# Evidence of Westward Changes in the Range of the American Woodcock

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**Abstract:** The American Woodcock (*Philohela minor*) has received little research attention in the westernmost states of the species' range. Data on woodcock numbers, distribution and nesting were collected from seven western woodcock states and pooled with similar data from Oklahoma. Persons contacted included those within state wildlife agencies, universities, and state ornithological societies in North Dakota, South Dakota, Nebraska, Iowa, Kansas, Missouri and Texas. Additional information was obtained on the migration routes and wintering areas of woodcock breeding in Minnesota and Wisconsin. All except Nebraska reported records of woodcock breeding. Locations of breeding sites provided by cooperators are considerably west of the western limit of the woodcock's breeding range as reported by Sheldon (1967). Earliest dates for courtship activity in the survey states ranged from late January in Oklahoma and Texas to April 24 in North Dakota. Nesting activity began as early as February 14 in Oklahoma and April 3 in South Dakota. Migration dates reported through the survey were compared to wing data provided by the U.S. Fish and Wildlife Service to elucidate fall migration chronology. Minnesota and Wisconsin officials reported some woodcock produced in their states migrated through or wintered in the southern survey states. All states reported woodcock were most common in eastern portions of the states. Minnesota, Texas and Oklahoma indicated that woodcock may be more widespread in western portions than previously recognized. The nesting records for states not previously known to support breeding woodcock plus information suggesting that a westward range extension has occurred indicate potential for increased woodcock numbers on the western periphery of the species' range.

AMERICAN WOODCOCK research in the past has concentrated on the species' principal breeding and wintering areas. Comparatively little information has been obtained in states on the western fringes of the range and in states along the migration routes between major breeding and wintering areas. Limited public awareness of woodcock in the Midwest may partially explain why few population data have been collected in this region.

A study was conducted at Oklahoma State University from August, 1974 to August, 1976 to determine the population status of woodcock in Oklahoma (Smith 1977). One of the objectives of that study was to compare the status of woodcock in Oklahoma with that in other states on the western fringe of the species range. The comparison was used to determine whether the information collected in Oklahoma was unique to the state or was consistent with woodcock population status in other western states. This paper presents the results of that comparison which should help in developing a broader understanding of the species' regional status.

Financial support for this study was provided by the U.S. Fish and Wildlife Service, Accelerated Research Program for Migratory Shore and Upland Game Birds. We wish to thank all persons responding to the questionnaire survey and those replying to letters asking for information regarding migration routes and wintering areas of woodcock nesting in their states.

## Methods and Materials

A MAIL SURVEY WAS USED to acquire information on woodcock breeding, migration

and wintering distribution and chronology in states on the western edge of the breeding and wintering ranges. States to be surveyed (Fig. 1) were chosen because of their position on woodcock distribution maps (Sheldon 1967), and because much of the area surveyed lies outside the current reference area of surveys by the U.S. Fish and Wildlife Service (hereafter, U.S.F. & W.S.) (Artmann 1975).

A survey form was designed and 23 questionnaires were mailed in April 1976, to personnel of wildlife agencies and universities, and members of state ornithological societies. Inquiries were also sent to Minnesota, Wisconsin and Michigan for information on the migration routes and wintering areas of woodcock breeding in their states. It was hypothesized that the above three states, known to have substantial breeding populations, may contribute migrant birds to western periphery states.

Woodcock wing survey data were obtained from the Office of Migratory Bird Management, U.S.F.&W.S. (Joe Artmann). These data were compiled by 10-day periods and along with wing data for states involved in our mail survey and adjacent states to the east were analyzed collectively to determine the autumn woodcock migration and distribution phenology in each state.

## Results and Discussion

TWELVE RESPONDENTS from the seven survey states returned questionnaires. Minnesota and Wisconsin officials responded to letters asking for information concerning migration routes and wintering areas of woodcock produced in their states.

## Incidence of Nesting

ALL STATES SURVEYED, with the exception of Nebraska, reported one or more records of nesting woodcock (Fig. 2). Respondents suggested that woodcock may be nesting in their states in greater abundance than their records indicate. Iowa reported 32 nest and brood records in 14 counties, mostly in the eastern portion of the state. Missouri reported approximately 15 nest records in the past 3 years, but did not include exact nest locations A Texas respondent described woodcock nesting in Texas as rare and believes that nest-

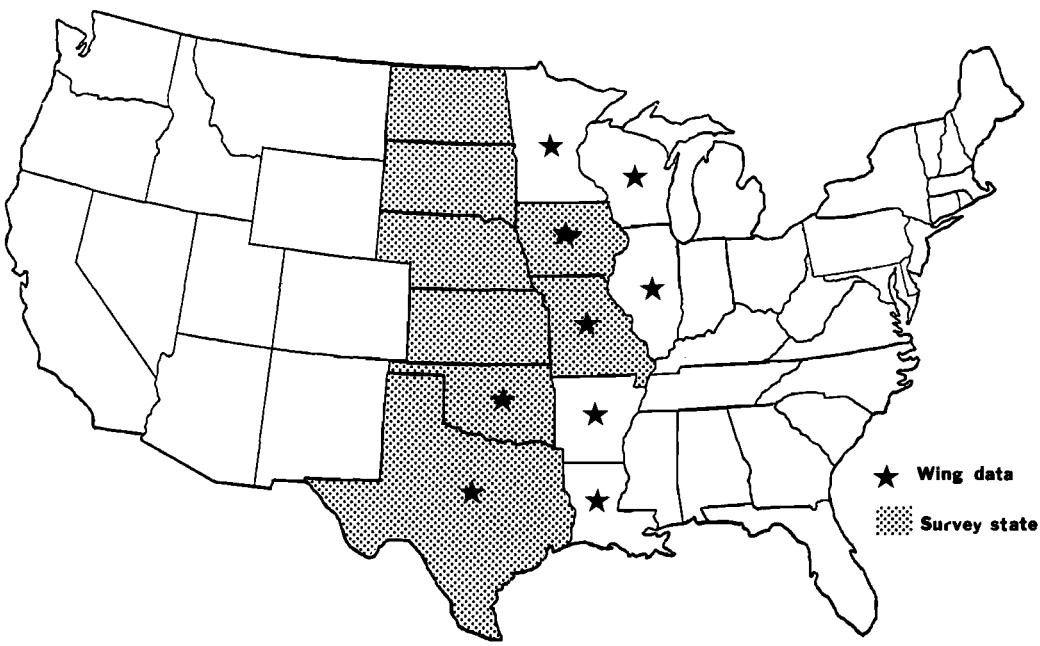


*Fig. 1: States surveyed by Regional Survey questionnaire (shaded area) and states for which wing-collection data (U.S.F. & W.S., Office of Migratory Bird Management — *) were obtained.*

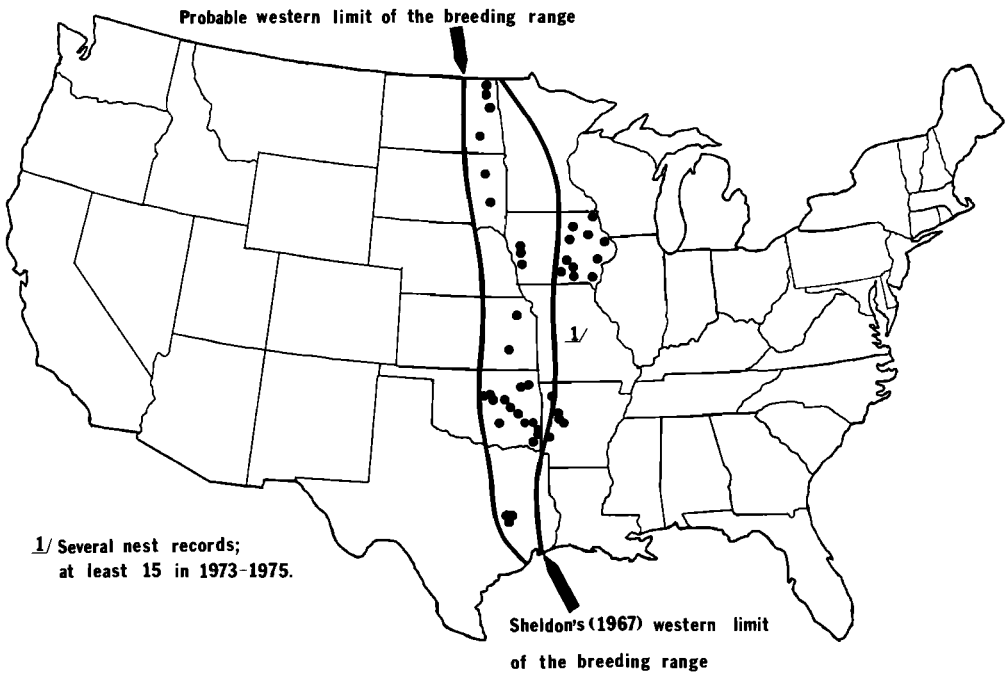


*Fig. 2: Woodcock nest sites (courtship sites in North Dakota) in states on the western edge of the species breeding range and the western limits of the woodcock's breeding range proposed by Sheldon (1967) and the authors.*

ing in that state may be directly related to rainfall. An Arkansas official responding to a letter asking for nest records reported no records for the state. However, woodcock nests and broods have been recorded in Arkansas by Pettingill (1936), Sutton (1967) and the authors. There are 14 nest records from central and eastern Oklahoma.

The western boundary for the breeding range of woodcock published in Sheldon (1967) is shown in Fig. 2. This boundary provided by Sheldon averages 286 km east of the western limit of woodcock breeding range we present. Distances between the two range margins are narrowest in Texas (176 km average) and widest in South Dakota (374 km average).

## Breeding and Nesting Chronology

THE RECORDS OBTAINED were used in combination to show the breeding chronology from south to north because records of both courtship activity and nests were not available from all states. A report from Texas indicated that male woodcock begin courtship activity in late January. No nesting dates were listed. This reported date of initiation in Texas is comparable to the late January beginning of courtship activity in southeastern Oklahoma. We found the average display initiation date in north central Oklahoma (Payne County) to be February 4. The earliest record of nesting in Oklahoma was March 6. Earlier nesting is suspected in Texas and Oklahoma because, based on an incubation period of 21 days and 4 days for egg laying, a brood found on March 10 in Oklahoma would have come from a nest containing eggs layed on or before February 14.

The earliest date for a woodcock nest recorded in Kansas was April 15 and the latest brood sighting was May 28. We speculate that courtship activity in Kansas begins in mid-February.

Iowa Conservation Commission personnel conducted an annual singing-ground survey from mid-April to mid-May. No dates were given for courtship activity or nesting in Iowa but woodcock probably began displaying before the mid-April survey initiation date

Breeding activity in Nebraska, if existing as we expect, probably occurs during nearly the same time period as in Iowa.

A brood hatching on April 28 represents the only such record for South Dakota. Since nesting activity for this brood probably began around April 3, courtship activity in South Dakota must exist in late March.

Displaying males were recorded from April 24 to May 11 in North Dakota but no nests or broods were reported. Woodcock nesting in South Dakota and Minnesota and the presence of displaying birds in North Dakota indicate that woodcock may nest in the state. If present, woodcock would be expected to begin nesting in late April in North Dakota. Woodcock have been reported in North Dakota from July 15 to July 27.

### Timing of Fall Migration

Respondents from Iowa, Kansas, Missouri and Texas listed dates in which woodcock migrated through their states in fall (Fig. 3). Iowa provided date of initiation and Kansas reported ending date. All states that recorded initiation dates for the fall migration reported that it begins in mid-October and states recording ending dates for the migration reported that the birds are gone by mid-December Respondents in North Dakota, South Dakota and Nebraska reported that woodcock were believed to migrate through their states in fall but timing was unknown.

The approximate timing of the woodcock migration per state as deduced from the U S F.& W.S. reports is shown in Fig. 3. The peak period reported for the woodcock observed in a state was thought to be a strong indicator of the period when the greatest numbers of migrant birds were present.

Data analysis revealed that the earliest peak in woodcock migration occurred in Minnesota while the latest peaks were in Arkansas and Louisiana. Peaks advanced from north to south, as the season progressed. The extended peak in Illinois occurred during the same time period as the migration dates reported for Iowa. The peak periods for Missouri, Oklahoma and Texas are clear from Fig. 3. The peak migration period in Texas mainly preceded the hunting season, indicating that a substantial portion of the woodcock hunted in Texas comes from birds wintering in the state The same is probably true in Arkansas and Louisiana.

### Migration Routes

Larry Gregg, Wisconsin Department of Natural Resources, reported that many Wisconsin-banded birds migrate nearly straight south in the fall and their migration route roughly coincides with the Mississippi River. Band returns show that most Wisconsin-produced birds winter in Louisiana and Mississippi; 10 percent of the band recoveries are from Texas. There are direct recoveries of Wisconsin banded woodcock in Oklahoma William Marshall, University of Minnesota, reported that woodcock banded in Minnesota and recovered in Iowa and Missouri indicate the southern migration route of the species and that recoveries from Louisiana and Mississippi indicate its wintering areas. A male woodcock banded in Oklahoma in spring, 1973 was recovered the following fall in Pine County, Minnesota, near the Wisconsin border.

Respondents to the regional survey, except those in Iowa and Missouri, listed the portions of their states containing breeding woodcock (Fig. 2) as being the same portions that contained the greatest numbers of migrant woodcock. Iowa and Missouri respondents reported that woodcock were found scattered across their states but were most abundant in eastern counties.

### State Trends

Most respondents reported that they were not sure of the trends in woodcock range or numbers in their states because of insufficient data. However, Marshall (pers comm.) reported an apparent westward expansion and greater numbers of woodcock in Minnesota in areas previously unrecognized as woodcock range. A Kansas respondent reported woodcock are becoming more numerous in the state and a Missouri respondent reported that he had, in recent years, received more reports of singing and nesting woodcock than previously. A Texas respondent reported that woodcock seemed to be more widespread to the west. Available evidence indicates that woodcock have been increasing in Oklahoma,

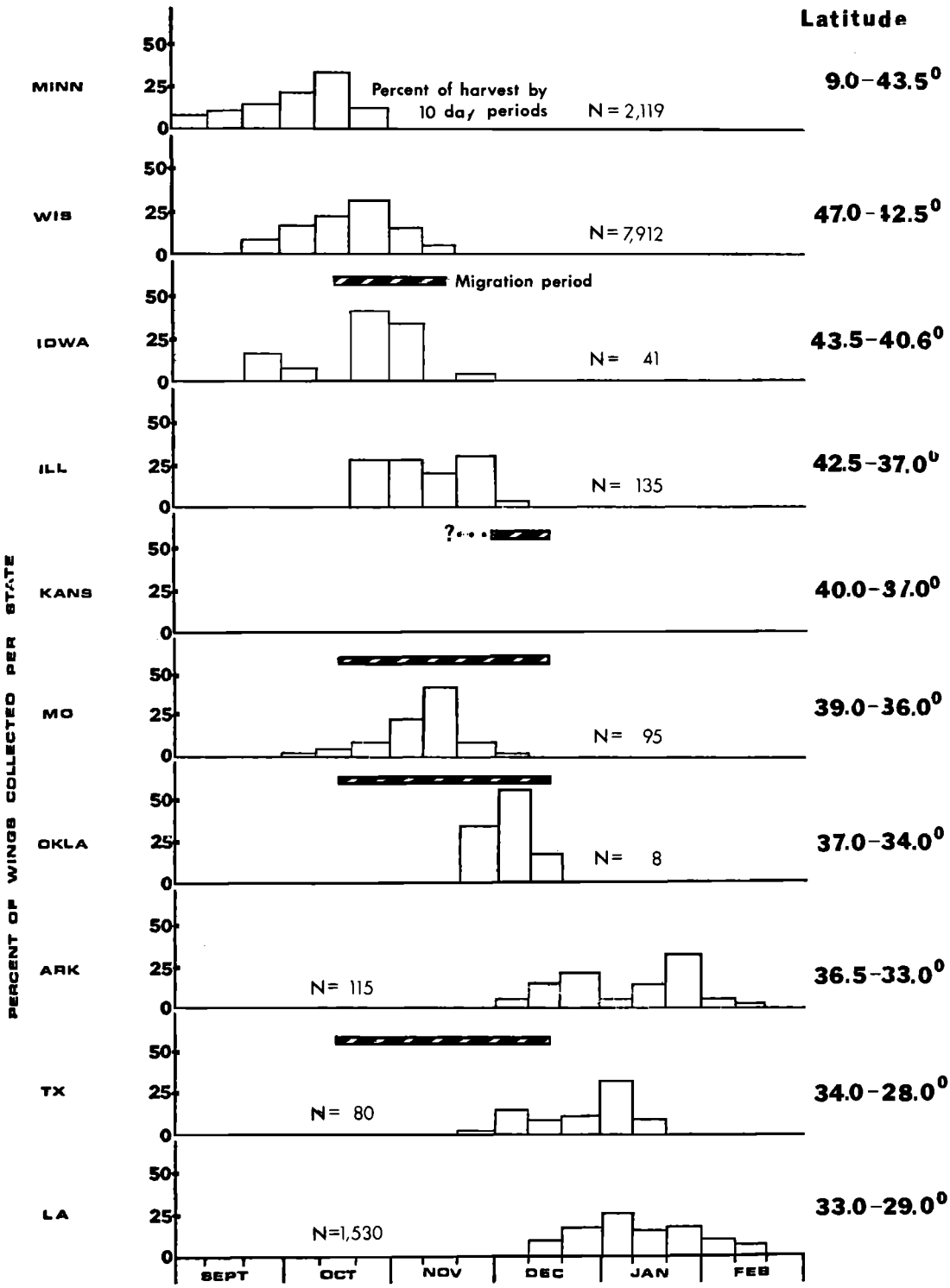


*Fig. 3: Distribution of 1972-73 through 1974-75 woodcock wing collections by 10-day periods (U.S.F. & W.S ) and migration periods (horizontal bars) reported on the Regional Survey questionnaire.*

particularly in the eastern and central portions of the state where they were once considered to be rare.

The western boundary for breeding woodcock which we present coincides with the western boundaries of the bluestem prairie and oak/bluestem parkland ecoregions (Bailey 1976). Natural factors governing the existence of these ecoregions may also govern the distribution and abundance of woodcock in the eastern United States. Regional precipitation patterns appear to be the most critical natural influence on woodcock distribution and abundance *via* effects on other habitat components.

Further study of woodcock in these states appears warranted so that a more complete knowledge of breeding, migration, wintering, and habitat requirements might be obtained.

Studies of woodcock on the western edge of the species' range may have importance in determining the population status and habitat requirements in other portions of the range. Odum (1971:113) stated that "If we accept Andrewartha and Birch's (1953) contention that distribution and abundance are controlled by the same factors, then study at range margins should be doubly instructive." By studying the factors limiting woodcock on the western edge of their range, we may be able to better understand those factors limiting their abundance elsewhere. Annual monitoring of breeding populations in western fringe states could reveal important information not detected in areas where breeding populations are more abundant.

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