Capital Region PRISM
Partnership for Regional
Invasive Species Management
capitalregionprism.org

Cornell Cooperative Extension Saratoga County
50 West High St.
Ballston Spa, NY 12020

Capital Region Partnership for Regional Invasive Species Management
Aquatic Response Report

Section 1: Response Project Summary

General Information	
Date Response Action Conducted: July 8th & 9th, 2025	**County:** Washington
Site Name: Moses Kill (tributary of the Upper Hudson)	**Permit(s)/Permission(s) Acquired?** Yes—private landowners; Canal Corps. *JD process initiated for 2026.*
Address (if different): 14 Richardson Ln ("home base") & 1637 US-4 (offloading), Fort Edward, NY 12828	**Time Spent on Site (Hours)/ # of Staff on Site:** 10-12 hours (5-6 hr/day); 2 CR-PRISM staff (up to 24 man hours just for PRISM)
	Property Owner Name, Title, and Contact: * - Frank Burkhardt, owner of 14 Richardson Ln, fburkhardt6@gmail.com - Kathy Smatko, owner of 1637 US-4, (518) 774-7775 **Denise Mayer (denise.mayer@nysed.gov) was primary contact with landowners.*
Parking Lot Latitude/Longitude: 43.198387, -73.580180	**Project Leader Name, Title, and Contact:** - Hannah Diebboll, NYSDEC Region 5 AIS Coordinator, hannah.diebboll@dec.ny.gov & hd384@cornell.edu - Co-led by CR-PRISM Alexa Howansky & Kris Williams
Total Parcel Size (acres): No single parcel; the Moses Kill is ~22 miles long	**Disposal Name and Contact:** ** Biomass was first temporarily dumped at Denise's property (closer) and then hauled to the Lake George Transfer Station where DEC has permission to dump biomass. ***Hannah Diebboll was primary contact with disposal.*
Worksite Size (acres): Approx. 2 acres	**Team Member Name(s) and Title(s):** - Alexa Howansky; CR-PRISM Aquatic Invasive Species Program Manager - Kristopher Williams; CR-PRISM Lead Coordinator
Report Author: Alexa Howansky	**Data Recorder & iMapInvasives ID:** Alexa Howansky; iMap ID #28804
# of Volunteers (if any): No volunteers per se, but 10-13 staff of NYSDEC/Cornell Water Resources Institute/NYS Museum	**# of Total Volunteer Hours on Site (# of volunteers x Time spent on site):** 100-156 non-PRISM man hours

Conservation Goal:

☐ Delineate & assess a conservation value ☒ To prevent and protect a conservation value

☐ Local Eradication ☐ Post-Treatment Monitoring ☒ Containment

☒ Suppression ☐ Exclusion ☐ Restoration

Response Type:

☒ Initial Response ☐ Follow-up Monitoring ☐ Crew Assistance Program Project

☐ Research Action ☐ Restoration ☐ Volunteer Engagement

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Disposal method(s):

Removed biomass was bagged and hauled off site for disposal, where it was temporarily dumped onto Denise Mayer's property (closer to worksite) and then hauled via dump trailer to the Lake George Transfer Station where the DEC has permissions to dump biomass.

Project Significance:

This Water Chestnut removal project has been prioritized for the protection of critical natural habitat for Rare/Threatened/Endangered (RTE) species known to be in the vicinity.

Denise Mayer, Malacology Collections Manager and Director of the NYS Museum's Field Research Laboratory in Cambridge, has said that a Water Chestnut bed is one of the few environments in which native freshwater mussels cannot subsist. Native mussels are an invaluable part of the complex ecosystems of the Upper Hudson River and its tributaries:

> *In the Upper Hudson River and other ecosystems mussels are major contributors to benthic invertebrate biomass and serve important functions by filtering water, cycling nutrients, enhancing habitat complexity, and providing food for wildlife.* (Hudson River Natural Resource Trustees, 2020)

In addition to the significance of the immediate worksite, the project also maintains the goal of preventing establishment of Water Chestnut in the Thompson Island pool of the Upper Hudson River/Champlain Canal, a known "sanctuary" for native freshwater mussels, via suppression of the nearby Water Chestnut populations in an attempt to contain the spread.

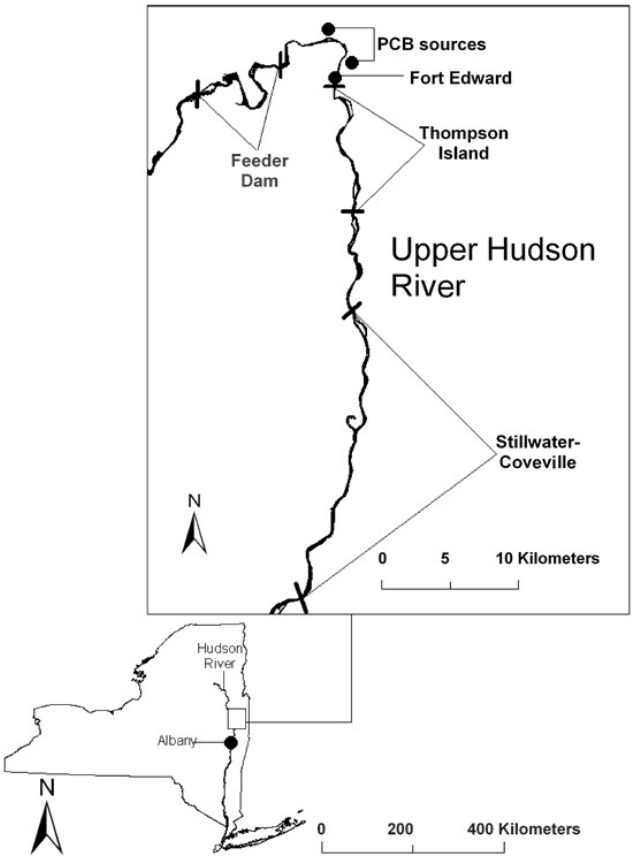

Figure 1. *Map of the general area & Upper Hudson River*. The Moses Kill meets the Hudson near the bottom of the Thompson Island Pool. Retrieved from Maceina & Sammons, 2013.

Section 2: Response Results Summary

Species Common & Scientific Name	Tier	Threat Ranking	Response Method	Percent Cover	Distribution/ Abundance	Size of Infestation	Area Treated
Water Chestnut (*Trapa natans*)	4	Very High	Manual Hand Pulling	Ranging from 5 to 100% (overall ~50% coverage of searched area)	Dense to monoculture patches + scattered sparse plants	~0.9 acre	~0.52 acre

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Biomass Removed:

Total harvested area was approximately 0.52 acre, or 2,119.97 square meters. Of the area treated, roughly 1,019.8 m^2 of that area was largely of monoculture density, and about 1,100.17 m^2 was mostly of sparse density. Biomass can be estimated using metrics converted from those found in a study published in *Journal of Aquatic Plant Management* on "Water chestnut biomass estimates using density as a proxy[…]" (Moore et al., 2023):

Given that the wet weight of Water Chestnut averages around 8.98387 lb/m^2 in a monoculture and 0.0705479 lb/m^2 in sparse distributions, it is estimated that a total of about **9,239.37 pounds or 4.62 US tons** was removed from Moses Kill during the 2-day treatment.

Treatment Iteration:

This was the first documented treatment of this site. With the success of this iteration, an Invasive Species Management Plan will likely be created for the continued management of this site as a valuable freshwater ecosystem for conservation. Follow-up treatment is strongly recommended, preferably on at least an annual basis in order to effectively deplete the seed bank and thus reduce future populations. Detailed recommendations are further outlined in Section 3.

Map:

Figure 2. *iMap Mobile Advanced (iMMA) records for the Moses Kill.* Searched area (purple) of approx. 2 acres, Water Chestnut presence (green) just under 1 acre, and physical treatment (orange) just over half an acre. All orange treatment polygons are over top of green presence polygons. The pre-treatment population of Water Chestnut covered roughly half of the water's surface, and about half of that was removed, therefore bringing overall post-treatment coverage closer to just one quarter of the water's surface. Imagery sourced from cugis.maps.arcgis.com.

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Photos:

Figure 3. *Pre-treatment*. Dense *T. natans* monocultures shown from the Rt 4 bridge, facing East.

Figure 4. *Pre-treatment*. Dense *T. natans* monocultures shown from the Rt 4 bridge, facing West.

Figure 5. *Mid-treatment*. Taken from the Rt 4 bridge, facing West.

Figure 6. *Mid-treatment*. Closeup of hand-pulling efforts.

Figure 7. *Post-treatment*. Taken East of Rt 4 bridge.

Figure 8. *Post-treatment*. Taken West of Rt 4 bridge.

Figures 3 – 8 all courtesy of Hannah Diebboll, NYSDEC Region 5 AIS Coordinator.

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Section 3: Summary of Recommendations

Treatment:

Continued management of the Water Chestnut in the Moses Kill is recommended to occur on at least an annual basis, with multiple iterations per season being favorable during the first few years. Ideally, the bulk of the population should 'crash' after 2 or 3 years of management as the preexisting seeds in the sediment age and expire.

The ideal window for conducting removals is primarily within the month of July—early enough to capture nutlets before they begin to ripen and drop, but also late enough to ensure all plants have surfaced and that any broken stems left rooted do not have enough time to produce viable seeds should they resprout during the season.

The approach of recruiting 10 – 15 staff of the NYSDEC, Cornell WRI, CR-PRISM, NYS Museum, etc. to hand-pull over a 2-day span proved to be effective for the removal of a significant portion of the infestation in 2025. The use of two motorized boats also helped to maximize efficiency by allowing full bags of biomass to be hauled to shore without the need to paddle, allowing a majority of participants to remain at the worksite and continue pulling.

As for allocation of efforts within the treatment area, it is recommended to continue the approach of a multi-day event, with each day focusing on a designated subsection that everyone works on together (as opposed to scattering), and/or with divided groups assigned to different areas—year one of treatment focused on the dense/monoculture areas close to the mouth, but there is also record of additional Water Chestnut scattered more sparsely up the Moses Kill for about ¾ of a mile beyond the 2025 treatment area. Future iterations could potentially send a small group of participants to focus on those sparser plants upstream, while the rest continue to chip away at the monoculture. More detailed recommendations will be compiled in the Invasive Species Management Plan.

Post-Treatment Monitoring:

Post-treatment monitoring of the site should occur the following year, just before the next treatment iteration. The percent cover and total area infested should be compared from one year to the next to either provide justification for continuing the same methodology, or to show whether there is a need to reevaluate the approach.

Before beginning a new treatment iteration, a project leader or other participant should delineate that season's Water Chestnut population and map its extent & percent cover in iMap Mobile Advanced (iMMA). The new treatment polygons should then be mapped overtop of those presence polygons immediately during/after the treatment iteration, effectively also delineating whatever was left behind (i.e. the remaining green presence polygon still visible; see Fig. 2).

All of this should be conducted around the same time each growing season, not only for effective management appropriate to the plant's life cycle, but also so that the size of the individual plants is comparable and does not falsely shrink/inflate the total surface area infested during mapping.

Additional Notes:

Access to the Moses Kill was coordinated with the private property owners on either side of the Kill. Through on-site experience, it was found that the Richardson Ln property is the better option for parking vehicles, offloading

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equipment, and launching kayaks/canoes. The Rt 4 property across the Kill was best used for offloading biomass from boats to be hauled away for disposal.

At the Richardson Ln property, there is a decent length driveway allowing for several trucks/cars, and a small dock for launching. The launch is small and muddy, so a small board of plywood placed next to the dock was found to be helpful. The property is home to the historic WW Patterson General Store, now an abandoned & condemned structure, as well as a number of cars, garages, and barns slowly returning to nature—it is important to be mindful of the potential hazards and note appropriate safety precautions.

Note that if motorized boats (or anything larger than a canoe/on a trailer) are being used, they will have to be launched elsewhere (such as the Fort Edward Hudson River Boat Launch) and driven a few miles to the Moses Kill as there is no hard surface/trailer launch nearby.

References

Hudson River Natural Resource Trustees. (2020, November). *Fact Sheet Hudson River Freshwater Mussels: Thin Sectioning Study*. Retrieved August 2025, from https://extapps.dec.ny.gov/docs/wildlife_pdf/musselfactsheetthin.pdf

Maceina, M. J., & Sammons, S. M. (2013). Polychlorinated biphenyls in adult black bass and yellow perch were not associated with their reproductive success in the Upper Hudson River, New York, USA. *Environmental Toxicology and Chemistry*, *32*(7), 1582–1591. https://doi.org/10.1002/etc.2206

Moore, J., O'Neill, M., Lutz, C., & Pearson, S. H. (2023). Water chestnut biomass estimates using density as a proxy: Facilitating multiyear comparisons with a streamlined approach. *Journal of Aquatic Plant Management*, *61*, 15–21. Retrieved August 2025, from https://doi.org/10.57257/japm-d-22-00007

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