

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

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

2019 Activity

Monitoring Only



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



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 successfully repeatedly by ASIS vegetation technician Jonathan Chase. This tree species remains active but is restricted to just one known location at this time. The only active site in 2019 is restricted to a 50 meter long section of the dune facing the inlet on ASIS's North End (pictured above). The current active site is likely to produce recruits, but has not thus far following previous treatments there in 2017.

Areas currently infested at ASIS:

☒ Island (North end)

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

Herbicide(s) Used:

☒ No herbicides used

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 2019 and the previous years' treatment in 2017 was found to have been a continued success; all trees that had been treated were dead and the area beneath the treated trees were without any recruitment.

This site must be monitored again in 2020 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, appeared to have been successful when monitored in August of 2019.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: *Artemisia vulgaris* (Mugwort)

2019 Activity

0.4534 Acres Treated



Image by: 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 2019; the species is restricted to (8) locations.

Areas Currently Infested at ASIS:

This species currently occurs at ASIS in (7) 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, 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, 7.) The end of Bayside campground loop C west corner and 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, however this species has also 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 2019 continued in earnest, as an apparent seed bank continues to produce many plants, particularly at the Headquarters property. Of the 8 infestations listed above, all but the first required treatments in 2019. Triclopyr herbicides 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 2019)

Species Targeted: *Arthraxon hispidus* (Small carpetgrass)

2019 Activity

0.8995 Acres Treated



Image Credit: Leslie J.
Mehrhoff Invasive.org

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 the roadsides of the Developed Area and the Headquarters property. Vegetation Management began to treat this species for the first time in 2019.

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, preferring the full sunlight.

Roadsides in the Developed Area of ASIS (MD)

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

Herbicide(s) Used:

Rodeo (Glyphosate) 2%

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 2019. 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 Sinepuxent Vegetation Buffer, 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.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

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

2019 Activity

0.0672 Acres Treated



Image Credit: C. Nolan (NPS)



Image Credit: 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.

Areas Currently Infested at ASIS:

- ☒ 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% (Until 2015), 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 2019. Since 2015, ASIS has used Imazapyr instead of Glyphosate herbicide and had better results with regards to efficacy. 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.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: *Cirsium arvense* (Canada thistle)

2019 Activity

0.3991 Acres Treated



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

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. Next to the hunt shack at the Ranger Contact station.

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%, Garlon 4 Ultra (Triclopyr) 3%, Polaris (Imazapyr) 2%

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.

Treatments of *C. arvense* were conducted during October and November of 2018 and in June, August and September of 2019 on the Headquarters property in the un-mowed vegetation buffers Headquarters Housing Buffer, the UMES Buffer and the Sinepuxent Vegetation Buffer that border our Headquarters property to the North, South and East. Also treated on the island, were the boneyard and Hunt shack by the Ranger Contact station.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

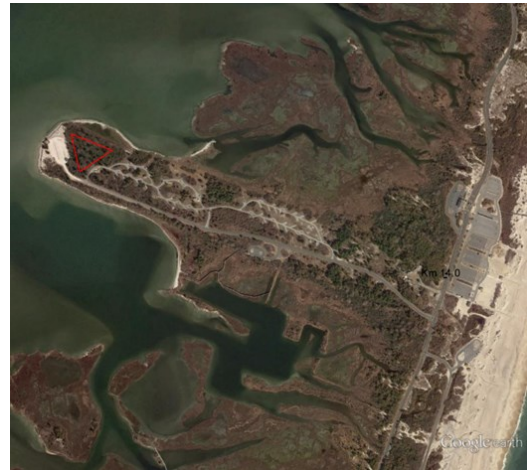
Species Targeted: *Clematis terniflora* (Virginsbower)

2019 Activity

0.3608 Acres Treated



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



Map: Bayside Peninsula (red triangle indicates area of infestation)

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 (3) 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.) the causeway to the island in Maryland (on State Park lands).

Areas currently infested at ASIS:

[X] Island (Developed Area)

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

Herbicide(s) Used:

Rodeo (Glyphosate) 2%, Polaris (Imazapyr) 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 technician began working at ASIS in 2003. The entire known infestation area was found to be very active during an early season assessment of the area in Spring of 2019. The site had been treated, in earnest, in late summer of 2016 after access trails were cut using a weed wacker hedge trimmer attachment. There were some *C. terniflora* vines discovered at the western portion of loop C at Bayside campground on Bayside drive about 50 meters east of the dump station on the north side of Bayside Drive. The 2016 treatments were highly effective, but since then, the trails that had been cut to allow access have fully grown back over and there was a great need to treat this entire area again in 2019, since there had been recruitment observed at the site. In late August of 2019 treatments were conducted at the location and again, a month later in September, a follow up treatment was conducted there. More treatments are suggested in the same locations in 2020.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: (Dwarf Juniper)

2019 Activity

0.0015 Acres Treated



Image Credit: J. Chase (NPS)

Current Conditions:

Dwarf Juniper was first encountered at ASIS in 2018 and was treated soon after its discovery in that same year. This prostrate tree species is currently 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:

Rodeo (Glyphosate) 2%

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.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: *Elaeagnus umbellata* (Autumn Olive)

2019 Activity

0.0494 Acres Treated



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.

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

Areas currently infested at ASIS:

[X] Headquarters (Mainland)

[X] Island (Developed Area)

Treatment History: ☐ Newly Encountered ☐ Treated $\leq$ 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:

E. umbellata saplings continue to emerge at the Headquarters area of ASIS, but few were of a detectable size in 2019, so few treatments were conducted on this species in 2019 on Park lands.

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.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: *Eleusine indica* (Wiregrass)

2019 Activity

0.1730 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, or weeds..

Specific Infestation Location(s):

Roadsides and bike paths throughout the park.

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

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 2019. Treatments were conducted during May in Maryland at the Visitor Center and Headquarters parking lots and in June at the Life of the Forest parking lots.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: *Eragrostis curvula* (Lovegrass)

2019 Activity

0.1730 Acres Treated



NPS Images

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 serves as 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 we 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.

Areas Currently Infested at ASIS:

[X] Island (Developed Area)

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:

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 August of 2019 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.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: *Glechoma hederacea* (Creeping Charlie)

2019 Activity

0.0692 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 at the Headquarters property where the species is restricted to.

Specific Infestation Location(s):

UMES Vegetation Buffer

Areas Currently Infested at ASIS:

☒ Headquarters (Mainland)

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

Herbicide(s) Used:

Rodeo (Glyphosate) 2%

Notes:

Repeated treatments of this species on the Headquarters property occurred in May, June, August and September of 2019.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: *Hedera helix* (English Ivy)

2019 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 is 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

Notes:

Monitoring of the previously infested areas at Clements inholding and near Bayberry North house in 2019 did not discover any activity of this species in either area.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: *Lagerstroemia indica* (Crepe Myrtle)

2019 Activity

Monitoring Only



© Robin R. Buckallew



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 at ASIS. This tree species is restricted to this single occurrence, which when monitored in 2019 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

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 2019. Additional monitoring of the site will occur once annually for 2 additional years 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 2019)

Species Targeted: *Lezpedeza cuneata* (Chinese Lezpedeza)

2019 Activity

0.0469 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.

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:

In October of 2018 the Bayside peninsula between A loop and the Boneyard, as well as the end of Bayside Loop C (West corner), as well as the traffic circle to Bayside Dr. on Bayberry Drive were targeted for the treatment of this species. Later in August of 2019, the Developed Area on Bayberry Drive from the northern boundary by sign on west side of road, to the boneyard, was treated.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: *Ligustrum vulgare* (Privet Bush)

2019 Activity

0.002 Acres Treated



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

Current Conditions:

Ligustrum vulgare (Privet Bush) was first encountered at ASIS in 1984 by botanist Steven Hill at Great Egging island, but was described as rare elsewhere. ASIS began treating this shrub species in 2009 when a small grove of shrubs were discovered in the vegetated buffer behind the Maryland Visitor Center. This 2009 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:

Garlon 4 Ultra (Triclopyr) 3%

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.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: *Lonicera japonica* (Honeysuckle)

2019 Activity

0.4819 Acres Treated



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", he wrote. After many years the populations have grown island-wide. 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 Park 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.

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:

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

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 it is likely that there would be very large patches of the vines there.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

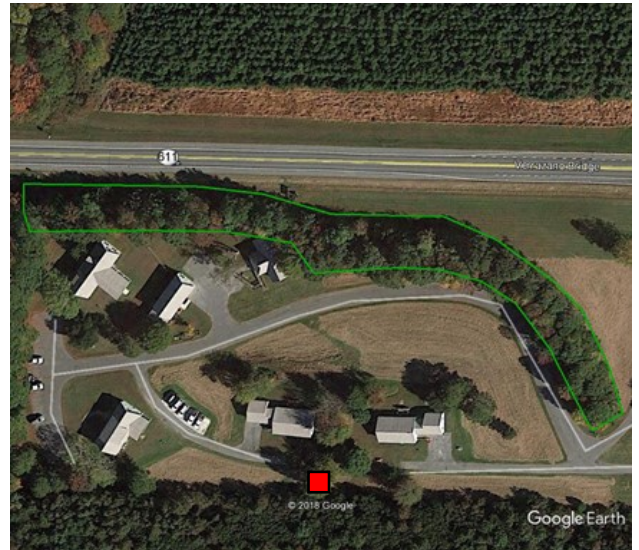
Species Targeted: *Mentha suaveolens* (Wooly Mint)

2019 Activity

0.0012 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 Park 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) Loblolly house and successfully treated there over years, the current infestation lies South of Loblolly house near a large *Acer rubrum* (Red Maple) tree.

Areas Currently Infested at ASIS:

[X] Headquarters (Mainland)

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

Herbicide(s) Used:

Garlon 4 Ultra (Triclopyr) 3%

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.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: *Microstegium viminium* (Stiltgrass)

2019 Activity

0.6919 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):

Park Headquarters: 1.) The entire southern border of the property, 2.) the vegetation buffer on the East of the property from the Verrazzano bridge to the Paul Sarbanes Coastal Ecology Lab, 3.) the meadow that is in the center of park housing and on the island, and 4.) 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 at this time. The untreated infestations that lie nearby, or upon borders will remain a threat to us at the Headquarters property for the foreseeable future.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: *Miscanthus sinensis* (Silvergrass)

2019 Activity

Monitoring
Only



Image Credit: James H. Miller, USDA Forest Service, Bugwood.org

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 treatments in 2020 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:

No herbicides used

Notes:

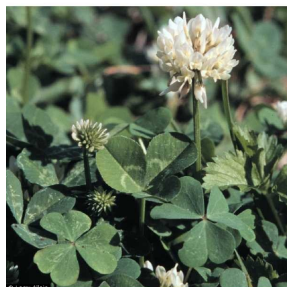
An expansion at the North end inlet infestation to the south from the forest where the plants were first controlled was discovered in Fall of 2019 while monitoring the site. The tall grasses had penetrated further into the Wax Myrtle shrubs there and had expanded closer to the wetland that lies to the West. This will be an area 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 transects there to ensure that gridding of the area can be entirely thorough.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: Nuisance Weeds

2019 Activity

1.8829 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):

1.) The Virginia Maintenance Compound, 2.) the Maryland Boneyard, 3.) the vehicle storage area at park Headquarters, and 4.) 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 ☒ 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.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: *Paulownia tomentosa* (Princess tree)

2019 Activity

0.0062 Acres



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 this year. At ASIS, this tree species is restricted to just the one recently discovered site.

Specific Infestation Location(s):

1.) The first discovery N 4224376, E 485171 (NAD83, UTM Zone 18N) -Not active in 2019, 2.) the second discovery N 4223674, E 484833 (NAD83, UTM Zone 18N) -Active and treated in 2019

Areas Currently Infested at ASIS:

[X] Island (OSV)

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

Herbicide(s) Used:

Polaris (Imazapyr) 50%

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 on site (and left there as the bag weighed nearly 80 lbs.) to prevent recruitment in the future. Return trips are recommended to determine if there are viable seeds remaining in the seed bank that could lie in the footprint of the now felled tree.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

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



2019 Activity

0.3039 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 2019 with success and are at manageable levels.

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.

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:

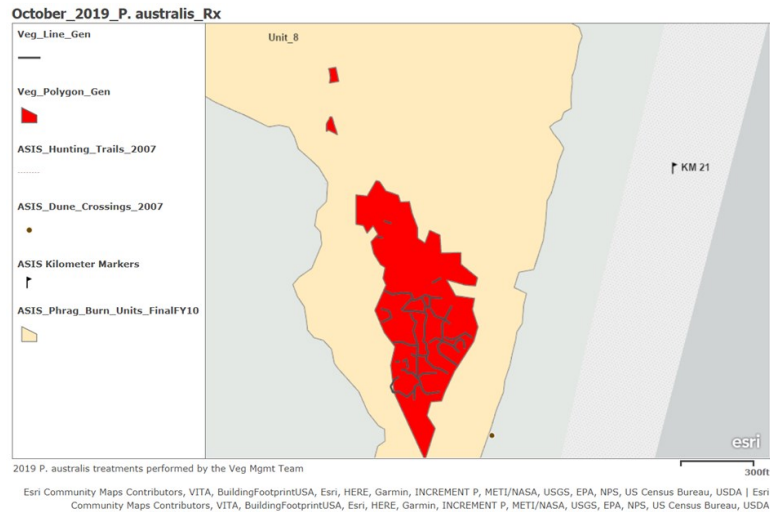
The infestation at the ASIS Headquarters is most certainly the result of introduction from our neighboring golf course where mowed clippings containing seeds were deposited adjacent to natural areas where they were able to recruit themselves. Once established, they flourish in any range of sunlight and 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.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: *Phragmites australis* (Phragmites)

2019 Activity

45.4353 Acres Treated



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

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 2010. Ground treatments have occurred at ASIS since 2009 that focus on patches with lower densities (<60%). Invasive Plant Management Teams help annually 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)

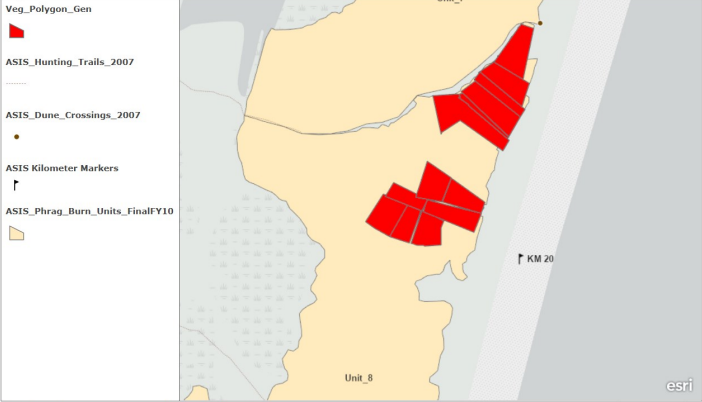
Treatment History: [] Newly Encountered [] Treated $\leq$ 5 Years [X] Treated $\geq$ 5 Years [] Eradicated

Herbicide(s) Used: Polaris (Imazapyr) 2%

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.

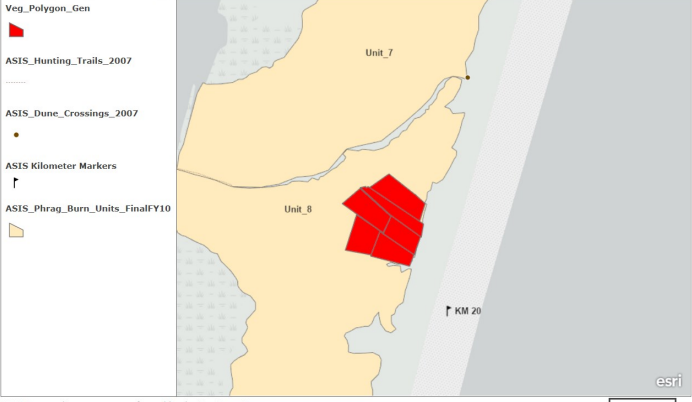
Notes: ASIS/ SCA Native Plant Corps worked at Burn Unit 8 and Green Run Road in July, August, and September. In October, Mid Atlantic IPMT assisted ASIS at Burn Unit 8 West of the Bullpen and in the North of the Unit. See following page for maps of the 2019 treatments.

July_2019_P. australis_Rx



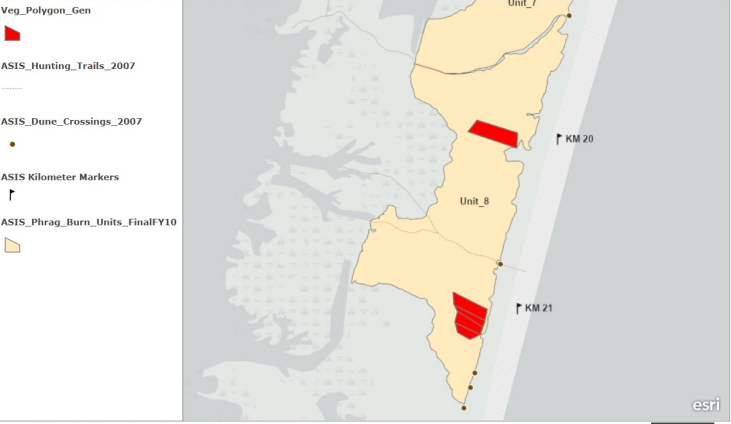
2019 P. australis treatments performed by the Veg Mgmt Team
VITA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA | VITA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

August_2019_P. australis_Rx



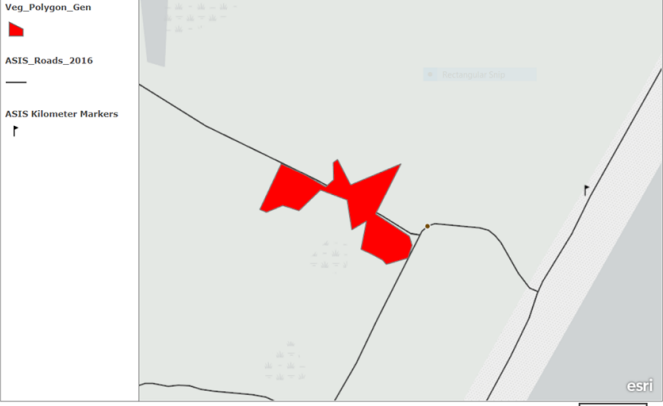
2019 P. australis treatments performed by the Veg Mgmt Team
VITA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA | VITA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

September_2019_P. australis_Rx



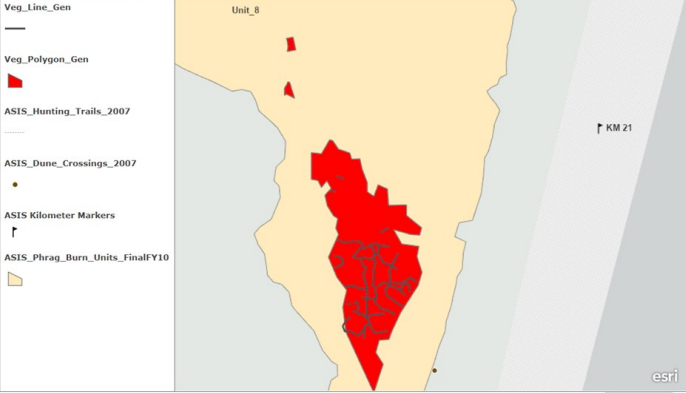
2019 P. australis treatments performed by the Veg Mgmt Team
VITA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA | VITA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

September_2019_P. australis_Rx at Green Run



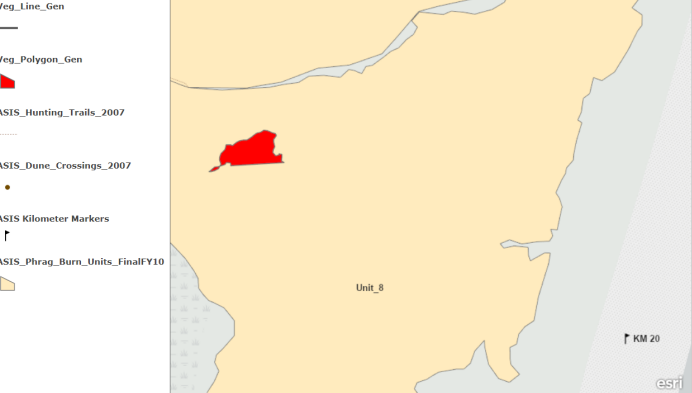
2019 P. australis treatments performed by the Veg Mgmt Team
Esri Community Maps Contributors, VITA, BuildingFootprintUSA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA | Esri Community Maps Contributors, VITA, BuildingFootprintUSA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

October_2019_P. australis_Rx



2019 P. australis treatments performed by the Veg Mgmt Team
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



2019 P. australis treatments performed by the Veg Mgmt Team
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 2019)

Species Targeted: *Pinus nigra* (Black Pine)

2019 Activity

2 saplings cut



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

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:

[X] Headquarters (Mainland) [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

Notes:

Pinus nigra (Austrian 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 now reside 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.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: *Rosa multiflora* (Multiflora rose)

2019 Activity

0.0667 Acres



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 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):

1.) In open gaps where sunlight is abundant in the shrub zone, or edges of forest, 2.) the vegetated buffers at the ASIS Headquarters and 3.) Bayside Campground frequented by birds that drop seed from populations outside ASIS that quickly become large shrubs.

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%, Polaris (Imazapyr) 2%

Notes:

Treatments of this species occurred in multiple locations during 2019. In October and November of 2018 treatments were conducted at Clement's inholding and the MD Headquarters housing area. In April of 2019 treatments were conducted at Bayside Drive, between the boneyard and Bayside drive, the Headquarters property, Loop A between Bayside Drive and the campsites, north of the intersection of loops A and B in Bayside campground. In May of 2019, treatments occurred at 1.) the North side of the Headquarters parking lots, 2.) the UMES vegetation buffer, 3.) the southern border of Headquarters from shed A westward, and 4.) the Sinepuxent vegetation buffer.

Assateague Island National Seashore: Vegetation Management Summary (Year 2019)

Species Targeted: *Rosa wichuraiana* (Memorial rose)

2019 Activity

0.0259 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 road triangle at the entrance to ASIS housing as part of an extensive landscaping project of the grounds in 1979, much of which still remains today. In 2004, biological technician Jonathan Chase observed that the planting 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. wichuraiana* 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. wichuraiana* was first introduced eventually became heavily infested. When in the open *R. wichuraiana* 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 occurred in November of 2018 along the southern border of HQ, as well as at the Housing and Sinepuxent vegetation buffers. In May and June of 2019, treatments again continued at the same locations.