A photograph of a person in a yellow and red kayak on a wide river. The background is a dense forest of green trees under a clear blue sky. A vertical wooden post is visible on the right side of the frame. The text is overlaid on the image.

# **Tracking Horned Pondweed and its Friends in Love Creek**

**Steve Britz**

**June 19, 2014**

# Surprise plant shows promise for Inland Bays tributary health

By Leah Hoenen  
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A surprising underwater plant is cleaning up a part of Love Creek, and scientists say it is showing what a healthy bays ecosystem should look like. The growing patch of green might offer a ray of hope for the pollution-plagued system.

Ed Whereat, coordinator of the University of Delaware's Citizen Monitoring Program, was training a new volunteer for the program when he noticed the vegetation. At the time, he said, salinity in the water was unusually low, on the heels of nine months of higher-than-normal precipitation.

For now, scientists say growth of the underwater plants is a quirk.

Chris Bason, science coordinator for the Center for the Inland Bays, investigated. "It turned out to be a pretty large area, a couple of acres. It goes up the upper creek until it reaches freshwater marsh. About half the bottom was covered," he said.

Initially, scientists thought they had found widgeon grass, a favorite snack of ducks, said Bason. Because it had just flow-



SUBMITTED PHOTO  
Horned pond weed was recently found growing in a section of Love Creek.

ered, they were able to determine from the seed pods that it was not widgeon grass but horned pond weed. Bason said the weed is thick and some algae is growing along with it. Water over the plants is clear and full of fish and crabs, he said.

Scientists don't know much about the vegetation. Whereat said it's possible that Goslee Mill Pond, upstream from the patch, was the source of the seeds. He said he couldn't speculate how long the plants had been there. "I can say, from my experience, that the area was fresh for a long

time. It's usually brackish," he said. Rain and snow last fall and winter made the water fresher, he said.

Bason said the patch of weed is surprising because the tidal part of Love Creek suffers from nutrient pollution, which causes a decrease in water quality. "It's not very well flushed, so it's very sensitive to pollution. On summer mornings, oxygen levels are always very low. It's definitely a polluted creek," he said.

Along the creek banks where horned pond weed is growing are vegetated buffers between homes and the water, Bason said. Upstream is a mill pond, he said, and it likely catches a lot of pollution that would otherwise flow down into the creek. The mill pond may also provide a source of seeds, so if the vegetation is damaged, there will be more seeds that can germinate and help re-establish the patch.

Homes alongside the creek have septic systems, but there aren't a lot of homes. Many properties still have trees, he said. "It was a nice surprise to see that was hanging on. The local conditions are probably very good," he said.

Scientists have not determined



SUBMITTED GRAPHIC  
THIS MAP SHOWS the area of Love Creek in which a patch of submerged vegetation has been found.

why the plants are able to thrive in this particular spot. Bason said the buffers may have contributed to the health. "I can't say the buffers are what caused the water quality, but it certainly contributed to it," he said.

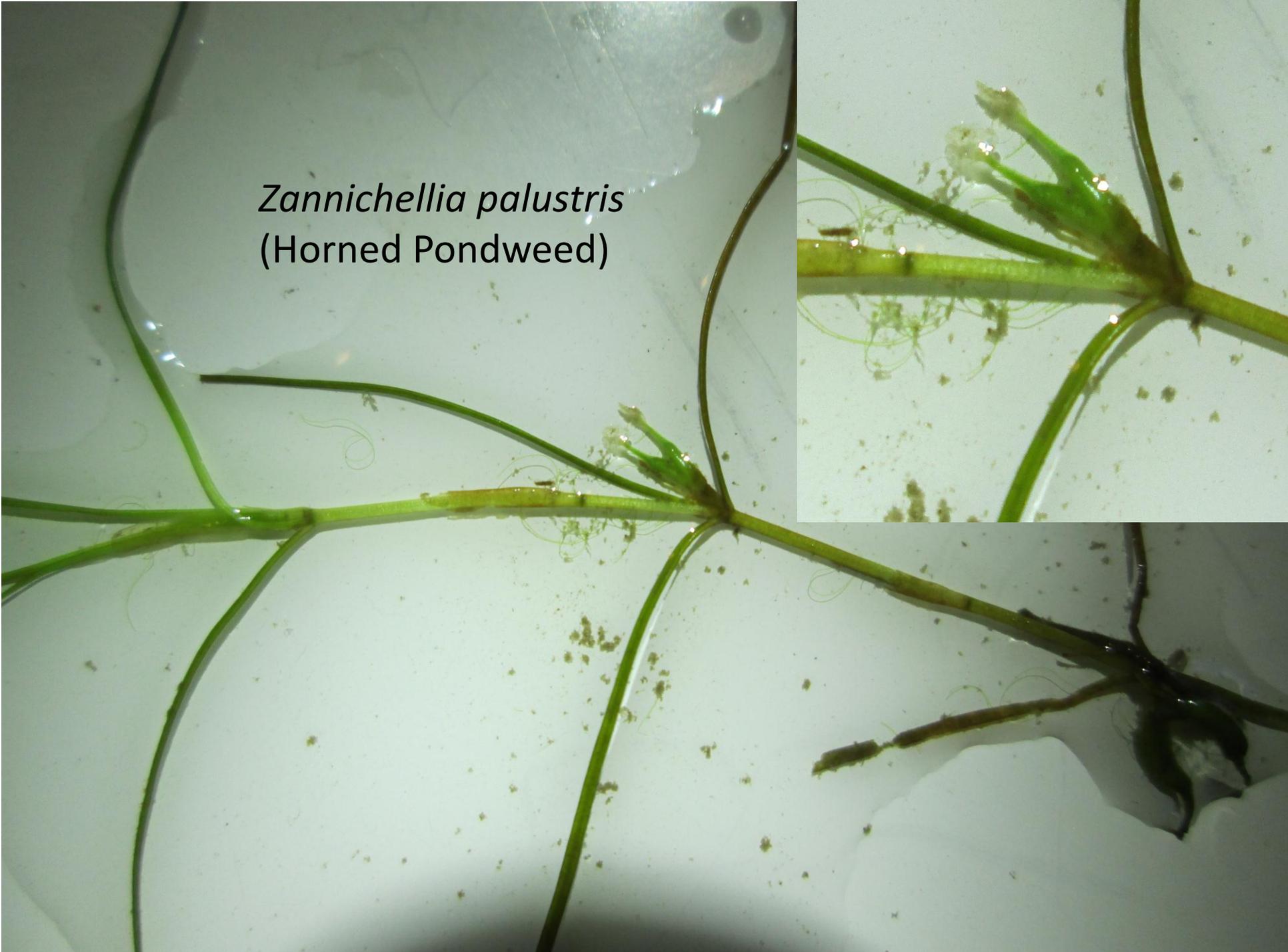
Whereat said, "Remember the context of a really wet year, wetter than normal." The plants may have been able to expand because of the fresher water, he said. Bason said the pond weed does well even in places that have a lot of nutrient pollution, so it isn't a great indicator of water quality. However, it shows that conditions in the area are good. The vegetation could expand, he said, but it will be limited

ed by how clear and how salty the water is. "The vegetation contributes to water clarity. It keeps the sediments in place," he said. It also provides habitat for fish and crabs and generates oxygen.

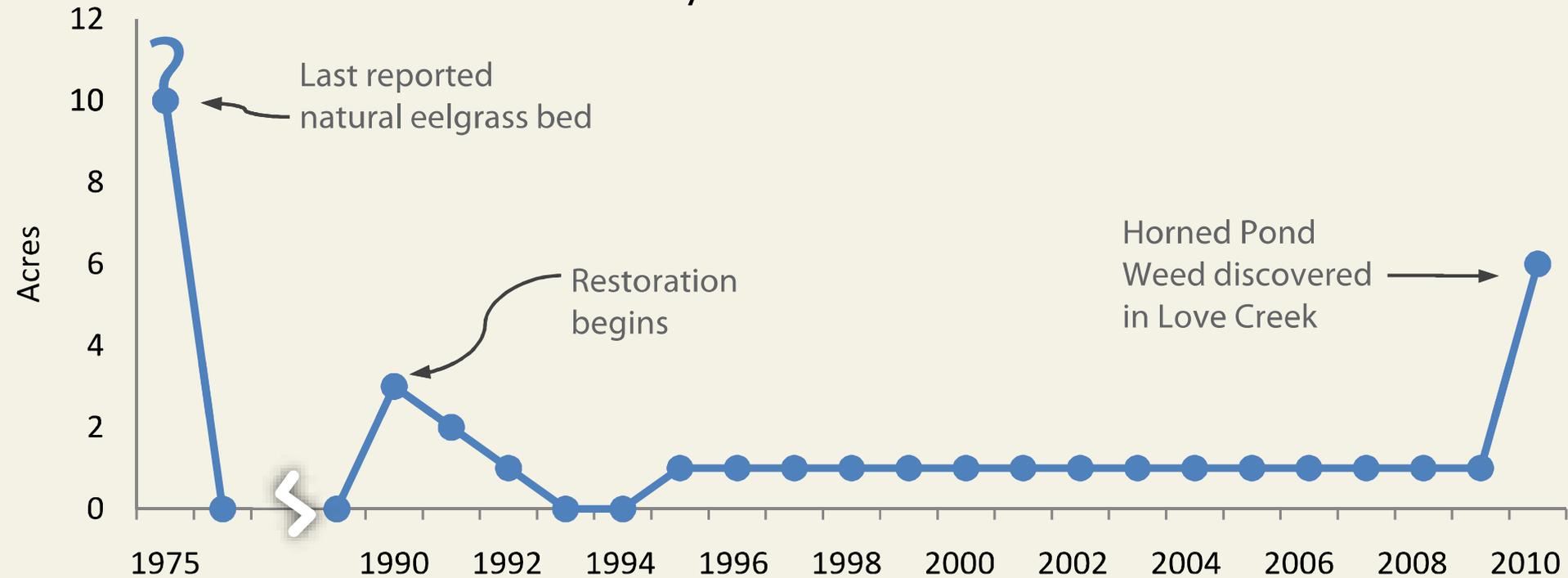
"Submerged vegetation is supposed to be very common in bays if they have the water quality we're trying to create. It helps keep the system stable, so if there is a storm or other disturbance, it holds the sediments in place and helps keep the water clear," he said.

"The only other spot we know of is the eel grass restoration area. It's about one acre and was planted 10 years ago," Bason said.

*Zannichellia palustris*  
(Horned Pondweed)



## Estimated Acreage of Known Beds of Bay Grasses in the Inland Bays & their Tidal Tributaries

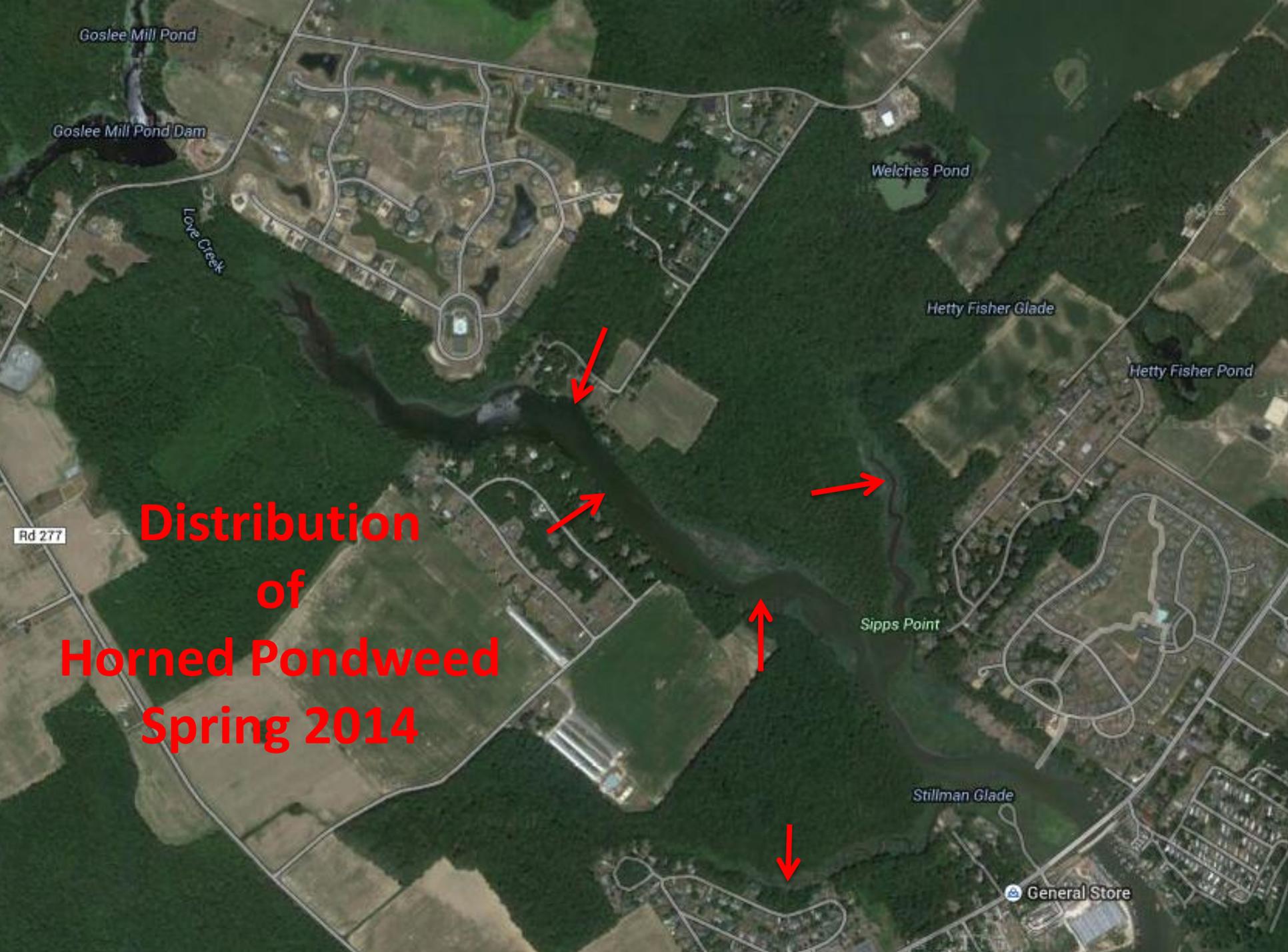


For comparison, the Maryland Coastal Bays had over 10,000 acres of bay grass in 2006.

# Nutrient Tolerance/Requirement

- Newbold & Palmer, 1979<sup>1</sup>
  - 150 British fresh water herbaceous plants
  - Unique trophic ranking from 1 to 150
    - oligotrophic to eutrophic
  - Horned Pondweed (*Z. palustris*): #150

<sup>1</sup>Newbold, C. and M.A. Palmer. Trophic adaptations of aquatic plants. Chief Scientist's Team Notes No. 18. Nature Conservancy Council, London, 12 pp., 1979 (cited in R. Goulder. Checklists and their importance for recording freshwater vascular plants: the British experience. *Freshwater Reviews* 1: 205-225. 2008.



Goslee Mill Pond

Goslee Mill Pond Dam

Love Creek

Welches Pond

Hetty Fisher Glade

Hetty Fisher Pond

Rd 277

**Distribution  
of  
Horned Pondweed  
Spring 2014**

Sipps Point

Stillman Glade

General Store

# Upstream Hetty Fisher Glade

June 15, 2014





Floating mats of *Spirogyra* – June 6, 2014 P.M.



# Spirogyra



*Spirogyra*

June 7, 2014





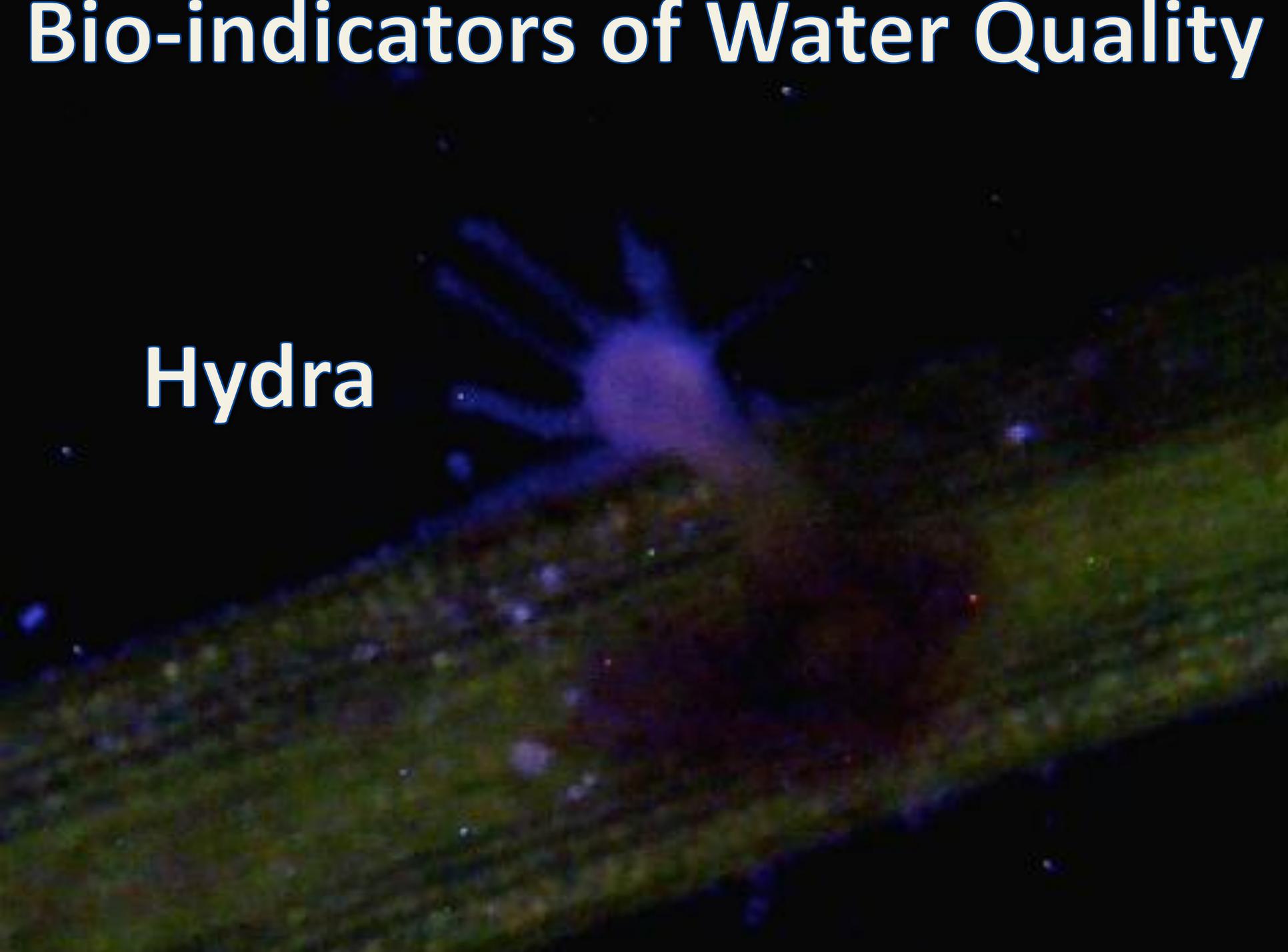
**Dead,  
Washed  
ashore**

**Expanding  
patch**

**Horned Pondweed – June 15, 2014**

# Bio-indicators of Water Quality

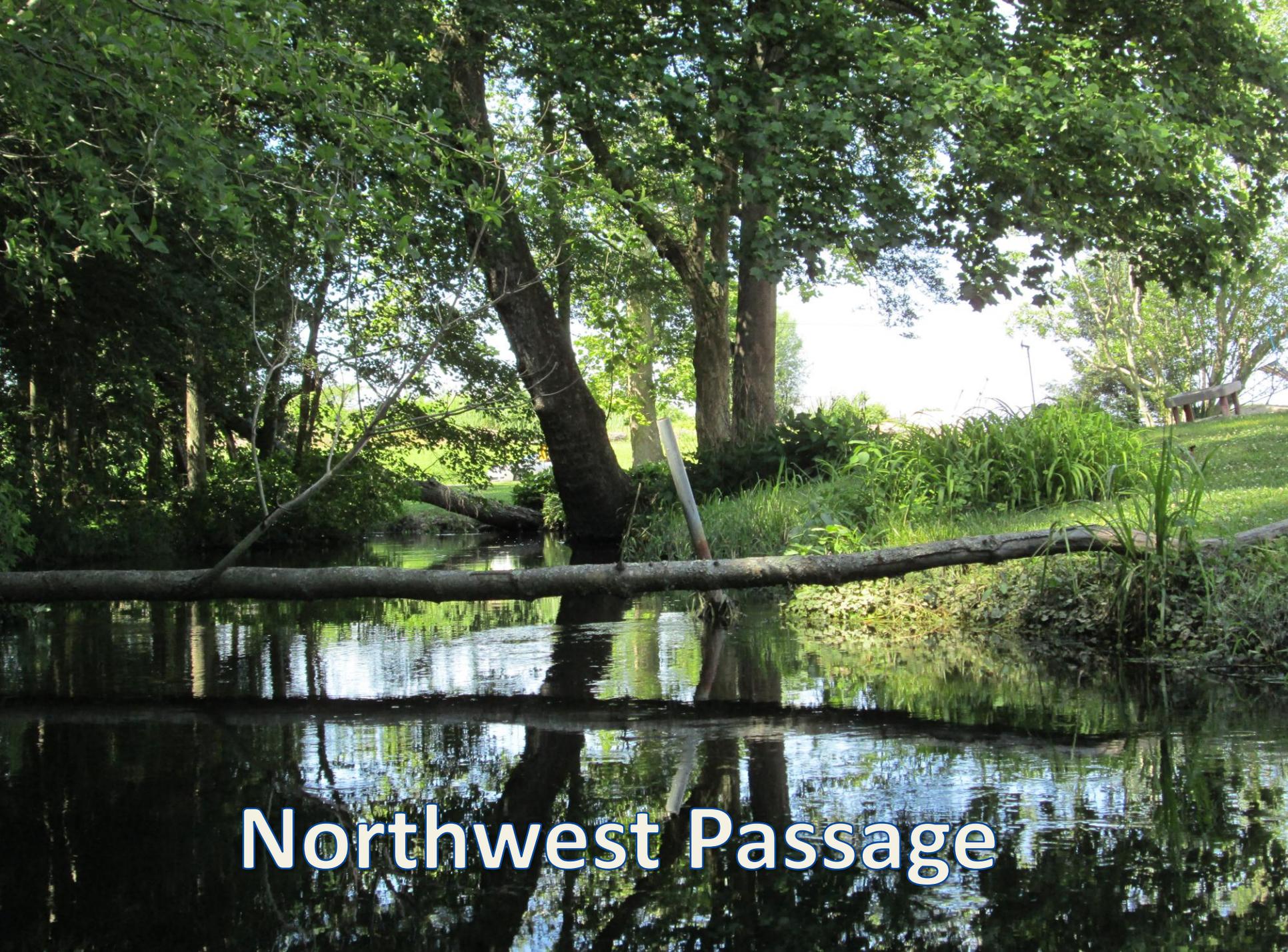
Hydra



A photograph of a swampy area. In the foreground, there is a body of brown water with ripples. In the middle ground, several dead tree stumps are visible in the water. Behind the water, there is a dense forest of green trees. The text "Habitat Loss" is overlaid on the water in the lower center of the image.

**Habitat Loss**





# Northwest Passage



## INLAND BAYS

# CIB begins pilot project on Inland Bays tributaries

Your Creek project will connect citizens with local creeks

By Ron MacArthur  
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Paddling a kayak on a sunny, late spring afternoon on Love Creek is an ideal way to help people learn about the creek that flows near their homes. That's the objective of the Center for the Inland Bay's three-year project called Your Creek.

It begins with Love Creek, a primary tributary to Rehoboth Bay and one of the 14 major Inland Bays tributaries in the Cape Region. Earlier this month, center staff led a group of volunteers on a kayak trip on Love Creek.

Most residents' only view of the creek occurs when they ride over Love Creek bridge on Route 24, said Sally Boswell, the center's education and outreach coordinator. "A lot of people who live here now didn't grow up here and don't know about the creeks," she said.

She's hoping that changes in a dramatic way. It's hard for her to contain her enthusiasm for the initiative and the Love Creek pilot project. "We see huge potential with this," Boswell said. "It can be a transformational kind of project. It's a home run to get people to feel a real relationship with the Inland Bays and with the

Sea Grant program. "We want to share that information in a user-friendly way, creek by creek by creek," she said.

Since 1991, a corps of citizen scientist volunteers has collected water samples at assigned sites around the Inland Bays and along its tributaries to measure a range of water quality characteristics, such as dissolved oxygen, water clarity, harmful algae and bacteria levels.

Boswell said the center hopes that from the Your Creek project citizens will form their own groups similar to Adopt a Watershed groups.

The team and staff will reach out to communities along Love Creek to not only educate residents, but also conduct a survey and establish a baseline on the status of the creek. "We want to see what the level of interest is and what the concerns are," she said. "We also want to know what the misunderstandings and perceptions are. We know a lot of people are very concerned about potential development projects on Love Creek."

Already proposed in the Love Creek area are new housing projects, the 600-site Love Creek RV Park and Campground, a new Delaware State Police barracks and a new Cape Henlopen School District elementary school, recently approved in a district referendum.

Boswell said each team would



RON MACARTHUR PHOTOS

**AFTER KAYAKING** for more than two hours on Love Creek, Your Creek team members and Center for the Inland Bays staff prepare to get out of the water near the Route 24 bridge.

develop a snapshot in time of Love Creek to establish current conditions and possible threats to the watershed.

Boswell said they will take what they learn from the Love Creek pilot project and apply it to other creeks. To start, projects are planned for Vine's Creek and Pepper's Creek, which both empty into Indian River Bay and Dirickson Creek, which empties into Little Assawoman Bay. The ultimate goal of the project would be to have Your Creek initiatives on all major tributaries of the three Inland Bays.

