temperature on radial growth of *Picea engelmannii* at tree line*

PROFESSIONAL EXPERIENCE

Graduate Assistant

August 2020 – Present

Ferretti Lab, Department of Fish and Wildlife Conservation, Virginia Tech, Blacksburg, VA

Marine Protected Areas (MPAs)

- Leading research project that synthesizes public data from regional fisheries management organizations (RFMOs) and vessel tracking data from Global Fishing Watch to generate standardized catch rates and projected catch in MPAs.
- Investigating home range and space use in large marine predators to better inform location and size of future MPAs.

Mediterranean White Sharks

- Collaborated with multi-national team from several institutions to plan and execute a three-week research expedition in the Sicilian Channel searching for an endangered population of white sharks.
- Led deep sea and mid-water pelagic baited remote underwater video (BRUV) components of the expedition; also worked with researchers from other institutions to develop tagging protocols.
- Currently planning a return trip for Summer 2022

Ecosystem Consequences of Losing Sharks

- Heading further investigation of proposed yet controversial trophic cascade regarding large sharks, cownose rays, and shellfish in the Mid-Atlantic.
- Analyzing population trends in cownose rays using catch reconstruction techniques and advanced stock assessment approaches to better model population trajectories and complete the first stock assessment regionally for cownose rays.
- Investigating the potential role of risk effects in the proposed trophic cascade via *in situ* observation of cownose rays under varying levels of predation risk using BRUVs.

Research Manager / Research Associate
Beneath the Waves, *Cape Cod, MA*

June 2018 – Present

- Joined organization as intern to complete thesis research for MSc; full-time employee during 2019 field season (Research Manager); Research Associate since 2020.
- Significant research experience in the Caribbean (eight expeditions in the Bahamas, including serving as science lead for 15-day trip on a 137-foot vessel; one expedition in the Turks & Caicos Islands) and New England (led more than 60 days of on-water research in the region).
- Organized and led all field activities for four graduate students conducting their thesis research with the organization during 2019 Cape Cod research season

Project Engineer / Environmental Health & Safety Specialist
The Vertex Companies, Inc., *Weymouth, MA*

January 2012 – August 2017

PEER-REVIEWED PUBLICATIONS

- 10) Andrzejczek, S.A., Lucas, T., Goodman, M., ...**Shea, B.D.**, ...and Curnick, D. (*In revision*). "Diving into the vertical dimension of elasmobranch movement ecology." In revision at *Science Advances*.
- 9) Halpern, B.S., Boettiger, C., Dietze, M.C., ...**Shea, B.D.**, ...and Youngflesh, C. (*In revision*). "Priorities for synthesis in ecology and environmental science." In revision at *Frontiers in Ecology and the Environment*.
- 8) Jorgensen, S.J., Micheli, F., White, T.D., ...**Shea, B.D.**, ...and Ferretti, F. (2022). "Emergent research and priorities for elasmobranch conservation." *Endangered Species Research*, 47: 171-203.
- 7) **Shea, B.D.**, Coulter, S.K., Dooling, K.E., Isihara, H.L., Roth, J.C., Sudal, E., Donovan, D.J., Hoopes, L.A., Dove, A.D.M., Cooke, S.J., and Gallagher, A.J. (2022). "Recreational fishing fight times are not correlated with physiological status of blue sharks (*Prionace glauca*) in the Northwestern Atlantic." *Fisheries Research*, 248: 106220
- 6) Bates, A.E., Primack, R.B., ...**Shea, B.D.**... and Duarte, C.M. (2021). "Global COVID-19 lockdown highlights humans as both threats and custodians of the environment". *Biological Conservation*, 263: 09175
- 5) Gallagher, A.J., Alsudairy, N.A., **Shea, B.D.**, Payne, N.L., and Duarte, C.M. (2021). "First application of 360-degree camera technology to marine predator bio-logging." *Frontiers in Marine Science*, 8: 707376
- 4) **Shea, B.D.** and Gallagher, A.J. (2021). "Humpback Whale Instigates Object Play with a Lion's Mane Jellyfish" *Oceans*, 2: 386-392.
- 3) Gallagher, A.J., Shipley, O.N., van Zinnicq Bergmann, M.P.M., Brownscombe, J.W., Dahlgren, C.P., Frisk, M.G., Griffin, L.P., Hammerschlag, N., Kattan, S., Papastamatiou, Y.P., **Shea, B.D.**, Kessel, S.T., and Duarte, C.M. (2021). "Spatial connectivity and drivers of large shark habitat use within a large marine protected area in the Caribbean." *Frontiers in Marine Science*, 7: 608848
- 2) **Shea, B.D.**, Benson, C.W., de Silva, C., Donovan, D., Romeiro, J., Bond, M.E., Creel, S., and Gallagher, A.J. (2020). "Effects of exposure to large sharks on the abundance and behavior of mobile prey fishes along a temperate coastal gradient." *PLoS ONE*, 15(3): e0230308
- 1) Benson, C.W., **Shea, B.D.**, de Silva, C., Donovan, D., Holder, P.E., Cooke, S.J., and Gallagher, A.J. (2019). "Physiological consequences of varying white shark exposure on Striped Bass (*Morone saxatilis*)." *Canadian Journal of Zoology*, 97(12):1195-202

PRESENTATIONS

- Shea, B.D.**, Gallagher, A.J., Bomgardner, L.K., and Ferretti, F. “Using Big Data to test the effects of spatial protections in remote island shark sanctuaries” Ocean Sciences Meeting, March 2, 2022.
- Shea, B.D.** and Gallagher, A.J. “Connecting Shallow and Deep: Describing the vertical habitat use of large sharks near Great Exuma, The Bahamas using acoustic telemetry.” Ocean Tracking Network Symposium, November 16, 2021.
- Shea, B.D.**, Harding, L., Kattan, S., Shipley, O.N., Hammerschlag, N., Payne, N.L., Gallagher, A.J. “Deep Water Habitat Use of Tiger Sharks in the Bahamas.” Bahamas Natural History Conference, August 19, 2020.
- Shea, B.D.** “Swimming scared: Exposure to white sharks affects the behavior of mobile fish species along a dynamic coastal landscape.” Thesis defense in partial fulfillment of the requirements of the degree of Master of Science, Marine Biology, presented to the Northeastern University Marine Science Center on December 7, 2018.
- Shea, B.D.** “Influence of temperature on radial growth of *Picea engelmannii* at tree line.” Thesis presented to the Faculty of the Environmental Program at The Colorado College in partial fulfillment of the requirements of the degree of Bachelor of Arts, May 2011.

TEACHING EXPERIENCE

Graduate Teaching Assistant

Department of Fish and Wildlife, Virginia Tech, Blacksburg, VA

Mammalogy (*Lab instruction*)

Fisheries Management (*Prepared and led labs, one lecture*)

Fall 2020

Spring 2021

FUNDRAISING/GRANTS/AWARDS

- Robert D. Ross Graduate Scholarship, American Fisheries Society, Virginia Chapter – 2021/2022
- Burd Sheldon McGinnes Fellowship, Department of Fish and Wildlife Conservation, College of Natural Resources and Environment, Virginia Tech – 2021/2022
- Charles Engelhard Foundation (\$10,000 grant to Beneath the Waves) – November 2020

WORKSHOPS / CONFERENCES

- National Center for Ecological Analysis and Synthesis, “Future of Synthesis in Ecology and Environmental Science” virtual workshop, February 2021
- Bahamas National History Conference, Panelist for “Into the Deep” Session, Summer 2020

OUTREACH / MEDIA

- Appeared in 2021 Discovery show “Dr. Pimple Popper Pops Shark Week” (July 2021)
- Guest writer, Discovery.com, “[Deep-Sea Divers: Tiger Sharks of the Bahamas](#)” (August 2020)
- “Sharks Rule!”, children’s program for Mansfield Public Library, Mansfield, MA (August 2020).
- Featured expert on Answered by Vox, available on Quibi (August 10, 2020)
- “Risk Effects of Large Sharks”, webinar presented via Beneath the Waves’ “Shark Talks” on Facebook Live during the COVID-19 pandemic (April 10, 2020).
- Led Camp Thayer’s “Shark Camp” for two weeks in Summer 2019.

SERVICE TO PROFESSION

Professional memberships:

- American Fisheries Society, Virginia Tech Chapter
- The Oceanography Society

Peer review for following journals:

- Endangered Species Research (1 manuscript in 2021, 2 in 2020)
- Northeastern Naturalist (1 manuscript in 2021)
- Journal of Fish Biology (1 manuscript in 2022)

RELEVANT SKILLS

- **FIELD:** PADI certified Open Water Diver; significant research diving experience (>150 dives); served as safety diver during television production; significant experience with all aspects of fishing for, restraining and tagging large sharks (>150 sharks, >10 species), including acoustic and satellite telemetry, bio-logging, mark-recapture tagging, and biological sample collection (blood, muscle, tissue) and analysis (including in-field analysis for blood glucose, lactate, and pH); benthic, pelagic mid-water and deep-sea (acoustic release) BRUV deployment and retrieval; acoustic telemetry array installation and maintenance; eDNA sample collection and filtering.
- **COMPUTER/QUANTITATIVE:** Significant programming experience in R statistical software, including frequentist and Bayesian approaches, notably: GLM, GLMM, GAM, GAMM, GLS, SLR/MLR, fisheries stock assessment modeling, spatial analysis techniques, environmental synthesis/big data approaches, machine learning, network analysis, PERMANOVA and non-multidimensional scaling; moderate experience in PostgreSQL, Google BigQuery, ArcGIS/QGIS, Python. Proficient in Microsoft Office Suite, significant experience with BRUV annotation and analysis.
- **LABORATORY:** Dissolved ion and gas chromatography; fish dissections; titrations; incubations; eDNA filtration, PCR and Western Blot; separation of blood plasma and cells, and dendrochronological measurements.
- **EXPEDITIONS:** Experience both leading and participating in dedicated research expeditions to the Bahamas (eight trips); Turks and Caicos (one trip); and the Sicilian Channel (one trip); including multiple trips of two weeks or more.
- **LANGUAGE:** English (native); Spanish (written and verbal - near fluent, including significant experience using the language professionally).

CERTIFICATIONS

- PADI-certified Open Water Diver
- First Aid/CPR/AED Online