

by those of *hyperboreus*. However, it seems reasonable to suggest *argentatus* as the dark-winged parent. The colors of the orbital rings in *hyperboreus* and *argentatus* are similar, and much different from that of *thayeri*; Smith (*op. cit.*) has shown that the color of the orbital ring may act as an isolating mechanism in these gulls. Moreover, the Herring Gull appears to be extending its range northward. Those individuals on the edge of the range might mate more readily with a different species than those well within the range. Well developed isolating mechanisms may not evolve until after the establishment of sympatry.

The only previous report of a *hyperboreus* × *argentatus* cross known to us is from Bear Island (74°N lat., 19°E long.), where Bertram and Lack (*Ibis*, ser. 13, 3: 297, 1933) saw a bird thought to be a hybrid and found a mixed Glaucous-Herring Gull pair defending a nest and chick. Dwight (*Bull. Amer. Mus. Nat. Hist.*, 50: 249–250, 1925) considered "Nelson's Gull" a hybrid of *hyperboreus* and *L. argentatus vegae*. The few known specimens are all adult birds.

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Natal plumage characters in rails.—The downy young of the Clapper Rail (*Rallus longirostris*), King Rail (*Rallus elegans*), and Virginia Rail (*Rallus limicola*) are described as totally black in all literature examined by us. Wetherbee (*Bird-Banding*, 32: 141–159, 1961) noted that some neonates of Virginia Rail from Storrs, Connecticut, had patches of white down below the wings. "Neonatal" pertains to the developmental condition or characters at hatching distinct from the much abused term "natal" which in ornithology pertains to the condition or characters from hatching to acquisition of teleoptile plumage. The presence of similar patches of white down was observed by us in the Clapper Rails at Chincoteague, Virginia (Figure 1). An examination of many hundreds of specimens from the ranges of most of the subspecies of Clapper Rails, including the strongly contrasting *R. longirostris saturatus* from Louisiana, revealed the almost invariable presence of at least 1 and sometimes as many as 30 white neossoptiles in the anterior abdominal regions of the ventral pterygiae. Conversely, no King Rail neonate examined by us has shown a white neossoptile.

Beyond the diagnostic significance of this observation, certain parallels in the genetics of black color of neonatal down in breeds of domestic chickens (*Gallus domesticus*) suggest the possibility of approaching the systematics of rails at a fundamental gene level. R. C. Punnett (*Heredity in poultry*, London, Macmillan and Co., 1923; see p. 136) and E. Kimball (*Poultry Science*, 33: 472–481, 1954) describe this inheritance in chickens. In homozygous blackish varieties of chickens, chicks with some white in the neonatal down become all black at maturity and chicks with no white in the neonatal down become "broken" in color of plumage at maturity. Phaeomelanin (red brown) genes can be expressed in the later ontogeny of solid black chicks, but phaeomelanin genes are cryptomeric in the later ontogeny of white-spotted black chicks: i.e., the extension factor (*E*) in chickens is epistatic to most other plumage color genes.

Should a similarity in the gene for extended black pigment (*E*) exist between *Rallus* and *Gallus* the taxonomy of the Clapper Rail–King Rail complex might ultimately be reduced to genetics. The bitypic King Rail, the larger, freshwater marsh,



Figure 1. Downy young Clapper Rail showing patches of white neossopites in the anterior abdominal regions of the ventral pterygae.

rufous form with the all-black chicks, and the polytypic Clapper Rail, the smaller, salt marsh, blackish form with the white-spotted chicks, are probably incompletely reproductively isolated (Meanley and Wetherbee, *Auk*, 79: 453-457, 1962). The various subspecies of Clapper Rail (H. C. Oberholser, *Proc. U. S. Natl. Mus.*, 84: 313-354, 1937) show plumage characters that range from the gray color of the nominate form almost to the rufous color of the King Rail. The extension factor (E) and its alleles may run through the King Rail-Clapper Rail complex and be partly responsible for the subspecific characters. Multiple alleles have been demonstrated at the (E) locus in the fowl (G. V. Morejohn, *Genetics*, 40: 519-530, 1955) and in domestic Turkeys (V. S. Admundson, *Genetics*, 30: 305-322, 1945); however, an alternate hypothesis is that segregating genes at different loci may be affecting the expression of (E) or (E)-like genes (J. R. Smyth, Jr., pers. comm.).

Two hybrid embryos, 17 and 19 days incubated, from a nest of a female King Rail mated to a male Clapper Rail (Meanley and Wetherbee, *loc. cit.*) showed the patches of white ventral neossopites. This inheritance is not contrary to the genetic dominance of (E) in the domestic fowl.

The peculiarly modified neossopites found in several rallids, especially the American Coot (*Fulica americana*), suggest another neonatal character paralleling a defective down condition known in poultry as "clubbing." F. B. Hutt (*Genetics of the fowl*, New York, McGraw-Hill, 1949) showed that in poultry "clubbing" is caused by the same gene mentioned above for extended black (E). R. O. Hawes and T. W. Fox (*Poultry Science*, 41: 1504-1588, 1962) showed that the pleiotropic effect of that gene may be modified in its expression by the residual genotype of the individual bird. The dark, unbroken pigmentation (probably eumelanin) of the adult coot associated with the clubbed down of its neonate provides further grounds for speculation on the presence of genetic factor (E) in rails.

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