



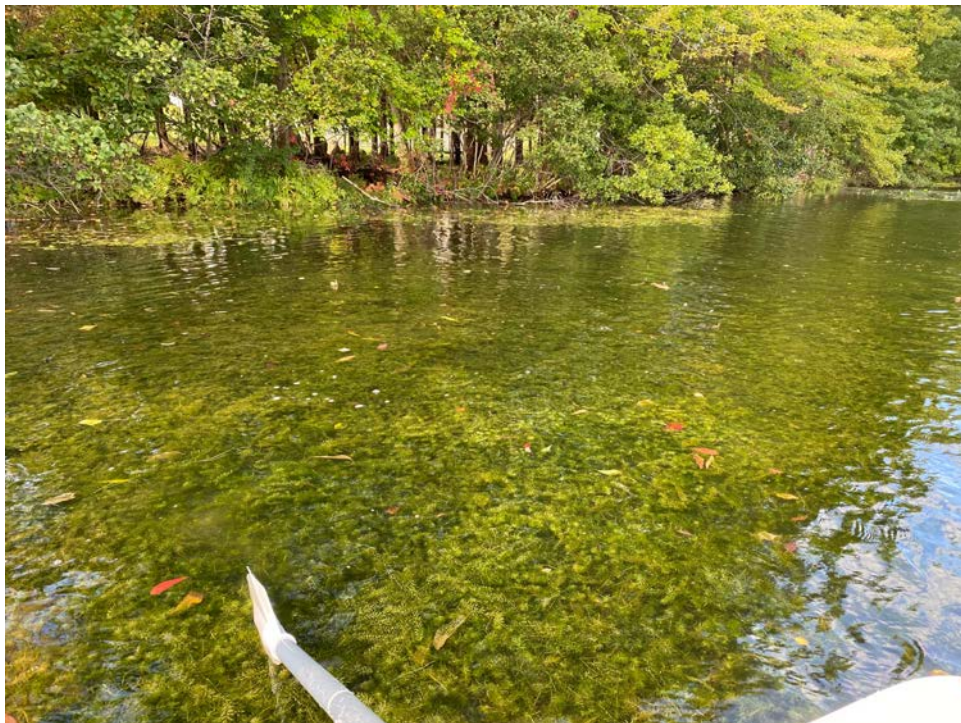
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How to murder (hydrilla) and get away with it.

**Components of large-scale Hydrilla Control Projects in southeastern NYS
NEAPMS Plant Camp
2022**

Hydrilla is a worst-case scenario



2018 Hydrilla Distribution





Infestation
discovered 2013

- Croton River
- New Croton Reservoir
- Potential aquarium dump



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Reservoir drains to
1000-foot spillway

- No mechanism for holding water
- Cannot prevent fragment migration





SePRO

3-mile stretch of river

- Drains directly to Hudson River Estuary
- Fragments are significant threat



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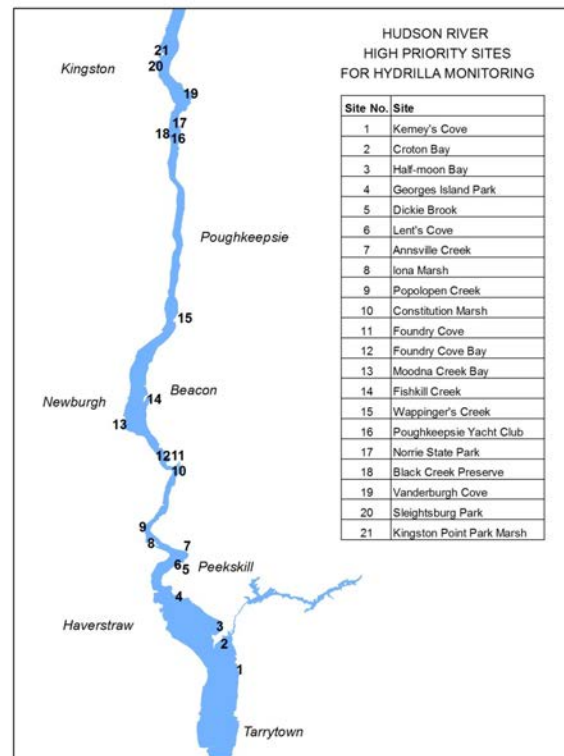
Project Design

- Project Goals & how you will measure success
- Evidence management will be safe and effective
- Environmental Impact Assessment / Permitting
- What factors cause delay/extension of treatment?



Plant Mapping

- Survey for submersed aquatic plants
- **446** points along the Croton River
- **1458** points along **29** “High Priority” Hudson River Sites
- **3,764** points at **18** Northern Hudson River Sites



Croton River Hydrilla Control Project



Herbicide Treatment: Entire Croton River (158 Acres)



In-water application: Sonar Genesis[®] (Fluridone)



Maintain 2-4 ppb concentration for 90 days during growing season for min 5 years





Post-treatment aquatic plant surveys will assess success and monitor for non-target impacts



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Permitting

 SEQR Negative Declaration issued November 3, 2021


 DOS - Coastal Assessment Form (DOSCAF)

 SPDES NOI – Permit ID NYP160548


 NYSDEC Article 24 Freshwater Wetlands Permit

 NYSDEC Article 15, Title 27 Wild, Scenic & Recreational Rivers Permit

 NYSDEC Article 15 Aquatic Pesticide permit for Sonar Genesis

 Part 575 Permit (Collect & Possess)

 NYCDEP Land Use Permit

 Westchester County Land Use Permit



10B3

0 ppb



1ppb



2ppb



3 ppb



4 ppb



5ppb



6ppb



Photo: Katia Engelhardt, PhD

Watercraft Inspections

Echo Boat Launch

- 2018: 662
- 2019: 584
- 2020: 2333
- 2021: 1104



Sam Epstein, HR Sloop Clearwater



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Treat



SŌLitude & Croton Water Dept.

- ✓ 3 Wells (+ A&B samples)
- ✓ Finished Water
- ✓ 2 Distribution

- ✓ ≤ 1 ppb Samples collected twice per week
- ✓ > 1 ppb samples collected three times per week
- ✓ Analyzed by independent lab
- ✓ Lab reports posted to project webpage as they are received
- ✓ Summarized in biweekly field season reports to stakeholders

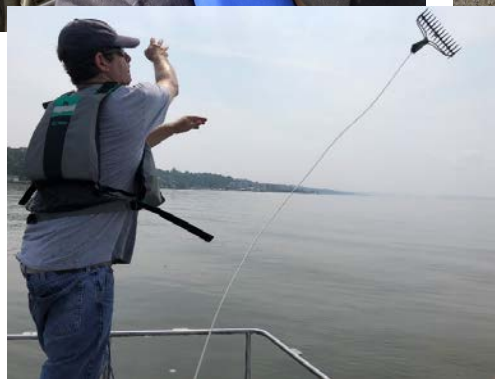
<https://www.dec.ny.gov/animals/110624.html>



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Project Surveys

- SCUBA/Snorkel Surveys
- Rake Toss Surveys
- Tuber Surveys
- Rare Plant Surveys
- Macroinvertebrate Surveys
- Fragment surveys

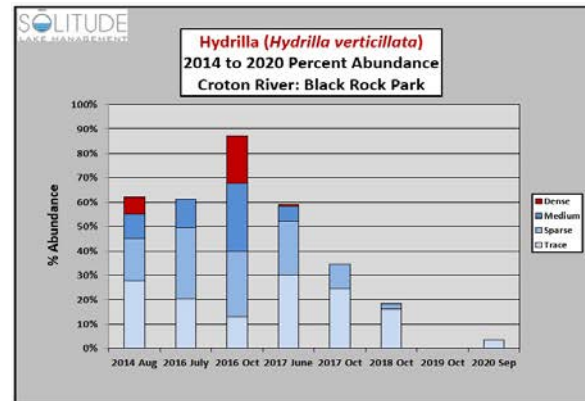


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Croton River Treatment Results

All dense mats eliminated after single treatment season



<u>Year</u>	<u>Trace</u>	<u>Sparse</u>	<u>Moderate</u>	<u>Dense</u>	<u>Overall</u>
2016	58 (13.00%)	56 (12.60%)	46 (12.60%)	30 (6.73%)	190 (42.60%)
2017	39 (8.74%)	21 (4.71%)	8 (1.80%)	0 (0.00%)	68 (15.25%)
2018	23 (5.16%)	6 (1.40%)	0 (0.00%)	0 (0.00%)	29 (6.56%)
2019	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
2020	4 (1.36%)	1 (0.34%)	0 (0.00%)	0 (0.00%)	5 (1.70%)
2021	2 (0.45%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	2 (0.45%)



NYCDEP - Plant Injury



Croton Hydrilla: Untreated versus Treated

19



Photos: DEC



Tuber Production 10-23-18

Croton River - Treated



Croton Reservoir- Untreated



Untreated



Photo: DEC

3 weeks after treatment



Photo: DEC

Untreated

- ✓ Lush green foliage
- ✓ Developed root system
- ✓ Thick biomass

Treated

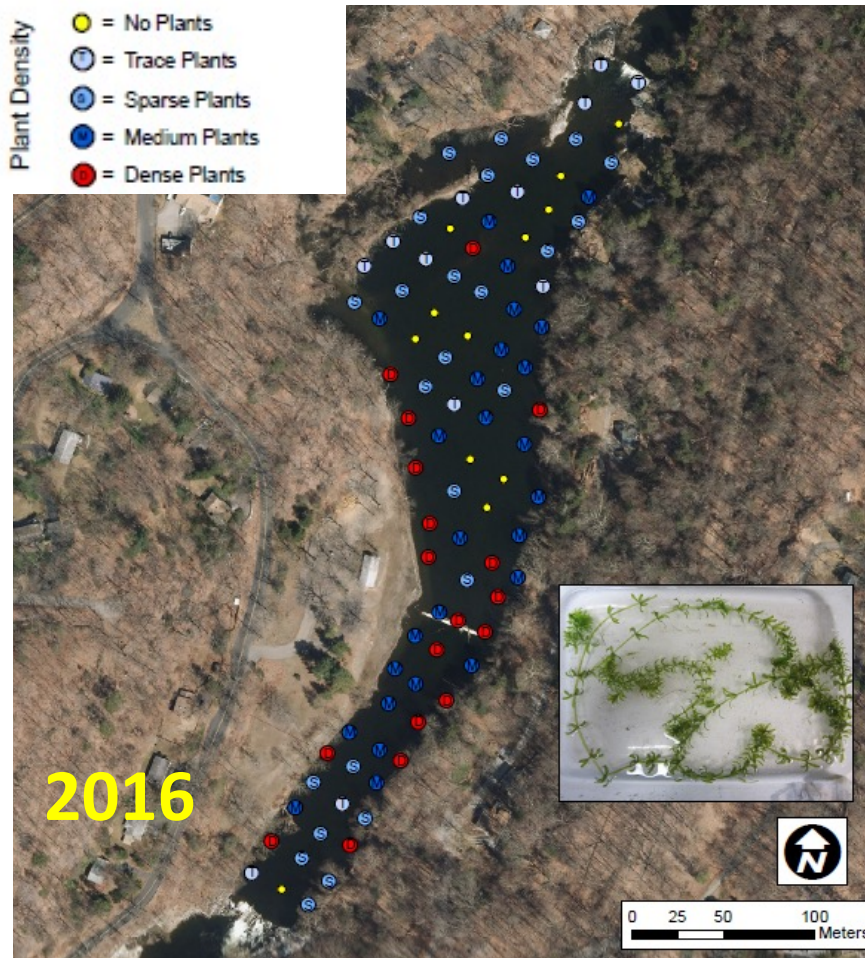
- ✓ Injury to new shoots
- ✓ Leaf defoliation
- ✓ Chlorosis/bleaching
- ✓ Little growth from germinated tuber



Snorkel Survey Results

- 5 Weeks into treatment
- Left – **Treated** hydrilla from Croton River
- Right – **Untreated** hydrilla from New Croton Reservoir
 - Both collected 7/9/20

- Plant Density
- = No Plants
 - = Trace Plants
 - = Sparse Plants
 - = Medium Plants
 - = Dense Plants



1 Plant @
Point 10



Sample Location	Site	2016			2017			2018		
		# of Cores	Tubers (m ²)	Turions (m ²)	# of Cores	Tubers (m ²)	Turions (m ²)	# of Cores	Tubers (m ²)	Turions (m ²)
Black Rock Park	BRP-3	3	1,637.6	35.6	6	35.6	8.9	NA	-	-
	BRP-4	3	498.4	0.0	3	516.2	160.2	NA	-	-
Silver Lake Beach	SLB-1	3	2,082.6	53.4	3	231.4	35.6	NA	-	-
Croton River	CR-1	3	872.2	231.4	3	0.0	0.0	15	0.0	0.0
	CR-2	4	495.8	321.6	5	96.3	21.4	15	0.0	0.0
	CR-3	4	174.2	67.0	3	106.8	89.0	15	0.0	0.0
	CR-4	5	0.0	32.1	3	35.6	0.0	15	39.2	3.6
	CR-5*	-	-	-	-	-	-	-	-	-

Table 8. 2016 – 2018 Tuber Density Results *Site added in 2020

Sample Location	Site	2019			2020			2021		
		# of Cores	Tubers (m ²)	Turions (m ²)	# of Cores	Tubers (m ²)	Turions (m ²)	# of Cores	Tubers (m ²)	Turions (m ²)
Black Rock Park	BRP-3	20	0.0	0.0	25	0.0	0.0	30	0.0	0.0
	BRP-4	20	0.0	0.0	25	0.0	0.0	30	0.0	0.0
Silver Lake Beach	SLB-1	30	0.0	0.0	35	0.0	0.0	35	0.0	0.0
Croton River	CR-1	NA	-	-	25	0.0	0.0	30	0.0	0.0
	CR-2	20	0.0	0.0	25	0.0	0.0	30	0.0	0.0
	CR-3	NA	-	-	25	0.0	0.0	30	0.0	0.0
	CR-4	20	0.0	0.0	25	0.0	0.0	30	0.0	0.0
	CR-5*	-	-	-	25	0.0	0.0	30	0.0	0.0

Tuber Summary 2016-2021

- No tubers or turions since 2018
- # of cores increase every year
- Extra core site added 2020



Wild Celery Restoration



- ✓ **NEXT STEP: RESTORE** genetically diverse populations of wild celery
- ✓ Plants from UMCES greenhouse
- ✓ Replanting will occur following end of herbicide treatment



Contact Info

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she/her

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NYSDEC

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