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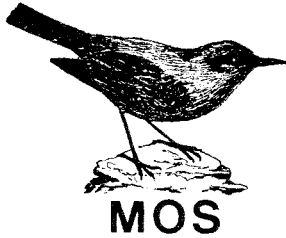


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THE ORNITHOLOGICAL SOCIETY

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The aim of Il-Merill is to serve as a medium for the publication of the annual systematic list of birds recorded in the Maltese Islands and the annual ringing report, both produced by the Ringing & Research Committee of the MOS, as well as for the publication of papers and short notes primary relating to the study of birds in the Maltese Islands. Accordingly the editorial board welcomes contributions treating any aspect of the ornithology of the Maltese Islands and the Mediterranean for publication in this journal.

For the sake of uniformity, authors submitting papers for consideration for publication are requested to follow the following sequence : Title; the name (s) of author (s), an abstract (summarizing the main results) and the address (s) of the author (s); introduction; methods; results; discussion; acknowledgements; and references. Tables and figures should be presented on separate sheets with their desired position indicated in the manuscript margin. Manuscripts should be typed double-spaced on one side of the paper only, with a wide margin.

The Ornithological Society was founded in 1962 to promote the scientific study of ornithology and bird conservation in the Maltese Islands. It organises a variety of scientific and social activities. It runs the Valletta Ringing Scheme and has a young members' section.

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THE DWARF MALTESE SWAN

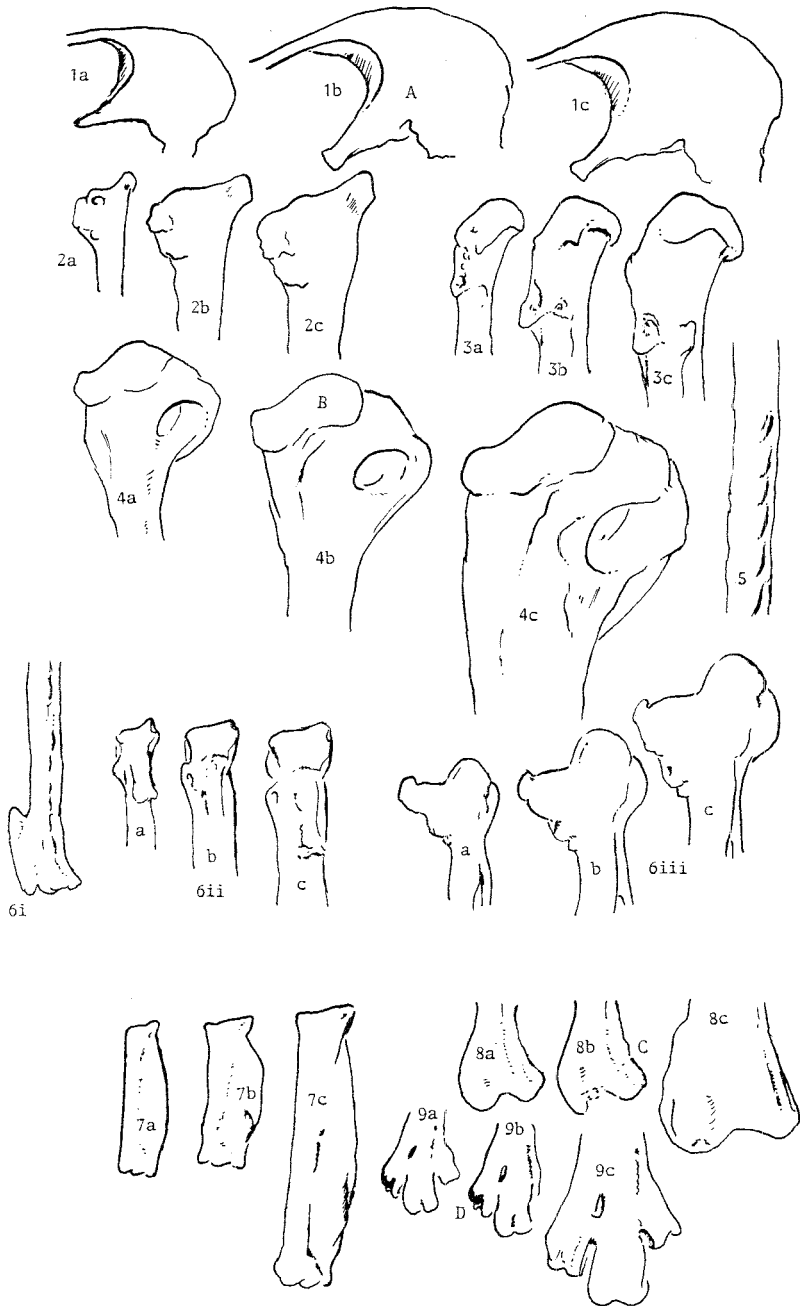
E. MARJORIE NORTHCOTE

Bate (1916) gave the name *Cygnus equitum* to fossil bones she considered to be those of a dwarf extinct swan. Lambrecht (1933) and Howard (1964) agreed with Bate. However, the eminent authority Brodkorb (1964) named these bones *Anser equitum*, considering them to belong to a large extinct goose. Bate (1916) briefly described the holotype (a carpo-metacarpus) and paratypes (a proximal humerus and a coracoid) that came from deposits at Ghar Dalam, Malta. This type-series (Specimens 20 and 21) is in the National Museum of Natural History, Malta (NMM). Casts of the bones (Specimens A1613, A1614, and A1615), labelled *Anser equitum*, are in the British Museum (Natural History) (BMNH). Among other anseriform bones from those museums and the University Museum of Zoology, Cambridge (UMZC) I found further *equitum* fossils (chiefly also of fore-limbs) from elsewhere in Malta. It is now possible to ascertain the genus and affinities of the bird and suggest its size, form and habit, particularly with respect to Bate's claim that *equitum* was flightless.

The *equitum* specimens came from the same level as giant Maltese Swans *C. falconeri* Parker, 1855 and giant Maltese Cranes *Grus melitensis* Lydekker, 1890 assigned elsewhere (Northcote 1982a,b, 1981-83, 1984-85) to a period equivalent to the Ipswichian (Eemian) Interglacial Stage of more northern countries, i.e., about 125,000 years ago.

	<u>n</u>	<u>equitum</u>	<u>n</u>	Greylag Geese	<u>n</u>	Whooper Swans	<u>n</u>	Bewick's Swans	<u>n</u>	Mute Swans
humerus										
max. length	2	197.15	6	169.37	28	275.5	8	233.3	33	290.9
min. shaft										
width	2	9.60	6	9.38	28	12.30	8	10.91	33	12.29
ulna										
max. length	2	c.187	7	152.77	25	259.7	8	219.5	28	257.3
min. shaft										
width	2	7.80	7	7.86	25	10.16	8	8.79	28	9.80
carpomet.										
max. length	4	91.18	5	96.44	17	137.47	2	118.90	9	133.36
max dorso-ventral width	4	7.95	5	5.66	17	8.16	2	6.20	9	7.67
met. majus.										
phalanx										
max. length	9	33.42	2	43.40	16	58.29	2	51.15	5	51.42
femur										
max. length	1	c. 79	5	80.16	26	108.78	8	94.33	34	104.67
min. shaft										
width	1	9.90	6	7.52	26	10.46	8	9.39	34	10.20

TABLE 1. Mean limb-bone measurements (mm) of *equitum*, Greylag Geese and extant Palearctic swans.



Captions for figures

Where appropriate a, goose; c, Whooper Swan.

Fig.1. Cranium. b, *equitum* BMNH 3267.

Figs 2 and 3. Cranial extremity of scapula and coracoid respectively.
b, *equitum* BMNH A5218 and A5221.

Fig.4. Proximal extremity of humerus. b, *equitum* BMNH A5222.

Figs 5 and 6.i. Shaft of ulna BMNH A5225 and distal carpometacarpus NMM Q.102. F25 respectively of *equitum* showing flight feather follicles.

Figs 6.ii and iii. Cranial and dorsal aspects respectively of proximal extremity of carpometacarpus. b, *equitum* BMNH A5225.

Fig.7. Dorsal aspect of chief wing phalanx. b, *equitum* BMNH A5219.

Figs 8 and 9. Cranial surface of distal extremity of femur and tarsometatarsus respectively. b, *equitum* BMNH A5812 and A5810 respectively.

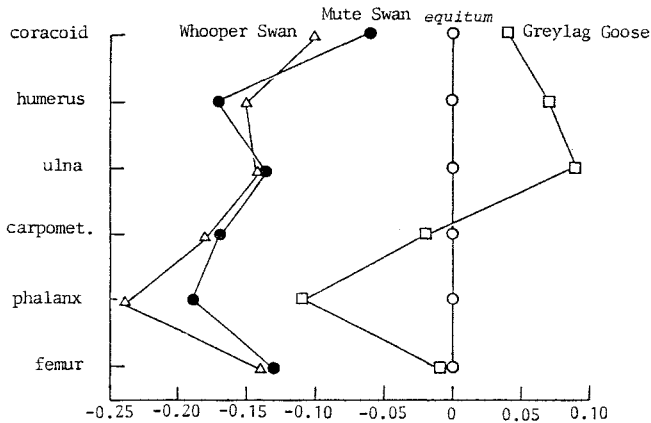


Fig. 10. Ratio diagram comparing mean lengths for six bones of Greylag Geese, Whooper and Mute Swans and *equitum*.

Comparisons with extant European Anserini show the bird was indeed a swan. So far, the only goose-like characters are the relatively small size (Table 1), one feature on the proximal humerus (B) (Fig.4) and one each on distal femur (C) and tarsometatarsus (D) (Figs 8 and 9). The relatively larger beak indicated by accommodation of larger muscles and ligaments (A) (Fig.1), characteristic shape of scapula and coracoid (Figs 2 and 3), and chief hand bones (Figs 6ii,iii and 7), 'stoutness' of the limb bones (from Table 1) and ratios of their lengths to one another (Fig. 10), all show the overall skeletal structure of *equitum* to be less like geese than swans. Absence of a bony bill knob especially (Fig. 1), two features on the humerus and ratio (femur length : humerus length) (from Table 1), taken together, indicate affinity between *C. equitum* and Whooper and Bewick's Swans, *C. cygnus* and *C. bewickii* respectively, rather than Mute Swans *C. olor*. However, the relative shortness of the chief hand bones, similar to that in Mute Swans, combined with the actual shortness of the limb bones and greater 'stoutness' of carpometacarpus and femur compared to other European swans justify Bate's (1916) designation of it as a separate species.

Using scaling formulae I estimate mean weight of *C. equitum* as 3.5-4kg. Though within ranges for the largest European Geese (Greylag Geese) and the smallest swans (Bewick's Swans), this is less than mean weight of the latter (6.05 kg.) (data from Scott et al. 1972). *C. equitum* is the smallest known swan.

The coracoids of *C. equitum* are relatively longer than in other swans (e.g. 74.7mm for both it and the larger Bewick's) so its body may have been comparatively broader.

Using its wing-bone lengths plus the calculated distance between its humeri as well as formulæ based on its weight, I estimate the feathered wing span of *C. equitum* as approximately 1.5m. Compared to other swans, its wings were probably more 'elliptical' - greater 'stoutness' of carpometacarpus and perhaps ulna suggests a higher camber; also, the relatively short hand indicates less attenuation than the 'high-speed' wings of, for example, Whooper Swans. The body and wing shapes I propose for *C. equitum* and greater similarity of its distal wing-bone proportions to the more sedentary Mute than the migratory Whooper and Bewick's Swans suggest it did not fly far. However, there is no evidence to support Bate's (1916) assertion, subsequently quoted by other workers, that *C. equitum* had a reduced carpometacarpus and lacked flight feathers and was, therefore, flightless. Indeed there was no reduction either of 'stoutness' and relative lengths of wing bones or coracoid or of major flight muscles, its wings were fully feathered as evidenced by the presence of flight feather follicles on ulna and carpometacarpus (Figs 5 and 6.i) and it was light enough to fly.

C. equitum was abundant and widespread on the island and occurred near both fresh and brackish water. The goose-like characters noted above suggest it may have walked well on land and, unlike other swans, could have taken off and alighted on the ground.

Remains of Whooper Swans are found with those of the related *C. equitum* and *C. falconeri*. The first occurs at other levels elsewhere in Europe but the two other swans are found only in Interglacial deposits of Siculo/Malta and were evidently endemic, maybe indigenous. During the ca. 21,000 years of the Interglacial, Siculo/Malta was isolated from the mainland by very strong currents in the Straits of Messina (Sondaar and Boekschooten 1967). On the island, mild climate, plentiful food and lack of predators (Northcote 1981-83) would have obviated dispersal or escape and encouraged speciation. Rapid climatic changes terminated the Interglacial (Starkel 1977). The less specialised Whooper Swans migrated; *C. falconeri*, that had reduced flight ability (Northcote 1981-83) and *C. equitum*, perhaps unable to fly far, became extinct.

Acknowledgements

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