For Box Turtles, Marsh Habitat Is Complete

By Anna Moyer,
Jug Bay Research Fellow

Skeptical of an ecology internship located right outside of Washington, D.C., I came to Jug Bay Wetlands Sanctuary scared that I had signed myself up for an internship at a little urban park. I was quite relieved to see my summer unfold in a very different direction. The variety of habitats and the variety of people at Jug Bay created for me an expansive amount of information and experiences. I never became bored! Going to school in the Southern Appalachian Mountains, I got a real kick out of living along a river that had a tide and enjoyed learning about this different, estuarine environment. My time at Jug Bay gave me a greater understanding of how ecosystems work together and prevented me from having a narrow view of the environmental world. The most academically important part of my summer experience was the strong emphasis on field research. I enjoyed bird banding and monitoring turtle nests, trapping turtles, tracking Box Turtles, meeting other professionals and students doing research, and most demanding of all, developing and executing my own research on the use of the tidal wetland habitat by the Eastern Box Turtle.

Ana Moyer and Jen Lentz head out to track box turtles.

It is known that the Eastern Box Turtle, (*Terrapene carolina carolina)*, inhabits forests and can also be found in creeks and ponds within these forests. The past nine years of research done on the Box Turtle home range at Jug Bay shows that many of the turtles also spend time in the fresh water tidal wetlands found on the property. I did research to see how Box Turtles utilize their time in the tidal wetlands. For this, I used a Tid-bit thermometer to record temperature fluctuations, studied the contents of Box Turtle fecal samples, and analyzed the ratios of heavy to light stable isotopes of nitrogen and carbon via a mass spectrometer. I found that while most turtles feed very little in the tidal marsh, there are turtles that, through telemetry tracking, are often found in the marsh. The research showed that Box Turtles that spend time in the tidal wetlands use it for feeding and have a diet largely made of organisms from the tidal wetlands. The significant difference in temperature fluctuations between the tidal and non-tidal wetlands shows that the Box Turtles may also use the tidal wetlands as a preferred way of regulating their body temperatures. The tidal wetlands provide adequate if not ideal temperatures and diet items for the Box Turtles at the Sanctuary.

I enjoyed my summer at the Sanctuary, and feel that there is still so much more exploring and knowledge I can gain from this place. I hope to return to visit, to see how the Sanctuary and its research grow.

Box Turtles: Females Are Travelers

By Jennifer Lentz,
Jug Bay Research Fellow

Born and raised in the southern Arizona desert, I have spent the past three years trying to immerse myself in as many types of ecosystems as possible. My journey began when I moved 3,000 miles away from home to go to school at Hamilton College in upstate New York. Needing a break from the six-month winters (often consisting of wind-chill temperatures of -30° F!), I decided to go abroad to the Turks and Caicos Islands for Spring 2004. I spent the semester studying coralline diseases and marine resource management. Having spent extensive time in the southwestern deserts, the seemingly frozen tundra of the North East, and the warm Caribbean tropics, it seemed my next logical step was to experience an estuarine environment. Thus, the summer fellowship at Jug Bay Wetlands Sanctuary seemed a perfect fit.

For my summer research project, I looked at the home range and habitat preferences of Eastern Box Turtles (*Terrapene carolina carolina)* at the Sanctuary. I also compared the two data collection techniques that the Sanctuary uses to study the box turtles: mark-recapture and telemetry. To examine the mark-recapture method, I chose study turtles from the database that had more than 10 sightings (29 on average), which made our home range estimates considerably more accurate when compared to an older study done at Patuxent Research Wildlife Refuge, in which turtles with more than 6 sightings were used (8 on average). Home range estimation by telemetry is more accurate than the mark-recapture method because turtles are located more often, and they are found in off-trail areas, as well as near areas frequented by people. Based on telemetry, I found that male box turtles had a significantly smaller home range size than females, which directly contradicted the common belief that males are the big travelers.

I also found that females use each of the seven habitat types (tidal wetland, *Phragmites*, scrub- shrub, open forest, dense forest, and flood plain) at Jug Bay, and they show no significant preference; males use most of the habitats with similar frequency to the females. However, males used the meadow appreciably less often and were never found in the *Phragmites* stands in the marshes. Unless the significant size and diversity of female home ranges are recognized, critical nesting habitats—such as the meadow—are likely to be overlooked by conservation plans, which will put box turtle populations at risk.

I had an amazing summer here, and hope that I will be able to continue the work I did here in the future; my only regret is that my summer flew by too quickly.