M A D I S O N M . B E T T S

7739 1st Ave NE, Seattle, WA 98102
(724) 599-4122 | mmbetts03@gmail.com

EDUCATION

M.Sc. in Fisheries and Wildlife Science, *Virginia Tech, Blacksburg, VA* 07/2023

B.Sc. in Environmental Science/Theatre Minor, *Allegheny College, Meadville PA* 05/2021

Experiential Learning

Caribbean Ecosystem Field Studies Program (ECOFS), Univ. of Montana, Xpu-Ha, Mexico. 2019

Coastal Marine Education and Research Academy (CMERA), Clearwater, FL. 2018

WORK EXPERIENCE

Fisheries Lab Geneticist 11/2023 - Present

Lynker Technologies/NOAA NWFSC, Seattle, WA
Supervisor: Dr. Krista Nichols | 40 hrs/wk

- Extracted DNA from a range of sources, including fresh and degraded tissues and eDNA filters
- Performed a variety of molecular lab techniques including PCR amplification, qPCR, library prep for GTseq and metabarcoding, and sequencing using Sanger and MiSeq machines
- Conducted field sampling and health monitoring for salmonid and anadromous fish studies
- Coordinated with NOAA trawl surveys and observers to collect specimens for the UW marine fish voucher collection; managed ID, tissue sampling, and specimen archiving with UW
- Generated genetic data using bioinformatics pipelines
- Supported the eDNA initiatives of the Integrated West Coast Pelagic Survey by conducting field work at sea, on board the Bell. M. Shimada

Graduate Research/Teaching Assistant 08/2021 – 08/2023

Virginia Tech, Blacksburg, VA
Supervisor: Dr. Emmanuel Frimpong | 20-40 hrs/wk

As Lab Manager:

- Coordinated multiple field and lab-based biological studies to meet grant requirements
- Supervised and trained a 12-person field team during summers 2022 and 2023
- Contributed to annual funder reports and prepared manuscripts for publication
- Delegated work responsibilities to crew and managed work schedule
- Built outreach partnerships with local schools and organizations; delivered educational presentations

As Research Assistant:

- Maintained long-term datasets and conducted daily habitat monitoring
- Designed and ran lab-based experiments on fish behavior and physiology
- Led genetic analysis for multiple projects; first in 5 years to sequence fish embryos
- Performed and trained lab technicians to complete DNA extractions, PCR amplification, and library preparation for sequencing
- Identified fish nests and spawning fishes to species using morphology, often from shore
- Led snorkel, seining, and electrofishing surveys in streams and rivers
- Contributed to annual funder reports; prepared manuscripts for publication

As Teaching Assistant:
- Taught labs in Ichthyology and Fish Ecology; led dissections (lamprey, shark, perch)
- Instructed students in species identification and field sampling (electrofishing, seining)
- Gave lectures on coral reef ecology, fish physiology and behavior
- Provided individual support during weekly office hours

Fisheries Technician 06/2021 - 08/2021
Virginia Tech, Blacksburg, VA
Supervisor: Dr. Emmanuel Frimpong | 40 hrs/wk
- Monitored larval development of multiple minnow species across six lab-based experiments
- Conducted electrofishing surveys in 1st–4th order streams throughout southwest Virginia and the Shenandoah Valley
- Performed stream habitat assessments and recorded daily abiotic data (flow, temperature, dissolved oxygen, pH)
- Measured oxygen consumption in larval fishes using Unisense micro-respirometry systems

Avian Field Technician 02/2020 - 04/2020
IUP Research Institute, Indiana, PA
Supervisor: Dr. Jeff Larkin | 20 hrs/wk
- Identified woodcock and other bird species using visual observation and spotting scopes
- Assisted in testing and refining transect survey protocols
- Recorded biological data accurately and consistently
- Conducted fieldwork in varied weather and rugged terrain, often involving moderate-distance hiking

Environmental Science Dept. Office Assistant 08/2017 - 05/2021
Allegheny College, Meadville, PA
Supervisor: Ms. Ruth Dunton | 20 hrs/wk
- Collaborated with Dept. faculty to schedule events and professional talks
- Developed skills to work independently and as part of a team
- Promoted department with various forms of social media
- Handled general office organization/paperwork

PUBLICATIONS

Shelton, A. O., K. Nichols, K. M. Parsons, **M. M. Betts**, S. P. Engster, A. Ramón-Laca, M. Parsley, M. Shaffer, A. Wells. 2025. Developing an abundance index for pacific hake using environmental DNA (Appendix G in: Status of the Pacific Hake (whiting) stock in U.S. and Canadian waters in 2025). 286 p.

Betts, M. M., N. Abaid, E. G. Maurakis, and E. A. Frimpong. 2024. Bluehead chub Nocomis leptocephalus hosts exploit selfish-herd benefits from their heterospecific nest associates. *Freshwater Biology*, 69, 450–459. https://doi.org/10.1111/fwb.14224

Betts, M. M. 2023. Two Layers of Selfish-herds in Spawning Aggregations of Chub (*Nocomis sp.*) and its Nest Associates. Master's thesis, Virginia Tech.

GRANTS

Betts M. M., et al. 2022. Bridging Stream and City: Inspiring Natural Wonder through Art and Technology (Outreach Grant). Institute for Creativity, Arts, and Technology (ICAT) Major SEAD Grant, Virginia Tech ($23,000).

AWARDS

Environmental Science Faculty Prize, Allegheny College, Meadville, PA, 2021

Distinguished Alden Scholar, Allegheny College, Meadville, PA, 2019-20

2x Alden Scholar, Allegheny College, Meadville, PA, 2017-18, 2018-19

PRESENTATIONS & PUBLISHED ABSTRACTS

Yang, H., T. Bustamante, S. Kraus, S. Brooks, M. Betts, E. Frimpong, K. Strom, & H. Foroutan. *Combining Lab, Field, and Computational Approaches to Investigate the Transport of Dissolved Oxygen through Gravel-Mound Nests.* AGU Fall Meeting 2024, Washington, D.C., Poster No. 1414, id. EP51F-1414. 12/2024

Two Layers of Selfish-Herds in the Spawning Aggregations of Chub and its Associates. NOAA Conservation Biology Genetics & Evolution Program meeting, Seattle, WA (invited speaker). 02/2024

A day in the life of one fascinating fish. Kids Tech University at Virginia Tech, Blacksburg, VA (invited speaker). 02/2023

Bridging Stream and City: Inspiring Natural Wonder through Art and Technology. ICAT Playdate, Blacksburg, VA. 02/2023

Selfish nesting behaviors of the Bluehead Chub, a keystone stream fish. AFS 2022, Spokane, WA. 08/2022

Bustamante, T., M. Betts, S. Brooks, & E. Frimpong. *No Stone Unturned: Studying bluehead chubs at Virginia Tech.* New River Valley Symposium, New River Gorge National Park and Preserve, WV. 04/2022

The Intersection Between Performance Art and Science. VT Communicating Science Convention, Blacksburg, VA (invited panelist). 03/2022

Discover Chub: Builders of Deerfield Trail. VT Communicating Science Convention, Blacksburg, VA. 03/2022

Predation response to chemosensory and visual cues in wild vs. cultured Chesapeake logperch (Percina bimaculata). 13th Annual Erie Regional Science Consortium, Erie, PA. 11/2020

OUTREACH

Skype a Scientist – Microbiology Girls Club, Seattle, WA. (20 students). 07/2025

NOAA Flavor of Fisheries Seminar 2024, Seattle, WA. (20 participants). 08/2024

Blacksburg Girl Scout Troup Meeting, Blacksburg, VA. (30 children and parents). 05/2023

Girls Launch with Center for Communicating Science, Pembroke, VA. (75 students). 05/2023

Montgomery County Stormwater Days, Christiansburg, VA. (378 students and chaperones). 04/2023

Mountain Valley Pipeline Ecotheatre Workshop, Moss Arts Center, Blacksburg, VA. (15 participants, 65 audience) 11/2022

Virginia Tech Science Fair, Moss Arts Center, Blacksburg, VA. (150 children and parents)	11/2022
Pearisburg Public Library, Pearisburg, VA (60 children and parents).	07/2022
"Discover Chub: An Evening Experience," Public outreach event, Blacksburg, VA. (70 community members)	06/2022
Art Installment, Student Arts Spotlight, Moss Arts Center, Blacksburg, VA. (200+ viewers).	12/2021
"Touring the castles of hornyheads in a stream near you," Master Naturalist Event, Blacksburg, VA. (35 community members).	11/2021
"Commit to Unwavering Curiosity," VT Aspire! Awards, Blacksburg, VA. (75 VT faculty and staff).	10/2021
"The Art and Science of Stream Biodiversity," Science on Tap of the NRV, Blacksburg, VA. (65 community members).	07/2021

SKILLS & CERTIFICATIONS

Computer Skills:

- R
- Geneious
- Python
- MATLAB
- Microsoft Office

Certifications:

- CPR/First Aid + AED
- PADI Rescue Diver
- Ontario Pleasure Craft Operator Card (Boater's License)
- Washington Driver's License

MEMBERSHIP

President: Art for Environmental Justice (2022-23)
Vice President: VT's Chapter of the American Fisheries Society (2022-23)
Member: Climate Action, Sustainability, and Energy Committee at VT (2022-23)
Member: American Fisheries Society (National Chapter) (2022-)
Member: Communicating Science Club (2021-2023)

WEBSITES

Github - https://github.com/madisonbetts
ResearchGate - https://www.researchgate.net/profile/Madison-Betts-4
Google Scholar – https://shorturl.at/afP9m

REFERENCES

Dr. Emmanuel Frimpong
Virginia Tech
frimp@vt.edu
(540) 231-6880

Mr. Eric Iwamoto
NOAA NWFSC
eric.iwamoto@noaa.gov
(206) 369-8573

Dr. Meghan Parsley
NOAA NWFSC
parsleymeghan1@gmail.com
(614)-545-8538