DIVER Application: Accessing Project and Environmental Data

2018 Gulf of Mexico Oil Spill & Ecosystem Science Conference

Ben Shorr and Nick Eckhardt

NOAA - NOS - Office of Response & Restoration

Mike Peccini & Marti Goss

NOAA - NMFS – Office of Habitat Conservation

Dan Hudgens, Ann Jones, Neal Etre

IEc Inc.

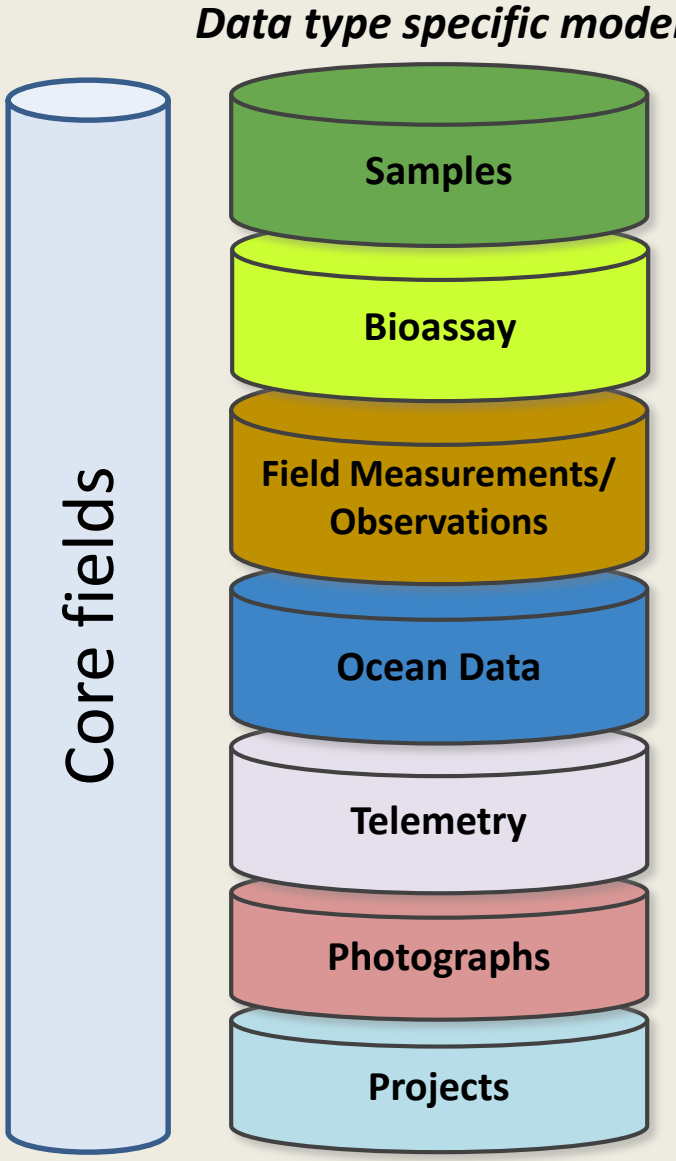
Overview

DIVER

(Data Integration, Visualization, Exploration, and Reporting)

DIVER is a **data warehouse** and **query** application. The DIVER approach **integrates standardized** datasets so users can query across data holdings and download information and results.

Common Data Models



- **Samples:** Chemistry, biological+
- **Bioassay:** Toxicity testing and results
- **Field Measurements and Observations:** shoreline, marsh, birds and mammals; biological data, oil thickness
- **Oceanographic:** Cruise-collected sensor data
- **Telemetry:** Whales, dolphins, turtles, tuna
- **Photography:** Geolocation, Keywords
- **Restoration data:** Project tracking data

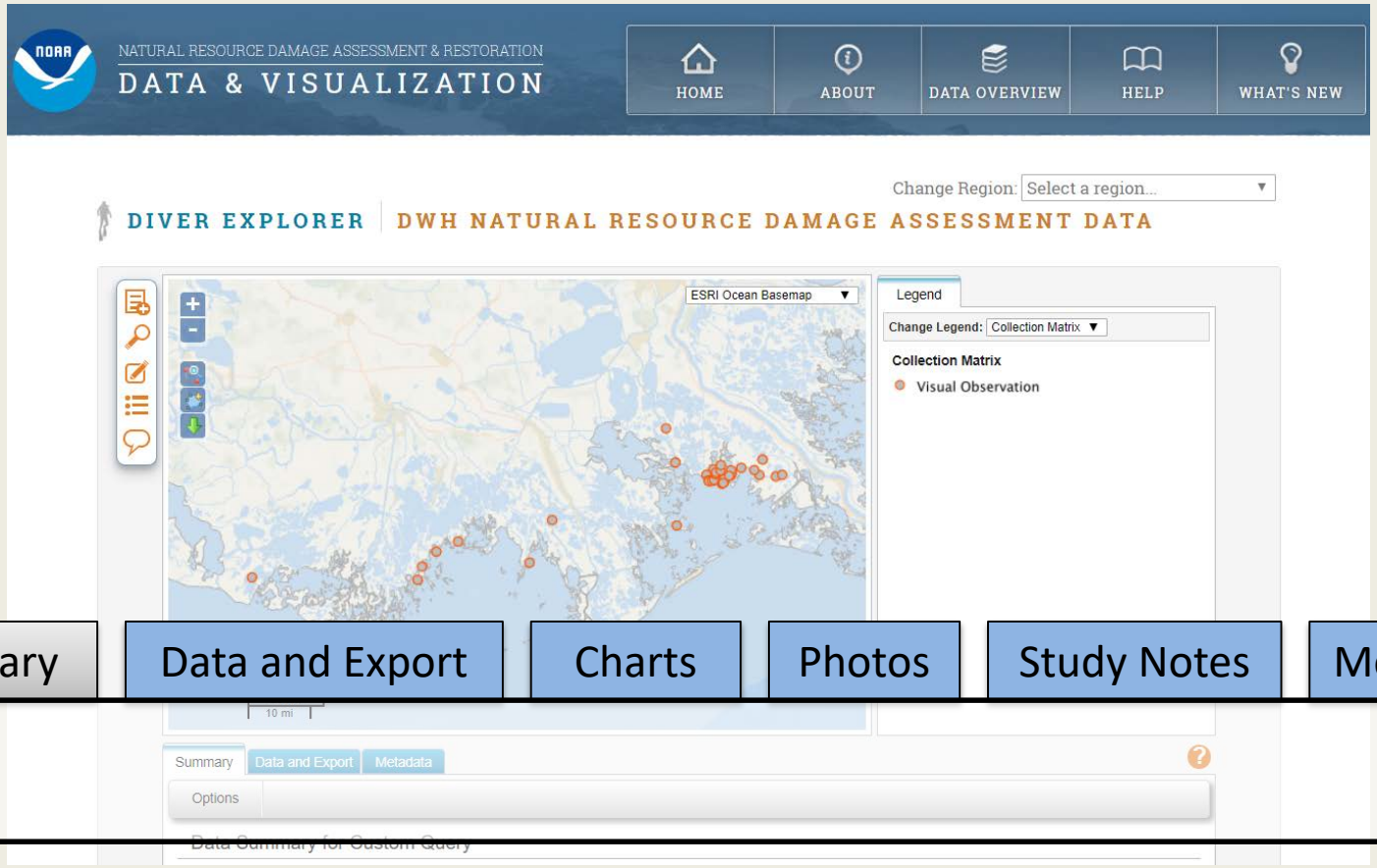
Public DIVER website

Public facing DIVER website for case/project data

https://www.diver.orr.noaa.gov

DIVER Explorer: Query Result

DIVER Explorer is a query tool. Filter, map and download. Dashboard display.



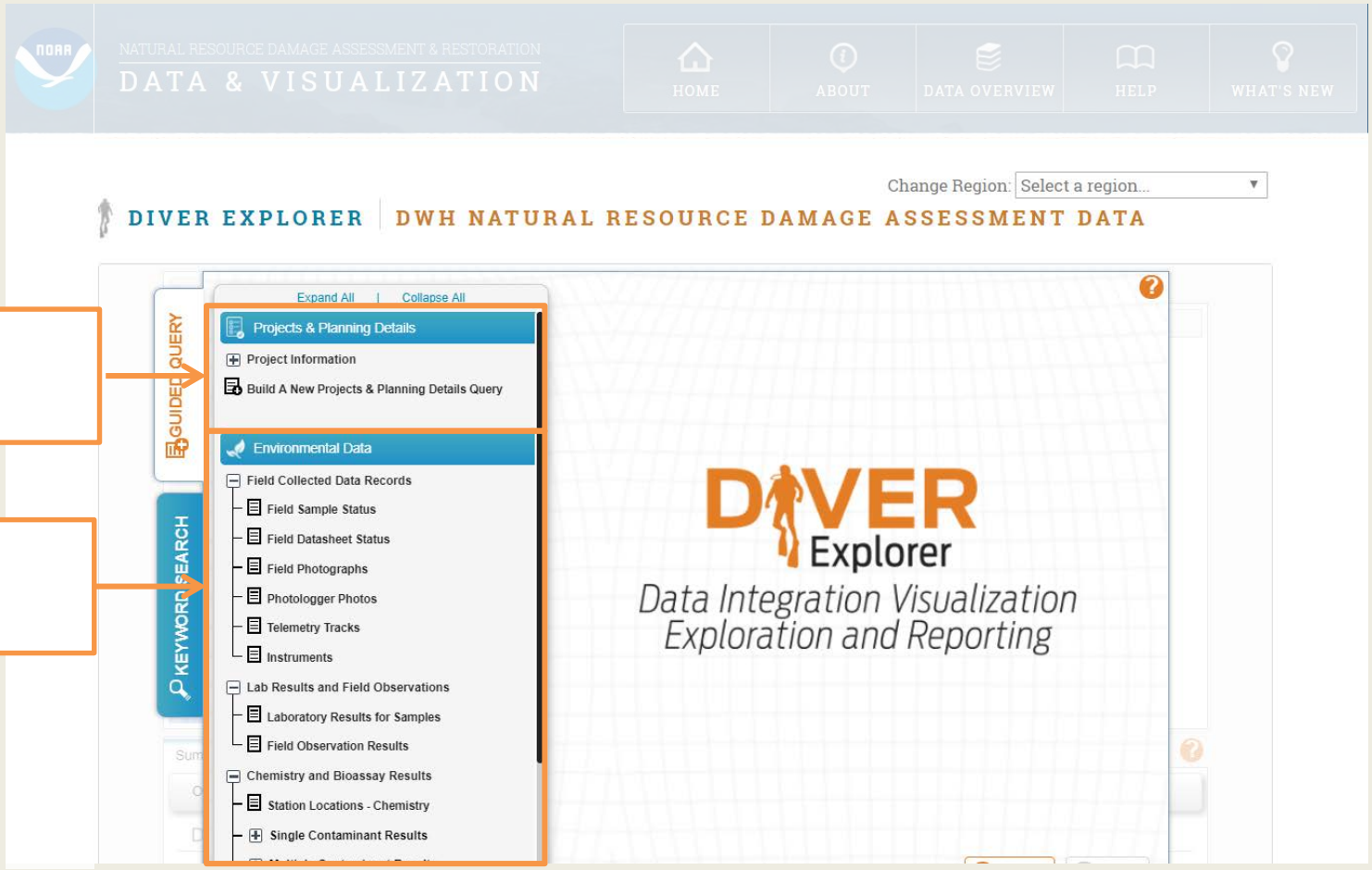
Summary | Data and Export | Charts | Photos | Study Notes | Metadata

DIVER Explorer

Guided Queries and Build New Query

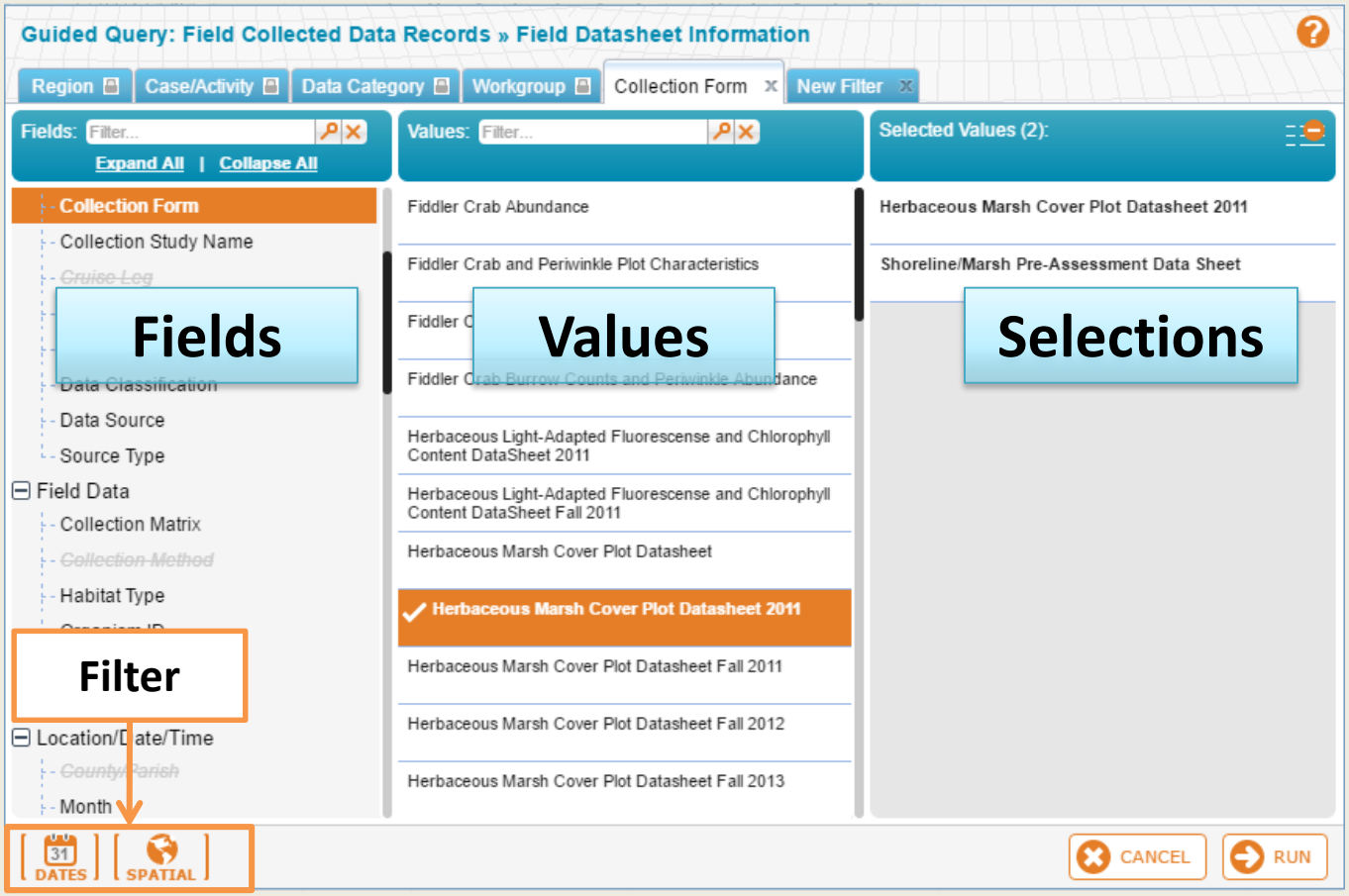
Project Queries

Environmental Data Queries

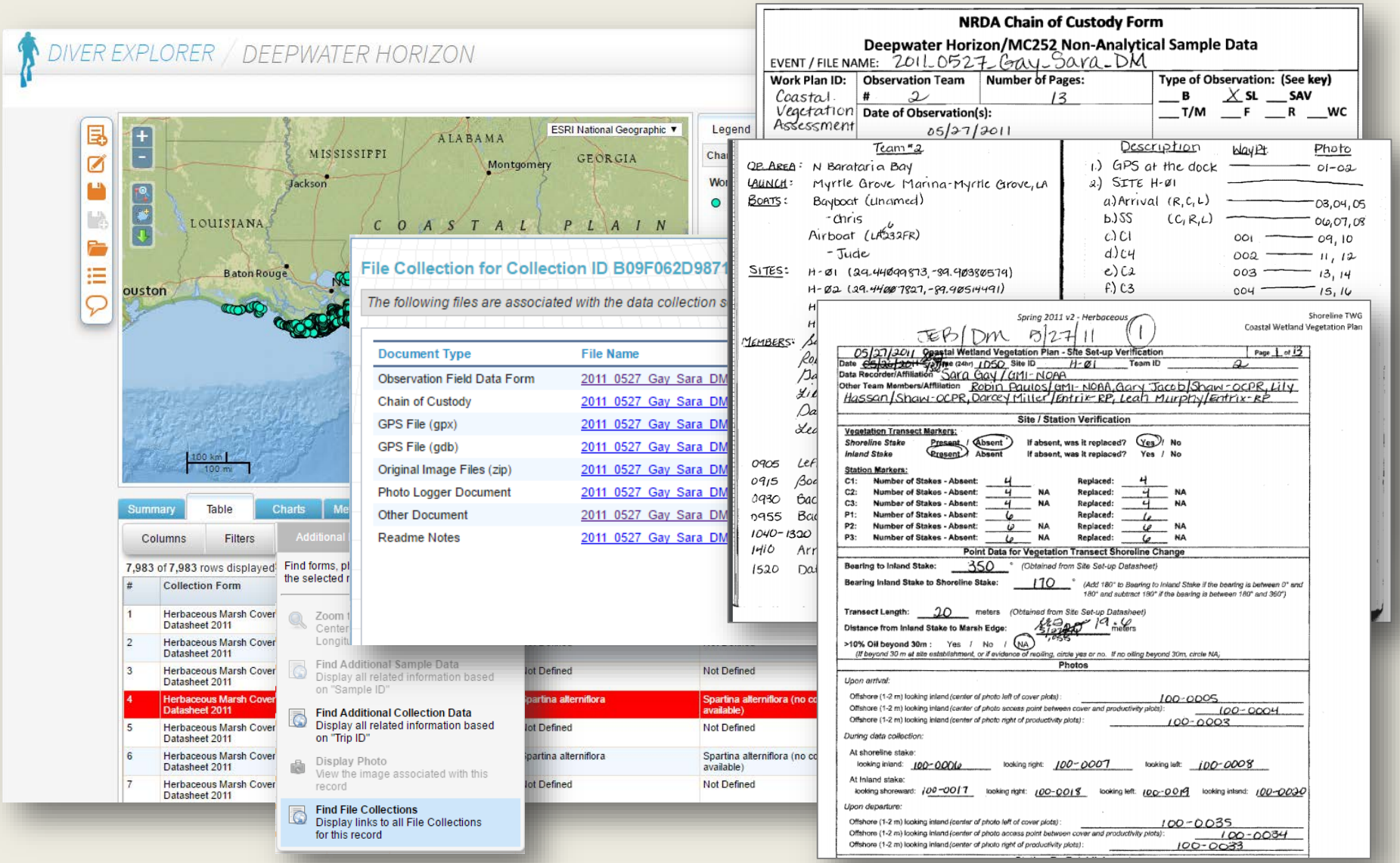


DIVER Explorer

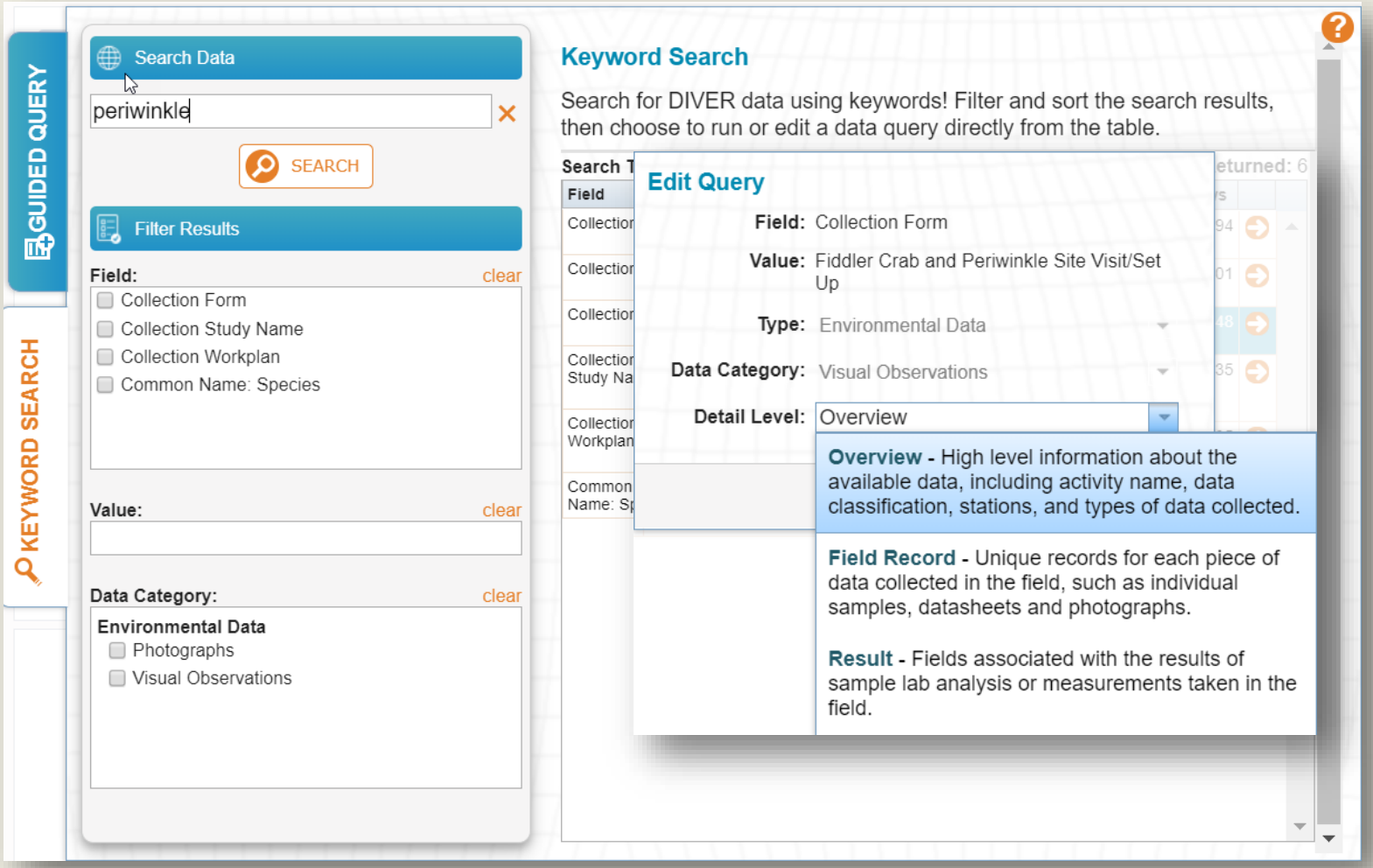
Query Filters

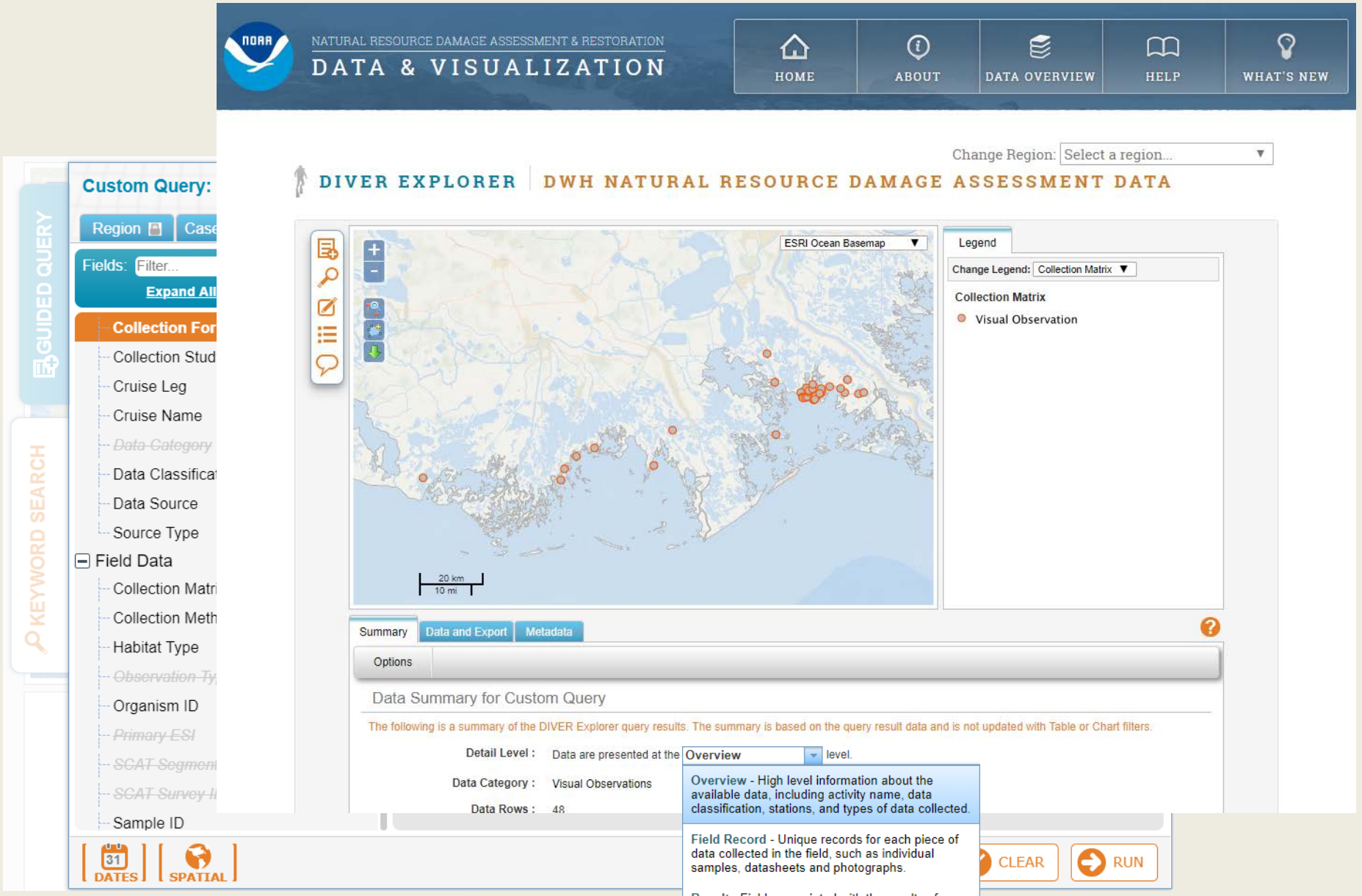


DIVER: Data Access



Keyword Search




NATURAL RESOURCE DAMAGE ASSESSMENT & RESTORATION
DATA & VISUALIZATION
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Change Region: Select a region...
DIVER EXPLORER
DWH NATURAL RESOURCE DAMAGE ASSESSMENT DATA
GUIDED QUERY
KEYWORD SEARCH
Custom Query:
Region
Case
Fields: Filter...
Expand All
Collection For
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Cruise Name
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SCAT Segment
SCAT Survey II
Sample ID
ESRI Ocean Basemap
20 km
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Legend
Change Legend: Collection Matrix
Collection Matrix
Visual Observation
Summary
Data and Export
Metadata
Options
Data Summary for Custom Query
The following is a summary of the DIVER Explorer query results. The summary is based on the query result data and is not updated with Table or Chart filters.
Detail Level : Data are presented at the Overview level.
Data Category : Visual Observations
Data Rows : 48
Overview - High level information about the available data, including activity name, data classification, stations, and types of data collected.
Field Record - Unique records for each piece of data collected in the field, such as individual samples, datasheets and photographs.
Result - Fields associated with the results of sample lab analysis or measurements taken in the field.
DATES
SPATIAL
CLEAR
RUN

DIVER EXPLORER | DWH RESTORATION PROJECTS

NATURAL RESOURCE DA
DATA & V

NOAA manages data associated w
hazardous waste releases, oil spill
nation's coastal and marine resou

Deepwater Horizon Restoration Projects

The restoration projects associated with the Deepwater Horizon oil spill are focused on restoring natural resources in the Gulf of Mexico. These data provide information on locations, project status, and monitoring data. More information...

Search Data in DIVER

Summary
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Number
Summary
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Project Details for Louisiana Oyster Cultch Project

Overview | Components | Activities | As-Builts | Monitoring | Env Compliance | Budget | Contacts | Documents

owned by the Grand Isle Port Commission and leased by LDWF. Louisiana State University plans to construct an additional building at this site prior to construction of the hatchery facility; this building is not part of this Early Restoration Project. The footprint of the hatchery building is proposed to be approximately 8400 sq ft. Parking will be available onsite. Oyster hatchery activities currently housed at the LDWF Research Lab in Grand Isle, Louisiana will all or in part be relocated to the new hatchery building once it is constructed.

Project Modifications:
The above project description was revised from the description provided in the Phase I Early Restoration Plan to reflect that the leaseholder changed from Louisiana State University to the Louisiana Department of Wildlife and Fisheries (2014 Q1).

The above project description was revised from the description provided in the Phase I Early Restoration Plan to reflect a change in the street name of the oyster hatchery facility from 133 Port Drive to 133 LSU Drive (2014 Q3).

The above project description was revised from the description provided in the Phase I Early Restoration Plan to reflect that LSU Sea Grant will provide technical direction for oyster hatchery activities and may choose not to relocate all of the oyster hatchery activities to the new facility (2014 Q3).

Component(s):
- Oyster Cultch Placements
- Oyster Hatchery

Trustee Implementation Group(s):
- Louisiana

Implementing Trustee(s):
- Louisiana Coastal Protection and Restoration Authority (CPRA)
- Louisiana Department of Wildlife & Fisheries (LDWF)

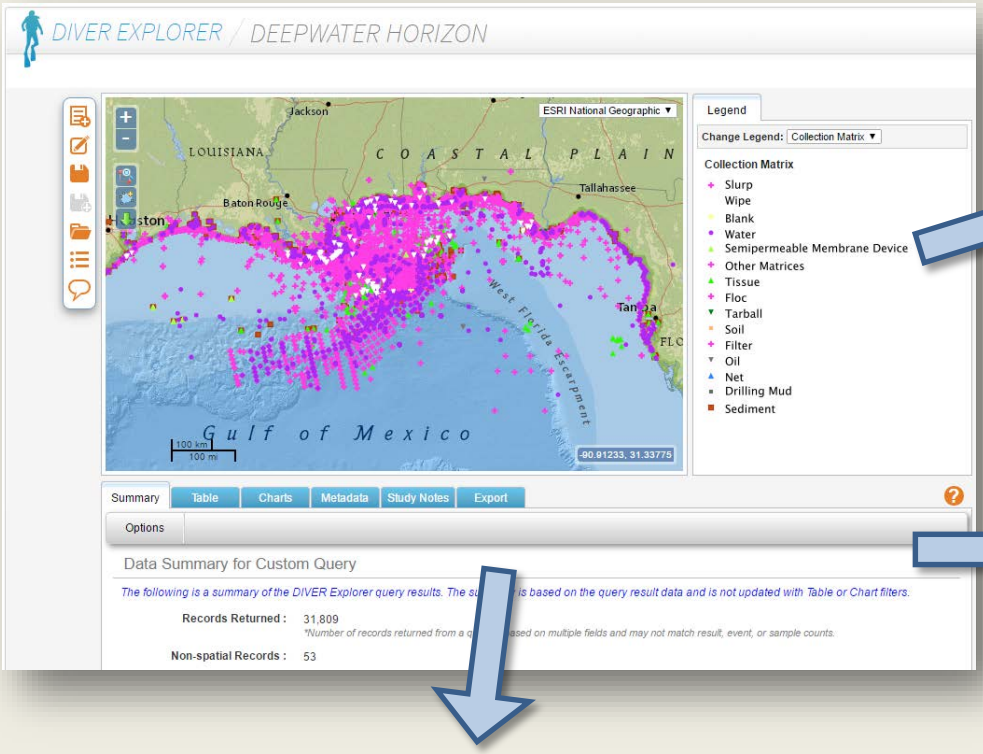
Restoration Type(s):
- Oysters

Restoration Phase:
Early Restoration Phase 1

Site Location(s):

CLOSE

DIVER Explorer: Export Packages



Mapping/GIS

SHP

KML

ERMA®

Metadata & Study Notes

ISO

Data Packages

ISO

Expanded Data Services

ERDDAP
Easier access to scientific data

Additional Data Dashboards

NATURAL RESOURCE DAMAGE ASSESSMENT & RESTORATION

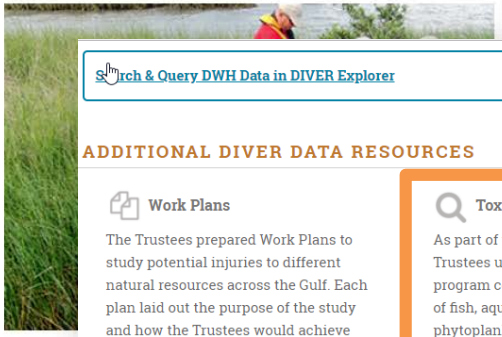
DATA & VISUALIZATION

HOME | ABOUT | DATA OVERVIEW | HELP | WHAT'S NEW

DEEPWATER HORIZON NRDA DATA

On April 20, 2010, an explosion on the Deepwater Horizon MC252 drilling platform killed 11 workers and caused the rig to sink and leak oil into the Gulf of Mexico. The magnitude of this spill is something our nation had not seen before, causing significant impacts to wildlife and the fishing community along the large coastal areas of Louisiana, Mississippi, Texas, Alabama, and Florida.

The Oil Pollution Act authorizes certain federal agencies, states, and Indian tribes—collectively known as natural resource trustees—to evaluate the impacts of the Deepwater Horizon (DWH) oil spill on natural resources. These trustees are responsible for studying the effects of the spill through a process known as Natural Resource Damage Assessment (NRDA). As part of this process, scientists work together to identify potential injuries to natural resources and lost recreational uses, such as boating and beachcombing, resulting from the spill.



DIVER (DATA INTEGRATION VISUALIZATION EXPLORATI

DIVER serves as the public NOAA repository for data related to the DWH Trustees' NRDA ef
the site also includes historical (pre-2010) contaminant chemistry data for the onshore are
chemistry data collected during the response efforts and by the responsible party, British P
public and are accessed through a query and mapping interface called DIVER Explorer.

Categories of Trustee NRDA data include:

- Photographs of the emergency response, the oiled animals, plants, fish, and beaches;
- Telemetry information collected from remote sensing devices such as transmitter data
- Field observations such as notes about the condition of animals found in the spill and e
- Instrument data such as water temperatures and salinity collected during the spill; and
- Sample results of laboratory analysis on tissue, sediment, oil, and water.

Search & Query DWH Data in DIVER Explorer

ADDITIONAL DIVER DATA RESOURCES

Work Plans

The Trustees prepared Work Plans to study potential injuries to different natural resources across the Gulf. Each plan laid out the purpose of the study and how the Trustees would achieve their assessment goals. Study designs reflected input from experienced scientists and resource managers who specialize in studying oil spills and natural resources in the Gulf. Most data collected under these Work Plans are available in DIVER and ERMA, or through the National Centers for Environmental Information archives.

Download Work Plans

Toxicity Studies

As part of the injury assessment, the Trustees undertook a toxicity testing program covering more than 40 species of fish, aquatic invertebrates, phytoplankton, reptiles, and birds. The program tested effects on those coastal and marine creatures from dispersants and DWH oil from the well or the field, including both floating slick oil and oiled sediments collected at different times post-spill. A full review of the program is available as a technical report (Morris et al. 2015). The results of these studies are available to the public.

Search & Export Toxicity Data

Data Packages

In addition to data available through DIVER Explorer, NOAA compiled DWH-related data packages and links to external data sources. These data packages and links cover a wide variety of topics, including raw data from recreational use surveys, links to marine mammal and sea turtle data sources, and instrument data from research cruises.

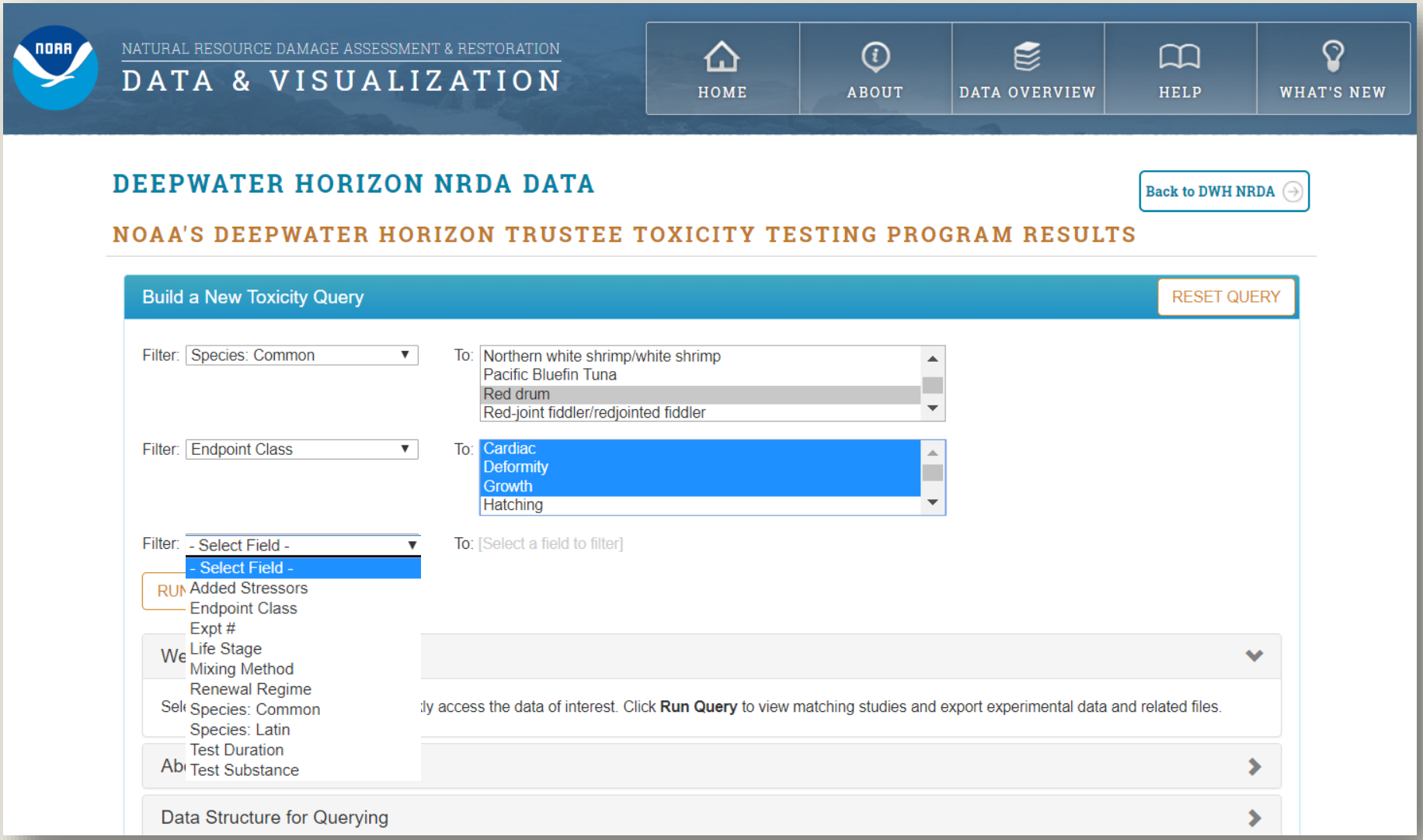
Download Data Packages

RELATED SITES

NOAA's Office of Response and Restoration compiled links to relevant data sources and references regarding the response, assessment, and restoration phases. Data sources include records of the spill trajectories, archive locations for plankton and marine mammal tissue samples, and extensive NOAA photo collections. The site includes a compilation of literature documenting the environmental impacts of the Deepwater Horizon Spill.

Gulf Spill Restoration is a website maintained by NOAA on behalf of the Deepwater Horizon Natural Resource Damage Assessmnt Trustees. The site provides updates on the Trustees assessment and restoration activities. The Trustees are

Toxicity Data Dashboard



Toxicity Data Dashboard

DEEPWATER HORIZON NRDA DATA

Back to DWH NRDA

NOAA'S DEEPWATER HORIZON TRUSTEE TOXICITY TESTING PROGRAM RESULTS

Query Results | < EDIT QUERY | EXPORT DATA FOR THESE STUDIES

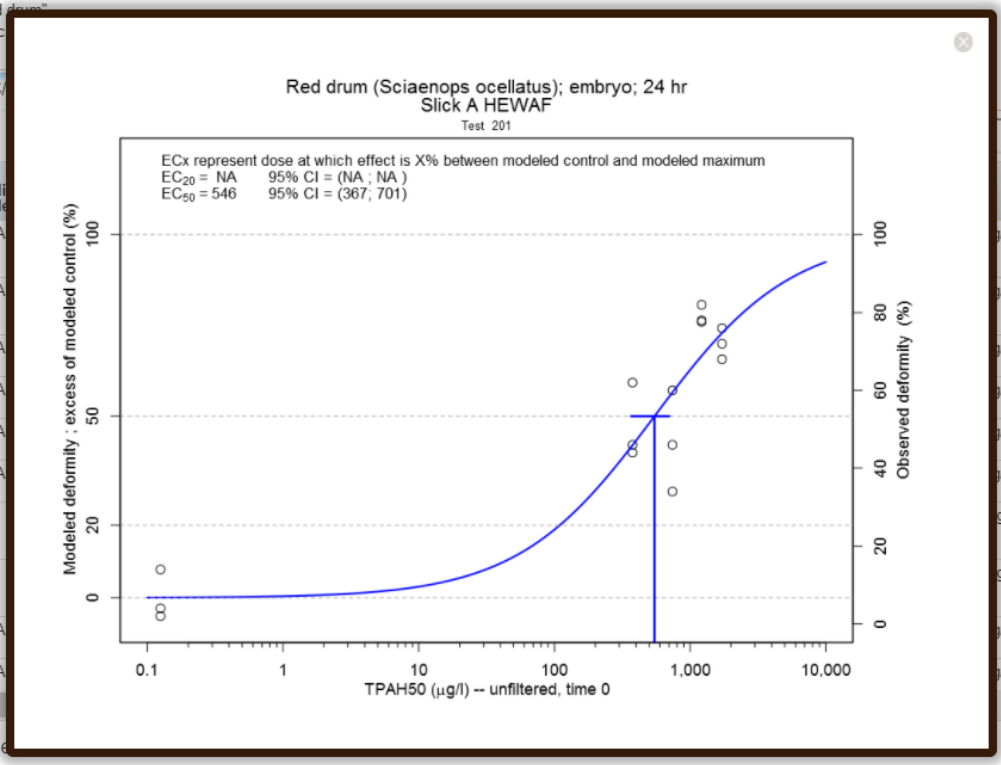
Species: Common = "Red drum"
Endpoint Class = "Cardiac

Study Summary | EC/

Expt #	Test Substance	Mi Me	Parameter Units	Parameter Analyte	Qua Coc
200	Weathered Source (Oil)	HEWA	g/L	toxpah50	INT MA SUF
200	Weathered Source (Oil)	HEWA	g/L	toxpah50	INT MA
201	Slick A (Oil)	HEWA	g/L	toxpah50	Not Def
201	Slick A (Oil)	HEWA	g/L	toxpah50	Not Def
202	Slick A (Oil)	CEWA	g/L	toxpah50	MA
202	Slick A (Oil)	CEWA	g/L	toxpah50	MA
204	Dispersant (COREXIT 9500)	DISP	g/L	corexit	Not Def
204	Dispersant (COREXIT 9500)	DISP	g/L	corexit	Not Def
636	Slick A (Oil)	HEWA	g/L	toxpah50	AVC
636	Slick A (Oil)	HEWA	g/L	toxpah50	AVC

Showing 1 to 53 of 53 e

Note: Reported statistical results are for experiments that were designed for concentration-response analysis. Some experiments produced data that were not amenable



DEEPWATER HORIZON NRDA DATA

Back to DWH NRDA

NOAA'S DEEPWATER HORIZON TRUSTEE TOXICITY TESTING PROGRAM RESULTS

Export Data

< EDIT QUERY | < BACK TO RESULTS

Species: Common = "Red drum"
Endpoint Class = "Cardiac | Deformity | Growth"

Select Download Types all none

Results

- [x] Treatment mean results for each available time point and endpoint (bio_mean.csv)
- [ ] Individual replicate results for each available time point and endpoint (bio_rep.csv)
- [x] Effect and Lethal Concentrations (EC/LCx) from modeled concentration-response curve (bio_stat.csv)
- [ ] Details of modeled concentration-response curve (bio_stat_detail.csv)
- [x] Matched bioassay and analytical chemistry results (bio_chem.csv)
- [ ] Analytical chemistry and calculated results (full_chem.csv)

Supplemental Data

- [ ] Field-collected sample information (field_samp.csv)
- [ ] Test conditions (test_cond.csv)
- [ ] UV exposure doses (uv_doses.csv)
- [ ] Water quality measurements (water_quality.csv)
- [ ] Chemistry notes (chem_notes.csv)

Metadata

All exports contain the following files for selected studies: Study Notes (study_notes.txt), Study References (study_ref.csv), Field Definitions (field_definitions.csv), Qualifier Definitions (qual_definitions.csv), and Metadata (DWH_Tox_ISO19115.html and DWH_Tox_ISO19115.xml).

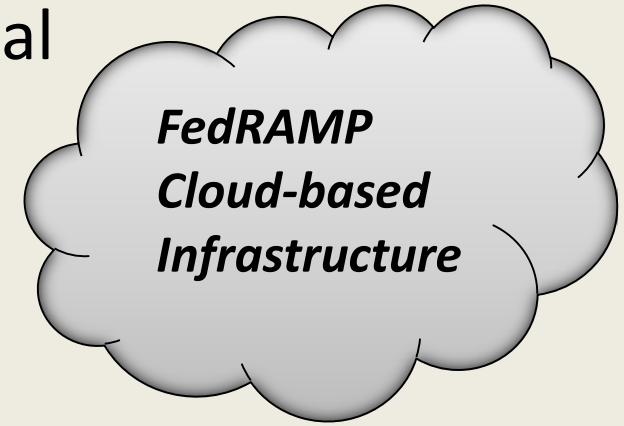
EXPORT DATA

In process and next steps

- Transitioning data holdings to NOAA NCEI Archive
  - Data Attribution (data source- data packages)
  - Digital Object Identifiers (discrete data package)
- Expanding Data Models and data exchange
  - Restoration Monitoring Data
  - Biological data model and templates
  - Linkage with other data systems (e.g. GRIIDC) and data models (e.g. IOOS; Marine Mammals; Telemetry)
- Creating Data Services – exposing millions of environmental data records directly (ERDDAP)

DIVER Tools and Processes (nerd-lite slide)

- **ETL Process:** Pentaho Analytics
  - Data Integration; Schemas; PostgreSQL/PostGIS;
- **Portal:** Liferay; PostgreSQL; Drupal
- **Explorer Query Tool**
  - Custom Java API and query engine
  - MapServer/OpenLayers
  - Dojo Toolkit Javascript library
  - MDX query language – Pentaho Community Edition
  - PostgreSQL/PostGIS (AWS RDS);
  - Redshift (AWS)



Acknowledgements (partial!)

- Amy Merten: former Spatial Data Branch Chief
- Dan Hudgens, Jim Anderton, Neal Etre, Ann Jones: IEc Inc.
- DIVER Development Team (DWH and beyond)

  Kate Doiron & Jerry Bower (Lead Developer)
- NMFS Restoration Center

  Marti Goss, Mike Peccini, Jamey Redding
- Spatial Data Branch: NOS Office of Response and Restoration

  Matt Dorsey, Nick Eckhardt, Mike Greer, Jay Coady, Robb Wright, Jill Bodnar, George Graettinger, Rachel Fox, Michele Jacobi, Zach Winters-Staszak, Kevin Kirsch
- DWH Scientists, Principal Investigators and DWH NRDA Trustees and partners who contributed data, queried data, and made this possible.