


Original Draft: May 18, 2010
Latest Revisions: June 7, 2010

**WORK PLAN FOR AERIAL SURVEYS AND PHOTOGRAPHIC
CENSUS FOR BIRDS IN THE VICINITY OF THE DEEPWATER
HORIZON (MSC 252) OIL SPILL –BIRD STUDY #2**

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INTRODUCTION

The objective of this plan is to provide data to determine the number of water birds and seabirds in the region potentially affected by the Deepwater Horizon (MSC 252) Oil Spill. It will be accomplished by aerial surveys at sea, along potentially affected shorelines, and by photographic census of breeding bird colonies.

Aerial surveys began on 4 May 2010 and ended on 23 May 2010. We surveyed coastal and nearshore waters from the western edge of Louisiana to Sarasota Florida as well as offshore flights extending from the coast out to the spill origin. During this period, we also carried out a photographic census of the majority of seabird and coastal wader colonies in Louisiana, Alabama and Mississippi.

Birds will be in attendance at colonies throughout the potentially affected area during the month of June. Our intent is to document the status of the majority of seabird and nearshore wader colonies in Texas and Florida, and also to revisit several colonies in Louisiana where some bird species were not yet in full breeding condition during our first census period in early May. During June, we will also replicate our coastal and offshore surveys, extending coverage to Key West in the east and to the Texas-Mexico border in the west. Surveys taking place after the end of the breeding season in June will *only* entail coastal and offshore surveys, and will not include colony photography.

STUDY AREA

Aerial surveys will be carried out in the area potentially affected by oil released by the Deepwater Horizon (MSC 252) oil spill. The original study area was defined as the region between the Texas/Louisiana border and Gulf County, Florida. As the spill has increased in size and the area of potential impact has widened, the study area has been expanded to include the gulf shore of Florida as far south as Key West, and the shoreline of Texas from Louisiana to the Mexican border. Surveys will include coastal beaches, barrier islands, nearshore waters, marshes, offshore waters, and seabird or wading bird colonies located near the coastline.

Surveys

Observers will fly at 200' above sea level (ASL) moving at 90-100 kt with observers stationed on either side of the aircraft scanning a 75 meter strip. Areas where we cannot fly at this altitude will be avoided. Observers will identify and record all birds, sea turtles, and marine mammals to species or species group within the strip. Observers are trained in the use of 75 m strip census, and will calibrate regularly using an inclinometer. A third person will act as navigator and data logger, recording summaries of observations and vectoring the pilot. When flying coastal surveys, the aircraft will be positioned so that the aircraft is just offshore, but close enough that the inshore observer can scan the entire beach. Detailed data relating to each sighting will be recorded on audio tape and

subsequently transcribed and merged with the GPS locations recorded by the navigation software. These survey protocols were first developed for federally funded seabird surveys in California, Oregon, and Washington, and were standard for those studies. They are currently used by the University of California Santa Cruz Aerial Survey Team when responding to oil spills in California at the request of the Office of Oil Spill Prevention and Response as well as by other seabird census programs such as the Puget Sound Ambient Monitoring Program.

We propose to make four general types of surveys:

- 1) *Marine surveys*, flown in a north-south direction and extending well south of the spill site.
- 2) *Outer coast surveys*, flown along the shoreline with the landward observer recording all birds seen along beaches or wetlands, while the seaward observer records wildlife within the standard 75m strip.
- 3) *Barrier island surveys*, similar to the outer coast surveys, but flown along both sides of the barrier islands.
- 4) *Nearshore surveys*, zigzag lines between the mainland and the barrier islands. Where barrier islands are absent, we will fly shallow zig-zags extending several miles seaward.

Flight lines and observations from aerial surveys carried out in May 2010 are shown in the attached PDF.

Colony Photography

Colony photographs will provide a detailed record of bird attendance and behavior, in most cases before spill impacts occur. We have attempted to systematically check the status of all the colony sites in Louisiana, Alabama, and Mississippi for which there are records from the last (approximately) 30 years. Many of these colonies are no longer attended or the islands where they were located are no longer visible. Active colonies are photographed in multiple frames using high resolution digital cameras equipped with telephoto lenses. These photographs are sufficiently detailed that even the postures and species of relatively small birds such as terns can usually be distinguished (See attached PDF). Colony locations, altitude, trackline, and photographic frame numbers are recorded on a computer/GPS system. When engaged in colony photography, the aircraft will remain at an altitude of 600' ASL or more at all times to avoid any flushing behavior or disturbance on the part of nesting or roosting birds. Nest sites and attendant adults will be counted using imaging software adapted specifically for this purpose. Analysis of photographic surveys is time consuming and requires up to twenty days of analysis per day of colony photography.

AIRCRAFT

Colony photography and most survey flights will be made using a Partenavia Observer. The Partenavia is a twin engine high wing aircraft that seats 4 (or 5 on a limited basis) passengers. It is an excellent platform for aerial surveys and is widely used for this purpose. For the June surveys, we will use two Partenavia Observers provided by Aspen Helicopters of Oxnard, California. Subsequent surveys will not include colony photography, and therefore will require only one Partenavia.

The spill area, particularly around the delta and in adjacent areas, have a high level of air traffic, especially helicopter traffic. To maximize safety and coordination, we are integrated with the Air Ops Plan and work with Glenn Cullingford (USFWS) regarding the timing and locations of our survey and photographic flights. We are currently providing flight plans on a daily basis, notify Air Operations of any changes in our itinerary if weather or other factors force us to alter our flight plan, and receive copies of the daily Air Ops Report. We will also 'self announce' our presence on an FM radio frequency used explicitly for this purpose by USFWS. Additionally, we have equipped both Partenavias with collision avoidance systems that detect and notify the pilot of other aircraft within a 6 mile radius.

For open water flights extending up to 200 miles from the shoreline, we will utilize a Twin Otter which will be provided by BP. The Twin Otter is a very effective long range platform for offshore surveys, and was used for federally sponsored bird surveys of seabirds and marine mammals in Oregon and Washington as well as numerous other similar studies. As in the Partenavia, the bird survey team will consist of three persons, and will survey 75m strips to either side of the aircraft. The Twin Otter will fly at the same altitude and speed, 200' ASL and about 90 kt, as is used in Partenavia surveys. Depending on the configuration of the aircraft and the required range, it may be possible to comfortably accommodate several additional personnel on these flights.

On Partenavia flights, representatives of the Trustees or the RP may choose to fly on some survey legs as conditions permit. The Partenavia is a relatively small aircraft, and additional passengers limit its range and make movement within the cabin difficult. We will do our best to accommodate these requests to the extent that the survey schedule and weather permit.

COORDINATION WITH MANAGERS OF CONSERVATION UNITS

Avoiding any disturbance to colonies is any extremely high priority. Disturbance can negatively affect the productivity of colonies, and photographic counts cannot be made if a colony is disturbed. We will not cross over NPS lands or USFWS refuges at altitudes less than 600'. If the NPS has concerns regarding disturbance, we propose that they place monitors who are in direct communication with the aircraft on the ground near the colonies. If monitors have *any* concerns about the behavior of the birds, they can contact

the aircraft and immediately halt the photographic survey until such time as they indicate it is safe to approach the colony again. This technique has been used on the west coast for colonies that are in the jurisdiction of both NPS and USFWS, and has been found to be an effective way of monitoring and avoiding colony disturbance.

IMPLEMENTATION SCHEDULE

The Trustees propose to conduct a base operational survey period of about two months in duration (May and June) which can be expanded by additional sets of surveys as needed. Expansion of surveys beyond the base operational period will be dependent upon progress of response cleanup efforts, status of oil exposures to birds, and the professional judgment of the Trustees and their authorized contractor R.G. Ford Consulting Co., and in consultation with British Petroleum (BP) and its consultants. The June surveys will include both coastal and open water surveys as well as photographic census of colonies, and will embody our greatest survey effort. Subsequent surveys will not include colony photography, and therefore will require less than half the level of effort. We recommend that further surveys be carried out with regard to seasonal changes in bird abundance and phenology. The post breeding season begins in July, and surveys during late July or early August would provide a record of the post breeding distribution of birds.

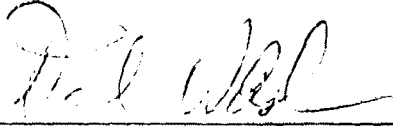
COOPERATIVE ASSESSMENT LOGISTICS AND BUDGET

Space will be available on the Twin Otter during offshore surveys for extra people (BP or agency personnel). Space in the Partenavia, however, is limited, and the survey range of the aircraft is significantly reduced by the presence of an additional passenger. If BP or management agency personnel (e.g. NPS) need to participate in a flight to approve the technique, short flights could be accomplished for that purpose assuming BP and agency personnel have safety training that would meet the equivalent of Department of the Interior B3 Combination Helicopter/Airplane Safety training, as well as the Water Ditching and Survival course, A-312 or equivalent course such as those being offered in Houma, LA.

An estimate of the budget required for this project is attached. In addition, data sharing agreements between natural resource trustees, R.G. Ford Consulting, BP, and its authorized consultants will be developed and implemented.

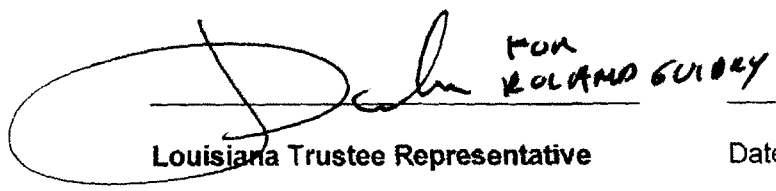
Approval of this work plan is for the purposes of obtaining data for the Natural Resource Damage Assessment. Parties each reserve its right to produce its own independent interpretation and analysis of any data collected pursuant to this work plan

APPROVAL



Dan Welsh (USFWS)
Trustee NRDA Bird Group Lead

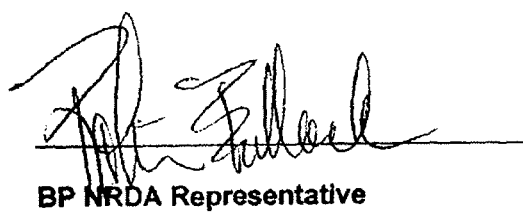
6/11/10
Date



FOR
ROLAND GUYARD

Louisiana Trustee Representative

7/20/10
Date



BP NRDA Representative

June 11, 2010
Date

Aerial Bird Survey Budget

Each set of surveys is expected to take up to six days of flying, depending on the size of the area currently at risk. One set of surveys will be carried out approximately every two weeks.

Based on 6 survey days and costs for aircraft maintenance after 100 hours. Final costs will be determined based on hours flown and days in the field.

Aircraft and Pilots

Partenavia subcontracted from Aspen Helicopters.

Aerial surveys – 6 days at 6 hours per day

36 hours @ \$550.00 = \$19,800.00

Perdiem for pilot

14 days¹ @ \$204.00² = \$2,856.00

Maintenance cost (estimate, prorated) \$1,500.00

Subtotal, Aircraft and Pilots = \$24,156.00

Observer-Navigators and Data Processing

Observer prep and aerial survey

3 surveyors, airfare @ \$1,100.00² = \$3,300.00

3 surveyors, 10 days³ = 30 days @ \$1,200.00 = \$36,000.00

Perdiem for surveyors

30 days @ \$204.00 = \$6,120.00

Data workup

Transcription and proofing:

2 surveyors, 7.5 days = 15 days @ \$1,200 = \$18,000.00

Photo analysis: 15 days @ \$12,000 = \$18,000.00

Mapping: 6 days @ \$600.00 = \$3,600.00

Subtotal, Observer-Navigators and Data Workup = \$85,020.00

TOTAL COSTS PER SURVEY SET \$ 109,176.00

Overhead @ 12% = \$ 13,101.12

TOTAL BUDGET PER SURVEY SET \$122,277.12

¹ Perdiem estimate from GSA Schedule

² Airfare estimate from internet search

³ 2 days travel, 2 days contingency, 6 days survey = 10 days