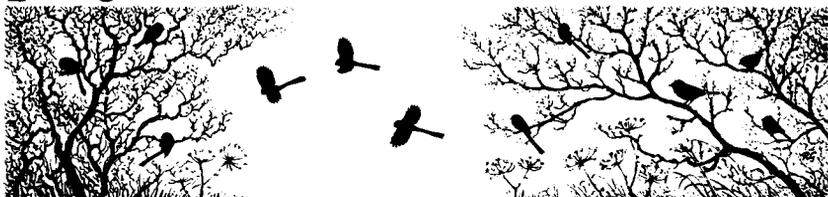


# Report on roving tit flocks project



D. J. Fisher

From August 1980 to February 1981, following requests (*Brit. Birds* 73: 267; *Bird Life* July-August 1980: 40), information on the composition of flocks of tits *Parus* & *Aegithalos* was collected by readers of *British Birds* and members of the Young Ornithologists' Club. In this analysis of the data submitted, the definition of a flock has been taken to be three or more birds, and records of one or two have been omitted. Sightings of flocks in areas which did not clearly fall into one of the three defined habitats (coniferous woodland, deciduous woodland, or hedgerows) have also been excluded. Altogether, 548 tit flocks were recorded, 60 in coniferous woodland, 333 in deciduous woodland and 155 along hedgerows (table 1). There was no great variation in the number of flocks recorded in each habitat through the period; totals in all three showed an increase through the autumn, peaking in November, December and January, and decreasing again in February. The main analyses deal only with the commonest four tit species: Blue Tit *Parus caeruleus*, Great Tit *P. major*, Coal Tit *P. ater*, and Long-tailed Tit *Aegithalos caudatus*. The smaller numbers of Marsh *P. palustris* and Willow Tits *P. montanus*, and other species associated with the flocks, are considered later.

**Table 1. Total number of flocks of tits *Parus* & *Aegithalos* recorded in each of three habitats each month, from August 1980 to February 1981**

Months	WOODLAND			Totals
	Coniferous	Deciduous	Hedgerows	
August	10	27	27	64
September	14	36	21	71
October	4	39	17	60
November	11	74	27	112
December	13	58	25	96
January	5	69	21	95
February	3	30	17	50
TOTALS	60	333	155	548

## Flock size

Flocks ranged in size from the defined minimum of three to 285, this latter extremely large flock being recorded in deciduous woodland in January. The average flock size in deciduous woodland and along hedgerows was

very similar, as was the group size within the flock for each of the four species (table 2). The flocks in coniferous woodland were on average slightly smaller than those in deciduous woodland and along hedgerows, and they contained smaller groups of Blue and Long-tailed Tits, larger groups of Coal Tits and roughly similar sized groups of Great Tits. There was some monthly variation, but no regular pattern was apparent.

**Table 2. Ranges of monthly average (and winter average) flock size and within-flock species-group size for mixed flocks including Blue *Parus caeruleus*, Great *P. major*, Coal *P. ater* and Long-tailed Tits *Aegithalos caudatus*, in three habitats from August 1980 to February 1981**

Flocks and within-flock groups	WOODLAND		
	Coniferous	Deciduous	Hedgerows
Mixed tit flock size	7.0-18.9 (13.3)	10.6-24.1 (15.2)	9.8-19.7 (15.5)
Group size—Blue Tit	3.3-10.4 (6.4)	5.5-14.2 (8.3)	5.7-11.1 (8.1)
Group size—Great Tit	1.0-12.5 (4.1)	2.9- 6.6 (4.6)	3.1- 5.6 (4.5)
Group size—Coal Tit	1.3-16.0 (5.3)	2.0- 4.9 (2.9)	1.0- 5.5 (2.5)
Group size—Long-tailed Tit	2.8-14.5 (5.6)	6.2-17.4 (8.1)	6.5-13.7 (9.5)

### Occurrences of species within flocks

Blue and Long-tailed Tits occurred in roughly the same percentage of flocks in each habitat (table 3); Great Tits occurred in the same percentage of flocks in deciduous woodland and along hedgerows, but less frequently in coniferous woodland and, as might be expected, Coal Tits occurred far more frequently in coniferous woodland than in deciduous woodland or along hedgerows. Occurrences of each species within the flocks varied from month to month. The percentage of flocks containing Blue Tits apparently decreased throughout the winter in both coniferous and deciduous woodland (though this statistical decrease could have been caused by other species increasing). The pattern in hedgerows was less clear. The percentage of flocks containing Great Tits in coniferous woodland increased during the autumn, and then decreased again from November onwards. In deciduous woodland, the percentages showed a similar though less well-marked pattern, whereas in hedgerows they decreased as the winter progressed. The proportion of flocks containing Coal Tits in coniferous woodland was quite high in the autumn, but decreased from December onwards. In deciduous woodland, the proportion of flocks containing Coal Tits remained roughly the same throughout the period, whereas along hedgerows the proportion increased to a peak in October-November and

**Table 3. Percentage of flocks of tits *Parus* & *Aegithalos* containing Blue *P. caeruleus*, Great *P. major*, Coal *P. ater* and Long-tailed Tits *Aegithalos caudatus*, in each of three habitats during August 1980 to February 1981**

Species	WOODLAND		
	Coniferous	Deciduous	Hedgerows
Blue Tit	82	90	83
Great Tit	52	70	68
Coal Tit	62	39	26
Long-tailed Tit	42	35	47

then decreased again. Though the percentage of flocks containing Long-tailed in all three habitats varied from month to month, no clear pattern emerged.

As the percentages for each species increase or decrease depending on increases and decreases in any or all of the other species, it is difficult to pinpoint true variation, so the conclusions are somewhat tenuous. It should also be noted that certain high percentages can be caused by a small sample of flocks (e.g. there were only four flocks recorded in coniferous woodland in October).

### Marsh and Willow Tits

It is likely that a proportion of the Marsh and Willow Tits were misidentified. As might be expected, only small groups of Marsh and Willow Tits were recorded. Interestingly, however, all records of Willow Tit were of one or two birds, whereas there were quite a few records of three, four, five and, on one occasion, six Marsh Tits together. There was also one sighting of eight unidentified Marsh or Willow Tits with a flock. Both species showed a marked preference for deciduous woodland, and larger numbers of both species were found in this habitat from November to January. The proportions of flocks containing Marsh or Willow Tits in each habitat varied from month to month, but the data are based on small samples. The preference for deciduous woodland from November to January was still clear, however, and high proportions in August and September along hedgerows suggested a movement from that habitat into deciduous woodland as the autumn progressed.

### Other species associated with tit flocks

Percentages of flocks containing species other than tits in each habitat (table 4) showed no significant monthly variation in coniferous woodland or deciduous woodland, but there did seem to be a decrease as the winter progressed in the number of non-tit species associating with the flocks along hedgerows.

A total of 40 non-tit species was recorded with the tit flocks, of which 153 individuals of 11 species were recorded in coniferous woodland, 829 of 28 species in deciduous woodland, and 1,037 of 37 species along hedgerows. In all three habitats, the number of species decreased as the winter progressed (one factor in this would have been the disappearance of summer migrant species). The total number of individuals recorded each month did not vary significantly in coniferous or deciduous woodland, but decreased noticeably along hedgerows. The majority of these species were recorded in only very small numbers, so do not warrant individual analysis or comment. The species most commonly associating with tit flocks was Goldcrest *Regulus regulus*, which occurred in 33% of the flocks in coniferous woodland, and in only a slightly smaller number of flocks in deciduous woodland and along hedgerows. Treecreepers *Certhia familiaris* were also recorded with tit flocks, most frequently, as might be expected, in deciduous woodland (24%). Nuthatches *Sitta europaea* were also associated with flocks in deciduous woodland (18.6%). The only other species to associate in any

**Table 4. Percentage of flocks of tits *Parus* & *Aegithalos* containing each non-tit species in each habitat during August 1980 to February 1981**

Species	WOODLAND		
	Coniferous	Deciduous	Hedgerows
Green Woodpecker <i>Picus viridis</i>			0.6
Great Spotted Woodpecker <i>Dendrocopos major</i>			0.6
Lesser Spotted Woodpecker <i>D. minor</i>	1.7	0.6	1.3
Tree Pipit <i>Anthus trivialis</i>			2.6
Meadow Pipit <i>A. pratensis</i>		0.3	1.3
Pied Wagtail <i>Motacilla alba</i>			1.3
Wren <i>Troglodytes troglodytes</i>		1.5	5.8
Duncock <i>Prunella modularis</i>		0.3	9.7
Robin <i>Erithacus rubecula</i>		1.2	7.1
Redstart <i>Phoenicurus phoenicurus</i>			3.2
Whinchat <i>Saxicola rubetra</i>			0.6
Stonechat <i>S. torquata</i>			0.6
Blackbird <i>Turdus merula</i>			0.6
Song Thrush <i>T. philomelos</i>		0.3	
Melodious Warbler <i>Hippolais polyglotta</i>		0.3	
Lesser Whitethroat <i>Sylvia curruca</i>		0.6	4.5
Whitethroat <i>S. communis</i>		0.3	3.9
Garden Warbler <i>S. borin</i>	1.7	0.6	1.9
Blackcap <i>S. atricapilla</i>		2.1	9.0
Wood Warbler <i>Phylloscopus sibilatrix</i>		0.3	
Chiffchaff <i>P. collybita</i>		0.9	9.7
Willow Warbler <i>P. trochilus</i>	8.3	3.9	10.3
Chiffchaff or Willow Warbler	3.3	2.1	3.9
Goldcrest <i>Regulus regulus</i>	33.3	28.8	23.2
Firecrest <i>R. ignicapillus</i>		0.3	1.9
Spotted Flycatcher <i>Muscicapa striata</i>		0.9	5.8
Pied Flycatcher <i>Ficedula hypoleuca</i>		0.3	
Nuthatch <i>Sitta europaea</i>	3.3	18.6	7.7
Treecreeper <i>Certhia familiaris</i>	18.3	24.3	18.1
House Sparrow <i>Passer domesticus</i>			0.6
Tree Sparrow <i>P. montanus</i>		0.6	0.6
Chaffinch <i>Fringilla coelebs</i>	13.3	12.0	13.5
Brambling <i>F. montifringilla</i>		0.9	1.3
Greenfinch <i>Carduelis chloris</i>		0.6	1.3
Goldfinch <i>C. carduelis</i>		0.6	4.5
Siskin <i>C. spinus</i>	1.7	0.6	3.9
Linnet <i>C. cannabina</i>	1.7		2.6
Redpoll <i>C. flammea</i>	3.3	0.6	5.8
Bullfinch <i>Pyrrhula pyrrhula</i>			3.8
Yellowhammer <i>Emberiza citrinella</i>			1.9
Reed Bunting <i>E. schoeniclus</i>			3.2

significant way with the tit flocks was the Chaffinch *Fringilla coelebs*, which occurred in very similar proportions in each of the habitats (12.0-13.5%).

## Discussion

The habit of various species of tits to join together in flocks has been known for many years, but little detailed study seems to have been made of it. Perrins (1975) suggested that flocking has two advantages for the birds involved. First, there is a better chance of detecting a predator in a group where all the individuals are on the look out; secondly, the chances of

finding food are increased in a flock, since some individuals may know of good feeding areas.

The results of the project show that most species of tit prefer to feed in deciduous woodland or along hedgerows, where food items are presumably more abundant and more varied. Coal Tits were present in larger numbers in coniferous woodland, although significant numbers were also present in the other two habitats, particularly later in the winter.

The difference in group size between Marsh and Willow Tits is less easy to explain. Morley (1953) stated that Marsh Tits not holding winter territories will join up with mixed species flocks, and after August will travel together without aggression, whilst those holding a winter territory will join up with the flock only whilst it is passing through that territory. The small numbers of Willow Tits perhaps suggest that this species is more aggressive and less tolerant of other members of its own species in a flock, though, as Perrins (1975) stated that Willow Tits are usually thinly scattered even where they occur abundantly, the explanation may be simply a matter of distribution.

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### Summary

Results of a joint *British Birds* and YOC project concerning roving flocks of tits *Parus* & *Aegithalos* during winter 1980/81 are presented and the trends are summarised. No unexpected patterns were found, though it is concluded that further study of Willow Tits *P. montanus* might prove worthwhile.

### References

- MORLEY, A. 1953. Field observations on the biology of the Marsh Tit *Brit. Birds* 46: 233-238.  
 PERRINS, C. 1979. *British Tits*. London.

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