

# The Capital

## Fear for the turtle

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Dr. Willem Roosenburg holds a terrapin near the Patuxent River. The Ohio University professor is a top expert in the field of terrapin research.

With terrapin harvest closed, research and protection of state reptile takes on new urgency

POPLAR ISLAND — Walking single-file, Dr. Willem Roosenburg and assistants Ryan Trim bath and Tony Frisbee keep their heads down, eyes focused on the sandy shore of this island in the middle of the Chesapeake Bay.

They're looking for diamondback terrapin hatchlings, the next generation of the beloved - and imperiled - state reptile.

One year after lawmakers banned the commercial harvesting of terrapins, state regulators have made it illegal to keep terrapins as pets, too. And the state Department of Natural Resources is about to create an overall plan for helping terrapins, which are threatened by human behavior - sandy beaches that are turned into rip-rapped

fortresses, commercial fishing nets and traps that drown the turtles and rapid development that's causing wetlands to disappear.

"The main concern about terrapins is they're existing in a habitat that's undergoing tremendous pressure: pollution, habitat loss, overharvesting, incidental catch," said Dr. Richard Seigel of Towson University. "They're just being hammered in every way you can be hammered."

Dr. Roosenburg's work on Poplar Island is one effort to determine what's going on with terrapins. He's widely acknowledged to be the top expert on diamondback terrapins.

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**See a slide show:**

<http://media.hometownannapolis.com/flash/2008/09/14ssterrapin/index.html>

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## TERRAPIN FACTS

- Scientific name: *Malaclemys terrapin*.
- **Appearance:** Dark top shell, or carapace, covered in gray scutes that have concentric, diamond-shaped markings. The lower shell, or plastron, is yellow or greenish. They have beaks, webbed feet and rough skin. Females are larger than males.
- **Habitat:** They live in and around salt marshes and wetlands along the coasts. Nesting is on sandy beaches in the late spring and summer. In the winter, they hibernate at the bottom of creeks and rivers. Terrapins are found all along the East Coast and the Gulf Coast.
- **Nesting habits:** It's easy to miss a terrapin nest. Females amble up onto the shore and lay clutches of eggs in holes in the sand. Some hatchlings emerge in late summer; others don't come out from the nests until the next spring. Females reach sexual maturity between the ages of 8 and 13.
- **About the soup:** Terrapin populations took a hit in the 1700s and 1800s when terrapin soup was a local delicacy. In recent years, demand for terrapins as an ingredient in Asian dishes surged. The commercial harvest in Maryland was halted in 2007. It's also now illegal to keep wild terrapins as pets.

**Sources:** Chesapeake Bay Program, Maryland Department of Natural Resources.

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## CHALLENGES

- **Habitat loss:** Fewer wetlands and marshes to live in; a loss of sandy beaches needed for nesting.
- **By-catch:** Dying in watermen's nets or traps designed to catch fish or crabs.
- **Crabbing:** Recreational crabbers who don't use by-catch reduction devices, also called excluder devices, on their crab pots. The devices prevent turtles from entering the crab pots, but still allow crabs to go in.
- **Vehicles:** Terrapins can be injured by boat propeller strikes or cars.
- **Natural predation:** In some cases, more than 90 percent of eggs are eaten by raccoons and other predators.
- **Harvest:** Until last year, large females were caught in large numbers to be sold at fishmarkets. Large females are key to reproduction and rebuilding the population.

**Sources:** Maryland Department of Natural Resources, Ohio University, Towson University, Terrapin Institute.

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Each summer, Dr. Roosenburg and his assistants scour the Poplar shoreline for terrapin nests, which can number about 100. They put protective mesh to keep predators away and then patiently wait for the eggs to hatch.

Twice daily, the team checks each and every nest. Every so often, they'll see something dark beneath the mesh. Sometimes it's just a rock or a shadow. But if they're lucky, it's an itty-bitty diamondback terrapin hatching.

The trio crowds around the nest for a better look. "There are more guys in here, I feel 'em," Dr. Roosenburg said, rooting through sand on a blisteringly hot day. "Here's a dead egg ... Here's an empty eggshell. Here's a dead embryo."

This nest's contents were disappointing. The final tally: three turtle hatchlings, five dead eggs and two dead embryos.

The hatchlings went into a small mesh bag, so they could be checked out and tagged before being released.

The hunt for terrapin nests and baby terrapins the size of a quarter is a ritual that's in its fifth year on Poplar Island, a massive construction project in the middle of the Chesapeake Bay.

The island was abandoned long ago as it washed away into the bay, ravaged by the Chesapeake's winds and tides.

Almost as soon as work started to rebuild the island in the 1990s, engineers noticed the distinctive state reptile crawling on what was left.

"They called me up and said, 'We've got turtles nesting on our island,' " said Dr. Roosenburg, a biology professor at Ohio University who spends half his year in Maryland.

All of a sudden, Dr. Roosenburg had a new project: monitoring Poplar Island terrapin nests. He already had a long-running research project documenting terrapin populations in the Patuxent River.

Dr. Roosenburg suspects terrapins have been crawling ashore on Poplar and laying eggs for decades, even as the island got smaller and smaller. "They're sort of the hangers-on," he said.

In some respects, all of the Chesapeake Bay's terrapins have been barely hanging on for a long time. But terrapin boosters find hope in the harvest ban. And they're looking forward to the state's new management plan.

Dr. Roosenburg, however, cautioned it's going to take a lot of work on a variety of fronts to help terrapins. "There's no quick answer," he said.

State reptile

Diamondback terrapins (*Malaclemys terrapin*) are one of the many distinctive creatures found in the Chesapeake Bay region. They're also found up and down the Atlantic Coast and the Gulf Coast.

They're about as adorable as critters come, and they captivate people's attention. They are the official state reptile and serve as the mascot of the flagship school in the state university system, the University of Maryland, College Park. Costumed terrapin mascots prance courtside at nationally televised basketball games, and College Park graduates proudly call themselves "Terps for Life."

But terrapins aren't just charismatic - they play a role in the bay's ecosystem, especially in wetlands and marshes.

They don't have the filtering power of oysters or serve as forage for big fish as menhaden do. And they don't tempt the palates of diners like blue crabs or rockfish.

But terrapins eat smaller critters and larger critters eat them. They eat periwinkles, a type of snail that can destroy marsh grasses. Because terrapins move between land and water, they serve as a link between aquatic ecosystems and terrestrial systems.

Dr. Seigel, who is the chairman of the biology department at Towson, draws a football analogy to explain terrapins' importance in the ecosystem. Terrapins don't have a starring role like the quarterback or the wide receivers and running backs. But they are like key members of the offensive line, he said.

As football fans know, if your line is weak, the quarterback and the entire offense suffers. "They have a major role in the functioning of the ecosystem. You can't pull out a major role of the ecosystem and think everything's going to be OK," Dr. Seigel said. "It just doesn't happen."

### Halting the harvest

But why are Dr. Seigel, Dr. Roosenburg and others so concerned about diamondback terrapins?

Frankly, they're worried about losing the species entirely.

Terrapins live long lives, are slow to reproduce and have small success rates with producing young - so when there's a problem with the population, as has already happened, it can take decades for the species to recover.

If a decline isn't halted in time, it could be too late for the state reptile.

"The species was not going to last ... One of the things to keep the animal on the planet was to stop harvesting them," said Marguerite Whilden, a terrapin advocate and former Maryland Department of Natural Resources employee. She runs a small nonprofit in Shady Side called the Terrapin Institute.

Concerned about losing the state reptile, state lawmakers halted commercial harvest of terrapins in 2007. And this year, the state quietly made it illegal to catch terrapins to keep as pets.

Banning the commercial harvest didn't come without controversy, though. Watermen claimed shutting down the harvest represented one more loss of potential income for their struggling profession.

And the politicians and state regulators tussled over who should have ultimate authority over state wildlife.

The bill eventually passed, and Gov. Martin O'Malley proudly signed it with two terrapins from the National Aquarium in Baltimore in the audience.

### 'Playing catch-up'

And now the Department of Natural Resources is tapping terrapin experts and aficionados to help with a management plan to bring terrapins back to abundance. "We're kind of playing catch-up here. We're just trying to get going on it," said Scott Smith, a DNR ecologist who is leading the effort.

The group will start meeting this fall. One of their first tasks will be to review a diamondback terrapin plan drawn up by a special committee in 2001. The top recommendation back then was shutting down the harvest, which has been achieved. The new plan will address other concerns that affect terrapins, including loss of habitat and the unfortunate problem of terrapins dying in fishing gear meant for other species, a problem known as "bycatch."

The plan will cost \$10,000 to produce, and some of that is being paid through a federal government wildlife grant. Mr. Smith said he's positive Maryland can make "great strides" in boosting terrapins in the next few years.

"It's the only turtle we have that predominates in our estuary, our great Chesapeake Bay," he said. "It's our state reptile. If we aren't going to take care of our state reptile, what are we going to do?"

### Studies continue

As the state moves forward with the terrapin plan, researchers and educators continue to focus on the turtles.

Dr. Roosenburg is respected as the top authority on diamondback terrapins. He grew up in Southern Maryland as the son of a biologist at the University of Maryland's Chesapeake Biological Lab.

These days, Dr. Roosenburg splits his time between Ohio University, where he is a professor, and Maryland. He has two research sites here: one on the Patuxent River and the other on Poplar Island.

While Poplar is a more recent addition, Dr. Roosenburg has been working for decades on the Patuxent.

His focus there is figuring out the dynamics of the terrapin population. He uses a half-dozen nets and four modified crab pots to trap terrapins, evaluate them and record their vital information before sending them back into the water.

"It used to be we would catch lots and lots of turtles. The best day I had was 196," Dr. Roosenburg said while motoring the Patuxent on a sunny morning this summer. That was his last day on the Patuxent for the year, and he was helped by a University of Maryland student from Laurel, Margaret Lilly, and two aspiring turtle biologists from Myanmar who work with the international Turtle Survival Alliance, Khin Myo Myo and Kyaw Moe.

Nowadays, Dr. Roosenburg and crew are more likely to catch terrapins numbering in the dozens, rather than in the hundreds.

But as the numbers of terrapins are declining, the interest in researching them continues to increase. Dr. Roosenburg has scores of research partners. Blood samples from male terrapins are being sent to a college in Alabama for a hormone study, for example. And Dr. Roosenburg is advising University of Maryland honors students who are testing ways to protect terrapin eggs from predators.

Even schoolchildren in Anne Arundel County are research partners. The kids and their teachers raise hatchlings collected from Poplar Island that are released at the end of the school year. Dr. Roosenburg hopes to start a study next year to recapture young terrapins around Poplar to see if the kids' "headstarted" terrapins are surviving. He has a sinking suspicion, though, that many are meeting their demise in crab pots.

"The big plan now is to turn this into a system for understanding basic turtle biology ... I hope in the next five years, there's going to be some neat stuff coming out."

It's too soon to tell, however, how much the ban on harvesting may be helping. Because terrapins live so long and take so long to reach maturity - females don't lay eggs until they are 8 to 13 years old - it may take decades to see a recovery of terrapins.

Scientists and regulators can't even say for sure how many terrapins were being caught and sold. Watermen's reports and seafood buyers' reports didn't often match up. For years, they suspect the harvest was going underreported. They don't know how much the population plummeted or how long it will take to bounce back.

"Now we've bought ourselves a good amount of time," said Dr. Seigel of Towson. "We've taken out the largest, immediate threat that was killing thousands of turtles a year - we can take a look at what we can do long-term for this species."