

Red Knots wintering in Bahia Bustamante, Argentina: are they lost?

GRACIELA ESCUDERO^{1*}, MONICA ABRIL^{1,2}, M. GABRIELA MURGA¹ & NATALIA HERNANDEZ²

¹Asociación Patagónica de Ornitología, Esquel 2283, 9000 Comodoro Rivadavia, Chubut, Argentina;

²Universidad Nacional de la Patagonia San Juan Bosco, Km 4, Comodoro Rivadavia, Chubut, Argentina

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We update knowledge on wintering and stopover use of Bahia Bustamante, Patagonia, Argentina, by Red Knots. The area was found to hold 7,400 wintering Red Knots in 1982, and no data have been published since. Our surveys of the area, from April 1997 to November 1999, covering about 100 km of shoreline, show that Red Knots do not use the area as a wintering site any longer, but it is still used as a stopover site during northward migration. We discuss possible reasons for the absence of knots in winter.

INTRODUCTION

For at least the last decade, there has been concern that the subspecies of Red Knot that migrates to South America, *Calidris canutus rufa*, is declining (Morrison *et al.* 1994, Baker *et al.* 1999, Morrison *et al.* 2001). As a migrant, its conservation is highly dependent on the preservation of a range of key places: wintering grounds, stopover sites and breeding grounds. It is critically important to identify the role and locations of these areas if we wish to conserve the birds that inhabit them.

The *Atlas of Nearctic Shorebirds on the coast of South America* (Morrison & Ross 1989) summarized the distribution of wintering shorebirds on the coast of South America, based mainly on aerial surveys of most of the continent's shoreline. The work is a masterpiece that shows the big picture, and at the same time inspired local biologists to work on migratory species. The 7,400 Red Knots they observed in January 1982 during their aerial surveys motivated our initial searches in Bahia Bustamante. Our subsequent visits were mainly in response to the beauty of the area and other abundant avifauna.

STUDY AREA AND METHODS

Bahia Bustamante (45°06'S, 66°31'W) is located in the middle of the San Jorge Gulf, 200 km to the north of Comodoro Rivadavia, Patagonia, Argentina and comprises a complex of mudflats, sandflats and restingas (Fig. 1) (restingas are wave-cut rock platforms dotted with tidal pools (Murphy 1936)). The area was visited 30 times during the austral spring, summer and autumn mainly during the three years, 1997–1999. No visits were made during the winter months (June–August) when weather conditions make access to the area difficult. However, nearctic migratory waders are less likely to be found at that time, as most are breeding in the Arctic.

During every visit, we surveyed 15 km of the shoreline in the central part of Bahia Bustamante, covering Bustamante beach, the mudflats of Gravina peninsula and the northern area of Caleta Malaspina. The surveys were carried out

around high tide. When possible, counts were made from a car in order to minimise disturbance. During several visits, we also covered additional pieces of shoreline to the south and north of our main study area in order to expand the search and possibly find new shorebird sites. Altogether, we covered most of the shoreline from Punta Tafor to Cabo Aristizabal.

RESULTS

In all three years, 1997–1999, Red Knots were observed during northward migration, mainly on Bustamante beach. In April 1997 and April 1998 respectively, maxima of 26 and 23 birds were recorded. In 1999, knots were observed during March, April and early May and numbers varied around 200 throughout with a maximum 490. A single bird was observed in Caleta Malaspina north, in October 1998 during southward migration. Not a single Red knot was observed during the “wintering” months of November–February (Fig. 2).

The knots were observed feeding on *Darina solenoides* (a small white clam), which was also found in the sediment. The geomorphology of the beach varies from year to year depending mainly on the amount of water and sediment carried by the Marea creek, situated at the north of the Bahia Bustamante beach.

DISCUSSION

Red Knots in their non-breeding areas congregate in flocks that are easily visible from a distance when flying like a cloud of smoke dancing in the air. In view of our extensive and frequent coverage, it is impossible that 7,000 knots spent their wintering months in Bahia Bustamante and we failed to detect them. We discuss four hypotheses to explain the mysterious missing knots: (1) the bird counts in 1982 were mistaken, (2) the situation observed in 1982 was exceptional, (3) Bahia Bustamante wintering knots disappeared due to local events, (4) a decline in the whole knot population affected the numbers wintering in Bahia Bustamante.

* Corresponding author, e-mail: graesc@uolsinectis.com.ar or gra_aves@hotmail.com



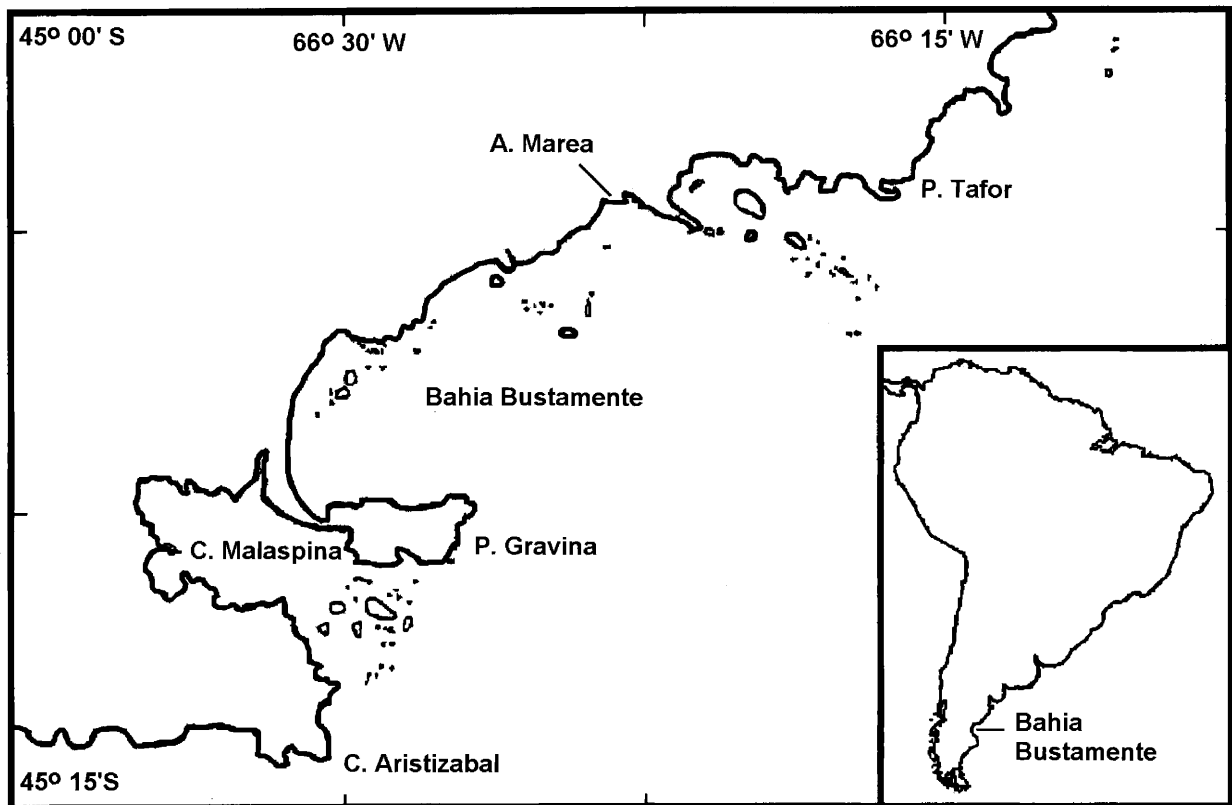


Fig. 1. Map of the study area and location of sites mentioned in the text.

- (1) The 1982 counts were mistaken. In addition to the vast experience that Morrison and Ross had on aerial counts, GE had the opportunity to fly with Ken Ross when surveying the Argentinean shore of Tierra del Fuego in February 2000. She had no doubts about his skills in counting and identifying shorebirds, and therefore of the Red Knots observed in 1982. We therefore reject this hypothesis.
- (2) The numbers seen in 1982 were exceptional. Bahia Bustamante is a stopover site used during northward, as shown by the dates of our observations. The behaviour of the birds, feeding on *Darina solenoides* on an extensive beach of fine sediment and with the influence of a creek, is similar to the situation at Fracasso Beach, Peninsula Valdes (Pagnoni 1997, Bala *et al* 2001). The variation in numbers of Red Knots in Peninsula Valdes has been attributed to the variation from one year to the next in their principal prey in that area, *Darina solenoides* (L. Bala pers. comm.). The same explanation could well apply to Red Knots stopping-over in Bahia Bustamante. Just possibly, although in our view unlikely, 1982 was an extraordinarily good year in terms of prey availability, allowing Red Knots to winter there in then, but feeding opportunities have since declined.
- (3) Bahia Bustamante wintering knots disappeared due to local events. Possibly, the Red Knots that wintered in Bahia Bustamante in the early 1980s could have been affected by local events, such as increased human disturbance or increased numbers of predators. However, we found no evidence that the area has changed significantly in these or any other respects. Moreover other shorebirds (such as American Oystercatcher *Haematopus palliatus*, Magellanic Oystercatcher *H. leucopodus*, Blackish Oystercatcher *H. ater*, White-rumped Sandpiper *C. fuscicollis* and Two-banded Plover *Charadrius falklandicus*) have not apparently been affected and are still very common in the area. Nevertheless, information about the area is so sparse that it is not possible to construct a full environmental history of the intervening years. As in many Patagonian environments, the extensive wilderness and low human population density does not guarantee the conservation of an area, it just makes it more difficult to study and protect.
- (4) A decline in the whole knot population affected the numbers wintering in Bahia Bustamante. There has been a substantial reduction in numbers at the population level (Morrison *et al.* 1994, Baker *et al.* 1999, Morrison *et al.* 2001). This has been far greater than the 7,400 birds missing from Bahia Bustamante, but it is still surprising that the whole wintering group of that site has disappeared. The same group of Red Knots may migrate and stay together in other places further north. Thus, a local event at another distant site could possibly affect the whole Bahia Bustamante group. Recent examples of such events include an outbreak of parasites affecting shorebirds in Brazil (T. Piersma & I. de Lima S. do Nascimento pers. comm.) and over-exploitation of horseshoe crabs in Delaware Bay (Baker *et al.* 1999). Although Red Knots might distribute themselves freely over all available wintering sites, certain locations may be preferred. Therefore a decline at the population level may lead to reduced competition in the most favoured sites so that birds from less suitable areas (possibly Bahia Bustamante) are able to move to the better sites (such as



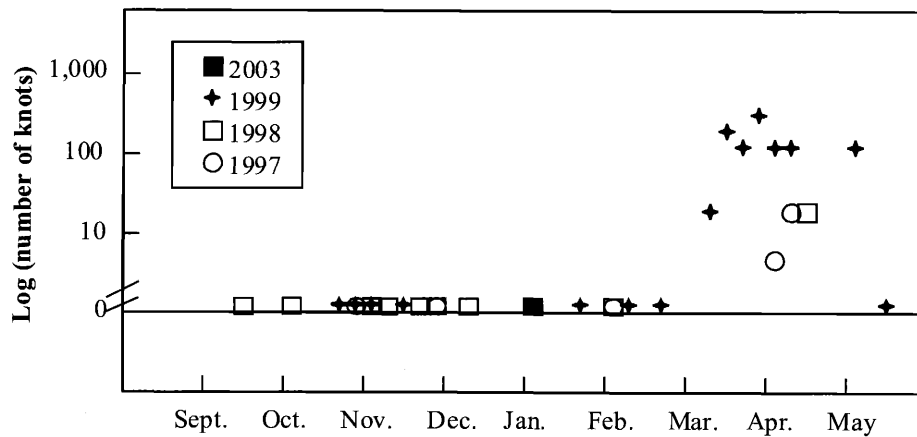


Fig 2. Red Knot numbers in Bahia Bustamante plotted against time of year. Note that the y-axis is a logarithmic scale and that counts when no Red Knots were found are shown on the zero line.

Bahia Lomas, Chile, or Rio Grande, Argentina). Therefore in the early stages of a population decline, numbers at the best sites may not be reduced. However, if the population decline is greater, it will also become evident at the more favoured sites. In our view, this is the most likely explanation for the disappearance of Red Knots from Bahia Bustamante – and for their persistence at Bahia Lomas and Rio Grande.

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