

production of cones in different regions of the county. Therefore, this bird has evolved into a nomadic species, moving in search of evergreen forests with suitable numbers of cones. An area supporting a large population of crossbills one year may contain few, if any, during subsequent years until the local cone production is again adequate to sustain another invasion.

Although most of the nomadic Red Crossbills reported in Oklahoma during the summer of 1996 were juveniles, there were a few adults, which raises the possibility of breeding birds. There is no record of the Red Crossbill nesting in Oklahoma, however. Due to the wide diversity of nesting dates from year to year for this species throughout its normal range, there is no reason to suspect that the birds seen in Oklahoma this summer were part of any nesting effort.

Throughout the range of Red Crossbills in the western and northern United States, seven "types" are identifiable, based on vocalizations and morphological differences. One additional type occurs in Newfoundland. Craig Benkman of New Mexico State University stated that the most reliable way to identify the types of Red Crossbill involved in an invasion is by analyzing a recording of the calls. Unfortunately, no recording was made during any Oklahoma sighting, but this information provides guidance for future encounters with nomadic Red Crossbills, when the use of a recorder should prove valuable in identification of type, and hence the probable geographic origin of these periodic wanderers.

LITTLE RIVER NATIONAL WILDLIFE REFUGE, P.O. BOX 340, BROKEN BOW,
OKLAHOMA 73728, 28 OCTOBER 1996.

STATUSES OF FOUR AVIAN SPECIES IN SOUTHWESTERN OKLAHOMA

BY JACK D. TYLER AND E. JANI BECHTOLD

A knowledge of the continent-wide distribution and abundance patterns of an avian species is of great value. They reveal not only range extent, but also locations of high density. Localized studies afford an opportunity to shed light on local population trends. Wardel (1981) suggested that within localized areas, biotic interactions such as competition and predation influence the details of species range boundaries, whereas on a larger scale, physiological tolerances for environmental characteristics such as climate and vegetation are the ultimate limiting factors (Wardel *in* Root, 1988). Two types of population surveys were used to extract abundance data and calendar dates for 13 counties within southwestern Oklahoma for the Scissor-tailed Flycatcher (*Tyrannus forficatus*), Mountain Bluebird (*Sialia currucoides*), Loggerhead Shrike (*Lanius ludovicianus*), and Cassin's Sparrow (*Aimophila cassinii*). The counties within the study area included all or part of Beckham, Caddo, Comanche, Cotton, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Stephens, Tillman and Washita.

The first data set analyzed was the National Audubon Society Christmas Bird Count (CBC). The patterns of the CBC verify the presence of species and identify locations of populations. The counts are restricted to specific locations which require a minimum of eight hours during which all species within a 24 km (15 mile) radius are counted. The CBC data adequately represent the average abundance of most birds reported (Root, 1988). One must keep in mind, however, that the sites of

these counts are not uniformly distributed throughout North America. The abilities of the participants, miles traveled, hours spent counting, and size of the parties differ between count sites (Tramer, 1974). Weather may also cause variation in the data, as it affects species detectability (Verner, 1985). Another possible variant is that CBC counts occur in early winter when individual birds may not have completed their migration, particularly during warm years (Graber and Graber, 1983).

The second information source reviewed was the annual United States Fish and Wildlife Service Breeding Bird Survey (BBS), which furnishes knowledge of the distribution of breeding birds in the United States (Root, 1986). The BBS has gained status as one of the preeminent sources of population trend data for the continent's avifauna. Randomly distributed roadside routes have been established within each one degree block of latitude and longitude in the United States and southern Canada. The density of routes varies geographically, and will be noted as it relates to southwestern Oklahoma.

Breeding Bird counts are made on the principle that during the breeding season, males of most species are in their territories where they sing or perform within a limited area. Each male is assumed to represent a breeding pair, although some singing males may not have a mate, and some established pairs may be silent at the time of the census (Terres, 1980). As with the CBC, attempts to monitor bird populations under field conditions are subject to a variety of interacting biases including weather conditions, experience of observers, and route densities. An important source of bias is the failure of the BBS to distinguish between breeding birds and unmated individuals. In many instances, a nonbreeding bird may sing more persistently than a mated bird, especially if the nesting season is well advanced. Thus, for some species the trend being detected may be largely of unmated birds rather than breeding populations. By standardizing procedures as much as possible, many of the potential sources of bias are reduced. Studies of random BBS roadside sampling indicate the variability of species counts. Often, as many as one-third of the species detected by one observer will be missed by the other. This variability in detection does not detract from the validity of the survey, it simply stresses that the survey is recording only a sampling of the species that are present (Root, 1988). By repeating the census year after year, indications of population changes are recognized. When such censuses, taken throughout the entire country in all types of bird habitats, are summarized, they yield information regarding the abundance of breeding pairs of each species (Aldrich and Robbins, 1970 *in* Root, 1988). BBS data serve many functions, one of which is an "early warning" system for groups of species experiencing declines. The data is utilized as a tool in the development of management strategies by resource agencies (Peterjohn, 1995).

Breeding Bird Surveys were conducted in all except four of the 13 counties in southwestern Oklahoma (Comanche, Jackson, Jefferson and Tillman) between 1967 and 1994. There were two BBS routes in Cotton County, two partial routes in Caddo County, a partial route in Washita and Grady counties, and one route each in the remaining seven counties. The number of surveys within the study area has been sporadic. For example, only two surveys were completed during two years; six runs in five years; and five Breeding Bird Surveys were conducted during 11 years of the 28-year history of the counts.

Scissor-tailed Flycatcher - A transient and summer resident in Oklahoma, the Scissor-tail is observed in southwestern counties from early April to late October, with spring migration extremes of 7 March and 21 April (Tyler, 1994). Its breeding range extends from southern Nebraska to southern Texas, and it has been recorded outside its normal range on many occasions (Bent, 1942). In summer, it ranges from Texas north to Kansas and is considered "common" (spring, summer, and fall) in the southwesternmost Oklahoma counties of Comanche, Cotton, Greer, Harmon, Jackson, Kiowa, and Tillman. The winter range extends from southern North America into central Costa Rica (AOU, 1983). Sightings of *T. forficatus* on Christmas counts in the United States are restricted to the Gulf Coast region and throughout Florida northward to the Georgia border (Root, 1988).

Preferred habitat includes scattered trees and shelterbelts in prairie country (Sutton, 1967). The diet consists almost entirely of insects, including virtually no useful species. Orthoptera (grasshoppers and crickets) are preferred, and may constitute up to 50 % of all food items (Terres, 1980), the highest percentage for any tyrannid. The small amount of vegetable food taken consists of small fruits or berries and a few seeds (Bent, 1942).

BBS counts document the means for Scissortail numbers in southwestern Oklahoma, ranging from a high of 45 in 1972 (5 BBS runs; 225 individuals), to a low of 3.25 in 1989 (8 BBS runs; 26 individuals). The mean by county includes Beckham-7.66; Caddo-25.33; Cotton (two runs) 13.33 and 17.73; Grady-8.28; Greer-14.07; Harmon-24.00; Kiowa-18.00; Stephens-33.57; and Washita-16.00 (Root, 1988; see Fig. 1).

SCISSOR-TAILED FLYCATCHER

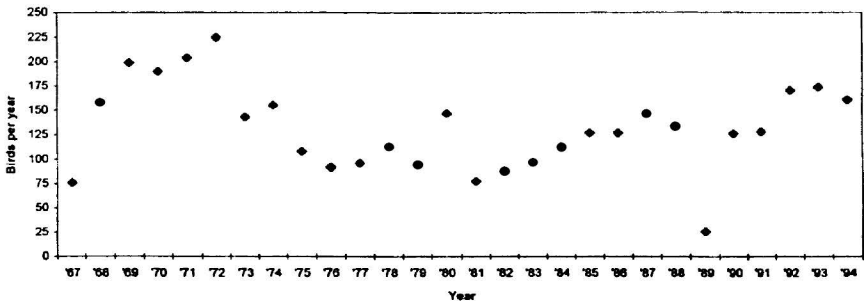


Figure 1. Total numbers of birds tallied on all southwestern Oklahoma Breeding Bird Surveys, 1967-94.

Mountain Bluebird -This species is a winter resident in western Oklahoma, recorded from 27 September to 22 April (Sutton, 1967), and generally winters where the humidity measures 80 to 130 inches (203-330 cm) of annual pan evaporation. It is a rare summer resident in the northwestern corner of Cimarron County, and a common fall and winter visitor in that region. The Mountain Bluebird is more strongly associated with mountains in summer than winter. Fall migration takes it south into the southern United states and Mexico (AOU in Root, 1988).

S. currucoides occupies a wide breeding range throughout the western half of

Canada and the United States west of the Great Plains. It competes for cavity nesting sites with Northern Flickers (*Colaptes auratus*), swallows, House Sparrows (*Passer domesticus*) and European Starlings (*Sturnus vulgaris*; Ehrlich et al., 1988). Breeding areas include open coniferous and deciduous forests, subalpine meadows, and other open country, usually above 7000 feet (Bent, 1949). Deciduous forests have slowly reached across the plains, creating suitable habitats for range expansion (Ehrlich et al., 1988). A freshly completed nest in an old woodpecker hole was found 28 February 1954 in Harmon County, Oklahoma (Sutton, 1967).

The preferred habitat is open forest, with the densest population in the foothills of the Sangre de Cristo Mountains of northern New Mexico, which are surrounded on three sides by grasslands (Root, 1988). The diet of *S. currucoides* is 92% insects and other animal matter, making it the most highly carnivorous thrush in the United States (Bent, 1949).

In southwestern Oklahoma, Christmas Bird Counts located the species only at the Wichita Mountains Wildlife Refuge in Comanche County. There was no record of *S. currucoides* during 14 of 27 count years between 1965 and 1994. No refuge count was held in 1989. A high of 411 birds was recorded in 1991, for a mean of 44.10 (Fig. 2).

MOUNTAIN BLUEBIRD

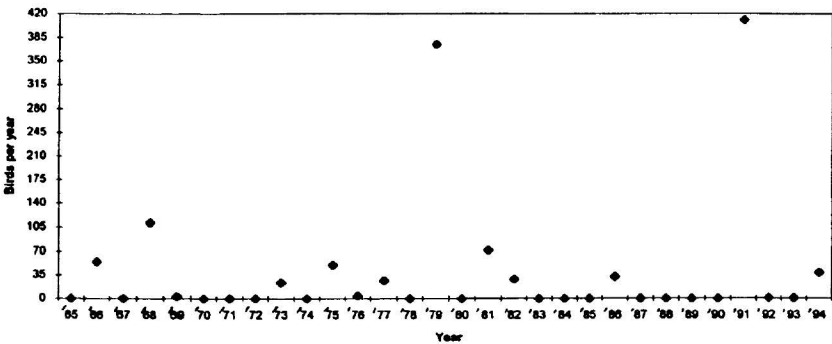


Figure 2. Total numbers of birds tallied on the Wichita Mountains Wildlife Refuge Christmas Bird Counts, 1965-94.

Loggerhead Shrike -Essentially a bird of open county, *Lanius ludovicianus* is an Oklahoma resident, with some winter birds probably being replaced by birds from the north (Sutton, 1967). It is suggested by Root (1988) that daylength influences its northern range boundary. This shrike occurs in high concentrations throughout areas with less than 12 inches (30 cm) of snow annually (Root, 1988). Winter range includes the southern half of its breeding range (Terres, 1980). Nesting occurs from the southern interior of British Columbia, central Saskatchewan, southern Ontario and Quebec, south into Mexico, the Gulf Coast and south Florida (Terres, 1980). The Loggerhead Shrike nests earlier than most passerines, with Oklahoma records from 13 March near Lawton (Tyler, 1992). Site tenacity is high, with a strong male fidelity to breeding territory (Ehrlich et al., 1988).

This species is widespread across southern Canada and the United States,

south into Mexico, and is the only shrike that lives wholly within the Western Hemisphere (Terres, 1980). It is raptorial like its congeners; however, unlike *L. excubitor* (Northern Shrike), it is reported to eat all that it kills (Bent, 1950). Where prey is very common, there are a limited number of attacks (Craig, 1978 in Root, 1988). Its annual diet includes 68% insects, 28% vertebrates (birds and mice), and 4% spiders; the winter diet "consists of more birds and particularly more mice" (Bent, 1950 in Root, 1988). Up to 76% mice are taken in winter (Erllich et. al., 1988). The size of territory is dependent upon prey abundance (Bent, 1950). Attack rates in winter decline with colder temperatures, thus, a decrease in prey activity encourages afternoon hunting (Craig, 1978 in Root, 1988). The prey is impaled on a thorn, barb, or sharp twig while the shrike devours all or part of it; any remains are thought to be eaten later (Bent, 1950).

L. ludovicanus was Blue Listed from 1972 to 1986. Habitat loss and pesticides are implicated in its widespread decline, especially in the central United States. During this same period, the BBS documented a record high of 56 individuals in 1976 for southwestern Oklahoma. Nine of the 13 southwest Oklahoma counties contained entire or partial BBS runs (1967-94). The mean within each county for these 28 years included: Beckham-2.64; Caddo-3.39; Cotton (two routes) 6.96, 4.80; Grady (partial route included in Caddo); Greer-2.61; Harmon-5.00; Stephens-1.71; and Washita-3.00 (U.S. BBS, 1995). A Breeding Bird Survey low of seven individuals was reported in 1983 and 1985 (Fig. 3).

Only two of 28 Christmas Bird Counts within southwestern Oklahoma from 1965 to 1994 did not record this species (Fig. 4). A high of 14 birds was recorded in 1975, and the mean was 7. All CBS numbers were recorded at the Wichita Mountains Wildlife Refuge in Comanche County. No count was conducted in 1989. Nine Breeding Bird Surveys were run in other southwestern Oklahoma counties during the same period.

LOGGERHEAD SHRIKE

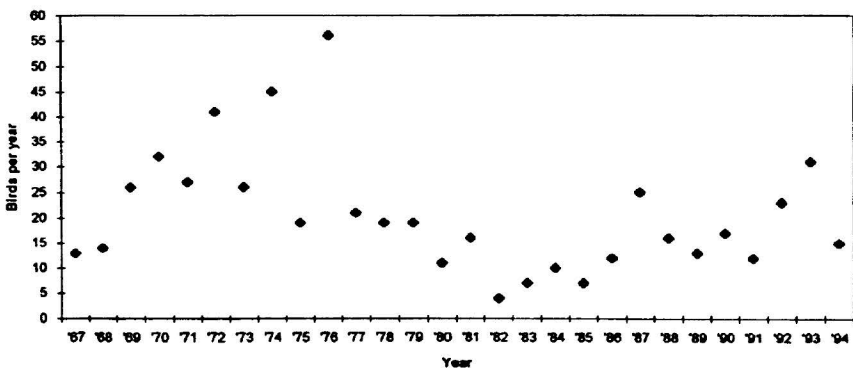


Figure 3. Total numbers of birds tallied on all southwestern Oklahoma Breeding Bird Surveys, 1967-94.

LOGGERHEAD SHRIKE

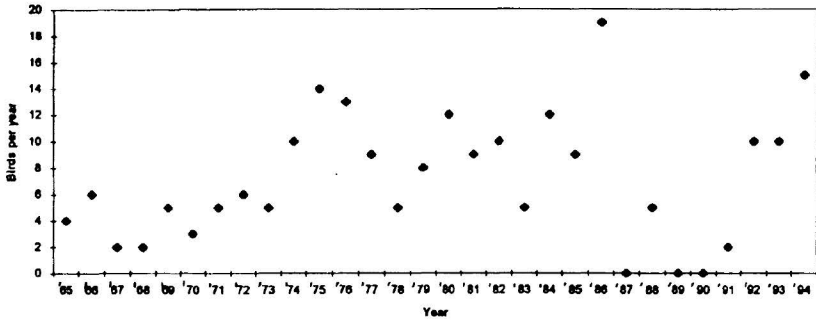


Figure 4. Total numbers of birds tallied on all Wichita Mountains Wildlife Refuge Christmas Bird Counts, 1965-94.

Cassin's Sparrow -This species is a transient and summer resident in western Oklahoma (Sutton, 1967). An inhabitant of the open prairie and shortgrass plains, it is most abundant in western Texas and Oklahoma, eastern New Mexico, and Colorado (Bent, 1968). *A. cassinii* prefers lightly grazed sandy areas with arid plants of prickly pear, mesquite and shinners oaks (Sutton, 1967). This species is almost never found in chaparral thickets and does not usually inhabit areas that are entirely grassy, but prefers small shrubs, bushes and yuccas as singing perches (Bent, 1968).

A ground-dweller, Cassin's Sparrow nests from late May through late June. The male flight-song is initiated from an elevated perch rather than from the ground, and territorial defense is carried on by song duels between males (Bent, 1968). "Breeding is triggered by an ill-defined combination of unpredictable rainfall and high temperature" (Ehrlich, 1988). Details of breeding biology are largely unknown. It is a nondescript bird with secretive habits; Sutton (1967) commented that Cassin's Sparrow "is an exceedingly inconspicuous bird when not singing." At times other than courtship chases, it is difficult to find a Cassin's, even in an area where the species is plentiful, for they spend their lives on the ground running, skulking, and hiding like mice (Bent, 1968). The diet consists of insects during the nesting season and grass and forb seeds for the rest of the year. Apparently *A. cassinii* does not require drinking water, but utilizes cellular respiration (Bent, 1968).

Six southwestern Oklahoma counties recorded this sparrow during the BBS counts of 1967-94. The highest number recorded was 17 individuals (1993), in Harmon County. Kiowa County recorded only one, while Cotton and Stephens counties each had highs of two. The Harmon County route was run only during 1993-94, and the 1994 count tallied 12 individuals. The mean for Harmon County was 14.50, followed by 1.30 in Beckham County. Routes have been run for 24 years in Beckham County.

By comparison, the total number of BBS runs within the state between 1967 and 1994 was 599; total routes with this species, 205; and total birds, 1849. From 1986 to 1994, the total for state routes run was 337; total routes with species, 99; and total

birds, 1293. The mean for the 1986-94 BBS routes that recorded this species was 13.06, and for all BBS routes (1967-94) that recorded this species, 11.04 (U.S. BBS, 1995; Fig. 5)

CASSIN'S SPARROW

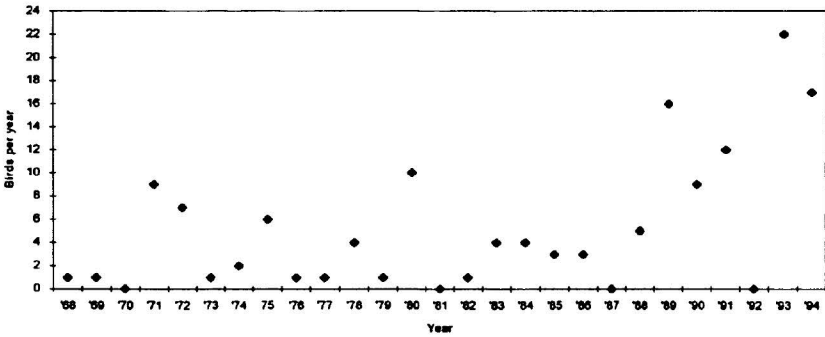


Figure 5. Total numbers of birds tallied on all southwestern Oklahoma Breeding Bird Surveys, 1968-94.

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GENERAL NOTES

Fregata minor, Great Frigatebird, in Oklahoma.—Victor J. Heller and John S. Barclay (Bull. Oklahoma Ornithol. Soc. 10:9-10, 1977) provisionally identified a wild bird specimen captured 3 November 1975 in Perry, Noble County, Oklahoma, in these words: "We suspect that our bird is a Great Frigatebird (*Fregata minor*), a species that has never been taken in North America, but final identification must await further investigation. Although Heller and Barclay were apparently unsure of their identification of this frigatebird, it was included in the American Ornithologists' Union's Check-List of North American birds (1983, 6th ed., pp. 41-42) as the only North American record of *F. minor*. There is a subsequent sight record with photograph of a Great Frigatebird from California (Howell, Steve N.G., 1994, *Birding* 28 (6):402).

In January 1990, Hoffman saw the specimen at the Oklahoma State University Museum, and asked if any further study of this specimen had been made in the 15 years since it was found. To our knowledge, no additional information on the