

## SOME RECENT NESTING RECORDS FOR THE SNOWY PLOVER IN THE SAN JOAQUIN VALLEY, CALIFORNIA

GARY L. IVEY, Kern National Wildlife Refuge, P.O. Box 219, Delano, California 93216 (present address: Malheur National Wildlife Refuge, P.O. Box 113, Burns, Oregon 97720)

A survey to determine the breeding status of the western race of the Snowy Plover (*Charadrius alexandrinus nivosus*) in California was conducted from 1977 to 1980 (Page and Stenzel, West. Birds 12:1-40, 1981). The San Joaquin Valley was surveyed in 1978 but the only Snowy Plovers found there that were suspected of breeding were one pair at Goose Lake, Kern County. Page and Stenzel (1981) also summarized historical breeding records for California, including the San Joaquin Valley. Gary Zahm (pers. comm.) reported two pairs of Snowy Plovers with broods on and near tile drainage evaporation ponds at Kesterson National Wildlife Refuge, Merced County, in June 1981. On 1 June 1982 I located nesting Snowy Plovers on newly developed tile drainage evaporation ponds, approximately 30 km south of Corcoran, Kings County.

I conducted periodic surveys of the Snowy Plover nesting population on two groups of evaporation ponds through the summer of 1982. I was able to survey only about 80% of the potential nesting habitat because some of it was on remote islands which were difficult to census. I observed several nests containing from one to three eggs, one nest with four eggs, and numerous young. The peak count was 126 adult-sized birds in early July. This total may have included some young of the year because I did not attempt to distinguish adults from fledged young. I estimated that approximately 60 pairs of Snowy Plovers nested on these areas in 1982.

Tile drainage evaporating ponds were developed in arid regions where summer evaporation is high and evaporating irrigation waters carry accumulations of salts. These ponds, described by Summers (American Society of Agricultural Engineers Paper No. 75-2064, 1975), are similar structurally to commercial salt evaporation ponds in the San Francisco Bay Area, which are also used extensively by nesting Snowy Plovers (Page and Stenzel 1981).

Ponds surveyed in 1982 were constructed in 1980 and 1981 in southeastern Kings County. The ponds encompassed the combined total of 998 ha. About 95% of the total area was covered with water; the remainder consisted of dikes, islands and service roads.

Snowy Plovers nested on the dikes, islands and roads around the ponds. These areas were generally devoid of vegetation because of high salinity. High populations of brine flies (family Ephydriidae), a major food source for Snowy Plovers (Purdue, Southwestern Naturalist 21:347-357, 1976), occurred along the margins of the ponds. Other invertebrates were also present in high densities. Water salinity in the ponds (measured by specific conductance) ranged from about 10,000 to 100,000 micromhos per centimeter at 25°C (S. Hall pers. comm.).

During the summer 1982, an additional 259 ha in Kern County were incorporated into the evaporation pond complex. The new area was filled with water during fall and winter 1982-83, and supported nesting Snowy Plovers during the 1983 breeding season (D. Severson pers. comm.). This observation indicates that Snowy Plovers will readily colonize new habitats of this type.

Because of the magnitude of the soil salinity problem, several areas are currently being developed as evaporation basins in the San Joaquin Valley. It is likely Snowy Plovers will colonize these new basins when they are completed. Although these ponds are providing additional Snowy Plover habitat, the levels of potential toxicants accumulated in tile drainage waters, and how these toxicants may affect Snowy Plovers and other nesting birds, need to be investigated.

I would like to express my thanks to C.D. Littlefield and Gary Page for their comments on this manuscript, and to Dee Ehlers for typing assistance.

Accepted 21 August 1984