

**Rachel E. Weisend**

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**Career Objective:** To discover the links between microbes and geochemical cycles in intertidal and open ocean ecosystems and apply this information to the intersection of research, policy, and science communication.

**Education:**

**Ph.D. in Marine Biology** – Texas A&M University – Corpus Christi

- August 2016 – Present, Expected Graduation August 2021 *Current GPA: 3.926*
- Thesis Title: Spatial and Temporal Variability of Microbial Communities within Texas Coastal Mangroves

**B.S. in Biological Sciences, Minor in Chemistry and Spanish** – Florida State University

- August 2012 – May 2016, Cum Laude with Honors *Final GPA: 3.517*
- Honors Thesis: Elemental Ratios of Bioactive Trace Metals in Suspended Particulate Matter in the Bay of Bengal

**Peer-Reviewed Publications:**

Mullis M.M., **Weisend R.E.**, Kiel Reese B. 2021. Draft genome sequences of *Idiomarina abyssalis* strain KJE, *Marinobacter salarius* strain NP2017, and *Marinobacter salarius* strain AT3901, isolated from deep-sea sediment near the western flank of the Mid Atlantic Ridge. *Microbiol Resour Announc* 10:e01295-20.

Hayes, C.T., Fitzsimmons, J.N., Boyle, E.A., McGee, D., Anderson, R.F., **Weisend, R.E.**, and Morton, P.L., 2015. Thorium isotopes tracing the iron cycle at the Hawaii Ocean Time-series Station ALOHA. *Geochimica et Cosmochimica Acta* 169: 1–16.

Fitzsimmons, J.N., Hayes, C.T., al-Subiai, S., Zhang, R., Morton, P.L., **Weisend, R.E.**, Ascani, F., and Boyle, E.A. 2015. Daily to decadal variability of size-fractionated iron and iron-binding ligands at the Hawaii Ocean Time-series Station ALOHA. *Geochimica et Cosmochimica Acta* 171: 303–324.

**Non-Peer-Reviewed Publications:**

Wilkins, K.W., Rosa-Marín, A., **Weisend, R.E.**, and Kurosawa, E. 2020. Benefits, Challenges, and Opportunities for International Research Collaborations: Perspectives from the Limnology and Oceanography Research Exchange. *Limnology and Oceanography Bulletin*, 29(4).

Beck, H.N., Cohen A., McKenzie T., **Weisend R.E.**, Wilkins K.W., and Woodstock M. S.. 2019. Broadening Horizons: Graduate Students Participating in International Collaborations through the Limnology and Oceanography Research Exchange (LOREX) Program. *Limnology and Oceanography Bulletin*.

**Manuscripts in Preparation:**

**Weisend, R.E.**, Mullis, M., Reese, Brandi. K. 2022. High Through-Put Culturing of Sediment Microbial Communities Using Fluorescent Activated Cell Sorting (FACS).

**Leadership Experience:**

- Leading undergraduate students through research projects
- Creating connections with local organizations for science communication events
- Spearheading international research collaborations.

**Skills:**

- Proficient in R Studio
- Project Design
- Operation of JAZZ FACS
- Microwave digestion
- Dissolved trace metal extraction
- DNA and RNA extraction
- Cell counts
- Science Communication
- Work with hazardous materials
- Sediment coring and subsampling
- Boat certified in the state of Florida
- Proficient in Microsoft Office Suite
- Proficient in Adobe InDesign
- Data analysis

**Research Experience:**

*Research Assistant* – Texas A&M University – Corpus Christi  
(August 2016 – Present)

My research focuses on measuring microbial community activity coupled with rates of methane flux within marine sediment. This project utilizes high through-put sequencing, quantitative PCR, fluorescent activated cell sorting, and standard geochemical assays.

*Science Communication Intern* - American Society of Limnology and Oceanography  
(Spring 2023)

*Research Assistant* – *Educational Evaluation of an NSF-Funded Project* – BChi Consulting  
(April – October 2020)

Working with Dr. Chi, I helped compile a review for a NSF funded project. This involved comparing de-identified data from pre and post surveys. This experience provided experience on writing reviews that will be helpful to grant agencies as well as grant recipients.

*Participant in the Limnology and Oceanography Research Exchange (LOREX) program* – American Society of Limnology and Oceanography  
(December 2018 – March 2020)

Participant in a two-month research exchange in cooperation with ASLO and the Southern Cross University of Australia – Lismore. This program allowed for students to collaborate internationally and to receive training regarding international research through various workshops. A blog and ASLO Instagram posts were created to share experiences of the research exchange.

*2019 International Geobiology Summer Course* – CalTech  
(June-July 2019)

Participant in a summer course that offers graduate students and postdoctoral applicants to examine Earth's evolution alongside the biosphere with specific interest on microbial processes. This course taught cutting-edge geobiological techniques and led to collaboration with scientists with diverse backgrounds within the interdisciplinary field of geobiology.

*Benthic Invertebrate Taxonomy, Metagenome, and Bioinformatics Workshop* – Corpus Christi, TX

(January 2018)

Attended a week-long workshop hosted by members of University of New Hampshire, University of California – Riverside, and Texas A&M University – Corpus Christi. This workshop focused on assembling genomes for microbial and benthic communities, interpreting results using QIIME2, and taxonomic identification of benthic organisms.

*Summer Internship* – National High Magnetic Field Laboratory, Tallahassee, FL

(May 2016 – August 2016)

Worked for three months on 2015 U.S. GEOTRACES Arctic samples with Dr. Eric Collins (U. Alaska-Fairbanks) in May to extract DNA from seawater and sea ice samples. Gained experience working with genomic libraries. Began the NHMFL's internship program in June, digesting marine particle samples from the Arctic Ocean.

*Senior Honors Thesis* – Florida State University

(August 2015 – May 2016)

Presented and defended a year-long senior honors thesis - "Elemental Ratios of Bioactive Trace Metals in the Bay of Bengal." Improved writing and research skills by writing a prospectus and thesis about my research project. Gained practice presenting and then defending my thesis in front of a committee.

*Directed Independent Study* – Florida State University

(August 2014 – May 2016)

Continued REU research project at the NHMFL with Dr. Peter Morton for class credit, analyzing and interpreting the data, conducting literature research, and preparing and analyzing samples. Prepared a poster for the American Geophysical Union annual Fall Meeting (December 2014). Developed independent research skills while supervised by a mentor. Coauthored two manuscripts (November/December 2014).

*Research Experience for Undergraduates* – National High Magnetic Field Laboratory, Tallahassee, FL

(June – August 2014)

Worked for two months processing and analyzing samples under the supervision of a mentor. Learned about how professional scientists work, day to day, in a large class-100 clean lab. Analyzed contamination-prone samples. Organized and analyzed large amounts of data using Excel. Presented methods and results in a poster to other colleagues and professional scientists.

**Teaching Experience:**

*Teaching Assistant: Oceanography* – Dauphin Island Sea Lab – Dauphin Island, AL

(Summer 2021)

Co-Instructed a five week course and accompanying lab. Topics included physical, chemical, and biological oceanography. Instructed the lab portion including the field sampling on the RV Alabama Discovery conducting CTD casts, zooplankton tows, Peterson grab, secchi, and niskin bottle operations. Instructed data analysis with Ocean Data View.

*Teaching Assistant: Microbial Ecology* – Texas A&M University – Corpus Christi

(Fall 2019)

Instructed two lab sections moving from sample collection to a final term manuscript. Field work included water sampling, sediment coring, and collecting abiotic parameters. Lab topics included: biological oxygen demand, Winogradsky columns, plate counts, DNA extraction, DNA quantification, PCR, cell enumeration, fermentation, flow cytometry, and bioinformatics.

*Instructor of Record: Senior Presentation* – Texas A&M University – Corpus Christi  
(Summer 2019)

Taught a course to 20 undergraduate seniors discussing how to create and present research to the broader scientific community. Lessons included what to include in a presentation, public speaking skills, the importance of international research, how to discuss science to the public, and how to provide helpful peer reviews.

*Guest Lecturer for Microbial Ecology course* – Texas A&M University – Corpus Christi  
(Fall 2018)

Taught undergraduates about the origins of life, phylogenetic trees, microbial diversity, microbial metabolism, biological oxygen demand, and Winogradsky columns.

*Teaching Assistant: Biology 1* – Texas A&M University – Corpus Christi  
(June-August 2018)

Taught two sections of *Biology 1* lab for undergraduate students. The following topics were included in the course: scientific method, microscope use, pipetting, PCR, gel electrophoresis, photosynthesis/fermentation, osmosis and diffusion, enzymes, meiosis and mitosis, and genetics.

*Instructor of a Two-Week Module* – Texas A&M University – Corpus Christi  
(January/February 2017)

Instructor of a two-week long module on the topic of Mangroves and Ecosystem Services for a graduate level Oceans and Human Health course at TAMU-CC. I led a two-week course on the importance of mangroves and their ecosystem services. I also distributed accompanying research articles and led group discussions.

## **Field Experience**

- Numerous small boat and field operations involving sediment and water sampling
- Expedition NBP-2301 to Ross Sea, disembarking at McMurdo Station in Antarctica

## **Presentations:**

### Oral Presentations:

1. “Co-location of Oxidizing and Reducing Microbial Communities within Wetland Sediments” **Rachel E. Weisend**, Megan Mullis, Jason Selwyn, Ian Rambo Brett Baker, Brandi Kiel Reese. 11/2021, Coastal & Estuarine Research Federation 26<sup>th</sup> Biennial Conference, \*Held virtually due to COVID-19.
2. “Co-location of Oxidizing and Reducing Microbial Communities within Wetland Sediments” **Rachel E. Weisend**, Megan Mullis, Jason Selwyn, Ian Rambo Brett Baker, Brandi Kiel Reese. 05/2021, Southeastern Biogeochemical Symposium, \*Held virtually due to COVID-19. \*\**Received 3<sup>rd</sup> place for best oral presentation.*
3. “Diurnal and Vegetation based Geochemical Activity in Mangrove Marsh Ecosystems” **Rachel E. Weisend**, Brandi Kiel Reese, Megan Mullis, Brett Baker, Ian Rambo.

- 12/2020, Bay and Bayous Symposium 2020, \*Held virtually due to COVID-19.
4. “Investigating Methane Emissions and Microbial communities via ASLO's LOREX program” **Rachel E. Weisend**, Joanne Oakes, Judith Rosentreter, Brandi Kiel Reese. 03/2020, Southern Cross University Centre for Coastal Biogeochemistry - Invited Seminar, Lismore, NSW, Australia.
  5. “Mangrove Ecosystems: Insight into Microbial and Geochemical Counterparts” **Rachel E. Weisend**, Megan Mullis, John Turman, Jason Selwyn, Ian Rambo, Brett Baker, Brandi Kiel Reese. 11/2019, *Goldschmidt Graduate Student Award Lecture*, American Society for Microbiology Texas Branch – Fall meeting, San Antonio, Texas.
  6. “Seasonal and Diurnal Variation of Methane Flux in Mangrove Ecosystems” **Rachel E. Weisend**, Susan McGuire, Brooke Denney, Lin Zhang, Brandi Kiel Reese. 02/2019, ASLO Aquatic Sciences Meeting, San Juan, Puerto Rico.
  7. “Investigating Methane Production in Wetlands” **Rachel E. Weisend**, Brooke Denney, Lin Zhang, Lee Smee, Brandi Kiel Reese. 01/2019, TAMU MARB Retreat, Corpus Christi, Texas.
  8. “Biologically-Mediated Methane Cycling in Texas Wetland Mangroves” **Rachel E. Weisend**, Brandi Kiel Reese. 10/2017, SACNAS Annual Meeting, Salt Lake City, Utah.
  9. “Microbial and Biogeochemical Fluxes in a Wetland Mangrove Ecosystem” **Rachel E. Weisend**, Brandi Kiel Reese. 01/2017, TAMU MARB Retreat, Galveston, Texas.
  10. “Microbial and Biogeochemical Fluxes in a Wetland Mangrove Ecosystem” **Rachel E. Weisend**, Brandi Kiel Reese. 12/2016, TAMU-CC Graduate Student Symposium, Corpus Christi, Texas.
  11. “Particulate Trace Metal Cycling at Station ALOHA” **Rachel E. Weisend**, Pete L. Morton, et al. 05/2015, Florida Annual Meeting and Exposition for the American Chemical Society, Tampa, Florida.

#### Poster Presentations:

1. “Spatial and Temporal Variability of Microbial Communities within Mangrove Systems” **Rachel Weisend**, Brandi Kiel Reese. 04/2019, Coastal and Ocean Sciences at Work for Texas: 2019 Research Symposium, College Station, TX.
2. “Investigation Nutrient and Organic Carbon Distribution in Wetland Sediment” Susan McGuire, **Rachel Weisend**, Brandi Kiel Reese. 04/2019, 2019 Beta Beta Beta South Central Regional Convention, Cedar Hill, TX
3. “Sorting and Cultivation of Single Cells from Sediment” **Rachel Weisend**, Megan Mullis, Brandi Kiel Reese. 11/2018, American Society for Microbiology Texas Branch Meeting, Corpus Christi, TX.
4. “Targeted cultivation of basaltic crustal fluids from the western flank of the Mid-Atlantic Ridge” Megan Mullis, **Rachel Weisend**, Brandi Kiel Reese. 11/2018, American Society for Microbiology Texas Branch Meeting, Corpus Christi, TX.
5. “Effects of Nitrate and Ammonia on Wetland Predation” Brooke C. Denney, **Rachel E. Weisend**, Dr. Brandi Kiel Reese. 03/2018, Sigma Xi Poster Symposium, Corpus Christi, TX.
6. “Culturing the Unculturable: Using Fluorescent Activated Cell Sorting to obtain viable isolates” Clay C. Clarkson, **Rachel E. Weisend**, Dr. Brandi Kiel Reese. 01/2018, Gordon Research Conference, Galveston, TX.
7. “Culturing the Unculturable Using Single Cell Sorting” **Rachel E. Weisend**, Brandi Kiel Reese, 03/2017, American Society for Microbiology Texas Branch Meeting.
8. “Elemental Ratios of Bioactive Trace Metals in the Bay of Bengal” **Rachel E. Weisend**, Peter L. Morton, et al. 02/2016, Ocean Sciences Meeting.
9. “Elemental Ratios of Bioactive Trace Metals in the Bay of Bengal” **Rachel E. Weisend**,

- Peter L. Morton, et al. 11/2015, International Symposium on the Indian Ocean, Goa, India.
10. “Particulate Trace Element Cycling in a Diatom Bloom at Station ALOHA” **Rachel E. Weisend**, Peter L. Morton, et al. 03/2015, Southeastern Biogeochemical Symposium.
  11. “Particulate Trace Element Cycling in a Diatom Bloom at Station ALOHA” **Rachel E. Weisend**, Peter L. Morton, et al. 12/2014, American Geophysical Union Conference.

### **Outreach and Organization Involvement:**

1. Mentor to a middle school student and undergraduate students (08/2016-Present)
  - a. Responsible for teaching how professional scientists function, day to day, in a microbial ecology laboratory. Currently advising undergraduate students in their own research projects that accompany my thesis research.
2. Active member of Texas A&M University Corpus Christi Marine Science Graduate Student Organization (09/2016-present)
  - a. This organization brings together multiple marine science graduate students at Texas A&M University – Corpus Christi. On top of attending monthly meetings, I partake in glass recycling events for the university and was a part of a committee responsible for making the New Student Handbook.
3. *Reach Out Science Slam Semi-Finalist* – Boston Museum of Science
  - a. February-May 2021  
Presented a Science Slam entry over three minutes discussing the importance of microbial communities in mangrove wetland environments. Presented to a live audience representing the Center for Dark Energy Biosphere Investigations (C-DEBI).
4. Earth Day Bay Day (04/20/19)
  - a. Ran a table at the Earth Day Bay Day event demonstrating the importance of wetlands ecosystem services, mangroves, and microbes to families. Held a photo booth where visitors were able to dress up as future scientists (600+ people).
5. Coastal Bend Regional Science Fair Judge (02/16/2019, 02/24/2018, 01/29/2017)
6. National STEM Night at the Texas State Aquarium (11/12/2018)
  - a. This STEM night was an event open to students in middle school and high school. At this event we discussed our research, shared how we became involved in research, and led students through a DNA extraction. Reached approximately 200 students.
7. Kaffie Middle School's STEM night (10/01/19, 09/26/2018 and 10/16/2017)
  - a. Using visual aids, we discussed microbes, mangroves, and wetland sediment with middle school students and their parents. At this event we were able to share our research topic with ~600 students, parents, and teachers.
8. Social Media manager for local magazine *Third Coast Science For You* (06/17-06/18)
  - a. Sharing the values of *Third Coast Science For You* on social media platforms to promote the journal and excite local residents about scientific research in the Texas Coastal Bend.
9. Earth Day Bay Day (04/08/18)
  - a. Ran a table at the Earth Day Bay Day event demonstrating the importance of wetlands ecosystem services, mangroves, and microbes to families (200+ people).
10. Teen STEM Café at the Texas State Aquarium (10/02/2017)

- a. This Teen STEM Café was an event open to students in middle school and high school. At this event we discussed our research, shared how we became involved in research, and led students through a DNA extraction.
11. Collaborator in Art-Science Exhibit – TAMU-CC/Texas State Aquarium (02-06/17)
  - a. Coordinated with students in an Advanced Painting class at TAMU-CC. I met with a student artist, explained my research, received a painting based on my research, and wrote a narrative based to accompany the art piece. This was displayed at an exhibit on World’s Ocean Day June 10<sup>th</sup>, 2017 at Texas State Aquarium.
12. Referee for Estuarine, Coastal and Shelf Science Journal (02/2017)
13. 2017 National Ocean Sciences Bowl – Loggerhead Challenge (02/18/2017)
14. Volunteer at Marsh Planting Event at Nueces Bay with Coastal Bend Bays & Estuaries Program and the Coastal Bend Bays Foundation (10/2016)

### **Awards:**

1. Awarded Center for Coastal Studies Graduate Student Award (\$1,840) (awarded for 2021)
2. Awarded Research Assistantship through Marine Biology program at Texas A&M University - Corpus Christi (awarded for Fall 2020, Fall 2021, Summer 2022, Fall 2022)
3. Awarded TAMU-CC Student Research Competition Scholarship (\$800.00) (Awarded for 2020-2021)
4. Awarded to participate in the ASLO Limnology and Oceanography Research Exchange (LOREX) program (round trip travel, room and board, daily allowance for 2 months)
5. Awarded Research Assistantship through Marine Biology program at Texas A&M University - Corpus Christi (awarded for Spring and Summer 2020)
6. Awarded Center for Coastal Studies Graduate Student Award (\$1,000) (awarded for 2020)
7. Awarded Texas Branch of the American Society of Microbiology Dr. Millicent and Eugene Goldschmidt Award 2018-2019 (\$9,000)
8. Awarded Texas Sea Grant Grants-in-Aid Scholarship, (\$2,000) (Awarded for 2018-2019)
9. Awarded Sigma Xi Grants-in-Aid Scholarship (\$1,000) (Awarded for 2018-2019)
10. Awarded TAMU-CC Student Research Competition Scholarship (\$800.00) (Awarded for 2018-2019)
11. Awarded Texas A&M University - Corpus Christi MARB Travel Grant (\$1,000) (Awarded for 2017-18, 2018-19, 2019-20)
12. Awarded Research Assistantship through Marine Biology program at Texas A&M University - Corpus Christi (awarded for Fall 2018 and Spring 2019)
13. Awarded the R.N. "Dick" Conolly Endowed Scholarship for academic achievement, (\$1,000) (Awarded for Fall 2017 and Spring 2018)
14. Awarded Texas Sea Grant Grants-in-Aid Scholarship, (\$1,972) (Awarded for 2017-2018)
15. Awarded Research Assistantship through Marine Biology program at Texas A&M University - Corpus Christi (awarded for Fall 2017 and Spring 2018)
16. Awarded Texas A&M University – Corpus Christi Summer Graduate Scholarship (\$500) (06/2017)
17. Awarded Texas A&M University - Corpus Christi MARB Travel Grant (\$500) (02/2017)

18. FSU Oceanography Winchester Travel Fund (\$500) (03/2016)
19. FSU Oceanography Winchester Travel Fund (\$1000) (11/2015)
20. FSU Oceanography Winchester Travel Fund (\$600) (12/2014)
21. American Geophysical Union Travel Grant Awardee (\$500) (12/2014)
22. Member of the National Society of College Scholars (Inducted 03/2014)