NOTES ON THE PLUMAGES AND GENERIC STATUS OF THE LITTLE BLUE HERON

ROBERT W. DICKERMAN AND KENNETH C. PARKES

THE juvenal plumage of the Little Blue Heron (*Florida caerulea*) has always been described as white with dull brownish gray tips to the primaries (Palmer, 1962: 428, and earlier authors). In September 1962, when Dickerman was collecting blood specimens from nestling herons in a large mixed colony at San Blas, Nayarit, Mexico, an assistant brought to the boat for bleeding a large ambulatory nestling, 20–25 days of age, which because of the chestnut suffusion on the crown and back was considered at the time a hybrid between the Little Blue Heron and Louisiana Heron (*Hydranassa tricolor*). In October 1963 both authors visited the same heronry and found several juveniles showing a gradient of characters approaching the earlier specimen. Additional collecting at San Blas in 1964 and 1965 showed that this type of variation was relatively common and regular in occurrence. A total of 13 juveniles was collected.

The San Blas specimens vary from those fitting the classical description of the juvenile Little Blue Heron to individuals with the top of the head predominantly chestnut mixed with gray, and with a dingy chestnut cast to the interscapular area and lesser wing coverts. The primaries in such individuals are more extensively tipped with dusky than those of "typical" juveniles, the alula is marked with black, and the inner secondaries and scapulars are flecked with gray. Intermediate individuals have lesser amounts of chestnut or gray in these areas. The hybrid theory was initially suggested by the prominence of chestnut in the extreme individuals, as juvenile Louisiana Herons are extensively chestnut (see the excellent colored illustration by Eckelberry (in Pough, 1951: pl. 15). A total of 15 adult Little Blue and 14 adult and juvenile Louisiana herons collected in the San Blas colony shows no sign of "hybrid" or intermediate characters.

The plumage variation shown by the San Blas nestlings stimulated us to examine all Little Blue Heron specimens in a number of major museums (see Acknowledgments). We found a few juveniles with grayish crowns and interscapulars that approached some of the San Blas birds, and occasionally a specimen with black markings on the alula (characters not mentioned in literature descriptions of the juvenal plumage), but no juveniles with the chestnut coloration of the extremes among the San Blas population. As our sample of adult and juvenile Louisiana Herons showed no evidence of introgression, we can only conclude that the chestnut-crowned juvenal plumage represents a localized color phase, thus far known only from San Blas.

During our search of museum specimens we encountered several Little Blue Herons in postjuvenal plumages that initially impressed us as being probable hybrids between that species and the Louisiana Heron. These young birds had one or more chestnut feathers in areas where chestnut would not be found in normal Little Blue Herons, usually along the midventral line of the neck, but also on the crown and face. Two birds in a late predefinitive plumage had considerable white on the abdomen (*not* retained from a previous white plumage) as in the Louisiana Heron, while most Little Blue Herons at this stage are uniformly slaty blue on the underparts.

All specimens considered to have hybrid-like characters were assembled at the America Museum of Natural History, where they were compared with a large series of Little Blue Herons in an attempt to determine whether they were in fact hybrids, and to work out the sequence of plumages between the juvenal and the definitive. After compiling pages of notes, the only conclusion we were able to reach was that we had no *certain* hybrids among the specimens. None showed intermediacy in the structural characters differentiating the Little Blue and Louisiana herons. The series of Little Blue Herons showed great individual variation, including the presence of "nuptial" plumes in birds of all postjuvenal color types. Because of this individual variation and the huge geographic area represented by specimens examined (plus the added complication of migration which mixes in one area birds of different annual cycles), we found it impossible to determine plumage sequences. We were unable to determine either the number or the characteristics of the predefinitive plumages, and we suspect that these may vary with latitude and with early or late hatching as well as individually. The problems of plumage sequence in the Little Blue Heron can probably best be solved through the study of healthy captive birds of known age and origin. In this way details could be obtained of the exact extent of feather replacement at each molt period.

Another result of our study has been the reinforcement of our firm conviction of the futility of maintaining each of the medium-sized North American colonial-nesting herons in a separate genus, as in the 1957 A.O.U. Check-list. Bock (1956) suggested the generic merging of the Little Blue Heron (*Florida caerulea*), the Reddish Egret (*Dichromanassa rufescens*), and the Louisiana Heron (*Hydranassa tricolor*) under the name *Hydranassa*. He found it difficult to separate his genus *Hydranassa* from an expanded genus *Egretta* (including the Snowy Egret, *Leucophoyx thula*, and the Common Egret, *Casmerodius albus*), and had to base his separation on the highly adaptive signal character of breeding plumes. Such plastic characters are significant at the species level (as in the duck genus *Anas*) but not usually as generic characters (the current generic

classification of hummingbirds and birds of paradise not withstanding). Parkes (1955) had earlier called attention to the similarity between the Little Blue Heron and the egrets, and had suggested merging *Florida* and *Egretta*, although at that time he favored maintaining *Casmerodius*. Meyerriecks (1960: 106) wrote: "My observations of the behavior of *rufescens* and *thula* indicate that they are congeneric." More recently de Schauensee (1966: 28–29) suggested that *Casmerodius, Florida, Dichromanassa*, and *Hydranassa* were "possibly best included in *Egretta*," but the only one of the monotypic genera that he actually suppressed in favor of *Egretta* was *Leucophoyx*.

Sprunt (1954) reported a hybrid (which we have examined) between the Little Blue Heron and the Snowy Egret. In addition we have examined, through the courtesy of Alexander Sprunt IV, excellent color slides of a heron photographed at Big Pine Key, Florida, 25 June 1960, that appears to have been a hybrid. One parent, as indicated by soft part colors, must have been a Snowy Egret, the other, as suggested by proportions (especially the very long, slender neck), was probably a Louisiana Heron.

Variation in the texture of plumes, with intergradation between the lanceolate and filamentous types even on single specimens of *Florida*, together with the probable rapid evolution of this type of character, indicate the inadequacy of structure of breeding plumes for generic separation. Bock (1956) used the condition of the crest plumes to distinguish three groups of species of his genus *Egretta*. Although he stated that *E. thula* and the Old World *E. garzetta* "have quite different plumes and appear not to be closely related," immature specimens lacking plumes and of intermediate measurements may be almost impossible to identify to species—in spite of the striking structural difference between crown plumes of adults.

We believe that Bock's genera *Hydranassa* and *Egretta* should be combined under the latter name, as tentatively suggested by de Shauensee. The five New World species resemble one another more closely in morphology, habitat, and behavior than any of them resembles any other American heron, although *Egretta alba* appears to form a link with the genus *Ardea* (Parkes, 1955; however, see discussion by Bock, 1956: 40). The expanded genus *Egretta* would therefore include the following genera recognized by the A.O.U. Check-list: *Florida, Dichromanassa, Casmerodius, Leucophoyx*, and *Hydranassa*. The genus *Egretta* should stand adjacent to *Ardea* rather than separated from it (as in the 1957 A.O.U. Check-list) by *Butorides*; contrary to Phillips *et al.* (1964: 5–6), we believe the Green Heron to be out of place in the *Ardea-Egretta* assemblage. Within *Egretta* we also include the Old World genera *Demigretta* and *Mesophyx*

recognized by Peters (1931); we have not studied "*Melanophoyx*" and "*Tonophyx*," which Bock included in his expanded genus *Hydranassa*.

ACKNOWLEDGMENTS

The authors express their gratitude to the curators of the following museums who permitted us access to collections in their care: American Museum of Natural History, Peabody Museum of Natural History at Yale University, Museum of Zoology of the University of Michigan, and United States National Museum. Additional specimens were examined at Carnegie Museum by the junior author. Alexander Sprunt IV kindly gave us permission to report on his photographs of an apparent hybrid heron. Dickerman was supported in part during 1961–1963 by United States Public Health Service Training Grant No. 5 T1 AI 231 02 from the National Institute of Allergy and Infectious Disease, and during 1964–1966 by Public Health Service Research Grant AI 06248. Permission to collect birds in México was granted by the Departamento de Conservación de la Fauna Silvestre, Secretaria de Agricultura y Ganaderia. Specimens collected by Dickerman have been deposited at the University of Minnesota Museum of Natural History, Minneapolis, and at Cornell University, Ithaca, New York.

LITERATURE CITED

AMERICAN ORNITHOLOGISTS' UNION. 1957. Check-list of North American birds. Fifth edit. Baltmore, Amer. Orn. Union.

BOCK, W. J. 1956. A generic review of the family Ardeidae (Aves). Amer. Mus. Novit., no. 1779: 1–49.

DE SCHAUENSEE, R. M. 1966. The species of birds of South America and their distribution. Narberth, Pennsylvania, Livingston Publ. Co.

MEYERRIECKS, A. J. 1960. Comparative breeding behavior of four species of North American herons. Publ. Nuttall Orn. Club, **2.**

PALMER, R. S. 1962. Handbook of North American birds, vol. 1. New Haven, Connecticut, Yale Univ. Press.

PARKES, K. C. 1955. Systematic notes on North American birds. 1. The herons and ibises (Ciconiiformes). Ann. Carnegie Mus., **33:** 287–293.

PETERS, J. L. 1931. Check-list of birds of the world, vol. 1. Cambridge, Massachusetts, Harvard Univ. Press.

PHILLIPS, A., J. MARSHALL, AND G. MONSON. 1964. The birds of Arizona. Tucson, Univ. Arizona Press.

POUGH, R. H. 1951. Audubon water bird guide. Garden City, New York, Doubleday & Co.

SPRUNT, A., JR. 1954. A hybrid between the Little Blue Heron and the Snowy Egret. Auk, **71:** 314.

Department of Microbiology, Cornell University Medical College, New York, New York 10021, and Carnegie Museum, Pittsburgh, Pennsylvania 15213.