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**MIGRATION OF BANDED YELLOW-HEADED BLACKBIRDS**

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# MIGRATION OF BANDED YELLOW-HEADED BLACKBIRDS

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During the past decade, large-scale banding operations have constituted a major part of the Denver Wildlife Research Center's research program on blackbird populations and habits in relation to agricultural damage in the West. Private bird banders have also given increasing attention to blackbirds and have contributed additional information on blackbird distribution and movements. To date, only Guarino (1968a, b) and De Grazio et al. (1969) have reported band recovery data for Yellow-headed Blackbirds (*Xanthocephalus xanthocephalus*). A sufficient number of band recoveries for this species has now accumulated to justify a general review.

This paper presents information on geographical and seasonal dispersal of recoveries of banded Yellow-headed Blackbirds. Data include all recoveries processed by the Bird Banding Laboratory through 30 June 1969. Because over 76 per cent of all birds recovered were banded in North and South Dakota, the analysis is presented in two parts: recoveries of birds banded in the Dakotas, and recoveries of birds banded elsewhere.

## YELLOWHEADS BANDED IN NORTH AND SOUTH DAKOTA

### BANDING

From 1937 through 1941, 1197 yellowheads were banded at Sand Lake National Wildlife Refuge, Brown County, South Dakota. During that period and more recently, smaller numbers were also banded at other refuges in North and South Dakota. From 1961 through 1968, personnel of the Denver Wildlife Research Center banded 27,027 yellowheads at Sand Lake and 193 in scattered areas of North Dakota; and in a cooperative effort, the fourth author and Robert T. Gammell banded 12,438 in the vicinity of Des Lacs National Wildlife Refuge, Kenmare, North Dakota, and at Lower Souris (now J. Clark Salyer) National Wildlife Refuge, Upham, North Dakota.

Nearly all Dakota banding was done April-September, with the greatest numbers banded May-August.

Many more males than females were banded.

For example, at Sand Lake in 1963, 3943 males, 1356 females, and 411 birds of unknown sex were banded; and in North Dakota in 1967 and 1968, 2337 males and 1285 females were banded. This unbalanced sex ratio reflects a trapping bias. Except possibly in July, females appear less attracted to the modified Australian crow traps (Zajanc and Cummings 1965) most often used to capture blackbirds.

In 1962 and 1963, 5683 yellowheads banded at Sand Lake were also marked with a colored tag (Guarino 1968a). Other bandings were normal.

### DISTRIBUTION OF RECOVERIES

Through 30 June 1969 there were 246 recoveries of Dakota-banded yellowheads, including 171 banded at Sand Lake, 3 elsewhere in South Dakota, 48 at Des Lacs, 22 at Lower Souris, and 2 elsewhere in North Dakota. Over half (135) of the recoveries were in Mexico, 5 in Canada, and 106 in the United States. Of the latter, 81 were recovered in the Dakotas, including 68 in the same state where banded. Figures 1A and B include all April-September and October-March recoveries, respectively, except those 44 recovered in the same latitude-longitude degree block where banded and 3 winter recoveries in the United States, mentioned later. Recoveries are plotted to show migration routes in the spring and fall and distribution in breeding and wintering areas.

### MIGRATION

April-September recoveries of Dakota-banded yellowheads are shown in figure 1A. However, the following eight recoveries from México are unmapped because their locations were unreported or could not be found on maps: three birds banded at Des Lacs recovered in Durango and Nuevo León in April and Guanajuato in May; five birds banded at Sand Lake recovered in Coahuila, Cuanajuato, and Jalisco in April and Guanajuato and Michoacán in September.

Band recoveries indicate the probability of a major southeastward yellowhead migration from Saskatchewan and northwestern North Dakota into the Sand Lake area during August.

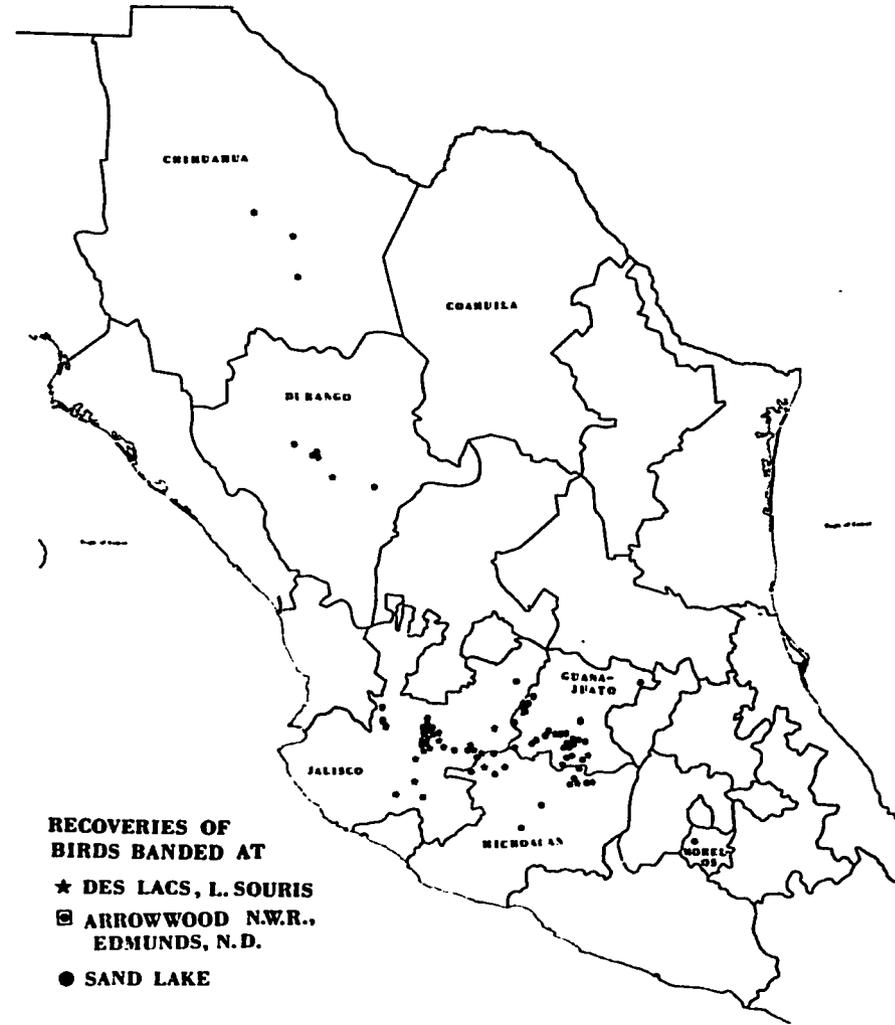
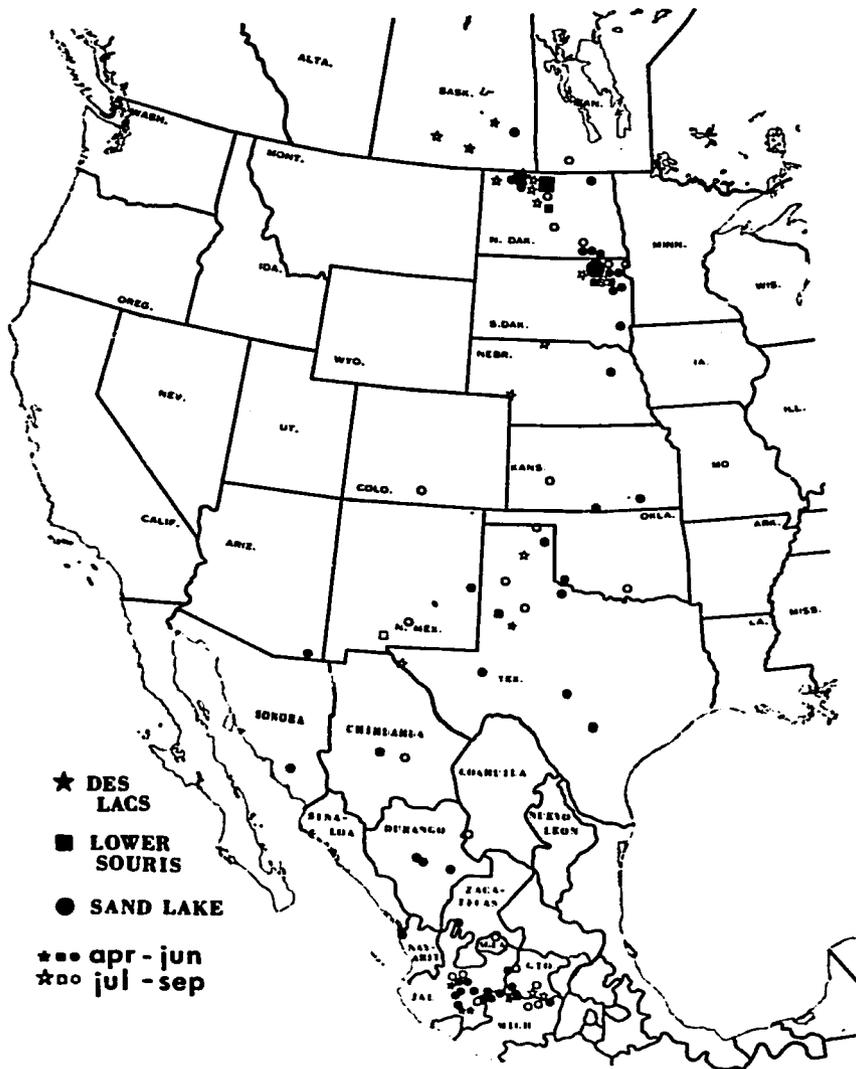


FIGURE 1. Recoveries of Dakota-banded Yellow-headed Blackbirds. A (left), April-September; B (right), October-March.

Two direct and 11 indirect recoveries support this. One yellowhead was banded at Des Lacs on 1 August 1964, retrapped there on 2 August 1965, and then retrapped at Lower Souris on 17 August 1965. This bird moved 63 mi. ESE within 15 days. Another bird banded at Des Lacs was shot after moving 55 mi. SE 15-22 August 1966. One Des Lacs and two Lower Souris birds were recovered at or near Sand Lake, while two Sand Lake birds were recovered at Des Lacs and two at or near Lower Souris in later years. Four Dakota birds were recovered in Saskatchewan in later years up to about 210 mi. W from banding locations.

Such a southeastward movement might have some advantage for the birds because there are greater acreages of both marsh and ripening grain in eastern than in western South Dakota. Although we suspect that the availability of roosting cover and food may determine migration routes, too little work has been done in western South Dakota to learn the relative degree of migration straight south from the Des Lacs and Lower Souris Refuges.

Yellowheads migrate rapidly out of the Dakotas in August, and movement into Mexican wintering areas is complete by the end of September. Few yellowheads were seen or trapped in the Dakotas after the first of September, even though blackbird trapping efforts and observations were not curtailed. In September there were only two Dakota recoveries, while there were 19 to the south, from Kansas to Michoacán.

Thirty-four yellowheads banded 20 July-1 September were recovered south of the Dakotas the same calendar year, indicating direct fall migration. Three of these with the shortest intervals between banding and recovery reveal most clearly the period and rapidity of fall migration: (1) North Dakota to Texas 8 August-10 September, (2) South Dakota to Chihuahua 15 August-8 September, and (3) North Dakota to Guanajuato 17 August-14 September. These birds covered 1190, 1260, and 1960 air miles at minimum rates of 36, 52, and 70 miles per day, respectively. The earliest September recovery in south-central México was in Guanajuato on 11 September of a bird banded at Sand Lake on 27 July. The other 30 direct recoveries were also in México; 2 occurred later in September, 7 in October, 17 in November, and 4 in December.

Data given by Bent (1958) show that the fall migration period is from July through late November in the central United States, with average dates of late departure most fre-

quently falling during the second half of September. Our band recoveries reflect neither such a long period of migration nor such a late average date. Six yellowheads were recovered in July and four in August in states south of Dakota banding locations, ranging from South Dakota through Texas and New Mexico to Jalisco and Michoacán. However, since none were direct recoveries, they may have been either early migrants or birds that migrated in a previous fall and remained in southern areas.

Northward movement in April is indicated by 27 recoveries scattered from Michoacán through northern México, Texas, New Mexico, Kansas, and Nebraska, with only one recorded for the Dakotas. Migration is still in progress in May, judging by the continued spread of recoveries from México to the Dakotas. May recoveries included 11 in México, covering six states from Michoacán to Sonora and Chihuahua and occurring as late as 18 May; five scattered through the Southwest from southeastern Arizona to Texas and Kansas; and 19 in the Dakotas. By the first of June, spring migration appears to be complete.

As with the fall season, spring band recoveries and observations do not reflect the earliest migration reported by Bent (1958), which was in February and March. The first recorded spring arrival date of yellowheads for 10 seasons between 1947 and 1959 at Sand Lake ranged from 8 April to 28 April; one bird observed on 24 March 1948, may have stayed there all winter (Elmer Podoll, pers. comm.). At Kenmare, North Dakota, arrival date ranged from 15 April to 30 April for 15 seasons between 1940 and 1967 (median, 22 April). Yellowheads have been banded at Sand Lake as early as 22 April and at Des Lacs as early as 24 April.

One yellowhead banded at Sand Lake in May 1938 was found dead in Saskatchewan in June 1940, and one banded at Des Lacs on 11 May 1964, was found dead in Saskatchewan between then and 15 June the same year. These recoveries may indicate there is a northwestern migratory tangent through the Dakotas in the spring, the reverse of the fall movement.

#### WINTER DISTRIBUTION

October-March recoveries are shown in figure 1B. Again, 10 recoveries are unmapped for lack of exact recovery location data. These are: three birds banded at Des Lacs, one recovered in Durango in January and two in Guanajuato in November; one bird banded at

Lower Souris recovered in Guanajuato in November; six birds banded at Sand Lake recovered in Coahuila, Jalisco, and Michoacán in February, Jalisco in March, Guanajuato in October, and Michoacán in November.

The major wintering areas (October–March) for Dakota-banded yellowheads apparently lie in Guanajuato, Jalisco, and Michoacán, the region of south-central México known as the Bajío, a high plain largely devoted to livestock pasture and irrigated corn, wheat, vegetables, and other crops. Of 91 winter recoveries in México, 79 were in these states. Edwards (1968) lists the yellowhead among the most frequently observed winter birds around ponds, lakes, and marshes scattered over this region. Recoveries were the most densely clustered near Lake Chapala in the west and in the region around Yuriria and Jaral del Progreso in the east. Five banded yellowheads were shot on one ranch in Jalisco on 31 March 1966; all had been banded the preceding summer, two at Des Lacs, one at Lower Souris, and two at Sand Lake. These recoveries suggest a common wintering ground for Dakota-banded birds.

Although yellowheads winter as far south as the states of Guerrero and Puebla (Bent 1958), a bird shot near Cuernavaca, Morelos, on 21 February 1965, was the only recovery farther south than Michoacán. Robert W. Dickerman (pers. comm.) saw over 1000 yellowheads at Laguna Coatetelco, Morelos, on 29 and 30 November 1962, which indicates they may be more common in that state than band recoveries indicate.

The remaining 11 Mexican winter recoveries were in Durango (7), Chihuahua (3), and Coahuila (1). Edwards (1968) again lists this species as frequently observed around ponds and marshes in his Northern Highlands Subregion, which includes Durango. During a January 1961 survey of Sandhill Cranes (*Grus canadensis*), Erwin L. Boeker (pers. comm.) noted large flocks of yellowheads west of the city of Chihuahua, mostly at Laguna Bustillos and some in Lagunas de Bavicora.

Only three birds have been recovered in the United States between 1 October and 31 March, all in the Dakotas.

#### SUMMER DISTRIBUTION

Recoveries in June, July, and August, 57 in the Dakotas, four in southern Saskatchewan, and one in southern Manitoba, indicate that this region is the major breeding or summering area for Dakota-banded yellowheads. Most recoveries were at or near banding stations.

Among recoveries not shown in figure 1A are five birds banded at Des Lacs and retrapped at Lower Souris, and five banded at Lower Souris and retrapped at Des Lacs.

There are no reliable June recoveries south of the Dakotas. A bird found dead at Novillero, on the coast of Nayarit, Mexico, was reported to the Bird Banding Laboratory by a letter postmarked 5 June, but this bird may have been found in an earlier month. Ten July and August recoveries far south of the Dakotas were mentioned in connection with fall migration, but the species breeds even in northern México (Bent 1958; Miller 1957) and occurs at least as far south as Zacatecas as a sparse midsummer vagrant (Webster 1968). Thus, we do not know if these birds were early migrants, or birds that failed to return north after an earlier fall migration. For a 15 July recovery near Alamosa, Colorado, only the band and a few bones were found (George Doty pers. comm.), indicating the bird had been dead for several weeks or longer.

#### OTHER BANDINGS AND RECOVERIES BANDING

Alexander Wetmore (pers. comm.) banded yellowheads at the mouth of Bear River in northern Utah in the spring of 1916. One of these birds, shot in southeastern Arizona the following November, was the first recovery for this species. Since that time relatively few yellowheads have been banded outside the Dakotas. The staff at Ruby Lake National Wildlife Refuge, Nevada, banded 2503 from 1964 through 1968. Denver Wildlife Research Center biologists have banded 1102 near Denver, Colorado, and 498 in states farther west. The 89 banded by Center personnel in southern Arizona are the largest number banded anywhere during October–March. F. W. Robl banded 989 at Ellinwood, Kansas, and 593 were banded on the Turnbull and Columbia National Wildlife Refuges, Washington, under a permit held by Gordon H. Orians, University of Washington. Undoubtedly, many others have also banded yellowheads over the years but we lack data on the total numbers.

#### RECOVERIES

Seventy-six recoveries resulted from the above efforts. Banding in Nevada, Minnesota, and Colorado resulted in 15, 13, and 10 recoveries, respectively, or half the total. Banding in 13 other states and two Canadian provinces accounted for the other 38.

All recovered birds were banded April–September, except for one bird banded in

Phoenix, Arizona, in December 1962, which was recovered at Ruby Lake National Wildlife Refuge, Nevada, in April 1967.

Shown in figures 2A and B are 14 April–September recoveries and 15 October–March recoveries that reflect long-range dispersal. The remaining 47 recoveries occurred at or near the banding site.

The 15 Mexican recoveries occurred October–May. Two Arizona recoveries were in November and two in January, indicating the wintering status of male yellowheads in the southern part of that state (Phillips et al. 1964).

Although these authors report “wintering swarms near the southern limit of the range, in Jalisco and Nayarit,” a bird banded as a nestling near Caldwell, Idaho, in June 1966 and shot at Guasave in northern Sinaloa on 4 May 1967 was the southernmost recovery for yellowheads banded west of the Rocky Mountains. Alden (1969) reported immense numbers of blackbirds, including yellowheads, wintering in farmlands in the Guasave area. The lack of Mexican recoveries for the 989 yellowheads banded in Kansas is puzzling, since there are ratios of one Mexican recovery per 310, 367, and 377 yellowheads banded in South Dakota, Colorado, and North Dakota, respectively.

A yellowhead banded in Wyoming on 3 May 1939, and killed at McPherson, Kansas (reported to the Bird Banding Laboratory by a letter dated 23 April 1940), shows an unusual eastward shift, but this is apparently a valid record.

During the fall migration period, the latest banding or recovery dates for birds recovered in the United States were 4 September (Oregon and Nevada, one each), 23 September (Kansas), and 2 October (northern Texas). The earliest dates for spring migration were 3 April (Nevada), 22 April (Kansas), and 26 April (Colorado). All these dates fall well within Bent's (1958) periods of spring arrival and fall departure. As with the data for Dakota-banded birds, they do not show the earliest spring arrival dates or the last dates of fall departure. However, Bent's late spring departure dates for southern areas (e.g., Tucson, Arizona, 13 May; Orange County, California, 26 May) are supported by the 4 May recovery in northern Sinaloa.

#### FUTURE BANDING

Banding in certain areas would help to answer some interesting questions about migration routes and wintering areas. For example, more

banding in Kansas, Washington, and elsewhere in the breeding range might give the first clues to the wintering ranges for birds from these areas. What routes do yellowheads from Montana follow when migrating to and from México? Do any of those from western Montana winter in Arizona? How much do populations from east and west of the Rockies overlap in the winter in Arizona, Sonora, and Chihuahua? Also, recoveries from winter banding in the southwestern United States and México would help to identify the breeding range of various local wintering populations. Suggested winter banding areas include the San Joaquin Valley, California; Yuma, Arizona; the Rio Grande Valley through southern New Mexico to El Paso, Texas; the Bajío; and the states of Sinaloa, Chihuahua, Durango, Morelos, and Nayarit, wherever yellowheads occur in numbers.

#### SUMMARY

Over 40,000 Yellow-headed Blackbird have been banded in the Dakotas, most of them in the last decade. Through June 1969 this work yielded 246 recoveries. The data show that most yellowheads leave the Dakotas during August and begin arriving in south-central México in September. From October through March, most recoveries were in Guanajuato, Jalisco, and Michoacán. Yellowheads reappear in the Dakotas in early to mid-April, and spring migration continues through May. Most Dakota-banded birds spend the summer in the Dakotas, Saskatchewan, and Manitoba.

Banding in states and provinces outside the Dakotas has resulted in 76 recoveries. Twenty-nine show long-range geographical dispersal. Most wintered in México, but none banded west of the Rockies were recovered farther south than Sinaloa and Chihuahua.

Future banding is needed to help define the migratory routes and wintering areas of yellowheads that breed in various parts of the United States and Canada and to reveal how much the populations from east and west of the Rocky Mountains overlap on the wintering range in the Southwest.

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Earl B. Baysinger, Chief, Bird Banding Laboratory, Bureau of Sport Fisheries and Wildlife, Laurel, Maryland, provided all band recovery data. The National

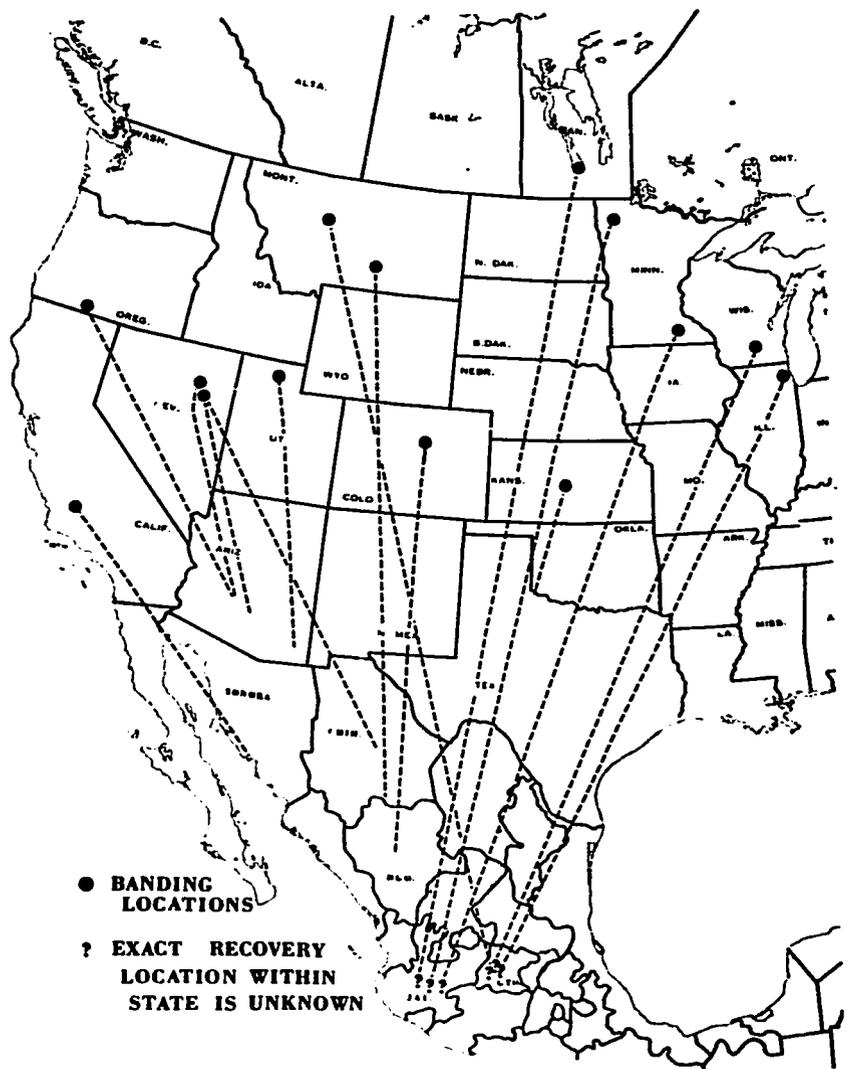
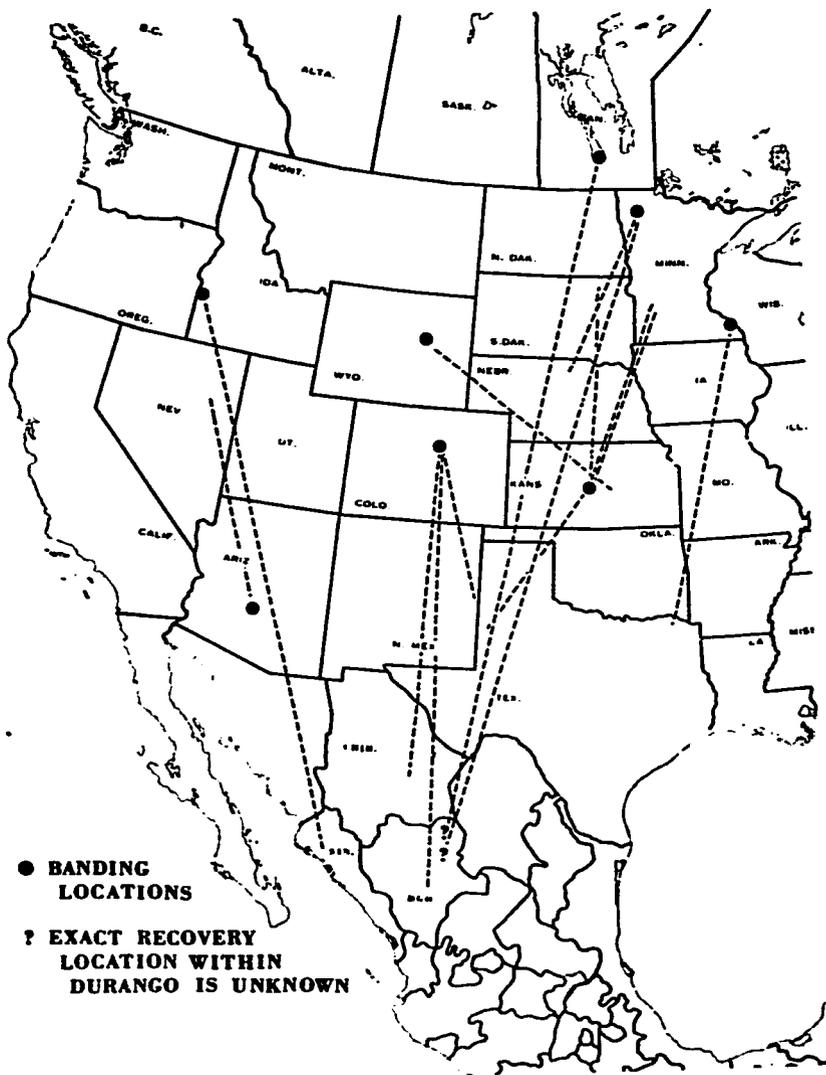


FIGURE 2. Recoveries of Yellow-headed Blackbirds banded outside the Dakotas. A (left), April-September; B (right), October-March.

Geographic Society, Mexican Committee on Geographical Names, and Mexican Embassy, Washington, D.C., located the place names for some Mexican recoveries. Richard W. DeHaven, Olin E. Bray, and Robert and Janet Witzeman helped in literature review. Jerome F. Besser and Ann H. Jones critically reviewed the manuscript.

Frank W. Robl and Donald E. Lewis gave permission to include their recovery data in this paper. Lowell L. Napier, George Doty, W. L. Mühlbach, Carol Schultz, and Alexander Wetmore supplied further details for certain band recoveries. Elmer Podoll provided his records of earliest spring sightings of Yellowheads at Sand Lake, and Erwin L. Boeker and Robert W. Dickerman reported their observations of Yellowheads in México. We thank each of the above individuals and organizations for their cooperation.

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