

Research Links Turtle's Survival to Wetland Size

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Freshwater wetlands of the Delaware River Basin are amazingly diverse. Many plant and animal species continue to thrive while many other species are in decline. The freshwater turtle communities in the Delaware River Basin are an example of an organism type that is either thriving or in decline, dependent on the species. Some species like the painted turtle (*Chrysemys picta*) are abundant in many wetlands. Others, like the eastern mud turtle (*Kinosternon subrubrum*), have been wiped out from the majority of the wetlands they once occupied in Pennsylvania.

In the commonwealth of Pennsylvania, the red-bellied turtle (*Pseudemys rubriventris*) is officially a threatened species. However, it is not yet a federally listed threatened species. Recent surveys have shown that red-bellied turtles are now absent from half of the wetlands they once occupied. Historically, the red-bellied turtle decline has been driven by habitat loss and overharvesting. The continued decline may be due to the introduction of red-eared slider turtles (*Trachemys scripta elegans*), a potential competitor.

Red-eared slider turtles are native to the Mississippi River Drainage Basin. They have been introduced, and have established breeding populations, on



Two red-eared slider turtles (*Trachemys scripta elegans*) sun themselves on a dock. Notice the red patches where you might expect to see ears; hence the term "red-eared."

Credit: Flickr user turtlemom4bacon

all continents except for Antarctica. Introductions of red-eared slider turtles are mainly due to released or escaped pets, and occasionally they are released for religious or ceremonial purposes.

Introduced species can impact native species through predation by directly reducing native species' population size. They can also do so through competition, which reduces the rate of growth, reproduction and survivorship of ecologically similar species.

In the Delaware River Basin, red-eared slider turtles are ecologically similar to red-bellied turtles and require the same habitat for basking, foraging and nesting.

To determine if red-eared slider turtles are potential competitors of red-bellied turtles, we have been studying the spatial and dietary resource use of these two species. Our sample populations live in the wetlands at Fort Mifflin, Philadelphia County, and at the Silver Lake Nature Center (SLNC) in Bucks County, Pennsylvania. The two wetland complexes differ in size and degree

of fragmentation. The Fort Mifflin wetlands consist of three small wetlands surrounded and separated by mowed lawns and paved roads, while the wetlands at the SLNC consist of two large lakes connected by a creek and surrounded by lowland forest and parkland.

Our research suggests that at both Fort Mifflin and the SLNC, red-eared slider turtles and red-bellied turtles share many resources. However, for dietary resources, both species feed on the same foods at Fort Mifflin, while at the SLNC they feed on different items. These studies suggest that in small, highly fragmented wetlands like Fort Mifflin, the potential for competition between red-eared slider turtles and red-bellied turtles is greater than in large, less fragmented wetlands like those at the SLNC. The level of fragmentation and the diversity of dietary resources within a habitat are important in maintaining the native turtle populations of that habitat.

As land development within the Delaware River Watershed continues, we must ensure that the habitats necessary for the recovery and long-term survival of wildlife remain undeveloped and are as large in size as possible. ■

Editor's Note: Steven Pearson won a Best Student Poster Award at the Delaware Estuary Science and Environmental Summit in February. In recognition of his accomplishment, the Partnership for the Delaware Estuary is pleased to share his research in Estuary News.



A baby red-bellied turtle (*Pseudemys rubriventris*)

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