

Snowy Plover

Charadrius nivosus

REGULATORY STATUS

USFWS: Migratory Bird
USFS R2: No special status
USFS R4: No special status
Wyoming BLM: No special status
State of Wyoming: Protected Bird

CONSERVATION RANKS

USFWS: Bird of Conservation Concern
WGFD: NSSU (U), Tier III
WYNDD: G3, S1
Wyoming Contribution: LOW
IUCN: Near Threatened
PIF Continental Concern Score: Not ranked

STATUS AND RANK COMMENTS

Snowy Plover (*Charadrius nivosus*) that breed within 50 miles of the Pacific coast in the U.S. and Mexico are listed as Threatened under the Endangered Species Act ¹. However, Snowy Plover in Wyoming have no such regulatory status, nor any other status beyond those listed above.

NATURAL HISTORY

Taxonomy:

Formerly considered conspecific with *C. alexandrinus*, Snowy Plover is now considered a distinct species (*C. nivosus*) based on differences in male calls, morphology, and mitochondrial and nuclear DNA ^{2, 3}. These differences suggest that *C. alexandrinus* and *C. nivosus* are more closely related to *C. marginatus* than they are to each other ³. Two subspecies, *C. n. nivosus* and *C. n. occidentalis*, are recognized, supported by genetic differences ⁴. *C. n. nivosus* occurs in North America, while *C. n. occidentalis* is found in South America ⁵.

Description:

Snowy Plover can be identified in the field by its small size (15–17 cm long, 34–58 g), white hind-neck collar, and breast band that is restricted to lateral patches and does not form a complete band ⁵. Other characteristics that aid in identification are its pale brown upperparts and dark gray to blackish legs. Males and females are indistinguishable in basic plumage, whereas in alternate plumage, males have a black crown, ear coverts, and foreneck patches ⁵. Males often have a distinct rusty cap in the beginning of the breeding season, while females lack the rusty cap and often have brown feathering in one or more of their foreneck patches. Some females can exhibit a black crown, ear coverts, and foreneck patches, resembling males. Juveniles are distinguished from adults by pale edges on mantle feathers and lack of forehead patch ⁵. Similar species in Wyoming include Piping Plover (*C. melodus*) and Semipalmated Plover (*C.*

semipalmatus). Snowy Plover is distinguishable from *C. melodus* and *C. semipalmatus* by its small size, dark gray legs, completely black bill, and incomplete breast band⁵.

Distribution & Range:

In North America, there are 4 primary population regions: Pacific Coast, Inland, Gulf Coast, and Atlantic. The Rocky Mountains occur in the Inland population region where Snowy Plover breeds at several disjunct locations⁵. In Wyoming, Snowy Plover is known only to breed in a small portion of the southwest to south-central portion of the state. Although Snowy Plover has been observed in 11 of Wyoming's latitude/longitude degree blocks, confirmed or suspected breeding has been documented in only 2 degree blocks⁶. The species has a relatively high degree of site fidelity (ca. 63% re-sighting rate of individuals at a sample of breeding sites outside of Wyoming), but has also been known to disperse to different breeding sites within and between years⁵. Snowy Plover winters outside of Wyoming along the Pacific coast south through Mexico and Central America, along the Florida and Gulf coasts, in the Caribbean, and at a few inland sites in California⁵.

Habitat:

In the Rocky Mountains Snowy Plover breeds on barren to sparsely vegetated ground at alkaline or saline lakes, reservoirs, ponds, and riverine sand bars^{5, 7, 8}. Man-made features used by Snowy Plover include sewage, salt-evaporation, and agricultural waste-water ponds⁹. Nests are scraped directly into the substrate, and are usually placed next to a shrub, piece of debris, or other object in areas of relatively barren ground. Foraging is concentrated along the margins of water, occasionally ranging into dry flats. Winter habitat is primarily coastal, including beaches, tidal flats, lagoon margins, and salt-evaporation ponds. Some inland birds winter at agricultural waste-water ponds and saline lakes⁵. In Utah, Snowy Plover occupancy was negatively correlated with proximity to water and percent shrub cover¹⁰.

Phenology:

Snowy Plover arrives in Colorado around mid-April¹¹; limited records in Wyoming show arrival late April–late May¹². Fall migration begins in mid-July and extends into early November¹¹⁻¹⁷. Compared to other breeding grounds, pair formation is latest in the Great Plains and Great Basin because of later spring arrival dates^{5, 14, 18-20}. In the Great Plains, nesting begins in late April, with most eggs laid in May and June^{5, 8, 14, 19}. Egg laying occurs during all hours of the day and night, with about 55–62 hours between each laid egg²¹. Clutch size is typically 3 eggs (range 1–6); any clutch of only 1 egg is usually deserted^{21, 22}. In the Great Plains, incubation ranges from 23–28 days^{14, 19}. Within hours of the last chick hatching, the precocial chicks leave the nest permanently but need periodic brooding for several days^{5, 14}. First flight of chicks occurs ca. 31 days post hatching⁵. In Utah, predation, weather, and abandonment were the most common causes of nest failure, respectively. Snowy Plover daily nest survival was higher in vegetated areas or near conspicuous objects compared to barren mudflats and lower areas within 100 m of dikes²³.

Diet:

Snowy Plover feeds on terrestrial, freshwater, brackish, and marine invertebrates. In the Great Plains, Snowy Plover chases down prey or probes in the sand on shores of lakes, reservoirs, ponds, braided river channels, and playas⁵. It is assumed that Snowy Plover in Wyoming eat available invertebrates, but preferences and diet composition here are unknown.

CONSERVATION CONCERNS

Abundance:

Continental: WIDESPREAD BUT PATCHY

Wyoming: VERY RARE

The population size of Snowy Plover in North America is estimated to be 25,869 birds²⁴. Of that estimated population size, 16,905 Snowy Plovers are estimated to occur in the interior U.S. and Mexico. None of the survey sites from this study were located in Wyoming; however, Colorado had an estimated 294 and 147 birds on its shortgrass/mixed-grass prairies and Colorado plateau, respectively. The statewide rank of VERY RARE is based on the rather small area of the state known to be occupied in any given season, and the small coverage of suitable habitat within that area. However, within suitable habitat in the occupied area, Snowy Plover appears to be rare, as it occupies only a small percentage of preferred habitat within its range and may not be readily detected during surveys expected to indicate its presence⁶. Detections of Snowy Plover in Wyoming are limited, with only 19 detections recorded in the Wildlife Observation System managed by the Wyoming Game and Fish Department (WGFD).

Population Trends:

Historic: MODERATE DECLINE

Recent: UNKNOWN

Little data are available for Snowy Plover in Wyoming. However, across North America Snowy Plover has experienced a decline in occupied range and breeding numbers over the last 50 years^{5, 25, 26}.

Intrinsic Vulnerability:

HIGH VULNERABILITY

Snowy Plover is highly vulnerable due to its strong preference for specific habitats – namely, shallow water margins with sparse vegetation – and dependence on aquatic invertebrates as food. Declines in preferred habitat have been clearly documented in all portions of Snowy Plover range, and there are some recorded instances of environmental toxins apparently accumulating in Snowy Plover and depressing survival and reproductive output⁵.

Extrinsic Stressors:

MODERATELY STRESSED

Documented stressors to Snowy Plover include invasion of exotic plants, disturbances while nesting, increased predation, and, potentially, environmental toxins in the aquatic food chain. In the Great Basin, stands of the exotic *Phragmites australis* expanded five-fold in five years, reducing large, open areas previously used by Snowy Plovers for nesting (J. Cavitt, in litt.)⁵. In the Great Plains, a *Tamarix* spp. has invaded alkaline flats, which has contributed to Snowy Plover population declines in that area²⁷. *Tamarix* can cover formerly barren nesting areas, and predators that prey on Snowy Plover eggs and chicks use *Tamarix* for cover²⁸. In publicly-accessible areas, humans and domestic dogs often disturb nesting plovers, which can lead to clutch loss²¹. Cattle have also been known to trample nests in Colorado⁷. At the Great Salt Lake in Utah, increasing numbers of raccoon (*Procyon lotor*) and red fox (*Vulpes vulpes*) have reduced Snowy Plover nest success to near zero (J. Cavitt, in litt.)⁵.

KEY ACTIVITIES IN WYOMING

Snowy Plover is classified as a Species of Greatest Conservation Need in Wyoming by the WGFD, and as a Level II Priority Species requiring monitoring action in the Wyoming Bird

Conservation Plan ²⁹. Only 19 records of Snowy Plover have been recorded in the WGFD Wildlife Observation System. Existing data from ongoing monitoring programs are not robust enough to support estimates of occupancy, density, or population trend in the state. Since 1984, WGFD has conducted annual or periodic monitoring at important and productive waterbird sites to determine species presence and distribution, and to estimate number of nesting pairs. Additionally, in 2014 an online atlas of western colonial waterbird nesting sites was produced with data from a recent multi-year cooperative project with the U.S. Fish and Wildlife Service to survey all historic, known, potential, and new colonial waterbird breeding sites in the western U.S. ³⁰⁻³². In Wyoming, Snowy Plover was not detected during these efforts, and there are no new or on-going research or monitoring projects designed specifically for this species in the state. Observations of Snowy Plover are reported to the WGFD and vetted through the Wyoming Bird Records Committee (WBRC). Snowy Plover is a species for which the WBRC requests documentation on all sightings.

ECOLOGICAL INFORMATION NEEDS

Information on basic habitat use, distribution, and population trends within Wyoming is lacking, as the majority of existing research has targeted coastal populations and larger inland breeding centers. Breeding range of Snowy Plover in Wyoming is poorly understood, as are the effects of oil and gas development and other disturbances on nesting habitat and nest success. The effects of climate change on Snowy Plover habitat, breeding success, and population trends are unclear.

MANAGEMENT IN WYOMING

This section authored solely by WGFD; Andrea C. Orabona. Snowy Plover is a rare summer resident in Wyoming, with breeding confirmed in 2 of the 11 latitude/longitude degree blocks in which the species has been documented (out of 28 total degree blocks) ⁶. Snowy Plover is classified as a Tier III Species of Greatest Conservation Need in Wyoming with an unknown Native Species Status (NSS) due to limited suitable breeding habitat, susceptibility to predation and human disturbance during the breeding season, and impacts of fluctuating water levels during nesting. Several separate but compatible survey programs are in place to monitor populations of many avian species that breed in Wyoming, including the Breeding Bird Survey ³³, Integrated Monitoring in Bird Conservation Regions ³⁴, and species-specific waterbird ³⁵ and marsh bird surveys ³⁶ at key nesting sites in the state. While these monitoring programs provide robust estimates of occupancy, density, population trend, or distribution for many species in Wyoming, Snowy Plover is on the periphery of its breeding range in the state and may need a more targeted survey approach to obtain such data. Short-term management priorities for Snowy Plover will focus on addressing data deficiencies, while longer-term efforts should target gathering information on species presence, distribution, population status, and the impact of potential threats on known or potential nesting sites. Any information gathered will ultimately be used to develop management and conservation recommendations for Snowy Plover, and to designate a known NSS ranking.

CONTRIBUTORS

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Figure 1: Adult Snowy Plover in breeding plumage in Albany County, Wyoming. (Photo courtesy of Shawn Billerman)

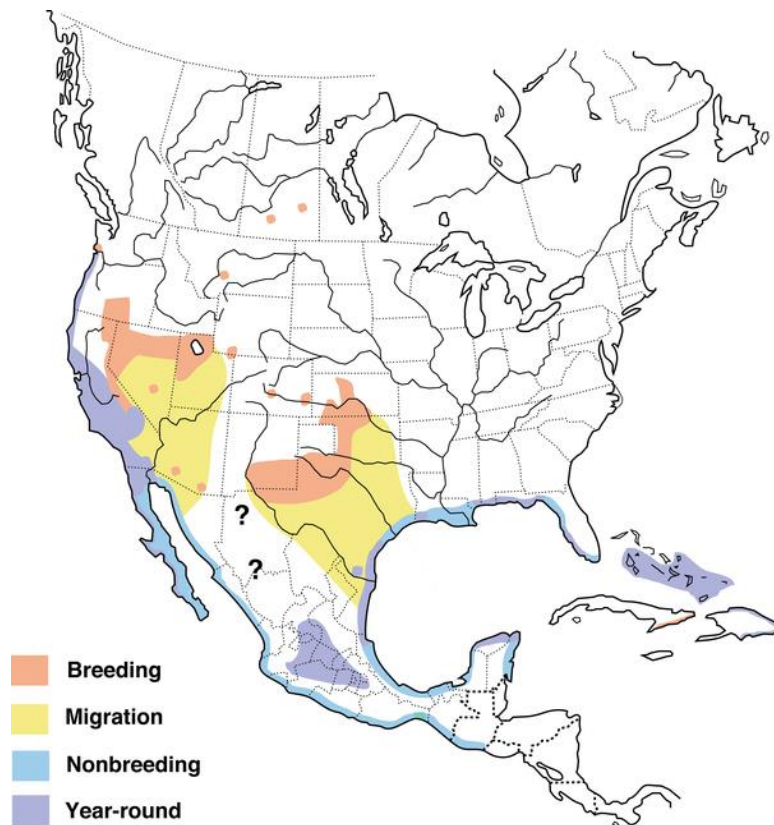


Figure 2: North American range of *Charadrius nivosus*. (Map courtesy of Birds of North America, <http://bna.birds.cornell.edu/bna>, maintained by the Cornell Lab of Ornithology)

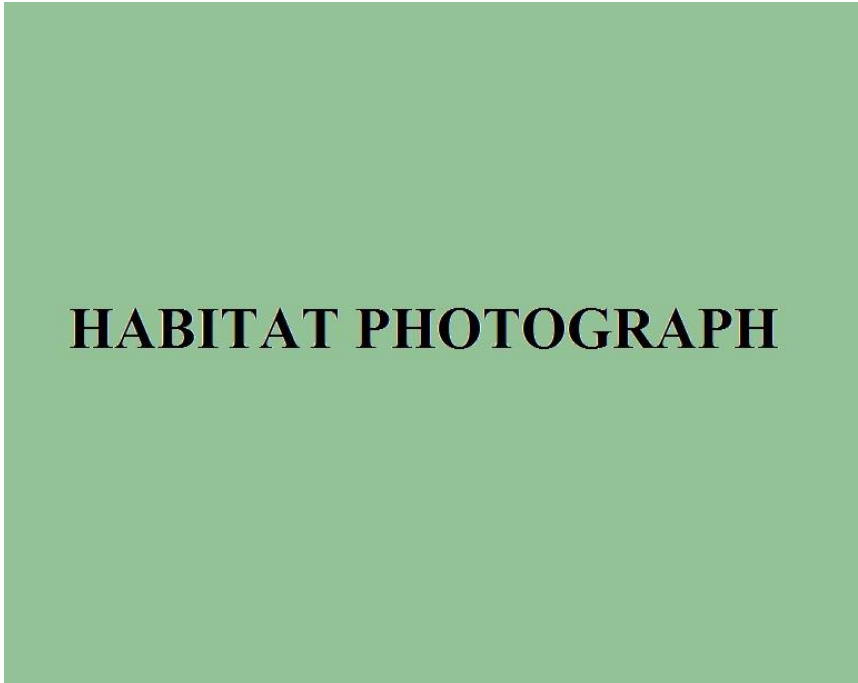


Figure 3: Photo not available.

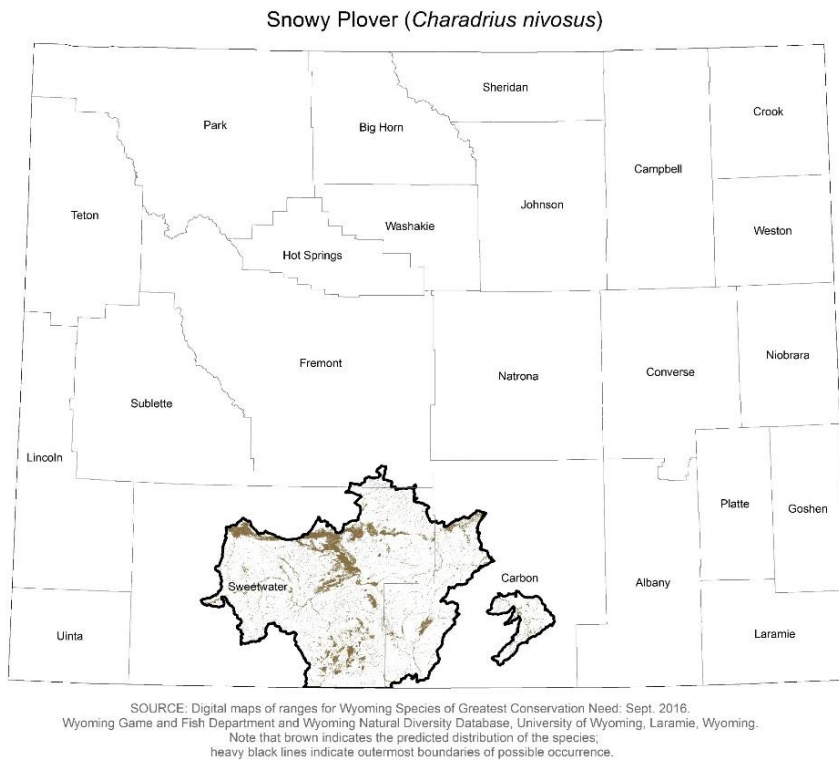


Figure 4: Range and predicted distribution of *Charadrius nivosus* in Wyoming.