A ROYAL PENGUIN *EUDYPTES SCHLEGELI* IN THE FALKLAND ISLANDS?

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SUMMARY

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The Royal Penguin *Eudyptes schlegeli* breeds only on Australia's Macquarie Island and its nearby islets, about 1 200 km southwest of New Zealand. Vagrant Royal Penguins have been reported elsewhere in Australia, New Zealand and Antarctica. Reports of Royal Penguins from other subantarctic islands, including Heard, Prince Edward and Marion Islands, South Georgia and the Falkland Islands are controversial, as these penguins could also be aberrant Macaroni Penguins *E. chrysolophus*, and species determination can be difficult because of high variation in facial colour in both species. We discuss here the recent sighting of an apparent immature Royal Penguin on New Island, Falkland Islands. A simultaneously visiting adult male Macaroni Penguin allowed a size comparison between the two individuals. This could be the first documented sighting of a vagrant Royal Penguin in the Neotropical region.

Key words: Royal Penguin, Macaroni Penguin, body size, facial coloration, Falkland Islands/Islas Malvinas

INTRODUCTION

Royal Penguins *Eudyptes schlegeli* breed only on Australia's Macquarie Island and its associated Bishop and Clerk Islands, about 1 200 km southwest of New Zealand (Williams 1995). As in all *Eudyptes* species, Royal Penguins have a strongly synchronised breeding cycle. Both adults are involved in the breeding activities throughout the chick-rearing period, which lasts from the end of September until the beginning of February (Warham 1971a). Thereafter, breeding adults go on an extended foraging trip to gain energy reserves for the moult that takes place in March (Warham 1971a). After moult, breeding Royal Penguins disperse and spend the winter in pelagic waters, staying in relative proximity to Macquarie Island (distribution patterns based on shipboard observations; Reid *et al.* 1999). Royal Penguins start breeding activities at a minimum age of five years (Warham 1971a). Non-breeding birds visit colonies at least once a year to moult. Juveniles and second to third years are smaller than adults and have shorter crest feathers (Warham 1971a, Williams 1995). Besides these age-related size differences, the species exhibits a sexual size dimorphism, with male Royal Penguins being generally about 10% larger than females (Warham 1971a, Williams 1995, Woehler 1995, Hull 1996).

The Royal Penguin has been considered a subspecies or colour morph of the similar Macaroni Penguin *Eudyptes chrysolophus*, which breeds on several subantarctic islands, from South America in the west to Heard Island in the east (Christidis & Boles 1994, Williams 1995). More recently, Macaroni and Royal Penguins have been considered two different species, although confusion in identification remains (Williams 1995, Shirihai 2007). The split has been adopted by the New Zealand Checklist Committee (2010), but not by Christidis & Boles (2008). Royal and Macaroni Penguins are the largest species within the genus *Eudyptes*, and they are the only species in which the anterior, fibrous-textured, yellowish-golden and black superciliary stripe crest feathers meet on the forehead (Williams 1995).

The main identification characteristic, and the most commonly cited, is the facial colour: the Royal Penguin generally has a pale face, with whitish cheeks and a pale throat, whereas the Macaroni Penguin has a dark grey to black face and throat (Williams 1995, Shirihai 2007). However, this coloration is variable, and Shaughnessy (1975) describes a continuum of white to dark grey cheek colour in breeding Royal Penguins. In this species, the darker facial colour occurs more frequently in females than in males. Dark-faced individuals are more frequent in some breeding colonies, resulting in an uneven distribution of dark-faced females between breeding colonies on Macquarie Island (Shaughnessy 1975).

On the other hand, there are also descriptions of completely white-faced individuals among Macaroni Penguins (see Fig. 2 in Petersen 2002). Notably, these pale-faced penguins make up only 0.02% of the population on Marion Island, and they seem to breed only in particular areas on this island (Petersen 2002). These observations have led some to question whether pale-faced birds among Macaroni Penguins are local variants or hybrids with Royal Penguins (e.g. Williams 1995, Petersen 2002).

Although Royal Penguins have on average 5%–20% larger bills than Macaroni Penguins (Williams 1995, Woehler 1995, Hull 1996), the overlap of variation between the two species makes reliable identification difficult (Williams 1995, Petersen 2002, Shirihai 2007). This is especially true for vagrant penguins away from breeding sites. Vagrant Royal Penguins have been reported from Australia, New Zealand (including the Snares Islands), as well as from Antarctica (Jouanin & Prévost 1953, Berruti 1981, Mitchell 1986, Williams 1995, Shirihai 2007).

For archipelagos further away from Macquarie Island, reports of white-faced *Eudyptes* species are usually treated differently. Williams (1995), on the basis of Berruti (1981), states that pale-faced individuals on Heard, Marion, Crozet and Kerguelen Islands could also be aberrant Macaroni Penguins, but Shirihai (2007) is less conservative and refers to several sightings of Royal Penguins on South Georgia. In contrast, the American Ornithologist's Union (Remsen Junior *et al.* 2011) does not accept the reports of potential Royal Penguins in southern Chile (one sighting) and the Falkland Islands (several sightings, including description by I.J. Strange of breeding attempts). Here, we present the recent sighting of an immature Royal Penguin appearing simultaneously with a black-faced, much smaller, adult male Macaroni Penguin on New Island, Falkland Islands, in January 2011.

OBSERVATIONS

While conducting fieldwork with Southern Rockhopper Penguins *Eudyptes chrysocome chrysocome* between 11 November 2010 and 24 February 2011, we visited the "Settlement Colony" (51°43'S, 61°17'W) of New Island, Falkland Islands, daily. On the morning of 18 January (10h18) ND observed what she believed to be a Royal Penguin resting at the landing site among Rockhopper Penguins. From the distance (about 100 m), looking down from the northern ledge of the Rockhopper colony, the Royal Penguin appeared nearly twice as large as the adjacent Rockhopper Penguins, and the pale face was clearly visible. By around 11h00 the Royal Penguin had left the landing area, and we found it again around 20h00 in a gully that Rockhopper Penguins use to reach the part of the colony known as "The Bowl." This time, we (AA, KL, ND) could approach the penguin to within 2 m. The cheeks, throat and breast of the bird were white; however, there was a thin greyish line of feathers between throat and breast (Fig. 1). The bill was thick, high-ridged and reddish-brown in colour. The facial skin around the bill had a bright pink colour, and some of the immediately adjacent feathers had a yellowish-golden tone. Crest-feathers united in the middle of the forehead and were of golden-yellowish colour, interspersed with some black feathers. Feathers were black from the bill up to the forehead and the neck. Crest-feathers of the penguin were rather short, reaching the back of the head, but not beyond that, as shown in Shirihai (2007) for adult Royal Penguins. In general, feathers looked rather worn, as though approaching moult, and the upper tail coverts were white, as often seen in pre-moult Macaroni and Royal Penguins (e.g. see Warham 1971b). The Royal Penguin appeared to be in a well-nourished state and behaved dominantly against the passing, much smaller, Rockhopper Penguins (Fig. 2). We checked for the presence of a PIT-tag, but the Royal Penguin was not marked. The Royal Penguin was again observed on 19 January in a different gully just east of the

Figure 1. Royal Penguin on New Island, Falkland Islands, 18 January 2011. The head coloration shows the typical white cheeks. Photograph by Nina Dehnhard.

Figure 2. Royal Penguin (top right) next to Southern Rockhopper Penguins on New Island, Falkland Islands, 18 January 2011. Photograph by Nina Dehnhard.

Figure 3. Adult male Macaroni Penguin (front) standing close to Southern Rockhopper Penguins at the landing site, New Island, Falkland Islands, 18 January 2011. Photograph by Nina Dehnhard.

landing area. Thereafter, despite searching in different parts of the colony, we did not see the Royal Penguin again.

Simultaneously with the Royal Penguin, an adult Macaroni Penguin visited the Settlement Colony of New Island. The Macaroni Penguin was first observed by ND on 18 January 2011 around 11h00 in the gully east of the landing area. That evening we observed the Macaroni Penguin coming ashore with a group of Southern Rockhopper Penguins (Fig. 3). In comparison with the Royal Penguin, it appeared slender and much smaller, and feathers appeared less worn. This individual Macaroni Penguin had visited New Island once before, in December 2008, as indicated by the presence of a PIT-tag. On that occasion it had been captured, measured and marked with a PIT-tag by M. Poisbleau and L. Demongin, who kindly gave us their data. The measurements taken at that time (mass 4940 g, bill length 63.4 mm, bill depth 26.2 mm, flipper length 205 mm) clearly identify this individual Macaroni Penguin as a male (compare with measurements in Williams 1995). The Macaroni Penguin stayed several days on New Island, appearing in different parts of the colony, and was last observed on 21 January 2011 in the northern part of the Rockhopper Penguin colony.

DISCUSSION

The identification of a Royal Penguin away from its usual breeding site requires careful evaluation. Previously, sightings of penguins believed to be Royal Penguins, especially in the Neotropical region around the Falkland Islands and South America, have been rejected, and the birds were conservatively considered aberrant Macaroni Penguins. However, for this recent sighting of a white-faced *Eudyptes* Penguin on New Island, we have strong evidence to suggest that it was a Royal Penguin.

The white-faced bird that we observed on New Island had comparatively short crest feathers, indicating that it was not yet a fully grown adult. The state of the feathers of the observed individual suggested that it was just prior to moult. As in other crested penguins, immatures and non-breeding Royal Penguins tend to moult earlier in the season than breeding adults (Warham 1971a). Although we did not catch and measure the bird, we suggest from its overall size and its long and high bill that it was a male (see Woehler 1995 & Hull 1996 for measurement data of Royal Penguins).

Published data on morphometric measurements between Macaroni and Royal Penguins partially overlap, which makes the species identification difficult. The calculation of the bill shape index (derived from bill length, width and depth) results in a better, but still not complete, segregation between the two species (Woehler 1995). For example, the bill measurements from the Macaroni Penguin that visited New Island at the time the Royal Penguin was reported are in the average to upper range of data published in Willams (1995) for male Macaroni Penguins. Compared with published measurement data of Royal Penguins (Williams 1995, Woehler 1995, Hull 1996), the bill measurements of the Macaroni Penguin were smaller than or as small as the lowest values published. The penguin we believe to be a Royal Penguin was larger and had a longer and thicker bill than the Macaroni Penguin (when compared <5 m away), suggesting it was an immature male. We do not have a photograph of the Macaroni and the Royal Penguin next to each other, but the comparison of the two individuals with the Southern Rockhopper Penguins (Figs. 2 and 3) clearly shows the size difference, which is consistent with the literature (Williams 1995, Woehler 1995, Hull 1996).

It seems more likely that the pale-faced bird on New Island was a Royal Penguin than a Macaroni Penguin. On Macquarie Island, Royal Penguins are more commonly pale-faced than dark-faced, and the proportion of pale-faced individuals is higher in males than in females (Shaughnessy 1975). We believe the bird that we observed to be a sub-adult male. In contrast, pale-faced Macaroni Penguins are rather rare (Petersen 2002). Together, the observed size differences and stronger likelihood that a pale-faced individual is a Royal Penguin, argue against the possibility that it was an aberrant Macaroni Penguin.

Assuming our report to be the first documented observation of a vagrant Royal Penguin on the Falkland Islands, it demonstrates another example of a far-travelled vagrant and reinforces the potential for dispersion for this species. Macquarie Island is about 7 600 km from New Island, the shortest route being an eastward crossing of the Pacific Ocean and Cape Horn. However, even smaller penguin species, such as the Snares Penguin (*Eudyptes robustus*), have been shown to travel such long distances (e.g. Demongin *et al.* 2010). Moreover, it seems that sub-adult non-breeding penguins are more often recorded as vagrants in distant places than adults (e.g. Woehler 1992, Miskelly & Bell 2004).

In the light of this recent sighting of a Royal Penguin on New Island, at least some of the previous and historic reports and their classifications as aberrant white-faced Macaroni Penguins could be erroneous. To distinguish between the two species, size comparisons can be helpful. For a clear identification in the future, it would be helpful to amend the dataset collected by Woehler (1995) to get a sufficient sample to determine the variation in size (e.g. bill length, depth and width and flipper length) over the breeding range (including several colonies) for both Royal and Macaroni Penguins. With such a dataset, discriminant functions for accurate species identification could be developed, similar to the discriminant function analyses used for sex-determination in other size-dimorphic species (e.g. see Hull 1996; Poisbleau *et al.* 2010). For future vagrant observations, we therefore recommend capturing and measuring the vagrant bird (especially its bill depth and length) to more positively identify which of these two extremely variable crested penguin species the vagrant represents.

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