

Eastern

Mud Turtle

photo-Tom Diez

by Rob Criswell

It may seem difficult to get excited about a creature like the eastern mud turtle. It's a small, nondescript species that practically no Pennsylvanian has ever seen or heard of. Its appearance is no more exciting than its name. With a carapace (upper shell) that is usually only 3- to 4-inches long, it is one of our smallest turtles. And, it doesn't win any beauty contests either. The smooth, oval upper shell is a plain olive-yellow, brown or black hue, and the plastron (lower shell) is a yellow or yellow-brown. The neck, legs and tail are olive to brown as well, but the dark brown head sports yellow stripes or mottling.

Somewhat interesting features of the eastern mud turtle anatomy include an unusual double-hinged plastron. These hinges are located on either side of central scutes (plates) on its underside and allow the turtle to completely retract

its body when it decides to "close the doors." The tail of the male is larger and thicker than that of the female and is tipped with a spine or spike. The eastern mud turtle is often confused with the eastern musk turtle or "stinkpot," which is named aptly for the musky odor it emits when under duress. Although there are other subtle differences, the distinguishing feature that separates the two species is that the eastern musk turtle has only one hinge on the upper portion of its plastron.

Although once thought to be most at home in aquatic environs, recent research has shown that eastern mud turtles spend the majority of their life cycle in uplands. Prime eastern mud turtle habitat includes swamps, marshes and ponds, along with slow-moving streams and rivers with soft, muddy bottoms and dense stands of aquatic vegetation. But, just as important is the adjacent terra firma, which should feature meadows, shrublands, thickets and open forests, all with loose, sandy or loamy soils for easy digging and burrowing.

Until recently, almost nothing was known about Pennsylvania's eastern mud turtles. There were a few old records from Pennsylvania's portion of the Coastal Plain in Bucks, Delaware and Philadelphia counties, but no specimens had been confirmed since 1963, and this species was considered extirpated from the state. That all changed in 2008. Researchers from East Stroudsburg University cooperating with the Pennsylvania Fish & Boat Commission (PFBC) on a State Wildlife Grant (SWG) made an exciting discovery, a dead specimen near a wetland complex. The

The eastern mud turtle has an unusual double-hinged plastron (lower shell). These hinges allow the turtle to completely retract its body.



photo-Brandon Rulke



A young eastern mud turtle

following year, a second population was discovered. Thirteen eastern mud turtles were subsequently outfitted with radio transmitters.

Biologists tracking the turtles learned that they hibernate in upland soils or hummocks. Their sleep is somewhat fitful. Through the winter, they may move about in a 4- to 11-inch soil zone, depending on temperatures. During very warm spells, they may snooze just under the soil surface. They rouse themselves during the first warm days of March, when temperatures climb into the 60 to 70 degree range.

After emergence and some early basking and foraging, eastern mud turtles congregate in wetlands to breed. Afterwards, the females move back to the uplands to dig nests and lay eggs in June and July. Males hang around the marshes and ponds until August, hoping to find a wayward mate.

Females dig nests in loose soils or deposit their clutches, averaging 4 to 5 eggs, in debris or under cover. The eggs, an inch or so in length, hatch in 90 to 110 days. Young eastern mud turtles are a bit flashier than their adult counterparts, sporting yellow, red or orange patterns on their plastron.

Both males and females spend the rest of the summer and fall in upland habitat and return to their hibernation site sometime from October to December, depending on the weather.

Given its current status in Pennsylvania, this species has elicited a high level of conservation concern. Brandon Ruhe, a biologist with the Mid-Atlantic Center for Herpetology and Conservation (MACHC) and one of the investigators involved in the SWG project, is worried about the long-term viability of Pennsylvania's eastern mud turtle populations. Although both known locations include quality habitat, they are embedded in the most densely populated region of the state. He cites threats in the form of predation, introduced species and human activities.

It became evident during the research project that mammalian predators that prefer fragmented habitat, particularly raccoons and foxes, were responsible for killing turtles and raiding nests for eggs. A non-native red swamp crayfish, a voracious predator of smaller reptiles and

amphibians including juvenile turtles, was found the first year of the SWG study. Then, 40 to 50 were found the second year. By the third year, there were hundreds. It has not been determined whether eastern mud turtles can withstand the predation pressures they will face in the future.

Compounding the eastern mud turtles' plight is the juxtaposition of its habitat within a sea of humanity. The telemetry study showed that eastern mud turtles stayed within a little more than 100 yards of their breeding areas, so conserving adjacent open woodlands, shrubby areas and meadows is just as important as preserving the wetlands themselves. Streets and highways dissect some wetland and upland complexes. The specimen discovered in 2008, the first in 46 years, was hit on a road.

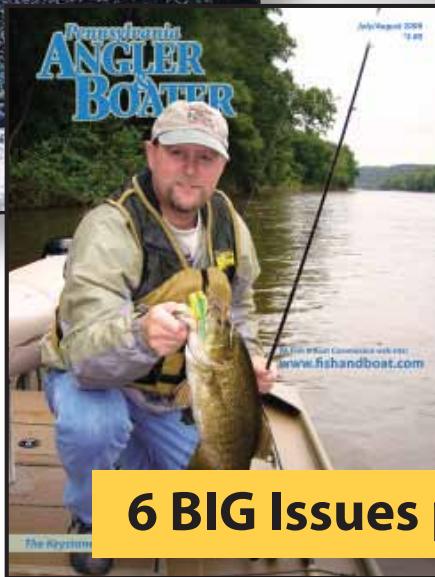
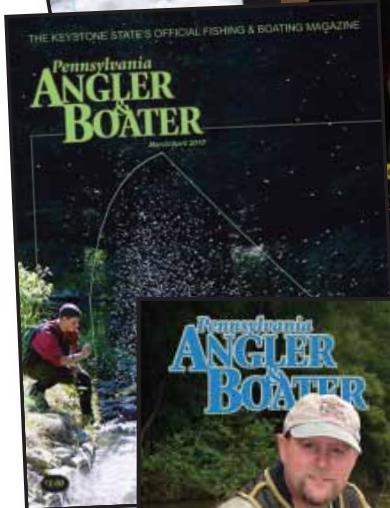
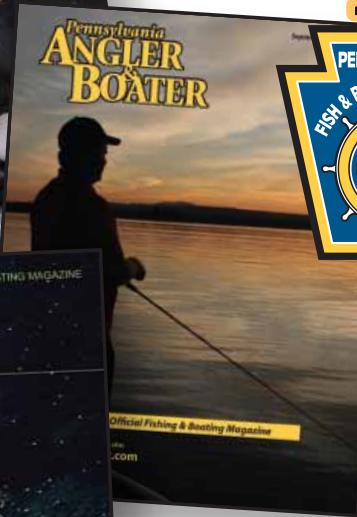
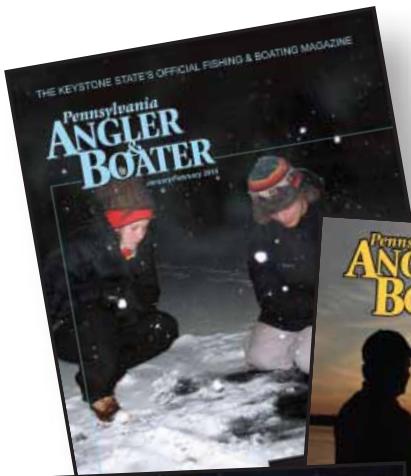
However, Ruhe thinks there is hope. He points to a bit of an ironic twist where industrial sites near streams and wetlands that historically compromised habitat in the southeast have been abandoned. The result has frequently been the creation of parks and nature centers in their place. These open spaces often include wetlands and waterways that are still functional, and the upland areas that were once factory and mill complexes have been restored. In some cases, they have been restored to ideal upland eastern mud turtle habitat.

Given the availability of this potential habitat, PFBC and MACHC are considering the feasibility of reintroducing eastern mud turtles to unoccupied sites in Pennsylvania. If the project would move forward, the sites would need to meet exacting criteria. The process would include a rigorous series of proven steps and techniques, like "head-starting" hatchling turtles to increase their chances of survival, to maximize the likelihood of success.

Increasing the number of populations of this less-than-exciting reptile, even if they are small, would significantly improve its chances of remaining a part of the Pennsylvania's incredible biological diversity. Now, that is exciting. □



The eastern mud turtle is a species of concern.



Pennsylvania ANGLER & BOATER



Get the complete story and read what you've been missing!

Do you like what you're reading? Do you find *Pennsylvania Angler & Boater* online articles a valuable resource? If so, why not become a regular subscriber to *Pennsylvania Angler & Boater* and receive the entire magazine delivered to your doorstep. With each printed issue, we place only a small portion of our feature articles on our website. If you fish or boat in Pennsylvania, you shouldn't miss a single issue, or even a single article! It's been the Pennsylvania Fish & Boat Commission's (PFBC) premier, award-winning magazine since 1931.

Print out this page and mail the form below with your payment to begin your subscription. Or you can subscribe online through

PFBC's Outdoor Shop. **CLICK HERE!**

6 BIG Issues per year!

Subscribe with this form today or online at www.fishandboat.com.

SUBSCRIBE TO *Pennsylvania Angler & Boater*

Name _____

Address _____

City/State/Zip _____

Phone _____

E-mail (optional) _____

SAVE UP TO 44% OFF THE COVER PRICE!

Payment must accompany orders. Use your credit card, check or money order made payable to the Pennsylvania Fish & Boat Commission. Return this form with payment to: **PA&B Circulation, Pennsylvania Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000.** Allow 45 days to receive the first issue.

One year (6 issues) **\$12** Three years (18 issues) **\$30**

TOTAL ENCLOSED \$

Credit Card Purchase: VISA Mastercard Discover AmerEx

Credit Card # _____ Exp. Date _____

Signature _____

Phone _____ E-mail (optional) _____

Since 1931, Pennsylvania's official fishing and boating magazine.

PAA&B-SUB-9-10