

NOAA Restore Marsh Food Web Project Advisory Meeting

Linking Community and Food-Web Approaches to Restoration: An Ecological Assessment of Created and Natural Marshes Influenced by a River Diversion



Fri, Oct 25, 2019 12:00 PM - 2:00 PM CDT

Join from your computer, tablet or smartphone.

<https://global.gotomeeting.com/join/466881309>

You can also dial in using your phone.

United States: +1 (646) 749-3122

Access Code: 466-881-309

Agenda:

- 12:00 - 12:05 pm: Welcome and brief overview – Mike Polito
- 12:05 – 12:20 pm: PI Reports (~3 mins each)
 - Hydrology & Elevation Mapping – Swenson
 - Litterbag Decomposition – Polito, Roberts, Lopez-Duarte
 - Primary Producers & Nutrients – Roberts, Rossi
 - Bacteria, Archaea, Fungi – Engel
 - Insects – Hooper-bui
- 12:20 – 12:30 pm: Questions/Feedback from Advisors
- 12:30 – 12:45 pm: PI Reports (~3 mins each)
 - Infauna –Rabalais
 - Litterbag Macroinvertebrates –Lopez-Duarte
 - Suction & Trawl Sampling – Martin
 - Minnow Traps –Lopez-Duarte, Olin
 - Biomarkers –Polito, Olin, Lopez-Duarte
- 12:45 – 12:55 pm: Questions/Feedback from Advisors
- 12:55 – 1:05 pm: PI Reports (~3 mins each)
 - Food-web Modeling – Jensen
 - Website – Rabalais, Morrison
 - Data management - Rabalais, Morrison, Wick
- 1:05 – 1:30 pm: Summary input from Advisory Board members (~5 mins each)
 - Pat Williams – NOAA
 - Kevin Roy – USFWS
 - Sharon Osowski - EPA
 - Stuart Brown & Jim Pahl - CPRA
 - Robert Spears - Plaquemines Parish
- 1:30 – 1:40 pm: Input from NOAA Restore Team
- 1:40 – 1:50 pm: Open discussion
- 1:50 – 2:00 pm: Wrap up and next steps – Polito



Meeting Goals:

1. Summarize our research efforts and accomplishments
2. Review our objectives for the upcoming project year
3. Have our Advisory Board member ask questions and provide insights into the project's design and ultimate applications



Principle Investigators :

Michael J. Polito, Louisiana State University, Department of Oceanography and Coastal Sciences, 1239 Energy, Coast & Environment Building, Baton Rouge, LA 70803, 225-578-9403, mpolito@lsu.edu

Annette S. Engel, University of Tennessee-Knoxville, Department of Earth and Planetary Sciences, 1412 Circle Drive, Knoxville, TN 37996, 865-974-0402, aengel1@utk.edu

Linda M. Hooper-Bui, Louisiana State University, Department of Environmental Sciences, 1249 Energy, Coast & Environment Building, Baton Rouge, LA 70803, 225-578-5427, Lindabui@lsu.edu

Olaf P. Jensen, Department of Marine & Coastal Sciences, Rutgers University, 71 Dudley Rd., New Brunswick, NJ 08901, 410-812-4842; olaf.p.jensen@gmail.com

Paola Lopez-Duarte, Rutgers University Marine Field Station, 800 c/o 132 Great Bay Blvd, Tuckerton, NJ 08087, 609-296-5260 lopez-duarte@rutgers.edu

Charles W. Martin, Nature Coast Biological Station, University of Florida, P.O. Box 878, Cedar Key, FL, 32625, 256-504-1432, martin.charles.w@gmail.com

Jill A. Olin, Great Lakes Research Center, Michigan Technological University, 1400 Townsend Drive, Houghton, MI 49931, 906-487-1121, jaolin@mtu.edu

Nancy N. Rabalais, Louisiana Universities Marine Consortium & Louisiana State University, Department of Oceanography & Coastal Sciences, 3161 Energy, Coast & Environment Building, Baton Rouge, LA 70803, 985-851-2836, nrabalais@lumcon.edu

Brian J. Roberts, Louisiana Universities Marine Consortium, 8124 Highway 56, Chauvin, LA 70344, 985-851-2821, broberts@lumcon.edu

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Project Advisory Board Members:

Stuart Brown, Coastal Protection and Restoration Authority, 150 Terrace Ave., Baton Rouge, LA 70802, (225) 342-4736, stuart.brown@la.gov

Jim Pahl, Coastal Protection and Restoration Authority, 150 Terrace Ave., Baton Rouge, LA 70802, (225) 342-2413, james.pahl@la.gov

Sharon Osowski, Marine, Coastal and Analysis Section (6WQ-EC), US EPA Region 6 , 1445 Ross Ave , Dallas, TX 75202, 214-665-7506, Osowski.Sharon@epa.gov

Kevin Roy, U.S. Fish and Wildlife Service, Louisiana Ecological Services Office, 646 Cajundome Blvd., Suite 400, Lafayette, LA 70506, (337) 291-3120, kevin_roy@fws.gov

Robert Spears, Plaquemines Parish Coastal Zone Management Office, 8056 Hwy 23, Suite 200, Belle Chasse, LA 70037, 504-297-5631 / 504-934-6155, rspears@ppgov.net

Pat Williams, NOAA's National Marine Fisheries Service, Habitat Conservation Division, c/o Louisiana State University, Military Science Building, Room 266, South Stadium Drive, Baton Rouge, LA 70803, (225)389-0508 ext 208, patrick.williams@noaa.gov

NOAA Restore Program Officers:

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NOAA Restoration Center, 301-427-8679, melissa.carle@noaa.gov

Shannon Martin, Ecosystem Assessment Scientist, Cooperative Institute for Marine and
Atmospheric Studies, CIMAS/NOAA/OAR/AOML, 337-739-8292,
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Brief Overview of Project

Project Goal: The primary goal of this research is guide future restoration effort by integrating community and food-webs approaches into management and restoration planning.

Translation to Management:

- Compare with community and species level models commonly used by CWPPRA to evaluate marsh restoration projects.
- Identify the insights managers can gain from metrics of food web structure that can help interpret and refine current models and practices.



Brief Overview of Project

Three Specific Objectives:

1. To examine species composition, relative abundances, and food web structure at created vs. natural marshes.
2. To examine species composition, relative abundances, and food web structure in natural marshes along a salinity gradient.
3. To use the above field data to develop and test an ecosystem model that will be used to predict the outcome of habitat restoration efforts on marsh food web structure, function and resilience.

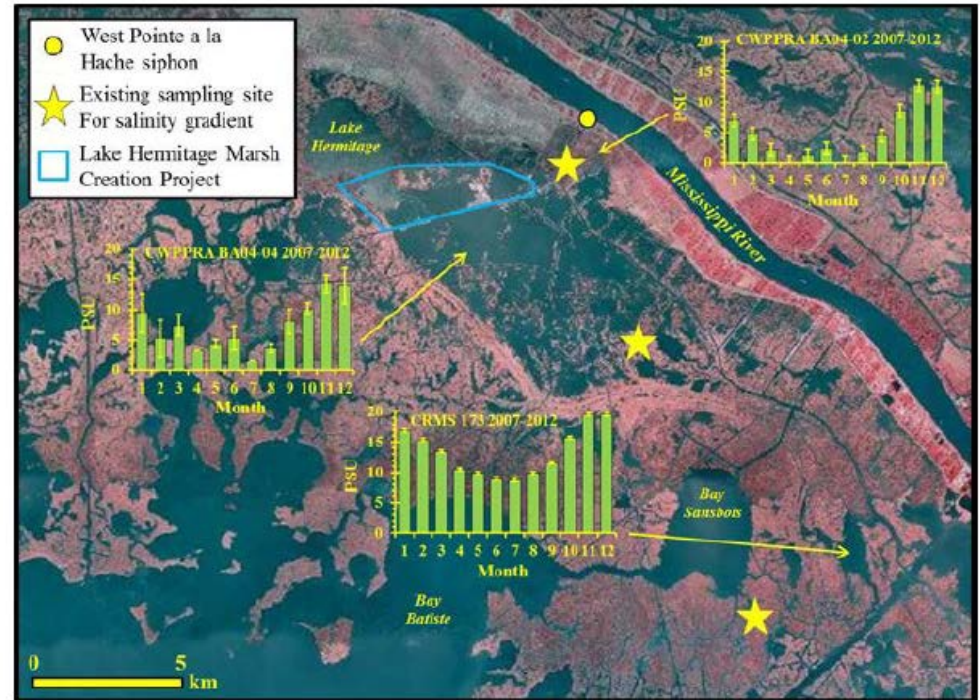


Brief Overview of Study Design

Study Area: West Point a la Hache area and Lake Hermitage Marsh Creation Project within Barataria Bay, in Plaquemines Parish, Louisiana.

Study Design: Sample two created marsh sites and one natural site at the Lake Hermitage Marsh Creation Project and three natural marsh sites at varying distances from the WPH siphon over a three year period:

- Spring 2018 (Siphon off) ✓
- Spring 2019 (Siphon off) ✓
- Spring 2020 (Siphon on)



**** Additional Data:** Spring 2016 (siphon on) - Stable isotope data for four natural marsh sites at varying distances from the siphon.

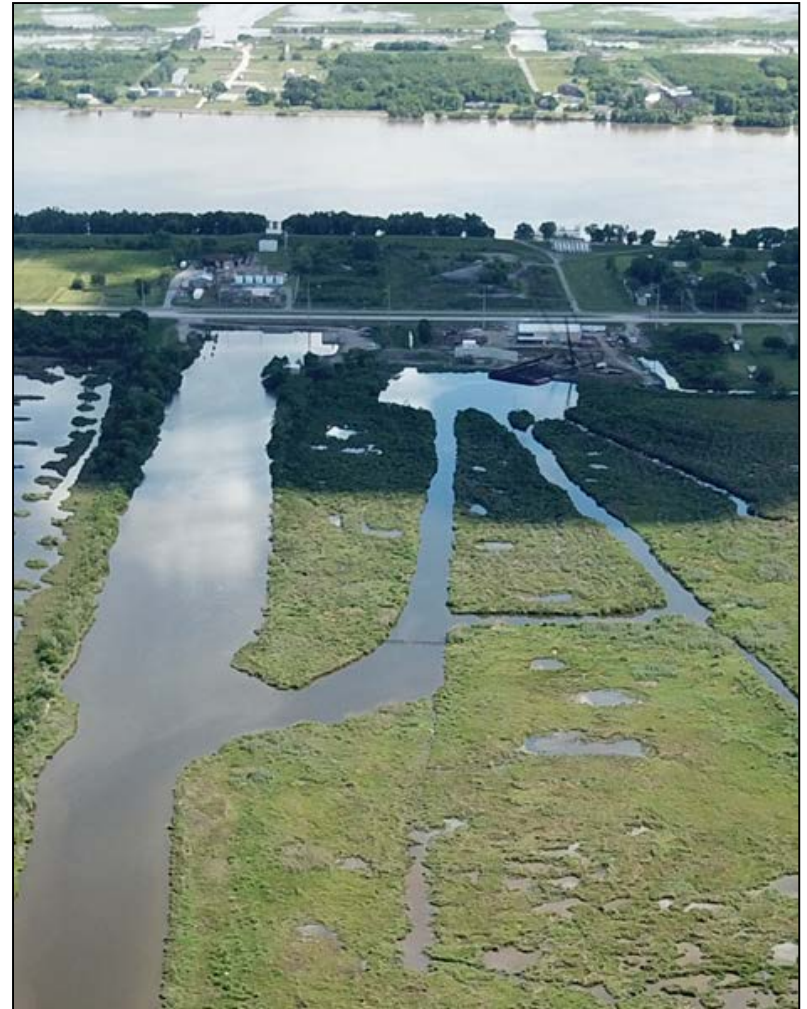
Siphon Update

Current plan

- *Spring 2016 (Siphon on)
- Spring 2018 (Siphon off)
- Spring 2019 (Siphon off)
- Spring 2020 (Siphon on)

Updated Construction Timeline:

- Early December construction will be finished
- Siphons could be operated partially, prior to the expected finish date.



PI Reports

Brief summary of major research activities in 2018/19, ongoing analyses and/or preliminary results (~3 mins each)

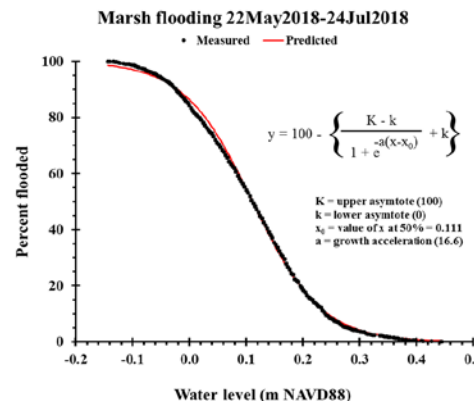
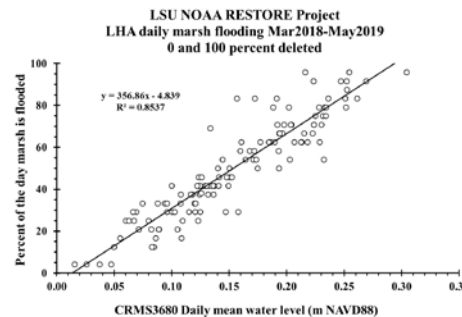
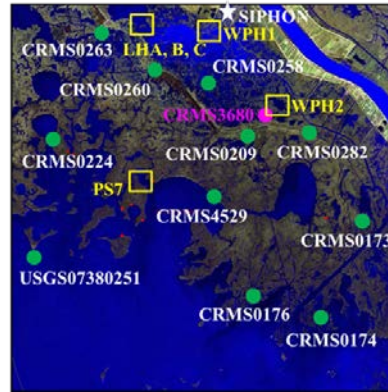
- Hydrology & Elevation Mapping – *Swenson*
- Litterbag Decomposition – *Polito, Roberts, Lopez-Duarte*
- Primary Producers & Nutrients – *Roberts, Rossi*
- Bacteria, Archaea, Fungi – *Engel*
- Insects – *Hooper-bui*



Looking Back at 2018-19: Hydrology & elevation mapping

Swenson, Polito – LSU

- **Field Work: April - July 2019**
 - Service and re-deploy YSI sondes (April and May)
 - RTK survey conducted in July
- **Lab Work:**
 - Processes data from LSU sondes
 - Update data files from CRMS stations
 - Developed procedure to compute marsh flooding
 - Process survey data
- **Results:**
 - Correlation among sites is high for all parameters
 - Picked CRMS3680 as index station
 - Most (70%) of the differences between the 2019 and 2018 elevation surveys were fairly small (<5 cm) with 74% of the 2019 elevations being higher



Station	Correlation with CRMS3680 May2018-May2019		
	Water temperature	Salinity	Marsh water level
WPH1	0.853	0.514	0.937
OC	0.991	0.522	nd
LHA	0.862	0.306	0.983
LHB	0.919	0.917	0.892
LHC	0.854	0.756	0.974
CRMS0263	0.996	0.746	0.967
CRMS0260	0.997	0.878	0.980
CRMS0258	0.982	0.771	0.979
CRMS0282	0.992	0.798	0.859
CRMS0224	0.989	0.797	0.907
CRMS4529	0.996	0.881	0.938
CRMS0209	0.997	0.980	0.958
CRMS0173	0.996	0.815	0.959
USGS_GI	0.976	0.290	0.913

Transect	Distance Inland (m)	2019 Elevation - 2018 Elevation (cm)					
		LHA	LHB	LHC	PS7	WPH1	WPH2
1	1	2.9	2.9	19.1	-1.8	11.9	-3.2
1	10	3.8	10.9	14.5	0.8	7.1	8.1
1	25	2.5	-2.0	9.0	1.2	9.2	-3.3
1	50	2.9	-1.1	1.3	-2.2	7.0	1.0
1	100	4.0	3.4		1.1	5.8	1.3
2	1	-0.1	-1.3	-0.1	-4.1	1.5	11.7
2	10	3.9	6.6	0.4	0.3	2.3	5.2
2	25	2.8	2.7	-3.0	3.4	0.5	6.9
2	50	2.9	-2.5	-2.2	-0.8	3.7	5.6
2	100	11.0	-2.1		-10.0	15.2	-3.7
3	1	-0.1	0.4	3.8	-0.5	3.8	1.4
3	10	7.6	-0.5	3.9	4.3	3.9	3.9
3	25	6.4	6.0	-10.6	3.1	10.0	6.3
3	50	-0.7	6.3	-0.2	4.4	7.7	1.9
3	100	1.8	6.5		4.6	7.3	2.0
Average		-3.4	-2.4	-3.0	-0.2	-6.4	-3.0

“On Schedule”

Looking Forward to 2019-20: Hydrology & elevation mapping

Swenson, Polito – LSU

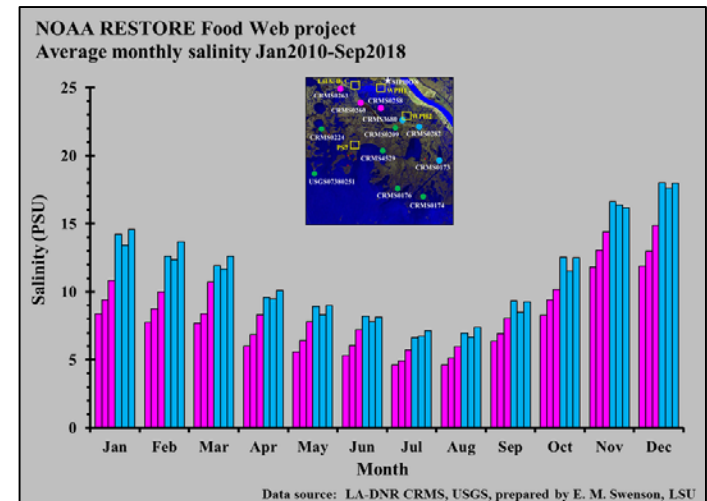
- **2019-20 Analyses**

- Compare marsh flooding with data from 2018 and 2019 decomposition studies
- Use the CRMS data sonde data base developed to look at trends and do an overall hydrologic characterization of the project area



- **2020 Field Work Goals**

- Service YSI's October 2019, May 2020



Looking Back at 2018-19: Litterbag Decomp

Polito, Roberts, López-Duarte – LSU / LUMCON / UNCC

- **Field Work: May & July 2019**

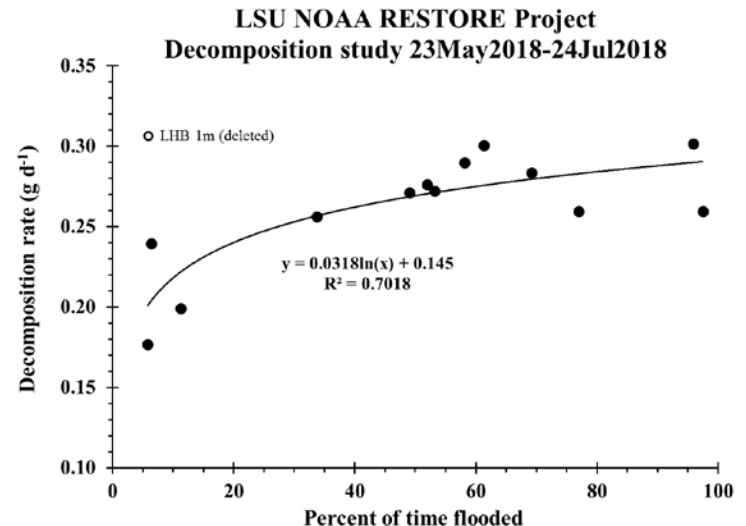
- 1 transect per site, 5 distances from edge (1,10,25,50,100*m)
- 5 replicate *S. alterniflora* litter bags per distance deployed for 2 months

- **Lab Work:**

- Decomposition rates measured for 2018 bags

- **Results:**

- *S. alterniflora* decomposition is highest in sites that are flooded more due to with lower elevation and larger tidal range

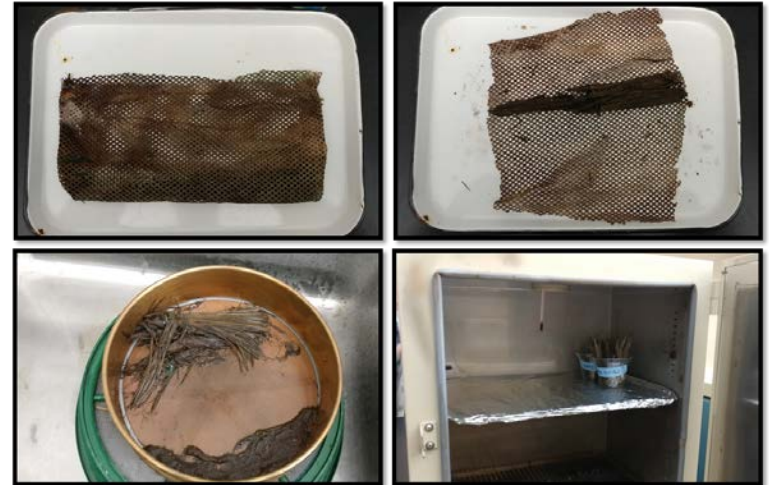


“On Schedule”

Looking Forward to 2019-20: Litterbag Decomp

Polito, Roberts, López-Duarte – LSU / LUMCON / UNCC

- **2019-20 Analyses**
 - A. Benelli , Undergrad Honors Project
 - N. Sanders, High School Internship
- **2019-20 Papers & Presentations**
 - LSU Undergrad research conference
 - Manuscript Spring/Summer 2020
- **2020 Field Work Goals**
 - Replicate sampling May & July 2020
 - Examine salinity trends



Looking Back at 2018-19: Primary Producers

Roberts, Rossi – LUMCON

Field Work: May 2018 & 2019

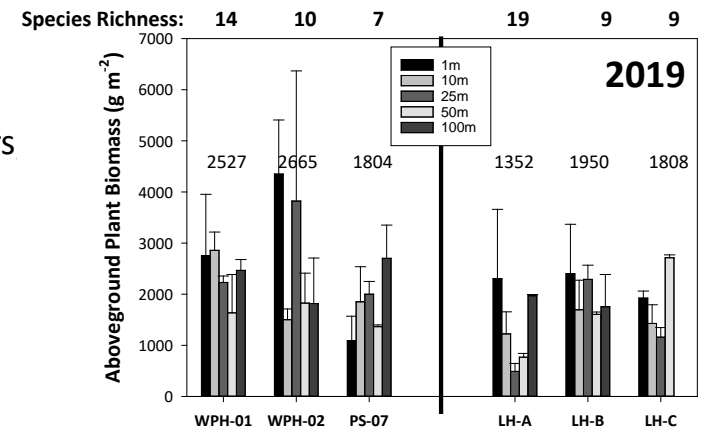
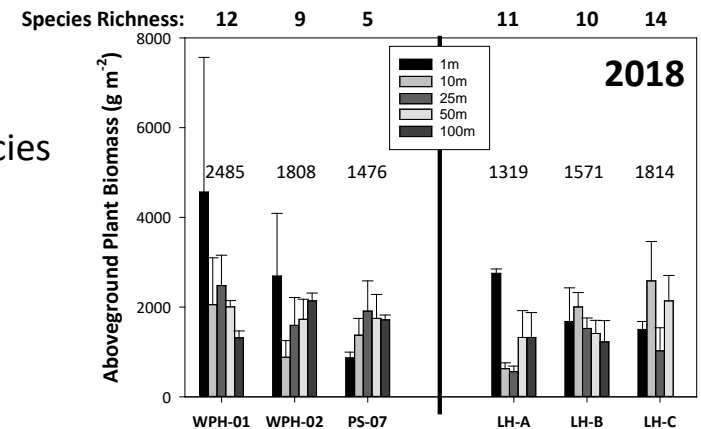
- 5 distances from edge (1, 10, 25, 50, 100m)
- 3 transects in 2018; 2 plots on single transect in 2019
- Clip plot, sort by species, determine biomass (additional species for biomarkers)
- Benthic and water column chlorophyll (from creek outlet)
- Surface soil cores (OM, CN, BD, WC, pw salinity, pH)

Lab Work:

- Processing and analyses of plant/chl samples completed

Results:

- Overall magnitude of aboveground biomass similar between years
no consistent pattern with distance
 - Trend of decrease along salinity gradient in 2018, weaker in 2019
 - Biomass lower in high elevation restored site (LH-A) than control site (LH-C); Restored LH-B more similar to control site in biomass
- Overall aboveground richness similar between years
 - Richness decreases with salinity
 - Richness lower in restored than control sites in 2018; lower elevation restored site (LH-B) and control site (LH-C) richness more similar than high elevation LH-A site
 - Many of additional species found in LH-A not typical of wetlands
- No clear patterns in benthic chlorophyll by site or distance (*not shown*)



"On Schedule"

Looking Forward to 2019-20: Primary Producers

Roberts, Rossi – LUMCON

- **2019-20 Analyses**
 - Continue examining inter-annual variation and more explicit statistical analyses of differences with distance
 - Complete analyses of ancillary soil parameters
 - Incorporate results into overall marsh platform community and food web analyses
- **2019-20 Papers & Presentations**
 - Present results at a conference in 2020
 - Manuscript development; interested in integrated marsh platform focused manuscript
- **2020 Field Work Goals**
 - Replicate 2019 sampling in May 2020
 - 2019 sampling showed that reduction in sampling effort yielded similar results
 - Added salinity focus with siphon opening



Looking Back (2018-19): Microbes

Annette Summers Engel - University of Tennessee

• Field work in 2018 & 20199

- collected 48 soil + 8 water samples (expanded scope by adding one more 'control')
- 1, 10, 100 m inland + 1 m offshore (expanded scope by adding more distances & depths)
- soil pH, conductivity, temperature, + grain size and organic C & water content (in lab)

• Results

- Created marsh soils fundamentally different than natural soils: lack well-developed peat layer, wider grain size distributions (and larger overall particle sizes); less organic C
- Distinct microbial communities within soils, which affect the types of metabolic processes and microbial community services that influence the marsh habitat through time
- Overall taxonomic diversity similar, but specific genetic groups differed between created & natural marshes

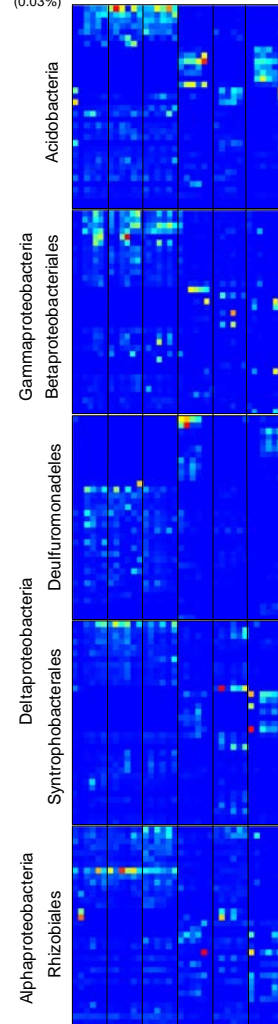
Engel et al. "Additional of microbial community composition in the evaluation of habitat suitability for tidal marsh restoration projects: A case study from the Lake Hermitage Marsh Creation Project, Plaquemines Parish, Louisiana" GOMOSSES meeting, Feb. 2019.

SHARED MICROBIAL GROUPS

Created
↓
Natural

Top 35 Shared OTUs (0.03%)

Core Order: → 3A, 3E, 5A, 5E, 7A, 7E
LHA LHB LHC WPH1 WPH2 PS07



Looking Forward to 2019-20: Microbes

Annette Summers Engel - University of Tennessee

- **2019-20 Analyses**

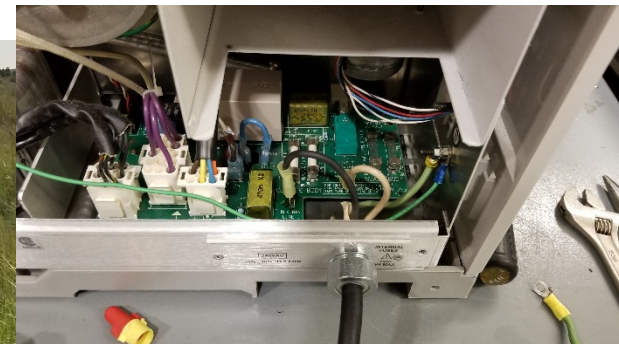
- Semi-retirement of research faculty member (for lipid analyses), lost a staff position (reduced hands), & no students on project (slows progress immensely...)
- Efforts underway to process samples for DNA extractions and send off for community sequencing, as well as for lipid analyses (now that instrument is fixed)
- Please help me recruit a student (probably now best for a M.S. student)

- **2019-20 Papers & Presentations**

- Write up Year 1 results, develop manuscript; presentations for 2020 planned

- **Field work in 2019**

- Replicate 2018 and 2019 sampling in May 2020



Looking Back at 2018-19: Insects and Spiders

Hooper-Bùi– LSU

- Field Work: May 2019
 - Emergence traps set Day 1, collected Day 8
 - 4 replicate sweeps at each site for biodiversity
 - 4 replicate sweeps at each site for isotopes
- Lab Work:
 - Sorted 2018 sweep samples for community metrics and biodiversity; currently sorting 2019
 - Isotope samples are in the freezer
 - Data entry 2018 complete; 2019 ongoing
- Results:
 - Emergence traps = a bust (we did extra sweeps)
 - 80 morphospecies ID'd to date; QA/QC in progress

“On Schedule”



Looking Forward to 2019-20: Insects and Spiders

Hooper-Bùi– LSU

- 2019-20 Analyses
 - Hooper-Bùi, H. Gordon
- 2019-20 Papers & Presentations
 - CERF 2019
 - Community metrics manuscript in development with students
- 2020 Field Work Goals
 - Replicate sweep sampling May 2020
 - No emergence traps



Questions and Feedback



PI Reports

Brief summary of major research activities in 2018/19,
ongoing analyses and/or preliminary results (~3 mins each)

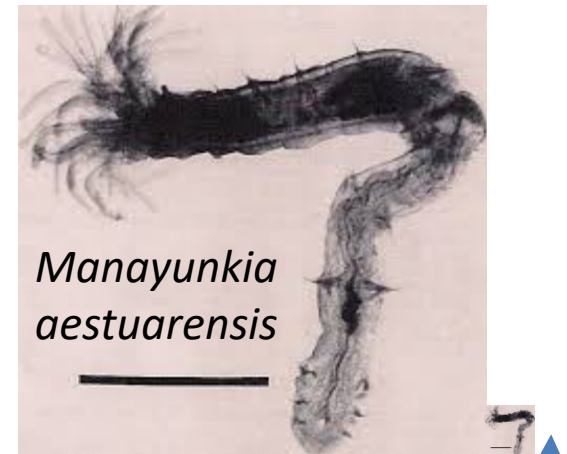
- Infauna – *Rabalais*
- Litterbag Macroinvertebrates – *Lopez-Duarte*
- Suction & Trawl Sampling – *Martin*
- Minnow Traps – *Lopez-Duarte, Olin*
- Biomarkers – *Polito, Olin, Lopez-Duarte*



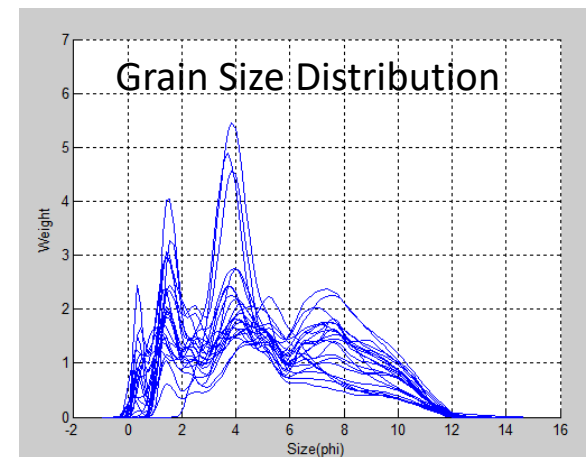
Looking Back at 2018-2019: Benthic Infauna

Rabalais, Morrison, Woods – LSU / LUMCON

- Field Work: May 2019
 - 1 transect per site, 2 distances from edge (10, 50 m)
 - 5 replicates infauna, TOC, grain size
- Lab Work:
 - Processing of infauna, completion of 2018 TOC, working with K. Xu on getting grain size analyses completed
- Results:
 - Too soon to comment



Size under scope 



*On Schedule

Looking Forward to 2019-2020: Benthic Infauna

Rabalais, Morrison, Woods – LSU / LUMCON

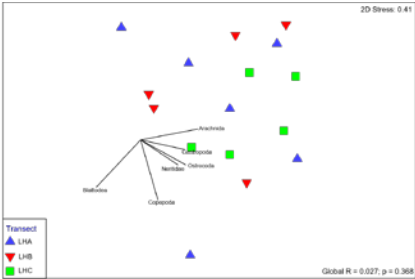
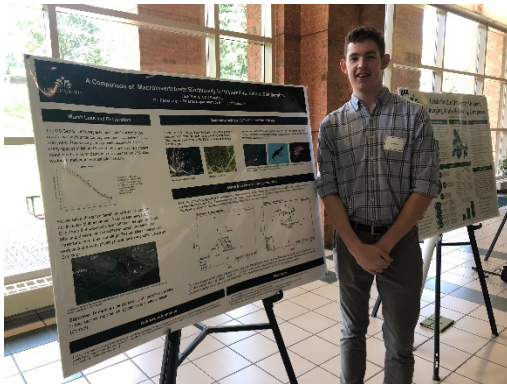
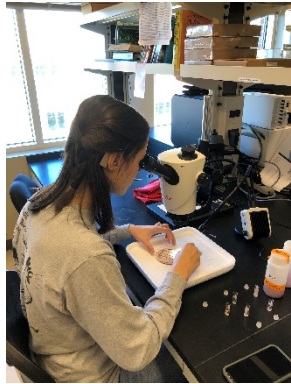
- 2019-2020 Taxonomy
 - *Rabalais*
- 2019-2020 Completion of
 - *TOC and grain size analyses*
 - *Data analysis*
- 2020 Field Work Goals
 - *Replicate sampling May 2020*



*Behind schedule, but resolutions underway.

Looking Back at 2018-19: Litterbag Macroinvertebrates

López-Duarte – UNCC

Activity	2018	2019
Sampling <ul style="list-style-type: none"> 1 transect per site, 5 distances from edge (1,10,25,50,100*m) 5 replicate <i>S. alterniflora</i> litter bags per distance deployed for 2 months 	Completed	Completed
Sample Sorting and Identification Species abundance and composition	Underway Since summer of 2019, several undergraduate students at UNCC have been working on this effort (Jack Morin, Sherry Dijkstra, Rebecca Lucero)	Not started
Data Analysis 	Preliminary (based on low sample sizes) No difference among restored and natural marshes or among distances has been detected. <div>   </div>	Not started

“Behind Schedule”

Looking Forward to 2019-20: Litterbag Macroinvertebrates

López-Duarte – UNCC

Activity	2018	2019	2020
Sampling <ul style="list-style-type: none">1 transect per site, 5 distances from edge (1,10,25,50,100*m)5 replicate <i>S. alterniflora</i> litter bags per distance deployed for 2 months	Completed	Completed	Schedule trip
Sample Sorting and Identification <p>Species abundance and composition</p>	<p>Continue to recruit students; hire Sherry Dijkstra part time</p> <p>She's graduating in Dec 2019; attending vet school in the fall 2020</p> 	Undergraduate project for summer 2020	

Presentations

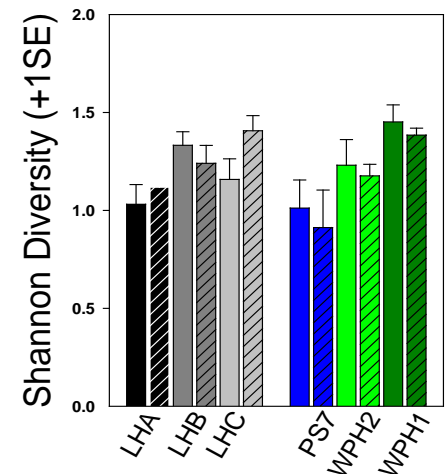
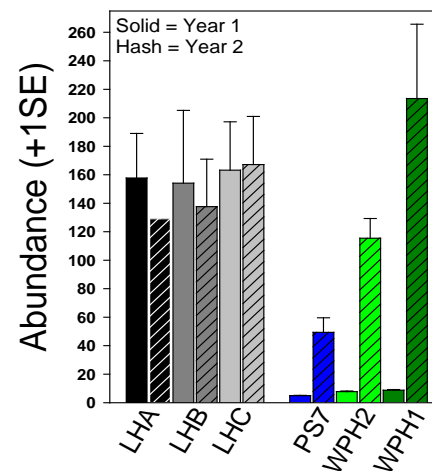
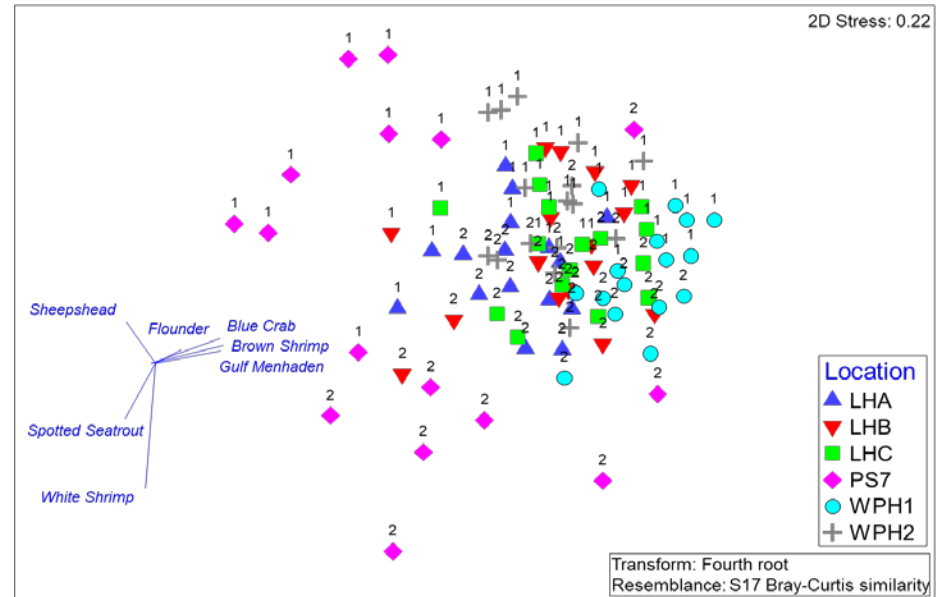
Undergraduate Research Symposia (summer 2019; spring 2020)

BEM 2020

Looking Back at 2018-19: Trawl/Suction

Martin, Scheffell– UF

- Field Work: May & July 2019
 - Trawls
 - 8 trawls/site in years 1 and 2
 - Suction sampling
 - Year 1 suction, n = 10 at salinity gradient sites
 - Year 2 suction, n = 9/site at all sites
- Lab Work:
 - Sorting suction year 2 ~40% complete
- Results:
 - Trawl: Clear differences between years, sites
 - Suction, ongoing. Common species:
 - Amphipods (2 species make up majority)
 - Olive nerite snails (*Neritina* sp.)
 - Isopods (*S. quadridentata*)
 - Mud crabs (*Xanthidae* - *Panopeus* sp.)
 - Insects (Need IDs - Linda?)
 - Grass shrimp (*Palaemonetes* sp.)
 - Mud crabs (*Xanthidae*)

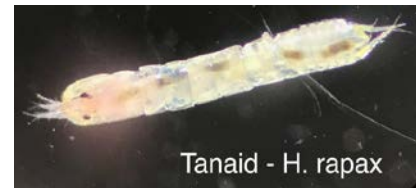


"On Schedule"

Looking Forward to 2019-20: Trawl/Suction

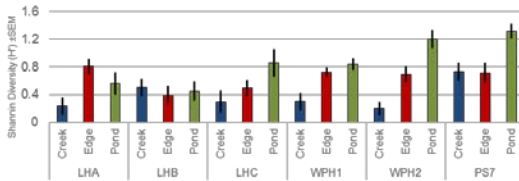
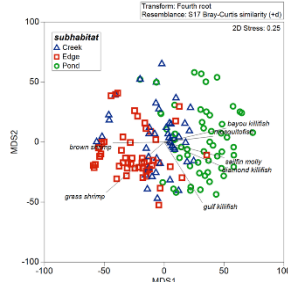
Martin, Scheffel– UF

- 2019-20 Analyses
 - Complete suction sampling processing
- 2019-20 Papers & Presentations
 - Manuscript development
 - Presentations at various conferences and local/regional events
- 2020 Field Work Goals
 - Replicate sampling May & July 2020



Looking Back at 2018-19: On-marsh nekton community (Minnow traps)

López-Duarte, Olin – UNCC / MTU

Activity	2018	2019
Sampling 3 deployments x 1 hr x 6 sites x 3 sub-habitats: edge, creek, pond	Completed	Completed
Data QA/QC Species abundance and composition; physical data	Completed	Completed
Data Analysis Nekton community varies among sub-habitats (ANOSIM, Global $R=0.333$, $p=0.001$). Biodiversity is highest in ponds at natural marshes.	Completed  	Underway Follow similar analysis as in 2018, but also work on interannual comparisons and incorporate site-specific data
Lessons Learned	We identified a need to incorporate site-specific data (e.g., pond sizes, marsh height) to determine which drivers influence community structure in ponds, creeks, or edges, across sites	All sites were imaged using drones

“On Schedule”

Looking Forward to 2019-20: On-marsh nekton community (Minnow traps)

López-Duarte, Olin – UNCC / MTU

Activity	2018	2019	2020
Sampling 3 deployments x 1 hr x 6 sites x 3 sub- habitats: edge, creek, pond	Completed	Completed	Schedule trip
Data QA/QC Species abundance and composition; physical data	Completed	Completed	
Data Analysis	Completed	Follow similar analysis as in 2018, but also work on interannual comparisons and incorporate site-specific data	

Presentations

CERF 2019; BEM 2020 (several students to attend)

Manuscripts in Development

- Marsh connectivity (interspersions) as a driver of community structure in different subhabitats (2018 data)
- Restored vs. natural marshes (years 1 & 2) and salinity effects (years 1-2 vs. 3)

Looking Back at 2018-19: Biomarkers

Polito, Olin, Lopez-Duarte – LSU / MTU / UNCC

- **Field Work: May 2019**

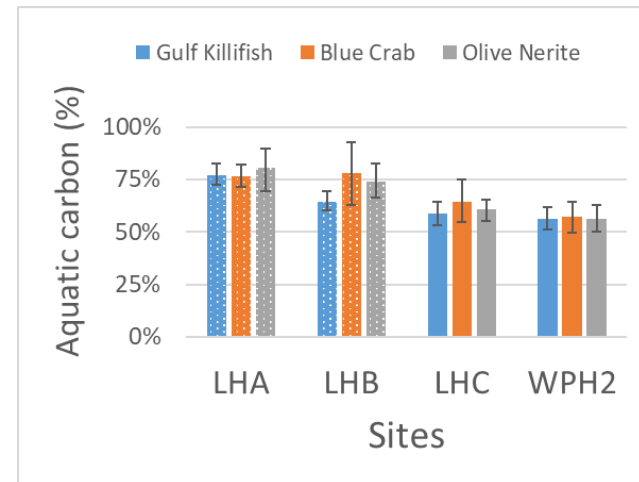
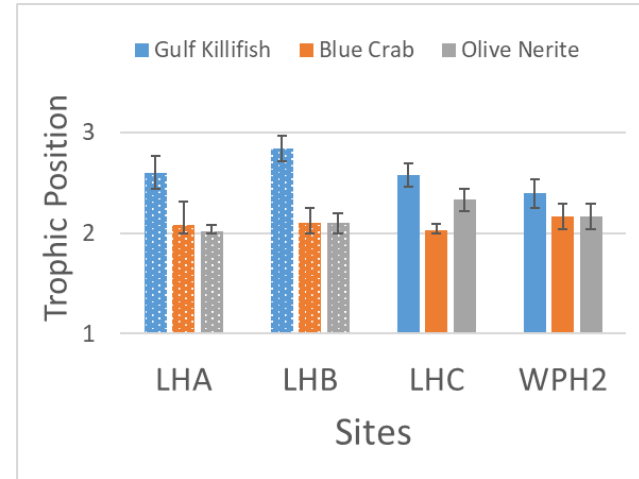
- Collected ~2000+ sample in each year
- Fish, invert, plants, SAV, algae, benthic microalgae, soil organic matter, particulate organic matter

- **Lab Work:**

- Processed 1800+ samples from 2018
- C&N isotopes: 2016 & 2018 complete
- Compound-specific: 2016 complete
- Heads collected for otoliths

- **Results:**

- Aquatic basal carbon sources are more important than terrestrial at all sites.
- Similar trophic level but slightly higher use of terrestrial carbon at natural sites relative to created sites.



“On Schedule”

Looking Forward to 2019-20: Biomarkers

Polito, Olin, Lopez-Duarte – LSU / MTU / UNCC

- **2019-20 Analyses**
 - Process & analyze 2019 samples for C&N
 - Process & analyze 2018 sample for 34S
 - Process & analyze 2018 otoliths
- **2019-20 Papers & Presentations**
 - CERF 2019 Presentations: K. Lamb & J. Olin
 - K. Lamb – 2018 C&N Manuscript
 - S. Moyo – 2016 CSIA Manuscript
- **2020 Field Work Goals**
 - Replicate sampling May 2020
 - Examine salinity trends



Questions and Feedback



PI Reports

Brief summary of major research activities in 2018/19,
ongoing analyses and/or preliminary results (~3 mins each)

- Food-web modeling – *Jensen*
- Website – *Rabalais, Morrison*
- Data management - *Rabalais, Morrison, Wick*



Looking Back at 2018-19: Ecosystem Modeling

Jensen, Vasslides (new postdoc) – Rutgers

- Initial balanced ecosystem model (Ecopath with Ecosim) developed
 - Parameterized partly from the existing Barataria Bay model and partly from data collected during CWC and RESTORE field work
- Improved biomarker mixing model (FASTINR)
 - Combines data from stable isotopes and fatty acids to estimate diet proportions
 - New version runs faster
 - different modeling platform – STAN
 - Parallelization so it can be run on multicore computers or clusters



Ecopath with Ecosim
No fish is an island



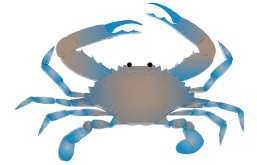
~ 3 months behind schedule because of personnel change (postdoc)

Looking Forward to 2019-20: Ecosystem Modeling

Jensen, Vasslides (new postdoc) – Rutgers

- **Workshop**

- January 2020
- Polito, Roberts, Lopez-Duarte, Olin, Martin, Jensen, Vasslides
- Complete integration of field data into EwE model



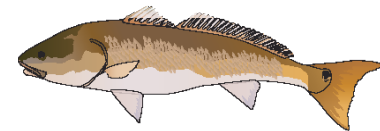
- **Analyses**

- Parameterize versions of the base EwE model for natural and restored marsh
- Use diet compositions from FASTINR and relative abundance from our field work
- Track uncertainty through the model to determine whether differences in natural and restored marsh food webs are significant or within the “noise”



- **Papers & Presentations**

- Submit manuscript on analysis above
- Present results at ASLO 2020 (Madison, WI)



Data Management

Rabalais, Morrison, Weick

Looking Back

- *Data Management Plan approved*
- *RESTORE dataset tracking sheet created*
- *DIFs established for 18 data sets*
- *Internal Tracking Number (ITN) assigned to each DIF and provided to the PIs to use as identifier when data sets are submitted*
- *RESTORE dataset tracking sheet populated with dataset information*
- *Google Drive internal data sharing platform created*

Looking Forward

- *Finalize the data submission and sharing policy and disseminate to PIs*
- *Send out emails requesting datasets*
- *Request lat/long for group stations and post on Google Drive platform*

**On Schedule, but will require some shifts in job responsibilities beginning Nov 2019*

Project Website

Rabalais, Smith, Weick, Morrison



RESTORE Website Status

- Established Domain
- Created Logo & Branding
- Created Home Page
- Created Subpage Template
- Currently populating subpages with content

Plans

- Solicit subpage content from team members (Oct-Nov)
- Add content to site (Nov-Mar)
- Internal site review (Mar-Apr)
- Projected website completion April 2020



*Behind schedule, but established and being filled in

Input from Advisory Board members

1. What are the specific management needs your agency is hoping to have addressed as part of this project? Have they changes from our last meeting?
2. Have we sufficiently incorporated your management needs into our research plans, and if not how can we do a better job moving forward?
3. Are there any new activities or projects at your agency that are complementary to this project?

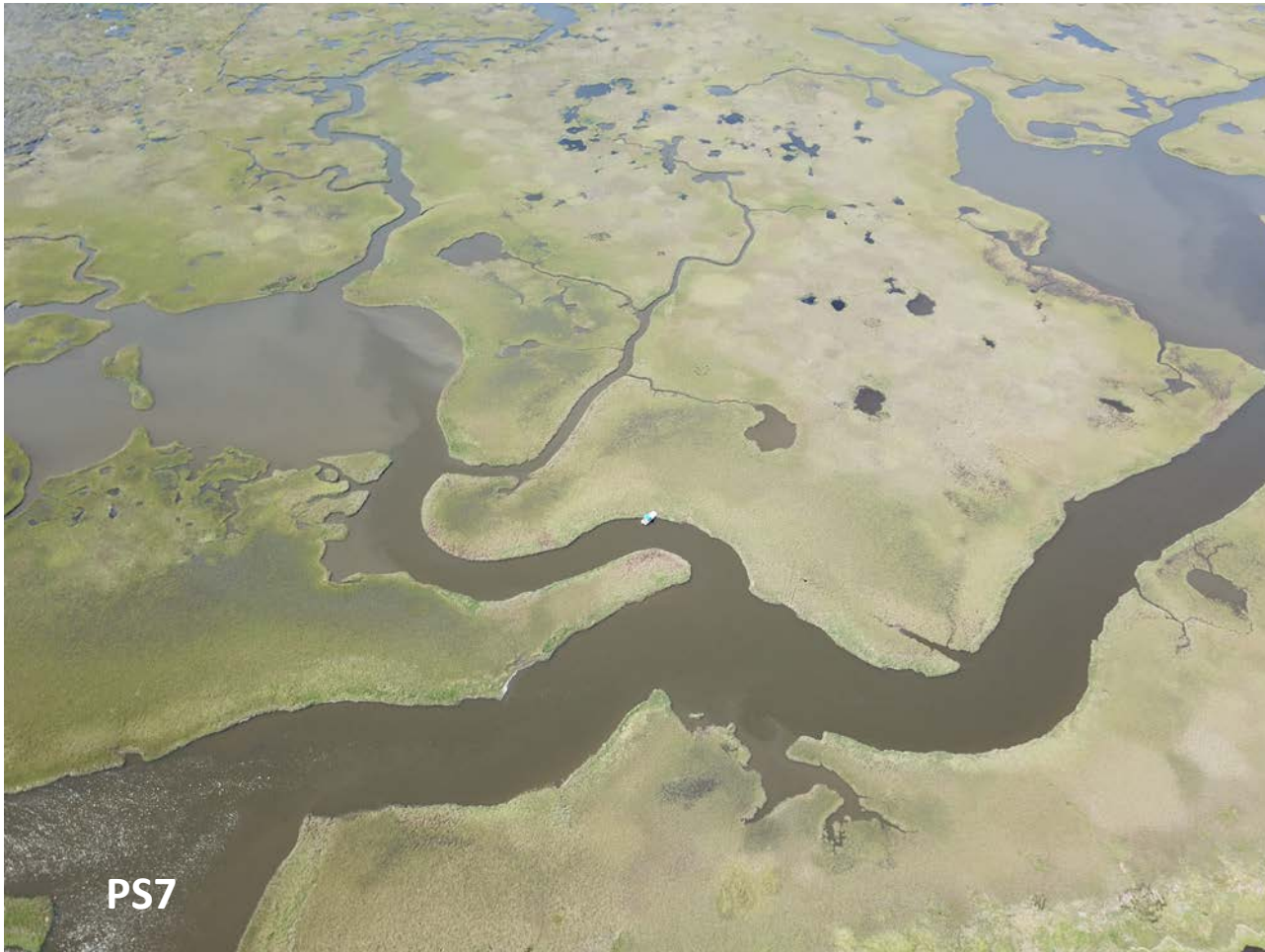


Input from NOAA Restore

1. What are the specific management needs your agency is hoping to have addressed as part of this project? Have they changes from our last meeting?
2. Have we sufficiently incorporated your management needs into our research plans, and if not how can we do a better job moving forward?
3. Are there any new activities or projects at your agency that are complementary to this project?



Open Discussion



Wrap-Up & Next Steps

- **Upcoming Meetings:**
 - CERF 2019 – Mobile, AL
 - GOMOSSES 2020 – Tampa, FL
- **Site Visit: Spring 2020 – Baton Rouge, LA**
 - Single day meeting in February/March
 - Will send out doodle poll....
- **May 2020** – Primary field sampling trip (~10 days long)
 - Likely mid to late May as in past years



FY20 Goals

Analyses

- QAQC and conduct preliminary analyses on May 2019 community composition data.
- Process, run, & QAQC May 2019 samples for C&N, and 2018 for S & Otoliths
- Parameterize EcoSim models (Workshop)

Data & Outreach

- Collect dataset as the develop
- Implement website
- Present results at CERF, GOMOSES and other meetings.
- Site visit meeting and other outreach

Field work

- **Feb/March 2020** - Water level/salinity recorder maintenance
- **May 2020** – Primary field sampling trip (~10 days long)
- **July 2020** – Secondary field sampling trip (liter bags, elevation mapping)



Thank you!

Linking Community and Food-Web Approaches to Restoration: An Ecological Assessment of Created and Natural Marshes Influenced by a River Diversion



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