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KILLING THE CHESAPEAKE

Hell-bent for Hellbenders: 'The canary in the coal mine' of the Susquehanna River watershed

save them.

Mike Argento, York Daily Record

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This USA Today Network special report explores solutions to deep threats that flow through New York, Pennsylvania and Maryland as the Susquehanna River feeds the Chesapeake Bay — with life and death.

His name is Frank.

He lives in a laboratory in the basement of the Lynn Science Center at Lycoming College in Williamsport.

He has mottled brownish skin covered with mucus, beady little eyes, a wide mouth, a paddle-like tail and tiny legs that have the appearance of the useless front legs of a T. Rex. The mucus-covered skin on his sides is ruffled, resembling the edge of lasagna noodles, the origin of one of his nicknames, “lasagna lizard.”

The species has several nicknames — mud devil, devil dog, grampus and snot otter, among others. The origin of its name is said to have come from settlers of North America who described it as “a creature from hell where it’s bent on returning.”

Meet Frank, an Eastern Hellbender and Peter Petokas, the caretaker of his kind (1:43)

The threatened Eastern hellbender is the largest salamander in North America. Peter Petokas of Lycoming College is trying to save it.

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Frank is an Eastern hellbender, a species that is the largest salamander in North America, a creature that dates to prehistory — to a time when dinosaurs ruled the planet. His ancestors survived the cataclysm that wiped out the dinosaurs, the ice age, the rise of human beings and their stewardship of the planet, from a bucolic wilderness to the Bronze Age, to the Iron Age, centuries upon centuries.

Now, in the Information Age, their days might be numbered.

A creature whose lineage goes back 65 million years is in danger of being wiped out.

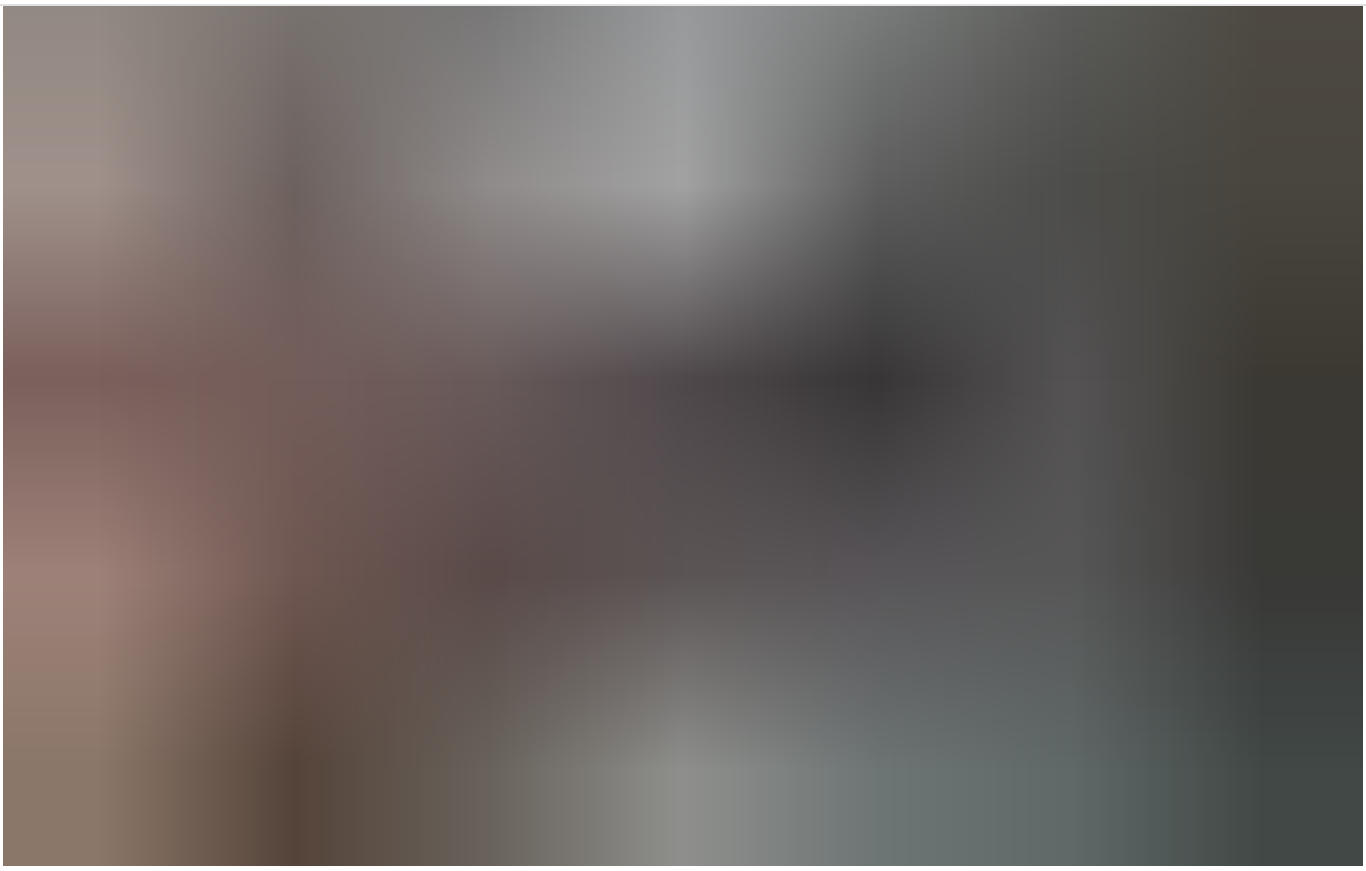
And humans are the cause.

Got Milt?

from a shelving unit. He tried to get the college to adopt the hellbender as its mascot, but, he said, “They already had a warrior.”

The walls are lined with T-shirts promoting the hellbender, including one that led to an awkward moment at the grocery store. He was wearing the T-shirt that bore an outline of a hellbender with text that read “Got Milt.” A woman in the dairy aisle responded to his shirt by holding up a gallon of milk to indicate that she “got milk.” Petokas acknowledged the woman and smiled, but he couldn’t bring himself to explain that his shirt had nothing to go with milk. Milt is the scientific name for the seminal fluid of fish, mollusks and, of course, hellbenders.

Petokas, a research associate with Lycoming College's Clean Water Institute, is, as one of several buttons he has that promote the amphibian says, “Hell-bent for hellbenders.” He’s a tall, slim man with shaggy white hair, an Air Force veteran of the Vietnam War who returned from southeast Asia and earned four college degrees, studying and researching wildlife ecology management. He has a professorial air to him, a soft-spoken gravitas, except when he starts talking about hellbenders.



Frank is an Eastern Hellbender that lives at Lycoming College in Williamsport, Pa. The species is the largest salamander in North America and is Pennsylvania's official state amphibian.

PAUL KUEHNEL, YORK DAILY RECORD

The snot otter is his passion, and preventing them from extinction is his passion project, one to which he has dedicated more than 14 years. His interest began when he was working with the New York Department of Conservation to conduct surveys of hellbender populations in state watersheds. “We did some surveys and didn’t find any,” he said. “That said something to me. I started working on trying to bring them back.”

Since then, he has captured and tagged thousands of them – more than 4,000 at last count – so researchers can track them. He has developed and, along with his students, deployed man-made habitats for them, concrete, box-like structures to provide shelter to the hellbender where habitat had been destroyed. He learned how to scuba dive so he could dive into deep water to find hellbenders.

“My first year of diving, I didn’t see any hellbenders,” he said. “That just gave me more motivation to go out and find them.”

"They're the canary in the coal mine," he said.

The keystone species

Just about every ecological threat to the health of the Susquehanna watershed and the Chesapeake Bay poses a threat to the hellbender. In that way, the continent's largest amphibian is also its most powerful symbol of what ails public waters.

Excessive sediment robs them of their habitat, covering the large rocks in stream and river beds that provide them with shelter. Pesticide and herbicide runoff from agriculture poisons them. The logging, mining and tanning industries also contribute to create conditions that endanger the hellbender, increasing the amount of sediment in waterways and throwing off its chemical balance.

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Meet Frank, a large Hellbender amphibian at Lycoming College

The Eastern Hellbender is considered the canary in the coal mine for water quality in the Susquehanna River watershed. It needs clean water to survive.

A disease caused by something called the chytrid fungus has been detected in hellbenders, infecting as much as 40 percent of the population, Petokas said. It's not known whether the fungus has

The introduction of invasive species, specifically rusty crayfish, has had an effect, too.

“Where rusty crayfish moved in, hellbender populations crashed,” Petokas said. Hellbenders eat crayfish, almost exclusively, and in areas in which rusty crayfish — notable for being highly aggressive — move in, native crayfish populations were nearly wiped out, greatly reducing the source of nourishment for hellbenders.

“Everything’s connected,” Petokas said. “The hellbender is almost like a keystone species.”

And everything is connected to the hellbender.

Hellbender slaughters

At one time, the biggest threat to hellbenders came not from environmental pressures, but from hunters.

In the 1930s and the 1940s, Petokas has written, “sportsmen’s associations, with the support of Pennsylvania’s Fish Commissioners, conducted a ‘War on Waterdogs’... in tributaries of the Susquehanna River’s West Branch in north-central Pennsylvania.”

Here, Frank, an Eastern Hellbender, looks out a tank at Lycoming College in Williamsport, Pa.

PAUL KUEHNEL, YORK DAILY RECORD

Sportsmen declared that war under the mistaken belief that hellbenders threatened native trout populations by feeding on trout eggs, something that Petokas said is untrue. The hunts were slaughters, he asserts.

One hunt, described in the local newspaper at the time, resulted in 160 hellbenders meeting their demise. Newspapers reported that in 1939, when a sportsmen's club placed bounties on hellbenders, more than 800 were killed in one month.

That is remarkable, Petokas said, because hellbenders, though abundant at that time, are notoriously difficult to catch, remaining under rocks during daylight hours and not venturing far from their lairs in the dark. Two men were credited with killing more than 750 hellbenders over a decade.

"Back in the '30s, sportsmen had this intense desire to eliminate what they considered vermin from the waterways," Petokas said. "Hellbenders, snapping turtles and water snakes were considered predators and a threat to trout, and sportsmen tried to eliminate them."

Carl A. Bidelspacher stands in front of the Steiger Brothers Store in downtown Williamsport, Pa. with hellbenders taken during a hunt in the 1930s.

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A poster in his office contains a photo from the local newspaper at the time, showing a smiling outdoorsman displaying a stringer of dead hellbenders in a storefront window.

Hellbenders, Petokas said, “still occur in most streams where large numbers were removed, but distribution is limited and overall numbers are considerably lower.”

Not protected in Pa.

Petokas is working with the Wildlife Conservation Society and the Bronx Zoo to restore hellbender populations, bringing it back from the brink of extinction.

Using eggs collected in the wild, researchers at the Bronx Zoo breed hellbenders and raise them until they are mature enough to release in the wild. Since 2009, the zoo has released more than 140 hellbenders in the Allegheny and Susquehanna watersheds. (Hellbenders are unusual in their reproductive habits. The female lays eggs and the male fertilizes them with milt. Then, the female takes off and the male remains in the nest to care for the eggs and hatchlings.)

The hellbender’s plight received a boost in April 2019 when it was named Pennsylvania’s official amphibian. The designation, though elevating the hellbender’s profile, does nothing to protect it. In other states, such as New York, the hellbender is considered a protected species. Pennsylvania has not taken legal steps to protect the salamander, something Petokas and other researchers would like to change.

'I've been blessed'

In the basement lab, Frank swims around in an aquarium, oblivious to his status as a marker of the ecological health of the Susquehanna watershed. “Frank’s doing well,” Petokas said. “They don’t always do well in captivity.”

He takes Frank from the smaller aquarium and carefully places him back into his larger tank, one that has PVC tubes to mimic his claustrophobic natural habitat. Hellbenders have fine, sharp teeth, and if you mishandle one, Petokas said, it can do “an alligator roll” and sink its teeth into your flesh, ripping the skin. You get the idea that he has first-hand experience with that.

He watched as Frank slithered into his PVC habitat.

“I feel like I’ve been blessed, in a way, to work with this animal,” he said. “Most people have never even seen one. It’s kind of exciting.”

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