

# AGEING AND SEXING

## COMMON WAXBILL *ESTRILDA ASTRILD*

Terry Oatley's (1987) recent browbeating editorial in *Safring News* exhorted ringers with extensive data on single species to assimilate their information for the use of other ringers, and unfortunately (for me), chose the example of the Common Waxbill *E. astrild*. Terry knows that, like Mike Fraser, I have let my "yellowing field-notebooks" gather dust while attending to the more frantic concerns of producing a thesis. However, as the ringer of several hundred of the 938 Common Waxbills ringed in southern Africa from 1984-86, I sheepishly put the thesis aside for a week to compile the data below. (After all, I strongly agree with Terry's views on ringers who slavishly gather biometric data which never see the light of day: if data from any of the 4 547 waxbills ringed prior to 1984 had been published, I wouldn't have had to fill in all the Age and Sex columns of my Schedule 1s as "unknown"!).

The data given here were obtained during intensive monthly ringing sessions over three breeding seasons (September - December 1984-86) in the southern Cape. As such, this note throws little light on the annual moult cycle in southern Africa; for the time being ringers should continue to consult Vowles & Vowles (1987) for a guide to moult. I handled 331 Common Waxbills and processed 207 recaptures, but as this species exhibits little sexual dimorphism, age and sex data are given mainly for a subset of 52 known-sex birds (of a sample of 66 dissected for analysis of gonadal development).

### SEX

#### Mensural Data:

Common Waxbills show virtually no sexual plumage dichromatism or size dimorphism (Table 1 overleaf). While tail length and culmen width show significant sexual differences, these overlap too much for practical use by ringers.

#### Plumage and soft parts:

Only bill colour and the degree of blackness of the undertail coverts (UTCs) are reasonable clues to a bird's sex (Table 1), and unfortunately these appear to covary strongly with age. Breeding males with testes  $\geq 2,0$  mm in length have pinker, brighter bills than those of breeding females, which tend to retain the immature reddish-orange hue. However, there is extensive sexual overlap, and lacking standardised colour reference charts for ringers, bill colour cannot be regarded as a very reliable clue to sex.

TABLE 1

BIOMETRICS, SOFT PART AND PLUMAGE CHARACTERS OF KNOWN-SEX COMMON WAXBILLS  
DISSECTED DURING THE BREEDING SEASON IN THE SOUTHERN CAPE

TRAIT <sup>a</sup>	MALES				FEMALES				TEST	
	MEAN	RANGE	SD	N	MEAN	RANGE	SD	N	STAT <sup>b</sup>	p
Wing (max. chord)	51,6	48-55	1,52	31	50,8	48-53	1,51	21	1,87	NS
Tail	57,3	52-61	2,53	31	55,3	48-60	2,67	21	2,74	0,01
Tarsus	14,5	13,5-16,0	0,47	27	14,4	14,0-15,0	0,30	17	0,78	NS
Culmen length	8,4	8,0-9,0	0,37	27	8,3	7,5-9,0	0,36	17	0,89	NS
Culmen width	4,3	3,5-5,0	0,32	27	4,1	4,0-4,5	0,20	17	2,32	0,05
Culmen depth	6,4	6,0-7,0	0,30	27	6,4	6,0-7,0	0,39	17	0,17	NS
Mass	9,2	7,7-10,2	0,60	29	9,4 <sup>c</sup>	7,7-10,7	0,82	21	1,00	NS
Iris colour	chocolate brown				chocolate brown				-	-
Bill colour	4,1	2-7	1,31	31	3,2	2-5	1,12	21	13,22	0,0003
Undertail covs (% blackness)	98,7	85-100	3,79	31	74,8	20-100	23,50	21	31,22	0,00001

a Wing and tail to nearest mm; tarsus and culmen data to nearest 0,5 mm; mass to nearest 0,1 g. Bill colour scored subjectively on the scale: 1 = orange, 2 = orange red, 3 = red orange, 4 = red, 5 = red pink, 6 = pink red, 7 = pink. Undertail coverts (UTCs) scored against gridded sketches of increasing blackness using the units: 5%, 10%, 20%, 30%, 90%, 95%, 98%, 99%, 100%.

b Student's t for mensural data; Kruskal-Wallis H for bill colour and UTC score.

c Includes one female with yolky follicles but none with oviducal eggs.

Of some utility is the darkness of the undertail coverts. As Vowles & Vowles (1987) noted for *E. astrild* in Portugal, UTC colour darkens progressively from a light brown in juveniles to a jet black in adult males (3<sup>+</sup> years) and very dark brown in adult females. At least in the breeding season, males have much blacker UTCs than females (Table 1), although scores overlap. In my sample, 90,3 % of 31 known males had UTCs between 98-100 % black, while only 9,5 % of 21 females fell into this category. However, contra Vowles & Vowles (1987), at least one breeding female had jet black UTCs like those of adult males. Black UTCs may be more common in adult females than suggested by my sample, since such females may be less likely to visit my ringing site during the incubation and brooding periods. In addition, two of the 14 birds with minute, indistinct gonads (which could not be sexed with certainty in the field) had UTCs of 99 % blackness; I judged these to be pre-breeding adults. Therefore, UTC blackness seems a more reliable predictor of advanced age than of sex or even breeding status (I do not have a suitable nonparametric software package with which to quantify covariance in this respect).

#### AGE

#### Mensural Data:

Among biometric traits, wing length, tail length and culmen width increase significantly with age (Table 2 overleaf), using UTC blackness as an index of age. Since the UTC score and age classification (breeding vs. nonbreeding) of 61 dissected birds are strongly related (Kruskal-Wallis  $H = 39,25$ ,  $p < 0.00001$ ), this index seems valid. Unfortunately, because I ringed no juveniles and thus had no known-age birds, it is not possible to give separate means and ranges of mensural traits for specific age categories, and there is no indication that these would be sufficiently distinct to aid ringers.

#### Plumage and soft parts:

Bill colour appears to become progressively pink (on a continuum of orange-red-pink) as the gonads of adults mature during the spring and early summer. Of a sample of 86 individuals retrapped a month or more after ringing, the bill colour scores of 15 had increased during the season by two or more units on a scale of 1 - 7 (see Table 1 footnote). (I ignored apparent changes of  $\pm 1$  unit, since these could easily be due to classification errors in different light conditions). Most (12 of 15) of these birds had blackish (80 %<sup>+</sup>) UTCs, implying that they were potentially breeding birds of 2<sup>+</sup> years; I did not examine their cloacal protuberances (cf. Dowsett 1987) as I was unfamiliar with the technique.

Only 14 birds were retrapped in a second season (no 1984-ringed birds were retrapped in 1986 due to a change of ringing sites).

Most birds whose UTCs were scored were adult in both years, and there were only marginal score increases (e.g. from 60 % to 70 % black) in subadult birds from 1985 to 1986. My UTC data do not, therefore, add much to Vowles' & Vowles' (1987) description of the progression from light brown to dark brown or black.

TABLE 2

AGE-RELATED CORRELATIONS WITH BIOMETRICS AND BILL COLOUR  
OF COMMON WAXBILLS RINGED DURING THE BREEDING  
SEASON IN THE SOUTHERN CAPE, USING RELATIVE UNDERTAIL COVERT  
(UTC) BLACKNESS<sup>a</sup> AS AN INDEX OF AGE

TRAIT	SPEARMAN RANK CORRELATION COEFFICIENT	N	p
Wing (max. chord)	0,2863	196	0,0001
Tail	0,3871	194	0,0001
Tarsus	0,0565	187	NS
Culmen length	0,0909	187	NS
Culmen width	0,1587	187	0,0304
Culmen depth	0,1114	187	NS
Mass	0,0468	192	NS
Bill Colour	0,3448	197	0,0001

<sup>a</sup> All measurements and scores as in Table 1 footnote<sup>a</sup>.

In summary, ageing and sexing of Common Waxbills is unusually problematic, and mensural data are of little help due to nearly complete sexual monomorphism. While wing length, tail length, culmen width and pinkness of the bill all increase significantly with age (as estimated by undertail covert blackness), it is not yet possible to establish ranges of measurement for specific age categories since I ringed only free-flying, post-juvenile birds.

In any event, it seems unlikely that mensural data will prove useful to ringers for ageing purposes, since even among traits significantly correlated with UTC blackness there appears to be excessive overlap between age categories. Only UTC blackness and bill pickness appear at all useful in ageing and sexing; orange-billed birds with tawny UTCs are immature, while crimson-billed birds with jet black UTCs are adult, probably breeding and most likely male. More specific classifications cannot be reliably made until data on birds ringed as juveniles, including information on moult and winter plumages, are published for southern Africa.

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