



Department of
Environmental
Conservation

Giant Hogweed Program

2022 ANNUAL REPORT

DIVISION OF LANDS AND FORESTS

BUREAU OF INVASIVE SPECIES AND ECOSYSTEM HEALTH

Kathy Hochul, Governor | Basil Seggos, Commissioner



GIANT HOGWEED PROGRAM
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Program funded, in part, by:

New York State Environmental Protection Fund
United States Department of Agriculture Forest Service

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Year in Review

Through the ongoing work of the New York State Department of Environmental Conservation (DEC) Giant Hogweed Program and our partners, giant hogweed (GH) continues to decline throughout New York State.

During the 2022 season, crews surveyed 893 sites previously treated for GH infestations and found no GH plants. We designated 216 of these as eradicated—no GH plants for 3 consecutive years. This brings the total of eradicated sites to 1,113. Of all the sites that had been previously treated for infestation, 57% (1,612 sites) had no GH plants in 2022.

Of the sites that still have GH plants, 71% (861 sites) have fewer than 100 plants and are considered small sites. Since small sites can be eradicated relatively quickly, we expect many more of these sites to have no GH plants in the next few years.

Larger sites are also responding well to control measures. Many larger sites that previously required herbicide treatment are now small enough to be treated by root-cutting. Fewer sites have large flowering plants, and in general, sites are patchier than in previous years.

2022 Highlights

- 2,831 confirmed sites in 52 counties
- 1,718 of the confirmed sites are in the monitor or treatment stages
- 216 sites newly designated as eradicated
- 2,472 sites (87%) have 0–99 plants
- 22.4 miles of stream surveyed, with 16 new sites found
- 88 new sites identified
- 1,993 sites visited
- 1,060 sites and approximately 452,000 plants controlled
- 5,780 DEC staff hours spent at GH sites
- 1,042 calls and emails responded to by GH information line staff
- 291,488 visits to DEC's GH webpages

Cumulative Site Totals

- Total sites: 2,830
- Sites with no plants: 1,612
 - Eradicated sites (no plants for 3 consecutive years): 1,113
 - Monitor sites (no plants found for 1 or 2 years): 499
- Sites with plants: 1,219
 - 1–99 plants: 861
 - 100–399 plants: 178
 - 400 or more plants: 180

Staffing

Much GH Program work depends on seasonal staff. Twenty-seven seasonal field staff were hired in 2022. Field staff work full time for three to four months contacting landowners, surveying sites for GH, and controlling plants by root-cutting or applying herbicide. We commend their hard work and dedication. Nine staff were returning professionals. Their collective knowledge and expertise have been extraordinary assets to our program.

Partnerships

Collaboration improves success. The GH Program has strong working relationships with other organizations and groups. Program staff initially trained staff from eight other organizations, who have subsequently developed survey, control, and outreach programs for GH in their areas. These collaborative efforts resulted in 160 hours spent at 129 treatment or monitor sites. We truly appreciate these partnerships and control efforts, as their assistance enables us to reach more sites.

Outreach

Outreach plays a significant part in the GH Program. We provide the public and our partners with information on how to identify, report, and safely and effectively control GH. We have also assisted agencies in other states and Canada in planning their own GH control and outreach programs.

In 2022, GH staff responded to 1,042 phone calls and emails to the GH information line. In addition, program staff and partners distributed more than 2,067 educational brochures, posters, and control guides.

The GH information webpages (visit www.dec.ny.gov and search “hogweed”) provide extensive information on this plant. The webpages are frequently accessed by people from New York State and around the world.

People visited the webpages 291,488 times during 2022 and have visited them 4,112,097 times since their inception.

Looking Forward

New York State’s GH Program has been tremendously successful. The control of this plant is a personal safety issue that people care deeply about. We will continue to build upon past successes and look forward to eradicating many more GH infestations.

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Introduction

About Giant Hogweed (*Heracleum mantegazzianum*)

GH is a significant public health and environmental issue. It is a public health hazard because it can cause severe burns when skin comes in contact with the sap and is then exposed to sunlight (Figure 1). It is an environmental problem because it is an invasive plant that threatens biodiversity by shading and out-competing native plants, which can also lead to soil erosion along slopes and riparian areas.

GH is listed by the federal government as a “noxious weed.” New York State law prohibits possession of GH with the intent to sell, import, purchase, transport, introduce, or propagate it.

GH is a monocarpic perennial that generally flowers in its third or fourth year, sets seed, then dies. The plant produces an average of 20,000 seeds that mostly fall within a few meters of the parent plant. Seedling mortality is generally high under these crowded conditions. The delayed flowering and limited dispersal (except where seed travel is assisted by people or water), in conjunction with effective manual and chemical control methods, make eradication of GH a feasible goal for most sites in New York State.



Giant hogweed plants can grow up to 14 feet tall.



Figure 1. Skin reaction to GH sap over a five-month period (Photo credits: Bob Kleinberg)



Figure 2. GH grows in a variety of settings.

GH grows in a variety of settings, e.g., riparian areas, fields, forests, yards, parks, and roadsides. Control is very manageable when the number of plants is low, especially before seeds have dropped. But since each adult plant produces an average of 20,000 seeds, a site can quickly grow from a few plants to hundreds within a short time. It is critical, therefore, that we deal with known sites as soon as possible. Landowners, as well as town, county, and state governments, need help and guidance in finding and dealing with GH.

DEC's Approach

DEC uses an integrated pest management strategy to control and eradicate GH from public and private lands in New York. The program uses manual and chemical control methods with an emphasis on minimal ecosystem impact from treatment. This strategy:

- Enables native plants and trees to reoccupy former GH sites;
- Increases biodiversity;
- Reduces impacts on streams and fisheries from soil erosion;
- Encourages outdoor recreation; and
- Reduces human health risks.

We have shown that repeated treatments over multiple years are effective at eradicating GH from entire sites. DEC's public awareness component improves people's understanding of GH's dangers and reduces human health risks through education and outreach. The GH Program has strengthened DEC's partnerships with other organizations by providing training and support in exchange for help with outreach, survey, and control.

2022 Staff



Figure 3. 2022 DEC GH Program staff: Syracuse staff (top left photo): Kaylee Kilmer, James Farrell, Meaghan Schwartz, Roman Reiss, Mackenzie Klaben, and Jesse Magno. Avon staff (top right photo): Sylvia Albrecht, Jack Agar, Julian Fischl, Ben Cary, Erin Norton, Sarah Blank, Kaitlyn Thompson, Kate Riordan, Austin Shay, and Hannah Kliszewski. Knox Farm staff (bottom left photo): Allison McKenna, Vincent Hornberger, Jay Kaplewicz, Zachary Delgado, Emily O'Brien, Leilani Hooks, and Jennifer Wybieracki. New Paltz staff (bottom right photo): Joshua Jacobs, Naja Kraus, and Dan Waldhorn. Not pictured: Jeff Fridman, Steven Herzberg,

DEC hired 27 seasonal staff for the 2022 field season (Figure 3), which included:

- Two 1-person crews and six 2-person crews that used the root-cutting method at sites with fewer than 400 plants;
- Three 1-person crews and four 2-person crews that used the root-cutting method at small sites and also applied herbicide at sites with more than 100 plants; and
- Two staff who managed the information line, performed control on southeastern New York sites, and helped with the overall program.

Of the 11 staff that applied herbicide, 4 were DEC-certified commercial pesticide applicators, 5 were pesticide technicians, and 4 were pesticide apprentices.

Nine staff members were returning professionals with prior experience working in the GH Program. Their knowledge, dedication, and expertise have been extraordinary assets.

Staff were stationed at DEC offices in Avon, New Paltz, and Syracuse, and at Knox Farm State Park in East Aurora.

Six partner agencies (Figure 4) conducted outreach, survey, and control for some or all of the GH sites within their boundaries:

- Adirondack Park Invasive Plant Program (APIPP) Partnership for Regional Invasive Species Management (PRISM)
- Capital Region PRISM
- Catskill Regional Invasive Species Partnership (CRISP) PRISM
- Lower Hudson PRISM
- Saint Lawrence-Eastern Lake Ontario (SLELO) PRISM
- Oswego County Soil and Water Conservation District (OCSWCD)

Funding

DEC hired 18 seasonal staff and 9 seasonal interns that were funded by various state sources, including the Environmental Protection Fund. The interns were hired through a cooperative program with the State University of New York College of Environmental Science and Forestry. Two seasonal staff were funded by the Finger Lakes Institute (FLI), in conjunction with the Finger Lakes PRISM. DEC also received funding from the United States Department of Agriculture (USDA) Forest Service for this program.



Figure 4. 2022 partners that conducted GH control.

2022 Field Season Activities

Site Visits

During the 2022 field season, DEC and partner agency crews visited 1,993 of 2,172 total active sites (92%) and 12 inactive sites. Crews spent 5,760 hours at these sites implementing GH surveys and controls. A GH site is defined as a unique property (by tax parcel or owner) where GH plants have been confirmed.

The 1,993 sites consisted of:

- 1,171 of 1,277 sites that had plants in 2021;
- 494 of 537 monitor sites that had no plants in 2021;
- 253 of 283 eradicated sites last visited in 2016, 2017, 2018 and 2019; and
- 75 of 88 new sites confirmed in 2022.

At each of the 1,993 visited sites, where applicable, crews:

- Obtained signed permission forms or verbal/email approval to access the property and perform control;
- Surveyed for GH plants and applied control methods to plants found;
- Photographed, recorded Global Positioning System (GPS) points, created geospatial information system (GIS) polygons, and collected other current site information (e.g., plant count and property owner contact information); and
- Recorded control information (e.g., time spent on-site, number of plants root-cut or that had umbels removed, or amount of herbicide applied).

DEC and partner agency crews performed control at 1,060 sites (Table 1). Crews used root-cut control at 603 sites, herbicide control at 426 sites, and both forms of control at 21 of these sites. At 10 sites, crews used only umbel control (flower/seed-head removal). Crews also performed umbel control at 102 herbicide sites (24%), 188 root-cut sites (31%), and 8 root-cut and herbicide sites (38%).

Landowners and other entities performed controls at 9 sites and assisted DEC crews at another 21 sites. At 223 active sites, no monitoring or control occurred, the most common reason being no landowner contact or permission (66%). Permission for control was refused at 40 of these sites.

Table 1. 2022 Control Methods, Sites, and Plants Controlled Per Agency

Agency	Root-Cut Control	Herbicide Control	Umbel Control	Sites and Plants Controlled	Sites Surveyed (No Plants Found)
DEC	606 sites 21,302 plants	416 sites 409,101 plants	304 sites 9,387 plants	1,010 sites 431,083 plants	814
APIPP	2 sites 4 plants	0 sites	0 sites	2 sites 4 plants	4
Capital Region	7 sites 462 plants	0 sites	0 sites	7 sites 462 plants	5
CRISP	1 site 83 plants	0 sites	0 sites	1 site 83 plants	5
Lower Hudson	4 sites 1 plant	3 sites 17,543 plants	1 site 9 plants	7 sites 17,601 plants	17
OCSWCD	0 sites	17 sites 2,170 plants	3 sites 51 plants	18 sites 2,175 plants	21
SLELO	4 sites 87 plants	11 sites 547 plants	0 sites	15 sites 634 plants	27
DEC & partner agency crews total	624 sites 21,996 plants	447 sites 429,361 plants	308 sites 9,447 plants	1,060 sites 452,042 plants	893



Before umbel control

After umbel control



Before herbicide control

After herbicide control

Treatments

Root-cutting is typically used at smaller sites (fewer than 400 plants), at sites where owners refuse to allow chemical treatment, and at ecologically sensitive portions of larger sites. DEC and partner crews used root-cutting on 21,996 plants at 624 sites. Sites solely controlled by DEC root-cutting averaged 79 minutes of time on-site. Sites with DEC root-cutting plus umbel removal averaged 135 minutes on-site. Sites that were root-cut or root-cut with umbel removal had an average of 35 plants per site. The largest number of plants root-cut at a site was 3,501.

Herbicide control is typically used at larger sites (more than 400 plants). Herbicides may also be used at smaller sites when they are directly adjacent to larger sites, where root-cutting is ineffective due to rocky soil conditions, and for efficiency reasons. Herbicide control by DEC and partner crews occurred at 447 sites, with a total of 429,361 plants sprayed. DEC crews used the herbicide Accord XRT II (EPA Reg. No. 62719-556). Sites solely controlled by herbicide averaged 194 minutes of DEC staff time per site. Sites controlled by herbicide and umbel removal averaged 158 minutes per site. Sites that received herbicide control or herbicide and umbel removal had an average of 999 plants per site. The largest number of plants sprayed at a single site was about 54,400.

Umbel control is used at sites where flower/seed heads (umbels) are present. DEC and partner crews cut and removed umbels from 9,447 plants at 308 sites. Umbel removal was the only form of control at nine of those sites. Crews are trained on the importance of collecting umbels. This form of manual control keeps seeds from spreading and is an extremely important part of control, especially at small sites and areas where seeds can easily spread to new sites (e.g., along streams and roadsides).

Owners/others performed control at 30 sites using various methods. Of these sites, 63% were controlled using herbicide, 16% were controlled by root-cutting and/or umbel removal, and 21% were controlled by other or unspecified methods. Twenty-one of these 30 sites were also controlled by DEC and partners. Control outcomes should be even more effective at sites where landowners or other organizations provide an additional round of control.



DEC staff cutting a GH plant root.



DEC staff spraying GH with herbicide.



DEC staff removing GH seed heads.

Stream Survey

GH infestations growing along streams and other waterways have a high risk of spreading seeds downstream, reducing the efficacy of control efforts and introducing the invasive species to new areas. To proactively locate GH infestations currently unknown to our program, a crew conducted surveys upstream and downstream of known infestations. These surveys focused on streams located in western and central New York and the Finger Lakes region that had significant GH infestations along their banks. GIS analysis was used to identify sections of streams most likely to have previously unidentified infestations based on the distribution of known locations, and parcels were then selected to be surveyed along these sections.

A total of 15 crew members visited properties on various days and typically paired up as 2-person teams. Prep work included obtaining written or verbal permission from landowners to walk the streamside and along the floodplain. Crews spent 44 person-days surveying 22.4 miles of stream frontage on 161 properties during the 2022 field season (Table 2). Infestations were found on 16 properties, none of which were known to have GH present prior to the surveys. Staff added new sites to the database, and the sites were passed along for control as time allowed.

Table 2. 2021 Streams Surveyed

Stream Surveyed	# of Tax Parcels Surveyed	Miles Surveyed	# of Sites (Tax Parcels) with GH Plants Found
Buffalo Creek	8	0.9	2
Canadice Lake Outlet	9	0.7	0
Fivemile and Lyon creeks	38	3.9	1
Forks Creek	17	2.0	7
Genesee River	2	1.9	0
Rush Creek	15	1.5	2
Sconondoa Creek	13	2.2	1
Springbrook Creek	3	0.9	1
Stanford Creek	14	1.6	0
Taughannock and Bolter creeks	42	6.8	2
Total	161	22.4	16



DEC staff survey a stream for GH.

Data Management

Field crews used a mobile app to enter field data that was later checked for accuracy and entered in the statewide database. In 2022, 88 new sites were discovered (Figure 5) by field crews or through information line reports.

Information line staff and field crews obtained owners' names and contact information whenever possible. One staff person worked on gathering any missing information during the offseason. Field crews are more efficient when they can easily contact landowners regarding future control work.

The GH Program has signed property permission forms for 1,918 sites (68%), allowing access to survey for plants and perform control if needed. Additional landowners have given verbal permission, which is sufficient for root-cut control and surveying; signed permission forms are necessary for herbicide control. All signed property permission forms have been scanned and saved in electronic site folders. Digital photos taken during crew visits and by information line callers were also saved in the site folders.

Currently, there are 1,113 eradicated sites (Figure 6) and 1,718 active sites in the treatment or monitor stages throughout 52 counties in New York State (Figure 7).



DEC information line coordinator Dan Waldhorn

New Giant Hogweed Sites Detected Per Year

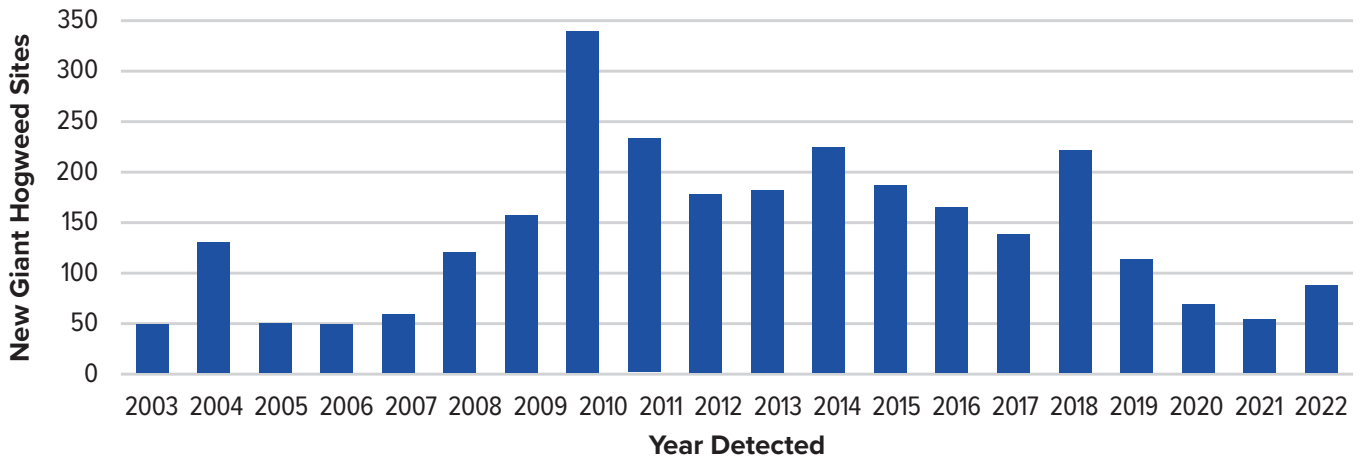


Figure 5. New sites detected per year

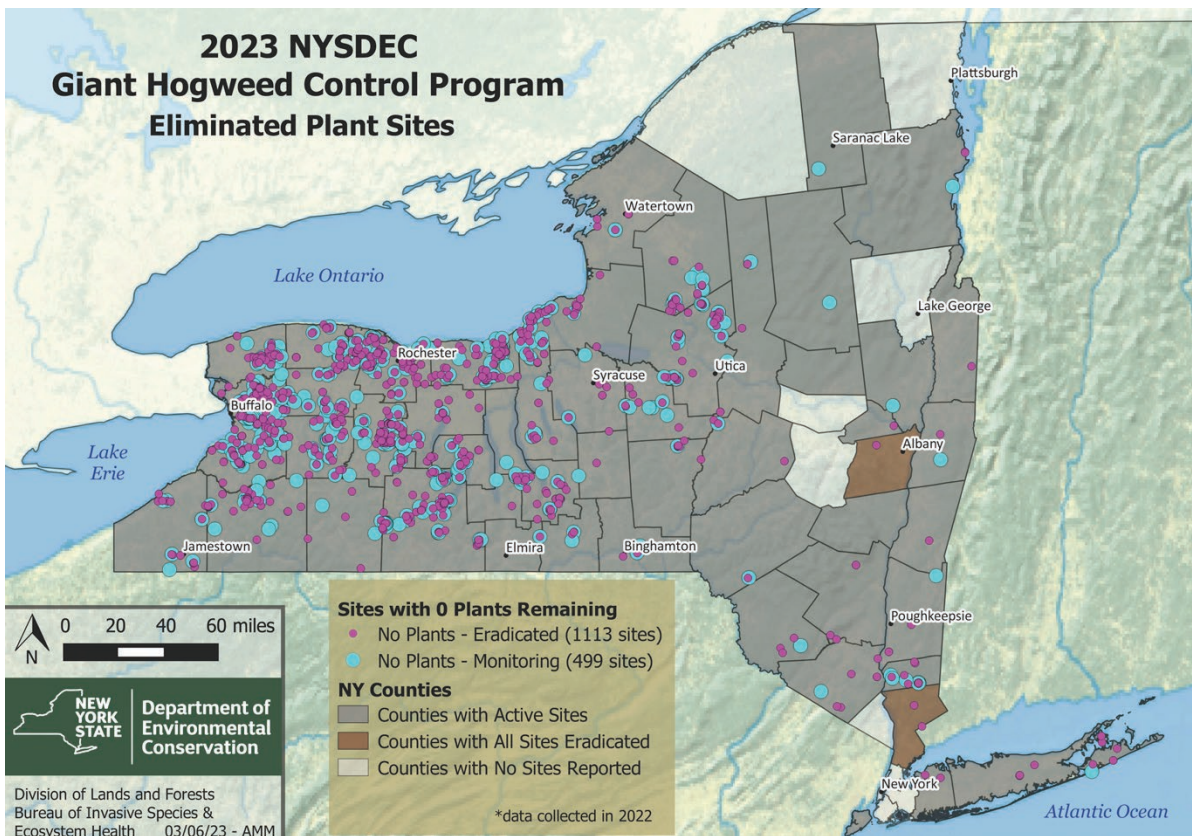


Figure 6. New York State giant hogweed sites with no plants (eradicated or still being surveyed). A site is considered eradicated after three consecutive years of surveying with no plants found during a site visit.



Figure 7. New York State active giant hogweed sites in treatment or monitor stages

Control Effectiveness

DEC crews have greatly reduced the number of GH plants at many sites throughout New York State (Figure 6). In 2022, crews found no GH plants at 1,612 properties that once had infestations (Table 3), which means that 57% of all sites now have no GH plants due to prior control efforts.

We have found that small sites can be eradicated fairly quickly. Currently, 1,105 active sites (64% of active sites) have fewer than 20 plants, and an additional 256 sites (15% of active sites) have 20–99 plants (Table 4).

Eradication is quick if there is no seed bank in the soil. If seeds are present, control must continue yearly until all seeds have germinated and have been controlled. Many of the small sites are now in the stage where we are controlling newly germinating plants from the seed bank. We should be able to remove the plants at these sites in the next few years.

Many larger sites that previously required herbicide treatment are now small enough to be reassigned to a root-cut crew. These sites are patchier than in prior years, and crews are seeing fewer large flowering plants as well.

Figure 8. Five photo examples of DEC giant hogweed control success

Site #725 - Livingston County. This site has been controlled for 13 years, primarily using herbicide control, switching to root-cut control in 2020. There were 15,000 plants in 2010; 13 plants were root-cut in 2022.

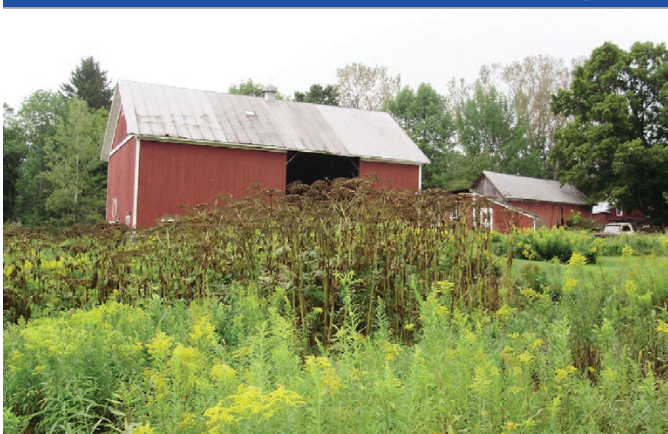


2012



2020

Site #36 - Oneida County. This site has been controlled for 13 years. Herbicide was used from 2010–2015 when the site was large. Once the site was small enough to be managed manually, crews used root-cut control from 2016–2022. There were 3,000 plants in 2009; in 2022 the crew only had to root-cut 4 plants.



2009



2022

Figure 8. Five photo examples of DEC giant hogweed control success

Site #579 - Livingston County. This site has been cooperatively controlled with the landowner since 2009, with no herbicide use permitted. In 2011, over 3,000 plants were root-cut. In 2022, only 42 plants had to be root-cut.



Site #354 - Niagara County. The green points on the series of maps below represent GH plants controlled along this streamside site between 2012 and 2022. Although the site started with more than 4,000 plants, only 38 had to be root-cut in 2022.

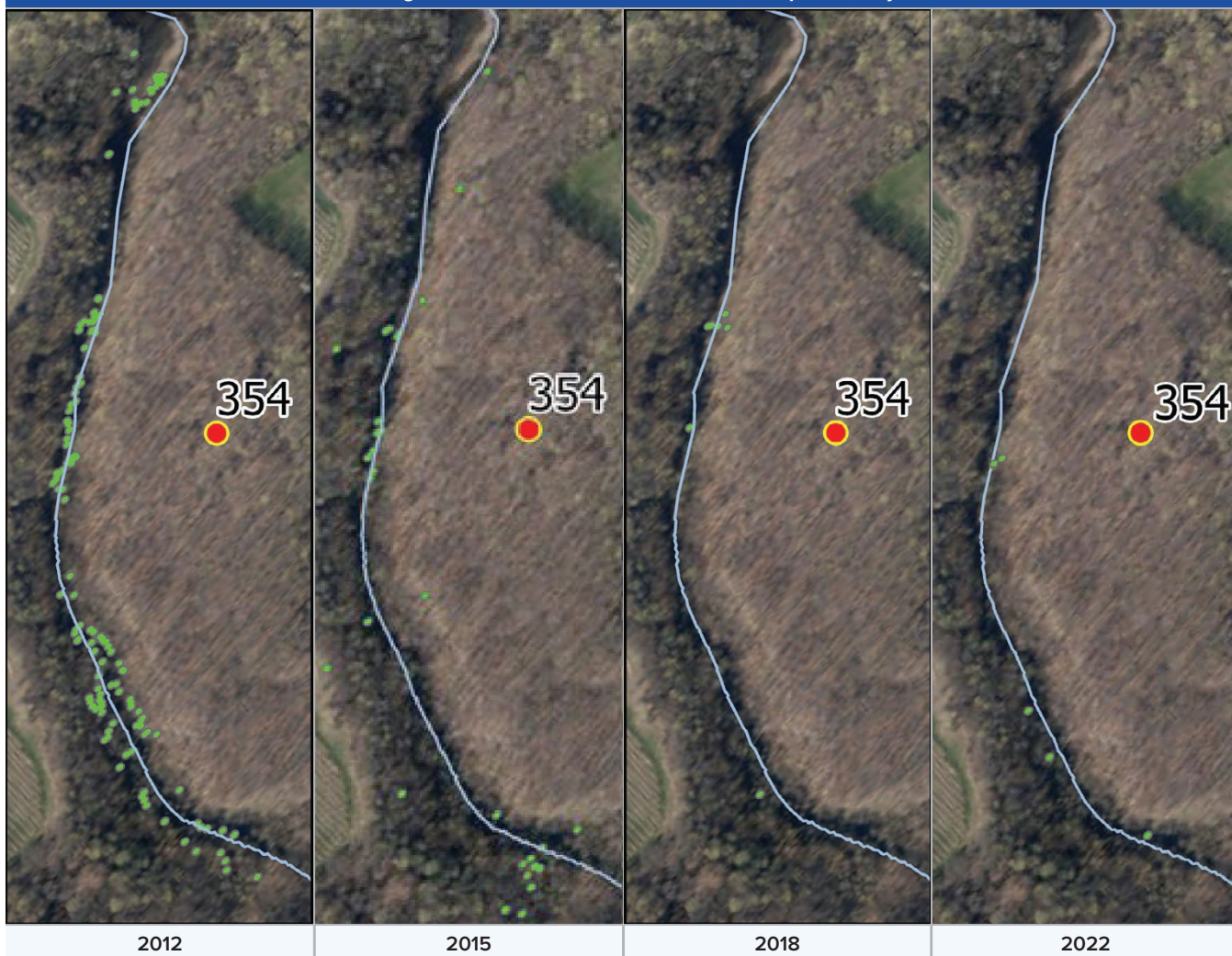


Figure 8. Five photo examples of DEC giant hogweed control success

Site #1867 - Cayuga County. This site has been controlled using herbicide starting in 2014 when there were 7,000 plants controlled. Only six plants had to be root-cut in 2022.



2013

2022

Table 3. Sites Per Size Class Per Year

Plants Per Site	0	1–99	100–399	400–999	1,000+	Unknown	Total Number of Sites	Total Active Sites*
2022 season	1,612	861	176	79	100	3	2,831	1,718
2021 season	1,466	911	162	89	94	4	2,726	1,797
2020 season	1,476	848	163	91	84	4	2,666	1,896
2019 season	1,285	937	175	104	91	5	2,597	1,871
2018 season	1,071	1,005	200	93	109	6	2,484	1,861
2017 season	904	900	208	104	135	2	2,253	1,755
2016 season	823	892	191	73	127	10	2,116	1,729
2015 season	639	872	203	100	124	10	1,948	1,671
2014 season	501	793	214	116	108	28	1,760	1,521
2013 season	348	674	220	132	143	19	1,536	1,439
2012 season	339	563	172	105	135	35	1,349	1,252
2011 season	219	474	167	81	138	31	1,110	1,111
2010 season	139	414	119	91	113	68	944	944
2009 season	106	316	78	44	73	28	645	645
2008 season	64	155	85	38	77	78	497	497

* Active sites include all sites with plants and sites currently being monitored (one or two years of no plants found).

Table 4. Sites Per Size Class by County (2022 field data)

County	Sites w/o Plants	Sites w/ Plants	Eradicated (0 Plants for 3 Years)	Monitor (0 Plants)	1–19 Plants	20–99 Plants	100–199 Plants	200–399 Plants	400–999 Plants	1,000+ Plants	Unknown # of Plants
Albany	1	0	1								
Allegany	8	9	5	3	3	3		1	1	1	
Broome	23	9	19	4	6			1	1	1	
Cattaraugus	47	48	36	11	15	11	4	2	9	7	
Cayuga	61	56	34	27	26	9	3	8	4	6	
Chautauqua	27	16	20	7	13	1	2				
Chemung	2	2	1	1	2						
Chenango	10	9	9	1	5	3		1			
Columbia	1	1	1		1						
Cortland	2	2	2		2						
Delaware	2	1	1	1		1					
Dutchess	4	4	3	1	1	1				2	
Erie	255	250	154	101	123	62	17	17	13	18	
Essex	3	1	2	1	1						
Franklin	1	0		1							
Fulton	0	1			1						
Genesee	41	29	26	15	16	2	3	3	2	3	
Greene	0	1			1						
Hamilton	1	0		1							
Herkimer	7	2	6	1	2						
Jefferson	9	3	7	2	3						
Lewis	45	14	33	12	12	1			1		
Livingston	111	107	81	30	43	26	10	12	7	9	
Madison	11	9	6	5	7	1		1			
Monroe	147	81	106	41	33	27	9	5	4	3	
Nassau	2	1	2		1						
Niagara	68	34	53	15	18	8	3	1	3	1	
Oneida	62	76	39	23	38	17	5	2	5	9	
Onondaga	15	3	11	4	2	1					
Ontario	54	13	44	10	12		1				
Orange	7	1	6	1		1					
Orleans	47	33	36	11	13	5	2	7	3	3	
Oswego	44	30	34	10	16	7		4	1	1	1
Otsego	4	6	3	1	4	2					
Putnam	18	5	12	6	3	1				1	
Rensselaer	2	0	1	1							
Richmond	0	1			1						
Saratoga	2	1		2	1						
Schenectady	1	4	1		1	1		2			
Schuyler	22	30	10	12	17	6	1	2	1	3	
Seneca	1	0		1							
Steuben	136	94	85	51	46	16	6	8	10	7	1
Suffolk	11	3	10	1	3						

Table 4. Sites Per Size Class by County (2022 field data)

County	Sites w/o Plants	Sites w/ Plants	Eradicated (0 Plants for 3 Years)	Monitor (0 Plants)	1–19 Plants	20–99 Plants	100–199 Plants	200–399 Plants	400–999 Plants	1,000+ Plants	Unknown # of Plants
Sullivan	4	1	3	1			1				
Tioga	5	0	3	2							
Tompkins	41	42	33	8	22	9	3			8	
Ulster	4	1	4		1						
Washington	1	1	1		1						
Wayne	127	135	87	40	68	25	7	12	8	15	
Westchester	2	0	2								
Wyoming	69	34	42	27	13	8	4	3	3	2	1
Yates	44	15	38	6	9			3	3		
Grand Total	1612	1219	1113	499	605	256	81	95	79	100	3

It is hard to judge control efficacy using plant numbers following treatments since areas with seed banks will grow more plants in future years. After we control the larger plants at seed-bank sites, more and smaller plants grow from seeds in the same space the following year. Even though control was effective and large plants were eliminated, the total number of plants for these sites will increase the following year. High plant numbers will likely continue until most seeds in the seed bank have germinated and are controlled, after which we will see numbers drop rapidly.

During the 2022 field season, we surveyed 893 sites previously treated for GH infestation and found no plants; 216 of the sites had no plants for 3 consecutive years, allowing us to designate them as eradicated. This brings the total number of eradicated sites to 1,113. Of all sites that had been previously treated for infestation, 57% (1,612 sites) had no plants in 2022.

Of the 537 visited sites that started the 2022 field season as monitor sites (no plants found the previous year, but not yet an eradicated site), 69% (371 sites) remained free of GH. Crews did not visit 44 monitor sites in 2022, primarily due to no contact or permission from the landowner.

Eighty-six percent of monitor sites where plants were found (102 of 119 sites) had fewer than 20 plants. Reappearance of GH indicates that seeds germinated from the seed bank, crews overlooked plants during prior visits, or seeds were spread from another site.

It typically takes multiple years of control before we find no plants at a site. However, we occasionally find no plants at a site after just one year of control. Since the start of the GH Program, this has occurred 459 times. Eighty-five percent of these sites originally had fewer than 20 plants. Small sites are easiest to eradicate due to small or nonexistent seed banks.

After no plants are found for three consecutive years, the site is deemed eradicated and is no longer surveyed yearly. As an added precaution, in case seeds germinate later from a seed bank or new seeds spread to the site from another source (e.g., an upstream site), we revisit eradicated sites two additional times: three and six years later. Landowners are also provided contact information should they notice new plants.

In 2022, we surveyed 236 sites that were last surveyed in 2017, 2018, and 2019, and found and controlled plants at 18 of these sites. This shows the importance of occasionally surveying inactive sites. Natural and human-assisted seed dispersal along dispersal corridors (e.g., streams and roads) have not stopped, so it remains likely that these sites have a higher probability of being infested again.



Seeds can spread downstream.

Outreach and Communications

Our program has a strong outreach component, through which we provide valuable information to the public and to partner organizations on how to identify and safely and effectively control GH. The GH information line staff are busy all field season answering questions and identifying plants for the public. Every year, we incorporate lessons learned from previous seasons and improve our outreach materials. We offer training; distribute brochures, control guides, and posters; and post GH information on DEC's website, which is accessed by people from around the world. We have also assisted agencies in other states and Canada in planning their own GH programs.

DEC's Giant Hogweed Information Line

DEC's GH information line staff answered 561 calls and 481 emails from the public in 2022. Forty-seven new GH sites were confirmed from information line reports. Reports of possible GH locations made up 90% of the total 1,042 calls and emails. The remaining 10% were from people looking for information about GH or other invasive species, not to report possible GH sites.

Of the public calls and emails regarding possible GH sites, 30% were confirmed by information line staff as correctly identified, and 70% were determined to be look-alike plants, not GH. The most common look-alike plants reported were cow parsnip, angelica, elderberry, wild parsnip, and poison hemlock.

Of the calls and emails in which the person had correctly identified GH, 26% were for new sites and 74% were for established/known sites.

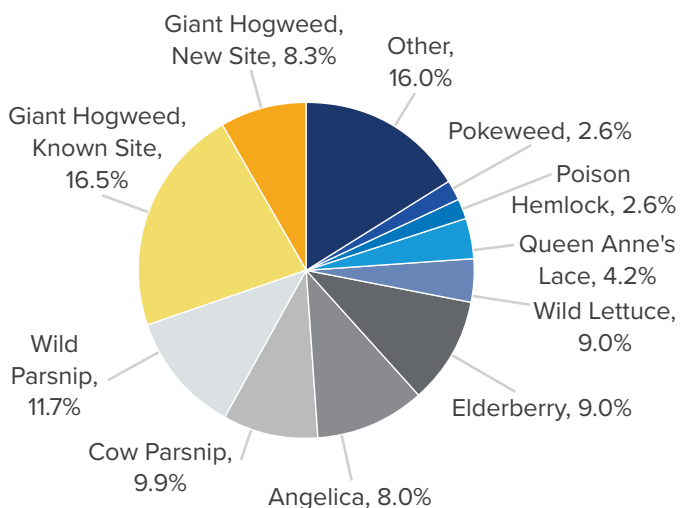


Figure 9. Most common plants reported to the information line

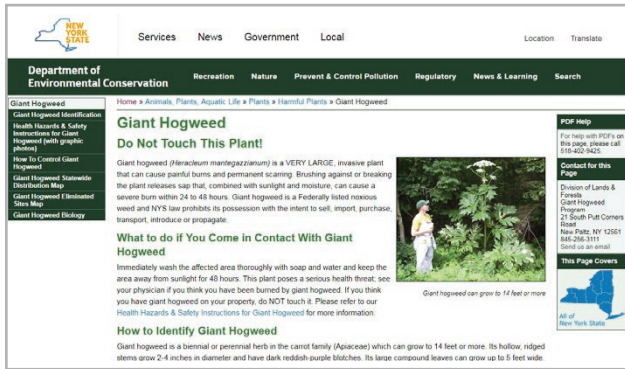
Staff told callers about DEC's GH webpage, and if they were interested, sent them a GH brochure and control guide. We also sent those with confirmed GH sightings on their properties a control guide and a license-to-enter-property form to sign and return.

We confirmed sites by viewing photos of flowers, stems, leaves, and entire plants that callers sent via text, email, or standard mail. For cases in which callers were unable to provide photos, we reached out to Cornell Cooperative Extension (CCE) staff or PRISM partners for help. In many instances, CCE staff members and master gardeners, or PRISM staff were able to verify the sites in their counties for us.

Giant Hogweed Maps

We posted updated maps on DEC's website, www.dec.ny.gov/animals/39809.html, that reflect 2021 field data of known GH locations, as well as locations where GH is no longer present in New York State (Figure 6 and Figure 7). We also passed along GH site information to the New York State invasive species database, *iMapInvasives*, to update GH data on its website (www.nyimainvasives.org).

Webpages



DEC's GH webpage, www.dec.ny.gov/animals/39809.html, leads to a number of other pages with information on identification, health hazards, and safety instructions; control methods; maps; and links to articles, pest alerts, brochures, and non-DEC GH webpages. People visited DEC's GH webpages 291,488 times in 2022 and have visited them 4,112,097 times since their inception.

Social Media



DEC's Office of Communication Services staff help spread the word about GH. Social media is used during the plant's blooming season to educate the public and request that they report new sites. Posts contain a variety of information about GH and we use photos to help capture the reader's attention.

Each post generates questions and comments that provide additional opportunities to educate the public. Three GH Facebook posts resulted in 752,963 total views. One GH Instagram post resulted in 31,684 views. Two GH tweets resulted in 4,444 total views.

Giant Hogweed Poster, Brochure, and Control Methods Guide



We use DEC's GH brochure, poster, and control methods guide to educate the public about GH in New York. The brochure and poster help people learn to identify the plant, to avoid touching it, and to report GH locations to DEC so we can help control it. The control methods guide offers more detailed information about how to safely control GH. In 2022, program staff and partners distributed more than 2,067 brochures, posters, and control guides to interested people and organizations.

These outreach documents are available on our website; to request paper copies, contact the GH Program.

- Poster: www.dec.ny.gov/docs/lands_forests_pdf/ghposter18x24.pdf
- Brochure: www.dec.ny.gov/docs/lands_forests_pdf/ghbrochure.pdf
- Control Guide: www.dec.ny.gov/docs/lands_forests_pdf/ghcontrol.pdf

Landowner Training

A small percentage of landowners assist with GH control. We train them to safely and effectively control the plant on their property. Though controlling GH requires caution, we emphasize that landowners can do it safely with proper training, protective clothing, and appropriate equipment. We urge them to read and follow the health hazards and safety instructions in DEC's control guide prior to initiating control.

We advise owners to initially control plants early in the season, when GH are small and less hazardous. Landowners usually live on the site where GH is growing, so we also advise them to control their GH patch many times each season. This prevents latecomer seedlings from attaining a more dangerous size.

These best practices help keep plant numbers down and overall patch size small, leading to safer and speedier eradication. When training landowners, crews have learned to stress both the health hazards of the plant and the benefits of landowner control.

Partnerships

The GH Program has cultivated strong working relationships with PRISMs and other organizations. DEC program staff provided partner agencies with an initial training on GH identification, safe and effective control methods, and an overview of GH control

program protocols and data collection. Partner agencies have been an integral component of the overall statewide program since 2012. In 2022, APIPP, the Capital Region PRISM, CRISP, the Lower Hudson PRISM, SLELO, and OCSWCD conducted outreach, surveys, and control for some or all of the GH sites within their boundaries.

Other partner agencies assisted with surveys, outreach, and program management:

- The Finger Lakes PRISM, in conjunction with FLI, hired two staff to work with the GH control program.
- The Long Island Invasive Species Management Area assisted with monitoring sites.
- The Western New York PRISM assisted with outreach.

As resources and interest allow, we work with state, county, town, and village highway departments. Many of them are concerned about how GH will affect the safety of their workers or park visitors. We train them to safely control GH, and we assign sites for them to control, coordinate primary and follow-up control, and join forces to control some of the larger sites.

When GH infestations occur on state, county, town, and village park land, we coordinate control efforts with park staff, and in some cases, we control the site for them. Control outcomes are more effective at sites where a partner agency or landowner provides an additional round of control.

Conclusion

Unlike many invasive species, we can potentially eradicate GH from most sites in New York State. Since each mature plant can produce an average of 20,000 seeds annually, consistent and continuous efforts are required to reach this goal.

Numbers of mature plants at treated sites have dropped dramatically. New sites are identified each year because of public outreach efforts. Based on feedback from the public, this may be one of the most well-known invasive species in the state. The added partner support for outreach and treatment activities increases the annual impact of our program's GH eradication efforts.



DEC Avon crew supervisor Austin Shay next to a patch of mature giant hogweed plants



Greater public awareness has led to us finding more small infestations at earlier stages.

Appendix A

History and Accomplishments of NY's Giant Hogweed Program

Starting in 1998, the USDA, New York State's Department of Agriculture and Markets (AGM), and CCE surveyed for GH in New York through USDA's Cooperative Agricultural Pest Survey (CAPS) Program. CAPS led to the detection of GH in approximately half the state's counties, with most detection records coming from Western New York.

In 2006–2007, AGM maintained the GH information line. DEC crews visited and confirmed reported GH sites and updated information on known sites. In 2007, property ownership information was also gathered by DEC using GIS data and an outreach mailing. In 2007, DEC applied for and received a 2ee exemption letter allowing us to use the herbicide Rodeo for GH control. Under the 2ee exemption, in special circumstances, a pesticide can be applied to a target pest that is not specified on the pesticide label.

DEC implemented manual control of GH plants starting in 2008, with three crews hired to control GH plants by root-cutting. DEC also began maintaining the GH information line at this time. In 2009, two crews were hired to control smaller sites using manual root-cutting, and one crew was hired to control larger sites using herbicide.

In 2010 and 2011, DEC received an American Recovery and Reinvestment Act grant, allowing the GH Program to double in size. Five crews in 2010 and six in 2011 were hired to use manual or chemical control tactics. In 2011, we applied for and received a 2ee exemption letter allowing the use of additional herbicides for GH control. We also received a statewide general wetland permit in 2011 and in 2021, which allows us to use herbicide for GH control in DEC-regulated wetlands and adjacent areas.

From 2012–2022, state funds were used to hire 6–10 control crews per season. USDA Forest Service supplied partial GH Program funding from 2013–2015 through a Competitive Allocation Request Proposal, and from 2016–2022 through a Landscape Scale Restoration grant. Starting in 2012, four partner organizations agreed to control GH sites within their boundaries: APIPP, CRISP, SLELO, and OCSWCD. In 2014, the Lower Hudson PRISM joined the statewide GH control effort, as did the Capital Region PRISM in 2015. From 2016 to 2021, the Finger Lakes PRISM, in conjunction with FLI, used USDA Natural Resources Conservation Service funding to hire four to five staff to work with the GH control program and conduct GH outreach. They used their own funding to hire two staff in 2022. Tables 5 and 6 show GH Program accomplishments from 2006 to 2022.

Table 5. DEC Giant Hogweed Program Control and Surveying Accomplishments

Year	# of Sites Root-Cut Controlled	# of Plants Root-Cut Controlled	# of Sites Herbicide Controlled	# of Plants Herbicide Controlled*	# of Sites Surveyed** (No Plants Found)	# of New Sites Found
2022	624	21,996	447	429,361	893	88
2021	698	17,550	340	234,311	931	55
2020	553	11,344	245	51,952	495	69
2019	771	27,129	425	431,325	888	115
2018	797	17,090	489	667,330	660	223
2017	786	26,214	453	642,000	604	140
2016	812	34,995	391	563,000	620	167
2015	761	34,422	444	454,000	448	188
2014	556	22,255	551	397,000	354	226
2013	593	43,023	486	637,000	251	183
2012	494	38,781	347	375,000	282	179
2011	538	73,793	270	1,482,000	204	234
2010	402	39,411	210	1,177,000	139	341
2009	195	13,354	146	871,000	106	158
2008	130	10,558	N/A	N/A	64	122
2006/2007	N/A	N/A	N/A	N/A	N/A	60

*Starting in 2012, we used a different, but more consistent, method of calculating the number of plants controlled by herbicide to allow for better comparison to future plant counts. 2012's and later calculations are based on the amount of herbicide used; prior year plant counts were calculated using crews' plant density estimates.

**Surveyed sites have had prior control, but no GH regrowth/plants found during the latest yearly field season's surveying visit. After three consecutive yearly visits with no plants found, a site is deemed eradicated.

Table 6. DEC Giant Hogweed Program Outreach Accomplishments

Year	Information Line Calls	Information Line Emails	Website Visits
2022	561	481	291,488
2021	263	503	241,944
2020	365	523	201,473
2019	944	654	239,773
2018	1,423	1,005	675,968
2017	635	471	205,857
2016	945	1,006	326,918
2015	1,099	1,315	535,516
2014	1,019	1,472	642,798
2013	592	801	345,665
2012	967	1,045	65,044
2011	1,976	861	307,444
2010	912	237	25,066
2009	660	N/A	10,770
2008	200	N/A	6,373

Table 7. Giant Hogweed Program Stream Survey Accomplishments

Stream Surveyed	# of Tax Parcels Surveyed 2018–2021	Miles Surveyed 2018–2021	# of Sites (Tax Parcels) with GH Plants Found 2018–2022
Buffalo Creek	150	19.7	52
Canadice Lake outlet	2	1.4	0
Cazenovia Creek	119	7.9	3
Conesus Lake tributaries	48	7.6	11
Eighteen Mile Creek	87	7.9	25
Fivemile and Lyon creeks	38	3.9	1
Forks Creek	17	2	7
Genesee River	3	4.7	0
Monroe County streams	95	4.5	5
Oatka Creek	102	15.9	12
Rush Creek	15	1.5	2
Salt Creek	16	4.5	4
Sconondoa Creek	13	2.2	1
Springbrook Creek	3	0.9	1
Springwater Creek	8	1.5	5
Stanford Creek	14	1.6	0
Taughanock and Bolter creeks	42	6.8	2
Grand Total	772	94.5	131

Appendix B

Historical Funding

Funding for this program has come from a variety of sources since its inception:

- American Recovery and Reinvestment Act
- USDA Animal and Plant Health Inspection Service
Plant Protection and Quarantine
- USDA Forest Service
- NYS Environmental Protection Fund
- DEC Invasive Species Coordination Unit
- NYS Department of Health

Appendix C

Additional Giant Hogweed Data

Table 8. Sites Per Size Class by DEC Region (2022 Field Data)

DEC Region	Sites w/o Plants	Sites w/ Plants	Eradicated (0 Plants for 3 years)	Monitor (0 Plants)	1–19 Plants	20–99 Plants	100–199 Plants	200–399 Plants	400–999 Plants	1,000+ Plants	Unknown # of Plants
1	13	4	12	1	4						
2	0	1			1						
3	39	12	30	9	5	3	1			3	
4	11	13	8	3	7	4		2			
5	8	4	3	5	4						
6	123	95	85	38	55	18	5	2	6	9	
7	212	160	151	61	86	30	6	15	6	16	1
8	732	539	514	218	258	108	39	52	38	43	1
9	474	391	310	164	185	93	30	24	29	29	1
Grand Total	1612	1219	1113	499	605	256	81	95	79	100	3

Table 9. Sites Per Size Class by PRISM (2022 Field Data)

PRISM	Sites w/o Plants	Sites w/ Plants	Eradicated (0 Plants for 3 years)	Monitor (0 Plants)	1–19 Plants	20–99 Plants	100–199 Plants	200–399 Plants	400–999 Plants	1,000+ Plants	Unknown # of Plants
APIPP	10	2	6	4	2						
Capital Region	10	10	7	3	7	1		2			
CRISP	13	8	9	4	4	3	1				
Finger Lakes	812	608	569	243	300	123	40	54	38	52	1
Long Island	13	5	12	1	5						
Lower Hudson	32	11	25	7	5	3				3	
SLELO	160	122	113	47	68	26	5	5	7	10	1
Western NY	562	453	372	190	214	100	35	34	34	35	1
Grand Total	1612	1219	1113	499	605	256	81	95	79	100	3

Table 10. Sites Per Size Class for 2011–2022

Year	Sites w/o Plants	Sites w/ Plants	Eradicated (0 Plants for 3 years)	Monitor (0 Plants)	1–19 Plants	20–99 Plants	100–199 Plants	200–399 Plants	400–999 Plants	1,000+ Plants	Unknown # of Plants
2022	1612	1219	1113	499	605	256	81	95	79	100	3
2021	1466	1260	929	537	667	244	80	82	89	94	4
2020	1476	1190	770	706	597	251	79	84	91	84	4
2019	1285	1312	727	558	684	253	90	85	104	91	5
2018	1071	1413	623	448	719	286	110	90	93	109	6
2017	904	1349	498	406	645	255	94	114	104	135	2
2016	823	1293	387	436	627	265	99	92	73	127	10
2015	639	1309	277	362	586	286	105	98	100	124	10
2014	501	1259	239	262	516	277	116	98	116	108	28
2013	348	1188	149	199	419	255	119	101	132	143	19
2012	339	1010	97	242	317	246	83	89	105	135	35
2011	219	947	55	164	310	220	88	79	81	138	31

Table 11. Sites and Plants Controlled by DEC/Partner Agencies 2012–2022

Year	Sites Controlled by DEC/Partner Agency	Plants Controlled by DEC/Partner Agency
2022	1060	452,042
2021	1,038	252,348
2020	790	63,396
2019	1,189	459,169
2018	1,271	678,000
2017	1,233	668,000
2016	1,175	598,000
2015	1,180	489,000
2014	1,102	419,000
2013	1,067	680,000
2012	869	415,300

Table 12. Average Plant Number and Control Time at Root-Cut and Herbicide Sites 2012–2022

Year	Average Plant Number at Root- Cut Sites	Average Plant Number at Herbicide Sites	Average Control Time at Root- Cut Sites* (min)	Average Control Time at Herbicide Sites* (min)
2022	35	999	79	194
2021	25	727	45	102
2020	19	219	37	35
2019	36	1,140	51	103
2018	22	1,583	33	124
2017	37	2,045	37	105
2016	41	1,741	43	148
2015	46	1,097	30	97
2014	39	824	30	76
2013	71	1,547	50	91
2012	79	1,084	51	91

*Excluding sites that also had umbel removal. Starting in 2022, control time included all time spent on-site.

Appendix D

Long-Term Conservation Goals

Eliminate GH from New York

Benefits: Increase plant diversity and decrease soil erosion. GH is an early colonizer that can quickly establish itself on exposed sites in riparian areas, fields, forest edges, wetlands, roadsides, and trails. Its rapid growth and broad leaves shade out native and desirable plants. Removing GH will allow other preferable species to grow and will restore plant diversity at GH- colonized sites. Riparian areas and steep slopes with GH infestations are also prone to increased erosion as the large plants die back in the fall and expose large areas of bare soil. In many of our important fishery streams, bank erosion can be a critical factor threatening spawning beds. Controlling GH infestations at these sites will enable native plants to reoccupy and stabilize slopes, reducing sediment delivery to important fish habitat.

Benefits: Reduce human health risks. GH infestations in important recreation access areas, such as roads, trails, and streambanks, significantly threaten public health and the quality of recreational experiences. Contact with the plant's sap can lead to severe burns. Children are particularly susceptible, as they find the large plants with hollow stalks interesting to play with. We have targeted all infested sites near locations where children live or visit (e.g., schools, daycares, playgrounds, homes) as top priority sites for treatment and eradication. Recreational areas (e.g., fishing access sites, parks, campgrounds, nature centers, hiking trails, mini-golf courses, wildlife management areas, sports fields) are also targeted. Controlling GH and increasing awareness of its dangers will minimize public health risks and return the sites to a state where people can safely resume recreation.



Bare soil underneath GH



DEC prioritizes control of GH at sites located near children.

Maintain and improve public awareness of GH's dangerous nature

Benefits: Reduce human health risks and improve GH infestation reporting. A major impediment to avoiding GH exposure is a lack of knowledge of the plant's dangerous nature. Describing what GH looks like, how to distinguish it from similar plants, and how attending to sap exposure immediately can prevent serious burns are vital parts of our outreach effort. We reduce human health risks from GH infestations through education and outreach efforts designed to:

- Describe how GH can cause harm;
- Enable people to properly identify GH and look-alike plants;
- Describe appropriate avoidance techniques;
- Describe personal safety clothing and equipment for avoiding injury while working near or controlling GH; and
- Describe treatment that minimizes harm from exposure to GH sap.



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