









St. Louis Box Turtle Project



An adult three toed box turtle in the leaf litter at the Tyson Research Center near St. Louis. Note the VHF tracking device fitted to the top of the carapace which allows researchers to track the turtle's movements.

WHAT IS THE BOX TURTLE PROJECT?

The St. Louis Box Turtle Project was initiated in the spring of 2012 in response to 1) the growing threats facing box turtles in the Midwest and across the USA, 2) the lack of awareness of these problems, 3) the increasing disconnect between young people and the outdoors, 4) the incredible opportunity that exists on St. Louisians doorsteps to experience nature, including box turtles, 5) the lack of scientific information available to help inform box turtle conservation. The well-known turtle biologist, Archie Carr once noted that "everyone likes box turtles", but how many St. Louisians know that wild, native box turtles are residents of parks in the heart of the City and surrounding countryside, or that turtle numbers are probably declining throughout the state of Missouri due to road kills, habitat loss, disease, and over-harvesting? The goal of this project is to promote conservation of urban and rural box turtles in the St. Louis area by 1) improving our understanding of the ranging patterns, ecology, and health status of these delightful animals, and 2) developing an education and outreach program. We work in Forest Park (one of the nation's iconic urban parks that lies in the heart of St. Louis), and the Tyson Research Center, a protected 809ha natural area, 25km from Forest Park. Our work at each site involves radio-tracking of box turtles to understand ranging behavior, surveys to estimate the abundance and distribution of turtles, research on turtle health status, and outreach for young people.



Molly Chaney, an undergraduate from Washington University, acquainting herself with a Forest

Park box turtle

Highlights

Box turtles

- There are 17 species of turtles in Missouri, including two box turtles, Ornate and Threetoed
- The three-toed box turtle is the state reptile of Missouri
- Three-toed box turtles can have four toes (oh dear!)
- Ornate box turtles (Terrepene ornata ornata) prefer grassy habitats such as prairies, while the three toed box turtle (T. carolina carolina) occur mostly in woodlands.
- They can live for 50+ years.
- Adult shell length is between 12-18cm, and weight is up to 800grams.
- Turtle diet is broad including worms, insects, fruit, mushrooms, leaves and grass.
- Nest temperature determines sex: "cool dudes and hot babes"!
- Turtles brumate (hibernate) in winter, and can withstand freezing!







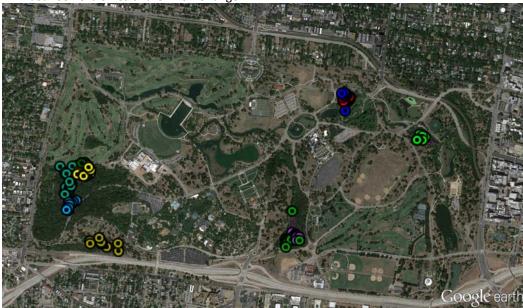






TURTLE TRACKING

We deployed 20 radio-tracking tags onto turtles (10 in Forest Park and 10 at Tyson). The tags are specially designed for turtles and weigh between 9-15 grams. Tags are attached to the shell of the turtles using a small amount of non-toxic plumber's epoxy, and the weight of the tag plus epoxy never exceeds 5% of the turtle's bodyweight. Each tag emits a regular radio pulse with a unique frequency, and we use a radio receiver and yagi antenna to track and locate each turtle once every 7 to 10 days. Forest Park turtle home ranges (below) are much smaller than Tyson turtles, possibly because of the small fragmented forest patches in Forest Park compared to the larger contiguous forest cover at Tyson. Some of the Tyson turtles are particularly mobile, moving over 1km between extremes of their home range.



TURTLE HEALTH

Understanding the health of wildlife populations is increasingly seen as a critical part of conservation. Turtles may be threatened from a variety of disease risks including those related to stress, parasites and pathogens such as ranavirus and mycoplasmosis which can cause high mortality. We have completed physical exams to document any lesions or abnormal clinical signs as well as bodyweight, measurements, and condition, and tick infestations, and have collected blood samples from over 60 turtles in both sites, and in 2013 will complete a suite of analyses to determine turtle health status.

OUTREACH

This year we have worked with a variety of local institutions in

the St. Louis area including the St. Louis Children's Zoo, the South City Prep. school, the Institute for School Partnership at the University of Washington in St. Louis, Forest Park Forever and the St. Louis Academy of Sciences during the Forest Park BioBlitz. Our approach is to introduce turtles, their habitats and ecology and our research to people using practical methods in the field. We will also be consolidating links among young people in St. Louis and the Galapagos Islands through a common interest in the conservation of box turtles and iconic giant tortoises.

GOALS FOR 2013

In the coming year we hope to 1) complete population surveys of the turtles in both forest Park and Tyson, 2) understand the relationship between forest block size and turtle presence and ranging in Forest Park, 3) discover where Forest Park turtles nest, and assess the vulnerability of nest sites, 4) document the health status of turtles in the two sites, assess risk to populations and consider management options, 5) promote the next generation of conservation scientists through programs of hands on field and classroom activities at both Tyson and Forest Park.

Turtle movements

- 20 VHF tags were fitted in early 2012, 10 in each site
- Weekly locations of each turtle are taken using GPS
- Home range size variation is huge (0.4-55.5ha). Tyson turtles have much bigger home ranges than urban turtles in Forest Park
- One Tyson turtle (called Mum) moved 600m in one week
- Forest Park seem to be restricted to small forest fragments

Outreach

- Introduced 40+ school aged children to the project through field trips and classroom visits
- Provided summer internships for two undergraduates and two high school students
- Project has featured on local TV networks, newspapers, and numerous web sites
- Developed a smart phone application (using rephoto) for forest park turtles that records photos and location data to the web for use in citizen science
- Obtained funding to train 20 teachers from local St. Louis schools in turtle research and conservation methods and develop educational curricula

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