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## Blue Cranes *Anthropoides paradiseus* at Etosha Pan, Namibia: what is the origin of this isolated population?

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**SUMMARY.**—There is an isolated breeding population of Blue Cranes *Anthropoides paradiseus* around Etosha Pan, in northern Namibia, despite a lack of regular reports of the species from adjoining regions of Botswana, southern Namibia or even north-western South Africa. A search for historical records of Blue Cranes north of South Africa suggests occasional vagrancy to southern Namibia, eastern Botswana and perhaps Zimbabwe, with consistent sightings of resident, breeding birds only from Etosha since 1918. It is apparently not a relict population. While the natural establishment of a breeding population by rare vagrants appears unlikely, there is no documented evidence for the alternative explanation that birds were deliberately introduced to this locality.

Current data indicate that Blue Crane *Anthropoides paradiseus* is restricted to South Africa (with occasional records in Lesotho and Swaziland of non-breeders), except for an isolated breeding population around the Etosha Pan in northern Namibia (Taylor *et al.* 2015). Although the vegetation type of the region is 'Mopani', the cranes are restricted to grassland near pans and lakes (Allan 1997). The largest numbers of cranes in the Etosha region (up to 138 birds) were reported in the 1970s following a period of good rains. Since then numbers have declined, and by March 2012 no more than 35 individuals were counted (Simmons 2015). Three possible scenarios exist to account for this odd distribution: (1) this outlier represents a relict population, the last survivors of a formerly wider range; (2) natural dispersal lead to the establishment of a breeding population at Etosha; or (3) these birds were deliberately introduced at some point in the past.

Andersson (1872) stated that the species was 'not uncommon in Damara and Great Namaqualand during the rainy season, but migrates on the return of the dry.' J. H. Gurney, who edited the book for publication following Andersson's death, added a footnote: 'I have not seen a Damara-Land example of this crane', but he did not doubt the accuracy of the identification. On the map in Andersson (1872), Great Namaqualand extends from the Orange River to 25°S, with Damara Land lying between 20° and 25°S. There is one 19th-century specimen record from southern Namibia. A Swedish collector, Gustav de Vylder, shot a Blue Crane near Brukkaros (25°52'S, 17°46'E) on 27 May 1873 (Rudner & Rudner 1998); the specimen is in the Stockholm museum, along with other birds presented by de Vylder. The date in the catalogue reflects the date of acquisition (1876) and the locality is given as 'Afr. merid.' (G. Frisk pers. comm.). Axel Eriksson, another Swede who lived and traded primarily in Namibia during the period 1866–1901 (Brinck 1955) and collected >1,000 bird specimens, apparently had just one crane specimen, a Grey Crowned Crane *Balearica regulorum* from the Cunene River at the border between Namibia and Angola, in his collection (Rudebeck 1955). In a lengthy narrative account of Namibian birds, Fleck (1894) mentioned only Wattled Cranes *Bugeranus carunculatus*, although he included a description of the Etosha region, where he noted bustards and ostriches as being common. Reichenow (1900) listed distributional records of Blue Crane based on the literature, and in

the atlas volume of *Die Vögel Afrikas* (Reichenow 1902) he provided approximate locality data for those records cited in the text. Most are clearly in South Africa; Andersson (1872) was Reichenow's only source for Namibia.

Grote (1922) reported on a small collection of birds from the Etosha area, collected by Dr Leo Waibel in 1914; his collecting trip was cut short by the outbreak of the First World War. Grote mentioned Ostrich *Struthio camelus*, Kori Bustard *Ardeotis kori* and Northern Black Korhaan *Eupodotis afraoides* as common large ground birds in the area, but Blue Cranes were apparently not encountered. Finch-Davies (1918) spent a year in Namibia on military service, and travelled widely, collecting birds when possible. He noted seeing a pair of Blue Cranes at the southern edge of the Etosha Pan. Hoesch (1938) observed several pairs of Blue Crane at the eastern edge of the pan near Onguma, and in their account of the birds of Namibia, Hoesch & Niethammer (1940) described the range of Blue Crane as restricted to the Etosha area. Winterbottom (1971) also considered that the species was confined to a limited area south and east of Etosha Pan, but noted one record from Stampriet (24°20'S, 18°24'E), 630 km south of Etosha. In an atlas based largely on museum material, Snow (1978) did not map any Blue Crane localities for Zimbabwe or Botswana, and just one in Namibia away from the Etosha region, in map square 24°S 18°E (apparently Winterbottom's record).

'Matebele (Buckl.)' (Reichenow 1900: 263) suggests a locality in Zimbabwe, but Buckley (1874) clearly stated that Blue Cranes were encountered only on the Transvaal highveld (northern South Africa) before crossing the Limpopo River. However, 'Maschona IX. X. (James., Marsh.)' (Reichenow 1900) refers to Marshall (1900: 263), who stated that 'All the three South-African Cranes occur in Mashonaland', noting that Wattled Crane was the least common, whereas he had seen flocks comprising 20–30 individuals of both Blue Crane and Grey Crowned Crane. An earlier collecting trip by Jameson, accompanied by Ayres, also reported all three species in Mashonaland (c.18°S in north-western Zimbabwe) albeit 'seen, but not procured' (Shelley 1882). 'Sambesi X "Quibanda" gen. (Cap., Ivens)' (Reichenow 1900) refers to the Portuguese expedition that crossed Africa from Angola to Mozambique. However, this appears to be an error as the only crane collected on the Zambezi was a Wattled Crane (Capelo & Ivens 1886: 446). Priest (1934) had only two confirmed personal records of Blue Cranes in Zimbabwe, one in the Umvukwes (17°10'S, 30°43'E) and the other just south of Harare (18°19'S, 31°08'E); he considered the species very rare. In a later review of the avifauna of Zimbabwe, Irwin (1980) did not include Blue Crane as an accepted species. He nevertheless noted that, although records from the 19th century for the area of Harare and Umvukwe might have involved confusion with Wattled Cranes, these and subsequent reports from the 1930s could have been genuine vagrants from South Africa. There have been no records from Zimbabwe during the Southern African Bird Atlas Project, which commenced in 1987 and is currently in the second phase of data collection (SABAP2 2017).

In their account of South African birds, Holub & von Pelzeln (1882) described the heartland of the Blue Crane as north-central South Africa, but reported personal observations in south-east Botswana, and stated that its range extended north to the Zambezi, without providing specific localities. Holub (1890) made no mention of Blue Cranes north of South Africa on his later travels. Reichenow (1900: 263) listed only 'Westgriqualand, Betschuanaland (Holub)'. Although Smithers (1964) included an extensive review of historical collections from Botswana, he had no records of Blue Cranes, and did not even mention the species in a list of 'Species not recorded but likely to occur'. Penry (1994) had records from Makgadigadi Pans and Gaborone, and categorised Blue Crane as a rare and unpredictable visitor to Botswana. There were records from the Gaborone area during the first bird atlas period (Allan 1997), and one report of breeding at Makgadigadi

(Allan 2005), but there have been no records in Botswana during the current atlas period (SABAP2 2017). This single breeding record does not suggest that vagrants are likely to establish new outlying populations.

The distributional data in standard handbooks and field guides provide no indication of which records are 'current' and which 'historical'. Stark & Sclater (1906) listed Blue Crane records from Mashonaland in Zimbabwe (Ayles, Marshall), and Damaraland and Great Namaqualand (Namibia) during the rainy season (Andersson), but did not mention Botswana. Sclater (1930: 110) gave the range of Blue Crane as 'Africa south of the Zambesi, chiefly on the high veld; not on the coast-lands of Natal and Zululand'. However, Roberts (1940: 89) simply remarked 'Distribution confined to South Africa'; no maps were included. Mackworth-Praed & Grant (1962: 259) stated boldly 'South-west Africa to Southern Rhodesia, the Transvaal, Cape Province and Natal', while their map has the whole region south of the Cunene and Zambesi Rivers shaded, except Mozambique. In the second edition of *Roberts* the Etosha population, a sight record from Mashonaland in Zimbabwe, and outliers in the south-western Cape in South Africa were mapped (McLachlan & Liversidge 1957: 114). This map was unchanged in the third edition, but the text stated 'Now also Western Cape' (McLachlan & Liversidge 1970: 146). For the fourth edition of *Roberts* the shaded areas on the map extended to the Western Cape, with another patch around Etosha; and the text was modified to read 'Now also Western Cape and Etosha' (McLachlan & Liversidge 1978: 152). Originally absent from the fynbos biome (Allan 1997), Blue Cranes colonised areas cleared for agriculture, and by the 1980s the species was considered a 'Common resident and summer visitor' in the Western Cape (Hockey *et al.* 1989: 52–53). This range expansion occurred from adjoining areas where the species was common and nested regularly.

In the first modern field guide for southern African birds, Newman (1983: 138) showed the regular distribution of the Blue Crane as South Africa from the Western Cape to the north-eastern Highveld (excluding the north-west Cape), Lesotho, western Swaziland, and the Etosha region. Two vagrant records were mapped, one in south-east Namibia and the other in the Limpopo region of South Africa, but none for Botswana or Zimbabwe. This map was reproduced in the fifth edition of *Roberts* with the text specifying 'isolated population at Etosha, n Namibia; occasional in sw Botswana' (Maclean 1985: 187). However, in the sixth edition the text was modified to read 'isolated population at Etosha and in Bushmanland, n Namibia; occasional in nw Botswana', and the map shows a broad band extending from Etosha into north-west Botswana (Maclean 1993: 184). Urban (1986) summarised the distribution of Blue Crane north of South Africa: 'Namibia, occurs mainly north of 20°S and south and east of Etosha Pan, rare to vagrant south of 20°S; Botswana, rare Makgadigadi; Zimbabwe, vagrant to rare Mashonaland with persistent reports of sightings.' For the seventh edition of *Roberts*, Allan (2005: 309–311) wrote 'Isolated br[eeding] population at Etosha NP, Namibia since at least early 1800s; vagrant elsewhere in Namibia. Recent records from Caprivi unconfirmed. Small numbers regular in extreme se Botswana; occasionally north to Makgadigadi Pan (1 br[eeding] record). Several unconfirmed records from Zimbabwe'. The fourth edition of the field guide by Sinclair *et al.* (2011: 152) showed the regular range of Blue Crane in South Africa and the isolated population in Etosha, with crosses indicating vagrants in the Caprivi region, southern Namibia, south-east and north-east Botswana, and north-west Zimbabwe (Mashonaland).

So the available evidence indicates that over the past 140 years there have certainly been records of vagrant Blue Cranes well to the north of their present South African range, in both Namibia and Botswana, and probably also in Zimbabwe. However, there is no evidence that the species has regularly nested north of the Limpopo River or in the western sector of the

Orange River, except in the Etosha Pan region. Thus there is no support for the hypothesis that this isolated population represents a remnant of a formerly wider distribution. Was the Etosha population founded by lucky colonists with a critical mass of breeding birds, or was there a deliberate introduction? This is not merely an academic question, as the Namibian population is currently rated 'critically endangered' and a range of conservation measures has been proposed (Simmons 2015). Genetic comparisons may clarify the source of these birds. Within South Africa, no exchange between different subpopulations of Blue Cranes has been noted, with the most extensive movement by a ringed bird being 426 km; in the Namibian population movements of up to 120 km have been recorded (Simmons 2015). The distance from Etosha to the nearest current South African record of Blue Cranes is 1,200 km (SABAP2 2017).

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