

Patuxent Wildlife Research Center

The Eastern Box Turtle at USGS Patuxent Wildlife Research Center, MD



The Challenge: Once common to forest and backyard habitats, the eastern box turtle (*Terrapene carolina*) has declined sharply and is now a federally protected species. Threats to box turtles include loss of habitat to fragmentation, road mortality, and commercial harvest for the international pet trade. Researchers at the USGS Patuxent Wildlife Research Center have been studying box turtle populations along the forested flood plain of the Patuxent River since the 1940s. This long term study has provided valuable insights into box turtle biology, including information on home range, seasonal movement, growth and demographic characteristics. Despite protection on undisturbed federal land, the box turtle population on the Patuxent Center has been in decline since about 1970. Causes of this decline have yet to be determined.



The Science: Dr. Lucille Stickel, later to become director of the Patuxent Wildlife Research Center, initiated box turtles studies on a 12 ha forested site along the Patuxent River in 1942 and continued monitoring turtles until 1975. By marking turtles for individual identification, Dr. Stickel used a method of mark and recapture to document turtle movement, define home range, document growth and longevity, and collect vital demographic statistics. In 1955, systematic searches within the study documented a robust population with over 1000 captures of more than 280 individuals. During the past 30 years however, repeated surveys of Dr. Stickel's Patuxent River study site have produced fewer captures of box turtles, indicating a nearly complete collapse of the population.



The Future: An investigation into the loss of this study site's box turtle population will include population modeling of Dr. Stickel's historic data with the addition of more recent survey records. Hand written archived data sets will be transcribed into an electronic data base for digital mapping. GIS analyses will describe box turtle movements, home range and population distributions. Although these analyses may not reveal the cause of the decline, the timing and magnitude of the decline may be more accurately depicted and correlated with documented declines of box turtles elsewhere. The isolation of the Patuxent study site suggests that local ecological factors may be of significance in the box turtle decline. Such factors include lack of turtle food resources on the ground as a result of grazing pressure from white tailed deer, or absence of open areas beneath the dense forest canopy.