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Tarsal Widths and Band Sizes for Tree Swallows and Violet-green Swallows

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ABSTRACT

Measurements of tarsus widths of adult Tree Swallows and Violet-green Swallows indicated that new band size 0 is still preferred for adults with size 1 as an alternate. Size 1 is appropriate for juveniles, but full closure of the band may need to be done one or two days later for nestlings that are parasitized by blowflies.

INTRODUCTION

Until recently, the band size recommended for adult Tree Swallows (TRES) (*Tachycineta bicolor*) and adult Violet-green Swallows (VGSW) (*T. thalassina*) by the Bird Banding Laboratory (BBL) of the National Biological Service was size 0 or size 1. Size 1 has been recommended for nestlings of these species, especially due to the problem of inflammation of the tarsus due to blowfly *(Protocalliphora sialia)* ectoparasitism.

In July 1991, John Tautin, Chief of the BBL, sent a memorandum to all banders that listed proposed changes in band specifications and in recommended band sizes. The inside diameter of the size 0 band is being reduced from 2.1 mm to 2.0 mm, and that of the size 1 band is being reduced from 2.4 mm to 2.3 mm. Consequently, the BBL recommended that in using the new bands, size 1 should be used for all individuals of both TRES and VGSW. However, there are no published data on tarsal widths for these species on which this decision could be based.

METHODS

To determine whether the new size 0 bands would indeed be too small for adults of these species, I measured the left tarsus of adults of both species breeding in nest-boxes near Central City, Rollinsville, Nederland, and Boulder, in north-central Colorado, during June and July 1993. These areas are in the Front Range of the Rocky Mountains, at elevations ranging from 2,026 to 2,699 m (6,650-8,850 ft).

Capture methods were as described previously (Cohen 1984, Cohen 1985, Cohen and Hayes 1984). I measured the width of the tarsus with a vernier caliper, to the nearest 0.1 mm, at a point halfway along the length of the tarsus. The measurement taken was the caliper gap that would allow the tarsus to slide freely between the caliper edges while simultaneously contacting both edges. As the tarsus is laterally flattened, on almost all individuals I measured both its greater width (gw) and lesser width (lw).

RESULTS AND DISCUSSION

The results are shown in Tables 1 and 2. For both species the mean tarsal gw was 1.6 mm. The total range of gw measurements among the 292 TRES and 13 VGSW was 1.2 mm to 1.9 mm. Although the distributions of values (Table 1) are skewed from normal, I ran Student's t-tests (Langley 1970) on the data for male TRES versus female TRES (Table 2) and on that basis could not show a gender difference at either the 95% level of confidence or the 90% level of confidence.

The new size 0 band has a length of 5.5 mm. Although the tarsus is quite short in both species (11-13 mm) (Godfrey 1968, Robertson et al. 1992) the width of the tarsus is nearly constant along the middle 5.5 mm of its length

I conclude that the new size 0 band is not too small for adults of either of these species. The BBL has notified me (pers. comm.) that on the basis of these results it will keep the recommended band size for the two species as 1-0, as it was in the past; i. e., size 1 should be used on nestlings and can be used on adults, whereas size 0 should not be used on nestlings but can be used on adults.

The reduction of the diameter of the size 1 band will result in a greater incidence of inability to close this band on the tarsus of nestlings of both of these species, especially at nests with blowflies. In such cases, the band can temporarily be left partially closed. As the partially closed band protects the tarsus from the blowfly larvae, usually the inflammation of the tarsus is sufficiently reduced by one day later that the band can be closed at that time (pers. obser.).

However, if it is necessary to return to close a band when the nestling is over 15 days old, this may cause premature fledging due to the disturbance of handling, unless the nestling has been handled regularly throughout the nestling period (pers. obser.; Burtt 1977; J.J. Stahura, pers. comm.). As premature fledging probably reduces survivorship; it has, therefore, now become more important to band nestlings of these species before they are 15 days old.

Table 1. Distribution of tarsus widths for Tree and Violet-green Swallows.

Value	TREE SWALLOWS				VIOLET-GREEN SWALLOWS			
mm	gw		lw		gw		lw	
	n	%	n	%	n	%	n	%
1.0	0	0	1	0.3	0	0	0	0
1.1	0	0	36	12.4	0	0	4	31
1.2	1	0.3	145	49.8	0	0	4	31
1.3	2	0.7	90	30.9	0	0	4	31
1.4	13	4.4	16	5.5	0	0	0	0
1.5	49	16.7	3	1.0	1	8	1	8
1.6	109	37.1	0	0	8	62	0	0
1.7	84	28.6	0	0	3	23	0	0
1.8	34	11.6	0	0	1	8	0	0
1.9	2	0.7	0	0	0	0	0	0

Sexes lumped; gw = greater width; lw = lesser width

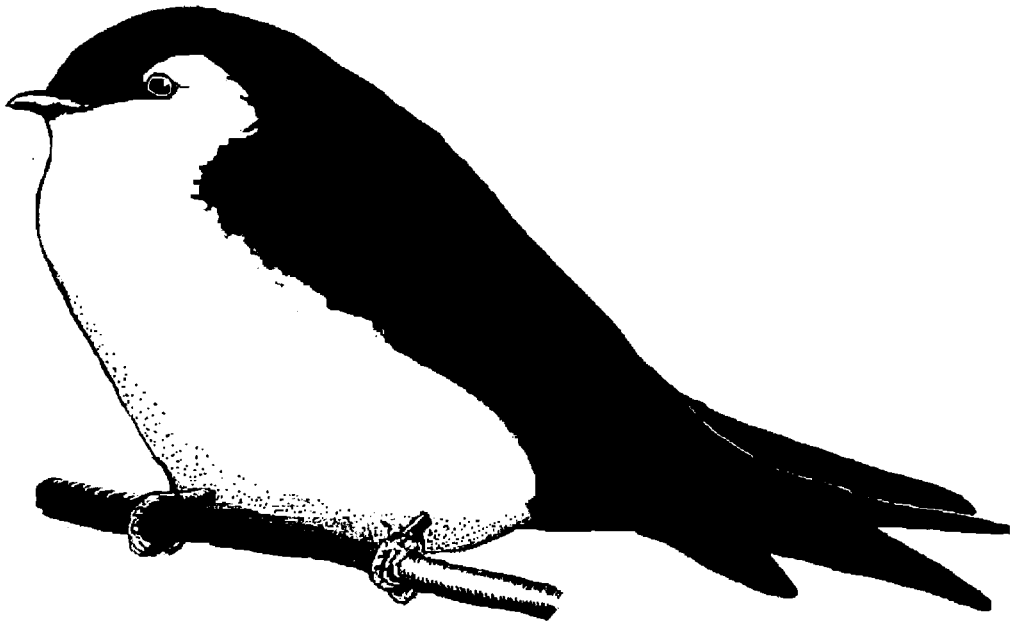

Table 2. Means, standard deviations, and standard errors for greater and lesser tarsus widths of male and female Tree Swallows in mm.

	AHY-M		AHY-F	
	gw	lw	gw	lw
n	135	135	157	157
mean	1.61	1.22	1.64	1.24
SD	0.11	0.08	0.11	0.08
SE	0.01	0.01	0.01	0.01

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