

# Turtles Project 2012 Year in Review

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The year 2012 was another event-filled year for the Arizona Game and Fish Department's Turtles Project (Cristina Jones, Project Coordinator, and Audrey Owens, Biologist). We continued working on several long-term projects, including the juvenile desert tortoise radio-telemetry study at our long-term study site northeast of Phoenix.

## Juvenile Desert Tortoise Telemetry



One of our volunteers radio-tracking a juvenile desert tortoise.

The Turtles Project has studied the movements, survival, and reproductive ecology of adult tortoises at our study site northeast of Phoenix since 1991.



Turtles Project long-term desert tortoise study site outside Phoenix.

Juvenile tortoises, on the other hand, have not been studied here, or anywhere in the Sonoran or Mojave desert, because they are notoriously difficult to find. Their small size (less than 7 inches long) makes them vulnerable to predation by many creatures, so they tend to stay hidden in shelters and

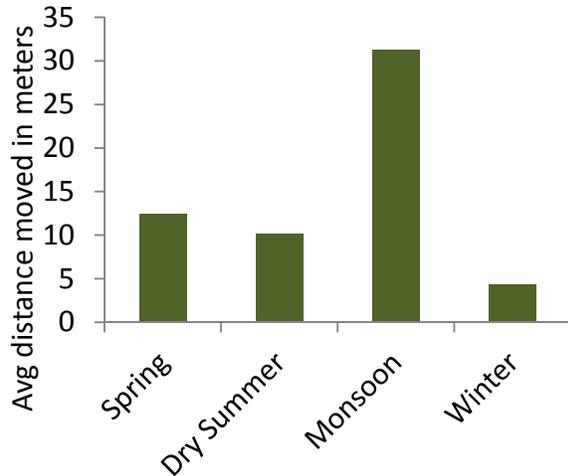
under vegetation. Because the relatively dense vegetation and steep rocky terrain makes looking for juvenile tortoises like looking for a needle in a haystack, we rely on our volunteers to help us with our surveys. Through the use of radio transmitters, we have been tracking 11 juvenile tortoises for the past 2 years. This year, with the help of our volunteers, we added 2 more juvenile tortoises to our study, for a total of 13!

This study will help us gain insight into the activity and habitat use of juvenile tortoises, which will be important for understanding their conservation needs. We are getting tons of data and this year proved especially interesting in the juvenile tortoises' behavior.



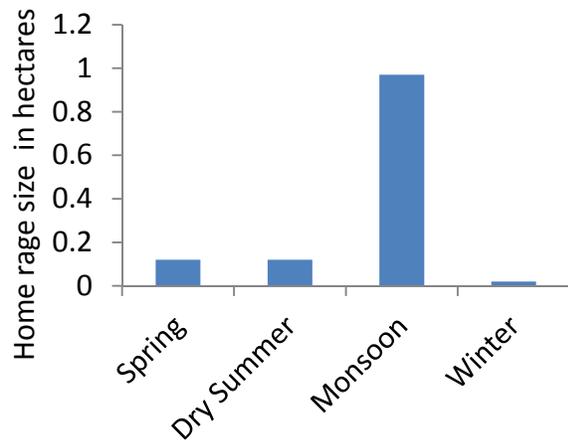
Tortoise 859, one of the juvenile tortoises added to the project this year.

Juvenile tortoises typically do not move much. On average, they move 30 meters from one day of tracking to the next (2 to 4 days later). This summer, we had two juveniles move long distances. In fact, one tortoise moved over 3km! In general, the tortoises became much more active this year, possibly because we received more rain during this monsoon season compared to the previous two seasons.



Average distance moved between tracking days in each season. They are moving the longest distances during the monsoon, as they take advantage of all the forage species that are lush from rain.

The juveniles’ home ranges (the area where they spend their time) are much smaller than those of adult tortoises at this site. For comparison, their home ranges average 1.59 hectares (about 4 acres), while adult tortoise home ranges here average over 5 hectares.



Their home range sizes are largest during the monsoon, when there is plenty of vegetation to eat.

Somewhat surprisingly, we have seen no mortality in the juvenile tortoises we are tracking. Adult tortoises at the site have high survival (>95%), and it’s possible that juveniles have equally high survival because they move infrequently and spend much of their time underground.



Tortoise 883, shown here getting its transmitter, was one of the new juveniles we added to our study this summer.

We will continue to radio-track and present our findings at scientific conferences, and we anticipate publishing the results of this one-of-a-kind study (which wouldn’t be possible without all of our fabulous volunteers, the dedication of our summer interns, and sponsorship from donors like yourself) upon completion of the project. Even though the tortoises have now entered hibernation, tracking the juveniles will continue through the winter (albeit with much fewer visits, since they won’t be moving much!).



Our volunteers take a much needed break during a tortoise survey.

### Long-term Desert Tortoise Monitoring

We performed 13 surveys this monsoon to search for additional juvenile tortoises for our telemetry study. Frequent surveys to our study site allow us to collect data on the entire tortoise population, so that we can keep tabs on adult tortoises marked years ago, or mark tortoises that are new to the

population, such as hatchlings (which are too small for transmitters).

During this year's surveys, we encountered 45 individual tortoises on 93 occasions, meaning we encountered several tortoises on multiple occasions. Of the 45 tortoises, 16 were male, 24 were female, and 5 were juvenile or hatchling size (unable to determine sex). Three of these tortoises had never been encountered by us before.



Two of our volunteers take a look at one of the hatchlings found this year.

Of the young tortoises, 2 were new juveniles (to which we affixed transmitters), 2 were hatchlings encountered in previous years, and 1 was a new hatchling. It is extremely rare to encounter a hatchling on more than one occasion, especially more than a year later, because hatchlings are so small (less than 3 inches) and have so many predators. The new hatchling was found in early August and had an egg tooth on its beak (a small projection that allows them to tear through the leathery egg shell), indicating that it had just hatched. Typically Sonoran desert tortoise hatchlings emerge from their nests in October, so this represents a very early record.

In addition to the early hatchling, we made a few other interesting observations. We observed three adult tortoises converged at a rock shelter next to a wash, and discovered that they were “calcium mining”, or eating the small rocks and sand within the shelter; this behavior may allow them to acquire

calcium and other nutrients. While this has been observed in tortoises congregated around rock shelters in Saguaro National Park West, this is a first at our site. Finally, we also had the rare opportunity to observe tortoises mating on two separate occasions.



Female 57 and male 705 mating at our long-term tortoise study site.

We also had the privilege of collaborating on a project studying the health of Sonoran desert tortoises. This health study (performed by a graduate student at University of Nevada, Reno) will help biologists better understand disease prevalence in the Sonoran and Mojave desert tortoises throughout their ranges in the US.



A black-tailed (top), tiger (lower left), and western diamondback (lower right) rattlesnake that were found during our tortoise surveys in 2012. All 3 of these species are encountered regularly at this site.

We are very fortunate to have volunteers that are eager to come out on these surveys. Their participation allows us to cover a wider area, and potentially find more tortoises. Since 1991, 181 tortoises have been marked at this site, and the data we collected during these surveys contributes to a huge set of long-term data that we maintain on the growth, health, and location of these tortoises. In addition to tortoises, we often encounter various other desert species on a regular basis, including Gila monsters and 3 species of rattlesnake.



One of several Gila monsters we encountered during our tortoise surveys this year. Gila monsters and desert tortoises generally do not bother each other, and even cohabitate in the same shelters. However, a nesting female tortoise will aggressively defend her nest from a Gila monster, as Gila monsters are a notorious predator of tortoise eggs.

### **Turtle Trapping at the Phoenix Zoo**

Because the pond in front of the Phoenix Zoo has become a popular spot for people to release their unwanted pet turtles, we held our 6<sup>th</sup> annual Turtle Trapping at the Phoenix Zoo, around the weekend of World Turtle Day (May 23). Once again it was an exciting and successful event. The purpose is to remove female nonnative turtles (to slow the breeding and potential spread of turtles outside the zoo pond) and provide outreach to zoo visitors on the threats posed to our native turtles by released pet turtles. The female turtles go to a pond at the Phoenix Herpetological Society, where they

can be adopted, and the males are released so they can be enjoyed by zoo patrons.

This year we trapped a total of 142 turtles, including 139 pond sliders (62 females and 77 males), 1 spiny softshell (18.5 pounds), 1 painted turtle, and 1 eastern redbelly turtle.



A male pond slider (with moss covered shell) awaits being processed. Cute when they are little, pond sliders get large and never become tame pets.

Our trapping totals had been decreasing during the first four events, but started to increase again over the last two years. We captured 212 turtles in 1999, 204 in 2007, 95 in 2008, 94 in 2009, 75 in 2010, and 110 in 2011. The data indicate that there has been an increase in the number of people releasing pet turtles since our 2010 turtle trapping - many of the turtles we caught this year were small, but at a size at which they have outgrown their tanks. In fact, many of these smaller turtles we captured had evidence of being in captivity, such as shell pyramiding and peeling.

Since 1999, we have over 900 turtle captures at this pond, representing 15 species, and have permanently removed nearly 500 turtles. We'll use the data from this year, and from the years' past, to calculate the population size of the pond sliders, and determine if the age classes of the turtles (based on the shell size) has changed over the years.



Cristina holding a young painted turtle that was captured in this year's turtle trapping (left). Audrey identifying the pond slider by carefully examining the notches in the marginal scutes (right).

As always, one of our biggest success stories is that we were able to deliver our message to thousands of people with our outreach on the bridge, at the gazebo, and through the news media. Our outreach volunteers did a fabulous job talking to people about responsible pet ownership, nonnative species, and options for people that can no longer care for their pet turtles. Hopefully our messages will be remembered when people consider buying a baby turtle as a pet, or as they wonder what to do with their turtle that has outgrown its tank!

### **Ornate Box Turtle Watch**

Because of concern that the ornate box turtle, a secretive species that spends much of its time underground, is in decline, we decided that the best way to get information on their populations is to ask the public for assistance. So, in 2009 we started the Ornate Box Turtle Watch, a program that asks people to submit their observations of box turtles to us so that we can accumulate a database of locality data. We continue to advertise the program to folks who spend time in the outdoors, through presentations and articles in naturalist magazines. We are very excited that we have received over 150 observations, and several of these observations are from localities at which we did not know box turtles still existed, such as western Santa Cruz County! For more

information on the Ornate Box Turtle Watch, or to download observation forms, visit [www.azgfd.gov/boxturtlewatch](http://www.azgfd.gov/boxturtlewatch).



Male ornate box turtle. Photo by Thomas R. Jones.

### **Consider Desert Tortoise Adoption!**

In 2012 Arizona celebrated its 100-year birthday, while the Department's Tortoise Adoption Program celebrated its 30<sup>th</sup> Anniversary. Desert tortoises, an Arizona treasure that can live up to 100 years, are available for adoption if you live within their range in Arizona (Phoenix, Tucson, Bullhead City, Kingman, Lake Havasu, or Yuma). You also must have a fenced backyard with an underground shelter. If you are interested in sharing your yard with a desert tortoise, please visit [www.azgfd.gov/tortoise](http://www.azgfd.gov/tortoise) for information on feeding, caring for, and creating a backyard habitat.



A captive desert tortoise enclosure and burrow. Photo by K. Jacobs.

