

Edna G. Fernández-Figueroa, Ph.D.

University of Tampa
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EDUCATION

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|------|--|-------------------|
| 2021 | Ph.D. Fisheries, Aquaculture and Aquatic Sciences
Dissertation : From drones to <i>Daphnia</i> : Exploring eutrophication and climate change impacts on algal blooms at various scales.
Advisor: Dr. Alan E. Wilson | Auburn University |
| 2014 | B.S. Marine Science
Minor: Environmental Studies | Eckerd College |

RESEARCH & EMPLOYMENT

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| 2023- present | Assistant Professor of Environmental Studies
Current research: Use of unoccupied aerial systems for monitoring fish kill events and habitat restoration projects. | University of Tampa |
| 2021 - 2023 | Postdoctoral Research Fellow
Current research: Collaborative project to design a toxic harmful algal bloom forecasting tool based on remote sensing and machine learning techniques.
Supervisor: Dr. Stephanie Rogers | Auburn University |
| 2016 - 2021 | Graduate Research Assistant
Developed methods for utilizing unoccupied aerial systems for harmful algal bloom monitoring (Fernández-Figueroa et al. 2021).
Conducted state-level monitoring of surface drinking water utilities to determine the prevalence of cyanobacterial toxins in drinking water sources (Fernández-Figueroa et al. 2021).
Performed a national assessment of eutrophication trends of over 1,000 United States lakes (Fernández-Figueroa et al. <i>In review</i>). | Auburn University |
| 2017 - 2021 | NSF GRFP Fellow
Investigated the effects of multiple stressors on predator-prey interactions of zooplankton and toxic cyanobacteria (Fernández-Figueroa and Wilson 2021). | Auburn University |
| 2018- 2019 | Science Communication Intern | ASLO |
| 2015 | Research Assistant | Rookery Bay National Estuarine Research Reserve |
| 2015 | Coral Restoration Associate | The Nature Conservancy |
| 2014 | Coral Restoration & Conservation Intern | Coral Restoration Foundation |
| 2013 | Marine Science Teaching Assistant | SeaCamp Association |

2012 **Coral Restoration Research Volunteer** University of Puerto Rico

TEACHING

Graduate Courses

2022 **GEOG 6850: GIS Applications: drones and geospatial applications. Co-instructor** with Dr. Stephanie Rogers. Auburn University
Designed and co-instructed a graduate-level experience-based course on how to collect, process, and analyze unoccupied aerial system data (i.e., drones) for research.

2022 **GEOG 7930: Remote sensing of wetland environments. Co-instructor** with Dr. Stephanie Rogers. Auburn University
Graduate-level directed studies course aimed at utilizing remote sensing tools (i.e., drones and satellites) for mapping and monitoring wetland environments.

Undergraduate Courses

2017 **FISH 5320/6320: Limnology. Graduate Teaching Assistant.** Auburn University
Led lectures, assisted with laboratory activities, and graded exams and lab reports.

GRANTS

2021 - 2023	AAES AIR Rogers, PI; Fernández-Figueroa, Collaborator	\$149,546
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FELLOWSHIPS & AWARDS

Total: \$141,550

2017 - 2021	NSF GRFP Fellowship National Science Foundation Graduate Research Fellowship Program.	\$138,000
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2017	AL/MS Section of the American Water Works Association Scholarship	\$3,000
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2017	9th US Symposium on Harmful Algae Poster Competition: 1st Place	\$250
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2017	College of Agriculture Graduate Student Poster Showcase: 2nd Place	\$200
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2017	SEC Campus Water Matters Competition: 2nd Place	\$100
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2012 **Multicultural Initiative in the Marine Sciences Program (MIMSUP)**

PEER-REVIEWED PUBLICATIONS

15. 2022 **Complex effects of dissolved organic matter, temperature, and initial bloom density on the efficacy of hydrogen peroxide to control cyanobacteria.**
Buley, R. P., M. F. Gladfelter, E. G. Fernández-Figueroa, and A. E. Wilson.
Environmental Science and Pollution Research International.
<https://doi.org/10.1007/s11356-023-25301-4>

14. 2022 **Can correlational analyses help determine the drivers of microcystin occurrence in freshwater ecosystems? A meta-analysis of microcystin and associated water quality parameters.**
Buley, R. P., M. F. Gladfelter, E. G. Fernández-Figueroa, and A. E. Wilson. *Environmental Monitoring and Assessment* 194: 493.
<https://doi.org/10.1007/S10661-022-10114-8>.
13. 2022 **Dissolved nitrogen form mediates phycocyanin content in cyanobacteria.**
Gladfelter, M.F., R. P. Buley, A. P. Belfiore, E. G. Fernández-Figueroa, B. L. Gerovac, N. D. Baker, and A. E. Wilson.
Freshwater Biology 67(6): 954-964. <https://doi.org/10.1111/fwb.13892>.
12. 2022 **Local adaptation mediates direct and indirect effects of multiple stressors on consumer fitness.**
Fernández-Figueroa, E. G., and A. E. Wilson
Oecologia 198: 483-492. <https://doi.org/10.1007/s00442-022-05118-7>.
11. 2021 **Commercially available unoccupied aerial systems (UAVs) for monitoring harmful algal blooms: a comparative study.**
Fernández-Figueroa, E. G., A. E. Wilson, and S. R. Rogers. *Limnology and Oceanography: Methods* 20(3): 146-152. <https://doi.org/10.1002/lom3.10477>.
10. 2021 **Zooplankton as an alternative method for controlling phytoplankton in catfish pond aquaculture.**
Belfiore, A., R. P. Buley, E. G. Fernández-Figueroa, M. Gladfelter, and A. E. Wilson. *Aquaculture Reports* 21: 100897.
<https://doi.org/10.1016/j.aqrep.2021.100897>.
9. 2021 **Controlling *Microcystis* blooms in Alabama catfish aquaculture.**
Buley, R. P., A. Kelly, L. Roy, E. G. Fernández-Figueroa, M. Gladfelter, A. Belfiore, and A. E. Wilson. *Alabama Cooperative Extension System ANR-2757*.
8. 2021 **Carlson's Trophic State Index is a poor predictor of cyanobacterial dominance in drinking water reservoirs.**
Fernández-Figueroa, E. G., R. P. Buley, M. U. G. Barros, M. F. Gladfelter, W. D. McClimans, and A. E. Wilson. *AWWA Water Science* 3(2): e1219.
<https://doi.org/10.1002/aws2.1219>.
7. 2021 **Drones for monitoring “blue-greens” in aquaculture ponds.**
Fernández-Figueroa, E. G., Angelea P. Belfiore, and A. E. Wilson. *Fish Farming News* 2021(1):16-17.

6. 2020 ***Icyano: A cyanobacterial bloom vulnerability index for drinking water treatment plants.***
Barros, M. U. G., J. I.R. Leitão, T. R.B.T. Aranha, S. Simsek, R. P. Buley, E. G. Fernández-Figueroa, M. F. Gladfelter, A. E. Wilson, and J. Capelo-Neto. *Water Supply* 20 (8): 3517-3530. <https://doi.org/10.2166/ws.2020.239>.
5. 2019 ***Environmental factors associated with toxic cyanobacterial blooms across 20 drinking water reservoirs in a semi-arid region of Brazil.***
Barros, M. U. G., A. E. Wilson, J. I. R. Leitão, S. P. Pereira, R. P. Buley, E. G. Fernández-Figueroa, and J. Capelo-Neto. *Harmful Algae* 86: 128-137. <https://doi.org/10.1016/j.hal.2019.05.006>.
4. 2018 ***Assessing science training programs: structured undergraduate research programs make a difference.***
Wilson, A. E, J. L. Pollock, I. Billick, C. Domingo, E. G. Fernández-Figueroa, E. Nagy, T. D. Steury, and A. Summers. *BioScience* 68 (7): 529-534. <https://doi.org/10.1093/biosci/biy052>.
3. 2018 ***Hydrogen peroxide treatment promotes chlorophytes over toxic cyanobacteria in a hyper-eutrophic aquaculture pond.***
Yang, Z., R. P. Buley, E. G. Fernández-Figueroa, M. U.G. Barros, S. Rajendran, and A. E. Wilson. *Environmental Pollution* 240: 590-598. <https://doi.org/10.1016/j.envpol.2018.05.012>.
2. 2018 ***Is sustainable control of toxic algae a reality for catfish aquaculture?***
Wilson, A. E., E. G. Fernández-Figueroa, R. Buley, and L. A. Roy. *Fish Farming News* 2018 (1): 7-8.
1. 2018 ***Preparing water resource managers to identify and measure toxic cyanobacteria.***
Wilson, A. E., and E. G. Fernández-Figueroa. *Streamlines* Spring 2018: 18.

PUBLICATIONS IN REVIEW

1. *In review* ***The Green Convergence: United States lakes are collectively moving toward a eutrophic state.***
E. G. Fernández-Figueroa, S. R. Rogers, M. N. Waters, and A. E. Wilson.

PUBLICATIONS IN PREPARATION (*drafts available upon request*)

2. *In prep* Fish kill mortality spatiotemporal and species composition trends
Fernández-Figueroa, E. G., S. Mapes, S. R. Rogers
1. *In prep* Detecting harmful algal blooms in Lake Okeechobee using MODIS satellite imagery and long-short term memory (LSTM)
Bagherian, L, S. R. Rogers, E.G. Fernández-Figueroa, K. Kaye; Y. Bao

STUDENT MENTORSHIP

Graduate Students

2022-present Kelly Kaye Graduate Research Project
Auburn University

Undergraduate Students

2022 Callista Macpherson Warm-Water Aquatic Ecology REU
Auburn University

2020 JaKayla Cunningham Undergraduate Research Project
Auburn University

2019 Kathryn Cruz Warm-Water Aquatic Ecology REU
Auburn University

PROFESSIONAL SERVICE & SYNERGISTIC ACTIVITIES

2020 - 2023 **Board of Directors Member**
Ass. for the Science of Limnology and Oceanography

2016 - Present **Ad-hoc review** of over 20 manuscripts.

2022 **Proposal reviewer**
National Science Foundation

2022-2023 **Scientific Planning Committee Member**
Ass. for the Sciences of Limnology and Oceanography

2022 **Scientific Society Representative, DEI Audit Tool Panel**
Consortium of Aquatic Science Societies

2021 - Present **Awards Committee Member**
Ass. for the Sciences of Limnology and Oceanography

2021 **Session Chair**
GSA 2021 Southeastern Online Section Meeting

2019 -2020 **Student Representative**
Auburn University Writing Committee

2019 **Student and Early Career Committee Member**
10th US Symposium on Harmful Algae

COMMUNITY OUTREACH

2023 Designed and presented an educational skit about the relationship between phytoplankton evolution and climate change entitled **“Plankton inferno: the tiny titans want their carbon back”** at an arts festival in Miami, FL.

- 2016 - 2020 Presented on aquatic ecology topics in Alabama correctional facilities through the **Alabama Prison and Arts Project's** SPARKs lecture series.
- 2016 - 2021 Developed and led aquatic science activities through annual outreach events such as **Jr. Mad Scientist** and **Community Nights** at the Jule Collins Smith Museum of Fine Art, as well as several events with K-12 students and senior citizens.
- 2017 - 2021 Served in student panels and presented on the application process of National Science Foundation student opportunities through programs such as Auburn University's **College of Sciences and Math's STEM Bridge** which engages incoming under-represented minority freshmen.
- 2018 Led educational activities at the **Lee County Water Festival**.
- 2015 - 2016 Collected, tagged, and measured elasmobranchs as a **Shark Monitoring Volunteer** at Rookery Bay National Estuarine Research Reserve, FL.
- 2013 - 2014 Volunteered as a **Teacher's Assistant** at Sanderlin Elementary, FL.
- 2012 - 2013 Facilitated sustainable urban agriculture and basic botany lessons in schoolyard gardens as an **Edible Peace Patch Project Instructor**, FL
- 2012 Recruited, trained, and organized beach cleanup leaders as well as volunteers as a **Beach Cleanup Organizer Intern** at Scuba Dogs Society, PR.

INTERVIEWS

- 2023 AWWA Author Spotlight
AWWA *Journal*. <https://doi.org/10.1002/awwa.2033>
- 2019 Interview with Edna Fernandez-Figueroa, ASLO Winter 2018 Science Communication Intern, by Teresa Curto.
Limnology and Oceanography Bulletin, 28: 68-70. <https://doi-org/10.1002/lob.10307>

MEDIA APPEARANCE

News Reports

- 2018 Científicos estadounidenses y cubanos estudian algas tóxicas.
Canal Caribe, Cuba. <https://youtu.be/buIoMB6JrbQ> [in Spanish]

ADDITIONAL TRAINING

- 2019 Employment Acquisition Skills Boot Camp for Scientists.
American Institute of Biological Sciences, Washington, D.C.
- 2018 Volatile analysis workshop and lab-to-field training course.
Rocky Mountain Biological Laboratory, CO.

CONTRIBUTED PRESENTATIONS

Oral Presentations

- 2022 **The Green Convergence: United States lakes are collectively moving toward a eutrophic state.**
Fernández-Figueroa, E. G., S. R. Rogers, M. N. Waters, and A. E. Wilson.
Auburn University 2022 Postdoctoral Research Symposium. Auburn, AL.
- 2022 **Commercially available unoccupied aerial systems for monitoring harmful algal blooms: a comparative study.**
Fernández-Figueroa, E. G., S. R. Rogers, and A. E. Wilson.
Joint Aquatic Sciences Meeting. Grand Rapids, MI.
- 2022 **Dissolved nitrogen form mediates phycocyanin content in cyanobacteria.**
Gladfelter, M. F., R. P. Buley, A. P. Belfiore, E. G. Fernández-Figueroa, B. L. Gerovac, N. D. Baker, and A. E. Wilson.
Arkansas Water Resources Conference. Fayetteville, Arkansas.
- 2022 **Commercially available unoccupied aerial systems for monitoring harmful algal blooms: a comparative study.**
Fernández-Figueroa, E. G., A. E. Wilson, and S. R. Rogers.
American Association of Geographers. Virtual.
- 2022 **Zooplankton as an alternative method for controlling phytoplankton in catfish pond aquaculture.**
Wilson, A. E., A. Belfiore, R. P. Buley, E. G. Fernández-Figueroa, and M. Gladfelter.
World Aquaculture Society. San Diego, California.
- 2021 **Local adaptation mediates direct and indirect effects of multiple stressors on consumer fitness.**
Fernández-Figueroa, E. G., and A. E. Wilson.
ASLO Virtual Meeting. Virtual.
- 2021 **How to give an effective zoom presentation.**
Fernández-Figueroa, E. G.
ASLO Virtual Meeting. Virtual.
- 2021 **Commercially available unoccupied aerial systems for monitoring harmful algal blooms: a comparative study.**
Fernández-Figueroa, E. G., S. R. Rogers, and A. E. Wilson.
10.5 US Symposium on Harmful Algae. Virtual.
- 2021 **Zooplankton improve water quality in farm pond aquaculture.**
Belfiore, A. P., R. P. Buley, E. G. Fernández-Figueroa, M. F. Gladfelter, and A. E. Wilson.
10.5 US Symposium on Harmful Algae. Virtual.

- 2021 **Available dissolved nitrogen form dictates pigment content in cyanobacterial cells.**
Gladfelter, M. F., R. P. Buley, A. P. Belfiore, E. G. Fernández-Figueroa, B. L. Gerovac, N. D. Baker, and A. E. Wilson.
10.5 US Symposium on harmful algae. Virtual.
- 2021 **Commercially available unoccupied aerial systems for monitoring harmful algal blooms: a comparative study.**
Fernández-Figueroa, E. G., S. R. Rogers, and A. E. Wilson.
Geological Society of America 2021 SE Section Meeting. Auburn, AL.
- 2021 **Available dissolved nitrogen form dictates pigment content in cyanobacterial cells.**
Gladfelter, M. F., R. P. Buley, A. P. Belfiore, E. G. Fernández-Figueroa, B. L. Gerovac, N. D. Baker, and A. E. Wilson.
This Is Research: Student Symposium. Auburn University, AL.
- 2019 **Can intake depth be used as a tool for managing toxic cyanobacterial blooms in surface drinking water reservoirs?**
Wilson, A. E., E. G. Fernández-Figueroa, R. P. Buley, M. U.G. Barros, W. McClimans, and D. Harrison.
10th US Symposium on Harmful Algae. Orange Beach, AL.
- 2019 **Hydrogen peroxide treatment promotes chlorophytes over toxic cyanobacteria in a hyper-eutrophic aquaculture pond.**
Wilson, A. E., Z. Yang, R. P. Buley, E. G. Fernández-Figueroa, M. Barros, and S. Rajendran.
World Aquaculture Society. New Orleans, LA.
- 2018 **Effects of TN:TP on taste and odor compound production in Alabama drinking water reservoirs.**
Fernández-Figueroa, E. G., D. Harrison, W. McClimans, and A. E. Wilson.
34th Congress of the International Society of Limnology. Nanjing, China.
- 2018 **Do toxic cyanobacterial blooms threaten Alabama's surface drinking water sources?**
Wilson, A. E., E. G. Fernández-Figueroa, R. P. Buley, M. U.G. Barros, W. McClimans, and D. Harrison.
Alabama/Mississippi American Water Works Association Conference. Montgomery, AL.
- 2018 **Can N:P be used to predict taste and odor events in surface drinking water sources?**
Fernández-Figueroa, E. G., D. Harrison, W. McClimans, and A. E. Wilson.
ASLO Aquatic Sciences Meeting. Victoria, Canada.

- 2018 **Effects of light, temperature, and carbon source on cyanotoxin and off-flavor compound production.**
Fernández-Figueroa, E. G., and A. E. Wilson.
This Is Research: Student Symposium. Auburn University, AL.
- 2017 **Microcystin and taste and odor compound dynamics in Alabama's surface drinking water sources.**
Fernández-Figueroa, E. G., D. Harrison, W. McClimans, and A. E. Wilson.
Alabama/Mississippi American Water Works Association Conference. Point Clear, AL.
- 2017 **Large effects of consumer offense on ecosystem structure and function: Implications for water resource management.**
Fernández-Figueroa, E. G., A. E. Wilson, M. Chislock, O. Sarnelle, B. Olsen, and E. Doster.
Association of Southeastern Biologists Meeting. Montgomery, AL.
- 2017 **Eutrophication mediates complex interactions between cyanobacteria and diatoms that influence taste and odor events in a drinking water reservoir.**
Fernández-Figueroa, E. G., B. K. Olsen, M. F. Chislock, A. Rebelein, W. Thornton, D. Hilyer, and A. E. Wilson.
ASLO Aquatic Sciences Meeting. Honolulu, HI.
- 2012 **Morphologic changes in *Synechococcus* as a grazing defense mechanism against protist predators.**
Fernández-Figueroa, E. G., S. Strom, and K. Fredrickson.
MIMSUP Student Research Presentation. Anacortes, WA.
- 2012 **Morphologic changes in *Synechococcus* as a grazing defense mechanism against protist predators.**
Fernández-Figueroa, E. G., S. Strom, and K. Fredrickson.
Alaska Department of Fish and Game. Seattle, WA.

Speed Talk with Poster Presentation

- 2019 **Drone imagery for algal bloom monitoring.**
Fernández-Figueroa, E. G., K. Cruz, and A. E. Wilson.
10th US Symposium on Harmful Algae. Orange Beach, AL.

Poster Presentations

- 2022 **Forecasting harmful algal blooms in inland water bodies using Sentinel-2 data and long-short term memory (LSTM)**
Bagherian, K., Y. Bao, K. Kaye, E. G. Fernández-Figueroa, and S. R. Rogers
AL Water Resources Conference and Symposium. Orange Beach, AL.

- 2022 **Commercially available UAV sensors for monitoring water quality: best practices and collection methods.**
Kaye, K., E. G. Fernández-Figueroa, S. R. Rogers, K. Bagherian, A. E. Wilson, and Y. Bao.
AL Water Resources Conference and Symposium. Orange Beach, AL.
- 2022 **Using unoccupied aerial systems to study mangroves distribution.**
Macpherson, C., E. G. Fernández-Figueroa, and S. R. Rogers.
Auburn University REU Poster Showcase. Auburn University, AL.
- 2020 **Commercially available unoccupied aerial systems for monitoring harmful algal blooms: a comparative study.**
Fernández-Figueroa, E. G., S. R. Rogers, and A. E. Wilson
College of Agriculture Student Showcase. Auburn, AL.
- 2019 **Drone imagery for algal bloom monitoring.**
Fernández-Figueroa, E. G., K. Cruz, and A. E. Wilson.
College of Agriculture Student Showcase. Auburn, AL.
- 2019 **Standardization methods for unmanned aerial vehicle (UAV) monitoring of cyanobacterial blooms.**
Cruz, K., E. G. Fernández-Figueroa, and A. E. Wilson.
Auburn University REU Poster Showcase. Auburn University, AL.
- 2019 **Assessing science training programs: structured undergraduate research programs make a difference.**
Wilson, A. E., J. L. Pollock, I. Billick, C. Domingo, E. G. Fernández-Figueroa, E. Nagy, T. D. Steury, and A. Summers.
The Society for Integrative & Comparative Biology. Tampa, FL.
- 2019 **Can N:P be used to predict taste and odor events in surface drinking water sources?**
Fernández-Figueroa, E. G., D. Harrison, W. McClimans, and A. E. Wilson.
EPA Region 6 Numeric Nutrient Criteria Technical Workshop. Dallas, TX.
- 2018 **Can N:P be used to predict taste and odor events in surface drinking water sources?**
Fernández-Figueroa, E. G., D. Harrison, W. McClimans, and A. E. Wilson.
EPA Region 4 Harmful Algal Bloom Southeastern Regional Workshop. Atlanta, GA.
- 2017 **Can taste and odor compounds predict harmful algal blooms in surface drinking water sources?**
Fernández-Figueroa, E. G., D. Harrison, and W. McClimans, and A. E. Wilson.
9th US Symposium on Harmful Algae. Baltimore, MD.

2017 **Can taste and odor compounds predict harmful algal blooms in surface drinking water sources?**

Fernández-Figueroa, E. G., D. Harrison, and W. McClimans, and A. E. Wilson.
College of Agriculture Student Showcase. Auburn University, AL.

2012 **Morphological changes of *Synechococcus* in culture as a result of protist grazer pressure.**

Fernández-Figueroa, E. G., S. Strom, and K. Fredrickson.
College of Science and Technology Scholar's Week Poster Fair, WWU Chapter-Sigma-Xi. Bellingham, WA.

2012 **Morphological changes of *Synechococcus* in culture due to protist grazer pressure.**

Fernández-Figueroa, E. G., S. Strom, and K. Fredrickson.
Pacific Estuarine Research Society. Anacortes, WA.

INVITED PRESENTATIONS

Panelist

2022 **Diversity and inclusion luncheon.**

Fernández-Figueroa, E. G., B. Jones, and J. C. Colón-Gaud
Joint Aquatic Sciences Meeting. Grand Rapids, MI.

2021 **Exploring different career paths.**

Fernández-Figueroa, E. G.
ASLO Virtual Meeting. Virtual.

Guest lectures

2018 **Off-flavor compounds and cyanotoxins in freshwater bodies.**

Fernández-Figueroa, E. G.
CiguaPIRE, Cienfuegos, Cuba. [in Spanish]

2017 **Graduate school: what you should know.**

Fernández-Figueroa, E. G.
FISH 3950: Careers in Fisheries, Auburn University, AL.

SCIENTIFIC SOCIETY MEMBERSHIPS

American Association for the Advancement of Science (AAAS)
Association for the Sciences of Limnology and Oceanography (ASLO)
Association Of Southeastern Biologists (ASB)
American Association of Geographers (AAG)

LANGUAGES

Spanish and English Fluent in reading, writing, speaking, and translating.