
Determination of Hatch Year and Percent Hatch Year

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ABSTRACT

An argument is presented for the standardization of methods used in determining the Hatch Year statistic required for various reports. A discussion follows on moving from the almost exclusive use of skulling to age a bird in North America towards a combination of skulling and the use of plumage characteristics in European, including British, methods.

INTRODUCTION

Rock Point Bird Banding Station is one of the banding stations under the Haldimand Bird Observatory banner. The station is located in Rock Point Provincial Park on the north shore of Lake Erie in the Canadian province of Ontario. The habitat is mixed dogwood, *Viburnum*, and cranberry, with patches of marsh, spruce and hardwood.

In questioning my own low Hatch Year (HY) percent total for fall 2002 I found that trying to compare the sets of results submitted by stations reporting to *North American Bird Bander* (Brooks 2003) was very difficult because stations had widely varied statistics. This I thought might be because of different methods being used to classify age in the field and to determine the age ratio based on field totals.

METHOD

I compared HY percent results as published in *NABB* (Brooks 2003) with my own results at Rock Point and discussed the two predominant methods used to age birds in the field, skulling and examination of plumage and "soft parts."

One of the statistics wanted by the Atlantic Flyway Report, the Canadian Migration Monitoring Network, and for individual reports is the overall percentage of the birds banded that were determined to be HY birds.

On looking at the HY statistics contained in *NABB* (Brooks 2003), it occurred to me that there may be a difference in how observatories or stations determine this statistic. Initially, I think most places determine the number by the use of Band Manager or some similar computer program. The first method, that I also used, was to load the file for that season which gives the total number of captured birds. Re-trap information has to be filtered out so that the total reflects only newly banded birds. Filter again so that the total shows only HY birds. This total, divided by the total number of newly banded birds, gives the percentage of HY birds.

The second method that is used is to filter out all Unknown birds. This involves getting the original banding total, then filtering for "Unknown," and subtracting this total from the original. The HY birds are then determined by filtering and in order to get a percent, the HY total is divided by the total banded minus the Unknowns.

The third method is for those who have a number of local nestlings banded that would not show up in the initial HY statistic, but should be added to the HY total.

RESULTS

Examples of the three methods of determining the percentage HY illustrate my point of varied results.

(1) If you banded 100 birds you could end up with: 15 Unknown, 60 Hatch Year, 5 Local, 18 After Hatch Year, 2 Second Year. If you use the method in this example, you would have 60 divided by 100 equals 60% HY.

(2) By method two, the Unknowns (15) would be subtracted from 100, equaling 85. Divide 60 by 85 equals 70.6% HY.

(3) Method three would get rid of the Unknowns, giving 85 but would have HY as 60 plus the Locals = 65. Divide 65 by 85 to get a total of 76.5% HY.

Thus, from the same station, depending on the method that is used, the HY percent could be 60, 70.6, or 76.5. The problem results from trying to compare the HY totals among various stations. Which method was used? Without a consistent specified method, it is meaningless to use this statistic for comparisons. To get consistency, we need to choose among the known methods and agree which of these known methods to use.

In fall 2003 I had an overall percentage of 65.4% HY which was a worry to me because two other Canadian stations that posted their results on the web had 87 and 90% HY. Was Rock Point so different or was it the method used to determine the percent? The technique used to determine the initial HY field designation for the bird is discussed later.

In my initial calculations I used the first method since, frankly, it did not occur to me to do anything else. Eliminating my Unknowns from the mix left me with 66.3% HY. Using the third method and including my local hatchlings I calculated 67.2 % HY, still very low in comparison to other stations.

Examining the results published in Brooks (2003), I found that for 2001/2002, stations report HY results anywhere from a low of 58% to a high of 93%. Six seasons for three stations are reported as between 58 and 75%. In 14 stations that reported percentage HY for 2001/2002, the average is 70.4%. Not knowing how the statistics were determined makes it very difficult to compare and know if Rock Point was, in fact, extremely high in After-Hatch-Year (AHY) birds and low in HY birds or not.

Examining the results for Ruby-crowned Kinglets as the top 10 bird species at other stations, I find stations reporting 57, 72, and 8% HY, with four other stations not reporting this statistic. I expect that in early October, when skulling may or may not show a window in this species, personnel at the other four

stations did not want to use plumage, or did not have sufficient expertise to do so, classifying most birds as Unknown.

Magnolia Warblers were among my top 10 species. Again using Brooks (2003), I find 76, 52, 100, 98, 55, 100, 59, 81, 81, 74, and 100% HY. This is quite a spread. Is this due to the method of arriving at the statistic, similarity of habitat among stations with similar percent, the technique that is used to determine the initial age designation in the field or differential migration by age?

DISCUSSION

There are many variables besides the ones mentioned in this commentary that could account for either low or high HY percent results. White-crowned Sparrows, which in the fall require limited skill to determine age, were predominantly high in AHY birds at Rock Point, so perhaps I did, in fact, have a low percentage of young birds. Suitability of habitat may result in adult birds frequenting a site at a higher rate than younger birds. The weather at the time of migration may have hindered older birds and caused younger birds to over fly the area. Migration routes may differ for HY and older birds.

I suggest that the calculation of the statistic for HY is a variable that can be standardized if all banders use the same method to determine the statistic. Then, we can study these other variables with more meaning.

A wide variety of techniques are used for determining age, including iris, mouth and gape colors. Pyle (1997:3) states, "Determinations should be based on a synthesis or combination of all available characters (whether or not they are definitive), all of which may or may not coincide with those of one particular species, subspecies, or age/sex class." I suggest that plumage criteria be examined even when skulling does not work rather than taking the easy method of using Unknown. In the fall, of course, most stations use skulling to determine age. Other places probably rely on both skulling and plumage characteristics as given in Pyle (1997). Many of these plumage characteristics are subtle, but many banders are determining in-field criteria based on Pyle, which we think are accurate. Is the similarity of numbers among

stations due to the method used for classifying plumage? I work very hard at using plumage identifiers for age. A mind set based on Pyle is established early in the season, confirmed by skulling, and applied throughout the season where only occasional skulling may be done as added confirmation. This lack of skulling may be done in order to speed up processing or because of cold weather. Are we relying too much on subtle plumage characteristics? I do not know how to progress in this area without ongoing effort to get better at identifying and using plumage. Until methods are standardized, will this result in a high degree of errors?

Skulling is a technique apparently peculiar to North American banders. I understand that it is not used very much in Europe where plumage features are used to age birds. Since we in North America seem to have such a reliance on skulling, I found it really interesting that other areas do not see the need to wet down a bird's head, pull the feathers back, and peer through the skin to see whether they can see bone cones or just clear skull. Although Pyle (1997: 9) states: "Skulling is now recognized as being the most reliable technique for ageing passerines during the fall months...", it still requires a degree of skill. McKinney (2004) shows that after a certain date it is no longer safe to age safely by skulling. For those who rely entirely on skulling that means that all subsequent birds are aged as Unknown after the cut-off date. Skulling is not 100% accurate and two experienced banders, as I have observed in the past, can come up with a totally different evaluation of the age of a bird based on skulling. One said it was a clear skull and so a HY bird, while the other saw bone cones and said it was an AHY and this with a thrush showing buff tips. We are expected to use magnification in order to be sure, but how many do? With some species, the skin color or pin-feathers make it difficult to determine age by skulling. Skulling, dependent upon the skill level of the individual, may be time consuming and, in cold weather, questionable to the health of the bird. It often takes a good eye to determine what you are looking at, and when adequate time is taken, in good light, and then by wetting and moving the feathers back to peer through the skin, the age can be determined with a high degree of accuracy. This, of course, within the limitations of season and cut-off dates as mentioned in McKinney's (2004) article.

If it comes down to training harder to become better at skulling and training harder to be better at looking at plumage, I do not disregard skulling but I favor an increased use of plumage or soft parts. If Europe and Britain are to the point that they know what to look for in feathers, then I suggest that North America continue to move in the same direction. Some of the picture booklets being published (Froehlich 2003) go a long way toward helping banders become better at using plumage. Those banders who are willing to participate in or lead training sessions and workshops also help in teaching what to look for in feathers and so help to achieve consistency of techniques between banders.

Perhaps only with consistency of technique and more publications, such as Morris et al. (2003), Hussell (2004) and Covino et al. (2005) testing reliability and generality of well-proven feather characteristics will we move towards the elimination of possible misapplication of feather criteria and also develop skills past skulling. McNicholl suggests, "What works very well in one part of a species' range may be less helpful somewhere else, so criteria that are shown to be reliable in one part of a species' range need to be tested elsewhere to see whether or not those criteria are valid throughout." We also need guidance in relation to how a statistic is to be determined so that the numbers generated for Hatch Year have true meaning among stations.

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