

**WORKPLAN FOR ESTIMATING WINTERING
WATERFOWL OILING AND MORTALITY
BIRD STUDY PLAN #10**

Prepared by the Waterfowl Technical Working Group
For the Mississippi Canyon 252 Oil Spill

January 29, 2011

U.S. Fish and Wildlife Service

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INTRODUCTION

The Deepwater Horizon (MC 252) oil spill began on April 20, 2010 in the Gulf of Mexico off the Louisiana coastline. Oil spill related injury to wildlife is of major concern to the Natural Resource Trustees, public, and BP. At least 30 state wildlife management areas, national wildlife refuges and national parks occur in the area potentially threatened by the oil. Seabirds, colonial waterbirds, shorebirds, and waterfowl are particularly susceptible to impacts from the oil at sea and on land.

Study plans are assessing potential impacts to marsh birds (NRDA Bird Study #3), colonial waterbirds (NRDA Bird Study #4), pelagic seabirds (NRDA Bird Study #6), the endangered Piping Plover (*Charadrius melodus*) (NRDA Bird Study #7) and non-breeding and breeding shorebirds (NRDA Bird Study #5 and #8). This plan, the tenth in a series of avian injury ephemeral data collection studies, seeks to specifically address potential impacts to waterfowl. The objectives of this study are to:

- 1) document dead and live oiled and unoiled waterfowl in representative habitats,
- 2) estimate the temporal and spatial abundance and distribution of waterfowl within the study area,
- 3) examine oiled and not visibly oiled birds collected from representative habitats.

Every year, millions of waterfowl travel from breeding grounds in Canada and the northern United States to the marshes, bays, and estuaries of the Gulf coastal states through the North American migration flyways. These birds winter or stage in Gulf areas before continuing a southward migration or redistributing to other southern U. S. habitats (i.e., Mississippi Flyway, Figure 1).

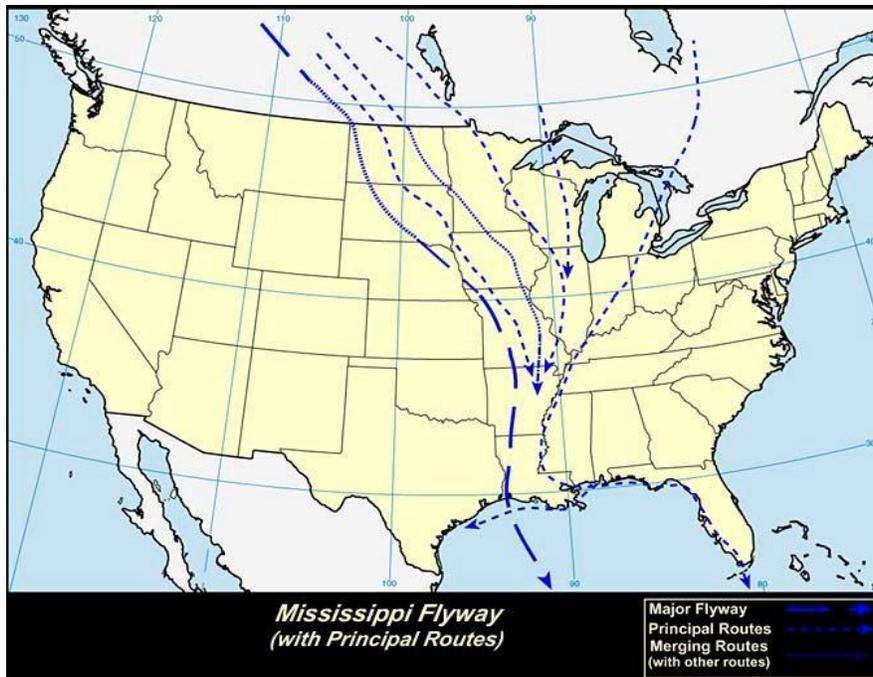


Figure 1. Map of Mississippi Flyway.

STUDY AREA

The study area is broadly described as bays, estuaries, salt marshes, and tidal marshes, including SAV beds and mudflats that serve as waterfowl habitats not currently evaluated as part of any other Natural Resource Damage Assessment (NRDA) studies. In the event of an oil spill, oiled birds may also seek refuge on berms or beach loafing areas, or move into the dense marsh grasses. Coastal Louisiana constitutes important wintering waterfowl areas, where this project is primarily focused (USDOI 1981). However, if ongoing data collection reveals oiling of waterfowl or other waterbirds is a concern in adjacent areas, the geographic scope of the study area may be broadened by mutual agreement between the Trustees and BP. Likewise, if data indicate few oiled waterfowl are present within surveyed areas, the study area may be contracted.

STUDY DESIGN

Data-collection protocols for making boat-based live and dead bird observations as well as foot-based live and dead bird observations are attached (Appendix A).

Objective 1: Document dead and live oiled and unoiled waterfowl in representative habitats.

Two carcass-detection methods, Objectives 1A (boat-based marsh edge beached bird survey) and 1B (walking beach-based bird survey) will be employed to estimate numbers of oiled waterfowl. In addition, live and dead oiled waterfowl will be observed during open water bird surveys (Objective 1C). Survey crews will perform Open Water Bird Surveys (Objective 1C) and Boat-based Beached Bird Surveys (Objective 1A) relying on transect initiation points in close proximity to the extent possible to economize effort. Walking Beached Bird Surveys (Objective 1B) will also be conducted on existing beached bird segments (from NRDA Bird Study #1) between Atchafalaya Delta, LA and Apalachicola, FL.

The program will be reviewed 30 calendar days after implementation for all components of Objective 1 (which may, at the agreement of BP and the Trustees, be counted from the initiation of USFWS searches in early January). Given that implementation of some transects was initiated earlier than others, it is the intent of BP and the trustees that all transects will be surveyed for no shorter than a 30 day time period. At that time, if BP and the Trustees agree it is warranted, the duration of the study may be extended and the Trustees and BP may agree to expand, contract or maintain the scope based on survey results. If BP does not agree to continue the efforts described in the work plan past the first 30 days, the Trustees reserve the right to continue work under this Work Plan depending on their assessment of whether additional data are needed to determine oiling rates or carcass deposition, and BP will not initiate surveys that duplicate or overlap Trustee waterfowl survey efforts.

1A. Boat-based Beached Bird Survey

A pilot study (Bird Study #11) was conducted to evaluate using airboat and skiff surveys along the edge of waterfowl marsh habitats to search for carcasses in these habitats. Information gathered as part of Bird Study #11 informed Trustee opinions as to Objective 1A implementation.

Sampling Area:

Habitats to be sampled include vegetated (robust emergent vegetation) edges of bays, estuaries, and marshes accessible by motorized boat and airboat. Maps showing concentrations of recovered oiled birds, historical waterfowl and waterbird concentration areas, and SCAT maps, as well as other sources of information regarding oiling, will be considered when selecting sampling areas.

Areas of known concentration for waterfowl range from central Texas to the panhandle of Florida. This plan focuses in three areas where shoreline oiling impacts have been greatest: Mississippi River delta, Terrebonne Bay, and Barataria Bay. If field crews in other areas

encounter significant numbers of waterfowl or other waterbird carcasses, survey areas could be expanded. Likewise, if systematic surveys at any of the three initial focal areas detect substantial mortalities, then that may be a trigger for additional surveys in other areas.

Two reference sites will be established on Atchafalaya Delta WMA and Marsh Island/Vermilion Bay where no oil has been observed (as confirmed by current SCAT data). Reference area surveys will be conducted at the same times as impact area surveys to the extent possible. The Trustees and BP will cooperatively review data collected from oil-impacted sites and reference areas to determine if and when the survey effort should be compressed (after the initial 30-day period).

Target species: This study targets dabbling ducks, diving ducks and geese. To the extent possible, other avian species, both live and dead, will also be recorded and evaluated for oiling. Carcasses encountered during field efforts will be processed according to the Deepwater Horizon (MC 252) Oil Spill Carcass Collection Protocol. The SOP for Carcass handling will be modified appropriately as warranted, e.g., due to a change in Office of Law Enforcement requirements. Any carcasses left in place will be clearly marked following the Carcass Handling SOP.

Sample units: Sample units are transects along stretches of selected marsh (at the outer interface of robust emergent vegetation with open water) within the oil-impact zone that can be searched by a boat-based survey crew. Transect distance will be measured using track file from a field GPS unit. Transects will be approximately 5 km in length. Visibility along some marsh habitat edges will be limited by dense vegetation. Evaluation of this sample unit will be made soon after onset of the study, and methods can be revised to adjust to observed field conditions as agreed by the Trustees and BP in writing. Calculations of sampling area coverage will be adjusted for variable-width sample units and will be clearly documented in SOPs submitted to BP for review in a timely fashion.

Transect locations on areas administered by the National Park Service (NPS), areas within military bases, and those in national wildlife refuges or state wildlife management areas 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. Standard Operating Procedures for coordinating activities with land managers will be followed to ensure that project implementation is consistent with management goals for the protected area (Appendix B). In addition, transect locations will be coordinated with other TWG activities to ensure that surveys for this study do not overlap with areas set aside for ongoing response or NRDAR activities (e.g., shoreline TWG assessment).

Stratification: Transects will be located in representative marsh habitats supporting “high” or “medium” densities of waterfowl (>1.5 ducks/acre and 0.5-1.5 ducks/acre for marsh habitats, respectively, based on Gulf Coast Joint Venture data sets). Three marshes are in “heavy” and “moderate” oil impact areas based on SCAT maps (Pass a Loutre WMA, Barataria Bay, and Terrebonne Bay) and two are in unimpacted areas (Atchafalaya Delta and Marsh Island/Vermilion Bay).

Sample Selection: Transects are developed from randomly generated points along the marsh/shoreline in each of five major concentration areas (three oil impacted areas and two reference areas). The marsh edge was manually digitized (1:63424 scale) along the shoreline using a satellite coverage obtained from ESRI’s World Imagery (available from ESRI online). A shoreline/marsh polygon was created buffering the line shapefile by 0.5 meters. The “Generate Random Points” function of Hawth’s tools was used to generate the random points along this polygon in ARC/GIS. Points are restricted to > 500m apart to ensure dispersion within each stratum. If the resultant transect associated with a selected start point offers an edge of marsh less than 5 km, then additional random start points will be used and transects assigned such that a minimum of 50 km of shoreline is surveyed in each of the three oil-impacted marshes (a minimum of 25 kilometers of shoreline will be surveyed in each of two reference areas as well). For each pre-assigned start point, the direction in which the transect runs along the marsh edge will be pre-determined and randomly selected.

Survey duration: Sampling will be initiated in January and extend for 30 calendar days at which time BP and the Trustees will evaluate the data collected up to that time and determine the need for additional work under this Plan. If BP and the Trustees agree it is warranted, cooperative sampling will continue in a phased manner. Results from NRDA Bird Study #11 (carcass detection) may also be considered in the decision of when to terminate sampling efforts.

Sample size: A minimum of 10 transects will be sampled in each of the focus areas (Pass a Loutre WMA, Terrebonne and Barataria bays) corresponding to a minimum of 50km of shoreline coverage. In each of two reference areas (Atchafalaya Delta and Marsh Island/Vermilion Bay) a minimum of 5 transects will be sampled corresponding to a minimum of 25 km of shoreline coverage. The total number and location of transects may be modified as agreed by the Trustees and BP in writing based on experience from initial phase of the study and from results of NRDA Bird Study #11.

Data collection: Boat crews will survey pre-assigned transects based on nearshore normalization via GIS protocols (refer to site selection for additional details). Three observers (one federal and one state Trustee representative and one BP representative) will be on each survey including the boat operator. If boat space does not allow, a good faith effort will be made to obtain a larger boat prior to the next outing, unless a larger boat would prevent effective implementation of the survey due to difficulties approaching the shoreline in shallow water or other reasons. Under circumstances where larger boats cannot be utilized, additional shallow draft boats may be obtained; however, every effort will be made to accommodate integrated teams (of Trustee and BP representative observers) in the same boat.

Integrated teams of observers will search transects for dead waterfowl carcasses along a maximum of 5 km of shoreline for each transect beginning near a pre-assigned random point. Search platforms will be either a small shallow draft vessel or airboat moving at 10 km per hour or the minimum safe speed to maintain steerage (whichever is greater). Airboat use will be restricted to areas where disturbance to recreational hunting is negligible. Crews will conduct simultaneous surveys for live and dead birds. A good faith effort will be made to conduct all study elements that fall within the BP safety policy with cooperative, integrated teams of observers and field technicians.

Survey frequency: Selected transects will be sampled every 3 days, consistent with methods in NRDA Bird Study 1 (estimating mortality of birds using beached bird surveys).

Data Analysis: Data will be collected in a manner that will support the beached bird model used in NRDA Bird Study #1.

1B. Walking Beached Bird Survey

Sampling Area: Beaches and barrier islands will comprise the sampling area from the Atchafalaya Delta in Louisiana eastward to Apalachicola, FL. Upon mutual agreement of the Trustees and BP, the sampling area could expand within the first 30-day period if oiled waterfowl are found outside this study area.

Target species: This study targets dabbling ducks, diving ducks and geese. To the extent possible, other avian species will be recorded and evaluated for oiling. Carcasses encountered during field efforts will be processed according to the Deepwater Horizon (MC 252) Oil Spill Carcass Collection Protocol. The SOP for Carcass handling will be modified appropriately as warranted, e.g., due to a change in Office of Law Enforcement requirements. Any carcasses left in place will be clearly marked following the Carcass Handling SOP.

Sample units: Sample units are approximately 1000-m long stretches of beach corresponding to named segments delineated by the oil spill response Incident Command. Sample unit width will be variable, extending from the water line to the high-high tide line, which is identified by the wrack line. If this is not apparent, the inland edge is defined as 50-m inland from the water or vegetation line, whichever comes first. Whenever practicable, oiled or dead individual birds observed outside of sample segments will be recorded as “off transect.”

Standard Operating Procedures (Appendix B) for coordinating activities with national wildlife refuges and state wildlife management area land managers will be followed to ensure that project implementation is consistent with management goals for the protected area. All required permits will be obtained.

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

Sample selections: Beaches have been selected with a systematic random approach and implemented by randomly selecting a start point within the sampling area and selecting every other walkable beach segment in both directions to the edges of the sampling area (refer to NRDA Bird Study #1).

Sample size: Sample size will be approximately 25% of the available segments (those areas without restricted access or other logistical constraints).

Data collection: Data will be collected consistent with protocols outlined in NRDA Bird Study #1. Crews will conduct simultaneous surveys for live oiled and dead birds.

Survey frequency and duration: All pre-existing beached bird transects in LA will be surveyed every three days consistent with protocols for Bird Study #1. A subset of existing beached bird transects in MS, AL, and FL (to Apalachicola) will also be surveyed at a reduced frequency (e.g., every 14 days). Sampling will be initiated in late January and continue 30 calendar days at which time cumulative data will be reviewed by BP and the Trustees to inform decisions on further sampling and determine the need for additional work under this Plan. If BP and the Trustees agree it is warranted, sampling will continue as agreed in a phased manner. If oil-related impacts are evident to BP and the trustees at sentinel survey sites in MS, AL and panhandle Florida, the survey effort may be expanded based on agreement between the Trustees and BP to full scale effort consistent with Bird Study #1 (e.g., sample frequency of every three days and expansion to all pre-existing transects) as needed.

Data analysis: Data that meet the protocol for Bird Study #1 (e.g., collected every 3 days) will be collected in a manner that will support the Beached Bird Model (NRDA Bird Study #1). Other data will be used to document the number and locations of beached birds.

1C. Open Water Bird Surveys

Sampling Area: The sampling area encompasses bays and open water estuaries that are known to have high/medium concentrations of waterfowl and heavy/moderate oiling as described in Objective 1A.

Target species: This study targets dabbling ducks, diving ducks and geese. To the extent possible, other avian species (especially those that are targeted by other NRDA studies) found dead or oiled will be recorded and reported to Wildlife Operations Dispatch. Dead birds will be processed in accordance with the Carcass Collection Protocol (revised January 2011) (Appendix A).

Sample units: Sample units are GPS tracks, or transects, across the bays and open water estuaries.

Sample selection: An attempt will be made to site the transect start point in close proximity (e.g., approximately 300 meters offshore of the marsh edge) to the start of each Objective 1A study site. Transects will run due south a maximum of 5 km in length or to the initial entrance to embayment, whichever comes first.

Sample duration: The first phase of survey transects will be conducted concurrent with Objective 1A). Sampling will be initiated in January and extend for 30 calendar days at which time BP and the Trustees will review the cumulative data and determine the need for additional work under this Plan. If BP and the Trustees agree it is warranted cooperative sampling will continue in a phased manner.

Stratification: Transects will be in representative bay habitats that historically support “high” or “medium” (>0.5 ducks/acre and 0.1-0.5 ducks/acre for bays, respectively, based on Gulf Coast Joint Venture data sets) duck concentrations and coincide with areas identified with “heavy/moderate” oil impacts as described in Objective 1A. Transects will be stratified by site as described in Objective 1A.

Data collection: Boat crews will survey pre-assigned transect tracklines downloaded on GPS units. Tracklines will be tracked using a GPS recording position. Surveys will be run when the

boat is underway on a straight course at a constant speed. A minimum of three observers (one federal and one state Trustee representative and one BP representative) will be on each survey including the boat operator when boat space allows. If boat space does not allow, a good faith effort will be made to obtain a larger boat prior to the next outing.

The observers will work as a team and be seated near the bow of the boat with an unobstructed 180 degree field of view, the centerline (90 degrees) being the bow of the boat. The observer's arc will reach 300m away from the boat for the purpose of carcass observation. The perpendicular distance from the centerline will be recorded for each observation. Distance sampling methods will be used to adjust for visibility. Narrow strip transects (e.g. less than 50m) will be used for the purposes of live bird species identification, oiling status observation, and density estimates.

Observers will use binoculars with 10X magnification to identify live and dead waterfowl, identify waterfowl to species, and to determine waterfowl oiling status. All observations will be recorded. Dead birds will be processed in accordance with the current protocols.

Observers will use a range finder provided to familiarize themselves with the transect radius prior to beginning and periodically during the transect. One observer should focus on simple population counts within the strip-transect while the other focuses on confirmed observations of oiling status. Data collected during the surveys will be recorded on the attached data sheets (Appendix A). For each bird, critical information includes: species (or closest taxon), whether the bird was confidently assessed for oiling, and whether the bird was oiled or not. For birds for which oiling status could not be confidently assessed, these observations will be noted for purposes of estimating population sizes, but they will not contribute to the determination of oiling rate. An oiling status is "confidently assessed" when the observer has undoubtedly observed oil on the bird or has undoubtedly observed the bird to be free of oil. Any birds for which oiling status could not be confidently determined due to distance from observer, water conditions, weather or other factors limiting visibility should be noted as "undetermined."

Survey frequency: Transects will be sampled every 3 days.

Survey duration: The survey will continue depending on results from phased 30 day sampling periods if BP and the Trustees agree it is warranted.

The Beached Bird Model requires estimates of:

- 1) Searcher efficiency,
- 2) Sinking,

- 3) Removal by scavenging, and
- 4) Background carcass collection rates.

Depending in part on results of the initial 30 days of 1A-1C effort, carcass persistence and drift and searcher efficiency studies may be cooperatively developed and implemented in separate, supplemental work plans.

GENERAL OPERATING PROCEDURES

Chain-of-custody procedures will be observed at all times. All samples and data sheets will be transferred with appropriate chain of custody forms.

Laboratory Data

All field and laboratory data will be collected, managed and stored in accordance with US EPA Good Laboratory Practice regulations (GLPs) to the extent practicable. In accordance with GLPs, all field and laboratory work, and the calibration and use of field and laboratory equipment (e.g. scales, hand held GPS devices, etc.) shall be conducted using written Standard Operating Procedures (SOPs). The appropriate training on particular equipment or in the conduct of specific field studies for all personnel involved with the project shall be documented and those records kept on file by the implementing entity for the duration of this project. All data (including electronically archived data), and original data sheets or electronic files, must be promptly transferred to USFWS, BP or their representative, LOSCO and other Trustees. All samples will be sent to NRDA approved laboratories.

In the event that samples for laboratory analysis are collected, each laboratory shall simultaneously deliver raw data, including all necessary metadata, generated as part of this work plan as a Laboratory Analytical Data Package (LADP) to the trustee Data Management Team (DMT), the Louisiana Oil Spill Coordinator's Office (LOSCO) on behalf of the State of Louisiana and to BP (or CardnoENTRIX on behalf of BP). The electronic data deliverable (EDD) spreadsheet with pre-validated analytical results, which is a component of the complete LADP, will also be delivered to the secure FTP drop box maintained by the trustees' Data Management Team (DMT). Any preliminary data distributed to the DMT shall also be distributed to LOSCO and to BP (or CardnoENTRIX on behalf of BP). Thereafter, the DMT will validate and perform quality assurance/quality control (QA/QC) procedures on the LADP consistent with the authorized Analytical Quality Assurance Plan, after which time the validated/QA/QC'd data shall be made available simultaneously to all trustees and BP (or CardnoENTRIX on behalf of BP). Any questions raised on the validated/QA/QC results shall be handled per the procedures in the Analytical Quality Assurance Plan and the issue and results shall be distributed to all parties. In

the interest of maintaining one consistent data set for use by all parties, only the validated/QA/QC'd data set released by the DMT shall be considered the consensus data set. In order to ensure reliability of the consensus data and full review by the parties, no party shall publish consensus data until 7 days after such data have been made available to the parties. Also, the LADP shall not be released by the DMT, LOSCO, BP or CardnoENTRIX prior to validation/QA/QC absent a showing of critical operational need. Should any party show a critical operational need for data prior to validation/QA/QC, any released data will be clearly marked "preliminary/unvalidated" and will be made available equally to all trustees and to BP (or CardnoENTRIX on behalf of BP).

Scheduling Field Efforts

A good faith effort will be made to conduct all cooperative study elements that fall within the BP safety policy¹ with integrated teams of observers and field technicians. Where study elements fall outside of BP safety policy, teams will be integrated to the extent possible. A weekly schedule describing the number of teams and their general area of operation will be prepared by the Trustee's project coordinator and provided to BP or its designated contractor a week in advance. BP or its designated representative will provide the Trustee's project coordinator and other responsible Trustee agencies a list of the field efforts in which it will participate at least 3 days prior to the beginning of the designated week, and BP or its designated representative will be notified as soon as possible of specific time and place of departure for cooperative field efforts. If these agreed-upon notification and communication procedures are followed, yet circumstances prevent BP or its designated representative from participating in a field effort, the field effort may be carried out without BP or its designated representative's participation.

Field data transfer: Prior to concluding each field day, integrated teams will share (1) all data sheets (2) all official photographs, and (3) the official GPS track log using methods developed as part of the Beached Bird Survey (Study #1) effort. In the event that the data is collected without a BP representative present, those data (data sheets, track logs, photos, any and all data collected as part of the field effort) will be e-mailed to a designated BP representative within 3 days of its being collected. In the event that transfer of such data is delayed due to equipment malfunction or other reasons, it will be emailed to designated BP and Louisiana Oil Spill Coordinator's Office representatives as soon as practicable.

Durable Equipment - All durable equipment (such as cameras, GPS, etc.) purchased by BP for this study will be returned to BP or their designated representatives at the conclusion of their use for this study.

¹ Low level overflights and night operations generally fall outside the BP safety policy.

Carcass Management - Carcasses encountered during field efforts will be processed according to the Deepwater Horizon (MC 252) Oil Spill Carcass Collection Protocol as it may be amended.

Safety – Field teams will comply with existing training and safety protocols as applicable to operations. Prior to commencement of field activities, BP and the Trustees will agree upon a person or persons to whom study participants may report any safety concerns. Such person(s) will take action to address and resolve reported concerns.

Adaptive Management of Field Efforts – BPs continued participation in, and funding of the cooperative waterfowl plan, or any of its specific tasks, is contingent upon the results of the meeting which will occur within 30 days beyond implementation of surveys on the last transect initiated. During this meeting, adherence to SOPs will be reviewed and discussed. The trustees and BP will also review the information collected to date and will determine if there is joint agreement that continued data collection is warranted.

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APPENDIX A: STANDARD OPERATING PROCEDURES

MORTALITY AND OILING
EXTENT OF WINTERING
WATERFOWL
DEEPWATER HORIZON (MC
252)

NATURAL RESOUCCE
DAMAGE ASSESSMENT AND
RESTORATION (NRDAR)

**Bird Study No. 10 Sections 1a –
1c**

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5 January, 2010

INTRODUCTION

The Deepwater Horizon (MC 252) oil spill began on April 20, 2010 in the Gulf of Mexico off the Louisiana coastline. Oil spill related injury to wildlife is of major concern to the Natural Resource Trustees, public, and BP. At least 30 state wildlife management areas, national wildlife refuges and national parks occur in the area potentially threatened by the oil. Seabirds, colonial waterbirds, shorebirds, and waterfowl are particularly susceptible to impacts from the oil at sea and on land.

Study plans are assessing potential impacts to marsh birds (NRDA Bird Study #3), colonial waterbirds (NRDA Bird Study #4), pelagic seabirds (NRDA Bird Study #6), the endangered Piping Plover (*Charadriusmelodius*) (NRDA Bird Study #7) and non-breeding and breeding shorebirds (NRDA Bird Study #5 and #8). This plan, the tenth in a series of avian injury ephemeral data collection studies, seeks to specifically address potential impacts to waterfowl. The objectives of this study are to:

- 1) document dead and live oiled and unoiled waterfowl in representative habitats,
- 2) estimate the temporal and spatial abundance and distribution of waterfowl within the study area,
- 3) examine oiled and not visibly oiled birds collected from representative habitats.

This manual provides the protocols, methods, resource materials, and some overall context for Natural Resource Damage Assessment and Restoration Bird Study #10 Section 1a-1c. In contrast to many offshore surveys of marine birds, most of which seek to obtain an accurate index of abundance or density, this study places its greatest priority on enumerating relative carcass abundance in affected and unaffected areas, and the percentage of visibly oiled waterfowl in impacted zones and unimpacted areas.

ACKNOWLEDGMENTS

The Trustee Waterfowl Technical Working Group drafted the work plan upon which this manual is based. Additional protocols were also obtained from the Pelagic Seabird SOP (NRDA Bird Study #6), Non-Breeding Shorebird Study (Bird Study #5 – Objectives #2 and #3b), and Beached Bird Study (Bird Study #1). This SOP was reviewed by NRDAR Fairhope office personnel, LDWF, USFWS, DOI NRDA Data Manager, and a DOI Contractor.

**SAMPLING DESIGN FOR ESTIMATING OILING RATES AND
COUNTING CARCASSES OF WATERFOWL USING WALKING AND
BOAT-BASED SURVEYS IN THE VICINITY OF THE DEEPWATER
HORIZON (MC 252) OIL SPILL (BIRD STUDY #10 Objectives 1a - 1c)**

SAMPLING DESIGN

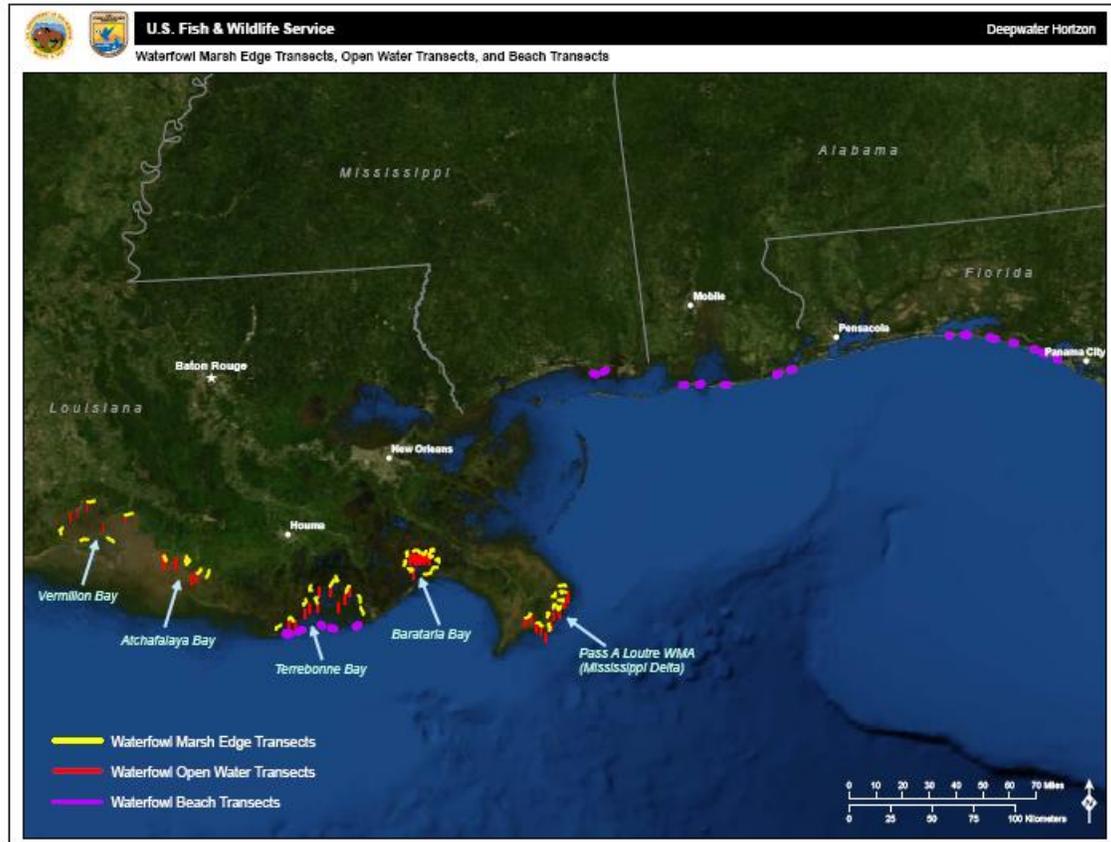
A total of 100 coastal transects (5 – 20 per site) were selected for ground-based non-breeding waterfowl surveys in a five-state area within the Gulf of Mexico (Table 1, Map 1). Predetermined survey areas were established in sites where waterfowl aggregations are likely to be encountered. Field surveys will consist of two parts: 1) live waterfowl oiling level assessment, and 2) waterfowl carcass enumeration. Both parts are done as the observers move along their assigned survey route either from a boat (marsh edge and open water; Louisiana only) or on foot (Louisiana to Apalachicola, Florida).

Table 1. List of study sites, the number of transects per study site for the deepwater horizon MC-252 oil spill as part of NRDA Bird Study #10 Objectives 1a-1c.

Site	Impact	Number of Transects ¹		
		Marsh	Open Water	Beach
Atchafalaya Delta WMA	Reference	5	5	
Vermilion Bay	Reference	5	5	
Barataria Bay	Impacted	10	10	
Terrebonne Bay	Impacted	10	10	
Mississippi River Delta	Impacted	10	10	
Louisiana Barrier Islands	Impacted			5
Mississippi	Impacted			5
Alabama	Impacted			5
Florida	Impacted			5

¹Marsh and open water transects are 5 km in length, beach transects are approximately 2km long

Figure 1. Map of all study transects for NRDA Bird Study #10 Objectives 1a-1c.



Permits, Access, and Safety

Each field team should verify that the necessary permits have been acquired to access the necessary State Wildlife Management Areas, State Parks, National Parks, and National Wildlife Refuges. To the extent possible the Natural Resource Damage Assessment and Restoration (NRDAR) bird coordinator will work with you to obtain the necessary permits.

Surveys will be conducted in a variety of environments and proper safety precautions must be taken to ensure the health of each crew member. Consult the *MC 252 Site Safety Plan* for training and personal protective equipment that may be required while conducting surveys (Waterfowl Survey Workbook). All crew members must wear protective booties in areas affected by oil and carry proof of trainings (photocopies of HAZWOPER and BP 4-Hour Training certificates) during all surveys. Specific safety protocols such as daily check in and scheduling are provided in the Field Team Tracking Protocol in the Workbook.

Sampling Schedule

Each boat-based transect (marsh and open water) within each study area will be sampled every three days for 30 days starting early-January. All pre-existing beached bird transects in LA will be surveyed on foot every three days consistent with protocols for Bird Study #1. A subset of existing beached bird transects in MS, AL, and FL (to Apalachicola) will also be surveyed at a reduced frequency (e.g., every 14 days). Surveys will be extended another 30 days if reasonable numbers of oiled live birds and carcasses are detected, but no difference among impacted and control sites is found (for boat-based surveys). Surveys could be contracted if very few carcasses are found. The Weekly summaries of results will be provided to the Trustees who will ultimately determine whether modifications to the duration of field sampling are warranted. If unsuitable weather or tidal conditions prevent the completion of a scheduled survey, it may be rescheduled and completed over the next two days. If a weather forecast predicts that conditions will prevent a survey from being completed on the scheduled day, the survey may be done up to two days prior to the original date. Crews are encouraged to track future weather to plan accordingly.

FIELD METHODS

Data Sheets

Survey data (e.g., date, start/end time, coordinates, weather) will be recorded on the Bird Search Effort – Wintering Waterfowl (BSE – WW) data sheets. Bird observational data will be recorded on Live Animal Assessment – Wintering Waterfowl (LAA – WW) data sheets. If dead birds are encountered, data will be recorded on Carcass Collection – Wintering Waterfowl (CC – WW) data sheets.

Estimating Oiling Rates in Marsh and Open Water Habitats (Objectives 1a and 1c)

Marsh and open water surveys are performed by boat, following an established, 5 km course at approximately 10 km per hour (or the slowest possible safe operating speed). Routes were established by ground-truthing transects in the two weeks prior to commencing surveys. Best route tracks were recorded and will be followed using a GPS. Beach surveys are established, 2 km transects that will be conducted in one pass. Observations will be made on all birds or groups of birds encountered. Oiling status will only be assessed for live birds within 100 m of the boat or observer (beach surveys). Care will be taken to avoid double-counting flying birds. Before each survey, surveyors will calibrate their visual, un-aided ability to estimate distance using a range finder on objects (e.g., buoys) at least five locations from 5-100 m distant. A minimum of three observers, including the boat operator, (one federal and one state Trustee representative and one BP representative) will be on each survey including the boat operator when boat space allows. If boat space does not allow, a good faith effort will be made to obtain a larger boat prior to the next outing. For boat-based surveys, two observers will observe birds and record while the other observer drives the boat and also assists in detecting birds or identifying oiling extent of identified birds. For beach surveys, observers will walk the beach (with at least one observer below and one above the wrack line) and will alternate who is the recorder for each transect and will generally follow protocol for NRDA Bird Study #1: Beach Bird Surveys (Appendix A-2).

Observers will use image-stabilizing binoculars with at least 10X magnification to locate live waterfowl, identify them to species (or nearest taxon), and to determine the bird's oiling status.

Oiling status will be documented using oiling categories developed for the Beached Bird Survey Live Animal Assessment.

For each detection of a bird or group of birds, time, number, species, and oiling status will be recorded along the length of each transect for all waterfowl species. At one point along each transect, observers will conduct a live bird assessment on non-waterfowl species following protocol described in Appendix B (Beached Bird Surveys). The live assessment will start when the first group of non-waterfowl birds are seen along each transect. Only birds that are in clear view of the observer will be assessed for oil. Oiling level will be assessed according to the following amount of oil coverage for each bird: (1) not visibly oiled, (2) trace (< 5%), (3) light (5-20%), (3) moderate (21-40%), (4) heavy (> 40%). An oiling status is “confidently assessed” when the observer has undoubtedly observed oil on the bird or has undoubtedly observed the bird to be free of oil. GPS waypoints (boat position) and distance from the survey transect, i.e., the boat, will be taken for each confidently assessed sighting of an oiled or unoiled bird. Waterfowl that cannot be confidently assessed will be recorded, but they will not contribute to the determination of oiling rate. Any waterfowl for which oiling status could not be confidently determined due to issues with distance from observer, sea state, or weather limiting visibility will be noted as “undetermined”.

Enumerating Waterfowl Carcasses in Marsh, Beach, and Open Water Habitats (Objectives 1a - 1c)

Observations will be made during surveys for live waterfowl. For marsh surveys (Objective 1a) observers will look for carcasses along the vegetated edge nearest to the transect. For beach surveys (Objective 1b), observers will look for carcasses from the water’s edge up to 5 m above the wrack line (the collection of organic debris collected from the previous high tide). If this is not apparent, the inland edge is defined as 50-m inland from the water or vegetation line, whichever comes first. Whenever practicable, oiled or dead individual birds observed outside of sample segments will be recorded as “off transect.”

For open water surveys (Objective 1c), observers will look in a 180 degree arc from the bow of the boat. Observers will use image-stabilizing binoculars with at least 10X magnification to locate carcasses. When a carcass is detected, observers will calculate the distance of the carcass from the survey transect, i.e., the boat, using a rangefinder.

Observers will then record location variables on the Carcass Collection – Wintering Waterfowl (CC-WW) data sheets (Appendix A-1) and collect or mark carcasses consistently using established Carcass Collection Protocols (Appendix A-2 and Appendix A-3). For each bird, critical information includes: species (or closest taxon), location, and a description of oil visible on the bird. A minimum of three observers, including the boat operator, (one federal and one state Trustee representative and one BP representative) will be on each survey including the boat operator when boat space allows. If boat space does not allow, a good faith effort will be made to obtain a larger boat prior to the next outing. One observer will look for carcasses and one observer will record while the third observer drives the boat and also assists in carcass detection.

The area surveyed for marsh transects (Objective 1a) is variable based on the distance of the transect line to the nearest vegetated edge. To estimate the area surveyed, we will lay GPS tracks along each transect, and digitize the shoreline at each transect using GIS software (ArcGIS 9.2, ESRI Inc.). We will then use ArcGIS to create a polygon using the transect line and shoreline as boundaries connected by two straight lines. We can then determine how much marsh habitat

within a site was surveyed and extrapolate carcass abundance based on area surveyed to the entire marsh area as determined by GIS. We will ground truth our digitized estimates of shoreline by laying GPS tracks along the vegetated shore edge by walking the shoreline along three transects per site. If ground-truthed shorelines do not approximate those digitized using GIS, we will walk the vegetated edge of each marsh transect within the study.

COMPLETING DATA SHEETS

NOTE: Observers are not to fill out lines on the forms' footer sections that are indicated with the following designations: "Database Form ID: _____", "Data Entered into Database by (print and sign): _____", and "Date Entered: _____"

1. BIRD SEARCH EFFORT – WINTER WATERFOWL DATA SHEET

- **Page ___ of ___:** Indicate the first page of all forms used, even if only one page used, and number the second, third, etc., pages for that particular transect if applicable.
- **Investigators:** print and sign full name of every observer.
- **Date:** Expressed as 3-letter calendar month between calendar date and year. E.g., 07Jul2010.
- **Start/End Time:** Time of the start and end of one transect survey in 24-hour military format (e.g., 3:30PM = 1530)
- **Camera:** Camera ID number
- **SD Card Number:** Number of SD card in camera
- **GPS Unit#:** Number on outside of GPS unit
- **Survey Tools:** Circle binoculars, scope, or both
- **State:** State where transect survey was conducted (e.g., LA, MS, AL)
- **Transect ID:** For marsh and open water surveys; one letter transect type code (M = marsh transect, O = open water transect, followed by a 2-digit transect number, e.g., M03. For beached bird surveys, two letter state code, followed by 2 or 3 digit segment ID number followed by 2 digit transect number, e.g., LA-644-01

Format for Beached Bird Surveys

Louisiana Beach survey	LA-XXX-XX
Mississippi Beach Survey	MS-XXX-XX
Alabama Beach Survey	AL-XXX-XX
Florida Beach Survey	FL-XXX-XX

- **Survey Area:** Name of island (e.g., Chandeleur islands) or 4-digit study site code.

Site codes for study sites

Atchafalaya Delta	ATCH
Vermilion Bay	VERM
Terrebonne Bay	TERR
Barataria Bay	BARA
Mississippi River Delta	MSRD

- **Transect Type:** Circle marsh, open water, or beach survey
- **Start Terminus:** Either T0 or T1 read from the GPS or map. Start at terminus that allows observers to best see the water in relation to the sun.
- **Start/End Lat/Long:** Latitude and longitude of the boat in decimal degrees and WGS 84 projection (e.g., 90.339480) at the starting point and ending point of the transect survey. Do not round decimal degrees.
- **Track ID:** At the end of each day, save your daily tracks with the following naming protocol. Four digit site code, date, and team letter. The primary team will be team ‘A’, those filling in or helping out at a site will be subsequent letters to be decided on the day of survey. Do not delete or rename any tracks once they are saved.

Tracks for the primary team on the Atchafalaya delta on January 5th would be called

ATCH_1_5_A

A second team helps on 4 on January 18 at MSRD and their tracks would be called...

MSRD_1_18_B

Site and Transect Letters:

Mississippi River Delta = MSRD

Atchafalaya = ATCH

Vermilion Bay = VERM

Barataria Bay = BARA

Terrebonne Bay = TERR

- **Oil Presence:** circle one of the options listed: oil smell, oil in water, oil on vegetation, oil on exposed land, none
- **Weather:** Use a single numerical code, ranging from “0” to “5”, as listed and described on form.
- **Wind:** Recorded wind speed, expressed in miles per hour.

- **Wind Direction:** True wind direction (not relative to the ship), expressed in cardinal directions.
- **Visibility:** Use a single numerical code, ranging from “0” to “9”, as listed and described on form.
- **Tide:** Position (low or high) and direction (rising or falling). May be filled out after transect is run after looking at a tide chart.
- **Notes:** Notes any elaboration on behavior, inter-specific associations, oceanographic features, etc., observed during the transect.
- After completing the survey, before leaving the survey area, check each datasheet to confirm that ALL data fields are complete and filled out correctly, completely, and legibly. Empty field should be “X” out. 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 Search Effort - Wintering Waterfowl Data Sheet
NRDA Bird Study #10 1A-1C

Deepwater Horizon (MC-252)

Page ____ of ____

Please: Only one transect per form. Fill out form completely; indicate 'Unknown' or 'Not Evaluated' if applicable

Investigators (print and sign names) _____

Date _____ Start time _____ End Time _____ Camera _____ SD Card # _____ GPS Unit # _____

State _____ Transect ID _____ Survey Area _____

Start Lat¹ _____ Start Long _____

Survey Tools (circle one): Binoculars Scope Both

Transect Type (circle one): Marsh Open-Water Beach

End Lat _____ End Long _____ Track ID _____

Oil Presence (circle all that apply): Oil smell Oil in water Oil on vegetation Oil on exposed land None

Weather² _____ Wind (mph) _____ Wind Direction³ _____ Visibility⁴ _____ Tide⁵ _____

Notes :

¹Lat/Long in decimal degrees WGS 84; Lat = Northing, Long = Westing

²Weather: 0 = clear to partly cloudy (<50%); 1 = cloudy to overcast (>50%); 2 = Fog, Patchy; 3 = Fog, solid; 4 = rain, light, 5 = rain, heavy

³Wind Direction: SW, W, NW, N, NE, E, SE, S

⁴Visibility: 0 = < 50m; 1 = 50 - 200m; 2 = more than 200 m

⁵Tide: position (low or high) and direction (rising or falling)

Database Form ID _____ Database Entry by (print and sign) _____ Date Entered _____ REV12JAN11

2. **LIVE ANIMAL ASSESSMENT – WINTERING WATERFOWL DATA SHEET**

- **Page ___ of ___:** Indicate the first page of all forms used, even if only one page used, and number the second, third, etc., pages for that particular transect if applicable.
- **Investigators:** print and sign full name of each observer (if 2).
- **Date:** Expressed as 3-letter calendar month between calendar date and year. E.g., 07Jul2010.
- **Transect ID:** For marsh and open water surveys; one letter code for survey type (M = marsh, O = open water), followed by a 2 digit transect number, e.g., M03. For beached bird surveys, two letter state code, followed by 2 or 3 digit segment ID number followed by 2 digit transect number, e.g., LA-644-01

Site codes for beach transects are as follows

Louisiana Beach survey	LA-XXX-XX
Mississippi Beach Survey	MS-XXX-XX
Alabama Beach Survey	AL-XXX-XX
Florida Beach Survey	FL-XXX-XX

- **Survey Area:** Name of island (e.g., Chandeleur islands) or 4-digit study site code.

Site codes for study sites

Atchafalaya Delta	ATCH
Vermilion Bay	VERM
Terrebonne Bay	TERR
Barataria Bay	BARA
Mississippi River Delta	MSRD

- **Start/End Time:** Time of the start and end of one transect survey in 24-hour military format (e.g., 3:30PM = 1530)
- **Group Number:** Each bird or group of birds independently encountered will be assigned a group number that is the time followed by group ID, e.g., the second group of birds observed on a transect at 923AM would be given the group number 0923-2 and the group number would apply to numerous rows if multiple species were observed within the group (one row for each species)
- **Species:** Species recorded. Observers may use a four-letter abbreviation, termed an alpha code, using the conventions provided by the Institute for Bird Population Studies (see: <http://www.birdpop.org/alphacodes.htm>) Below is a list of many of the

species that have been recorded in Gulf of Mexico waters (coastal, inshore, offshore, and pelagic) and their corresponding codes.

ENGLISH NAME	4-LETTER CODE	SCIENTIFIC NAME
Mallard	MALL	<i>Anas platyrhynchos</i>
Lesser Scaup	LESC	<i>Aythya affinis</i>
Redhead	REDH	<i>Aythya americana</i>
Canvasback	CANV	<i>Aythya valisineria</i>
Northern Pintail	NOPI	<i>Anas acuta</i>
Northern Shoveler	NSHO	<i>Anas clypeata</i>
Gadwall	GADW	<i>Anas strepera</i>
Blue-winged Teal	BWTE	<i>Anas discors</i>
American Green-winged Teal	AGWT	<i>Anas c. carolinensis</i>
American Wigeon	AMWI	<i>Anas americana</i>
American Coot	AMCO	<i>Fulica americana</i>
Mottled Duck	MODU	<i>Anas fulvigula</i>

- **Degree of oiling:** Record the number of birds per species seen in each of the described oiling degree category in columns 3 to 7 (“No Visible Oil” through “Heavy (>40%). “No Visible Oil” means that a bird was thoroughly visually evaluated and it did not have oil on it. “No Visible Oil” *does not* mean that oil could not be adequately evaluated; do not record inadequately evaluated birds on the form.
- **Debilitated:** Record the number of debilitated birds per species in the “debilitated” column. This includes any birds seen exhibiting lethargic or abnormal behavior, misaligned feathers, or injuries.
- **Photo (ID no.):** if a photograph (or photographs) are taken to elaborate or confirm any data on the transect, including photos of oiled birds, then a numerical identifier, including one from the camera, should be recorded here (see attached instructions for Disposition of Electronic Data for FWS Employees or FWS Contractors) .
- **Distance (m):** distance of bird in meters from observer using rangefinder or educated guess.
- **GPS Waypoint:** waypoint name given to location where bird(s) were located. Using the following naming protocol
 - SITE_TRANSECT_MONTH_DAY_L_NUMBER

The first GROUP of birds you record in marsh transect 9 in the Atchafalaya delta on January 5th would be called

A_M09_1_5_L1

The 4th group of birds in open water survey transect 4 on January 18 at MSRD would be called...

M_O04_1_18_L4

Site and Transect Letters:

MSRD = M

Atchafalaya = A

Vermilion Bay = V

Barataria Bay = B

Terrebonne Bay = T

Marsh transects = M

Open water transects = O

Beach transects = B

- **Notes:** Note any elaboration on behavior, inter-specific associations, oceanographic features, etc., observed during the transect survey.
- After completing the survey, before leaving the survey area, check each datasheet to confirm that ALL data fields are complete and filled out correctly, completely, and legibly. Empty field should be "X" out. 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.

3. CARCASS COLLECTION – WINTER WATERFOWL DATA SHEET

- **Page ___ of ___:** Indicate the first page of all forms used, even if only one page used, and number the second, third, etc., pages for that particular transect if applicable.
- **Date:** Expressed as 3-letter calendar month between calendar date and year. E.g., 07Jul2010.
- **Investigators:** print and sign full name of every observer.
- **Transect ID:** For marsh and open water surveys; one letter code for site (M = marsh, O = open water, followed by a 2-digit transect number, e.g., M03. For beached bird surveys, two letter state code, followed by 2 or 3 digit segment ID number followed by 2 digit transect number, e.g., LA-644-01

Site codes for beach transects are as follows

Louisiana Beach survey	LA-XXX-XX
Mississippi Beach Survey	MS-XXX-XX
Alabama Beach Survey	AL-XXX-XX
Florida Beach Survey	FL-XXX-XX

- **Survey Area:** Name of island (e.g., Chandeleur islands) or 4-digit study site code.

Site codes for study sites

Atchafalaya Delta	ATCH
Vermilion Bay	VERM
Terrebonne Bay	TERR
Barataria Bay	BARA
Mississippi River Delta	MSRD

- **Survey Type:** circle beach, marsh or open water
- **Evidence Seizure Tag (EST) Number:** Form 3-487, WHITE tag assigned for one or more birds AT A SINGLE LOCATION. See Carcass Collection Protocol (Appendix A-3) for instructions on filling out Evidence Seizure Tag.
- **Was carcass collected:** Circle Yes or No
- **Disposition:** If carcass was collected, note disposition.
- **Time:** Time in 24-hour military format at detection

- **Carcass ID#:** Unique ID tag # affixed to each carcass. The tag ID # is the location_transect type and #_order of birds collected under that evidence seizure tag. For example, the second carcass collected on open water transect 4 at Vermilion Bay have the tag #
 - VERM_O04_002 (to put on evidence ID tag)
 - ONLY the last 3 digits need to be on the data form (ex: 003)
- **Species:** Species recorded. Observers may use a four-letter abbreviation, termed an alpha code, using the conventions provided by the Institute for Bird Population Studies (see: <http://www.birdpop.org/alphacodes.htm>) Below is a list of many of the species that have been recorded in Gulf of Mexico waters (coastal, inshore, offshore, and pelagic) and their corresponding codes.

ENGLISH NAME	4-LETTER CODE	SCIENTIFIC NAME
Mallard	MALL	<i>Anas platyrhynchos</i>
Lesser Scaup	LESC	<i>Aythya affinis</i>
Redhead	REDH	<i>Aythya americana</i>
Canvasback	CANV	<i>Aythya valisineria</i>
Northern Pintail	NOPI	<i>Anas acuta</i>
Northern Shoveler	NSHO	<i>Anas clypeata</i>
Gadwall	GADW	<i>Anas strepera</i>
Blue-winged Teal	BWTE	<i>Anas discors</i>
American Green-winged Teal	AGWT	<i>Anas c. carolinensis</i>
American Wigeon	AMWI	<i>Anas americana</i>
American Coot	AMCO	<i>Fulica americana</i>
Mottled Duck	MODU	<i>Anas fulvigula</i>

- **Sex:** M = male, F = female, U = unknown
- **Carcass Position:** Whether carcass is belly up (BU) or belly down (BD).
- **Beach Position: for beach surveys only** - position relative to high tide line: U = Upper (above wrack line W = Wrack, L = Low (wash zone), otherwise N/A
- **Photo (ID no.):** if a photograph (or photographs) are taken to elaborate or confirm any data on the transect, including photos of oiled birds, then a numerical identifier, including one from the camera, should be recorded here (see attached instructions for Disposition of Electronic Data for FWS Employees or FWS Contractors)
- **Oiling:** the degree to which the carcass is covered in oil. NONE = not visibly oiled, Trace = ≤5% of body, Light = 6-20% of body, Moderate = 21-40% of body, Heavy = >40% of body

- **Scav:** the degree and type of scavenging visible on the carcass. F = freshly dead whole carcass with little or no scavenging, L = lightly scavenged, H = heavily scavenged, M = mummified or skeletal, X = not evaluated

- **GPS Waypoint:** waypoint name given to location where a carcass was located. Using the following naming protocol

- SITE_TRANSECT_MONTH_DAY_C_CARCASS ID

The first carcass you record in marsh transect 9 in the Atchafalaya delta on January 5th would be called

A_M09_1_5_C1

The 4th carcass in open water survey transect 4 on January 18 at MSRD would be called...

M_O04_1_18_C4

Site and Transect Letters:

MSRD = M

Atchafalaya = A

Vermilion Bay = V

Barataria Bay = B

Terrebonne Bay = T

Marsh transects = M

Open water transects = O

Beach transects = B

- **Notes:** Note any elaboration on behavior, inter-specific associations, oceanographic features, etc., observed during the transect survey.
- After completing the survey, before leaving the survey area, check each datasheet to confirm that ALL data fields are complete and filled out correctly, completely, and legibly. Empty field should be "X" out. 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.

DATA DISPOSITION

Data Sheets: At the end of each day, check each data sheet to confirm that data fields are complete.

- DO NOT LEAVE DATA FIELDS BLANK; WRITE N/A for “Not Applicable” WHEN APPROPRIATE.
- Make sure you sign and date all data sheets as the investigator (not data entry).

At the end of each day, scan all signed data sheets and save as:

NRDA_mmddyyyy_TRANSECTNUMBER_LSUteammemberlastname.pdf.

Example: “**NRDA_08232010_GOGU.23Aug2010.17:45_MATZ.pdf**”

At the end of each day, or as often as possible based on internet connectivity, email these files to:
FW4NRDADataManagement@fws.gov.

Within 7 days of the end of each survey, the observer(s) must make available all original signed data sheets, the camera, camera memory card, scanner, laptop and any other issued equipment to the Project Coordinator (Courtney Amundson, LSU Ag Center). If the project coordinator cannot make it to a field site, all materials listed above must be provided using appropriate Receipt and Transfer of Property forms (DI-104 and DI-105) in person or via FedEx. The mailing address and contact information is as follows:

PROJECT COORDINATOR

Courtney Amundson, PhD
Program Coordinator, NRDA Bird Study #10 1a-1c
School of Renewable Natural Resources
341A RNR Building
LSU Ag Center
Baton Rouge, LA 70803
(225) 578-7854 (office)
(612) 655-0218 (cell)

Within 7 days of receipt of the original signed data sheets, electronic data, and equipment, the Project Coordinator will provide a weekly summary of study findings, and copy the photo and data sheet files from the laptop onto a CD and transmit the original data sheets, CD, and equipment to the Federal Trustees with the original, completed Receipt and Transfer of Property forms (DI-104 and DI-105) in person or via Federal Express to the following address:

U.S. Fish and Wildlife Service
NRDAR Planning Section – Birds
ATTN: Data Manager
29474 N. Main Street
Daphne, AL 36526
(251) 509-3565

All original data sheets and SD cards must be archived at the USFWS NRDAR office in Fairhope, AL, after LSU investigators have completed all tasks, including data entry. Data packages must be transmitted

with the original, completed Receipt and Transfer of Property forms (DI-104 and DI-105) in person or via Federal Express to the following address:

USFWS/NRDA
ATTN: Data Manager
24190 US HWY 98, Suite E
Fairhope, AL 36532
251-517-5008

Appendix A-1: DISPOSITION OF ELECTRONIC DATA FOR FWS EMPLOYEES or FWS CONTRACTORS

PHOTOS

Legally Defensible Photos

There are two concepts that apply to creating a legally defensible photo record. First, maintain a complete photo record. Do not delete photos from the camera or from your computer before the official archive is created. Second, keep one set of photos that are never opened. In practice this means transferring one copy of the photos from the camera memory card to a computer, to other storage media such as a non-editable DVD-R or CD-R, and to the secure server without ever opening them. The resulting continuous set of photo files that have not been opened will demonstrate that that you have a full, un-edited, photo record for the court.

- Set camera to keep incrementing file names across multiple downloads. This avoids duplicate filenames.
- Do not delete photos in the field. Maintain a full photo record from the lowest to highest photo number.
- Return from field – download camera
 - Place one copy in the “*Working*” directory and one copy in the “*Archive*” directory – before reviewing on the PC (review = open)

You will upload your photos to the secure server, following the instruction in “Data Entry Instructions: Uploading Digital Photographs” (Appendix A-4)

Before entry into the online server:

- Archive
 - Photos should be sortable by date, and you will not rename them. Label the archive directory using the following convention: “ArchivePhotos_DHMC252_NRDA_**Transect Number**_FWSteammemberlastname.”
 - Example: “ArchivePhotos_DHMC252_NRDA_GOGU.23Aug2010.17:45_Matz”
 - Never open the files stored in the “*Archive*” directory
 - Additional back-up copies can be made to portable hard drives

Returning from Field/Completion of Daily Surveys

Archive photos

Use the steps above to create an unopened, un-editable copy of all photos in the Archive Directory.

Process: Logging photos

Locating photos in space and time is a good first step to ensure that your photos become data and not useless files. The next step is to enter your photos in a log. Photo logs can take several forms. A log can

be a simple spreadsheet that captures basic information about each photo. It can also be a photo database that stores more information and provides additional functionality. A photo log should include:

Photographer: e.g., Angela Matz

Date: 05/24/2010

Incident Name: Deepwater Horizon (MC252) Spill

Note/Caption: e.g., Photo from NRDA Segment ALBA1-1, May 24 2010, Carcasses

Camera Memory Cards, Laptop, and Camera

Save all full SD cards for archiving – do not reuse them. When a card is full, remove it from the camera, tape it to a 3x5 card with your name, date, “NRDA Beached Bird Survey Photos” or other descriptor written on it, and save for transfer to the PI along with your original Data Sheets, Laptop Computer, and Camera immediately upon completion of the cruise.

Appendix A-2. SOP for Beached Bird Surveys (NRDA Bird Study #1)

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).

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%)	Dobilitated
<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.mmmmm^o, 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 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 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.
- 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 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 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 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.**

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* form to keep with the other forms for that survey segment. The Evidence Custodian will keep the original form, **you must keep a copy**.

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. Scan all signed data sheets from one segment and save as a .pdf file to your computer hard drive. Use the following naming convention:

NRDA_mmddyyyy_segmentID_USFWSteammemberlastname.pdf

Example: "NRDA_05252010_MSHR1-1NRDA_matz.pdf"

4. Email a copy of each segment .pdf file to:

DHMC252.BIRDNRDA.DATA.ERDC@gmail.com

5. Approximately every three days, FedEx all of your data forms to the NRDA Bird Group at:

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

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.

Appendix A-3. Carcass Collection Protocol

AVIAN CARCASS COLLECTION PROTOCOL Standard Operating Procedures for NRDA Bird Plan Study Field Crews January 13, 2011

The purpose of this protocol is to describe when and how to collect bird carcasses, as part of US Fish and Wildlife Service NRDA field studies being conducted to assess potential injury to birds during the MS Canyon 252 Deepwater Horizon Oil Spill. This protocol is periodically updated, according to current NRDA needs and injury conditions.

BEACHED BIRD SEARCH TEAMS (or members of NRDA Bird Study Surveys assigned this task):

- Teams will consist of at least two members. At least one member of the team should have previous carcass search and collection experience or have completed standardized training based on this protocol.
- Each collection team will be issued a carcass collection kit. Each kit should contain a carcass collection form.
- Begin each collection by filling out the top portion of the form for each location; carcass specific information is entered in the lower portion under the “DEAD BIRDS COLLECTED” heading.

WHEN TO COLLECT CARCASSES

The attached “Carcass Collection at a Glance” table illustrates final disposition of the carcass, based on characteristics of the carcass. The table also defines when a carcass should be collected or left in place.

If the carcass is banded, tagged or transmitted it could be a NRDA study bird. These carcasses will be collected regardless of their status. Record how bird is marked (band, tag or transmitter) and all associated numbers on its unique blue Evidence Identification Tag (see below).

If the carcass is of a species listed on the federal Endangered Species List, treat the carcass as if it were banded, tagged, or transmitted.

Carcass Collection Protocol

- Wear nitrile gloves when handling bird carcasses. A new pair of gloves should be donned prior to handling each bird.

- If one or more bird carcasses are found and collected at any one location, assign a **white Evidence Seizure Tag** (Form 3-487) for that location. Each Seizure Tag is imprinted with a unique number. Fill out the entire datasheet **except for the INV number block** (the Evidence Custodian will fill this in at the Intake Center). Do not leave anything blank other than the INV.
- Complete a **blue Evidence Identification Tag** (Form 3-2052) for each carcass that is collected. One blue Identification Tag is used to identify each individual carcass and should be filled in to include: the white Seizure Tag Number – collection number; date; and initials of the collector. Collectors should **not fill in the file no.** on the Identification tag (the Evidence Custodian will fill this at Intake Center).

NOTE: If more than one carcass is collected from a single location, then multiple blue Identification Tags will be recorded on the single white Seizure Tag assigned to that location. However, do not ~~to~~ exceed 10 carcasses per seizure tag; use additional tags if necessary. If only a single carcass is collected, its blue Evidence Tag will be the only one recorded on the white Seizure Tag for that location.

- Photograph the carcass with the completed blue Identification Tag visible next to the carcass.
- Fill in the carcass information on the carcass collection form including: species identification (if known), lat/long of carcass collection location (decimal degrees, WGS 84), ID# (blue Evidence Identification Tag item number (assigned sequential number, i.e., 001, 002...010); field photograph number; and amount/description of oiling. Determinations on carcass condition, scavenging, and emaciation should be made by experienced personnel as time allows.
- Carcass handling procedure -**It is important that oiled carcasses do not touch plastic bags.** For simplicity, follow this same handling process with fresh, Not Visibly Oiled (NVO) carcasses, as well:
 1. First place the carcass in a paper bag, then place the paper-bagged-carcass in a plastic bag.
 2. Do NOT place used gloves in the bag with the carcass.
 3. Securely attach the completed blue Evidence Identification Tag to the outside of the plastic bag.
- Record the GPS location for each carcass on the “Bird Search Effort and Birds Collected Form.”
- Complete the white Seizure Tag with information from all of the blue Identification Tags associated with this location. One member of the collection team should become responsible for this and their name should appear on the Seizure Tag.
- After the carcass(es) has been appropriately bagged and tagged, the accompanying white Seizure Tag should be filled in to include: the date and time; number of carcasses collected;

all blue Identification Tag numbers associated this same location; and the name of the person collecting the carcasses.

ADDITIONAL NOTES:

- If you collect multiple carcasses from one location which have different dispositions (some to LE and some to NRDA), fill out a separate datasheet and white Seizure Tag to represent all carcasses for each different disposition. In other words, all oiled carcasses should **be** recorded on one data sheet and Seizure tag which goes to LE, and all NVO on another data sheet and Seizure tag which goes to Fairhope NRDA. Remember not to exceed 10 carcasses per Seizure Tag.
- For all oiled carcasses collected, make a copy of the completed datasheets. Leave the ORIGINAL with the carcass at the Intake Center. Provide the copy to the Fairhope NRDA field office **and LOSCO**.

**MS Canyon 252 Deepwater Horizon Oil Spill
 USFWS OFFICE OF LAW ENFORCEMENT
 Designated OILED CARCASS Intake Centers**
Fresh (intestines intact) oiled carcasses only
 are to be sent to Law Enforcement at the locations below
 (Wildlife rehab center contact info is listed for your information).

FWS LE Liaison Wildlife Rehab Center Coordinators	Officer Wesley Verrill Jr. Resee Collins Carmen Simonton	(573) 999-1694 (404) 314-6526 (404) 576-3874	wesley_verrill@fws.gov resee_collins@fws.gov carmen_simonton@fws.gov
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Alabama

Environmental Studies Center 6101 Girby Road Mobile, Alabama	Susan Clemens	(251) 221-5000	LIVE OILED BIRDS ONLY No Carcasses
Alabama Office of Law Enforcement	Special Agent Donnie Grace	(251) 202-1556	donnie_grace@fws.gov

Florida

Wildlife Sanctuary of NW Florida 105 North "S" Street Pensacola, Florida	Dorothy Kaufmann	(850) 433- 9453	LIVE OILED BIRDS ONLY No Carcasses
Florida Office of Law Enforcement	Special Agent Downie Wolfe	(904) 545- 2612	downie_wolfe@fws.gov

Louisiana

Wildlife Rehab Center 200 Lear Drive Hammond, Louisiana	Erica Miller Heather Neville	(985) 345- 8261	LIVE OILED BIRDS ONLY No Carcasses
Louisiana Office of Law Enforcement	Special Agent Phillip Siragusa	(337) 288- 2810	phillip_siragusa@fws.gov

Mississippi

Humane Society of South MS 2615 25 th Avenue Gulfport, Mississippi	Casey Sartin	8-5133	LIVE OILED BIRDS ONLY No Carcasses
Mississippi Office of Law Enforcement	Special Agent Ben Bryant	4-7115	yant@fws.gov

NOT VISIBLY OILED Carcasses

FWS NRDA Field Office <u>Contact Bird Planner or Bird Lead to arrange for disposition in New Orleans</u>	Bird Lead	(251) 442- 7416	FW4_NRDA_Bird@fws.gov And/or Bird Planner email
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NRDA Carcass Collection AT A GLANCE

The Condition ¹ of the Carcass is:	And Oiling ² Status is:	And the bird is "Marked" or Listed? ³	Should you Collect?	Disposition and/or Action Guideline
Fresh (Intestines Intact)	Oiled	Yes	Yes	Disposition per LE Designated Intake Centers; make a copy of data sheet (original stays w/bird, copy to NRDA Bird Lead); notify NRDA Bird Lead in Fairhope.
		No	Yes	
	Not Visibly Oiled	Either Yes or No	Yes	Cold storage for retention by NRDA, <u>contact NRDA Bird Lead to arrange</u> for cold storage at 3401 Alvar St., New Orleans, 70126 (504-895-4826).
Recent	Oiled or Not Visibly Oiled	Either Yes or No	Yes	
Old	Oiled or Not Visibly Oiled	Yes	Yes	Leave in place. Mark with zip-tie to indicate carcass has been observed.
		No	No	

¹ A "Fresh" bird has intestines intact. "Recent" is defined as any largely-intact bird with feathers, including flat, dry carcasses (e.g., one wing attached to body, carcass without head, etc). "Old" is defined as a carcass consisting only of bones and/or isolated portions of a bird (e.g., head only, etc).

² "Oiling" means oil is present and visible to the naked eye, including light or trace oil.

³ "Marked" is defined as having a bird band, tag or telemetry equipment associated with the remains. Record bird band, tag, and/or satellite transmitter information. Bands and tags stay on bird; transmitters go to NRDA Bird Lead. "Listed" means it is a species that is protected as Threatened or Endangered under the ESA.

Table updated: January 13, 2011

The following informational figures and lists are reproduced here from the original Carcass Collection Protocol (NRDA Bird Study #1) (Nov 14, 2010):

Evidence Seizure Tag:

EVIDENCE SEIZURE TAG
UNITED STATES DEPARTMENT OF THE INTERIOR U.S. Fish and Wildlife Service

DATE, TIME OF SEIZURE: 5/29/2010 1300	SEIZURE TAG NO. 899766
FILE NO. INV.	
<input type="checkbox"/> TAKEN FROM: (PERSON AND/OR LOCATION) <input type="checkbox"/> RECEIVED FROM: <input checked="" type="checkbox"/> FOUND AT: Gulfport, MS	
30.235343 86.432243 WGS 84	
DESCRIPTION OF EVIDENCE: 001) Northern Gannet - Oiled 002) Unknown bird 003) Laughing gull	
SPECIAL AGENT/INSPECTOR Collector's name	BADGE NO.

FORM 9-487 (Rev. 7/87) U.S. GOVERNMENT PRINTING OFFICE: 2009-295-078

SEIZED PROPERTY RECEIPT

DATE, TIME OF SEIZURE:	SEIZURE TAG NO. 899766
DESCRIPTION: Leave blank and attached	
SPECIAL AGENT/INSPECTOR:	BADGE NO.

CHAIN OF CUSTODY: Listed Item(s) transferred from custody of officer listed on reverse side of this tag to:

DATE:	PRINTED NAME:	INITIALS:
5/29/10	Second person	SP
5/31/10	Third person	TP

RETURN ACKNOWLEDGEMENT: I hereby acknowledge that the article(s) listed on the reverse side of this tag have been returned to me in as good a condition as when they were seized by the indicated officer.

RECEIPT SIGNATURE:	DATE:
--------------------	-------

WARNING: the material to which this tag is affixed is in the custody of the United States Government and must not be tampered with under penalty of law: 18 USC 2232.

**DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE**

Date and military

Check appropriate box. If received from non-FWS, check that box & input person's name

List city, state, & collection site (Lat/Long in decimal degrees), and Datum

List bird species or class (gull, tern, sandpiper, etc.) and indication of oiling

Collector's name (does not have to be Law Enforcement)

Second person in the chain of custody or Evidence Custodian

Leave the INV block blank; Evidence Custodians will fill in the INV number

No more than 10 Evidence Identification Tags on 1 Evidence Seizure Tag

Leave blank unless LE

BLUE EVIDENCE TAG:

The diagram shows a blue evidence tag with a circular hole on the left side. The tag is titled "EVIDENCE IDENTIFICATION TAG" and contains a table with the following fields:

SEIZURE TAG NO.	ITEM NO.	DATE:
902641-001		5/29/2010
FILE NO.	TAGGED BY (INITIALS)	
	MKH	

Below the table, the text reads: "DEPARTMENT OF THE INTERIOR U.S. FISH AND WILDLIFE SERVICE GPO: U.S. GPO 2010-800-841 FORM 3-2052".

Callouts with red boxes and arrows point to the following fields:

- Seizure Tag No. This number can be reused for multiple Evidence Identification Tags collected at the same site.** (points to 902641-001)
- ID# of individual bird from the Bird Search Effort and Birds Collected Data Form** (points to the empty Item No. field)
- Date collected** (points to 5/29/2010)
- Leave blank** (points to the empty File No. field)
- Collector's initials** (points to MKH)

Carcass collection kit (USFWS):

Incident-specific maps or shoreline segment maps, if available
Evidence Seizure Tags, Form 3-487 (white)
Evidence Identification Tags, Form 3-2052 (blue)
BIRD SEARCH EFFORT and BIRDS COLLECTED DATA FORMs
Chain-of-Custody Forms
Carcass collection protocol
Large paper bags (for otter carcasses)
Paper bags
Small plastic bags
Large plastic bags
Rubber bands or twist ties
Pencil and / or permanent pen (sharpie)
Evidence tape
Nitrile gloves
Flagging (for marking large marine mammal carcasses)

Carcass collection kit (non-USFWS):

Incident-specific carcass collection instructions
Paper bags
Small plastic bags
Large plastic bags
Rubber bands or twist ties
Pencil and / or permanent pen (sharpie)
BIRD SEARCH EFFORT and BIRDS COLLECTED DATA FORMs
Chain-of-Custody Forms
Tape
Nitrile gloves
Flagging (for marking marine mammal carcass locations)

Appendix A-4. Uploading Photographs to the DOI/ERDC Database

Deepwater Horizon (MC 252)
USFWS/ERDC NRDA Bird Database



Data Entry Instructions: **Uploading Digital Photographs**

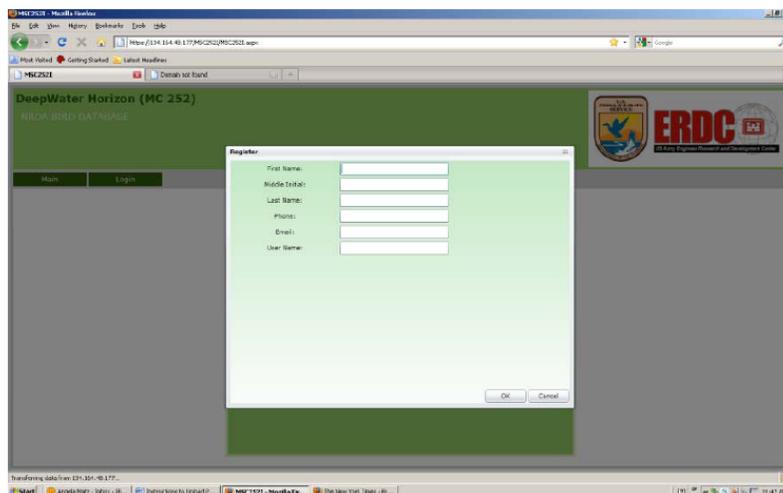
Remember: Never rename, delete, or open a photo file!

1. To access the USFWS/ERDC NRDA Bird Database please connect to:

<https://134.164.48.177/msc252i/msc252i.aspx>

Individual settings on FWS computers may result in sub-optimum performance using Internet Explorer, so Mozilla Firefox may be needed. Accept unknown certificates and allow flash viewers to operate. Use the “x” in the corner of each pop-up to close windows; the browser back button will cause ejection from the database.

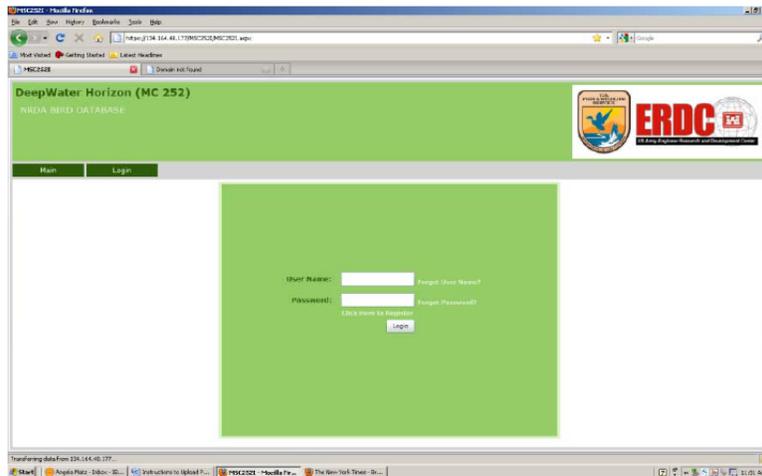
2. First-time users will be prompted to download Microsoft Silverlight if not already installed. Answer “yes” to all security download questions.
3. First-time users need to register. Hit “Click Here to Register” and enter your information on the resulting screen. You will create your own username.



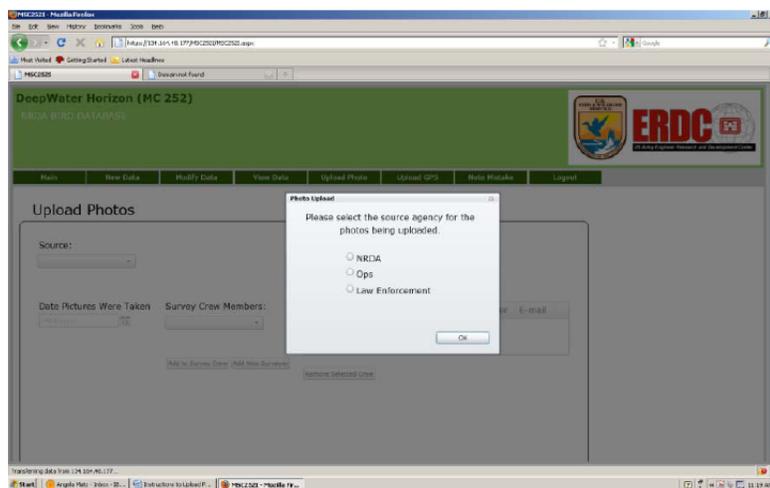
4. A password will be generated and emailed to you.
5. Login using your user name and password.

Last updated: 14Jul10

3



- Click the Upload Photo tab. A series of selections will appear. Click on “NRDA” if the carcass was collected on a Beach Bird Survey segment or “Ops” if it was collected off-segment.



- Enter the Date that photos were taken
- On the next screen, click on “Survey Crew Members,” select yourself, then click on “Add to Survey Crew.” If you aren’t on the list, click on “Add New Surveyor” and add yourself to the Survey Crew Members list, followed by “Add to Survey Crew.”

Last updated: 14Jul10

3

9. If NRDA, select the state, ACP, and/or Segment Name. If Ops, select or enter the Evidence Seizure Tag number.
10. Click "Upload Photos." A browser screen will open and allow you to select photos for upload. Select only the photos associated with the specified segment name or seizure tag!

Remember: Never rename, delete, or open a photo file!

Appendix A-5. Workbook Contents

1. Field Team Tracking Protocol
2. MC 252 Site Safety Plan
3. Dead bird Flow Chart
4. Transfer of Property Form
5. Receipt of Property Form
6. Chain of Custody Report Form

APPENDIX B
PROTOCOL FOR REQUESTING ACCESS
to
US FISH AND WILDLIFE SERVICE
NATIONAL WILDLIFE REFUGES
For
Natural Resource Damage Assessment Activities
MSC252 – Deep Water Horizon

To be used with respect to Natural Resource Damage Assessment (NRDA) activities related specifically to the BP Mississippi Canyon 252 Oil Spill in the Gulf of Mexico

National Wildlife Refuge (NWR) lands are some of the most sensitive areas in the oil spill area. National Wildlife Refuge managers have been overwhelmed with requests for data collection on NWR lands. Collection of data from NWRs is vitally important and coordination with NWR staff on all activities on NWR lands is needed. The refuge staff are experts on their NWRs and integration into appropriate ongoing refuge activities, as applicable, is important. The purpose of this protocol is to facilitate assessment by providing central points of contact for NWR managers and Technical Working Group (TWG) members. The refuge staff are experts on their NWRs and integration into appropriate ongoing refuge activities, as applicable, is important. To assist with NRDA data collection, please use the Access Request Form to facilitate your pre-assessment and assessment needs.

The form is located on the ftp site: www.researchplanning.com/downloads/ under *Field Operations* in the *Scientific Research and Collecting Permits* file. Please submit access request and associated assessment work plan(s) to fw4nrdanwr@fws.gov. After the request is received by an NWR liaison you will be contacted to arrange access to the requested site.

NRDA NWR Liaison: (251) 725-2439
NWR Liaison: (504) 303-2859

Access Request Form
U.S. Fish and Wildlife Service
National Wildlife Refuges
for
Natural Resource Damage Assessment Activities

Send completed request to: fw4nrdanwr@fws.gov

National Wildlife Refuge: _____

Technical Working Group: _____

Title of Assessment Plan(s): _____

Contact: _____
Name email

Phone #(s) _____

Goal of Plan/Study: _____

Date(s): _____

Type of Assessment (ie.; aerial surveys, biotic/abiotic sampling, visual surveys):

Resource support needs (boat etc): _____

Information Needs from NWR: _____



Incident-Specific Guidance for Scientific Research and Collecting Permit applicants
May 14, 2010

**To Be Used Only With Respect To Scientific Activities Related Specifically To
The BP Mississippi Canyon 252 Oil Spill In The Gulf Of Mexico**

The purpose of this information is to provide guidance to those who wish to conduct scientific activities in parks impacted by the oil spill.

- Activities related to response/clean-up do not require a Scientific Research and Collecting Permit. Contact the park directly to determine how to proceed.
- Proposed activities that trigger the requirement to apply for a Scientific Research and Collecting Permit include Natural Resource Damage Assessment (NRDA) activities, scientific specimen collection, data collection, inventory, monitoring, and research.

If you need a permit this is what you do:

- Access the Research Permit and Reporting System (RPRS) web site:
<https://science.nature.nps.gov/research>
- Choose “Submit applications for research permits” and follow the instructions
- Please identify the funder of your activity in the “Purpose of Study” field.
- Be sure to complete the process. You will know you are done when the system provides you the option to print a copy of your application. This page also provides an “Apply for another Research Permit” option by which you may submit the same application to additional parks. This option saves time by porting the data you entered in your original application into the new application, and you will be able to edit the data in the new application.
- Park contact information is provided at the beginning and end of the application process. It is a good idea to follow up your application by checking in with the Park Research Coordinator.
- If you are unable to submit your application on-line, you may contact the park directly. The park has the option of processing permit applications via paper forms.

Additional Points

- Park contact information is available from the RPRS web site; choose the “Park Info” menu item.
- A National Park Service resource advisor/observer may be assigned to accompany you in the field.
- Review of applications related to the oil spill will be expedited.
- Review of applications not related to the oil spill may be delayed.
- For questions related to the process of submitting an application you may contact Bill Commins at 202-513-7166, bill_commins@nps.gov
- For questions related to the status of your application, contact the Park Research Coordinator.
- Additional appendices will be included to cover assessment methods, SOPs and protocols associated with the activities within the spill area.

Waterfowl Bird Study #10 budget

An estimate of the required budget for this project is attached. In addition, data sharing agreements between natural resources trustees, Louisiana State University, BP, and its authorized consultants will be developed and implemented. The parties acknowledge that this budget is an estimate, and that actual costs may prove to be higher. BP's commitment to fund the costs of this work includes any additional reasonable costs within the scope of this work plan that may arise. The trustees will make a good faith effort to notify BP in advance of any such increased costs. It is acknowledged that this agreement authorizes only those activities and expenses associated with Phase 1 of the proposal. Any activities or expenses outside phase 1 would require a supplemental agreement.

Objective 1	<u>Cost per unit</u>	<u>Number of units</u>	<u>Total</u>
PI Salaries			
Principal Investigator (Rohwer)	████████████████████	2 months	\$14,331
Fringe benefits	36%		\$5,159
co/PI (Amundson)	████████████████████	5 months	\$25,000
Fringe benefits	36%		\$9,000
Housing & Food (co/PI)	\$80/day/person	45 days	\$3,600
Subtotal			\$57,090
Field Workers			
Research Associates (2)	████████████████████	1.5 months	\$9,000
Fringe benefits	36%		\$3,240
Survey technicians (14)	████████████████████	1.5 month	\$50,400
Fringe benefits	7.65%		\$3,856
Housing & Food (16 people)	\$80/day/person	45 days	\$57,600
Subtotal			\$124,096
Objective 1A – Boat-based Beach Surveys			
Mileage for vehicles	\$0.48/mile	17,000 miles	\$8,160
7 rental boats (boat, motor & trailer)	\$500/day/unit	45 days	\$157,500
Fuel for 7 rental surface drive boats	\$45/boat/day	7 x 45 days	\$14,175
Field supplies			\$17,400
Subtotal			\$197,235
Objective 1B – Walking Beach Bird Surveys			
Mileage for vehicles	\$0.48/mile	6,000 miles	\$2,880
1 rental bay boat (boat, motor & trailer)	\$600/day/unit	45 days	\$27,000
Fuel for rental boat	\$85/boat/day	45 days	\$3,825
Field supplies			\$6,500
Subtotal			\$40,205
Objective 1C – Open Water Bird Surveys			
Mileage for vehicles	\$0.48/mile	14,100 miles	\$6,768
3 rental bay boats (boat, motor & trailer)	\$600/day/unit	45 days	\$81,000
Fuel for 3 rental boats	\$85/boat/day	3 x 45 days	\$11,475

Field supplies		\$15,200
Subtotal		\$114,443
Total direct costs		\$533,069
LSU Agricultural Center Overhead	26%	\$138,598
Total for Objective 1A; 1B; & 1C		\$671,667

1D Budget for Examination of carcasses (will be pursued in supplemental work plan if warranted)

1E Budget for Search Efficiency (will be pursued in supplemental work plan if warranted)

Objective 2: (23 transect lines; 3 months @ 18 days apart = 6 runs)

<u>Budget for Aerial Surveys</u>	<u>Cost per unit</u>	<u>Number of units</u>	<u>Total</u>
Salary Three (3) surveyors	\$300/day/person	12 days	\$10,800
One (1) pilot	<i>(included in equipment costs)</i>		
Travel/Commodities	\$200/day/person	12 days	\$ 9,600
Other Costs			\$ 2,500
Facilities/Administration (20%)			\$4,580
TOTAL PERSONNEL COST			\$27,480
• Airplane with pilot	\$2400/day	12 days	\$28,800
• Supplies (paper, pencils, clipboards, guides, etc.)			\$ 1,500
TOTAL EQUIPMENT COST			\$30,300
Total for Objective 2			\$57,780

SUMMARY

Objective 1:

Objective 1A	\$197,235
Objective 1B	\$40,205
Objective 1C	\$114,443
Total for Objective 1	\$671,667

Objective 2:

Total for Objective 2	\$57,780
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OVERALL TOTAL	\$729,447
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WORK PLAN FOR ESTIMATING WINTERING WATERFOWL

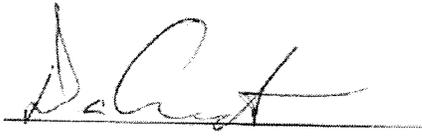
OILING AND MORTALITY

DEEPWATER HORIZON (MISSISSIPPI CANYON 252) OIL SPILL

BIRD STUDY #10

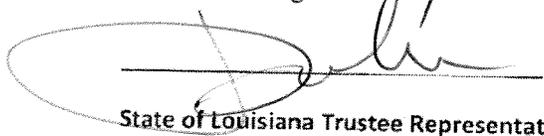
Approval of this work plan is for the purpose of obtaining data for the Natural Resources Damage Assessment. Each party signing below reserves its right to produce its own independent interpretation and analysis of any data collected pursuant to this work plan

APPROVAL



Trustee NRDA Bird Group Lead

2/4/11
Date

FOR ROR RMD
GUIDRY


State of Louisiana Trustee Representative

2/22/11
Date



BP Representative

Feb. 1, 2011
Date

Objective 2: Estimate the temporal and spatial abundance and distribution of waterfowl within the study area

Aerial surveys will be conducted to estimate abundance and distribution of waterfowl using near-shore and offshore habitats within the study area.

Surveillance flights will be conducted along existing systematically placed transects used by LDWF (spaced 15 miles apart) following protocols currently utilized by federal and state agencies to allow comparisons with historical data (Figure 2, white transect lines). Additional transects (shown in yellow in Figure 2) will be added between existing/historical transect lines to cover areas known to have been impacted by oil in each of four focal areas (Terrebonne Bay, Barataria Bay, the Mississippi River delta, and the Biloxi Marsh area). Systematic randomly placed transects will be established in each focal area on 5-mile intervals between the traditional LDWF transects. In order to monitor diving ducks, current transects will also be extended to cover areas where historical concentrations of diving ducks have been identified, including bays extending to both the Timbalier Islands and Isle Dernieres. The USFWS annual flights over the Chandeleur Islands will be used to estimate Redheads (*Aythya americana*) that utilize local seagrass beds. Figure 2 depicts the proposed 23 transects for this survey. With extensions of existing transects and 13 additional transects, the distance is approximately double the LDWF traditional aerial waterfowl survey in Southeast LA.

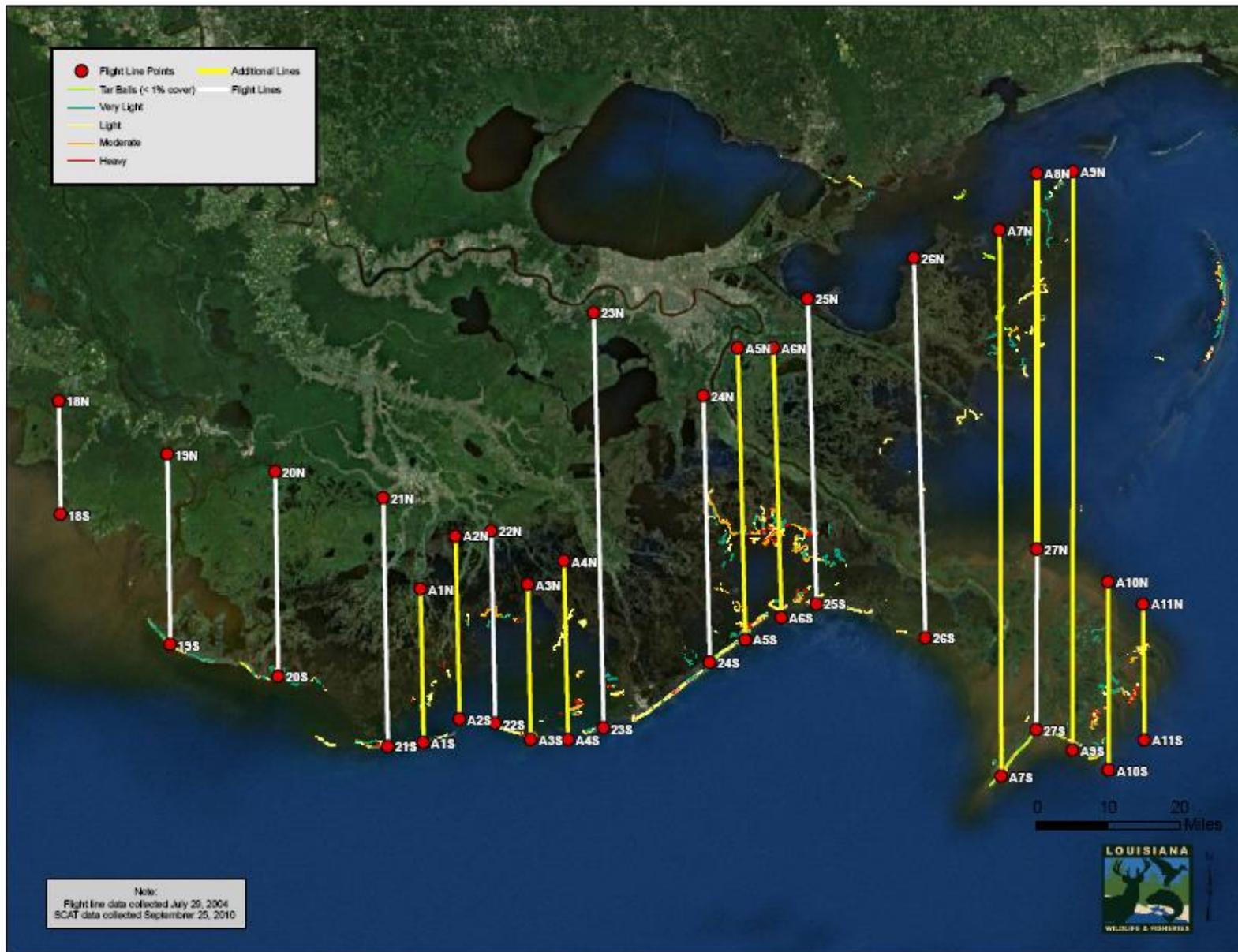


Figure 2. Aerial Louisiana waterfowl survey transects (Atchafalaya Basin to the Mississippi line) for dabbling and diving ducks.

Locations of waterfowl will be recorded using laptops with GPS-equipped voice recording software. A continuous track file will be determined. This will enable geographically explicit counts. Because this element of the study falls outside of BP safety policy, Objective 2 will be accomplished independently by the trustees.

Survey flights will be at or below 200' above sea level moving at 90-100 knots with observers stationed on either side of the aircraft scanning a 200-m fixed-width transect. A third person seated in the copilot's position will assist with navigation and back-up data logging.

Sample frequency: Surveys will be conducted approximately every 18 days so long as BP and the Trustees agree they are providing data that will reduce NRDA uncertainty.

This frequency may be modified as needed. The Trustees will make a good faith effort to notify BP in writing prior to modifying the sampling frequency.

Sample duration: November through February but may be adjusted by mutual written consent of the Trustees ~~and BP~~.

Specific sample sites on areas administered by the NPS, areas within military bases, and those in national wildlife refuges or state wildlife management areas 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. Standard Operating Procedures for coordinating activities with land managers will be followed to ensure that project implementation is consistent with management goals of the protected area (Appendix B). Research permits to operate within state or federal-owned lands will be requested as needed. Landowner permission will be secured for access to privately held properties.

Two primary observers will fly all the aerial surveys for this evaluation. Individuals will be selected based on prior experience as well as ability to commit to working for the entire study period. LDWF will train observers in accordance with established protocols.

LDWF traditionally conducts aerial waterfowl surveys once per month in November, December, and January in coastal Louisiana. The southeast portion of the survey takes approximately 1.5 days to fly and process data. Three additional surveys, transect extensions, thirteen additional transects, and spatial referencing necessary for this study will add 2 days to normal surveys and 2 days of additional surveys.

Objective 3: Examine oiled and not visibly oiled birds collected from representative habitats.

Visual inspection and sample analysis of collected waterfowl

Information will be collected from carcasses harvested legally for other LDWF work to evaluate “birds in hand” for signs of oil exposure. This element of the study will be accomplished independently by the trustees under a workplan previously signed by the Trustees.