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**NOTES ON SUBFOSSIL ANATIDAE FROM NEW ZEALAND, INCLUDING
A NEW SPECIES OF PINK-EARED DUCK MALACORHYNCHUS**

STORRS L. OLSON

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SUMMARY

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A new species of pink-eared duck, *Malacorhynchus scarletti*, is described from subfossil deposits at Pyramid Valley, South Island, NZ, and is characterized by larger size. Preliminary observations indicate that subfossil specimens of *Biziura* from New Zealand are larger and differ qualitatively from *B. lobata*; for the present, the name *Biziura delautouri* Forbes, 1892, ought to be retained for the New Zealand form. An erroneous record of *Mergus australis* is corrected.

INTRODUCTION

During two visits to museums in New Zealand, I examined remains of numerous fossil and subfossil birds, including those of several extinct species of ducks. Of these, the form known as *Euryanas finschi* was represented by thousands of specimens and I plan to treat its osteology and relationships in a subsequent study. Three other species are the subject of the present paper.

MALACORHYNCHUS

In a report on avian remains from Pyramid Valley Swamp, South Island, Falla (1941: 352) listed '*Malacorhynchus* sp. Terminal fragments of premaxillae of two individuals of this genus were found, with one tibia probably of the same.' Scarlett (1955: 261) repeated Falla's remarks and added that 'it is likely that other *Anas* bones [from Pyramid Valley Swamp] belong to this genus, but there is no skeleton available for comparison.' Oliver (1955: 600) listed the record as '*Malacorhynchus membranacea* [sic] (?)' and suggested that the New Zealand specimens 'probably . . . belong to the Australian species.' Howard (1964: 306) noted that '*Malacorhynchus membranaceus* is questionably recorded from sub-recent deposits in Pyramid Valley Swamp, South Island, New Zealand.' I was able to compare the two premaxillary fragments mentioned above and an additional portion of a mandible, with a series of fourteen skeletons of the Australian Pink-eared Duck *Malacorhynchus membranaceus*. I have not seen the tibiotarsus mentioned by Falla (1942). Two of the subfossil specimens are indeed correctly referred to the genus *Malacorhynchus* but they are quite distinct from *M. membranaceus* and merit recognition as a new species.

Malacorhynchus scarletti, new species

(Plate 6 A, C, E, G)

Holotype. Anterior portion of premaxilla CM Av 5855.

Paratype. Posterior portion of right mandibular ramus, CM Av 9959.

Locality. Pyramid Valley Swamp, near Waikari, North Canterbury, South Island, NZ.

Age. Holocene; the bone-bearing sediments at Pyramid Valley Swamp have been determined by radio-carbon dating to be about 3,500 years old (Gregg 1972).

Etymology. I take pleasure in naming this new species for R. J. Scarlett, osteologist at the Canterbury Museum, in recognition of his significant contributions to New Zealand palaeornithology.

Diagnosis. Much larger than *M. membranaceus* (see Table I).

Description. The premaxilla (Plate 6 A, C), as in *M. membranaceus*, is very broad, thin and truncate anteriorly, with a small nail, unlike the rounded premaxilla with a large nail of the New Zealand Shoveler *Anas rhynchotis*, the only New Zealand duck with which it might be confused. The premaxilla of *M. scarletti* differs from that of *M. membranaceus* in being broader, somewhat more truncate at the tip and in having the constriction in the lateral margins less distinct. Also, the nail in both anterior and lateral view is less pronounced but this may in part reflect the fact that the holotype appears to be from an individual not quite adult.

The paratype mandibular ramus (Plate 6 E, G) is definitely from a juvenile individual and the posterior margin of the retro-articular process is clearly seen to be incompletely ossified, thus accounting for its somewhat different shape as compared to an adult of *M. membranaceus*. Nevertheless, the specimen is still remarkably larger than in any specimen of the Australian species. The entire element is proportionately deeper than in *M. membranaceus* and the internal and external articular processes are more massive, the former with much less of an anterior hook. The paratype of *M. scarletti* differs from the comparable element of *Anas rhynchotis* and other New Zealand ducks in its larger size, much less elongate internal articular process and in its broad square articular surface for the quadrate, as opposed to the narrow elliptical one of *A. rhynchotis* and most other ducks.

TABLE I

Measurements (mm) of premaxillae and mandibles of *Malacorhynchus membranaceus* compared with *M. scarletti*, new species.

			N	Range	Mean	S.D.
Width of premaxilla*	<i>membranaceus</i> ♂		17	22.0-25.2	23.7	0.85
	<i>scarletti</i> ♀		15	20.1-24.0 27.3	22.2	1.08
Length of retro-articular process	<i>membranaceus</i> ♂		8	11.7-12.5	12.2	0.22
	<i>scarletti</i> ♀		6	10.5-11.3 12.4**	11.0	0.29
Depth of retro-articular process (at base)	<i>membranaceus</i> ♂		8	5.3- 5.7	5.4	0.16
	<i>scarletti</i> ♀		6	4.9- 5.5 7.5	5.1	0.24

* Measurements of premaxillae were taken from 18 skins and 14 skeletons.

** This measurement would have been considerably larger in a fully adult bird.

Remarks. The other premaxillary fragment (CM Av 5860) assigned to *Malacorhynchus* by Falla (1941) is much too rounded at the tip for that genus and differs in several other respects as well. It may be from *A. rhynchotis* but, being from a quite young individual, it is not possible to be certain of the identity.

The Pink-eared Duck in Australia is a species of the inland plains with a 'very strong preference for the shallow open expanses of residual floodwater or rain-filled claypans . . . but small groups do live and breed in some permanent swamps' (Frith 1967: 234). *M. scarletti* may have been largely restricted to the open areas and swamps in and round the Canterbury Plains, to which certain other species, such as the quail *Coturnix novaezealandiae*, were mainly confined. The fact that both of the specimens of *M. scarletti* appear to be from immatures indicates that the species was probably breeding in the Pyramid Valley Swamp. Efforts to identify and describe additional material of this distinctive duck should be encouraged.

BIZIURA

A tarsometatarsus of a musk duck 'somewhat larger than *Biziura lobata*' from Enfield Swamp, near Oamaru, was named *Biziura delautouri* by H. O. Forbes (1892a: 417). Howard (1964) and Cowles (1970) have correctly pointed out that this constitutes a valid description and antedates an abstract by Forbes (1892b) in which the name *Biziura lautouri* appears as a *nomen nudum*, this last publication having been considered erroneously as the original reference to the species by other authors treating the subject.

Dawson (1958) found the type specimen of *Biziura delautouri* among the Forbes collection in the British Museum (Natural History) and also mentioned

similar tarsometatarsi from a subfossil site at Lake Grassmere to which he had previously drawn attention (Dawson 1949; 1952). Scarlett (1969) assigned a humerus from Lake Grassmere and a humerus and tibiotarsus from Poukawa Swamp, Hawkes Bay, to the modern Australian Musk Duck *Biziura lobata*, dismissing Forbes's name *lautouri* as a *nomen nudum* but apparently being unaware of the earlier valid designation of this form as *B. delautouri*. Harrison and Walker (1970) re-examined the type of *Biziura delautouri* and concluded that the differences in size from *B. lobata* were too slight to warrant nomenclatural separation of the New Zealand form.

A proper assessment of *B. delautouri* is rendered difficult by the tremendous sexual dimorphism in size in *B. lobata*, by the great individual variation in size within the sexes and by lack of adequate modern comparative material. Scarlett (1969) had one partial skeleton of a male and six unsexed skeletons of *B. lobata*; Harrison and Walker (1970) had only two females and a tarsometatarsus removed from a study skin of a male. I was able to examine complete skeletons of five males and three females of *B. lobata* and even this series is probably not sufficient to give a true idea of the variation in size in the species.

Rather extensive collections of avian remains from Lake Grassmere made by E. W. Dawson in 1948 and 1951 are on deposit at the National Museum of New Zealand but have not been fully identified or catalogued. From this collection I was able to study briefly two tarsometatarsi of *Biziura* and compare them directly with part of the above-mentioned series of eight *B. lobata*. Because much more subfossil material of *Biziura* from New Zealand is potentially obtainable and because of the limitations of the presently available comparative material of

B. lobata, I here offer only a few preliminary observations.

Although they did not regard the differences as significant, Harrison and Walker (1970) did note that the New Zealand specimens of *Biziura* were two to three per cent larger than in *B. lobata*. The larger tarsometatarsus I examined from Lake Grassmere (56.7 mm) and the type of *B. delautouri* (57.2 mm) both exceed in size five males of *B. lobata* (range 50.8–52.6 mm). The smaller tarsometatarsus from Lake Grassmere (47.2 mm), which appears to be from a female, is smaller than in males of *B. lobata* but larger than in any of the three females I examined (range 39.5–44.0 mm). Thus, the scanty evidence does seem to support the contention that the New Zealand bird is larger. Furthermore, I noted that in the Lake Grassmere specimens the intercotyler knob was smaller and more pointed and the shapes of the cotylae and the conformation of the hypotarsal canals were different from those of *B. lobata*. Therefore, it seems premature to regard the New Zealand *Biziura* as inseparable from the Australian species, because it may be at least subspecifically, if not specifically, distinct. The name *Biziura delautouri* or *B. lobata delautouri* should be retained until this matter can be more effectively resolved.

MERGUS

The now-extinct Auckland Islands Merganser *Mergus australis* was thought to have been endemic to the Auckland Islands until Kear and Scarlett (1970) reported on subfossil remains from three localities on South Island, NZ, and one on Stewart Island. The bill and cranial material from Wairau Bar, Marlborough, and Lake Grassmere, which I have examined at the Canterbury Museum, is unquestionably referable to the genus *Mergus*, as are two additional tarsometatarsi I identified among the above-mentioned material from Lake Grassmere in the NMNZ.

The purpose of this note is to correct an erroneous record of a right humerus from a Maori settlement site, Te Hiku o te Waeroa, South Bay, Kaikoura, Marlborough. Concerning this, Kear and Scarlett (1970: 78-79) wrote that 'measurements of two *M. australis* skeletons in the British Museum . . . also compare well with those of the mainland limb bones, except for the humerus ([Canterbury] Museum number AV 19563). This has a length of 82 mm compared with 70.9 mm for the male and 67 mm for the female of *M. australis*. The greater length suggests that the New Zealand form may have been a larger bird, possibly ancestral to the Auckland Islands species.'

Though the possibility that the New Zealand population of *Mergus* may have differed from that of the

Auckland Islands should be explored, the specimen from South Bay does not offer evidence for this, because it is actually from a coot (*Fulica*) and not from a duck at all. It is easily distinguishable from *Mergus* in lacking the large pneumatic foramen characteristic of that genus. The specimen is about five millimetres shorter than the smallest (87.1 mm) of seven humeri in the type series of *Fulica chathamensis prisca* from Castle Rocks, South Island, (see Olson 1975: table 4) but, because this is a small sample, the South Bay specimen may fall within the normal range of *F. c. prisca*. In any case, it has no bearing on the status of the New Zealand population of *Mergus*.

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DR STORRS L. OLSON, *National Museum of Natural History, Smithsonian Institution, Washington, DC 20560 USA.*

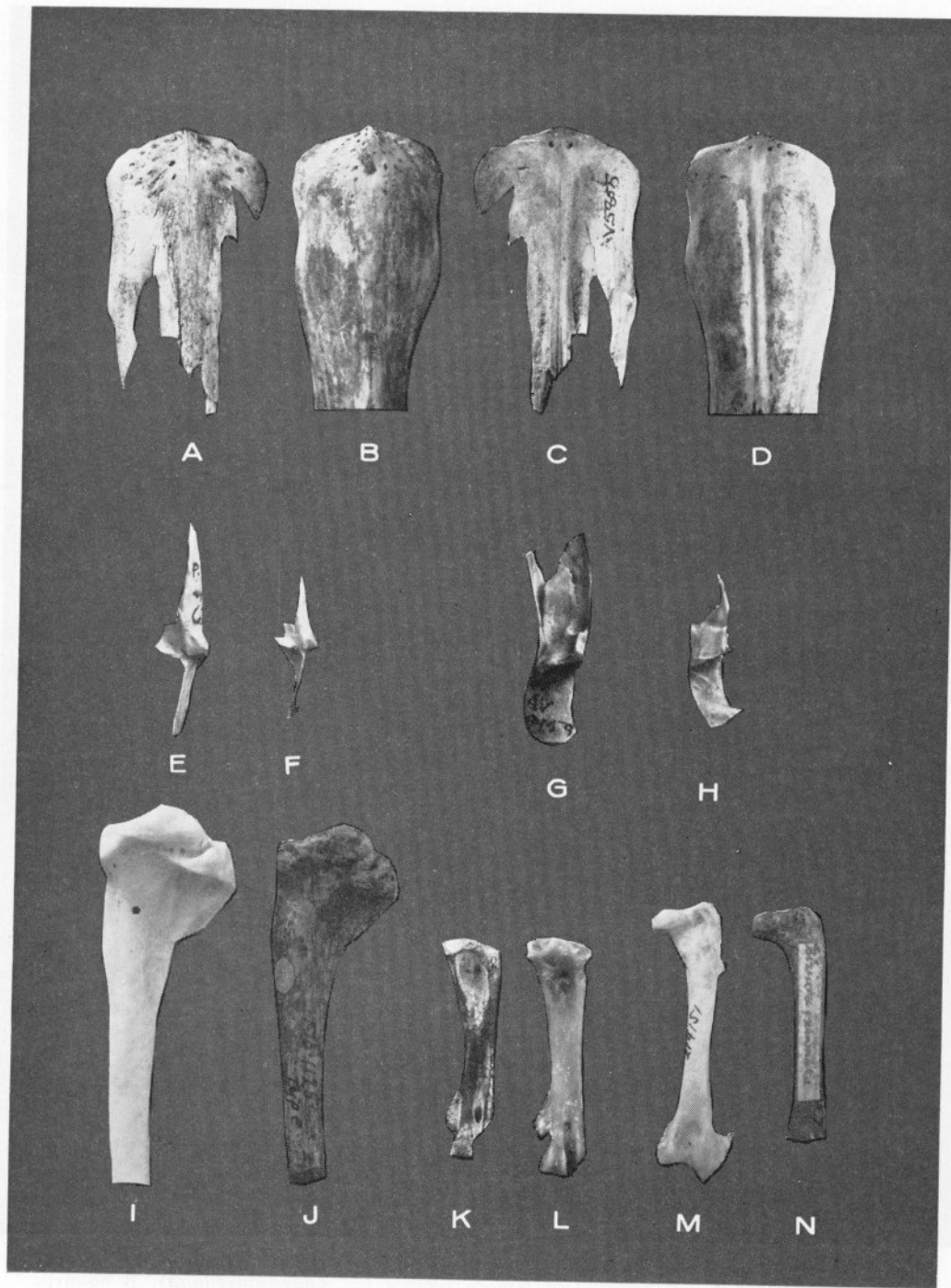


Plate 6. **A** and **C** dorsal and ventral views of holotype premaxilla of *Malacorhynchus scarletti*, new species (CM Av 5855); **B** and **D** dorsal and ventral views of premaxilla of *M. membranaceus*; **E** and **G** dorsal and left lateral views of paratype right mandibular ramus of *M. scarletti*, new species (CM Av 9959); **F** and **H** dorsal and left lateral views of right mandibular ramus of modern *M. membranaceus*; **I** proximal end of left humerus of modern *Biziura lobata*, small male; **J** lectotype proximal end of left humerus of *Dendrocygna validipennis* (= *Biziura lobata*); **K** holotype left tarsometatarsus of *Biziura exhumata* (= *B. lobata*); **L** left tarsometatarsus of modern *B. lobata*, small female; **M** left femur of modern *B. lobata*, small female; **N** referred specimen of left femur of *B. exhumata*. All figures natural size.