

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

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

2020 Activity

Monitoring Only



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 polygon)

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 vegetation technician Jonathan Chase. The last known active location of this species on the island showed no signs of recruitment in August of 2020. This last active site was restricted to a 50 meter long section of the dune facing the inlet on ASIS's North End (pictured above). The site has neither produced recruits in 2020, nor did it produce any recruits in the years following the 2017 treatment.

Areas currently infested at ASIS:

There are currently no known active sites of this species on ASIS property.

Treatment History: ☐ Newly Encountered ☐ Treated $\leq$ 5 Years ☐ Treated $\geq$ 5 Years ☒ Eradicated

Herbicide(s) Used:

☒ No herbicides used in 2020

Notes:

A discovery of *A. altissima*, made by Jonathan Chase at the inlet during the Seabeach Amaranth census in August of 2017 returned this species onto our list of targeted plants, where it had been absent because we had thought the species to have been eradicated from the island. The inlet site was monitored in August of 2020 and the previous treatment from 2017 was found to have been a continued success; all trees that had been treated were dead and the area beneath the treatments were observed to have not produced any recruitment of new individuals.

This site must be monitored again in 2021 to look for recruitment. The single *A. altissima* sapling that was found 100 meters south of the inlet infestation adjacent to the forest and treated in 2018 using the cut stump method in the northern edge of the forest at the inlet, also appeared to have been successful when monitored in August of 2020.

***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 populations 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 2021 includes:

- Monitoring the last known active site on the dune that faces the inlet on the North end, as (3) consecutive years of absence following treatments renders the species eradicated at a site of interest.

***Artemisia 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 2021 includes:

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

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Artemisia vulgaris* (Mugwort)

2020 Activity

0.1048 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 at ASIS where it has been discovered. There were several active sites of this species in 2020; the species is restricted to (8) locations at ASIS.

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 Visitor 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.) The end of Bayside campground loop C west corner. 8.) The ASIS Headquarters and Maryland Visitor Center.

Treatment History: ☐ Newly Encountered ☐ Treated $\leq$ 5 Years ☒ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

Garlon 4 Ultra (Triclopyr) 3%, Rodeo (Glyphosate) 2%

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 2020 continued monthly from June to November, as an apparent seed bank continues to produce many plants, particularly at the Headquarters property. Of the (8) infestations listed above, 3.) through 8.) required treatments in 2020. 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 where 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.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Arthraxon hispidus* (Small carpetgrass)

2020 Activity

Monitoring Only



Image Credit: Leslie J. Mehrhoff Invasive.org

5448841

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. After its discovery, assessments determined the extent of the infestations at ASIS to be restricted to some of the roadsides of the Developed Area and the Headquarters property. Vegetation Management began to treat this species for the first time in 2019. No treatments occurred for this species in 2020 but the need for treatment remains.

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 into shaded areas; this species appears to prefer full sunlight.

[X] Roadsides in the Developed Area of ASIS (MD)

Treatment History: ☐ Newly Encountered ☒ Treated $\leq$ 5 Years ☐ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used: No herbicides used in 2020

Notes: The first ever treatments of this species were conducted in the Developed Area at ASIS in September of 2019. The treatments were timed to occur before the species was in flower. This species has not been encountered in the OSV, or North end as of 2020. Treatments occurred here in 2019: 1.) The northern boundary of the Developed Area to the ASIS sign on west side of Bayberry Drive, 2.) Oceanside Drive on west side of the road, 3.) Ferry Landing Road, 4.) the Si-nepuxent Veg Buffer (see Image 5:), 5.) Bayside Drive on both sides of road and across the intersection of Bayberry and Bayside drive 6.) Along Oceanside Road on the east side toward and up to the group camp, and 7.) the ASIS Headquarters Housing meadows and the southern border of Headquarters.

These areas were selected for the preliminary treatment because their concentrations were greatest and they could be contained with a strategic selection of control areas using the roadways as boundaries. On 11/5/2020 the roads of the developed area were treated for *Eragrostis curvula*, during which the previous years' treatment of *A. hispidus* were observed. These treatments were seen to have been effective, with native vegetation having taken the place of the target species. There are several areas that require treatment in the developed area, which may be targeted in 2021.

***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 likely intrusion into natural areas.

The proposed treatment of this species in 2021 includes:

- Late summer treatment of the developed area roadsides.

***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 repeated 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 2021 includes:

- Continue to look for this target during Seabeach Amaranth searches and ask Plover technicians to record any occurrences they may be discovered during nest searches.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

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

2020 Activity

0.1048 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 2020.

Areas Currently Infested at ASIS:

- [X] Island (North end)
- [X] Island (Developed Area)
- [X] Island (OSV)

Treatment History: ☐ Newly Encountered ☐ Treated $\leq$ 5 Years ☒ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

Polaris (Imazapyr) 2%

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 Assateague National Seashore Herbarium. Treatments for this species have been conducted in 2006, 2008, 2009, 2010, and 2013 through 2020. 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 this species now difficult to detect, where 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 discovery and treatment of this species. In 2020, (12) small infestations were discovered during Seabeach Amaranth searches. These occurrences were treated in July and November after the completion of the searches.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Cirsium arvense* (Canada thistle)

2020 Activity

0.3249 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, the Boneyard and 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)

Treatment History: ☐ Newly Encountered ☐ Treated $\leq$ 5 Years ☒ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Garlon 4 Ultra (Triclopyr) 3%

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.

2020 treatments occurred from June through November in the vegetated buffers on the Headquarters property (Sinepuxent Buffer, UMES Buffer, Pole Barn Buffer, the Housing Buffer and along the southern boundary of the property across its entire length.

Seed removal was conducted whenever large involucres were observed (see image 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>)

***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 populations 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 2021 includes:

- Continued treatments of those areas which have had treatments in the last 2 years.

***Cirsium vulgare* (Bull Thistle)**

Is prioritized for treatment at ASIS because:

- This species is highly invasive and has only just begun to be detectable 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, thorny protruberances 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 carefully timed treatments.

The proposed treatment of this species in 2021 includes:

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

Assateague Island National Seashore: Vegetation Management Summary (Year)

Species Targeted: *Cirsium vulgare* (Bull thistle)

Activity

0.0148 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.

Specific Infestation Location(s): The known infestations of this species are currently restricted to (3) 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 and 3.) behind the canoe rental at the end of Bayside Drive.

Areas Currently Infested at ASIS: ☒ Headquarters (Mainland)
☒ Island (Developed Area)

Treatment History: ☐ Newly Encountered ☒ Treated $\leq$ 5 Years ☐ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Polaris (Imazapyr) 2%

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 2020 will be revisited in 2021 to look for recruitment, which will be retreated.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Clematis terniflora* (Virginsbower)

2020 Activity

0.1063 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 and 4.) the causeway to the island in Maryland (on State Park lands).

Areas currently infested at ASIS: ☒ Island (Developed Area)

Treatment History: ☐ Newly Encountered ☐ Treated $\leq$ 5 Years ☒ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%

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 August and September of 2019 were effective, but additional trail blazing (to enter into the viny habitat) and treatment were needed in 2020. In 2020, the August and September treatments could be characterized as much reduced in comparison to the previous years' treatments. A new infestation was discovered at the end of end of Oceanside Drive on the east side by the last dumpster which received treatment in 2020. More treatments are suggested in the same locations in 2021 early in the season and later in the fall. 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. This has been achieved by using a Stihl brand weed wacker with a hedge trimmer attachment.

***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 colonies 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 2021 includes:

- Maintaining the access trails established at the site.
- Treating the site twice in 2021.
- Cutting vines which climb into large eastern red cedar trees at the infestation site.

***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

Difficulties with treating this species include:

- None

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 2021 includes:

- Monitor the treatment efficacy.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Juniperus procumbens* (Dwarf Juniper)

2020 Activity

No action



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.

Specific Infestation Location(s):

One single infestation site behind Clements inholding at the State Line

Areas currently infested at ASIS:

☒ Island (OSV)

Treatment History: ☒ Newly Encountered ☒ Treated $\leq$ 5 Years ☐ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

No herbicides used in 2020

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 will be monitored for activity of *Pinus nigra* and *Rosa multiflora* during the growing season in 2021 at which time the status of the Dwarf Juniper will be determined.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Elaeagnus umbellata* (Autumn Olive)

2020 Activity

Monitoring Only



Image Credit: Bill Johnson (NPS)

Current Conditions:

First encountered at ASIS in 2005 and later treated that same year, *Elaeagnus umbellata* (Autumn Olive), a tree species, is restricted to the ASIS Headquarters property and the Developed Area of the island. Just (2) trees are known to exist on ASIS property at this time. One tree is located in the southeast corner of the Headquarters property and another is located across the road from the dump station at loop C in the Bayside Campground.

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)

Treatment History: ☐ Newly Encountered ☐ Treated $\leq$ 5 Years ☒ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

No herbicides used in 2020

Notes:

Because a great number of *E. umbellata* trees have been found bordering the Headquarters land in the past, as well as being well established throughout South Point, it is believed that this species 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 in 2020 when they were observed during July of 2020. The (2) known trees will be treated in 2021 with a basal bark treatment.

***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 undetectable 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 2021 includes:

- Treating the 2 known trees.

***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 2021 includes:

- Treating pavement cracks if there appears to be an abundance of plant material.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Eleusine indica* (Wiregrass)

2020 Activity

0.4596 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 $\leq$ 5 Years ☐ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%

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, so we were asked by the Maintenance Division to treat some of these areas again in 2020. Treatments were conducted during June at the CNWR Crabbing Decks, the Headquarters visitor center lot and Housing roadsides and cracks, North Beach lot, Life of the Forest lot, Boathouse lot, Life of the Marsh lot, the Boneyard, Ranger Contact Station, Ferry Landing Crab Decks, and lastly the Bayside Canoe Rental.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Eragrostis curvula* (Lovegrass)

2020 Activity

0.0198 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 is 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:

☒ Island (Developed Area)

Treatment History: ☐ Newly Encountered ☐ Treated $\leq$ 5 Years ☒ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

Polaris (Imazapyr) 2%

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 November of 2020 along roadsides throughout the park and also in the footprint of the original loop A of the Bayside campground located just to the west of the Boneyard. Very few plants were located then, indicating success overall.

***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 infested 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 herbicides.
- 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 only occasional treatments.

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 2021 includes:

- A late season treatment while targeting other species (*Lezpedeza cuneata*) that are in the same treatment 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 canopy 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 treatments.

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

- Unchecked recruitment and spread.

The proposed treatment of this species in 2021 includes:

- Continuing the treatments at the southern border of the park Headquarters.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Glechoma hederacea* (Creeping Charlie)

2020 Activity

0.0642 Acres Treated



© Lawrence S. Gilliam 2004

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 no longer can 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 then.

Specific Infestation Location(s):

UMES Vegetation Buffer

Areas Currently Infested at ASIS:

[X] Headquarters (Mainland)

Treatment History: ☐ Newly Encountered ☒ Treated $\leq$ 5 Years ☐ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Garlon 4 Ultra (Triclopyr) 3%

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. The Headquarters infestations were treated in June, July, September and October of 2020.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Hedera helix* (English Ivy)

2020 Activity

Monitoring Only



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 $\leq$ 5 Years ☐ Treated $\geq$ 5 Years ☒ Eradicated

Herbicide(s) Used:

No herbicides used in 2020

Notes:

Monitoring of the previously infested areas at Clements inholding and behind Bayberry North house in 2020, did not discover any activity of this species in either area. It is now thought to have been eradicated at ASIS, but an additional observation is need in 2021 to ensure this determination.

***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 treatment should follow.

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

- Eradication, which will be the current condition if the site at park housing remains under control this year.

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 2021 includes:

- Monitoring the site behind Bayberry House in park housing to look for activity.

***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 concern at this time.

The proposed treatment of this species in 2021 includes:

- Monitoring the site where the single tree was controlled to ensure it is under control.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Lagerstroemia indica* (Crepe Myrtle)

2020 Activity

Monitoring Only



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 2020 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 ☒ Treated $\leq$ 5 Years ☐ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

No herbicides used in 2020

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. Additional monitoring of the site will occur once more to ensure that the site remains inactive. Three consecutive years of observed inactivity will render its status to "eradicated".

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Lezpedeza cuneata* (Chinese Lezpedeza)

2020 Activity

0.0062 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:

Lezpedeza 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, 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)

Treatment History: ☐ Newly Encountered ☐ Treated $\leq$ 5 Years ☒ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Garlon 4 Ultra (Triclopyr) 3%

Notes:

In 2020, very few plants were detected and treated at all of the known locations in July and November, indicating that we have brought this species nearer to eradication.

***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 treatment 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 2021 includes:

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

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

Is prioritized for treatment at ASIS because:

- The species has proven its invasive potential regionally and can form an understory in loblolly pine forests.

Successful treatments of this species occur when:

- The few treatments we have conducted at ASIS have been successful because they have caught the infestations early in their establishment. Both cut stump and foliar application have been successful with Triclopyr-based herbicides.

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 discovered, soon after their discovery.

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 2021 includes:

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

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Ligustrum vulgare* (Privet Bush)

2020 Activity

Monitoring Only



© Smithsonian Institution

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 .

Specific Infestation Location(s):

ASIS housing vegetation buffer

Areas Currently Infested at ASIS:

[X] Headquarters (Mainland)

Treatment History: ☐ Newly Encountered ☐ Treated $\leq$ 5 Years ☒ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

No herbicides used in 2020

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. No plants were discovered in 2020. All previous treatments were seen to be effective when observed in 2020 and its status is likely to be changed to "eradicated" in 2021.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Lonicera japonica* (Honeysuckle)

2020 Activity

Monitoring Only



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

Current Conditions:

Lonicera japonica (Honeysuckle) was first encountered at ASIS by botanist Steven Hill in 1984 which he described as being, "infrequent but apparently established in the disturbed sands and shrub successional zone at ASIS and increasing", at the time of his publication. After many years the populations have grown island-wide, but are aggregate in their locations. ASIS has treated this vine species since 2005. The current, sizable populations are restricted to 1.) the ASIS Developed Area, 2.) the shrub successional zone from the beginning of the OSV to kilometer 19, 3.) along the roadsides to Scotts point, 4.) on the North end at the Shell Road and 5.) at the ASIS Headquarters property.

Specific Infestation Location(s):

This species intertwines with other shrub species at ASIS to gain access to sun, in particular *Smilax rotundifolia* (Greenbriar) and *Morella cerifera* (Wax Myrtle) are impacted by the vines growing on them, which can topple them over time, especially during extreme wind events..

Areas Currently Infested at ASIS:

☒ Island (North end) ☒ Headquarters (Mainland) ☒ Island (Developed Area) ☒ Island (OSV)

Treatment History: ☐ Newly Encountered ☐ Treated $\leq$ 5 Years ☒ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

No herbicides used in 2020

Notes:

Bayside campground and Scotts Point have benefitted greatly from repeated treatments of this species. At Bayside campground the cover of this species has been greatly reduced and has been converted to largely ground populations. At Scotts point, a population explosion was prevented by having controlled the area before the forest started to decline in 2012 from southern pine beetles. Had we not treated that area prior to the loss of the forest there from southern pine beetles, there would be very large patches of the vines there. Treatments will resume in 2021, if assistance is available.

***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, or ground treatments can slowly reduce the reproductive potential of seed banks that will be present beneath the previously well-established occurrences. Having sufficient assistance is the key element in treating this species, because the effort required to cover large infestation areas at ASIS is significant.

Difficulties with treating this species include:

- This species comeslingles with difficult-to-penetrate thickets of thorny, viny, shrubby vegetation like greenbriar and muscadine making it difficult to get close to targets. It is challenging to grid while wearing backpacks in treatment areas that are wild and undeveloped lacking access trails. The timing of treatments do not often coincide with the arrival of our seasonal employees and IPMT teams have been difficult to schedule at this time for the same reasons, though in the past were able to commit assistance to ASIS at that time on a few occasions. Spring treatments (April) result in considerably less non-target application, as the target is emergent early in the growing season and is most visible then, before other comingling native vegetation emerges later in May and June. This species is so well established at ASIS that it has been very difficult to maintain at manageable levels.

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

- Continuing treatments at the Bayside campground peninsula, targeting roadside infestations throughout the developed area, treating the infestations that lie in the shrubs and forest between Km 17 through Km 19 in the OSV.

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

- Gaining a manageable level of control once again in areas where this can be reasonably accomplished.

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

- Continued proliferation and expansion of populations island-wide.

The proposed treatment of this species in 2021 includes:

***Mentha suaveolens* (Woolly 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, indicating 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 than 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 2021 includes:

- Treatment of any recruits in the vicinity of Greenbriar house.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Mentha suaveolens* (Wooly Mint)

2020 Activity

0.0007 Acres Treated



Image Credit: NetPS Plant Finder Tool



Current infestation site (marked in red) at the Headquarters housing area

Current Conditions:

Mentha suaveolens (Wooly Mint) was first encountered at ASIS in 2009 at the Headquarters property in the housing area. The herbaceous species has been treated at ASIS since 2009 in the housing area where it has remained restricted to.

Specific Infestation Location(s):

Originally located behind (North of) Greenbriar house and successfully treated there over years, the current infestation lies South of Greenbriar house near a large *Acer rubrum* (Red Maple) tree.

Areas Currently Infested at ASIS: ☒ Headquarters (Mainland)

Treatment History: ☐ Newly Encountered ☐ Treated $\leq$ 5 Years ☒ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

Garlon 4 Ultra (Triclopyr) 3%, Rodeo (Glyphosate) 2%

Notes:

The introduction of this species to the Headquarters property came from an unintentional planting. Presumably, leftover pots of the plants were discarded behind the house, where some individuals became established leading to a perennial patch that was several meters across when discovered and initially treated. While this species has remained at a manageable level it is a reminder that unintended actions in park housing can have consequences on other operations. It is recommended that pots of similar mint species be tended by residents, rather than plantings. The few plants that were seen during other treatments in the same locations in June and September of 2020 were treated bringing this species another step closer to eradication.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Microstegium viminium* (Stiltgrass)

2020 Activity

0.0902 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.

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 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.

Areas Currently Infested at ASIS:

☒ Headquarters (Mainland)

☒ Island (Developed Area)

Treatment History: ☐ Newly Encountered ☐ Treated $\leq$ 5 Years ☒ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used: Rodeo (Glyphosate) 2%

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 2020, no activity was observed on the island but at Headquarters there were infestations, apparently reduced by previous treatments, in the vegetated buffers on our southern and eastern boundaries that required treatments in August, September and October.

***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 2021 includes:

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

***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 original site of detection moving southward into the dense thicket of Wax Myrtle shrubs in 2020 where it was extensively 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 2021 includes:

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

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Miscanthus sinensis* (Silvergrass)

2020 Activity

0.0988 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 and (2) small occurrences in the OSV.

Specific Infestation Location(s):

The (2) new, small sites discovered during searches in 2015, will require observation in 2021 as they have yet to be revisited since 2015. These sites were located at (NAD 1983, UTM Zone 18N) N 42247067, E 485229 (4 plants) and N 4224710, E 485231 (2 plants).

Areas Currently Infested at ASIS:

[X] Island (North end)

[X] Island (OSV)

Treatment History: [] Newly Encountered [] Treated $\leq$ 5 Years [X] Treated $\geq$ 5 Years [] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Polaris (Imazapyr) 2%

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 has always been a challenge to treat thoroughly. It may be necessary to establish pathways to ensure that gridding of the area could be entirely thorough. The area was treated thoroughly in September and a follow up treatment occurred in November of 2020. The first treatment was very successful and very little remained to be treated that had not been targeted initially.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: Nuisance Weeds

2020 Activity

0.6894 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 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, bike path edges 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 $\leq$ 5 Years [X] Treated $\geq$ 5 Years [] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Polaris (Imazapyr) 2%

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 (10) treatments were conducted during June, July and August of 2020 throughout the park in both MD and VA.

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 unwanted 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 herbicide 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 2021 includes:

- Taking each request for treatments of nuisance weeds with herbicides on a case by case basis, and discussing the actions with park Resource Managers, to seek approval of the actions before 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 produce propagules effectively in those locations, but without recruitment. It has not proven to be highly invasive, but we have not wished 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.

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 2021 includes:

- Monitoring the single site that was treated in 2019 to observe if any further treatment is required.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Paulownia tomentosa* (Princess tree)

2020 Activity

Monitoring Only



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

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; the single tree that was discovered was treated that same year. A second tree was found in summer of 2019 that was treated that same year. At ASIS, this tree species is restricted to just the one recently discovered site which needs to be monitored post-treatment.

Specific Infestation Location(s):

First discovery N 4224376, E 485171 (NAD83, UTM Zone 18N) -Not active in 2019, second discovery N 4223674, E 484833 (NAD83, UTM Zone 18N) -Active and treated in 2019

Areas Currently Infested at ASIS: ☒ Island (OSV)

Treatment History: ☐ Newly Encountered ☒ Treated $\leq$ 5 Years ☐ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

No herbicides used in 2020

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 is planned for 2021 to determine if there is recruitment at this site.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

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



2020 Activity

0.0815 Acres Treated

Image Credit: Jim
Solomon Missouri
Botanical Garden

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 (2) locations. All locations have been treated in 2020 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 (3) meters wide behind the Bayside canoe rental at the tip of Bayside peninsula in the forest there that was observed to be expanding in 2020.

Areas Currently Infested at ASIS:

[X] Headquarters (Mainland)

[X] Island (Developed Area)

Treatment History: [] Newly Encountered [] Treated $\leq$ 5 Years [X] Treated $\geq$ 5 Years [] Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%

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-'19) 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 2020 when treated in September of 2020. The Headquarters infestations were treated in August, October and November of 2020.

***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 landscape.
- There is a significant population of plants on neighboring lands, that constantly send propagules onto our Headquarters property. These source populations are not controlled by any treatments by the neighboring land managers.

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 2021 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.

***Phragmites australis* (Phragmites)**

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 2021 includes:

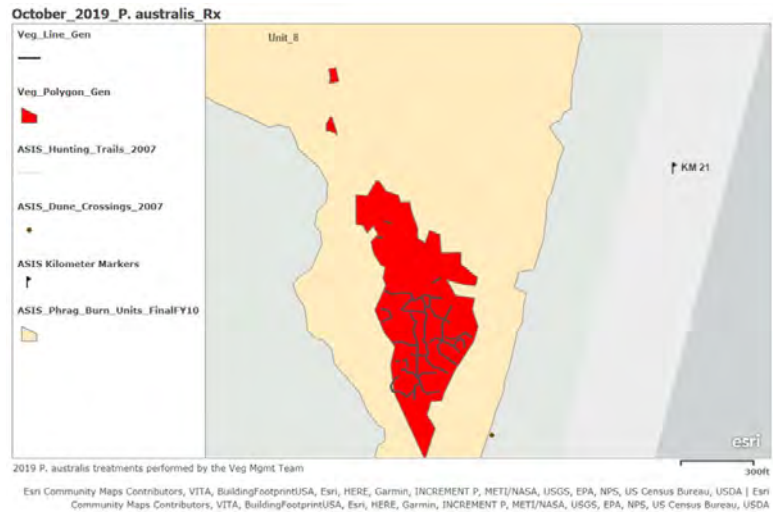
- Ground treatments in previously treated areas of the developed area and in the OSV.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Phragmites australis* (Phragmites)

2020 Activity

Monitoring Only



IPMT Liason Nathan Wender in Burn Unit 8 (Image Credit: J. Chase NPS)

Map: Combined ASIS/ IPMT Treatment at Burn Unit 8

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, then prescribed fire for 2 cycles starting in 2008 and ending in 2009. 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)

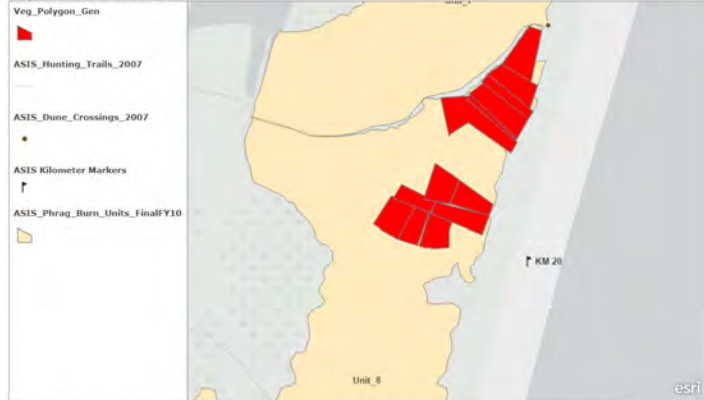
Treatment History: [] Newly Encountered [] Treated $\leq$ 5 Years [X] Treated $\geq$ 5 Years [] Eradicated

Herbicide(s) Used: No herbicides used in 2020

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: In October of 2019, the Mid Atlantic IPMT assisted ASIS at Burn Unit 8, West of the Bullpen and in the north of the Unit. These treatments at Burn Unit 8 were deemed successful during a visit in the unit in October of 2020. The treatments at Green Run were observed to have been thorough and effective when observed in September of 2020.

July_2019_P. australis_Rx



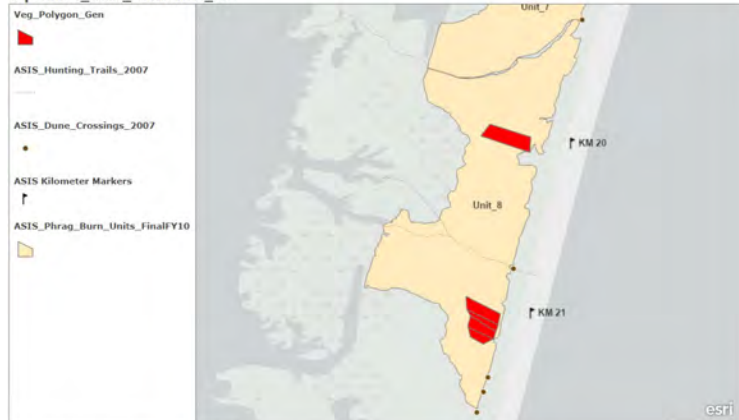
VITA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA | VITA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

August_2019_P. australis_Rx



VITA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA | VITA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

September_2019_P. australis_Rx



VITA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA | VITA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

September_2019_P. australis_Rx at Green Run



Esri Community Maps Contributors, VITA, BuildingFootprintUSA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA | Esri Community Maps Contributors, VITA, BuildingFootprintUSA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

October_2019_P. australis_Rx



Esri Community Maps Contributors, VITA, BuildingFootprintUSA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA | Esri Community Maps Contributors, VITA, BuildingFootprintUSA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

October_2019_P. australis_Rx



Esri Community Maps Contributors, VITA, BuildingFootprintUSA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA | Esri Community Maps Contributors, VITA, BuildingFootprintUSA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Pinus nigra* (Black Pine)

2020 Activity

1 Tree Cut



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

Areas Currently Infested at ASIS:

☒ Headquarters (Mainland) ☒ Island (Developed Area) ☒ Island (OSV)

Treatment History: ☐ Newly Encountered ☐ Treated $\leq$ 5 Years ☒ Treated $\geq$ 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.

***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 High Wins 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 removed 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.

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 infestation will expand.

The proposed treatment of this species in 2021 includes:

- Monitoring both the Clements and High Wins 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 application, 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 2021 includes:

- Monitor the Bayside campground for new plants in spring (looking for regeneration) and later in the fall when the plants are in flower (looking for the tell-tale blossoms).

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Rosa multiflora* (Multiflora rose)

2020 Activity

0.0131 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:

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.

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.

Areas Currently Infested at ASIS:

☒ Headquarters (Mainland) ☒ Island (Developed Area) ☒ Island (OSV)

Treatment History: ☐ Newly Encountered ☐ Treated $\leq$ 5 Years ☒ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Garlon 4 Ultra (Triclopyr) 3%

Notes:

Treatments of this species occurred in multiple locations during June, July, September, October and November, 2020. Small shrubs were treated at the end of Oceanside drive, behind the canoe rental at the end of Bayside drive and at the Park Headquarters in the vegetated buffer behind the Maryland Visitor Center between June and November on (6) occasions.

Assateague Island National Seashore: Vegetation Management Summary (Year 2020)

Species Targeted: *Rosa wichuraiana* (Memorial rose)

2020 Activity

0.0062 Acres Treated



Image Credit: A. Barra Real Jardín Botánico, Madrid



Map: *R. wichuraiana* planting site (red square) across from housing buffer (green polygon)

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 restricted to the mainland at Park Headquarters.

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

Areas Currently Infested at ASIS:

[X] Headquarters (Mainland)

Treatment History: ☐ Newly Encountered ☐ Treated $\leq$ 5 Years ☒ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Garlon 4 Ultra (Triclopyr) 3%

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 November of 2019 along the southern border of HQ, as well as at the Housing and Sinepuxent vegetation buffers were seen to be successful during other treatments in the same locations during 2020. In June and September of 2020, (4) treatments were performed again at the same locations on new recruits.

***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 Headquarters 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 seed banks.

The proposed treatment of this species in 2021 includes:

- Targeting this species for treatments along with others in the same habitat at the park Headquarters property.

***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 2021 includes:

- Observing last years' treatments to see if additional work is needed to keep the plants out of the contact zones where they have been a problem in recent years.

Assateague Island National Seashore: Vegetation Management Summary (2020)

Species Targeted: *Toxicodendron radicans* (Poison Ivy)

2020 Activity

0.0346 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 $\leq$ 5 Years ☒ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Garlon 4 Ultra (Triclopyr) 3%

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 June and July of 2020, the Life of the Dunes trail, the Bayside canoe rental and the Boneyard were treated to prevent contact with visitors and employees.

Herbicide Use 2020

Species	acres treated	Garlon 4 Ultra (mL)	Rodeo (mL)	Polaris (mL)	Monitoring Only
Ailanthus altissima	none	none	none	none	x
Artemesia vulgaris	0.031877	215			
Artemesia vulgaris	0.002500			10	
Artemesia vulgaris	0.070423		265		
Carex kobomugi	0.104771			161	
Cirsium arvense	0.119846	585			
Cirsium arvense	0.205087		730		
Cirsium vulgaris	0.002471			10	
Cirsium vulgaris	0.012355		50		
Clematis terniflora	0.106255		360		
Eleusine indica	0.459615		1860		
Eragrostis curvula	0.019764			80	
Glechoma hederacea	0.044479	270			
Glechoma hederacea	0.019767		80		
Lezpedeza cuneata	0.004942	30			
Lezpedeza cuneata	0.001235		5		
Mentha suaveolens	0.000247	5			
Mentha suaveolens	0.000494		1		
Microstegium viminium	0.090191		230		
Miscanthus sinensis	0.024705			100	
Miscanthus sinensis	0.074132		370		
Morus alba	0.002224	8			
Nuisance Weeds	0.059305			240	
Nuisance Weeds	0.630118		2550		
Pennisetum alopecuroides	0.081536		325		
Phragmites australis	none	none	none	none	x
Pinus nigra	0.008896	none	none	none	
Rosa multiflora	0.007660	43			
Rosa multiflora	0.005436		20		
Rosa wichuraiana	0.003707	30			
Rosa wichuraiana	0.002471		10		
Toxicodendron radicans	0.044479	270			
Toxicodendron radicans	0.034595		140		

Assateague Island National Seashore: Vegetation Management Summary (Year)

Species Targeted:

Activity

____Acres Treated or Monitoring Only

Insert image here

Insert map here

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 $\leq$ 5 Years ☐ Treated $\geq$ 5 Years ☐ Eradicated

Herbicide(s) Used:

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

Notes:

Species covered in this report:

Ailanthus altissima (Tree of Heaven)

Artemesia vulgaris (Mugwort)

Arthraxon hispidus (Small carpetgrass)

Carex kobomugi (Asiatic Sand Sedge)

Cirsium arvense (Canada thistle)

Cirsium vulgare (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)

Lagerstroemia indica (Crepe Myrtle)

Lezpedeza cuneata (Chinese Lezpedeza)

Ligustrum vulgare (Privet Bush)

Lonicera japonica (Honeysuckle)

Mentha suaveolens (Woolly Mint)

Microstegium viminium (Stiltgrass)

Miscanthus sinensis (Silvergrass)

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)

Toxicodendron radicans (Poison Ivy)

Summary Statements:

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 2021 includes