

- ⁵ (a) Fourteen (14) birds were too indefinite in plumage characteristics to be keyed with the criteria used.
- (b) Twenty (20) birds were not sexed on the museum label.
- (c) Originally 34 mistakes were found when the 350 birds were keyed. Thirteen (13) of the 34 were removed from the sample because the collector and/or identifier were not considered reliable. Collectors and/or identifiers considered reliable by the museum staff were J. Dwight (13 birds), T.P. Carter (1), S.B. Gabaldon (1), Robertson (1), Thurber (1), Brainerd (1), Bandish (1), D.G. Elliot (1), W. Dutcher (1).

REQUEST FOR INFORMATION

I would greatly appreciate other banders publishing or sending me information that supports or refutes my findings as I shall continue to look for better criteria for aging and sexing redstarts. I would particularly appreciate information on the presence or absence of:

- repeat or recovery records of redstarts where plumage was carefully checked each time, indicating either the accuracy or inaccuracy of the age/sex determination methods used.
- July to December birds with black flecks on back, breast, and head. (Please note that if you blow aside the feathers surrounding the ear of most redstarts you will find the mid to basal portions of the feathers black or very dark.)
- July to December birds with orange side of breast and/or underwing and a completely ossified skull.

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A NUMERICAL CRITERION FOR AGING BY IRIS COLOR IN THE GRAY CATBIRD

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The Gray Catbird (*Dumetella carolinensis*) is a common breeder over much of North America and is frequently encountered in banding operations. The aging of these birds relies on the characters of crissum feather type, mouth color and iris color (Wood, 1969). These are qualitative criteria and are at times difficult to implement, but I have found that iris color determination can be quantified using the Munsell color system, and this paper presents some results.

The technique for iris color determination is described in a previous paper (Wood and Wood, 1972) and involves comparing the bird iris directly with an abbreviated set of color standard charts. The charts are prepared specifically by the Munsell Color Company to test soil colors, which contain the red and yellow hues commonly found in birds' eyes. Furthermore the color standards are mounted with a hole in the page next to the color chip so the object to be viewed (in this case a bird's iris) can be placed adjacent to the standard. The numerical index of the standard with the closest match to the bird's iris is recorded as the numerical representation of the iris color. To ensure a correct match the comparison is done in strong daylight. The Munsell system breaks a color down into three characters: hue, the redness, yellowness etc. of the color; value, the lightness or darkness of the color; and chroma, the intensity of the color from very pale to very vivid. Thus each color is numerically stated with three terms each separated by an oblique in the order indicated above. For example, 10/3/8 would read, hue of 10, a reddish color, value of 3, rather dark, and chroma of 8, very intense. This would be a very strong dark red--the color of the eye of an adult Red-eyed Vireo (*Vireo olivaceus*).

In studying the iris color of the Gray Catbird, 93 observations of 75 individuals trapped in south-west Ohio and New Jersey, north of 39° latitude were used. I found no evidence that the iris color of catbirds in Ohio differed from those in New Jersey

so all data are plotted in Figure 1. In the case of the catbird, hue showed wide variation in contrast with value and chroma which varied only moderately.

When the data are examined, it is apparent that the iris hue of the catbirds trapped in spring is relatively constant at 7.5/ or 5/. Since all of these birds satisfied the other adult criteria of crissum plumage and mouth color it can be concluded that this color is typical of the adult iris and that the adult iris color is attained by the age of 7 months. The Fall data present a different picture. These birds separate into two populations, one with hue greater than 10/ and the other with hue less than 10/. When these birds were aged using the other characters of crissum plumage and mouth color the populations of HY birds and AHY birds matched these groups respectively.

Therefore the following numerical criterion is possible: If a catbird has an iris hue of greater than 10/ then from June to December it is HY and after December SY. If the hue is less than 10/ then before November the bird is AHY. The data are too limited to show the rate of change of the iris hue from immature to adult. This final change occurs between October and May but these birds migrate from Ohio and New Jersey by the end of October and no data for these months are as yet available. Consequently this criterion must be used with caution after October until further research is done. Southern banders should also keep in mind the possibility of young hatching earlier in the year than New Jersey or Ohio birds, thus attaining the adult hue sooner.

The clear separation of populations at hue 10/ is ideally suited for a simplified aging procedure. Instead of recording the iris color using color standards of many hues, the iris could be compared to a single standard of hue 10/. The iris could then easily be judged yellower or redder than the standard and the age determined. To do this the other color characters must be considered and for those wishing to try I would recommend a color chip with coordinates 10/3/2, available from the Munsell Color Co., Baltimore, Md.*

*Munsell Color Company, 2441 N-Calvert St.
Baltimore, Maryland 21218
Catalogs and descriptive materials available on request.

In summary, color standards designed by the Munsell Color Co. for soil color determination were used to measure the iris colors of Gray Catbirds in a numerical representation system. From these data a simple and useful quantitative age criterion for Latitude 40° was developed suitable for aging all birds from their arrival in spring until their departure in fall.

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LITERATURE CITED:

- Wood, D.L. and Wood, D.S., 1972, Numerical Color Specification For Bird Identification: Iris Color And Age In Fall Migrants. Bird-Banding, 43:182-190
- Wood, M., 1969, A Bird Bander's Guide To Determination Of Age And Sex Of Selected Species. Pa. State University, University Park, Pa.

FIGURE ONE: Iris color (hue) of Gray Catbirds plotted against date of capture. Each circle represents one observation.

