Flowing from the base of the New Croton Reservoir (part of New York City’s water supply system) to the Hudson River Estuary, the Croton River proper is a tailwater ecosystem. The area is quite scenic, and the river is home to a trout fishery as well as an annual migration of river herring. When there are heavy rains, New Croton Reservoir overflows, sending water roaring over New Croton Dam’s 1,000-foot spillway and producing a tremendous wall of foam. The flow plunges downward along nearly 300 feet of steps and crashes into Croton Gorge. From here, the freshwater current tumbles over cobbles and winds around a series of islands. The surge slows, gently lapping forested banks, before it meets the salt on each incoming tide from the Hudson River. The water becomes brackish here, in the lower third of the Croton proper, and empties into the Hudson on each outgoing tide.
Since Europeans came to the Hudson River Valley, the Croton River ecosystem has endured many man-made impacts. Construction of dams, mills, and bridges, and vast commercial fishing pressure have all affected the river ecology. But the most recent man-made issue for the system originated from a seemingly innocuous and unexpected place—a fish tank.

The invasive aquatic plant *Hydrilla verticillata* has been found in the Croton River system, likely introduced when someone dumped the contents of an aquarium into the river waters. Hydrilla was originally brought into the United States in the 1960s, and quickly became a common freshwater aquarium plant. However, the plant’s reputation for taking over waterways led it to be classified as a federally-listed noxious weed and it is regulated as an invasive species in New York State.

Hydrilla is named after the water monster “Hydra” from Greek mythology. According to lore, Hydra could regenerate heads, while hydrilla can regrow entire new plants from even small fragments. Today, hydrilla is often called “the world’s worst invasive aquatic plant.”

The hydrilla infestation was discovered in the Croton system during an aquatic plant survey in 2013. Able to grow an inch per day, and lacking any natural predators, hydrilla had formed large mats and spread throughout the length of the Croton River by 2016. Left unchecked, it would quickly displace native aquatic plants and affect the wildlife that relies on them. Also alarming is that hydrilla fragments could grab a free ride on the tide to reach potential new habitats—causing a significant threat to the Hudson River Estuary and its tributaries.

Recognizing the urgency of the situation, DEC created the Croton Hydrilla Five-Year Management Plan in 2016 to explore all the options to reduce the threat. A couple of the highlights discussed in the plan include:

- Hand-pulling and mechanical removal are not feasible management methods for hydrilla due to its ability to regrow from small fragments and structures called tubers (underground energy storage structures) and turions (detaching overwintering buds).
- The infestation is far too widespread for benthic barriers (aka weed mats), which consist of dark materials placed along the bottom of a body of water to block sunlight and inhibit aquatic plant growth. Such barriers are also not typically effective in high flow systems such as the Croton River.
- Using a biological control like triploid grass carp is impractical in a tidal river, where fish may escape into the Hudson.
- The use of chemicals is limited to those that are safe for fish, wildlife, and public swimming beaches; are effective in flowing systems (both fresh and brackish water); and will not impact the drinking water quality for the Village of Croton-on-Hudson.
In 2017, DEC began treating the infestation of hydrilla using a very low concentration of the aquatic herbicide fluridone, which can inhibit the plant’s photosynthesis. Following two seasons of treatment (2017 and 2018), hydrilla biomass decreased 87 percent throughout the Croton River, and the density of tubers that overwinter in the soil has decreased 83 percent. In addition, turion (overwintering bud) density has decreased 96 percent.

Researchers performed rigorous water quality sampling to ensure the treatment hasn’t impacted Croton-on-Hudson’s drinking water supply or local aquifers. They also conducted extensive surveys of submerged aquatic plants each year since 2015 to compare plant community data before and after treatment. Of particular interest was wild celery (*Vallisneria americana*), a native plant of concern; results show it has not been impacted.

The results have been encouraging. In 2018, DEC surveyed 5,222 points at 47 sites along the Hudson River Estuary for submerged aquatic plants. No hydrilla was found. In addition, studies conducted during 2017-2018 to assess the health of the aquatic macroinvertebrate community found the fluridone treatment has had no impact. DEC plans to continue hydrilla treatment throughout each growing season (May-October) until 2022 and will then assess whether further treatment is needed.

The success of this control project is due in large part to cooperation among a variety of experts and stakeholders. Aquatic invasive infestations within flowing rivers can be notoriously difficult to manage, and it will be the strong upstream/downstream partnerships that will ultimately control hydrilla. At present, DEC is working closely with the New York City Department of Environmental Protection, which is beginning treatment of hydrilla in the New Croton Reservoir.

Boaters, anglers, and other recreationists can also help prevent and control invasives. DEC has conducted extensive outreach efforts within the Croton River and Hudson River Estuary watersheds to increase awareness about aquatic invasive species, specifically hydrilla.

Watercraft inspection stewards are stationed at the public boat launch in Croton-on-Hudson to educate recreational boaters about the risks of spread and inspect watercraft for plant fragments before and after launch.

Our waters serve many purposes, including providing many recreation opportunities, and we must be vigilant protecting them. DEC looks to build on the positive results we’ve seen in managing hydrilla in the Croton River to ensure the mythological Hydra’s modern-day namesake is controlled and people have access to all the benefits the river and its watershed offer.

For more information about hydrilla or the Croton River Hydrilla Control Project, visit: [www.dec.ny.gov/animals/104790.html](http://www.dec.ny.gov/animals/104790.html) or [www.dec.ny.gov/animals/106386.html](http://www.dec.ny.gov/animals/106386.html)

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