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Species Management Abstract

Wilson's Plover

(Charadrius wilsonia)

To the User:

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Natural History, Condition, Management/Monitoring, Research, Information Sources

I. IDENTIFIERS

Common Name: WILSON'S PLOVER

Global conservation status rank from the Association for Biodiversity Information: G5

II. STEWARDSHIP SUMMARY

Threats include habitat loss and degradation due to coastal development, beach stabilization and renourishment, and sediment diversion; disturbance by humans and their pets to roosting and/or breeding birds; environmental contaminants; and un-naturally high populations of predators. Nesting, migration stopover, and wintering habitat can be protected by acquisition or restoration of beach habitat, enforcing pet leash laws, educational signage, vegetation control, and fencing off nest sites or closing beaches during nesting. Population trend estimates are difficult to interpret as no historic quantitative data exist to compare with recent figures. Regular monitoring programs need to be designed and implemented to accurately track temporal population trends.

III. NATURAL HISTORY

Range:

Winter season abundance map from the Christmas Bird Count

BREEDING: central Baja California and northern Sonora south along Pacific Coast to northwestern Peru; from southern New Jersey south along Atlantic and Gulf Coasts to northern South America east to northeastern Brazil; and the West Indies south to Dominica, Grenada, and the Grendadies (AOU 1998).

NON-BREEDING: Baja California and Sonora south along Pacific Coast to central Peru; Gulf coast of western Louisiana and Texas; and Florida south in Caribbean-Gulf-Atlantic to northern South America (AOU 1998).

Habitat:

Coastal sandy and shell beaches, barrier and spoil islands, borders of salt ponds, tidal mudflats, inlets, bays, estuaries, and sometimes sandbars and mudbanks of rivers near the coast (Johnsgard 1981, Raffaele 1989, Stiles and Skutch 1989). Nests principally on sand or bare soil near salt or brackish water (Bent 1929, Sprandel 1996, Tomkins 1944). Nests are either out in the open, or near sparse vegetation or some object (Tomkins 1944).

Nests in Texas were 50-1100 meters from water (Bergstrom 1988). In the Florida Keys, three nests were under small mangroves, and near the Indian River, Florida, nests were among open stands of glasswort (SALICORNIA) or pickerelweed (PONTEDARIA; Bent 1929). In Virginia, nests on the upper portions of sandy beaches on barrier islands, usually within 30 meters of dune vegetation but not in dense vegetation; sometimes on overwash flats behind the dunes (Byrd and Johnston 1991). In Texas, 98 percent of nests were within 0.5 meter of a plant, and 12 percent were within 2-30 centimeters (mean = 12 centimeters) of objects including cow manure, a pipe, and a stone (Bergstrom 1988). The vegetation near most nests in Texas was in the direction of the prevailing winds, presumably providing a windbreak for the nest (Bergstrom 1988). In South Carolina, nests have been found amid sparse cordgrass (SPARTINA PATENS; Tomkins 1944). Toland (1999) attributed the difficulty in locating incubating plovers in Indian River County, Florida to the camouflaging effect of surrounding beach croton (CROTON PUNCTATUS).

Nests are sometimes located on anthropogenic surfaces. Most nests (76 percent) at Laguna Atascosa, Texas were on or at the edge of an old abandoned road surfaced with gravel or shells;

at Matagorda Island, Texas, 45 percent of nests were on old concrete or asphalt pavement (Bergstrom 1988). Rooftops are rarely used for nesting (Fisk 1978). Often nests in association with other birds including least tern (STERNA ANTILLARUM), common nighthawk (CHORDEILES MINOR), snowy plover (CHARADRIUS ALEXANDRINUS), piping plover (CHARADRIUS MELODUS), American avocet (RECURVIROSTRA AMERICANA), black-necked stilt (HIMANTOPUS MEXICANUS), and American oystercatcher (HAEMATOPUS PALLIATUS; Bent 1929, Bergstrom 1988).

Ecology:

Little is known regarding chick and adult survival, longevity, age at maturity, or sex ratio (Sprandel 1996). The radius of the breeding territory around the nest is estimated to be 30 meters (Tomkins 1944). Nesting density estimates range from 0.13 pairs per 0.1 kilometer of beach (Toland 1999; 2 pairs observed along a 1.5 kilometers length of beach) to 6.25 pairs per 0.1 kilometer length of beach (Bent 1929; 50 pairs observed along a 0.8 kilometer length of beach).

In Venezuela during the nonbreeding season, gregarious when roosting in daytime, solitary when roosting or foraging at night (Thibault and McNeil 1994). In winter in Panama, observed feeding in small groups (6-20 birds spaced 1-2 meters apart) with semipalmated plovers (CHARADRIUS SEMIPALMATUS) and roosting with semipalmated and collared plovers (C. COLLARIS; Strauch and Abele 1979). Two breeding pairs banded on Matagorda Island, Texas exhibited inter-year site fidelity. One pair nested 40.6 meters from its nest used the previous year, the second pair nested 303 meters away (Bergstrom 1988).

Reproduction:

Nests singly or in loose colonies where nests are typically spaced far enough apart so that incubating birds cannot see each other (Stevenson and Anderson 1994, Sprandel 1996). In Texas, nests were 35.5-250 meters apart; in Virginia, 12 nests averaged 85 meters apart (Bergstrom 1988; Bergstrom and Terwilliger 1997, cited in Bergstrom 1988).

Nesting occurs from February through May or June in Costa Rica (Stiles and Skutch 1989), from mid-March through mid-July in Florida (Stevenson and Anderson 1994), from early April through mid-July in Texas (Oberholser 1974), from late April through late June in South Carolina (Sprunt and Chamberlain 1970), and from early May through mid-June in Virginia (Bergstrom and Terwilliger 1987, cited in Bergstrom 1988). The range of nesting dates includes renesting attempts.

Eggs are laid in shallow scrapes in the substrate (Harrison 1975). Clutch size is typically three eggs (Bent 1929, Sprandel 1996). Average size of 51 Texas clutches was 2.92 eggs (range = 2-4 eggs; Bergstrom 1988), whereas the average size of 19 clutches of eggs collected in Florida was 2.9 (range = 2-3; Stevenson and Anderson 1994). Eggs are laid over a period of 5-9 days (Bent 1929, Bergstrom 1988). Incubation, conducted principally by the female, is irregular until the final egg is laid (Bergstrom 1988). Incubation takes 23-27 days (Bent 1929, Bergstrom 1988) and eggs hatch 4.5-37 hours apart (Bergstrom 1988).

In Texas, nest hatching success (number of nests hatching greater than one egg) ranged from 25-54 percent, and egg hatching success (number of eggs that hatched) ranged from 30-45 percent. Nest failure was due to predation, rain, flooding, and crushing of eggs by cattle (Bergstrom

1988). In Florida, nest success (nests that fledged greater than one chick) was 40 percent. Nest failure was attributed to a thunderstorm and possibly predation (Toland 1999). Renesting is sometimes attempted after nest failure. In Florida, two renesting attempts were observed, one in the last week of May, the other the last week of June (Toland 1999). In Texas, the average time between nest failure and initiation of a second clutch was 7.6 days (range = 5-13). Second nests were within an average of 58.2 meters (range = 24-157 meters) of the first nest, and pairs remained together to renest (Bergstrom 1988).

The precocial chicks begin walking and sometimes leave the nest within 1-2 hours of hatching (Bent 1929, Bergstrom 1988, Tomkins 1944). After hatching, parents move the chicks 20-100 meters from the nest to low, wet areas for foraging. Both parents brood the chicks (Bergstrom 1988). Time to fledging and chick survival is unknown. Although Tomkins (1944) reported that the young may be capable of flight in a minimum of 21 days, Sprunt and Chamberlain (1970) describe a 28-day-old juvenile that still could not fly. Non-parental females sometimes adopt chicks.

IV. CONDITION

Threats:

Threats include habitat loss/degradation due to coastal development, beach stabilization and renourishment, and sediment diversion; disturbance by humans and their pets to roosting and/or breeding birds; environmental contaminants; and un-naturally high populations of predators (Burger 1981, Melvin et al. 1991, Senner and Howe 1984).

HUMAN DISTURBANCE: During winter, humans were the main cause of shorebird disturbance at 80 percent of survey sites in Florida (Sprandel et al. 1997).

CONTAMINATION: Potentially threatened by oil spills and environmental contaminants such as pesticides, herbicides, and heavy metals (Sprandel et al. 1997).

PREDATION: Potential predators of eggs and young include gulls (LARUS spp.), American crow (CORVUS BRACHYRHYNCOS), fish crow (C. OSSIFRAGUS), peregrine falcon (FALCO PEREGRINUS), raccoons (PROCYON LOTOR), bobcats (LYNX RUFUS), red foxes (VULPES VULPES), striped skunks (MEPHITIS MEPHITIS), opossums (DIDELPHIS VIRGINIANA), Norway rats (RATTUS NORVEGICUS), ghost crabs (ONCYPODA spp.), and domestic pets (Bergstrom 1988, Melvin et al. 1991, Morrier and McNeil 1991, Toland 1999). The only confirmed predators are laughing gulls (LARUS ATRICILLA; G. Sprandel, pers. comm.) and coyotes (CANIS LATRANS; Bergstrom 1988).

PARASITES: In Florida, birds have been found infected with lice (DEGEERIELLA OPACA; Stevenson and Anderson 1994).

Trend:

Christmas Bird Count (CBC) data indicate declines in Florida (-2 percent per year) and Texas (-0.5 percent per year) from 1959-1988; however, declines are not statistically significant (Sauer et al. 1996). In Florida, analysis of CBC data for the period, 1960-1989, detected small declines (2-4 birds per year) in the Tampa Bay area and a small increase (3 birds per year) in the Sanibel

Island area (Sprandel 1996). Average winter counts in Florida as determined by two different survey methods are remarkably similar: 284 for CBC data (1980-1989) and 282 for a statewide shorebird survey (1993-1994; Sprandel et al. 1997). ^Population trends are difficult to determine as no historic quantitative data exist to compare with recent figures (Sprandel et al. 1997). However, although considered "common" statewide in Florida by Howell (1932) and "abundant" near St. Augustine by Audubon (Proby 1974), were not observed on the east coast during Florida's winter shorebird survey and have been only infrequently observed there during recent CBCs (Sprandel et al. 1997). Approximately 958 individuals comprise the U.S. Atlantic Coast population during the autumn migration (Harrington et al. 1989). During migration, 85-99 percent of the birds concentrate at important marine sites identified during the International Shorebird Survey (Harrington et al. 1989).

Restoration Potential:

Because it will colonize deposits of dredge spoil (Sprunt and Chamberlain 1970), spoil islands constructed of suitable material can be used to offset breeding habitat lost elsewhere. In addition, vegetation reduction could improve overgrown breeding habitat, thus encouraging colonization.

V. MANAGEMENT/MONITORING

Preserve Selection & Design Considerations:

Preserves within the breeding range require suitable breeding and foraging habitat in close proximity; adults will lead chicks to foraging areas up to 100 meters from the nest (Bergstrom 1988). Preserves along migration routes and in the winter range need to include areas of sufficient food resources.

Management Requirements:

Nesting habitat can be protected by enforcing pet leash laws, acquisition or restoration of beach habitat, educational signage, vegetation control, controlling vehicle access, and fencing off nest sites or closing beaches during nesting (Melvin et al. 1991, Toland 1999). Biologists conducting sea turtle nest surveys should be watchful for plover nests (G. Sprandel, pers. comm.). Predator exclosures are effective means of protecting piping plover (CHARADRIUS MELODUS) nests (Deblinger et al. 1992), and could probably be used to protect Wilson's plover nests (Melvin et al. 1991). Critical migration stopover sites and winter roosting/foraging areas also need to be protected from development and other forms of human disturbance. In breeding habitat, dredging operations should be restricted to the period when birds are not present. In addition, dredge spoil should consist of suitable material deposited in a manner that creates nesting or foraging habitat (Melvin et al. 1991).

Monitoring Requirements:

Concentrations of wintering birds can be located from the air using fixed-wing aircraft or helicopters flying at an altitude of approximately 30-45 meters (Sprandel et al. 1997); however, birds observed from the air cannot always be identified to species (G. Sprandel, pers. comm.). On the ground, counts can performed with the aid of binoculars and spotting scopes (Bergstrom 1988). In cases where multiple observers are used, potential observer bias should be considered. Due to the logistical difficulty in conducting surveys on a large scale (e.g., a state), Sprandel et

al. (1997) suggest regular monitoring of a subset of sites. Caution must be used in site selection, however. If only protected sites are surveyed, population losses at other sites may not be detected. Because birds displaced by habitat loss at one site may move to another site, the density of birds at a regularly-monitored protected site may increase through time due to an influx of displaced birds, giving a false impression of an increasing population trend (Goss-Custard et al. 1994). Due to high variability in counts and to movement of individuals, particularly in the non-breeding season, monitoring programs may have low statistical power (G. Sprandel, pers. comm.).

Monitoring Programs:

Migrating populations are monitored by the International Shorebird Survey (ISS) developed at the Manomet Bird Observatory, Manomet, Massachusetts (Harrington et al. 1989). However, ISS data are of limited use as these surveys were designed to identify important stopover points and to enhance knowledge of migration routes, rather than to collect statistically defensible estimates of population change (Howe et al. 1989). Wintering populations are monitored irregularly in Florida by the Florida Fish and Wildlife Conservation Commission and annually during CBCs (Sprandel et al. 1997). Additional data are collected throughout the range during breeding bird atlases; these data can be used to detect range expansions and contractions but not numerical trends within an atlas block.

VI. RESEARCH

Research Needs (General):

Further research needed on nocturnal foraging activities to determine if there are any population-regulating impacts that are unique to night (G. Sprandel, pers. comm.).

Management Research Needs:

Need to determine the impact of human disturbance on wintering areas, the extent of breeding and wintering habitat loss, the efficacy of using predator exclosures around nests, chick survival after leaving the nest, age at first reproduction, longevity, and whether populations are regulated by habitat needs or food resources and, if so, whether in the breeding, migration, or winter habitats. Also need to determine ecological requirements during winter, and develop a means of recognizing optimal habitat and detecting habitat quality declines; research habitat characteristics and distribution of prey in order to identify or create new habitat; and develop new survey techniques to improve population assessment in some habitats (Evans and Pienkowski 1984, Harrington et al. 1989, Sprandel 1996, Sprandel et al. 1997).

VII. ADDITIONAL TOPICS

VIII. INFORMATION SOURCES

Acknowledgements:

The author thanks Gary Sprandel for generously sharing literature and for reviewing a draft of the abstract. Funding for the preparation of this abstract was provided through the Great Plains Bird Conservation Planning Team, supported by The Nature Conservancy's Wings of the

Americas, Ecoregional Conservation, and Great Plains Programs.

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IX. DOCUMENT PREPARATION & MAINTENANCE

Edition Date: 1999-11-30

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