Case, Beth Catherine, Environmental Enrichment for Captive Eastern Box Turtles (*Terrapene carolina carolina*), MS Thesis (Zoology), University of North Carolina, 2003.

**Abstract***

The relatively recent rise in public concern for animal welfare has led to the improvement of the housing conditions for a wide variety of captive animals. Despite this heightened awareness, reptiles have been relatively ignored. There has been a long held misconception that reptiles are stoic, adaptable and highly tolerant to abnormal conditions. However, because reptiles have strong innate drives and are not subject to parental and social education, they may actually be less tolerant and less adaptable to an unnatural, captive environment.

This study examined the physiological and behavioral impact of housing conditions on the captive eastern box turtle (*Terrapene carolina carolina*), and determined if box turtles exhibit a preference for an enriched or barren environment. Thirty-eight box turtles were randomized to either a barren (flat newspaper substrate) or enriched (cypress mulch substrate, shredded paper and a hide box) enclosure for a period of one month. Complete blood counts, fecal corticosterone, and body weights were measured at the beginning and end of the treatment period. Behavior was also assessed during the study.

Turtles in enriched enclosures had a significantly lower heterophil to lymphocyte ratio (H/L) at the end of the treatment period, indicating they were less stressed than barren-housed turtles. Enriched-housed turtles also spent significantly less time engaged in escape behavior, suggesting they were more accepting of their housing conditions. There was no significant difference in fecal corticosterone or body weight change between the two treatments.

Prior to treatment each turtle was placed in a preference test system in which it could move freely between a barren and enriched environment. Relative dwelling time was determined for each environment. Turtles showed a distinct preference for the enriched environment. After the one-month housing experiment turtles were reevaluated for preference to determine if previous housing experience affects choice. Turtles continued to prefer an enriched environment regardless of prior housing conditions.

This study shows that the captive housing environment can negatively or positively influence the physiology and behavior of box turtles. Housing modifications that encourage typical species specific behavior should be provided. For the box turtle these would include substrate in which to dig and items that permit hiding.

*This abstract and the complete thesis are available on-line at:*
