

Coastal Waters Consortium – III
Revised Draft Data Management Plan for RFP-VI
Prepared by Jason Weick, Wendy Morrison, and Nancy Rabalais

SECTION 1: RESEARCH CONSORTIUM INFORMATION

1. Project Title

Oil spills as stressors in coastal marshes: The legacy and the future.

2. Lead Principal Investigator and Contact Information

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3. Data Manager and Contact Information

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4. Data Manager Roles and Responsibilities

CWC Data Manager Jason Weick has been involved with GRIIDC since its inception, and for CWC-III he will continue to make decisions regarding data and web management, in collaboration with Dr. Nancy Rabalais (Lead PI). With increased demands on his time by LUMCON during CWC-II, and with the addition of Wendy Morrison (Deputy Director CWC) to the Data Team at the beginning of CWC-II, Jason and Wendy now jointly manage the day-to-day CWC data responsibilities. Jason will continue to attend the Advisory Council meetings, participate in the monthly GRIIDC calls, upload DIFs and datasets to GRIIDC, and participate as necessary in internal dataset reviews (Effort: 50%). Wendy will continue to review datasets, communicate with the researchers on data matters, respond to GRIIDC back-to-submitter emails, and track progress updates to GRIIDC (Effort: 50%). Jason's technical expertise and involvement with the GoMRI program since the beginning, combined with Wendy's scientific background and role as Deputy Director make for an efficient team.

5. Data Submission to GRIIDC

When a new dataset is generated, researchers are asked to fill out a DIF template, a word document designed by Jason and Wendy that includes all of the fields on the online submission form. The form is reviewed, researchers are either contacted if additional information is required, or the information is uploaded to GRIIDC and the UDI is sent to the researcher. Information and communications regarding the dataset (including the UDI) are entered into an internal CWC tracking sheet where all future activity is recorded and tracked. Since institution of the CWC-II Data Policy in 2016, datasets are not directly submitted to GRIIDC by the researcher, but are given to the CWC Data Team for internal review and eventual submission. This policy will continue for CWC-III. Depending on the preference of the

researcher, metadata is either submitted to the CWC Data Team as an xml generated by the GRIIDC metadata editor tool, or in a word document Metadata Template designed by Jason and Wendy that includes all of the fields from the metadata editor tool. Wendy reviews the dataset and metadata and either requests additional information from the researcher or sends it to Jason to be uploaded to GRIIDC. The dataset DOI is recorded in the CWC tracking sheet and sent to the researcher. If additional information or revisions to the data package are requested, Wendy responds to GRIIDC according to the guidelines outlined in the GRIIDC Followup Process 2017-02-27 guidance document and then works with the researcher to adequately address all of the issues. She also monitors the GRIIDC home page for those submissions that did not require additional revisions and notifies researchers when their dataset has been approved.

6. Data Management Training

All CWC-III coPIs have met the RFP-VI data training requirements either through general GRIIDC training presentations or the CWC-III specific webinar presented by Sandra Ellis on March 19, 2018. Because several CWC-III Collaborators are also likely to generate data for the project, we will inquire as to GRIIDC's willingness to present the CWC-III webinar again in May or June so that those researchers may benefit from that information. Because Jason and Wendy submit datasets directly to GRIIDC on behalf of researchers, the training focus within CWC relates more toward good dataset design, adequate descriptive metadata and adherence to the GoMRI Data Policy.

7. Communicating Data Submission Requirements

GRIIDC dataset submission guidance documents are disseminated to PIs upon internal receipt of the specialized datasets governed by the guidance documents.

8. Data Storage Backup

All PIs are asked to back up data daily to multiple storage devices, one of which is a cloud service such as Dropbox or Google Drive.

9. Ethics and Compliance Information – Data Involving Human Research Subjects

- a) Do any components of the research project require Institutional Review Board approval?
Does not apply
- b) Are there any Institutional Review Board (IRB) or HIPPA (Health Insurance Portability and Accountability Act) issues that might preclude sharing data?
Does not apply.

SECTION 2: METHODS INFORMATION

The methods used to collect, generate, or otherwise acquire data can influence how data will stored and organized. Please answer the following questions with the best available information for each data type.

1. Research Cruises

- a) Will your RC be organizing or participating in research cruises? **NO**
If yes,
- b) How many research cruises will your RC be participating in or organizing?
- c) If known, please list cruise name, estimated dates of research cruise(s), and types of

data collected on each cruise (e.g. CTD, ADCP, Plankton tows, etc.).

2. Non-Cruise Field Work

a) If your RC is not participating in research cruises, will any field work be performed?

YES

If yes,

b) Will you be collecting environmental data while in the field? **YES**

c) What types of environmental data will be collected?

- Marsh edge overhang, marsh soil shear strength, sulfide concentrations, horeline water temperature, salinity and depth, marsh canopy height and stem counts.
- Wave height/period and turbidity by stationary weighted bottom sensors in Lower Barataria Bay and just offshore of Grand Isle
- Wave height/period and turbidity by a stationary weighted bottom sensor in Bay Jimmy
- Water velocity and turbidity from a stationary platform (USGS) in Barataria Pass, Grand Isle

d) Will moored buoys, drifters, or other oceanographic platforms collect any of this data? **YES**

If yes,

e) Please describe which platforms will be used.

- USGS 073802516 Barataria Pass at Grand Isle, LA
(https://waterdata.usgs.gov/la/nwis/uv?site_no=073802516)

3. Environmental Sample Lab Analysis

a) Will your RC be collecting any samples in the field that will then be analyzed in the lab?

YES

If yes,

b) What types of samples will be collected and what types of analysis will be performed on each sample type? (e.g. fish muscle tissue analyzed for mercury, fish otoliths for age, fish fin clip for next generation DNA sequencing, sediment grain size from cores, isotopes, etc.)

- Sediment and water samples for hydrocarbon analysis
- Root mass, dry soil bulk density and pore water nutrients
- Sediment samples for gene abundance and community composition (DNA fingerprinting using TRFLP) of ammonia oxidizing bacteria and archaea, methane oxidizing bacteria, and denitrifying bacteria
- Water collected from a water sampler on a platform in Barataria Pass for total suspended sediment, loss on ignition (LOI) of the total suspended sediment, nutrients, and carbon.
- DNA meta-barcoding analysis of sparrow diet from samples already archived or collected in previous field efforts
- Epigenetic (gene methylation) analysis in marsh rice rats from samples already archived or collected in previous field efforts
- Bulk stable isotope analysis of seaside sparrow muscle and liver tissue and marsh rice rat muscle tissue.
- Fatty acid analysis of seaside sparrow muscle and liver tissue and marsh rice rat muscle tissue.
- Compound-specific stable isotope analysis of fatty acids of seaside sparrow muscle and liver tissue.
- Bulk CN&S stable isotope analysis of marsh flora and fauna samples

- Compound-specific stable isotope analyses of amino acids of marsh flora and fauna
- Seaside sparrow feathers and plasma for corticosterone analysis.
- Seaside sparrow tissues for oxidative status.
- Seaside sparrow adult and nestling genotyping (microsatellite loci) as part of the genetic breeding system work.

4. Microcosms/Mesocosms

a) Will your RC be performing any microcosm or mesocosm experiments? **YES**

If yes,

b) What microcosm or mesocosm experiments will your RC perform?

- Tethered bait items in mesocosms (unoiled versus oiled) to assess predator-prey interaction potential under varying levels of hydrocarbon contamination.
- Testing the effects of different levels of oil on microbial communities (ammonia oxidizing bacteria and archaea, methane oxidizing bacteria, and denitrifying bacteria) by following changes in abundance and community composition before and after oil additions.
- Seasonal to bi-monthly sampling of MPB (microphytobenthos), and meiofauna in mesocosms studies (Twelve tanks populated with natural mixed vegetation marsh plots, exposed to four oil treatments: No oil, low oil, medium oil, and high oil).
- Evaluation of how plants offset or augment soil greenhouse gas fluxes in terms of carbon sinks (soil chamber fluxes, LGR vegetation chambers).
- Quantifying snail and fish movements and the avoidance of oiled/unoiled locations in tanks using camera arrays. Controlled choice tests to determine if prior oil exposure affects behavioral habitat preference patterns.
- Tracking benthic diatom responses to oiling in mesocosms to assist with the development of conceptual and numerical models to forecast impacts of future oiling events (See # 6 below).

5. Pure Lab-Based Studies

a) Will your RC be performing any purely lab based work? (examples: measuring properties of standard chemicals, developing new dispersants, measuring flow rates of jets) **YES**

If yes,

b) What purely lab based experiments will your RC perform?

- Oil sample analytical support for CWC (samples from the field and mesocosm experiments).

6. Modeling

a) Will your RC be conducting any numerical or computational modeling? **YES**

If yes,

b) What modeling activities will your RC perform?

- FVCOM hydrodynamic simulations to predict water mass, salinity, and suspended sediment fluxes across Barataria Pass
- Hydrodynamic and passive particle trajectory simulations to predict currents, salinity and pollutant transport in Barataria Bay and adjacent continental shelf under present-day and altered hydrologic conditions (no-diversion, one-diversion, and multiple-diversions). (FVCOM model)
- Conceptual and numerical models will be developed to forecast impacts of future oiling events on phytoplankton and MPB. Several factors will be included: 1) benthic diatom responses to oiling in the mesocosms; 2) those factors causing unexpected responses

(i.e., temperature, salinity, composition at time zero); 3) phytoplankton population dynamics in response to changing water quality and oil spill scenarios.

c) Do any of these models use non-publicly available code? If so, please list. **NO**

7. Mapping

a) Will your RC be conducting any mapping activities? **NO**

If yes,

b) What mapping activities will your RC perform?

8. Remote Sensing and Aerial Imagery

a) Will your RC be using or acquiring any remotely sensed or other aerial imagery data? **YES**

If yes,

b) What types of remote sensing or aerial imagery data will be used or acquired?

- Sea surface temperature (SST) and ocean color (for surface suspended sediment concentration) data will be used for numerical simulation validation (FVCOM models)
- Measurements of island morphology

c) Are any of these data proprietary (i.e. cannot be freely redistributed)? **NO**

9. Images

a) Will any of your RC activities produce images as data? (NOTE: This does not include images taken through education or outreach activities or photos of research work that are taken for use in presentations, etc.) **NO**

If yes,

b) What activities will produce images as data?

10. Video

a) Will any of your RC activities produce videos as data? (NOTE: This does not include videos taken through education or outreach activities or videos of research work that are taken for use in presentations, etc.) **YES**

If yes,

b) What activities will produce video as data? (example: microscopy)

- We will place GoPro cameras near tethered bait items in mesocosms to identify active consumers.

11. Social Surveys and Interviews

a) Will your RC be performing any surveys of people or in-person interviews? **NO**

If yes,

b) What survey activities will your RC perform?

12. Economics

a) Will your RC acquire or use any economic data? **NO**

If yes,

b) What economic data will your RC be acquiring or using (e.g. household income, fish landings, fish production, oil production, etc.)?

c) Will this data be acquired from existing sources?

If yes,

d) What are the planned sources for data for each data type?

13. Other Methods and Data Types

Please describe any research methods that will be employed by members of your RC that are not reflected in the answers to the above questions and what types of data will be generated using each method.

- Analyses of Seaside Sparrow nest outcomes will be completed for 2012-2017 (building on previous CWC datasets). CWC researchers also expect to build on the Seaside Sparrow population genetics questions by incorporating data from the Atlantic coast (project funded outside of CWC, but now have range-wide data).
- Predator-prey interaction potential in different regions (i.e., history of oiling impact, tidal regime) will be studied in marshes across the northern GOM. This information will be combined with mesocosm studies.
- Field experiments measuring the behavioral response of fishes to oil concentrations (low, medium, high) and weathering (fresh or weathered) will take place in marshes across the northern GOM to determine preference patterns. This information will be combined with mesocosm studies.
- Snail habitat preferences will be assessed in sites across the northern GOM.
- We will investigate integrating published and other open-source stable isotope datasets for 2010-2016 from coastal marsh regions impacted by the oil spill (including archived NRDA and GRIIDC stable isotope and fatty acid biomarker datasets from CWC-I and -II).
- Biomarker data from archived sediment hydrocarbon samples will be reviewed to match weathering patterns with specific conditions (sediment content, concentrations, eH, salinity, particle size, bacterial consortia, etc.).

SECTION 3: DATASET INFORMATION FORMS

Dataset Title (in GRIIDC)	UDI
Shoreline erosion rates in Barataria Bay, 2018	R6.x808.000:0001
Erosion Rates of Islands in Barataria Bay, Breton Sound, and Terrebonne Bay, 2018	R6.x808.000:0002
Marsh health and process data collected in Louisiana Coastal Plain Marshes, 2018	R6.x808.000:0003
Seaside Sparrow diet as assessed with DNA meta-barcoding data, Plaquemines Parish, Louisiana, 2012-2017	R6.x808.000:0004
Marsh rice rat epigenetic (gene methylation) data, Plaquemines Parish, Louisiana, 2015-2017	R6.x808.000:0005
Seaside Sparrow compound-specific fatty acid data 2012-2017	R6.x808.000:0006
Seaside Sparrow genetic breeding system data (microsatellite genotypes) 2012-2017	R6.x808.000:0007
Outcome of Seaside Sparrow nests, Plaquemines Parrish, Louisiana, 2012-2017	R6.x808.000:0008
Abundance of ammonia oxidizing bacteria before and after oiling in mesocosms	R6.x808.000:0009
Abundance of methane oxidizing archaea before and after oiling in mesocosms	R6.x808.000:0010
Abundance of denitrifying bacteria before and after oiling in mesocosms	R6.x808.000:0011
Community composition of ammonia oxidizing archaea before and after oiling in mesocosms	R6.x808.000:012
Community	R6.x808.000:0013

composition of ammonia oxidizing bacteria before and after oiling in mesocosms	
Community composition of methane oxidizing archaea before and after oiling in mesocosms	R6.x808.000:0014
Community composition of denitrifying bacteria before and after oiling in mesocosms	R6.x808.000:0015
Time series hydrodynamics and turbidity data at Barataria Pass, Spring 2018	R6.x808.000:0016
Suspended sediment time series data from Barataria Pass, Spring 2018	R6.x808.000:0017
Wave and turbidity time series data obtained from a stationary bottom sensor offshore of Grand Isle, Louisiana, Spring 2018	R6.x808.000:0018
Wave and turbidity time series data obtained from a stationary bottom sensor in lower Barataria Bay, Louisiana, Spring 2018	R6.x808.000:0019
Wave and turbidity time series data obtained from a stationary bottom sensor in Bay Jimmy, Louisiana, Spring 2018	R6.x808.000:0020
Abundance of ammonia oxidizing archaea before and after oiling in mesocosms	R6.x808.000:0021
FVCOM simulated currents, salinity and suspended sediment concentrations for Barataria Bay and adjacent Louisiana-Texas continental shelf for the period April 1 - December 31, 2010	R6.x808.000:0022
FVCOM simulated water mass, salinity, and suspended	R6.x808.000:0023

sediment fluxes through the Barataria Pass during periods coinciding with frontal passages and fair weather campaigns	
Simulated pollutant transport (i.e., particle trajectories) under present-day and altered hydrologic conditions (no-diversion, onediversion, and multiple-diversions) for Barataria Bay and adjacent continental shelf	R6.x808.000:0024
Loss rate of tethered prey in mesocosms (oiled versus unoiled)	R6.x808.000:0025
Behavioral data (feeding, agonistic displays) observed from GoPro videos deployed in association with tethering trials in mesocosm experiments	R6.x808.000:0026
Loss rate of tethered prey in marshes across the northern Gulf of Mexico	R6.x808.000:0027
Catch rates of marsh-associated meso-predators across the northern Gulf of Mexico	R6.x808.000:0028
Corticosterone levels in feathers and plasma of Seaside Sparrows, Plaquemines Parish, LA, 2014-2015	R6.x808.000:0029
Compound-specific stable isotope analyses of amino acids in Seaside Sparrow tissues, 2012-2017	R6.x808.000:0030
Bulk CN&S stable isotope analysis of archived marsh flora and fauna samples	R6.x808.000:0031
Compound-specific stable isotope analyses of amino acids of archived marsh flora and fauna	R6.x808.000:0032
Analytical support of the Coastal Waters Consortium: Target alkane and aromatic concentrations for field sediment samples collected in 2018	R6.x808.000:0033
Analytical support of the Coastal Waters Consortium: Target alkane and aromatic concentrations for mesocosm sediment samples collected in 2018	R6.x808.000:0034
Ancillary parameters from mesocosm experiments examining impacts of controlled oil dosed exposures on marsh ecosystems	R6.x808.000:0035
<i>Spartina alterniflora</i> dynamics	R6.x808.000:0036

from mesocosm experiments examining impacts of controlled oil dosed exposures on marsh ecosystems	
Microphytobenthos from mesocosm experiments examining impacts of controlled oil dosed exposures on marsh ecosystems	R6.x808.000:0037
Meiofauna from mesocosm experiments examining impacts of controlled oil dosed exposures on marsh ecosystems	R6.x808.000:0038
2017 Marsh Rice Rat Ecological Tracers	R6.x808.000:0039
2017 Seaside Sparrow Ecological Tracers	R6.x808.000:0040
Oxidative status of Seaside Sparrow tissues, Plaquemines Parish, LA, 2011—2015	R6.x808.000:0041