

# Tributary Summary: Nanticoke River

## Invasion status

*When were blue and flat head catfish introduced?*

- Maryland Department of Natural Resources (MD DNR) estimates that blue catfish were illegally stocked in 2008, based on the size of those encountered.
- In Delaware, there has been one confirmed blue catfish detection by acoustic receiver at the mouth of Broad Creek in spring 2015. Recreational anglers have reported catching both species in 2014-15, but those reports have not been confirmed.

*What methods are being used to determine population size and structure? What population data exists?*

- The Smithsonian Environmental Research Center (SERC) conducted electrofishing in summer and fall of 2012-13 to determine relative abundance (electrofishing catch per unit effort) and size structure in Marshyhope Creek.

*What are the specific ecological impacts (i.e. predominant prey species)? Is there any mapping or information on the spatial extent of the species?*

- One impact of invasive catfish is the direct and indirect competition for forage fish with native fish, particularly the largemouth bass. Alewives, herring and shad, all highly valued species in Maryland, have also been found in blue catfish stomachs. Current diet data shows that blue catfish will feed on whatever is in the river. This indiscriminate feeding can have a detrimental effect on species that enter the Bay and its tributaries on a seasonal basis. In Delaware, specific impacts of invasive catfish are unknown, although there are many potential prey species.
- In a [NOAA-funded study conducted by SERC](#), catfish were collected and assessed for diet. The diet of the smallest fish was composed primarily of small benthic invertebrates, mysids and plant matter. As the blue catfish grew, bivalves were added to the diet. Above 350 mm TL, diet became diverse with fish being the dominant prey. Blue catfish were relatively common from Federalsburg south to the confluence of the Marshyhope with the Nanticoke River, which was the downstream extent of the study area. In a separate acoustic telemetry study, at least one blue catfish tagged in Marshyhope Creek moved into Broad Creek in Delaware, indicate movement is likely throughout the freshwater tidal and brackish portions of the Nanticoke River.

## Monitoring and Science

*What survey(s) are you using to monitor?*

- There are no MD DNR or Delaware Department of Natural Resources and Environmental Control (DNREC) surveys specifically targeting catfish. In Delaware, catfish are noted if collected or observed during largemouth bass and American shad projects that have been ongoing for more than 15 years, although none have been observed to date. No invasive catfish were encountered during sampling in 2013, which entailed several days of boat electrofishing from Middleford, DE to the MD/DE state line.

*List any active research projects.*

- No MD DNR or DNREC projects.
- SERC has an active acoustic telemetry project in the Nanticoke River that will continue until at least summer 2016.

*What information exists on the contaminant burdens of fish?*

- Consumption advisories for contaminants in fish are issued at the federal and state levels and exist for both commercial and recreational fishing. More specific advisories are recommended for individual species



A blue catfish gets transferred from a holding bin to a bin of sedative on Marshyhope Creek in 2014. Photo courtesy of SERC.

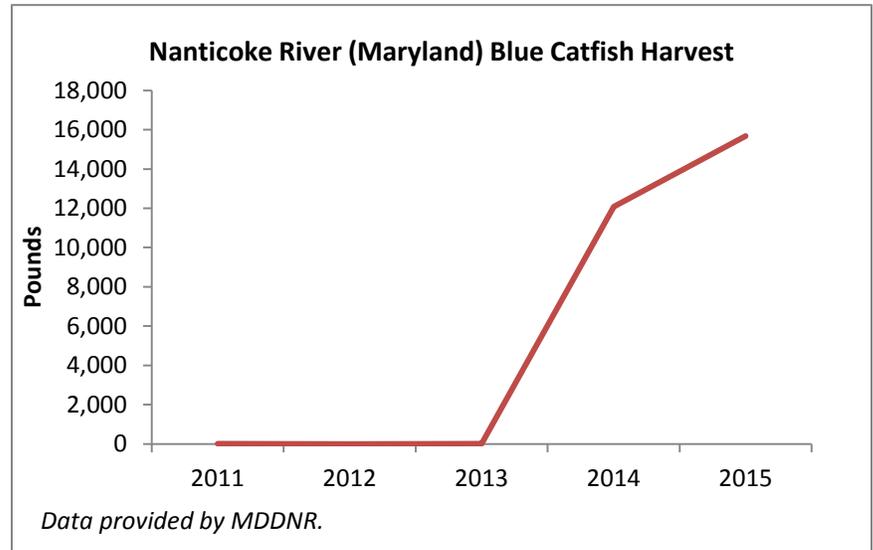
depending on size of the fish and where it was caught in the water body. The main contaminants of concern for fish are Mercury (Hg) and PCBs.

- In Maryland, there are no specific advisories for blue catfish in the Nanticoke. There are also no specific advisories in Delaware, so the statewide advisory of no more than one meal per week applies.

## Fishery

*Is there an active commercial fishery? What harvest data exist? What gear is being used to catch the fish?*

- Commercial harvest has been reported in Maryland with >10,000 pounds reported in 2014 and 2015.
- In Delaware, commercial fishing (primarily drift gillnet, hook and line) is minor (1-3 watermen). The catfish that are landed are primarily bycatch as white perch and striped bass are the primary target species.



*Is there recreational fishing? Specifically, what types: charter, subsistence, or both?*

- In Maryland, there is a recreational fishery and catfish tournaments.
- In Delaware, recreational fishing in the Nanticoke River is primarily individual anglers although there may be some charter activity as well. Some level of subsistence fishing is likely although this is not documented by the Delaware Division of Fish & Wildlife. Data provided by MD DNR.

*What fishing regulations exist in the tributary?*

- [MD DNR](#) does not have a minimum size or creel limit for invasive catfish caught in Maryland waters.
- In Delaware, blue and flathead catfish are listed as invasive finfish. There is a [statewide regulation](#) prohibiting the transport, purchase, possession or sale of live invasive finfish without written permission from the DDFW director. It is also unlawful to stock any invasive finfish. The regulation lists 'bow and arrow' as a legal method of take for these species. For recreational fishing, there is an open season on catfish in the Nanticoke River system and there are no size or creel limits.

## Communications and outreach

*Who are the primary contacts and key stakeholders (scientists, managers, fishermen, conservation groups)?*

- Delaware Department of Natural Resources and Environmental Control-Division of Fish and Wildlife, Division of Watershed Stewardship, Division of Water
- Delaware Department of Agriculture
- The Nature Conservancy
- The Nanticoke River Watershed Alliance
- Bass Clubs: Delaware B.A.S.S. Nation, Eastern Shore Bassmasters, Chester County Bassmasters, Tidal Patterns Bass Club, Blue Hen Bassmasters, 1 More Cast, Bad Weather Bassin, Del-Mar Basstrackers, Bluerock Bass, DuPont Bass Club
- Local jurisdictions: Seaford, Bethel, Blades, Woodland, Middleford, Laurel
- The Nanticoke River Marina (Blades Economic Development Corporation)
- The Nanticoke Indian Tribe
- SERC (Matt Ogburn, Rob Aguilar)
- Maryland DNR, Bay Catfish Advocates, Chesapeake Conservation Association, and a host of small clubs or guiding businesses.

*Are there any active public messaging campaigns?*

- MD DNR's campaign includes website bulletins, signage at primary angler access points, newspaper articles, ads in the annual Fishing Guide given to anglers purchasing fishing licenses, and a display panel about invasives with a live fish display presented at the State Fair, Seafood Festival and various Fishing Shows throughout the year.
- In Delaware, periodic press releases remind the public to report invasive species to the DDFW and signage at major access areas. The Delaware Invasive Species Council [website](#) includes invasive catfish information and identification.
- Invasive species information is provided to anglers when they report tagged largemouth bass and invasive species updates are included in a newsletter sent to more than 50 organizations that hold largemouth bass tournaments in Delaware. The spring 2015 issue included a blue catfish alert for the Nanticoke.

## **Management strategies**

*Are there active management strategies in place for invasive catfish in this tributary?*

- MD DNR is continuing its public relations campaign and is also a member of the Chesapeake Bay Program's [Sustainable Fisheries Goal Implementation Team](#) and is working with state, federal and local agencies to draft regionwide management strategies.
- In Delaware, the public is encouraged to report invasive species through press releases and signage. The DDFW maintains a database to document and track invasive species and if feasible collects fish that are caught and reported for further data collection. The most active commercial waterman will be collaborating with DDFW in 2016 to monitor landings for invasive catfish on the Nanticoke River.

*What strategies could be developed or implemented to reduce impacts of invasive catfish?*

- MD DNR plans to continue to encourage removal by both commercial businesses and local anglers, especially focusing on another commercial use besides consumption. MD DNR contacted a couple of fairly local companies that do exploit large fish catches, but neither were interested in blue catfish, for various reasons.
- In Delaware, there is a lack of financial and staff capacity to implement intensive actions, and the likelihood of completely eradicating the species seems slim. Possibilities include launching a public information campaign about potential economic/ecological harm and also state regulations to prevent possession and transportation. Increased communication and pooling of resources between government agencies, NGOs and academia would increase dissemination of information to the public and provide opportunities to discuss management techniques, ecological and economic impacts, and development of outreach materials.