# 2003 OKLAHOMA BLUEBIRD NEST BOX RESULTS

The Oklahoma Nestbox Trails Project was initiated in 1985 to enhance habitat for cavity-nesting birds in Oklahoma and reverse the population decline noted for the Eastern Bluebird (*Sialia sialis*). The project depends entirely upon volunteers to place the boxes in suitable habitat, monitor usage, control competition from House Sparrows, alleviate predation problems and report the nesting season's results. The Oklahoma Department of Wildlife Conservation's Wildlife Diversity Program would like to especially give credit to those trail reporters who take the time and have the dedication to establish extensive trails and report on them.

The Wildlife Diversity Program would also like to express our sincere gratitude to the **Oklahoma Bluebird Society** (OBS) for promoting bluebird conservation in Oklahoma. Almost half (18) of the bluebird nestbox reports we received for the 2003 breeding season listed an affiliation with OBS. The Oklahoma Wildlife Diversity Program was honored during the Fall 2003 meeting of the OBS by receiving a very generous donation of $1000 toward activities of the Program. This donation will be used toward ongoing bird research in the shortgrass prairies of Oklahoma. If you wish to learn more about your bluebirds please consider joining this important conservation organization. They have already made a significant contribution to conservation by encouraging trail monitors to provide us with their data. The database of the Oklahoma Nestbox Trail Project provides a "window" into the conservation of cavity-nesters- particularly bluebirds- in Oklahoma. Membership includes receiving their excellent newsletter, *The Hole Story*, which provides good information about monitoring bluebird nesting activities and habitat enhancement. Heart-warming stories and poems provided by members will offer inspiration! A membership form is included in your packet.

The staff of the Oklahoma Wildlife Diversity Program wishes to extend our sincerest "thank you" to all trail monitors who know the work, the joy and the frustrations of maintaining a bluebird trail. Thank you for helping bring back the Eastern Bluebird.

## RESULTS

The number of nestbox trail reports received for the 2003 breeding season (44) reflected an increase from the 2002 (40). The number of nestboxes monitored increased (780) as compared to 2002 (750). Twenty-one (21) counties are represented for the 2003 breeding season which is a slight decrease from 2002 (22). Table 1 provides a list of nestbox trail variables from 1993 to 2003.

The top four species in frequency of nesting attempts and occurrence on trails were the **Eastern Bluebird**, **House Sparrow**, **Carolina Chickadee,** and the **Tufted Titmouse**. Over **99%** of nestbox usage was by Eastern Bluebirds and this species was reported on **100%** of the trails.

Nine (9) identified bird species and one identified mammal species were reported nesting in nestboxes. A trail in Muskogee County reported **flying squirrels** nesting in three of the 11 nestboxes monitored. Nesting attempts by year is provided in Table 2. In 2003, the House Sparrow was again an unwelcome species on the list. However, only10 chicks fledged out of 117 eggs reported. Also reported for the second year in a row was a nesting attempt by a European Starling (Comanche County) which laid 12 eggs but none hatched. This demonstrates how continual monitoring helps to alleviate competition from these non-native species. Congratulations!

As in previous years, not all nesting attempts were monitored throughout the breeding season, and therefore, the number of eggs laid, hatched, and young fledged represent the minimums for the species (Table 3). Monitors reported at least **2,128 Eastern Bluebirds** fledged from **641 clutches**. Figure 1 is a map of Oklahoma showing

bluebird data by county for the 2003 breeding season. Included are the number of monitored nestboxes and the number of fledgling bluebirds reported by county.

The **total number of fledgling bluebirds reported** to the Oklahoma Nestbox Trails Project **since 1985: 47,333**.

TABLE 1. NESTBOX TRAIL VARIABLES FROM 1993 TO 2003

| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | **2003** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Trail Reports | 90 | 83 | 53 | 54 | 40 | 52 | 46 | 47 | 47 | 40 | **44** |
| Total Nestboxes | 1112 | 1401 | 1173 | 1108 | 1081 | 1142 | 963 | 871 | 797 | 750 | **780** |
| Average Trail Size | 12 | 17 | 17 | 18 | 27 | 22 | 20 | 18 | 15 | 15 | **17** |
| Number of Counties | 36 | 33 | 29 | 31 | 24 | 31 | 21 | 24 | 25 | 22 | **21** |

TABLE 2. NESTING ATTEMPTS BY YEAR

| Species | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | **2003** |
|---|---|---|---|---|---|---|---|---|---|
| Eastern Bluebird | 1087 | 1016 | 1072 | 1390 | 1075 | 879 | 686 | 690 | **664** |
| Carolina Chickadee | 125 | 48 | 59 | 53 | 36 | 47 | 49 | 39 | **40** |
| House Sparrow | 204 | 134 | 98 | 143 | 118 | 78 | 90 | 70 | **105** |
| Unidentified Wren Species | 10 | 0 | 5 | 7 | 12 | 5 | 11 | 7 | **0** |
| Bewicks Wren | 35 | 20 | 33 | 19 | 8 | 13 | 6 | 11 | **16** |
| Carolina Wren | 10 | 13 | 14 | 22 | 6 | 12 | 6 | 5 | **11** |
| House Wren | 13 | 5 | 0 | 6 | 3 | 3 | 2 | 1 | **0** |
| Tufted Titmouse | 18 | 17 | 41 | 45 | 31 | 71 | 20 | 18 | **40** |
| White-breasted Nuthatch | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | **0** |
| Red-headed Woodpecker | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Red-bellied | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |

| Species | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | **2003** |
|---|---|---|---|---|---|---|---|---|---|
| Woodpecker | | | | | | | | | |
| Northern Flicker | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Great-crested Flycatcher | 1 | 2 | 3 | 5 | 7 | 4 | 6 | 5 | **4** |
| Prothonotary Warbler | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Tree Swallow | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | **0** |
| Phoebe | 2 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | **5** |
| House Finch | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | **0** |
| Eastern Wood Peewee | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 3 | **0** |
| European Starling | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | **4** |

TABLE 3. NESTING SUCCESS BY SPECIES IN 2003

| Species | Clutches Monitored | Eggs Laid Total | Eggs Laid PC | Eggs Hatched Total | Eggs Hatched PC | Young Fledged Total | Young Fledged PC |
|---|---|---|---|---|---|---|---|
| **Eastern Bluebird** | **641** | **2863** | **4.5** | **2250** | **3.5** | **2128** | **3.3** |
| Carolina Chickadee | 37 | 236 | 6.3 | 218 | 5.9 | 215 | 5.8 |
| Tufted Titmouse | 25 | 141 | 5.6 | 116 | 4.6 | 110 | 4.4 |
| House Sparrow | 37 | 117 | 3.1 | 27 | 0.7 | 10 | 0.3 |
| Carolina Wren | 10 | 50 | 5.0 | 44 | 4.4 | 43 | 4.3 |
| Bewick's Wren | 16 | 87 | 5.4 | 68 | 4.2 | 68 | 4.2 |
| Great Crested Flycatcher | 4 | 21 | 5.3 | 21 | 5.3 | 21 | 5.3 |

PC = per clutch

## BLUEBIRD CONSERVATION IN OKLAHOMA

The North American Bluebird Society (NABS), initiated in 1978, saw a significant upward trend of Eastern Bluebird populations during the first ten years of their nationwide conservation effort. The data used to determine the population trend of the Eastern Bluebird is generated through the Breeding Bird Survey (BBS).

The BBS is a continental monitoring program for all breeding birds. Breeding Bird Surveys are conducted during the peak of the nesting season, primarily in June. Each route is 24.5 miles long, with fifty stops located at 0.5 mile intervals along the route. A three-minute point count is conducted at each stop, during which the

observer records all birds heard or seen within 0.25 mile of the stop. Today there are approximately 3700 active BBS routes across the continental U.S. and Canada, of which nearly 2900 are surveyed annually. The BBS was designed to provide a continent-wide perspective of population change. Routes are randomly located in order to sample habitats that are representative of the entire region. The survey produces an index of relative abundance rather than a complete count of breeding bird populations. Despite a complicated analyses, the BBS has proven to be a very valuable source of information on population trends. It is important to note that analyzing population change on survey routes is probably the most effective use of BBS data, but these data do not provide an explanation for the causes of population trends. To evaluate population changes over time, BBS indices from individual routes are combined to obtain regional and continental estimates.

The Oklahoma Nestbox Project, initiated in 1985, was patterned after NABS conservation initiative. During Fall, 2003 the Wildlife Diversity Program (WDP) performed basic comparative statistical analysis on data generated through the Oklahoma Nestbox Project. WDP focused on data beginning in 1985 and every 3 years through 2000, which represents six years of data. Although the Oklahoma Nestbox Project generates data for all cavity-nesting species using bluebird nestboxes, only data regarding the Eastern Bluebird was analyzed.

Data from three data fields were comparatively analyzed for the six years: “Total Eggs Laid”, “Total Eggs Hatches” and “Total Young Fledged”. The graph in Figure 2 demonstrates the relationship between these three fields. In almost all years the total number of eggs is higher than the total number of young fledged. This is normal since a species, in order to maintain a population level, must try to replace themselves in the next generation. Therefore, breeding adults must lay more eggs than can be expected to survive as breeding adults.

One measure of a bird’s productivity is the number of young it is able to raise that live long enough to fledge (leave the nest). Clutch success, expressed in percentages, is shown in Figure 3. This analysis is based on the comparison between the total number of eggs laid and the total number of young fledged for each of the six years. The lowest percentage is 67% (1988). According to the Nestbox Project data, more than 50% of the eggs laid develop into young that fledge. Considering that the mortality rate of young among altricial species (chicks that are naked at hatching and stay in the nest for an extended period of time) is roughly 45%, Eastern Bluebird productivity among reported nestboxes in Oklahoma is above normal.

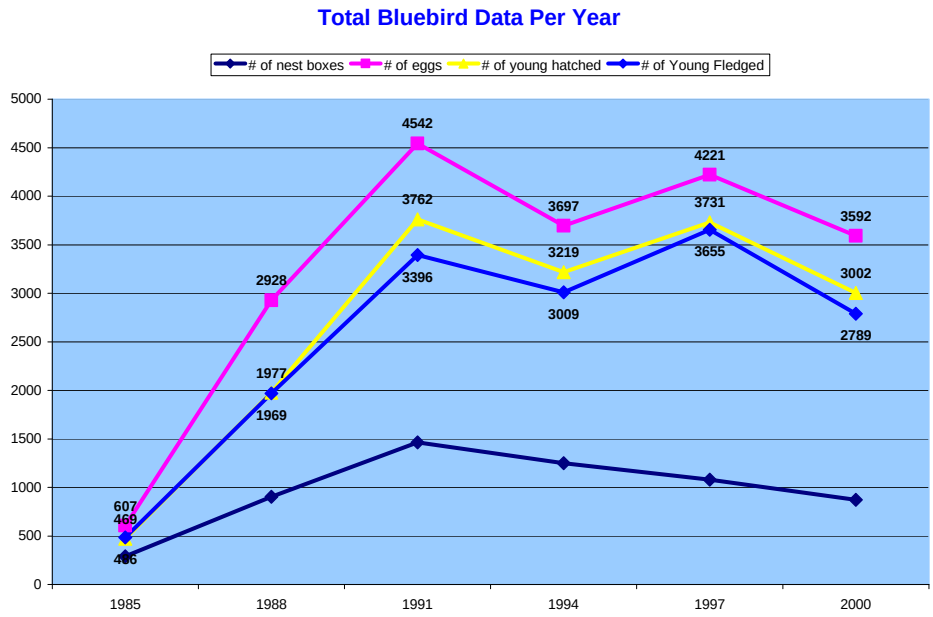



Figure 2.

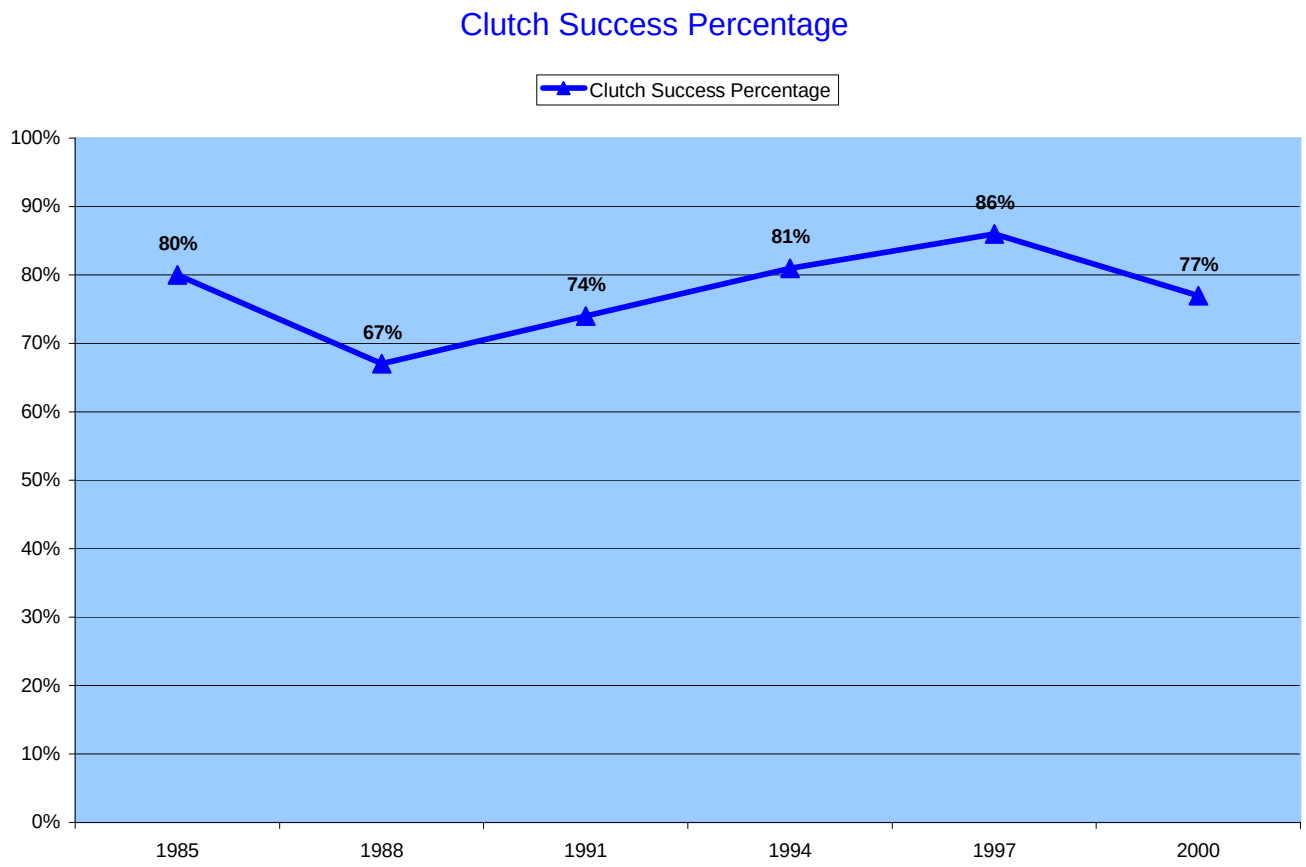
As already stated, Eastern Bluebird populations experienced an upward population trend during the first

ten years of NABS's bluebird conservation effort. Have Eastern Bluebird populations within Central U.S. and in Oklahoma responded equally well? The BBS data for the Eastern Bluebird population for the Central U.S. region shows that between 1966 and 1979 there was an estimated -3.8% change per year (downward trend). Between 1980 and 2002, the estimated population trend shows 2.8% change per year; an upward trend. The BBS data for the Eastern Bluebird in Oklahoma tracks similarly to the Central U.S. region. In Oklahoma, the BBS data shows that there was an estimated -7.2% change per year between 1966 and 1979 for the Eastern Bluebird. Between 1980 and 2002, the estimated population trend was 4.1% change per year.

BBS data also measures relative abundance of bird species per survey route. The relative abundance number is an approximate measure of how many birds are seen on a route in the region. Relative abundance in the Central U.S. region is 3.03 Eastern Bluebirds per survey route (1966 – 2002). **Relative abundance in Oklahoma is 9.18 Eastern Bluebirds per survey route.**

Without a doubt Oklahomans have contributed to the upward trend the Eastern Bluebird population is experiencing in Oklahoma and nationwide. This success is due to the many Oklahomans we acknowledge through their participation in the Oklahoma Nestbox Project, the Oklahoma Bluebird Society, as well as many unrecognized landowners who maintain bluebird houses.

**Figure 3.**




## COMMENTS

Following are the comments provided by the trail reporters. My apologies if your comment is not reflected below. If I could not interpret handwriting, I did not record your comment. Thank you so much for taking the time to provide some thoughts, ideas, and concerns:

- I would have thought a nest fledged except I saw the snake in the box just a day or two before time to fledge (Cleveland County)

- Had a late start in the nesting season. Hope to start in early spring next year and monitor bluebird houses (Cleveland County)

- This is the first time that all of my bluebird nesting attempts were successful – that is that at least one nestling fledged. I was not quick enough in getting old nests cleaned out for 2 of my bluebird pairs – they just spruced up the old nest and used it again. Had a slow start but a good ending for the nesting season of 2003. Had the exact number to fledge this year as last year. (Beckham)

- The first nest was early and then they left and it was a full month before they nested again. (Woodward)

- Observed robins and brown thrashers nesting in yard. Also there are catbirds successfully raising nearby – these birds are so full of energy and such fun to watch all summer (McCurtain County)

- This was the first time I had a nest of 6 eggs and all hatched and fledged. (Sequoyah County)

- Good, considering all the construction going on around our office. (Cleveland County)

- No cowbird eggs. Usually about 40 nesting attempts (27 this year) – This is the lowest production since 1986! (Pontotoc County)

- 6 nestboxes had no predator guards, 5 nestboxes had metal cone predator guards made from 3-feet wide metal, 5 nestboxes had metal cone predator guards made from 4-feet wide metal, and 6 nestboxes had electrified wire predator guards. (Carter County)

- 2 nestboxes had no predator guards, 3 nestboxes had metal cone predator guards made from 3-feet wide metal, 3 nestboxes had metal cone predator guards made from 4-feet wide metal, and 2 nestboxes had electrified wire predator guards. (Carter County)

- 6 nestboxes had no predator guards, 5 nestboxes had metal cone predator guards made from 3-feet wide metal, 5 nestboxes had metal cone predator guards made from 4-feet wide metal, and 6 nestboxes had electrified wire predator guards. (Carter County)

- 2 nestboxes had no predator guards, 3 nestboxes had metal cone predator guards made from 3-feet wide metal, 3 nestboxes had metal cone predator guards made from 4-feet wide metal, and 2 nestboxes had electrified wire predator guards. (Carter County)

- This has been my worst year since starting my trail in 1988. We lost several boxes due to land development and the sparrow population has increased tremendously. If anyone in the reporting group has suggestions for sparrow control I will look forward to hearing about it in our 2003 report. Thanks for all the work you do. (Delaware County)

- House Sparrows were worse than ever! I trapped 64 in the first few weeks! (Wagoner County)

- We have bluebirds every year. The box is about 25 ft from where we sit and watch them build, lay, fee, and fledge. Doesn't seem to bother them at all. (Pottawatomie County)

- Five nests with 19 eggs were started. All eggs disappeared. I will put up metal guards this winter. (Beckham County)

- This is probably our worst year for "repeat use". It was mostly one and done. (Payne County)

- …The birds in general got a very late start for Fort Sill. The first nest did not fledge until early May which is really late for us. I do not know why the birds waited so long to start nesting. Weather was good through out the nesting season, which is unusual for Fort Sill. You might be interested in knowing an OSU grad student is using my bluebird boxes set up on PVC poles as a way to mark her transects for her vegetation study. Any other way of marking transects the Army would run over. To date, only about 3 or 4 boxes have been destroyed by the Army vehicles in the 15 years plus we have been doing this. (Comanche County)

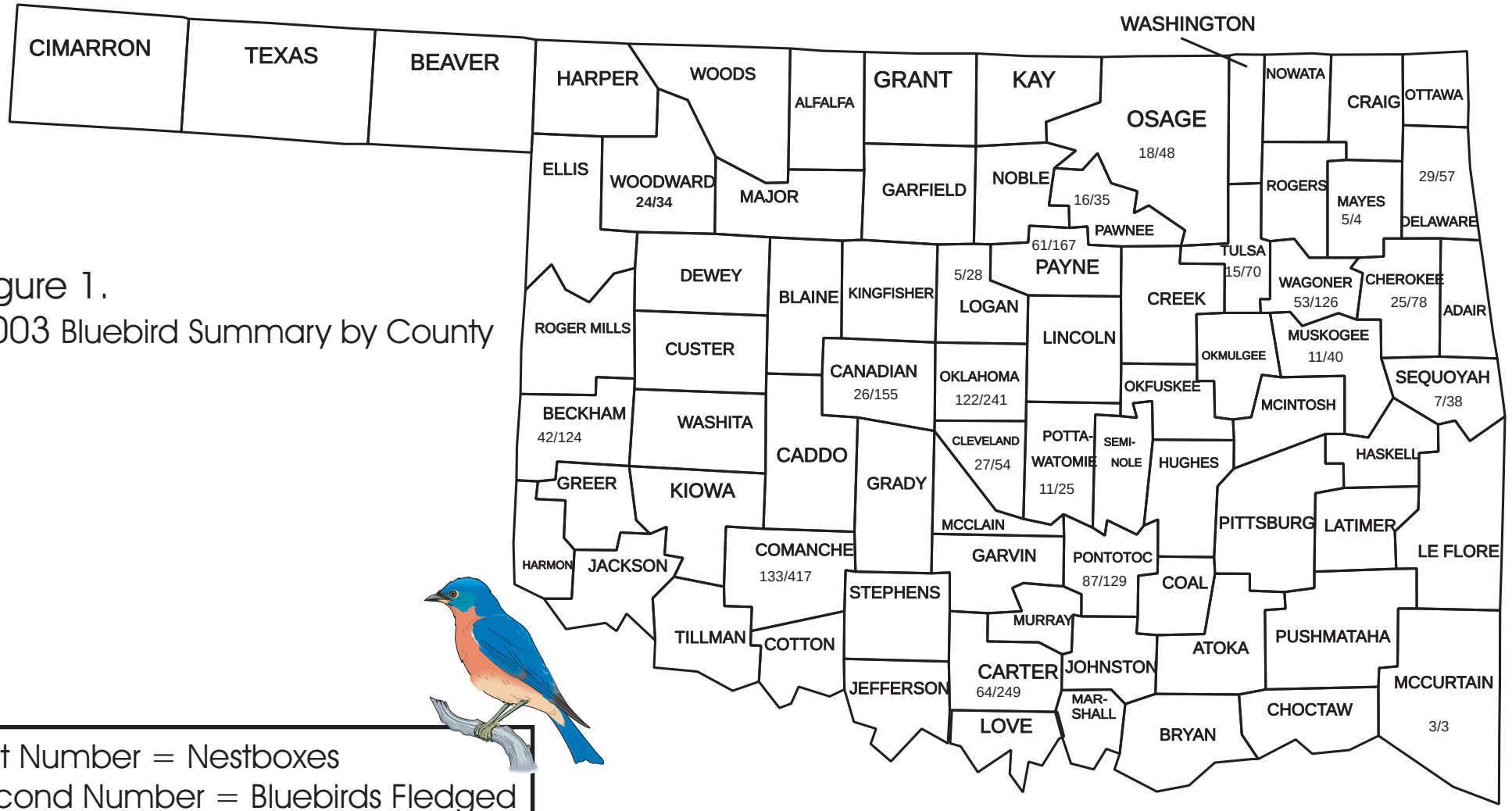
- Last clutch was during the real hot temperature – mama bluebird could not stay in the box. (Payne County)

- Bluebird made nest in newspaper container. (Payne County)

- This is a notable increase in sparrow activity on this trail. (Pawnee County)

- We threw out many many sparrow nests. Very few bluebirds came around this year and they were not people friendly as before. (Mayes County)

Figure 1.
2003 Bluebird Summary by County




First Number = Nestboxes
Second Number = Bluebirds Fledged