

Mississippi Canyon 252

Assessment Plan to Determine Potential Injuries to Beach Mice Due to Habitat Impacts from Response Activities Associated with the Deepwater Horizon Oil Spill Events

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Plan Overview

The purpose of this work plan is to document disturbance to or destruction of the sand dune habitat of endangered and candidate beach mice species (*Peromyscus polionotus sp.*) in Alabama and Florida due to activities related to the Mississippi Canyon 252 Oil Spill (MC252) response. The plan focuses on occupied and potential habitat because 1) both habitat categories (occupied, potential) are considered critical to the maintenance of this subspecies of mouse; and 2) beach mouse population numbers and, to a lesser extent, occupied habitat can vary over time. Thus, disturbance to or destruction of occupied or potential beach mouse habitat could harm or impede recovery of this species.

This plan will use input from land managers, ground surveys, and a review of high-resolution aerial images to determine where potential impacts may have occurred. All areas will be mapped and the extent of impact will be estimated by habitat-based assessments. This plan should be considered the first step in an assessment process because it identifies the extent and location of potential habitat injury. Subsequent work will focus on methods to restore habitat in these areas.

I. Natural Resources Being Addressed

The coastal dunes of Alabama and Florida are habitat for seven subspecies of beach mice (*Peromyscus polionotus spp.*) (Figure 1). Five of the beach mice (Alabama, Perdido Key, Choctawhatchee, St. Andrew, and Anastasia Island) are listed as state and federally endangered; the southeastern beach mouse is listed as federally threatened; the Santa Rosa beach mouse is a federal species of concern and candidate species. This plan will only be implemented for the five subspecies that occur in Alabama and the Florida panhandle (locations 1-5 on Figure 1).

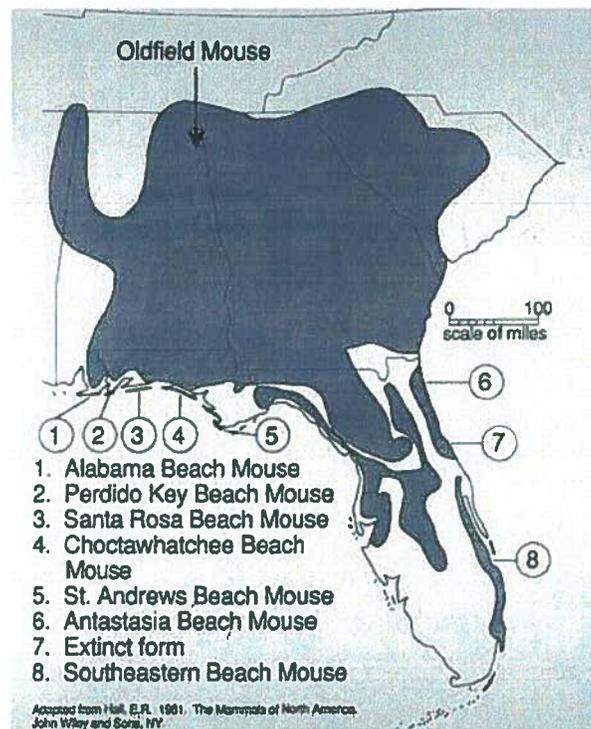


Figure 1. General distribution of the beach mice subspecies in Alabama and Florida in relation to the Oldfield mouse (*Peromyscus polionotus*).

Beach Mouse Distribution and Habitat: The current distribution of beach mice and some baseline information about their preferred habitat is well known on a landscape scale (Loggins et al. 2008). Beach mice inhabit the coastal dune ecosystems on the Atlantic and Gulf coasts of Florida and the Gulf coast of Alabama. The coastal dune habitat is generally categorized as:

- * **primary dunes** (characterized by sea oats [*Uniola paniculata*] and other grasses),
- * **secondary dunes** (similar to primary dunes but also frequently include woody goldenrod [*Chrysoma pauciflosculosa*] and false rosemary [*Conradina canescens*]), and
- * **scrub dunes** (often dominated by scrub oaks [*Quercus geminata* spp.] and yaupon holly [*Ilex vomitoria*]).

Beach mouse population size and density can fluctuate markedly over time, but the habitat or area occupied is less variable (Rave and Holler 1992, Swilling et. al 1998). In general, beach mice were listed as endangered species primarily because of the fragmentation, adverse alteration, and loss of habitat due to coastal development. The threat of development-related habitat loss continues to increase. Additional contributing factors include low beach mouse population densities, habitat loss from other causes (including hurricanes), predation (foxes, coyotes, cats), and competition by animals associated with human development (house mice).

Beach Mouse Behavior and Ecology: The life span of a beach mouse depends on environmental factors, but generally ranges from five to nine months (Rave and Holler 1992, Swilling 2000). Beach mice are considered sexually mature at 55 days of age; however, some are capable of

breeding earlier (Weston 2007). Gestation averages 28 to 30 days (Weston 2007) and the average litter size is four pups (Kaufman and Kaufman 1987). Beach mice spend their entire lives within the coastal dune system. They are semifossorial, using their complex burrows as a place to rest during the day and between nightly foraging bouts, escape from predators, have and care for young, and hold limited food caches. Beach mice are nocturnal and forage for food throughout the dune system. Beach mice feed primarily upon seeds and fruits, but have been shown to prey on insects. In most cases, seeds and fruits consumed by beach mice are either produced by low-growing, prostrate plants, or become available as fallen seeds. Beach mice appear to forage opportunistically on food items based on availability and have shown no preferences for particular seeds or fruits. Studies of the home range size of beach mice (using trapping and telemetry data) have yielded estimates of 1 to 5 acres (Novak 1997; Lynn 2000). Individual beach mice have been observed traveling extensive distances (up to a mile) during one night (Swilling et al. 1998; Lynn 2000; Moyers and Shea 2002). Peak breeding season for beach mice is autumn and winter, declining in spring, and falling to low levels in summer (Blair 1951). However, pregnant and lactating beach mice have been observed in all seasons (Moyers et al. 1999).

Since beach mice spend their entire lives in the dunes, and are entirely dependent on the natural resources of the dunes, their survival and recovery is tied directly to the fate and quality of the dunes. Disturbing the dunes with heavy equipment can adversely impact beach mice by fragmenting habitat (Wilkinson et al. 2010), crushing burrows and/or nests, destroying current and future food sources, eliminating high elevation storm refugia (Swilling et al. 1998), and destabilizing the dunes.

II. Purpose

Presently, it does not appear that product from the Deepwater Horizon (MSC 252) Oil Spill will impact beach mice on a biological level. However, to carry out activities necessary to keep said product away from beaches, out of beach mouse habitat, and clean it off the beaches (e.g., access points for boom deployment and clean-up crews, actual clean-up activities etc.), impacts to beach mice and their habitat may have occurred. The purpose of this plan is to collect data to document the extent of disturbance to beach mouse habitat by mapping the current condition of dune habitat in areas where response activities occurred in known or potential beach mouse habitat.

III. Methods

This protocol will be implemented in the potential habitats for the subspecies in Alabama and the Gulf coast of Florida.

A. Beach Mouse Habitat Identification:

Beach mouse habitat is well understood and documented (Loggins et al. 2008). Any dunes within a subspecies' range are potential habitat. As a result, the first phase of this assessment is to create a map of dune habitat that exists within the range of each Gulf Coast beach mouse subspecies. This will be accomplished by interpreting dune features from the most recent pre-spill aerial maps available. Ground truthing will be required. While the U.S. Fish and Wildlife Service has published maps displaying the location of designated beach mice critical habitat,

these maps do not depict all beach mice habitat, as certain areas were excluded from critical habitat for reasons unrelated to the biological needs of the species. As a result, maps of critical habitat provide a starting point for identifying beach mice habitat, but they cannot be relied on exclusively for identification of all existing or potential beach mouse habitat.

B. Beach Mouse Habitat Injury Assessment:

Through coordination with Trustee agencies, efforts are being made by response crews in connection with the Deepwater Horizon events to minimize and/or avoid impacts to beach mice habitat. However, when oil response emergencies arise, complete avoidance of habitat is not always feasible. For example, some beach mouse habitat has been damaged as a result of response activities. It is also possible that future activities (e.g., boom disassembly, emergency berm remediation) may cause additional damage to dunes.

To assess potential injury to beach mice, the Trustees will evaluate injury to beach mice habitat associated with MC252 Response activities. The focus of this plan is to quantify conditions where disturbance or destruction is observed in high-resolution aerial photography. Information on potential impacts to beach mice habitat associated with MC252 Response efforts will be solicited from public land managers, agency officials, or beach cleaning crews familiar with this habitat within the areas defined by the maps (see Section III A). Dunes will be considered impacted when the sand has been moved, altered, or compacted, and when vegetation has been disturbed or killed as a result of Response activities. The acreage of habitat impacted will be measured by a minimum two-person crew with GPS units walking the perimeter of impacts associated with clean up activity. As a quality control measure, both individuals will walk and record the extent of the impact. Pictures will also be taken at GPS points to characterize the nature of the impact. The pre-impact floral community will be estimated by using an undisturbed, adjacent reference, of equal size and proportion, with aerial imagery, as a proxy for what had been there previously (Figure 2). The total number of plant species and the percent species composition will be recorded. The percent coverage density of each species will be determined in adjacent plots to the nearest 10% via visual estimation and assigned a qualitative category from minimal to severe.

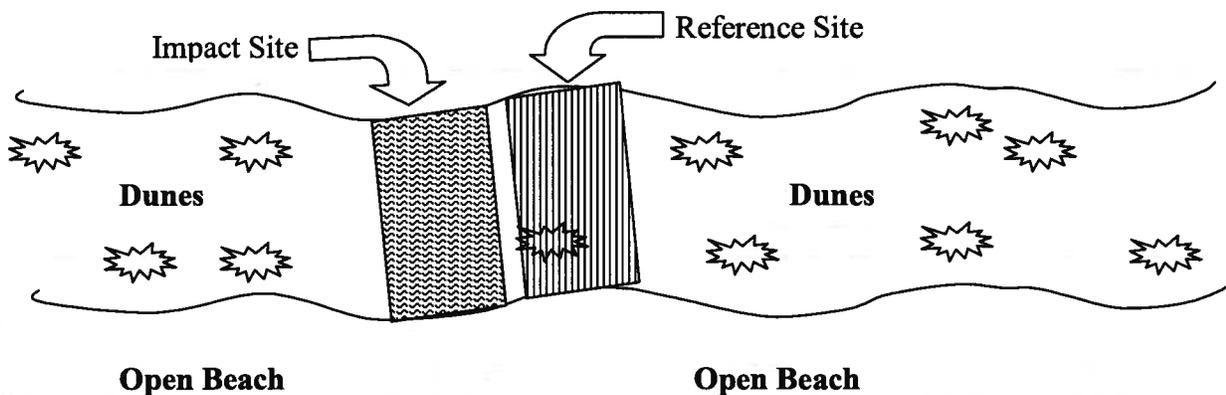


Figure 2. Schematic of impacted and reference site. Visual estimates in the reference site will be used to determine injury and restoration goals for impacted areas.

If a hurricane or other catastrophic event impacts beach mouse habitat in the Gulf of Mexico study area, and MC252 oil is observed in the storm surge, a separate plan will be needed to address potential impacts from MC252 oil. However, the results from the current plan may be used as a baseline condition of the dunes for future assessments.

A lead coordinator will be required to serve as the point of contact for this assessment. Staff at land management agencies and beach cleaning crew leaders will be notified of the person's contact information and this assessment to help information flow to the coordinator. This person will also lead the field activities.

Prior to the initiation of field investigations, detailed field protocols will be cooperatively developed by the Trustees and BP/CE. Consensus protocols will be distributed to all field team members prior to their deployment and at least one copy will accompany all teams in the field should it need to be referenced.

Work safely. Field teams will comply with existing training and safety protocols as applicable to all NRDA 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.

A good faith effort will be made to conduct this work with cooperative, integrated teams of observers. A weekly schedule describing the number of teams and their general area of operation will be prepared by the Trustees' project coordinator and provided to BP/CE two weeks in advance of the scheduled field operations. BP/CE will provide the Trustees' project coordinator a list of the teams on which it will participate at least 10 days prior to the beginning of the designated week. If these agreed-upon notification and coordination procedures are followed, yet circumstances prevent BP/CE from participating in a survey, the survey will be carried out without the participation of BP/CE. If BP/CE is available and on site for the survey, then the fieldwork will be carried out as an integrated team.

IV. Budget

The budgets estimated below were developed to portray what financial resources are necessary to assess damage to beach mouse habitat. The Parties acknowledge that this budget is an estimate, and that actual costs may prove to be higher due to a number of potential factors. 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.

Durable Equipment - All durable equipment (such as computers, 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.

IV. A Beach Mouse Habitat Identification

Table 1. Estimated costs of identifying beach mouse habitat and creating the habitat maps.

*Wages include benefits.

Item	Number	Total
Digital Aerial Photographs (in progress by USGS)	Full Set	0
Item	Wage	Hours
Biologist		40
GIS Analysis Technician		80
Per diem costs		4 days/2 people
UTV w/trailer		6
4WD Pickup Truck		10
Fuel		400
Boat		16
Total		

IV. B Beach Mouse Habitat Injury Assessment

At present there are reports from seven areas that need to be followed up on (e.g., Gulf State Park, Perdido Key, county access points in Perdido Key and Walton County, and Henderson State Park). In addition, staff time is needed to contact all land managers to determine and investigate additional oil-related response activities that may have caused habitat damage. It is estimated that this will require approximately four weeks of staff time. A cost breakdown for the existing assessment needs is presented in Table 2.

Table 2. Estimated costs* of assessing existing habitat impacts. Wages include benefits.

Item	Wage/Cost	Number	Total
Biologist (coordinator)		160	
Technician		160	
GIS Analysis Technician		80	
Per diem costs		6 days/2 people	
UTV w/trailer		20	
4WD Pickup Truck		20	
Fuel		800	
GPS/Camera		1	
Computer/software		1	
Boat		16	
Total			

* Some equipment needed for this study may be in BP's existing inventory. BP-owned equipment should be used if and when available.

At this time, response efforts are significantly scaled back, though they are not complete. Additional impacts may occur in the future and would need to be assessed by implementing this protocol. Assessment efforts related to any such additional impacts will be agreed upon in an addendum to this work plan.

COST OF PROJECT AT THIS TIME = \$55,300
20% OVERHEAD FOR CONTRACTOR = \$11,060
TOTAL COST = \$66,360

V. Data Management

All field work shall be conducted in accordance with Standard Operating Procedures (SOPs). All data (including electronically archived data) and original data sheets or electronic files, must be promptly transferred to USFWS.

Data will be electronically stored in Excel and GIS format. 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. As long as internet connectivity allows, original datasheets will be scanned and emailed within one week to the USFWS NRDA Office, Fairhope, Alabama (NRDA). Data and photos will be uploaded to a database created for the Deepwater Horizon oil spill. In the event that transfer of such data is delayed due to equipment malfunction or other reasons, it will be mailed directly to the NRDA office as soon as practicable. In the event that a survey must be carried out without BP/CE present, the data (data sheets, track logs, maps, photos) will be e-mailed to a designated BP representative as soon as practicable. NRDA chain-of-custody procedures will be observed at all times. GPS units and/or their memory cards and Camera memory cards will be submitted to the NRDA office after a card is full or after the study is completed pursuant to a protocol for transferring and uploading photos.

Data sharing - Prior to concluding each day, integrated teams will share all (1) data sheets, (2) official photographs, and (3) the official GPS track log. In the event that such data are collected without a BP representative present, those data (data sheets, track logs, photos) will be shared with BP weekly, in accordance with text in this section and any project specific SOPs developed for this project. In the event that transfer of such data is delayed due to equipment malfunction or other reasons beyond the reasonable control of USFWS or other parties in possession of this data, it will be emailed to a designated BP representative as soon as practicable.

VI. Schedule

The assessment of injuries to beach mouse habitat will begin in April, 2011. It is estimated that field work will continue for four weeks.

Table 3. General schedule summary of when to initiate each assessment.

Assessment Type	Immediately	Future Impact
Habitat Identification	X	
Habitat Injury	X	X

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Signature Page

MISSISSIPPI CANYON 252 OIL SPILL

**Assessment Plan to Determine Potential Injuries to Beach Mice Due to
Habitat Impacts from Response Activities Associated with the Deepwater
Horizon Oil Spill Events**

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.

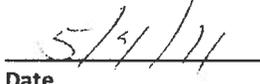
This plan will be implemented consistent with existing trustee regulations and policies. All applicable state and federal permits must be obtained prior to conducting work.

The trustees have developed a preliminary conceptual model of the DWH release, potential pathways and routes of exposure, and potential receptors. This preliminary model has informed the trustees' decision to pursue the studies outlined in the work plan. By signing this work plan and agreeing to fund the work outlined, BP is not endorsing the model articulated in the work plan.

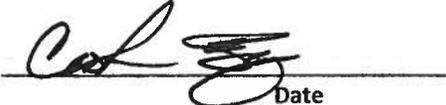
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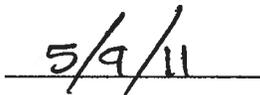
DOI Trustee Representative



Date



Date
BP Representative /NRDA Coordinator



Date