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Nesting of the Manx Shearwater (*Puffinus puffinus* Brünnich, 1764) on the Island of Tenerife (Canary Islands)

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Abstract. Nesting of the Manx Shearwater (*Puffinus puffinus*) on the Island of Tenerife has been confirmed for the first time. A total of seven burrows have been localized on a ledge of a deep ravine in the NW of the island, 3 km inland. Four of them showed definite signs of being occupied whereas the remaining three were abandoned possibly as a result of predation by rats (*Rattus rattus*). Furthermore, several birds have been heard at other localities during the breeding season thus indicating the possibility of the existence of other colonies still to be discovered.

Key words. Seabirds, breeding, *Puffinus puffinus*, Canary Islands.

Introduction

Although the Manx Shearwater has long been suspected of breeding in the Canary Islands (Koenig 1890; Le Grand et al. 1984; Martín 1987), definite proof has only been obtained recently on the island of La Palma (Martín et al. 1989).

Bibliographic references concerning the species' presence on Tenerife are very scarce. Reid (1887) observed hundreds off the coast of La Orotava in March of the same year, and Meade-Waldo found it abundant around Garachico (fide Bannerman 1914). Koenig (1890) received a specimen collected on the island, while Bannerman (op. cit.) mentions that R. Gómez (a local collector) obtained an individual from the island in June, which was deposited in the Alexander Koenig Museum (Bonn) though without label and origin.

More recently, Martín (1987) mentions the finding of two dead specimens, one on the Anaga Rocks and the other on the nearby coast.

As regards to specimens present in local collections, we only know of the existance of three. Two are in the Godiño brothers collection (La Laguna), one of which was obtained in the mentioned town in February 1920, and the other at Punta del Hidalgo on 29 July 1924. The third is deposited at the Natural History Museum in Santa Cruz, having been found at El Médano in September 1988 (TFMC/VA-364). All three birds correspond to the typical subspecies.

On the other hand, Martín et al. (1989) reported that some birds had been heard inland at various localities in the NW of the island (Tierra del Trigo, Barranco de Cuevas Negras and Barranco de Los Cochinos) where the species is popularly known as "papagayo".

Methods

Between 16 May 1987 and 10 June 1989, the above mentioned areas were surveyed on twenty occasions with the aim of locating precisely possible nesting sites. The initial results indicated that a large number of birds were present in the Barranco de Los Cochinos (barranco =

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ravine) which corresponded to the locality that apparently offered the best conditions for breeding.

Bearing in mind the fact that on La Palma the breeding sites of *P. puffinus* are mainly located on the edge of cliffs or inaccessible ledges where sufficient soil and vegetation exist, areas that did not meet these conditions were rejected beforehand. Consequently, this reduced the survey area to just a 1 km section of the east wall of the gorge, opposite Las Moraditas.

Owing to the inaccessibility of the area, nocturnal listening stations were established on the opposite side (300 meters away) or in the bed of the gorge. Most observations were undertaken between February and March, coinciding with the courtship period. The time spent at each station was, in all cases, more than 60 minutes ($\bar{x}$ = 125; N = 13) between 17.40 and 24.00 hours.

From the contacts obtained, it was possible to delimit three main zones for which the birds showed the highest preference. Two of these were rejected in light of their inaccessibility whilst in the case of the other, access routes which facilitated closer observations, were opened up through the dense vegetation.

Study Area

Morphologically the Barranco de Los Cochinos is very similar to the gorges of the N and NE of La Palma. The head of the ravine is a wide polylobed watershed while the course is short and narrow though extraordinarily deep. In its last sector, the walls are vertical with sheer drops of up to 300 m.

The vegetation present in the higher areas consists of laurisilva more or less well conserved which, on descending, mixes with more thermophilous elements. The lateral cliffs are mainly covered with rupicolous plants belonging to the genera *Aeonium*, *Sonchus* and *Echium*, while in fissures and on ledges where some soil and humidity exist numerous trees have established themselves, especially on the east wall.

Results and Discussion

On 10 June 1989, seven nesting burrows were localized on a ledge (accessible only by ropes) of the east wall of the gorge, 3 km inland and 450 m a.s.l. (U.T.M. coordinates 28RCS221370). This ledge which is orientated to the north, lies 150 m above the bed of the barranco. In width, it does not exceed 10 m being covered with an appreciable amount of soil and presenting an inclination of approximately 35° (Fig. 1).

The vegetation is fundamentally composed of trees and shrubs amongst which the most abundant are the arboreal species *Erica arborea*, *Viburnum rigidum* and *Hypericum canariense*, the creepers *Semele androgyna* and *Smilax canariensis* together with the shrubs *Globularia salicina*, *Sonchus acaulis* and *Echium* cf. *virescens*.

Surprisingly two small stone walls (0.5 m high) are present on the site. These indicate that the spot was formerly cultivated though having been abandoned at least 100 years ago. Although partially dismantled, these walls have contributed efficiently to retain the soil.

Precisely five of the burrows had been excavated in the soil of one of these two terraces while the remaining two had their entrance holes between the stones of one of the walls. In this context, it is interesting to note that the species has exceptionally been found nesting under buildings in the British colonies on Skomer and Skokholm (Cramp & Simmons 1977) while on the east coast of the United States, a pair even nested under a boat (Buckley & Buckley 1984).

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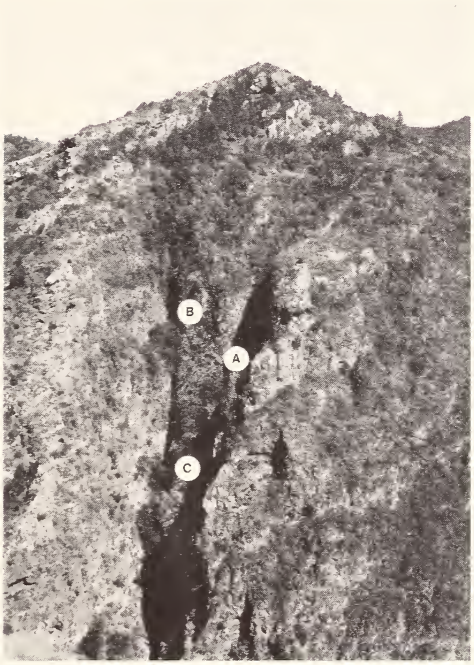

Fig. 1: General view of the breeding area of *Puffinus puffinus* in the Barranco de Los Cochinos (Tenerife). Point "A" indicates the location of the colony discovered while points "B" and "C" refer to possible breeding sites.

Of the seven burrows, three were found to be abandoned and partly filled in with soil and dry leaves, whilst in the remaining four, fresh droppings and feathers were present, together with down in the case of two. In addition, two egg-shells (one with signs of having been bitten by rats) and a keel were found nearby.

The minimum distance between two adjacent burrows was 0.6 m while the maximum was 5 m. The entrance holes in three of the cavities measured were on average 19.6 cm wide and 10.3 cm high. The structure of the burrows hindered an inspection of their interior.

A corpse of a rat (*Rattus rattus*) and various droppings were found in the immediate surroundings, the latter presenting the characteristic odour of seabirds. Predation of this murid on various procellariiforms has been reported by several authors (Moors & Atkinson 1984; Atkinson 1985; Cheylan 1985) and possibly represents the cause why three of the burrows were abandoned, a similar phenomenum having been observed by Martín et al. (1989) on the island of La Palma.

Owing to the steep orography of the Barranco de Los Cochinos and the peculiar biology of *Puffinus puffinus*, any estimation of the size of the breeding population is very difficult. However, on the basis of the data available, the number of breeding pairs is around 20.

Finally, the results from nocturnal listening stations during the appropriate season in the Barranco de Rodrigo (Guía de Isora), the cliffs above Garachico, Barranco de

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Ruiz and Barranco de Godínez (El Realejo) (F. Siverio, pers. comm.), have indicated that nesting could occur in low numbers at other sites on the island.

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Zusammenfassung

Es werden erstmals Brutnachweise des Schwarzschnabel-Sturmtauchers (*Puffinus puffinus*) auf der Insel Teneriffa gemeldet. Sieben Nisthöhlen wurden auf einer Felskante einer tiefen Schlucht im NW der Insel ausgemacht. Vier wiesen eindeutige Zeichen der Besetzung auf, während die übrigen drei verlassen waren, möglicherweise als Folge von Störungen durch Ratten (*Rattus rattus*). An anderen Stellen wurden während der Brutzeit mehrere Vögel gehört, was darauf hindeutet, daß noch andere, bisher unentdeckte Kolonien bestehen.

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