

**CO-OPERATIVE BREEDING BY THE WHITE-BROWED SCRUB-WREN *SERICORNIS FRONTALIS***

Dow (1980), in summarizing the species of Australian birds known to be co-operative breeders, includes only one scrub-wren, *Sericornis magnirostris*, on the basis of circumstantial evidence. However, Harris and Newman (1974), in Tasmania, had observed an adult pair of the White-browed Scrub-wren *S. frontalis* and two young, presumably from an earlier brood of the season, feeding nestlings in late January. Observations on the White-browed Scrub-wren at Wollomombi, near Armidale NSW, in 1978-81, indicate that it is a regular co-operative breeder.

McGill (1976) states that *S. frontalis* occurs in pairs of family parties but at Wollomombi it occurred year-round in groups of three to five birds. In the course of another study I recorded the composition of all mixed-species feeding flocks, and the extent of participation by *S. frontalis* is given in Table I, which shows that the species habitually occurs in groups of more than a simple pair. As will be shown later these groups are not necessarily pairs with dependent young. Table I also shows that there is no significant change in the size of a party throughout the year (Students t-test, size of groups not significantly different by seasons,  $p > 0.1$ ). The decrease in occurrences between August and November is because there are few mixed flocks at Wollomombi during the spring breeding season, as has been found in similar habitat in the ACT (Bell 1980). I took no special notice of Scrub-wrens outside mixed-species flocks but these, too, were usually in parties of more than two individuals.

From observations of colour-banded individuals no bird was seen more than 100 m from the banding-site, even after three years. The territory of the only group to occur in my study area was about 1 ha, and was vigorously defended by the resident banded birds, against unbanded intruders, on the one side of the territory where suitable habitat adjoined. The banded group occasionally

left the territory during winter and foraged in adjacent, more open, woodland.

Table II shows the composition of the group over the period, during which it comprised four or five adults. When the first birds were netted, in August 1978, both the two banded (♂ and ♀), and the two unbanded birds (sex not noted) were adults. The banded female had only the beginnings of a brood-patch, which later (25 September) was heavily-vascularized. Therefore it is probable that all four birds were at least no younger than the previous (1977/78) breeding season. All four birds were seen together over the next few months and in February 1979 were observed foraging with three immatures, recognizable by their yellow gapes and drab plumage. One of these young was banded but soon disappeared.

In the next season (1979/80), the group numbered five birds. The female MAGENTA/WHITE had disappeared but another, MAGENTA/ORANGE, was banded, along with one adult male, MAGENTA/BLACK, and an immature, YELLOW/YELLOW, the only one seen.

During 1980/81 two banded males (MG, MB), the new female (MO) and an unsexed unbanded bird were seen with three newly-fledged young, unable to fly properly. All four adults were seen to feed the young. Finally, almost one year later, on 8 October 1981 four banded birds (MO, MG, MB, WG) were seen foraging with two immatures. The female MO was flushed out of a large hollow log, which both she and the male MG were seen to enter and leave. The female was flushed again from this spot but the inside of the log was too dark for me to locate a nest, if one was present. At all times while I was near the log the whole group, including the immatures, was very agitated. On 14 October the group had abandoned the area of the log.

**TABLE I**

*Number of Sericornis frontalis observed in mixed-species flocks, and occurrences and numbers per flock, by months.*

No. of birds per flock	1	2	3	4	5	6	7					
No. of flocks	2	5	7	14	3	1	1					
	Mean no. birds per flock 3.63 ± (S.D.) 1.4											
Month	J	F	M	A	M	J	J	A	S	O	N	D
No. of occurrences	4	6	2	5	2	4	4	—	1	2	2	1
Mean no. of Scrub-wrens per flock	4.0	3.7	3.0	4.0	3.5	3.7	3.7	—	4.0	4.5	1.5	4.0

TABLE II

*History of colour-banded groups of White-browed Scrub-wrens at Wollomombi 1978-81*

Colour-band	MW	MO	MG	MB	WG	YY	MY	
Sex	♀	♀	♂	♂	♂	imm.	imm.	
Date banded	Aug 78	Oct 79	Aug 78	Oct 79	Aug 81	Aug 79	Feb 79	
1978 24 Aug.	X		X					+ 2 unbanded* adults
1979 7 Feb.	X		X				X	+ 2 unbanded adults & 2 unbanded immatures
1979 1 Oct.		X	X	X		X		+ 1 unbanded adult
1980 7 Nov.		X	X	X				+ 1 unbanded adult & 3 juveniles
1981 8 Oct.		X	X	X	X			+ 2 unbanded immatures

(X = bird present. Colour bands on left leg, first colour on top; M = magenta W = white O = orange  
G = light green B = black Y = yellow; \* = no note taken on sex of unbanded birds.)

When visiting adjacent territories I never saw any of my banded birds, so presumably the missing ones had perished. Because of the sedentary nature of the group it seems likely that the new birds after the first season were the unbanded adults or immatures of the previous year. If so, in-breeding may not be infrequent, as found by Rowley (1981) with the Splendid Fairy-wren *Malurus splendens* and by myself in current studies on Buff-rumped Thornbills *Acanthiza reguloides*.

It seems reasonable to assume that co-operative breeding by the species is more than the casual feeding of young of a second brood by those of the first. I have observed nine species of scrub-wrens in the field and have extensively observed seven, *frontalis*, *magnirostris*, *citreogularis*, *nouhuysi*, *perspicillatus*, *papuensis* and *spilodera*, and feel that all except *citreogularis*, and possibly *spilodera*, occur in groups rather than pairs. Thus co-operative breeding could be more widespread in the genus than has been hitherto thought.

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