Final – 7 June 2011

WORK PLAN (BIRD STUDY #1C): BEACHED CARCASS PERSISTENCE STUDY

1.0 INTRODUCTION

A study to evaluate the persistence of beach cast carcasses is identified in Appendix A of the "Work Plan for Estimating Mortality of Birds Using Beached Bird Surveys in the Gulf of Mexico near the Mississippi Canyon 252 Oil Spill (Bird Study #1)". Carcass persistence studies were not conducted during the beached bird surveys which occurred from late May through September 2010. However, evaluating the persistence of carcasses will help to refine estimates of mortality derived from counts of birds recovered during the course of the beached bird surveys.

The objective of this carcass persistence study is to evaluate the daily persistence rates of carcasses on beaches surveyed during the Beached Bird Surveys in order to estimate the proportion of carcasses that persisted long enough to be found by the beach bird survey crews that worked May through September 2010.

The study described in this Scope of Work will collect carcass persistence data from up to 30 transects. The study is currently planned for implementation in June 2011.

2.0 CARCASS PERSISTENCE STUDIES – GENERAL BACKGROUND

Carcass persistence studies have been undertaken as part of assessment efforts for several oil spills in the U.S., including but not necessarily limited to the Selendang Ayu, Cosco Busan, Bouchard B-120, Kure, New Carissa, Exxon Valdez, and Nestucca. Methodologies and results from these efforts have been considered and incorporated into this scope of work, as appropriate. To provide context for the protocols proposed as part of Deepwater Horizon (MC 252) natural resource damage assessment efforts, some of the findings and issues identified in previous studies are summarized below.

Existing research suggests that the removal rate of carcasses from the beach often is rapid in the first several days, declining with predator/scavenger satiation and the degree of carcass rotting (Ford and Zafonte 2009, Ford 2006, Van Pelt and Piatt 1995). However, the rate of carcass removal can vary substantially between locations, and even at the same location at different times, due to a variety of site-specific factors potentially including (but not necessarily limited to): habitat type, carcass density (related to scavenger satiation rate); size of carcass; degree of oiling of carcass; scavenger abundance; season; and weather and tidal conditions (e.g., Byrd et al. 2009, Ford and Zafonte 2009, Ford 2006, Fowler and Flint 1997). Scavenging is most often cited as the primary cause of carcass removal from beaches after a mortality event (Byrd et al. 2009, Ford and Zafonte 2009, Ford 2006, Ford et al. 2002, Fowler and Flint 1997, Van Pelt and Piatt 1995). In addition, bird carcasses that are deposited on a beach subsequently can be removed from that beach by high tides or large waves and lost at sea or re-deposited outside the search area.[1] Although less frequently mentioned in relevant technical literature, members of the public can remove or cause carcasses to be removed. Similarly, beach grooming activities can be a source of carcass removal.

3.0 STUDY DESIGN

Given the potential variability in carcass removal rates, and the lack of previous studies on this topic in the Gulf region, a site-specific study on carcass persistence will be undertaken for the Deepwater Horizon assessment.

[1] Carcasses may also be moved from their original location to a different location within the search area, but would not be considered lost because they remained within the search area.

The proposed implementation timing for this study (i.e., June 2011) is intended to match seasonal conditions during the spill which began 20 April, 2010.

Carcasses of un-oiled birds of species similar to those found during beached bird surveys will be individually marked in ways not conspicuous to scavengers, but visible to researchers (i.e., carcasses will be tagged with poultry tags, one at the base of the humerus, one diagonally opposed at the top of the femur because if carcasses become disarticulated, the pelvic girdle or the wing structure usually remain intact for a while). Each carcass will be checked daily for 14 days or until the carcass disappears, whichever occurs first. The study duration is designed to address the fact that, during 2010, beached bird survey teams were instructed to try to search their assigned beaches every three days, but weather conditions and other hindrances resulted in the interval between searches varying between three and twelve days. As carcasses disappear during the persistence study, the daily workload for field teams will decrease, and it may be necessary to consolidate some field teams if practical and/or demobilize some field teams prior to 14 days to maintain cost-effectiveness.

Number and Type of Carcasses — Appendix A identifies 192 carcasses potentially available for use for this study, currently stored in Daphne, AL. The study will use up to 120 carcasses (e.g., 20 transects, six birds maximum per transect) for this effort. While the existing inventory of available birds should be sufficient to meet study needs, additional carcasses may be obtained to meet size class objectives, to maximize use of species found in the Gulf region, to reserve carcasses for other studies, and/or for other purposes. Potential sources of additional carcasses include, but are not limited to, the U.S. Dept. of Agriculture Wildlife Services (birds shot with non-lead shot near airports) and resource agencies (salvaged birds). If these sources are not sufficient provide a reasonable number of carcasses representing the larger species (e.g., brown pelican), then additional sources may be explored (e.g., commercially raised birds, as a last resort). Birds euthanized using chemical agents other than inhalant anesthetics will not be used nor will birds from disease-related wildlife mortality events be used. It is anticipated that up to 34 birds from each of the three size classes (small (<200g), medium (200-500g) and large (>500g)) will be used. This proportion may be adjusted if insufficient birds for one or more size class are available at the time the study is implemented. Carcasses will be intact and un-scavenged when placed on beaches. No gutted birds will be used. Prior to implementation of the study, the number of carcasses to be placed on each study transect will be determined by a random number between (and including) two and six.

Transect Selection — Up to 30 beached bird survey transects will be used in the Carcass Persistence Study. The exact transects will be identified in a Standard Operating Procedure to be developed before the implementation of the study. Transects to be used will represent the variety of habitat types searched during the Beached Bird Surveys. Four general categories of habitat types are:

- Developed mainland
- Undeveloped mainland
- Developed barrier island
- Undeveloped barrier island

The distinctions of "developed" and "undeveloped" are loose, qualitative categorizations that could be based on visual inspections of Google Earth maps and best professional judgment that determines whether sufficient natural habitat existed in the vicinity of the transect so that natural populations of scavengers and natural scavenging rates would exist. The Trustees and BP are not aware, at the time of the preparation of this study plan, of any published literature that would quantitatively define "developed" and "undeveloped" in ways meaningful and applicable to the Carcass Persistence Study. Due to the qualitative distinction between the two habitat types, this characterization will not be used to identify study transects a priori but may be included in posteriori data analysis if the study results reveal that such variable is important.

The Searcher Efficiency study (Bird Study #1C) targeted beaches that were groomed and not groomed, in addition to the categories listed above. For the Carcass Persistence study, beaches that would be groomed for aesthetic purposes in 2011 but that were not aesthetically groomed during 2010 will be avoided.

The choice of transects will also be influenced by logistical considerations. To maintain cost-effectiveness, study transects must be somewhat clustered so that travel time of field teams is reasonable and ensures that all transects can be visited by each team each day. Secondly, transects may be avoided if permission from landowners to access such beaches cannot be obtained in a reasonable time.

Additional details on final transect selection will be provided in the aforementioned Standard Operating Procedure.

Placement of Carcasses —Carcasses will be placed along the beach at random distances between the transect start and end (two km for most Beached Bird Survey transects). A wooden block with the associated bird's identification number written on it in permanent marker will be placed under all carcasses to aid searchers in distinguishing between a rewash event and the removal of a carcass by a scavenger. Overall, one-third (approximately 34) of the carcasses will be placed in the low area (wash zone), one-third at the wrack or high tide line, and the remaining one-third in the upper intertidal area. As noted above, bird sizes will be evenly distributed among small, medium and large size classes. The size (i.e., small, medium or large) and location (i.e., distance from transect start and position on the beach) for each carcass on each transect will be assigned randomly using the distributions described above and presented in a Standard Operating Procedure before study implementation begins.

Carcass Checks —Each transect will be checked daily to determine if carcasses are still present. The degree of scavenging and position on the beach will be noted on each visit, and carcasses will be photographed at each check. Carcass checks will continue until all carcasses are gone or at least 14 days have elapsed. If a carcass is missing from the placement point, teams will search for it while checking for other transect carcasses, in case the carcass has been moved by a scavenger or rewashed up or down the beach. The area of the beach to be searched for "missing" carcasses should be the same as was searched during the Beached Bird Surveys (e.g., between the water's edge and 5 m landward of the old wrack line). At a minimum, "missing carcass" searches should cover the portion of the transect between the carcasses located closest and farthest from the transect start on the prior day, plus 100 meters on either end.

Discovery of Oiled Dead Birds – In the event that a study team encounters a dead oiled bird, the appropriate protocol for collecting that carcass will be followed (e.g., Avian Carcass Collection Protocol, Standard Operating Procedures for NRDA Bird Plan Study Field Crews, January 13, 2011)(Appendix E of this Study Plan)).

Study Teams – Based on experience with the Searcher Efficiency study, we generally expect field teams to be able to conduct daily carcass persistence observations at four transects, although logistical challenges may reduce this number for some teams.[2] Up to seven field teams may be required to conduct activities at all of the transects planned for this study. Each field team will consist of at least one Trustee representative and one BP/CardnoENTRIX representative. Any deviation from this study team composition will be mutually agreed upon by both parties. An on-site logistics manager (Trustee contractor) will support field team efforts and address any logistical challenges that arise during the course of the study. A Trustee representative for the State of Louisiana may join the field crews, particularly those working in Louisiana, to participate in the field

[2] Transects are approximately 2km in length. Given distances between transects, accessibility challenges, and the potential need to walk each transect due to the spacing of placed carcasses and the need to search for 'missing' carcasses to ensure they were not simply rewashed to another location on the transect, an average rate of four transects per team per day is reasonable for planning purposes. As a point of reference, beached bird survey teams typically searched three or fewer transects each day.

activities.

Permitting – All federal Migratory Bird Treaty Act permits, State scientific collection permits, and permissions to access property, as appropriate, will be obtained prior to the start of the study. Searchers will carry copies of the permits that are appropriate and needed for their transect areas.

Safety – All field teams (and boat captains, where applicable) will be required to abide by the safety protocols of Incident Command, BP/CardnoENTRIX, Industrial Economics, Inc., and the U.S. Fish and Wildlife Service, as applicable, that are in place at the time of the study. Prior to commencement of field activities, BP/Entrix and the Trustees will agree upon a person or persons to whom study participants may report any safety concerns. Such person(s) will take prompt action to address and resolve reported concerns.

4.0 DATA SHARING

Field teams will complete data sheets each day. Each team member will sign the data sheet indicating agreement on the content of the data sheet. The Trustee representative on each field team will retain custody of all completed data sheets until they are transferred to the U.S. Fish and Wildlife Service's NRDA Office in Fairhope, Alabama, at the end of the study for archiving (and data entry into the ERDC database). BP/CardnoENTRIX representatives, and Louisiana representatives if present, may photograph or scan data sheets on a daily basis if desired. Field team members will also share electronic copies of all photographs taken on a daily basis, if practical. On field efforts where LA representatives are present, those field representatives will be responsible for transmitting the day's datasheets and photos to their appropriate headquarters. The field team's camera memory card will remain in the custody of the Trustee representative on each field team until the completion of the study and will be archived at the NRDA Office in Fairhope. At the completion of all field work, a Trustee representative will compile all data sheets and photographs onto one or more CDs (or other electronic storage device) for distribution to BP/CardnoENTRIX, the Louisiana Oil Spill Coordinator's Office (LOSCO) on behalf of the State of Louisiana Natural Resource Trustees, and other Trustee agencies, as requested by such Trustee agencies. Distribution of compiled data will take place within four weeks of study completion or September 30, 2011, whichever is earlier.

After completion of the study, a field and data report will be generated by Trustee representatives that documents field activities, notes adjustments (if any) to SOPs, and provides a compilation of the raw data generated by the study. The preliminary and final reports will be made available within two weeks of completion to BP/CardnoENTRIX, the Louisiana Oil Spill Coordinator's Office (LOSCO) on behalf of the State of Louisiana Natural Resource Trustees, and other Trustee agencies, as requested by other Trustee agencies.

5.0 DATA HANDLING

Chain-of-custody procedures will be observed at all times. All photographs, data sheets, and other study-related materials will be transferred with appropriate chain of custody forms.

6.0 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 its use for this study.

7.0 SOPs

The following SOPs are appended to this Study Plan:

Appendix A: List of available carcasses

Appendix B: Bird Preparation SOP

Appendix C: Deployment, Observation & Retrieval of Carcasses SOP

Appendix D: Data Collection SOP

Appendix E: Carcass Collection Protocol

8.0 REFERENCES

Byrd, G.V., J.H. Reynolds, and P.L. Flint. 2009. Persistence rates and detection probabilities of bird carcasses on beaches of Unalaska Island, Alaska, following the wreck of the M/V *Selendang Ayu*. *Marine Ornithology*, 37: 197-204.

Ford, R.G., J.C. Ward, G.K. Himes Boor, and J.D. Storm. Final Report: Carcass Scavenging Rates Study for the M/V KURE/Humboldt Bay Oil Spill. Prepared for California Department of Fish and Game, Office of Spill Prevention and Response, April 2002.

Ford, R.G. Final Report: Bird Carcass Scavenging Study. Prepared for Buzzards Bay Bird and Wildlife Assessment Team: Other Birds Sub-Team. *Conducted by* RG Ford Consulting, United States Fish and Wildlife Service, and ENTRIX. March 2005.

Ford, R.G. 2006. Using beached bird monitoring data for seabird damage assessment: The importance of search interval. *Marine Ornithology*: 34: 91-98.

Ford, R.G. and M.A. Zafonte. 2009. Scavenging of seabird carcasses at oil spill sites in California and Oregon. *Marine Ornithology* 37: 205–211.

Fowler, A.C. and P.L. Flint. 1997. Persistence rates and detection probabilities of oiled King Eider carcasses on St Paul Island, Alaska. *Marine Pollution Bulletin*, 34: 522-526.

Van Pelt, T.I. and J.F. Piatt. 1995. Deposition and persistence of beachcast seabird carcasses. *Marine Pollution Bulletin*, 30: 794-802.

Wiese, F.K. and P.C. Ryan. 2003. The extent of chronic marine oil pollution in southeastern Newfoundland waters assessed through beached-bird surveys, 1984-1999. *Marine Pollution Bulletin*, 46: 1090-1101.

9.0 BUDGET

The table below presents an approximate budget for the portions of the Carcass Persistence Study that will be contracted by the Trustees. The budget does not include costs of any Trustee agency personnel (at least Veronica Varela, USFWS, will be participating in the implementation of the study in the field) or BP/CardnoENTRIX personnel. The rental of off-road utility vehicles and boats will be directly procured by BP/CardnoENTRIX, and therefore, those costs are not included below.

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 approved work plan that may arise. The Trustees will make a good faith effort to notify BP in advance of any such increased costs.

Carcass Persistence Project Proposed Budget

				Field Logistics	Field Team Personnel (Trustee Contractors)					
Activities	Donlan person-days (off site)	Martin person-days (off site)	Brasso person-days (off site)	Person A 12-hr field days	Person B 12-hr field days	Person C 12-hr field days	Person D 12-hr field days	Person E 12-hr field days	Person F 12-hr field days	Approx cost
Study Plan / SOP development	4	2	4	--	--	--	--	--	--	$10,000
Pre-trip planning/logistics	2	5	5	--	--	--	--	--	--	$10,000
Mobilization, On-site prep	--	--	--	2.5	2.5	2.5	2.5	2.5	2.5	$17,500
Field Implementation	--	--	--	15	15	15	15	15	15	$130,000
Demobilization	--	--	--	1	1	1	1	1	1	$8,000
Field and Data Report	5	5	10	--	--	--	--	--	--	$25,000
Project Management/Admin	3	5	--	--	--	--	--	--	--	$10,000
Project Expenses:										
Flights (rd trip)	--	--	--	1	1	1	1	1	1	$5,000
Hotel	--	--	--	19	19	19	19	19	19	$14,250
Meals	--	--	--	20	20	20	20	20	20	$6,600
Rental Car	--	--	--	1	1	1	1	1	1	$4,800
Boat Rental	--	--	--	--	--	--	--	--	--	$0
off-road utility vehicles	--	--	--	--	--	--	--	--	--	$0
Misc										$2,500
									TOTAL	$243,650

The Trustees acknowledge receipt of advance funds for this study in the amount of $70,000 and agree that such funds will be deducted from requests for reimbursement of the study's full costs.

WORK PLAN (BIRD STUDY #1C): BEACHED CARCASS PERSISTENCE STUDY

******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******

This plan will be implemented consistent with existing trustee regulations and policies. All applicable state and federal permits must be obtained prior to conducting work.

APPROVAL

Trustee NRDA Bird Group Lead — Date: 6/11/11

State of Louisiana Trustee Representative — Date: 9/1/2012

BP Representative — Date: 6/12/2011

LIST OF APPENDICES

Appendix A – Daphne AL Carcass Inventory (as of 6 October 2010)

Size*	Species Code	Species	Comments on bird condition
medium	LAGU	Laughing gull	gutted
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
large	HEGU	Herring gull	gutted
medium	LAGU	Laughing gull	
large	HEGU	Herring gull	
small	UNK TERN	Unknown tern	intact? very sandy
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	gutted
large	HEGU	Herring gull	intact but with fire ant scavenging
small	BUFF	Bufflehead	
small	HOME	Hooded merganser	
small	HOME	Hooded merganser	
large	HEGU	Herring gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
large	HEGU	Herring gull	
medium	LAGU	Laughing gull	
small	UNK	Unknown bird	
medium	LAGU	Laughing Gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	gutted
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	gutted
medium	LAGU	Laughing gull	gutted
medium	LAGU	Laughing gull	gutted
medium	LAGU	Laughing gull	gutted
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	

medium	LAGU	Laughing gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
medium	LAGU	Laughing gull	
large	HEGU	Herring gull	
medium	LAGU	Laughing gull	gutted
medium	LAGU	Laughing gull	
large	HEGU	Herring gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	poor condition
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
small	UNK RAPTOR	Unknown raptor	remains in advanced decomposition
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
medium	LAGU	Laughing gull	gutted
large	HEGU	Herring gull	
medium	LAGU	Laughing gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
medium	LAGU	Laughing gull	
medium	LAGU	Laughing gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
medium	LEGU	Laughing gull	
medium	LEGU	Laughing gull	
medium	LEGU	Laughing gull	
medium	LEGU	Laughing gull	
medium	LEGU	Laughing gull	
medium	LEGU	Laughing gull	
small	MEGU	Mew gull	
small	MEGU	Mew gull	
medium	LEGU	Laughing gull	
large	HEGU	Herring gull	

large	HEGU	Herring gull	
medium	LAGU	Laughing gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
small	GWTE	Green-winged teal	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
medium	LAGU	Laughing gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	WHPE	White pelican	
large	COLO	Common loon	
small	GWTE	Green-winged teal	
large	BRPE	Brown pelican	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
medium	WODU	Wood duck	decapitated
medium	WODU	Wood duck	
medium	WODU	Wood duck	
medium	WODU	Wood duck	
medium	WODU	Wood duck	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
small	HOGR	Horned grebe	
small	GWTE	Green-winged teal	
small	GWTE	Green-winged teal	
small	GWTE	Green-winged teal	
small	GWTE	Green-winged teal	
small	GWTE	Green-winged teal	
large	HEGU	Herring gull	
medium	WODU	Wood duck	

medium	WODU	Wood duck	
medium	WODU	Wood duck	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
large	HEGU	Herring gull	
small	GBHE	Green heron	
small	GWTE	Green-winged teal	
small	GWTE	Green-winged teal	
small	GWTE	Green-winged teal	
small	GWTE	Green-winged teal	
small	GWTE	Green-winged teal	
small	GWTE	Green-winged teal	
small	GWTE	Green-winged teal	
small	GWTE	Green-winged teal	
small	GWTE	Green-winged teal	
small	GWTE	Green-winged teal	
large	DCCO	Double-crested cormorant	
large	MALL	Mallard	
large	HEGU	Herring gull	
large	NOGA	Northern gannet	
large	COLO	Common loon	
medium	ROTE	Royal tern	
small	UNK GULL	Unknown gull	
medium	LAGU	Laughing gull	
medium	BADO	Barred owl	
small	GBHE	Green heron	
small	UNK GULL	Unknown gull	
small	SATE	Sandwich tern	
small	YBSA	Yellow-bellied sapsucker	
small	YBSA	Yellow-bellied sapsucker	
small	MODO	Mourning dove	decapitated
small	MODO	Mourning dove	
small	MODO	Mourning dove	
small	MODO	Mourning dove	
small	MODO	Mourning dove	
small	MODO	Mourning dove	
small	MODO	Mourning dove	
medium	HOME	Hooded merganser	
medium	HOME	Hooded merganser	
medium	BADO	Barred owl	
medium	RSHA	Red-shouldered hawk	
medium	CAEG	Cattle egret	
medium	UNK CORM	Unknown cormorant	

*Size classes are estimates only.

Appendix B: Bird Preparation SOP

1. Bird carcasses that will be used for the carcass persistence study are currently stored in a freezer at the FWS office in Daphne, AL. A table listing the inventory of birds in this freezer is provided in Appendix A.[3] Carcasses will be thawed at least 24 hrs before deployment.

2. For carcass persistence purposes, birds have been separated into three size classes: small (less than 200g), medium (200g-500g), and large (greater than 500g). This categorization in part reflects the fact that laughing gulls are the most common bird found (based on ERDC data as of August 24, 2010), and many laughing gull carcasses are available in the Daphne freezer. It is our understanding that laughing gulls are typically 200g-500g in size, and so a size class was created to capture them ('medium'). Birds smaller than 200g are assigned to a 'small' category, and birds larger than 500g are assigned to a 'large' category.

3. Carcasses used for this study will be intact and unscavenged. No birds euthanized using chemical agents other than inhalant anesthetics, killed with lead shot, or birds from disease-related wildlife mortality events will be used.

4. As the available supply of carcasses allows, preference will be given to using species that are present locally. Other bird species may be used if necessary. Trustee and BP/CardnoENTRIX representatives will work collaboratively to determine if there are any compelling reasons why specific birds in the Daphne freezer are inappropriate for use in the carcass persistence study.

5. All birds will have a cryptic tag with a unique identification number in a location not conspicuous to scavengers, but visible to researchers. Specifically, carcasses will be tagged with poultry tags, one at the base of the humerus and one diagonally opposed at the top of the femur. Bird species, weight, and identification number will be recorded on a 'master list' of birds used for the carcass persistence study.

6. A wooden block, no more than 5" x 3" x 3/4" in size, will be constructed to be placed under each carcass. The carcass ID number will be written on the block with permanent marker.

7. Prepared carcasses will be individually bagged, with the transect number and carcass/placement details (i.e., size category, distance from start of transect and position relative to surf) indicated on the bag. All birds to be deployed at a single transect will be placed in a larger bag/container, with the transect number and number of birds included indicated on the bag.

[3] Appendix A excludes five mew gulls that may be contaminated with avian influenza.

Appendix C: Deployment, Observation & Retrieval of Carcasses SOP

1. The size of study teams will be mutually agreed by Trustee and BP/CardnoENTRIX representatives. While use of two person teams (one Trustee, one BP/CardnoENTRIX) is preferable for safety and other reasons, one person teams can be utilized to deploy and retrieve carcasses, if such activities can be accomplished in a safe manner and is agreed to by Trustee and BP/CardnoENTRIX representatives and the individual who would be working alone. A representative for the Louisiana Trustee may join the field crews, particularly those working in Louisiana, to participate in the field activities.

2. Many transects can be accessed by car/walking. Some will require boat or small off-road vehicles (e.g., UTV). Study teams will need to plan in advance to secure appropriate transportation; however, BP/CardnoENTRIX will be responsible for procuring the rental of such equipment. Trustee and BP/CardnoENTRIX representatives will discuss and agree to the following day's carcass deployment schedule.

3. Study teams will obtain the container/bag of bird carcasses prepared for use on specified transects (see SOP for bird preparation). The teams will confirm (using the labels on the larger bags and individual bird bags) that the carcass number, size, and placement location information is consistent with those specified in the SOP for carcass placement.

4. Study teams will use GPS to place birds at the distance from the start of the transect specified on each individual bag containing a carcass.

5. Study teams will place carcasses in the low, wrack, or upper areas of the beach as specified in the SOP for carcass placement. Birds in the upper portion of the beach will be placed up to 5 meters above the wrack/high tide line or, for very narrow beaches, the transition from beach to other habitat (e.g., saltmarsh, mangrove, etc.). Birds specified for the 'low' part of the beach will be placed in the wash zone below the wrack line and those in the 'wrack' position will be placed at the wrack or high tide line. Carcasses should be placed on the beach in a manner that realistically mimics natural deposition (e.g., some mingling with wrack or slight covering with sand is acceptable).

6. The latitude and longitude of placed carcasses should be noted on data sheets provided to the teams, along with carcass identification number, size class, estimated distance from start of transect, time of placement and position relative to surf.

7. A small wooden block (approximately 5" x 3") will be placed under each carcass. The carcass ID number will be written on the block with permanent marker. The presence/absence of the wood block on subsequent days will provide an indication of whether a storm surge or other unusually high tide event likely rewashed the carcass (i.e., if the block is present but the carcass gone, scavenging is the likely cause; if both block and carcass are gone, rewash is the likely cause).

8. Three photographs should be taken of each placed carcass at the time of placement from approximately 1, 5, and 25 meters away. No zoom should be used. The purpose of the 1m photograph is to document the carcass state and to provide a reference photograph for subsequent 1m photographs depicting evidence of animal or human tracks or water marks. The purpose of the 5m photograph is to provide a reference photograph to which to compare subsequent 5m photographs depicting movement of the carcass on the beach. The purpose of the 25m photograph is to document the environment surrounding the carcass.

9. Study teams should return at approximately the same time each day and record whether or not the carcass (and associated block) is present, and if so, its location and carcass state. If the carcass is present, one photograph will be taken from approximately 1 meter away (intended to document carcass condition) and from 5 meters away (to photo-document any movement of the carcass from its original location). (A photograph from 25m is not needed if the carcass has not significantly moved, since the purpose of the 25m photo is to illustrate the environment surrounding the carcass, which will not have changed.)

10. If the block is present but the carcass is not (regardless of whether the carcass is later 'found' that day), one photograph will be taken from one meter away from where the carcass should have been found (to document any animal or human tracks or other evidence that might be associated with the carcass' disappearance) and one photograph will be taken from approximately 5 meters away (to document the block and missing carcass).

11. If a carcass and block become separated, the block may be collected and replaced under the carcass or a new block placed if the original one cannot be found. The block's purpose is to provide information as to the potential fate of the carcass in the 24 hrs since the previous check. Record such replacement in the Notes of the datasheet.

12. If a carcass is found to have moved more than 25 meters away from its location at last check, photograph the carcass from 1, 5, and 25 meters away.

13. If a subsequent carcass check determines that a carcass is missing from its last known location, teams should search the transect in case the carcass has rewashed or otherwise been moved up or down the beach. The area of the beach to be searched for "missing" carcass should be the same as was searched during the Beached Bird Surveys (i.e., between the water's edge and 5 m landward of the old wrack line). At a minimum, 'missing carcass" searches should cover the portion of the transect between the carcasses located closest and farthest from the transect start on the prior day, plus 100 meters on either end. The field team will take a photograph (from 1 and 5 meters away) of the location where the carcass should have been found. If the block is found in a new location, this may indicate the direction of any long-shore current and may facilitate relocating the carcass. If a "missing" carcass is found, its new location should be noted on the study data sheet and photographs taken from 1, 5, and 25 meters away. If not found, the carcass should be noted as "Missing" on the study data sheet, and "N/A" should be written on the data sheet for the GPS location and position relative to surf. Carcasses found to be moved from their original locations *should not* be repositioned back at the original placement area.

14. Definitions of carcass state are provided below:
    a. **No scavenging**
        i. "Int." – intact carcass and there is no evidence of scavenging;
    b. **Lightly scavenged**
        i. "Dist." - carcass is disturbed. Although skin is broken, carcass is mostly intact,
        ii. "PR" - pectorals removed but organs present, or
        iii. "OR" - organs removed but pectorals present;
    c. **Heavily scavenged**

i. "SB" - skin and bones only; pectorals and organs removed,

ii. "PG" - fragmentary; pelvic girdle only,

iii. "Wing" - fragmentary; one or both wings only, or

iv. "Skin" – a few feathers attached to skin fragments; and

d. **Removed**

i. "Skin" - "Miss." – carcass is missing, and no part of carcass remains.

15. For each carcass observed during carcass checks, study team members should provide notes explaining the basis for choosing the carcass state selected, if one carcass state code does not adequately describe the condition (to help assess and, if necessary, adjust classifications to maximize consistency between study teams).

16. Carcass checks at a particular transect will continue on a daily basis until all carcasses are gone or at least 14 days have elapsed Photographs will be taken from 1 and 5 meters away on the final check day unless the carcass has moved more than 25m away from the original placement location (then see item #12 above).

17. If any carcasses are present on the day of the last check, they will be collected and disposed of in a landfill.

Appendix D: Data Collection SOP

1. A copy of the data sheet to be used for the carcass persistence study is included as Exhibit 1 to this SOP. One data sheet will be completed each day for each transect included in the carcass persistence study, and will be filled out on paper, in ink. The general purpose of the carcass persistence data sheet is to document carcass placement and record carcass status on each field day.

2. Original data sheets will remain in the possession of the Trustee counterpart of each carcass persistence team until the team has completed their assigned transects. The BP/CardnoENTRIX representative on each team, and if present the LA representative, will be provided the opportunity to copy each data sheet after completion of transect observations each day. At the end of the study, the original data sheets will be provided to a designated Trustee representative. The Trustee representative will scan all data sheets onto one or more CDs (or other electronic storage media); one set of data sheets will be mailed to a designated BP/CardnoENTRIX representative, and one set to LOSCO under proper Chain of Custody procedures, a third such set will be provided to IEc.

3. Original data sheets from previous field days must not be carried in the field, in order to protect data sheets from inadvertent damage. Therefore, each field team must compile before each field event all the information they will need to be able to efficiently revisit the locations of each carcass observed on the previous day. The study data sheet contains a column for listing the previous day's GPS coordinates for each carcass. If additional information is needed, it is recommended that such information is carried in field notebooks.

4. At the end of each day, photographs of each carcass (as specified in the relevant SOP) will be downloaded to a computer, and given a name using the following convention: the first symbols will be the letters "CPStudy" followed by an underscore; the next symbols will be the Transect number used by Beached Bird Survey teams followed by an underscore; the next symbols will be the bird identification number given to the carcass followed by an underscore; the next symbols will be the date of observation using 'mm-dd-yy' format followed by an underscore; and the last symbols will be '1', '5' or '25' for the photos taken approximately 1, 5 and 25 meters from the carcass, respectively. For a carcass that was "missing" from its placement location but was found later the same day, the field team will have two sets of photographs for the same carcass (see item 5.g. below). In this event, add to the end of the naming convention described above an underscore and 'missing' (to identify the photos of the location the carcass should have been in) or 'found' (to identify the photos of the 'found' carcass). At the end of the study, the Trustee representative will load electronic copies of all photos to one or more CDs (or other electronic storage media); one set of photos will be mailed to a designated BP/CarndoENTRIX representative and to LOSCO under proper Chain of Custody procedures, and one set will be provided to IEc.

5. Surveyors should start the study using new/blank camera memory cards. Do not delete any photos from the memory cards. At the end of the study, the memory cards will be provided to a designated Trustee representative, using appropriate Chain of Custody procedures, for archiving.

6. Filling out the Carcass Persistence Study data sheet:

    a. All blanks in the data sheet should contain either data or an "X" (that would indicate that such blank was purposefully not filled in). Any data entry errors should be crossed out with a single thin line and initialed.

b. After a datasheet is completed, the survey team members will sign the datasheet, indicating that they all agree that the data contained therein is correct.

c. Record the latitude and longitude for the carcass on placement day and on each day the carcass is visited. The data sheet contains columns titled "GPS Location Previous Day" and "GPS Location Today." On carcass placement day, only the "GPS Location Today" column will be used. On carcass check days, "GPS Location Today" is used to record the location of the carcass that day, while "GPS Location Previous Day" is used to record the location of the carcass on the previous day to assist the field team in relocating the carcass that day.

d. The column "Distance from transect start" is primarily to be used on the placement day, and the pre-assigned distance should be written in. This data can assist the surveyors in locating carcasses on revisit days, but there is no need to re-measure this distance on revisit days. If this column is not used on revisit days, cross out the column with a large "X".

e. For the columns "position relative to surf," "carcass state," and "Block Present?" choose only one value from the pick list. On carcass check days, these columns are to be used to describe the carcass that day.

f. In the "Notes" column, record any potentially useful information not covered by the "carcass state" codes. For instance, record descriptions of carcass movement and any evidence for the cause of a carcass' movement or removal (e.g., footprints/tracks present, sightings of scavengers at the carcass, likely re-wash, etc.).

g. If a search was conducted for a suspected "missing" carcass and the "missing" carcass was subsequently found, take photographs from 1 and 5 meters away at the original location and from 1, 5, and 25 meters away at the new location. Use a new row in the datasheet to record the new location data.

h. If a carcass is determined to be "missing," enter "N/A" in the cells for GPS Location and Position Relative to Surf.

i. If a second / continuation data sheet is needed for a transect survey, use another data sheet. Make sure that the header information is consistent between the first page and subsequent pages. Label the top of subsequent pages with the appropriate page number.

7. Filling out the Chain of Custody form

a. When transferring custody of original data sheets or camera memory cards, such transfer must be documented using a Chain of Custody form (Exhibit 2).

i. Leave "Date and Time of Seizure" and "File No." blank.

ii. In "Evidence/Property Seized By" fill in the name of the person who has had custody of the item for the duration of the study. If not the Carcass Persistence Team Leader, then strike that label out on the form.

iii. Fill in information in "Description of Evidence/Property." All items listed can be grouped as "Item No. 001"

iv. Enter the appropriate item number in the first column.

v. The person releasing the evidence/property signs the "From" row, and the person receiving the evidence/property signs the "To" row.

b. All persons signing the Chain of Custody form should keep a photocopy for his/her records. However, the original signature sheet remains with the evidence/property. Copies of the original signature sheet will be furnished to LOSCO at completion of the study, as such copies are part of the data transfer packages described in items #2 and #3 above for transferring copies of data sheets and photographs.

Appendix E: 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 transmittered 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 transmittered.

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 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.

Final – 7 June 2011

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

ALABAMA

Environmental Studies Center 6101Girby 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 25th Avenue Gulfport, Mississippi	Casey Sartin	18-5133	LIVE OILED BIRDS ONLY No Carcasses
Mississippi Office of Law Enforcement	Special Agent Ben Bryant	14-7115	yant@fws.gov

NOT VISIBLY OILED Carcasses

FWS NRDA Field Office **Contact Bird Planner or Bird Lead to arrange for disposition in New Orleans**	**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, contact NRDA Bird Lead to arrange 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	
		No	No	Leave in place. Mark with zip-tie to indicate carcass has been observed.

[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).

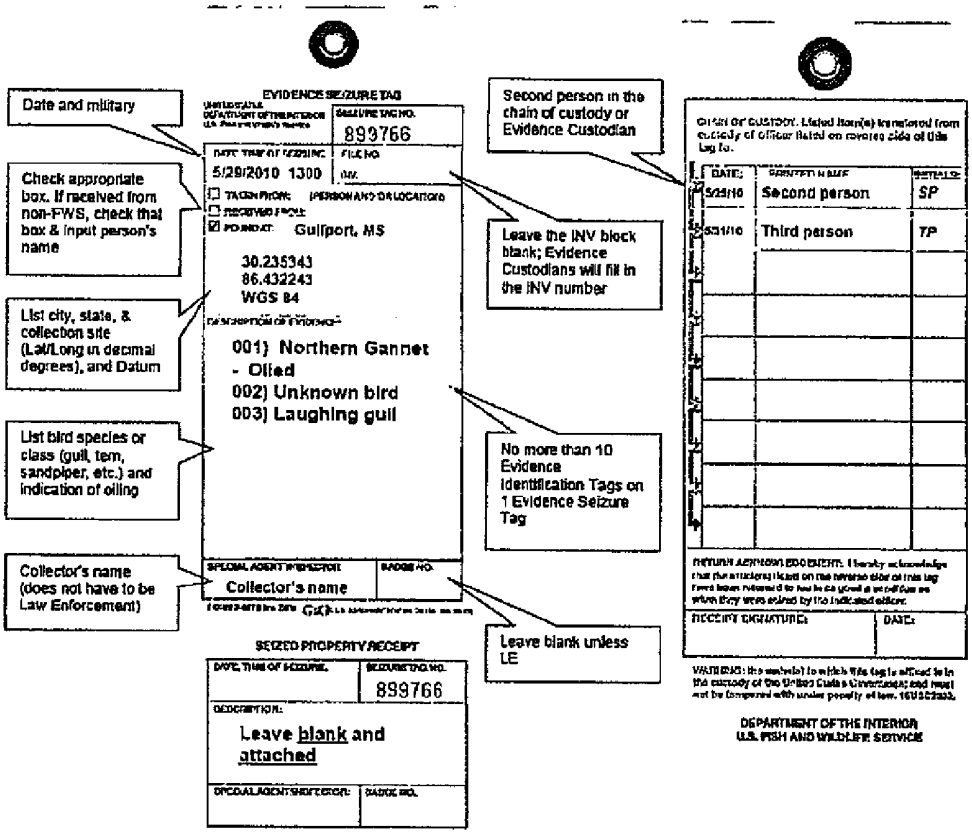
[2] "Oiling" means oil is present and visible to the naked eye, including light or trace oil.

[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.

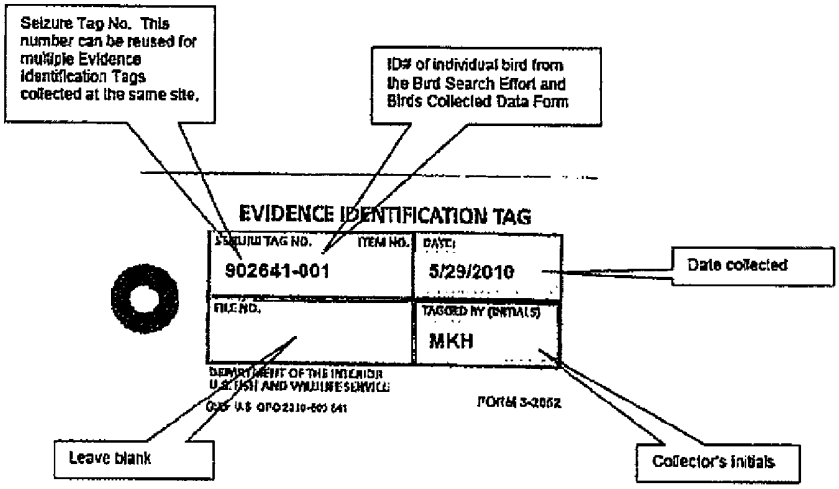
Table updated: January 13, 2011

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:



BLUE EVIDENCE TAG:



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)

Exhibit 1: Carcass Persistence Data Sheet

Mississippi Canyon 252 Oil Spill NRDA: Carcass Persistence Data Form

Date (mm/dd/yyyy):	Surveyors:	Surveyor Signatures:
Survey Transect #		

Carcass ID and size[1]	GPS Location[2] Prev. Day	Dist. from Transect Start (m)	Time (military format)	GPS Location[2] Today	Position Relative to Surf[3]	Camera: Photo(s) ID#[4]	Carcass State[5]	Block Present?[6]	Tide (circle one): rising, falling, slack low, slack high Notes
						1m 5m 25m			
						1m 5m 25m			
						1m 5m 25m			
						1m 5m 25m			
						1m 5m 25m			
						1m 5m 25m			

[1] "S" = small, "M" = medium, "L" = large

[2] Latitude/Longitude. WGS 84. Decimal degrees.

[3] Record either "LOW" (for the wash zone, below wrack line), "WRACK" (for at the wrack or high tide line), or "UPPER" (for the upper intertidal, above the wrack or high tide line)

[4] On placement day or days where carcass moved >25m from last location, take photos at 1, 5, and 25m. Otherwise, take photos at 1 and 5m (put a large "X" on line for 25m).

[5] Use one of the following: "Int." (intact, equivalent to No scavenging), "Dist." (disturbed, skin broken, mostly intact), "PR" (Pectorals removed but organs present), "OR" (Organs removed but pectorals present), "SB" (Skin and bones only; pectorals and organs removed), "PG" (Fragmentary; pelvic girdle only), "Wing" (Fragmentary; one or both wings only), "Skin" (feathers attached to skin fragments), "Miss." (missing, no part of carcass remains; equivalent to Removed). If "Missing or Miss." Record, write "N/A" in cells for GPS location and Position Relative to Surf.

[6] "Yes" = block present in previous location, "Moved" = present but not found in previous location, "No" = no longer be found within survey transect.

Exhibit 2: Chain of Custody Forms

US Department of the Interior U.S. Fish and Wildlife Service Division of Law Enforcement

CHAIN OF CUSTODY RECORD

FILE NO
INV

DATE AND TIME OF SEIZURE	REGION	EVIDENCE/PROPERTY SEIZED BY
	4	(CP Team Leader)

SOURCE OF EVIDENCE/PROPERTY (person and/or location)	CASE TITLE AND REMARKS
☐ TAKEN FROM: ☐ RECEIVED FROM: ☐ FOUND AT: Original data collection	Deepwater Horizon NRDA Carcass Persistence Study (Bird Study 1A)

ITEM NO	DECRIPTION OF EVIDENCE/PROPERTY (include Seizure Tag Numbers and any serial numbers)
001	Camera memory card Brand: Memory capacity: ID # (if applicable): Dates used:

ITEM NO			RELEASE SIGNATURE	RELEASE DATE	DELIVERED VIA:
001	FROM:	(PRINT NAME, AGENCY)			☐ U.S. MAIL
	TO	(PRINT NAME, AGENCY)	RECEIPT SIGNATURE	RECEIPT DATE	☐ IN PERSON ☐ OTHER:
ITEM NO	FROM:	(PRINT NAME, AGENCY)	RELEASE SIGNATURE	RELEASE DATE	DELIVERED VIA:
	TO	(PRINT NAME, AGENCY)	RECEIPT SIGNATURE	RECEIPT DATE	☐ U.S. MAIL ☐ IN PERSON ☐ OTHER:
ITEM NO	FROM:	(PRINT NAME, AGENCY)	RELEASE SIGNATURE	RELEASE DATE	DELIVERED VIA:
	TO	(PRINT NAME, AGENCY)	RECEIPT SIGNATURE	RECEIPT DATE	☐ U.S. MAIL ☐ IN PERSON ☐ OTHER:

☐ ADDITIONAL TRANSFERS ON REVERSE SIDE

FORM 3 2003 (3/00)

US Department of the Interior U.S. Fish and Wildlife Service Division of Law Enforcement

CHAIN OF CUSTODY RECORD

FILE NO: INV

DATE AND TIME OF SEIZURE	REGION: 4	EVIDENCE/PROPERTY SEIZED BY: (CP Team Leader)
SOURCE OF EVIDENCE/PROPERTY (person and/or location): ☐ TAKEN FROM ☐ RECEIVED FROM: ☐ FOUND AT: Original data collection		CASE TITLE AND REMARKS: Deepwater Horizon NRDA Carcass Persistence Study (Bird Study 1A)

ITEM NO	DECRIPTION OF EVIDENCE/PROPERTY (include Seizure Tag Numbers and any serial numbers).
001	Carcass Persistence Study datasheets (list datasheets by date and Transect Name)

ITEM NO					
001	FROM:	(PRINT NAME, AGENCY)	RELEASE SIGNATURE	RELEASE DATE:	DELIVERED VIA: ☐ U.S. MAIL ☐ IN PERSON ☐ OTHER:
	TO	(PRINT NAME, AGENCY)	RECEIPT SIGNATURE	RECEIPT DATE:	
ITEM NO	FROM:	(PRINT NAME, AGENCY)	RELEASE SIGNATURE	RELEASE DATE:	DELIVERED VIA: ☐ U.S. MAIL ☐ IN PERSON ☐ OTHER:
	TO:	(PRINT NAME, AGENCY)	RECEIPT SIGNATURE	RECEIPT DATE:	
ITEM NO	FROM:	(PRINT NAME, AGENCY)	RELEASE SIGNATURE	RELEASE DATE:	DELIVERED VIA: ☐ U.S. MAIL ☐ IN PERSON ☐ OTHER:
	TO	(PRINT NAME, AGENCY)	RECEIPT SIGNATURE	RECEIPT DATE:	

☐ ADDITIONAL TRANSFERS ON REVERSE SIDE

FORM 3-2063 (3/00)

Errata: Appendix C

Appendix C: Deployment, Observation & Retrieval of Carcasses SOP

1. The size of study teams will be as mutually agreed by Trustee and BP/CardnoENTRIX representatives. While use of two person teams (one Trustee, one BP/CardnoENTRIX) is preferable for safety and other reasons, one person teams can be utilized to deploy and retrieve carcasses, if such activities can be accomplished in a safe manner and is agreed to by Trustee and BP/CardnoENTRIX representatives and the individual who would be working alone. A representative for the Louisiana Trustee may join the field crews, particularly those working in Louisiana, to participate in the field activities.

2. Many transects can be accessed by car/walking. Some will require boat or small off-road vehicles (e.g., UTV). Study teams will need to plan in advance to secure appropriate transportation; however, BP/CardnoENTRIX will be responsible for procuring the rental of such equipment. Trustee and BP/CardnoENTRIX representatives will discuss and agree to the following day's carcass deployment schedule.

3. Study teams will obtain the container/bag of bird carcasses prepared for use on specified transects (see SOP for bird preparation). The teams will confirm (using the labels on the larger bags and individual bird bags) that the carcass number, size, and placement location information is consistent with those specified in the SOP for carcass placement.

4. Study teams will use GPS to place birds at the distance from the start of the transect specified on each individual bag containing a carcass.

5. Study teams will place carcasses in the low, wrack, or upper areas of the beach as specified in the SOP for carcass placement. Birds in the upper portion of the beach will be placed up to 5 meters above the wrack/high tide line or, for very narrow beaches, the transition from beach to other habitat (e.g., saltmarsh, mangrove, etc.). Birds specified for the 'low' part of the beach will be placed in the wash zone below the wrack line and those in the 'wrack' position will be placed at the wrack or high tide line. Carcasses should be placed on the beach in a manner that realistically mimics natural deposition (e.g., some mingling with wrack or slight covering with sand is acceptable).

6. The latitude and longitude of placed carcasses should be noted on data sheets provided to the teams, along with carcass identification number, size class, estimated distance from start of transect, time of placement and position relative to surf.

7. A small wooden block (approximately 5" x 3") will be placed under each carcass. The carcass ID number will be written on the block with permanent marker. The presence/absence of the wood block on subsequent days will provide an indication of whether a storm surge or other unusually high tide event likely rewashed the carcass (i.e., if the block is present but the carcass gone, scavenging is the likely cause; if both block and carcass are gone, rewash is the likely cause).

8. Three photographs should be taken of each placed carcass at the time of placement from approximately 1, 5, and 25 meters away. No zoom should be used. The purpose of the 1m photograph is to document the carcass state and to provide a reference photograph for

subsequent 1m photographs depicting evidence of animal or human tracks or water marks. The purpose of the 5m photograph is to provide a reference photograph to which to compare subsequent 5m photographs depicting movement of the carcass on the beach. The purpose of the 25m photograph is to document the environment surrounding the carcass.

9. Study teams should return at approximately the same time each day and record whether or not the carcass (and associated block) is present, and if so, its location and carcass state. If the carcass is present, one photograph will be taken from approximately 1 meter away (intended to document carcass condition) and from 5 meters away (to photo-document any movement of the carcass from its original location). (A photograph from 25m is not needed if the carcass has not significantly moved, since the purpose of the 25m photo is to illustrate the environment surrounding the carcass, which will not have changed.)

10. If the block is present but the carcass is not (regardless of whether the carcass is later 'found' that day), one photograph will be taken from one meter away from where the carcass should have been found (to document any animal or human tracks or other evidence that might be associated with the carcass' disappearance) and one photograph will be taken from approximately 5 meters away (to document the block and missing carcass).

11. If a carcass and block become separated, the block may be collected and replaced under the carcass or a new block placed if the original one cannot be found. The block's purpose is to provide information as to the potential fate of the carcass in the 24 hrs since the previous check. Record such replacement in the Notes of the datasheet.

12. If a carcass is found to have moved more than 25 meters away from its location at last check, photograph the carcass from 1, 5, and 25 meters away.

13. If a subsequent carcass check determines that a carcass is missing from its last known location, teams should search the transect in case the carcass has rewashed or otherwise been moved up or down the beach. The area of the beach to be searched for "missing" carcass should be the same as was searched during the Beached Bird Surveys (i.e., between the water's edge and 5 m landward of the old wrack line). At a minimum, 'missing carcass" searches should cover the portion of the transect between the carcasses located closest and farthest from the transect start on the prior day, plus 100 meters on either end. The field team will take a photograph (from 1 and 5 meters away) of the location where the carcass should have been found. If the block is found in a new location, this may indicate the direction of any long-shore current and may facilitate relocating the carcass. If a "missing" carcass is found, its new location should be noted on the study data sheet and photographs taken from 1, 5, and 25 meters away. If not found, the carcass should be noted as "Missing" on the study data sheet, and "N/A" should be written on the data sheet for the GPS location and position relative to surf. Carcasses found to be moved from their original locations *should not* be repositioned back at the original placement area.

14. Definitions of carcass state are provided below:
    a. **No scavenging**
        i. "Int." – intact carcass and there is no evidence of scavenging;
    b. **Lightly scavenged**

i. "Dist." - carcass is disturbed. Although skin is broken, carcass is mostly intact,

ii. "PR" - pectorals removed but organs present, or

iii. "OR" - organs removed but pectorals present;

c. **Heavily scavenged**

i. "SB" - skin and bones only; pectorals and organs removed,

ii. "PG" - fragmentary; pelvic girdle only,

iii. "Wing" - fragmentary; one or both wings only, or

iv. "Skin" – a few feathers attached to skin fragments; and

d. **Removed**

i. "Miss." – carcass is missing, and no part of carcass remains.

15. For each carcass observed during carcass checks, study team members should provide notes explaining the basis for choosing the carcass state selected, if one carcass state code does not adequately describe the condition (to help assess and, if necessary, adjust classifications to maximize consistency between study teams).

16. Carcass checks at a particular transect will continue on a daily basis until all carcasses are gone or at least 14 days have elapsed Photographs will be taken from 1 and 5 meters away on the final check day unless the carcass has moved more than 25m away from the original placement location (then see item #12 above).

17. If any carcasses are present on the day of the last check, they will be collected and disposed of in a landfill.