Delaware River Seine Survey: 2013 Sampling Summary

Fish and Wildlife employees haul in the seine net

From June 18 to November 22, 2013, biologists conducted the Delaware River Seine Survey. Over the course of these six months, crews hauled 311 individual seines. In total, 74,277 fish were caught, averaging 238 fish per haul. On June 18, 2013, one single catch of Atlantic menhaden totaled 30,727 fish. This was 91% of the total number of menhaden caught during the entire 2013 survey! This one catch also accounted for 46% of all fish caught during 2013. The five most abundant species caught were: Atlantic menhaden, American shad, bay anchovy, banded killifish and white perch.

Species Name	TOTAL NUMBER	RELATIVE ABUNDANCE (%)
Atlantic Menhaden	33,837	45.555%
American Shad	10,799	14.539%
Bay Anchovy	10,772	14.502%
Banded Killifish	4,933	6.641%
White Perch	2,896	3.899%
Blueback Herring	2,148	2.892%
Eastern Silvery Minnow	1,889	2.543%
Spottail Shiner	1,809	2.435%
Atlantic Silverside	1,259	1.695%
Striped Bass	846	1.139%
Rough Silverside	560	0.754%
Mummichog	539	0.726%
Tessellated Darter	458	0.617%
Gizzard Shad	433	0.583%
Hogchoker	244	0.329%
Blue Crab	151	0.203%
Channel Catfish	84	0.113%
Pumpkinseed Sunfish	76	0.102%
Bluefish	75	0.101%
Atlantic Croaker	62	0.083%
Yellow Perch	51	0.069%
American Eel	48	0.065%
White Sucker	47	0.063%
Golden Shiner	42	0.057%
Bluegill Sunfish	32	0.043%
Herring Species	32	0.043%
Inland Silverside	22	0.030%
Spot	22	0.030%
Goldfish	21	0.028%
Alewife	16	0.022%
Black Bullhead	15	0.020%
Carp	12	0.016%
Largemouth Bass	12	0.016%
Banded Sunfish	8	0.011%
Black Drum	8	0.011%
Naked Goby	5	0.007%
Brown Bullhead	3	0.004%
Atlantic Needlefish	2	0.003%
Black Crappie	2	0.003%
Striped Mullet	2	0.003%
Brown Trout	1	0.001%
Comely Shiner	1	0.001%
Green Sunfish	1	0.001%
Northern Kingfish	1	0.001%
Northern Snakehead	1	0.001%
GRAND TOTAL	**74,277**	**100.000%**

The primary target species of this survey is striped bass. In 2013, this species was the tenth most abundant fish caught. In total, 846 striped bass were caught and 802 of those were young-of-year striped bass. This means that 95% of the striped bass caught were less than 1 year old. This is a positive reflection of the spawning success of this species in the Delaware estuary.

Young-of-Year striped bass

During 2013, several species yielded significantly lower catches than in 2012. These decreases **do not** mean that the species are at risk – some of these species had higher than normal catches during 2012. In addition, sampling limitations yielded only 311 hauls during the 2013 sampling season. This was almost 20 less hauls than completed in 2012. With all 320 stations being sampled during 2012, this could explain the decrease in some species.

The table below shows which species had the most significant decreases:

TOTAL NUMBER CAUGHT

SPECIES	2012	2013	% decrease
Atlantic Croaker	954	62	93.50
Atlantic Needlefish	7	2	71.43
Bluegill Sunfish	101	32	68.32
Hogchoker	880	244	72.27
Inland Silverside	42	22	47.62
Mummichog	1,046	539	48.47
Northern Kingfish	8	1	87.50
Pumpkinseed Sunfish	119	76	36.13
Spot	406	22	94.58
Striped Mullet	13	2	84.62
White Perch	4,301	2,896	32.67

During 2013, several species yielded higher than normal catches. Some increases could be a result of low numbers caught in 2012.

New regulations were put in place in 2012 due to concerns about the significant coastwide decline of river herring stocks. Survey data for 2013 shows a positive increase in catches of American shad and blueback herring.

The table below lists the species with the greatest increases:

TOTAL NUMBER CAUGHT

SPECIES	2012	2013
American Shad	1,634	10,799
Atlantic Menhaden	1,785	33,837
Atlantic Silverside	522	1,259
Bay Anchovy	3,812	10,772
Blueback Herring	322	2,148
Spottail Shiner	1,333	1,809
Striped Bass	477	846

Additional species, which were not caught during the previous year, included: black bullhead catfish (15 fish), Northern snakehead (1 fish) and green sunfish (1 fish).

Green Sunfish

Northern Snakehead

Northern Snakeheads and green sunfish are both considered invasive species in New Jersey's waters. These fish can outcompete native fish for food and habitat. New Jersey statutes prohibit the possession or release of live, potentially dangerous animals including fish. Dangerous species are defined as "a species that is non-native to an ecosystem and whose introduction causes, or is likely to cause, economic or environmental harm or harm to human health." Possession and/or release of live potentially dangerous fish species is prohibited and if these species are encountered while angling they must be destroyed. For more information, please visit our website: http://njfishandwildlife.org/aquatic_invasives.htm

All water quality parameters for 2013 were within normal range. Water temperatures ranged from 4.5 to 30.5 degrees Celsius. Dissolved oxygen levels ranged from 4.5 to 12.1 milligrams per liter. Salinity values ranged from 0 to 9 parts per thousand.

Full effects of Superstorm Sandy, which hit the NJ coast on October 29, 2012, on the Delaware River and the species within could not be examined until the seine survey began in June 2013. Water quality sampling throughout the 2013 survey did not show any variations from normal parameters. Data also suggests that species diversity and abundance were not affected by Sandy.

Any setbacks which occurred during 2013 sampling were due to staff limitations and bad weather, such as wind and tidal surges. In general, it was an average sampling year. Hopefully 2014 will be just as successful!

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