Seasonal dispersal of Red-winged Blackbirds banded in four Western states

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Introduction

U.S. Fish and Wildlife Service (FWS) personnel at the Denver Wildlife Research Center have banded Red-winged Blackbirds *(Agelaius phoeniceus)* (hereafter, redwings) in the western United States since 1960 as part of research on ways to alleviate agricultural damage. Here we report our findings about seasonal distribution of populations banded in specific breeding and wintering localities in Colorado, Nebraska, Wyoming, and Montana from 1960 through 1978. The average numbers of redwings reported per Breeding Bird Survey route in these semiarid states are low — 41, 66, 29, and 21, respectively — compared to the weighted continental average (74) per route (Van Velzen and Robbins 1971). In suitable habitat in irrigated valleys and natural wetlands, however, redwing populations are high enough to allow large-scale banding in this region in both summer and winter.

Methods

For convenience, we divided the banding data into two parts: (1) winter banding (October through April) and (2) summer banding (May through September). These categories appear to cause few problems. Dolbeer (1978) showed that, for most regions, redwing movements during the period 1 August — 15 October were < 200 km from the birds' localities during the reproductive period.

In winter we banded 34,720 redwings within about a 100-km stretch of the South Platte Valley (SPV) from Denver to Greeley, Colorado, and 1,923 redwings in the Arkansas Valley (AV) from Las Animas to Hasty, Bent County, Colorado (Table 1). These birds were obtained at livestock feedlots and roost marshes by means of decoy traps, dip nets (Spencer and De Grazio 1962), cannon nets, and an immobilizing bait, DRC-736-treated cracked corn (Schafer et al. 1967). Colored plastic tags were affixed to the leg bands on about 49% of the SPV birds and 90% of the AV birds to increase the band recovery rate and to obtain sightings of marked birds (Guarino 1963, 1968; Royall et al. 1972). In two years, we solicited tag sighting by the public (Anon. 1963; Guarino 1963; Anon. 1971).

Table 1. Red-winged Blackbird winter banding in South Platte Valley (SPV) and Arkansas Valley (AV)

Banding period	Number banded			
	Males	Females	Total	%
SPV				
October	436	338	774	2.2
November	2,276	592	2,868	8.3
December	5,581	1,508	7,089	20.6
January	4,716	3,033	7,749	22.5
February	3,726	2,879	6,605	19.2
March	5,609	3,743	9,352	27.2
Totals	22,344	12,093	34,437	100.0
AV				
January	367	486	853	44.4
February	661	409	1,070	55.6
Totals	1,028	895	1,923	100.0

Table 2. Red-winged Blackbird banding in Colorado, Wyoming, Nebraska, and Montana in summer.

Banding area	Nestlings	Number banded		
		Males	Females	Total
South Platte Valley, CO	1,027	1,101	1,004	3,132
West of Bighorn Rg., WY	1,498	825	0	2,323
East of Bighorn Rg., WY	0	202	0	202
North Platte Valley, NE	0	273	0	273
Valentine NWR, NE	0	107	0	107
Yellowstone Valley, MT	76	448	0	524
Northeastern MT	0	407	0	407
Total	2,601	3,363	1,004	6,968

We banded 6,968 redwings in summer in seven localities in the 4-state area (Table 2). Among 3,363 males, 84% were captured with portable decoy traps set on breeding territories (Bray et al. 1975, 1977). The other males and females were captured by other types of traps and nets. Leg tags were attached to 87% of the males and 13% of the females. Banded nestlings were not tagged. Summer tagging received no publicity.

John L. Cummings banded 329 territorial male redwings in Grand and Summit counties on the Western Slope of Colorado in the summers of 1973 through 1979 under the DWRC banding permit.

Our findings about seasonal distribution are not intended to be quantitative. We were not concerned about maintaining consistent monthly and yearly banding efforts; these efforts were influenced by concurrent studies, weather, and other factors. The two types of encounters with marked birds — band recoveries and tag sightings — include those reported by two sources — FWS personnel and the general public. These sources are given separate headings in Table 3 because they are distinctly different samples. In the Results and Discussion section, only encounters by the public are used to demonstrate certain points because FWS encounters are invalid for those purposes. We searched for tagged birds among roosting and feeding flocks during four winters in parts of Colorado, Nebraska, Kansas, Oklahoma, and Texas, and shot or retrapped some tagged birds.

Table 3. Effect of tags on band recovery rates of Red-winged Blackbirds winter-banded in South Platte Valley (SPV).

Banding status	Number banded	Percent recovery rate FWS[1]	Foreign[2]	Total
Males				
Not tagged	10,168	1.2	0.5	1.7
Tagged	12,176	1.0	1.0	2.0
Females				
Not tagged	7,207	0.7	0.1	0.8
Tagged	4,886	0.6	0.4	1.0

Results and Discussion

We obtained 528 band recoveries and 46 tag sightings of redwings winter-banded in the SPV, 11 recoveries and 4 sightings from AV winter banding, 22 recoveries and 9 sightings from SPV summer banding, and 17 recoveries and 38 sightings from summer banding in states north of Colorado. The sighting totals are conservative, having been adjusted to show the minimum numbers of different tagged birds we think were seen. About 60% of the 675 total encounters were obtained by FWS workers and the remainder by the public.

SPV winter banding. Most band recoveries, even in later years, were within 80 km of the 23 SPV banding sites. This distance is our somewhat arbitrary estimate of the redwing's maximum daily feeding range in this area. Royall and Guarino (1976) found the same daily range to exist among Starlings (*Sturnus vulgaris*) banded in the SPV. About one-fourth of the recoveries by the public within the SPV banding area occurred from May through September, indicating that a portion of the winter-banded population remained there to breed.

One FWS and four recoveries by the public were in the AV from 10 December to 4 March (Fig. 1). Three of these birds had been banded in January and two in early March; the former three recoveries indicate that redwings sometimes shift wintering areas. A sighting of a SPV-tagged bird in a winter roost in Hutchinson County, Texas, shows that a bird wintering in Colorado may sometimes move up to 550 km farther south. One redwing banded 10 November moved about 100 km northeast to the Fort Morgan, Colorado area by 11 December, a late fall dispersal direction for which we can offer no explanation.

Forty-seven redwings were recovered and 12 with tags were sighted at distances >80 km from northern Colorado to Canada (Fig. 1). None were encountered east of the eastern boundary of Colorado. Only one recovery, near Kremmling, Colorado, was west of the Continental Divide. Encounters at Kremmling, Rollinsville, Estes Park, and Red Feather Lakes show that some redwings migrate into higher Colorado elevations for the summer. The greatest northward dispersal distances were 1,158 km and 1,050 km, for recoveries near Glenwoodville, Alberta, and Mazenod, Saskatchewan. More time spent by FWS investigators in Wyoming and Nebraska partially accounts for more recoveries and sightings in those states than in Montana and Canada.

The two most eastward recoveries in the far north — at Mazenod, Saskatchewan and north of Havre, Montana — were of females banded and tagged on 18-24 February 1964 at an SPV foodlot. The absence of male redwing recoveries in the same breeding range could be pure chance or a reflection of males and females of the same breeding population having wintered in different areas.

The earliest and latest SPV banding dates for the 38 redwings recovered north of Colorado were 18 November and 17 March. The extreme banding dates for the nine recovered beyond 80 km within northern Colorado were 10 November and 26 March. These recovery dates and locations seem to indicate that the more northern populations arrive slightly later at the winter range and disperse from it slightly earlier. A disproportionate number of recoveries by the public in Wyoming, Montana, and Canada had been banded in March (46% of 26 recoveries versus 27% of 9,352 releases). This

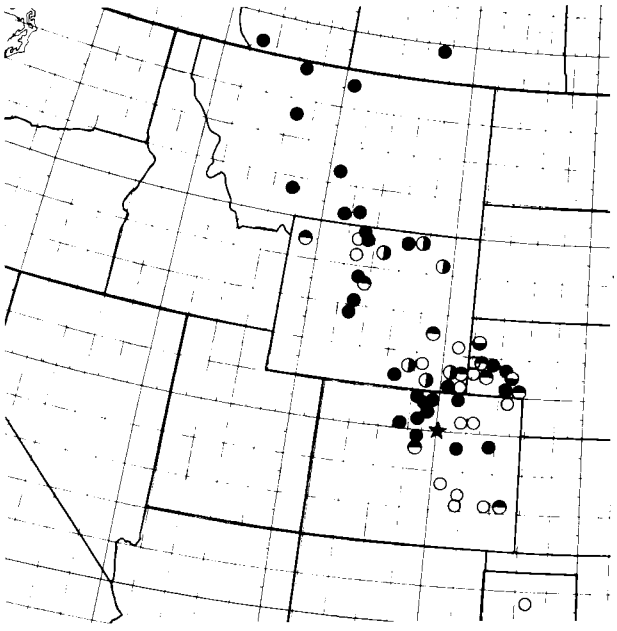

Fig. 1. Encounters of Red-winged Blackbirds winter-banded in the South Platte Valley, Colorado

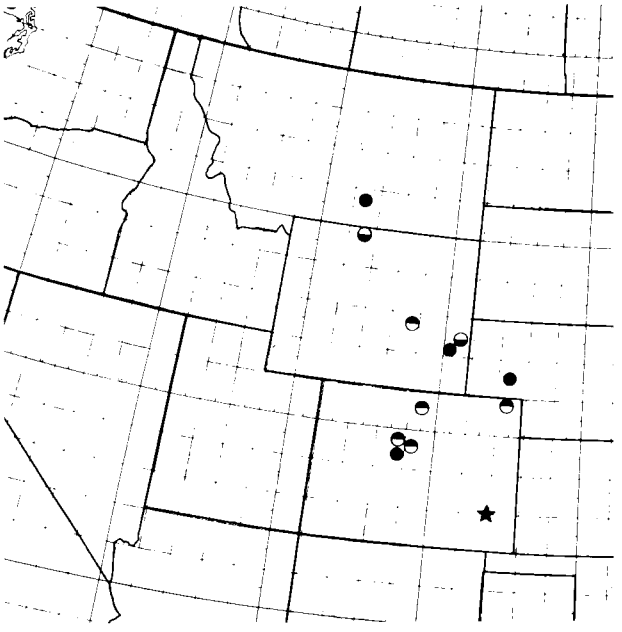

Fig. 2. Encounters of Red-winged Blackbirds winter-banded in the Arkansas Valley, Colorado

Legend, Figures 1—3

Banding location — ★

Encounter location:

- May-Jul ●
- Aug-Sep ◑
- Oct-Nov ◒
- Dec-Feb ○
- Mar-Apr ◓

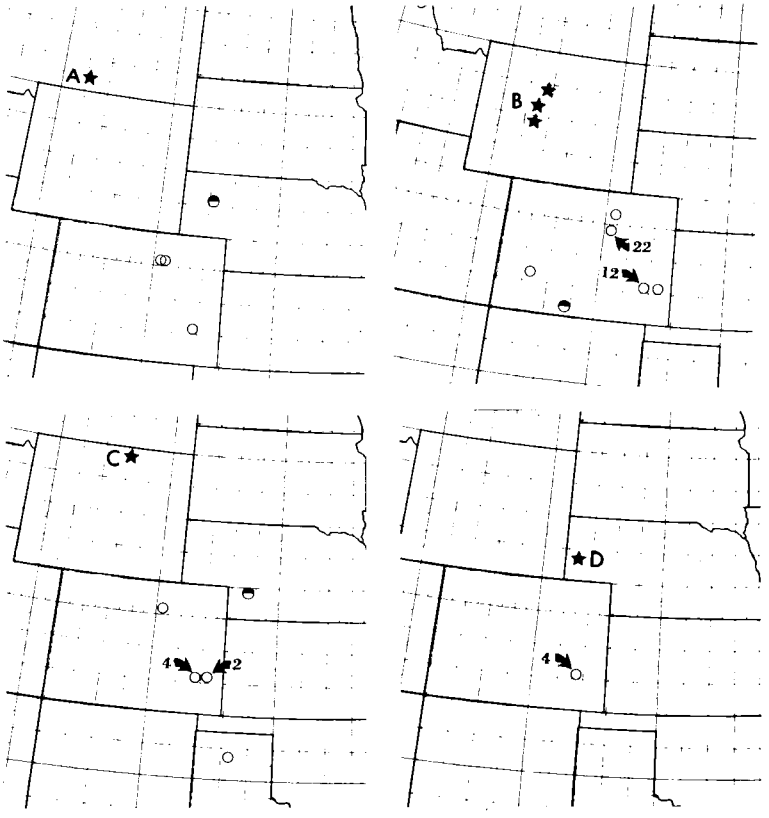

Fig. 3. Encounters of Red-winged Blackbirds summer-banded in A, The Yellowstone Valley, MT; B, west of the Bighorn Range, WY; C, near Sheridan, WY; D, the North Platte Valley, NE. Numerals and arrows denote multiple encounters at the indicated locations.

differential suggests that the birds recovered at these higher latitudes had wintered farther south and were migrating through the SPV when banded.

Fifteen recoveries and most tag sightings were made in the first March through July after banding; these show direct spring migration. An adult male found dead on 15 March near Douglas, Wyoming, about 256 km north of the SPV banding location, was the earliest direct recovery. Redwings recovered in later years, particularly those in fall, winter, and spring, were of less certain status (i.e., migrant or winter resident) within the recovery localities.

AV winter banding. Only one of 11 recoveries of redwings banded in the AV was obtained locally, whereas the others were recovered from Texas to Montana (Fig. 2). The distribution of summer recoveries falls within the recovery area for birds banded in winter in the SPV and shows that the two winter banding areas attract birds from the same breeding areas. Two AV tags were seen by FWS biologist Jerome F. Besser in northern Colorado in March and we retrapped one tagged male on his breeding territory in the SPV in June (Fig. 2).

SPV summer banding. All 26 redwings encountered between 10 October and 30 March were within about 56 km of their spring or early summer banding locations, further indicating that the SPV breeding population is to some extent nonmigratory. Winter tag sightings confirmed that some individuals are nonmigratory. For example, in January and February 1974 we saw at least nine different tagged males in SPV roosts, at least 14% of the 63 breeding males tagged the preceding spring. Also, males tagged in the SPV in the springs of 1972-74 were not seen among redwings closely observed by us in southeastern Colorado and the Texas Panhandle in subsequent winters. There is, however, one record of a short migration among recoveries of redwings banded under other permits in the SPV. A bird banded as a nestling in the Boulder area in 1968 was recovered 145 km south in the Colorado Springs area the following October. Our June recapture in the SPV of a male banded in winter in the AV (see preceding section) is the only other firm evidence of migration among SPV breeders.

Redwings of all ages banded in the SPV and encountered from one to seven summers later were, with one exception, found within a few kilometers of their banding locations. A subadult male banded at a feedlot 8 May 1964 was recovered near Kimball, in extreme western Nebraska, on 25 May 1965. This bird was evidently a transient or late-departing winter resident when banded. Late dates of spring departure listed by Bent (1958:149), from several localities, extend well into May.

Breeding season banding north of Colorado. Our data indicate that redwings breeding in western Nebraska, Wyoming, and south-central Montana migrate south and southeast into five major river basins in Nebraska, Colorado, and Texas (Fig. 3). The patterns vary for four banding areas: (A) redwings banded in the Yellowstone River Valley, Montana, were encountered in the North Platte Valley, in western Nebraska, and the SPV and AV of eastern Colorado; (B) those banded in Wyoming west of the Bighorn Range were found in the SPV, AV, Rio Grande Valley, and Gunnison Valley of Colorado — the one tag sighting by Victor D. Keenan near Montrose, in the Gunnison Valley, is the only record of a Wyoming redwing wintering on the Western slope of Colorado; (C) male redwings banded east of the Bighorn Range, near Sheridan, Wyoming, were encountered in the SPV and AV, Colorado, and the Canadian Valley in the Northern Panhandle of Texas; and (D) males from extreme western Nebraska were recorded only in the AV of southeastern Colorado. None of the 107 birds tagged at Valentine National Wildlife Refuge, Cherry County, Nebraska, in 1975; 31 in Carbon County, Wyoming, in 1976; or 407 in northeastern Montana in 1978 have been encountered to date.

Breeding season banding on the western slope of Colorado. Redwings breeding at high elevations — 2,244 to 2,791 m — in Grand and Summit counties, Colorado, winter in lowlands to the east and southeast: two bands were recovered in the SPV and one in the AV. A third recovery in the SPV, reported as "found dead in May" (date unknown), might possibly be an additional winter record. These encounters complement those reported in a preceding section that show winter-banded SPV birds moving to higher elevations to breed.

Effects of tagging and capture method. For winter banding in the SPV, tagging increased the overall recovery rate by about 20%; however, it more than doubled the rate of recoveries by the public whereas it slightly decreased the FWS recovery rate (Table 3). In both reporter categories, however, tagged birds were recovered at a much higher rate in the first year after banding, before the tags fell off from wear, than were banded-only individuals. This higher recovery rate is confirmed by the disparity in the percentage of the total re-

coveries of tagged (74%) and banded-only (56%) males during this time.

Among redwings winter-banded in the SPV, we obtained 24 band recoveries by the public within 1 year at distances exceeding 80 km. Eighteen of these birds were tagged. This demonstrates the value of tags in acquiring long-range dispersal data, because roughly similar numbers were released (17,375 not tagged, 17,062 tagged). Tagging also added much to the value of banding males on breeding territories when followed by winter tag searches by FWS investigators.

Tags, on the other hand, by their conspicuousness, can bias band recovery data, especially in mortality rate studies (Guarino 1968). In addition, our aviary tests show that attachment method and qualities (e.g., color, fabric durability) of the tag can influence retention time and thereby bias data (Royall et al. 1974, DeHaven 1975). In January 1975, some FWS observers noted more fraying among green tags (Montana-banded) than among yellow tags (Wyoming-banded), although this difference was not quantified. If truly indicative of an earlier loss of green tags, the difference in durability would help explain the relative scarcity of our green tag sightings that winter.

Redwings captured with immobilizing bait in the SPV and AV in winter were recovered from Texas to Montana, the overall patterns appearing to be very similar to those for recoveries of birds captured with traps and nets. We broke the SPV winter-banded population into four groups — (1) trapped/netted and banded (14,793); (2) trapped/netted, banded, and tagged (13,727); (3) baited and banded (2,582); and (4) baited, banded, and tagged (3,335). For each group, we figured the total numbers recovered by the public and recovered by the public 3 years or more after banding. These totals were 58/17, 118/16, 7/3, and 19/2, respectively. A 2 x 2 contingency table was used to test equality of the proportion of recoveries <3 years in bait-captured and trapped/netted birds. The test provided no evidence of a difference in the two proportions ($x_1^2 = 0.34$). Thus, capture with this immobilizing bait appears not to have lowered life-expectancy among redwings that survived the initial effect.

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Summary

FWS personnel banded 43,611 Red-winged Blackbirds in Colorado, Nebraska, Wyoming, and Montana from 1960 through 1978. Half of this number were also marked with a colored plastic leg tag. The 578 band recoveries and 97 tag sightings show that some redwings — that breed in parts of Alberta, Saskatchewan, Montana, Wyoming, Nebraska, and Colorado — winter in the South Platte and Arkansas valleys of eastern Colorado. A few were encountered in winter in western Colorado, western Nebraska, and the Northern Panhandle of Texas. Some redwings remain in the SPV all year, but the evidence shows some migration as far southward as the AV in winter. Some redwings summer in higher Colorado elevations and winter in the SPV and AV. Leg tags were helpful in obtaining seasonal distribution data but their associated biases must be recognized.

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Notes from the BBL

M. Kathleen Klimkiewicz

Aging and sexing American Goldfinches

It seems that there is some confusion regarding the aging and/or sexing of the American Goldfinch.

American Goldfinches **can be sexed** by the color of the wings. Birds with **black** wings are safely sexed male; those with **brown** wings are safely sexed female. Occasionally you will encounter a bird with very dull black wings or very rich brown wings which may appear black. It is best to sex these birds unknown *unless* there are some black feathers in the crown. If there are black feathers in the crown, then it is safe to sex them male.

There is **no** accurate way to **age** the **female** goldfinches by plumage coloration. However, the **males** can be relatively easily **aged** by **plumage.** Birds with rich, black flight feathers **and** yellow shoulder patches **and** extensive white tippings to the secondaries and several of the primaries may be safely aged AHY in fall and ASY from January through the breeding season. Birds with dull black wings **and** brown to olive shoulders **and** little white edging on the secondaries and primaries may be safely aged HY in the fall and SY from January through the breeding season.

Please contact me at BBL if you need further assistance.

Aging and sexing House Finches

There are several problems involved in aging and sexing House Finches. Geographic variation and the effect of diet on the plumage coloration complicate the picture. Please **do not** use the article by McEntee (*EBBA News*, 1970, Vol 33) to age House Finches.

Birds in juvenal plumage **cannot** be sexed. However, sexing is possible as soon as the postjuvenal molt is complete. Birds with red, orange, or gold on the head, throat, rump, and/or breast are males. Females are brown-gray and seldom have more than an occasional red or yellow feather.

Aging is another problem. Until the questions of geographic variation and diet effect are solved, females must be aged by skull pneumatization: incomplete = HY/SY and complete = AHY (January—October) and U (November—December). Males with pink edges to **all** wing coverts can safely be aged ASY (January—May) and AHY (June—December). Males which have gold or yellow-orange on head, throat, and rump can be aged HY/SY. All other males **must** be aged by skull pneumatization (incomplete = HY/SY; complete = AHY (January—October) and U (November—December).