

INTERIM REPORT

As Required by

THE ENDANGERED SPECIES PROGRAM

TEXAS

Grant No. TX E-95-R

Endangered and Threatened Species Conservation

**A Survey of Upper Texas Coast Critical Habitats for Migratory and Wintering
Piping Plover and Associated Resident 'sand plovers'**

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30 September 2008

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INTERIM REPORT

STATE: Texas GRANT NUMBER: TX E-95-R

GRANT TITLE: Houston Toad Meta-population Assessment and Genetics: Data Necessary for Effective Recovery Strategies in a Significantly Fragmented Landscape

REPORTING PERIOD: 6 Sep 07 to 5 Sep 08

OBJECTIVE(S):

To quantify the population of Piping Plover (*Charadrius melodus*) on the upper coast of Texas throughout the 2007-2008 season to determine population size of wintering plovers and factors which influence their differential use of habitat.

Segment Objectives:

1. A complete survey of the defined coastline will be conducted twice each month between November 1, 2007 and October 31, 2008.

Significant Deviation:

A small (~ 2 mi) section of City of Galveston will not be surveyed due to high vehicular and pedestrian traffic, in addition to very low probability that the area would support plovers.

Summary Of Progress:

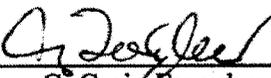
Please see Attachment A.

Location: Jefferson, Galveston, Brazoria, and Matagorda Counties, TX

Cost: Costs were not available at time of this report, they will be available upon completion of the Final Report and conclusion of the project.

Prepared by: Craig Farquhar

Date: 30 Sep 2008

Approved by: 
C. Craig Farquhar

Date: 30 Sep 08

ATTACHMENT A

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**A Survey of Upper Texas Coast Critical Habitats for Migratory and Wintering Piping
Plover and Associated Resident 'sand plovers'**

TPWD contract # 184463

Principal Investigator: Benjamin Wardwell
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Interim Reporting Period: January 2008 – August 2008

Summary of Progress

Bi-monthly surveys of the upper Texas coast have been conducted on from January 2008 to mid September 2008. The purpose of these surveys has been to determine wintering population size and habitat use of the Piping Plover (*Charadrius melodus*) on the upper Texas coast. We also collected data for two other species of “small sand plovers” in order to gauge their interactions, if any, with migrant and wintering Piping Plovers. These species are Snowy Plover (*Charadrius alexandrinus*) and Wilson’s Plover (*Charadrius wilsonia*). The former is considered “Threatened” by the USFWS and the latter has a world population estimated to be only 5000 pairs and both use the same heavily populated Gulf coast. Six hundred and eight Piping Plover detections had been made as of August 31, 2008. During the same period, 401 Snowy Plovers and 487 Wilson’s Plovers were recorded.

Thirty-five percent of detected Piping Plovers occurred in currently designated Critical Wintering Habitat by the USFWS. GIS analysis indicates that major areas of concentration are the mouths of rivers, particularly the Brazos River mouth at Bryan beach and the Colorado River mouth at Matagorda Bay Nature Park, or passes into major bay systems and large tidal or algal flats associated with them, especially Bolivar Flats and East Beach /Apfel Park at the northern entrance to Galveston Bay and San Luis pass at the southern entrance. Much of the beach in Jefferson, Galveston, Brazoria, and Matagorda Counties is bordered on its landward side by marsh, which offers little or no habitat for use by Piping Plovers.

Some areas, such as Bryan beach in Brazoria County, have shallow lagoon areas behind the dune line that offer prime habitat to many shorebirds if water levels are appropriate, Piping and Wilson’s Plovers included. These areas exhibited high levels of evaporation and drainage during the abnormally dry summer months of 2008. Most shorebirds, although few Piping Plovers were present at that season, were forced to areas that still retain adequate habitat for feeding. However the dry flats were attractive to Wilson’s Plovers, most of which were accompanied by unfledged young. This desiccation led to higher detection rates of Piping Plovers on the immediately adjacent outer beach. Some color-banded birds have not been re-sighted in the area so far, suggesting that in years of drought returning plovers, which begin arriving in mid July, can be significantly impacted.

All Piping Plovers recorded in the survey have been classified according to sex and age, when possible, location is marked using GPS coordinates and mapped in a GIS layer for concentration trends and habitat comparison. Color-banded birds are further noted. Of the 608 detections, 11% (65) have been birds color marked on the breeding grounds. A significant portion of this total has been positively re-sighted in same areas that they were encountered initially, indicating that wintering Piping Plovers exhibit considerable site fidelity within a season. Failure to relocate some color marked birds may be due to their departure from the area for migration or due to variables in the habitat, but several factors may cause marked birds that are present from being positively relocated. Partial identifications, where all the marker combinations were not seen, were omitted from

consideration. Also various factors at the time of observation may cause birds to flush prior to full inspection. Given the difficulty in obtaining positive identification of the marker combination of distant birds, it is estimated that as many as 20% of the wintering population on the upper Texas coast may have been marked on the breeding grounds.

As of the date of this report, returning migrants are relatively few. However initial detections of returning banded birds (6 re-sightings) shows low site fidelity between years. The sample size is too small to analyze so far and this early impression may prove to be incorrect.

Observations indicate that there is intra- and interspecific competition among most small shorebirds. Piping, Snowy, and Wilson's Plovers show both types of competition, but the strongest aggression is seen during conspecific encounters. This is due to food source competition between individuals, further supported by noted incidents when food was abundant, as with exceptionally low tides exposing prey items rarely available, personal space was suspended and individuals would tolerate close conspecific competitors. This suggests that Piping Plovers maintain individual feeding territories that are variable in size depending on the abundance of the resources. Birds are gregarious in resting/roosting situations. The areas of congregation were noted by GPS coordinates whenever encountered in an effort to determine if these sites are traditional or opportunistic.

Little interspecific competition exists between Piping and Wilson's Plovers when the two occur sympatrically on the upper Texas coast (the seasonality of the two species in the region is reversed, with only a limited period of overlap in the spring and early fall). Also Wilson's Plovers utilize larger prey, especially arthropods and crustaceans (sand crabs and fiddler crabs) and carry on most of their activities in areas behind the narrow dune line, appearing on the Gulf beaches only for a short period after the young fledged and prior to a rather early departure from the breeding grounds.

Piping and Snowy Plovers appear to feed on similar prey species but observed instances of competition have been lacking. This may partially be due to the relative abundance of Piping versus Snowy Plovers.

Coastline segments exhibiting high levels of human disturbance are being compared with less used sections. At this point human recreational use of the beach does not seem to provide any significant deterrent to plovers using the beach. Developments directly on the beach and back dune areas do affect the population and beach use of Piping Plovers. In all sections surveyed, detections were lower in areas with significant beach development (e.g., Galveston and sections of Bolivar peninsula). Sections of beach with relatively high human traffic seasonally, but low levels of development on or just behind the beach (Quintana/Bryan beach in Brazoria County) are being compared with areas of entirely undeveloped beach front with almost no human activity (Wolf Island between the mouths of the Brazos and San Bernard Rivers, accessible only by boat). Surveys at this time indicate that Piping Plovers are considerably more numerous on the Bryan Beach/Surfside sections of beach. The northeastern (Bryan Beach) side of the mouth of the Brazos River had 103 Piping Plover detections compared with only 18 detections on

the southwestern (Wolf Island) side. This may be based on the effluent from the Brazos River which longshore currents take toward the southwest and which deposits debris, and no doubt silt in large quantities on the Wolf Island side, possibly limiting food availability there, but no clear reason is obvious.

Significant Deviations

Sections of the City of Galveston have been excluded from the survey because of lack of vehicular access and high levels of pedestrian traffic year round. The area removed extends from approximately two miles northeast of San Luis Pass to Apffel Park on the northern end of the island. That portion of the beach essentially consists of the City of Galveston behind the seawall and a smaller area of intensive development west of the western terminus of the seawall. Initial surveys of the area indicated that the beach is too narrow and heavily developed in this area to support plovers in any significant numbers.

Also, the language of the "Location" section of the proposal was unclear on one point. It states that "the upper Texas coast is defined for the purposes of this study as extending from the mouth of the Sabine River in Jefferson County to the *tip of the Matagorda Peninsula in Matagorda County*". It should read "to the base of Matagorda Peninsula in Matagorda County". The Matagorda Peninsula actually consists of upper and lower peninsulas. The base of the Upper Peninsula is at the mouth of the Colorado River. South of the Colorado River the lower peninsula is extremely remote and isolated. There is no practical access to this part of the coastline with the resources that are available to us.

Special Note

As of September 13, 2008 significant portions of the Upper Texas Coast have been dramatically altered as a result of Hurricane Ike. The storm made landfall in the Galveston area severely altering Galveston Island and points east to the Sabine River. Light to moderate alteration of beaches in Brazoria and Matagorda Counties are not expected to affect the numbers and distribution of plovers. However, severe erosion of the coastline of Galveston and Jefferson Counties effectively eliminated the sandy beach from the mouth of the Sabine River to Rollover Pass near High Island, exposing the underlying clay. Nevertheless we have been able to survey this stretch of coast once since the storm although no plovers were found in this stretch of coastline. Only a portion of Bolivar Peninsula that has been closed to all except property owners remains inaccessible at this time. We anticipate that it will become accessible in the near future.

The sand and associated beach plants and cover have been removed from the immediate shore and deposited inland (photographs available). The sections of beach that were directly in the path of the eye have been altered to such a degree that they no longer constitute viable plover habitat, at least in the short term. Local beaches have improved considerably in the 14 days since the passage of Ike. The storm presents a unique opportunity for the project to determine how plastic the wintering distribution of Piping Plovers on is. Some sections of beach are far less affected than others and the probability of relocation to such areas seems high.