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EXTIRPATION OF THE SNOWY PLOVER (*CHARADRIUS ALEXANDRINUS*) ON ST. MARTIN, WEST INDIES

ADAM C. BROWN

Environmental Protection in the Caribbean, 200 Dr. Martin Luther King Jr. Blvd., Riviera Beach, FL 33404, USA; e-mail: *abrown@epicislands.org*

Abstract: Recent surveys for the Snowy Plover (*Charadrius alexandrinus*) on St. Martin reveal that the species is no longer a resident on the island. Following surveys from 1997–2005, when the species was annually detected and observed breeding, plovers were no longer observed on the island. Both human disturbance to nesting birds and predation by invasive species are potential causes of the extirpation.

Key words: Charadrius alexandrinus, extirpation, human disturbance, invasive species, Snowy Plover, St. Martin, West Indies

Resumen: EXTINCIÓN LOCAL DE *CHARADRIUS ALEXANDRINUS* EN ST. MARTIN, CARIBE INSULAR. Los muestreos recientes para *Charadrius alexandrinus* en St. Martin muestran que la especie ya no es residente en la isla. Después de los muestreos de 1997-–005, cuando la especie fue detectada anualmente y se registró nidificando, no ha sido visto ningún otro individuo en la isla. Tanto el disturbio humano a los individuos en cría y la depredación por especies invasoras son causas probables de esta extinción local.

Palabras clave: Caribe insular, *Charadrius alexandrinus*, extinction local, disturbio humano, especies invasoras, St. Martin

Résumé : EXTIRPATION OF THE SNOWY PLOVER (CHARADRIUS ALEXANDRINUS) ON ST. MARTIN, WEST INDIES. Recent surveys for the Snowy Plover (Charadrius alexandrinus) on St. Martin reveal that the species is no longer a resident on the island. Following surveys from 1997-2005, when the species was annually detected and observed breeding, plovers were no longer observed on the island. Both human disturbance to nesting birds and predation by invasive species are potential causes of the extirpation.

Mots clés : Charadrius alexandrinus, extirpation, human disturbance, invasive species, Snowy Plover, St. Martin, West Indies

Recent declining trends in shorebird populations in both North American and the Caribbean have been notable (Hunter *et al.* 2002, Thomas *et al.* 2006). These declines are widespread and most have been attributed to habitat loss, introduced predators, and disturbance by humans (Brown *et al.* 2001). Due to these declines, surveys of shorebirds range-wide are critical to understanding the current trends in shorebird populations.

While there have been numerous publications on over-wintering shorebirds in the Caribbean, little is known about breeding shorebird species (Gorman and Haig 2002, Elliott-Smith *et al.* 2004). Recent efforts to quantify breeding sites throughout the Caribbean have further highlighted the need to both locate and quantify regional shorebird breeding colonies (Elliott-Smith *et al.* 2004).

The Snowy Plover (*Charadrius alexandrinus*) is a small, light-colored shorebird with a thin dark bill and a partial breast band. The plover is wide-ranging with populations found throughout North America, Central America, South America, and the Caribbean (Page *et al.* 1995). The Pacific coast population is listed as threatened by the US Fish and Wildlife Service and the Gulf coast populations are protected in Mississippi and Florida (Gruver 2009). Historic declines in both the Pacific and the Gulf coast plover populations led to their respective protected status; however, recent data from the Pacific coast and the Gulf coast in Florida suggest stable current plover populations (Chase and Gore 1989, Page *et al.* 1991, Himes *et al.* 2006).

There is no current trend data for Snowy Plovers in the Caribbean. A recent data summary documents plover populations of 16 individuals in Cuba and 17 individuals in Puerto Rico (Elliott-Smith *et al.* 2004). Additionally, there are breeding records for Snowy Plovers in the Dominican Republic, Bahamas, Turks and Caicos, US Virgin Islands, British Virgin Islands, Anguilla, St. Martin, St. Barthelemy, St. Kitts, Bonaire, and Curaçao (Voous and Koelers 1967, Hoogerwerf 1977, Steadman *et al*. 1997, Gorman and Haig 2002, Ridgeley *et al.* 2003, Elliott-Smith *et al.* 2004, Prins *et al.* 2009). On St. Martin,

the Snowy Plover is a year-round resident breeder. Historic breeding records from the 1950s report Snowy Plovers nesting in small numbers in the Orient Pond area and near the village of Simpson Bay (Voous and Koelers 1967, Hoogerwerf 1977).

Snowy Plovers nest on the ground, most often in open areas. Beaches, saline ponds, man-made agricultural run-off areas, dredge spoils, and salt evaporation ponds have all been used as nesting areas for Snowy Plovers (Page *et al.* 1995). Snowy Plovers on St. Martin had been documented nesting on two habitat types: beach habitat along Simpson Bay and the edges of a saline pond at Orient (Voous and Koelers 1967). The breeding season of the Snowy Plover in the region is long, with records of downy young as early as February and as late as September (Voous and Koelers 1967, Wells and Childs 2006).

Herein, I report on the current status of Snowy Plovers on St. Martin and potential factors limiting their breeding success.

METHODS

I surveyed all the wetlands (n = 20) on both the Dutch and French sides of St. Martin (18°03′ N, 63° 03′ W; 100 km^2) from 2001–2010. There are numerous wetland types on St. Martin, including saltwater ponds, fresh water ponds, and saltwater lagoons. Wetland surveys were completed at a minimum each month from January–April. In 2001–2003, surveys were completed at the end of May. In 2004 and 2005, surveys were completed through July. In 2006 and 2007, surveys were completed through the end of April. Additionally, we had a single day of island-wide surveys in February 1997, 1999, and 2000. Each wetland was surveyed from multiple observation sites. When possible, the entire shoreline was walked to be sure no birds were left unrecorded.

Snowy Plover nests were located by observing breeding behavior such as plovers chasing other individuals in the hunched-position territorial display, mock-brooding, or broken-wing distractions. Once a nest was located and recorded, we did not revisit the nest scrape, attempting to reduce disturbance to the nesting pairs or the nest site. In addition to collecting data on birds, we anecdotally recorded potential disturbances to birds at each wetland, such as humans, vehicles, and introduced mammals.

RESULTS

Snowy Plovers and nests (beginning in 1999) were recorded annually from 1997–2005, but no individuals or nests were found following the 2005 breeding season (Table 1). The high count for plovers island-wide occurred in 2001, when we observed 13 individual plovers and located 6 nests. Chicks were never observed during surveys, only adults and eggs.

Snowy Plovers were recorded solely at Gallion Pond (18°04′44.33″ N, 63°00′56.59″ W). Gallion Pond is a highly saline (60 ppt) shallow wetland surrounded by white mangroves (*Laguncularia racemosa*), black mangroves (*Avicennia germinans*), buttonwood (*Conocarpus erectus*), and sea grape (*Coccoloba uvifera*). There is a small (2000 m^2) beach area on the southeast side of the pond, where all the plovers were observed roosting, feeding, and nesting. This area is made up of powder-like, white-colored sand. The shoreline is adjacent to a dirt road that connects a heavily-traveled paved road and a busy tourist beach.

We recorded numerous disturbance issues at Gallion Pond. There was a horse-rental enterprise on the south end of Gallion Pond. The horses were ridden a minimum of twice daily along the southeast shoreline, across from where plovers were regularly observed. Cars were observed on multiple occasions using the shoreline where the plovers nested as a recreational off-road area. The police were observed on multiple occasions driving across the shoreline in apparent training exercises. Introduced mammals were recorded regularly at this location, including domestic dogs (*Canis lupus familiaris*), domestic cats (*Felis catus*), small Indian mongoose (*Herpestes auropunctatus*), brown rat (*Rattus norvegicus*), and roof rat (*Rattus rattus*) tracks were observed on the shoreline during multiple visits, as well. Discharged shotgun shells were observed on several occasions and whereas it wasn't clear that plovers were being targeted by hunters, shorebird hunting on St. Martin was often observed.

DISCUSSION

There have been no Snowy Plovers observed on St. Martin since 2005. Historically, the species appeared to have been a consistent breeder, with regular nesting records from 1959 through 2005; however, thorough searches for the bird during island-wide wetland surveys since 2005 have been unsuccessful in locating any plovers. It appears certain that Snowy Plovers have been extirpated from St. Martin.

The specific cause(s) of the Snowy Plover's extirpation is difficult to determine. We recorded many of the same factors on St. Martin that have caused declines in U. S. populations. Human disturbance

appears to be the major factor in the St. Martin population's decline and subsequent extirpation. The breeding colony at Gallion Pond is adjacent to a popular tourist beach and, consequently, birds are often disturbed. During each visit to Gallion Pond, we observed disturbance or evidence of recent disturbance to the colony, mostly in the form of vehicles traveling through the breeding area.

Introduced mammals, more so than any other vertebrate group, represent the best documented cases of ecological disturbance resulting from introduction (Ebenhard 1988, Lever 1994). Oceanic islands in particular support limited diversity and often have high rates of endemism; these factors make island wildlife highly susceptible to introduced predators (Chapius 1995). Notably, predation by introduced animals has been the cause in 42% of island bird extinctions worldwide (King 1985). Introduced mammals are widespread on St. Martin (Brown 2008). During surveys at Gallion Pond we regularly detected tracks of or observed brown rat, black rat, small Indian mongoose, domestic dog, and domestic cat. All of these species are known to prey on ground-nesting birds, making it likely that introduced mammals may have caused, or at least have been a major factor in, the loss of Snowy Plovers on St. Martin.

Reports of extirpations such as that of the Snowy Plover on St. Martin contribute to a regional and global perspective on the status of insular, endemic, vulnerable, or otherwise sensitive species in general and shorebirds in particular. There has been much effort recently to document current population status of Snowy Plovers throughout their range; however, data from the West Indies were notably lacking and in some cases secondary resources such as bird guides were used to quantify the species's status in the Caribbean. Reporting data on breeding shorebird species in the region is vital to land stewards who manage local populations and their breeding grounds and are able to control for potential threats such as disturbance during the breeding season. Global policy planners also use such data to identify overall trends in the global population as well as regional populations.

Whereas it was stated through secondary sources that Snowy Plovers breed at other locations in the Lesser Antilles, it is unknown if those populations are extant and, if so, what the current status of the species is in each location. Although it is unfortunate that Snowy Plovers were extirpated on St. Martin, regional biologists and land managers of plover breeding grounds in the Caribbean should be made aware of current trends and take action to conserve the species before other populations suffer a similar fate.

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