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Spawning shad affirm potential of dam-removal program in Brandywine Creek

By JON HURDLE (/PEOPLE/JON-HURDLE) • AUG 7, 2020

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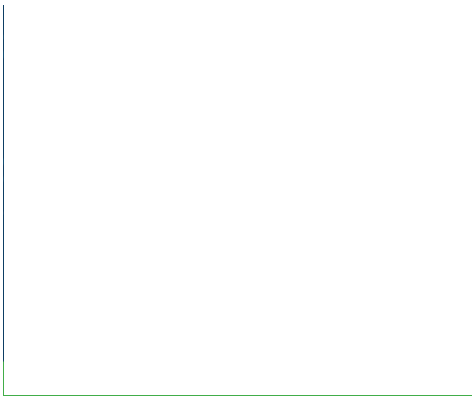
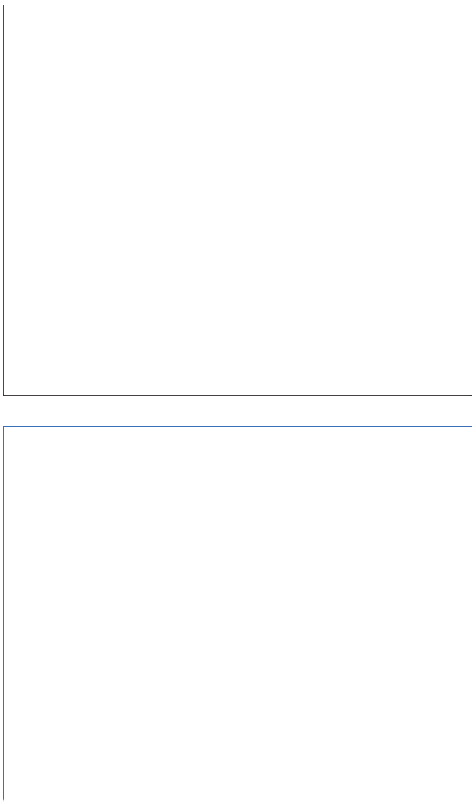


We return this week to Brandywine Creek for another update on a story we've been following all year.

In January, contributor Jon Hurdle reported on how a series of dams along the Brandywine dating back some 200 years were targeted for removal or modification - hoping to allow American shad to their ancestral spawning grounds again for the first time in two centuries.



In May, Jon told us initial evidence showed the effort is paying off. Now he reports there's even more good news this summer.

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10:14

Delaware Public Media's Tom Byrne and contributor Jon Hurdle discuss the progress of a project to bring American shad back to the Brandywine Creek in Wilmington.

For the first time in more than 100 years, American shad are spawning in the Brandywine Creek at Wilmington, vindicating a campaign to remove or modify dams so that the iconic fish can eventually return to their historic spawning grounds upstream.

Researchers cheered on July 28 when 159 juvenile shad and three adults were netted upstream of the site of the West Street Dam which was removed by the City of Wilmington last year, allowing the fish to migrate further than they had been able to since the dam was built in 1903.

The fish were caught just downstream of Dam 2, previously the second-lowest dam on the creek but now the furthest downstream, and the first obstacle to a fish headed upstream.

The presence of the young fish in larger-than-expected numbers was a major boost for the campaign to remove or modify all 11 dams on the creek so that fish can migrate freely for the first time since the first dams were built to power grain mills as long ago as 1740.

"It's absolutely a big deal because it really provides evidence that by removing the dams, the shad will migrate upstream and spawn." - Jim Shanahan, co-director of Brandywine Shad 2020,

"It's absolutely a big deal because it really provides evidence that by removing the dams, the shad will migrate upstream and spawn," said Jim Shanahan, co-director of Brandywine Shad 2020, a nonprofit that heads the project. "This was to be expected but until you have evidence of it you don't really know for sure."

Until the 1970s, shad were an abundant food source in the Delaware Valley but their numbers have since sharply declined because of overfishing and pollution. Now that catches are regulated and waterways are cleaner, the removal of dams in tributaries like the Brandywine is seen as the next step to restoring the species.

"Now this is the last target for trying to help these fish recover," said Ed Hale, a marine advisory specialist at Delaware Sea Grant, a partnership between state and federal governments and the University of Delaware that works to share scientific knowledge with commercial and recreational fishermen and the aquaculture industry. "Now we can definitively say that juvenile and adult American shad have been found below Dam 2 and above Dam 1. We've opened up that habitat corridor."

Hale, who led the netting, was elated to find more than twice as many juvenile shad in one event than he had expected to find in the creek all year. "The 159 juveniles was just a smash," he said. "I didn't expect anything like that many."

The catch was particularly exciting for Hale and his associates because a previous event on July 14 netted only seven adult shad. They are due to try again on Aug. 11.

Although the fish were found as adults in the Brandywine earlier this year, the presence of so many juveniles so soon after the first dam was removed shows the dam-removal project is really working, Hale said.

"Essentially, we are restoring ecological function," he said. "We are re-wilding a system that has been dammed up and blocked. It's one of the most urban systems, and we are essentially reclaiming this for wild-run fish."

Still, the Atlantic States Marine Fisheries Commission said on Wednesday that the shad population is still "depleted" coast-wide because of multiple factors including the presence of dams on waterways where the fish spawn.


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A Brandywine Shad 2020 shad netting effort on July 28th netted 159 juvenile shad and three adults upstream of the site of the West Street Dam.

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The regulator said existing "barriers" partly or completely block access to 40 percent of the region's shad-spawning habitat, which may equate to a loss of more than a third of spawning adults. Its annual stock assessment for the fish found that shad recovery is "limited by restricted access to spawning habitat."

But on the Brandywine, the return of shad is expected to strengthen and diversify the creek's ecology. The fish eat plankton, and are in turn eaten by larger species like striped bass. The renewed presence of the American shad, as well as other migratory fish like river herring and alewives, is also expected to attract more avian predators like bald eagles and osprey. After spawning, their decomposing bodies add nutrients to the water.

It's also a "really good sign for anglers," who can expect new opportunities in the repopulated creek, Hale said. He noted that some people from the Wilmington community volunteered with the fish netting on July 28.

This year, Brandywine Shad 2020 aims to remove or modify three more dams, and is expecting to get funding to allow that to happen, said Shanahan. But progress with Dams 3, 4 and 6 won't allow fish to swim any further upstream until the project tackles Dam 2 – where the juvenile shad were found last month – and that's a bigger, more expensive proposition.

"It's really exciting news because this is the first actual scientific confirmation, as opposed to anecdotal reports."- Ed Hale, a marine advisory specialist at Delaware Sea Grant

Some of the dams such as those near the Hagley Museum can't be removed because they are historic structures, and so they must be adapted to allow fish to pass upstream.

The techniques include a bypass, a gradual slope that allows the fish to swim around one end of a dam; a "rock ramp," which builds up the full width of a river bed on the downstream side of a dam so that fish can swim over it; and a series of ponds that allow fish to climb over a dam.

The modifications can enable up to 80 percent of fish to get past the dams, according to research from the University of Delaware. In 2015, a UD study estimated that removal or modification of all the dams would produce some 26,000 shad.

Whether they are modified or removed altogether, altering dams to allow fish passage has many other advantages for a waterway, advocates say. The benefits include lowering the water temperature, increasing the level of dissolved oxygen – an important indicator of ecological health – speeding the flow of water, and improving water quality for cities like Wilmington.

Removal or modification also helps with flood control by reducing pooling behind dams in times of high flow, an increasingly urgent need as climate change increases the frequency and intensity of rainstorms.

The Brandywine project follows the removal of a Revolutionary-era dam from the mouth of the White Clay Creek in 2014. That project, led by Dr. Jerry Kauffman of UD's Water Resources Center, also lured shad beyond the site for the first time in more than two centuries.

And the idea passed the test on the Musconetcong River in New Jersey where the local watershed association has opened up six miles of river to migratory fish from the Delaware River by removing five dams since 2008.

But on the Brandywine, project leaders have lacked hard evidence that their plans would work – until now.

"It was unknown," said Hale of Delaware Sea Grant. "It's really exciting news because this is the first actual scientific confirmation, as opposed to anecdotal reports. It's just a good story all around in terms of its promise for the environment."

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