

# LOOSELY COLONIAL NESTING BY WESTERN KINGBIRDS IN NORTHWESTERN TEXAS

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**ABSTRACT:** The number of Western Kingbirds (*Tyrannus verticalis*) breeding on a farmstead in northwestern Texas increased from four pairs in 1990 to 13 pairs in 2001. In most cases, nests were located in large planted shade trees at this 0.6-ha farmstead. The earliest resident birds arrived on the mean date of 20 April ( $n = 12$  years), and earliest observed nest building was on 10 May 2000; the first fledglings were noted on the mean date of 6 July ( $n = 11$  years). Most clutch and nestling losses resulted from nest displacement ( $n = 7$ ) caused by strong winds, with only two from other causes. Ten fledglings died, all from weather events. During the 1990–2001 study period, seven adults were known to have died. Territorial defense of only a small space surrounding the nest and dispersed foraging may have permitted such a large number of pairs to breed successfully in an area where nest sites were limited.

The Western Kingbird (*Tyrannus verticalis*) breeds in south-central Canada, the western United States, and northern Mexico, occupying openings in riparian forests, woodlands, savannas, shrublands, agricultural lands, deserts, and urban areas (Gamble and Bergin 1996). In the Great Plains states and elsewhere, the species is currently more abundant than it was historically (Gamble and Bergin 1996, Scheuring 2003). With the settlement of the plains from the late 1800s on, new kingbird nesting and foraging habitats were created by the planting of shade trees around human dwellings and the construction of fences and electric-distribution poles and wires (Gamble and Bergin 1996). Between 1965 and 1979, U. S. Fish and Wildlife Service Breeding Bird Survey data suggested highly significant increases in most of the central and western portions of the continent; increases were particularly evident in New Mexico, Texas, and North Dakota, with greatest abundance in the high plains of Kansas (Robbins et al. 1986).

The Western Kingbird is now a common summer resident on the high plains of northwestern Texas (Oberholser 1974, Seyffert 2001), nesting primarily in trees about towns, suburban homesites, and especially farmsteads. It apparently was during the period 1911–25 that the species extended its breeding range south across the Oklahoma panhandle and onto the plains of northwestern Texas (cf Sutton 1967). Before settlement, no nest sites were available on the treeless shortgrass prairie (*sensu* Morris 1997) covering this region. Beginning around 1906, large tracts of prairie in the area were plowed (Parmer County Historical Commission 1981), and by 1950 much of the region was devoted to agriculture. Associated with landscape change and the establishment of farmsteads, shade trees were planted, in turn providing habitat for arboreal birds. Western Kingbirds readily adapted to these habitat “islands,” with most stands now occupied by one to three pairs (pers. obs.). Here I report on a farmstead where many pairs of kingbirds nested simultaneously, and report the birds’ breeding chronology and mortality from 1990 to 2001.

## STUDY AREA AND METHODS

The study site was a small farmstead surrounded by croplands and Conservation Reserve Program grasslands, 16 km northwest of Earth, Lamb County, Texas (34° 13' N, 102° 24' W). Within an area of 0.6 ha, 24 Siberian Elms (*Ulmus pumila*) 10–12 m tall, one Red Mulberry (*Morus rubra*) <10 m tall, and one Western Red Cedar (*Thuja plicata*) were near a dwelling built around 1925 and an outbuilding built in 1958 (some elms were planted shortly after these constructions). In addition, elm saplings up to 3 m tall created a dense understory in places or were scattered at other locations. During the study period, nearby crops included cotton, corn, milo, pumpkins, beans, and winter wheat. Utility wires and poles were present to the south, north, and west, and there was a fence 0.8 km south.

The terrain is flat except for a gentle slope down toward a freshwater playa 0.8 km to the southeast. Mean precipitation for Lamb County is 45 cm, falling mostly from thunderstorms in May and June and from subtropical storms from the southwest in August and September. The mean maximum temperature in July, the warmest month, is 34° C, and evaporation rates are high.

Most of my observations were opportunistic, without a specific study design, but all of the kingbirds nested within 40 m of the dwelling, with most within 20 m. I monitored the birds daily from nest construction through fledging using 7× binoculars, or merely watching from a window or door. I usually assessed nest success but not clutch size, hatching success, or fledging success, as nests were generally inaccessible. Observations ended after the 2001 breeding season.

## RESULTS

## Nesting Success

From 1990 to 1992, four pairs nested annually at the site. Two of four nests fledged young in 1990 and again in 1991, but in 1992 no nests were successful, as a result of severe thunderstorms in June. Only two pairs nested in 1993, and one of these fledged young. In 1994 the population increased to three pairs, two of which fledged young.

From 1995 to 1997 three pairs continued to nest annually, and productivity increased. Nine young fledged in 1995. All pairs were successful in 1996, although I did not determine the exact number of young fledging. Seven young fledged from two nests in 1997.

In 1998 four pairs nested, and all four were successful. Six pairs nested in 1999. The greatest increases occurred in 2000 and 2001, to 11 and 13 pairs, respectively.

## Breeding Chronology

Mean spring arrival (presumably males) was 20 April (standard deviation [SD] 3.62 days), ranging from 13 April 2001 to 27 April 1990 ( $n = 12$  years). The latest known arrival was a pair together on 13 June 1994. Earliest courtship display was noted 24 April 1998; earliest nest building was 10 May 2000.

## LOOSELY COLONIAL NESTING BY WESTERN KINGBIRDS IN TEXAS

Of 68 nests observed, 63 (92.7%) were in elms and five (7.3%) were in the mulberry; no nests were in the red cedar. The mean date of first observed fledging was 6 July (SD 6.84 days), ranging from 21 June 2001 to 15 July 1995 ( $n = 11$  years). Latest fledglings left the nest on the mean of 1 August (SD = 12.77), ranging from 14 July 1996 to 24 August 1997 ( $n = 10$  years); the last to fledge was from a replacement nest built after a first attempt failed. During the study, 59 of 68 (86.7%) nests fledged young.

### Mortality

Clutch and nestling mortality consisted of seven (10.3%) nests being displaced by strong winds associated with thunderstorms, one (1.5%) clutch lost to an unknown predator, and one brood (1.5%) lost to an arboreal Gopher Snake (*Pituophis melanoleucus*). Sixteen adult kingbirds hovered 1–3 m above the nest during the latter event, but I did not see them make any attempt to displace the snake. This event occurred on 4 July 2001, and the victimized pair migrated on 10 July. I noted 10 instances of mortality of fledglings: eight were killed during severe thunderstorms (strong winds and/or hail), and two prematurely left a nest when excessively warm temperatures from direct solar radiation apparently caused nest abandonment. Both young were dead beneath the nesting tree 2 days later. There were no observed losses to avian predators, as most potential predators were deterred by defensive mobbing by adult kingbirds; Swainson's Hawks (*Buteo swainsoni*), American Kestrels (*Falco sparverius*), Common Grackles (*Quiscalus quiscula*), and particularly Great-tailed Grackles (*Q. mexicanus*) were the usual recipients of these aggressive assaults.

I confirmed the deaths of seven adult kingbirds during breeding periods over the 12 years. Three were lost in severe thunderstorms; two were killed after colliding with vehicles on a nearby highway; one was captured by a house cat during a near-ground dispute between two rival males; and one died when its tongue became entangled in a seed-sack string while attempting to steal nesting material from a neighbor's nest.

## DISCUSSION

Generally, Western Kingbirds are solitary nesters, with pairs typically not nesting in close proximity (Gamble and Bergin 1996). Exceptions, however, have been reported. For example, in the Trans-Pecos region of far western Texas, two or three pairs occasionally nested near each other, and the average distance between nests was 31 m, with the closest nests being 12 m apart (Gamble and Bergin 1996). I took no exact measurements for this study, but nests frequently were within approximately 10 m of each other and occasionally within 6 m of each other. Why this particular farmstead supported a loose colony of up to 13 pairs of normally pugnacious kingbirds is unclear (other nearby farmsteads had one to three pairs; one had five). Insect prey apparently was sufficient; after 1996 use of insecticides in spring and summer on adjacent croplands was limited, except on one cotton field to the northwest, which was treated with pesticides 11 times during the 2000 growing season (pers. obs.). The kingbirds made little use of that field. A program to eradicate boll weevils, entailing weekly spraying

## LOOSELY COLONIAL NESTING BY WESTERN KINGBIRDS IN TEXAS

of some 29,000 ha of cotton, generally did not begin until late September, after kingbirds had migrated.

The high density of nests at this study site was perhaps due, at least in part, to the separation of nesting and foraging sites. After one or two days of strife during establishment of territories, conflicts usually subsided, with aggressive behavior noted thereafter only within a small space surrounding a nest. Nesting in one habitat, pairs foraged in another; the nearest foraging sites were >200 m from the nests, with most 0.8–1.2 km away. As the kingbirds dispersed to forage, they consistently used narrow flight corridors through and away from the farmstead trees, thus generally avoiding intraspecific conflicts. Nest location usually dictated departure direction; for example, pairs with nests in trees at the northeast corner of the farmstead left to the north, northeast, or east. Once fledglings attained sufficient flying skills, young frequently accompanied parents to foraging sites; family units spent the day either perching or sallying from wires, vegetation, circle-pivot irrigation systems, or other upright objects. Similar behavior has been documented from southeastern Arizona and southwestern New Mexico (Hespenheide 1964). There also the species was highly territorial near nests, but territorial activity was not maintained at foraging sites; pairs used only a small part of the available habitat for nesting but fed in all of it. The Western Kingbird frequently breeds in regions where nesting sites are in short supply. In such areas, defending only a small space near the nest, while foraging at distant and undefended sites, is a strategy that would permit multiple pairs to occupy nearby nesting sites successfully.

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LOOSELY COLONIAL NESTING BY WESTERN KINGBIRDS IN TEXAS

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Western Kingbird

*Sketch by George C. West, Birchside Studios*