

FIGURE 1. Melanistic *Phaethon lepturus*, YPM 44055, Fernando de Noronha (below) compared with normally plumaged bird USNM 434284, Ascension (above). Inset: ventral view of rectrices with melanistic bird below, normal bird above.

Museum of Natural History (USNM) shows any real approach to the condition of the melanistic bird. In the latter, some of the normally unpigmented greater and lesser secondary coverts are black and some of the scapulars are tipped with black, both combining to make the black wing bar wider. The primary coverts and the outer webs of the alular feathers are mostly black rather than white as in normal birds. The tip of each rectrix, except for the elongate middle pair, bears a conspicuous black spot (fig. 1, inset) and the shaft of each is also pigmented.

The melanistic specimen belongs to the subspecies *ascensionis* which includes the populations of Fernando de Noronha, Ascension Island, and the Gulf of Guinea. This race, as Murphy (Oceanic birds of South America, Am. Mus. Nat. Hist., N.Y., p. 802, 1936) states, has "never been satisfactorily distinguished from the typical or Indian Ocean race." However, he goes on to say (p. 803), "birds of the Bermuda-West Indies subspecies, *Phaethon lepturus catesbyi*, differ from the equatorial and South Atlantic representatives in that the black area on the outermost primary extends close to the tip; on the second and fourth from the outermost it practically reaches the tip; while the third from the outermost quill is entirely black or no more than very narrowly tipped with white. There

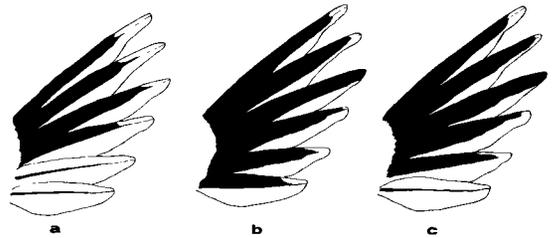


FIGURE 2. Outer primaries of *Phaethon lepturus*. a. normal *ascensionis* YPM 44061, Fernando de Noronha. b. melanistic *ascensionis* YPM 44055, Fernando de Noronha. c. normal *catesbyi* USNM 316316, Haiti.

is also much more black in the fifth from the outermost quill. All of these black marking of the remiges are remarkably conspicuous when the birds are in flight." With respect to the five outermost primaries, the melanistic specimen of *ascensionis* is identical to *catesbyi* (fig. 2). The sixth from the outermost primary has the outer web almost entirely black. The base of this web may be black in some individuals of *catesbyi* and to a lesser extent in *ascensionis* as well. The seventh from the outermost primary of the melanistic bird has a broad (4 mm), black median streak extending to within 18 mm of the tip. This primary was unpigmented, except for the shaft itself, in other specimens of the species examined.

The precise duplication of the *catesbyi* pattern in the melanistic individual of *ascensionis* suggests that this racial character of *Phaethon lepturus* may be the result of a simple melanic allele that is expressed in one population and not in the others. The presence of melanin in primaries appears to reduce wear (Averill, Condor 25:57, 1923), but it is difficult to believe that the primaries of *catesbyi* are subject to greater wear than those of all other populations of the species. Therefore the selective advantage, if any, of the allelic shift in *catesbyi* is not apparent.

I am particularly indebted to Eleanor H. Stickney and Fred C. Sibley for the loan of specimens from the Yale Peabody Museum and also to the curators of the American Museum of Natural History and the National Museum of Natural History for the use of specimens and facilities. Victor E. Krantz took the photographs. John Farrand made comments on the manuscript.

Accepted for publication 16 February 1973.

## THE USE OF WESTERN HARVESTER ANT MOUNDS AS STRUTTING LOCATIONS BY SAGE GROUSE

KEITH I. GIEZENTANNER

Department of Game and Fish  
Santa Fe, New Mexico 87501

AND

WILLIAM H. CLARK

Department of Biology  
705 Smith St.  
Vale, Oregon 97918

On 7 April 1972 between 05:30 and 07:00, 12 male Sage Grouse (*Centrocercus urophasianus* Bonaparte) were observed strutting on mounds of the western

harvester ant (*Pogonomyrmex occidentalis* Cresson) in a grassy area of Bedell Flats, Washoe County, Nevada, at 1370 m elevation.

The 1-ha strutting ground was located in a 16-ha burned area on a flat, alluvial fan located in a basin sagebrush (*Artemisia tridentata*) dominated plant community. The burned area was dominated by cheat grass (*Bromus tectorum*) and tumble mustard (*Sisymbrium altissimum*), with small patches of invading *A. tridentata*. The grouse were often partially obscured from view by the dense tumble mustard, which averaged 0.5 m in height. A windmill at the western edge of the burned area, which is the major water source for the locality, was not functional for the first time in many years. The strutting area contained 30 *P. occidentalis* mounds per hectare with an average

height per mound of 17.9 cm ( $n = 20$ ). The average area around the mound cleared of vegetation by the ants was about 7 m<sup>2</sup> ( $n = 20$ ).

Again, on 9 and 11 April at approximately the same time period as on the 7th, male Sage Grouse were observed strutting on the ant mounds and in the clearings around the mounds. Patterson (1952) found that on two occasions Sage Grouse utilized "abandoned rodent or ant colonies" as strutting grounds. Midday examination of the ant mounds used by the grouse indicated that all were viable colonies (ants observed on and around the nest). Observations made on the ant nests just after the termination of the morning strutting activities revealed that no ants were outside the mounds. Comanor and Clark (unpubl. data) have found that during this time of year in this region *P. occidentalis* begins daily above-ground activity ranging from 08:45 to 09:30, hence the ants were not active during the strutting period. Whitaker (1957) states "it appears that birds use (for anting) only those ants incapable of stinging." *P. occidentalis* is noted for its severe sting (Weber 1959; Wheeler and Wheeler 1963). These above factors exclude the possible use of the mounds by the grouse for any anting behavior.

An examination of the *P. occidentalis* mounds and clearings in the strutting area indicated that they were all used by the grouse during that spring. Sage Grouse tracks, feathers, and droppings were abundant on these areas. Other small, cleared areas were more frequently used for strutting than the ant mounds; however, the visibility of the birds was enhanced by

the height of the mound. Due to the late date, the females were not present and it was not possible to ascertain if the males using the ant mounds were the dominant males of the strutting grounds. Although several aposematic attacks similar to those described by Bent (1932) were noticed on flat areas, none was observed on the ant mounds.

Sand and gravel from the apex and sides of the mounds were removed by the trampling action of the Sage Grouse and occasionally chambers near the mound surface were exposed. These were the only visible adverse effects of the strutting activities on the ant mounds.

#### LITERATURE CITED

- BENT, A. C. 1932. Life histories of North American gallinaceous birds. U.S. Natl. Mus. Bull. 162: 1-490.
- PATTERSON, R. L. 1952. The Sage Grouse in Wyoming. Sage Books, Inc., Denver, Colo.
- WEBER, N. A. 1959. The stings of the harvesting ant, *Pogonomyrmex occidentalis* (Cresson), with a note on populations (Hymenoptera). Entomol. News 70:85-90.
- WHEELER, C. C., AND J. WHEELER. 1963. The ants of North Dakota. Univ. North Dakota Press, Grand Forks.
- WHITAKER, L. M. 1957. A resume of anting, with particular reference to a captive orchard oriole. Wilson Bull. 69:195-262.

Accepted for publication 15 February 1973.

## FUNCTION OF EYE COLORATION IN NORTH AMERICAN ACCIPITERS

NOEL F. R. SNYDER

AND

HELEN A. SNYDER

Box 21  
Palmer, Puerto Rico 00721

Roberts (Ontario Bird Banding 3:95, 1967) presents evidence for a general developmental change in iris coloration of Sharp-shinned Hawks (*Accipiter striatus*). The progression is from gray in nestlings to yellow in young adults, to orange in middle-aged adults, and finally to red in elderly adults. Judging from our observations of Goshawks (*Accipiter gentilis*) and Cooper's Hawks (*Accipiter cooperii*) in Arizona and New Mexico, this progression of iris colors may be characteristic for all North American accipiters. We have observed most of the above progression in one female Cooper's Hawk and have observed the above range of iris colors in different individuals of Goshawks and Cooper's Hawks. Though our data are insufficient to document how many years the full progression takes in these species, we have observed some breeding Cooper's Hawks in adult plumage with yellow irises at a presumed age of 2 years. The eye color of the above female Cooper's Hawk changed from yellow to light orange to orange-red in 3 years. Evidently, in Cooper's Hawks, as in Sharp-shinned Hawks, it takes on the order of 5 years until red iris coloration is achieved. Meng (The Cooper's Hawk. Ph.D. dissertation, Cornell University, Ithaca, 1951) and Grossman and Hamlet (Birds of prey of the world. C. N.

Potter, Inc., New York, 1964) give supporting evidence for the above progression of iris colors in North American accipiters.

Curiously, Roberts' (op. cit.) data strongly suggest that females take about a year longer than males to complete the transition to red eyes, and Meng (op. cit.) mentions a similar sexual difference in rate of darkening of the iris in his study of Cooper's Hawks. This rate difference may lie behind our observation that it is very rare to find a male accipiter with iris color lighter than that of his mate. In many dozens of pairs of accipiters, we have only once found a pair in which the male's iris was lighter than that of the female, and only twice have we found pairs in which iris coloration appeared to be the same in both sexes.

The significance of the above developmental changes in eye coloration forms the subject of this paper. We are particularly concerned with the following questions:

1. Why is there a progressive change from yellow to red in iris color of adult accipiters?
2. Why do males achieve red eyes faster than females?
3. Why do adults ever have red eyes?

The last question arises as a result of observations we made on a particular adult male Cooper's Hawk with dark red eyes in the summer of 1971. This male took over the normally feminine role of ripping apart prey for the chicks when his mate was killed, and his eyes were repeatedly subjected to pecking by the bills of the chicks (fig. 1). It appeared that the red coloration of his eyes might be a powerful releaser of the pecking response.