

# Nguyen Tien Anh Quach

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## EDUCATION

### Ph.D. in Geography and Environment

- University of North Carolina at Chapel Hill, Chapel Hill, North Carolina
- Advisor: Dr. Amanda G. DeVecchia
- Anticipated date of completion: May 2028

### M.S. in Biology – May 2023

- Towson University, Towson, Maryland
- Thesis title: *Road Salt: A Likely Driver of Long-term Benthic Macroinvertebrate Decline in an Urbanizing Stream* - Advisor: Dr. Susan E. Gresens
- Biology Graduate Student Association – *Ecology Liaison*
- Cumulative GPA: 3.96/4.00

### B.S. in Environmental Science – May 2020 – *Summa Cum Laude*

- Troy University, Troy, Alabama
- Program Advisor: Dr. Kewei Yu
- Cumulative GPA: 3.87/4.00; Institutional GPA: 3.92/4.00

### University of Skövde

- Exchange Student in Sweden; Sp18

## HONORS/AWARDS

### University of North Carolina at Chapel Hill

**Inclusive Excellence Top-Up – 2023**

**Teaching Assistantship – 2023-present**

### Towson University

### Towson University Graduate Student Association

- Research Grant – 2021
- Travel Grant – 2021; 2022
- Professional Development Grant – 2022

**Fisher College of Science & Mathematics Travel Grant – 2022**

**Teaching Assistantship – 2020-2023**

### Troy University

**Chancellor's List (GPA 4.0) – Sp20; Fa19; Sp/Fa18; Fa17**

**Provost's List (GPA 3.6) – Sp19; Sp17; Fa16**

**Chancellor's Award for Global Competitiveness – Fa17**

**Chancellor's Scholarship – 2016-2020**

**PUBLICATIONS**

**Peer-reviewed**

**Quach, N. T. A.**, Moore, J., Brittingham, K. B., Genito, D., Gresens, S. E., *In preparation*. A Comparison of Benthic Macroinvertebrate Communities and Water Quality in Red Run Watershed Over Two Decades of Urban Development and Salt Application. *Word count: 11,914*.

Miller, J. M., **Quach, N. T. A.**, Patel, M., Guillaumet, A., *Submitted*. Environmental Factors and Individual Characteristics Influencing Mussel Survival During Extraordinary Drought Periods: A Dewatering Experiment.

**Non-peer reviewed**

Miller, J. M., Patel, M. K., **Quach, N. T. A.**, Guillaumet, A., 2021. Survivability of Mussels, Targeting Federally Listed Species, Over a 13-week Period During the Drawdown of Gantt Reservoir. A Report to Power South Energy Cooperative and U.S. Fish and Wildlife Service as part of the Gantt Reservoir Drawdown Project Agreement (USFWS Project No. 2016-F-0576).

**INVITED PRESENTATION(S)**

**Quach, N. T. A.**, 2023. Freshwater Salinization and Its Consequences for Benthic Macroinvertebrate Communities and Water Chemistry. Presented virtually at the Chesapeake Bay Seminar Series at the Maryland Department of the Environment, August 2nd.

**PRESENTATIONS**

**Quach, N. T. A.**, Moore, J., Gresens, S. E., 2022. Consequences of Freshwater Salinization for Benthic Macroinvertebrate Communities and Water Chemistry. Presented at the 28th Annual Maryland Water Monitoring Council Conference, December 15th. Linthicum, MD.

**Quach, N. T. A.**, Gresens, S. E., 2022. A Comparison of Benthic Communities and Water Quality in Red Run Watershed Over Two Decades of Urban Development. Presented at the Baltimore Ecosystem Study 24th Annual Meeting, October 13th – 14th. Baltimore, MD.

**Quach, N. T. A.**, Gresens, S. E., 2022. Can a Maryland Piedmont Trout Stream Be Protected from Rapid Urban Development? The Long-Term View. Presented virtually at the 2022 Joint Aquatic Sciences Meeting, May 14th – 20th. Grand Rapids, MI.

Miller, J. M., **Quach, N. T. A.**, Patel, M. K., Guillaumet, A., 2021. Survivability of Mussels over the 13-Week Drawdown of Gantt Reservoir, Andalusia, AL and Factors Influencing Survival. Presented at the 2021 Alabama Water Resource Conference, September 8th – 10th. Perdido Beach, AL.

Miller, J. M., Patel, M. K., **Quach, N.T.A.**, Guillaumet, A., 2021. Autoecological and Environmental Factors Influencing Mussel Survival Over a 13-Week Period During the

Drawdown of Gantt Reservoir, AL. Presented at the 2021 Ecological Society of America Annual Meeting, August 2nd – 6th. Virtual Meeting.

**Quach, N. T. A.,** Miller, J. M., Guillaumet, A., Patel, M. K., 2020. Tracking Movement of a Federally Threatened Species of Mussel During the Drawdown of Gantt Reservoir. To be presented at the 81st Annual Meeting of Association of Southeastern Biologists, March 25th – 28th. Jacksonville, FL. *Cancelled due to COVID-19.*

**Quach, N. T. A.,** Miller, J. M., Guillaumet, A., Patel, M. K., 2020. Tracking Movement of a Federally Threatened Species of Mussel During the Drawdown of Gantt Reservoir. Presented at Alabama Mollusk & Crayfish Working Group Meeting, January 15th – 16th. Cullman, AL.

Miller, J. M., Patel, M. K., **Quach, N. T. A.,** Guillaumet, A., 2020. Survivability of Mussels, Including a Federally Listed Species, at Gantt Reservoir During a 13-week Drawdown. Presented at Alabama Mollusk & Crayfish Working Group Meeting, January 15th – 16th. Cullman, AL.

**Quach, N. T. A.,** Moore, A. T., Davis, E. C., Temple, T. N., Miller, J. M., 2019. Preliminary Investigations of Refuges as a Method to Capture Riverine Crayfish. Presented at the 80th Annual Meeting of Association of Southeastern Biologists, April 3rd – 6th. Memphis, TN.

## RESEARCH EXPERIENCE

**Graduate Student Researcher - Road Salt: A Likely Driver of Long-term Benthic Macroinvertebrate Decline in an Urbanizing Stream** (*April 2021 – May 2023*) – Towson University – Thesis Advisor: Dr. Susan E. Gresens

- Objective: Evaluate potential impacts of rapid urban development on benthic macroinvertebrate communities in Red Run watershed and of climate change on stream hydrology
- Conducted benthic field sampling with the Baltimore County Department of Environmental Protection and Sustainability
- Processed and identified benthic macroinvertebrates to genus level
- Collected benthic, climatological, land use, and water chemistry data
- Analyzed data by performing multivariate statistical analyses using RStudio and PC-ORD
- Preparing two manuscripts for the first and second chapters of thesis

**Graduate Student Researcher - Non-thesis Research in Benthic Taxonomy** (*January 2021 – May 2021*) – Towson University – Supervisor: Mr. Dennis Genito

- Objective: Obtain skills needed to identify benthic macroinvertebrates found in streams of Baltimore County
- Processed historic samples collected from streams in Baltimore County, MD and identified benthic macroinvertebrates to the genus taxonomic level

**Undergraduate Research Assistant - Survivability of Mussels, Targeting Federally Listed Species, During the Drawdown of Gantt Lake Reservoir** (*September 2019 – May 2020*) – Troy University – Principal Investigator/Supervisor: Mr. Jonathan M. Miller

- Objective: Evaluate effect of lake drawdown on survivability of mussels, specifically the federally threatened *Fusconaia escambia*, over a 13-week drawdown period
- Identified freshwater mussel species present at Gantt Reservoir

- Measured various environmental parameters weekly throughout the 13-week study
- Analyzed data and coauthored report and presentations
- Preparing a manuscript based on the research

**Undergraduate Student Researcher - Using bird vocalization as a tool for identification and taxonomy** (*January 2020 – May 2020*) – Troy University – Principal Investigator: Dr. Alban Guillaumet

- Objective: Compare bird songs of two closely related species.
- Conducted literature research to identify the tools and modeling approaches to measure the difference between vocalizations produced by different bird individuals/populations/species

**Undergraduate Student Researcher - NSF RAPID - Rapid response to drought in a biodiversity hotspot** (*September 2018 – May 2020*) – Troy University – Principal Investigator: Dr. Brian Helms

- Objective: Document how a ‘flash drought’ (a short-term exceptional drought) in the fall/winter of 2016 affected stream benthic macroinvertebrates of the Appalachian Plateau and the Piedmont of Alabama
- Processed macroinvertebrate samples collected from Appalachian Plateau and Piedmont streams
- Identified macroinvertebrates to family and performed data entry

**Undergraduate Student Researcher - Preliminary investigations of refuges as a method to capture riverine crayfish** (*September 2018 – May 2019*) – Troy University – Principal Investigator: Mr. Jonathan M. Miller

- Objective: Propose and evaluate sampling techniques of collecting lotic species of crayfish and comparing data to collections with addition of baits in Southeast Alabama streams
- Constructed and modified refuge design for crayfish
- Collected/identified crayfish species of Southeast Alabama
- Data entry, data analysis, prepared presentation

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## WORK EXPERIENCE

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**Field Scientist** (*February 2023 – May 2023*) - Countywide Biological, WQ and Stream Geomorphological Monitoring and Assessment: Round 5/Year 1 And 23-Year Retrospective Analysis, Prince George’s County, MD – Clean Streams LLC – Supervisor: Mr. Alexi Sanchez de Boado

- Objective: Provide objective biological data on streams and watersheds throughout Prince George’s County, Maryland, to fulfill a portion of the County’s current NPDES Municipal Separate Storm Sewer System (MS4) permit requirements, as a continuation of the County’s long-term, watershed scale stream monitoring program
- Received training on physical habitat assessment and benthic sampling from the Maryland Department of Natural Resources
- Reconnoitered all primary and alternate site locations for field teams for sampleability, safety, and accessibility
- Sampled benthic macroinvertebrates following Maryland Biological Stream Survey protocol
- Conducted water chemistry measurement, physical habitat assessment (MBSS and EPA RBP), stream geomorphology characterization, and Wolman pebble count

**Field Technician Intern** (*May 2019 – December 2019*) - Sanders Lead Company, Inc. - Supervisor: Mr. Chris Rutherford & Mr. Matt Brown

- Environmental Affair Department:
  - Performed daily secondary containment inspection

- Monitored greenhouse gas and Solid Waste Management Unit
- Conducted percolation tests and evaluated soil types for septic tank placement
- Sampled groundwater for heavy metal testing
- Authorized to drive forklift and front-end loader
- Safety Department:
  - Conducted safety inspections, identified hazards, and recommended corrective actions according to OSHA regulations for general industry
  - Helped with inventory in the supply department
  - Familiar with numerous topics in OSHA regulations (Machinery and Machine Guarding, Walking-Working Surfaces, Electrical, etc.)

**Volunteer Zoological Museum Technician** (*September 2018 – May 2020*) - Faculty supervisor: Mr. Jonathan M. Miller

- Curation and data entry of samples including fish, crayfish, and mussels
- Organized lab and maintained specimens

## TEACHING EXPERIENCE

**Guest Lecture – BIOL207L – General Zoology** (*March 2023*) – Towson University – Instructor: Dr. Will H. Ryan

- Title: “Microscopic” Aquatic Insects in the “Macroscopic” Landscape: Toward a Better Understanding of Their Stories

**Head Teaching Assistant – BIOL120L – Principles of Biology** (*August 2021 – present*) – Towson University – Supervisor/Lab Coordinator: Mrs. Pamela Healey

- Organize and coordinate all TAs’ hours and work schedules
- Assist TAs in problem solving difficulties
- Develop lab plans that help guide TAs throughout the lab
- Coordinate and assist lab coordinator in lab setup and preparation

**Teaching Assistant – BIOL120L – Principles of Biology** (*August 2020 – May 2023*) – Towson University – Supervisor/Lab Coordinator: Mrs. Pamela Healey

- Teach the assigned curriculum in two-hour classroom sessions
- Lead class discussion and answer students’ questions
- Evaluate and grade students’ lab assignments, experiments, and reports
- Maintain records on students’ progress and grades
- Attend weekly meeting and contribute ideas and feedback

## SKILLS & ABILITIES

- R and RStudio
  - edX Verified Certificate for Data Wrangling and Visualization
  - Familiar with essential R packages: dplyr; ggplot2; tidyr; vegan; EGRET; etc.
  - Experienced with GitHub
  - Basic knowledge of HTML5 and CSS
- GIS
  - Watershed and land use modeling; Urban growth prediction
- PC-ORD v7.09
  - Multivariate statistical analyses
- Collection of

- fish and crayfish using backpack shocker and D-nets
- benthic macroinvertebrates using D-nets (MBSS protocol)
- Taxonomy of
  - freshwater fishes of southeast Alabama
  - freshwater benthic macroinvertebrate of Piedmont region, Maryland
- Stream health and habitat assessments using fish and benthic macroinvertebrate assemblages, IBI, and RBP (EPA)
- Experienced with soil and water quality field instruments (Hydrolab, pH meter, YSI, etc.)
- Proficient with Microsoft Word, Excel, Power Point, Outlook, and other Office programs

## RELEVANT COURSEWORK

### Graduate

Data Analysis and Interpretation for Biologist

Ecosystem Ecology

Community Analysis and Bioassessment

Data Visualization ([certificate](#))

Global Change

GIS Applications

Hydrogeology

Data Wrangling ([certificate](#))

### Undergraduate

Environmental Assessment (Aquatic Biomonitoring)

Statistics (junior and senior level)

Environmental Pollution Control

Biostatistics

Survey of Environmental Science

Organismal Biology

Organic Chemistry

Limnology

## NEWS COVERAGE

1. TROY researcher and students studying habitat changes on federally-listed species of mussel. *TROY Today* (2019). Available at: <https://today.troy.edu/faculty-staff/troy-researcher-and-students-studying-habitat-changes-on-federally-listed-species-of-mussel/>

## PROFESSIONAL MEMBERSHIPS

**Member of the Society for Freshwater Science (SFS)** – 2021-present

**Member of Beta Beta Beta** - National Biology Honor Society Mu Epsilon Chapter – 2019-2020

**Member of Association of Southeastern Biologists** – 2019-2020

## REFERENCES

**Susan E. Gresens, Ph.D.** – Professor Emerita – Towson University

- [sgresens@towson.edu](mailto:sgresens@towson.edu)
- Telephone: 443-301-3840

**Joel Moore, Ph.D.** – Professor – Towson University

- [moore@towson.edu](mailto:moore@towson.edu)
- Telephone: 410-704-4245

**Dennis Genito, M.S.** – Natural Resource Specialist – Baltimore County Department of Environmental Protection & Sustainability

- [dgenito@baltimorecountymd.gov](mailto:dgenito@baltimorecountymd.gov)
- Telephone: 410-887-8567