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WHOOO-O-O-O IS FEARLESS?

By Beverly A. Litchfield

Fearless is a red-phased screech owl (Otus asio) who has lived with us in Norwell, Mass., for the past four years. We were told Fearless was a two-year old male, probably. We know better, now. Three months ago, Fearless got very sick, would not eat, developed a brood patch and passed a broken mass resembling a leathery turtle's egg. After a telephone conversation with Dr. Margaret Petrak at the Angell Memorial Hospital, we were told to bring Fearless in for an examination. An X-ray showed she was egg-bound with an egg 1-1/2" to 2" in diameter which she could never pass. An operation was performed and was very successful.

To prevent any further egg-laying, she is now on male hormones. This is in pill form and wrapped inside a piece of beef kidney every other day. After a complete molt, she is now looking beautiful and can fly freely once more in our house.

We have a sub-permittee bander's license from the Manomet Bird Observatory and therefore have a permit to show Fearless for educational purposes to local schools. We should welcome any correspondence pertaining to screech owls in captivity.

--373 Winter Street, Norwell, Mass. 02061

NUMERICAL COLOR SPECIFICATION FOR BIRD BANDERS

by

D.L. Wood and D.S. Wood

Introduction

The colors of soft parts have long been used in aging criteria for bird banding. But only recently has attention been drawn to the means for rendering color criteria quantitative (Wood and Wood, 1972), and only recently have any numerical color criteria been established (Wood and Wood, 1973). We wish to present here a further discussion of the numerical system and its potential for bird banders as well as some tentative results on eye color in several species. It is hoped that other banders might be persuaded that the method is valuable, and expand the results presented here into full-fledged criteria for age, sex, or species.

The method

The method is based on the Munsell Color System, and has been used for many years in other contexts. Its use for bird banding data has been described before in detail (Wood and Wood, 1972), and an example of its application to iris color in Downy Woodpeckers (Dendrocopus pubescens) has been published (Wood and Wood, 1973). Only a brief sketch will be given here. The method depends on a direct comparison in full daylight between the colored surface and a set of carefully prepared numerical color standards (the Color Atlas) manufactured by the Munsell Color Company. We have found that the abridged set of standards designed for soil color determination in agriculture and related disciplines contains a suitable set of reference standards in the reds and yellows for iris color in most species. This is fortunate, as the full set of standards contains over 1500 color "chips", and is rather expensive, while the soil color book can be obtained for about $35.00. Also the soil color charts are normally prepared with holes in the pages on which the reference chips are mounted so that the area to be compared (the bird's eye, for example) appears next to the standard when held behind the page. This greatly facilitates the comparison.

The Munsell color system specifies three attributes of the color. Hue relates to the redness, yellow-ness, green-ness of the color with the whole spectrum divided into 100 equal parts from red (0to 10) through green (40 to 50) to purple (80 to 90). Value relates to the

gray-ness from 0 (white) to 10 (black), while chroma relates to the vividness of the color from weak (1) to intense (8 or more). The notation consists of the numerical values of the three attributes between slash marks in the order of hue/value/chroma. The red iris of an adult Red-eyed Vireo (Vireo olivaceus) is 10/4/8, while the yellow iris of an adult Common Grackle (Quiscalus quiscula) is 25/8/3. The values for the three attributes are written next to the standard color chip in the book of standards, and the values for the best match with the bird part are recorded on the banding record sheet. The only apparatus required is the set of standards.

Iris color criteria

The Munsell system has been used to document quantitatively the iris color age criterion for five species, Red-eyed Vireo, Rufous-sided Towhee (Pipilo erythrophthalmus), and Tennessee Warbler (Vermivora peregrina) in (Wood and Wood, 1972), Downy Woodpecker in (Wood and Wood, 1973), and Gray Catbird in (Wood, 1973). Two others, the Common Flicker (Colaptes auratus) and Brown Thrasher (Toxostoma rufum) are mentioned in the first reference, but no data are given. A study of the iris color age criterion in Lesser Scaup (Nyroca affinis) is to be published soon (D.L. Trauger, to be published). Thus the documentation of iris color criteria is in its infancy, and there is much that banders can contribute to establish the criteria on a quantitative basis. As recently as 1972, the qualitative iris color criterion for Downy Woodpeckers was not securely established, and its use was questioned (by W.G. George, 1972). But the method described here and based on the Munsell Color System produced evidence which showed that the criterion is valid after all (Wood and Wood, 1973). The criteria for the five species for which the documentation exists are listed in Table I, together with the previously used qualitative criteria from the banding literature (M. Wood, 1969). What, then, is the status for other species where no quantitative documentation for iris color versus age exists?

Species in which an age iris color criterion probably exists

The iris color has been used for an age criterion by banders for nine more species listed in Table II (M. Wood, 1969), but nothing quantitative has been published yet. The tentative criteria which we have derived from some rather limited and preliminary data are also given in Table II, but these should not be used for aging until fully confirmed. Note that the attribute called hue is the most useful in every case except that of the Common Grackle. For

this species the value, or grayness, is the attribute which most clearly separates HY from AHY. In White-throated Sparrows (Zonotrichia albicollis) it is possible that chroma may also be useful as an age criterion.

A further perusal of the literature shows that the additional seven species listed in Table III also conform to an iris color age criterion, but no data are available even for a tentative description in terms of the numerical system. These species are obvious candidates for immediate study.

In addition to the fairly obvious cases listed in the three tables, we have the very strong feeling that many other species will show an iris color age dependence. In color pictures of Sandhill Cranes (Grus canadensis) we have seen indications that there is a big change from immature to adult. If the effect is great enough to show in photographs, it will surely yield a numerical color age criterion. In other cases the color variation is more subtle, and the criterion is only possible with the quantitative system. It was somewhat surprising to us that Tennessee Warblers exhibited a measureable iris color change with age, but it appears to be reliably established (Wood and Wood, 1972). Our experience indicates that other warblers may show this effect.

In another avian group, the raptors, it is reported (M. Wood, 1969) that for Sharp-shinned Hawks and Cooper's Hawks the iris is yellow the first year and red during the fourth year. It is reasonable to expect that the quantitative system of color measurement may correctly place the intermediate second and third year birds.

Single chip criteria

It is important that banders recognize the possibility of generating sets of criteria for age, sex, or species based on color in which a single reference color is required. The observer then is required only to decide whether the iris, plumage, or other colored part differs from the standard in one direction or the other (toward the red or toward the yellow, for example), and the age is determined. This has been possible for iris color in Downy Woodpeckers (Wood and Wood, 1973) and it frees the bander from the expense of a complete set of color standards. This may apply to other criteria such as plumage color as well. For example in the separation of Empidonax Flycatchers on the basis of color of the dorsal tract, a single chip reference should suffice to distinguish

the two brown-backed birds (Least (E. flaviventris) and Traill's (E. traillii)) from two green-backed birds (Yellow-bellied (E. flaviventris) and Acadian (E. virescens)). The color reference stock in the form of coated paper is available from the Munsell Co. and a neutral gray card with a suitable piece of the colored paper mounted over a hole for comparison completes the reference standard. The single chip reference standard is therefore exceedingly simple to make.

Summary

The colors of bird soft parts and plumages play an important role in the procedures for aging and sexing birds for banding. Other criteria such as weight, length, skull ossification, or even fat class are easily rendered quantitative, but color has not been made quantitative until recently. This is mostly because the system for doing so has been unfamiliar. The quantification of color certainly is practical using the relatively straight-forward Munsell system, and this opens up new possibilities for color differentiation. We have discussed here iris color and plumage for a few species, but we conclude that a great deal more information lies in wait of discovery through quantitative measurement of color.

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TABLE I

SOME SPECIES WITH DOCUMENTED EYE COLOR AGE CRITERIA

SPECIES	AHY	HY
Red-eyed Vireo	Red	Brown
Vireo olivaceus	Hue < 10	Hue > 10
Downy Woodpecker	Deep Red	Deep olive
Dendrocopus pubescens	Hue < 12	Hue > 12
Rufous-sided Towhee	Deep Red, Orange, White	Brown
Pipilo erythrophthalmus	Hue < 11	Hue > 11
Catbird	Deep Red	Brown to Red-brown
Dumatella carolinensis	Hue < 10	Hue > 10
Tennessee Warbler	Brown	Olive Brown
Vermivora peregrina	Hue < 18	Hue > 18

TABLE II

SOME SPECIES OBSERVED IN THIS STUDY
TENTATIVE RESULTS ONLY

SPECIES	AHY	HY
Common Flicker	Red	Olive brown
Colaptes auratus	Hue < 10	Hue > 10
Red-bellied Woodpecker	Red	Brown
Centurus carolinus	Hue < 12.5	Hue > 12.5
Swainson's Thrush	Brown	Olive Brown
Hylocochla ustulata	Hue < 17.5	Hue > 17.5
Tufted Titmouse	Brown	Olive Brown
Parus bicolor	Hue < 17.5	Hue > 17.5
Myrtle Warbler	Brown	Olive Brown
Dendroica coronata	Hue < 17.5	Hue > 17.5
Magnolia Warbler	Brown	Olive Brown
Dendroica magnolia	Hue < 17.5	Hue > 17.5

SPECIES	AHY	HY
Common Grackle	Yellow	Brown, Gray, Grayish-yellow
Quiscalus quiscula	Value > 7	Value < 7
Brown Thrasher	Yellow	Gray
Toxostoma rufum	Hue < 22.5	Hue > 22.5
White-throated Sparrow	Medium Brown	Olive to Dark Brown
Zonotrichia albicollis	Hue < 17.5 Chroma > 4	Hue > 17.5 Chroma < 4

TABLE III

SOME SPECIES FOR WHICH QUALITATIVE AGE-COLOR CRITERIA HAVE BEEN REPORTED

SPECIES	AHY	HY
Hairy Woodpecker Dryobates villosus	Deep Red	Deep Olive
Mockingbird Mimus polyglottis	Yellow or Orange	Gray
White-eyed Vireo Vireo griseus	White	Gray
Common Crow Coruus brachyrhynchos	Brown	Bluish
Red-shouldered Hawk Buteo lineatus	Brown to Red	Pale Yellow
Cooper's Hawk Accipiter cooperii	Red (4th year)	Lemon Yellow
Sharp-shinned Hawk Accipiter striatus	Red (4th year)	Lemon Yellow

--46 Fox Run, Murray Hill, N.J. 07974

While banding breeding birds and their offspring during the summer of 1973, I realized that the age codes used by the Banding Lab were insufficient to classify fledgings (birds in juvenal plumage but capable of sustained flight). Normally these birds would be called HY's, but this does not distinguish between birds in juvenal plumage (of known general area of hatching) and birds in first winter plumage (of unknown area of hatching). Therefore, I have started using the notation $HY^{Fl.}$ to indicate a fledging as opposed to HY to indicate a bird in first winter plumage, and I would urge other banders to do likewise.

It can be argued that fledgings could be separated from other HY birds by the date of banding, but this method is not always reliable. For example, in the Maryland Piedmont where I work, HY Catbirds may be in either juvenal or first winter plumage through the third week of September. Banders can easily and accurately distinguish between these plumages, thus removing all guesswork.

--Paul W. Woodward, 2433 Southgate Square, Reston, Va. 22091
October 8, 1973

REQUEST FOR INFORMATION

In September, a small number of color-banded Harris Sparrows will be released from Ithaca, New York. These are birds that were captured overwintering in Kansas, and transported to Cornell for use in "Displacement-orientation" experiments in the spring of 1974. They will be released to determine whether they will move south from Ithaca or will travel west toward Kansas on their fall migration. Anyone sighting or collecting such birds please contact Stephen T. Emlen, Section of Neurobiology and Behavior, Division of Biological Sciences, Cornell University, Ithaca, New York 14850.

EDITOR'S NOTE

Due to production difficulties in the preparation of the "American Banding Directory", we found it necessary to postpone that project to 1975. The Directory will be published in place of the Spring 1975 issue. To obtain your copy, please be sure to renew your membership for 1975!