Curriculum vitae

The Vertebrate Museum

Department of Biological Sciences Southeastern Louisiana University

Thelma Ryan Hall

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Education

Texas A&M University (2019)

Ph.D., Recreation, Park, and Tourism Sciences (emphasis: leisure sciences)

Qualitative Analysis of the Saltwater Aquarium Trade: The Process of Specialization Promotes
Science as a Leisure Activity

Southeastern Louisiana University (2012)

M.S., Biological Sciences (emphasis: taxonomy and phylogenetics of fishes)
Phylogeography and Taxonomy of <u>Belonesox belizanus</u> Kner (Teleosti: Poeciliidae)

The Ohio State University (2010)

B.S., Zoology

Academic Positions

Museum Manager and Director of Museum Outreach and Education Program Development, Vertebrate Museum at Southeastern Louisiana University Department of Biological Sciences (*current*)

Adjunct Professor, Loyola University New Orleans Department of Environmental Communication (*current*)

Instructor of Record, Texas A&M University Department of Recreation, Park, and Tourism Sciences (2014)

Outreach and Education Positions

Citizen Science and Science Education Coordinator, Jean Lafitte National Historical Park and Preserve; Barataria Unit (2019-2020)

Volunteer and Education Graduate Assistant Coordinator: The Leach Teaching Gardens at Texas A&M University; College of Agriculture and Life Sciences (2018-2019)

Program Mentor: Applied Biodiversity Sciences Conservation Scholars Program (2015-2016)

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Volunteer Educator: The Ohio State University; Museum of Biological Diversity (2008-2010)

Research Interests

Current: Natural history of a natural scientist; sociology of leisure; leisure social worlds; serious leisure and recreational specialization; experiential environmental education; science communication, citizen science; microplastics and marine debris.

Future: Human dimensions; GIS; philosophy of science, conservation psychology

Selected Awards, Honors, and Certificates

- EPA Trash Free Waters Proposal; Environmental Protection Agency (in review)
- Master Naturalist; Greater New Orleans Chapter (Ongoing)
- Boating safety course certification Turtle Cove Research Station at Southeastern Louisiana University (2020 - current)
- Fellow; Institute for Environmental Communication (2020)
- Local Phenology Leader Training through Nature's Notebook and Grand Bay Coastal Resources Center (2020)
- Certified Educator, Growing up Wild; Texas Parks and Wildlife Department (2019)
- Seed Fund for Volunteer Program; Aggie Green Fund at Texas A&M University (2019)
- Diversity Training; Aggie Ally Training Certification (2018)
- Robert B. Ditton Endowed Grant; Texas A&M University (2013, 2017)
- Graduate Student Scholarship; Marine Aquarium Society of North America (2015)
- Presentation Grant; American Livebearer Association (2013)
- Amazon Field School Scholarship; Applied Biological Sciences Program at Texas A&M University (2013)
- Excellence Fellowship; Texas A&M University 1 year, full funding (2012)
- Diversity Fellowship; Texas A&M University 3 years, full funding (2012-2014)
- Scholar to attend the Willi Hennig Society International Workshop in Phylogenetic Methods (2010)
- SCUBA Open Water Certification
- CPR and Wilderness First Aid Certification; National Park Service and Longleaf Wilderness Medicine
- Research Experience for Undergraduates at the Center for Research on Invasive Species and Small Populations (CRISSP); University of Idaho (2010)
- Scholarship for summer courses at Stone Laboratory; The Ohio State University (2010; declined)

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Peer-Reviewed Publications - published

- 1. Dogru, T., **Marchio, E.A.**, Bulut, U., & Suess, C. (2019). *Climate change: Vulnerability and resilience of tourism and the entire economy. Tourism Management*, 72. https://doi.org/10.1016/j.tourman.2018.12.010
- 2. **Marchio E.A.** (2018) *The Art of Aquarium Keeping Communicates Science and Conservation*. Frontiers of Communication 3:17.
- 3. Marchio E.A. (2018) Climbing out of the bottle. Science 362: 6416 pg. 862.
- 4. **Marchio E. A.** (2015) *My Metamorphosis*. Science 347: pg 209.
- 5. **Marchio E. A.** & Piller K.R. (2013) *Cryptic diversity in a widespread live-bearing fish* (*Poeciliidae:Belonesox*). Biological Journal of the Linnean Society 109: 848-860.
- 6. **Marchio E. A.** & Piller, K. R. (2013) *Scale-stacking in the Pike Livebearer Belonesox belizanus (Poeciliidae)*. Journal of Fish Biology 83: 1387-1390.

Peer-Reviewed Publications - in preparation

- 1. Benfield, M., **Marchio, E.A.**, Thomas, A. (analysis stage). Assessing the Impact of the CGM CMA Bianca Nurdle Spill in New Orleans, Louisiana.
- 2. Marchio E.A. and Scott, D. (in prep). Scientific Specialization in Aquarium Keeping.
- 3. **Marchio E.A.** and Scott, D. (in prep). *The Social World and Associated Styles of Aquarium Keeping*.

Book Sections

1. **Marchio E.A.** (out for review) *Social Implications of the Aquarium Hobby: A Psychological Perspective.* Coastal Habitat Conservation: New Perspectives and Sustainable Development of Biodiversity in the Anthropocene. Chapter 5 Section 4.3.

Technical Reports

- 1. Kyle, G., **Marchio, E. A.**, Shafer, C. S., Bradle, T., & Richardson, J. (2017a). *An Investigation of Recreational Boating on Inks Lake, Texas*. College Station.
- 2. Kyle, G., **Marchio, E. A.**, Shafer, C. S., Bradle, T., & Richardson, J. (2017b). *An Investigation of Recreational Boating on Lake Buchanan, Texas*. College Station.
- 3. Kyle, G., **Marchio, E. A.**, Shafer, C. S., Bradle, T., & Richardson, J. (2017c). *An Investigation of Recreational Boating on Lake Lyndon B. Johnson, Texas*. College Station.
- 4. Kyle, G., **Marchio, E. A.**, Shafer, C. S., Bradle, T., & Richardson, J. (2017d). *An Investigation of Recreational Boating on Lake Marble Falls, Texas*. College Station.
- 5. Kyle, G., **Marchio, E. A.**, Shafer, C. S., Bradle, T., & Richardson, J. (2017e). *An Investigation of Recreational Boating on Lake Travis, Texas*. College Station.

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Other Publications

Marchio E. A. (2008) *Stocking a Nano Aquarium*. Aquas Scaping World Magazine. Web publication. http://issuu.com/john_n/docs/issue1march2008.

Marchio E. A. (2008) *Urban Ponding - Tubbin' Water Gardens*. AquasScaping World Magazine. Web publication. http://issuu.com/john_n/docs/asw_issue4june2008.

Invited Seminar Presentations

- 1. **Marchio, E.A.** (2022, February) *Introduction to Plastic Production, Microplastics, and the NOLA Nurdle Spill*. Departmental Seminar for Biological Sciences at Southeastern Louisiana University.
- 2. **Marchio, E.A.** (2021, May) *Introduction to Plastic Production, Microplastics, and the NOLA Nurdle Spill*. Presented to undergraduates in Environmental Communication at Loyola University New Orleans. Zoom; 38 participants.
- 3. **Marchio, E.A.** (2020, September) *Becoming a Scientist & Studying Microplastics*. Presented to undergraduates in Environmental and Natural Resources at Clemson University. Zoom; 36 participants.
- 4. **Marchio, E.A.** (2019, November) *Natural Science as Leisure*. Departmental Seminar for Biological Sciences at Southeastern Louisiana University. Traditional; 60 participants.
- 5. **Marchio, E.A.** (2012) *Phylogeography and Taxonomy of Belonesox belizanus* (*Poeciliidae*). Seminar for the Department of Wildlife and Fisheries at Texas A&M University. Traditional; 40 participants.

Presentations to Amateur Scientists

- 1. **Marchio, E.A.** (2020) *The Art of Aquarium Keeping Communicates Science and Conservation*. The Marine Aquarium Conference of North America; online.
- 2. **Marchio, E.A.** (2017) *Fishes of Peru: Update*. Louisville Tropical Fish Fanciers, Louisville, KY; traditional.
- 3. **Marchio, E.A.** (2016) *Aquarium Science as Leisure*. Marine Aquarium Conference of North America, San Diego, CA; poster.
- 4. Marchio, E.A. (2016) Fishes of Peru. Aquatic Experience, Chicago, IL; traditional.
- 5. **Marchio, E.A.** (2015) *Fishes of Peru.* Greater Pittsburgh Aquarium Society, Pittsburgh, PA; traditional.
- 6. **Marchio, E.A.** (2015) *Fishes of Peru*. Bermuda Fry-Angle Aquarium Society, Warwick Bermuda; traditional.
- 7. **Marchio, E.A.** (2014) *Research in Belize*. Madison Area Aquatic Hobbyists, Madison, WI: traditional.
- 8. **Marchio, E.A.** (2014) *Fishes of Peru*. Milwaukee Aquarium Society, Milwaukee, WI; traditional.

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- 9. **Marchio, E.A.** (2014) *Fishes of Peru*. Columbus Area Fish Enthusiasts, Columbus, OH; traditional.
- 10. **Marchio, E.A.** (2014) *Fishes of Peru*. Missouri Aquarium Society Workshop, St. Louis, MN; traditional.
- 11. **Marchio, E.A.** (2013) *Phylogeography and Taxonomy of Belonesox belizanus* (*Poeciliidae*). American Livebearer Association, Grand Rapids, MI; poster.
- 12. **Marchio, E.A.** (2013) *Fishes of Peru*. Brazos Valley Aquarium Society, College Station, TX; traditional.
- 13. **Marchio**, **E.A.** (2013) *Fishes of Peru*. Louisville Tropical Fish Fanciers, Louisville, KY; traditional
- 14. **Marchio, E.A.** (2012) *Research in Belize*. Brazos Valley Aquarium Society, College Station, TX; traditional.
- 15. **Marchio, E.A.** (2012) *Research in Belize*. Columbus Area Fish Enthusiasts, Columbus, OH; traditional.
- 16. **Marchio, E.A.** (2012) *Research in Belize*. Greater Cincinnati Aquarium Society, Cincinnati, OH; traditional.

Presentations at Professional Meetings

- 1. **Marchio, E.A.** (2021) *The Vertebrate Museum at Southeastern Louisiana University Creating a Public-Facing Persona*. Southeastern Fishes Council; Columbus, Georgia; poster.
- 2. **Marchio, E.A.** (2015) *Science as Leisure: The Birth of Citizen Scientists?* Southeast Environment and Recreation Research Conference, Asheville, KY; traditional.
- 3. **Marchio**, **E.A.** (2015) *Science as Leisure*. Science for Parks, Parks for Science Conference, Berkeley, CA; poster.
- 4. **Marchio, E.A.** (2013) *The Business end of Belonesox: cranial osteology of the Pike livebearer Belonesox belizanus (Teleostei: Poeciliidae)*. Joint Meeting of Ichthyologists and Herpetologists; Albuquerque, NM; poster.
- 5. **Marchio, E.A.** (2013) *Science as a Leisure Activity*. Ecological Integration Symposium, College Station, TX; poster.
- 6. **Marchio, E.A.** (2012) *Phylogeography and Taxonomy of Belonesox belizanus* (*Poeciliidae*). Louisiana Academy of Sciences, Rustin, LA; traditional.
- 7. **Marchio, E.A.** (2012) *Invasive Pike Killifish: What's the Source?* Southeastern Fishes Council, Chattanooga, TN; traditional.
- 8. **Marchio, E.A.** (2011) *Phylogeography of the Pike Livebearer Belonesox belizanus* (*Poeciliidae*). Joint Meeting of Ichthyologists and Herpetologists, Minneapolis, MN.

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Interviews

- 1. **Marchio, E.A.** (2021) *Plastic Production, Nurdles, and Microplastics*. Interviewed for a high school project by a student from Hilliard Bradley High School.
- 2. **Marchio, E.A.** (2021). *How to become a graduate student*. Interviewed by an undergraduate at Southeastern Louisiana University interested in natural resources and conservation.
- 3. **Marchio, E.A.** (2021). *NOLA Nurdles: One Year Later*. Interviewed by an undergraduate at Louisiana State University for a project on the CMA CGM Bianca Nurdle Spill in New Orleans.

Environmental Education Videos

Developed and Edited:

National Park Service's Fun at Home "Summer Camp" (2020):

- 1. <u>Discover Urban Insects with Dr. Aimee Thomas of Loyola University! Jean Lafitte National Historical Park and Preserve (US National Park Service)</u>
- 2. <u>Crawfish Dissection Jean Lafitte National Historical Park and Preserve (US National Park Service)</u>
- 3. Explore Barataria! Invasive Species Water Hyacinth Jean Lafitte National Historical Park and Preserve (US National Park Service)

Contributed Content:

- 1. Update on the CMA CGM Bianca Nurdle Spill (scheduled for December, 2021).
- 2. Passing the Buck: The CMA CGM Nurdle Spill (2020). https://www.youtube.com/watch?v=KTvSvBe9ae0&t=473s

Co-taught:

1. *Beneath the Bayou* interactive video lecture. Live taping onsite at Barataria Preserve made in collaboration with the Lake Pontchartrain Conservancy and the National World War II Museum at New Orleans.

 $\underline{https://www.nationalww2museum.org/events-programs/events/127876-beneath-\underline{bayou}}$

Courses Taught

Traditional instruction to undergraduates unless otherwise noted.

University Courses

As primary instructor:

• *Natural Science as Leisure* (ENVA Y294); Environment Program at Loyola University New Orleans; asynchronous online; currently being taught.

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• Leisure and Outdoor Recreation in American Culture (RPTS 301); Recreation, Park, and Tourism Sciences at Texas A&M University; asynchronous online 2013-2014.

As teaching assistant:

- *General Biology Laboratory I* (BIO-152); Department of Biological Sciences at Southeastern Louisiana University 2011-2012.
- *General Biology Laboratory II* (BIO-154); Department of Biological Sciences at Southeastern Louisiana University 2011-2012.
- Fundamentals of Ecology Laboratory (RENR-215); Department of Renewable Natural Resources at Texas A&M University 2012-2013.
- Australian Natural Resources. Queensland, Australia (RENR-400); Renewable and Natural Resources at Texas A&M University; 2014.
- *Hotel and Resort Operations* (RPTS-421); Department of Recreation, Park, and Tourism Sciences at Texas A&M University; 2017 online asynchronous.
- Applications of Tourism Principles (RPTS-302); Department of Recreation, Park, and Tourism Sciences at Texas A&M University Texas A&M University 2018 online asynchronous.

Citizen Science Training Courses:

- *Introduction to Nature's Notebook and Data Collection*, One 3 hour training session in collaboration with the U.S. National Phenology Network, Jean Lafitte National Historical Park and Preserve, and the Barataria Terrebonne National Estuary Program; 2019.
- *Introduction to the Frogs of Barataria*, concurrent with FrogWatch data collection every month at Barataria Preserve unit of Jean Lafitte National Historical Park and Preserve; 2019-2020.

Professional Development Courses:

• *Living Downriver*, an annual course for high school teachers participating in the Living Downriver Program through the National Park Service and the Barataria-Terrebonne National Estuary Program; 2019-2020.

Service

- Leadership Role
 - **Citizen science monitoring,** New Orleans Nurdle Patrol (ongoing); data collection, monitoring, science communication.
 - Chair, Graduate Student Seminar Series; Department of Recreation, Park, and Tourism Sciences at Texas A&M University 2016-2018.
- Mentor/Adviser role
 - Undergraduate mentor, 12 undergraduates (2020-current). I manage undergraduate volunteers at the Vertebrate Museum and have mentored two towards graduate school.
 - **Virtual mentor,** (2011-2019): I have mentored one student since their freshman year in high school and several on and off.

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- Graduate Student Researcher, Aquarium Research Team of 8 undergraduates conducted research through LAUNCH Undergraduate Research Program at Texas A&M University.
- Educator Role
 - Natural Science Outreach and Education, Laboratory School (K-8) at Southeastern Louisiana University (ongoing) and Woodland Park Magnet Elementary School (PreK-3) in Hammond, Louisiana.
- Peer review/Referee role
 - **Reviewer,** Journal of Fish Biology (2011-2014)
- Moderator Role
 - Session moderator; Southeastern Fishes Conference (2021)
- Other
 - Member, of the Applied Biodiversity Sciences program at Texas A&M University (2012 - 2019)
 - **Letters to a Pre-Scientist,** outreach to 5th grade students via pen pal letter writing (2016-2018)

Additional Social Science Research Experience

Texas A&M University, College Station, TX

Research Assistant - Climate change vulnerability and resilience of tourism and the entire economy. (2017-2019)

- Worked closely with a new professor to conduct a thorough literature review for a
 collaboration examining the vulnerability and resilience of both tourism as well as the
 entire economy.
- Framed climate change as an economic challenge for tourism, specifically in places reliant on tourism *and* natural resources (e.g., New Orleans, Louisiana).

Texas A&M University, College Station, TX

Journal Club Project - Science as a Public Good: Findings From a Survey of March for Science Participants (2016-2017)

- March for Science participant survey project; helped develop a large-scale, collaborative study to collect data concurrently in Washington D.C., Los Angeles, California, and Austin, Texas on April 22, 2017.
 - Led the Austin, TX team to survey march participants to understand their motivations for participating,
 - o Results published in *Science Communication* (2018).

Texas A&M University, College Station, TX

Research Assistant - Lead Field Researcher Investigating Recreational Boating on the Texas Highland Lakes (2014-2015)

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- Project objectives include to (1) determine the characteristics of boaters and their use patterns on each of the five Highland Lakes near Austin, TX; (2) document stakeholders' perceptions of the natural, social, and managerial conditions on the lake; (3) document the nature, magnitude, and locations of conflict; (4) identify when and where peak use occurs on the lake; and (5) illustrate stakeholders' attitudes toward lake management.
- Led multiple teams of graduate students on three data collection trips over the weekends of Memorial Day, Fourth of July, and Labor Day.
 - o Led logistics for car rental and overnight stays,
 - o Prepared all materials for fieldwork,
 - o Provided consistent communication with team members.
- Helped develop and launch a follow-up survey available as both mail-in or via Qualtrics,
- Coordinated with local survey research company for data entry,
- Analyzed data and produced five technical reports, one for each lake under investigation.

Texas A&M University, College Station, TX

Qualitative Methods Course Project - Losing the Lost Pines; Continued Impacts on Victims of the Bastrop County Complex Wildfire 3 years Later (2014)

• The Bastrop County Complex fire (2011) burned portions of a Pleistocene Era track of loblolly pine trees while becoming the most destructive wildfire in Texas history, killing 4 people and causing over \$300 million in damages. This project aimed to (1) use qualitative methods to determine various impacts on the land and its people over the last three years, (2) assess how the human community has changed over time, (3) determine any attitudinal or behavior changes towards natural resources, specifically the loblolly pine, (4) practice writing thick, rich descriptions capable of qualitative analysis, and (5) produce a written product that is shared with the community.

Texas A&M University, College Station, TX

Amazon Field School - Applied Biodiversity Sciences Program (2013)

- Traveled to the Peruvian Amazon, specifically Peurto Maldonado and the Tambopata Research Reserve and field station, for a two-week, interdisciplinary field course.
 - o Met with indigenous local communities to understand natural resource use,
 - Worked in small teams of graduate students to identify a course project, outline the objectives, collect and analyze data, and present results to the class.
 - Projects included natural science data collection and analysis and ethnographic data collection and analysis.
 - Investigated the interactions occurring between natural science and social science graduate students,
 - Utilized the location of the course to stay 10 days to conduct my own research case study on an American aquarium keeper living in Peru as a guide and fish exporter.

Additional Natural Science Research Experience

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Texas A&M University, College Station, TX

Seahorse and Pipefish Collecting Fieldwork - Port Aransas, TX (2013-2014)

• Assisted in multiple 2-day collecting events focused on capturing live dwarf seahorses (*Hippocampus zosterae*) and Gulf pipefish (*Syngnathus scovelli*) for transport to a laboratory at Texas A&M University.

Texas A&M University, College Station, TX

Field Technician - CICHAZ Field Station in Calnali, Mexico (2012-2017)

- Participated in annual collecting trips to the CICHAZ field station to collect Poeciliid fishes.
- Collected fishes using minnow traps, dip nets, and seine nets in extremely remote field sites.

Texas A&M University, College Station, TX

Amazon Field School - Applied Biodiversity Sciences Program (2013)

- Developed a research project with four other graduate students in the field.
- Project objectives include
 - o Comparison of fish assemblages across various size water bodies,
 - o The use of fish and fishing to local communities,
 - Connecting the natural and social science results to form a cohesive, interdisciplinary product.
- I also kept through field notes and presented a trip report to a multitude of aquarium clubs (se Presentations to Amateur Scientists, above)

Southeastern Louisiana University, Hammond, LA

Research Associate - The Vertebrate Museum; Department of Biological Sciences (2020-current)

- Manages over 200,000 vouchered specimens in two natural history collections,
- Maintains over 8,000 vouchered fish and herp tissue samples,
- Teaches undergraduates and graduate students how to curate and care for wet specimens,
- Leads undergraduate research projects and aids in data collection,
- Conducts fieldwork with departmental researchers and curates any specimens collected.

Southeastern Louisiana University, Hammond, LA

Research Associate - Pearl River Fish Survey (2020 - current)

- Collects, identifies, and counts specimens to assess the assemblages of native fishes,
- Monitors the impacts paper mill effluent on the population dynamics and community assemblages of fishes over time.

Texas A&M University, College Station, TX

Research Assistant - Glochidia (Unionidae) extraction and genetic amplification techniques. Systematic Ichthyology Laboratory (2012-2013)

- Dissected larval bivalves (glochidia) from fish gills in the laboratory,
- Developed DNA amplification process for glochidia.

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Southeastern Louisiana University, Hammond, LA

Graduate Research Associate - Fieldwork in Belize (2012)

- Collected Belonesox belizanus across its range in Belize,
- Vouchered specimens and collected tissue for genetic analysis,
- Conducted genetic analyses (DNA extraction, PCR, DNA alignment),
- Conducted phylogenetic analyses (via MrBayes, PAUP*).

Southeastern Louisiana University, Hammond, LA

Graduate Research Assistant - Fieldwork in Michoacán, Mexico (2011)

• Collected fish voucher specimens and tissues for genetic analysis on native Poeciliids.

The Ohio State University, Columbus, OH

Undergraduate Research Assistant – A bioenergetics based evaluation of hybrid striped bass habitat quality in Ohio reservoirs (2010)

- Maintained live fish stocks in a laboratory setting,
- Assisted in laboratory experiments,
- Prepared fish and conducted tissue mastication for analysis,
- Assisted with data entry.

The University of Idaho, Center for Research on Invasive Species and Small Populations (CRISSP), Moscow, ID

Research Experience for Undergraduates - Evaluation of Virkon Aquatic toxicity and application to disinfect invasive mollusk infested field and hatchery gear (2010)

- Conducted laboratory experiments on the toxicity level of an aquatic disinfectant,
- Followed strict procedure aimed at zero-release of invasive study subjects.
- Helped a Native American graduate student design strategies to improve survival and return recruitment of steelhead kelts from Snake River stocks.

Organizational Leadership Experience

*non-professional listings are directly related to my research program

- **Social Media Committee,** Department of Ecology and Evolutionary Biology; Texas A&M University (2017)
- **Representative,** Departmental graduate student group; Recreation, Park, and Tourism Sciences; Texas A&M University (2014-2015)
- Chair; Graduate student representative for the Outreach and Education Committee; American Society of Ichthyologists and Herpetologists (2013-2015)
- Co-Chair, Event Planning Committee; Ecology and Evolutionary Biology Interdisciplinary Graduate Student Organization at Texas A&M University (2012-2013)
- **Treasurer**, Biology Graduate Student Organization at Southeastern Louisiana University (2011-2012)
- **Secretary***, Columbus Area Fish Enthusiasts (2009)
- Member at Large*, Columbus Area Fish Enthusiasts (2006-2008, 2010)

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Professional References

Additional references available

• **Dr. Kyle R. Piller,** Edward G. Schlieder Foundation Professor of Environmental Studies and Sustainability in the Department of Biological Sciences and Curator of Vertebrates at Southeastern Louisiana University

Manages my current position and was my MS adviser

Kyle.Piller@selu.edu

985-549-2191

• **Dr. David Scott,** Professor Emeritus at the Department of Recreation, Park, and Tourism Sciences at Texas A&M University

Ph.D. adviser.

dscott@tamu.edu

979-450-3359

• **Dr. Robert (Bob) A. Thomas,** Professor of Mass Communication, Loyola Distinguished Scholar Chair in Environmental Communication, and Director of the Center for Environmental Communication at Loyola University New Orleans

Environmental education adviser - New Orleans area

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