even in dry locations where migrants comprise a sizeable percentage of the total number of bird species.

Although the available data indicate that lowland rain forests contain few migrants, it is clear that in Yucatan undisturbed forest habitats of lower vegetation profile (CI, II and III) are not necessarily avoided by migrants.

These results reinforce the impressions of other investigators (e.g., Orians 1969; Karr, pers. comm.) that the Neotropics contain two rather distinct avifaunas: (1) that of wet lowland forests, containing a high proportion of families and genera endemic to the tropics and few wintering temperate-zone birds; and (2) the avifaunas of montane forests, disturbed areas, and dry forests of relatively low structural complexity, which contain a high proportion of temperate-zone families in the resident avifauna and moderate to high densities of migrants. Willis (1966), Brosset (1968), and Leck (1972b) have suggested some reasons for this pattern, but our information on the interactions between tropical forest residents and migrants remains too scanty to permit a definitive explanation.

SUMMARY

Bird populations were censused at nine Neotropical sites to investigate the importance of wintering North American migrants in the avifaunas of dry tropical localities. Census localities were designated as either highly disturbed, moderately disturbed, or undisturbed by man. The importance of North American migrants was highly variable within census groups. Importance calculated as percent of total species ranged as high as 41%, and always exceeded the percent of total individuals. The percent of total individuals in turn exceeded the measures of functional importance (percent of total biomass and percent of consuming biomass in calories). Thus migrant species are, on the average, smaller and scarcer than native species, and have a relatively small ecological impact. Migrants appeared to have similar importance values in all habitats, regardless of degree of disturbance; thus, migrants are relatively more abundant in dry tropical woodlands than in lowland rain forests.

LITERATURE CITED

Brosset, A. 1968. Localisation ecologique des Oiseaux migrateurs dans la foret equatoriale du Gabon. Biol. Gabonica 4:211–216.

Buechner, H. K., and J. H. Buechner [eds.]. 1970. The avifauna of northern Latin America. Smithsonian Contrib. Zool. no. 26. Washington, D.C. 119 p.

Karr, J. R. 1971. Structure of avian communities in selected Panama and Illinois habitats. Ecol. Monogr. 41:207–233.

Leck, C. F. 1972a. The impact of some North American migrants at fruiting trees in Panama. Auk 89:842–850.

Leck, C. F. 1972b. Seasonal changes in feeding pressures of fruit and nectar-eating birds in the Neotropics. Condor 74:54–60.

Orians, G. H. 1969. The number of bird species in some tropical forests. Ecology 50:783–796.

Schoener, T. W. 1968. Sizes of feeding territories among birds. Ecology 49:123–141.

Willis, E. 1966. The role of migrant birds at swarms of army ants. Living Bird 5:187–231.

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ALBINISM IN THE BLACK NODDY (*ANOUS TENUIROSTRIS*)

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Albinism apparently has not been recorded in the Black Noddy (*Anous tenuirostris*, here including *Anous minutus*). On 17 March 1968, while on Laysan Island, Northwestern Hawaiian Islands, I observed a strikingly marked albinistic Black Noddy (fig. 1) flying around the largest nesting colony on the island (see Berger 1973:68 for an illustration of this colony). Unlike other recently fledged noddies present, this bird flew weakly and was captured with a hand-net the following day. The specimen (USNM 543336), an immature female, weighed 69 g as compared with a mean of 100 g (range: 92–114 g) for three other immature females collected on Laysan and nearby Lisianski Island.

Albinism in which pigment is reduced or diluted in the plumage, eyes, or soft parts has been termed imperfect albinism (Gross 1965) or leucism (Harrison 1964) and has been shown experimentally to be related to diet in *Turdus merula* (Rollin 1959). Short and Laybourne (1967) cited instances in which white wing bars resulted from inadequate diet in corvids and in turkey (*Meleagris gallopavo*) poults. The marked symmetry in the leucism and the emaciated condition, of the aberrant noddy, suggest that in this instance, too, albinism may have arisen from dietary deficiencies.

Tens of thousands of adult and immature Black Noddies were observed during the course of the Pacific Ocean Biological Survey Program but only this individual showed such marked albinism. Instances of a lesser degree of albinism may well have been overlooked. During banding activities in August and September 1967 and in March 1968, C. A. Ely and I examined 232 Black Noddies for plumage aberrations on Laysan (180) and Lisianski (52) islands. In addition to the bird noted above, two adults on Laysan and one on Lisianski lacked pigment in one or more of the remiges. In one of the Laysan birds, both the web and vane of the outermost left secondary were white. In the other Laysan bird, the outer three primaries on each wing were mainly white with some pigmentation along the shaft. In the Lisianski albino, the innermost tertial of the right wing was white with a white vane, and the tertial next to it was mostly white with an elliptical dull grayish-brown center.

I examined 367 immature and adult Black Noddies (12 Atlantic, 24 Indian Ocean, 331 Pacific) in the collection of the U.S. National Museum of Natural History to determine how frequently such minor albinism may occur. Seven immatures showed faint to marked white edges on the tips of the rectrices. Of these, three also had faint white tips on some of the upper and lower tail coverts. Another bird, an adult female, is a partial albino. Numerous small feathers in the loral and malar areas, two of the greater secondary coverts on the right wing, one small covert on the left wing, and numerous small feathers on the carpal joint and on the leading edge of the wing are white.

In these samples, the incidence of albinism is 1.7%

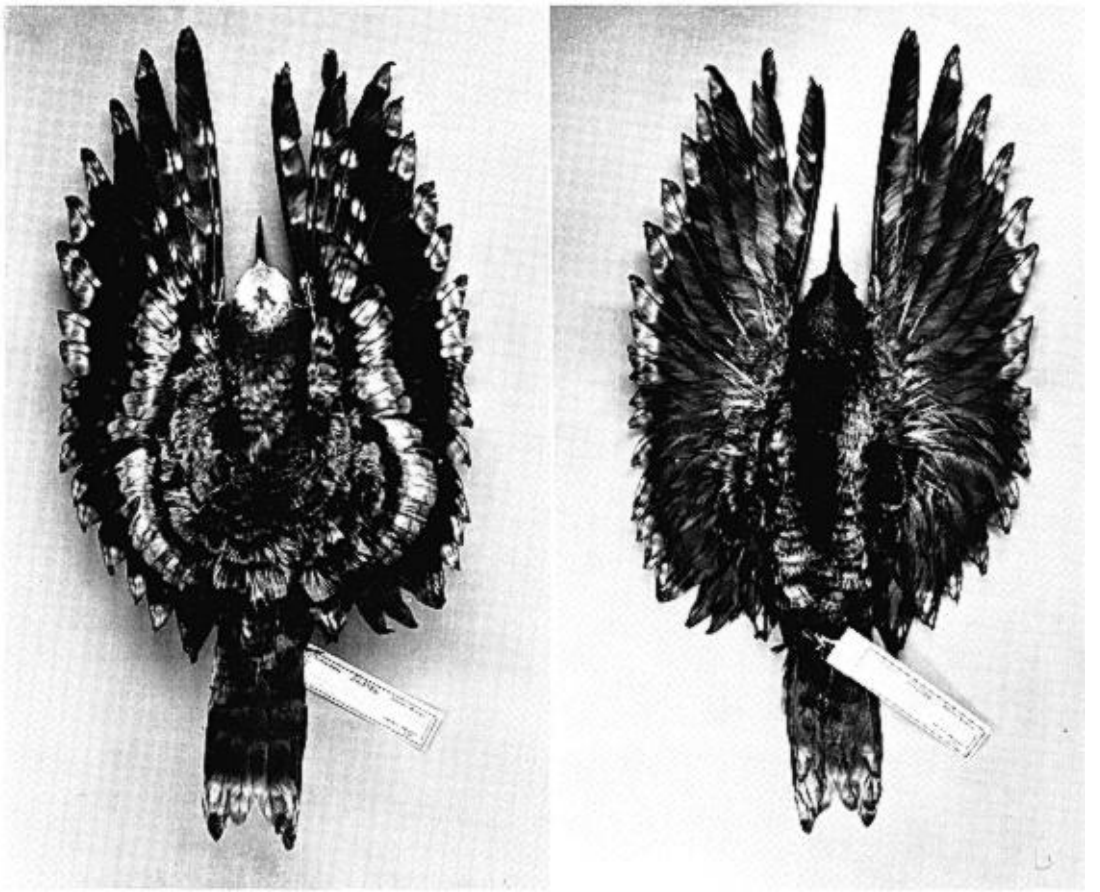

FIGURE 1. Symmetrical, imperfect albinism in a Black Noddy, dorsal and ventral views. Except for the white cap, the normal plumage of the young is a uniform dark brown.

in two populations of noddies examined in the field and 2.2% in specimens examined in the National Museum. This incidence is apparently greater than in most passerines (Sage 1963) and less than recorded for most storm-petrels by Baptista (1966), who reported on overall incidence of 8.6% (n: 852) partial albinism in eight species. It thus appears that imperfect albinism or leucism is not particularly uncommon in immature Black Noddies nor is partial albinism uncommon in adult Black Noddies.

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LITERATURE CITED

BAPTISTA, L. F. 1966. Albinistic feathers in storm petrels (Hydrobatidae). Condor 68:512–514.

BERGER, A. J. 1973. Hawaiian bird life. Hawaii Univ. Press, Honolulu.

GROSS, A. O. 1965. The incidence of albinism in North American birds. Bird-Banding 36:67–71.

HARRISON, J. M. 1964. Plumage, abnormal and aberrant, p. 643–646. *In* A. L. Thomson [ed.] A new dictionary of birds. McGraw-Hill, New York.

ROLLIN, N. 1959. White plumage in Blackbirds. Bull. Brit. Ornithol. Club 79:92–96.

SAGE, B. L. 1963. The incidence of albinism and melanism in British birds. Brit. Birds 56:409–416.

SHORT, L. L., JR., AND R. C. LAYBOURNE. 1967. An instance of "white wing-barring" in the Common Crow. Wilson Bull. 79:113–114.

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