Deep Water Horizon Plankton Assessment Archive (DWHPAA): What can it do for you?

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The Deepwater Horizon Oil spill and the Natural Resource Damage Assessment response:

On April 20, 2010, *Deepwater Horizon* Macondo oil well drilling platform exploded off the coast of Louisiana in the Gulf of Mexico (GOM) starting the largest marine oil spill in U.S. history. The spill lasted for 87 days resulting in millions of barrels of oil being released into the Gulf of Mexico. In response to the spill, the National Oceanic and Atmospheric Administration (NOAA) and its trustees launched the National Resource Damage Assessment (NRDA) to tackle the spill and assess the damage caused. Within a month, more than a dozen technical working groups were formed to assess the impacts of the oil and dispersants on natural resources like wetlands, fish, and birds. One such working group was the Water Column working group, which evaluated damage from the oil as it travelled from the wellhead to the surface.

Plankton sampling:
Extensive sampling of the northern Gulf of Mexico began immediately after the spill and continued on through 2011. Samples were taken across the GOM with the majority taken near the wellhead. Gear types used for sampling include bongo nets, neuston nets, manta nets, and the Multiple Opening/Closing Net and Environmental Sensing System (MOCNESS). Plankton samples were processed for ichthyoplankton, fish eggs, and decapod larvae according to protocols based on gear type.
Specimens were identified to the lowest taxonomic level possible based on the currently available literature. Measurements were also taken of all target specimens per protocols. Debris and larger zooplankton (jellyfishes, salps, etc…) were also removed but not identified.

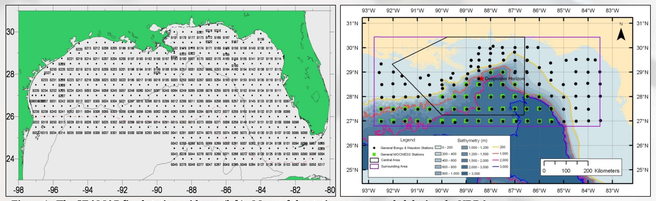

Figure 1. The SEAMAP fixed station grid map (left) . Many of the stations were sampled during the NRDA surveys. Right, a map showing generalized stations for bongo & neuston surface and deep 1 meter MOCNESS sampling, and two geographic regions (Central Area and Surrounding Area). The black box shows high priority stations most affected by the spill.
Left, from SEFSC website, Right, from NRDA documents

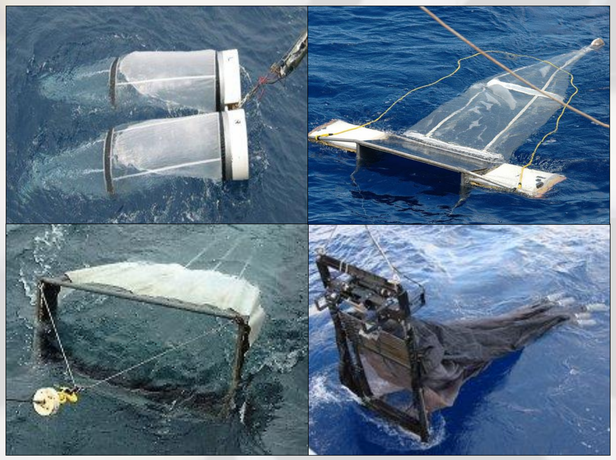

Figure 2. Photos of the gear types used during the NRDA plankton sampling . Top left: Bongo nets; Top right: Manta net; Bottom left: Neuston net; Bottom right: MOCNESS nets
Photos form NOAA.

What is the DWH Plankton Assessment Archive?

The DWHPAA is the culmination of the plankton research conducted under the National Resource Damage Assessment (NRDA) Water Column project in response to the Deep Water Horizon oil spill in 2010. At the end of the NRDA project, as a result of the BP settlement, the samples were signed over to the custody of the NOAA NMFS Mississippi Laboratory, where they are archived in a storage facility at the Stennis Space Center for long term storage and use.
The DWHPAA houses the entirety of the NRDA Plankton project which contains over 130,000 samples from 19 different surveys. In addition to the NRDA plankton samples, the DWHPAA also houses samples from the NRDA Sargassum project and a portion of the NRDA Nekton project.

The archive contains 1100 different taxa as they currently stand as identified. Many specimens are left at a higher taxonomic levels (family, tribe, etc.) due to protocols, lack of larval descriptions, uncertainty, or damage.

Plankton samples	**~120,000 fish larvae, fish eggs, and decapod crustacean larvae.**
Sargassum samples	**~4,500 fish larvae, decapod crustacean larvae, and encrusting invertebrates.**
Nekton samples	**~2,500 fish**

Example Taxon	**Number of vials available**	**Number of specimens available**
Genus *Thunnus:* Includes 4 species	727 lots	4503 specimens
Epinephelinae: Includes 3 tribes; 6 species	318 lots	614 specimens
Genus *Lutjanus:* Includes 3 species	361 lots	923 specimens
Genus *Pristipomoides*:	131 lots	466 specimens
Genus *Rhomboplites:*	187 lots	364 specimens
Family Portunidae: includes 6 genera in multiple life stages	3323 lots	62479 specimens
Family Penaeidae: Includes 9 genera in multiple life stages	3634 lots	32626 specimens
Family Palinuridae: Includes 2 genera in phyllosoma life stage	108 lots	286 specimens

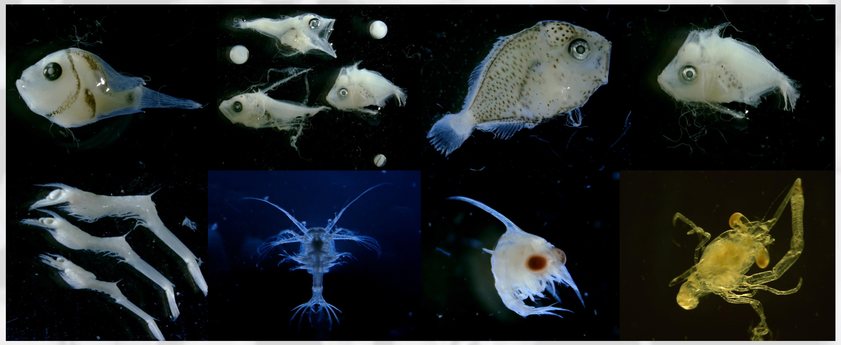

Figure 3. Examples of specimens that are housed in the archive. Photos courtesy of SEAMAP collections.
Photos Top row: Ceratiidae, multiple fish larvae and eggs, Carangiidae, Boar fish; Bottom row: *Parapenaeus* sp. in multiple stages, protozoea stage of a penaeid shrimp, Portunidae zoea, Parthenopidae megalope.

What Can the DWH Plankton Assessment Archive do for you?

Loans

Our goal is to provide specimens and data to researchers for furthering the understanding of the zooplankton community in the northern Gulf of Mexico. We will loan out specimens to researchers as requests are submitted. Requests can include specific taxa, locations (station, lat/long, area), time of day/month/year, and sampling method and/or preservative. The loan request must include information on any destructive or damaging analysis of the specimens that may be used for research purposes (i.e., clearing/staining, otolith removal, tissue sample for molecular work, stomach analysis). This request will then be shared with the DWHPAA loan committee for discussion on whether or not the specimens should be used for the analysis. Because many of the collections were made in deep GOM water, there are rare specimens not normally collected by zooplankton researchers. Value of destroying such specimens will be discussed by the committee before the loan will be authorized.

What is required to receive a sample loan?

1) Write to one of our five curators with details about what types of samples you are interested in, or you can visit our website's general database information to see what we have available (launching later this summer).

2) Once we have established what is available, we will supply you with a loan agreement form. Simply sign saying that we have selected the appropriate specimens and that you agree to the terms of the loan.

3) It will be the responsibility of the requestor to cover all shipping costs.

4) We ask you provide the DWHPAA with any publications that used loaned specimens, as these papers are linked with the specimens in our database.

Identifications

In need of someone to identify or sort a sample for you? The DWHPAA staffs taxonomists who participated in the original analysis of the NRDA plankton samples and are skilled in taxonomic identifications of ichthyoplankton and invertebrates. We want to help you conduct the best science possible so let us know how we can help!

Please feel free to contact the archive at nmfs.sec.mslabs.dwhpaa@noaa.gov with any questions or sample requests!

ACKNOWLEDGEMENTS: We would like to thank all those that have assisted in the undertaking of this project , with special thanks going to Dan Hann and Jennifer Kunzelman of the NOAA Assessment and Restoration Office for their time and efforts in securing funding and orchestrating sample transfers. Special thanks also go to all those who helped at the NOAA-NMFS Mississippi Labs with the movement, organization, and archiving of the NRDA samples. We would also like to acknowledge all those who were part of the sampling and analysis process. Without those countless scientists who collected, sorted, and identified these samples, none of this would be possible and we hope that this collections honors your legacy of effort in the DWH oil spill.