

## COLORED BANDS

### METHODS FOR USING BANDS AND ARRANGING DATA

By FREDERICK P. MANGELS

IN 1933 Rudyerd Boulton (*News from The Bird Banders*, W. B. B. A., 8, April, 1933, p. 20) published a method of identifying individual birds by means of colored bands. There has been an increasing interest in this type of work as applied to the study of life histories, social orders, populations, flock movements and other studies in which it is necessary or advisable to recognize, as *individuals*, a large number of birds.

However, nothing has been published on the order of using combinations or the arrangement of the data. I wish therefore to suggest a somewhat simpler system and, also, a method of utmost simplicity of arranging the combinations, whereby a bird wearing four colored bands and a Biological Survey band may be immediately identified as, for instance, bird 9-8743.

Four colored bands and a Biological Survey band are placed on each bird, two colored bands on each leg. The four positions of the colored bands shall be numbered 1, 2, 3, and 4, respectively, as shown in Figure 1.

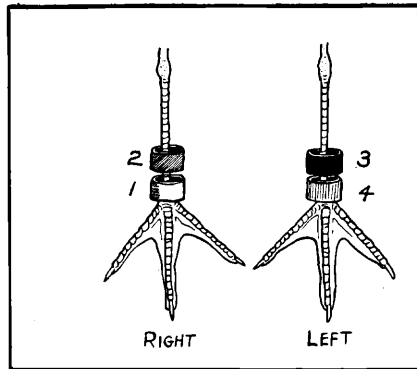


Figure 1

The colors in any band combination on any bird must always be recorded in the order of their position. For example, a bird bearing the colored bands shown in Figure 2 would have its color combinations recorded as YRBG and *not* YGRB, BRYG, or some other order of recording these colors.

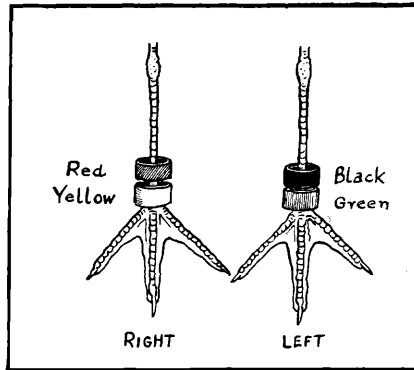


Figure 2

The Biological Survey band may be placed in any of the six positions shown in Figure 3.

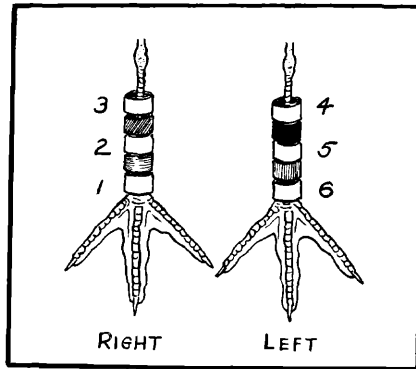


Figure 3

To secure the various combinations for a given number of colors and the proper order of use, a number is assigned to each color, as, for example, is shown in Figure 4.

<i>Yellow</i>	<i>Red</i>	<i>Green</i>	<i>Black</i>
1	2	3	4

Figure 4

A schedule is then made using all four digit numbers containing these, and only these digits. The color combinations are taken from

these numbers by substituting the colors for their respective numbers. A sample schedule is here shown (4 colors). It should be borne in mind that these key numbers are not Biological Survey numbers.

<i>No.</i>	<i>Color Comb.</i>	<i>Data</i>
1111	YYYY	
1112	YYR	
1113	YYG	
1114	YYB	
4443	BBBG	
4444	BBBB	

Figure 5

These combinations are used in the order in which they appear on the schedule. For the first series of colors the Biological Survey band is always placed in position 1 (Figure 3). This is called Series I. When all the combinations have been used the Biological Survey band is shifted to position 2 (Figure 3) and all the colors are used again in the same order as in the previous series. This is Series II. This procedure is repeated until all six positions for the Biological Survey have been used.

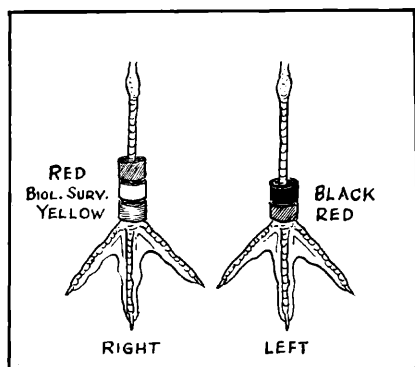


Figure 6

By using the sequence outlined above it is possible to ascertain immediately the number of any banded bird that is seen. If, for instance, we see a bird bearing bands arranged as shown in Figure 6, we write the color combination in correct order: YRBR. Sub-

stituting the respective numbers for the colors (Figure 4), we see that this is bird 1242 and, since the Biological Survey band is in 2d position, the bird is 1242—Series II. A shorter form of writing this is 2-1242. This is recommended as it makes for neatness and simplicity in keeping data. This number can be easily and quickly located in the proper schedule and any necessary data recorded.

The advantages of this system lie in its simplicity and the consequent facility in keeping and looking up data, and the fact that all birds have the same number of bands. No bird can possibly be confused with another due to the loss of one or more bands.

For smaller number of birds or for economic reasons it may be desirable to use a smaller number of bands. A similar system could be evolved using two or three colored bands.

Four digit numbers would be used with a zero denoting the blank space. A table is given below showing the various possibilities as to total number of combinations possible from a given number of bands and colors.

Number of Bands Including Biological Survey Band	Number of Colors						
	1	2	3	4	5	6	7
1.....							
2.....	6	12	18	24	30	36	42
3.....	12	48	108	192	300	432	588
4.....	10	80	270	640	1250	2160	3430
5.....	6	96	486	1536	3750	7776	14406

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## RETURNS AND RECOVERIES OF BIRDS BANDED AT NORRISTOWN, PENNSYLVANIA

By RAYMOND J. MIDDLETON

THE following detailed listing of some returns at my banding station at Norristown, Pennsylvania is given to emphasize particularly the persistency of birds returning year after year to place of birth, summer residence or winter residence. In the case of the Catbirds, the details given supplement the age-records of this species published by May Thacher Cooke appearing in *Bird-Banding* Volume VIII, pages 52-65.

The recoveries in southern states give additional information as to the wintering grounds of summer residents. All of the species listed have been recovered in the same states during previous years and reported in former issues of *Bird-Banding*.