2022 ASIS Invasive Plant Treatment Report

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Invasive Plant Species Managed by ASIS Vegetation Management in 2022 and discussed in the following report:

Ailanthus altissima (Tree of Heaven)
Artemisia vulgaris (Mugwort)
Arthraxon hispidus (Small carpetgrass)
Carex kobomugi (Asiatic Sand Sedge)
Centaurea maculosa (Spotted Knapweed)
Cirsium arvense (Canada thistle)
Cirsium vulgaris (Bull Thistle)
Clematis terniflora (Virginsbower)
Juniperus procumbens (Dwarf Juniper)
Elaeagnus umbellata (Autumn Olive)
Eleusine indica (Wiregrass)
Eragrostis curvula (Lovegrass)
Glechoma hederacea (Creeping Charlie)
Hedera helix (English Ivy)
Juniperus procumbens (Dwarf Juniper)
Lagerstroemia indica (Crepe Myrtle)
Lezpedeza cuneata (Chinese Lezpedeza)
Ligustrum vulgare (Privet Bush)
Lonicera japonica (Honeysuckle)
Mentha suaveolens (Wooly Mint)
Microstegium viminium (Stiltgrass)
Miscanthus sinensis (Silvergrass)
Morus alba (White Paper Mulberry)
Nuisance Weeds
Paulownia tomentosa (Princess tree)
Pennisetum alopecuroides Syn. Cenchrus purpurascens (Fountain grass)
Phragmites australis (Phragmites)
Pinus nigra (Black Pine)
Rosa multiflora (Multiflora rose)
Rosa wichuraiana (Memorial rose)
Salsola kali (Tumbleweed)
Toxicodendron radicans (Poison Ivy)
Vitex rotundifolia (Beach Vitex)

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Ailanthus altissima* (Tree of Heaven)

2022 Activity

0.0091 Acres Treated

The *Ailanthus altissima* trees at the time of discovery on the inlet dunes (Image Credit: J. Chase (NPS))

Map of location at the North end inlet (red box)

Current Conditions:

Ailanthus altissima (Tree of Heaven) was encountered at ASIS in 1984 by botanist Steven Hill at Scotts Point. Later, in 2004 it was again discovered by botanist Chris Lea (100 meters) south of Valentine's inholding. Since 2004 other island locations (Pope island, Scotts Ocean Beach Hotel footprint, dunes at the Inlet Bayshore) were found, located and treated repeatedly and successfully by ASIS. A new site a few hundred meters to the south of the inlet was discovered and treated in 2021 and in 2022. An additional infestation of plants in all life stages were found and treated at this site this year. Three small trees and seedlings were found and treated (within the yellow box above) in total. A small population of saplings was discovered at the Assateague State Park behind the garage at the south end of the large concession parking lot. This will be treated in 2023 to prevent any further spread.

Areas currently infested at ASIS: There is currently one known active site of this species on ASIS property.

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

[X] Polaris (Imazapyr) 25% cut stump [X] Rodeo (Glyphosate) 2% —>Foliar application

Notes:

A discovery of *A. altissima,* made by Jonathan Chase at the inlet forest during treatments of *Miscanthus sinensis* there in early September 2021, returned this species onto our list of targeted plants when a few small saplings were discovered (See image above on left). The inlet area has a long history of small infestations of this species but is very much under control at manageable levels at this time. These plants were treated in late July of 2022.

These inlet sites must be monitored again in 2023 to look for recruitment. Treatments are recommended to follow soon after discovery.

***Ailanthus altissima* (Tree of Heaven)**

Is prioritized for treatment at ASIS because:

-Its likelihood of becoming well established if left untreated is very high, as has been observed in established popul ations at the park, particularly at Scotts Landing.

Successful treatments of this species occur when:

-Basal bark treatments, or cut stump treatments are utilized on mature individuals.

-Repeated treatments occur and the sites are revisited at intervals of (3) years once recruitment is observed to have been significantly diminished.

Difficulties with treating this species include:

-Seed banks can be persistent in well-established populations making retreatments unavoidable.

Proposed actions for this species include but are not limited to:

-Treating any populations that are discovered, soon after their discovery.

The desired future fate of this species' treatment outcome is:

-Eradication

If no action is taken the likely outcome for this species will be:

-Treatments of this species have rendered it near eradication, but new populations can be introduced from various sources that are not well understood at this time.

The proposed treatment of this species in 2023 includes:

-Monitoring the last known active site in the clearing on the north and east side of the inlet forest because of the continued activity seen there in 2022.

***Artemesia vulgaris* (Mugwort)**

Is prioritized for treatment at ASIS because:

-This species is becoming increasingly widespread on ASIS's developed areas and treatments have been successful in diminishing their numbers in areas where they have been treated which prevent further recruitment into adjacent areas.

Successful treatments of this species occur when:

-The species is treated before it flowers and seeds.

Difficulties with treating this species include:

-Creating denuded patches which can become recruitment areas for other invasive species like *Cirsium arvense*, if there is an abundance of invasive species in the treatment areas. Selective herbicides can mitigate this.

Proposed actions for this species include but are not limited to:

-Annual treatments to maintain the control at manageable levels.

The desired future fate of this species' treatment outcome is:

-Maintaining a manageable level of control.

If no action is taken the likely outcome for this species will be:

-Proliferation and widespread increase in the developed area with a great potential for intrusion into natural areas.

The proposed treatment of this species in 2023 includes:

-Treatment at all known populations before the species flowers in the Fall.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Artemisia vulgaris* (Mugwort)

2022 Activity

0.1294 Acres Treated

Image Credit: Doug Goldman, hosted by the USDA-NRCS PLANTS Database

Current Conditions:

Artemisia vulgaris (Mugwort) was first encountered in 1984 by botanist Steven Hill on Great Egging Island. Later at the ASIS Sinepuxent Visitor Center landscaping beds in 2012, it was again encountered and then treated for the first time in 2013. This herbaceous species has required annual treatments in the places where it has been discovered at ASIS because it becomes establishes rhizomes. There were several active sites of this species in 2022; the species is restricted to (8) locations at ASIS. All ASIS sites were visited and/ or treated in 2022. All but site 1.), listed below, were active in 2022.

Areas Currently Infested at ASIS:

This species currently occurs at ASIS in (8) active sites in the MD Developed Area, they are:

1.) The eastern guardrail by the entrance to the Park, 2.) The Ranger Contact Station deer checking station on the island, 3.) The north side of Bayside Drive between loops B and C and 4.) The area directly surrounding the trash dumpster at the dump station on Oceanside Drive (discovered 2018) 5.) the southern side of the causeway, just near the Verrazano bridge. 6.) The boneyard, and 7.) Bayside Campground loops B and 8.) The ASIS Headquarters and Maryland Visitor Center.

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Garlon 4 Ultra (Triclopyr) 3%, Rodeo (Glyphosate) 2%, Polaris (Imazapyr) 2% —>Foliar application

Notes: A sizable infestation of *A. vulgaris* had appeared in the vicinity of the ASIS Sinepuxent District Visitor Center since 2012, when it was discovered there. This species has been found to be active on the island since then. On the mainland at Park Headquarters, the plants are encountered most frequently in the UMES vegetation buffer that runs the length of our southern property line. Control efforts at the Headquarters and Island infestations during 2022 continued in June, September and October, as an apparent seed bank continues to produce many plants, particularly at the Headquarters property. Of the (8) infestations listed above, (7) were treated in 2022. Number 5.), is on State Park property and was not treated this season. Triclopyr herbicides like Garlon 3A and Garlon 4 Ultra can be used selectively, so that grasses are not damaged in the treatment areas, which can allow native cover to return more quickly. Replacing cover quickly is helpful when it prevents further productivity of this species in already-infested areas because it repopulates from persistent seed banks. Special attention must be given to the landscaping beds surrounding the Maryland Visitor Center to ensure that this species does not become further established there. This species is spreading in all areas it has infested at ASIS. Treatment and/ or monitoring will continue at all sites in 2023.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Arthraxon hispidus* (Small carpetgrass)

2022 Activity

0.3509 Acres Treated

Image Credit: Leslie J. Mehrhoff Invasive.org

Image Credit: J. Chase (NPS)

Image Credit: J. Chase (NPS)

Current Conditions: *Arthraxon hispidus* (Small carpetgrass) was first reported at ASIS by botanist Steven Hill in 1984 and later encountered in 2017 when botanist Sarah Koser of E. A. Engineering and ASIS biological technician Jonathan Chase discovered the grasses growing along the roadside at the end of the Oceanside Drive near the traffic circle while conducting wetland delineations in the Oceanside Campground. Searches for this species were conducted in 2021 in the developed area, the North end and in the OSV. The species was found to be sparse in the forest at the inlet, densely abundant at the Oceanside Campground, and present sparsely on just (2) OSV dune crossings: 1. the road to Valentine's and 2. Pine Tree Camp Road. The headquarters property has some dense patches in open sunlit areas of areas not mowed.

Areas Currently Infested at ASIS: This species is ubiquitous throughout the Developed Area at ASIS particularly along roadsides where it exists in the mowed areas between the roadsides and shrubs. It does not appear to invade well into shaded areas or to become established in the shade; this species appears to prefer full sunlight.

[X] Headquarters (Mainland) [X] Island (North end) [X] Island (Developed Area) [X] Island (OSV)

Treatment History: [ ] Newly Encountered [X] Treated ≤ 5 Years [ ] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used: Rodeo (Glyphosate) 2% —>Foliar application

Notes: This species has now been encountered at Headquarters, in the OSV, and on the North end as of 2022. Treatments occurred here in 2022: 1.) Oceanside Campground 2.) Sinepuxent Vegetation buffer (Headquarters) 3.)The inlet forest. These areas were selected for treatment because they could control further spread. Areas treated in 2021 remained well under control when observed during the growing season in 2022. We are currently managing the spread by targeting places like roadbeds of the OSV before they flower and along roadsides in the developed area. In 2022 the SCA presented us with a monitoring opportunity to determine the effectiveness of SCA Native Plant CORPS treatment efforts and (3) 30m x 30m plots were installed and monitored at Oceanside Campground. These plots are located in the south end of camp between horse camp and loop 2. There are 2 control plots and 1 treatment plot. The treatment plot is the most southern plot and it was treated at the end of August, 2022. The plots were monitored initially in August pre treatment and again in November post treatment.

The Forest at the inlet and the Sinepuxent Vegetation buffer were treated in September of 2022.

***Arthraxon hispidus* (Small carpetgrass)**

Is prioritized for treatment at ASIS because:

-Its likelihood of becoming well established if left untreated is very high.

-Its abundance triggered a preliminary treatment in 2019 that was observed to be effective in 2020.

Successful treatments of this species occur when:

-It is treated before it flowers in September.

Difficulties with treating this species include:

-The species is very distributed in the developed area along roadsides and there are some locations which are in designated camping areas.

-Multiple applicators are needed to effectively treat this species.

Proposed actions for this species include but are not limited to:

-Annual treatments before the species flowers.

The desired future fate of this species' treatment outcome is:

-Achieving a manageable level of control.

If no action is taken the likely outcome for this species will be:

-Proliferation in the developed area with further intrusion into natural areas.

The proposed treatment of this species in 2023 includes:

-Late summer treatment of the affected roadsides in the front and backcountry. Monitoring of the SCA plots in July of 2023.

***Carex kobomugi* (Asiatic Sand Sedge)**

Is prioritized for treatment at ASIS because:

-It was once well established across the length of the island, but is now at manageable levels of control after repeat ed treatments spanning many years.

Successful treatments of this species occur when:

-Imazapyr-based herbicide is used rather than Glyphosate-based herbicide.

Difficulties with treating this species include:

-Locating the plants can be difficult without comprehensive surveys. When the Seabeach Amaranth census is conducted island wide the greatest assurance can be had in finding all occurrences, but this action may be beyond what is needed to survey for the Seabeach Amaranth.

Proposed actions for this species include but are not limited to:

-Continuing the Seabeach Amaranth surveys and also surveying for this target during those searches.

-Plover nest searches should also include this target.

The desired future fate of this species' treatment outcome is:

-Maintaining the species at the current manageable level of control.

If no action is taken the likely outcome for this species will be:

-Continued periodic recruitment from the populations on the coast to the north of ASIS and further expansion of as yet undiscovered infestations that may be on the island.

The proposed treatment of this species in 2023 includes:

-Continue to look for this target during Seabeach Amaranth searches and ask Plover technicians to record any occur rences that are discovered during searches.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Carex kobomugi* (Asiatic Sand Sedge)

2022 Activity

0.0099 Acres Treated

Image Credits: J. Chase (NPS)

Current Conditions:

Carex kobomugi (Asiatic Sand Sedge) was first encountered at ASIS in 1999 in numerous locations along the length of the island between the high tide line and the shrub zone on the MD portion of the island between and upon dunes. *C. kobomugi* has been treated at ASIS since the year 2000. Successive, annual treatments of the entire island's beaches since 2013 have significantly reduced the occurrence of this species in Maryland. This sedge species is currently present in large colonies on the Chincoteague National Wildlife Refuge, in Virginia. Treatments continued in 2022 in Maryland.

Areas Currently Infested at ASIS:

[X] Island (North end)

[X] Island (Developed Area)

[X] Island (OSV)

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used: Polaris (Imazapyr) 2% —>Foliar application

Notes:

Asiatic sand sedge, an invasive plant from Asia, was introduced into the United States for its sand-building capabilities. ASIS Ecologist Chris Lea discovered it for the first time on Assateague Island National Seashore in 1999 at multiple locations on the island. This clonal plant forms dunes in the foredunes, in a niche naturally filled by native Beach Grass (*Ammophila breviligulata*). A specimen of this species is vouchered in the ASIS Herbarium. Treatments for this species have been conducted In 2006, 2008, 2009, 2010, and 2013 through 2022. Since 2015, ASIS has used Imazapyr instead of Glyphosate herbicide and had better results with regards to efficacy. Retreatments are not needed with the use of this herbicide. The frequent treatment of this species on an island-wide scale has helped to make it difficult to detect now, whereas it was once evenly distributed across the length of the island. The annual census for the federally-listed Threatened plant Seabeach Amaranth has been an integral link to the success with the management of this species because *C. kobomugi* plants are discovered during these searches the timing of which, in August, is both amiable to the discovery and treatment of this species. In 2022, infestations (mostly very small colonies, smaller than those pictured above) were discovered during Seabeach Amaranth searches. These occurrences were treated in August after the completion of the census.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Centaurea maculosa* (Spotted Knapweed)

2022 Activity

0.0321 Acres Treated

Image Credits: J. Chase (NPS)

Current Conditions:

First encountered at ASIS by Steven Hill in 1984, but described as "Rare, seen only along MD bridge causeway, apparently recently introduced", this species would not be reported again until the summer of 2021 when our Vegetation Management Team was surveying invasive plant species in the Oceanside Campground. At the same time it was also rediscovered and reported by a visitor through the iNaturalist ASIS invasive plant watch page (Assateague Invasive Plant Watch · iNaturalist); this is a terribly invasive plant that received early detection and rapid response actions again in 2022.The known extent of the infestations at ASIS are restricted to the North Beach parking lot and south to the Group camping parking lot and the shrub zone between these two locations.

Treatment History: [X] Newly Encountered [X] Treated ≤ 5 Years [ ] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Polaris (Imazapyr) 2% —>Foliar application

Notes:

This species is believed to have been present at the North Beach parking lot less than 3 years based on the size of the rosettes that were discovered. The seeds of every plant were removed and disposed of to the extent possible in late October 2021 and an exhaustive search was made to locate and treat with herbicide, every plant that could be found until the extent of the infestation was determined, which closely surrounded the North Beach Parking lot. The greatest concentration of rosettes was found at the southwest entrance to the parking lot from Bayberry Drive and it is here that the infestation is thought to have begun. In the images above L to R Kate holds a removed seed head, a basal rosette is in the center image and on the right a mature fruiting plant lies in the center of the image indicating the copious amounts of seed this species can produce. The plants are poisonous and must be handled carefully with protective gloves. Treatments occurred in June and October of 2022 at North Beach and the Group Camp parking lot. Every plant was located and treated to the greatest extent possible.

***Centaurea maculosa* (Spotted Knapweed)**

Is prioritized for treatment at ASIS because

-Its likelihood of becoming well established if left untreated is very high, as has been observed in established popular tions at the park, particularly at the North Beach on the island.

Successful treatments of this species occur when

-The plants are treated prior to flowering or fruiting with Triclopyr herbicides (if they grow in grasses because Triclopyr will not harm the grasses and the competition from the grasses can be helpful) and if the plants have seed ed all seeds should be removed and bagged up/ taken off the island.

Difficulties with treating this species include

-Finding them if they are in dense vegetation, they have a long taproot that can be difficult to pull out completely. The plant is poisonous and should not be touched without gloves.

Proposed actions for this species include but are not limited to

-Seeking full eradication, as this is a highly noxious invasive plant. Continuous treatments until it is eliminated.

The desired future fate of this species' treatment outcome is

-Eradication

If no action is taken the likely outcome for this species will be

-Proliferation in the developed area and then it will move into the OSV.

The proposed treatment of this species in 2023 includes

-Spot treatments at the North Beach Parking lot and Group Camp Parking lot.

***Cirsium arvense* (Canada thistle)**

Is prioritized for treatment at ASIS because:

-Its likelihood of becoming well established if left untreated is very high, as has been observed in established populat tions at the park, particularly at the park Headquarters property.

Successful treatments of this species occur when:

-The treatments are made when little or no dew is present on the leaves and before the plant is in flower.

Difficulties with treating this species include:

-Morning dew, an abundant seed bank, an abundance of untreated plants on neighboring properties.

Proposed actions for this species include but are not limited to:

-Early and late season treatments before the plants flower in all areas of previous treatment.

The desired future fate of this species' treatment outcome is:

-Maintaining a manageable level of control.

If no action is taken the likely outcome for this species will be:

-Proliferation and great difficulty in reaching a manageable level of control without multiple years of carefully timed treatments.

The proposed treatment of this species in 2023 includes:

-Continued treatments of those areas which have had treatments last year.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Cirsium arvense* (Canada thistle)

2022 Activity

0.1475 Acres Treated

Image Credit: Al Schneider, hosted by the USDA-NRCS PLANTS Database

Image Credit: J. Chase (NPS)

Current Conditions:

Cirsium arvense (Canada thistle) was first encountered and subsequently treated in 2009 at the ASIS Headquarters and Developed Area in Maryland. This herbaceous species is restricted to Park Headquarters and the Developed Area in MD.

Specific Infestation location(s): The vegetated buffers surrounding the Headquarters property, within landscaping beds that surround the Maryland Visitor Center, the Boneyard. Treated last year but inactive in 2021 were the sites at Bayside drive along the roadside on the North side of the road and on the north side of the hunt shack at the Ranger Contact station.

Areas Currently Infested at ASIS: [X] Headquarters (Mainland) [X] Island (Developed Area)

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Polaris (Imazapyr) 2% —>Foliar application

Notes: This nefarious invader had become established in areas of the Maryland Headquarters starting in 2009 when various disturbances related to landscape buffer construction and large quantities of abandoned vehicles altered mowing practices in the southern portion of this property. Judicious herbicide treatments have helped to reduce, but not eliminate, the prevalence of this species since 2009.

2022 treatments occurred in September and October in the vegetated buffers on the Headquarters property and along the southern boundary of the property across its entire length. The Boneyard on the island was also treated as well as the clearing at the north end inlet just north of the inlet Forest.

Seed removal was conducted whenever large involucres were encountered (see image on right above). This action, while tedious, further helps to ensure that seed dispersal is kept to a minimum. A single *C. arvense* plant can produce between 1,500 to 5,300 seeds which we seek to prevent by these actions. (https://www.invasive.org/weedcd/pdfs/northeast/CANADATHISTLE.pdf)

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Cirsium vulgare* (Bull thistle)

2022 Activity

0.0279 Acres Treated

Image Credit: Donald Hobern NC State, Creative Commons 2.0

Image Credit: J. Chase (NPS)

Current Conditions: *Cirsium vulgare* (Bull thistle) was encountered at the Assateague State Park in 1984 by botanist Steven Hill at which time its abundance was described as infrequent to rare. Preliminary treatments of this species began at ASIS in June, July and November of 2020. Treatments continued in 2022 and additional new plants were discovered.

Specific Infestation Location(s): The known infestations of this species are currently restricted to these locations at ASIS, they are: 1.) The Headquarters property directly around the Maryland Visitor center and 2.) Bayside drive on the island 100 meters east of the exit from loop C on the north side of the roadway, 3.) behind the canoe rental at the end of Bayside Drive, 4.) the boneyard and 5.) the dune that faces the inlet on the North end and south of her in the clearing north of the inlet Forest on its eastern edge.

Areas Currently Infested at ASIS:

[X] Headquarters (Mainland) [X] Island (North end) [X] Island (Developed Area) [X] Island (OSV)

Treatment History: [ ] Newly Encountered [X] Treated ≤ 5 Years [ ] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used: Rodeo (Glyphosate) 2% —>Foliar application

Notes:

Life cycle: Biennial. Basal rosette forms the first year. Bolts, flowers, and dies in the second year.

Weedy characteristics: Bull thistle is highly competitive and aggressive, and forms dense colonies that choke out native vegetation important to wildlife and pollinators. Seeds germinate rapidly and are spread by wind. An individual plant can produce up to 100,000 seeds.

Control strategies: Eradicate them in rosette stage in the first year whenever possible. In the second year, do not let them go to flower or seed. To prevent resprouting, cut taproot about 2 to 3 inches below soil surface, while disturbing soil as little as possible. Bag all buds, flowers or seeds. Always use gloves. Repeatedly monitor previous infestations for new growth. Plant desirable native species to outcompete invasive plants. Chemical control can be effective on rosettes.

The sites which were treated in 2022 will be revisited in 2023 to look for recruitment, which will be treated.

***Cirsium vulgaris* (Bull Thistle)**

Is prioritized for treatment at ASIS because:

-This species is highly invasive and has only just begun to be detectible in our developed areas of the park.

Successful treatments of this species occur when:

-The treatments are made when little or no dew is present on the leaves and before the plant is in flower.

Difficulties with treating this species include:

-Morning dew dilutes the treatment, thorny protuberances make wearing gloves a necessity if removing seeds.

Proposed actions for this species include but are not limited to:

-Early and late season treatments before the plants flower in all areas of previous treatment.

The desired future fate of this species' treatment outcome is:

-Eradication since it has only been encountered in small numbers to date.

If no action is taken the likely outcome for this species will be:

-Potential proliferation and great difficulty in reaching a manageable level of control without multiple years of care fully timed treatments.

The proposed treatment of this species in 2023 includes:

-Continued treatments of those areas which have had treatments last year. Consider treating any occurrence found i n the State Park.

***Clematis terniflora* (Virginsbower)**

Is prioritized for treatment at ASIS because:

-On the mainland where it is presumed to have originated from across the Bay at South Point it forms massive colo nies over other vegetation, climbing trees and forming large mats over all it encroaches upon.

-It is very difficult to control and has not been contained yet after 17 years of various treatments, due to its ability to hide in shrubby vines that occur in its current infestation site.

Successful treatments of this species occur when:

-Repeated annual treatments are made both in the early and late growing season when it is starting to flower and is most easily identifiable.

Difficulties with treating this species include:

-The species' ability to hide in shrubby vines that occur in its current infestation site.

-A robust seed bank that continues to recruit new offspring annually.

Proposed actions for this species include but are not limited to:

-Maintaining access trails that facilitate access to the infested area.

The desired future fate of this species' treatment outcome is:

-A manageable level of control.

If no action is taken the likely outcome for this species will be:

-Proliferation across Bayside Campground and an expansion into other areas adjacent to the peninsula.

The proposed treatment of this species in 2023 includes:

-Maintaining the access trails established at the site and treating the site at least once in 2023.

-Cutting any remaining vines which climb into large eastern red cedar trees at the infestation site.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Clematis terniflora* (Virginsbower)

2022 Activity

0.1404 Acres Treated

Image Credit: J. Chase (NPS)

Red triangle indicates primary infestation location

Current Conditions: *Clematis terniflora* (Virginsbower) was first encountered at ASIS in 1998. Later, when treatments seemed feasible, they were begun in 2004. This species is currently restricted to (4) locations in the ASIS Developed Area.

Specific Infestation location(s): 1.) Behind the canoe rental at the western end of the Bayside peninsula (see red triangle area in map above). 2.) directly East of the intersection of Bayside campground loop C exit on the North side of the Bayside Drive 3.) a newly discovered patch at the end of Oceanside Drive on the east side by the last dumpster 4.) the causeway to the island in Maryland (on State Park lands), and 5.) the Sinepuxent Vegetation Buffer.

Areas currently infested at ASIS: [X] Island (Developed Area) [X] ASIS Headquarters

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2% —>Foliar application

Notes:

The continuing reoccurrence of *C. terniflora* at the Bayside Peninsula is the result of an abundant seed bank established by the original infestation over many years. This species has been present at the site since the current biological science technician (plants) began working at ASIS in 2003. The treatments conducted in 2021 were characterized as much reduced in comparison to the previous years' treatments and the same was true in 2022 but we targeted the small ground plants and still had to make pathways open. New infestations were discovered in 2021 creeping to the east out of the Bayside peninsula loop C into loop B along the Bayside drive buffer that must continue to be treated and monitored in 2023.

The new infestation that was discovered at the end of end of Oceanside Drive on the east side by the last dumpster which received treatment in 2020 and was again not active at any time during the growing season of 2022. All other sites were active.

To be able to access the site behind the canoe rental it has been necessary to create and maintain a series of pathways through the thorny vines that cover the site again in 2023. This has been achieved by using a Stihl brand weed wacker with a hedge trimmer attachment. Further treatments in 2023 will help contain the spread of this vine.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Elaeagnus umbellata* (Autumn Olive)

2022 Activity

0.0128 Acres Treated

Image Credit: Bill Johnson (NPS)

Current Conditions:

First encountered at ASIS in 2005 and later treated that same year, *Elaeagnus umbellatta (*Autumn Olive), a tree species, is restricted to the ASIS Headquarters property and the Developed Area of the island. Just (2) trees were known to exist on ASIS property in 2021 and they have been treated. One tree was located in the southeast corner of the Headquarters property and another was located across the road from the dump station at loop C in the Bayside Campground. Three additional saplings were discovered and treated at Bayside loop C and a single tree was found and treated at the SInepuxent Vegetation Buffer in 2022. This species is under control and absent but for a few regular reintroductions.

Specific Infestation Location(s): This species emerges in the vegetated buffers surrounding the Headquarters property where birds presumably vector the seeds via their droppings. On the island, a long established grove of trees exists West of the Nature Center in the Assateague State Park. Also, the Bayside campground peninsula has upon occasion, been hospitable to new seedlings becoming established there.

Areas currently infested at ASIS: [X] Headquarters (Mainland) [X] Island (Developed Area)

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2% —>Foliar application

Notes:

Because a great number of *E. umbellata* trees have been found bordering the Headquarters land in the past, as well as the species being well established throughout South Point, it is believed that this *E. umbellata* will remain on our watch list for many years to come. Very large trees bordering the road to the Ratcliff house were treated in June of 2019 with a basal bark application to reduce recruitment onto Park lands. These treatments were seen to be effective again in 2023 when they were observed during the summer. Foliar treatments are less desirable and cut stump or hack and squirt treatments are preferred for larger trees.

***Elaeagnus umbellata* (Autumn Olive)**

Is prioritized for treatment at ASIS because:

-This species is a highly invasive plant that has demonstrated its success locally at becoming well established in various plant communities and at ASIS.

Successful treatments of this species occur when:

-In the case with large trees; they are treated with basal bark or hack and squirt treatments and the areas beneath them are revisited to look for recruitment a year later.

-In the case with saplings, a cut stump or foliar application is effective though cut stump is always better because of less off target spraying that can occur with foliar spraying. Seedlings receive foliar treatments.

Difficulties with treating this species include:

-Locating them when they are small, as they are indetectable in dense vegetation.

Proposed actions for this species include but are not limited to:

-Continued treatments when trees or saplings are located.

The desired future fate of this species' treatment outcome is:

-Near eradication with only occasional new recruitment.

If no action is taken the likely outcome for this species will be:

-It will continue to be introduced at the current rate which is very slow, as there is an abundance of these trees across the bay on the mainland.

The proposed treatment of this species in 2023 includes:

-Monitor recently treated sites and look for new recruits in these previously infested areas.

***Eleusine indica* (Wiregrass)**

Is prioritized for treatment at ASIS because:

-The species breaks down paved surfaces in the developed area.

Successful treatments of this species occur when:

-The species is treated with foliar applications, as it is susceptible to herbicide treatments and is easily controlled.

Difficulties with treating this species include:

-Having enough assistance to treat the many pavement cracks, when other priorities exist in natural areas.

Proposed actions for this species include but are not limited to:

-Periodic treatments of the pavement, when large numbers of the plants appear to be present.

The desired future fate of this species' treatment outcome is:

-Under review.

If no action is taken the likely outcome for this species will be:

-Continued proliferation in the developed area.

The proposed treatment of this species in 2023 includes:

-Treating the bike path from the Fee booths to the OSV entrance.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Eleusine indica* (Wiregrass)

2022 Activity

0.1853 Acres Treated

Image Credit: Robin R. Buckallew, hosted by the USDA-NRCS PLANTS Database

Current Conditions:

First encountered at ASIS in 2015 and later treated that same year, *Eleusine indica* (Wiregrass) is restricted to roadsides and bike paths throughout the park. In these locations where it roots through pavement edges breaking them down, periodic treatments are warranted to reduce ongoing degradation from these unwanted plants.

Specific Infestation Location(s):

Roadsides and bike paths throughout the park.

Areas Currently Infested at ASIS:

[X] Headquarters (Mainland)

[X] Island (Developed Area)

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Polaris (Imazapyr) 2% —>Foliar application

Notes:

The bike trails and roadways are frequently encroached upon by *E. indica*, which causes the pavement to crumble as the plants make their way through it. Treatments were conducted during June at the CNWR Crabbing Decks, the bike path in MD from the HQ to the Fee booths was treated in July of 2022.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Eragrostis curvula* (Lovegrass)

2022 Activity

0.0007 Acres Treated

Image Credit: J. Chase (NPS)

Current Conditions:

First Encountered at ASIS in 1971 by botanist Helen Higgins and reported by her as *Eragrostis sp.* (Higgins #43).14339. MD, *Eragrostis curvula* (Lovegrass) has been treated at ASIS since 2005. This grass species is restricted to the Developed Area at ASIS where it has bordered roadways for decades. The Assateague State Park roadsides present a stark contrast by comparison to ASIS roadways, as they have not treated this species and have very large tussocks of the grasses bordering their roads as ASIS once did.

Specific Infestation Location(s):

The footprint of loop A, the original camping sites of the Bayside Campground, later reclaimed and used for park Maintenance in what is now called "the Boneyard". Nearly all of the roadsides in the Developed Area are susceptible to invasion from this species., especially those with slightly elevated and dry, sandy disturbed soils.

Areas Currently Infested at ASIS:

[X] Island (Developed Area)

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Polaris (Imazapyr) 2% —>Foliar application

Notes:

E. curvula infestations have been treated in the Developed Area (which it has remained confined to) at ASIS since 2005 and the repeated treatments have successfully kept this species under control at manageable levels. Treatments continued in June and October of 2022 at the Bone Yard loop, the Ranger Contact Station islands, and the Life of the Marsh Parking lot. Very few plants were located then, indicating continued success of our continued control efforts.

***Eragrostis curvula* (Lovegrass)**

Is prioritized for treatment at ASIS because:

-Treatments to date have been very successful and a transformation has been made in areas previously heavily in fested whereby native plants have retaken the dominant role.

Successful treatments of this species occur when:

-Large tussocks are cut to ground level and the regrowth (at 15cm height) is treated with Imazapyr-based herbi cides.

-Recurring annual treatments with Imazapyr-based herbicides are conducted.

Difficulties with treating this species include:

-Initial investment of time and labor.

Proposed actions for this species include but are not limited to:

-Continuing the treatments annually or every other year.

-Treating the populations throughout the Assateague State Park to gain island wide control.

The desired future fate of this species' treatment outcome is:

-Near eradication with treatments now greatly reduced in scope.

If no action is taken the likely outcome for this species will be:

-A slow return of the species in its previous areas of infestation, as the abundant populations of the Assateague State Park will continue to be spread into ASIS lands.

The proposed treatment of this species in 2023 includes:

-A late season treatment while targeting other species (*Lezpedeza cuneata, Cirsium spp.*) that are in the same treat ment zones (roadsides).

***Glechoma hederacea* (Creeping Charlie)**

Is prioritized for treatment at ASIS because:

-It has demonstrated its invasive potential to form large mats and shade out competing natives in the vegetated buffer at the center of the southern border of the park Headquarters.

Successful treatments of this species occur when:

-Foliar applications of Glyphosate-based herbicides are used preferentially to Triclopyr-based herbicides under cano- py which can damage the canopy above, if conditions are not breezy and temperatures are high.

Difficulties with treating this species include:

-None are known.

Proposed actions for this species include but are not limited to:

-Continued treatments of infested areas in the vegetated buffer at the center of the southern border of the park Headquarters.

The desired future fate of this species' treatment outcome is:

-To have sufficient native cover that will prevent its recruitment and success in the areas it is currently receiving trea- tments.

If no action is taken the likely outcome for this species will be:

-Unchecked recruitment and spread.

The proposed treatment of this species in 2023 includes:

-Continuing the treatments at the southern border of the park Headquarters and in the UMES vegetation buffer, the lawn and picnic area by the visitor center and the landscaping beds there.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Glechoma hederacea* (Creeping Charlie)

2022 Activity

0.1384 Acres Treated

Image Credit: Lawrence S. Gilliam, hosted by the USDA-NRCS PLANTS Database

Current Conditions:

Glechoma hederacea (Creeping Charlie) was first encountered at ASIS in 1984 by botanist Steven Hill at Valentine Cabin at Scotts Point on the island, but can no longer be found there. Discovered on the mainland in 2018 along the southern border of the Headquarters property in the shade of vegetated buffers, ASIS has treated this herbaceous species since that time.

Specific Infestation Location(s):

UMES Vegetation Buffer

Areas Currently Infested at ASIS:

[X] Headquarters (Mainland)

Treatment History: [] Newly Encountered [X] Treated ≤ 5 Years [ ] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Garlon 4 Ultra (Triclopyr) 3% —>Foliar application

Notes:

The use of broad leaf herbicides like Triclopyr may be advantageous to non-selective herbicides like Glyphosate in places where grasses are present, because the grasses can be spared with a broadleaf herbicide like Triclopyr and the cover can be more readily replaced by the grasses, post treatment. Increasing ambient air temperatures may result in an increase in the volatility potential for the ester formulations of triclopyr herbicide like Garlon 4 Ultra, so care must be taken in the use of this product under trees. The Headquarters infestations were treated in June and October of 2022.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Hedera helix* (English Ivy)

2022 Activity

Eradicated

Image Credit: Robin R. Buckallew, hosted by the USDA-NRCS PLANTS Database

Current Conditions:

Hedera helix (English Ivy) was first encountered at ASIS in 2006 behind the Clements inholding. Treatments there in 2006 and 2016 eradicated the species. On the mainland, in park housing, a small patch of this vine has been discovered and managed since 2018 where the vine species was last restricted to.

Specific Infestation Location(s):

Behind Bayberry North house in the vegetated buffer.

Areas Currently Infested at ASIS:

[X] Headquarters (Mainland)

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [ ] Treated ≥ 5 Years [X] Eradicated

Herbicide(s) Used:

No herbicides used in 2022

Notes:

Monitoring of the previously infested areas at Clements inholding and behind Bayberry North house in 2022, did not discover any activity of this species in either area. It is now thought to have been eradicated at ASIS at this time.

***Hedera helix* (English Ivy)**

Is prioritized for treatment at ASIS because:

-It is a highly invasive plant that can damage trees by enveloping them adding surface area that can topple them in high winds. In vegetated buffers we are trying to promote tree growth and the presence of this plant would be counterproductive to our management of the buffers.

Successful treatments of this species occur when:

-They are begun early after the discovery of the target, especially if the infestation is small. This has been the case at ASIS where just 2 small infestations have been discovered since 2004 and treated with EDRR.

Difficulties with treating this species include:

-If the plants are enveloping tree trunks they can be difficult to treat without damaging the tree itself, especially if hack and squirt techniques are employed, or basal bark treatments. Foliar treatments are hard to deliver when the vines reach up into the canopy.

Proposed actions for this species include but are not limited to:

-Monitoring the (2) small areas that were once infested to look for recruitment and if found, rapid response treat ments should follow.

The desired future fate of this species' treatment outcome is:

-This species is thought to be eradicated from ASIS land at this time.

If no action is taken the likely outcome for this species will be:

-Possible reintroduction by birds into the vegetated buffers at the park Headquarters.

The proposed treatment of this species in 2023 includes:

-Keeping an eye out for any new infestations at Park Headquarters.

***Lagerstroemia indica* (Crepe Myrtle)**

Is prioritized for treatment at ASIS because:

-A single tree was found on the North end and treated and this species is abundant locally as a landscape plant which has the proven potential to be vectored to the island.

Successful treatments of this species occur when:

-Cut stump treatments with high concentrations (25%-50%) Imazapyr or Triclopyr-based herbicide are employed.

Difficulties with treating this species include:

-None are known.

Proposed actions for this species include but are not limited to:

-Monitoring the site where a single tree was treated and look out for new recruitment when working on park lands.

The desired future fate of this species' treatment outcome is:

-Eradication.

If no action is taken the likely outcome for this species will be:

-The tree that has been treated appears to have been successfully controlled, so new introductions are the only con cern at this time.

The proposed treatment of this species in 2023 includes:

-Monitoring of the site in 2022 indicated that the previous infestation treated in 2018 the site where the single tree was controlled had produced offspring. This single recruit was treated in 2022. This site near the inlet on the North end will be monitored determined to be eradicated after 3 years of absence.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Lagerstroemia indica* (Crepe Myrtle)

2022 Activity

0.0049 Acres Treated

Image Credit: Robin R. Buckallew, hosted by the USDA-NRCS PLANTS Database

Map: Inlet area of infestation is indicated by the red square above.

Current Conditions:

Lagerstroemia spp. (Crepe Myrtle) was first encountered at ASIS in 2018 and treated that same year. This tree species is restricted to this single occurrence, which when monitored in 2021 had appeared to have been successfully treated.

Specific Infestation Location(s):

In an open meadow that lies just 100 meters south of the dune that faces the Ocean City inlet.

Areas Currently Infested at ASIS:

[X] Island (North end)

Treatment History: [ ] Newly Encountered [X] Treated ≤ 5 Years [ ] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2% —>Foliar application

Notes:

A cut stump treatment using a 50% solution of Polaris (Imazapyr) herbicide in 2018, was observed to have been effective while monitoring the site in 2020 and again in 2021, but in 2022 a single new tree was discovered and treated in July of 2022. As this species was seen in 2022, it is no longer considered to have been eradicated from the island and monitoring at the site must continue for the next 3 years.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Juniperus procumbens* (Dwarf Juniper)

2022 Activity

Monitoring Only

Image Credit: J. Chase (NPS)

Current Conditions:

Dwarf Juniper was first encountered at ASIS in 2018 and was treated soon after its discovery that same year. This prostrate tree species was restricted to one single infestation site behind Clements inholding, treated in 2021.

Specific Infestation Location(s):

One single infestation site behind Clements inholding at the State Line

Areas currently infested at ASIS:

[X] Island (OSV)

Treatment History: [X] Newly Encountered [X] Treated ≤ 5 Years [ ] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

No herbicides used in 2022

Notes:

A single Dwarf Juniper shrub was discovered behind the Clement's inholding in October of 2018 when investigations of recruitment of *P. nigra* and *R. multiflora* in the same area turned up this single individual, which was promptly treated along with the other targets that were discovered there. This single plant is thought to be a remnant of the landscaping that once surrounded the house. The site was monitored for activity of *Pinus nigra* and *Rosa multiflora* during the growing season in 2022 at which time the status of the Dwarf Juniper was determined to be inactive. We chose to cut the stump and use a cut stump point source treatment with a concentrate of Imazapyr herbicide in 2022, which appears to have been effective. We will monitor for regeneration in 2023.

***Juniperus procumbens* (Dwarf Juniper)**

Is prioritized for treatment at ASIS because:

-It was a non-native landscaping addition to the Clements inholding.

Successful treatments of this species occur when:

-Unknown, as the treatment success has not been determined in 2022

Difficulties with treating this species include:

-Unknown

Proposed actions for this species include but are not limited to:

-Monitor the efficacy of the last treatment of the single occurrence.

The desired future fate of this species' treatment outcome is:

-Eradication.

If no action is taken the likely outcome for this species will be:

-It did not appear to be invasive at the time of its discovery, as it had not recruited new individuals.

The proposed treatment of this species in 2023 includes:

-Monitoring the treatment efficacy of the 2021 treatment.

***Lezpedeza cuneata* (Chinese Lezpedeza)**

Is prioritized for treatment at ASIS because:

-This species has been observed to be highly invasive at ASIS and can form dense shrubs that cover and crowd out native vegetation in shrub habitats. It is a prolific seed producer, which can make it difficult to control quickly once a seed bank is established.

Successful treatments of this species occur when:

-Foliar treatments with Imazapyr or Glyphosate (2%), or Triclopyr based herbicides (3%) are employed and repeated treatments occur in infestation sites until they are brought under control, or early treatments catch the small plants before they become well established as shrubs.

Difficulties with treating this species include:

-The plants can be difficult to see when they are not well-established and can evade detection and thorough treat ment when they are in the early stages of their establishment.

Proposed actions for this species include but are not limited to:

-Continuing to target the species for treatment wherever it occurs on ASIS.

The desired future fate of this species' treatment outcome is:

-Maintaining a manageable level of control.

If no action is taken the likely outcome for this species will be:

-Continued introductions from adjacent communities.

The proposed treatment of this species in 2023 includes:

-Continued targeting of the recruitment of seedlings in areas we have previously treated on the roadsides of the developed are on the island and in the vegetated buffers on the mainland at park Headquarters.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Lezpedeza cuneata* (Chinese Lezpedeza)

2022 Activity

0.0012 Acres Treated

Image Credit: James H. Miller, hosted by the USDA-NRCS PLANTS Database / James H. Miller and Karl V. Miller. 2005. *Forest plants of the southeast and their wildlife uses.* University of Georgia Press., Athens.

Current Conditions:

Lespedeza cuneata (Chinese Lezpedeza) was first encountered at ASIS along roadsides, at the Assateague State Park, and at Great Egging Island in 1984 by botanist Steven Hill who recorded that it had "probably been recently introduced". This shrub species has been treated at ASIS Headquarters since 2009 and at the ASIS Developed Area since 2016. Consecutive annual treatments of both affected areas since 2016 have brought this species to manageable levels park-wide. It is currently restricted to roadways in the Developed Area of Maryland, at Bayside Campground West of the Boneyard (where it was seen to be increasing in 2021), and the unshaded areas of the vegetated buffer behind the Maryland Visitor Center.

Specific Infestation Location(s):

In areas of open sunlight directly adjacent to roadways along Bayberry Drive and Bayside Drive and in open areas West of the Boneyard in the footprint of the original Loop A of the Bayside Campground. The vegetated buffer behind the Maryland Visitor Center has small quantities of this species.

Areas Currently Infested at ASIS:

[X] Headquarters (Mainland)

[X] Island (Developed Area)

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Polaris (Imazapyr) 2% —>Foliar application

Notes:

In 2022, very few plants were detected when treatments occurred in June and July, indicating that we have brought this species nearer to manageable levels of control. These few plants were treated at the Life of the Marsh Parking lot and the Group Camp Parking lot.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Ligustrum vulgare* (Privet Bush)

2022 Activity

0.0002 Acres Treated

Image Credit: Richard A. Howard, hosted by the USDA-NRCS PLANTS Database

Current Conditions:

Ligustrum vulgare (Privet Bush) was first encountered at ASIS in 1984 by botanist Steven Hill at Great Egging island, but was described as rare elsewhere. ASIS began treating this shrub species in 2009 when a small grove of shrubs were discovered in the vegetated buffer behind the Maryland Visitor Center. This treatment was later deemed a success and no shrubs were seen on ASIS property until 2019, when a small sapling was found and treated at the only known active site that this species is currently restricted to, the ASIS housing vegetation buffer. In 2022 a small infestation of shrubs was discovered and treated next to the Pole Barn within sight and northwest of the visitor center.

Specific Infestation Location(s):

ASIS Headquarters Vegetation Buffers

Areas Currently Infested at ASIS: [X] Headquarters (Mainland)

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2% —>Foliar application

Notes:

While *L. vulgare* is locally abundant, it has not been a great threat to the National Seashore, perhaps due to intolerance for salt and saturated soils. Treatments with Triclopyr herbicides have been effective for the control of this species at ASIS. Few plants were discovered in 2022. All previous treatments were seen to be effective when observed in 2022.

***Ligustrum vulgare* (Privet Bush)**

Is prioritized for treatment at ASIS because:

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Successful treatments of this species occur when:

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cides.

Difficulties with treating this species include:

-There have been no difficulties in treating this species to date, as they have been slow to become established and are easy to identify in the landscape.

Proposed actions for this species include but are not limited to:

-We will continue to watch out for this target and treat any new occurrences that are found, soon after their dis covery.

The desired future fate of this species' treatment outcome is:

-Maintaining the current level of manageable control.

If no action is taken the likely outcome for this species will be:

-Small scale introductions, presumably from birds, that frequent the vegetated buffers of the park Headquarters.

The proposed treatment of this species in 2023 includes:

-We will continue to watch out for this target (particularly in the Sinepuxent vegetation buffer at Headquarters) and treat any new occurrences that are discovered, soon after discovery.

***Lonicera japonica* (Honeysuckle)**

Is prioritized for treatment at ASIS because:

-This species has been observed to be highly invasive at ASIS and can form dense cover that crowds can climb high into shrubs and trees adding surface area that can topple the host in high wind events that are common at ASIS. Its seeds are highly attractive to birds that vector the seeds efficiently.

Successful treatments of this species occur when:

-Treatments in areas of high infestation with large amounts of plant material climbing upon host vegetation can start with the cutting and treatment (cut stem) of large vines. Subsequent repeated treatments of low to the ground material can slowly reduce the reproductive potential of seed banks that will be present beneath the previ ously well-

Difficulties with treating this species include:

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Proposed actions for this species include but are not limited to:

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The desired future fate of this species' treatment outcome is:

-

If no action is taken the likely outcome for this species will be:

- -

The proposed treatment of this species in 2023 includes:

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***Mentha suaveolens* (Wooly Mint)**

Is prioritized for treatment at ASIS because:

-It has been very persistent at the site of its discovery behind (North of) Greenbriar house in park housing, indication a productive seed bank.

Successful treatments of this species occur when:

-The treatments have a culminative effect when they are repeated annually and we are very near to eradication, it would seem, as productivity has been steadily trending downward at the site.

Difficulties with treating this species include:

-No difficulties have been experienced other that a productive seed bank.

Proposed actions for this species include but are not limited to:

-Annual treatments of new recruits at the site.

The desired future fate of this species' treatment outcome is:

-Eradication

If no action is taken the likely outcome for this species will be:

-Continued recruitment.

The proposed treatment of this species in 2023 includes:

-We will monitor the site for activity again in 2023.

***Microstegium viminium* (Stiltgrass)**

Is prioritized for treatment at ASIS because:

-It is an extremely invasive plant that, if not controlled, most certainly will displace native vegetation at ASIS, as has been witnessed on the park Headquarters property.

Successful treatments of this species occur when:

-Repeated treatments in the late summer before the species flower allow for the greatest ability for detection and treatment success.

Difficulties with treating this species include:

-Constant reintroduction from untreated populations on neighboring properties present an ongoing challenge in gaining long-term control of this species.

Proposed actions for this species include but are not limited to:

-Monitoring previously treated areas (particularly on the island) to ensure that any recruitment is treated and that the treatments occur before the species is able to flower.

The desired future fate of this species' treatment outcome is:

-Maintaining the level of control needed at manageable levels.

If no action is taken the likely outcome for this species will be:

-Continued proliferation and recruitment in all areas it has infested or will infest.

The proposed treatment of this species in 2023 includes:

-Continued monitoring of the controlled infestations on the island at the Ferry Landing road and treatments of re-curring infestations in the vegetated buffers at the park Headquarters property.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Microstegium viminium* (Stiltgrass)

2022 Activity

0.4201 Acres Treated

Image Credit: Ted Bodner, hosted by the USDA-NRCS PLANTS Database / James H. Miller and Karl V. Miller. 2005. *Forest plants of the southeast and their wildlife uses.* University of Georgia Press., Athens.

Current Conditions:

Microstegium viminium (Stiltgrass) was first encountered at ASIS in 2014 by seasonal biological technician Kristina Fahey at the Headquarters property where it was seen encroaching from the South from land owned by the State of Maryland. Treatments of this grass began soon after discovery in 2014. In 2017 the grass was discovered at a well monitoring site on Ferry Landing Road by seasonal biological technician Merritt Kramer that was treated in that same year. The ASIS Headquarters property and Ferry Landing Road were found to be active and were treated in September and October of 2022.

Specific Infestation Location(s):

1.) Park Headquarters: The entire southern border of the property, the vegetation buffer on the East of the property from the Verrazzano bridge to the Paul Sarbanes Coastal Ecology Lab, the meadow that is in the center of park housing and on the island at 2.) Ferry Landing Road from the intersection at Bayberry Drive to the beginning of the salt marsh habitat before the parking lot at the end of the road with some incursion on the south side of the road across from the well site.

Areas Currently Infested at ASIS:

[X] Headquarters (Mainland) [X] Island (Developed Area)

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used: Rodeo (Glyphosate) 2% —>Foliar application

Notes: Consecutive annual treatments since 2017, at both active sites, have helped to keep these infestations at manageable levels. The untreated infestations that lie nearby, or upon the Headquarters southern borders will remain a threat to us for the foreseeable future. In 2022, activity was observed on the island at Ferry Landing Road and at park Headquarters there were active infestations that required treatments in July, September and November. At Headquarters the population is apparently reduced by previous treatments, in the vegetated buffers on our southern and eastern boundaries. No activity was seen on the island in 2022. Monitoring and treatment will continue in 2023.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Miscanthus sinensis* (Silvergrass)

2022 Activity

0.0272 Acres Treated

Image Credit: J. Chase (NPS)

Map: Inlet infestation area (within green perimeter line)

Current Conditions:

Miscanthus sinensis (Silvergrass) was first at ASIS recorded by botanist Steven Hill in 1984 ,"at S end of North Beach at roadside". Later encountered by biological technician Jonathan Chase in the forest at the inlet on the North End in 2004 and treated in that same year, it was initially a sizable (@ 1 acre) infestation that still remains active despite periodic treatments. The tall grass species is restricted to the North end population that appears to be expanding as new plants were discovered south of this population near Km 2. All known sites were treated in September and November of 2022.

Specific Infestation Location(s):

North end inlet Forest, Km 3 in the shrub zone

Areas Currently Infested at ASIS: [X] Island (North end) [X] Island (OSV)

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Polaris (Imazapyr) 2% —>Foliar application

Notes: An expansion at the North end inlet infestation to the south from the forest where the plants were first controlled, was discovered in Fall of 2019 while monitoring the site. The tall grasses had penetrated further into the Wax Myrtle shrubs there and had expanded closer to the wetland that lies to the West of the forest. This area was targeted for treatment in 2020. Because it has found a niche in the thick Wax Myrtle shrubs at this inlet site, it was necessary to cut extensive access trails in 2020 and these were cut again in 2022 for spot treatments. The areas were treated thoroughly in 2022 and very few plants were encountered indicating treatment efficacy for the previous years' treatments. The first and second treatments were very successful and very little remained to be treated in 2022. The new infestation discovered by J. Chase was treated soon after discovery in November 2022 and was an example of EDRR.

***Miscanthus sinensis* (Silvergrass)**

Is prioritized for treatment at ASIS because:

-This species has escaped neighboring ornamental plantings and became established at the forest on the North end of the island near the inlet. Treatments there have been successful, but the infestation had expanded from its origi nal site of detection moving southward into the dense thicket of Wax Myrtle shrubs in 2020 where it was extensivel y treated.

Successful treatments of this species occur when:

-Repeated annual treatments of new infestations ensure that new recruitment is kept in check. Once there is little recruitment observed, the interval of return can be expanded to every 3 years. Also, treating this species later in the growing season (early Fall) can ensure detectability. Glyphosate-based herbicides have been proven to be effective against this species with foliar application at (2%) concentration. Very large tussocks can benefit from Imazapyr-based herbicides if used as a follow-up treatment for those places that had reduced efficacy with Glyphosate.

Difficulties with treating this species include:

-It can become established in shrub thickets and access trails may have to be created to gain access.

Proposed actions for this species include but are not limited to:

-Revisiting the known infestations and treating/ retreating any new plant material that is encountered.

The desired future fate of this species' treatment outcome is:

-Eradication

If no action is taken the likely outcome for this species will be:

-Establishment of large patches over the period of many years.

The proposed treatment of this species in 2023 includes:

-Retreating any recruitment at the inlet forest site and Km 3 site; revisiting small infestation sites to treat any plants that may be encountered there.

Morus alba (White Paper Mulberry)

Is prioritized for treatment at ASIS because:

-It is constantly reintroduced in very small numbers from nearby communities and if allowed to become established, a single tree can spawn a very great number of offspring (ie one gram of seed can produce up to 130 seedlings).

Successful treatments of this species occur when:

-Cut stump or hack and squirt methods are used on larger trees with 20% to 50% solutions of herbicides such as glyphosate, triclopyr and imazapyr. Smaller seedlings can be treated with a foliar spray herbicide.

Difficulties with treating this species include:

-Accessing lower stumps for cutting can be a challenge, but the large and distinctly edged leaves make them easy to identify. There can be reoccurring recruitment beneath older trees in the years following treatment.

Proposed actions for this species include but are not limited to:

-We will continue to look for these while doing other assignments and when found, will record their locations and treat them individually.

The desired future fate of this species' treatment outcome is:

-To keep its status at a manageable level of control needs, with all new infestations being able to be treated annual ly.

If no action is taken the likely outcome for this species will be:

-Occasional introductions will result in a small number of trees becoming established. Once established they can produce many seeds in a short time and the invasion will likely significantly increase in a few years and follow the standard known as the invasion curve.

The proposed treatment of this species in 2023 includes:

-Monitor the large tree treated near the UMES building and treat any seedlings that are encountered.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Morus alba* White Paper Mulberry

2022 Activity

0.0074 Acres Treated

Image Credit: treeseedonline.com

Current Conditions:

First Encountered at ASIS by Steven Hill in 1984 and reported as being infrequent to rare, this species is well established in communities neighboring the National Seashore. Treated at ASIS since 2005 and restricted to the Headquarters property at this time, though it has been present and treated on the island in the past, *M. alba* is under control at ASIS.

Specific Infestation Location(s): ASIS Headquarters property

Areas Currently Infested at ASIS: The Sinepuxent Vegetation Buffer behind the Maryland Visitor Center.

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Polaris (Imazapyr) 25% —->girdle bark and spray cambium all around cut

Notes:

A small sapling was discovered in the buffer while conducting treatments of other species and it was treated with a foliar herbicide solution. This was an example of EDRR for this year. This tree could present great problems if any large trees were to become established on the island, or on the mainland. No such trees are known to exist at this time on ASIS property, but some large trees were discovered in previous years. By removing these seed sources, the threat has been reduced to easily manageable levels with only occasional introductions occurring at park Headquarters and on the Verrazano causeway.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: Nuisance Weeds

2022 Activity

2.6168 Acres Treated

Trifolium repens
(White clover)
Image Credit: Larry Allain, hosted by the USDA-NRCS PLANTS Database

Medicago lupulina (Black medick)
Image Credit: Jim Stasz, hosted by the USDA-NRCS PLANTS Database

Cynodon dactylon (Bermuda grass)
Image Credit: University of California

Current Conditions: Nearly 30% of all of the vascular plant species in the ASIS herbarium are not native to the island. Some of these species are invasive, while most present no problems at all for land managers. Some of these plant species become an unwanted nuisance in the wrong setting that earn them the title of "Nuisance Weeds". There are many species of Nuisance Weeds at ASIS and they interfere with building maintenance, vehicle storage areas and landscaping in mowed areas. Three prevalent examples of these species are represented above.

Specific Infestation Location(s):

The Virginia Maintenance Compound, the Maryland Boneyard, the vehicle storage area at park Headquarters, park Headquarters landscaping beds, parking lots, and road edges

Areas Currently Infested at ASIS:

[X] Headquarters (Mainland)

[X] Island (North end)

[X] Island (Developed Area)

[X] Island (OSV)

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Polaris (Imazapyr) 2% —>Foliar application

Notes: Nuisance weeds (like White clover) in the fenced area of the Virginia Maintenance Compound and poisonous plants (like Poison ivy) in the Boneyard in Maryland's Developed Area require periodic treatment to allow more efficient grounds maintenance, keep workers safe and to keep the areas controlled without using weedwackers that can throw stones into expensive vehicle windows. Controlling these plants where vehicles are stored also prevents the vectoring of weed seeds. A total of (16) treatments were conducted during June, August and September of 2022 throughout the park in both MD and VA. The Virginia Maintenance compound requires extensive treatments annually and measures to cover the area with geotextiles have been considered.

Nuisance Weeds

Are prioritized for treatment at ASIS because:

-Because some plants either native or non-native present problems for operations at our park, they may be un wanted and therefore be considered a "weed" irrespective of being a native. These weeds may require treatment to mitigate the problem they present that makes them unwanted.

Successful treatments of this species occur when:

-They achieve the desired effect of mitigating the problem they individually present. (ie. Treating weeds with herbi cide in an unpaved parking area may prevent stones from being thrown that could break windows if a weedwacker or lawn mower was to be used instead of an herbicide application.

Difficulties with treating these species include:

-The assumption that widespread use of herbicides is acceptable. That a manicured appearance is often considered a desirable appearance in a landscaped setting and finding a balance between involved parties on what is desirable can be challenging.

Proposed actions for these species include but are not limited to:

-Considering each potential treatment on a case by case basis.

The desired future fate of this species' treatment outcome is:

-To use the minimum amount of herbicide to reach the desired outcome.

If no action is taken the likely outcome for these species will be:

-The use of other tools to reach a similar goal.

The proposed treatment of this species in 2023 includes:

-Taking each request for treatments of nuisance weeds with herbicides on a case by case basis, and discussing the actions with Resource Management supervisors, prior to engaging in the mitigations.

***Paulownia tomentosa* (Princess tree)**

Is prioritized for treatment at ASIS because:

-This species has demonstrated its ability to become established at ASIS in just (2) locations and to be able to pro duce propagules effectively in those locations, but without recruitment. It has not proven to be highly invasive and we do not wish to allow it to become further established, knowing that it has shown potential regionally to be invasive.

Successful treatments of this species occur when:

-Cut stump treatments are employed with either Triclopyr or Imazapyr-based herbicides at high concentrations 20% to 50%.

Difficulties with treating this species include:

-No difficulties have been experienced to date.

Proposed actions for this species include but are not limited to:

-Recording any new occurrences of this species and monitoring the treated sites to ensure that they do not reoccur.

The desired future fate of this species' treatment outcome is:

-Eradication.

If no action is taken the likely outcome for this species will be:

-Unknown.

The proposed treatment of this species in 2023 includes:

-Monitoring the single site (near Hungerford's) that was treated in 2021 to observe if any further treatment is re quired.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Paulownia tomentosa* (Princess tree)

2022 Activity

0.0012 Acres

Image Credit: Jeff McMillian, hosted by the USDA-NRCS PLANTS Database

Image Credit: J. Chase (NPS)

Image Credit: J. Chase (NPS)

Current Conditions:

Paulownia tomentosa (Princesstree) was first encountered in the shrubs near Kilometer 18 in the OSV at ASIS by biological technician Casey Nolan in 2016, since then just a few new trees have been found and treated elsewhere. At ASIS, this tree species is restricted to 3 sites which need to be monitored post-treatment. These sites are: 1.) the clearing at the inlet north of the Forest, 2.) the Life of the Marsh Trail near the steps and 3.) the site just south of Hungerford's.

Specific Infestation Location(s):

These sites are: 1.) the clearing at the inlet north of the Forest, 2.) the Life of the Marsh Trail near the steps and 3.) the site just south of Hungerford's.

Areas Currently Infested at ASIS: [X] Island (OSV) [X] North End

Treatment History: [ ] Newly Encountered [X] Treated ≤ 5 Years [ ] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Polaris (Imazapyr) 2% —>Foliar application

Notes:

The single *P. tomentosa,* located at (NAD83, UTM Zone 18N) N 4224376, E 485171 in 2016, was monitored in 2019 and is presumed to have been controlled from the 2016 treatment, as there was no activity at the location when monitored in August of 2019. An additional tree N 4223674, E 484833 was located by Tami Pearl and Bill Hulslander in the summer of 2019 and the Vegetation Management team returned to find the tree and to treat it in August of 2019. The tree was cut down and all seeds were collected and bagged up in a black plastic trash bag placed in direct sunlight to heat the seeds on site (and left there as the bag weighed nearly 80 lbs.) to prevent recruitment in the future. A return trip in late July of 2021 determined there was recruitment at this site from root sprouts of the previous tree (see image on right above). We cut these at the ground level. Sites 2.) and 3.) listed above were active in 2022 on the North End.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Pennisetum alopecuroides Syn. Cenchrus purpurascens* (Fountain grass)

Image Credit: Jim Solomon Missouri Botanical Garden

2022 Activity

0.0571 Acres Treated

Current Conditions:

Pennisetum alopecuroides Syn. Cenchrus purpurascens (Fountain grass) was first encountered in 2008 by biological technician Jonathan Chase and Terrestrial Ecologist Mark Sturm where the Maryland Visitor now stands. The grass species has been treated at ASIS since 2009 and its populations are restricted to (3) locations. All known locations have been treated in 2022 with success and are at manageable levels of control.

Specific Infestation Location(s):

1.) The Headquarters property, particularly along the Southern border, throughout the vegetation buffer East of the Maryland Visitor Center comprising several acres of infested area and 2.) a newly discovered patch (2019) behind the Bayside canoe rental at the tip of Bayside peninsula in the forest there that was observed to be active and more distributed than previously thought in 2021. These were treated in September of 2022. A single plant was found near the 3.) newly discovered M. sinensis at Km 2 and promptly treated in November of 2022. All known occurrences were treated in 2022.

Areas Currently Infested at ASIS: [X] Headquarters (Mainland) [X] Island (Developed Area) [X] North End

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Polaris (Imazapyr) 2% —>Foliar application

Notes: The infestation at the ASIS Headquarters is most certainly the result of introduction from our neighboring golf course where mowed clippings containing seeds were deposited adjacent to natural areas where they were able to recruit themselves. Once established, they flourish in any range of sunlight and form dense monoclonal stands in the understory, as well as in the open. Many consecutive years of treatments ('09, '10, '14, '16-'22) have been necessary to bring the infestations under control at ASIS Headquarters. The threat remains on our untreated neighboring lands to the South. The site behind the canoe rental at the end of Bayside Drive had recruited several new plants in 2022 when treated in June and September . The Headquarters infestations were treated in October of 2022.

***Pennisetum alopecuroides Syn. Cenchrus purpurascens* (Fountain grass)**

Is prioritized for treatment at ASIS because:

-It is recognized as an aggressive invasive plant, has shown this potential at the park Headquarters and has required significant effort to get it to manageable levels of control and the threat of invasion remains on our southern border of the Headquarters property.

Successful treatments of this species occur when:

-Glyphosate-based herbicides are applied when the plant begins to flower, a time when it is most easily recognized in the landscape in early fall.

Difficulties with treating this species include:

-Locating the plant can be difficult when the plants are small and not in flower, as they blend well into the land scape.

-There is a significant population of plants on neighboring lands, that constantly send propagules onto our Head quarters property. These source populations are not controlled by any treatments by the neighboring land manag ers.

Proposed actions for this species include but are not limited to:

-Continuing annual treatments to maintain control efforts at manageable levels.

The desired future fate of this species' treatment outcome is:

-Maintaining manageable levels of control for this species.

If no action is taken the likely outcome for this species will be:

-It is very likely that the nearby invasion would easily expand in cover and density onto our lands and be a very time consuming effort to bring it back to manageable levels of control.

The proposed treatment of this species in 2023 includes:

-Continue spot treatments on the park Headquarters infestations and at the forest adjacent to the Bayside canoe rental at the western end of Bayside Drive, as well as at the new infestation at Km 2.

***Phragmites australis* (Common Reed)**

Is prioritized for treatment at ASIS because:

-Two PEPC projects 23048 and 71864 were approved to control this species specifically.

-The species is ASIS's greatest invader.

Successful treatments of this species occur when:

-Imazapyr-based herbicides are used.

-There is sufficient assistance from workers to be able to make significant progress across large areas.

-Cover is $\leq$ 2% following repeated treatments.

Difficulties with treating this species include:

-Dense stand cover makes access difficult and it is also difficult to broadcast sufficient quantities of herbicide into treatment areas that are both dense and tall.

Proposed actions for this species include but are not limited to:

-Aerial spraying, prescribed fire and ground treatment crews.

The desired future fate of this species' treatment outcome is:

-An increase in controlled area.

If no action is taken the likely outcome for this species will be:

-Continued growth and expansion in currently infested sites and new expansions into new areas.

The proposed treatment of this species in 2023 includes:

-Ground treatments in burn units 3,7,10 and in or near to recent treatments from 2021 and 2022.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Phragmites australis* (Common Reed)

2022 Activity

21.2399 Acres treated

Burn Unit 9 (Left), Life of the Marsh Trail the 2022 SCA Native Plant CORPS treat P. australis (Center), MA IPMT Treats Developed Area (Right): Image Credits: J. Chase

Current Conditions: Botanist Steven Hill described *Phragmites australis* (Phragmites) in 1984 in his Annotated Checklist of the Vascular Flora of Assateague Island (Maryland and Virginia), as "Frequent to infrequent, but abundant in some areas, forming large colonies as at Great Egging Island and the State Park". In 2008, aerial mapping of ASIS with an helicopter recorded 533.7 acres in Maryland. Aerial treatments followed, in high density patches starting in 2008 and ending in 2009, then prescribed fire for 2 cycles starting in 2009 and ending in 2010. Ground treatments have occurred at ASIS since 2009 that focus on patches with lower densities (<60%). Invasive Plant Management Teams (IPMTs) help annually, when possible, to treat large portions of this species. Phragmites is ASIS's greatest invader.

Specific Infestation Location(s): This grass species is largely restricted to the center of the island where it cohabitates with tall Wax Myrtle shrubs that complicate treatments. Widespread regionally, this species is less prone to invasion into ASIS's low salt marshes, but it thrives in the shrub zone of the island.

Areas Currently Infested at ASIS:

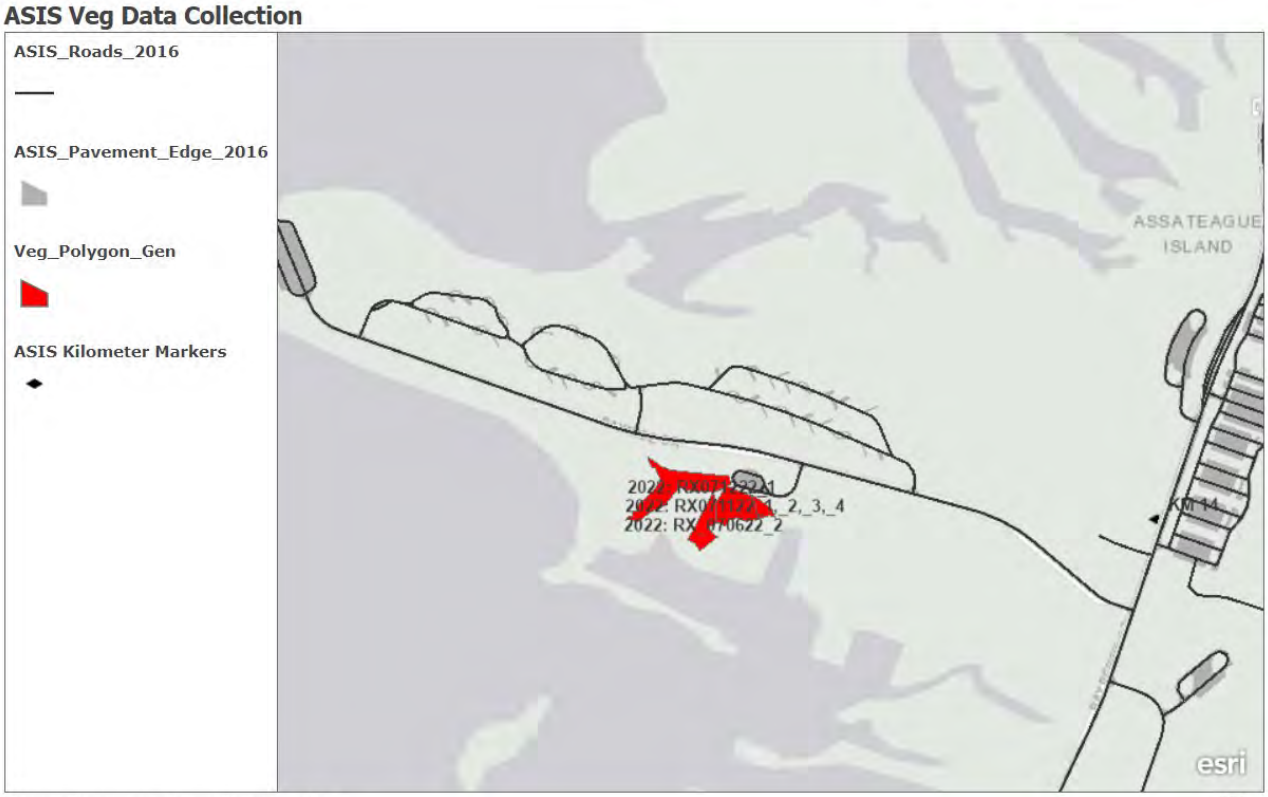
[X] Headquarters (Mainland) [X] Island (North end) [X] Island (Developed Area) [X] Island (OSV)

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

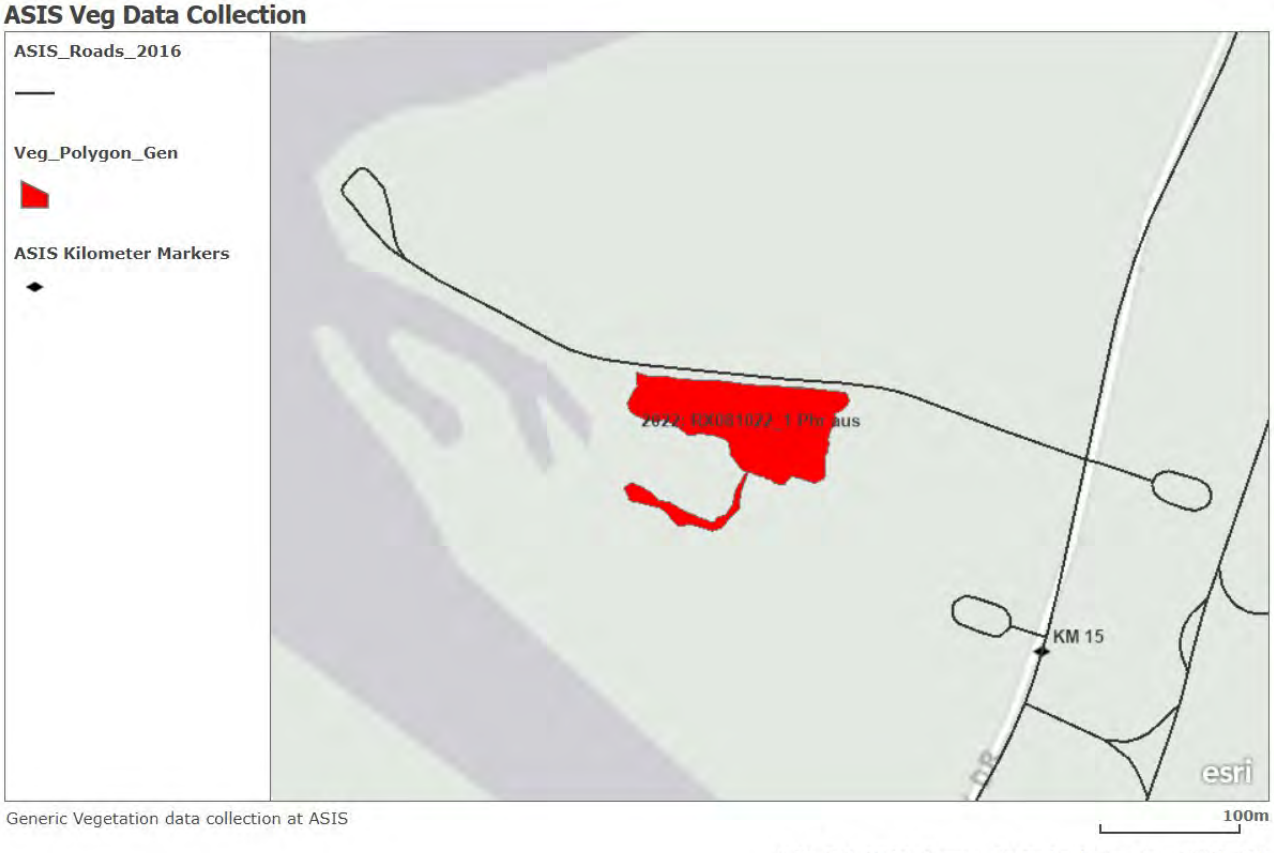
Herbicide(s) Used: (Polaris (Imazapyr) 2%) —>Foliar application. ASIS has primarily used Imazapyr-based herbicides to control this species, because it has been proven to be statistically superior in efficacy, as indicated in this journal: Efficacy of Imazapyr and Glyphosate in the Control of Non-Native *Phragmites australis*, Thomas J. Mozdzer[1,*], Curtis J. Hutto, Paul A. Clarke and Dorothy P. Field, Restoration Ecology, Volume 16 Issue 2, May 2008.

Notes: Treatments in 2023 were conducted with up to (5) personnel at the Ranger Contact Station, CNWR bridge, Life of the Marsh Trail, Pine Tree Camp Road, and Burn Unit 9 in June-August 2022. This season, we utilized the assistance of the SCA Native Plant CORPS to conduct our treatments. Our focus was to continue working on areas that had been treated in recent years to extend and thoroughly treat those areas. The maps that follow show this years' SCA Native Plant CORPS treatments. Later in the season, ASIS received help from the MA IPMT who came to us in late September and treated Phragmites throughout the developed area along every roadside, retreating the work accomplished in the same locations of the developed area by the joint IPMT teams in 2015. ASIS will request the assistance of the MA IPMT again in 2023 to treat Phragmites. The MA IPMT treated 12.33 acres in 4 work days while the SCA Native Plant CORPS was able to treat 8.91 acres in 15 days of treatments. Experience and capability are reflected in this comparison, the MA IPMT assistance shall not understated.

Map: SCA Native Plant CORPS *P. australis* treatment at Life of the Marsh Trail

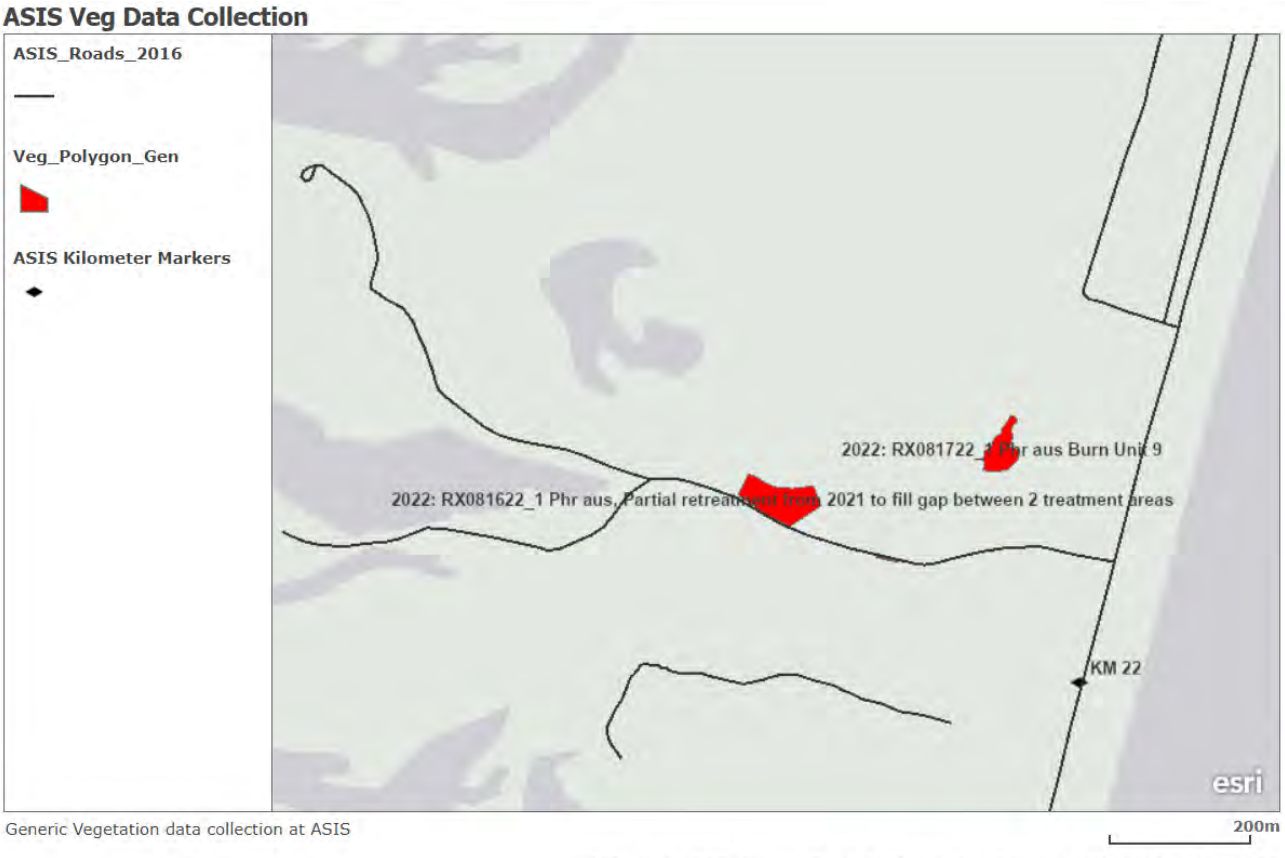


Map: SCA Native Plant CORPS *P. australis* treatment at Life of the Forest Trail/ Ferry Landing Road



Map: SCA Native Plant CORPS *P. australis* treatment at Oceanside Drive

Map: SCA Native Plant CORPS *P. australis* treatment at Pine Tree Camp Road and Burn Unit 9



Assateague Island National Seashore
Maryland and Virginia

National Park Service
U.S. Department of the Interior

2022 ASIS Developed Area (North) Phragmites australis IPMT treatments

Produced by Assateague Island National Seashore, Resource Management, GIS

February 2023

Assateague Island National Seashore
Maryland and Virginia

National Park Service
U.S. Department of the Interior

2022 ASIS Developed Area (South) Phragmites australis IPMT treatments

Produced by Assateague Island National Seashore, Resource Management, GIS

February 2023

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Pinus nigra* (Black Pine)

2022 Activity

Monitoring Only

Image Credit: J. Chase (NPS)

Current Conditions:

Botanist Steven Hill described *Pinus nigra* (Austrian Pine) in 1984 in his Annotated Checklist of the Vascular Flora of Assateague Island (Maryland and Virginia), as "Frequently planted in State Park, also frequent but declining at Great Egging Island and HiWins cabin, all MD". ASIS has treated *P. nigra* at Clements inholding since 2006, at HiWins cabin since 2015. All ASIS sites are at manageable levels but still produce occasional saplings that are easily identified and removed at intervals of several years. The tree species is abundant in the Assateague State Park but nearly eradicated at ASIS.

Specific Infestation Location(s):

Clements inholding, HighWinds inholding, a single tree at ASIS Headquarters in a landscaped bed, the Assateague State Park

Areas Currently Infested at ASIS:

[X] Headquarters (Mainland) [X] Island (Developed Area) [X] Island (OSV) [X] North End

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used: No herbicides used in 2020

Notes: *Pinus nigra* (Black Pine) is planted as an ornamental species in our region and was planted with this intention at several locations on Assateague Island. In all cases, except those where mowing occurred around planted trees, the planted trees have been able to recruit new individuals. A very sizable population of hundreds of individuals persists in the Assateague State Park. Treatment of this species is easily accomplished by cutting the trees down at their bases, however seedlings will emerge for many years from sites that have had established mature trees in them. Just a single tree was treated on the North end in July of 2021, when it was discovered during treatments of Miscanthus sinensis in the forest near the inlet, since then no additional trees have been discovered on ASIS lands on the island. Ornamental plantings at the park Headquarters remain but do not recruit, while the Assateague State Park has a wild population that is well established, especially near the concession area and their island Headquarters.

***Pinus nigra* (Black Pine)**

Is prioritized for treatment at ASIS because:

-This species has shown its potential for invasion at the Assateague State Park, the Clements inholding at ASIS and at the HiWins inholding at ASIS where they had become well established over time.

Successful treatments of this species occur when:

-The trees are cut low to the ground, or are girdled completely with large sections (15-20 cm tall) of cambium re moved on larger trees. Both Clements and High Wins inholdings are at manageable levels of control at this time.

Difficulties with treating this species include:

-There are no difficulties in treating this species at ASIS. It is quite rampant in the State Park, however.

Proposed actions for this species include but are not limited to:

-Monitoring the Clements and High Wins inholdings for recruitment of seedlings.

The desired future fate of this species' treatment outcome is:

-Eradication.

If no action is taken the likely outcome for this species will be:

-Seedlings will continue emerge at Clements and High Wins inholdings that will become trees. The State Park infes tation will expand.

The proposed treatment of this species in 2023 includes:

-Monitoring both the Clements and HiWins inholdings for recruitment of seedlings, then treating them if found.

***Rosa multiflora* (Multiflora rose)**

Is prioritized for treatment at ASIS because:

-This species is highly invasive regionally and has shown its invasive potential at the Bayside campground where birds continually drop seeds that eventually become established as large shrubs.

Successful treatments of this species occur when:

-Larger shrubs are best treated with a point source treatment like cut stump which reduces off target herbicide ap plication, while smaller shrubs and seedlings are effectively treated with glyphosate or triclopyr-based herbicides.

Difficulties with treating this species include:

-This species can blend well into the landscape and can be confused with blackberry bushes making this species hard to locate when it is not yet large in size. They grow within other thorny and viny plants which can make access very difficult. The shrubs are easiest to locate in spring when they regenerate, or in late summer when in flower.

Proposed actions for this species include but are not limited to:

-Continued monitoring for the presence of new recruitment in previously infested areas. Locating new discoveries.

The desired future fate of this species' treatment outcome is:

-Maintaining manageable levels of control.

If no action is taken the likely outcome for this species will be:

-Ongoing introduction from the mainland by birds that will certainly become established on the island.

The proposed treatment of this species in 2023 includes:

-Monitor the Bayside campground and park Headquarters for new plants during the growing season, when the plants are in flower (looking for the tell-tale blossoms).

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Rosa multiflora* (Multiflora rose)

2022 Activity

0.0489 Acres Treated

Image Credit: J. Chase (NPS)

Image Credit: James H. Miller, hosted by the USDA-NRCS PLANTS Database / James H. Miller and Karl V. Miller. 2005. *Forest plants of the southeast and their wildlife uses.* University of Georgia Press., Athens.

Current Conditions:

The presence of *Rosa multiflora* (Multiflora rose) at ASIS was first described by botanist Steven Hill in 1984 as "Rare, only one plant seen in the State Park near S end along road. May become a serious weed". This shrub species has been treated at ASIS since 2005 at Bayside Campground peninsula and at park Headquarters where the populations are currently at manageable levels. On the island this species is currently restricted to the Developed Area, but it has been controlled elsewhere on the island. Special attention was given to locate and treat this species throughout the Bayside Peninsula in 2021.

Specific Infestation Location(s): In open gaps where sunlight is abundant in the shrub zone, or edges of forest. The vegetated buffers at the ASIS Headquarters and vegetated "islands" at Bayside Campground are frequented by birds that drop seed from populations outside ASIS that quickly become established and have the potential to be spread elsewhere on the island from these if not regularly located and treated these sites would be highly infested.

Areas Currently Infested at ASIS:

[X] Headquarters (Mainland) [X] Island (Developed Area) [X] Island (OSV)

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Polaris (Imazapyr) 2% —>Foliar application

Notes: Treatments of this species occurred at the Sinepuxent Vegetation buffer, Bayside Campground loops A-C, Life of the Marsh, Park Headquarters and Bayside Drive from April through June, 2022. Small shrubs were located and treated at the Bayside Peninsula throughout all of the campground loops and from within all of the vegetated islands and at the Park Headquarters in the vegetated buffer behind the Maryland Visitor Center. These were mostly small, new shrubs that are the likely offspring from larger shrubs treated in recent years. The number of occurrences of this species have been significantly reduced by our continued efforts; where once there were many large shrubs at Bayside, now there are just young recruits.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Rosa wichuraiana* (Memorial rose)

2022 Activity

Monitoring Only

Image Credit: A. Barra Real Jardín Botánico, Madrid

Image Credit: J. Chase (NPS)

Current Conditions:

Rosa wichuraiana (Memorial rose) was planted in the triangle at the entrance to ASIS housing as part of an extensive landscaping project of the grounds in 1979, much of which still remains unchanged today. In 2004, biological technician Jonathan Chase observed that the plant had escaped into all of the adjacent vegetated buffers of the Headquarters property and also to the South. This vine-like shrub is no longer restricted to the mainland at Park Headquarters since its discovery at the Bayside Campground (see right image above) in June of 2021.

Specific Infestation Location(s): Vegetation buffers near its original planting site at the Headquarters property, Bayside Campground

Areas Currently Infested at ASIS: [X] Headquarters (Mainland) [X] Developed Area (Maryland)

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Polaris (Imazapyr) 2% —>Foliar application

Notes: Since its original planting, *R. wichuriana* had expanded and became widespread in the surrounding Headquarters area. Birds may have facilitated seed dispersal and adjacent vegetated buffers near the location where *R. wichuriana* was first introduced eventually became heavily infested. When in the open, *R. wichuriana* typically presents a prostrate growth form while by comparison it typically exhibits a climbing vine growth form in shaded areas. This variety of occupied habitats demonstrates the invasive potential of this species. Treatments that occurred in June and September of 2020 along the southern border of HQ, Bayside Campground, as well as at the Housing and Sinepuxent vegetation buffers were seen to be successful during other treatments in the same locations during 2022. Additional periodic treatments are essential to finding offspring from the previous infestations and also new recruits. It is also possible that new plants are introduced by birds into these buffers from neighboring lands where the plant is thought to have escaped in the years when the planting was still unrecognized as being invasive (1979 to 2004 are the years past between planting and treatments).

***Rosa wichuraiana* (Memorial rose)**

Is prioritized for treatment at ASIS because:

-This species was planted at park Headquarters in 1979 and escaped its planting area and became established in the southern boundary of the property. This is a recognized invasive plant species.

Successful treatments of this species occur when:

-Glyphosate or triclopyr-based herbicides are used in foliar applications.

Difficulties with treating this species include:

-There is an apparent seed bank that continues to produce recruits across the southern border of the park Head quarters property.

Proposed actions for this species include but are not limited to:

-Continued glyphosate or triclopyr-based herbicides are used in foliar applications.

The desired future fate of this species' treatment outcome is:

-Eradication

If no action is taken the likely outcome for this species will be:

-Continued recruitment from existing seed banks.

The proposed treatment of this species in 2023 includes:

-Targeting this species for treatments along with others in the same habitat at the park Headquarters property. Re visit the site in the Bayside campground to see that it remains under control.

***Toxicodendron radicans* (Poison Ivy)**

Is prioritized for treatment at ASIS because:

-This plant is highly poisonous to many humans, causing extreme skin irritations.

Successful treatments of this species occur when:

-Glyphosate or triclopyr-based herbicides are used in foliar applications.

Difficulties with treating this species include:

-Potential for the applicator to come into contact with the plant if it is in dense concentrations.

Proposed actions for this species include but are not limited to:

-Treating a select portion of sites utilized by visitors and employees (the Boneyard, trail margins or wayside exhibits).

The desired future fate of this species' treatment outcome is:

-Control of the plants in areas that humans may easily come into contact with, if it was not treated there.

If no action is taken the likely outcome for this species will be:

-Increased potential for visitors and employees to come into contact with the plants.

The proposed treatment of this species in 2023 includes:

-Observing again, the 2021 treatments which in 2022 were sufficient to not need retreatment and to see if addition al work is needed to keep the plants out of the contact zones where they have been a problem in recent years. The 3 trails (Life of the Marsh, Life of the forest and Life of the Dunes respectively), all backcountry campsites, the Bone yard, and select places presented to us by the Maintenance division where they may be especially threatened should be given an inspection and treated accordingly, if they are encountered there. There may be a select number of oth- er campsites that may require a treatment. We will also respond to any specific threat that is brought to our atten- tion, like a need for treating the Bone Yard where equipment and materials are stored near Poison Ivy prone areas.

Assateague Island National Seashore: Vegetation Management Summary (2022)

Species Targeted: *Toxicodendron radicans* (Poison Ivy)

2022 Activity

0.1087 Acres Treated

Image Credit: Jeff McMillian, hosted by the USDA-NRCS PLANTS Database

Current Conditions:

Toxicodendron radicans (Poison Ivy) is a native plant at ASIS. It is widespread in this region and can present a threat to visitors and employees when it occurs in places that they may easily come into contact with.

Specific Infestation Location(s):

Island wide

Areas Currently Infested at ASIS:

[X] Headquarters (Mainland)

[X] Island (North end)

[X] Island (Developed Area)

[X] Island (OSV)

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Garlon 4 Ultra (Triclopyr) 3% —>Foliar application

Notes: This native plant can present a problem to visitors along trail edges, bathroom entrances and campsites. When the hazard threshold is reached (the plants are very likely to contact visitors and employees in the listed locations) we take action and treat these plants to mitigate the hazard it presents. In July of 2021 the following campsites were thoroughly treated for all instances of this species: Tingles, Little Levels, Pine Tree, State Line, Pope Bay, and Green Run. In 2022, the 2021 treatments continued to provide protection from harm to humans and only the elevated boardwalk at North Beach was treated to protect Visitors.

Assateague Island National Seashore: Vegetation Management Summary (Year 2022)

Species Targeted: *Salsola kali* (Tumbleweed)

Activity

801 Plants Pulled

Image Credit: Kelly Taylor (NPS)

Current Conditions:

First reported on ASIS by Elizabeth Higgins in 1971 and just recently treated at ASIS since 2021, this Chenopodiaceae family member is restricted to the beaches of the island where it is encountered in small numbers annually.

Specific Infestation Location(s): the sparsely vegetated habitat of the beaches of the island

Areas Currently Infested at ASIS:

[ ] Headquarters (Mainland)

[X] Island (North end)

[X] Island (Developed Area)

[X] Island (OSV)

Treatment History: [ ] Newly Encountered [X] Treated ≤ 5 Years [] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

No herbicides used– Hand Pulling Only

Notes:

This species is most detectible during the time of the annual Seabeach Amaranth census in late July and early August and it occurs in the same habitat as this T&E species. This species is easy to remove by pulling, but must be done with leather gloves or a pair of pliers due to the spiny protuberances that the plant produces. Also, if grazed, the cut stem can appear to be very similar to the stem of Seabeach Amaranth and can be mistaken for a grazed Seabeach Amaranth. It is recommended that all occurrences of this species be removed manually during the Seabeach Amaranth census in all future years. If this is too time consuming during the Amaranth census, areas of abundance can be noted and returned to when it is more convenient.

***Salsola kali* (Tumbleweed)**

Is prioritized for treatment at ASIS because:

-It is an invasive plant that can be easily pulled from the sandy soil of the beach where it is sometimes found.

Successful treatments of this species occur when:

-Plants are carefully pulled from the sand with a plier to avoid the spines that are on the stems.

Difficulties with treating this species include:

-Finding the plants across the vast beaches of the island.

Proposed actions for this species include but are not limited to:

-Pulling them if they are found during Seabeach Amaranth searches.

The desired future fate of this species' treatment outcome is:

-Maintaining control at manageable levels where only a small number are encountered annually.

If no action is taken the likely outcome for this species will be:

-Occasional introductions on the beach with potential for spread .

The proposed treatment of this species in 2023 includes:

-During Seabeach Amaranth census we will locate and pull every plant we discover.

***Vitex rotundifolia* (Beach Vitex)**

Is prioritized for treatment at ASIS because:

-It has escaped plantings to the north of us in Ocean City at the inlet and elsewhere This species becomes establ ished easily at ASIS in the sandy soils of the upper beaches on the Oceanside and Bayside of the island.

Successful treatments of this species occur when:

-If plants are small, a foliar application of 2% Imazapyr can be used, larger plants require stem cuts and 25% Ima zapyr be dripped onto the many cuts along more woody stem lengths.

Difficulties with treating this species include:

-If the plants are older and established there are many stems to locate, to cut and to treat.

Proposed actions for this species include but are not limited to:

-Continue to look for it during Seabeach Amaranth census surveys.

The desired future fate of this species' treatment outcome is:

-Absence or eradication of the species from the island.

If no action is taken the likely outcome for this species will be:

-Periodic reintroductions are likely, as large populations exist to the north in New Jersey.

The proposed treatment of this species in 2023 includes:

-Monitor the single plant discovered/ treated on the bayside shore at the Bayside campground in 2021 and look for any new occurrences during the Seabeach Amaranth Census, as all are currently under control. There have only ever been (2) single plants discovered at ASIS to date.

Assateague Island National Seashore: Vegetation Management Summary (Year)

Species Targeted: *Vitex rotundifolia* (Beach Vitex)

Activity

Monitoring Only

Image Credits:

J. Chase (NPS)

Current Conditions:

First Encountered at ASIS in 2009 and treated on the north end of ASIS that same year there are no known occurrences of this species on ASIS that are not under control. A single plant was found and treated in June of 2021 near the end of Bayside peninsula on its northern shore.

Specific Infestation Location(s): Bayside peninsula

Areas Currently Infested at ASIS: None known

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [X] Treated ≥ 5 Years [X] Eradicated

Herbicide(s) Used:

Polaris (Imazapyr) 2% —>Foliar application

Notes: This species has been encountered only twice at ASIS since 2003. In 2009 a single plant was found on the north end that was treated and eradicated that same year. Once again, in June of 2021 a single plant was found near the end of Bayside peninsula on its north shore (see image on right above for the location and the image to the left is what the plant actually looks like up close) that was promptly treated. Imazapyr herbicides are very effective at treating this species. When they are larger shrubs, a hacked stem treatment with 20% Imazapyr is effective when multiple wounds are made along stems and are painted/ treated with the solution. Smaller plants can be treated with a foliar application of a 2% solution of Polaris (Imazapyr) herbicide. No activity was observed at the treatment site in 2022 and no action was required. Monitoring of the site will continue until 2024.

Herbicide Use 2021 **Species**	**acres treat-ed**	**Garlon 4 Ultra (mL)**	**Polaris (mL)**	**Rodeo (mL)**	**Monitoring Only**
Ailanthus altissima (Tree of Heaven)	0.0015		6		
Artemesia vulgaris (Mugwort)	0.0198	120			
Artemesia vulgaris (Mugwort)	0.0178		75		
Artemesia vulgaris (Mugwort)	0.1633			640.6	
Arthraxon hispidus (Small carpetgrass)	0.0272			110	
Carex kobomugi (Asiatic Sand Sedge)	0.0497		274.3		
Centaurea maculosa (Spotted Knapweed)	0.0049	30			
Centaurea maculosa (Spotted Knapweed)	0.0332			134.5	
Cirsium arvense (Canada thistle)	0.0198	90			
Cirsium arvense (Canada thistle)	0.2286			924.4	
Cirsium vulgaris (Bull Thistle)	0.0030		12		
Cirsium vulgaris (Bull Thistle)	0.0020			39	
Clematis terniflora (Virginsbower)	0.2669			1066	
Elaeagnus umbellata (Autumn Olive)	0.0032		6		
Elaeagnus umbellata (Autumn Olive)	0.0106			36.3	
Eleusine indica (Wiregrass)	0.0578		234		
Eragrostis curvula (Lovegrass)	0.0605		245		
Eragrostis curvula (Lovegrass)	0.0005			2	
Glechoma hederacea (Creeping Charlie)	0.0593	360			
Glechoma hederacea (Creeping Charlie)	0.0453			183.4	
Hedera helix (English Ivy)	None	None	None	None	X
Juniperus procumbens (Dwarf Juniper)	0.0010		2		
Lagerstroemia indica (Crepe Myrtle)	None	None	None	None	X
Lezpedeza cuneata (Chinese Lezpedeza)	0.0101		71		
Lezpedeza cuneata (Chinese Lezpedeza)	0.0007			3	
Ligustrum vulgare (Privet Bush)	0.0010			10.2	
Lonicera japonica (Honeysuckle)	0.0012		5		
Lonicera japonica (Honeysuckle)	1.0045			3101	
Mentha suaveolens (Wooly Mint)	0.0025			10	
Microstegium viminium (Stiltgrass)	0.0124		50		
Microstegium viminium (Stiltgrass)	0.2906			1162	
Miscanthus sinensis (Silvergrass)	0.0124		50		
Morus alba (White Paper Mulberry)	0.0010			10	
Nuisance Weeds	2.7397		6140		
Nuisance Weeds	0.2627			1073	
Paulownia tomentosa (Princess tree)	0.0200	None	None	None	Mechanically re-moved
Pennisetum alopecuroides Syn. Cenchrus purpurascens (Fountain grass)	0.0001		2.5		
Pennisetum alopecuroides Syn. Cenchrus purpurascens (Fountain grass)	0.0455			202.4	
Phragmites australis (Phragmites)	28.6832		25916		
Phragmites australis (Phragmites)	0.5563			918	
Pinus nigra (Black Pine)	None	None	None	None	X
Rosa multiflora (Multiflora rose)	0.0169		58.5		
Rosa multiflora (Multiflora rose)	0.0640			164.5	
Rosa wichuraiana (Memorial rose)	0.0005		2		
Rosa wichuraiana (Memorial rose)	0.0303			122.5	
Salsola kali (Tumbleweed)	0.0030	None	None	None	(21) Pulled
Toxicodendron radicans (Poison Ivy)	0.1087			440	
Vitex rotundifolia (Beach Vitex)	0.0002		1		

Herbicide Use 2022 **Species**	**acres treated**	**Garlon 4 Ultra (mL)**	**Polaris (mL)**	**Rodeo (mL)**	**Monitoring Only**
Ailanthus altissima (Tree of Heaven)	0.0030		12		
Ailanthus altissima (Tree of Heaven)	0.0062			25	
Artemesia vulgaris (Mugwort)	0.0670	405			
Artemesia vulgaris (Mugwort)	0.0149		65.3		
Artemesia vulgaris (Mugwort)	0.0474			162	
Arthraxon hispidus (Small carpetgrass)	0.3509			1420	
Carex kobomugi (Asiatic Sand Sedge)	0.0099		40		
Centaurea maculosa (Spotted Knapweed)	0.0012		24		
Centaurea maculosa (Spotted Knapweed)	0.0309			132	
Cirsium arvense (Canada thistle)	0.0070	3			
Cirsium arvense (Canada thistle)	0.0002		1		
Cirsium arvense (Canada thistle)	0.1465			633	
Cirsium vulgaris (Bull Thistle)	0.0279			114	
Clematis terniflora (Virginsbower)	0.1404			568	
Elaeagnus umbellata (Autumn Olive)	0.0106			78	
Eleusine indica (Wiregrass)	0.1853		1500		
Eragrostis curvula (Lovegrass)	0.0007		4		
Glechoma hederacea (Creeping Charlie)	0.1285	753			
Glechoma hederacea (Creeping Charlie)	0.0099			40	
Hedera helix (English Ivy)	None	None	None	None	X
Juniperus procumbens (Dwarf Juniper)	None	None	None	None	X
Lagerstroemia indica (Crepe Myrtle)	0.0049			20	
Lezpedeza cuneata (Chinese Lezpedeza)	0.0007		3		
Lezpedeza cuneata (Chinese Lezpedeza)	0.0005			2	
Ligustrum vulgare (Privet Bush)	0.0002			2	
Lonicera japonica (Honeysuckle)	0.5931	2400			
Lonicera japonica (Honeysuckle)	0.0321		130		
Lonicera japonica (Honeysuckle)	2.0154			8215	
Mentha suaveolens (Wooly Mint)	None	None	None	None	X
Microstegium viminium (Stiltgrass)	0.4201			1730	
Miscanthus sinensis (Silvergrass)	0.0198		80		
Miscanthus sinensis (Silvergrass)	0.0074			30	
Morus alba (White Paper Mulberry)	0.0074		30		
Nuisance Weeds	2.1721		4490		
Nuisance Weeds	0.4448			1800	
Paulownia tomentosa (Princess tree)	0.0012		23		
Pennisetum alopecuroides Syn. Cenchrus purpurascens (Fountain grass)	0.0002		1		
Pennisetum alopecuroides Syn. Cenchrus purpurascens (Fountain grass)	0.0568			236	
Phragmites australis (Phragmites)	21.2394		30344		
Phragmites australis (Phragmites)	0.0005			2	
Pinus nigra (Black Pine)	None	None	None	None	X
Rosa multiflora (Multiflora rose)	0.0005		2		
Rosa multiflora (Multiflora rose)	0.0484			305	
Rosa wichuraiana (Memorial rose)	None	None	None	None	X
Salsola kali (Tumbleweed)	All Km on MD beach				831 pulled
Toxicodendron radicans (Poison Ivy)	0.0015		6		
Vitex rotundifolia (Beach Vitex)	None	None	None	None	X

Assateague Island National Seashore: Vegetation Management Summary (Year)

Species Targeted:

Activity

____Acres Treated or Monitoring Only

Insert image here

Insert map here

TEMPLATE

Current Conditions:

First Encountered at ASIS Treated at ASIS since Restricted to

Specific Infestation Location(s):

Areas Currently Infested at ASIS:

[ ] Headquarters (Mainland)

[ ] Island (North end)

[ ] Island (Developed Area)

[ ] Island (OSV)

Treatment History: [ ] Newly Encountered [ ] Treated ≤ 5 Years [] Treated ≥ 5 Years [ ] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Garlon 4 Ultra (Triclopyr) 3%, Polaris (Imazapyr) 2%, No herbicides used

Notes:

Is prioritized for treatment at ASIS because:

Successful treatments of this species occur when:

Difficulties with treating this species include:

Proposed actions for this species include but are not limited to:

The desired future fate of this species' treatment outcome is:

If no action is taken the likely outcome for this species will be:

The proposed treatment of this species in 2022 includes:

TEMPLATE

TEMPLATE

XXXX ASIS Invasive Plant Treatment Report

Author: Jonathan Chase Lead Biological Science Technician

Invasive Plant Species Managed by ASIS Vegetation Management in XXXX and discussed in the following report:

Ailanthus altissima (Tree of Heaven)
Artemesia vulgaris (Mugwort)
Arthraxon hispidus (Small carpetgrass)
Carex kobomugi (Asiatic Sand Sedge)
Centaurea maculosa (Spotted Knap- **TEMPLATE** weed)
Cirsium arvense (Canada thistle)
Cirsium vulgaris (Bull Thistle)
Clematis terniflora (Virginsbower)
Juniperus procumbens (Dwarf Juniper)
Elaeagnus umbellata (Autumn Olive)
Eleusine indica (Wiregrass)
Eragrostis curvula (Lovegrass)
Glechoma hederacea (Creeping Charlie)
Hedera helix (English Ivy)
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Rosa wichuraiana (Memorial rose)
Salsola kali (Tumbleweed)
Toxicodendron radicans (Poison Ivy)
Vitex rotundifolia (Beach Vitex)