

**Deepwater Horizon Oil Spill (DWHOS)
Water Column Technical Working Group**

**Addendum to:
NRDA Spring 2011 Epipelagic Plankton Bongo/Neuston Sampling
Cruise Plan**

Sampling Vessel: M/V *Bunny Bordelon*

May 23, 2011

Prepared by:

Deborah French-McCay (ASA), Eileen Graham (ASA) and David Wells (NOAA) on behalf of the Trustees

Reviewed by:

Dan Hahn, John Quinlan (NOAA) and Amanda Vincent (LA) on behalf of the Trustees
William Graeber, Jeffery Simms (Cardno ENTRIX) on behalf of BP

Original Cruise Dates (Legs 1-3)

April 16 – May 25, 2011

Additional Cruise Dates (Leg 4)

June 1 – June 14, 2011 or completion of original sample locations, whichever comes first

Except as amended herein, all provisions of the NRDA Spring 2011 Epipelagic Plankton Bongo/Neuston Sampling Cruise Plan remain in effect.

Background

The signed cooperative NRDA Spring 2011 Epipelagic Plankton survey plan is to sample a subset of the SEAMAP stations within the NRDA region of interest using bongo and neuston nets. We have targeted stations in the SEAMAP program grid not to be sampled by the National Marine Fisheries Service, Southeast Fisheries Science Center (SEFSC) in their planned spring SEAMAP survey aboard the *Gordon Gunter* (see the NRDA Spring Epipelagic Plankton Cruise Plan for station locations and description of the work planned, Figure 1 is a copy of Figure 4 from that plan).

Justification

The Epipelagic Spring 2011 Plankton Sampling Plan was originally scheduled to be conducted aboard the R/V *McArthur II* within the constraints of a maintenance period required to begin on May 25, 2011. Due to NRDA-wide needs for vessels, this work was reallocated to the M/V *Bunny Bordelon* before the finalization of the plan. Because the *Bunny Bordelon* does not have the same maintenance period required, and because weather has already slowed the collection of data, it is proposed that the cruise plan be extended to include a fourth leg: June 1-14. This fourth leg will be shortened if all stations are sampled prior to the 14th of June.

The *Bunny Bordelon* extension is proposed to account for sampling days lost due to weather (neuston sampling cannot be completed in marginal sea states), mechanical delays and insufficient time proposed in the original work plan to complete sampling at the agreed-upon stations.

Schedule

The M/V *Bunny Bordelon* departed the Bordelon Marine yard in Houma, LA on April 16, 2011 to conduct the NRDA Spring Epipelagic Plankton Bongo & Neuston Plankton survey. Weather and other safety considerations permitting, the original cruise schedule was that it be conducted in 3 legs: leg 1 April 16 – April 26, leg 2 April 30 – May 11, leg 3 May 15 – May 24.

The *Bunny Bordelon* has been able to collect data at 2-3 stations per day based on a variety of factors, most importantly the distance between stations. On Legs 1 and 2, they sampled 30 stations, leaving 57 stations remaining to be sampled to finish the plan. Two days at sea (DAS) were lost on leg 1 due to weather; 3 DAS were lost on leg 2 due to mechanical issues that required they return to dock for repair. At 2-3 stations a day (estimate from leg 1), 19-28 DAS would be required to complete the work during leg 3 and this addendum (57 stations).

On leg 2 it was learned that sampling at 2 stations per day (with each station sampled twice, both day and night, so 4 samplings per day) is the maximum rate when at the offshore stations where the distance between them is larger. Because of the time constraints it was decided to reduce sampling at each station (only sample once, either day or night, maintaining the exclusion +/-30 minutes around sun rise/set) and increase the spatial coverage of sampling. The cruise track will now reflect sampling at each station once, EXCEPT at locations where the last day sample is conducted. At these locations the boat will hold on that station while the sun sets and repeat sampling at night (there by attaining a day/night pair) at those stations. The boat will then continue along the station path sampling once per station until the following afternoon, where it will hold station at the last location sampled before dusk and then repeat after dark. Thus, the boat will repeat sample in day-night paired stations only as the last day/first night samplings. This will allow 3-4 (5 if travel distances are small) stations to be sampled each 24-hour cycle. Therefore, the proposed schedule of 22 DAS (i.e., 10 remaining as per the original plan plus 12 DAS added by the extension) would be sufficient to complete the stations.

Below is a revised schedule that should allow the sampling to be completed.

Leg 1: April 16-24, 7 DAS

Leg 2: April 30-May 12, 11 DAS

Leg 3: May 13-24, 10 DAS

Leg 4: June 1-14, 12 DAS

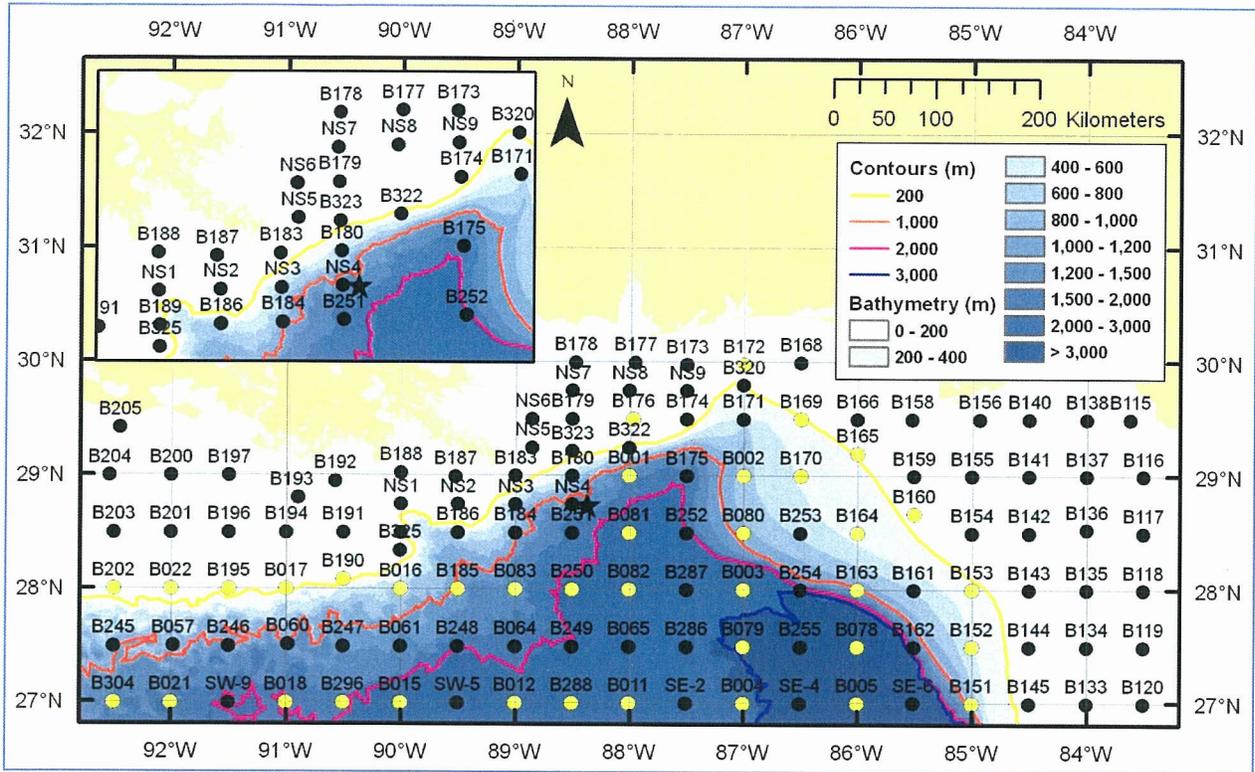


Figure 1. NRDA spring 2011 plankton stations (black circles) and SEAMAP spring 2011 cruise for the *Gordon Gunter* (yellow circles).

Table 1. Plankton station locations to be sampled as part of the NRDA Spring 2011 plan. Black circles in Figure 1. Legs 1 & 2 are stations actually sampled, those for Leg 3 are planned (31 stations). The 26 stations noted as 4a (first priority) or 4b (second priority) would be sampled in Leg 4.

Station Number	Longitude (W)	Latitude (N)	Sampled?
B057	-92	27.5	Leg 2
B060	-91	27.5	Leg 2
B061	-90	27.5	Leg 2
B064	-89	27.5	Leg 2
B065	-88	27.5	Leg 3
B115	-83.62	29.5	4a
B116	-83.5	29	4a
B117	-83.5	28.5	4a
B118	-83.5	28	4a
B119	-83.5	27.5	4a
B120	-83.5	27	4b
B133	-84	27	4b
B134	-84	27.5	4a
B135	-84	28	4a

Station Number	Longitude (W)	Latitude (N)	Sampled?
B136	-84	28.53	4a
B137	-84	29	4a
B138	-84	29.5	4a
B140	-84.5	29.5	4a
B141	-84.5	29	4a
B142	-84.5	28.5	4a
B143	-84.5	28	4a
B144	-84.5	27.5	4a
B145	-84.5	27	4b
B154	-85	28.5	Leg 3
B155	-85	29	Leg 3
B156	-84.93	29.5	Leg 3
B158	-85.52	29.5	Leg 3
B159	-85.5	29	Leg 3
B161	-85.5	28	Leg 3
B162	-85.5	27.5	4a
B166	-86	29.5	Leg 3
B168	-86.5	30	Leg 3
B171	-87	29.5	Leg 3
B173	-87.5	30	Leg 3
B174	-87.5	29.5	Leg 3
B175	-87.5	29	Leg 3
B177	-88	30	Leg 3
B178	-88.5	30	Leg 3
B179	-88.5	29.5	Leg 3
B180	-88.5	29	Leg 3
B183	-89	29	4a
B184	-89	28.5	Leg 1
B186	-89.5	28.5	Leg 1
B187	-89.56	28.96	Leg 1
B188	-90	29	Leg 1
B189	-90	28.5	Leg 1
B191	-90.5	28.5	Leg 1
B192	-90.55	28.9	Leg 1
B193	-90.88	28.78	Leg 1
B194	-91	28.5	Leg 1
B196	-91.5	28.5	Leg 1

Station Number	Longitude (W)	Latitude (N)	Sampled?
B197	-91.5	29	Leg 1
B200	-92	29	Leg 2
B201	-92	28.5	4a
B203	-92.5	28.5	4a
B204	-92.54	29	Leg 2
B205	-92.45	29.42	Leg 2
B245	-92.5	27.5	Leg 2
B246	-91.5	27.5	Leg 2
B247	-90.5	27.5	Leg 2
B248	-89.5	27.5	Leg 2
B249	-88.5	27.5	Leg 3
B251	-88.5	28.5	Leg 3
B252	-87.5	28.5	Leg 3
B253	-86.5	28.5	Leg 3
B254	-86.5	28	4a
B255	-86.5	27.5	4a
B286	-87.5	27.5	Leg 3
B287	-87.5	28	Leg 3
B320	-87	29.8	Leg 3
B322	-88	29.25	Leg 3
B323	-88.5	29.22	Leg 3
B325	-90	28.34	Leg 1
NS-1	-90	28.75	Leg 1
NS-2	-89.5	28.75	Leg 1
NS-3	-89	28.75	Leg 1
NS-4	-88.5	28.75	Leg 3
NS-5	-88.85	29.25	Leg 3
NS-6	-88.85	29.5	Leg 3
NS-7	-88.5	29.75	Leg 3
NS-8	-88	29.75	Leg 3
NS-9	-87.5	29.75	Leg 3
SE-2	-87.5	27	4b
SE-4	-86.5	27	4b
SE-6	-85.5	27	4b
SW-5	-89.5	27	Leg 2
SW-9	-91.5	27	Leg 2

Personnel for M/V Bunny Bordelon

- Chief Scientist
- Alternate Watch Lead
- 2 NOAA Data Managers
- 4 NOAA Samplers
- ENTRIX Lead
- 2 ENTRIX Representatives

Budgeting

The Parties acknowledge that this budget is an estimate, and that actual costs may prove to be higher due to a number of potential factors. As soon as factors are identified that may increase the estimated cost, BP will be notified and a change order describing the nature and cause for the increase cost in addition to a revised budget will be provided for BP’s consideration and review.

Additional Costs:

The costs for additional vessel-days are as follows. These costs are in addition to the original budget in the signed plan.

Budget Chart #1. Additional NOAA labor costs.

Field Survey Costs	Hrs/Days/Trips	Day/Hr Rate	Total
NOAA Labor (days):			
NOAA Chief Scientist	█	█	\$35,000
NOAA Alternate Watch Lead	█	█	\$28,000
4 Plankton/Net handlers			\$33,000
2 Data Manager	█	█	\$16,500
Travel	1	\$8,000	\$8,000
TOTAL			\$120,500

Days/Trips based on 14 potential cruising days plus mobilization for Leg4. Labor is estimated cost and hours.

Budget Chart #2. Additional vessel-related costs.

Vessel Costs	Total
Mobilization Costs	\$73,500
Vessel Costs	\$645,954
CSA Fleet Mgmt / Shore Support	\$73,500
Total Estimated Cost	\$792,954

Fuel & Lube estimates included in Vessel Cost

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Cruise Dates: April 16 – May 25, 2011**

May 23, 2011

Approvals

Approval of this work plan is for the purposes of obtaining data for the Natural Resource Damage Assessment. Parties each reserve its right to produce its own independent interpretation and analysis of any data collected pursuant to this work plan.

BP Approval

Robin Bullock
Printed Name

[Signature]
Signature

7/19/11
Date

Federal Trustee Approval

Lisa DiPinto
Printed Name

[Signature]
Signature

6/20/2011
Date

Louisiana Approval

KAROLION DEKUSSCHER
Printed Name

[Signature]
Signature

7/27/2011
Date

FOR KOLAND SOLDIER