Anas creccoides was based on the figures of several elements, without any diagnosis. The type series consists of a left humerus lacking the proximal end (Figure 3), the shaft of a right humerus (Figure 4), the proximal portion of a right ulna and the distal portion of a left ulna, said to represent the same bone but obviously from opposite sides of the body (Figure 5), and the proximal portion of a tibiotarsus (Figure 6). As lectotype I designate the humerus illustrated in Van Beneden's Figure 3. The locality is not precisely stated, but Rupelmonde in East Flanders is inferred, and this is accepted by Dollo (1909: 113).

Van Beneden implied relationship to the living teals, but Lambrecht (1933: 361) remarked that the reference of this species to the Anatidae was not convincing, and study of Van Beneden's figures makes it clear that it must be removed from that family. In the figure of the lectotype the entepicondyle is very long and wide and extends far distad from the internal condyle (the entepicondyle is shorter than the internal condyle in the Anatidae). The external condyle is bent in the middle and lies at an angle of 60° to the shaft (in the Anatidae it is straight and lies at about 20°). The ectepicondylar process is prominent and strongly curved (obsolete and nearly straight in the Anatidae). The shaft is sigmoid (nearly straight in Anatidae). The deltoid crest is very long and curved (straight and extending little beyond the level of the bicipital crest in the Anatidae). The other elements, although less diagnostic, also differ from those of the Anatidae, but they do not necessarily belong in the same taxon with the lectotype. Removal of *Anas benedeni* from the Anatidae, and from the order Anseriformes, is thus necessary, but since its correct position is not readily apparent from the illustrations, it must be relegated to the category of Incertae Sedis.

The other incorrectly assigned species is *Larus raemdonckii* Van Beneden (1871: 258, Figure 1). This was based on the figured and poorly described distal portion of a left humerus from Rupelmonde (now designated as lectotype), and on a second specimen from Édeghem, the latter undescribed and unfigured. The shape of the ectepicondylar process, the straight shaft, and the strongly rotated distal end agree with the condition in the shearwaters of the genus *Puffinus* and are quite different from the conformation in the Laridae. The species is therefore transferred to the Procellariidae as *Puffinus raemdonckii* (Van Beneden).

This study was aided by the National Science Foundation through grant number G19595.

LITERATURE CITED

DOLLO, L. 1909. The fossil vertebrates of Belgium. Ann. N.Y. Acad. Sci., **19** (4, pt. 1): 99–119, pl. 4–10.

LAMBRECHT, K. 1933. Handbuch der Palaeornithologie. Gebrüder Borntraeger, Berlin. xx + 1,024 pp., 209 figs.

SHARPE, R. B. 1899. A hand-list of the genera and species of birds. British Museum (Natural History), London. Vol. 1, xxi + 303 pp.

VAN BENEDEN, P. J. 1871. Les oiseaux de l'argile rupélienne. Bull. Acad. Roy. Belg., ser. 2, **32**(11): 256–261, plate.

—PIERCE BRODKORB, *Department of Biology, University of Florida, Gainesville, Florida.*

Recent Census and Observations of the Giant Pied-billed Grebe of Guatemala.—The Giant Pied-billed Grebe, *Podilymbus gigas,* occurs only on volcano-rimmed Lake Atitlán, 1,750 meters in the Guatemalan highlands. This species is nearly twice as large as the North American Pied-billed Grebe, *Podilymbus podiceps,* and ap-

pears to be completely flightless. Consequently, the species is quite vulnerable to hunting and predation. It may well be considered one of the rarest of Central American birds.

Although the species was collected by Salvin and Godman in 1862, it was not until 1929, during the visit of Griscom and Crosby to Lake Atitlán, that this grebe was recognized as a distinct species and the first population estimate of 100 pairs was made (*Amer. Mus. Nov.* No. 379, 1929). Wetmore (1941) corroborated these findings in 1936. Since then, no word has appeared in the literature regarding the status of the species. For this reason, plus the fact that no known photographs existed, the authors and Jorge Ibarra, Director of Guatemala's Museum of Natural History, spent four days in March 1960 censusing, photographing, and observing the Atitlán grebes.

Using an outboard motorboat, a thorough search was made along the rocky shores and reed-lined coves of Lake Atitlán, and careful counts were made of all waterfowl. It took three mornings to cover the 250-km shoreline.

A total of 99 Giant Pied-billed Grebes was seen. In addition, we saw the following species: 230 Least Grebes (*Colymbus dominicus*), 52 Eared Grebes (*C. nigricollis*), 1 Great Blue Heron (*Ardea herodias*), 4 Green Herons (*Butorides virescens*), 2 Common Egrets (*Casmerodius albus*), 181 Baldpates (*Mareca americana*), 28 Lesser Scaups (*Aythya affinis*), 1,040 American Coots (*Fulica americana*), 5 Spotted Sandpipers (*Actitus macularia*), 6 Laughing Gulls (*Larus atricilla*), 3 Belted Kingfishers (*Megaceryle alcyon*), and 2 Green Kingfishers (*Chloroceryle americana*).

Realizing the shortcomings of sight census, we believe that twice the observed number of giant grebes may be present on Lake Atitlán. This would indicate that the population has remained fairly stable since Griscom's count of 100 pairs in 1930 and Wetmore's of 1936.

Giant grebes were invariably seen near dense clumps of bulrushes (*Scirpus* sp.) and cattails (*Typha* sp.), which irregularly edge the shoreline. Here, they feed, nest, and hide. Only two birds were observed far out from shore. No attempt was made to distinguish sex or age groups. Breeding behavior and downy young appeared to be absent. Nesting is thought to occur in November, but definite information is lacking.

Early each morning the majority of grebes were busy diving, presumably for food. Some stayed submerged up to three minutes and covered 100 meters underwater. In this manner, they secured small fish and possibly some aquatic vegetation from the masses of pondweeds (*Potamogeton* sp.) and muskgrasses (*Chara* sp.), which grow in the limited littoral areas, one to seven meters deep.

Four species of mojarras (*Cichlasoma* sp.), a killifish (*Poecilistes* sp.), the "pescadito" (*Millienisia* sp.), "gulmina" (*Profundulus* sp.), "pepesca" (*Astyanax* sp.), and the recently introduced fry of bass and crappies (*Micropterus dolomieu* and *Pomoxis nigromaculatus*) occur in Lake Atitlán; also, the crab (*Potamocarcinus guatemalensis*). One species of mojarra, *Cichlasoma nigrofasciatum*, has been recorded from a Giant Pied-billed Grebe's stomach (Ibarra, letter, 1960).

The reed beds also provide shelter and a wave break for villages of local Maya Indians. They cut the three-meter stalks for roof thatch and floor matting, and hunt the reed beds for grebes and other waterfowl. Both practices have caused concern among conservationists, since a lack of nesting material and sheltering area, plus the direct loss through hunting, could seriously curtail Atitlán grebe productivity and survival. Fortunately, reed cutting appears to be controlled by the Indians themselves, who, of necessity, must maintain a continuous supply. A legal end to hunting has been afforded by the Guatemalan Government through legislation protecting all

aquatic bird life on Lake Atitlán (*Auk,* 1960). It is hoped that poaching, which is still popular, will diminish under these conditions. There is every possibility that these remarkable birds will continue to hold their own and even increase in numbers.

LITERATURE CITED

AMERICAN ORNITHOLOGISTS' UNION. 1960. Report of Committee on Bird Protection. Auk, **79:** 74.

GRISCOM, L. 1929. Studies from the Dwight collection of Guatemala birds. Amer. Mus. Nov., No. 379, pp. 1–13.

GRISCOM, L. 1932. The distribution of bird life in Guatemala. Bull. Amer. Mus. Nat. Hist., **64:** 1–431.

WETMORE, A. 1941. Notes on birds of Guatemalan highlands. Proc. U.S. Natl. Mus., **89:** 523–581.

—ANNE LABASTILLE BOWES AND C. V. BOWES, JR., *Box 534, Ft. Lauderdale, Florida.*

Additional Cases of Bilobated Kidneys in the Hornbills.—A few authors have noted the fact that the hornbills (Bucerotidae) have a two-lobed instead of the normal three-lobed kidney. Van Tyne and Berger (1959: 38) mention that some hornbills, unlike other birds, possess a bilobed kidney. Das (1924: 767) reported that the Grey Hornbill (*Ocyceros [Tockus] griseus*) consists of "two lobes only, the anterior and posterior, the middle lobe being absent."

Three additional species, *Buceros hydrocorax*, *Ceratogymna atrata*, and *Anthracoceros malabaricus*, can be added. The first two are based on specimens from National Zoological Park fatalities, which although eviscerated still contained the renal masses. The last is based on a wild bird examined by me. My interest at the time lay in the circulatory system, and, although the visceral circulation was absent, along with some of the systemic arch, enough remained to be of use. In this respect two of the forms examined had a different arrangement of the ischiadic artery.

In mammals the development of the pyramidal lobe structure is related to the size of the kidney, and this in turn to the size of the animal. As Smith (1951: 6) stated: "The limitations set by the maximal length of tubule leads to the replacement of one solitary big kidney by a multilobular organ composed in effect of smaller ones. . . . This lobulation . . . results in the formation of a variable number of *pyramids,* each pyramid generally draining into the renal pelvis by an independent papilla. In many mammals, however, the kidney is divided into a number of lobes so nearly independent that they are virtually separate kidneys."

The two widely separated lobes of the kidney in hornbills produce the condition described by Smith as "virtually separate kidneys." This condition is more marked than in mammals, because the avian kidney, unlike that in mammals, does not possess a hilum. There is no renal pelvis present to serve as a focal point from which vascular radiation may occur. Such an arrangement would favor the appearance of independent renal lobes. This is apparently the case in all birds and some reptiles, where the kidneys are lobulated but not because of the limitations placed upon the nephronic tubules as in mammals.

Figures 1 and 2 show the ventral synsacral region in *Buceros* and *Ceratogymna.* An interesting condition of the arterial supply occurs in the distribution of the ischiadic artery. In *Ceratogymna* as well as *Anthracoceros* the normal pattern prevails; that is, the renal arteries arise from the ischiadic before it passes to the leg. *Buceros,* however, has the ischiadic artery entering the posterior lobe and ramifying there, but not entering the leg. The areas normally supplied by this vessel are taken