

'Diluted' Red-crested Pochard in Morocco in 2015-16

In autumn 2015, I studied the Red-crested Pochard *Netta rufina* population at Hassar lake in Mohammedia province, Morocco; I counted, photographed and studied individuals, populations, behaviour, reproduction and development of chicks. Hassar lake is located between 33°33'00.82"N and 33°34'28.90"N and 7°25'27.27"W and 7°26'04.54"W and was created by a small dam built to protect Mohammedia town against flooding. In an annual cycle, numbers of Red-crested Pochard increased in winter to spring and decreased in summer. The high number in November was related to the arrival of wintering birds. All males observed in August-October were in eclipse plumage or immatures; the first breeding plumage male was seen on 24 October. On 29 October, an aberrantly coloured male, swimming with two normally coloured males and a female, was observed (plate 327-328). The bird differed by: **1** the normally black areas (breast, belly and tail) were grey; **2** the normally brown back was cream coloured; and **3** the normally bright red head was pale brownish-yellow overall. The male remained at the lake to at least January 2016 but rarely mixed with other Red-crested Pochards. In February 2015, a similar male had been observed and described at Sidi Boughaba lake, Gharb province (34°15'0"N 6°40'0"W; Illa Llobet & Giménez Lozano 2015; plate 329). Comparison of the photographs from February and October 2015 suggests that it involved the same male that moved

327 Red-crested Pochards / Krooneenden *Netta rufina*, with Common Moorhen / Waterhoen *Gallinula chloropus*, Hassar lake, Mohammedia, Morocco, 29 October 2015 (*Abdeslam Rihane*). 'Diluted pastel' male (right) with normally coloured male.



from Sidi Boughaba lake to Hassar lake, a distance of c 90 km. All chicks studied in Hassar lake in 2015 had a normal coloration and no aberrant coloration was observed during their development. We therefore assume the aberrant bird arrived at Hassar lake in October 2015.

Plumage aberrations in birds

Plumage aberrations are not uncommon in birds but there is quite some confusion in the literature, especially in relation to albinos. The major aberrant plumage conditions are defined by Buckley (1982), and include albinism, leucism, melanism, carotenism and dilution. According to earlier literature, albinism, leucism and other patterns of pigment reduction are thought to be widespread among birds, with examples having been documented for 50 avian families in North America alone, representing well over 245 species (Ross 1963). However, the majority of identifications and descriptions of plumage chromatic aberrations of birds are unsubstantiated or unclear. This problem of identification of chromatic aberrations was treated by van Grouw (2013), who detailed those aberrations and defined them (see also Mahabal et al 2016).

Dilution

The aberration of the Moroccan Red-crested Pochard is 'dilution', which involves a quantitative reduction of melanins: the number of pigment granules is reduced but the pigment itself is not changed. The lower concentration results in a weaker (or diluted) colour (van Grouw 2006, 2013). There are two forms of dilution: 'pastel' and

328 Red-crested Pochards / Krooneenden *Netta rufina*, Hassar lake, Mohammedia, Morocco, 3 December 2015 (*Abdeslam Rihane*). 'Diluted pastel' male (right) with normally coloured female.





329 Red-crested Pochard / Krooneend *Netta rufina*, Sidi Boughaba lake, Gharb province, Morocco, 19 February 2015 (Marc Illa Llobet & Lidia Giménez Lozano). 'Diluted pastel' male.

'isabel'. In 'pastel', black feathers turn grey and reddish-brown feathers turn yellow-brown caused by a quantitative reduction of both eumelanin and phaeomelanin, respectively. In 'isabel', black feathers turn grey, caused by a quantitative reduction of eumelanin only, and the phaeomelanin is unaffected. Any plumage showing this mutation is very sensitive to light, and therefore birds with this aberration can become much paler as their plumage ages. In seabirds, this bleaching is even quicker and stronger because of the combination of salt water and sun (Jakubas & Wojczulanis-Jakubas 2012).

The diluted Red-crested Pochard in Morocco can thus be classified as 'pastel', because both eumelanin (black parts) and phaeomelanin (head colour) are reduced. The degree of dilution varies both between individuals and within a single mu-

tation but most mutations cause a melanin reduction of c 50%. All birds with this form of dilution look like a pale version of their normal counterparts. Illa Llobet & Giménez Lozano (2015) stated that the paler colour of the orangey feathers was a consequence of the high abrasion, but their dilution classification (isabel) seems to be wrong.

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