

PROJECT SOS: SAVE OUR SIALIA



Data compiled by volunteers Bob and Judy Peak during the 2007 nesting season
for the Land Between the Lakes Association and the USDA-Forest Service

Description of Locations

Primary Location:

Land Between The Lakes, also known as LBL, is a 170,000-acre National Recreation Area that is located in western Kentucky and Tennessee. LBL is a 40-mile long isthmus that was formed when the Tennessee River and Cumberland River were impounded, creating Kentucky Lake and Lake Barkley (respectively). In 1963, President John F. Kennedy designated these federal lands as **Land Between The Lakes National Recreation Area**. The project was intended to demonstrate how an area with limited timber, agricultural, and industrial resources could be converted into a recreation asset that would stimulate economic growth in the region. Today, LBL is managed by the USDA-Forest Service, and, as the focal point of a \$600 million tourism industry, it remains one of the most visited attractions in Kentucky and Tennessee. With 300 miles of undeveloped shoreline, LBL hosts an average of two million visitors each year who come from all over the nation and more than 30 foreign countries. Land Between The Lakes offers a multitude of recreational opportunities and provides unique experiences in the areas of environmental education and historic interpretation. Bluebird nest boxes are located along bluebird trails in seventeen different areas of LBL, and birders and other visitors can view nearly all of the boxes. (Note: According to the North American Bluebird Society, “a bluebird *trail* is a series of bluebird boxes placed along a prescribed route.”)

Secondary Locations:

Consisting of 3,700 acres, **Lake Barkley State Resort Park** is the largest park in the Kentucky State Park system, and it is often called the system’s flagship park. It is located on the shore of Lake Barkley in Trigg County, Kentucky, approximately ten miles east of the center of Land Between the Lakes. The park offers a wide variety of recreational opportunities for outdoor enthusiasts, including golf, fishing, boating, swimming, tennis, hiking, camping, trap shooting, and birding. Nearly all of the bluebird nest boxes located there can be observed from the roads in the park.

John James Audubon State Park, also a part of the Kentucky State Park system, is located in Henderson County, Kentucky and is composed of 692 acres, with 325 of those acres serving as a state nature preserve. The Audubon Museum in the park houses many of Audubon’s original watercolors, oils, engravings, and personal memorabilia. The park’s Nature Center features a wildlife observatory, which serves as a reminder of Audubon’s own love for nature and the great outdoors. The park has five one-bedroom cottages and one ADA-accessible two-bedroom cottage, and there are facilities for camping, hiking, fishing, golf, tennis, and birding. Since bluebirds will tolerate humans in close proximity to their nests, the park’s nest boxes are located in areas where park visitors can easily observe them. Most importantly, the nest boxes are close

to the park's roads, so physically challenged people can view the birds from the comfort and convenience of a vehicle.

Location of LBL Nest Boxes and Related Data

<u>Location</u>	<u>Number of Boxes</u>	<u>Number of Bluebirds Fledged</u>
North Information Center.....	5.....	27
Hillman Ferry Campground.....	7.....	45
Nature Station.....	35.....	242
Camp Energy.....	7.....	67
Elk-Bison Prairie.....	10.....	47
Golden Pond Visitor Center.....	15.....	99
Administration Office.....	5.....	7
Hunter's Check Station.....	3.....	31
Central Maintenance.....	10.....	24
Colson Overlook.....	1.....	6
Rushing Creek Campground.....	8.....	64
The Homeplace-1850.....	4.....	16
South Bison Range.....	23.....	154
South Maintenance Area.....	7.....	26
Brandon Spring Group Camp.....	9.....	71
South Information Center.....	6.....	71
Piney Campground.....	10.....	53
Total.....	165.....	1050

Summary of Data

During the 2007 nesting season, a total of 1,331 eastern bluebird (*Sialia sialis*) eggs were laid in the 165 bluebird nest boxes at Land Between the Lakes (LBL), with 1,050 bluebirds fledging, for a 78.8% fledging success rate. (Note: A young bird has “fledged” if it leaves the nest on its own.) Adult bluebirds made 318 nesting attempts in the boxes. (Note: An “attempt” is defined as a bird building a nest and laying at least one egg.) There were 245 unhatched bluebird eggs and 36 dead bluebird nestlings discovered in the boxes. On March 24th, the volunteers found two dead adult bluebirds (one male, one female) in separate nest boxes at the South Bison Range. Judging by the condition of the bodies, both birds had succumbed during the winter months.

In early April, the LBL bluebird trails experienced record-breaking cold temperatures. Following the warmest March on record*, some of the coldest temperatures ever recorded in the month of April occurred on Easter weekend (April 7-8). (*March, 2007 easily shattered the record for the warmest March on record at Paducah, Kentucky. The average monthly temperature exceeded the previous record of 54.2 degrees by at least two degrees. There were 6 days in March with highs of at least 80 degrees at Paducah. This is the highest number of 80-degree days on record in March at Paducah. The previous record was four. At Paducah, a record high temperature of 82 was recorded on the 27th. This broke the old record of 79 set in 2004. Another record high of 83 degrees was established at Paducah on Thursday, the 29th. *All weather data in this report was provided by the Paducah, Kentucky NOAA National Weather Service Office Web site.*) On April 8, a new lowest April temperature record was set for Paducah (McCracken County). The mercury dipped to 21 degrees, breaking the old record of 24 degrees. Furthermore, about 30 miles to the south, in the area of most of the LBL bluebird trails, there were several consecutive days during this time frame when temperatures were in the low 20's. Surprisingly, the effect of the temperatures on LBL fledgling production was not as devastating as one might have expected. Despite the extreme fluctuations in conditions, 86 out of 96 clutches of bluebird eggs that were present in the LBL nest boxes on April 6-7 produced nestlings that fledged in late April or early May. Typically, April and May are the most prolific months for bluebird egg production, and the maximum clutch size for eastern bluebirds is usually six eggs. As affirmation of that nesting behavior, on April 6-7, 2007, the majority of the LBL clutches consisted of five or six eggs. In most of those clutches, nearly all of the eggs eventually hatched and produced bluebird fledglings. Additionally, during the same time period, there was one tufted titmouse clutch that proved to be successful, and there were six Carolina chickadee clutches that eventually fledged. One Carolina chickadee clutch was unsuccessful. Therefore, all things considered, these songbirds exhibited

resilience to adverse weather conditions that surpassed the expectations of the volunteers, and the female birds demonstrated a parenting/brooding ability that seemed to prevail over some very challenging environmental circumstances.

From nest construction to the fledging of the young birds, the eastern bluebird's reproductive cycle covers approximately one month. Therefore, the volunteers must monitor the nest boxes on a monthly basis to accurately determine the outcome of each nesting attempt. The volunteers monitored the boxes on the following dates: March 24-25, April 6-7, May 4-6, June 1-2, June 28-29, July 19-20, August 16-18 and September 1. Including preparatory work, travel time to LBL, nest box monitoring work in the field, bluebird presentations for groups, and preparing bluebird articles for publication, the two volunteers spent over 200 hours working on Project SOS and drove approximately 1,200 miles to monitor, repair, or relocate bluebird nest boxes at LBL. (Note: The volunteers would like to thank the USDA-Forest Service for providing a vehicle for the field work at LBL. The Peaks would also like to thank Phil Hazle, the Jailer for Calloway County, Kentucky, who provided replacement nest boxes through a special training program he has developed for the jail inmates.)

There were 73 white bluebird eggs (5.48% of the total) found in the following areas: Hillman Ferry Campground, Nature Station Area, Golden Pond Visitor Center Area, Rushing Creek Campground, The Homeplace-1850 Area, South Maintenance Area, South Bison Range, and the South Information Area. Fifty-eight of the white eggs produced birds that eventually fledged. Statistically, about 5% of all bluebird eggs are white, with the other eggs being the more typical light blue color that is indicative of thrushes. Interestingly, there is no absolute certainty that bluebirds fledged from a clutch of white eggs will produce white eggs when they become sexually mature, and bluebird hatchlings from white eggs always have blue feathers, except in the case of an albino. It should be further noted that there is no apparent link between white egg color and albinism in bluebirds, and any such occurrence would be rare and purely coincidental. Furthermore, there is usually no mixture of white and blue eggs in a bluebird clutch. On the rare occasion that a white egg is found among a clutch of blue eggs, or vice versa, a second female probably "dumped" the anomalous egg at an opportune moment. In 18 nesting seasons and inspections of several thousand bluebird clutches, the authors have never observed a mixture of egg colors in a bluebird nest.

The LBL nest boxes also yielded 28 Carolina chickadee (*Parus carolinensis*) fledglings, 6 prothonotary warbler (*Protonotaria citrea*) fledglings, 4 tree swallow (*Iridoprocne bicolor*) fledglings, 5 Carolina wren (*Thryothorus ludovicianus*) fledglings, and 2 tufted titmouse (*Parus bicolor*) fledglings. The prothonotary warbler, a Neotropical migrant, is the only cavity-nesting warbler in the eastern United States. According to the Breeding Bird Survey data that has been collected and analyzed by the U.S. Geological Survey, the prothonotary warbler population has declined by 30 percent in the past 40 years.

The number of bluebirds fledged in 2007 was the fourth-highest total in the eighteen years that the volunteers have managed the LBL bluebird trails. The totals for other years were: 1990: 544 bluebirds fledged from 108 boxes; 1991: 720 bluebirds fledged from 153 boxes; 1992: 727 bluebirds fledged from 159 boxes; 1993: 820 bluebirds fledged from 155 boxes; 1994: 898 bluebirds fledged from 159 boxes; 1995: 872 bluebirds fledged from 157 boxes; 1996: 754 bluebirds fledged from 156 boxes; 1997: 599 bluebirds fledged from 162 boxes; 1998: 774 bluebirds fledged from 149 boxes; 1999: 719 bluebirds fledged from 152 boxes; 2000: 871 bluebirds fledged from 153 boxes; 2001: 964 bluebirds fledged from 154 boxes, 2002: 1,086 bluebirds fledged from 158 boxes; 2003: 978 bluebirds fledged from 161 boxes; 2004: 1,129 bluebirds fledged from 164 boxes; 2005: 976 bluebirds fledged from 164 boxes; and, 2006: 1092 bluebirds fledged from 165 boxes. If one uses a ratio of bluebirds fledged per nest box, the 2007 nesting season ranked as the fourth-best year, with a ratio of 6.36 bluebirds fledged per box. During the volunteers' tenure, 1,094 additional juvenal birds, representing six species [Carolina chickadee, tufted titmouse, prothonotary warbler, Carolina wren, tree swallow, and white-breasted nuthatch (*Sitta carolinensis*)], have fledged from the LBL bluebird nest boxes.

While monitoring the bluebird nest boxes in 2007, the volunteers found that some of the boxes were used at various times by ants, wasps, and a variety of other insects. While working on the project, the volunteers also spotted numerous species of birds (including many wild turkeys-*Meleagris gallopavo* and ospreys-*Pandion haliaetus*), as well as many fallow deer (*Cervus dama*) and white-tailed deer (*Odocoileus virginianus*).

As an additional part of Project SOS, the volunteers used their own vehicle to check and maintain a bluebird trail (50 nest boxes) they have established at nearby Lake Barkley State Resort Park (LBSRP). In 2007, there were 492 bluebird eggs laid in the LBSRP boxes, with 405 birds fledging, for an 82.3% fledging success rate. There were 110 nesting attempts by bluebirds at the state park, and the ratio of state park bluebirds fledged per nest box was 8.1. The volunteers also found 13 dead bluebird nestlings in the boxes. Nineteen of the LBSRP bluebird eggs were white (3.86% of the total), and 14 of those hatchlings fledged successfully.

In previous years, the total bluebird fledglings at LBSRP were: 1990: 23 bluebirds fledged from 10 boxes; 1991: 27 bluebirds fledged from 11 boxes; 1992: 91 bluebirds fledged from 27 boxes; 1993: 97 bluebirds fledged from 30 boxes; 1994: 85 bluebirds fledged from 31 boxes; 1995: 87 bluebirds fledged from 29 boxes; 1996: 67 bluebirds fledged from 29 boxes; 1997: 99 bluebirds fledged from 28 boxes; 1998: 93 bluebirds fledged from 28 boxes; 1999: 118 bluebirds fledged from 29 boxes; 2000: 128 bluebirds fledged from 29 boxes; 2001: 116 bluebirds fledged from 36 boxes; 2002: 148 bluebirds fledged from 37 boxes;

2003: 302 bluebirds fledged from 37 boxes; 2004: 296 bluebirds fledged from 41 boxes; 2005: 316 from 41 boxes; and, 2006: 350 bluebirds fledged from 41 boxes. In 2007, the trail also yielded six Carolina chickadee fledglings. Since 1990, in addition to bluebirds, the LBSRP bluebird trail has yielded 230 fledglings, representing five species (Carolina chickadee, tufted titmouse, prothonotary warbler, Carolina wren, and tree swallow).

In May, the volunteers assisted the LBSRP naturalist in setting up a bluebird nest box that contains a camera (nest cam). Eventually, the camera will be connected to an indoor monitor, so the Lodge guests can view the activities of nesting birds.

As a further extension of Project SOS, the volunteers monitored a 12-box bluebird trail that they established at John James Audubon State Park (JJASP) in 2005. During the 2007 nesting season, the JJASP nest boxes produced 34 bluebird fledglings, 18 Carolina chickadees, and seven tree swallows. As a result of 13 nesting attempts by bluebirds, 51 bluebird eggs were discovered in the JJASP nest boxes. There were ten unhatched bluebird eggs and seven dead bluebird babies found in the boxes, and the bluebird fledging success rate was 66.6%. If bluebirds exhibit nest site fidelity, it is hopeful that surviving adult bluebirds will return to JJASP next spring and continue boosting the park's population.

In 2005, the JJASP nest boxes produced 18 bluebird fledglings, and in 2006, there were 37 bluebird fledglings. Since 1990, in addition to bluebirds, the JJASP bluebird trail has yielded 33 fledglings, representing two species (Carolina chickadee and tree swallow).

In August, the volunteers assisted the JJASP naturalist in setting up a nest cam box in the wildlife observation area behind the park's nature center. In the future, the park will also have an indoor monitor connected to the nest cam, so visitors to the nature center can observe the activities of nesting birds.

Conclusion

In summary, during the 2007 nesting season, the total number (LBL, LBSRP, and ASP combined) of eastern bluebird fledglings for Project SOS was 1,489. There were also 52 Carolina chickadees, 11 tree swallows, 5 Carolina wrens, 2 tufted titmice, and six prothonotary warblers fledged from the combined nest boxes. As always, the goal of Project SOS is to maintain a core population of bluebirds to counterbalance severe seasonal conditions, particularly winter seasons comparable to the winters of 1977 and 1978. Furthermore, since birding is one of the most prevalent recreational activities in the United States, and eco-tourism has become a driving force in the recreational pursuits of millions of Americans, the economic benefits of Project SOS are immeasurable. For that reason, in future years, the project should continue to be a valuable enhancement for Land Between the Lakes National Recreation Area, Lake Barkley State Resort Park, and John James Audubon State Park.

The bluebird trails at Land Between the Lakes and Lake Barkley State Resort Park are registered as a part of the Transcontinental Bluebird Trail (TBT). The TBT, developed by the North American Bluebird Society, is a network of bluebird trails stretching across the United States and Canada that will eventually provide thousands of nest boxes for bluebirds and other cavity-nesting species. The bluebird trails monitored by the volunteers at LBL and the state parks cover a four-county area (Trigg County, Lyon County and Henderson County, KY, and Stewart County, TN). The nesting data in this report will be shared with the USDA-Forest Service, Lake Barkley State Resort Park, John James Audubon State Park, the Land Between the Lakes Association, the North American Bluebird Society, and other governmental or ornithological organizations.

In Memoriam:

Prior to the authors' tenure, the bluebird trails at Land Between the Lakes were monitored and managed for four years (1986-89) by George and Della Zimmerman. In February, 2007, George passed away, and the Peaks have dedicated the accomplishments of the 2007 nesting season to his memory. Among his many talents, George was a master woodworker, and several of the nest boxes he constructed are still producing baby bluebirds at Land Between the Lakes and Lake Barkley State Resort Park. Fittingly, his craftsmanship continues to produce bluebirds for our rainbows, and we are grateful for George and Della's dedication to the perpetuation of a beautiful part of our world.

Cover photograph by the North American Bluebird Society
Report designed by Bob Peak and Judy Peak
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