**Chapter 2**

**Proposal Outline**

**Introduction**

**Background**

Using publicly available data I will assess trends in several key characteristics of the Big Bend of Florida.

(1) Using information from Raabe et al. 2004, I will use 19th century topographic sheets digitized by USGS for the Big Bend region of Florida and update the comparisons made between the 19th century assessments, 1995 satellite imagery used in Raabe et al. (2004), and more recent imagery available since 1995. I will follow guidelines from Raabe et al. (2004) to focus on overall trends in large-scale geographic features and not focus on site specific changes due to variation in survey methods. My initial efforts will focus on geographic region surveyed as part of Seavey et al. (2011) from approximately the Waccasassa River, Florida to Horseshoe Beach, Florida. I will develop a data workflow for collecting and processing available imagery that is reproducible and uses publicly available resources.

(2) I will identify a set of watershed metrics for the Suwannee River basin from public data repositories that are useful for understanding trends in variables that are known to correlate with changes in river discharge, nutrient levels, or aquatic biodiversity and habitats.

**Objectives**

This is the type of paper that can be important because they show a set of watershed scale metrics that relate to changes in freshwater mussel diversity (as an example of a group of species impacted)

<https://www.journals.uchicago.edu/doi/abs/10.1899/0887-3593(2004)023%3C0114%3ARODMBT%3E2.0.CO%3B2>

<https://www.tandfonline.com/doi/abs/10.1080/10643380801977966>

The first couple of paragraphs of this is good

https://onlinelibrary.wiley.com/doi/full/10.1002/hyp.10057

what is important is that these papers give you some variables that you may use publicly available data to track changes in the Suwannee basin.

Example for Florida

<https://www.tandfonline.com/doi/abs/10.1080/01431160500219273>

Example of something I’ve been a part of

https://afspubs.onlinelibrary.wiley.com/doi/full/10.1002/tafs.10110

Here is a key paper you should read that can help stitch together both chapters

https://link.springer.com/article/10.1007/s12237-016-0162-5

Here are results for searching for papers/reports that cite Ellen’s work

<https://scholar.google.com/scholar?start=0&hl=en&as_sdt=40005&sciodt=0,10&cites=11772616080432062962&scipsc>=

https://scholar.google.com/scholar?cites=10625390634339797700&as\_sdt=40005&sciodt=0,10&hl=en

Most recently, the Comprehensive Restoration Plan for the Gulf of Mexico mandates AM as part of the $8.8 billion settlement with BP to restore ecosystems damaged by the Deep Horizon Oil Spill (PDARP/PEIS [2016](https://link.springer.com/article/10.1007/s12237-016-0162-5" \l "CR121" \o "View reference)). Each of the five Gulf states will have a restoration team reporting to an overarching Trustee Council (including three federal resource agencies). AM will include data management infrastructure, coordination with other research, and monitoring in the region plus frequent reports and program reviews (ibid., Section 7.5). Guidance on restoring ecosystems and species is extensive, and the goal for conserving and protecting marine, coastal, estuarine, and riparian habitats includes land acquisition, invasive species control, debris removal, and improved water quality (Chapter 5; Appendix D.1.7, p. 5.239f.). AM should allow managers to achieve restoration goals, given this long-term, large-scale, and well-funded project. The world will be watching to learn how AM is applied to improve restoration.

Is any guidance missing? Yes. Cause–effect relationships become clearer when restoration is undertaken with experiments to test the functional value of vegetation along shorelines. Despite the opportunity to set up restoration experiments and test approaches within and among five Gulf of Mexico states, the guidance documents focus on monitoring and “scientific support activities” rather than AR (large phased field experiments). While the Plan (PDARP/PEIS [2016](https://link.springer.com/article/10.1007/s12237-016-0162-5" \l "CR121" \o "View reference)) acknowledged that uncertainties might influence restoration outcomes, there was no call to address unknowns experimentally. In this multi-state effort, enormous opportunities exist to begin large manipulative experiments to test alternative approaches to ecosystem restoration. Also, monitoring can support observational experiments by assessing the effect of the same action in multiple contexts. As evidence, the most common attribute of effective restoration that emerged from a recent compendium on large river restoration was an AM approach with learning by experimentation and monitoring (DeBruyne and Roseman [2015](https://link.springer.com/article/10.1007/s12237-016-0162-5" \l "CR37" \o "View reference)).

Outline

Intro

- Multiple ways to create dynamic and informative maps, interactive, static, animation, etc

- More accurate and complete history of an area are being created with modern technological advancements.

Objective

- Assess change in topographic shoreline features, by generating an analysis of physical changes through satellite imagery.

-Will be an analysis showing coastline loss or gained over time, and up to this this current time.

Methods

-Publicly available maps from various satellites.

-ArcMap – Landsat imagery, Ellan Raabe, Nick V

Pre-work

-Nothing completed at this time, gathering images

Discussion

-Having a good representation of the coastline changes in Cedar Key.

-Having something available for the public, so they can view environmental changes.

-Visual representation of shoreline change trends.

**Notes from meeting, other notes**

This is the paper that describes case study of using Landsat for water quality research. And applying ti to the data set of wq events.

Ok so looking remote sensing is not going to work out because the water id too dark

Agricultural data from basic, land use changes, metrics for this? Impervious from surface? Plot the changes over time. Extracting data, gapminder example, something like that. Changes in the watershed,

Human populati0on change

Georgia and Florida water basin, trends in human population

Forest increasing? Pavement increasing?

How old is this? How far can we go back?

Standardizing this, landform and watershed on the coast, but also in the basin

Lights at night, looking at population estimates?

Regional urban planning, college of architecture

Forcasts at 2040 , predictive, urban planning, plan of retreat for florida,

South florida changes

Basin has changes from 1940 now, forecasts, planning documents, 1000 friends of florida land planning group,

Changing levy coasts.org, seagrant and Katherine fray, check this out, started 2012, back in time and see the difference things, blog

Think about public lands, wildlife refuge, publically held lands

Logged at least 2 diff times

Coastline changing there

Changing already?

Suwannee basic, head waters are seprated refuges

Make more revision- bullets, Thursday

Find the shapefiles from joe aumuth and put that in the t drive

Meeting 3/5/2019

-Workflow working with the public data, to be reproducible, need to figure it out

-Maybe overlays like what Kristin W has done

-Idea known location, and a fixed point

- How would we automate this?

Ethan, Neon spatial data, automate the spatial comparison

1. Not necessarily comparing two images, picture represents something in the background
2. Overlays, representing visually, pulling from the open data sets, pulling the changes and the metrics,
   1. Some variables, 5 or 10, seagrass, fish communities, salinity
   2. Pulling nitrogen and phosphorus, publically available data, in a workflow

A little data set is not going to show us a big change in the area, better to use public data

Have it narrowly defined.

Building from ellen raabe works, on a 2015 satellite images, might have to digitize to get the rate of change

Using USGS watershed variables

Public land

Impervious cover

Human pop density

Nitrogen and Phosphorus

Percent forest

Percent pasture

Tim Fisch – pretty good classes

Sadie Ryan – Geography

Defined objective, narrow around that and build it out

Check the Ellen Raabe Tampa Bay, has been updated a few times

Jen Sevey, has been digitized, 2010-2011

Tampa stuff some Ellen Raabe