

1977

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Coon, Donald W. and Arnold, Keith A. (1977) "Origins of Brown-headed Cowbird Populations Wintering in Central Texas," *North American Bird Bander*. Vol. 2 : Iss. 1 , Article 3.

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Origins of Brown-headed Cowbird populations wintering in central Texas

Donald W. Coon and Keith A. Arnold

Introduction

The Brown-headed Cowbird (*Molothrus ater*) is one of several icterid species that, along with the Starling (*Sturnus vulgaris*), form large aggregations outside the breeding season. These aggregations are often in conflict with human populations either as foraging flocks that depredate grain and livestock feed, or as large roosts that raise fear of disease and create nuisance situations because of odors and noise. Because of these distinguishing qualities, pressures are often brought to bear to destroy roosting aggregations. This is often done without knowledge or consideration of the source for these winter populations. Thus, destruction of a large wintering blackbird population may have consequences for areas distant from the area of destruction. It seems reasonable that we should know more about the sources for such aggregations before we apply destructive measures. This study reports on the areas that would be affected should such control measures be applied in central Texas.

Our study area in central Texas (Brazos County and adjacent parts of Burleson County) is used by large numbers of cowbirds, along with grackles, blackbirds and starlings. Every fall a large roost, usually exceeding 1,000,000 birds, forms in the Bryan-College Station area (Brazos County). There may be three or four roosts of varying sizes in use in some winters. Initiated by local breeding birds, these roosts (and foraging flocks that disperse from them) are enlarged by the influx of huge numbers of migrants.

Methods

The primary data are the banding returns from over 60,000 cowbird bandings on our study area for the period 1969-1974; we also include a few foreign retraps from our traps. We have also analyzed all banding encounters from the Bird Banding Laboratory of Brown-headed Cowbirds for the

period 1932-1968, concentrating on encounters of winter-banded Texas birds and all Texas encounters of birds banded in other states.

For our analyses, we have considered the following periods: Spring migration following banding — March 1 to April 14; First breeding season — April 15 to August 15; Fall migration and second winter — August 16 to December 31; Other breeding seasons — April 15 to August 15 for subsequent years. Obviously, these dates are arbitrary in that some cowbirds probably are still in migration after April 14. However, we have encounters prior to that date from areas well within the northern breeding range, and feel justified in using these limiting dates.

Results

From our cowbird bandings, we have received 135 notifications of encounters. Of these, 64 made during the first calendar year after the winter banding or in subsequent breeding seasons are used here to determine the breeding grounds of Brown-headed Cowbirds that contribute to the wintering populations in central Texas. Table 1 presents the encounters by state and recovery period. Not included here are encounters from the coastal plains of Texas and Louisiana which represent another aspect of cowbird movements (Coon and Arnold, in preparation). With the single exception of a California recovery, all other encounters are from the eastern part of the Great Plains across the eastern half of North America to the Appalachian Mountains. The encounters made during breeding seasons (April 15 - August 15) are mapped in Figure 1.

During our trapping programs, we have had 10 foreign retraps. These show essentially the same pattern as the encounters of our bandings (Table 2), that is, widespread throughout the Mississippi River drainage.

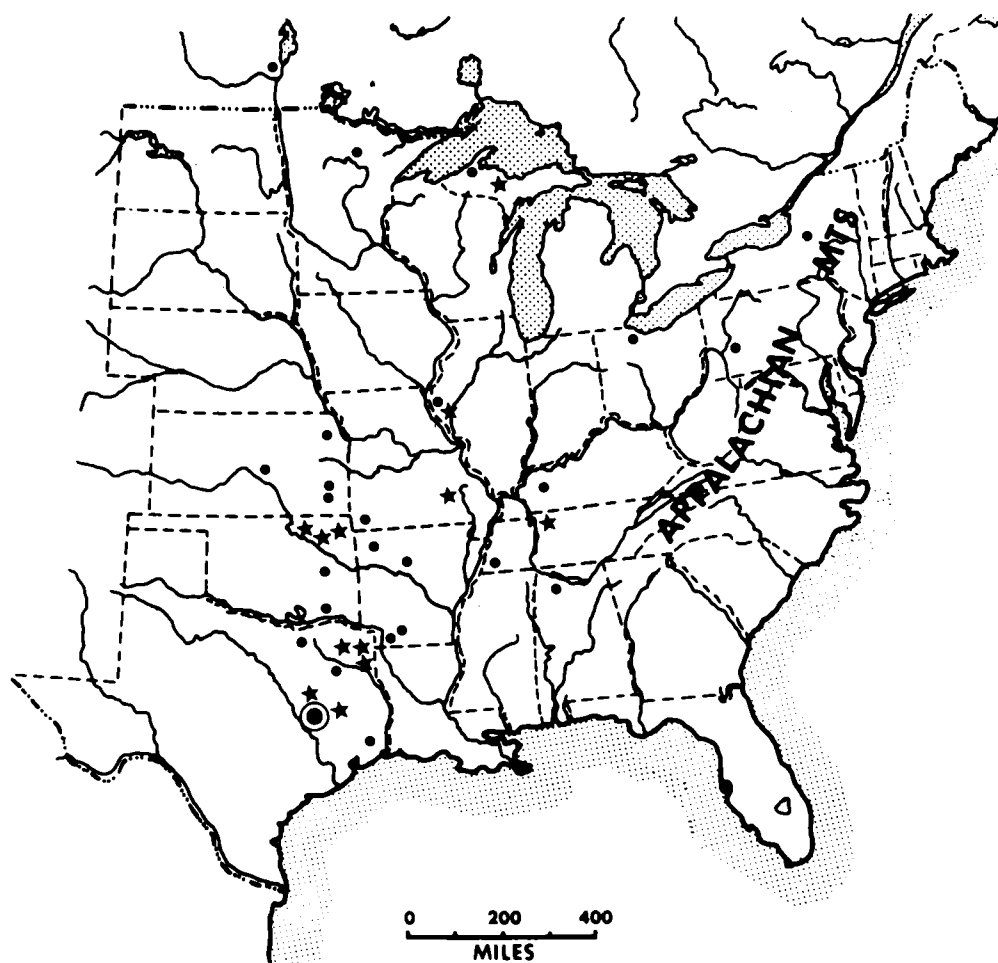


Fig. 1. Birds banded during this study and recovered during the breeding season, April 15-August 15. Solid circles indicate first breeding season post-banding; stars indicate subsequent years. The study area is indicated by the concentric circles.

Table 1. States and periods of recoveries for Brown-headed Cowbirds banded in this study.

	1 March-14 April Post-banding	15 April-15 August 1st "Breeding Season"	16 August-31 December Post-banding	15 April-15 August Other Breeding Seasons
Texas*	13	3		5
Louisiana	1			
Alabama		1		
Oklahoma	2	2	4	4
Arkansas	3	4		
Tennessee		1		1
Kansas		4		
Missouri		1		1
Kentucky		1		
Illinois	1	1		1
Ohio		1		
Pennsylvania		1		
Minnesota		1		
Wisconsin			1	1
Michigan		1		1
New York		1		
Manitoba, Canada			1	
California		1		
Totals	20	24	6	14

* Does not include birds recovered to south of study area except for those recovered in "breeding seasons".

Table 2. Foreign retraps made during this study.

Banding State	Date Banded	Date Recaptured
Oklahoma	22 October 1970	13 November 1970
	20 October 1970	9 February 1971
	3 December 1964	24 February 1973
Kansas	10 August 1974	27 October 1975
Tennessee	23 February 1973	1 October 1973
Ohio	3 April 1969	4 February 1971
	31 October 1970	11 September 1972
	5 May 1970	22 February 1971
Michigan	26 April 1971	10 March 1973
	9 January 1973	4 October 1975

The records of the Bird Banding Laboratory produced 45 encounters of Brown-headed Cowbirds in Texas for the period 1932-1968 of birds banded outside the state during the summer months. These encounters include three states not included within encounters of our bandings — Massachusetts, Rhode Island, and Vermont — and one Canadian province, Ontario (Table 3). For the same period we found 82 encounters from other states of cowbirds banded in Texas during the months of October through March (Table 4). Two states, Iowa and Virginia, are represented in these encounters, but not from our bandings; the province of Ontario is also represented among these encounters.

Discussion

In any ecological study of a migratory species, consideration of the migratory pattern between breeding and wintering grounds is an integral part of the study. Further, if any attempt is to be made at manipulating bird populations on wintering grounds, it should be known beforehand what geographic areas might be affected.

From birds banded on wintering grounds in Texas and from birds banded outside Texas during the breeding season we can show that a minimum of 23 states (including Texas) and two provinces of Canada contribute to our wintering populations. Most of these lie within the Mississippi River drainage; exceptions are the two Canadian provinces, the three New England states, Virginia and California. Since the Canadian provinces lie directly north of the Mississippi drainage, these encounters fit the general pattern (Fig. 1). The California recovery is certainly an anomaly. The bird, banded in its hatch-year, could have strayed into more western breeding populations following the winter of banding. Recoveries from the four eastern states — Vermont, Massachusetts, Rhode Island and Virginia — are somewhat unusual in that they all are beyond the Appalachian Mountains, a physiographic feature that seems to be a

Table 3. Banding locations of Brown-headed Cowbirds banded during summer months only in states other than Texas and recovered in Texas during the period 1932-1968.

Banding Location	RECOVERY SEASON		
	Following Winter	Subsequent Breeding Seasons	Subsequent Winters
Massachusetts	1		
Rhode Island	1		
Vermont	1		
Michigan	7		4
Minnesota	1		
Wisconsin	4		2
Ohio	4		
Illinois	6		6
Arkansas		2	
Tennessee	1		
Ontario	5		

reasonable barrier to those breeding populations that contribute to the Texas wintering populations. However, we have shown elsewhere (Coon and Arnold, in preparation) that intraseasonal movements occur among wintering cowbird populations on the Gulf coastal plain, so these birds may have migrated south along the Atlantic coast and across the Gulf coastal plain.

Royall (1973) reported on the origins of wintering populations of the Common Grackle (*Quiscalus quiscula*) in Texas. The breeding range that he established was of similar size, but oriented slightly westward of the breeding range of the cowbird. He also determined that Common Grackles could winter in Texas one year, then winter in states farther east another year and vice versa. Our findings on cowbirds are similar.

Table 4. Recovery locations of Brown-headed Cowbirds banded in Texas from 1932-1968 during the months of October through March only and recovered in other states.

Recovery Location	SEASON OF RECOVERY			Subsequent Breeding Seasons
	Same Winter	Next Breeding Season	Subsequent Winters	
Arkansas		9		9
Louisiana	1		8	
Mississippi				1
Tennessee		4	1	
Oklahoma		2	2	2
Kansas		8		3
Kentucky		1		3
Indiana		1		1
Missouri		1	1	2
Illinois		2		4
Michigan		3		3
Wisconsin		1		1
Ohio				2
Pennsylvania		1		
Iowa				1
Ontario				3
Virginia			1	

Crane et al (1972) reported that the cowbird was found in California year-round, with a concentration of cowbirds occurring during the winter near their study area in Colusa County, California. They recorded 50 percent of the breeding season recoveries as California recoveries; the remainder came from states north of California.

Among 44 encounters of our bandings which occurred during the period of March 1 - August 15 following banding, six birds were banded at a late date (March) and recovered less than 45 days after banding, allowing us to speculate on rate of migration. Such speculation, however, necessarily assumes that the birds left the day of banding and arrived at the recovery site on the day of recovery; obviously such assumptions have little validity. Table 5 gives the data for these six birds. The two Texas recoveries have a much lower travel rate (mean 8.85 km/day) than the out-of-state recoveries (mean 21.3 km/day). Since all six birds were banded in the first half of March when our blackbird roosts generally began to disperse, these differences may be real. If one assumes a minimum of one day after banding before departure and one day arrival prior to recovery, then the mean rates are 9.6 and 23.1, respectively, for Texas and out-of-state. The fact that two birds, banded on the same day and traveling the same approximate distance, arrived at their respective recovery locations 10 days apart demonstrates the fallacies of the above assumptions.

That the rates of migration may well exceed those illustrated by our six birds is shown by one recovery from the BBL files. A cowbird banded at Houston, Texas, was recovered at Oshkosh, Wisconsin 39 days later, an average of 53 km per day. Friedmann (1929) stated that the average arrival data for cowbirds in upper Wisconsin was April 10 for birds initiating migration at the beginning of March; this approximates the 39 days of the Houston-banded bird.

A low proportion of the breeding-season encounters are from Texas. Van Velzen (1972), reporting on the distribution and abundance of the Brown-headed Cowbird, showed that the areas of abundance for this species during the breeding season were the upper reaches of the Mississippi River drainage and the mid-western states; however, Texas does have a breeding cowbird population (Oberholser 1974). We had eight Texas localities (21 percent) out of the 38 breeding-season encounters of our bandings (Table 1). This is much higher than the 7 percent (11 of 154) for BBL data on breeding-season encounters for Texas winter-

Table 5. Recoveries from the study that give minimum estimate for distances travelled in migration.

Date Banded	Recovery Location	Recovery Date	Distance		Rate of Travel (km/day)
			Travelled (km)	Days Elapsed	
03-01-71	Jay, Oklahoma	04-14-71	725.8	44	16.5
03-03-71	16 mi. N Shreveport, Louisiana	03-20-71	322.6	17	19.0
03-08-71	7 mi. SE Gravette, Arkansas	04-13-71	725.8	35	20.7
03-08-71	5 mi. NW Reydon, Oklahoma	04-03-71	725.8	25	29.0
03-08-71	7 mi. SW Tatum, Texas	04-06-71	258.1	28	9.2
03-12-72	Near Chester, Texas	04-01-72	169.4	20	8.5

banded cowbirds for the 1932-1968 period. Considering the large number of bandings over a relatively short time-span in this study, we believe that our results more accurately portray the percentage of the wintering populations that originate from Texas breeding populations.

Brown-headed Cowbirds have been known to winter in northern states such as Michigan, generally around specific feeding sites (Adams 1974, Kelley 1974, Pinkowski 1976). Bird feeders, grain-handling facilities and similar food sources have no doubt increased this wintering behavior. This change in migratory habits is reflected in recoveries of our banded birds in January of subsequent years in Missouri and Wisconsin. The Wisconsin bird was actually retrapped by Mr. H.A. Mathiok of Horicon, who wrote that he often has many cowbirds wintering in this area.

The Mississippi River drainage migration of Brown-headed Cowbirds may be represented by many separate flocks of cowbirds moving southward, as dictated by weather and feeding locations. As migration progresses, these flocks tend to coalesce into larger units. Such units may linger in a region until a major storm of sufficient severity strikes the region, and the flocks move farther along the migratory pathway (Goddard 1971, Stone and O'Halloran 1966). The increase in roost size on the study area after each severe cold front, and the almost complete changeover in cowbird populations in mid-winter (Coon and Arnold, in preparation) support this conclusion.

In summary, the Brown-headed Cowbird populations wintering in Texas are derived from a large portion of North America. This area includes most of the Mississippi River drainage, and adjacent

portions of southern Canada. Also, some contribution may be made by cowbird populations of the eastern seaboard by way of the Gulf coastal plain. Population controls on blackbird winter roosts will, then, have far-reaching effects.

Acknowledgments

We are indebted to countless students who have cooperated in our banding program; we can acknowledge only a few: Robert Gotie, Michael Hanson, Roberta Summers and Ronald Klein, all of whom headed banding crews. We are also grateful to the large number of banders who allowed us to use their recovery records in this study. This is contribution number TA 12997 of the Texas Agricultural Experiment Station, Project 1615.

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Worksheets for western birds

Ageing/sexing worksheets for western birds are mailed with NABB only to Western Bird Banding Association members. They are, however, available to anyone interested. For each worksheet desired, send 25 cents (or \$1.00 for any five worksheets) to Mrs. Donald F. Radke, P.O. Box 446, Cave Creek, AZ 85331.

The following species sheets have been issued: Harris' Hawk, Scaled Quail, California Quail, Gambel's Quail, Mountain Quail, Common Snipe, Band-tailed Pigeon, key to kingbirds, Eastern Kingbird, Tropical Kingbird, Western Kingbird, Cassin's Kingbird, *Myarchis* flycatchers, Violet-green Swallow, Tree Swallow, Yellow-billed Magpie, Verdin, Bushtit, gnatcatchers, Orange-crowned Warbler, Northern Waterthrush, Louisiana Waterthrush, *Oporornis* warblers,

Tricolored Blackbird, Western Tanager, Summer Tanager, Black-headed Grosbeak, Lazuli Bunting, Cassin's Finch, Common Redpoll, American Goldfinch, Lesser Goldfinch, towhees.

(Editor's note: These worksheets are not bound into NABB for two reasons: (1) They are easier to use in the loose-leaf format. They can be slipped into a clear plastic jacket to be taken into the field — protected against wind, rain, and other hazards. (2) The worksheets are, at this time, tentative. Everything possible is done to insure their accuracy, but it is difficult to be certain that everyone having significant data has been contacted. By issuing the worksheets as we have, they go out into the field where, hopefully, we can get critical feedback. Then, if need be, corrected sheets can be issued.)