

Delaware River Seine Survey: 2012 Sampling Summary



Fish and Wildlife employees pull in the seine net

From June 18 to November 21, 2012, biologists conducted the Delaware River Seine Survey. Over the course of these six months, crews hauled 320 individual seines. In total, 25,365 fish were caught, averaging 79 fish per haul. The five most abundant species caught were: banded killifish, white perch, bay anchovy, Atlantic menhaden and American shad.

Species Name	Total Number	Relative Abundance (%)
Banded Killifish	4,399	17.343%
White Perch	4,301	16.956%
Bay Anchovy	3,812	15.029%
Atlantic Menhaden	1,785	7.037%
American Shad	1,634	6.442%
Eastern Silvery Minnow	1,617	6.375%
Spottail Shiner	1,333	5.255%
Mummichog	1,046	4.124%
Atlantic Croaker	954	3.761%
Hogchoker	880	3.469%
Atlantic Silverside	522	2.058%
Rough Silverside	515	2.030%
Striped Bass	477	1.881%
Gizzard Shad	463	1.825%
Spot	406	1.601%
Blueback Herring	322	1.269%
Tessellated Darter	205	0.808%
Pumpkinseed Sunfish	119	0.469%
Blue Crab	117	0.461%
Bluegill Sunfish	101	0.398%
Bluefish	61	0.240%
Channel Catfish	48	0.189%
White Sucker	43	0.170%
Inland Silverside	42	0.166%
American Eel	17	0.067%
Striped Anchovy	16	0.063%
Mullet Species	14	0.055%
Yellow Perch	14	0.055%
Golden Shiner	13	0.051%
Striped Mullet	13	0.051%
Carp	11	0.043%
Largemouth Bass	10	0.039%
Northern Kingfish	8	0.032%
Atlantic Needlefish	7	0.028%
Redbreast Sunfish	7	0.028%
Shiner/Minnow Species	5	0.020%
Alewife	3	0.012%
Black Drum	3	0.012%
Goldfish	3	0.012%
Smallmouth Bass	3	0.012%
Striped Killifish	3	0.012%
Summer Flounder	3	0.012%
Four-spined Stickleback	2	0.008%
Hickory Shad	2	0.008%
Southern Kingfish	2	0.008%
Black Crappie	1	0.004%
Northern Hogsucker	1	0.004%
Northern Pipefish	1	0.004%
Weakfish	1	0.004%
Grand Total	25,365	100.000%

The primary target species of this survey is striped bass. In 2012, this species was the thirteenth most abundant fish caught. In total, 477 striped bass were caught and 271 of those were young-of-year striped bass. This means that 57% of the striped bass caught were less than 1 year old, while nearly 40% were age 1. This is a positive reflection based on the high age 0 index of 2011. It is encouraging to see a strong year class like this from year to year.



Young-of-Year striped bass

During 2012, several species yielded significantly lower catches than in 2011. These decreases **do not** mean that the species are at risk – some of these species had higher than normal catches during 2011. New regulations were put in place this year due to concerns about the significant coastwide decline of river herring stocks. The exact cause for these coastwide declines remains uncertain, but numerous factors such as loss of spawning habitat, impediments to fish passage (i.e. dams), water quality degradation and fishing all likely played a role. (Source: http://www.njfishandwildlife.com/news/2012/herring-tog_regchange.htm)

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

Species	Total Number Caught		
	2011	2012	% Decrease
Alewife	325	3	99.1%
American Shad	5,478	1,634	70.2%
Blueback Herring	11,429	322	97.2%
Channel Catfish	92	48	47.8%
Gizzard Shad	833	463	44.4%
Striped Bass	1,983	477	75.9%
White Perch	6,150	4,301	30.1%

During 2012, several species yielded higher than normal catches. The Atlantic croaker and spot numbers were welcome increases, while the others could be a result of low numbers caught in 2011. When Hurricane Irene struck New Jersey in August of 2011, sampling was impacted for over 3 weeks. This and other weather-related setbacks yielded only 291 hauls during the 2011 sampling season. This was almost 30 less hauls, most during the fall months, than completed in 2012. It's during this time that large numbers of banded killifish, hogchoker and mummichogs are typically caught. With all 320 stations being sampled during 2012, this could explain the jump in total number caught.

Additionally, the dry summer of 2012 may have impacted catches of certain species, such as American shad, whose numbers were much greater in sampling efforts from the non-tidal portion of the Delaware River.

The table below lists the species with the greatest increases:

Total Number Caught		
Species	2011	2012
Atlantic Croaker	23	954
Banded Killifish	2,901	4,399
Hogchoker	311	880
Mummichog	713	1,046
Pumpkinseed Sunfish	43	119
Spot	7	406

Additional species, which were not caught during the previous year, included: striped and white mullet (27 fish) as well as Northern and Southern kingfish (10 fish).

All water quality parameters for 2012 were within normal range. Water temperatures ranged from 4 to 30.1 degrees Celsius. Dissolved oxygen levels ranged from 3.5 to 10.9 milligrams per liter. Salinity values ranged from 0 to 8.4 parts per thousand.

Superstorm Sandy, the largest Atlantic hurricane on record, made landfall in New Jersey on October 29, 2012. Sandy moved onshore, just north of Atlantic City, as a post-tropical cyclone with hurricane-force winds. Damage from the winds and flooding was widespread. This included the inland areas near the Delaware River. Debris could be found in all nearshore waters. Thankfully the Division's sampling schedule was not impacted by the storm. The Superstorm hit near the end of the survey season. Full effects on the Delaware River and the species within will not be seen until sampling begins in June 2013.

Overall, 2012 was an average sampling year, with few setbacks occurring while sampling – here's to 2013 being another successful sampling year!

