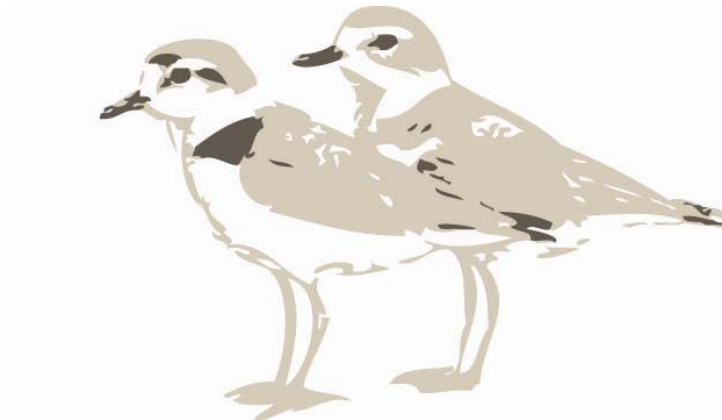


# Snowy Plover Survey – Great Salt Lake, UT

## Summary Report

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## Introduction

The Great Salt Lake (GSL) ecosystem is well-known as one of North America's most important inland shorebird sites (Oring et al. 2005) and has been recognized both nationally and globally for its importance to breeding and migratory birds. The expansive mudflats and playas of the GSL shoreline represents critical breeding habitat for the Snowy Plover (*Charadrius alexandrinus*). Throughout much of its range, SNPL populations have been declining (Page et al. 1991). In fact, the Pacific Coast population is designated as **Threatened** under the Endangered Species Act. Interior populations have also experienced significant declines (Page et al. 1991, 1995) and thus SNPL have been given **Priority Status** in many bird conservation programs.

The breeding population size of Snowy Plovers at GSL has been estimated at approximately 10,000 (Paton and Edwards 1992). If correct, this represents approximately 50% of the estimated US population (Page et al. 1995). Because the Snowy Plover is considered **Highly Imperiled** by the US Shorebird Conservation Plan, a **Focal Species** by US Fish and Wildlife Service (USFWS) Division of Migratory Bird Management, a bird of **Conservation Concern** by USFWS Region 6, a **Priority** species under the Great Basin Ecoregional Conservation Blueprint (The Nature Conservancy), and **Priority** species under Utah/Wyoming Rocky Mountains Ecoregional Conservation Plan, it is critical to determine current population size at the location with the largest breeding concentration.

Despite the importance of the GSL to the entire continental SNPL population, there has been no systematic monitoring program for this population. The USFWS in collaboration with USGS and other shorebird scientists formed a study-design team to develop methodologies for a survey of SNPL at GSL and to establish a long-term monitoring program to track population trends. A statistically defensible study design was very difficult to achieve because suitable breeding habitat for SNPL at GSL is vast, ephemeral, and is often difficult to access. Furthermore, SNPL are also very secretive, difficult to observe and respond quickly to changes in habitat quality during the breeding season by dispersing.

## Methods

The Great Salt Lake encompasses more than 6,000 sq km, thus a complete census of the entire GSL was not possible. Local area experts assisted in developing a sampling frame by identifying GSL shoreline habitat with – 1) known breeding SNPL, 2) having the potential to support breeding plovers, or 3) having no potential. Utilizing GIS, survey locations were randomly selected from within shoreline categorized as either known breeding or potential breeding habitat. These two strata were overlaid with a grid of 225-ha clusters of 25 9-ha (300 x 300 m) cells, which yielded 2130 sample clusters. A random sample of clusters was drawn from each stratum across the entire GSL. Because it was not possible to know the exact lake level before the start of the survey, some clusters fell in areas inaccessible for survey. To compensate for this more units were selected than could be surveyed. In total, 300 clusters were randomly drawn for the 2007 breeding season.

The sampling method consisted of an initial rapid survey to determine occupancy of each 9-ha cell within the 225-ha cluster and a follow-up more intensive search of all 9-ha cells where plovers were detected to determine abundance. Data collected will be used to calculate a SNPL breeding population estimate for GSL. This estimate will be pooled with estimates collected at other sites to generate a range-wide population size for this species.

*Training-* Training of all surveyors occurred during one of two training sessions, May 4 and May 5, 2007. Each training session was offered at the Bear River Migratory Bird Refuge. Participants were instructed on the protocol, the use of GPS units, species identification, and allowed an opportunity to practice estimating distances of 75m and 150m.

*Timing-* The survey period for Great Salt Lake began on 7 May and continued through 7 June. Five plots were surveyed on May 6 to take advantage of Suzanne Fellows, US Fish and Wildlife Service, time at Great Salt Lake.

Periodic conference calls were scheduled during the survey with the SNPL working group. These discussions were used to provide updates on survey progress, and to discuss issues with the survey protocols.

## **Results**

A total of 274 clusters (91%) were visited and sampled over the course of the survey period by 20 different observers. During the survey it became apparent that fewer SNPL were detected during the intensive survey relative to those counted during the rapid assessment. Observers consistently encountered aggregations of foraging birds during the rapid assessment. These aggregations quickly left the area following their initial discovery and thus weren't counted during the intensive survey. This was brought to the attention of the SNPL working group during the conference calls. The group decided to modify the protocol so that the intensive surveys occurred the day following the rapid assessment. However, counts continued to reveal fewer birds in the follow-up, intensive survey and thus the decision was made to cease intensive surveys.

On May 9 a plane was chartered to fly the entire shoreline of the GSL in order to identify shoreline clusters that were – 1) under water and thus not suitable to survey or 2) located in potential SNPL habitat. This saved a considerable amount of time for surveyors and allowed us to maximize the number of clusters that could be sampled.

Of the 6850 cells visited, data were collected from 2648. This left 4202 cells where observers could not initiate a count. Reasons for not surveying included, the cell was underwater (2640), the cell was covered in dense vegetation (1223) or the cell was located in upland habitat (393). Consequently surveyors were able to count 659 SNPL from 2648 cells that were suitable for survey.

## **Summary**

The GSL SNPL survey was conducted from 7 May – 7 June 2007. A total of 274 clusters were surveyed and 659 birds counted. Despite problems with foraging aggregations of SNPL, the survey was very successful and should yield good breeding population estimates for GSL. Two factors proved critical to the success of this project. First, I think it was very important to schedule periodic conference calls during the survey. These discussions were valuable in working through difficulties which ensured problems could be identified and steps taken to correct them. Second, it proved very useful to fly the entire shoreline early in the survey. This eliminated a large number of clusters quickly and allowed us to concentrate efforts on clusters potentially suitable for survey.

## **LITERATURE CITED**

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