RECOVER2 Data Management Plan

Section 1: RECOVER2 Information

Relationships of Effects of Cardiac Outcomes in fish for Validation of Ecological Risk (RECOVER2)

Contacts

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Data Manager Roles and Responsibilities

The Data Manager will be responsible for creating, maintaining, and adjusting the processes involved for the sharing, backing up, and submission of data in a timely manner. The Data Manager will also be the liaison between RECOVER2 and GRIIDC. Finally, the Data Manager will be responsible for training the team in all matters related to Data Management and Sharing. The Data Manager will devote 40% of her time to Data Management responsibilities.

Data Submission to GRIIDC

Researchers will complete RECOVER's Dataset Information Forms (DIF) and email it to the Data Manager. The Data Manager reviews the DIF, requests clarification and additional information as needed, and submits the DIF to GRIIDC. The Data Manager then creates a folder on Box, the University of Miami cloud-based storage system for RECOVER2, for the dataset. The researcher uploads and organizes all relevant files to the folder, completes the Metadata form, and submits the form to the Data Manager. The Data Manager then reviews the dataset and Metadata form and makes necessary changes like file and folder naming and organization. The Data Manager submits the dataset to GRIIDC and relays any questions and information between GRIIDC and the researcher.

Data Management Training

All RECOVER2 PI's, the Data Manager, and the researchers have attended an online webinar designed by GRIIDC for RECOVER2 data in March 2018. In addition, the Data Manager relays all training announcements from GRIIDC to the team and is always available to provide assistance at any point in the Data Management process.

Communicating Data Submission Requirements

All memos and guidance documents provided by GRIIDC are forwarded to all relevant researchers as received. Additionally, if a researcher is preparing to work with a type of dataset that is different from what they have typically worked with in the past, the Data Manager passes along all relevant and up to date communications from GRIIDC regarding that type of dataset.

Data Storage and Backup

Data collected will be stored locally at each PI's institution and backed up to the University of Miami's cloud-based storage system, Box, on a weekly basis at minimum. Box is secure and access is restricted solely to those invited. RECOVER2 has unlimited storage on Box. Each researcher is responsible for backing up their data routinely to their computer, to Box, and to an external hard drive. All researchers are encourage to use Box Sync to have the data they're currently working with simultaneously upload to Box.

Ethics and Compliance Information

RECOVER2 research does not require Institutional Review Board approval. RECOVER2 research is not subject to HIPPA.

Methods Information

Research Cruises

a) Will your RC be organizing or participating in research cruises? Yes.

If yes,

b) How many research cruises will your RC be participating in or organizing? RECOVER2 will be organizing one research cruise.

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.). RECOVER2's cruise will be taking place July 19 – August 2, 2018. We expect to collect CTD, ADCP, flow through surface water environmental data, mahi-mahi fork lengths, mahi-mahi capture locations and release locations, satellite tag data from the fish (when the tags pop off up to 96 days after release), and ammonia, dissolved oxygen, pH, temperature, salinity and PAHs of our incubation tanks (control and oil exposure).

Non-Cruise Field Work

a) If your RC is not participating in research cruises, will any field work be performed? No.

If yes,

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

c) What types of environmental data will be collected?

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

If yes,

e) Please describe which platforms will be used.

Environmental Sample Lab Analysis

a) Will your RC be collecting any samples in the field that will then be analyzed in the lab? No.

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.)

Microcosms/Mesocosms

a) Will your RC be performing any microcosm or mesocosm experiments? No.

If yes,

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

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? RECOVER2 will be performing the following lab-based experiments:

Mahi mahi, red drum, and sheepshead minnows (embryos and larvae) exposed to varying concentrations of oil.

-measures of mitochondrial function, cardiac edema, and corresponding PAH chemistry in control and oil-exposed fish

Mahi-mahi and sheepshead minnows (larvae and juveniles) exposed to varying concentrations of oil.

-electroretinogram outputs of eye function, electorolfactogram outputs of olfactory acuity, and corresponding PAH chemistry in control and oil-exposed fish

Mahi-mahi, red drum and sheepshead minnow embryos, larvae and adults exposed to various levels of crude oil and crude oil and dispersant mixtures.

-mortality, hatch rate and PAH bioaccumulation

Mahi-mahi embryos exposed to various durations of UVA exposure

- gene expression on antioxidant and UV repair enzymes, specific gravity measurements, mortality, dispersal

Ventricular heart cells from adult mahi-mahi exposed to control saline or saline containing PAHs and acute temperature changes

- cellular contractility (sarcomere shortening), and other biophysical aspects of contractile function including time to peak, time to baseline, departure velocity, and return velocity

Zebrafish and red drum larvae and juveniles will be exposed to varying levels of PAHs and crude oil

- learning assays, gene expression, immunohistochemistry

Red drum juveniles will be exposed to a pre-determined PAH or crude oil concentration

- behavioral assays, gene expression, aerobic scope, critical oxygen threshold, critical thermal maximum, and blood oxygen binding affinity

Bicolor damselfish (juveniles and adults) will be exposed to varying levels of crude oil

- electorolfactogram outputs of olfactory acuity and corresponding PAH chemistry

Juvenile mahi will be exposed to Corexit alone and in combination with oil

-mortality, gene expression, phenotypes

Adult mahi exposed to varying oil concentrations

- whole-genome methylation of adults and embryos, mortality

Adult quail will be exposed to varying concentrations of oil in food, vapors or its combination

-oxygen consumption, morphological alterations, immunohistochemical responses

Zebrafish embryos, larvae, juvenile and adults will be exposed to dietary crude oil and hypoxia

-epigenetic responses in offspring from each developmental-exposed group

Adult and embryonic killifish from two populations will be exposed to varying concentrations of dispersed oil

-measures of survival and pigmentation.

Modeling

a) Will your RC be conducting any numerical or computational modeling? Yes.

If yes,

b) What modeling activities will your RC perform? RECOVER2 will be modeling mahi embryo and larval trajectories using the open-source Lagrangian, particle-tracking framework, the Connectivity Modeling System, to compute particle evolution and transport in the Gulf of Mexico (GoM).

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

Mapping

a) Will your RC be conducting any mapping activities? No.

If yes,

b) What mapping activities will your RC perform?

Remote Sensing and Aerial Imagery

a) Will your RC be using or acquiring any remotely sensed or other aerial imagery data? No.

If yes,

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

c) Are any of these data proprietary (i.e. cannot be freely redistributed)?

Images

a) Will any of your RC activities produce images as data? Yes.

If yes,

b) What activities will produce images as data? Microscopes will be used to generate images to assess cardiac edema. Immunohistochemistry studies will also provide images.

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.)

If yes,

b) What activities will produce video as data? (example: microscopy) Behavioral and maze assays will all produce videos as part of their datasets.

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?

Economics

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?

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. N/A.

Dataset Information Forms

UDI	Dataset Title
R6.x804.000:0001	Embryos and larval mahi trajectories
R6.x804.000:0002	Oil and UV effects on embryonic buoyancy, dispersal and later life survival
R6.x804.000:0003	Expression of UV repair enzymes and relation to buoyancy change
R6.x804.000:0004	Effect of oil exposure on Hb-O2 affinity
R6.x804.000:0005	Oil exposure and environmental preference
R6.x804.000:0006	Examining if adrenaline protects myocytes against PAH toxicity
R6.x804.000:0007	Effects of temperature on heart cell function following oil exposure
R6.x804.000:0008	Effects of temperature on swim performance of mahi
R6.x804.000:0009	Oil exposure and critical thermal limitations
R6.x804.000:0010	Additive effects of oil and hypoxia on aerobic scope
R6.x804.000:0011	Effects of oil exposure on different types of learning in fish
R6.x804.000:0012	Effects of oil exposure on fish personality
R6.x804.000:0013	Oil exposure and thermal performance
R6.x804.000:0014	Electroretinogram measures of visual function in oil exposed fish
R6.x804.000:0015	Epigenetic Impacts of Crude Oil Exposure in Mahi-mahi
R6.x804.000:0016	Effects of UV on NOM and PAH-binding
R6.x804.000:0017	Effects of NOM/DOC on Crude Oil Toxicity and PAH Bioaccumulation
R6.x804.000:0018	Toxicity of oxyPAH to developing fish
R6.x804.000:0019	CTD, ADCP, and flow through data from Gulf of Mexico Mahi-Mahi tagging 2018
R6.x804.000:0020	Mahi-mahi data from Gulf of Mexico Mahi-Mahi tagging 2018
R6.x804.000:0021	Satellite tag data from Gulf of Mexico Mahi-Mahi tagging 2018
R6.x804.000:0022	Recovery tank water chemistry data from Gulf of Mexico Mahi-Mahi tagging 2018
R6.x804.000:0023	Electro-olfactogram bicolor damselfish
R6.x804.000:0024	Electro-olfactogram mahi-mahi
R6.x804.000:0025	Parental exposure of Quail to PAHs via vapors and diet - effects on F1 offspring
R6.x804.000:0026	Role of developmental stage in transgenerational epigenetics
R6.x804.000:0027	Development of pigmentation in embryonic fish - relationship to PAHs and UV exposure
R6.x804.000:0028	DNA methylation and epigenetic changes after adult oil exposure
R6.x804.000:0029	Transcriptional responses of juvenile mahi to Corexit alone and in combination with oil
R6.x804.000:0030	Impacts of PAH and oil exposure on cholesterol synthesis in fish
R6.x804.000:0032	The effect of oil-exposure on urea and ammonia transporters in mahi-mahi