

MELANISM IN NORTH AMERICAN BIRDS

By ALFRED O. GROSS

Melanism is due to the excessive deposition of melanin pigments and in this respect is opposite albinism in which there is a lack of pigment in the plumage.

Melanism is generally considered as a Mendelian dominant and if melanism is hereditary, it should appear in the heterozygous phase of the F 1 generation. There is not sufficient evidence to prove melanism is hereditary. Stiles, B. F. 1937, *Wilson Bull.* 49 (4) 297-298 observed a number of melanistic Rough-legged Hawks (*Buteo lagopus*) that were in different degrees of light and dark coloring. Two of the hawks seen on January 29, 1937 were identical; both birds were black except for the under surface of the distal third

CASES OF MELANISM IN NORTH AMERICAN BIRDS LISTED IN THE A. O. U. CHECK-LIST

- Black-crowned Night Heron (*Nycticorax nycticorax*) Pitelka (1938).
Least Bittern (*Ixobrychus exilis*) Bailey (1930), Flagg (1930), Carpenter (1948).
Canada Goose (*Branta canadensis*) Kennard (1912), Hanson (1949).
Mallard (*Anas platyrhynchos*) Deane (1880), McIlhenny (1941).
Ruddy Duck (*Oxyura jamaicensis*) Glann & van den Akker (1948).
Red-tailed Hawk (*Buteo jamaicensis*) Worthen (1896).
Harlan's Hawk (*Buteo harlani*) Worthen (1896).
Broad-winged Hawk (*Buteo platypterus*) Preston (1883), Ridgway (1886), Worthen (1896 & 1908), Atkinson (1900), Riley (1908), Calder (1907), Burns (1911), Bailey (1912).
Rough-legged Hawk (*Buteo lagopus*) Worthen (1896), Stiles (1937).
Bobwhite (*Colinus virginianus*) Deane (1876).
Herring Gull (*Larus argentatus*) Stokoe (1954).
Ring-necked Pheasant (*Phasianus colchicus*) Bruckner (1938).
Sora (*Porzana carolina*) Deane (1879).
Common Snipe (*Capella gallinago*) Van Tyne (1945).
Laughing Gull (*Larus atricilla*) Weston (1934).
Razorbill (*Alca torda*) Schaanning (1932).
Common Murre (*Uria aalge*) Schaanning (1932).
Black Guillemot (*Cephus grylle*) Coues (1868, Deane (1876).
Great Horned Owl (*Bubo virginianus*) Worthen (1896).
Yellow-shafted Flicker (*Colaptes auratus*) Deane (1876), Burns (1900).
Red-headed Woodpecker (*Melanerpes erythrocephalus*) Deane (1876), Coues (1878).
Violet-green Swallow (*Tachycineta thalassina*) Sutton (1943).
Black-capped Chickadee (*Parus atricapillus*) Tanner (1934).
Robin (*Turdus migratorius*) Davis (1868), Boardman (1875), Deane (1876), Coues (1878), Lockwood (1880), Emerson (1888).
American Redstart (*Setophaga ruticilla*) Gross (1953).
House Sparrow (*Passer domesticus*) Deane (1880), Barnes (1931).
Eastern Meadowlark (*Sturnella magna*) Townsend (1883).
Cardinal (*Richmondena cardinalis*) Brooks (1934 & 1946), Musselman (1950).
Harris' Sparrow (*Zonotrichia querula*) Nauman (1931).

of each wing. Stiles suggested that this might indicate that melanism is inherited.

There are cases in which a melanistic condition becomes well established in a species and replaces the entire normal coloration of the plumage. A striking example is the Bananaquit (*Coereba flaveola luteola*) on the islands of Grenada and St. Vincent in the East Indies; Gross, A. O. 1958, *Wilson Bull.* **70** (3): 257-279.

There are two types of melanism, which have been designated as normal and abnormal. In the normal, the melanistic plumage is of regular occurrence there being two phases of plumage known as dichromatism. In the abnormal the species does not normally produce a melanistic phase.

There are much fewer cases of melanism than albinism. I have noted only 29 species of birds in which melanism occurred whereas in a similar compilation, from the same sources of information, I found 304 albinistic species represented by 1847 individuals; Gross, A. O. 1965 *Bird-Banding* **36** (2): 67-71.

ERYTHRISM

Erythrism which is the intensification of red pigment does not occur often among North American birds. Like melanism there are two types of erythrism; the normal and abnormal. An example of normal erythrism is the well known case of the dichromatic Screech Owl (*Otus asio*) which has a red and gray phase of plumage. The abnormal types are those which do not normally produce an erythristic phase.

Erythrism occurs most frequently in the Galliformes. There were 10 cases of erythrism among 2,000 Ruffed Grouse (*Bonasa umbellus*) which I examined during the New England Ruffed Grouse Investigation. Brewster (1895) and Lawrence (1889) reported cases of erythrism in the Greater Prairie Chicken (*Tympanuchus cupido*) and Stoddard (1931) found numerous cases of partial erythrism in the Bobwhite (*Colinus virginianus*) at Thomasville, Georgia. Over a period of twenty years, according to Stoddard, erythristic quail increased and extended their range. Whittle (1928) reported several cases of erythrism among 2,300 Purple Finches (*Carpodacus purpureus*) which he banded.

XANTHOCHROISM

Xanthochroism is an abnormal coloring of the plumage in which yellow replaces the normal coloring. Tufts (1961) collected an Evening Grosbeak (*Hesperiphona vespertina*) in which the normal dusky olive parts of the head, neck and underparts and the normally black crown were of a bright yellow. Saunders (1958) also observed a yellow mutant of the Evening Grosbeak. Whittle (1928) trapped a single but a clear case of Xanthochroism in the Purple Finch (*Carpodacus purpureus*). Brooks (1946) has called attention to the Ruby-crowned Kinglet (*Regulus calendula*) in North Carolina and West Virginia where the red crown spot is replaced by yellow or orange. Brooks also mentions a female Cardinal (*Richmondena cardinalis*)

with an abnormal yellow plumage. Deane (1876) lists a xanthochoid specimen of the Bluebird (*Sialia sialis*).

Xanthochroism is of more frequent occurrence in parrots, a group in which it supplants albinism, Lawrence (1889). Caged birds of various species often acquire a yellow coloring which has been correlated with certain kinds of food eaten or to some pathological condition.

11 Boody St., Brunswick, Maine

Received July, 1965

AVIAN BIONOMICS OF MALAYA 2. THE EFFECT OF FOREST DESTRUCTION UPON A LOCAL POPULATION

By H. ELLIOTT McCLURE* and HUSSEIN BIN OTHMAN

INTRODUCTION

As in many parts of the world where expanding populations and economics demand more land and resources, much of the tropical rain forest of Malaya is rapidly being reduced to ashes or parkland.

This is an attempt to evaluate the effect of forest removal upon existing and adjacent bird populations. The biologist is rarely informed before a habitat is to be destroyed. Usually he can make studies only following the destruction and draw conclusions as to its effect from reference to and study of adjacent areas. Brandenburg and Campbell (1935) report that cleanup work in a secondary forest in Swan Creek Valley, Ohio, reduced the bird nesting by 87% in three years. Warbach (1958) noted that farm improvement involving the removal of brush from old fields during a five-year period brought a reduction of 40% in nesting pairs. The effect of tree removal in tropical rain forest does not appear to have been reported.

SUBANG STUDY AREA

The Subang Forest Reserve lies west of and adjacent to the village of Subang and the International Airport about 10 miles northwest of Kuala Lumpur in the State of Selangor. It is a secondary lowland forest of *Shorea*, *Dyera*, *Palaquium*, and *Endospermum* species from 25 to 30 years old with a closed canopy 50 to 80 feet high. Original felling occurred from 1937 to 1941 and natural regeneration has returned the forest to its present state (Fig. 1). The primary forest was *Shorea*, *Canarium*, *Palaquium*, and *Dyera* with a 150 to 200 foot canopy.

Avifaunal studies began in January 1962 and netting areas were set up as shown in Fig 2. Selective cutting in Areas B, C and D began in April and by July these three areas had been felled, burned,

*Work was accomplished while the authors were with the U. S. Army Medical Research Unit, Kuala Lumpur, Malaysia.