

(Bird Study #1)

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and

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Obviously mortality of birds occurs from causes other than oil spills and this is referred to as "background" mortality. It is important to estimate this rate because the background mortality ultimately needs to be separated from spill-caused mortality. One approach to estimating background is to sample beaches for carcasses before effects of oil are detected. Entrix conducted surveys on many beaches during the second week of May to document numbers of carcasses of various species that had accumulated on beaches in this region. It is also possible that beach surveys in part of the study area currently relatively distant from the oil can still be used for background mortality.

The specific objective of this plan is to estimate the rate of spill-related carcass deposition throughout the spill area. Since carcass deposition continues over time, periodic surveys of the same beaches is used to estimate the deposition curve for carcasses over the life of the spill. The first protocol listed here is for these beach surveys. Appendix A contains a protocol for localized studies designed to estimate rates of scavenging and loss of carcasses to rewash (i.e., carcass persistent rate), and Appendix B addresses estimating the detection probability of carcasses on beaches (i.e., searcher efficiency).

STUDY AREA

The study area is the coastal shoreline area that could be affected by the oil spill. Currently this is defined as shoreline with beaches between the eastern edges of the Mississippi Delta to just south of Tallahassee, Florida (Figure 1). This area could expand based on the future trajectory of the oil.

STUDY DESIGN FOR CARCASS SURVEYS

Sampling Universe.—Initially, samples will be selected from all beaches, including barrier islands, within the study area that are not placed off limits because of disturbance to nesting birds or breeding turtles, sensitive plants, military security concerns or beaches that are groomed by resorts, or other sensitive areas as delimited by land management agencies.

Target Population.—All species of birds that occur in the vicinity of the oil spill would potentially be found on beaches. Specifically all dead birds observed will be recorded on each beach surveyed.

areas within military bases, and those in National or state wildlife refuges will require consultation with those agencies to identify sensitive areas that should not be surveyed, to acquire appropriate permits, and to determine if crews need to be accompanied by agency personnel during surveys.

Stratification. — Post stratification will be considered after evaluating difference among types of beaches and geographic locations.

Sample Selection. — Sample beaches will be selected with a systematic random approach and implemented by randomly selecting a start point within the sampling universe and selecting every other beach segment in both directions to the edges of the sampling universe.

Sample Size. — Approximately 50% of the available segments (those not identified as off limits).

Data Collection.—Crews of two will search sample beaches on foot by zigzagging to get complete coverage (if carcasses are found above the wrack line they can be collected, but not counted as if they are in the sample unit—just note in comments on the form that they were out of the plot). Personnel will wear appropriate personal protective equipment when handling wildlife: at a minimum, disposable gloves (latex or nitrile are preferred) and dedicated clothing will be worn on oiled beaches. Each carcass will be identified to species if possible, described as specified on the attached form (Attachment 1) and bagged with other carcasses from the particular beach (be sure to label the bag with location and date). These bags will be turned into the appropriate wildlife intake center using methods recommended by the wildlife recovery unit. Initially selected beaches would be surveyed every other day but carcass persistence studies (see below) might serve to modify the sampling schedule to less frequent.

Survey Frequency and Duration.—Initially beaches will be surveyed every 3 days but this interval may be altered if the carcass persistence study (see below) indicates that less frequent sampling is adequate. Sampling will be initiated as soon as possible and continue until it is agreed that the effects of the oil have subsided.

Data Analysis.—Data will be collected in a manner that will support the Beach and Bird Model, if that modeling approach is selected.

ATV Trailers*	\$7,500
ATVs*	\$40,200
Samsung Digital Camera w/ GPS *	\$4,200
Garmin E-Trex H GPS Unit*	\$3,500
AA Batteries-24 pk	\$240
Paper: Waterproof	\$480
Gas for ATVs Cost/Gallon	\$450
Freezer*	\$1,000
Field Expendables: Tags, Gloves, Bags, Writing Instruments, Stakes, etc.	\$4,000
Backpacks*	\$1,540
Safety Equipment for ATV*	\$1,500
Total	\$64,610

*Expected One time purchase depending on duration of spill and need. Additional items could be needed if/when study is expanded.

These costs are estimated for approximately one month of implementation assuming 10 teams. Additional equipment will be necessary depending upon duration and extent of data collection period.

The bird injury group currently expects BP to purchase equipment directly.

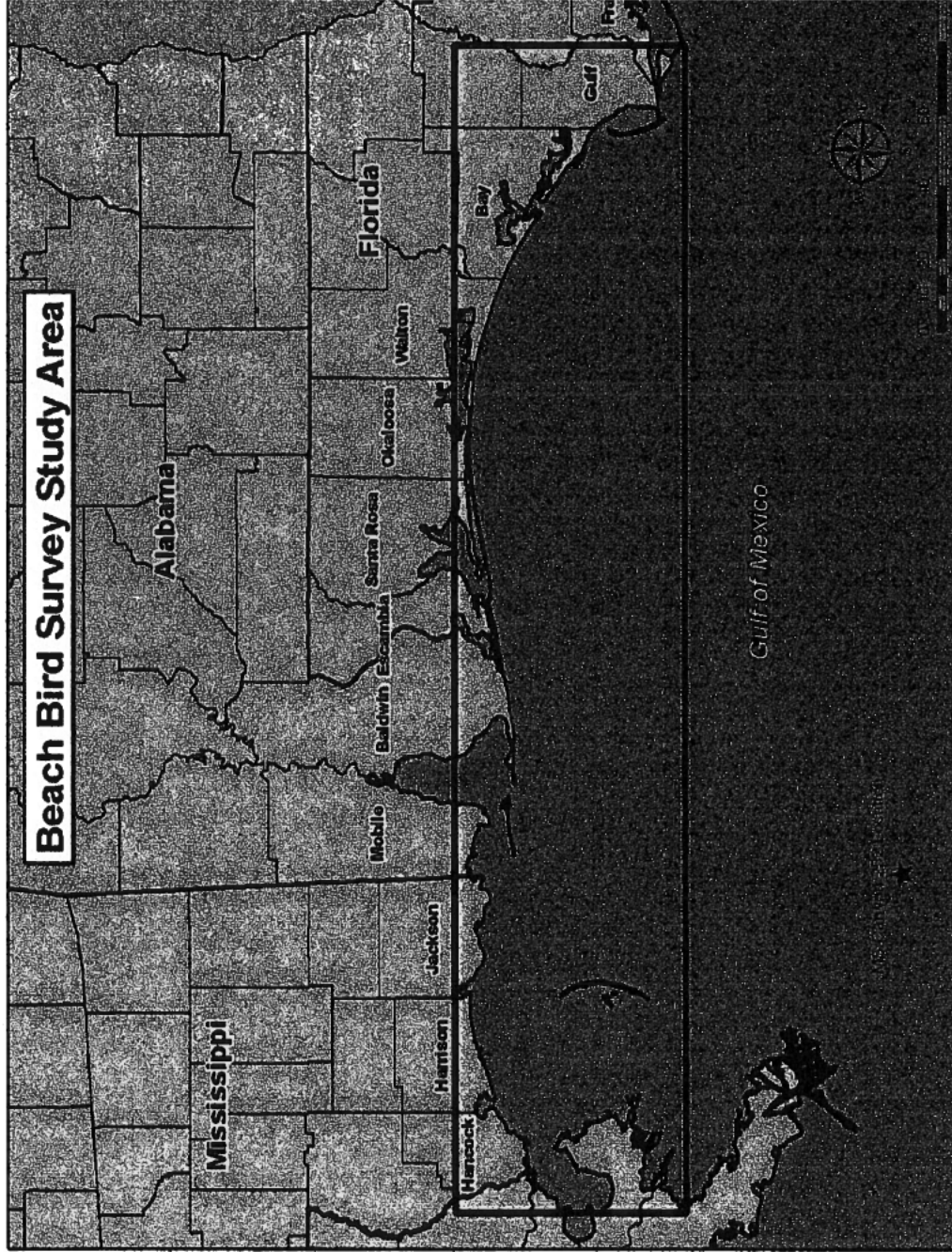


Figure 1: Beach bird survey study area associated with the Mississippi Canyon 252 Incident

LIVE / DEAD BIRDS COLLECTED (one bird per line; use additional sheets if necessary)

[illegible]

⁶Age: HY = Hatch Year JUV = Juvenile AD (or blank) = Adult

Date Entered:

previously archived from current background mortality studies, obtained from rehab centers, and from frozen specimens previously salvaged by resource agencies. Birds that had been euthanized using chemical agents other than inhalant anesthetics will not be placed on beaches, nor will specimens from disease-related wildlife mortality events. This persistence study will be initiated after a sufficient number of carcasses are accumulated.

Site Selection.—Study sites will be randomly chosen from the sample of beaches selected above. The number of beaches and replicate trials will be based on the number of carcasses available, and ideally will be continued throughout the period when mortality is occurring from the spill and across the geographic extent of the affected areas. If possible, the same species found in the spill area will be used in the persistence study. If sufficient numbers of carcasses from local carcasses are not available, similar-sized carcasses from non-local species will be used.

Sample Size.—Each trial will contain at least 30 carcasses, ideally with equal numbers for each of three size classes (e.g., small shorebirds and seabirds, medium seabirds and ducks, large waders and seabirds). Carcasses will be deployed in densities similar to those found on beaches in recent surveys. For instance if the density of carcasses in early surveys is 10 birds per km of beach, this density would be deployed over about 3 km of beach. The number of trials will depend upon the number of available carcasses, but at least 5 trials should be conducted during the study. The first trial should occur early in the spill event to help inform the interval of beach carcass searches which should be no longer than the persistence of at least some of the carcasses from the previous search.

Carcass Placement.—Carcasses used in the persistence study will be uniquely marked and placed on beaches scattered from just above the water line to the high-high tide line. Each carcass will have a small numbered plywood piece placed under it. The plywood will be smaller than the carcass do preclude attracting the attention of scavengers. If carcasses disappear during the study but the board remains, a scavenger is suspected. If the board and carcass disappear, the carcass likely re-washed (see Fig. 2.1).

Data Collection.—Beaches with carcasses will be checked daily until all carcasses are removed or until no removal occurs for 3 consecutive days. Data will be recorded on the persistence form (see Attachment 2).

Data Analysis.—If persistent rates are calculated, they will be calculated using existing methods.

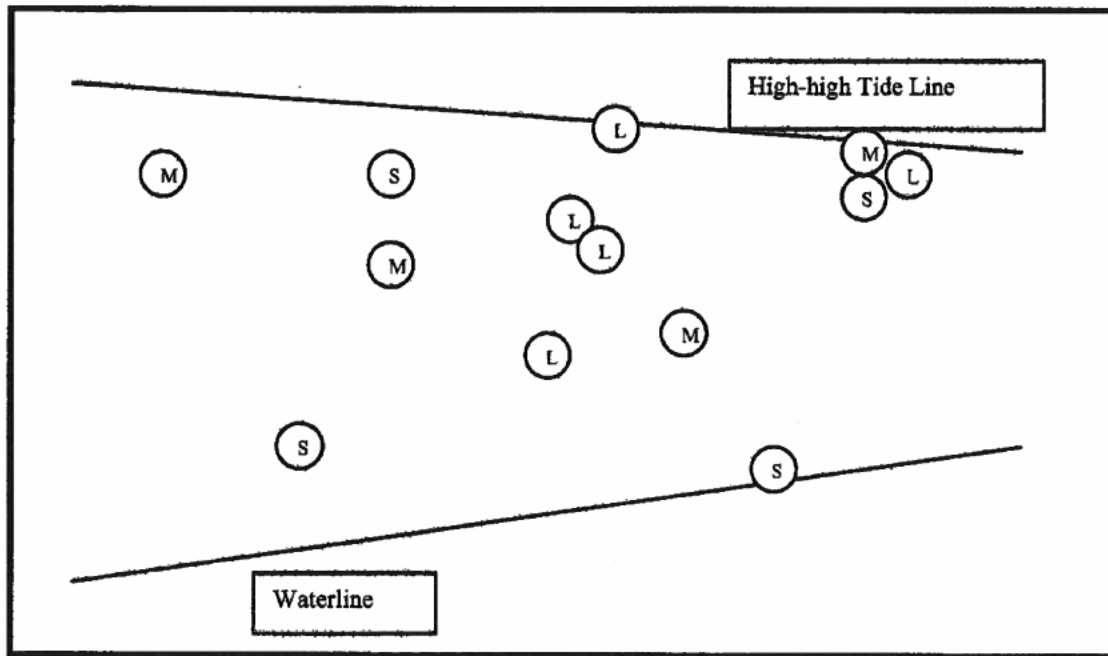


Figure 2.1. Example of different sized carcasses deployed on a sample beach.

An example of this approach is specified in Ford and Zafante (2009): “We set out 25 carcasses at each of the 10 sites, for a total sample size of 250 carcasses. Each carcass was placed between 0 m and 200 m from the previous carcass, based on a uniform random distribution; so that the mean distance between carcasses was 100 m...Carcasses were placed in randomized locations between the wrack line and the top of the beach. In a few cases in which waves came all the way to the base of the low sandy bluffs that formed the beach back, we placed carcasses on the bluff face or on the bluff top so that they would be beyond the reach of the tide. To avoid providing accidental cues to the scavengers, we set out carcasses during a rising tide, walking below the wrack line whenever possible so that any tracks would be washed away by the waves. The total length of all study beaches was about 25 km.”

*Record whether the carcass and board are still present

by marsh) combination. Searcher efficiency will be estimated by the following method. A different method may be used if more carcasses are present as described below.

Detection Rate (using carcasses placed on beaches by researcher)

Timing of Experiment. — While beach surveys are underway, searcher efficiency will be studied for a sample of crews searching beaches on foot and any additional methods used by shoreline carcass surveyors.

Sample Units. — Beaches within the larger sample selected for carcass surveys.

Carcass Placement. — A person who is not part of the beach survey crews will place whole and partially-scavenged bird carcasses of representative sizes and colors on selected beaches just before beach crews conduct a survey and mark each location with a GPS. Beach survey crews will not know when and where this will happen. The number of carcasses will be decided after initial data from beach searches are evaluated. The carcasses will be placed randomly along sample beaches at densities similar to those that are being found within the spill area.

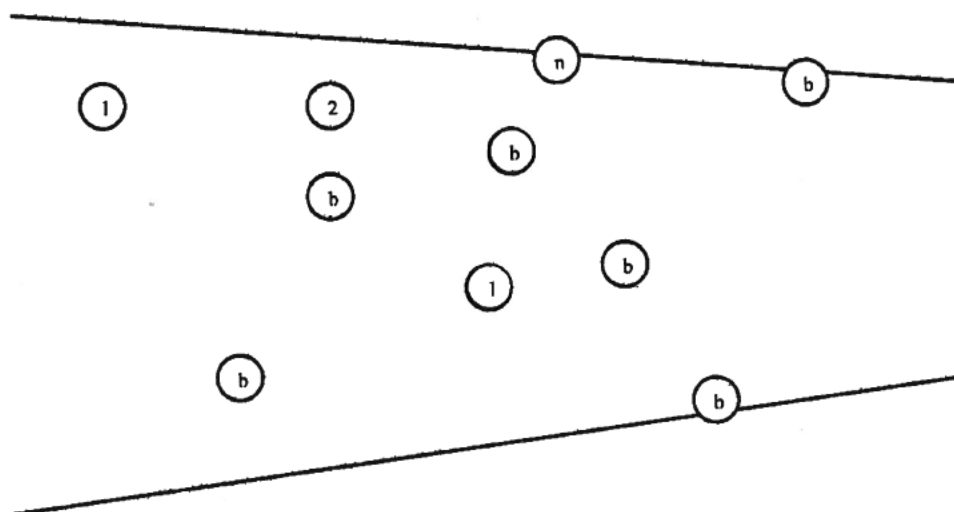
Data Collection. — Beach searchers will conduct normal surveys and the number of carcasses found will be compared with the known numbers of placed carcasses. All carcasses will be recovered at the end of the day's experiments.

Data Analysis. — The ratio of carcasses found to carcasses remaining after the survey will be used to estimate searcher efficiency in a manner that controls for potential removal by scavengers during the experiment. Typically these ratios are calculated for small, medium, and large carcasses and are specific to the habitat and the configuration of the search team.

Detection Rates (using carcasses washing up on beaches)

Usually some carcasses will be missed during beach searches and it is important to estimate the average detection rate to extrapolate for total carcasses. Therefore, at least once each on stretches of sand beach and other substrates with carcasses (doesn't have to be the entire length of a beach but should include water to high-high tide line on the stretch selected) one team (or one observer if only 2 people are in the search team) would search the stretch while the other is not looking. The first team or observer subtly marks each carcass they find (e.g., with a small tag underneath the carcass or with a GPS). Then the second team or observer searches the stretch and marks each carcass they find.

An example follows:



Marked by the first team or observer (1) only: = 2

Marked by the second team or observer (2) only = 1

Marked by (b)oth teams or observers = 6

Marked by (n)either team or observer but found after the initial searches = 1

recapture studies for multiple strata including non-Markovian transitions.
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Deepwater Horizon (MC 252) Oil Spill Beach Bird Survey – Field Procedures

Background

The coastline of the Gulf Coast has been subdivided into county/division sections from Corpus Christi, Texas to Merritt Island, Florida. Field teams will be assigned one or two county/division search sections as their sampling area. Within each sampling area, foot surveys will be conducted on 2 kilometer (km) segments. Segment surveys will consist of a Live Bird Assessment to estimate the proportion of birds that are oiled and a Bird Carcass Survey to document changes in bird mortality over time.

Beach Segments/ Sampling Schedule

Survey segments are 2 km in length, spaced every 8 km (Table 1). When you complete the segment, you will move down the beach approximately 6 km and survey another 2 km segment.

Table 1. Illustration of sampling pattern of 2 km survey segments

2 km beach segments				
Survey Segment	Skip	Skip	Skip	Survey Segment

In general, surveys should be conducted from east to west with the first survey segment beginning at the eastern edge of the most eastern county in your assigned sampling area. In peninsular Florida, begin with the more southern segments. On the Texas coast, the more northern segments should be sampled first.

Note: Segments may be run in reverse direction where efficiency or safety is substantially increased compared to the standard, east to west direction of surveys.

Each search area should be surveyed once every three days. Unsuitable weather and sea conditions will occasionally prevent completion of one or more surveys. If a survey is missed, make it up immediately and continue on a regular basis through the rest of the segments. Example: If a survey cannot be conducted on day 3, it should be conducted on day 4, or if necessary day 5. If a missed survey(s)

cannot be completed within that extra two-day allowance, do not re-survey it, and resume the scheduled segment survey sequence.

GPS coordinates for the segments will generally be provided by your coordinator. However, if GPS coordinates are not available, simply record the coordinates of your beginning and ending points of each 2 km segment. The first time a segment is surveyed, use the “Track” function on the GPS for upload to the GIS database (this only has to be done once for each segment).

Note: The survey segments must remain constant over time – go to the same beginning and ending coordinates each time you survey a segment.

If you have any questions regarding this protocol, please call the NRDA field coordinator at 850-316-0941.

Permits and Access

The NRDA program will provide field teams with any special permits needed to conduct the study. However, the field teams will need to coordinate local access with State and National parks, National Wildlife Refuges, and DOD lands. In Alabama, field teams will need a SONS permit/ID for accessing beaches closed to the public.

Beginning the Survey

If a group of live birds is present at the starting point of your survey, begin with the Live Bird Assessment (see instructions below). After completing the Live Bird Assessment, some crews may be instructed to conduct a Shoreline Assessment (see Shoreline Assessment guidance). After completing the Shoreline Assessment, begin your Bird Carcass Survey.

Live Bird Assessment

You will only evaluate birds that are close enough for you to confidently detect the presence of visible oil. This distance will vary, based on a variety of factors including the size of the bird, coloration of plumage, bird behavior (standing, sitting, flying), and degree of oiling. You are asked to evaluate birds for degree of oiling by species or class (gull, terns, sandpipers, plovers, etc.,) if identification to species is not possible.

You will perform one Live Bird Assessment per segment per day. If a group of birds is present at the beginning of your segment, proceed with a Live Bird Assessment; otherwise, perform the assessment on the first group of birds you encounter. When stopped for a Live Bird Assessment, you may need to allow several minutes for birds to adjust to your presence. While waiting, fill out the top portion of the *Live Animal Assessment Form*.

- Record the names of the survey team, date (dd/mm/2010), division/segment name (e.g. Bay County, Division 2), type of optics used (e.g. Nikon Monarch 10X42), weather (e.g. overcast, windy), wind direction (toward or away from shore) and Visibility.
- Record your coordinates and create a waypoint in the GPS.
- When you are ready to begin the assessment, record the start time.
- Spend up to 15 minutes evaluating birds for degree of oiling. If all birds cannot be classified in 15 minutes, evaluate as many as practical.
Remember to only evaluate birds that are close enough for you to confidently detect the presence of visible oil.
- For each species (or class), record each different behavior observed on a separate line (eg. “gull, standing”, “gull, flying”, “gull, on water”).
- Assess the birds in each behavior category for degree of oiling: no visible oil, trace oil ($\leq 5\%$), light oil (6-20%), moderate oil (21-40%), or heavy oil ($>40\%$) (See photos for examples of each oiling category). Also enter the number of birds observed that are debilitated.
- One person should observe the birds and call out the degree of oiling while the other tallies the observations on a note pad. When you are finished, add up the tallies for each species (or class) by behavior category and record the number in the appropriate percent oiling category. In the example below, the observer was able to confidently assess visible oiling on 5 sitting Brown pelicans, 6 standing Brown pelicans, and 3 flying Brown pelicans.

Species/Class	Behavior	Degree of Oiling (record number of birds in category) ¹					
		No Visible Oil	Trace (≤5%)	Light (6 -20%)	Moderate (21-40%)	Heavy (>40%)	Debilitated
<i>Brown pelican</i>	<i>sitting</i>	3	1	1	0	0	0
<i>Brown pelican</i>	<i>standing</i>	0	2	3	1	0	0
<i>Brown pelican</i>	<i>flying</i>	1	2	0	0	0	0

- If additional pages are needed, make sure you note these additions in the upper right hand corner of the first page and on all subsequent pages (eg “page 1 of 3”).
- When your observations are finished, record the stop time. Both members of the field team should review the data sheet and sign beside their printed names.
- If no bird activity was observed anywhere on the segment, conduct an assessment at the segment end point- even if no birds are present. Write “no live birds observed” across the lines on the data sheet and cross-out this section with a large (X).
- Make sure all of the fields are filled in correctly, completely, and legibly. Cross- out all empty fields with an X.
- If you fill in a field on the data sheet incorrectly, cross out the incorrect entry with a SINGLE thin line and record your initials next to the crossed out entry.

Bird Carcass Surveys

Survey teams walk the 2 km beach segment recording and collecting bird carcasses. The search area is defined as the beach from the water line up to 5 meters above the wrack line (the collection of organic debris deposited by the previous high tide) or, for very narrow beaches, the transition from beach to other habitat (eg. saltmarsh, mangrove, etc.). One person should cover the upper beach while the other covers the lower beach. It may be necessary to cover wide beaches in a zig-zag pattern to adequately cover the entire search area.

Within the search area, all bird carcasses are collected using the Carcass Collection Protocol. A bird carcass is defined as any dead bird, regardless of its

condition. **As little as a few feathers attached to skin fragments constitutes a bird carcass.**

Begin the Beach Carcass Survey by filling in the top portion of the *Bird Search Effort and Birds Collected Data Form*, making sure all fields are filled in correctly and legibly.

- Record the starting coordinates (Lat/Long) in decimal degrees (dd.mmmmmmm°, WGS 84) and the starting time. Note: Leave the INV field blank- this will be filled in by law enforcement.
- Circle the appropriate field unit (e.g. NRDA for beach survey crews).
- For each bird carcass found, fill in a SINGLE line on the data sheet. Identify to species/class, record the Lat/Long and create a GPS waypoint. The ID numbering convention is **001** for first bird found on survey, **002** for second, etc.
- Fill in remaining fields related to the bird carcass including: time of collection (24-hour), carcass location on beach (lower beach, wrack line, or upper beach), degree of oiling, degree of scavenging and age. If these fields are not assessed, complete the field with N/A.
- Ensure you're familiar with the **Guidance for Taking and Transferring Digital Photographs**, Appendix A). Photo-document the bird by writing the date, segment name (e.g., MS-02-01), state abbreviation, evidence seizure tag number, and bird ID (e.g. 001) on the whiteboard. Place the whiteboard next to the carcass or live bird and photograph.
- Collect the bird carcasses, using the Carcass Collection Protocol.
- Finish filling out the remainder of the data sheet. Record any comments in the Field Comments column, or in a yellow field notebook. The last two columns are for use by the Evidence Custodian. **DO NOT USE THESE COLUMNS FOR COMMENTS.**
- Record the ending coordinates and time (for a one-way search), or turn-around point for a round-trip search. If any new birds are found on the return trip, note 'R' within the comments section for that bird.

- If no bird carcasses are observed, write “no carcasses observed” across the individual lines on the data sheet and cross-out this section with a large (X). Write N/A in the Evidence Seizure Tag field.
- If you observe other dead animals on your survey segment (sea turtles, marine mammals, significant fish kills (>10 fish), etc., note these observations on the bottom lines of the “Dead Birds Collected” section of the *Bird Search Effort Form*. Record the coordinates of these observations, but **do not** create a waypoint in the GPS unit. Report your observations to the Wildlife Incident Hotline.
- If you see work crews cleaning your survey segment or find evidence that the beach has been cleaned or groomed, fill out an *Information Needs Related to Beach Surveys and Grooming* form (see instructions below).
- When the survey is complete, both members of the survey team should review the data sheet and sign beside their printed names at the top of the form. DO NOT SIGN AT THE BOTTOM.

NOTE:

Do not erase any incorrect entries on the data sheet. If you make an incorrect entry, cross it out with a single line and write your initials next to the crossed-out entry.

Beach Surveys and Documentation of Beach Cleanup/Grooming Activity

This assessment is completed on a segment ONLY when observers witness signs of, preparations for, or ongoing beach cleanup/grooming activity. The purpose of this assessment is to document actions that affect search conditions. Beach grooming is a common practice on beaches frequented by public. Other actions may be taken to remove oil or limit its spread. Such actions could potentially (1) interfere with operation of segment surveys; (2) alter distribution and detectability of dead birds; and (3) influence distribution of live birds during and after a beach manipulation event.

File out the top of the form with the segment name, date, survey crew members, and contact information. Record the lat/long coordinates of the two ends of the beach area subject to manipulation. This may be the entire 2 km survey segment for large-scale operations. Fill out the rest of the form to the best of your

abilities. If beach manipulation is ongoing and the situation allows, you can attempt to meet and identify a crew foreman who might describe the operation or provide contact information (phone no. and/or email address) of someone who could. **SAFETY NOTE: Do not jeopardize safety of your crew by approaching any moving heavy equipment or by flagging down operators of moving equipment.**

Documenting Off-Segment Wildlife Mortality

If you observe wildlife mortality events ***off of a designated survey segment*** (while walking to or from the segment, or between segments), you should collect any bird carcasses and report sea turtle, marine mammal, or significant fish kills (>10 fish) to the Wildlife Incident Hotline. However, this information must be kept separate from that associated with your designated survey segments.

Off-segment bird carcasses should be collected according to the Carcass Collection Protocol. Because this information is not associated with the NRDA Beach Bird Survey study, the carcass information must be recorded on a separate *Bird Search Effort and Birds Collected Data Form* and you must circle “Wildlife Ops” at the top of the form. Record the state and ACP in the “Segment Name” space and mark the other segment-specific spaces “N/A”. Record the lat/long coordinates, but do not create a waypoint in the GPS unit.

Document off-segment dead sea turtles, marine mammals, or significant fish kills in your field notebook, including lat/long (no not create a waypoint in the GPS unit). Report these observations to the Wildlife Incident Hotline.

Data Form and Carcass Procedures

1. At the end of every day, check each data sheet to confirm that ALL data fields are complete.
 - DO NOT LEAVE DATA FIELDS BLANK; WRITE “N/A” WHEN APPROPRIATE. REMEMBER THE INV FIELD WILL REMAIN EMPTY.
 - Make sure you sign and date all data sheets.
2. If you collected any bird carcasses, they are evidence and must be handled accordingly. Deliver the carcass and the original *Beach Search Effort and Birds Collected Data* form to the Evidence Custodian at the appropriate Intake

Center. At the Intake Center, make a copy of the *Beach Search Effort and Birds Collected Data* forms associated with the survey segments. The Evidence Custodian will keep the original form, **you must keep a copy**.

If you collected off-segment bird carcasses (and circled “Wildlife Ops” on the form), you do not need to keep a copy. Just leave the original form with the Evidence Custodian.

For logistical reasons, some field crews may be instructed to transfer carcasses to a designated Evidence Custodian at a National Wildlife Refuge. As described above, the original *Beach Search Effort and Birds Collected Data* form must stay with the carcass. **Make a copy** and keep it with the rest of the survey segment data forms.

If there are no Intake Centers within a reasonable driving distance, you may send carcasses by FedEx (see FedEx Protocol). Make a copy of the *Beach Search Effort and Birds Collected Data* form to keep with the other forms for that survey segment. Place the original *Beach Search Effort and Birds Collected Data* form inside a gallon-sized Ziploc bag and place in the shipping cooler with the carcass. Make sure you complete the white Evidence Seizure Tag and include it with the carcass. Remember, **you must keep a copy** of the *Beach Search Effort and Birds Collected Data* form.

3. Create a folder on your laptop hard drive for each unique type of survey and segment. Use the naming convention in **Guidelines for Organization and Naming of Electronic Data Records on Laptop Computers, NRDA Beach Bird Survey**, Appendix B, part I.
4. Scan all signed data sheets from one segment and save as a .pdf file in the proper segment folder. Use the naming convention with a *.pdf extension in the **Guidelines for Organization and Naming of Electronic Data Records on Laptop Computers, NRDA Beach Bird Survey** Appendix B, part II.
5. Create archive and working copies of digital photographs following **Guidance for Taking and Transferring Digital Photographs** in Appendix A.
6. Upload digital photos to the DOI/EDRC website using the **Uploading Digital Photographs** instructions in Appendix C.
7. Follow the **GPS Data Transfer and Upload Instructions** in Appendix D

8. Email a copy of each segment *.pdf file to:

DHMC252.BIRDNRDA.DATA.ERDC@gmail.com

9. Approximately every three days, FedEx all of your data forms to the NRDA BirdGroup at:

Homewood Suites Inn
29474 North Main Street
Daphne, AL 36526
Blakely Conference Room 2
ATTN: USFWS-NRDA BIRD

10. At the end of your tour, you are required to burn a CD of the entire electronic dataset for your tour. That includes all types of electronic records (e.g., .pdf files of datasheets, photos, GPS waypoints), except e-mail for the period of your tour. Refer to the **Guidelines for Organization and Naming of Electronic Data Records on Laptop Computers, NRDA Beach Bird Survey for file naming**. The CD should be FedEx'd to the USFWS-NRDA BIRD group at address above

Reporting Injured or Oiled Wildlife or Deepwater Horizon Debris

- If you find a live injured or oiled bird, you must call the Wildlife Incident Hotline, 866-557-1401. A Wildlife Response – OPS team will be assigned to collect the bird. You'll need a precise GPS location to give the hotline.
- If you find dead or injured wildlife other than birds, including turtles, dolphins, or fish kills, call the Wildlife Incident Hotline, 866-557-1401.
- If you find debris from the Deepwater Horizon, call 202-309-9559.

APPROVAL



Daniel Welsh (USFWS)
Lead Bird Group Trustee Representative
(on behalf of the Natural Resource Trustees)

5/19/10
Date



Ralph Markarian (Entrix)
Responsible Party Representative
(on behalf of British Petroleum)

5/19/10
Date

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GPS coordinates for the segments will generally be provided by your coordinator. However, if GPS coordinates are not available, simply record the coordinates of your beginning and ending points of each 2 km segment. The first time a segment is surveyed, use the “Track” function on the GPS for upload to the GIS database (this only has to be done once for each segment).

Note: The survey segments must remain constant over time – go to the same beginning and ending coordinates each time you survey a segment.

If you have any questions regarding this protocol, please call the NRDA field coordinator at 8 [REDACTED]

Permits and Access

The NRDA program will provide field teams with any special permits needed to conduct the study. However, the field teams will need to coordinate local access with State and National parks, National Wildlife Refuges, and DOD lands. In Alabama, field teams will need a SONS permit/ID for accessing beaches closed to the public.

Beginning the Survey

If a group of live birds is present at the starting point of your survey, begin with the Live Bird Assessment (see instructions below). After completing the Live Bird Assessment, some crews may be instructed to conduct a Shoreline Assessment (see Shoreline Assessment guidance). After completing the Shoreline Assessment, begin your Bird Carcass Survey.

Live Bird Assessment

You will only evaluate birds that are close enough for you to confidently detect the presence of visible oil. This distance will vary, based on a variety of factors including the size of the bird, coloration of plumage, bird behavior (standing, sitting, flying), and degree of oiling. You are asked to evaluate birds for degree of oiling by species or class (gull, terns, sandpipers, plovers, etc.,) if identification to species is not possible.

You will perform one Live Bird Assessment per segment per day. If a group of birds is present at the beginning of your segment, proceed with a Live Bird Assessment; otherwise, perform the assessment on the first group of birds you encounter. When stopped for a Live Bird Assessment, you may need to allow several minutes for birds to adjust to your presence. While waiting, fill out the top portion of the *Live Animal Assessment Form*.

- Record the names of the survey team, date (dd/mm/2010), division/segment name (e.g. Bay County, Division 2), type of optics used (e.g. Nikon Monarch 10X42), weather (e.g. overcast, windy), wind direction (toward or away from shore) and Visibility.
- Record your coordinates and create a waypoint in the GPS.
- When you are ready to begin the assessment, record the start time.
- Spend up to 15 minutes evaluating birds for degree of oiling. If all birds cannot be classified in 15 minutes, evaluate as many as practical.
Remember to only evaluate birds that are close enough for you to confidently detect the presence of visible oil.
- For each species (or class), record each different behavior observed on a separate line (eg. “gull, standing”, “gull, flying”, “gull, on water”).
- Assess the birds in each behavior category for degree of oiling: no visible oil, trace oil ($\leq 5\%$), light oil (6-20%), moderate oil (21-40%), or heavy oil ($>40\%$) (See photos for examples of each oiling category). Also enter the number of birds observed that are debilitated.
- One person should observe the birds and call out the degree of oiling while the other tallies the observations on a note pad. When you are finished, add up the tallies for each species (or class) by behavior category and record the number in the appropriate percent oiling category. In the example below, the observer was able to confidently assess visible oiling on 5 sitting Brown pelicans, 6 standing Brown pelicans, and 3 flying Brown pelicans.

Species/Class	Behavior	Degree of Oiling (record number of birds in category) ¹					
		No Visible Oil	Trace (≤5%)	Light (6 -20%)	Moderate (21-40%)	Heavy (>40%)	Debilitated
<i>Brown pelican</i>	<i>sitting</i>	3	1	1	0	0	0
<i>Brown pelican</i>	<i>standing</i>	0	2	3	1	0	0
<i>Brown pelican</i>	<i>flying</i>	1	2	0	0	0	0

- If additional pages are needed, make sure you note these additions in the upper right hand corner of the first page and on all subsequent pages (eg “page 1 of 3”).
- When your observations are finished, record the stop time. Both members of the field team should review the data sheet and sign beside their printed names.
- If no bird activity was observed anywhere on the segment, conduct an assessment at the segment end point- even if no birds are present. Write “no live birds observed” across the lines on the data sheet and cross-out this section with a large (X).
- Make sure all of the fields are filled in correctly, completely, and legibly. Cross- out all empty fields with an X.
- If you fill in a field on the data sheet incorrectly, cross out the incorrect entry with a SINGLE thin line and record your initials next to the crossed out entry.

Bird Carcass Surveys

Survey teams walk the 2 km beach segment recording and collecting bird carcasses. The search area is defined as the beach from the water line up to 5 meters above the wrack line (the collection of organic debris deposited by the previous high tide) or, for very narrow beaches, the transition from beach to other habitat (eg. saltmarsh, mangrove, etc.). One person should cover the upper beach while the other covers the lower beach. It may be necessary to cover wide beaches in a zig-zag pattern to adequately cover the entire search area.

Within the search area, all bird carcasses are collected using the Carcass Collection Protocol. A bird carcass is defined as any dead bird, regardless of its

condition. **As little as a few feathers attached to skin fragments constitutes a bird carcass.**

Begin the Beach Carcass Survey by filling in the top portion of the *Bird Search Effort and Birds Collected Data Form*, making sure all fields are filled in correctly and legibly.

- Record the starting coordinates (Lat/Long) in decimal degrees (dd.mmmmmmm°, WGS 84) and the starting time. Note: Leave the INV field blank- this will be filled in by law enforcement.
- Circle the appropriate field unit (e.g. NRDA for beach survey crews).
- For each bird carcass found, fill in a SINGLE line on the data sheet. Identify to species/class, record the Lat/Long and create a GPS waypoint. The ID numbering convention is **001** for first bird found on survey, **002** for second, etc.
- Fill in remaining fields related to the bird carcass including: time of collection (24-hour), carcass location on beach (lower beach, wrack line, or upper beach), degree of oiling, degree of scavenging and age. If these fields are not assessed, complete the field with N/A.
- Ensure you're familiar with the **Guidance for Taking and Transferring Digital Photographs**, Appendix A). Photo-document the bird by writing the date, segment name (e.g., MS-02-01), state abbreviation, evidence seizure tag number, and bird ID (e.g. 001) on the whiteboard. Place the whiteboard next to the carcass or live bird and photograph.
- Collect the bird carcasses, using the Carcass Collection Protocol.
- Finish filling out the remainder of the data sheet. Record any comments in the Field Comments column, or in a yellow field notebook. The last two columns are for use by the Evidence Custodian. **DO NOT USE THESE COLUMNS FOR COMMENTS.**
- Record the ending coordinates and time (for a one-way search), or turn-around point for a round-trip search. If any new birds are found on the return trip, note 'R' within the comments section for that bird.

- If no bird carcasses are observed, write “no carcasses observed” across the individual lines on the data sheet and cross-out this section with a large (X). Write N/A in the Evidence Seizure Tag field.
- If you observe other dead animals on your survey segment (sea turtles, marine mammals, significant fish kills (>10 fish), etc., note these observations on the bottom lines of the “Dead Birds Collected” section of the *Bird Search Effort Form*. Record the coordinates of these observations, but **do not** create a waypoint in the GPS unit. Report your observations to the Wildlife Incident Hotline.
- If you see work crews cleaning your survey segment or find evidence that the beach has been cleaned or groomed, fill out an *Information Needs Related to Beach Surveys and Grooming* form (see instructions below).
- When the survey is complete, both members of the survey team should review the data sheet and sign beside their printed names at the top of the form. DO NOT SIGN AT THE BOTTOM.

NOTE:

Do not erase any incorrect entries on the data sheet. If you make an incorrect entry, cross it out with a single line and write your initials next to the crossed-out entry.

Beach Surveys and Documentation of Beach Cleanup/Grooming Activity

This assessment is completed on a segment ONLY when observers witness signs of, preparations for, or ongoing beach cleanup/grooming activity. The purpose of this assessment is to document actions that affect search conditions. Beach grooming is a common practice on beaches frequented by public. Other actions may be taken to remove oil or limit its spread. Such actions could potentially (1) interfere with operation of segment surveys; (2) alter distribution and detectability of dead birds; and (3) influence distribution of live birds during and after a beach manipulation event.

File out the top of the form with the segment name, date, survey crew members, and contact information. Record the lat/long coordinates of the two ends of the beach area subject to manipulation. This may be the entire 2 km survey segment for large-scale operations. Fill out the rest of the form to the best of your

abilities. If beach manipulation is ongoing and the situation allows, you can attempt to meet and identify a crew foreman who might describe the operation or provide contact information (phone no. and/or email address) of someone who could. **SAFETY NOTE: Do not jeopardize safety of your crew by approaching any moving heavy equipment or by flagging down operators of moving equipment.**

Documenting Off-Segment Wildlife Mortality

If you observe wildlife mortality events ***off of a designated survey segment*** (while walking to or from the segment, or between segments), you should collect any bird carcasses and report sea turtle, marine mammal, or significant fish kills (>10 fish) to the Wildlife Incident Hotline. However, this information must be kept separate from that associated with your designated survey segments.

Off-segment bird carcasses should be collected according to the Carcass Collection Protocol. Because this information is not associated with the NRDA Beach Bird Survey study, the carcass information must be recorded on a separate *Bird Search Effort and Birds Collected Data Form* and you must circle “Wildlife Ops” at the top of the form. Record the state and ACP in the “Segment Name” space and mark the other segment-specific spaces “N/A”. Record the lat/long coordinates, but do not create a waypoint in the GPS unit.

Document off-segment dead sea turtles, marine mammals, or significant fish kills in your field notebook, including lat/long (no not create a waypoint in the GPS unit). Report these observations to the Wildlife Incident Hotline.

Data Form and Carcass Procedures

1. At the end of every day, check each data sheet to confirm that ALL data fields are complete.
 - DO NOT LEAVE DATA FIELDS BLANK; WRITE “N/A” WHEN APPROPRIATE. REMEMBER THE INV FIELD WILL REMAIN EMPTY.
 - Make sure you sign and date all data sheets.
2. If you collected any bird carcasses, they are evidence and must be handled accordingly. Deliver the carcass and the original *Beach Search Effort and Birds Collected Data* form to the Evidence Custodian at the appropriate Intake

Center. At the Intake Center, make a copy of the *Beach Search Effort and Birds Collected Data* forms associated with the survey segments. The Evidence Custodian will keep the original form, **you must keep a copy**.

If you collected off-segment bird carcasses (and circled “Wildlife Ops” on the form), you do not need to keep a copy. Just leave the original form with the Evidence Custodian.

For logistical reasons, some field crews may be instructed to transfer carcasses to a designated Evidence Custodian at a National Wildlife Refuge. As described above, the original *Beach Search Effort and Birds Collected Data* form must stay with the carcass. **Make a copy** and keep it with the rest of the survey segment data forms.

If there are no Intake Centers within a reasonable driving distance, you may send carcasses by FedEx (see FedEx Protocol). Make a copy of the *Beach Search Effort and Birds Collected Data* form to keep with the other forms for that survey segment. Place the original *Beach Search Effort and Birds Collected Data* form inside a gallon-sized Ziploc bag and place in the shipping cooler with the carcass. Make sure you complete the white Evidence Seizure Tag and include it with the carcass. Remember, **you must keep a copy** of the *Beach Search Effort and Birds Collected Data* form.

3. Create a folder on your laptop hard drive for each unique type of survey and segment. Use the naming convention in **Guidelines for Organization and Naming of Electronic Data Records on Laptop Computers, NRDA Beach Bird Survey**, Appendix B, part I.
4. Scan all signed data sheets from one segment and save as a .pdf file in the proper segment folder. Use the naming convention with a *.pdf extension in the **Guidelines for Organization and Naming of Electronic Data Records on Laptop Computers, NRDA Beach Bird Survey** Appendix B, part II.
5. Create archive and working copies of digital photographs following **Guidance for Taking and Transferring Digital Photographs** in Appendix A.
6. Upload digital photos to the DOI/EDRC website using the **Uploading Digital Photographs** instructions in Appendix C.
7. Follow the **GPS Data Transfer and Upload Instructions** in Appendix D

8. Email a copy of each segment *.pdf file to:

[REDACTED]

9. Approximately every three days, FedEx all of your data forms to the NRDA BirdGroup at:

Homewood Suites Inn
29474 North Main Street
Daphne, AL 36526
Blakely Conference Room 2
ATTN: USFWS-NRDA BIRD

10. At the end of your tour, you are required to burn a CD of the entire electronic dataset for your tour. That includes all types of electronic records (e.g., .pdf files of datasheets, photos, GPS waypoints), except e-mail for the period of your tour. Refer to the **Guidelines for Organization and Naming of Electronic Data Records on Laptop Computers, NRDA Beach Bird Survey for file naming**. The CD should be FedEx'd to the USFWS-NRDA BIRD group at address above

Reporting Injured or Oiled Wildlife or Deepwater Horizon Debris

- If you find a live injured or oiled bird, you must call the Wildlife Incident Hotline, 866-557-1401. A Wildlife Response – OPS team will be assigned to collect the bird. You'll need a precise GPS location to give the hotline.
- If you find dead or injured wildlife other than birds, including turtles, dolphins, or fish kills, call the Wildlife Incident Hotline, 866-557-1401.
- If you find debris from the Deepwater Horizon, call [REDACTED]