

QUANTITATIVE IRIS COLOR CHANGE WITH AGE IN DOWNY WOODPECKERS

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The change in iris color from immature to adult in Downy Woodpeckers (*Dendrocopos pubescens*) has been used in recent years as an aging criterion for fall banded birds (M. Wood, 1969. A bird bander's guide to determination of age and sex of selected species. Univ. Park, Pa., Pa. State Univ.). However, the quantitative change in color with age has not been documented, and its use has been questioned by George (*Bird-Banding*, **43**, 133, 1972). We have attempted such a documentation through observations on birds trapped over a period of two years primarily at feeding stations in New Jersey and western Ohio. This enabled us to measure both the iris color of a single bird as it changed through time and the iris color of random individuals at various times of the year. It appears that an aging criterion based on iris color for hand-held birds is valid.

The details of the iris color determination have been previously described (Wood and Wood, *Bird-Banding*, **43**, 182-190, 1972). The method involves a direct comparison in strong daylight between the abridged Munsell Soil Color charts and the iris of the bird. The color character called hue was found to be that with the most significant variation, and this is plotted against the date of observation in Fig. 1. Our data represent 135 observations of 80 birds and successive measurements over a period of months for two individuals are separately noted to show the changes in the same bird with age. These data are marked with filled and unfilled triangles in the figure. The circles represent separate observations on the same or different birds, but only one observation per bird is recorded for a given date.

The measurements taken from January through May reveal the ultimate hue of the iris of older birds. During this time the ages of all the birds are at least 5 months and many are more than 18 months old. It is evident from the figure that the ultimate iris color attained in the progression of hue with age is between 7.5/ and 10/. Referring to the data for the rest of the year, it is clear that many birds have iris colors with hue greater than 10/ (yellowish or brownish), and we associate these with birds-of-the-year (HY) for the following reasons. In all six birds for which we have recorded the presence of a red crown patch, and therefore very young, the iris color had a hue of 20/ or greater. We also observed seven cases for which there was a decrease in hue from brown toward red with time similar to the two cases noted in Figure 1. For both groups, the young and old are clearly distinguished on the basis of iris color, and we feel justified in assuming that the entire population follows the same pattern.

If association of immatures with the higher hue is correct, the data in Figure 1 show that the HY birds start out with a very yellowish iris in June (hue 20/ to 22.5/) and gradually by October to December attain the adult color. As expected there is some

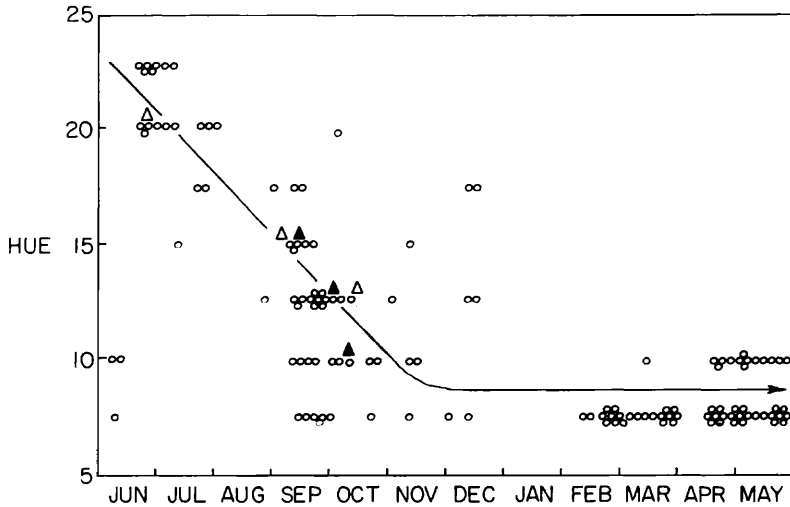


FIGURE 1. Hue character of iris color in Downy Woodpeckers recorded on various dates of the year. Open triangles and filled triangles represent successive observations on two individuals. Each circle represents a single observation, but only one observation for a given individual is shown on a given date.

variation among birds due to different hatching dates, slight differences in the rate of change of iris color and other influences, but the trend is very clear as marked by the arrow. From data of repeating birds we have found that no bird with an iris yellower than hue 10/ when banded had attained the adult (hue 10/) color before mid-October and none attained the 7.5/ hue until December.

We can, therefore, make these conclusions:

1. Through November, any Downy Woodpecker with the hue of the iris color less than 10/ is AHY.
2. Through December, any bird with hue greater than 10/ is HY and after 1 Jan. is SY.
3. Any bird with hue 10/ through September is AHY and during October through December is U.

These conclusions suggest the use of a single color reference criterion in which a judgment is made as to whether the iris color is redder or yellower than the hue standard (10/). This releases the bander from the need for a whole set of color standards, and makes available a single reference tool.

A limited supply of single chip standards for Downy Woodpecker aging is available at cost (50¢) from the authors for those wishing to try out the method.

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