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ALBINISTIC EGGS (WHITE EGGS) OF SOME NORTH AMERICAN BIRDS

BY ALFRED O. GROSS

Albinistic eggs are erratic and unpredictable in their occurrence. Furthermore the records have given rise to interesting and often conflicting theories and postulations. Therefore it seems desirable to present occurrences of albinistic eggs I have observed and to assemble records that have appeared in the literature and museum collections and others obtained in correspondence.

On June 3, 1945 I found a nest of the Osprey (*Pandion haliaetus*) located on the rocky shore of Sloop Island, Penobscot Bay, Maine. The nest contained 3 eggs, 2 of which were normal in coloration and 1 pure white albino egg. The albino egg was of similar dimensions and weight to those of the normal deeply colored eggs. The plumage of the adult birds was normal. During a subsequent visit to the nest there were 3 young all of normal coloration. The case of the Osprey is not an isolated condition as evidenced by similar instances of various species presented in Table I. In each case of these mixed clutches there is only a single albino egg with one or more of the normal eggs. There is no way to determine which type of egg is laid first nor the relation of the eggs to production of pigment. There is no lack of pigment since the normal eggs of each clutch are highly colored. It has been suggested that the albino egg is due to a temporary physiological disturbance or malfunction of the oviduct. It would be of interest to know the fate of the normal and albino eggs in the next generation.

In the same category is the production of soft-shelled eggs where there is a failure of the uterus to deposit a calcareous shell as well as a pigment. This might be due to a violent peristalsis which prematurely speeds the egg through the oviduct before the shell and pigment can be deposited.

In contrast to the conditions present in the mixed sets in Table I there are cases of successive sets of albino without normal eggs laid in one or more seasons. In a nest of the Herring Gull located on Heron Island, Casco Bay, Maine, which I first observed on May 28, 1942 there were 2 albino eggs. There were 2 albino eggs the following year and again on June 3, 1945 there was a third set of 3 pure albino eggs. The nest each year was in the same isolated location and the identity of the gulls as determined by characteristic behavior and traits indicates that all of the eggs were laid by the same female and sired by the same male. Both parents were of

TABLE 1

Species of North American birds which laid mixed sets of eggs in which there was one lone albino egg with one or more normal eggs of normal coloration. No mixed sets were found in which more than one albino was present.

Red-tailed Hawk <i>Buteo jamaicensis</i>	One albino egg and one heavily spotted egg. Preston, E. W. (1888) Baxter, Iowa.
Red-tailed Hawk <i>Buteo jamaicensis calurus</i>	One albino egg and one normal coloration. Bent, A. C. (1922) Cochise, Arizona.
Red-tailed Hawk <i>Buteo jamaicensis borealis</i>	One albino egg and one of normal coloration. McGregor, R. C. (1895)
Swainson's Hawk <i>Buteo swainsoni</i>	One albino egg and one normal coloration. McGregor, R. C. (1895).
Red-shouldered Hawk <i>Buteo lineatus</i>	Clutch of 3 eggs, one albino and 2 eggs of normal coloration. Merceau, L. E. (1891) Dubuque, Iowa.
Red-shouldered Hawk <i>Buteo lineatus</i>	Clutch of 3 eggs, one albino and other two heavily marked normal eggs. Morrell, C. H. (1891) Palmyra, Maine.
Sparrow Hawk <i>Falco sparverius</i>	Clutch of 5 eggs, one albino, four normally colored. Bendire, Capt. C. (1875) Cape Harney, Oregon.
Osprey <i>Pandion haliaetus</i>	Clutch of three eggs, one albino two normally colored. Gross, A. O. (1943) Penobscot Bay, Maine.
Common Murre <i>Uria aalge, californica</i>	Clutch of 6 eggs, one albino 5 normally colored. eggs. California Natural History Farallon Islands.
Long-billed Marsh Wren <i>Telmatodytes palustris</i>	Clutch of six eggs, one albino, five normal coloration. Swales, B. A. (1892).
House Sparrow <i>Passer domesticus</i>	Clutch of 6 eggs, one albino, five normal coloration. C. B. C. (1888)
Savannah Sparrow <i>Passerculus sandwichensis</i>	Clutch of four eggs, one albino, three normally colored. Sharpless Collection (1875).
Grasshopper Sparrow <i>Ammodramus savannarum</i>	Clutch of 5 eggs, one albino and 4 normally colored. Witherspoon T. D. (1894).
Chipping Sparrow <i>Spizella passerina</i>	Clutch of ? One albino <i>Cowbirds'</i> egg with eggs of the Chipping Sparrow. Miller, H. (1891).
Fox Sparrow <i>Passerella iliaca</i>	Clutch of five eggs, one albino and four normally colored eggs. Sharpless Collection, Philadelphia Academy of Sciences (113) Newfoundland.

normal coloration and evidently both possessed the genes responsible for the albinistic eggs. There are also other cases in which there have been successive sets of albino eggs produced by the same pair of birds. For example, Briggs (1902) collected 5 sets of pure albino eggs from the same pair of Bluebirds (*Sialia sialis*), and Wayne (1910) also reported 3 sets of white eggs from a single pair of Bluebirds. The above and similar cases suggest a tendency to a reversion to primitive conditions of uncolored eggs which exist in reptiles and certain birds such as the Woodpeckers, Kingfisher and Leach's Petrel where the normal color is white. These birds nest in places well hidden from view where there is no need of acquiring color and markings to serve the function as a protective coloration.

NUMBERS OF BLUEBIRDS LAYING ALBINO EGGS

According to my tabulation of available records there are more cases of albinistic eggs laid by Bluebirds than other species of North American birds. A great many albino eggs were reported by Oologists and amateur collectors, when egg collecting was in greater vogue than it is today. Reports of albino Bluebird eggs have been greatly augmented in recent years by bird-banders, especially by those who maintain long lines of Bluebird boxes. Mr. T. E. Musselman of Quincy, Illinois, has employed this method of study and has contributed much information concerning the life

TABLE II.

The species of birds listed in Table II are known to have laid albino eggs but none of the sets were mixed with normally colored eggs such as listed in Table I.

Turkey Vulture	Eastern Bluebird
Golden Eagle	Mountain Bluebird
Glaucous Gull	Loggerhead Shrike
Herring Gull	Prothonotary Warbler
Common Tern	Pine Warbler
Black Skimmer	Red-eyed Vireo
Kingbird	Red-winged Blackbird
Traill's Flycatcher	Brown-headed Cowbird
Cliff Swallow	Song Sparrow
Catbird	

history of Bluebirds, including albino eggs. In three years of banding he reported out of 730 Bluebird eggs 40 or 5.48 per cent were albino. This percentage has been maintained in recent years to a large extent. One item of special interest was a normal-plumaged young hatched from an albino egg, returned the following year and laid an albino set of eggs. The significance of this case is open for speculation and further study.

I am indebted to Mr. Musselman for replies to his questionnaire sent to various operators of Bluebird box routes. The following

sample of the Bluebirds laying albino eggs extends over a wide range from New Jersey and as far west as Iowa and Arkansas. Mrs. E. C. Laskey, Nashville, Tenn., reported 70 albino sets of eggs from 1938-1965. She also stated that according to her records, albinism was not inherited by the female; Mrs. W. P. Glass, Arkansas, out of 2,216 Bluebird eggs laid in 5 years, 74 or 3 per cent were albino; Mr. Stiles Thomas, Allendale, New Jersey, of 1,015 Bluebird eggs, 20 or 2.49 per cent were albino; Mr. and Mrs. Duncan, Louisville, Kentucky, one out of ten eggs were albino; Mr. Raleigh Stotz, Grand Rapids, Michigan, out of 52 sets, 1 set was albino; Dr. M. Bell, Toledo, Ohio, 1 3/4 per cent of eggs were albino; I. R. Clark, South Bend, Indiana, the eggs of 1 nest out of 200 were albino; Mr. H. F. Moore, Mt. Pleasant, Iowa, two pairs of Bluebirds out of 200 laid albino eggs; and Wm. Hightower, Warren, Penn., about 1 per cent of the eggs were albinistic.

Some of the unsolved problems concerning the eggs of the Bluebird and other wild birds may receive some light from the extensive work that has been done on the domestic fowl. The majority of the hen's eggs are either white or brown but varying in intensity. According to Romanoff & Romanoff, 1949 "Whenever brown-shelled eggs and white-shelled eggs of the domestic chicken are crossed . . . the first generation produces eggs of tints intermediate between the tints of the parent's eggs. In the second generation the original colors again become segregated . . . Major and minor genes for brown shell color have been postulated. In addition it is suspected there may be multiple determinants of shell color. There is also evidence that color inheritance is sex linked to the *sire*."

In the case of the Herring Gull, the coloration of the eggs is extremely variable. There are many of the eggs which are intermediate in color between those deeply colored and heavily marked and those that are pure albino. A large percentage of the thousands of eggs examined were nearly white or blueish in ground color with only faint markings (see Plate I). This condition cannot be explained by a malfunction of the color-producing cells of the uterus but is comparable with the variation of the eggs of the domestic fowl mentioned above.

In 1935 and 1936 Aldrich (1946) reported finding a large number of sets of white (albino) eggs of the Long-billed Marsh Wren (*Telmatodytes palustris*) in a marsh at Bay Point in northern Iowa. Aldrich states: "This apparent segregation of a latent hereditary character in a small newly formed colony is suggestive of the relationship of this species to the North American race of the Short-billed Marsh Wren (*Cistothorus platensis*), which habitually lays white eggs."

"The white eggs of *Cistothorus palustris* taken in connection with the normally white eggs of its near ally *Cistothorus stellaris* and the frequently white eggs of the Bluebird is an additional argument for the truth of the theory of protective coloration." (Bishop, 1894)

It is of interest to note that among 35 species of North American birds that I have known to lay albinistic eggs 18 different families

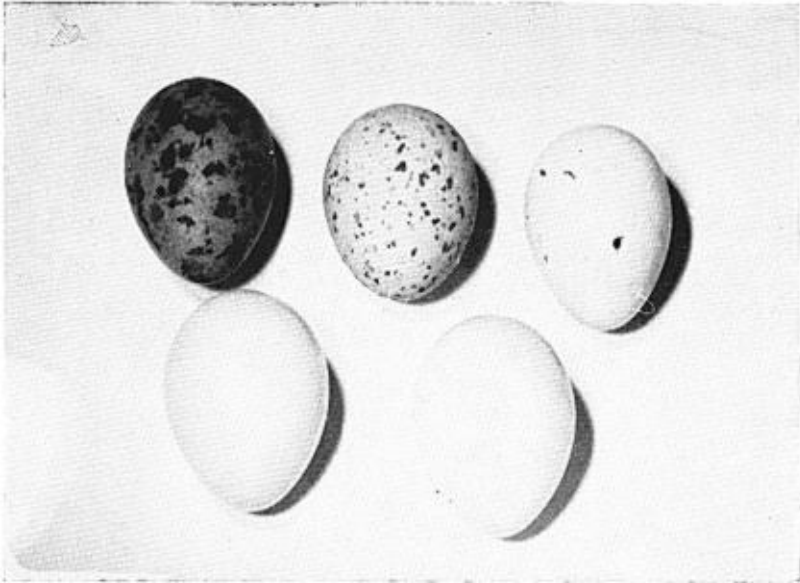


PLATE I
Herring Gull Eggs

1. Upper left deeply colored and heavily marked.
2. Upper center intermediate coloring and marks.
3. Upper right ground color white (some eggs bluish) with very few dark markings.
4. Lower two a set of albinistic eggs pure white.

are represented. Out of 20 orders only 3, the Falconiformes, Charadriiformes and Passeriformes, have species in my list known to lay albinistic eggs. There are a surprising number of species of the family Accipiter which I cannot explain unless it is the large number of collectors who prize these eggs in their collections and report them.

The albinism of the plumage is independent of albinism of the eggs. The albinism of the plumage is hereditary but as yet there is not sufficient evidence to indicate that the trait of laying albino eggs has a genetic basis (Gross, 1964, 1965).

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11 Boody St., Brunswick, Maine 04011

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EVALUATION OF A COLORED LEG TAG FOR STARLINGS AND BLACKBIRDS

BY JOSEPH L. GUARINO

Bird damage control studies conducted since 1960 at Sand Lake National Wildlife Refuge, South Dakota, and in a sector of the South Platte River Valley north of Denver, Colorado, require basic movement data for starlings (*Sturnus vulgaris*), red-winged blackbirds (*Agelaius phoeniceus*), and yellow-headed blackbirds (*Xanthocephalus xanthocephalus*). Consequently, a method of marking thousands of birds was needed to increase the recovery rates of banded birds and to facilitate field identification of specific depre-dating populations. Recovery rates of banded blackbirds and starlings have customarily been very low. For example, Neff and Meanley (1957:23) reported only 137 recoveries from 22,241 red-wings banded during an 11-year period in eastern Arkansas, and Mitchell (1963:7) reported only 9 recoveries from 6,512 redwings and 407 recoveries from 23,365 starlings banded during a 6-year period in seven eastern and midwestern states.

Numerous marking techniques have been successful in field identification of individual birds. The advent of brightly colored, durable plastic material provided a suitable marker for many