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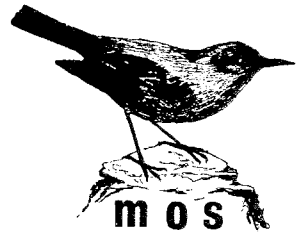

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THE ORNITHOLOGICAL SOCIETY

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The Editorial Board welcomes contributions treating any aspect of the Ornithology of the Maltese Islands and the Mediterranean for publication in this Bulletin.

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THE GIANT MALTESE CRANE

E. MARJORIE NORTHCOTE

The giant Maltese Crane *Grus melitensis* Lydekker,1890 was about the size of the Sarus Crane *G. antigone* (L.), the largest living crane species (that weighs c. 7-8kg, Johnsgard 1983). It was sympatric with the Common Crane *G. grus* (L.) (Northcote 1982a)(that weighs c. 6kg, Cramp & Simmons 1980) and evidently widespread on Malta; remains of both cranes have been found in Pleistocene deposits at Żebbuġ, Ta'l-Ġnien and Mnajdra.

Bones often occurred in river terrace, cave or fissure infillings (Adams 1870) but no precise dates are available for either sediments or fauna (Bosence, Pedley & Rose 1981, Zammit-Maempel 1981, Northcote 1982b). The crane bones were associated with giant Maltese Swans *Cygnus falconeri* Parker, 1865 and with *Elephas melitensis* Falconer, 1862 and/or *E. falconeri* Busk, 1867 (Northcote 1981-83). The elephants flourished on Sicuto/Malta during a period equivalent to the Ipswichian (Eemian) Interglacial Stage (Sondaar & Boekschoten 1967 : 567, Sondaar 1971). Gascoyne, Shwarcz & Ford (1983) define this period by the interval 114-135 years ago. This, then, may also be taken as the date of the cranes.

The following is an account of the Maltese Crane. Terminology follows Baumel (1979).

Cranium

A cranium fragment from Mnajdra (UMZC 252) comprising the caudal part of the fronto-parietal and most of the occipital plane resembles the corresponding area of the Sarus Crane in size and general morphology (Northcote 1982c).

Forelimb bones (?)

I have restudied the two bones that have been cited as appertaining to the forelimb (Northcote 1984). The dorsal half of a right coracoid BM(NH) 49365 was excavated at Żebbuġ (Fig.1). Lydekker (1890,1891) described the 'head' (A, the dorsal tip) of this fossil as 'smaller and relatively narrower' compared to the Sarus Crane. Harrison & Cowles (1977) considered the 'head' too eroded for such comment and it is, indeed, too damaged for accurate measurement. Not only the dorsal tip, but the whole of the coracoid fragment is much smaller than in the Sarus Crane; its size and proportions closely resemble the Common Crane that is c. 2kg lighter. Bone diameter is proportional to weight$^{0.375}$ (Northcote 1982b); a 'relatively narrower head' is, therefore, to be expected. Lydekker (1890) made no comment concerning the rest of the bone. He named the coracoid as a type specimen of an extinct species he named the Maltese Crane *G. melitensis* (Lydekker 1890, 1891).

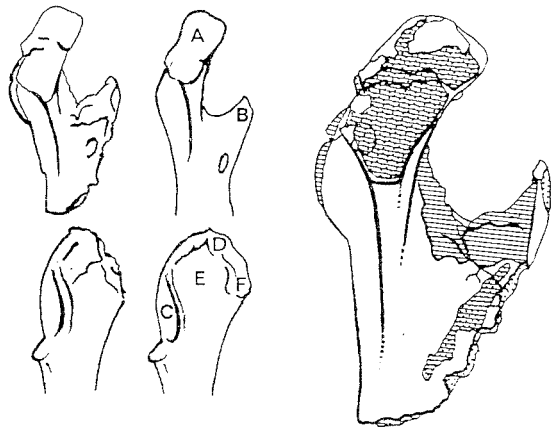

Fig.1. Dorsal part of right coracoid. Above - ventral view; below - lateral view.

Ventral view - left : Maltese Pleistocene British Museum (Natural History) BM(NH) 49365 (X1); right : Same specimen to show matrix (hatched) and erosion (stippled) (X2); and centre : Common Crane recent University Museum of Zoology, Cambridge UMZC 344S (X1).
Lateral view - left : BM(NH) 49365 (X1); and right : UMZC 344S (X1). For labelling see text.

Harrison (1979) noted the size correspondence between the fossil coracoid and the Common Crane but he considered their morphology differed. First (p.14) he maintained that the processus procoracoideus (B) is 'proportionately longer and more curved' on the fossil than on the Common Crane. However, the processus on the fossil has a length (10.3mm) within the range (8.8-10.9mm, n=6) for Neolithic (UMZC and SMC) and recent Common Cranes. It appears 'more curved' because the lateral edge is eroded and the tip is cracked and buckled. In addition, the whole processus seems to have become detached at some time, then replaced in an unnatural position with adherent matrix at its base and this has altered its appearance. Secondly, Harrison (1979,p.15) stated that the area between the facies articularis humeralis (C) and the lateral edge of the processus acrocoracoideus (D) is narrower and deeper on the fossil coracoid than on the Common Crane. However, matrix adheres to the eroded lateral edges of both the facies and the processus on the fossil and this results in an apparent narrowing and deepening of this area. Thirdly, Harrison (1979,p.14) considered the surface of the sulcus m. supracoracoidei (E), particularly at the level of the medial part of the facies articularis clavicularis (F), to be dorsoventrally narrower on the fossil coracoid than on the Common Crane. However, this area appears narrower on the fossil as a result of erosion of the ventral and medial corner of the sulcus and the adjoining part of the facies articularis clavicularis. Harrison & Cowles (1977,p.27) considered the fossil coracoid too 'slender' to belong to the Common Crane. However, only in ventral view does it appear to be more 'slender' and this results from erosion and chipping of the medial edge of the shaft at the base of the processus procoracoideus.

In summary, features that have been used for assigning coracoid BM(NH) 49365 to the Maltese Crane are the result of erosion, fossilisation and excavation. The size, proportions and morphology of this coracoid justify reassigning it to the Common Crane.

Among material from Tal-Ġnien was part of the distal extremity of a right crane humerus BM(NH) A5162 (Harrison 1979). It is much smaller than the corresponding part of a Sarus Crane; its size and morphology closely resemble the Common Crane (Fig.2). In particular, both have the epicondylus ventralis (A) rounded ventrally and confluent with the condylus ventralis (B). In both, also, the condylus lies at right angles to the shaft of the bone and its bulbous dorsal part is symetrically shaped. Also, the angle between the condylus and the tuberculum supracondylare (C) is similar in form on the fossil and on the Common Crane. The proximal part of the tuberculum of the fossil is missing; its ventral surface compares well with the Common Crane.

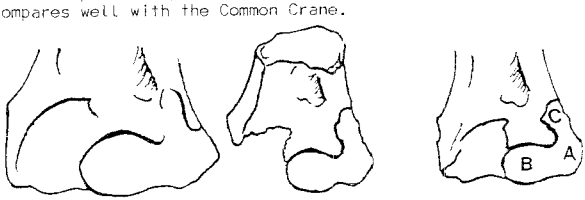

Fig.2. Distal extremity of right humerus, cranial view. Left - Sarus Crane UMZC 344M; centre - Maltese Pleistocene BM(NH) A5162; right - Common Crane recent UMZC 344S.

Harrison (1979,p.14) also observed this fossil humerus A5162 to be 'of similar size and character to that of the Common Crane', but he assigned the bone to the much larger Maltese Crane. However, its size, proportions and morphology justify reassigning this humerus to the Common Crane.

Hindlimb bones

Using material from Mnajdra UMZC 252a, I prepared three proximal femur fragments that though similar to the Sarus Crane in size and proportions, differ from it in the form of the head and trochanter (Northcote 1982c). In the Sarus Crane there is, caudally, a well-marked ridge that lies below the facies articularis antitrochanterica (Fig.3A) and is continuous with the lip on the facies articularis acetabularis (B) whereas in the Maltese Crane this ridge is absent. In addition, in the latter species, the angle between the facies articularis antitrochanterica and the head is smaller so that the head appears to be directed more proximally.

Numerous distal tibiotarsus fragments have been attributed to the Maltese Crane (Lydekker 1890, 1891, Mourer-Chauviré, Adrover & Pons 1975, Harrison & Cowles 1977, Northcote 1982c). Although Lydekker (1890, 1891) and Harrison & Cowles (1977) considered the distoproximal width of the supratendinal bridge to be narrower in the Maltese than in the Sarus Cranes, the range in bridge width of the fossils overlaps that in Sarus Cranes

Fig.3

Fig.4

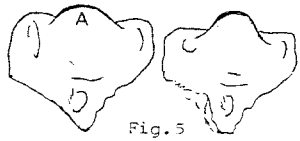

Fig.5

Figs.3-5. Left : Sarus Crane UMZC 344M; right : Maltese Pleistocene UMZC 252a.
Fig.3. Proximal extremity of left femur, caudal view.
Fig.4. Distal extremity of right tibiotarsus, medial view.
Fig.5. Proximal extremity of left tarsometatarsus, proximal view.

(Mourer-Chauviré, *et al.*1975, Northcote 1982c). It cannot, therefore, be used for diagnostic purposes. The general size and proportions of the tibiotarsi correspond to the Sarus Crane but their epicondyles differ (Fig.4). In the Sarus Crane the epicondyles are large and form a distoproximal ridge; the epicondylus medialis (A) is especially large. In the Maltese Crane, on the other hand, the epicondyles are small; the epicondylus lateralis is hardly distinguishable.

Proximal tarsometatarsus fragments were found at Ta' Ġnien (Harrison & Cowles 1977) and Mnajdra (Northcote 1982c). They are of the same general size as the Sarus Crane but the eminentia intercondylaris (Fig.5A) is more attenuated (Northcote 1982c, Table 1, Plate 6d). Distal extremity fragments were recorded from Żebbuġ (Lydekker 1890,1891) and Mnajdra (Northcote 1982c), (Fig.6). Lydekker (1890, 1891) considered the proportions and relationships of the trochleae to be the same as in the Sarus Crane. However, in the latter species the trochleae are close together and roughly parallel to one another, whereas in the Maltese Crane the intertrochlear notches are relatively wide (the incisura intertrochlearis medialis (A) measures *c.* 5mm *cf. c.* 4mm in Sarus Crane) and the trochleae for digits II and IV are curved away from that for digit III (Northcote 1982c). Lydekker (1890) considered the tarsometatarsus of Maltese Cranes to be larger overall than that of Sarus Cranes, but the greater distal width (32mm *cf.* 26mm in Sarus Cranes) results from the characteristic splaying of the trochleae.

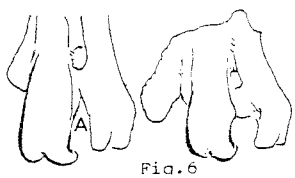

Fig.6

Fig.6. Distal extremity of left tarsometatarsus, cranial view. Left : Sarus Crane UMZC 344M; and right : Maltese Pleistocene BM(NH) 49358. All X1.

Discussion

Numerous hindlimb bones of the Maltese Crane have been found but Harrison & Cowles (1977) and Harrison (1979) knew of no forelimb bones large enough to support such a large crane in the air, nor hindlimb bones of a smaller crane that came from the Maltese Pleistocene. They therefore reasoned that the relatively small size of the two bones that they regarded as appertaining to the forelimb of the Maltese Crane indicates that it had reduced wings; Harrison & Cowles (1977, p.27) suggested that the bird had reduced power of flight. Doubt is cast upon this reasoning now that these bones have been reassigned to the Common Crane. This doubt is reinforced by the presence in the Maltese Pleistocene deposits of Common Crane remains (Northcote 1984), especially as these include hindlimb bones. It is more reasonable to assign the relatively small forelimb bones to the small and contemporaneous crane they resemble than to assign them to a much larger crane and postulate reduced flight ability to explain the resultant size disparity.

It is possible to correlate particular legbone characters with particular habits (Northcote 1981, 1982b). In comparison with the Sarus Crane, the smaller angle between the articulatory facet and the head of the femur in the Maltese Crane may have maintained the legs closer to the midline. The tibiotarsus epicondyles serve for the attachment of ankle ligaments. Their relatively small size in the Maltese Crane may indicate a less rigid ankle joint. The more attenuated eminentia intercondylaris of the tarsometatarsus is consistent with more efficient fore-and-aft movement of the foot and the greater spread of the trochleae may have provided a more stable base for the foot. All of these

features indicate that the Maltese Crane may have walked more elegantly than the Sarus Crane.

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References

ADAMS, A.L. 1870. Notes of a naturalist in the Nile Valley and Malta. Edinburgh : Edmonston & Douglas.

BAUMEL, J.J. 1979. Osteologia. *In* Baumel, J.J., King, A.S., Lucas, A.M., Breazile, J.E. & Evans, H.E. (eds), Nomina anatomica avium. Academic Press : London.

BOSENCE, D.W.J., PEDLEY, H.M., & ROSE, E.P.F. 1981. Field guide to the Mid-Tertiary carbonate facies of the Maltese Islands. Palaeontological Association : London.

CRAMP, S. & SIMMONS, K.E.L. (eds) 1980. The birds of the Western Palearctic. Vol.2. Oxford University Press : Oxford.

GASCOYNE, M., SCHWARCZ, H.P. & FORD, D.C. 1983. Uranium-series ages of speliothem from northwest England : correlation with Quaternary climate. *Phil. Trans. R. Soc. Lond.* B301 : 143-164.

HARRISON, C.J.O. 1979. The extinct Maltese Crane. *Il-Merill* 20 : 14-15.

HARRISON, C.J.O. & COWLES, G.S. 1977. The extinct large cranes of the north-west Palaearctic. *J. arch. Sci.* 4 : 25-27.

JOHNSGARD, P.A. 1983. Cranes of the world. Croom Helm : London.

LYDEKKER, R. 1890. On the remains of some large extinct birds from the cavern-deposits of Malta. *Proc. zool. Soc. Lond.* 28 : 403-411.

LYDEKKER, R. 1891. Catalogue of the fossil birds in the British Museum (Natural History). British Museum (Natural History) : London.

MOURER-CHAUVIRÉ, C., ADROVER, R. & PONS, J. 1975. Présence de *Grus antigone* (L.) dans L' "Avenc de Na Corna" a Majorque (Espagne). *Nouv. Arch. Mus. Hist. nat.* Lyon 13 : 45-50.

NORTHCOTE, E.M. 1981. Differences in weight and habit of Whooper *Cygnus cygnus cygnus* and Mute *C. olor* Swans in relation to differences in their long bones. *Bull. Br. Orn. Club* 101 : 266-267.

NORTHCOTE, E.M. 1982a. Sympatry of Common Cranes *Grus grus* with larger cranes in the last 125,000 years. *Bull. Br. Orn. Club* 102 : 141-142.

NORTHCOTE, E.M. 1982b. Size, form and habit of the extinct Maltese Swan *Cygnus falconeri*. *Ibis* 124 : 148-159.

NORTHCOTE, E.M. 1982c. The extinct Maltese Crane *Grus melitensis*. *Ibis* 124 : 76-80.

NORTHCOTE, E.M. 1981-83. The giant Maltese Swan. *Il-Merill* 22 : 6-8.

NORTHCOTE, E.M. 1984. Crane *Grus* fossils from the Maltese Pleistocene. *Palaeontology* 27 : 729-735.

SONDAAR, P.Y. 1971. Paleozoogeography of the Pleistocene mammals from the Aegean. *In* Strid, A. (ed). Evolution in the Aegean. *Opera Botanica* 30.

SONDAAR, P.Y. & BOEKSCHOTEN, G.J. 1967. Quaternary mammals in the South Aegean Island Arc; with notes on other fossil mammals from the coastal regions of the Mediterranean. *Proc. K. ned. Akad. Wet. Ser. B* 70 : 565-576.

ZAMMIT-MAEMPEL, G. 1981. A Maltese Pleistocene sequence capped by volcanic tufa. *Atti. Soc. Tosc. Sci. Nat., Mem. Ser.A* 88 : 243-260.

E. Marjorie Northcote - University Department of Zoology, Downing Street, Cambridge, England.