Further examination of the wing stripe of the Pine Siskin

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A previous paper (Yunick, 1970) presented a comparison of data on the attempted use of wing stripe width and brightness for determining age and sex of the Pine Siskin *(Spinus pinus)*. While the data were not in complete agreement, they suggested that stripe width may offer a means of determining age, and brightness may be useful for determining sex. Additional data have been collected on 1789 siskins which were banded during the period 1971 through 1974, and these are presented here. Included are comparisons of wing stripe width, wing chord length, stripe brightness and changes in regrown stripe width and brightness. This interim paper reports on progress to date on this continuing project to develop an age- and sex-determining scheme for this species.

Data Collection

Data were collected on Pine Siskins during the winter-spring invasions of 1971-72 and 1973-74 at Schenectady, N.Y.; during the breeding seasons of 1972 and 1973 at Jenny Lake near Corinth in the southern Adirondack Mountains of New York State; and during the fall migration of October 1973 at Island Beach State Park, N.J. Unflattened wing chords were measured to the nearest millimeter, wing stripe color intensities were noted, and wing stripe widths were measured with dividers to the nearest millimeter in the area of the first and second primary. When possible, skulls were examined from October through January to determine the extent of pneumatizations for age determination. During the period of April through July, birds were examined for the presence of a brood patch or cloacal protuberance to determine sex.

During the winter of 1973-74, siskins were subjected to removal of the second primary to determine changes in the width and intensity of the regrown primary. For purposes of data analysis, birds were grouped into two categories of wing stripe intensity — bright or pale — depending on the extent of yellow or white in the wing stripe.

Results

A. Wing Chord and Wing Stripe Intensity of Mixed Ages and Sexes — Figure 1 represents a plot of average wing stripe width vs. wing chord length for birds with bright and pale wing stripes. The tendency exists for bright stripes to be broader than pale stripes, and birds with longer wing chords to have broader stripes. However, the extent of overlap is so extensive that the differences are not significant enough to allow these characteristics, when considered individually, to be useful for determining age or sex in this species.

These same data were plotted in a slightly different manner in Figure 2. Instead of averaging the stripe widths for each respective wing chord length, as was done in Figure 1, the wing chord lengths were averaged for each respective wing stripe width. These data represent an equally overlapped situation and offer little, if any, opportunity to differentiate age or sex groupings within the sample.

B. Wing Chord and Wing Stripe Intensity of FY Birds — From among 69 siskins known to be less than one year old (incomplete pneumatization), the data on first year (FY) birds were gathered in Table 1. These are compared to similar data, from

Table 1. A comparison of wing chord lengths and stripe widths for 69 first year birds and 1789 birds of mixed ages.

	Age Group			
	FY	FY	ALL	ALL
Stripe	Pale	Bright	Pale	Bright
Wing Chord Length				
Range, mm.	68-75	69-76	66-77	68-79
Average, mm.	71.1	72.2	71.5	72.7
Wing Stripe Width				
Range, mm.	0-9	1-9	0-12	0-13
Average, mm.	3.2	5.5	3.8	5.6
Portion of Sample				
Percent	73	27	66	34

the mixed sample of 1789 birds, used to construct Figures 1 and 2.

These data show tendencies for FY birds to have slightly shorter wing chords, slightly narrower wing stripes, and to be more predominately pale in stripe intensity than the sample as a whole. However, without access to a sample of birds known for sure to have experienced their first postnuptial (second prebasic) molt, or subsequent molts, one cannot assess from these data whether useful differences in measurements exist between FY and older birds.

C. Changes in Stripe Width and Color Due to Feather Replacement — In order to ascertain what effect increasing age had on wing stripe appearance, it became a matter of interest to examine individual siskins before and after a molt. After 10 years of experience and the banding of 1570 of this species prior to the winter of 1973-74, it became apparent through a lack of return captures that there would not be adequate opportunity for such an examination. The next best opportunity was to remove part of the plumage of a bird and examine the regrowth while the bird remained at the feeder for the winter. This removal was planned on the assumption that by pulling a primary, the regrowth would simulate the changes brought about by normal molt.

Thus, during the winter of 1973-74, I removed the second primary of the right wing on approximately 275 siskins, and obtained 117 recaptures on 75 of

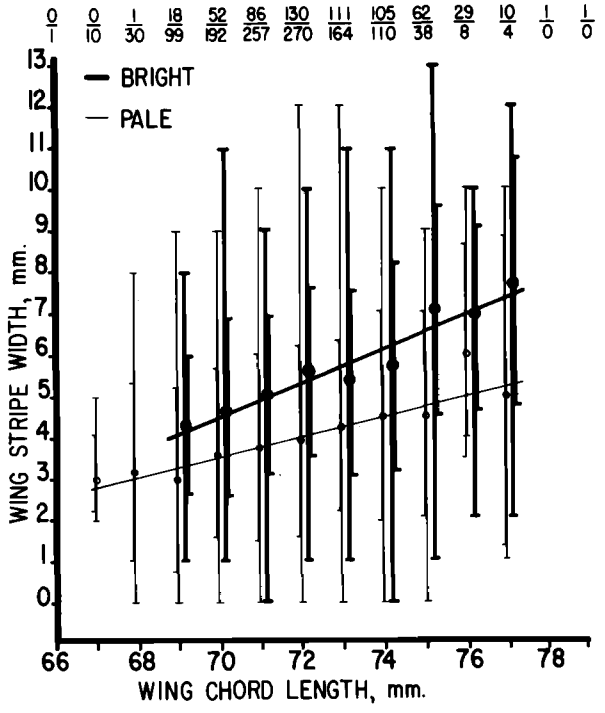

Figure 1. Wing stripe width of bright and pale birds grouped by wing chord length. The numbers at the top of the figure represent sample size: bright/pale. Circles represent mean wing stripe widths; the heavy bracketed vertical lines represent the mean ±1 standard deviation, and the full extent of the vertical lines represents the data range. The regression lines for the means were fitted by the method of least squares and fit the following equations: pale wing stripe width = 0.251 (wing chord) — 14.00 and bright wing stripe width =0.405 (wing chord) — 23.78.

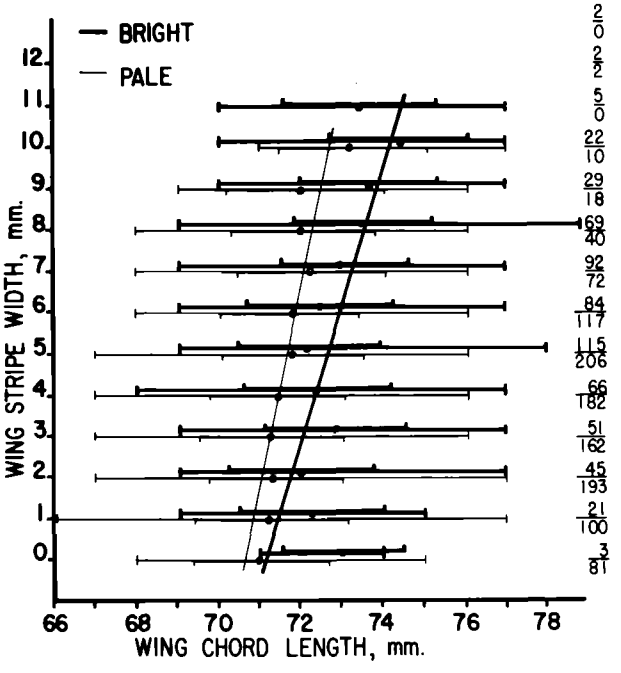

Figure 2. Wing chord length of bright and pale birds grouped by wing stripe width. The numbers at the right represent sample size: bright/pale. Circles represent mean wing chord lengths, the heavy bracketed horizontal lines represent the mean ±1 standard deviation, and the full extent of the horizontal lines represents the data range. The regression lines for the means were fitted by the method of least squares and fit the following equations: pale wing stripe width = 4.83 (wing chord) − 341.24 and bright wing stripe = 3.43 (wing chord) − 244.54.

these birds. The primary removal began on December 25, 1973 and continued to April 18, 1974. The recaptures occurred anywhere from one to 70 days after removal with the last such recapture occuring on May 11, 1974.

Out of the 75 recaptures, 44 birds were captured after regrowth of the primary was complete. From these 44 recaptures, 19 (43 percent) showed no change in stripe width and 25 (57 percent) showed increase in stripe width of one to three mm. In no case was a regrown stripe narrower than the original stripe. These results are given in Figure 3. Excluding the birds that underwent no increase in width, the average increase was 1.8 mm. Based on the distribution of increases in Figure 3, it appears that the increase in stripe width was approximately uniform for all wing chord lengths.

It is apparent from the data in Sections B and C that stripe width tends to increase with age. It remains to be determined how differences in width can be related to specific age groups.

The changes in color intensity of the regrown stripes of 49 birds are given in Table 2. The results are contrary to what one would expect from Table 1. One would expect that the succeeding plumages

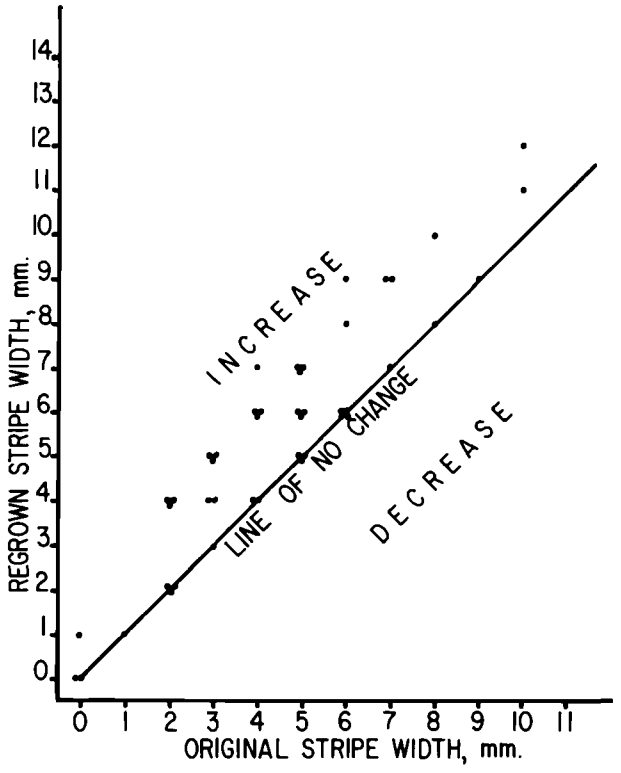

Figure 3. Width of regrown wing stripe compared to original stripe width of the second primary.

Table 2. A comparison of the color intensity of regrown and original wing stripes.

Color of Original Wing Stripe	Color of Regrown Wing Stripe		
	Brighter	Same	Paler
Pale	1	21	14
Bright		1	12

would tend to brighten rather than become paler. As the edges wear in time, the true color of the stripes became more predominently pale, one might suspect that edgings on the fresh plumage change the apparent color, as the eye perceives it. While it is not conclusively apparent why these plumage becomes apparent. Thus, the wing stripe intensity may be masked by edgings that are some color other than the particular yellow of the worn stripe. A microscopic comparison of old and new primaries is planned to verify if this reasoning accounts for the observed results.

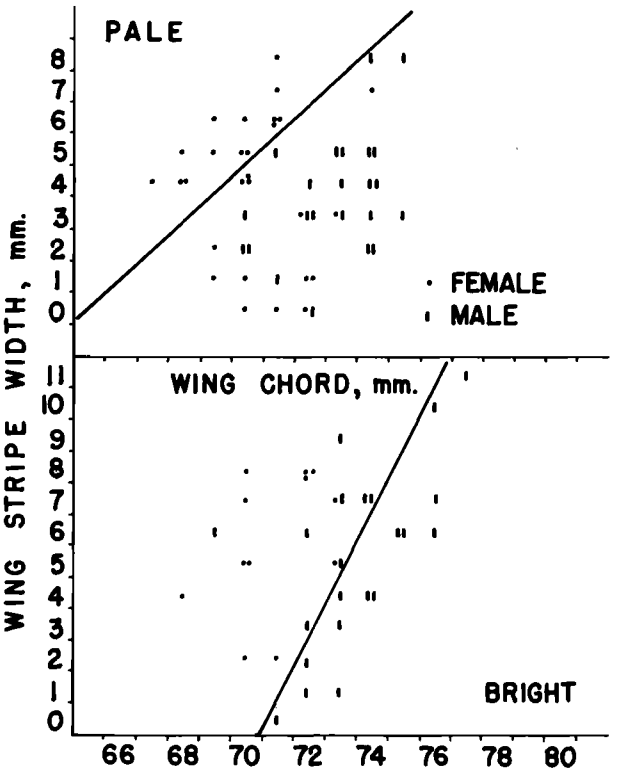

Figure 4. Wing stripe width of bright and pale birds of known sex and wing chord length. The line on the pale plot segregates those individuals that were exclusively female (above and to the left of the line) as opposed to those that were male and female. The line on the bright plot segregates those individuals that were exclusively male (below and to the right of the line) as opposed to those that were male and female.

D. Stripe Characteristics of Birds of Known Sex — From a sample of 85 siskins in breeding condition, the data in Figure 4 were gathered. The sample was 53 percent male and 47 percent female. The ratio of bright and pale stripes was 40/60. Among the 51 pale birds, the ratio of males and females was 45/55; and among the 34 bright birds, the ratio of males and females was 65/35.

In examining the top graph of Figure 4, a line can be drawn which separates a group of females from the rest of the pale sample. This group represents 28 percent of the sample and is made up of birds above and to the left of the line. Similarly in the bottom graph of Figure 4, a line can be drawn which separates 41 percent of the bright sample as males. These birds are below and to the right of the line.

Thus there is an indication from this limited sample that a method exists for identifying a portion of the males and females of this species. However, I still regard the use of these criteria as tentative, and do not recommend their use as yet. Additional data are needed to verify their reliability, and to more accurately establish the limits of the criteria. As more siskin invasions occur, further data will be collected in an attempt to better define a means of determining age and sex in this species.

Conclusions

Examination of the wing stripe characteristics of the Pine Siskin revealed that singular use of either stripe width or stripe brightness is not a reliable means of determining age or sex in a significant portion of this species. Stripe width increases in some succeeding plumages, and the exact change in stripe brightness is not yet clearly determined.

In a limited sample, the simultaneous use of stripe color, stripe width and wing chord length allowed separation of 28 percent of the pale females and 41 percent of the bright males.

References

Yunick, Robert P. 1970. The Pine Siskin Wing Stripe and its Relation to Age and Sex. *EBBA NEWS*, 33: 267-274.

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An Ovenbird at least seven years old

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Among North American Wood Warblers, adult Ovenbirds appear to have a particularly good chance of survival from one year to the next. Generally the average annual survival of adult Wood Warblers is around 60%, but an Ovenbird population in Massachusetts had an 84.5% annual survival chance (Roberts, 1971). Nevertheless, seven-year-old warblers are rarities. One example was published recently in this journal: it was a Canada Warbler which had become eight years old (Pantle 1973).

Near Lost River, Quebec (coordinates 455-0743), I have been banding warblers during fall migration for several years. Of 34 Ovenbirds banded between 1969 and 1975, only one individual has been recovered. An adult bird was banded on 6 September 1969 with band 52-49332. Some time in early July 1975, Mr. Anthony Graup, Laval, Quebec, accidentally killed this bird with a lawn mower while it was incubating on its nest. The distance between location of banding and the recovery was less than 300 feet. From the circumstances of the recovery one can conclude that the bird was a female and belonged to the local breeding population.

References

Pantle, R.J. 1973. A warbler recovery. *EBBA NEWS* 36: 165.

Roberts, J.O.L. 1971. Survival among some North American Wood Warblers. *Bird Banding* 42: 165-184.

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