ABOUT THE SEXING AND AGING OF WINTERTIME AMERICAN GOLDFINCHES

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We were surprised recently when a veteran bander was heard to remark that he had found the task of sexing and aging American Goldfinches at wintertime so confusing that he has stopped trying. While reading the descriptions of this species' winter plumage it had always seemed to us that enough specific characters existed to provide a basis for the accurate sexing of all individuals and for their aging within the ranges requested by our Banding Laboratory.

Prior to the winter of 1967-68 we had banded a modest total of 538 Goldfinches, so we were not entirely unfamiliar with the species. Most of them had been handled so late in the season, however, that spring molt had modified their plumages considerably from the conditions characteristic of winter. When a flock appeared at our feeders on January 21, 1968 we were presented with our first opportunity to compare winter plumages as we attempted to sex and age each individual that was trapped. We decided, also, to try to find out whether there is a place for the wing chord measurement as an additional tool in the determination of sex, or age, or both.

Following their arrival on January 21, at least a few Goldfinches were with us every day. Abnormally severe weather prevented uninterrupted trapping, but we examined every individual we were able to capture and we recorded its sex and age (as indicated by its plumage) and the length of its wing chord. Wing chord measurements were made to 0.1 mm., since the senior author's training dictated that measuring devices should be utilized to the legitimate limit of their accuracy; and all computations are reported hereinafter to a corresponding accuracy.

All of our birds were sexed without encountering any confusion. To age them, "skulling" was precluded by the advanced state of ossification and, during most of the study, by subnormal, wintry New England temperatures. Plumages of the males carried sufficiently distinct characteristics to permit their separation into SYM and ASYM groups. Female plumage characters were much less distinct, however.

As we watched a mixed flock of Goldfinches and Evening Grosbeaks at a feeder one day we were struck by the marked similarity between the winter plumages of the Goldfinches and those of the female Grosbeaks. The picture was as if diminutive female Evening Grosbeaks were mingling there with the normal-sized females. Immediately we dubbed the little Goldfinches "mini-beaks", and the name seemed so appropriate that we soon found ourselves using it persistently.

Notwithstanding years of study we never succeeded in finding a successful method of plumage-aging adult female Evening Grosbeaks and now we

have found ourselves unable to discover sufficient definite markings on the similarly plumaged female American Goldfinches to set aside a distinct SYF group. The ASYF class (typified by returns 101-39165, 105-73232 and 105-73781) was reasonably obvious, but their multitudinous plumage variations compelled us to include most of our females in the AHYF class.

Here are the distinguishing plumage characters included in each of our age-sex classes:

SYM - Primaries and rectrices dull black with buffy bars and spots. Lesser wing coverts greenish olive. Evidence of black cap almost hidden beneath greenish feathers of forehead. Rump grayish white and yellowish.

ASYM - Primaries and rectrices glossy black with white bars and spots. Lesser wing coverts distinctly yellow. Black cap apparent through greenish forehead feathers. Rump white and yellow.

AHYF - Primaries and rectrices brown with buffy bars and spots. Lesser wing coverts greenish olive. Faint streaks of brown on olive crown and forehead, but no trace of black cap. Cheeks greenish olive.

ASYF - Primaries and rectrices brownish black with buffy white bars and spots. Lesser wing coverts greenish olive with yellowish tinge. Tiny flecks of brown on olive crown, but no trace of black cap. Cheeks tinged with yellowish.

A single yellow pinfeather on the cheek of an ASY male which we trapped on February 22 gave us our first warning of the impending spring molt. Similar evidence was noted on other males subsequently, but it was not until March 17 that the molt became so prominent as to dictate the end of this "winter plumage" study.

During the period from January 21 through March 16 we processed 64 birds while winter plumages were in vogue. One ASY female's wing chord measurement was discarded because the tip of her longest primary was missing. During this same period the trapping of five returns (2 males, 3 females) supplied us with authentic ASYM and ASYF plumages for immediate comparison with our newly captured unknowns. Our wing chord measurements are summarized in Table I.

TABLE I. AMERICAN GOLDFINCH WING CHORD MEASUREMENTS AT HARTFORD, CONN.

Age-Sex	No. of Measurements	Range	Mean	Median
SYM	22	68.2 to 73.0	70.8	71.0
ASYM	16	70.2 to 75.0	72.4	72.2
AHYF	18	66.4 to 71.0	68.6	69.0
ASYF	7	67.0 to 71.0	69.2	69.0

TABLE II. AMERICAN GOLDFINCH RETURNS RETRAPPED AT HARTFORD, CONN.

	Banding Data			Returning Data			
Band No.	Age	Date	Wing Chord	Age	Date	Wing Chord	Increase
MALES							
101-39098	S	3/10/63	72.5	*ATY	5/ 6/66	74.0	1.5
111	S	3/13/63	73.2	TY	3/22/64	72.7	-0.5
146	A	3/18/63	73.0	ATY	3/ 5/66	74.0	1.0
723	S	3/14/64	73.7	*ATY	2/22/66	75.5	1.8
726	S	3/14/64	73.7	TY	4/16/65	75.2	1.5
"	"	"	"	*ATY	4/ 2/66	75.0	1.3
							(-0.2)**
778	A	4/15/64	70.6	*ATY	2/17/68	73.5	2.9
105-73243	S	3/23/65	70.6	TY	5/ 6/66	71.8	1.2
305	A	4/13/65	73.0	ATY	3/ 5/66	73.0	0.0
359	S	5/ 5/65	72.0	TY	3/ 5/66	73.1	1.1
902	S	5/ 3/66	72.0	*ATY	2/29/68	73.0	1.0
FEMALES							
101-39165	U	3/22/63	69.2	*ATY	1/28/68	71.8	2.6
203	U	4/ 3/63	67.5	ASY	4/12/64	69.0	1.5
783	A	4/17/64	68.6	ATY	3/ 9/65	70.5	1.9
784	A	4/17/64	69.5	ATY	4/13/65	70.5	1.0
"	"	"	"	*ATY	5/ 1/66	70.7	1.2
							(+0.2)**
105-73210	U	3/ 9/65	69.0	ASY	4/29/66	71.8	2.8
219	U	3/11/65	67.0	ASY	4/26/66	69.0	2.0
223	U	3/11/65	67.8	ASY	4/30/66	68.0	0.2
225	U	3/14/65	69.8	ASY	4/29/66	71.8	2.0
232	U	3/17/65	68.8	ASY	3/ 7/66	69.0	0.2
"	"	"	"	*ATY	1/23/68	69.0	0.2
							(0.0)**
249	U	3/23/65	69.1	ASY	3/ 8/66	69.0	-0.1
781	A	2/22/66	73.0	ATY	12/16/67	73.0	0.0

*We are unaware of any officially recognized Alpha Code for birds of known age beyond three years.

**These figures report wing chord "increase" for the time lapse between dates of first and second returnings.

The 63 birds involved in Table I have supplied far too few data upon which to base definite conclusions. A few implications can be pointed out, however:

1. Despite individual measurements to the contrary the wing chords of most male American Goldfinches are longer than the wing chords of most of the females.

2. Similarly, the wing chords of most of the older males are definitely longer than the wing chords of most of the second-year males.

3. In the case of our females a similar, but less definite, age-chord relationship is suggested. Our inability to establish a distinct SYF group has left the female picture unclear.

An examination of our station's permanent records reveals that 21 of our Goldfinches have returned a total of 24 times. These returnees have provided us with the opportunity to compare their wing chords over time lapses of from one to five years. These same records provide us, too, with knowledge regarding the wing chord measurements of definitely adult members of the species in at least the ASY, TY, and ATY categories. Tables II and III summarize our findings.

Table II affords us an opportunity to separate our returns (all adults) into two different age classes for each sex. Let us do so in Table III so that we may compare their wing chords with those of the plumage-aged individuals we have already reported in Table I.

TABLE III. WING CHORDS OF RETURNING GOLDFINCHES

Age-Sex	No. of Measurements	Range	Mean	Median
TYM	4	71.8 to 75.2	73.2	72.9
ATYM	7	73.0 to 75.5	74.0	74.0
ASYF	7	68.0 to 71.8	69.7	69.0
ATYF	6	69.0 to 73.0	70.9	70.6

Although, in Table III, we are again involved with a small number of birds the greater certainty of their relative ages improves the credibility of the records they have provided. Just as in the case of our newly-banded, plumage-sexed individuals (Table I) we see here that: (1) wing chords of males exceed those of females, and (2) wing chords of older birds exceed those of younger birds for both sexes.

There may be something of interest in a summary of the increases which occurred in the wing chord measurements of our returning Goldfinches over the time lapse periods between the dates of banding and return. Such a summary will be offered in Table IV.

It should be kept in mind that we have been obliged to employ a very small unit of measurement - the millimeter - so small, in fact, that it is capable of being seriously influenced by tiny variables which ordinarily might be ignored. Theoretically, it should be possible to measure a given fixed distance with consistent accuracy. But the "fixed distance" which we have been attempting to measure is "the straight line distance from the bend of the relaxed folded wing to the tip of the longest feather", and, as we approached the accomplishment of that measurement we found ourselves constantly challenged by such disconcerting thoughts as:

(a) Is the "bend of the relaxed folded wing" being held with consistent firmness against the zero-end block of our ruler for <u>every</u> measurement?

(b) Is the "relaxed folded wing" truly <u>relaxed</u>? (How very often have we seen the "straight line distance" increase or decrease as we tried to read the ruler, frequently by much more than a whole millimeter, as a nervous bird flexed the wing's contour!)

(c) Is the "longest feather", perhaps, an incompletely matured replacement for its natural counterpart which had been lost by molt or accident? Or has its tip been subjected to so much wear that our most careful measurements will be modified materially, although the feather appeared normal when we examined it?

But if we let such matters distract us we'll never get anywhere. We have made our measurements conscientiously, so let's get on with Table IV.

TABLE IV. INCREASE IN WING CHORDS OF RETURNING AMERICAN GOLDFINCHES.

Time Lapse (yrs.)	Sex	No. of Measurements	Wing Chord Increase: Range	Mean	Median
1	M	6	(-0.5) to 1.5	0.5	0.6
1	F	11	(-0.1) to 2.8	1.6	1.0
2	M	3	1.0 to 1.8	1.4	1.3
2	F	2	0.0 to 1.2	0.6	0.6
3	M	2	1.0 to 1.5	1.2	1.2
3	F	1	0.2		
4	M	1	2.9		
5	F	1	2.6		

Conclusion: The authors feel sure that all prior fundamental ornithological knowledge remains unshaken by any findings which this study may have revealed. Be that as it may, we've had lots of fun working with these cuddly little cuties.

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