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& ENVIRONMENTAL CONTROL  
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***Delaware Division of Fish and Wildlife***  
***Statewide Angler Mail Survey – Effort and Catch during the 2018 Fishing Year***  
***Summary of Results***

***Survey Response rate: 23% overall***

Survey forms were initially sent to nearly 6,000 anglers, followed by a second mailing to those who didn't respond to the first mailing. At the conclusion of the survey, 1,336 responses were received resulting in a response rate of 23% or about one in every four anglers that were contacted. Data from the returned surveys was used to estimate fishing effort and catch in Delaware's freshwaters. See below.

***Demographics: Residents age 65 and older most responsive group***

The universe of anglers surveyed was broken out into four categories: resident, non-resident, residents age 65 and older, and seven-day license holders. Residents age 65 and older were the most responsive group with 56% of those returning a survey. Responses were received from anglers who resided in all three Delaware counties, with the largest percentage (29.5%) from New Castle County. The majority of non-resident freshwater anglers reside in nearby states, including: Pennsylvania (15.3%), Maryland (9.3%), New Jersey (3.2%), Virginia (1.7%), and New York (1.1%). Another 19 states and the District of Columbia were also represented. The average age of survey respondents was 47 years for residents, 53 years for non-residents, 71 years for residents aged 65 and older, and 48 years for seven-day license holders.

***Public Pond Fishing: Most popular type of freshwater fishing***

Over 75% of survey respondents reported angling activity in public freshwater ponds. The ten most heavily fished (number of angler trips) public ponds were: Concord Pond, Becks Pond, Lums Pond, Trap Pond, Mud Mill Pond, Chipman Pond, Silver Lake (Dover), Ingrams Pond, Wagamons Pond, and Hearn's Pond. In terms of effort per pond acre, Becks Pond supported the most fishing trips per acre followed by Ingrams Pond and Concord Pond.

Non-resident anglers fished most heavily (number of trips) at Trap Pond, Millsboro Pond, Ingrams Pond and Lums Pond. The State Park ponds (Lums and Trap) have camping sites and other amenities that would be expected to draw a larger number of non-residents. Millsboro Pond and Ingrams Pond are close to coastal communities which are popular vacation destinations.

Most pond anglers (54%) used a boat when fishing, which may be partly due to limited shoreline access for fishing at some ponds. Although fishing activity was reported year round, most activity took place between April and September with a peak in June.

***Non-tidal and tidal freshwater stream fishing: Nanticoke River System the most heavily fished***

Four Piedmont streams (Brandywine, Red Clay, White Clay, and Christina) in New Castle County were listed on the survey form, as were nine tributaries of the Delaware River, the Chesapeake and Delaware Canal, and tributaries of the Nanticoke River system. Out of these, the most heavily fished (number of angler trips) was the Nanticoke River system which accounted for over 22% of all stream and river fishing activity. The Chesapeake and Delaware Canal and the Broadkill River rounded out the top three

most popular rivers. The most popular piedmont streams were Brandywine Creek and the Christina River.

The Broadkill River was most popular with non-resident anglers, possibly due to the proximity of the river to Delaware's coastal resort areas. In addition, there are public access areas upstream near the first dam and downstream near the mouth of the river with many miles in-between of relatively undeveloped shoreline. Non-resident use of the Nanticoke system was also high, likely due to the Largemouth Bass population and the extensive use of the river for bass fishing tournaments.

The majority (61.5%) of anglers fishing in streams and rivers utilized shoreline access, while 39.5% reported using a boat for fishing. This group most actively fished between April and September with a slight uptick in activity during June and July.

*Preferred Fish Species and Catch Rates:* *Largemouth Bass the most popular warmwater species*  
Anglers reported catching 1,099,694 fish in 2018, comprised of a variety of species. Survey respondents indicated that Largemouth Bass were by far the most sought species in freshwater ponds and river systems and bass subsequently comprised over 25% of the total catch. Anglers fishing at Concord Pond, Hearn's Pond, Lums Pond, Wagamons Pond and Chipman Pond reported catching the highest number of bass. In the river systems, anglers reported catching the most bass in the Nanticoke River system. Black Crappie were the second most targeted species overall by anglers that fished in freshwater ponds, with the most catch reported for Hearn's Pond, Trap Pond and Becks Pond.

Both pond and river anglers were also targeting 'sunfish', catching over 300,000 individuals, but not all respondents indicated the species. In Delaware, reference to 'sunfish' typically includes Bluegill, Pumpkinseed, Redbreast, and Redear which are common in most Delaware water bodies. The most 'sunfish' were caught at Becks Pond, Silver Lake (Dover), and Brandywine Creek. Catfish were also popular amongst pond and river angling groups, although in most cases the exact species was not specified. Currently Brown Bullhead, Yellow Bullhead, White Catfish, and Channel Catfish are known to occur in Delaware's freshwater ponds. These species also occur in most river systems along with Blue Catfish and Flathead Catfish, which are considered invasive species. Anglers reported catching over 80,000 catfish in 2018, with the highest catches in the Christina River, Nanticoke River and Mispillion River Systems.

Catch rates (catch per unit of effort - CPUE) were derived by dividing the number of fish caught ('catch') by the number of angling trips ('effort'). CPUE is useful for comparing the abundance of fish species between water bodies or through time at the same water body, but angling experience and other factors can influence the rate. According to the data from survey respondents, CPUE (all warmwater species combined) for public pond fishing was highest at Portsville Pond (19.1 fish/trip), followed by Hearn's Pond (11.3 fish/trip), McColley Pond (8.0 fish/trip), and Tussock Pond. The high catch reported by anglers at Hearn's Pond concurs with the findings from the fish community surveys conducted by the Division of Fish and Wildlife in the spring of 2018. According to Division surveys, McColley's Pond also has an abundant diverse fish population, however, fish populations in Portsville Pond and Tussock Pond were not as noteworthy.

CPUE (all warmwater species combined) for river and stream fishing was highest for Taylors Gut (17 fish/angler trip), which is part of the Duck Creek River system (a tributary the Delaware River). This was due to six participants that reported catching 335 Common Carp in 19 trips. Catch per trip was also highest for the Mahon River (8.9 fish/trip), Christina River (6.3 fish/trip), Brandywine Creek (5.92 fish/trip), and the Nanticoke River system (5.19 fish/trip). Total catch (all species combined and

regardless of the number of trips) was highest by far for the Nanticoke River (109,202 fish) followed by the Brandywine River (48,443 fish) and Christina River (48,050).

Collectively, freshwater anglers reported releasing warmwater fish, including 98% of the fish caught in public ponds and 96% of fish caught in rivers and streams. Catfish and White Perch were the species most likely to be kept by resident anglers, although only a small percentage. Common Carp were most likely to be kept by non-resident anglers in ponds and rivers. Anglers age 65 and over kept the highest number of Striped Bass, although in general the % was low. Anglers that purchased a seven day license reported keeping a higher percentage of Black Crappie in ponds and White Perch in ponds and rivers.

Trout fishing: White Clay Creek most popular trout fishing location

Trout (Brown, Rainbow, and Golden Rainbow) fishing in Delaware is limited to a put-and-take fishery with seven designated trout streams in northern New Castle County, and two ponds, one in each of Kent and Sussex Counties. White Clay Creek supported the greatest proportion of trout angling with nearly 58% of the effort (number of angler trips). Consequently, White Clay Creek also provides the most public land available to anglers. Wilsons Run, a tributary of Brandywine Creek, was the second most popular trout fishing location; although comparatively effort and catch was much lower than White Clay Creek. Red Clay Creek was stocked in the spring of 2018 for the first time since 1986. Water quality improvements facilitated the re-opening, and 1,010 angler trips were reported. Non-residents comprised just over 6% of the trout angling community and the majority of effort took place at White Clay Creek (87% of total trips by non-residents).

Newton Pond, a renovated borrow pit that opened in 2009, supported more trout fishing by residents than Tidbury Pond and effort (number of trips=2,214) was greater than four of the seven designated trout streams. Non-resident survey respondents did not fish for trout in Newton Pond and only a small percentage fished at Tidbury Pond.

Anglers reported catching 59,844 trout, with the majority (62%) from White Clay Creek. The highest catch per trip occurred in Wilsons Run (3.0 trout/hour) followed by Newton Pond (2.5 trout/hour) and White Clay Creek (2.2 trout/hour). Trout fishing took place year round with a peak in activity during April-June and a secondary peak in October. This coincides with opening season in the streams during early April and additional stocking that takes place in October. Periodic stockings occur from April to the early part of May, with most frequent stockings in White Clay Creek.

Issues of concern:

At the end of the survey anglers were asked "What fishing issues do you think are the most important in Delaware?" Responses were categorized and the top five categories of concern were: 1) water quality/fish consumption advisories, 2) increased boat and shore access, 3) fisheries management, 4) improve or increase enforcement, and 5) litter/trash clean-up. Other concerns included licenses/fees, promotion of youth fishing, and a need for more information/education. Invasive species were also listed as a concern. Because most anglers did not specify the catfish species that was caught, statistics on the number and location of invasive Blue Catfish and Flathead Catfish could not be determined. Survey respondents did report catching invasive Northern Snakehead in the Christina River, Dragon Run River, Marshyhope River, Nanticoke River/Broad Creek, Christina River, Becks Pond, Garrisons Lake, Mud Mill Pond, Trussum Pond and Tubmill Pond. The Division of Fish and Wildlife has not confirmed the presence of snakeheads in Garrisons Lake, Trussum Pond or Tubmill Pond.

