Moreno, Melissa

Travel Grant Documentation Support

(300 word maximum)

For Professional Development applicants: For the non-technical abstract above, if a results and discussion section is not applicable to your experience, please write about the expected output and application to your graduate research instead.

The “Nature Coast” region of the northeastern Gulf of Mexico extending generally from the Waccasassa River to St. Marks, is a low-energy coastline characterized by extensive seagrass habitats, coastal marshes and upland habitats, and limited human development. This region has large state and federal public land holdings that together place about 24% of the land area in conservation. Private land holdings in the region are primarily used for forestry and agricultural operations Unlike most coastlines in the US, the Nature Coast is not extensively developed and waterfront development is mostly concentrated in small towns (<1000 people). A recent economic assessment has shows that about 13% of the jobs in this region are dependent on natural resources, and that these jobs, and the economy of the Big Bend, is highly dependent on “healthy” forests, rivers, and coasts. In contrast to more urban coastal areas of Florida which are perceived by the public and resource managers to be at greater risk of impairment due to human development, the Nature Coast is often considered pristine. Long-time local residents in this region including commercial shellfish harvesters have alternative perspectives based on their observed changes throughout the region including changes in the abundance and distribution of oysters, the persistence of coastal landforms including islands and shorelines, and large changes in fish populations. Recent research efforts have begun to quantify changes in the vegetation and oyster populations in this region and how these changes may be related to sea-level rise, changing freshwater availability, or climate. My research will focus on two areas (1) assess change in topographic coastal features including islands and coastlines with an emphasis on public land holdings near Cedar Key, Florida; (2) synthesize multiple decades of water quality data collected by agency cooperators and integrate these data with the assessment of spatial features. My work will help to provide information to inform conservation decisions such as directing mitigation efforts to protect vulnerable coastal areas and promote resources critical to the economy and ecosystems of the Big Bend.

My project is dependent on developing an efficient data work-flow of complex data of two types. The first will be a variety of imagery data including satellite, aerial imagery, and LiDAR. These data include reconstructions of coastal maps first created in the mid 1800’s. The second data challenge will be integrating water quality data collected at different times and locations by agency and academic partners beginning in the 1990’s in a common framework that allows for comparison. The presentation and integration of both data products will be made graphically through a representation of how these data appear over time.

Key data challenges in working with this imagery include management of meta-data that allows for correctly projecting the data in comparable ways and correctly assessing projection error from each data source. As an example, mapping error between surveys conducted in the 1800’s and today are very different, however, the surveys collected in the 1800’s are essential for defining major coastal features (e.g, islands, navigation hazards) known at that time.

This importance of this region from an economic and ecological perspective is demonstrated by the The Cedar Key, FL region brings in millions of dollars in economic revenue per year**,** yet there is very little known about the coastal landscape even though it is one of the main foundations to an aquaculture endeavor. Using historical maps, my research will help bridge the gap between the past and current topographic coastal features. My research will allow for a thorough and detailed representation of the changing shoreline of the Big Bend. This is turn might suggest trends in shore loss, where an agency such as USGS might be able to use, to predict further shoreline deficit. Noticing trends will contribute in future conservation efforts to reduce shoreline loss and retain shore integrity.

Water quality has also been heavily surveyed, in this area, by multiple conservation agencies over a range of time. The Oyster Restoration Project, which I am a member of, is currently collecting water quality data in the Big Bend. Agency data has been normally analyzed independently, but my research will help to promote combining these data to create a “bigger picture” of the water quality trends in the vicinity.

The main objective of this research will be to fill in the gaps of absent mapping data of Big Bend coastline. The secondary objective is to gain understanding the values of the residents, to see whether future charting efforts are high priority. My secondary objective is to display water quality data over several years. My secondary objective combined historic water quality data with currently collected data, and create visual representations of its development over time.

Having an optimal efficient workflow will minimize the time it will take for spatial data processing. Much of my graduate research program will spent on analyzing and processing spatial data, which will require a strong efficiency and workflow background.

(298 words)

Additionally, in an separate paragraph (100 word maximum), give your justification for this experience (i.e., explain why you cannot receive this experience through a course at UF, etc.) and describe in detail the type of activity you will provide if you receive this award (selected under "Type of Presentation" above).

Even though I have taken several data carpentry workshops through UF, I would not be able to take this course on campus because it’s a specialty workshop. The workshop is to help increase efficient in R, for collaboration, communication, and iteration. Most of my graduate thesis will involve describing efficient methods in sharing conservation data, so this workshop with continue my education in R efficiency. I am taking Data Carpentry, WIS6934, and the class is very beneficial, but with only a few weeks in the semester I know I will need continued education to completely succeed in my master’s program.

(^ 100 words exactly)

**Statement of Benefit to the UF Community**

Explain the benefit of your travel to the student body and the greater UF community. How does this trip expand, enhance, or advance the Gator Nation? You will be expected to supply this same information to Student Government if your travel is approved, so you may wish to retain a copy of your statement. Please limit your response to approximately 200 words.

The benefit of my travel to the UF student body, is that I will be able teach, the techniques I learned from the workshop, to help students and faculty. I will be able to spread knowledge of unknown tips and tricks that will increase efficiency in data management. With these new skills, I can directly impact the productivity of the UF Oyster Restoration Project, which I am a member of. Through my data management experience on the project, I am creating an efficiency workflow documentation that will teach a class to faculty and students, and this class will be sponsored by UFIT. I plan to use what I learn in the workshops, to teach others on how to effectively manage conservation and research type data.

How will your conference attendance aid in your professional development as a member of the UF community? You might include information on specific panels you will attend, experts with whom you will create a dialogue, etc. Please limit your response to approximately 300 words. Please note that SG cannot fund travel to attend interviews.

Even though I have taken several data carpentry workshops through UF, I would not be able to take this course on campus because it’s a specialty workshop. The workshop is to help increase efficient in R, for collaboration, communication, and iteration. Most of my graduate thesis will involve describing efficient methods in sharing conservation data, so this workshop with continue my education in R efficiency. I am taking Data Carpentry, WIS6934, and the class is very beneficial, but with only a few weeks in the semester I know I will need continued education to completely succeed in my master’s program.

The workshop I am specifically attending is “What They Forgot To Teach You About R Workshop”, which is a two day workshop that is geared to instructor on how to design, teach and support short R courses. This workshop is will hone my R skills to aid in my professional development, I will also be pursuing to be a datacamp instructor, so this workshop will assist me in becoming a better trainer.

I hope that through teaching future scientists about proper data management, that there will be an growth in shareable and reproducible data.