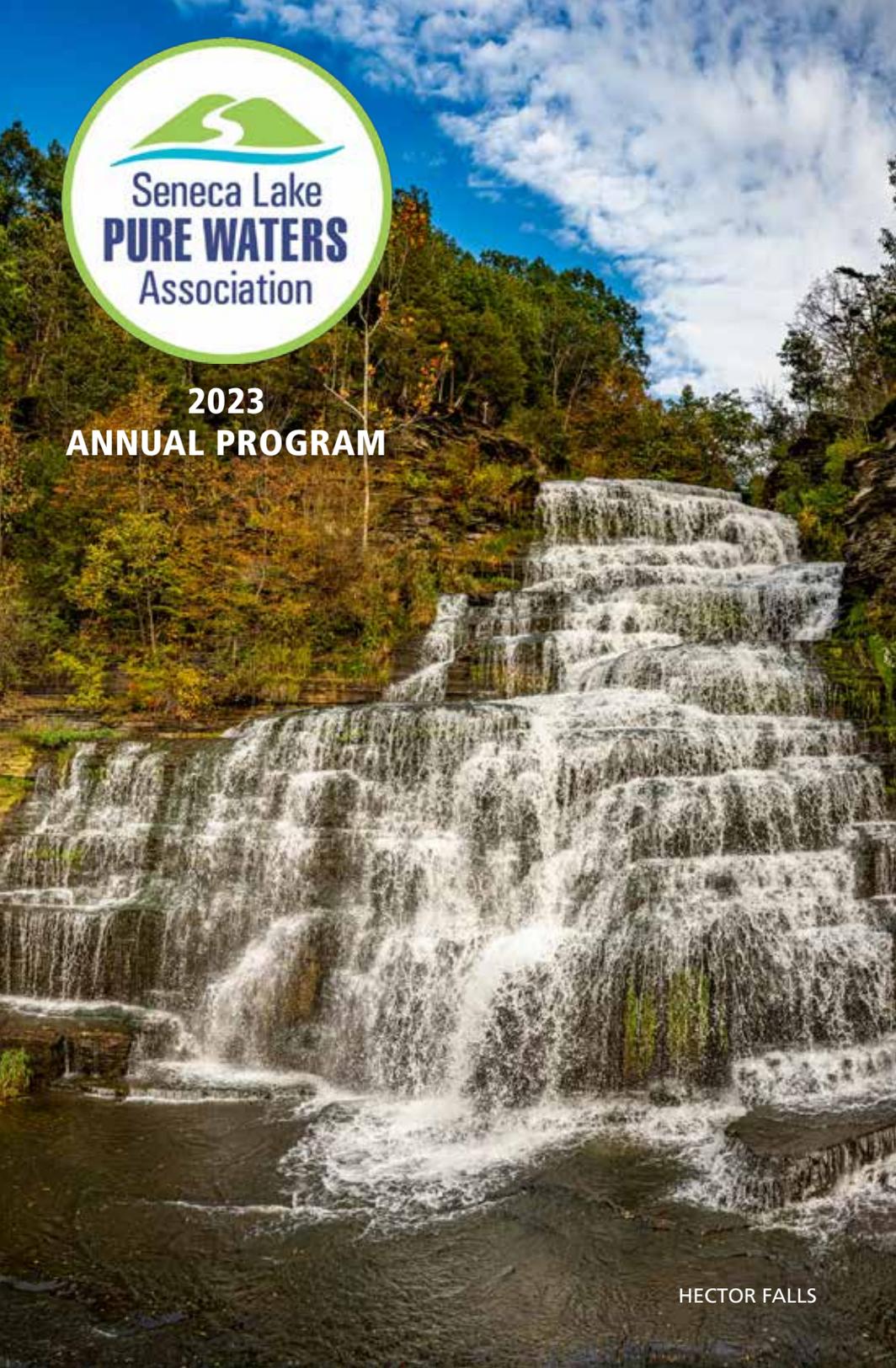




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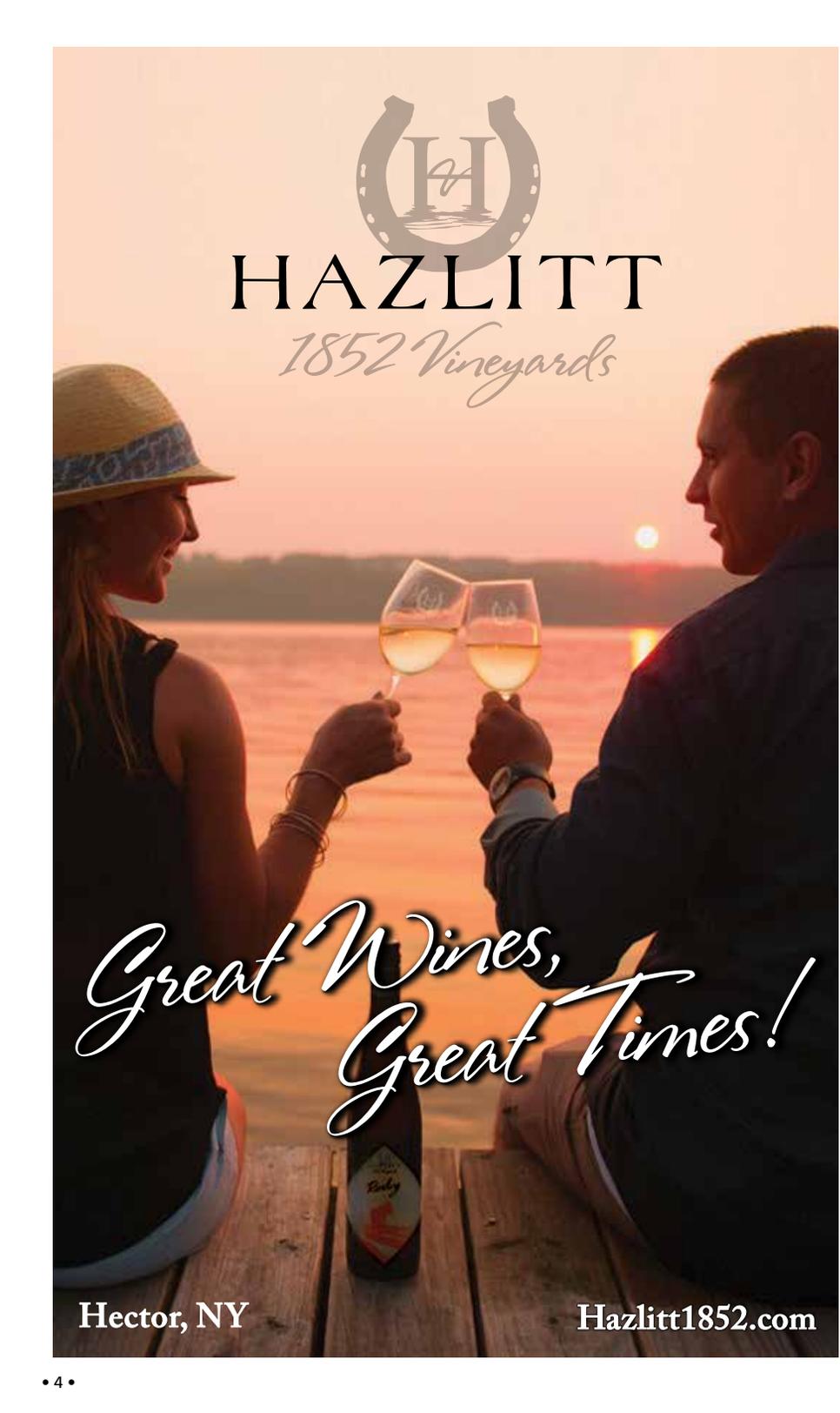
who have the privilege of knowing it.

As a non-profit organization, Pure Waters depends on memberships and donations to build programs that work to resolve the diverse set of threats that Seneca Lake and its watershed residents face.

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New HABS and PFAS Filter Being Installed by the Village of Waterloo

—Shannon Hazlitt

While Seneca Lake’s water can look crystal clear on a calm day, the lake is not immune to contaminants that have been making national headlines. Two different contaminants of particular concern for their health consequences are harmful algal blooms (HABs) and PFAS (Per- and Polyfluorinated Substances).

The good news is that the Waterloo Water Treatment Plant, located on the northeastern shore of Seneca Lake, is installing a new system this summer to filter out these pollutants. The plant draws water from Seneca Lake and serves approximately 15,000 people.

“This system is being installed as it is important for me to have the necessary tools in my toolbox in order to deal with these contaminants as well as exceed US EPA [United States Environmental Protection Agency] regulations,” said Jim Bromka, Director of Water Treatment at the Waterloo Water Treatment Plant. In March, the EPA proposed the establishment of legally-enforceable maximum levels of six PFAS chemicals that have been found in drinking water.

PFAS are a group of chemicals designed to make products that resist stains, grease, heat and oil. While useful for a huge variety of everyday items, from cleaning products to nonstick pans, PFAS don’t break down in the environment. They have been known to contaminate drinking water and bioaccumulate in people and animals. Health problems from PFAS range from increased cholesterol levels to an increased risk of kidney cancer.

The new system being installed by Waterloo will use horizontal pressure filters to filter out the algae, Bromka said. This process will attempt to prevent cell lysis, or the breakdown of a cell due to damage to its outer membrane, causing it to “spill its “guts,” Bromka explained.

continued on page 7



New HABS and PFAS Filter... *continued from page 5*

When the cells break open, they release their potential toxins. If they stay whole, they are harmless, Bromka said. The horizontal pressure filters will aim to capture the whole algal cells without allowing them to lyse so that they can be washed off the filters and removed from any potential drinking water. Bromka compared this to capturing water balloons with a spaghetti strainer without letting the balloons pop.

Any fluids from HABS that are lysed along with any PFAS will then be absorbed by granular activated carbon in carbon filter units, Bromka said. Activated carbon is a material that is porous. It removes organic compounds from liquids and gasses through adsorption.

While most plants that clean-up drinking water use carbon, Bromka said the combined use of the horizontal pressure filters followed by the granular activated carbon units "will be a first for us."

Calgon Carbon claims the filtration system can filter 99.9 percent of all HABS and PFAS contaminants, Bromka said.

The system is designed to treat water for the general public for nearly a third of Seneca County public water, which includes the village, schools, parks, and a prison, Bromka said.

However, other homes and cottages on the lake can help filter their water for PFAS and HABS by installing a filter that uses carbon and reverse osmosis, Bromka explained. Reverse osmosis is a water purification process that involves pushing water under pressure through a membrane that's semi-permeable to demineralize or deionize it. 🐟





Pollution

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I have observed an illicit act of pollution on land in the Seneca Lake watershed. To whom do I report this?

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Another Successful Year of Lake Trout Derby Samples for Fish Health Study



The winning fish for this year's derby was a lake trout weighing in at 12.71 pounds. An award was also presented Memorial Day afternoon for second and third place lake trout catches, in addition to first, second, and third place in a division for brown, landlocked, and rainbow trout.

While only a small fraction of Lake Trout Derby participants took home cash prizes, it could be seen as a win for all those concerned about the health of Seneca Lake fish. This year's derby marked the second year that competing anglers' helped a comprehensive study of Seneca Lake fish stock health. This was made possible thanks to anglers donating parts of their catches to be dissected and used as samples for the study spearheaded by the Finger Lakes Institute and Seneca Lake Pure Waters Association.

"The anglers were great contributing fish and appreciated us fileting their fish!" Petzold said. Twenty Seneca Lake Pure Waters Association volunteers generously donated their time dissecting fish and working at a fish weighing station, and brought in over 70 samples in total.

The idea to connect the derby to a fish health study first came about in 2022, Petzold explained. That year, Seneca Lake Pure Waters teamed up with the Finger Lakes Institute (FLI) to start a fisheries initiative.

continued on page 12

Trout Derby Samples... *continued from page 11*

Getting samples for this study from the derby “was a natural fit” Petzold said.

The team from the Finger Lakes Institute included the FLI’s Lisa Cleckner, Susan Cushman of Hobart William and Smith Colleges, and Roxanne Razavi of the State University of New York College of Environmental Science and Forestry (SUNY-ESF).

The study is focused on understanding three aspects of fish health. The first is the diets of the fish. This involves the dissection of fish stomachs to identify what they recently ate. Stable isotope analysis is also done to determine what the fish have eaten in the past.

The second main aspect of the fish study is testing fish flesh for mercury levels. Mercury is a chemical that is naturally occurring but is released into the atmosphere by human activities, such as burning oil and other fossil fuels. Mercury accumulating in the environment can cause significant health concerns for animals and people, including brain, heart, kidney, lung, and immune system harm.

The flesh of fish are also tested for PFAS levels, the third part of the fish study. PFAS is the acronym for a group of chemicals called per- and polyfluoroalkyl substances. There are more than 9,000 man-made chemicals in this group found in a long list of industrial and consumer products, including artificial turfs and the nonstick coatings used on pans.

PFAS have been linked to concerning health conditions including increased cholesterol levels, liver enzyme changes, decreased infant birth rates, and an increased risk of testicular and kidney cancers, among other things, according to the Centers for Disease Control and Prevention.

The results of samples from this year’s lake trout derby are not yet available, but the results from last year’s samples showed that 70 percent of the sampled fish’ diets were made up of the invasive fish species alewife and 4 percent of the native species sculpin, Petzold said.

Mercury levels in 2022 were at 350 parts per billion (ppb). This is similar to levels collected in 2016, which were 320 ppb. While these levels are under the New York State Department of Health (NYS DOH)’s

continued on page 14

The image shows two vertical posters side-by-side. The left poster features a circular logo at the top with the text 'FINGER LAKES GOODS' around the top edge and 'NEW YORK' at the bottom. The logo's center depicts a landscape with a sun, trees, and water. Below the logo, the text lists 'APPAREL', 'SWEETS & SAVORIES', 'PANTRY ESSENTIALS', 'HOUSEWARES', and 'GIFT SHOP'. A smaller line of text reads 'All locally sourced in the Finger Lakes.' At the bottom, the website 'FLXGOODS.COM' is displayed in large, bold letters, with 'THE FINGER LAKES WINE EXPERIENCE CENTER' written in smaller text below it. The background of the poster shows a sailboat on a lake at sunset. The right poster has a dark background with a close-up of a wine glass. At the top, it lists '150 WINES · 40 PRODUCERS', 'TASTINGS · COCKTAILS · CHARCUTERIE · DESSERTS', and the address '11 Linden Street, Geneva NY'. The word 'VINIFERA' is written in large, gold letters, with 'THE FINGER LAKES WINE EXPERIENCE CENTER' underneath. At the bottom, it says 'The First & Only SPEAKEASY of the Finger Lakes' and 'VINIFERANEWYORK.COM'.

Trout Derby Samples... *continued from page 12*

general advisory limit of 1,000 ppb, they are above the Environmental Protection Agency (EPA)'s limit of 300 ppb for consumption. This discrepancy is because states can set their own mercury consumption limits, Petzold said.

Regarding PFAS, 2022's study showed that fish flesh samples had levels that were consistent with the results of a New York State Department of Environmental Conservation (DEC) study from 2020. One of the most common PFAS chemicals is perfluorooctane sulfonate (PFOS).

For five of the fish, this level was 15,000 parts per trillion. This is under the DOH's concentration for an advisory against eating fish, which is 200,000 parts per trillion. However, the DOH considers 10 parts per trillion too high a concentration of PFAS to safely have in drinking water, and the EPA considers 4 ppt in drinking water an unsafe level, Petzold explained.

"The DOH has not explained the discrepancy [between safe PFAS levels in water and fish], so Seneca Lake Pure Waters recommends anglers read the available articles and make their own decision," Petzold said.

continued on page 17





Edward Jones celebrates Seneca Lake Pure Waters Association.



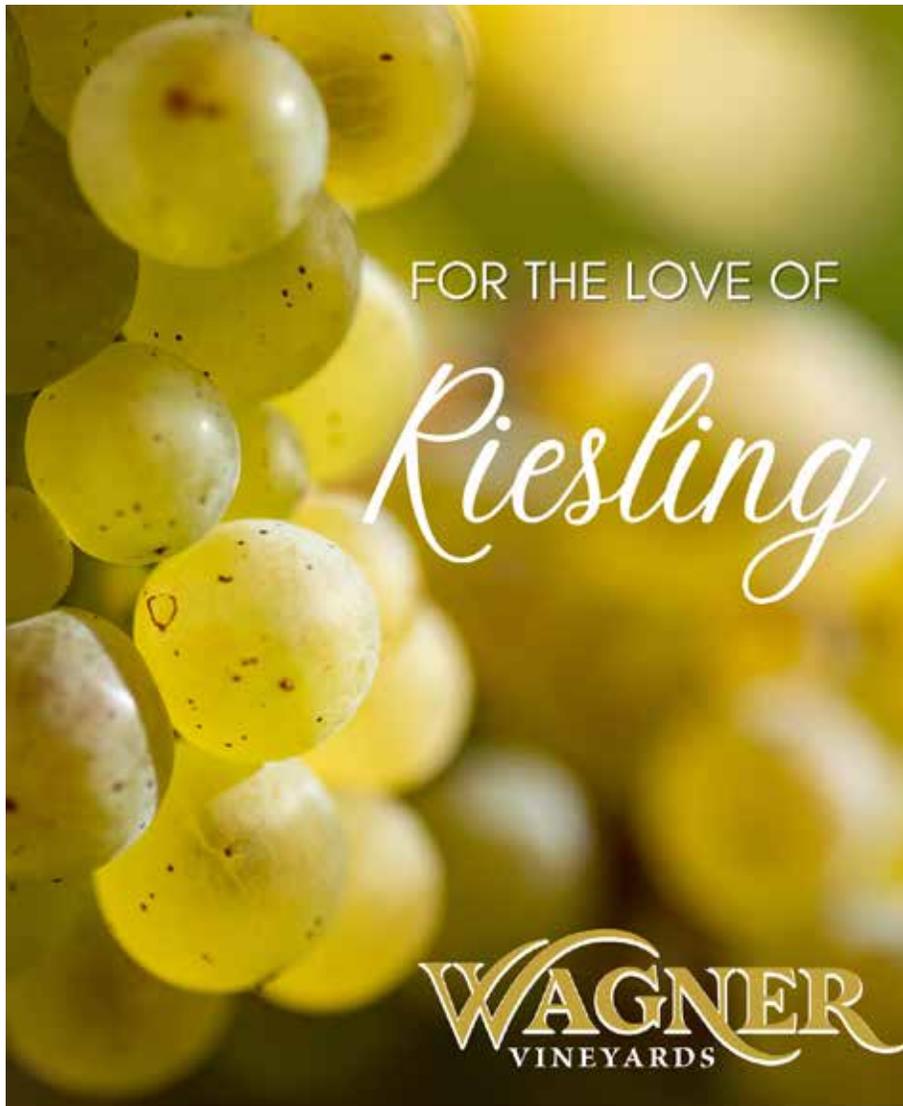
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Trout Derby Samples... *continued from page 14*

The fish study is expected to continue for two more years of the derby, Petzold said. "It is important to continue to monitor the fishery as the DEC rotates their attention across all the lakes," he added.

Since each lake contends with unique industries and pollution problems, Petzold explained he hopes other lake associations consider connecting a fish health study to a fishing competition.

"It is a great model for other lakes to consider," he said.

Anglers can also add to research about fish health by recording information about their fishing trips any time of year in DEC Angler Diaries. These are diaries the DEC provides to fishermen allowing them to record information about their catches in the Finger Lakes to help biologists understand more about managing fish health and populations. This includes the size of catches, scars from invasive lamprey eels, and the time of catches.

"Year round participation from the anglers is important," Petzold said. "The Derby provides one view of the fishery. Growth in the use of the DEC Angler Diary would provide additional data that can be used to determine the health of the fishery." 🐟



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—Dan Corbett

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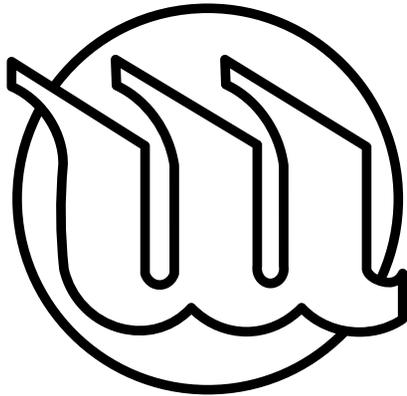
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Brown Trout, Rainbow Trout, and Splake (in lakes and ponds)	All year	5 (only 2 longer than 12")	
Trout in inland trout streams (see Definitions)	April 1 - Oct 15	5 (only 2 longer than 12")	
	Oct 16 - Mar 31	Catch & Release only	Artificial lures only
Lake Trout	April 1 - Oct 15	21"	3
Atlantic Salmon (Landlocked)	All year	15"	3
Coho and Chinook Salmon	See Great Lakes and Tributaries Special Regulations		
Black Bass (Largemouth and Smallmouth)	June 15 - Nov 30	12"	5
	Dec 1 - June 14	Catch & Release only	Artificial lures only
Muskellunge	June 1 - Nov 30	40"	1
Northern Pike	May 1 - Mar 15	18"	5
Pickrel	May 1 - Mar 15	15"	5
Tiger Muskellunge	May 1 - Mar 15	30"	1
Walleye	May 1 - Mar 15	15"	5
Crappie (Black and White)	All year	10"	25
Yellow Perch	All year	None	50
Sunfish	All year	None	25
Striped Bass	April 1 - Nov 30	1 (not less than 18" no greater than 28")	
American Shad - All other inland waters, including Delaware River	All year	None	3
Hickory Shad	Aug 1 - Nov 30	Any Size	5
American Eel	All year	9"	25
All endangered or threatened fish species	Fishing for (including Catch and Release) or possession prohibited		
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