

# CHARLES GRAY VICKERY

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## PERSONAL BIO

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Gray Vickery is a practiced environmental scientist with experience spanning a range of disciplines, including terrestrial/aquatic ecology, coastal geology, wetland science, low-impact road and bridge design, clean energy, and environmental policy. He holds a B.A. in Environmental Science from Emory University, and is currently working towards an M.S. in Environmental Science and Policy from the University of South Florida with a concentration in coastal geology (expected 2021 graduation).

## EDUCATION

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**UNIVERSITY OF SOUTH FLORIDA, School of Geosciences**

*Master of Science – Environmental Science and Policy (Expected 2021)*



**UNIVERSITY OF SOUTH FLORIDA, Muma College of Business**

*Graduate Certificate – Project Management (Expected 2021)*



**EMORY UNIVERSITY, Department of Environmental Sciences**

*Bachelor of Arts, Environmental Sciences (2015)*

## WORK EXPERIENCE

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**Ecologist III (July 2016 - August 2019 / 3 years, 1 month), Georgia Department of Transportation**

*\*Promoted from Ecologist II on October 16, 2017*

- Conduct wetland/stream delineations, seasonal protected species surveys, and habitat assessments to identify ecologically critical resources for protection under the Endangered Species Act, Clean Water Act, and other environmental regulations.
- Coordinate with roadway and bridge engineers and state/federal agencies including EPA, USFWS, NMFS, EPD, USACE, and GADNR to find least damaging design alternatives to avoid ecological impacts.
- Draft and review ecology assessments, permit applications, buffer variances applications, biological assessments, and other technical reports.
- Collect and analyze surface water samples during aquatic surveys to quantify stream health.
- Provide research support for a saltmarsh restoration project involving field sampling, in-situ soil/water analysis, and lab-scale experimentation to develop new procedures for restoring disturbed saltmarsh environments along causeways.

## **RESEARCH EXPERIENCE**

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### **Research Assistant (August 2019 to Present), University of South Florida**

- Support the USF Coastal Research Laboratory with a variety of coastal projects, including storm impact research, circulation modeling, and beach morphology monitoring.
- Collect field data to document coastal processes, including bathymetry, tide level, water velocity, and beach profile elevation.
- Utilize the Coastal Modeling System (CMS) software to simulate coastal circulation patterns under various environmental conditions, and better understand flow patterns in estuarine systems.
- Assist in analyzing the physical and chemical properties of sediment cores taken from various sea-turtle nesting hotspots along the Florida coast to help inform sustainable beach nourishment efforts.

### **Research Assistant (September 2017 to July 2019), Georgia Department of Transportation**

*Best Management Practices for Post Construction Restoration of Rights-of-Way in Saltwater Marshes, Estuaries and Other Tidally Influenced Area*, Funded by the Federal Highway Administration

- Investigate strategies to improve the efficacy of post-construction restoration of disturbed saltmarsh environments along Georgia causeways.
- Conduct *in-situ* soil and pore water measurements at 8 different locations within the Georgia saltmarsh utilizing a handheld analyzer to quantify water chemistry characteristics including pH, redox potential, salinity, and total dissolved solids.
- Characterize total percentage of vegetative cover at various sampling location to determine correlation between vegetative type and biogeochemical soil properties.
- Conduct lab-scale experimentation to measure the growth rates of saltmarsh plants in various engineered soils.

### **Research Fellow (August 2015 – July 2016, 11 months), Southface Energy Institute**

*Advanced Commercial Building Initiatives (ACBI)*, Funded by the US Department of Energy

- Drafted technical manuals enabling business owners, facilities managers, and college campuses to reduce energy and water consumption through benchmarking, energy assessments, targeted building upgrades, and ongoing tracking and verification.
- Collected circuit-level building data to determine which building systems generate the highest Energy Use Intensity (EUI), and used this data to generate a perspective list of targeted building upgrades to reduce bulk energy usage in small commercial buildings.

### **Sustainability Intern (February 2015 – July 2016, 7 months), Southface Energy Institute**

- Assisted the Commercial Sustainability Team, Residential Sustainability Team, and Communication Team with research and technical writing.
- Drafted literature review, journal articles, and newsletter articles on various environmental topics, including the environmental benefits of energy low-impact building design.
- Performed energy assessments on homes and commercial buildings including blower door testing, and duct blaster testing.

### **Senior Independent Research (Fall 2014), Emory University**

*The Ecological and Geomorphological Consequences of Artificial Catchment Reservoirs*

- Investigated the environmental impacts of manmade stream impoundments with a focus on fluvial disruption, water chemistry/eutrophication, ecological connectivity, and reservoir sedimentation.
- Composed a 50 page scientific paper summarizing the effects of dams and proposing reservoir management strategies to reduce sedimentation and increase dam longevity.

## NOTABLE COURSEWORK

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### *Post-Graduate Short Course Education*

#### **2017 Courses**

- USACE Wetland Delineation, United States Army Corps. of Engineers (40 hours)
- Municipal Separate Storm Sewer System (MS4) Training, Georgia Department of Transportation (8 hours)
- Advance Hydric Soils, Atypical Wetlands, and Hydrology, Duncan and Duncan Wetland Delineation and Endangered Species Training (16 hours)
- Atypical Wetland Delineation, Duncan and Duncan Wetland Delineation and Endangered Species Training (16 hours)
- Apalachicola, Flint, Chattahoochee Freshwater Mussel Workshop, Joseph W. Jones Ecological Research Center (40 hours)
- Bats in Bridges Training, Georgia Department of Natural Resources Wildlife Resource Division (16 hours)
- Region 4 Geographic Information Systems Training, United States Fish and Wildlife Service, Cookeville Tennessee (24 hours)
- Highway, Culvert, Bridge, and Erosion Control Plan Reading Basics, Georgia Department of Transportation (8 hours)

#### **2016 Courses**

- Basic Wetland Delineation, Duncan and Duncan Wetland Delineation and Endangered Species Training (40 hours)
- Training Course on the Identification of Intermittent and Perennial Stream, Blueline Environmental (40 hours)
- Plant Identification, Georgia Department of Natural Resources (ongoing):
  - Piedmont Plants (8 hours)
  - Coastal Plain Plants (8 hours)
  - Wetland Plants (8 hours)
  - Granite and Gneiss Outcrops (16 hours)
  - Trees and Shrubs of the Piedmont (8 hours)
  - Grasses and Forbes (8 hours)
  - Mountains and Cove Forests (8 hours)

#### **2015 Courses**

- Leadership in Energy and Environmental Design (LEED) Green Associate Training Course, Southface Energy Institute SWEET Center (24 hours)
- Home Energy Rating System (HERS), Southface Energy Institute SWEET Center (40 hours)

## PUBLICATIONS

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1. S. Sonny Kim, Ph.D., P.E., Stephen A. Durham, Ph.D., P.E., Jason Christian, Ph.D., P.E., **Gray Vickery** (in preparation) Best Management Practices for Post Construction Restoration of Rights-of-Way in Saltwater Marshes, Estuaries and Other Tidally Influenced Areas.
2. Juliette Apicella, Laura Capps, Cody David, Sydney Roberts, Shane Totten, **Gray Vickery** (2016) Campus Benchmarking Guide, Southface Energy Institute in Association with the U.S. Department of Energy. Web Link: <https://4553qr1wvuj43kndml31ma60-wpengine.netdna-ssl.com/wp-content/uploads/2016/11/Campus-benchmarking-toolkit.pdf>

3. Julliete Apicella, Laura Capps, Cody David, Kelly Herman, Alex Powell, Sydney Roberts, Shane Totten, **Gray Vickery** (2016) Submetering Factsheet; Measuring Campus Performance, Southface Energy Institute in Association with the U.S. Department of Energy. Web Link: <https://4553qr1wvuj43kndml31ma60-wpengine.netdna-ssl.com/wp-content/uploads/2016/11/Submetering-bulletin.pdf>
4. **Gray Vickery** (2015) The Benefits of Greening Single Family Residential Properties, Southface Energy Institute and the Virginia Center for Housing Research.
5. **Gray Vickery** (2015) Southface Refresh: GAF Spotlight, The Southface Journal, Southface Energy Institute. Web Link: <https://www.southface.org/the-journal/southface-refresh-gaf/>

## PROTECTED SPECIES SURVEY EXPERIENCE

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### MOLLUSKS

- Rayed creekshell (*Anodontoides radiatus*), fat threeridge (*Amblema neislerii*), gulf moccasinshell (*Medionidus penicillatus*), oval pigtoe (*Pleurobema pyriforme*). Pachitla Creek, Calhoun County, GA (October 2017)
- Shinyrayed pocketbook (*Lampsilis subangulata*). Spring Creek, Baker County, GA (August 2017)
- Purple bankclimber (*Elliptoides sloatianus*). Flint River, Baker County, GA (August, 2017)
- Gulf moccasinshell (*Medionidus penicillatus*), oval pigtoe (*Pleurobema pyriforme*). Chattahoochee River unnamed Tributary, Harris County (July 2017)

### AMPHIBIANS

- Eastern hellbender (*Cryptobranchus allaganiensis*). Multiple headwater stream locations in North Georgia (September, 2017 & September 2018)

### REPTILES

- Gopher tortoise (*Gopherus Polyphemus*). Wayne County (June 2018)
- Diamondback terrapin (*Malaclemys terrapin*). Chatham County (July 2017)
- Gopher tortoise (*Gopherus polyphemus*), American alligator (*Alligator mississippiensis*). St. Catherine's Island, Liberty County (April 2014)

### PLANTS

- Georgia aster (*Symphyotrichum georgianum*). Douglas County (October 2017), Cobb County (October 2018)
- Greenfly orchid (*Epidendrum magnoliae*). Early County (August 2018)
- Relict trillium (*Trillium reliquum*), fringed campion (*Silene polypetala*). Muscogee County (April 2018)
- Trailing meadowrue (*Thalictrum debile*), Jacob's ladder (*Polemonium caeruleum*). Gordon County (April 2017)
- Heartleaf brickellia (*Brickellia cordifolia*), Chattahoochee County (July 2017)
- Canby's dropwort (*Oxypolis canbyi*). Lee County (September 2016)
- Pink ladyslipper (*Cypripedium acaule*), Ozark bunchflower (*Veratum woodii*). Hall County (August 2016)

### MAMMALS

- Northern long-eared bat (*Myotis septentrionalis*), Indiana bat (*Myotis sodalis*), gray bat (*Myotis grisescens*). Multiple Counties across North Georgia (2016 to 2018)
- Brazilian free-tailed bat (*Tadarida brasiliensis*), big brown bat (*Eptesicus fuscus*). Chattahoochee County (May, 2017), Muscogee County (July 2017)

### MIGRATORY BIRDS

- Barn swallow (*Hirundo rustica*), cliff swallow (*Petrochelidon pyrrhonota*), eastern phoebe (*Sayornis phoebe*). Multiple Counties across Georgia (2016 – Present)

## **VOLUNTEER EXPERIENCE**

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### **Wildlife Caregiver (February 2017 to October 2017), Atlanta Wild Animal Rescue Effort (AWARE)**

- Rehabilitated a variety of injured or orphaned native Georgia animals including owls, foxes, bats, turtles, song birds, and coyotes.
- Assisted veterinarians in dressing wounds, preparing medications, and setting broken bones.

### **Alumni Mentor (September 2017 to May 2018), Oxford College Mentor Program**

- Exchanged professional ideas and technical experience to help prepare an undergraduate environmental science student for life beyond graduation.

## **PROFESIONAL PRESENTATIONS**

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1. **Gray Vickery**, David Hedeem (November, 2018) Phase II Research Proposal: Best Management Practices for Post Construction Restoration of Rights-of-Way in Saltwater Marshes, Estuaries and Other Tidally Influenced Areas. *Research Technical Advisory Group (RTAG) Semiannual Meeting*. Atlanta, Georgia
2. Jennifer Mercer, Ryan Pawlikowski, Sara Kuhn, **Gray Vickery** (June, 2018) Ecology Section Overview. *GDOT Ecology Section Cross-Training*. Atlanta, Georgia
3. **Gray Vickery**, Hannah Held (October, 2017) Impacts of Road Maintenance Activities on Nesting Diamondback Terrapins on Tybee Island Causeway. *GDOT Ecology Section Conference*. Atlanta, Georgia
4. **Gray Vickery**, Julliette Apicella (November, 2016) Campus Benchmarking Guide Webinar, *Southface Energy Institute Webinar Series*. Atlanta, Georgia. Web Link: <https://www.youtube.com/watch?v=Nb1ieI4nh80&t=217s>

## **AWARDS AND HONORS**

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*Commissioner's Commendation* - Conducting expedited ecology evaluations for the Interstate 85 bridge collapse emergency replacement, Project Identification (PI) Number 0015388 & 0015630, Fulton County (2017)

*Environmental Administrator's Commendation* – Presenting at the semiannual Research Technical Advisory Group (RTAG) meeting (2018)

*Simply the Best Customer Service Award* – Cultivating relationships with GDOT agency partners, private consultants, and external shareholders (2018)

## **MEMBERSHIPS AND AFFILIATIONS**

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- Tampa Bay Association of Environmental Professionals (TBAEP)
- Georgia Association of Environmental Professionals (GAEP)
- Georgia Protected Species Methodology Working Group
  - Contributions: Round-tailed muskrat (*Neofiber alleni*) and Appalachian cottontail (*Sylvilagus obscurus*) phase I habitat survey methodologies.
- Coastal Georgia Cooperative Invasive Species Management Area (CoGA CISMA)

## **FIELD INSTRUMENTATION EXPERIENCE**

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- Sontek Agronot – Acoustic Doppler Velocimeter
- Trimble Geoexplorer 6000 Series – Handheld GPS mapping device
- Trimble R8
- Baro Troll / Aqua Troll
- YSI Pro Plus Quatro – Multiparameter field water quality meter
- Pore water probe
- LaMotte Turbimeter – Portable turbidity meter
- Anabat SD2 – Acoustic monitoring bat detector
- GopherScope

## **SOFTWARE EXPERIENCE**

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- CMS Flow / CMS Wave
- ArcGIS Pro
- ArcMap 10.4.1
- Microstation V8i
- Microsoft Office Suite (Word, PowerPoint, Excel, Publisher, Outlook)
- Trimble GPS Pathfinder Office
- Adobe Acrobat
- Google Earth Pro
- JMP Statistical Software

## **ADDITIONAL SKILLS**

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- Wetland delineation
- Hydric soil indicators
- Plant identification
- Water and soil quality measurement
- Stormwater management
- Municipal Separate Storm Sewer Systems (MS4)
- Roadway & Bridge Plan reading
- Avoidance Minimization and Mitigation (AMM)
- Low impact bridge/culvert design
- Geographic Information Systems (GIS)
- 404 permitting
- National Environmental Policy Act (NEPA)
- Technical writing