

Arkansas Box Turtle Survey

Preliminary results from the 2007 Arkansas Box Turtle Survey have been compiled. Over 2,500 observations were submitted via the online reporting form, e-mail, telephone, and U.S. mail. Most observations were submitted through the online box turtle reporting form. Of the observations we received, 2,061 contained sufficient detail to be deemed actual sightings of either three-toed or ornate box turtles. These observations came from all corners of the state. Only one verified observation of the rare ornate box turtle was made over the course of the 2007 survey. All other observations were of three-toed box turtles.



Courtesy of box turtle-watcher Michelle Haygood

While the statistics from this most recent citizen science effort are noteworthy, the “citizens” who participated are equally amazing. For example, a man from Boone County sent in a total of 34 different observations; a woman from Logan County sent in eight observations, with a detailed hand-

drawn map for each turtle she observed; another man from Arkadelphia sent in 30 observations from six different counties, each with legal descriptions from topographic maps; a couple from rural Pulaski County sent in 32 observations between May 13 and October 13, all from their immediate area, so we have a picture of turtle activity over time.

Many of the citizen scientists were also enthusiastic and generous enough to include photographs of box turtles they observed. These images add even more value to the records and some are remarkable photos.

Some turtle watchers chose to phone in their observations, such as the Arkansas State Trooper, who called in once a month to report box turtles he saw while on patrol. A school bus driver also phoned in reports of turtles she saw each morning while driving her bus route.

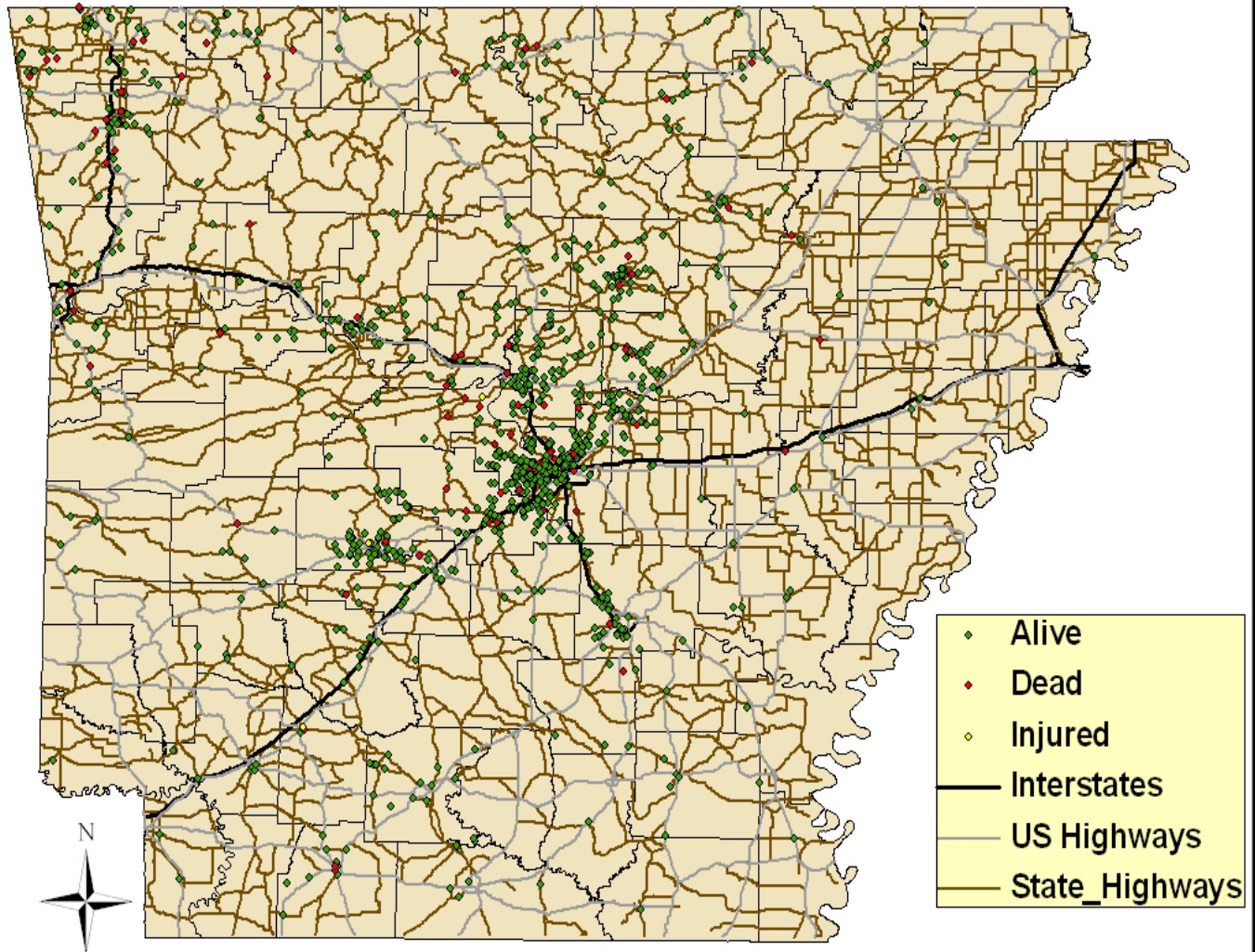
Many sightings of box turtles near roads included reports of injured turtles, and a special note of thanks goes to Mitzi Cafer and the volunteers with the Wild Child Alliance who donated their time and energy to care for injured turtles and also to the staff at North Hills Animals Clinic who donated medical care for injured box turtles.



Courtesy of box turtle-watchers Bart and Iona Dorsey

Results of the 2007 Field Season

Statewide Distribution of 2007 Box Turtle Observations



Map Created By: Thomas Jenkins and Nick Palmer
Data Provided by Arkansas Natural Heritage Commission

As part of all of ANHC's citizen science efforts, the education staff developed programs and materials to introduce the current survey species. For the box turtle, staff conducted 26 programs for 1,173 people ranging from school classroom to scout groups; from master naturalists to summer library reading programs. In addition, we conducted nine in-depth workshops for educators including classroom teachers and Arkansas State Parks interpretive staff.

Students and teachers played an important role in collecting data. In Heber Springs, a high school environmental science class distributed survey forms to the elementary school students, and then later collected the forms and summarized the data. In Little Rock,

Central High School's EAST lab students, Thomas Jenkins and Nick Palmer, took the submitted observations and produced a map (above) illustrating the location and type of observation.

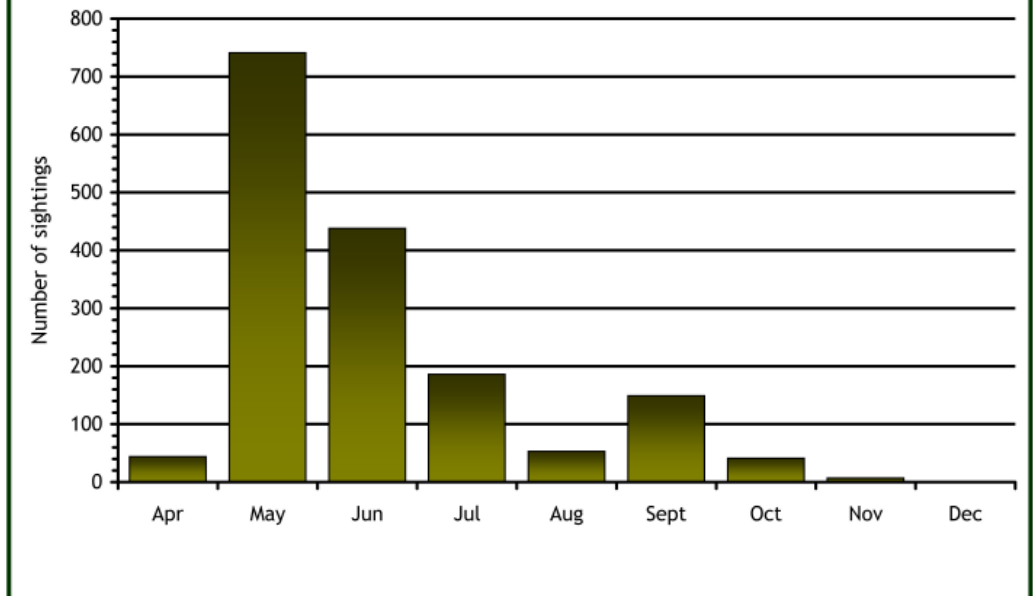
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As illustrated by the graph at right, most box turtle observations in 2007 were made during May and June. This timing is coincident with media attention of the survey, but also reflects the natural activity patterns of box turtles during the spring. Warming temperatures and higher amounts of rainfall contribute to increased box turtle activity at this time of year. With milder temperatures during May and early June, box turtles are more likely to be active for longer periods during the day thereby increasing the likelihood of them

being spotted by a box-turtle watcher. Spring and early summer are also a prime box turtle mating period. Most box turtle-watchers who observed and noted mating pairs did so during the month of May. Observations of female box turtles digging nests and laying eggs were most common in May with a smaller number noted into early June.

Box turtle observations declined throughout the remainder of the year. The often extreme

Box Turtle Sightings: April - December 2007



temperatures of summer tend to limit box turtle activity to early morning and evening. Since midday is typically spent undercover of vegetation or in burrows, chances for observation decline during this period. A very small number of mating box turtles were reported in late summer during August and September. The increased number of reports in September may reflect temperatures more favorable to increased box turtle activity and possibly a

second mating period. By October, box turtles in our region of the country have entered their overwintering sites. The last box turtle observation for the survey was made on December 2, 2007. This turtle was spotted near Ferndale in Pulaski County crossing a road. The occasional warm day during winter will often bring some box turtles out of their overwintering sites; sometimes to their detriment if temperatures drop suddenly.

Reports of live box turtles made up 95% of all reports to the survey. Dead box turtles accounted for the remaining 5%. A little over half of all live turtles were observed along roadways.

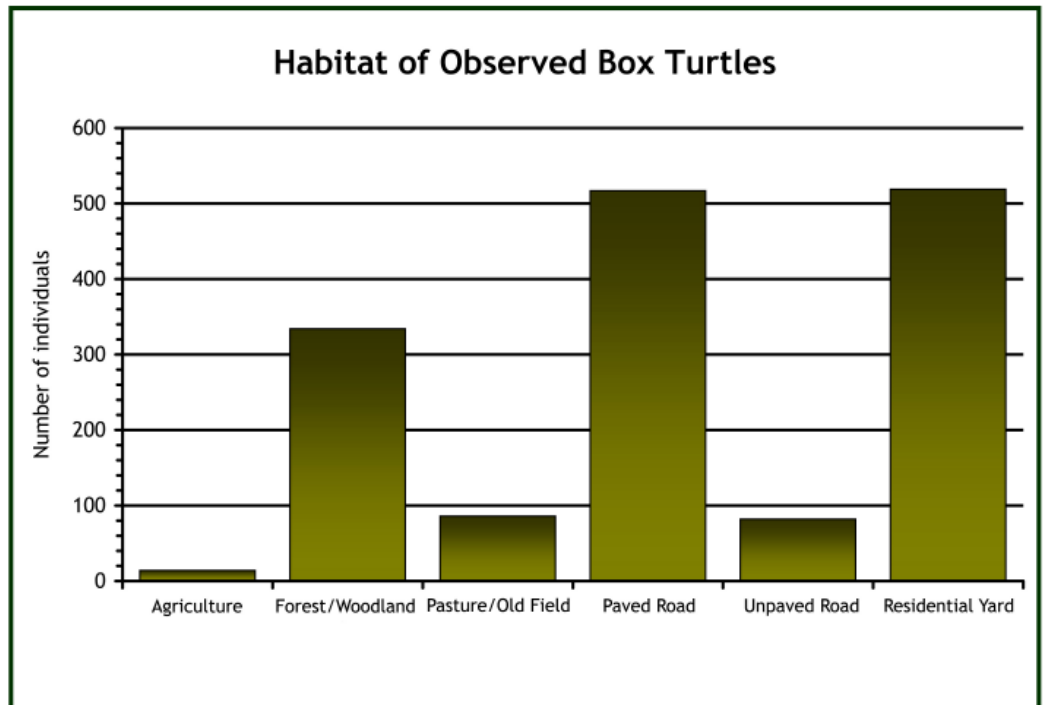


Courtesy of box turtle-watcher Robert Wells

Results of the 2007 Field Season

Ninety-two percent of all dead box turtle reports were of turtles that had been crushed along a roadway. Other dead turtles were reported as being hit by mowers or attacked by dogs. Reports of dead box turtles along roadways were most frequent in May. The only verified report of an ornate box turtle was of an individual found dead on a road in Benton County. Road mortality occurred most often along paved rather than unpaved roads. The majority of injured turtles were also found along paved roadways, exhibiting wounds inflicted by oncoming cars.

Road mortality is recognized as a significant threat to the persistence of North American turtle populations. It is clear from the observations submitted to this survey that large numbers of box turtles move across Arkansas roadways and are at risk of death. Long-term research suggests that as



little as 2-3% annual mortality is more than most turtle species can withstand and still maintain positive population growth. A 2002 statistical model developed by faculty from the State University of New York indicates that excessive mortality (>5% of individuals) already occurs among land turtle populations in many regions of the country, including our own. More detailed research will need to be conducted to determine the long-term impacts of road mortality on Arkansas box turtle populations, particularly species of conservation concern like the ornate box turtle.

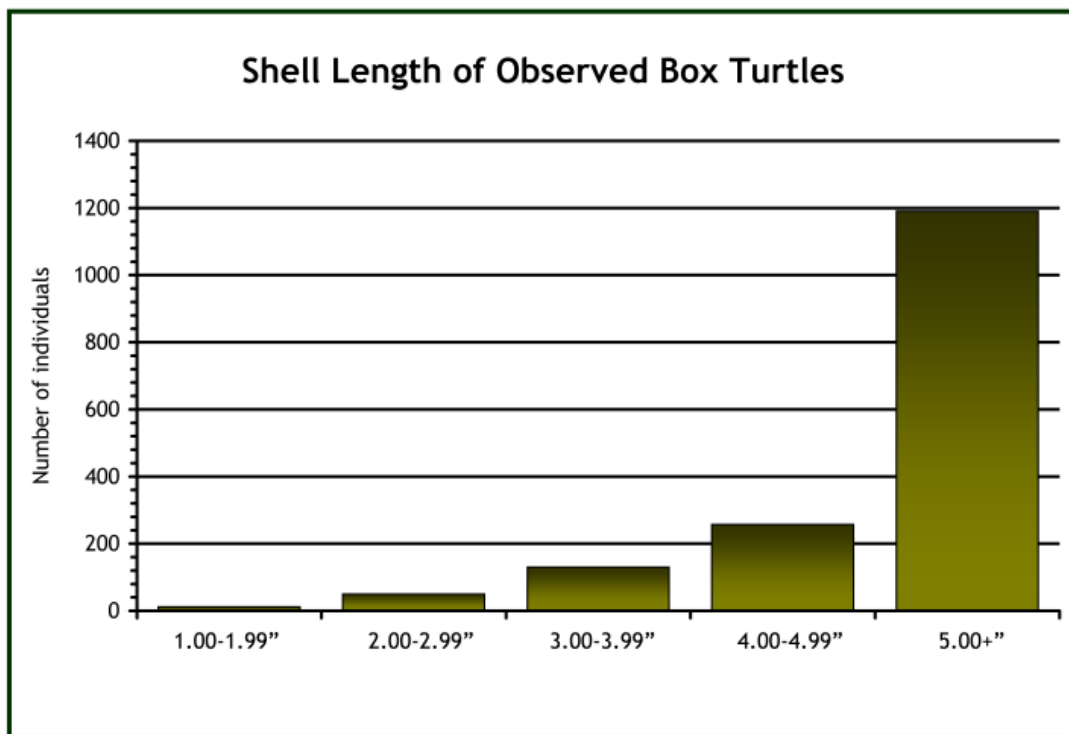
Outside of roadways, box turtles were most frequently observed in urban and suburban settings, primarily around private residences. This is to be expected as most box turtle-watchers were not out actively conducting surveys in natural habitat, but rather keeping an eye out around their own homes. Most instances of mating box turtle pairs and egg-laying females were made in this habitat type as well. Some box turtle-watchers noted quarter-sized hatchlings emerging from nests in flower beds and under piles of raked leaves. Forests and woodlands represented the third most reported habitat type. The smallest number of box turtle observations were made in agricultural settings.



Courtesy of box turtle-watcher Carol Womble

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The graph at right depicts the size range of box turtles reported to the survey. The majority of all sightings were of box turtles greater than five inches in shell length. At that size, most observed box turtles were of adult age. In Arkansas, box turtles generally reach adulthood around 10 to 13 years of age. Very few hatchling box turtles were reported. This is understandable as these small turtles often spend their first few years well-hidden under cover of leaf litter or other vegetation. Young, smaller box turtles are also the age class hardest hit by mortality factors such as predation. As a box turtle ages into adulthood, mortality decreases dramatically. The ecology of urban box turtles deserves more attention, particularly as it relates to the survival of hatchling



box turtles and whether urban populations can sustain themselves over the long-term.

Our analysis of the data is far from complete as we still have a tremendous amount of data to mine. Updates will be posted periodically as we complete our examination of the 2007 observations. A special

thank you to all those box-turtle watchers across Arkansas who took the time and effort to submit data last year. We hope you will keep an eye out this year as well. Your contribution to this survey effort has provided us with an unprecedented look at box turtles in Arkansas.



Courtesy of box turtle-watcher Jeffrey Benson