**Nathan Hagen Klobusnik** (He/They)

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**EDUCATION**

**Expected 2029** **Ph.D. in Ecology and Evolutionary Biology**

University of Connecticut, Storrs CT, United States

Thesis: TBD

**2022**  **B.Sc. in Marine Biology**, Minor in chemistry

Texas A&M University, Galveston TX, United States

Thesis: Microbial Community Structure of an Anchialine Sinkhole Sediment Core

**RESEARCH INTERESTS**

Microbial Community Ecology and Evolution, Theoretical Ecology, Phenotypic Plasticity, Harmful Algal Blooms, Astrobiology, Philosophy of Ecology.

**PUBLICATIONS**

Stroski, Kevin; Roelke, Daniel; Kieley, Christa; Park, Royoung; Campbell, Kate Louise; **Klobusnik, N. Hagen**; Walker, Jordon; Cagle, Sierra; Labonte, Jessica; Brooks, Bryan 2024. What, How, When and Where: Spatiotemporal Water Quality Hazards of Cyanotoxins in Subtropical Eutrophic Reservoirs. *Environmental Science and Technology* (Published January 2024)

Crista M. Kieley, Daniel L. Roelke, Royoung Park, Kathryn L. Campbell, **N. Hagen Klobusnik**, Jordan R. Walker, Sierra E. Cagle, Marissa L Kneer, Kevin M. Stroski, Bryan W. Brooks, and Jessica M. Labonte 2023. Microcystins correlate with nitrate and nitrite in warm monomyctic lakes of southcentral USA and may disrupt denitrification. *Harmful Algae* (Published November 2023)

Manoj Kamalanathan, Savannah Mapes, Alexandra Yard, Patricia Faulkner, **Nathan Hagen Klobusnik**, Jessica Hillhouse, David Hala, and Antonietta Quigg 2022. Core metabolism plasticity in phytoplankton: Response of *Dunaliella tertiolecta* to oil exposure. *Journal of* *Phycology* (Published September 2022)

Corinna Breusing, **N. Hagen Klobusnik,** Michelle Hauer, Roxanne Beinart 2022. Genome assembly and analysis of the chemosynthetic gammaproteobacterial endosymbiont of the Deep-Sea Snail Alviniconcha adamantis. *G3 Genes* (Published August 2022)

**N. Hagen Klobusnik**, Jordan R. Walker, Jessica M. Labonté 2024. Assembly and characterization of metagenome assembled genomes to uncover the hidden subsurface microbial life of Blackwood Sinkhole, Bahamas. (In preparation)

**N. Hagen Klobusnik**, Daniel L. Roelke, Tamas Palmais 2024. Assessing The Relationship Between Commercially Relevant Algal Polyculture Diversity, Grazer Resistance, and Stability. (In Preparation)

**PRESENTATIONS (Poster\*, Talk\*\*, Undergraduate Mentee°)**

\*Delaney Creech**°**, **Hagen Klobusnik**, Crista Kieley, Daniel Roelke “Inoculation of *Prymnesium parvum* into Different Microbial Size Fractions from Galveston Bay”, TAMUG research symposium, Galveston Tx, April 18th, 2024

\*\***Hagen Klobusnik** “Ecological Principles for Commercial Algal Farming; Assessing the Relationship Between Commercially Relevant Algal Polyculture Diversity, Resilience, and Stability”, Marine Botany class Invited Lecture, Texas A&M University Galveston Tx, February 18th, 2024

\*\*Daniel Roelke, Crista Kieley, **Hagen Klobusnik,** Royoung Park, Kate Campbell, Jordan Walker, Sierra Cagle, Kevin Stroski, Jacob Berkowitz, Marissa Kneer, Bryan Brooks, Jessica Labonte “Factors Critical to Long-Term Management of Warm Monomictic Lakes in the Southcentral USA”, ASLO Aquatic Sciences Meeting 2023, Palma de Mallorca Spain, June 4th, 2023

**\*\*N. Hagen Klobusnik,** Royoung Park, Gabi Leos**°**, Jordan R. Walker, Crista M. Keiley, Kathryn L. Campbell, Sierra E. Cagle, Daniel L. Roelke, Jessica M. Labonte “Viral Auxiliary Metabolic Gene Distribution in Twenty Warm Monomictic Lakes Across Texas”, TAMUG research symposium, Galveston Tx, March 21st, 2023

\*\*Royoung Park, Daniel L. Roelke, Crista M. Keiley, Jordan R. Walker, Kathryn L. Campbell, **N. Hagen Klobusnik,** Sierra E. Cagle, Kevin M. Stroski, Bryan W. Brooks, and Jessica M. Labonte “Spatiotemporal diversity of microbial communities in the warm-monomictic Buffalo Springs Lake”, U.S. Symposium on Harmful Algae, Albany NY, October 23rd, 2022

**\*\*Nathan Klobusnik,** Catherine Risley, Jordan Walker, Jessica Labonte “The Hidden Microbial Community Structure and Metabolic Potential within Blackwoods Sinkhole, Bahamas”, TAMUG research symposium, Galveston Tx, March 24th, 2022

**\*\*Nathan Klobusnik,** “Assembly and Analysis of a Novel Chemosynthetic Symbiont of the Deep-Sea Snail Alviniconcha adamantis,” University of Rhode Island REU program, Narragansett RI, July 28th, 2021

\*/\*\*Jake H. Ballard, Nalu Martin, **Nathan Klobusnik,** Anna R. Armitage “Teatime in the marsh: A story where vegetation plays no role in decomposition rate”, TAMUG research symposium, Galveston Tx, April 2021

**\*Nathan Klobusnik,** “Assembly and characterization of metagenome assembled genomes to uncover the hidden sub-surface microbial life of Blackwood Sinkhole, Bahamas”, American Society of Microbiology Texas Branch spring symposium, Galveston Tx, March 25th, 2021

**RESEARCH**

**Dr. Daniel Roelke, Plankton Ecology Laboratory**

2023 – Present

Over the past year I have contribute to the largescale study of microbial communities in lakes across Texas analyzing microbial DNA, RNA, Viral communities, and cyanobacteria toxins to understand harmful algal bloom dynamics and how viral communities interact with blooms. My current work regards algal community assembly, invasion, and BEF experiments to explore the use of algal polycultures in commercial algae cultivation. In addition, I am numerically modeling the growth of commercial and natural phytoplankton communities in chemostat via Matlab as well as assisting with experiments exploring oyster veliger nutrition via different algal assemblages and life stages.

**Dr. Jessica Labonte, Viral Ecology Laboratory**

2020 – 2023

I worked on many projects regarding microbial ecology, which included field work, experiments and computational analyses. Early on I assisted in the computational organization and modeling of microbial and viral metagenomic data following hurricane Harvey and the influx of freshwater and runoff. I've extracted DNA from sediment samples and analyzed the connection between sterols from wastewater and bacterial communities. In a similar project I completed an Undergraduate Research Thesis where i assembled microbial genomes from sinkhole sediment cores and correlated community patterns to nutrient gradients (publication in preparation). I worked within a team sampling lakes across the state of Texas for microbial DNA, RNA, Viral communities, and cyanobacteria toxins to understand harmful algal bloom dynamics and how viral communities interact with blooms on field expeditions lasting three weeks. I gained familiarity with R scripting and Linux command lines, as well as bioinformatics tools used in meta ‘omics work of microbes.

**Dr. Roxanne Beinart, Chemosynthetic and Anaerobic Protist Symbioses Laboratory**

2021 – 2022 **REU Internship** at The University of Rhode Island

I investigated the genetic and metabolic potential of a chemosynthetic bacterial symbiont found within the deep-sea hydrothermal vent dwelling snail *Alviniconcha adamantis*. My work consisted of extracting DNA from gill tissue, Illumina library preparation, Nanopore minion library preparation and sequencing as well as bioinformatic genome assembly, manual binning, annotation, and phylogenomic. I both presented this work in talks and published a manuscript.

**Dr. Antonietta Quigg and Dr. Manoj Kamalanathan, Phytoplankton Dynamics Laboratory**

2020 – 2022

I assisted in monitoring bay water for harmful algal blooms using an Imaging FlowCytobot (IFCB), which includes collection and processing of daily water samples. And a team of peers sampled wastewater to determine the impact that effluent from wastewater treatment facilities have on the composition and health of phytoplankton in Galveston Bay. I and a separate team developed an efficient method of microbially induced calcium precipitation in efforts to produce environmentally safe reef structures and breakwaters, with experiments both in lab and in situ.

**Dr. Anna Armitage, Coastal and Wetlands Ecology Laboratory**

2020 – 2021

I sampled separate salt marsh microbial environments to determine significant changes in carbon processing activity based on surrounding plant species such as black mangroves (*Avicennia germinans*) and spartina (*Spartina alterniflora*) via biomass loss in respect to labile/recalcitrant carbon sources.

**EMPLOYMENT**

**2023-2024 Research Assistant:**

Roelke Plankton Ecology Laboratory, Texas A&M University Galveston

**2022-2023 Research Assistant:**

Labonte Viral Ecology Laboratory, Texas A&M University Galveston

**2019-2023 Academic Tutor:**

Small group (2-15 people) and one-on-one sessions on a variety of subjects.

**TEACHING AND MENTORING EXPERIENCE**

***Tutoring****:*

Engineering Chemistry (CHEM 117) *2020-2022*

General Chemistry (CHEM 119 & 120) *2019-2022*

Microbiology (BIOL 351) *2021-2022*

Applied Bioinformatics (MARB 433) *2022*

Logic (PHIL 240) *2022*

Calculus I & II (MATH 151 & 152) *2023*

***Undergraduate Mentorship****:*

Gabi Leos Undergraduate researcher in the Labonte Lab exploring Viral AMGs in lakes across the state of Texas (Author on poster and talk) *2023*

Delaney Creech Undergraduate researcher in the Roelke Lab investigating the harmful algae P. Parvum and its ability to invade marine communities of Galveston Bay (First author on poster) *2024*

**FELLOWSHIPS, GRANTS, AND SCHOLARSHIPS**

2018 – 2022 TAMUG Merit Scholarship

2020 – 2022 William P. Ricker Memorial Scholarship

2021 & 2022 Texas Sea Grant Texas A&M University Research Grant: $1000 ($2000 total)

2022 Aggies Commit to Excellence Scholars (ACES) Research Grant: $500

2024 Jorgensen Fellowship (University of Connecticut)

Graduate Fellowship: $20,000 annually for 5 years

**HONORS**

2019 3rd Place Undergraduate Research Poster

TAMUG 2019 Research Symposium

2020 – 2022 Dean’s List: Texas A&M University

2021 2nd Place Spring 2021 Ocean and Earth Sciences Poster/Talk TAMUG 2021 Research Symposium

2021 2nd place Environmental Microbiology Undergraduate Poster Presentation American Society for Microbiology Conference, Texas Branch

2022 Honor’s Undergraduate Research Scholars: Sinkhole Microbial Ecology

**REFERENCES**

Daniel Roelke, Ph.D. [droelke@tamu.edu](mailto:droelke@tamu.edu)

Department of Marine Biology, Texas A&M University at Galveston

Professor (409) 740-4750

Jessica Labonte, Ph.D. [labontej@tamug.edu](mailto:labontej@tamug.edu)

Department of Marine Biology, Texas A&M University at Galveston

Professor (409) 740-4717

Manoj Kamalanathan, Ph.D. [mkamalanathan@bigelow.org](mailto:mkamalanathan@bigelow.org)

Bigelow Laboratory for Ocean Sciences

Senior Research Scientist (207) 315-2567

Darren Domksy, Ph.D. [domskyd@tamug.edu](mailto:domskyd@tamug.edu)

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