

Factors Influencing The Abundance of Wintering Western Snowy Plovers at Crown Beach State Memorial Park

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Figure 1. Western Snowy Plover wintering on Crown Beach. Photo by Daniel I. Riensche.

Abstract

Many shorebird populations are declining worldwide. Survival during the nonbreeding season, when mortality from food shortages and raptor predation is likely highest, influences shorebird population growth. These selection pressures, as well as anthropogenic influences, can shape wintering shorebird habitat use patterns. The Western Snowy Plover (*Charadrius alexandrinus nivosus*) is a small shorebird that uses sand-spits, dune-backed beaches, open areas around estuaries and river mouth beaches for nesting and roosting. The Pacific Coast population of Western Snowy Plovers is listed as a federally threatened species and a California Species of Special Concern. Previous studies suggest humans, dogs, crows, and other birds are the main sources of annoyance to plovers on public beaches. We observed Western Snowy Plover behavior and examined these disturbance factors at Crown Beach State Memorial Park in Alameda, California. For over three years, the majority of disturbances to plovers, in decreasing order of abundance are as follows: gull species, beach using public, crows/ravens, and dogs. Roughly 10% of the time, plovers responded negatively to hunting gulls by either flying away and not returning, or by running away along the beach and returning when gulls departed. Plovers showed negative response to hunting corvids nearly 40% of the time, and the most severe reactions to dogs at 78% of the time. Beach using public resulted in disturbance and avoidance behaviors by the plovers during 35% of the observations. In 2014, the District displayed passive signage encouraging beach users to “share the beach” by avoiding roosting Western Snowy Plovers. The following season the plover protection zone was formalized, by installing symbolic fencing, signage, and establishing the volunteer “Plover Protection Patrol” to monitor plovers and educate the public. From 2014 to 2016, the wintering population of Western Snowy Plovers at this site has increased from six to over thirty individuals.

Study Area

The study took place within Robert Crown Beach State Memorial Park (37.76034N Lat., 122.26661W Long.), located on the east side of San Francisco Bay in the city of Alameda (Fig. 1). The site is managed by the EBRPD, which established the plover protection zone. The protection zone consists of a roped-off rectangle of sandy beach adjacent to the bay and tidal areas. This fenced off area (also known as symbolic fencing) is designed to dissuade public access and provide plovers with roosting and foraging habitat.

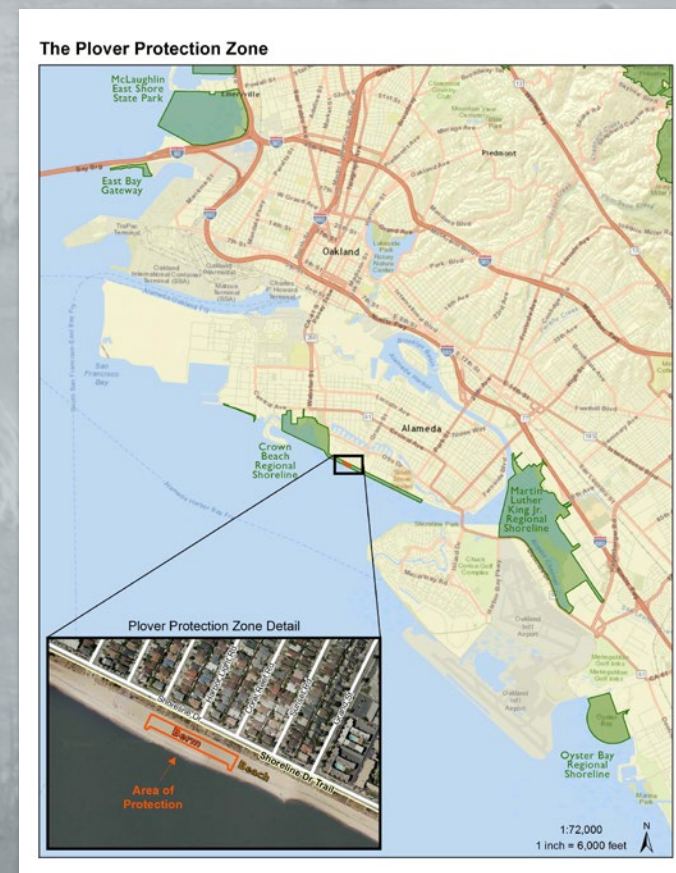


Figure 2. Map of the Study Site at Crown Beach State Memorial Park, in Alameda, CA. The plover protection zone is outlined in orange.

Methods

Surveys of wintering Western Snowy Plovers at Crown Beach have been conducted annually since 2014. The site was surveyed a total of 324 times, from 2014 to the present. Surveys took place between dawn and late afternoon and lasted from 0.5 to 2 hours, for a total of 297.5 survey hours. The observer(s) would survey from a sufficient distance to avoid disturbance to the plovers. Binoculars and scopes were used to observe plover behavior. Disturbance factors (beach using public, gulls, crows/ravens, dogs, etc.) were recorded when entering or flying over the protection zone, or the adjacent beach. Time, species, number, behavior, and direction from/to were recorded, as well as the plovers' pre-disturbance behavior and post-disturbance reaction (if any). Plover reactions were classified as: no reaction, fly up and return to previous behavior, run and return to previous behavior, fly away and not return, alarm call, or other.

Results

During the survey effort 8,175 gulls, 3,801 beach using public, 489 crows/ravens, and 35 dogs were recorded within the study area. Human presence was nearly constant, while crow/raven numbers were relatively minimal during the study. Western Snowy Plovers were typically engaged in roosting (nearly 80% of the time), or foraging (17.2%) prior to a disturbance event (Fig. 3). While gulls accounted for the greatest number of disturbance factors, Western Snowy Plovers had “no reaction” to the presence of hunting gulls during 91.1% of observations. The majority of negative reactions to hunting gulls were a “run and return” response, at 6.3%. Western Snowy Plovers had a moderately negative response to the presence of both walking and jogging beach using public (Fig. 4), and crows/ravens (Fig. 5), having a “no reaction” response in 64.0% and 62.2% of observations, respectively. However, for beach using public the “run and return” behavior was recorded during 26.6% of the observations while the “fly and return” behavior was observed 21.6% for crows/ravens. Plovers had a severe reaction to dogs, nearly 80% of the time, with their typical response being the “run and return” (Fig. 6).

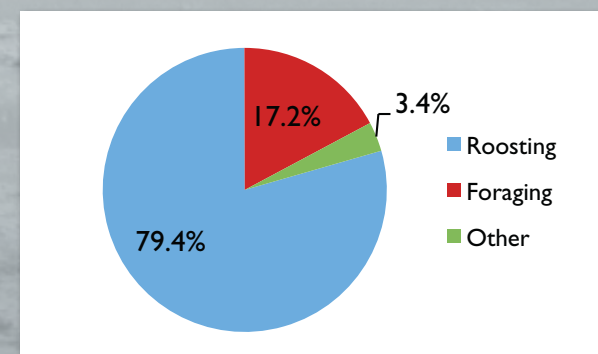


Figure 3. Western Snowy Plover Behavior Prior to Disturbance.

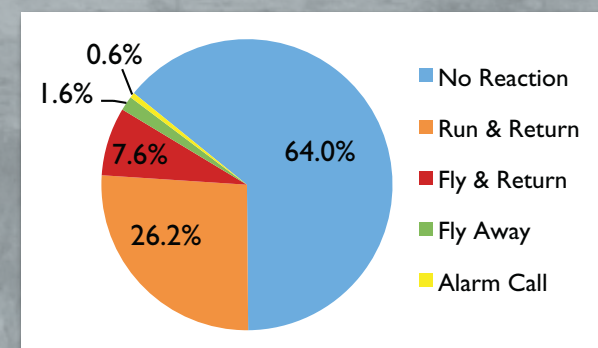


Figure 4. Western Snowy Plover Reaction to Disturbance by Walking and Jogging Beach Using Public.

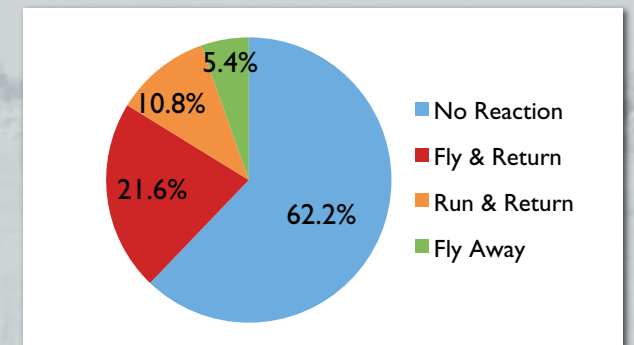


Figure 5. Western Snowy Plover Reaction to Disturbance by Hunting Crows and Ravens.

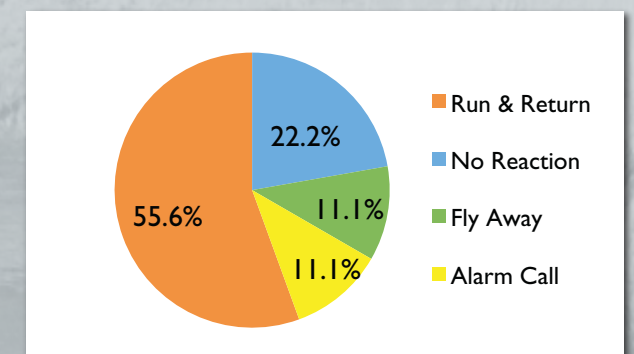


Figure 6. Western Snowy Plover Reaction to Disturbance by Dogs.

Management Implications

This study demonstrates the need for actively managed refuges for wintering Western Snowy Plovers. The study showed that plovers are wary of both humans and crows/ravens. While interactions with dogs were low, largely due to a no dog policy on the beach, the plovers showed negative reaction when dog owners violated EBRPD ordinance 38.

Acknowledgments

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