

# Data Summary of 2016 Delaware River Seine Survey



From June 14 to November 9, 2016, biologists conducted the Delaware River Seine Survey. Over the course of these six months, crews hauled 285 individual seines. In total, 22,993 fish were caught, averaging 80 fish per haul. The five most abundant species caught were: bay anchovy, banded killifish, Atlantic silverside, white perch and Eastern silvery minnows.



The primary target species of this survey is striped bass. In 2016, this species was the sixth most abundant fish caught. In total, 1,476 striped bass were caught and 942 of those were young-of-year striped bass. This means that 64% of the striped bass caught were less than 1 year old.

| SPECIES NAME           | TOTAL # CAUGHT | RELATIVE ABUNDANCE (%) |
|------------------------|----------------|------------------------|
| Bay Anchovy            | 4,922          | 21.407%                |
| Banded Killifish       | 3,849          | 16.740%                |
| Atlantic Silverside    | 2,464          | 10.716%                |
| White Perch            | 1,944          | 8.455%                 |
| Eastern Silvery Minnow | 1,788          | 7.776%                 |
| Striped Bass           | 1,476          | 6.402%                 |
| Atlantic Menhaden      | 1,449          | 6.302%                 |
| Spottail Shiner        | 944            | 4.106%                 |
| Mummichog              | 745            | 3.240%                 |
| Blueback Herring       | 721            | 3.136%                 |
| American Shad          | 548            | 2.383%                 |
| Gizzard Shad           | 365            | 1.587%                 |
| Blue Crab              | 328            | 1.427%                 |
| Tessellated Darter     | 257            | 1.118%                 |
| Hogchoker              | 243            | 1.057%                 |
| Atlantic Croaker       | 163            | 0.709%                 |
| Bluefish               | 126            | 0.548%                 |
| Rough Silverside       | 96             | 0.418%                 |
| Southern Kingfish      | 87             | 0.378%                 |
| Bluegill Sunfish       | 73             | 0.317%                 |
| Channel Catfish        | 72             | 0.313%                 |
| Pumpkinseed Sunfish    | 44             | 0.191%                 |
| Inland Silverside      | 40             | 0.174%                 |
| Redbreast Sunfish      | 40             | 0.174%                 |
| Northern Kingfish      | 39             | 0.170%                 |
| American Eel           | 36             | 0.157%                 |
| Black Drum             | 23             | 0.100%                 |
| Gray Snapper           | 18             | 0.078%                 |
| Yellow Perch           | 15             | 0.065%                 |
| Striped Anchovy        | 12             | 0.052%                 |
| Largemouth Bass        | 10             | 0.043%                 |
| Spot                   | 8              | 0.035%                 |
| Striped Killifish      | 8              | 0.035%                 |
| Goldfish               | 6              | 0.026%                 |
| Silver Perch           | 5              | 0.022%                 |
| Weakfish               | 5              | 0.022%                 |
| Brown Bullhead         | 4              | 0.017%                 |
| White Sucker           | 4              | 0.017%                 |
| Golden Shiner          | 3              | 0.013%                 |
| Striped Mullet         | 3              | 0.013%                 |
| Northern Pipefish      | 2              | 0.009%                 |
| Summer Flounder        | 2              | 0.009%                 |
| Carp                   | 1              | 0.004%                 |
| Comely Shiner          | 1              | 0.004%                 |
| Crevalle Jack          | 1              | 0.004%                 |
| Hickory Shad           | 1              | 0.004%                 |
| Naked Goby             | 1              | 0.004%                 |
| Northern Snakehead     | 1              | 0.004%                 |
| Smallmouth Bass        | 1              | 0.004%                 |
| Sunfish Species        | 1              | 0.004%                 |
| White Catfish          | 1              | 0.004%                 |
| White Mullet           | 1              | 0.004%                 |
| <b>Grand Total</b>     | <b>22,993</b>  | <b>100.000%</b>        |

During 2016, several species yielded significantly lower catches than in 2015. These decreases **do not** mean that the species are at risk – some of these species had higher than normal catches during 2015. The table below shows which species had the most significant decreases:

| TOTAL NUMBER CAUGHT |       |      |              |
|---------------------|-------|------|--------------|
| Species             | 2015  | 2016 | % Difference |
| American Shad       | 5,627 | 548  | 90.26        |
| Crevalle Jack       | 7     | 1    | 85.71        |
| White Sucker        | 25    | 4    | 84.00        |
| Blueback Herring    | 4,417 | 721  | 83.68        |
| Carp                | 5     | 1    | 80.00        |
| Rough Silverside    | 402   | 96   | 76.12        |
| Mummichog           | 1,886 | 745  | 60.50        |
| Brown Bullhead      | 9     | 4    | 55.56        |

During 2016, several species yielded higher than normal catches. Some increases could be a result of low numbers caught in 2015. In addition, sampling limitations yielded 285 hauls during the 2016 sampling season. This was 19 less hauls that were completed in 2016. The table below lists the species with the greatest increases:

| TOTAL NUMBER CAUGHT |       |       |
|---------------------|-------|-------|
| Species             | 2015  | 2016  |
| Striped Bass        | 881   | 1,472 |
| Atlantic Menhaden   | 1,073 | 1,449 |
| Blue Crab           | 64    | 328   |
| Gizzard Shad        | 189   | 365   |
| Atlantic Croaker    | 31    | 163   |
| Banded Killifish    | 2,262 | 3,849 |



All water quality parameters for 2016 were within normal range. Water temperatures ranged from 11 to 31 degrees Celsius. Dissolved oxygen levels ranged from 1 to 14.9 milligrams per liter. Salinity values ranged from 0 to 9.6 parts per thousand. pH was also collected for the first time. Normal ranges for the Delaware River will be determined after a few years of collecting this data. However, all data collected averaged to 7.9, which is considered more basic than acidic.

Setbacks which occurred during 2016 sampling were due to staff limitations, bad weather (such as wind and tidal surges) and dredging/beach replenishment.



NJ Department of Environmental Protection  
Division of Fish and Wildlife  
Marine Fisheries Administration  
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