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Movement of Black-capped Chickadees from Winter Area Toward Breeding Grounds Analyzed Through Banding Re-encounters

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In an earlier paper (Brooks 1987, Stewart 1988), I analyzed banding re-encounters of 14,396 Black-capped Chickadees (*Parus atricapillus*) reported to the Bird Banding Laboratory from 1922 to 1984. Only 13 re-encounters involved same-season movement out of the 10-minute block of banding between 1 March and 15 June. I used the 1 March date as the probable onset of spring migration based on information presented by Lawrence (1958), Elder and Zimmerman (1983) Hussell and Stamp (1965) and Speirs (1963). Analysis of these 13 re-encounters shows that 11 individuals moved in an ENE, NE or NNE direction for distances ranging from 13 to 277 km in an elapsed time of 10 to 73 days. Two birds moved in a SSW and SE direction in 25 and 32 days for distances of 40 and 52 km, respectively.

Most studies indicate that chickadee populations remain relatively stable on wintering grounds (Butts 1931, Odum 1941, Wallace 1941, Lawrence 1958, McCamey 1962, Smith 1976, Loery and Nichols 1985). Desrochers et al. (1988) indicated that most chickadees remain in their breeding area for the winter season as long as food supplies are adequate. Loery and Nichols (1985) believed that chickadees are site-tenacious between 1 November and 1 March. Although Weise and Meyer (1979) indicated that perhaps 5-9% of all juveniles undergo permanent winter or spring dispersal movements, studies by Brittingham and Temple (1988) in Wisconsin indicated that permanent winter and spring dispersal movements rarely occur. Their studies and those by Desrochers et al. (1988) classified birds as dead if they were not present during winter on territories occupied before 1 November.

Toward the end of winter, lower-ranked chickadees may undertake significant movement to seek out breeding territory but the extent and exact timing of that movement and the factors precipitating it are not well documented. Yunick (1982, pers. comm.) gives the date of earliest departure of chickadees from winter feeding grounds in the New York Adirondack region as 13 January. This date is based on his studies of the correlation between peak seed use and peak numbers of captures. In a report supportive of Yunick's 1980-81 observation, Charles R. Smith's report on Project Birdwatch indicated that in 1987 there was a 53% drop in chickadee populations at the feeders of project participants in New York State in mid-January. Desrochers et al.'s (1988) study of chickadees in Alberta indicated that winter flock breakup occurred between 20 February and 10 March in 1986 and 1987.

I re-examined the 14,396 chickadee re-encounters (augmented by an additional 74 reported to the BBL between 1984 and 1986) and analyzed the direction, distance and duration of movement of chickadees banded between 13 January and 1 March and contrasted this with the same recapture information presented in my earlier paper.

Of approximately 1900 re-encountered chickadees banded between 13 January and 1 March, 73 recaptures involved movement out of the block of banding but only 13 chickadees were re-encountered before 15 June of the same year. A summary of re-encounter information is shown in Table 1. An analysis of these re-encounters indicated that eight of the birds moved only short distances (27 km or less). Directions taken by these individuals are shown in Figure 1. Two of these birds were recaptured within two days of each other 24 km SW of the banding location. This group of eight birds may be evidence of nomadic-like movement of chickadees during late winter and early spring.

The remaining five birds that moved more than 27 km from their banding location moved distances ranging from 34 to 684 km in from 19 to 101 days. The directions taken by these birds are shown in Figure 2. Only one chickadee in this latter group was recaptured out of the 10-minute block of banding before 1 March. That individual had moved 34 km NE between 13 January and 1 February.

In contrasting the movement of chickadees banded before 1 March and those banded after that date, it seems apparent that there is more multi-directional movement of the group of 13 birds banded between 13 January and 1 March, that a greater percentage of the re-encountered chickadees banded after 1 March are long-distance movers and that the percentage of long-distance movers traveling in a generally NE direction is the same for both groups (see Table 2). Conclusions about the duration of movement of birds banded before 1 March are difficult to make because these birds could have remained in the vicinity of the banding area and begun their movement toward the recapture location at a later date. Since only one chickadee was re-encountered out

of the 10-minute block of banding before 1 March, there is little evidence in banding records of other than short-distance movement of chickadees between 13 January and 1 March.

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Fig. 1. Directions taken by chickadees banded between 13 Jan. and 1 Mar. when moving less than 27 km.

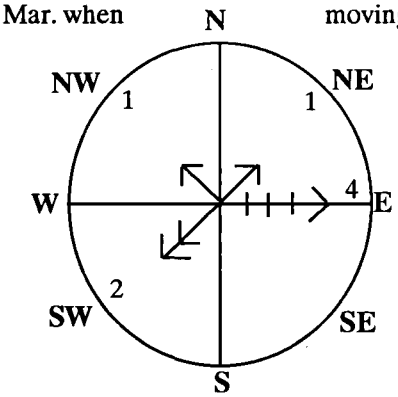

Fig. 2. Directions taken by chickadees banded between 13 Jan.and 1 Mar. when moving more than 27 km.

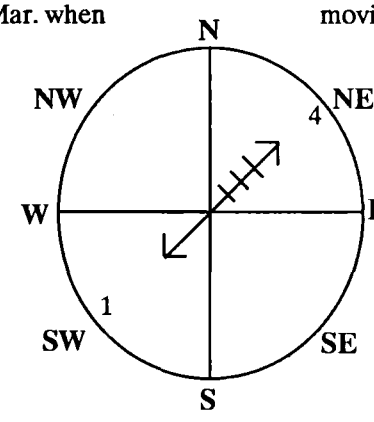

Table 1. Same-year spring re-encounters of Black-capped Chickadees outside the 10-min. block of banding when banding occurred between 13 January and 1 March.

Band Number	Banding Location Coordinates	Banding Date	Re-encounter Location Coordinates	Re-encounter Date	Distance and Direction	Time Elapsed
0240-16063	New York 414-0735	14 Jan '55	New York 414-0733	13 Apr '55	27 km NE	89 days
0270-63130	Mass. 423-0705	23 Jan '58	Mass. 422-0712	13 Apr '58	50 km SW	80 days
0200-86441	Delaware 394-0753	2 Feb '58	Penn. 401-0745	16 Apr '58	80 km NE	73 days
0250-29299	New York 421-0751	13 Jan '60	New York 422-0750	1 Feb '60	34 km NE	19 days
0320-23199	Ontario 435-0792	20 Feb '62	Ontario 435-0791	19 Apr '62	14 km E	59 days
1030-97201	Minnesota 445-0932	20 Jan '63	Minnesota 445-0931	25 Mar '63	13 km E	64 days
1030-38220	Wisconsin 450-0875	27 Jan '63	Wisconsin 450-0874	2 Mar '63	13 km E	34 days
1050-05742	Maine 431-0704	27 Feb '63	Maine 431-0703	2 May '63	19 km E	64 days
1150-27676	Wisconsin 442-0893	27 Jan '70	Michigan 464-0845	7 May '70	472 km NE	101 days
1020-88821	New York 415-0733	29 Jan '71	New York 414-0734	17 Apr '71	24 km SW	78 days
1020-88832	New York 415-0733	3 Feb '71	New York 414-0734	19 Apr '71	24 km SW	75 days
1600-68367	Ohio 413-0831	15 Feb '82	Ontario 452-0755	4 May '82	684 km NE	78 days
1660-78926	Ontario 451-0754	19 Jan '84	Ontario 452-0755	15 Mar '84	24 km NNW	56 days

Table 2. Comparison of distance, direction and duration of spring movement of two groups of banded Black-capped Chickadees.

	Chickadees Banded Between 13 Jan. - 1 Mar.	**Chickadees Banded Between 1 Mar. - 15 Jun.**
Approx. number of chickadees re-encountered anywhere	1800	1900
Number of chickadees re-encountered out of 10-min. block of banding	55	73
Number of same-season re-encounters out of 10-min. block	13	13
Average interval between banding and re-encounter	67 days	27 days
Average distance moved	136 km	114 km
% moving NNE,NE,ENE	38 %	85 %
% moving greater than 27 km	38 %	85 %
% moving NNE,NE,ENE in long-distance movers(greater than 27 km)	80 %	82 %