

ENDANGERED PIPING PLOVERS (*CHARADRIUS MELODUS*) OVERWINTERING IN PUERTO RICO

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Abstract: The Puerto Rican Shorebird Network conducted monthly counts at 14 census sites from 2001-2003. Piping plovers (*Charadrius melodus*) were found overwintering in restricted locations at three of the sites for multiple years and one was seen once at a fourth site. The number of birds wintering at these locations may be as few as five. Although birds were unmarked, their reappearance at particular sites in successive years suggests site fidelity. Two of the sites are beaches under pressure for development, which may reduce their suitability as wintering areas. Undetected Piping Plovers may winter sparsely throughout the Caribbean.

Key words: *Charadrius melodus*, endangered species, migratory shorebird, overwintering, Piping Plover, Puerto Rico

Resumen: CHORLO MELÓDICO (*CHARADRIUS MELODIUS*) UNA ESPECIE EN PELIGRO INVERNANDO EN PUERTO RICO. La Red Limícola Puertorriqueña llevó a cabo conteos mensuales en 14 sitios de censo desde 2001 hasta 2003. Se encontraron Chorlos Melódicos (*Charadrius melodus*) invernando en lugares específicos en tres de los sitios por múltiples años y uno fue visto una sola vez en un cuarto sitio. El número de aves invernando en estos lugares puede ser tan bajo como cinco. Aunque las aves no estaban marcadas, su reaparición en lugares específicos en años sucesivos sugiere fidelidad al sitio. Dos de los sitios son playas bajo presión de desarrollo, lo que puede reducir su conveniencia para la invernación. Chorlos Melódicos podrían estar invernando en bajas densidades a lo largo del Caribe sin ser detectados.

Palabras clave: *Charadrius melodus*, Chorlo Melódico, especie en peligro, invernando, playero migratorio, Puerto Rico

Résumé : LE PLUVIER SIFFLEUR (*CHARADRIUS MELODUS*), ESPECE EN DANGER, HIVERNANTE A PORTO RICO. Le réseau portoricain des limicoles a conduit des comptages mensuels de 2001 à 2003 sur 14 sites. Le Plumier siffleur (*Charadrius melodus*) a été trouvé en hivernage à des endroits isolés de trois des sites plusieurs années et une observation isolé d'un individu est connue d'un quatrième site. Le nombre d'oiseaux hivernant pourrait être de seulement 5. Bien que les oiseaux n'aient pas été marqués, leur réapparition des années successives aux mêmes localisations isolées suggère une fidélité de site. Deux de ces localisations sont des plages menacées par le développement, et qui pourraient voir leur qualité de site d'hivernage réduite. D'autres Pluviers siffleurs non détectés pourraient hiverner de manière éparses ailleurs dans la Caraïbe

Mots-clés : *Charadrius melodus*, espèce en danger, limicole migrateur, hivernage, Pluvier siffleur, Porto Rico

THE PIPING PLOVER (*Charadrius melodus*) is an endemic North American shorebird listed as endangered in both the United States and Canada (U. S. Fish and Wildlife Service 1985, COSEWIC 2005). Of the 50 species of shorebird nesting in North America it is one of five assigned highest priority in the U. S. Shorebird Conservation Plan (Brown *et al.* 2001). The distribution and status of the species is relatively well known due to the International Piping Plover Census (IPPC) carried out for winter and breeding populations in 1991, 1996, and 2001 by U. S. and Canadian researchers (Haig *et al.* 2005). Piping Plovers breed along the shores of lakes and rivers of the northern Great Plains in the U. S. and

Canada, along the barrier beaches of the Atlantic seaboard from Newfoundland to North Carolina, and in very small numbers around the Great Lakes. They overwinter along the sandy beaches of the southeastern U. S., the Gulf of Mexico, Cuba, Bahamas, and in small numbers at other Caribbean locations (Haig and Elliot-Smith 2004, Haig *et al.* 2005, Raffaele *et al.* 1998).

One of the findings of the species census is that the winter distribution remains incompletely defined. The 2001 IPPC found in winter only half as many birds as were found during the breeding season (2 389 vs 5 945; Haig *et al.* 2005, Ferland and Haig 2002). We speculate that some of the missing

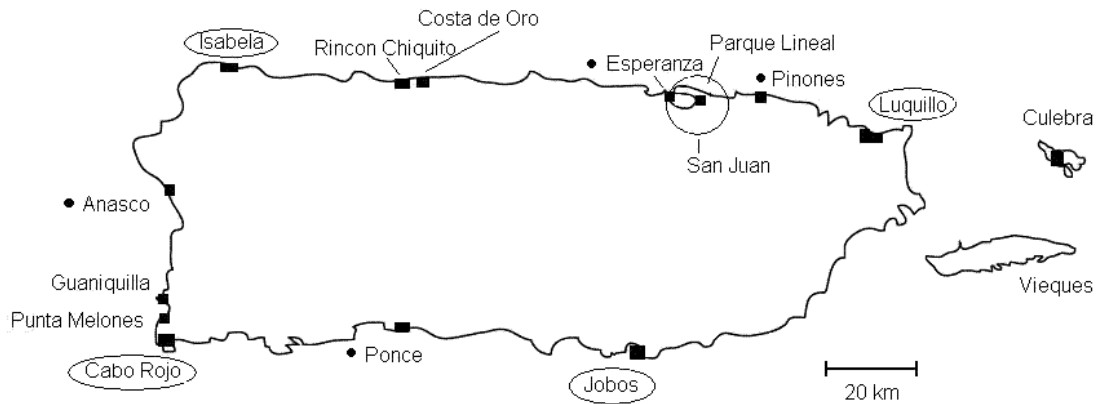


Fig. 1. Shorebird survey sites in Puerto Rico. Ellipses denote four sites where at least one Piping Plover was found during winter. Bullets denote four additional sites where the ocean beach or protected flat resembled utilized sites but no Piping Plovers were detected. The remaining sites were marsh, lagoon, and mangrove habitats where Piping Plovers were neither observed nor expected. City of San Juan is shown by a circle.

birds are spread thinly over the many km of beach in the Caribbean where few observers are available to record them. Censuses undertaken for the 2001 IPPC found 55 Piping Plovers in Cuba and 35 in the Bahamas, but none in Puerto Rico. Piping Plovers have been reported from Puerto Rico as rare winter visitors (Raffaële 1989, Collazo *et al.* 1995), and sightings from two Christmas Bird Counts were used justifiably in the IPPC report as evidence of the presence of the species. Nevertheless, little is known about the regular use of Puerto Rico as a wintering site by this species. This note describes Piping Plovers overwintering at low density at three Puerto Rican Shorebird Network survey sites.

METHODS

The Puerto Rican Shorebird Network (PRSN) of the Puerto Rican Ornithological Society initiated monitoring of shorebirds at selected sites in 2001 as part of the International Shorebird Survey organized by the Manomet Center for Conservation Sciences. The network has grown to include 14 sites with a total transect length of 33 km distributed around the coast of Puerto Rico (Fig. 1) in a variety of habitats. Monthly censuses have been taken at most of the sites for up to three calendar years, equivalent to parts of four consecutive winter seasons. Censuses for each area are under the charge of a trained volunteer who retraces the same route each month and makes total counts of all species of shorebirds observed.

RESULTS

At each of three PRSN survey locations (Cabo Rojo salt flats, Isabela, and Luquillo) Piping Plovers have been observed throughout the winter for two to four winter seasons (Table 1). A single sighting was recorded at a fourth survey site, Jobos, in January 2003. The total number of plovers using these sites may be as few as five, with one or two individuals at each site.

The Cabo Rojo salt flats (Caribbean Islands National Wildlife Refuge) supported occasional Piping Plovers from 1985 to 1992 (Collazo *et al.* 1995). The site contained two Piping Plovers in the four consecutive seasons covered by our surveys (Table 1). The plovers inhabited low-energy sand beaches (little or no wave action), fields of coral rubble, and salt flat at the edge of a shallow, high salinity lagoon. Associated species of shorebirds included resident Snowy Plovers (*Charadrius alexandrinus*), Wilson's Plovers (*Charadrius wilsonia*), and a variety of migratory calidrids.

The Luquillo site contained one Piping Plover in seasons two and four (Table 1). The plover inhabited high energy beach (heavy wave action) that was protected at some locations by a low strip of lithified sand dune (aeolinite). A band of vegetation separated the beach from adjacent upland areas. Associated species of shorebirds included Semipalmated Plovers (*Charadrius semipalmatus*), Black-bellied Plovers (*Pluvialis squatarola*), Sanderlings (*Calidris alba*), and Least Sandpipers (*Calidris*

Table 1. Piping Plover sightings in Puerto Rico by month, year, and location. No Piping Plovers were detected in months indicated with a zero; no census was carried out in months indicated with a dash. The table depicts three calendar years per site and, consequently, at least part of four winter seasons.

Location	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cabo Rojo	2001	1	1	1	0	0	0	0	0	1	0	2	2
	2002	2	2	2	2	0	0	0	0	0	0	0	1
	2003	2	1	1	0	0	0	0	0	0	0	1	0
Isabela	2001	–	–	–	–	–	–	–	–	–	–	–	–
	2002	1	0	0	0	0	–	–	0	0	2	1	1
	2003	1	1	0	0	0	–	–	0	0	0	1	2
Luquillo	2001	0	0	0	0	0	0	0	0	1	1	0	0
	2002	–	1	0	0	0	0	–	0	–	0	0	0
	2003	0	0	0	0	0	0	0	0	0	1	0	0
Jobos	2001	–	–	–	–	–	–	–	–	–	–	0	0
	2002	0	0	0	0	0	0	0	0	0	0	0	0
	2003	1	0	0	0	0	0	0	0	0	0	0	0

minutilla). The location used by the plovers is an empty stretch of beach, not the intensively developed recreation area, but it is not a refuge. Construction of a resort is under review for the site.

The Isabela site contained one and occasionally two Piping Plovers in seasons two, three, and four (Table 1). The site was not examined in season one. When two plovers were found, they were always near each other and foraged together. In all three seasons one or two plovers were usually found resting in a low hollow on the landward side of an aeolinite outcrop that offered protection from heavy Atlantic surf and wind. Small lagoons lapped the landward side of the aeolinite and supported an algal lawn on the lowest aeolinite exposures in which the plovers fed at low tide. The plovers also foraged in the adjacent dry beach sand, and two birds, perhaps the same pair, were once found in dry sand 3 km from the usual site. Associated species of shorebirds included Wilson's Plovers, Semipalmated Plovers, Black-bellied Plovers, Sanderlings, and Least Sandpipers. All sheltered on the aeolinite and foraged in the algal lawns as well as in wet areas formed higher on the rock by overwash. This site is on a 3 km stretch of beach that has been relatively inaccessible and has no human habitation. However, the beach is not part of a refuge and has recently come under heavy pressure for development.

DISCUSSION

Piping Plovers have been in residence at the same

locations for months during consecutive winter seasons at Cabo Rojo and Isabela and less consistently at Luquillo. We have not seen evidence that these home ranges are defended, but the reuse of particular sites leads us to speculate that the same individuals are returning to the same wintering locations. Strong site fidelity within a season has been reported for Piping Plovers wintering in Texas (Drake *et al.* 2001), and between year nest-site fidelity is well known in this species (Wilcox 1959, Haig and Oring 1988). We conclude that Puerto Rico is part of the regular wintering range for this species.

The sites used in Puerto Rico are beaches at the opposite ends of the spectrum of wave energy. This suggests that many locations in the Caribbean, including unstudied sites in Puerto Rico, might be appropriate overwintering sites for Piping Plovers. Unfortunately our census sites were not selected to be a representative sample of coastal habitats; they are sites known to have shorebirds, and they are convenient to reach for particular volunteers. Therefore, we cannot construct a defensible estimate of the total number of Piping Plovers overwintering in Puerto Rico. However, based on a total shoreline of 1,094 km (Earth Trends Country Profiles 2003), five birds in the 33 km census route, and recognition that much of the shoreline of the island is far too developed to sustain the plovers, we can guess that the number is less than 50. The three beaches in Puerto Rico now known as over-wintering sites, as well as the Jobos Reserve where a single bird was

observed, are characterized by relatively long stretches without development. Such beaches are disappearing from the island. The other four census sites (marked by bullets in Fig. 1) that are either salt flat or beach do not shelter the plovers. These sites have more development with nearby houses and dogs. Less intensively developed sections of Cuba, Hispaniola, and the Bahamas may have more birds. Some of the Piping Plovers missing from the 2001 IPPC winter census may be scattered over thousands of km of coastline in the Caribbean and the Bahamas.

As construction-based economic development transforms beaches that are not part of any refuge system, the suitability of the beaches for the plovers may decline, and because of their strong site fidelity the plovers may be unable to respond flexibly. Caribbean beaches are everywhere under pressure. Continuous monitoring is essential to detect and understand changes in use of wintering grounds by the birds in response to the intensification of use of the sites by people, and we hope the results of this study will encourage others in the Caribbean to carry out similar efforts. The Caribbean emphasis in the 2006 winter census (S. Haig pers. comm.) may also spur additional interest in this important region.

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