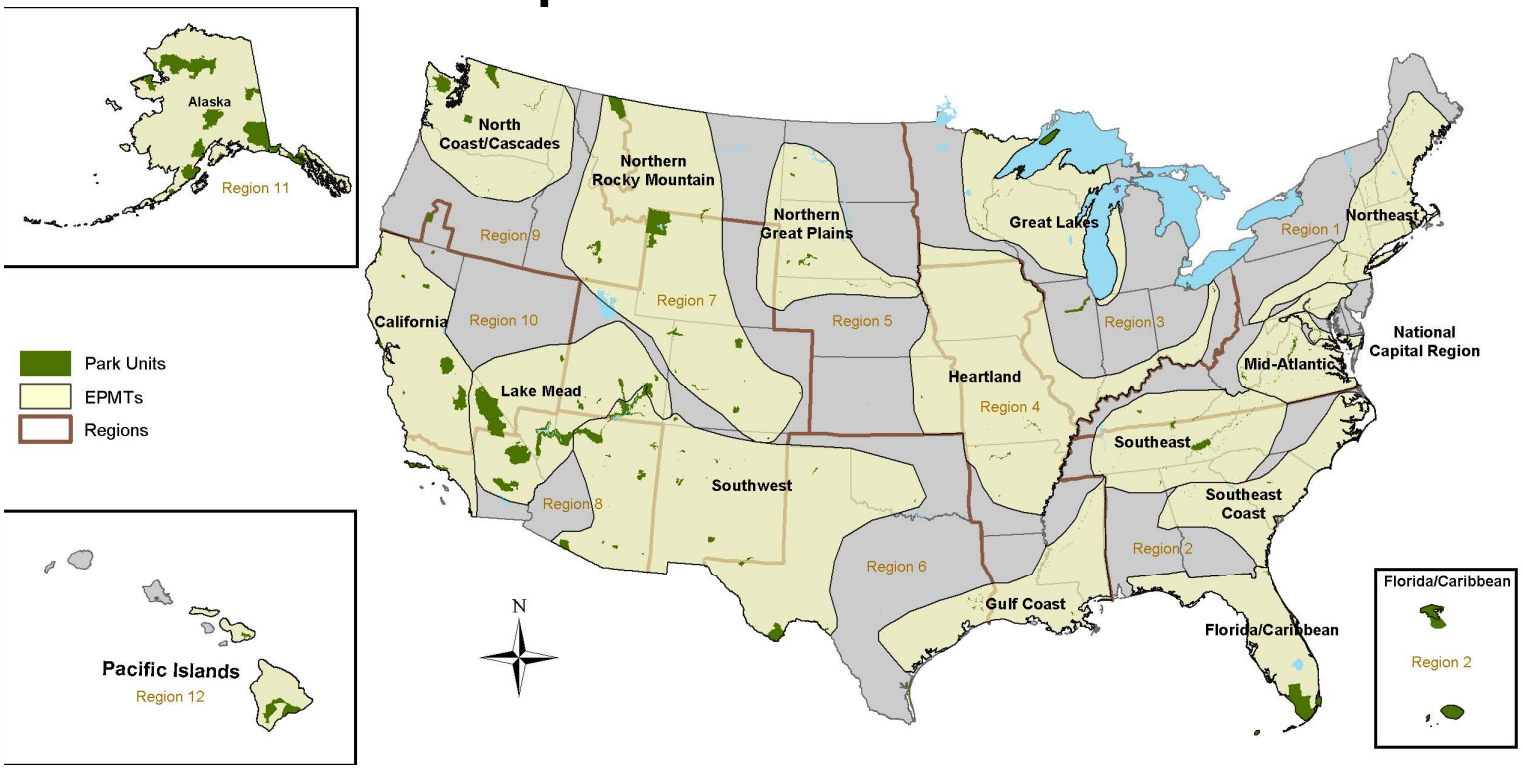
Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

IPMT Annual Report: FY 2021



Map of Invasive Plant Management Team (IPMT) boundaries across the US and territories. Each team's name appears within the polygon that includes the parks they serve.

Background

The National Park Service (NPS), one of the 11 bureaus within the US Department of the Interior (DOI), is tasked with protecting park units' vast natural and cultural resources "for the enjoyment, education, and inspiration of this and future generations" (NPS Mission Statement). Federal laws and DOI and NPS policies direct park staff and 17 Invasive Plant Management Teams (IPMTs) to take steps to prevent the introduction of invasive species, and to control and eradicate established populations. The IPMTs were created in 2000 through the Natural Resource Challenge to assist parks with the growing threat posed by invasive plants. The national NPS Invasive Plant Program (IPP) funds 15 of the IPMTs. The Heartland Inventory and Monitoring Network and DOI Region 2 oversee the other two teams. The teams serve over 298 park units and non-NPS partners across the US and its territories. The IPP staff and IPMTs are an integral part of the NPS response to a growing invasive species threat and provide a source of expertise in invasive plant management not otherwise available in most parks.

Since the program's inception, team liaisons have consistently demonstrated innovation, flexibility, and efficiency in managing their programs. Faced with unique challenges, each team incorporates strategies that best serve their partners to effectively protect natural, cultural, and significant ethnographic resources by providing or funding on-the-ground invasive species management support. In fiscal year (FY) 2021, the teams treated 7,430 acres and inventoried 20,390 acres for invasive plant species. In addition to treatment and survey work and with support from IPP and partners, IPMTs are leading efforts to prevent the introduction of new invasive species by guiding

Background (cont.)

parks to adopt the DOI Early Detection and Rapid Response (EDRR) framework into daily operations. The IPMTs also lead restoration efforts to increase native plant community resilience and reduce susceptibility to future invasions.

The IPMTs do so much more. They engage youth by providing employment and volunteer opportunities to inspire and train a new generation of land stewards. In 2021, 546 youth employees and volunteers contributed 129,270 hours to inventory and control of invasive plant species under the purview of the IPMTs. The IPMTs also provide a range of valuable training opportunities to park staff, partners, and volunteers. They effectively leverage program dollars through resourceful, productive, and mutually beneficial partnerships with contributions valued at nearly $5 million in FY 2021. This collaborative approach to manage invasive plants allows the teams to stretch limited IPMT funds to assist parks and partners.

The IPMT program is supported by the IPMT Advisory Group (IPMTAG) that is made up of representatives from across the NPS. The IPMTAG provides oversight, strategic direction, and invaluable assistance to the program. Together with the IPP Manager, they tackle emerging issues and significant challenges faced by the IPMTs in order to facilitate the teams' efforts across the country.

With a changing climate, parks and IPMTs must brace for new norms that may further exacerbate challenges associated with the management of invasive species. Through IPMTs' innovation, flexibility, and efficiency, the teams are well equipped to continue protecting and preserving the natural and cultural resources entrusted to the NPS for this and future generations.

What the IPMTs Protect: The Gulf Coast IPMT protects habitats such as Cypress tupelo swamp at Big Thicket National Preserve in Texas. NPS photo.

Prevention and EDRR: Southeast Coast IPMT Boot Brush Station at Congaree National Park, South Carolina. NPS Photo.

What the IPMTs Protect

The NPS IPMTs are proactive and innovative in their approaches to invasive plant management to protect resources. These resources span the entire US and its territories, and many are recognized as globally important, having garnered designations and recognitions including international biosphere reserves, designated wilderness, biodiversity hotspots, and Important Bird and Biodiversity Areas. The IPMTs strive to protect a range of natural resources and native ecosystems. IPMT territory covers coastal, wetland, and riparian native plant and animal communities including on the east, Gulf, and west coasts, the dunes along the shores of Lake Superior, western rainforest valleys, riparian woodlands, southeastern old-growth bottomland forest, and a variety of wetland types. Teams cover terrestrial communities such as boreal forests, high and low elevation sagebrush steppe, sub-alpine meadows, cave features, tallgrass prairies, eastern deciduous forests, and mixed shortleaf pine-oak-hickory forests. The IPMTs' invasive plant management work also protects a range of species of concern and the habitat they require to survive including that of sea turtles, snowy plovers, least terns, and Coho salmon, as well as multiple rare, significant, and globally threatened ecosystems.

The IPMTs' work also protects and preserves cultural resources and historic sites and features. Many parks commemorate important historical events, locations, people, and cultural practices, which requires integrating invasive plant management into cultural landscapes. They include historic battlefields, archeological sites, earthworks, scenic byways, and ethnographic and cultural landscapes.

DOI Invasive Species Strategic Plan

Following the John D. Dingell Jr. Conservation, Management, and Recreation Act (Public Law 116-9) in 2021, the DOI released its new Invasive Species Strategic Plan ([1]U.S. Dept of Interior 2021). It is a comprehensive framework for managing invasive species across DOI bureaus and offices from 2021 to 2025. The framework, rooted in nine crosscutting principles, includes five overarching goals for the management of invasive species. They are:

1. Collaborate across Interior and with others to optimize operations through leveraging partnerships, joint educational efforts, and shared funding.

[1]U.S. Department of the Interior. 2021. U.S. Department of the Interior Invasive Species Strategic Plan, Fiscal Years 2021-2025. Washington, D.C., 54p. DOI Invasive Species Strategic Plan | U.S. Department of the Interior

DOI Invasive Species Strategic Plan Cont.

2. Cost-effectively prevent the introduction and spread of invasive species into and within the United States.

3. Implement early detection and rapid response efforts in coordination with other Federal agencies, States, Tribes, Territories, and other partners to reduce potential damage and costs from new infestations becoming established.

4. Cost-effectively control or eradicate established invasive species populations to reduce impacts and help restore ecosystems.

5. Improve invasive species data management for decision-making at all levels of government.

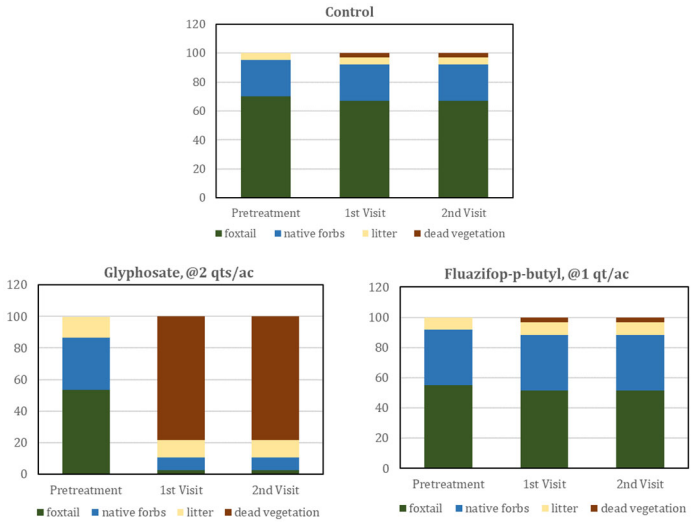
Through collaborative conservation, DOI, its bureaus, offices, and partners hope to leverage existing opportunities to prevent, control, and eradicate invasive species that are threatening the nation's environment and natural and cultural resources that federal agencies are tasked with protecting. The framework reinforces use of prevention and EDRR principles for cost effective management. The principles identified in the strategic framework are not new to the NPS and IPMTs. For years IPMTs have been working with partners to slow the spread of invasive plants and, when feasible, prevent the introduction of new species into NPS park units.

Prevention, Early Detection and Rapid Response

Prevention and EDRR are the most effective means to control invasive species. The IPMTs and Biological Resources Division, in partnership with the North American Invasive Species Management Association, secured over 100 boot brushes and other prevention tools that were distributed to units of the NPS over the course of the year. The Southeast Coast IPMT acquired two boot brush stations for partner parks. The stations, equipped with information signs, are a perfect way to engage visitors and raise awareness of invasive species issues experienced by the parks.

IPMTs use a range of tools to assist in EDRR efforts. In 2021, the Gulf Coast IPMT turned to citizen scientists and a recent publication ([2]Young et al. 2021) to aid parks with the detection of new invasive species looming on the horizon. The team developed invasive species watch lists using a readily available citizen scientists' tool, iNaturalist,

[2]Young, B.E., M.T. Lee, M. Frey, K. Barnes, and P. Hopkins. 2021. Using citizen science observations to develop managed area watch lists. Natural Areas J. 41(4): 307-314. http://doi.org/10.3375/21-8



Science, Technology, and Innovation: Results of a Northern Rocky Mountain IPMT herbicide trial on creeping foxtail (*Alopecurus arundinaceus*) at Fossil Butte National Monument shows percent cover averaged across three treatment blocks.

Science, Technology, and Innovation: National Capital Area IPMT and park staff setting up clear plastic for soil solarization at Brownsville Picnic Area, Manassas National Battlefield. NPS Photo.

Prevention, Early Detection and Rapid Response

and statistical software to gather observations of invasive species within a roughly 100 mi (160 km) buffer around selected national park units. The watch lists help natural resource staff identify potential new invaders and refine prioritization of control efforts within parks. Pacific Islands IPMT also turned to technology to aid with detection of new species in difficult to access sites. At Haleakalā and Hawai'i Volcanoes National Parks, outside experts analyzed imagery collected from a helicopter mounted camera array to locate EDRR species. The team then used this information to deploy on the ground crews to complete initial treatments and post-treatment monitoring. Through early detection efforts like this, parks and partners can eradicate invasive species before they outcompete native vegetation and alter community dynamics.

When a new species is detected within or near a park unit, quick response is necessary to control and contain the new invader. California (CA) IPMT worked closely with Pinnacles National Park (PINN) and an adjacent private landowner to survey and control a population of a new invader ,stinkwort (*Dittrichia graveolens*). By working together, the CA IPMT and its partners were able slow and possibly prevent the spread of this new species farther along the watershed and into PINN. While on the east coast, the Southeast IPMT and American Conservation Experience interns discovered and removed oriental bittersweet (*Celastrus orbiculatus*) as an EDRR species in Big South Fork National River and Recreation Area. Both projects demonstrate the need for surveys to detect, delimit, and then control emerging species before they threaten natural and cultural resources.

Science, Technology, and Innovation

Invasive species pose many threats to National Parks such as altering existing ecosystem functions, impeding recreational activities, compromising irreplaceable historic structures, and posing risks to human and animal health. Using the limited range of traditional management tools, park staff are unable to control established invasive species, and the introduction of new species is exacerbating the problem. However, NPS can stem the tide of invasive species by using proven, innovative methods and technology and science as modeled by the IPMTs that have adopted these new methods.

In order to prioritize the deployment of parks' finite resources available for invasive species management, Art Gover, of the Penn State

Science, Technology, and Innovation Cont.

University Wildland Weed Management program, developed the Habitat and Invasive Species Management Planning Tool. In 2021, staff from Minute Man National Historic Park, the Northeast Region Inventory and Monitoring Division, and the Northeast (NE) IPMT used the tool to prioritize invasive species management efforts across the park. This collaborative approach ultimately yielded a detailed management plan which park and IPMT staff will use to plan treatment efforts.

In addition to helping to prioritize the management of invasive plant species, the teams work with parks and partners to identify effective treatment methods and strategies. In recent years, Fossil Butte National Monument, an 8,198-acre park located in southwest Wyoming, has seen creeping foxtail (*Alopecurus arundinacea*) cover increase in its high elevation riparian meadows. To identify the most effective treatment options, the Northern Rocky Mountain (NRM) IPMT set up experimental plots to test five treatment options using two different herbicides. Preliminary results suggest that a single application with a non-selective herbicide is an effective treatment option for the invasive grass if timed correctly. The team plans to continue this research in following years to improve treatment options available to the parks and identify strategies to reduce damage to native plant species.

To improve efficacy of their treatments, North Coast-Cascades Network (NCCN) IPMT increased the timeframe within which treatment can be conducted by adding pre-emergent herbicides as a tool to target problematic invasive species before seeds germinate. This technique effectively reduces the viable seed bank of poison hemlock (*Conium maculatum*) which may persist for up to a decade.

While NE, NCCN, and NRM IPMTs explored new strategies for managing and prioritizing treatment of invasive plants, the National Capital Area (NCA) IPMT looked to the past for inspiration. At Manassas National Battlefield, the team used solarization to combat a persistent invasive legume, sericea lespedeza (*Lespedeza cuneata*). In May 2021, NCA IPMT installed 2000 sq ft of clear, greenhouse-grade plastic to kill the existing, sizable seedbank. Because this control method is non-selective, park staff re-seeded the area with a native seed mix of forbs and grasses after the plastic was removed in November 2021. While this technique cannot be used at all locations, it is a very useful strategy for managing highly degraded open areas with an existing and substantial invasive plant seed bank.

Strategic Management: The Great Lakes IPMT arriving at the Raspberry Island lighthouse for slope restoration work, Apostle Islands National Lakeshore. NPS Photo.

Strategic Management

Restoration projects conducted within a larger landscape context that includes cultural resources are complex. At Apostle Islands National Lakeshore, a multi-year slope restoration project is in progress following stabilization work to ameliorate erosion of shores below the Raspberry Island lighthouse. After shore stabilization, this highly disturbed site became a hotspot for invasive plants. The Great Lakes IPMT began controlling invasive plants here and revegetating the slopes to prevent further degradation and protect the historic lighthouse working on one section at a time. At Hopewell Culture National Historic Park, Heartland Network IPMT and park staff and Conservation Corps of Iowa interns removed invasive woody plants encroaching on earthworks constructed approximately 2,000 years ago. The goals are to expand the control of invasive plants, prevent reinvasion of the earthworks, and bring the disturbed forest area closer ecologically to the adjacent forest that harbors a high-quality native plant understory.

Other strategies slow the spread of and reduce native plant communities' susceptibility to invasive plants. In Kenai Fjords National Park, the Alaska IPMT targeted invasive plants along frequently used travel corridors where they are more likely to be introduced, be disbursed to other sites, and successfully outcompete native vegetation. Through this strategy, the team hopes to stem the spread of invasive plants into the park's more pristine interior. Another strategy is to protect the forest canopy which slows or prevents the establishment of invasive plant species like Japanese stiltgrass (*Microstegium vimine-um*). This species takes advantage of available light and can establish in canopy gaps. In Shenandoah National Park, the Mid-Atlantic IPMT helped protect over 340 native trees by combatting hemlock woolly adelgid (*Adelges tsugae*) and emerald ash borer (*Agrilus planipennis*) which have opened gaps in the canopy and drastically altered the species composition of eastern deciduous forests.

Working with Partners

Through collaborative conservation and with youth organizations, the IPMTs hope to train and inspire a new generation of land stewards. The Northern Great Plains IPMT integrated members of the Montana Conservation Corps into field crews to increase capacity and efficiency of operations, while the Southwest IPMT worked with Ancestral Lands Conservation Corps to manage bulbous bluegrass (*Poa bulbosa*) at the North Rim of the Grand Canyon. In 2021 alone, IPMTs worked with more than nine youth organizations to increase teams' capacity to manage invasive plants across NPS.

Working with Partners: The Southeast (SE) IPMT crew leader conducts utility terrain vehicle training for SE and Southeast Coast IPMT interns and American Conservation Experience staff leading IPMT youth crews. NPS Photo.

Working with Partners

Interagency agreements, non-federal partnerships, and contracts are also an integral part of IPMTs operations. Since 1996, Lake Mead IPMT has worked with federal and non-federal partners to restore vulnerable ecosystems across the Southwest. The Florida and Caribbean IPMT utilizes contracted crews from four private companies for large eradication projects within park units which also benefits adja-cent lands. The flexibility to adapt a range of strategies allows the IPMTs to provide cost-effective support to all partner parks and partners.

Summarized Data for 2021

Measure	Acres
Treated	**7,430**
Inventoried/Monitored	**20,390**
Gross Infested Area (Acres where an individual target species was found, regardless of infestation level.)	**70,785**
Net Infested Area (Density-adjusted surveyed area infested by each species. Calculated by multiplying the Gross Infested Area for each by the percent cover of that species in the specific location.)	**4,756**
Youth Engagement	
Total Number of Youth Participants and Youth Employees	546
Total Hours for Youth Participants and Youth Employees	129,270

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National Park Service
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Natural Resource Stewardship and Science
Biological Resources Division

Alaska IPMT Annual Report: FY 2021

Kenai Fjords National Park Invasive Plant Management Team technicians and Student Conservation Association (SCA) intern treating oxeye daisy (*Leucanthemum vulgare)* by first removing the flowering heads then spraying with herbicide. NPS Photo

Background

The Alaska Invasive Plant Management Team (AK IPMT) provides assistance to 16 units of the National Park Service (NPS) in Alaska. These units cover more than 52 million acres of high-quality natural areas and wilderness, including coastal fjords, glacial valleys, tundra, and boreal forests. Most national parks (NP) in Alaska protect healthy, intact, native ecosystems, but invasive plants are making their way into some of these areas.

The geography of Alaska makes invasive plant management difficult, requiring backcountry or air travel to reach many parks. Recreational use is widely dispersed with access by boat, backpacking, or planes. Remote airstrips, trails, cabins, and concessionaire activities can provide pathways for the introduction of invasive species into wilderness areas, where they are difficult to detect and manage. Therefore, the Alaska IPMT program relies heavily on information, knowledge, and participation from park staff.

The AK IPMT provided technical assistance to most of the parks it supports during fiscal year (FY) 21. In addition, the AK IPMT placed interns in Katmai NP and Preserve (KATM), and Kenai Fjords NP (KEFJ). The IPMT liaison helped Yukon-Charlie Rivers National Preserve (YUCH) with their non-native plant survey along the river. Denali NP and Preserve (DENA), Glacier Bay NP and Preserve (GLBA), and Klondike Gold Rush National Historic Park (KLGO) all used the IPMT for data management purposes. Despite the ongoing challenges related to the COVID-19 pandemic, the team completed many project in FY 21.

Program Highlights

Kenai Fjords National Park (KEFJ) Highlights

KEFJ saw a reduction in the infestation rates of invasive species at many sites managed by the AK IPMT. In 2020, the park observed a decrease in visitors due to COVID-19 pandemic. This allowed park staff to manage non-native invasive plants in areas popular among visitors during a normal year. Invasive plant control efforts from 2020 were noticeable in 2021, especially along roads, maintenance yards, and parking lots. The team and park staff will continue managing invasive plants in popular and high-use visitor areas to minimize their spread into less disturbed park areas.

Katmai National Park and Preserve (KATM) 2021 IPMT Highlights

KATM was able to bring back interns after not having any in 2020 due to the COVID-19 pandemic. In 2021, IPMT interns focused their efforts on sites managed by the team in past years. Work completed by interns and park employees should go a long way in helping reduce the populations that were untreated in 2020 and allow for a smaller crew in 2022.

Klondike Gold Rush National Historic Park (KLGO) employee putting the final pin in a tarp that is being used to smother orange hawkweed (*Hieracium aurantiacum).* NPS Photo.

Kenai Fjords National Park (KEFJ) technician and Student Conservation Association (SCA) intern hand pulling dandelion (*Taraxacum officinale*). NPS Photo.

Program Highlights (cont.)

Yukon-Charlie Rivers National Preserve (YUCH) Highlights

During 2021 field season, YUCH continued their annual surveys along the riverway for new infestations of white sweetclover (*Melilotus albus*). Park staff also conducted hand pulling trials to aid in the potential treatment of these sites.

Glacier Bay National Park and Preserve (GLBA) Highlights

Proceeds from cruise ships and other tour groups support the cost of travel and invasive plant control in remote locations of GLBA. Due to the COVID-19 pandemic, GLBA was unable to fund invasive plant control efforts in remote sites of the park. Park staff observed a reduction in some of the reed canarygrass (*Phalaris arundinacea*) patches that they have been monitoring and treating, which highlights the ground gained from previous efforts.

Summarized Data for 2021

Measure	Acres
Treated	15.2
Inventoried/Monitored	1,268
Gross Infested Area	1,397
Net Infested Area	18
Youth Engagement	
Total Number of Youth Participants and Youth Employees	7
Total Hours for Youth Participants and Youth Employees	4,398

Summary of Accomplishments

While COVID-19 continued to impact the Alaska IPMT, NPS staff and interns under the IPMT auspice surveyed and treated invasive plants in six parks this year. Some parks participated in and hosted volunteer days. Other parks increased their education and outreach capabilities, and implemented prevention measures by adding boot brushes and educational signs in areas with high visitor traffic. Park and IPMT staff were able to spend time assessing needs for next year, and developing plans for future monitoring, surveying, and treatments that include potential COVID-19 contingencies. With the ability to utilize Microsoft Teams, Zoom, and other virtual communication tools, the AK IPMT continues to build a strong relationships with parks and partners. Increased communication efforts should have a positive impact on the continual and cross jurisdictional treatments of invasive plant species.

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Natural Resource Stewardship and Science
Biological Resources Division

California IPMT Annual Report: FY 2021

The Dixie Fire from Lassen Volcanic NP burning the afternoon of August 4th, 2021; the fire burned over 100,000 acres in this photo by morning. NPS Photo

Background

The California Invasive Plant Management Team (CA IPMT) serves 14 parks and 17 total units in the California Floristic Province, one of 25 global biodiversity hotspots. The CA IPMT is a consultative model of the IPMT program that assists partner parks with all aspects of invasive plant management. CA IPMT provides technical assistance and direct financial support, along with expanded coordination between other state and federal agencies, partners, and non-governmental organizations. The CA IPMT model was developed to alleviate travel cost and overhead of a standing crew in a state as enormous as California, redirecting those extra funds directly to partner parks. The model seeks to augment local invasive plant management capacity and enable partners to leverage local resources to successfully build and maintain invasive plant programs at parks across the state.

This was another year marked by transitions; the transition of a new permanent liaison and transition to a state impacted by both climate change and fire. Multiple parks had fires and two were historic. Both Lassen Volcanic and Sequoia & Kings Canyon National Parks had fires that burned over 70,000 acres. Strong Resource Advisor (READ) and Burned Area Emergency Rehabilitation (BAER) teamwork revealed additional resources are needed to stand up appropriate measures to mitigate invasive plant introduction in the midst of fire emergencies. Working with parks to prepare for the 2022 fire season has already begun, taking lessons learned from both 2020 and 2021, with a focus on mobilizing data to assist operational decision-making.

Program Highlights

Moving beyond boundaries at Pinnacles National Park

If the regional fire season illustrated it with painful clarity, Pinnacles National Park (NP) staff have also been modeling ways to work with their neighbors and remind everyone NPS boundaries are just lines on a map. After early detection efforts in the watershed just to the north of the park revealed the presence of the nasty invader stinkwort (*Dittrichia graveolens*), CA IPMT supported Pinnacles NP to work closely with the adjacent land owner to stop this problem in its tracks along the park boundary with rapid treatment. If stinkwort had been allowed to continue spreading, it could have lead to major impacts downstream in the park along Marin Creek.

Working with the Spencer Ranch in the headwaters of Marin Creek, National Park Service (NPS) staff successfully mapped and treated hundreds of plants that had quietly expanded along the park's northern boundary and down into Pinnacles NP via Marin Creek. Multiple treatments later and staff are optimistic they stopped the nascent infestation in its tracks. Additionally, in the course of working in these remote and difficult to access areas, park staff located new populations of the invasive Italian thistle (*Carduus pycnocephalus*) they have been working to control for many years elsewhere in the park. Collaborative early detection of aggressive invaders and rapid response to staunch the spread illustrates the need for widespread surveys to detect, delimit, and then control a wide range of species that threaten California's floristic biodiversity.

Camp 8 prior to treatment in 2018, with Spanish broom (*Spartium junceum*) choking out a range of native chapparal species. NPS Photo

Camp 8 in 2021 following treatment by NPS and Los Angeles County fire personnel. NPS Photo

Program Highlights (cont.)

Invasive treatment collaborations in Santa Monica Mountains NRA

In collaboration with Los Angeles County Fire, Santa Monica Mountains National Recreation Area (SAMO) staff worked to control a range of invasive plants at the Camp 8 fire camp near Malibu. Formerly a Nike Missile site and now an active Los Angeles County fire camp, invasive plant control efforts at the site contribute to both ecological and fire protection goals.

Technicians successfully treated eight species from the park's list of the 25 most ecologically damaging invasive plant species on the 15 acre site. Fire personnel removed the Spanish broom (*Spartium junceum*) biomass that allowed for follow up cut-stump treatments by park staff. Along with treatments of tree tobacco (*Nicotiana glauca*), fennel (*Foeniculum vulgare*), castor bean (*Ricinus communis*), and fountaingrass (*Cenchrus setaceus*) crews were able to achieve 99% control this year for the targeted species. Follow up treatments and monitoring will continue for the next several years.

The project illustrates how collaboration with fire staff supports invasive plant control strategies that simultaneously meet fire protection, fuels reduction, and resource management goals. Fire cycles are becoming more intense and early invasive plant treatment can be win-win for both natural resources and fire management.

Summary of Accomplishments

The CA IPMT provided financial and logistical support in 2021 to 12 projects at seven different NPS units from Cabrillo National Monument to Point Reyes National Seashore to Lassen Volcanic National Park. Parks did initial treatments on over 370 gross acres and nearly 50 net acres while re-treating over 100 acres. Surveys and early detection rapid respond (EDRR) work was done on just shy of 200 acres, while treating over 30 individual species of concern. Lapse funding from the liaison position vacancy provided an additional $161,000 in direct support to partner parks, with additional leveraged resources of over $229,000 supporting ongoing work. These leveraged funds came from a number of sources including base funding from parks, the National Park Foundation, and a wide range of other private and public grant sources.

Summarized Data for 2021

Measure	Acres
Treated	48
Inventoried/Monitored	1,495
Gross Infested Area	376
Net Infested Area	10
Youth Engagement	
Total Number of Youth Participants and Youth Employees	23
Total Hours for Youth Participants and Youth Employees	2,511

More Information

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Biological Resources Division

Florida/Caribbean IPMT Annual Report: FY 2021

A view of Timucuan Ecological and Historical Preserve from the Pumpkin Hill Creek trail. NPS Photo.

Background

Invasive plants have a destructive effect on native plant communities by reducing native plant diversity and altering ecological processes such as fire behavior and ecosystem function. The Florida and Caribbean Invasive Plant Management Team (FLC IPMT) supports 16 National Park Service (NPS) units in Florida and the Caribbean by expanding existing invasive plant control efforts including inventory and monitoring, control, education, restoration, and research. The FLC IPMT utilizes contracted crews from four private companies for large eradication projects within park units. Smaller projects are carried out by the team, park staff, and volunteers. Due to the temperate, tropical, and sub-tropical climate zones found within the team's 2.68 million acre range, many of these invasive species create enormous challenges. Just over 400,000 acres of those lands are infested with invasive species. Some common species that are targeted include: Brazilian pepper tree (*Schinus terebinthifolius),* Old World climbing fern (*Lygodium microphyllum),* Australian pine (*Casuarina equisetifolia),* and punktree (*Melaleuca quinquenervia).*

An annual steering committee meeting is held to review and approve the strategic direction and financial plan of the team, rank projects, ensure the team provides information that is relevant to management, and develop a treatment schedule for the fiscal year. The ranking committee consists of representatives from the Southeast Regional Office (SERO), the US Army Corps of Engineers (USACE), and the Florida Fish and Wildlife Conservation Commission (FWCC). These meetings are held at a different park unit each year.

Program Highlights

Biscayne C-103 Spoil Peninsula Restoration

The FLC IPMT and Biscayne National Park (BISC) staff completed restoration of the eastern C-102 spoil island in 2015, the western C-102 spoil island in 2017, and the C-102 spoil peninsula in 2020. BISC obtained funding to restore the C-103 spoil peninsula which is located just north of the visitor center. It was densely infested by Brazilian pepper tree (*Schinus terebinthifolius)*, beach naupaka (*Scaevola taccada*), and Asian nakedwood (*Colubrina asiatica*). The team coordinated with and worked along side park staff to treat these invasive species on the western portion of the peninsula. Once treatment was completed, crews chipped the plant debris and spread it across the project site. Hundreds of native, salt tolerant plants were planted at the start of the wet season to minimize watering requirements. Additional treatment and restoration efforts are being planned for the other portions of the peninsula.

Native habitat created through spoil area restoration provides habitat for coastal wildlife and benefits aquatic vegetation such as seagrass by reducing erosion of the adjacent shoreline. Because of its proximity to the visitor center, the site presented an opportunity to involve and educate the public on the benefits of environmental restoration and promote environmental stewardship.

Removing and chipping invasive plants on the C-103 peninsula at Biscayne National Park. NPS Photo.

FLC IPMT staff surveying TIMU for invasive plant species. NPS Photo.

Program Highlights (cont.)

Timucuan Ecological and Historical Preserve Invasive Plant Survey

A portion of the Timucuan Ecological and Historical Preserve caught fire in 2018, which opened up canopies and made previously treated areas vulnerable to new invasive plant infestations. In 2019, contractors were hired to survey and treat any infestations that occurred within fire areas. In March 2021, the FLC IPMT began invasive plant surveys within the preserve that had not been surveyed by NPS employees for over five years. The survey conducted along I-95 found that the area experienced a significant emergence of Chinese tallow (*Triadica sebifera*) and camphor tree (*Cinnamomum camphora*) just outside of the initial survey area. Other surveys within the preserve found additional infestations of lantana (*Lantana camara*), Chinese privet (*Ligustrum sinense*), and air yam (*Dioscorea bulbifera*).

The four teams in the region agreed that this park unit would make a great, central location to host a 20th anniversary event which would include treating invasive plants, UTV certifications, tablet collection demonstrations, citizen science, and other integrated pest management (IPM) related lessons for park and regional staff. Unfortunately, due to travel restrictions the event was postponed until next year.

Summary of Accomplishments

In February 2021, the FLC IPMT held its ranking meeting virtually for the first time due to COVID-19 restrictions. Five proposals were presented by park representatives and all were approved for funding. Additional projects in Big Cypress National Preserve and Everglades National Park were funded by contributions from the FWCC.

The FLC IPMT assisted South Florida/Caribbean Inventory and Monitoring Network with their Corridors of Invasiveness project at BISC. The team also completed their annual trip to De Soto National Memorial (DESO) to survey and treat new infestations.

Brian Lockwood completed a 120 day detail as the acting Natural Resource manager at BISC. Additionally, Shea Bruscia was hired as the regional IPMT data manager and will assist all four teams in the region with their data management needs.

Summarized Data for 2021

Measure	Acres
Treated	2,016
Inventoried/Monitored	35
Gross Infested Area	5,528
Net Infested Area	2,009
Youth Engagement	
Total Number of Youth Participants and Youth Employees	2088
Total Hours for Youth Participants and Youth Employees	1

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Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Great Lakes IPMT Annual Report: FY 2021

Conservation Corps of Minnesota (MN) and Iowa (IA) Corps member targeting spotted knapweed (*Centaurea stoebe*) in the Grand Sable Dunes, Pictured Rocks National Lakeshore (PIRO). NPS Photo.

Background

The Great Lakes Invasive Plant Management Team (GL IPMT) provides support to twelve national parks across four states in the western Great Lakes Region. From the dunes along the shores of Lake Michigan, west to the scenic riverways of Wisconsin and Minnesota, and north to the boreal forests along the Canadian border, this is an area with diverse aquatic and terrestrial ecosystems. The region contains many rare, significant, and globally threatened ecosystems. It is also home to an international biosphere reserve.

Geographical and environmental conditions have mostly limited invasive species to those of cultural origin (ornamental and intentionally planted species). However, visitor use and necessary maintenance activities have introduced other invasive species.

The team balances its activity to meet two different needs: (1) long-term, large-scale control and restoration, and (2) early detection and eradication of nascent populations. To meet those needs, the team provides parks with focused regional expertise and skilled control work. Discipline-specific knowledge and a network of partners allow the team to anticipate threats to individual parks and implement site-specific management strategies. As a shared regional resource, the team either augments existing management efforts at parks or provides the parks with management options.

Program Highlights

Promoting Pollinators in IPMT Projects at the Apostle Islands National Lakeshore.

Raspberry Island contains one of the Apostle Islands most picturesque landscapes with its iconic lighthouse perched above Lake Superior. Years of wave action eroded the slope to the lighthouse, jeopardizing the historic structure and lighthouse grounds. A massive slope stabilization project preserved the lighthouse and grounds; however, common tansy (*Tanacetum vulgare*), everlasting pea (*Lathyrus latifolius*), and crown vetch (*Securigera varia*) invaded the slope. Monocultures of invasive plants not only provide less erosion control but are of lower florist quality for pollinators and negatively effect public perceptions.

In 2018 the GL IPMT inventoried invasive plant populations along the slope and met with park staff to plan for removal and revegetation. With such high densities of invasive plants, treating the entire slope wasn't feasible due to the risk of destabilization. Invasive plant removal started this year using a terraced approach. Treatment was limited to a single section of the slope to prevent erosion. Once invasive plants are removed and the terrace is revegetated with native plants, additional sections will be restored. This project should increase slope stabilization, protect the lighthouse, benefit pollinators, and demonstrate to the public the value of native plants.

Conservation Corps of MN and IA Corps members inspect a threatened pitchers thistle (*Cirsium pitcheri)* while inventorying for spotted knapweed, Pictured Rocks National Lakeshore. NPS Photo.

GL IPMT arriving at the Raspberry Island lighthouse to begin invasive plant control work along the slope. NPS Photo.

Program Highlights (cont.)

Getting Back on Track at Pictured Rocks National Lakeshore (PIRO)

In 2018 the GL IPMT discovered wild chervil (*Anthriscus sylvestris*) scattered along nearly seven miles of park roadsides near the biologically important Grand Sable Dunes in Grand Marais, MI. It had not been previously detected within the park and only a few locations had been reported in Michigan's Upper Peninsula. After confirming the discovery and planning control work, the team was set to begin treatment in 2020. However, treatments were delayed due to the COVID-19 pandemic. In 2021, after implementing strict COVID–19 travel protocols, crews began control work. Although the delay allowed plant population density to increase dramatically, the team was able to treat all seven miles of roadsides. Additional treatment and coordination with county mowing crews will be required, but the wild chervil population was treated before it became unmanageable.

Delayed treatments resulted in increases to several other invasive plants at Pictured Rocks, including spotted knapweed (*Centaurea stoebe*). A 10 to 30 percent increase in species cover was observed across the team's project areas. The team's efforts in 2021 will start to reverse the rising trend. The pandemic's negative impacts on invasive plant management shows how quickly invasive plant populations can build, and reinforces the importance of recurring IPMT work.

Summary of Accomplishments

After implementing strict travel protocols the team was able to complete high priority, mission-essential invasive plant work in five distant and two local National Park Service units. Although several projects were cancelled due to COVID-19, the team treated over 374 gross acres of invasive plants.

With several early season projects canceled, the team was able to assist parks in other ways. Staff hosed virtual herbicide safety and application classes for all 12 GL IPMT partner parks. The team hosted Sawyer, Working Faller, and Journeyman Faller level Chainsaw Safety Maintenance and Operations (CSMO) classes at St. Croix National Scenic Riverway. Liaison Isaiah Messerly hosted CSMO operator and train-the-trainer classes in Hawaii for Pacific Islands IPMT and regional staff. In total, 21 students including three new instructors were certified during six CSMO and two train-the-trainer classes, building capacity in both Midwest and Pacific Island regions.

Summarized Data for 2021

Measure	Acres
Treated	53
Inventoried/Monitored	30
Gross Infested Area	1,115
Net Infested Area	48
Youth Engagement	
Total Number of Youth Participants and Youth Employees	14
Total Hours for Youth Participants and Youth Employees	6,706

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Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Gulf Coast IPMT Annual Report: FY 2021

The work of the Gulf Coast Invasive Plant Management Team protects important natural resource habitats such as Cypress tupelo swamps, dominated by bald cypress (*Taxodium distichum)* and water tupelo (*Nyssa aquatica*), at Big Thicket National Preserve in Texas. NPS photo.

Background

The Gulf Coast Invasive Plant Management Team (GC IPMT) supports eight National Park Service (NPS) unites within Tennessee and four Gulf Coast region states. In east Texas, the GC IPMT provides invasive plant management services for the culturally significant salt prairie and brushland ecosystems of Palo Alto Battlefield National Historic Park, shorebird habitat of Padre Island National Seashore on the undeveloped barrier island and spoil islands, the cultural landscapes surrounding the four mission churches of San Antonio Missions National Historic Park, and the ecologically important floodplain and wetland habitats of Big Thicket National Preserve. East to Louisiana, Mississippi, Alabama, and Tennessee, the GC IPMT aids in the protection of the Barataria wetlands ecosystem of Jean Lafitte National Historical Park and Preserve, the Civil War battlefield cultural landscape and surrounding natural areas at Vicksburg National Military Park, portions of seven ecoregions along Natchez Trace Parkway, and barrier islands including a federally designated wilderness area at Gulf Islands National Seashore.

The GC IPMT implements invasive plant control work across all partner parks through contracts. Additionally, the team relies on partnerships to identify and geospatially map priority infestations within the parks. The GC IPMT liaison oversees contracts and cooperative task agreements, and the regional IPMT data manager provides data management support.

Program Highlights

New Reference Documents for Parks

In 2021 the GC IPMT and youth interns continued to develop new reference materials to help park staff identify best management strategies for controlling invasive plant species. This effort included 37 species-specific documents posted within the NPS Washington Office's Integrated Pest Management internal online species strategy library. Each species strategy contains information on plant identification, phenology, and control methods. Species strategies remove the research burden from park staff by pulling important information together within one document posted on an easily accessible site.

The GC IPMT also finalized and internally distributed a National Pollution Discharge Elimination System (NPDES) permitting reference, which parks can use as a starting point when planning to apply pesticides in or near water. This reference document covers all states and territories where GC IPMT partner parks are located. It contains web links to relevant NPDES permits, a list of permitting contacts, and flow charts for permitting processes for each of the states and territories covered by the document. Both efforts by the GC IPMT demonstrate team's commitment to provide partner parks with most effective and efficient treatment recommendations in accordance with federal and state laws.

Halstead Bayou within the Davis Bayou unit of Gulf Islands National Seashore in Mississippi, an area where the GC IPMT treated multiple invasive plant species in FY 2021. NPS Photo.

Padre Island National Seashore spoil island 305G in Texas following fall 2019 treatments and spring 2021 retreatments of Brazilian peppertree. NPS photo.

Program Highlights (cont.)

Non-native Invasive Plant Treatments for Seven Gulf Coast Parks

The fiscal year (FY) field season started in early October 2020 with surveys and treatments of Chinese tallowtree (*Triadica sebifera*) on the Barataria Preserve unit of Jean Lafitte National Historical Park and Preserve in Louisiana. Initially planned for spring 2020, the team had to delay the project in response to COVID-19 travel restrictions and severe weather events, including hurricanes Laura and Sally. Later during the year, the team funded coordination and completion of surveys and treatments at non-partner park Natchez National Historical Park in Mississippi and five more partner parks from South Texas to the southeast Mississippi coast.

Invasive Plant Watch Lists for Parks

The GC IPMT began developing a series of park-specific watch lists of invasive plant species near but not yet in parks. The process used to develop the watch lists of early detection species, described in a recent publication (Young et al. 2021), uses the statistical software R Studio to summarize data from the citizen science tool, iNaturalist. In 2022 the team will partner with local experts to refine the watch lists and begin sharing the information with park staff and partners who manage invasive plant species.

Summary of Accomplishments

During FY 2021, the GC IPMT assisted seven parks including the mainland Davis Bayou unit of Gulf Islands National Seashore, spoil island bird habitats of Padre Island National Seashore, and priority long-leaf pine restoration areas at Big Thicket National Preserve. The team's liaison oversaw 3,033 hours of surveys and treatments covering more than 1,100 acres. The team treated 22 target species including trees like Chinese tallowtree (*Triadica sebifera*) and tree-of-heaven (*Ailanthus altissima*), shrubs such as Chinese privet (*Ligustrum sinense*), oleander (*Nerium oleander*), and Brazilian pepper-tree (*Schinus terebinthifolius*), vines including Japanese climbing fern (*Lygodium japonicum*), and wisteria (*Wisteria sinensis*), as well as grasses like cogongrass (*Imperata cylindrica*) and torpedograss (*Panicum repens*). The team also developed over three dozen reference documents to aid park staff with invasive plant management. The GC IPMT made up for limited field work in 2020, and despite continued COVID-19 challenges in FY 2021, provided much needed service to partner and a non-partner park.

Summarized Data for 2021

Measure	Acres
Treated	755
Inventoried/Monitored	0
Gross Infested Area	2,199
Net Infested Area	750
Youth Engagement	
Total Number of Youth Participants and Youth Employees	4
Total Hours for Youth Participants and Youth Employees	2,133

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Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Heartland Network IPMT Annual Report: FY 2021

Crew member controlling invasive woody plants to protect archaeological resources at Hopewell Culture National Historical Park. Photo by Hannah Moomaw, Conservation Corps Iowa.

Background

The Heartland Network Invasive Plant Management Team (IPMT) serves 16 national parks in eight states of the Midwest and Mid-south. The parks include an array of plant communities ranging from unplowed and restored tallgrass prairie in the Flint Hills of Kansas and Sioux quartzite outcrops in Minnesota; eastern deciduous forests from northeastern Iowa and northeastern Ohio to southwest Missouri and southern Indiana; Midwestern riparian woodlands; mixed shortleaf pine-oak-hickory forests in the Ozark and Ouachita Mountains; and a variety of wetlands from southeastern cypress-tupelo swamps to emergent wetlands along tributaries to Lake Erie. The majority of these parks commemorate important historical events, locations, people, and cultural practices, which requires integrating invasive plant management into cultural and natural landscapes.

The Heartland Network IPMT exists to serve park managers and the resources that they protect. The IPMT follows the National Park Service's constructive model of identifying "prudent and feasible" invasive plant control projects. Because there is, unfortunately, no single litmus test to assess the prudence or feasibility of a project, the IPMT works to ensure the connection of invasive plant management and restoration projects with larger park vegetation management goals; to assess the long-term costs of projects; and to rely on evidence-based scientific data to support projects.

Program Highlights

Preserving Earthworks at Hopewell Culture National Historical Park

Two thousand years ago, the Hopewell Mound Group was perhaps the most sacred place in an Indigenous religious movement that linked hundreds of communities all across eastern North America. American Indians marked this ceremonial landscape by building an earthen wall nearly six feet tall, more than two miles long, and enclosing more than 140 acres.

At Hopewell Culture National Historical Park, autumn olive (*Elaeagnus umbellata*) has encroached on and around this wall. Bush honeysuckle (*Lonicera maackii*) and multiflora rose (*Rosa multiflora*) also occupy the site. Woody invasive plants disturb buried artifacts and sediments, and reduce visibility of the earthworks.

The priority for this season's work was to clear encroaching trees from on top of and immediately surrounding the earthwork walls. The Conservation Corps of Iowa and park staff worked within 35 acres of this forest to complete a first clearing of the invasive woody vegetation. Because this area sits between older, less-disturbed forest and areas previously converted to pasture, the project will also improve forest quality to match that of the intact forest. The intact forest is home to a high-quality native understory, including many spring wildflowers. Similar management efforts will continue at the park with a goal of expanding the line of control and preventing reinvasion onto earthwork areas.

Crew members on the lookout for tree-of-heaven (*Ailanthus altissima*) at Buffalo National River. Photo by Dillan Simmons, Watershed Conservation Corps.

Crew member using the hack-and-squirt treatment method on large diameter tree-of-heaven at Buffalo National River. Photo by Dillan Simmons, Watershed Conservation Corps.

Program Highlights (cont.)

Scaling Up Tree-of-Heaven Management at Buffalo National River

The Heartland Network IPMT worked with the Watershed Conservation Corps (WCC) to scale up efforts to control tree-of-heaven (*Ailanthus altissima*) at Buffalo National River (BNR). In 2021, WCC acquired grant funding from the National Park Foundation to expand this work. After a year of focused effort, WCC treated all previously inventoried areas, while adding new sites. Over 117 miles of trails have been surveyed for tree-of-heaven.

Increasing the efficiency of the treatment method was critical for scaling up the project. After an initial field trial to verify the effectiveness of a hack-and-squirt treatment, the IPMT adopted this approach in lieu of tree felling. IPMT and BNR staff worked closely together to assess the risk associated with standing dead trees. This methodological change resulted in significant time and costs savings.

The project now comprises 96 project areas totaling 350 acres. The two sites with long-term treatment showed complete absence of tree-of-heaven in 2021, while 19 sites supported less than five square meters. The IPMT plans to treat 1/3 of these project areas annually. Continuing to scale up the project will require more complicated river and aerial surveys, and the IPMT continues to seek support for these steps.

Summary of Accomplishments

The Heartland Network IPMT portfolio of projects currently consists of 20 projects spanning over 2,450 acres. In FY2021 the IPMT continued work on 10 of these projects that covered approximately 1,159 acres. Heartland Network IPMT also surveyed Pea Ridge National Military Park for invasive plants.

The IPMT continued to strengthen its on-going relationship with Conservation Corps Iowa and supported the development of Watershed Conservation Corps. The team supported year-long dedicated crews from both organizations. These organizations are affiliated with the 21st Century Conservation Service Corps.

The IPMT published reports on the status of invasive plant locations and extent for George Washington Carver National Monument and Wilson's Creek National Battlefield.

Summarized Data for 2021

Measure	Acres
Treated	1,458
Inventoried/Monitored	0
Gross Infested Area	6,415
Net Infested Area	14
Youth Engagement	
Total Number of Youth Participants and Youth Employees	16
Total Hours for Youth Participants and Youth Employees	14,000

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Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Lake Mead IPMT Annual Report: FY 2021

FY2021 Lake Mead Invasive Plant Management Team with founding team member Curt Deuser standing left (seven members not shown). NPS Photo.

Background

The Lake Mead Invasive Plant Management Team (LAKE IPMT) was established in 1996 serving as the prototype model for what eventually developed into the National Park Service (NPS) IPMT program. The IPMT has conducted on-the-ground projects with field crews on land managed by the NPS, the Bureau of Land Management (BLM), US Fish and Wildlife Service (USFWS) Refuges, US Forest Service, Bureau of Indian Affairs Units, Bureau of Reclamation (Reclamation), Marine Corps Yuma Air Station, and sites managed by state and local entities.

LAKE IPMT's three primary goals are to **1)** provide expertise in the control of invasive plants in priority areas to preserve, restore, and maintain native plant communities, **2)** professionalize invasive plant management within the NPS and partner organizations by developing staff expertise, and **3)** improve government efficiencies through interagency cooperation by developing partnerships to effectively manage invasive plant species on a landscape scale. Partnerships are integral to the team's success, annually leveraging each NPS base dollar with three additional dollars. Partnerships facilitate invasive plant management across boundaries and increase the LAKE IPMT's capacity to serve NPS units. Annually, partnership funds total over a million dollars and support up to a 20 person crew in the field throughout the year. The LAKE IPMT's geographic locality and many partnerships in the regional area enable year-round operations that maximizes efficiency and the ability to control a diversity of invasive plant species.

Program Highlights

LAKE IPMT's Impact on the NPS

Prior to the IPMT program there was no central structure to consistently address invasive plants across the NPS. Although invasive species management was a priority, funding varied widely with no career path for professional development. Specialized positions did not exist. This work was a collateral duty and was also conducted by volunteers. Invasive plant management is technical, complex, and can involve the application of herbicides in remote, hazardous terrain under challenging conditions. In 1999 Congress enacted the Natural Resource Conservation Challenge Initiative that developed several NPS-wide programs including the IPMTs. Although the IPMT program represents a small portion of this funding, it was included because it focused on implementation and results. The IPMT program, which is base funded, has become the foundation of invasive plant management expertise in the NPS.

The LAKE IPMT has hired, trained, and developed more than 165 NPS employees since 1996. Many have since launched their careers with the NPS or elsewhere, taking with them the significance and knowledge of invasive species management. In 2016 the LAKE IPMT transitioned to 20 permanent career seasonal positions with minimal furlough, full benefits, and career ladder opportunities. All of the 17 IPMTs have contributed to the development of this large core of expertise in the invasive plant management field. The USFWS even adopted the NPS IPMT model, forming their own national Invasive Species Strike Team program.

Lake Mead IPMT 2003 crew members. Far left is Tarl Norman, long time leader, and Curt Deuser, liaison and founding member, is on the far right. NPS Photo.

Lake Mead IPMT 2006 crew members, Ian Torrence and Tarl Norman long time team leaders standing on right. NPS Photo.

Program Highlights (cont.)

LAKE IPMT's Impact on the NPS (cont.)

Another primary goal of the LAKE IPMT is to improve government efficiencies through interagency cooperation and partnerships to more effectively manage invasive species. The LAKE IPMT has partnered with most other Federal land management agencies surrounding the team's NPS partner parks to plan and manage on a landscape scale and beyond boundaries. Many long term partnerships have also been maintained with county and state agencies. Some examples include partnerships maintained over 20 years and totaling two million dollars with the BLM Southern Nevada District and Clark County, Nevada that provide expertise and implementation for invasive plant management and restoration; a 10 year partnership with the Coconino National Forest assisting with their vegetation management totaling a half a million dollars. The LAKE IPMT had 31 partnership agreements in FY21 totaling over $1.5 million dollars. These partners rely on the expertise of the team to safely and efficiently manage their most challenging invasive plant issues. A broad vision is to develop this type of partnering across the nation, similar to the inter-agency hot shot fire crew program.

Another Tool for Control of Invasive Annual Grasses

Indaziflam is a relatively new pre-emergent herbicide used to control invasive annual brome grasses that disrupt native plant communities and leads to increases in wildfires throughout the western US. It is a low use rate herbicide that is selective, causing minimal effects to non-target plants while providing longer term control (up to three years) of these annual exotic grasses. The LAKE IPMT applies this herbicide strategically to reduce hazard wildfire fuels in Zion, Mojave, and Joshua Tree National Parks.

Summary of Accomplishments

The LAKE IPMT conducted more than 50 projects at 11 NPS units, five BLM districts, two national forests, eight Reclamation conservation units, and four county preserves. The team transplanted over 1,000 native plants on multiple restoration projects to support continued movement of these sites toward healthy native plant communities.

Summary of Accomplishments (cont.)

The COVID-19 pandemic continued to challenge the world and LAKE IPMT operations over the last two years. The IPMT was more prepared in FY21 to continue with field operations after implementation of COVID risk exposure reduction measures to conduct mission essential projects. Some common practices included gathering outdoors for open air team meetings, splitting into smaller traveling crews, and reducing occupancy of vehicles and housing including altering use of shared common spaces like kitchens and bathrooms.

Summarized Data for 2021

Measure	Acres
Treated	504
Inventoried/Monitored	5,556
Gross Infested Area	2,175
Net Infested Area	331
Youth Engagement	
Total Number of Youth Participants and Youth Employees	12
Total Hours for Youth Participants and Youth Employees	20,720

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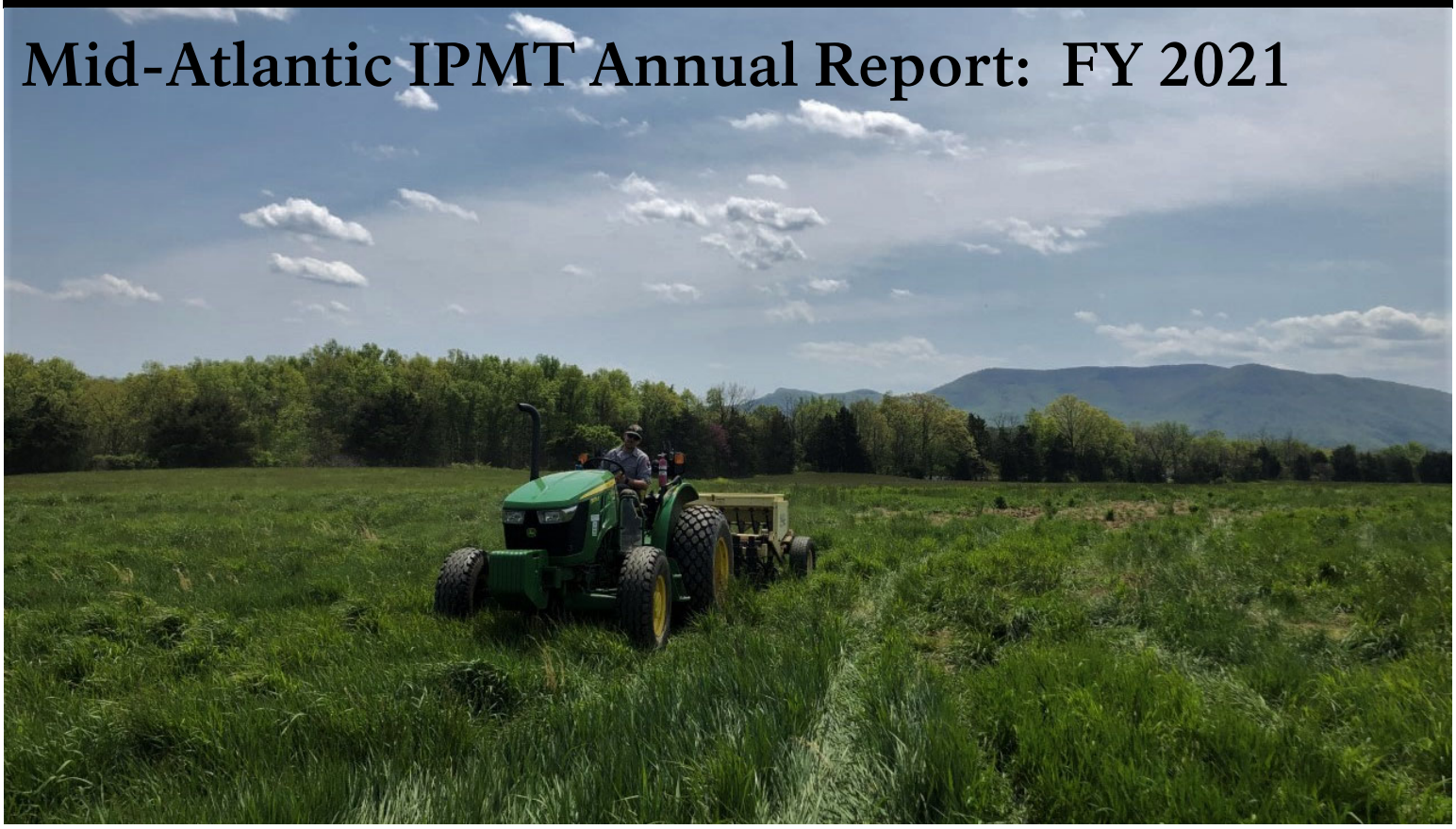
Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Mid-Atlantic IPMT Annual Report: FY 2021



Mid-Atlantic Invasive Plant Management Team (MA IPMT) crew member planting little bluestem grass (*Schizachyrium scoparium*) at Cedar Creek and Belle Grove National Historical Park. NPS Photo.

Background

The Mid-Atlantic Invasive Plant Management Team (MA IPMT), stationed at Shenandoah National Park (SHEN), began in 1999 as the Virginia Invasive Vegetation Management Team (VIVMT). The VIVMT supported nine National Park Service (NPS) units located in Virginia. In 2003, to meet a growing need for invasive plant management, the MA IPMT was established along with six other teams. The team now provides invasive plant management support to 21 NPS units in Maryland, Pennsylvania, Virginia, and West Virginia, and to partner lands adjacent to some parks. The parks served by the team range in size from 47 acres (Fort McHenry National Monument and Historic Site) to over 193,000 acres (SHEN) and include wilderness, natural areas, and suburban and urban environments. They are located from the Appalachian Mountains, through the Piedmont, to the Coastal Plain.

The MA IPMT uses integrated pest management strategies and best management practices to control invasive plants in ways that are effective, efficient, and least harmful to human and environmental health and to valuable resources within the parks. The team works with each park to help achieve their long-term natural resource management goals, and to act quickly when early detection rapid response is required. In addition to yearly visits for control work, the team advises parks on invasive plant management and restoration, and provides training to park staff and volunteers throughout the year.

Program Highlights

Hemlock and Ash Treatments at Shenandoah National Park

Shenandoah National Park (SHEN) began treating eastern hemlock trees (*Tsuga canadensis*) for hemlock woolly adelgid (*Adelges tsugae)* or HWA in 2006 and ash trees (*Fraxinus* spp.) for emerald ash borer (*Agrilus planipennis*) or EAB in 2018. To date, SHEN has conducted over 28,000 individual HWA treatments. HWA treatments evolved from using insecticidal soap in the early days of treatment to the present day practice of injecting insecticide into the soil around infested tree trunks. SHEN also releases predator beetles to combat HWA. EAB control efforts began with soil injections but have evolved to using specialized injection systems which utilize air pressure and the tree's natural turgor pressure to inject and uptake insecticide into the vascular system of trees. HWA treatments last seven to ten years. EAB treatments last two to three years.

Maintaining an intact forest canopy may slow down and sometimes prevent establishment of non-native invasive plant species, like Japanese stiltgrass (*Microstegium vimineum*), which can establish in canopy gaps, taking advantage of available light. The MA IPMT helped SHEN protect over 350 native trees across the park in key locations next to known infestations of non-native invasive plants. Monitoring and treatment at parks where ash tree mortality was high will be important for slowing non-native plant invasions and ensuring tree regeneration in these areas.

MA IPMT and SHEN staff treat a large infestation of wavyleaf basketgrass (*Oplismenus undulatifolius*) at Shenandoah National Park. NPS Photo.

MA IPMT staff survey native and invasive plants along the bank of the New River at New River Gorge National Park and Preserve. NPS Photo.

Program Highlights (cont.)

Meadow Survey at Cedar Creek & Belle Grove National Historic Park

In preparation for a meadow project to enhance pollinator and wildlife habit at Cedar Creek and Belle Grove National Historical Park, MA IPMT staff surveyed native and non-native plant species throughout the project area to determine baseline plant composition. Staff members gridded the site utilizing dichotomous keys, phone applications, and global positioning system devices to identify and mark plant occurrences. In total, the team identified 30 native and non-native plant species. With the knowledge of what plant species occur in the project area and where they occur, project managers can more appropriately select revegetation material and isolate planting areas to create a mosaic of habitat types across the landscape. Wildlife and pollinators should benefit from the variety of species composition and increased plant diversity within with the area.

20 Year IPMT Anniversary

To celebrate the 20th anniversary of the IPMT program, MA IPMT and Shenandoah National Park (SHEN) staff collaborated to treat 20 acres of wavyleaf basketgrass (*Oplismenus undulatifolius*) during two work days at SHEN.

Summary of Accomplishments

The MA IPMT had another safe and productive year in 2021. The team predominately worked at local parks and partner properties, but also assisted with improvement of rare plant habitats at Bluestone National Scenic River and New River Gorge National Park and Preserve, and treated invasive grasses at Thomas Stone National Historic Site. In addition to on the ground support, the team provided technical assistance on invasive plant management and financial support to fund invasive plant control contracts for parks and partners.

The team made important updates to equipment to aid in the safety and efficiency of treating large infestations of non-native invasive plants.

MA IPMT looks forward to working with parks and partners in 2022!

Summarized Data for 2021

Measure	Acres
Treated	262
Inventoried/Monitored	546
Gross Infested Area	795
Net Infested Area	179
Youth Engagement	
Total Number of Youth Participants and Youth Employees	12
Total Hours for Youth Participants and Youth Employees	4,860

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Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

National Capital Area IPMT Annual Report: FY 2021

Volunteers at the Weed Wrangle event at the National Colonial Farm, Piscataway Park. Accokeek Foundation photo.

Background

The National Capital Area Invasive Plant Management Team (NCA IPMT) supports National Park Service (NPS) units from the center of the District of Columbia to the foothills of the Appalachian Mountains. In addition to National Capital Area parks, the NCA IPMT assists non-NPS partners: the US Fish and Wildlife Service's National Conservation Training Center and the Virginia Department of Conservation and Recreation's Crow's Nest Natural Area Preserve.

The National Capital Area Invasive Plant Management Team:

1) Preserves habitats using early detection/rapid response,
2) Controls invasive plants impacting ecologically sensitive areas,
3) Restores native habitats by removing invasive plants and reestablishing native plants and natural processes,
4) Prevents the spread of invasive species through training and careful stewardship of tools and equipment, and
5) Works closely with partner parks and agencies to inventory and monitor invasive plants, train staff and volunteers, implement treatment and restoration efforts, and share resources and information.

The NCA IPMT serves **NPS and partner units located** in Virginia, Maryland, West Virginia, and the District of Columbia (DC).

Program Highlights

Volunteers Going to Battle Against Invasive Plants

On National Public Lands Day, the NCA IPMT teamed up with the National Capital Region (NCR) PRISM (Partnership for Regional Invasive Species Management) to support a Weed Wrangle®, a region-wide invasive plant removal event. Together, they recruited over 224 volunteers who have contributed more than 500 hours to non-native invasive plant removal in and around DC. This was the first, but not the last, event of its kind.

The Invasive Plant Professionals Training made a comeback! NCA IPMT and NCR-PRISM co-hosted this training, during which guest speakers discussed invasive species identification and management techniques, herbicide safety and regulation, successful habitat restoration projects, data collection tools, and more. During this virtual event, attendees were able to earn continuing educational units (CEUs) for certified pesticide applicators in MD, VA, WV, and DC. Over 120 attendees participated in the free, six-hour event.

NCR-PRISM consists of governmental and non-governmental entities located within the DC metropolitan area. As a member of the NCR-PRISM, NCA IPMT works with partners to reduce the impacts non-native invasive plant have on natural areas. Building a community of practice, like PRISM, allows for a unified approach to protect America's cherished national park resources. NCR-PRISM will continue to develop and adopt innovative techniques for managing non-native invasive plants in the future.

NPS staff setting up clear plastic for soil solarization at Brownsville Picnic Area, Manassas National Battlefield. NPS Photo.

Weed Warrior training event at the George Washington Memorial Parkway. NCR-PRISM Photo.

Program Highlights (cont.)

Integrated Pest Management (IPM) in practice: Solarization at Manassas National Battlefield

Located in Manassas National Battlefield (MANA), Brownsville Picnic Area is a popular destination spot for visitors and school groups, who take advantage of its picnic pavilion, accessible loop trail, open fields, and adjacent wetland. Its popularity among diverse audiences makes it a perfect location to show less common invasive plant control tools available to park managers.

In 2021, NCA IPMT, with guidance from the regional integrated pest management (IPM) coordinator and ecologist and with support from MANA natural resource staff, tested one of these tools on a persistent invasive legume, sericea lespedeza (*Lespedeza cuneata*). In May, the team installed 2000 sq ft of clear, greenhouse grade plastic where sericea lespedeza (*Lespedeza cuneata*) continued to persist despite previous management efforts, including mowing and herbicide application. This method is non-selective, so once the plastic was removed in November, the plot was seeded with a native mix of forbs and grasses. Park staff will continue monitoring this site to determine efficacy of the soil solarization technique. If proven effective, this method may be implemented at other NCA parks.

Summary of Accomplishments

This year marks the second year NCA IPMT operated under reduced capacity in response to the ongoing COVID-19 pandemic. This has not slowed the team down, and with a six-person crew, NCA IPMT spent 719 person days assisting NCA parks with management of invasive plants. In 2021, NCA IPMT made huge strides to engage with the local community. Starting in February, IPMT assisted with four Weed Warrior training events attended by over 100 volunteers. This new cohort of Weed Warriors volunteers will provide NCA parks with much needed support managing invasive plants in natural areas. In June, the IPMT, with the support from Rock Creek Conservancy and Rock Creek Park, hosted an English ivy removal event in honor of the IPMT program's 20th anniversary. During the two-day event 40 volunteers helped remove 100 bags of ivy from a "mini-oasis" located in Melvin Hazen Park. The NCA IPMT will continue supporting NCA parks and volunteers in the future.

Summarized Data for 2021

Measure	Acres
Treated	580
Inventoried/Monitored	363
Gross Infested Area	10,319
Net Infested Area	338
Youth Engagement	
Total Number of Youth Participants and Youth Employees	9
Total Hours for Youth Participants and Youth Employees	11,800

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Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

North Coast-Cascades Network IPMT Annual Report: FY 2021

North Coast-Cascades Network Invasive Plant Management Team technicians survey backcountry wetlands for reed canary grass (*Phalaris arundinacea*) at Ross Lake National Recreation Area's Big Beaver Wetlands. NPS photo.

Background

From the towering peaks of North Cascades National Park Complex, which includes Lake Chelan and Ross Lake National Recreation Areas, West to the rainforest valleys of Olympic National Park, and South to the ecologically rich coastlines of Lewis & Clark National Historical Park, the North Coast-Cascades Network Invasive Plant Management Team (NCCN IPMT) provides unparalleled invasive plant mitigation for our partners within the network. In addition to the parks listed above, NCCN IPMT provides invasive plant control services to Ebey's Landing National Historic Reserve, Mount Rainier National Park, and San Juan Islands National Historical Park.

The NCCN IPMT provides a variety of services to project partners and uses an ecosystem-based approach towards invasive plant species control. NCCN IPMT has helped design riparian restoration projects, collected native conifer seeds for propagation, and controls invasive plant populations in a variety of environments. The team specializes in large-scale, comprehensive invasive plant species control and is particularly effective at treating target populations in hard-to-reach areas or in the backcountry.

NCCN IPMT conducts research and works closely with industry specialists to ensure that the most effective and environmental friendly tools and methods are used by the team. The NCCN IPMT is moving towards winter applications of carefully calibrated pre-emergent herbicides to combat invasive plants that have a long germination period and previously required multiple treatments for effective control.

Program Highlights

Reed Canary Grass at Big Beaver Creek

NCCN IPMT has been performing surveys and treatments of reed canary grass (*Phalaris arundinacea*) since the team's inception. This invasive grass has penetrated into the backcountry of Ross Lake National Recreation Area, a significant component of the North Cascades National Park Complex.

Ross Lake is a man-made lake approximately 23 miles in length spanning the border of British Columbia, Canada and Whatcom County, Washington. Big Beaver Valley, on the west bank of Ross Lake, is accessible only by foot or by backcountry boats. The valley, surrounded by North Cascade peaks, contains ecologically valuable wetlands. NCCN IPMT staff surveyed 5 miles of Big Beaver Creek adjacent wetlands for reed canary grass (*Phalaris arundinacea*). The survey efforts resulted in treatment of 4.7 acres occupied by this invasive grass.

The team went to considerable lengths to access and work in the project area. Staff shuttled gear to a backcountry campsite using two boats on two different lakes with a truck haul in-between. The team then spent eight days hiking into the forests and wetlands from their basecamp, conducting surveys and performing treatments via inflatable kayak and on foot, while wading through deep water and nearly impenetrable thickets.

Follow-up treatments and surveys will take place in 2022.

NCCN IPMT technician treats invasive poison hemlock (*Conium maculatum*) at Ebey's Landing National Historical Reserve. NPS Photo.

NCCN IPMT technician wades through tall reed canary grass (*Phalaris arundinacea*) at Lewis and Clark National Historical Park. NPS photo.

Program Highlights (cont.)

Control of Invasive Blackberry and Poison Hemlock at Ebey's Landing National Historical Reserve

The NCCN IPMT program has made consistent efforts to control populations of Himalayan blackberry (*Rubus bifrons*) and poison hemlock (*Conium maculatum*) located in natural and agricultural areas at Ebey's Landing National Historical Reserve on Whidbey Island, Washington.

A combination of calibrated herbicide treatments, detailed knowledge of target plant phenology, and a good deal of concerted effort, NCCN IPMT has managed to reduce blackberry infestations to a nearly nonexistent level. Unfortunately, local avifauna continue to spread the invasive plant into the reserve. Park staff and the team must stay vigilant to maintain low levels of this invasive species.

Poison hemlock (*Conium maculatum*) has met a similar fate at the hands of NCCN IPMT staff. Where once the plants stood eight feet high, local grasses have managed to establish themselves again. Knowledge of the plant's reproductive history and seedbank longevity has led NCCN IPMT staff to use novel pre-emergent herbicides to target seedlings just as they emerge from the ground in the spring.

The seed bank of poison hemlock (*Conium maculatum*) may remain viable for up to a decade. Thus follow-up treatments will have to take place to prevent this species from developing viable seeds in the future. Ultimately, the goal is to eradicate this species from target adjacent areas managed by the National Park Service, The Nature Conservancy, and Washington State Parks.

Summary of Accomplishments

NCCN IPMT has continued to provide excellent invasive plant control service to all partner parks. The team prides themselves on being able to fulfill all requested projects and are often able to exceed this benchmark and assist partners in other arenas like GIS analysis, hazard tree assessments, and bryophyte surveys.

In response to the COVID-19 pandemic, the team continued to observe strict vaccination requirements and safety protocols, resulting in zero cases occurring among the NCCN IPMT staff.

Summarized Data for 2021

Measure	Acres
Treated	164
Inventoried/Monitored	226
Gross Infested Area	10,537
Net Infested Area	217
Youth Engagement	
Total Number of Youth Participants and Youth Employees	5
Total Hours for Youth Participants and Youth Employees	4640

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Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Northeast IPMT Annual Report: FY 2021

The Mid-Atlantic Fire Crew conducting mastication treatments on invasive shrubs at Delaware Water Gap National Recreation Area. NPS Photo.

Background

The Northeast Invasive Plant Management Team (NE IPMT), duty stationed at Delaware Water Gap National Recreation Area, was established in 2003 and serves more than thirty partner parks in ten states from Delaware to Maine. The parks served by the NE IPMT range in size from nine to over 100,000 acres, but the majority are relatively small with mandates to preserve and interpret culturally significant sites.

The NE IPMT's focus is on professional vegetation management through integrating multiple techniques, identifying and developing innovative control methods, and sharing knowledge through in-person and virtual trainings. The team works effectively with partner parks to define and rank invasive species priorities and establish management goals on projects that are achievable, cost-effective, and produce measurable results over time.

Beginning in 2016, the NE IPMT modified its strategy to ensure that parks continue to receive high quality technical support and continuity of service by adopting a flexible approach to providing assistance under a range of conditions. In addition to site visits with a reduced crew, the NE IPMT provides small grants directly to parks through a competitive proposal and ranking process. The team also provides direct treatment, training, and technical support to many of the parks within Unified Interior Region 1.

Program Highlights

Meadow Restoration and Collaboration at the Delaware Water Gap

The Delaware Water Gap National Recreation Area includes more than 70,000 acres of public lands straddling northern Pennsylvania and New Jersey. It also has a strong cultural component with hundreds of historic structures and three working historic villages utilized by both the local community and visitors . In fiscal year (FY) 2021 the NE IPMT initiated a large meadow restoration project at the historic Walpack Village. This once-open site had long since become an overgrown thicket of shrub honeysuckle (*Lonicera spp.*), autumn olive (*Elaeagnus umbellata*), and other nonnative invasive plants.

To restore these meadows the NE IPMT worked with the Mid-Atlantic Fire Management Team who operated mechanical masticators to remove woody vegetation from the site. The following summer the NE IPMT spot treated any resprouting invasive plants, and the meadows already showcased a return of native grasses and forbes. This partnership between the Delaware Water Gap National Recreation Area, Mid-Atlantic Fire Crew, and NE IPMT will continue into the future to open up more historic meadows. In the following years, the team plans to implement prescribed burns in addition to mechanical and chemical treatments.

Staff at Minute Man National Historic Park treat Japanese knotweed (*Fallopia japonica*) at Smith Field. NPS Photo.

Employee of Redstart Forestry fells a Norway maple (*Acer platanoides*) at Saint-Gaudens National Historic Park. NPS Photo.

Program Highlights (cont.)

Providing Continuing Support to Boston Area Parks

For several years the NE IPMT has provided grant support to four greater Boston area parks: Boston Harbor Islands National Recreation Area, Fredrick Law Olmsted National Historic Site, Minute Man National Historic Park, and Saugus Iron Works National Historic Site. Supported by a robust volunteer program, park staff and volunteers spent 6,869 hours treating 23 invasive plant species and conducting restoration and revegetation projects across the natural and cultural landscapes of these parks. By levering these grant funds for staff support and coordinating management efforts, together Boston area parks accomplish more than the NE IPMT or any single park could on its own.

Minute Man National Historic Park (NHP) also tested a new Habitat and Invasive Species Management Planning Tool developed by Penn State University. Staff from the Inventory and Monitoring Division, Minute Man NHP, and the NE IPMT met several times to sort and rank the park's sites and devise treatment plans for the site's invasive plants. The end product is a valuable and detailed treatment plan. The best part of the process was the collaborative approach used to examine park's management priorities and areas of highest concern.

Summary of Accomplishments

Despite continuing travel restrictions and a shortage of staff, the NE IPMT provided a high standard of service to partner parks in 2021. The team assisted with on the ground vegetation management only at the Delaware Water Gap, but did conduct site visits to six other parks. During the site visits, the team found and mapped many early detection invasive plant species. Before his retirement, the liaison hosted several technical sessions related to herbicide applications. The team leader also provided both in-person and virtual training on invasive plants, data collection, and management techniques during the field season.

Through its grant process, the NE IPMT partially funded seven invasive plant projects in six parks. Additional staff funding and supply purchases were made to further support management efforts and assist parks in starting their own invasive plant control programs.

Summarized Data for 2021

Measure	Acres
Treated	62
Inventoried/Monitored	660
Gross Infested Area	1,180
Net Infested Area	126
Youth Engagement	
Total Number of Youth Participants and Youth Employees	36
Total Hours for Youth Participants and Youth Employees	6,371

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Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Northern Great Plains IPMT Annual Report: FY 2021

Montana Conservation Corps (MCC) crew applying herbicide to control non-native, invasive plant species in Badlands National Park. MCC photo.

Background

The Northern Great Plains Invasive Plant Management Team (NGP IPMT) works with 14 partner parks in four states and two National Park Service (NPS) regions. The goal of the NGP IPMT is to help parks preserve native plant communities and historic landscapes by managing the spread of invasive plant species. The team also works with park personnel to accomplish restoration activities, such as implementing prescribed fires, developing native plant materials, and seeding sites to restore desired resource conditions. The area served by the NGP IPMT is approximately 452,000 acres and is ecologically diverse, with vast grasslands, forests, and integral river systems. Integrated pest management (IPM) strategies used to manage invasive plants include chemical, biological, mechanical, and cultural methods. Education and training in IPM are priorities of the team. Each year NGP IPMT staff offer a week-long training session in the principles and practices of IPM for park staff, partners, and NGP IPMT seasonal employees. The team also provides financial assistance to partner parks to help parks build internal capacity to manage invasive plant species.

Field crews for the NGP IPMT are based at either Badlands National Park or Theodore Roosevelt National Park and travel to other parks in the network. The IPMT also integrated members of the Montana Conservation Corps into the field crews to increase capacity and efficiency of operations. This also allows youth on the Conservation Corps crews to engage in important and substantive work to further the NPS mission.

Program Highlights

All Hands On Deck at Badlands National Park

The well known saying "it takes a village" is not lost on Badlands National Park (BADL). This vast landscape dominated by mixed-grass prairies is home to over 400 plant species shaped by dry, hot summers, freezing winters, and frequent natural disturbances, like flooding and fires. Changes in land use and increases in invasive plant species, like annual grasses, have altered the dynamic of this landscape and reduced suitable habitat for many grassland bird species. Both the park and NGP IPMT believe restoration of this grassland habitat, reduced to 30% of its original range, is necessary for the survival of many species who depend on it.

In 2021, NGP IPMT stationed at BADL, with help from the Montana Conservation Corps (MCC), continued an ongoing effort to reduce established infestations of annual grasses, like cheatgrass (*Bromus tectorum*), and invasive thistles (*Carduus* and *Cirsium* spp.). The Annual Brome Adaptive Management (ABAM) tool, developed by researchers with the US Geological Survey and NPS staff, informed on the ground management strategies. With help from above, in the form of an aerial application completed by a contractor funded by both the NGP IPMT and the park, the group completed invasive plant treatments in over 2,700 acres of the park. Using this innovative tool and combining herbicide applications and prescribed fires, the NPS stands a chance against an ongoing battle with invasive plants which have altered natural landscapes, like mixed-grass prairies.

New utility terrain vehicle (UTV) funded by NGP IPMT to improve invasive plant control operations at Knife River Indian Villages National Historic Site. NPS photo.

NPS staff mixing herbicide solution for upcoming invasive plant control project at the Badlands National Park. NPS photo.

Program Highlights (cont.)

Increasing Parks' Capacity to Manage Invasive Plants

NGP IPMT not only supports partner parks by providing boots on the ground, but the team is also dedicated to helping parks build internal capacity to efficiently and effectively manage invasive plant species in-house. In 2021, NGP IPMT purchased a UTV for Knife River Indian Villages National Historic Site (KNRI) to support invasive plant management projects in the park. This 1,758 acre park located in the Upper Missouri River Valley, once known for its mixed-grass prairies and rich river bottomlands floodplain forest, is now battling large swaths of invasive plants like leafy spurge (*Euphorbia esula*), cheatgrass (*Bromus tectorum*), and various invasive thistles (*Carduus* and *Cirsium* spp.).

The new UTV, equipped with a 25-gallon tank sprayer, allowed park staff to effectively control 100 acres of invasive plant species scattered across 500 acres of the park. The control efforts included targeting trails and parking lots where visitor are likely to encounter invasive plants and potentially spread the unwanted hitchhikers farther into the park. Targeted treatments along frequently used trails and roads are one of many strategies for slowing down the spread of invasive plants in national parks.

Summary of Accomplishments

In fiscal year (FY) 2021, the NGP IPMT, with assistance from the MCC, completed invasive plant control treatments in eight NPS units. Members of the MCC had the chance to interact with staff from six parks and learn more about natural and cultural resources found in each park. In addition to purchasing a UTV for KNRI, the team also provided financial assistance to BADL to purchase an UTV trailer to haul equipment used for invasive plant control. In FY 2022, the team hopes to increase support to other partner parks as COVID-19 travel restrictions are loosened across the Service.

Summarized Data for 2021

Measure	Acres
Treated	640
Inventoried/Monitored	3,360
Gross Infested Area	55
Net Infested Area	14
Youth Engagement	
Total Number of Youth Participants and Youth Employees	4
Total Hours for Youth Participants and Youth Employees	640

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Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Northern Rocky Mountain IPMT Annual Report: FY 2021

Last Stand Cemetery at Little Bighorn Battlefield National Monument. Public Photo.

Background

The Northern Rocky Mountain Invasive Plant Management Team (NRM IPMT) serves 25 National Park Service (NPS) units across Colorado, Idaho, Montana, northern New Mexico, Utah, and western Wyoming. Since its inception in 2003, the NRM IPMT program emphasizes the systematic, long-term management and control of invasive plant species. The Northern Rocky Mountains Region is vast and diverse, encompassing high and low elevation sagebrush steppe, forests, sub-alpine meadows, high deserts, and wetland and riparian areas. Many parks in this network are relatively small (median size is 20,000 acres) and a number of them do not have staff members available to address even their highest priority invasive species needs.

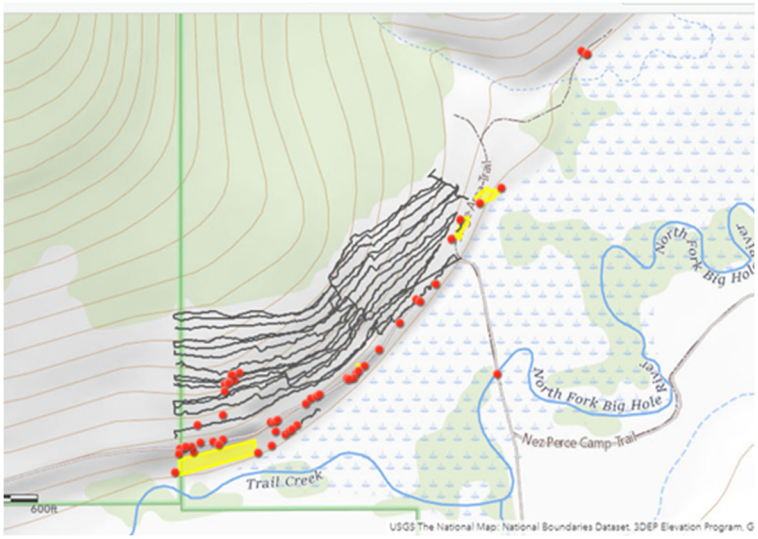
The NRM IPMT is currently a nine-person crew strategically divided into three smaller crews based at two large and one medium-sized park throughout the network. The program also partners with other work crews to address distant parks. In 2021, 17 partner parks received assistance from the team and 10 parks received multiple visits. Repeat visits are critical for many project areas to ensure all invasive plants are located and removed. Much of the team's effort is focused on controlling state listed noxious weeds and providing rapid response to new or particularly problematic invaders. The NRM IPMT program relies heavily on the region's seasonal dichotomy, working lower elevation parks in Utah and Idaho early in the growing season and higher elevation parks in Colorado, Wyoming, and Montana later in the summer. Field efforts typically continue into the early fall to address perennial invasive plants as they enter dormancy.

Program Highlights

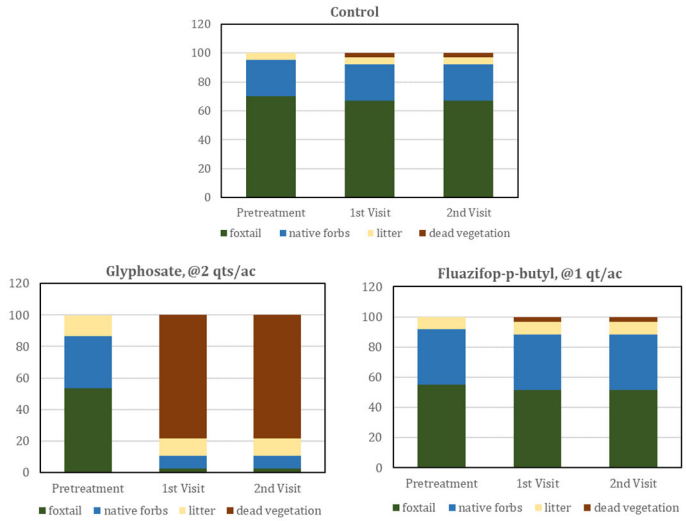
Efforts to Address Invasive Cheatgrass at Big Hole National Battlefield

Park managers at Big Hole National Battlefield (BIHO) are concerned the park is becoming invaded by cheatgrass (*Bromus tectorum*). In 2014, the Howitzer Field, a large sagebrush hillside crucial to the park's story, was burned as part of a prescribed fire to reduce lodgepole pine encroachment. Park staff first discovered cheatgrass in 2017 in a road corridor along the southern boundary of the fire. It is theorized that the invasive grass may have been introduced during fire management activities. It was also documented in several hotter areas of the fire. Park staff began systematically removing the invasive grass in 2018 by hand pulling and chemically treating it in the spring, but feared it was spreading to new locations despite the park's high elevation and wet conditions.

Expertise from the NRM IPMT was requested in 2021 to address this issue starting with a larger inventory of vulnerable areas. Over the course of three days in June, members of the team assisted park staff conduct cheatgrass surveys with a primary focus on the Howitzer Field. Crews found close to 1.5 acres infested with this invasive grass during the two-day survey. Fortunately most patches were discovered near places it was already known to exist. A wildfire prevented the team from completing foliar chemical treatments with indaziflam (Rejuvra®) herbicide in early August. With more areas now disturbed by fire, a more aggressive effort to locate and control cheatgrass is planned for BIHO in 2022.



Survey tracks (black lines) across the Howitzer Field at Big Hole National Battlefield. Cheatgrass (*Bromus tectorum*) infestations as points (red) and patches (yellow).



Results of an herbicide trial on creeping foxtail (*Alopecurus arundinaceus*) at Fossil Butte National Monument. Data provided are percent cover values averaged across three treatment blocks/areas.

Program Highlights (cont.)

Herbicide Trials on Creeping Foxtail at Fossil Butte NM

Creeping foxtail (*Alopecurus arundinaceus*) has been expanding at Fossil Butte National Monument (FOBU), primarily through the park's wetter riparian meadows. In 2021, the park requested help from the NRM IPMT to target this species. The team decided to conduct an herbicide trial to identify the most effective chemical control options. The trial included five treatments with two unique herbicides across three, 9-square meter plots. All treatment plots had at least 50 percent cover of creeping foxtail and were treated three times during summer. As shown in the associated figure, glyphosate (Rodeo®) applications at 2 quarts/acre were effective in killing the invasive grass, reducing it from 53 percent of total average plant cover to 2.7 percent after the initial treatment. A second round of glyphosate application (not shown in the figure) reduced the population by another 1.4 percent (from 2.7 percent to 1.3 percent), providing evidence that a single application of glyphosate if timed correctly could be very effective. Late season application with a grass selective herbicide, fluazifop-p-butyl (Fusilade II®), at 1 quart/acre, reduced the invasive grass cover to only 3.5 percent. On average, the team observed an 83 percent reduction in native forbs from glyphosate applications (from 34 percent to 6 percent of total plant cover). Since this herbicide is non-selective, and native and invasive vegetation was intermixed, the reduction in native forbs came as no surprise. The team plans to continue this research in 2022 to determine the best control options for the invasive grass at the park.

Summary of Accomplishments

The NRM IPMT treated 172 gross infested acres of nonnative invasive plants in 17 NPS units in fiscal year 2021. In total, 3,420 person hours were spent treating predominantly noxious weeds in parks served by the NRM IPMT program with the assistance of various park staff and youth crews.

The NRM IPMT continues to strike a balance between contributing to long-term, large-scale control, early detection and removal of nascent populations, and opportunistic restoration of native species. Several steering committee meetings are held annually to review and approve the strategic direction and financial plan of the team, ensure the team provides information that is relevant to management, and develop an invasive plant treatment schedule for the fiscal year.

Summarized Data for 2021

Measure	Acres
Treated	172
Inventoried/Monitored	390
Gross Infested Area	13,243
Net Infested Area	137
Youth Engagement	
Total Number of Youth Participants and Youth Employees	24
Total Hours for Youth Participants and Youth Employees	4,000

More Information

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Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Pacific Islands IPMT Annual Report: FY 2021

The Pacific Islands Invasive Plant Management Team (PI IPMT) chainsaw operators from Hawai Volcanoes and Kaloko-Honokōhau parks removing invasive vegetation as a first step in the restoration of Aimakapā fishpond. NPS Photo.

Background

The Pacific Islands IPMT (PI IPMT) serves six core National Park Service (NPS) units in the Hawaiian Islands: Hawai'i Volcanoes and Haleakalā National Parks; Kaloko-Honokōhau, Pu'uhonua O Hōnaunau, and Kalaupapa National Historical Parks; and Pu'ukoholā Heiau National Historic Site. The team collaborates with non-NPS partners and other parks in the Pacific to support invasive species management, native species restoration, and island biosecurity. The team also offers training opportunities for park staff and partners to perform critical natural resource and safety functions in the Pacific.

The living natural resources of Hawai'i evolved gradually over millennia on the most isolated set of islands in the world. This extreme isolation and infrequent natural colonization by plants and animals led to the evolution of some of the most remarkable, yet vulnerable, species in the world. Invasive species continue to be the greatest immediate threat to the unique ecology of the Pacific Islands. This is followed by habitat destruction and shifts in climate that alter habitat conditions, pushing ecological balances away from mostly endemic, native plants and animals and towards monocultures of invasive plants.

Although the team primarily engages in treatments of invasive species, the overarching goal is preservation and restoration of native ecosystems. The PI IPMT has been pursuing this goal for over two decades, working closely with park staff, partners, and indigenous communities, whose rich cultural history is deeply connected to the natural resources found on the islands.

Program Highlights

Leveraging Capacity for Smaller Parks

The PI IPMT and Hawai'i Volcanoes National Park (NP) vegetation staff continued annual work collaborations to support restoration of native coastal strand habitat and archaeological sites at both Kaloko-Honokōhau and Pu'uhonua O Hōnaunau National Historic Parks (NHP). Mobilizing an IPMT crew of 10-12 staff and interns, with support from willing partner-park personnel, made a dramatic landscape altering project possible in a short timeframe. Within a few days, the team removed a total of 9,915 invasive kiawe (*Prosopis pallida*), opium (*Pithecellobium dulce*), and haole koa (*Leucaena leucocephala*) trees, as well as several acres of fire-promoting invasive grasses.

'Aimakapā at Kaloko-Honokōhau NHP is a loko pu'uone, or a fishpond separated by a sand berm from the ocean. It serves as a refuge for native and migratory wetland birds and recovering native coastal and dry habitat vegetation. In more recent time, invasive groundcover, shrubs, and trees have displaced native vegetation within this 30 acre site. Each year, PI IPMT removes invasive vegetation to restore lost ecosystem services provided by the loko pu'uone. Efforts at 'Aimakapā begun by cutting and removing all woody biomass from the pond's perimeter. Due to the sensitivity of the surrounding areas, removal of the material is resource intensive, involving chipping, soft -hauling, or using helicopters to lift the cut material away to a safe zone. Next steps will include treatment of the invasive groundcover.

Kupu intern patrols for and treats invasive blackberry (*Rubus argutus*) in the Crater District at Haleakalā National Park. NPS Photo.

A PI IPMT crew leader treats a remote outlying faya trees (*Morella faya*) in East Unit of Kahuku at Hawai'i Volcanoes National Park. NPS Photo.

Program Highlights (cont.)

Growing Next Generation Land Stewards in the Pacific Island Parks

In partnership with park-based youth programs, IPMT staff mentors and leads interns and youth rangers while working together to remove invasive plant species from sensitive natural areas. Youth rangers are recruited from high schools in underserved rural districts of Hawai'i Island, receiving training and experience that provides them with valuable skills. This partnership forges connections between communities and the park for many families. By building experiences for students and local youth, these programs have the potential to shape the next generation of the National Park Service stewards.

Early Detection, Mapping, and Treatment

Early detection and rapid response to incipient ecologically damaging invasive species is an ongoing part of the PI IPMT program at both Haleakalā and Hawai'i Volcanoes National Parks. Vegetation crews and outside experts provide support by detecting and identifying emerging new species, while IPMT assists with treatments and post-treatment monitoring. Sometimes detection work involves specially developed algorithms to analyze imagery collected from a helicopter-mounted camera array. Work may also include more traditional ground-based sweeps and observation. Both survey methods provide the team with an opportunity to eradicate new species before they wreak havoc across sensitive natural communities.

Summary of Accomplishments

The IPMT and the Pacific Island Parks recognized a need to enhance the network's ability to train, qualify, and deploy non-wildland fire chainsaw operators. To build instructor capacity, PI IPMT organized a National Chainsaw Safety Program (NCSP) instructor qualification course to qualify four new instructors and several fallers from ranks of veteran operators and mentors. Together, these newly qualified instructors began training a new cohort of chainsaw operators across the network. This effort enhances safety programs and streamlines training across the Pacific. With the program's deployment, parks build on collective experiences adapted into their own area-specific risk assessment tools and planning documents. Overall, this effort is a fundamental extension of the 20+ year IPMT vision.

Summarized Data for 2021

Measure	Acres
Treated	124
Inventoried/Monitored	3,679
Gross Infested Area	16
Net Infested Area	1
Youth Engagement	
Total Number of Youth Participants and Youth Employees	285
Total Hours for Youth Participants and Youth Employees	30,511

More Information

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Stacey Torigoe — **(808) 985-6097**
Ecologist — **stacey_torigoe@nps.gov**

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Hawaii National Park, HI 96718

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Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Southeast IPMT Annual Report: FY 2021

In the gorge of the New River at Big South Fork National River and Recreation Area. NPS Photo.

Background

The Southeast Invasive Plant Management Team (SE IPMT) supports 20 National Park Service (NPS) units in seven states in the Southeast Region. The parks served by the SE IPMT lie within the Cumberland Plateau, Appalachian Highlands, and Piedmont physiographic provinces and includes unique natural ecosystems and cultural landscapes. From the cedar glades among the Civil War battlefields of Chickamauga & Chattanooga National Military Park (CHCH) to the world's longest known cave system of Mammoth Cave National Park (MACA), natural and cultural resources are intertwined. Invasive plants threaten federal and state listed plant and animal species and cultural resources. Using an integrated and adaptive resource management strategy, the SE IPMT meets long term management goals to protect these resources while complying with state and federal regulations.

The SE IPMT, founded in 2003, is based in Asheville, North Carolina on the Blue Ridge Parkway (BLRI). The program functions as a self-contained, mobile strike team composed of a field crew leader and youth interns. In fiscal year 2021, liaison Lauren Serra and field crew leader Toby Obenauer led the SE IPMT. Liaison supervision of the SE and Southeast Coast (SEC) IPMTs was combined in 2020. This year the crew was composed of three American Conservation Experience (ACE) interns, who for seven months traveled to partner parks. During travel restrictions caused by the COVID-19 pandemic, the SE IPMT only served local parks within 50 miles from Asheville, North Carolina. Additionally, a new ACE crew agreement with the SE and SEC IPMTs provided a Conservation Corps with a leader to serve partner parks.

Program Highlights

SE IPMT Interns and Youth Crews Align to Serve Parks

Faced with delays to SE IPMT's intern start date and travel uncertainty during the COVID-19 pandemic, the program collaborated with partner parks to fund a youth crew led by ACE staff. The ACE crew worked in Big South Fork National River and Recreation Area (BISO) and Great Smoky Mountains National Park. In concert with park staff, the SE IPMT interns joined the ACE field crew for a week of training and treatments at BISO led by the SE IPMT liaison and field crew leader. This opportunity allowed for the sharing of skills and knowledge among the SE IPMT staff and interns, park staff, and the youth organization's staff and crew.

All groups aligned to treat sites SE IPMT had worked in past years. One location included spot treatments where kudzu (*Pueraria montana*) was previously treated while expanding further into adjacent areas where a three sawyer crews removed tree-of-heaven (*Ailanthus altissima*), and found and treated Oriental bittersweet (*Celastrus orbiculatus*) as an early detection and rapid response (EDRR) species. The ACE crew and SE IPMT took turns with park staff to survey the river systems and control both kudzu (*Pueraria montana*) and Japanese knotweed (*Fallopia japonica* var. *japonica*) on rare Cumberlandian cobble bar communities, also known as river scour prairies. Although the SE IPMT moved forward with projects at other parks, the ACE crew returned to BISO and assisted with more invasive plant control projects at the park.

The SE IPMT crew leader conducts UTV training for SE and SEC IPMT interns and American Conservation Experience staff leading IPMT youth crews. NPS Photo.

An SE IPMT intern treats Chinese wisteria (*Wisteria sinensis)* at Ninety Six National Historic Site. NPS Photo.

Program Highlights (cont.)

Training to Support Partnerships and Advance Storm Cleanup Efforts

SE IPMT staff provided vehicle and chainsaw operations training that allowed park staff, volunteers, and collaborators to complete critical resource management tasks during storm cleanup efforts and invasive plant management work. The SE IPMT field crew leader instructed five Recreational Off-Highway Vehicle Association (ROHVA) trainings, including classes to equip both ACE staff and SEC IPMT interns to operate Utility Terrain Vehicles (UTVs). The field crew leader taught All Terrain Vehicle Safety Institute (ATVSI) training to park staff at Kings Mountain National Military Park (KIMO), Ninety Six National Historic Site (NISI), and Guilford Courthouse National Military Park (GUCO), plus three National Chainsaw Safety Program (NCSP) courses for sawyer certifications which included a course at NISI for the Appalachian Highlands Inventory and Monitoring Network (APHN) staff.

The skills to run a chainsaw also benefitted volunteers with the Carolina Mountain Club and Appalachian Trail, and park staff at GUCO tasked with removal of trees damaged by pine beetles following an ice storm. The field crew leader assisted with two more storm cleanup assignments by applying both lead sawyer and Resource Advisor skills. SE IPMT also led four herbicide trainings and three plant identification trainings at partner parks such as CHCH and KIMO.

Summary of Accomplishments

The SE IPMT surveyed four partner parks and treated approximately 30 invasive plant species at 10 partner parks. The team joined SEC and Florida/Caribbean (FLC) IPMTs to survey and/or treat invasive plants at three non-partner parks, and provided technical assistance to partner parks and IPMT program. The SE IPMT continued projects with the Denver Services Center's Transportation Division on a highway corridor at BLRI, helped Carl Sandburg Home National Historic Site prevent the spread of parrot feather (*Myriophyllum aquaticum*) to local watersheds, and at CHCH the team applied insecticides to protect eastern hemlocks (*Tsuga canadensis*) from the invasive hemlock woolly adelgid (*Adelges tsugae*). The liaison assisted with the MACA Resource Stewardship Strategy, while the field crew leader attended the APHN annual meeting. Both SE IPMT staff completed their wildland fire refreshers.

Summarized Data for 2021

Measure	Acres
Treated	301
Inventoried/Monitored	130
Gross Infested Area	4,006
Net Infested Area	347
Youth Engagement	
Total Number of Youth Participants and Youth Employees	20
Total Hours for Youth Participants and Youth Employees	2,739

More Information

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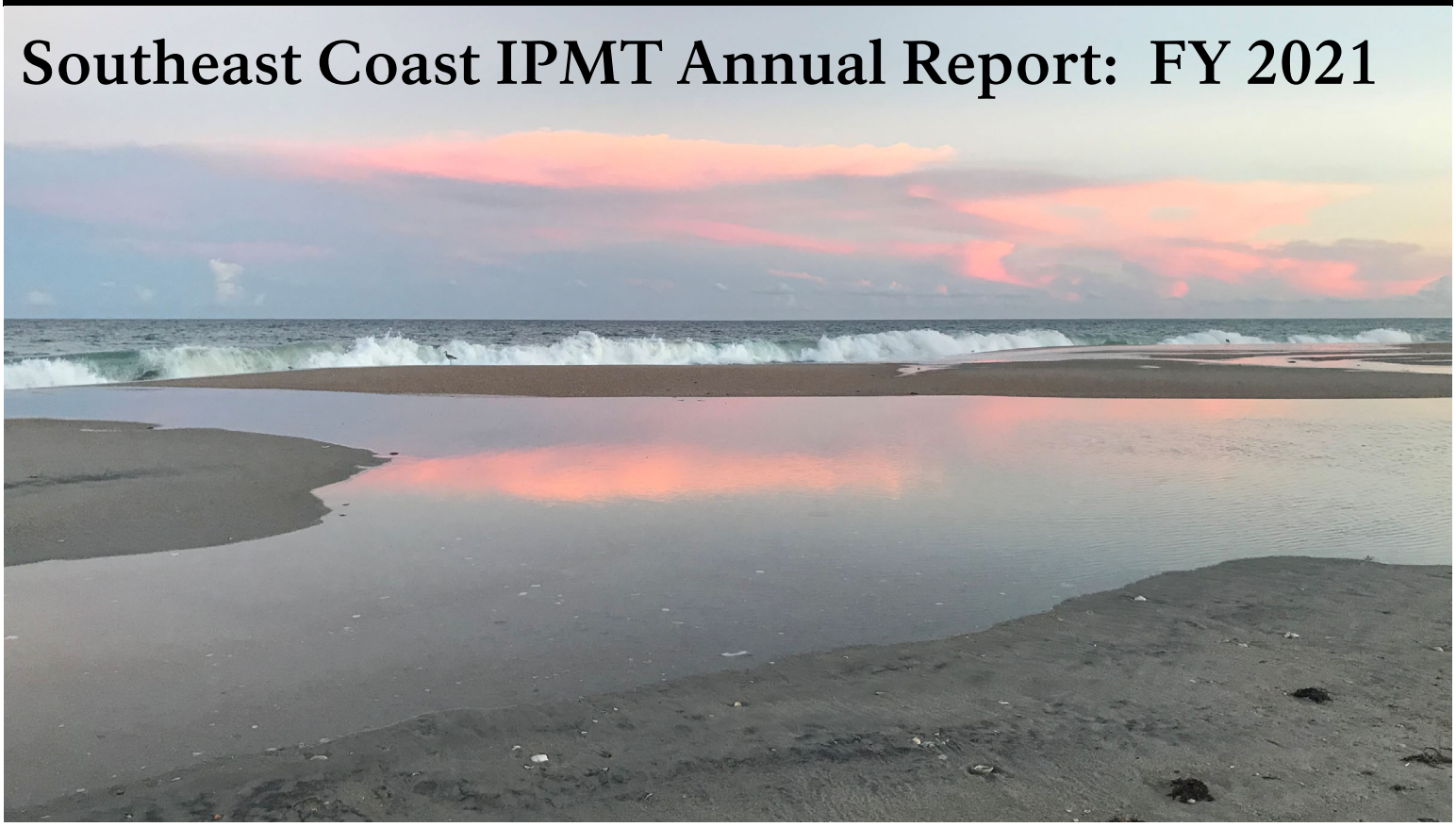
Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Southeast Coast IPMT Annual Report: FY 2021



Sunset along the beach of South Core Banks at Cape Lookout National Seashore. NPS Photo.

Background

The Southeast Coast Invasive Plant Management Team (SEC IPMT) serves 15 National Park Service (NPS) units in North and South Carolina, Georgia, and Alabama. Partner parks range from protected seashores and forested wilderness to urban recreational areas and preserved cultural landscapes. Along the coast are the National Seashores from the lighthouses of Cape Hatteras (CAHA) to the wild horses of Cumberland Island (CUIS), with historic Revolutionary and Civil War battle sites in between. Inland, the SEC IPMT serves parks like Chattahoochee River National Recreation Area (CHAT) in the Atlanta metro to the prehistoric settlements at Ocmulgee Mounds National Historical Park (OCMU). Congaree National Park (CONG), which encompasses one of the last remnants of intact old growth bottomland forest and designated wilderness, hosts the SEC IPMT.

The SEC IPMT began as a pilot project in 2005 and by 2010 was permanently funded through CONG's base operating budget. In 2020, the SEC IPMT's base funds were reallocated to Interior Region 2's Science and Natural Resources Management Division, along with personnel and oversight. Through a Letter of Understanding the program continues operations at CONG. Although funded differently than the majority of IPMTs, the SEC IPMT has similar goals for invasive plant management. In fiscal year (FY) 2021, the SEC IPMT was led by Lauren Serra (liaison) and Amorita Brackett (field crew leader). Due to the COVID-19 pandemic the SEC IPMT youth crew was hosted at multiple partner parks and consisted of six American Conservation Experience (ACE) interns and one Scientist in Parks (SIP) intern.

Program Highlights

Partner Parks Host SEC IPMT Interns

Travel restrictions during the COVID-19 pandemic changed how SEC IPMT oversaw field operations at partner parks. Instead of basing a travelling team at CONG, partner parks provided onsite supervision to ACE interns, while SEC IPMT staff provided guidance on invasive plant control from CONG. Host partner parks included OCMU, Moores Creek National Battlefield (MOCR), Fort Pulaski National Monument (FOPU), and Horseshoe Bend National Military Park (HOBE). Interns based at OCMU and HOBE removed Chinese privet (*Ligustrum sinense*) from the parks' river floodplains. The MOCR based intern assisted with an ongoing project to support grassland restoration by removing invasive woody vegetation in sync with prescribed fire treatments to support reestablishment of carnivorous plants. The ACE program's website featured an article written by a FOPU based intern describing her experience with removing common reed (*Phragmites australis*) from the park.

The Southeast Coast Inventory and Monitoring Network (SECN) in partnership with the SEC IPMT hosted a SIP intern at CONG then CUIS, with travel to Kennesaw Mountain National Battlefield Park and CHAT in between. During this time the SIP intern mapped invasive plant populations and early detection and rapid response (EDRR) species such as autumn fern (*Dryopteris erythrosora*). Invasive plant survey and treatment data collected by both SIP and ACE interns will help the team identify and prioritize future invasive plant control projects at partner parks.

A Southeast Coast IPMT intern treats invasive vegetation post-fire to promote grassland restoration at Moores Creek National Battlefield. NPS Photo.

A Scientist in Parks intern assists with an early detection and rapid response effort on autumn fern (*Dryopteris erythrosora*) at Congaree National Park. NPS Photo.

Program Highlights (cont.)

Virtual Outreach to Prevent the Spread of Invasive Plants

During the pandemic, the SEC IPMT conducted outreach efforts virtually. To showcase the boot brush station the North American Invasive Species Management Association (NAISMA) provided to CONG, the SEC IPMT field crew leader wrote a press release to raise public awareness about the importance of prevention as an invasive plant management tool. Encouraged by positive feedback from visitors and park staff, SEC IPMT purchased a boot brush station for the Timucuan Ecological and Historic Preserve (TIMU). The boot brush stations are part of NAISMA's PlayCleanGo campaign and allow visitors to wipe their shoes free of invasive plant material, including seeds, while learning about threats posed by invasive plant species.

Social media was instrumental in sharing outreach materials. The SEC IPMT liaison wrote an article for NPS about the team's Weed Wrangle® event hosted in collaboration with the Palmetto Garden Club in late 2019. The article provided an opportunity for readers to learn more about the nationwide Stay-at-Home Weed Wrangle® movement, which empowers community members to take action and support habitat restoration efforts by removing invasive plants from their backyards. These efforts will help prevent the introduction of new invasive plants and slow the spread of non-native invasive plant species already found in National Parks.

Summary of Accomplishments

In 2021, the SEC IPMT provided assistance to13 partner parks and treated 36 invasive plant species at 10 partner parks. The SEC IPMT assisted with a special resource study on a river cane (*Arundinaria gigantea*) at OCMU. The liaison served on the boards for the SECN's annual steering committee meeting and the South Carolina Exotic Pest Plant Council. The liaison is a member of the South Carolina Association of Naturalists and served as vice chair on CONG's Safety, Environmental, and Wellness Committee. The field crew leader was the technical supervisor for an OCMU employee and trained partner park staff on how to use Global Positioning System (GPS) tools and programs to improve data sharing between parks and the team. The field crew leader also served on the review panel for the Servicewide Combined Call and reviewed 41 youth projects.

Summarized Data for 2021

Measure	Acres
Treated	37
Inventoried/Monitored	2,167
Gross Infested Area	11,418
Net Infested Area	217
Youth Engagement	
Total Number of Youth Participants and Youth Employees	18
Total Hours for Youth Participants and Youth Employees	5,259

More Information

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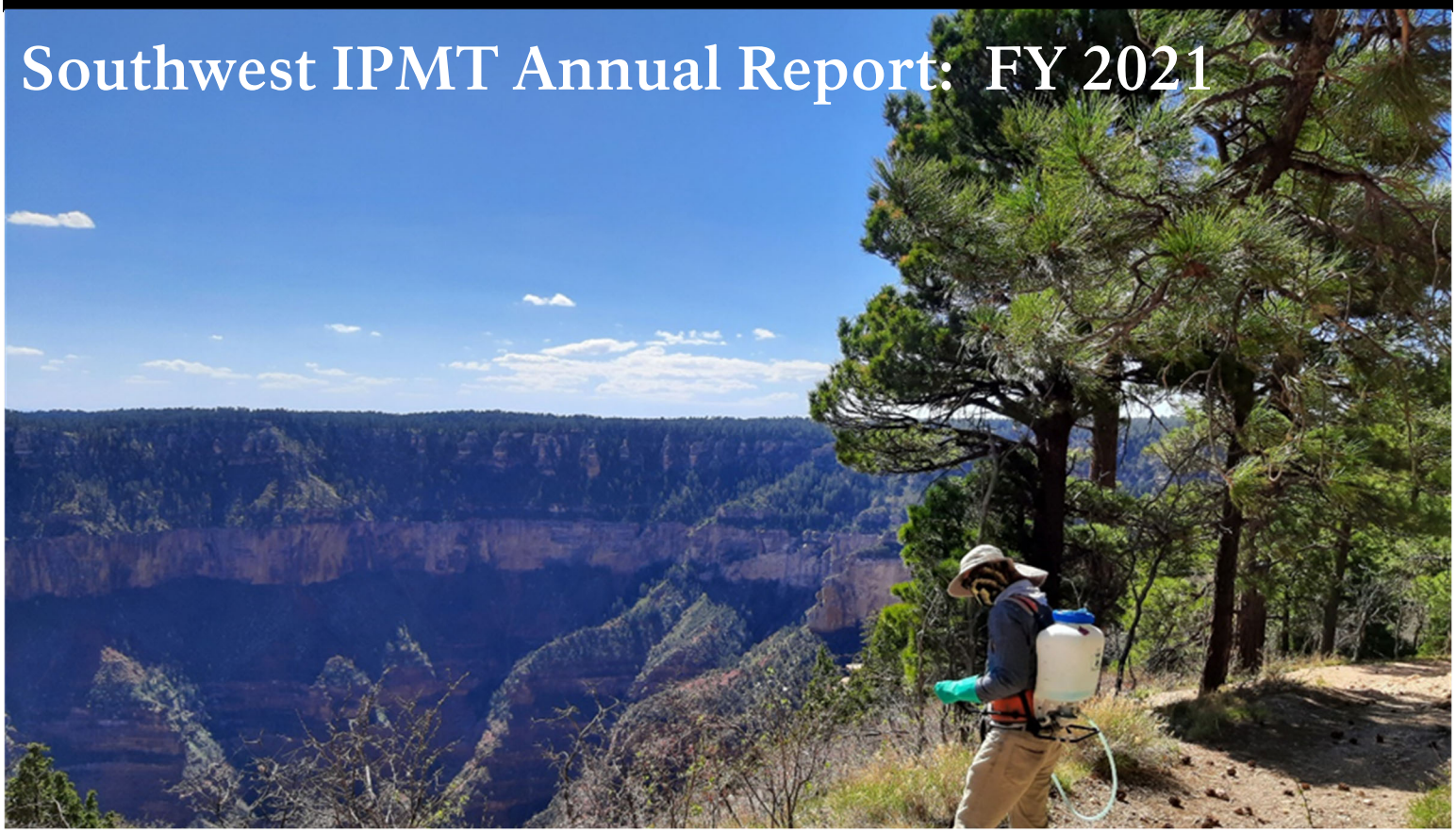
Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Southwest IPMT Annual Report: FY 2021



Member of the Tucson Audubon Society looks at the camera between spraying bulbous bluegrass along the North Rim of the Grand Canyon. NPS photo.

Background

The Southwest Invasive Plant Management Team (SW IPMT) serves 46 National Park Service (NPS) units and adjacent landowners in six states throughout the southwest.

The *SW IPMT's* mission is**: *to collaborate with park staff, with other programs within the NPS, and with park neighbors, local communities and organizations, and other state and federal agencies, to restore the native ecosystems of our parks and surrounding lands.*** The SW IPMT assists parks and partners by serving as a regional resource to combat the invasion of non-native plant species and support the restoration of disturbed areas to functioning healthy ecosystems.

The SW IPMT supports many programs related to the international issues of invasive plants, ecosystem fragmentation, and habitat restoration. In addition to treating invasive plants, significant activities include research in control and restoration methods, production of appropriate native plant materials, and collaboration with communities and partners. The SW IPMT is working with and supports a diverse coalition of universities, land management agencies, non-profit organizations, and conservation groups to restore native plant biodiversity and the ecosystems that sustain the native flora and faunal heritage.

Program Highlights

An enriching collaboration to control bulbous bluegrass at the Grand Canyon North Rim

In environmental conditions akin to the North Rim of the Grand Canyon, bulbous bluegrass (*Poa bulbosa*) reproduces clonally, producing small, viable plantlets known as bulbils where flowers and seeds would elsewhere develop. This allows the species to expand rapidly within a single season and presents unusual complexity to managers. Bulbils were likely introduced to the North Rim campground from a vehicle or gear, and they can spread rapidly when not managed.

In April 2021, SW IPMT collaborated with staff from Grand Canyon National Park, Tucson Audubon Society, and Ancestral Lands Conservation Corps to combat expanding populations of bulbous bluegrass in developed sites on the North Rim. The infestation had expanded since the previous season, but the crew was able to treat all target areas and more using backpack sprayers to apply herbicide.

Despite the earnest nature of the project, it was an enriching experience for the entire work group, especially owing to its collaborative nature. The collaborators were humbled by the ancestral connection to the worksite, and honored when several ALCC leaders in training, all native youth, spoke poetically about experiencing the place of their tribes' creation stories for the first time in their lives.

A Scientists in Parks vegetation intern sprays Johnsongrass (*Sorghum halepense*) in the Rattlesnake Springs unit at Carlsbad Caverns National Park. NPS Photo.

SW IPMT member applying herbicide to Johnsongrass at the Rattlesnake Springs unit of Carlsbad Caverns National Park. NPS Photo.

Program Highlights (cont.)

Protecting Rattlesnake Springs from Johnsongrass at Carlsbad Caverns National Park

Rattlesnake Springs is a natural oasis in the Chihuahuan Desert and is home to a wide variety of moisture-loving native plant and bird species. Johnsongrass (*Sorghum halepense*) crowds out native vegetation, often growing over six feet tall in moist sites such as riparian areas. In mid-September 2021, the SW IPMT worked with NPS staff and interns to slow down the spread of Johnsongrass in the Rattlesnake Springs unit of Carlsbad Caverns National Park (CAVE). With help from a Scientists in Parks (SIP) vegetation intern and CAVE staff, the group was able to treat the full extent of the known infestation along the park boundary adjacent the Rattlesnake Springs picnic area. Follow-up treatments are necessary for effective control of this problematic perennial grass species.

While at the park, SW IPMT took ample time to train the SIP intern, who had no previous experience using herbicide, and a maintenance staff member, who had little prior herbicide experience. Both were great learners and helpful workers. Their training included identification of target invasive plant species as well as a special emphasis on chemical hygiene and safety while mixing, loading, and applying herbicide. Training provided by the team will help the park build internal capacity to manage invasive plant species in the future.

Summary of Accomplishments

In fiscal year (FY) 2021 the SW IPMT worked with 21 parks to treat and survey invasive plants across approximately **127** acres. To complete this work the program engaged **56** youth who contributed **3,721** hours. In FY 2021 SW IPMT continued its partnership with the Tucson Audubon Society Collaborative Audubon Treatment and Inventory Squad (COATIS), established in 2020. The COATIS operate as a three-person strike team and worked with the SW IPMT, the US Fish and Wildlife Service, and Saguaro National Park on a rotational schedule performing invasive plant treatment and management. By working together, the SW IPMT and its partners can slow down the spread invasive plant species and minimize impacts to natural areas.

Summarized Data for 2021

Measure	Acres
Treated	244
Inventoried/Monitored	485
Gross Infested Area	11
Net Infested Area	2
Youth Engagement	
Total Number of Youth Participants and Youth Employees	56
Total Hours for Youth Participants and Youth Employees	5,935

More Information

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National Park Service
U.S. Department of the Interior

Biological Resources Division, Natural Resource Stewardship and Science

FY2021 Invasive Plant Management Team – Program Participants

Alaska IPMT

Leadership
Anna O'Brien (Liaison- hired May 2020)
Grant Hilderbrand (Supervisor-Acting as liaison)

Crew
SCA interns: Ethin Allen, Christine Fox
Federal Seasonals: Hanna Gage, Tyler Balstad
YCC: None – COVID-19

Region/Network Support
Joel Cusick (field GPS support), Angie Southwould (GIS lead), Angela Holeton (budget), James Cato (Grants and Agreements Manager), the regional office staff provide numerous help since the AK IPMT is coordinated out of it.

Park Support
Denali National Park and Preserve - Wendy Mahovlic, Carl Roland, Dave Schirokauer
Katmai National Park and Preserve (also covers ALAG and ALEU) - Kelsey Griffin, Robert Peterson
Kenai Fjords National Park-Christina Kriedeman, Benjamin Pister
Glacier Bay National Park and Preserve - Martin Hutten
Klondike Gold Rush National Park and Preserve - Elaine Furbish, Annyssa Franks
Sitka National Historic Park – Olivia Magni, Naomi Mason
Wrangell – St Elias National Park and Preserve - Mark Miller
Yukon -Charley River National Preserve- Danielle Knapp, Amy Larson, Jeffery Rasic

Partners
Alaska Association of Conservation Districts, Soil & Water Districts
Various statewide CWMAs
SCA
Chugach National Forest
USFWS
DOT - Fairbanks Division

Volunteers
Limited – COVID-19

Steering Committee
Alaska Regional Office – Grant Hilderbrand
Central Alaska Park Representative – Carl Roland
Southwest Alaska Park Representative – Sharon Kim
Arctic Parks Representative – Dave Swanson
I&M Program Manager – Mike Bower

California IPMT

Leadership
Steve Buckley (Liaison)
Brent Johnson (Supervisor)

Staff Support
Cabrillo National Monument — Linh Anh Cat
Golden Gate National Recreation Area — Christine Sullivan, Erik Grijalva

Lassen Volcanic National Park — Tim Marsh, Colleen Egan, Jason Mateljak
Pinnacles National Park — Amelia Ryan, Corbin Gentzler
Point Reyes National Seashore — Lorraine Parsons, Dylan Voeller, Ellen Hamingson (retired)
Santa Monica Mountains National Recreation Area — Joey Algiers, Antonio Sanchez
Whiskeytown National Recreation Area — Laura Shaskey, Anna Schrenk, Tyler Self
Yosemite National Park — David Campbell, Garrett Dickman, Trevor Denson
Great Basin Institute — Melonie Brown
Point Reyes National Seashore Association — Michael Spaeth
John Cannon, NISIMS Data Management Support, Lava Beds National Monument

Region/Network Support
Interior Regions 8, 9,10, 12 (Lower Colorado Basin, Columbia-Pacific Northwest, California-Great Basin, Pacific Islands) Office – Denise Louie (Natural Resources and Science Lead), Brent Johnson (Vegetation Ecologist)

Park Support
Host Park – Redwood State and National Parks, Steve Mietz (Superintendent)

Partners and Cooperators
American Conservation Experience
Cabrillo National Monument Conservancy
Cabrillo National Monument Foundation
CalFlora
California Invasive Plant Council
Golden Gate National Parks Conservancy
Pinnacles National Park Foundation
Point Reyes National Seashore Association
Santa Monica Mountains Fund
Sierra Institute for Community and Environment
Yosemite Conservancy
Youth Conservation Corps

Volunteers
Point Reyes National Seashore Association
Golden Gate National Parks Conservancy
Yosemite Conservancy
Youth Conservation Corps

Steering Committee
Golden Gate National Parks, Alison Forrestel (Vegetation Chief)
Redwoods National Park, Stassia Samuels (Plant Ecologist)
Yosemite National Park, Garrett Dickman (Botanist)
Pacific West Region, Brent Johnson (Vegetation Ecologist)
CalPMT, Steve Buckley (Liaison)

Florida / Caribbean IPMT

Leadership
Brian Lockwood (Liaison),
Shea Bruscia (Data Manager)

Region/Network Support
Interior Region 2 South Atlantic Gulf – Mark Frey - Branch Chief SNRMD
South Florida and Caribbean Inventory and Monitoring Network – Irina Ford, Brooke Shamblin, Mario Londono, Judd Patterson

Park Support
Big Cypress National Preserve – William Snyder, Courtney Angelo
Biscayne National Park – Shelby Moneysmith, Vanessa McDonough, Amanda Bourque
Buck Island Reef National Monument/Christiansted National Historic Site/Salt River National Historic Park and Ecological Reserve – Kristen Ewen
Canaveral National Seashore – Kristen Kneifl
DeSoto National Memorial – Stanley Bond, Wayne Boyd, Kristen Kneifl
Dry Tortugas National Park – Hillary Cooley

Everglades National Park – Hillary Cooley, Bryan Falk
Fort Matanzas National Monument, Castillo de San Marcos – Kurt Foote
Gulf Islands National Seashore – Jennifer Manis
Timucuan Ecological and Historic Preserve, Fort Caroline – Steven Kidd
Virgin Islands National Park –Thomas Kelly

Partners and Cooperators
Florida Fish and Wildlife Conservation – Linda King, Dennis Giardina, Jackie Smith
Miami-Dade County – Dallas Hazelton, Gwen Burzycki
US Army Corps of Engineers – Jon Lane, Jessica Spencer
South Florida Water Management District – LeRoy Rodgers, Christen Mason, Christina Stylianos, Manny Porras

Steering Committee
Big Cypress National Preserve – Thomas Forsyth
Biscayne National Park – Penelope Del Bene
Buck Island Reef National Monument/ Christiansted National Historic Site/Salt River National Historic Park and Ecological Reserve – Angelita Alvino
Canaveral National Seashore – Cinda Waldbuesser
Desoto National Memorial – Stanley Bond
Everglades National Park/Dry Tortugas National Park – Pedro Ramos
Fort Matanzas National Monument/Castillo de San Marcos National Monument – Gordie Wilson
Gulf Islands National Seashore – Darrell Echols
Timucuan Ecological and Historic Preserve/Fort Caroline National Memorial – Chris Hughes
Virgin Islands National Park – Nigel Fields

Great Lakes IPMT

Leadership
Isaiah Messerly (Liaison), Stephen Mull (Crew Leader), Rebecca Key (Data Manager), Tammy Keniry (Admin Officer), Kelly Garrison (IT Support)

Region/Network Support
Interior Regions 3, 4, and 5 (Great Lakes/ Mississippi River Basin/ Missouri River Basin) - Carmen Thomson (GL-IPMT Supervisor)

Field Crew
Biological Technicians: Stephen Mull (Crew Leader), Daniel Jorgensen
Conservation Corps of MN. and IA: Anna Kilian, Laura Ringeisen

Park Field Crews
Mississippi National River and Recreation Area – Neil Smarjesse
Saint Croix National Scenic Riverway – Michael Rhoades, George Johnson, Jason Dowell

Park Support
See Technical/Steering Committee section
Additional Contacts: Scott Weyenberg (MWR-Fire), Chris Loudenslager (NOCO)

Partners and Cooperators
Conservation Corps of Minnesota and Iowa
Northwood Cooperative Weed Management Area
St. Croix Red Cedar Cooperative Weed Management Area
Grand Portage Reservation Tribal Council
Saint Croix River Association

Steering Committee
Eric Gabriel, Superintendent, Ice Age National Scenic Trail
David Horne, Superintendent, Pictured Rocks National Lakeshore

Paul Labovitz, Superintendent, Indiana Dunes National Park
Julie Galonska , Superintendent, Saint Croix National Scenic Riverway
Wyndeth Davis, Superintendent, Keweenaw National Historical Park
Denice Swanke, Superintendent, Isle Royale National Park

Technical Committee

Apostle Islands National Lakeshore – Peggy Burkman
Grand Portage National Monument – Brandon Seitz
Ice Age National Scenic Trail – Dan Watson
Isle Royale National Park – Lynette Potvin
Indiana Dunes National Park – John Kwilosz
Keweenaw National Historical Park - Steve Delong
Mississippi River and Recreation Area – Neil Smarjesse
North Country National Scenic Trail – Luke Jordan
Pictured Rocks National Lakeshore – Bruce Leutscher
St. Croix National Scenic Riverway – Scott Weyenberg
Sleeping Bear Dunes National Lakeshore – Julie Christian
Voyageurs National Park – John Snyder

Gulf Coast IPMT

Leadership

Dale McPherson (Liaison),
Shea Bruscia (Regional IPMT Program Data Manager)

Region/Network Support

Interior Region 2 South Atlantic Gulf Division of Science and Natural Resources Management - Mark Frey (Acting Division Chief), Darrell Echols (Division Chief), Timothy Pinion (Acting Division Chief), Kelly Irick (Acting Branch Chief), Christopher Barrow (Regional GIS Coordinator), Welles Tisdale (Acting Regional GIS Coordinator)
Interior Region 2 South Atlantic Gulf Contracting Division - Celinda Hicks (Contracting Officer), Alison Smith (Agreements Officer), Demetria Smith-Wilson (Contracting Officer)
Gulf Coast Inventory and Monitoring Network – Martha Segura (Network Coordinator)

Intern Support

Conservation Legacy – Austin Rinehart
Conservation Legacy – Brynna Loomans
Virtual Student Federal Service – Raquel Thatcher
Virtual Student Federal Service - Caleb Simak Hoover

Park Support

Big Thicket National Preserve Resource Management – Andrew Bennett, Whitny Howeth
Gulf Islands National Seashore RM – Kelly Irick, Cody Haynes
Jean LaFitte National Historical Park and Preserve RM – Guy Hughes, Dave Fox
Natchez Trace Parkway RM – Christina Smith, Deanna Boensch
Palo Alto Battlefield National Historical Park RM – Rolando Garza
Padre Island National Seashore RM – Shelley Todd, Charles Sassine
San Antonio Missions National Historical Park RM – Greg Mitchell
Vicksburg National Military Park RM – Chuck Beightol, Rachel Davidson

Steering Committee

Big Thicket National Preserve – Wayne Prokopetz (Superintendent)
Gulf Islands National Seashore – Darrell Echols (Superintendent)

Jean LaFitte National Historical Park and Preserve – Chuck Hunt (Superintendent)
Natchez Trace Parkway – Doug Neighbor (Superintendent)
Palo Alto Battlefield National Historical Park – Oralia Fernandez (Superintendent)
Padre Island National Seashore – Eric Brunnermann (Superintendent)
San Antonio Missions National Historical Park – Christine Jacobs (Superintendent)
Vicksburg National Military Park – Carol Daniels (Acting Superintendent), Carrie Mardorf (Acting Superintendent)

Heartland Network IPMT

Leadership
Carmen Thomson (Regional I&M and IPMT Program Manager)
Mike DeBacker (Network Coordinator/Supervisory Ecologist)
Gareth Rowell (Data Manager)
Craig Young (Terrestrial Program Leader)

Crew
Jordan Bell (Project Manager), Jessica Salesman (Project Manager)

Partners and Cooperators
Conservation Corps of Iowa
Watershed Conservation Corps

Region/Network Support
Midwest Region – Carmen Thomson (I&M Program Manager)

Board of Directors
Arkansas Post National Memorial – Karen Bradford (Superintendent)
Effigy Mounds National Monument – Jim Nepstead (Superintendent)
Hopewell Culture National Historical Park – Karen Dorn (Superintendent, Chair)
Ozark National Scenic Riverways – Jason Lott (Superintendent)
Tallgrass Prairie National Preserve – Randy Bilbeisi (Superintendent)
Midwest Regional Office – Carmen Thomson (Regional I&M Program Manager)

Technical Committee
Arkansas Post National Memorial – Kirby McCallie
Buffalo National River – Melissa Trenchik
Cuyahoga Valley National Park – Chris Davis
Effigy Mounds National Monument – Rodney Rovang
George Washington Carver National Monument – Randall Becker
Herbert Hoover National Historic Site – Seth Goodspeed
Homestead National Monument of America – Jesse Bolli
Hopewell Culture National Historical Park – Bret Ruby
Hot Springs National Park – Nathan Charlton
Lincoln Boyhood National Memorial – Mike Capps
Ozark National Scenic Riverways – Victoria Grant
Pea Ridge National Military Park – Nolan Moore
Pipestone National Monument – Seth Hendriks
Tallgrass National Preserve – Kristen Hase
Wilson's Creek National Battlefield – Gary Sullivan

Lake Mead Inter-Regional IPMT

Leadership
Curt Deuser (Liaison), Andy Pigg (Operations Leader), Anna Wheeler (Data Manager, vacated July 2021)

Crew
James Roberts, Hannah Andrascik, Joseph Ingram, Matthew Gorentz, Grady Workman, John Myers, Lillian Setters,

Maegan Stephenson, Emily Cochran, Brandon Blackburn, Jessica McCulloch, and Matthew D'Ambrosi.

Region Support

Interior Regions 8, 9,10, 12 (Lower Colorado Basin, Columbia-Pacific Northwest, California-Great Basin, Pacific Islands) Office – Denise Louie, Brent Johnson

Interior Regions 6, 7, and 8 Office - John Mack, (Natural Resources Division, Biological Resource Program Manager)

Lake Mead NRA Host Park Support

David Alberg (Chief of RM), Wendy Foster, Brad Morris and Kim James (Administrative Assistants), Scott Briggs (Budget Officer), Lila Klein (Admin Officer), Brenda Todd and Justin Pattison (Acting Deputy Superintendent's)

Park Support

Arches National Park and Canyonlands National Park (Southeast Utah Group): Liz Ballenger, Kelli Quinn and Terry Fisk

Joshua Tree National Park: Neil Frakes, Kristin Richardson and Jane Rodgers

Death Valley National Park: Ali Ainsworth, Carol Fields and Mark Sappington

Bryce Canyon National Park: Eric Vasquez

Capitol Reef National Park: Sandra Borthwick and Morgan Wehtje

Great Basin National Park: Ben Roberts, Meg Horner, Julie Long

Mojave National Park: Andrew Kaiser and Debra Hughes

Zion National Park: Laura Schrage and Darrin Gobble

Lake Mead NRA: Carrie Norman and Kelly Wallace

Parashant National Monument: Jennifer Fox

Pipe Spring National Monument: Brian Black

Manzanar National Historic Site: Jeff Burton, Dave Goto

Tule Springs Fossil Beds National Monument (not official partner): Erin Eichenberg and Derek Carter

Organ Pipe Cactus NM (not official partner): Jeanne Taylor

Partners and Cooperators

Bureau of Land Management:
- Southern NV District: JJ Smith, Sean McEldery, Tarl Norman, Tyler Hecht, Tyler Warner, Ryan Wallis and Curtis Walker
- Battle Mountain District: Anna O'Brien, Kenneth Shedden and Robert Burdick
- Elko District: Sam Cisney
- California Ridgecrest District: Alex Neibergs and Marty Dickes
- Winnemucca District: Michael McCampbell

US Fish and Wildlife Service - Cibola NWR: Melissa Fry, Linda Miller, Ryan Woody

US Forest Service
- Spring Mountains NRA: Corrin Floyd and Sarah Kapel
- Coconino NF: Amanda Roesch and Katherine Landry

Bureau of Reclamation – Lower Colorado River MSCP Program: Jessica Stegmeier, Laken Anderson, Jeremy Brooks

Clark County, Nevada Desert Conservation Program – Riparian River Reserves: Caryn Wright; Boulder City Conservation Easement: Stefanie Ferrazzano and Sara Carrizal

Clark County Wetlands Park and Nature Preserve – Liz Bickmore and Ben Jurand

Nevada Department Of Wildlife: Anthony Miller

Mid-Atlantic IPMT

Leadership

Casey Reese (Liaison), Nathan Wender (Team Leader), Jonathan Mikolin (Field Leader/Data Manager)

Crew

Rowan Johnson, Deneith Reif

Region Support
Interior Region 1 (North Atlantic Appalachian) Office – Casey Reese, Supervisor (Regional IPM Coordinator), Carmen Chapin (Chief Natural Resource Management)

Park Support
Host Park – Shenandoah National Park – Patrick Kenney (Superintendent), Jim Schaberl (Chief, Natural and Cultural Resources), Jake Hughes (Biologist – Invasive Plants/Restoration)
Appomattox Courthouse National Historical Park – Brian Eick
Appalachian National Scenic Trail – James Von Haden
Assateague Island National Seashore – Bill Hulslander, Jonathan Chase
Booker T. Washington National Monument – Timothy Sims
Cedar Creek and Belle Grove National Historical Park – Karen Beck-Herzog, Jon Beck
Colonial National Historical Park – Dorothy Geyer
Fredericksburg and Spotsylvania County Battlefields Memorial National Military Park – Ray Brown
Gettysburg National Military Park and Eisenhower National Historic site – Zach Bolitho, Dafna Reiner, Christopher Davis
George Washington Birthplace National Monument and Thomas Stone National Historic Site – Melissa Cobern, Doy Russell, Brian Wrabley
Hampton National Historic Site and Fort McHenry National Monument and Historic Shrine –
Hopewell Furnace National Historic Site and Valley Forge National Historical Park – Amy Ruhe, Kate Jensen
New River Gorge National River, Bluestone National Scenic River, and Gauley River National Recreation Area – Bryan Wender, Doug Manning
Petersburg National Battlefield – Tim Blumenschine, Julia Steele
Richmond National Battlefield Park – Kristen Allen

Partners and Cooperators
Appalachian Trail Conservancy
Blue Ridge PRISM
Smithsonian Conservation Biology Institute
Potomac Appalachian Trail Club
Town of Elkton, VA

Volunteers
James Akerson
PATC, Rob Lamar

Steering Committee
Appomattox Courthouse National Historical Park – Brian Eick
Appalachian National Scenic Trail – James Von Haden
Booker T. Washington National Monument – Timothy Sims
Colonial National Historical Park – Dorothy Geyer
Fredericksburg and Spotsylvania County Battlefields Memorial National Military Park – Ray Brown
Gettysburg National Military Park and Eisenhower National Historic Site – Zach Bolitho
George Washington Birthplace NM and Thomas Stone National Historic Site – Melissa Cobern, Doy Russell
Hampton National Historic Site –
Hopewell Furnace National Historic Site and Valley Forge National Historical Park – Amy Ruhe, Kate Jensen
New River Gorge National River, Bluestone National Scenic River, and Gauley River National Recreation Area – Bryan Wender, Lizzie Watts
Petersburg National Battlefield – Timothy Blumenschine, Julie Steele

Richmond National Battlefield Park – Kristen Allen
Shenandoah National Park – Jim Schaberl

National Capital Area IPMT

Leadership
Alex Voznitza (Liaison), Nate Finney (Team Leader)

Crew
Cara Giordano (Squad Leader), Wayne Heideman (Squad Leader), Michael Inlow (intern), Noe Melgar (intern), Raxhana Mendez (intern), Linnea Stewart (intern)

Region Support
National Capital Area Office – Pat Campbell (Chief of Natural Resources and Science)
National Capital Area Office - Diane Pavek (Research and T&E Coordinator)
National Capital Area Office - Elizabeth Matthews (Regional I&M Program Manager)
National Capital Area Office – Dorothy Borowy (Ecologist, Regional IPM Coordinator)

Park Support
Antietam National Battlefield – Joe Calzarette (Natural Resources Program Manager), Christopher Tawney (Biologist), Jane Custer (Chief, Resource Management)
Catoctin Mountain Park – Lindsey Donaldson (Chief, Resource Management), Becky Loncosky (Biologist)
Chesapeake and Ohio Canal National Historical Park– Andrew Landsman (Natural Resources Program Manager), Layne Strickler (Biological Science Technician)
George Washington Memorial Parkway – Brent Steury (Natural Resources Program Manager), Mireya Stirzaker (Biologist)
Harpers Ferry National Historical Park – Mia Parsons (Chief, Resource Management), Eric Kelley (Natural Resource Specialist), Nicole Keefner (Biological Science Technician), Darlene Hassler (Cultural Resources Management Specialist)
Manassas National Battlefield Park – Bryan Gorsira (Natural Resources Program Manager), Allison Hay (Biologist)
Monocacy National Battlefield– Andrew Banasik (Superintendent), Kaitlyn Parness (Biological Science Technician), Alex Vindas Cruz (Chief, Resource Management)
National Capital Parks - East – Mike Commisso (Chief, Resource Management), Mikaila Milton (Biologist), Lara Hannon (Natural Resources and Environmental Compliance Program Manager), Vincent Gentilcore (Maintenance Supervisor- Greenbelt)
National Mall and Memorial Parks – Leslie Frattaroli (Natural Resource Specialist), Brittany Grouge (Biological Science Technician), Catherine Dewey (Chief, Resource Management)
Prince William Forest Park – Gregg Kneipp (Chief, Resource Management), Kristen Shelton (Biologist)
Rock Creek Park – Nick Bartolomeo (Chief, Resource Management), Ana Chuquin (Botanist)
Wolf Trap National Park for the Performing Arts – Walter McMurry (Gardener Supervisor), Edgar Deskins (Gardener)

Partners and Cooperators
United States Fish and Wildlife Service – Phil Pannill (NCTC Land Manager)
Virginia Department of Conservation and Recreation – Michael Lott (Crow's Nest Manager/Northern Region Steward)
NCR-PRISM – Sara Tangren (NCR-PRISM Coordinator), Damien Ossi (DOEE, Wildlife Biologist), Erin Stockschlaeder (Fairfax County Park Authority, Natural Capital Protection Program Manager), Ryan Colliton

(Montgomery County Department of Parks, Principal Natural Resources Specialist), Mary Travaglini (Montgomery County, Organic Lawn and Landscape Program Manager), Corinne Stephens (Montogomery County, Senior Natural Resources Specialist), Jorge Bogantes Montero (Anacostia Watershed Society, Natural Resource Specialist), Jeanne Braha (Rock Creek Conservancy, Executive Director)
Arlington County Department of Parks and Recreation – Jennifer Soles (Natural Resource Specialist), Alonso Abugattas (Natural Resources Manager)
Appalachian Conservation Corps – Michelle Marsich (Eastern Region Talent Development Specialist), Maddie Interdonato (IP Program Manager)
Glenn Tobin - (George Washington Memorial Parkway, Weed Warrior Volunteer)

Steering Committee
Antietam National Battlefield – Joe Calzarette
Catoctin Mountain Park – Becky Loncosky
Chesapeake and Ohio Canal National Historical Park – Andrew Landsman
George Washington Memorial Parkway – Mireya Stirzaker
Greenbelt Park - Vincent Gentilcore
Harpers Ferry National Historical Park – Eric Kelley
Manassas National Battlefield Park – Bryan Gorsira
Monocacy National Battlefield– Alex Vindas Cruz
National Capital Parks-East – Lara Hannon
National Mall and Memorial Parks – Catherine Dewey
Piscataway Park – Lara Hannon
Prince William Forest Park – Gregg Kneipp
Rock Creek Park – Nick Bartolomeo
Wolf Trap National Park for the Performing Arts – Edgar Deskins
NCA IPMT Liaison - Alex Voznitza
NCA Chief of Natural Resources and Science – Pat Campbell
NCA Ecologist/ Integrated Pest Management Specialist – Dorothy Borowy
NCA Research Coordinator – Diane Pavek
NCA Inventory & Monitoring Network Program Manager – Elizabeth Matthews

North Coast / Cascades Network IPMT

Leadership
Cheryl Decker (Liaison),
Sophie Wilhoit (Crew Lead and Data Manager –OLYM)
Collin McAvinchey (Crew Lead--OLYM)
Miles Berkey (Crew Lead—NOCA)

Crew
Salvadore Silaua, Samantha Fischbein--Seasonals)

Region/Network Support
Interior Regions 8, 9,10, 12 (Lower Colorado Basin, Columbia-Pacific Northwest, California-Great Basin, Pacific Islands) Office – Denise Louie, Irina Irvine, Brent Johnson

Park Support
Host Parks: North Cascades National Park – Denise Schultz (Acting Superintendent), Brad Johnson (Acting Chief Resource Management);
Olympic National Park – Sarah Creachbaum (Superintendent), Jerald Weaver (acting Chief Resource Management); Ebey's Landing National Historical Reserve--Roy Zipp (Area Manager)

Partners and Cooperators
Clallum County Noxious Weed Control

Island County Noxious Weed Control
San Juan County Noxious Weed Control
Skagit County Noxious Weed Control
Olympic Peninsula knotweed working group (CWMA)
Skagit CWMA
Washington State Extension Service
The Nature Conservancy, Mt Vernon office
Whidbey Island Poison Hemlock working group
Trust Board of Ebey's Landing National Historical Reserve
Washington State Parks
Pacific Northwest Invasive Plant Council
Skagit Fisheries Enhancement Group
Quinault Nation
Quileute Nation
Washington Conservation Corps
Earth Corps
Pacific Rim Institute
Center for Natural Lands Management
North Sound Prairie Working Group

Steering Committee
Olympic National Park – Janet Coles
North Cascades National Park – vacant
Mount Rainier National Park – Beth Fallon, Kim Popeck
Lewis and Clark National Historical Park – Carla Cole, Kayla Fermin
Ebey's Landing National Historical Reserve – Roy Zipp
San Juan Island National Historical Park – Sara Dolan

Northeast IPMT

Leadership
Casey Reese (Interior Region 1 IPM Coordinator-acting Liaison), Nicholas Stevenson (Team Leader)

Crew
None

Region/Network Support
Interior Region 1 (North Atlantic Appalachian) Office – Casey Reese, (NER IPM Coordinator); Carmen Chapin, (NER Chief of Natural Resources), Mid Atlantic Fire Management Team

Park Support

Host Park: Delaware Water Gap National Recreation Area, host park - Larry Hilaire (Wildlife Biologist), Tom Witter (DEWA VIP)
Acadia National Park – Jesse Wheeler (Vegetation Program Manager)
Allegheny Portage Railroad National Historic Site - Doug Snavely (JOFL Maintenance) Brenda Wasler, (Natural Resource Manager WEPA)
Boston Harbor Islands National Recreation Area - Marc Albert (Natural Resources), Benjamin Curell and Daniel Kruchten (Biotechs)
Cape Cod National Seashore - Stephen M. Smith (Natural Resources)
Fire Island National Seashore - Jordan Raphael (Natural Resources)
First State National Historic Park - Alan McLoughlin, Sonja Werth (Biologist)
Flight 93 National Memorial - Stephen Clark, Doug Snavely, Brenda Wasler
Frederick Law Olmsted National Historic Site - Elliott Doughty
Gateway National Recreation Area - Patricia Rafferty (Natural Resources)
Home of Franklin D. Roosevelt National Historic Site - Dave Hayes (Natural Resources)
Katahdin Woods and Waters National Monument -Isabel Ashton (Integrated Resources Manager)
Minuteman National Historic Park - Margie Coffin-Brown (Natural Resources Manager), Ada Fox (Biotech)
Morristown National Historical Park -Robert Masson (Biologist)
Sagamore Hill National Historic Site - Scott Gurney (Natural Resources)

Saint-Gaudens National Historic Site - Steve Mortillo (Integrated Resources)
Saratoga National Historic Park - Chris Martin & Linda White (Natural Resources)
Saugus Iron Works National Historic Site - Bill Fuchs (Natural Resources)
Upper Delaware Scenic and Recreational River - Don Hamilton & Jessica Newbern (Natural Resources)

Partners and Cooperators
Appalachian National Scenic Trail – Marian Orlousky (Appalachian Trail Conservancy (ATC)), Linda Rohleder (New York-New Jersey Trail Conference (also ATC))
CU Maurice River (partner organization of the Maurice National Wild and Scenic River)
Morristown National Historical Park - New Jersey Invasive Species Strike Team

Northern Great Plains IPMT

Leadership
Vacant (Liaison), Justin Mills (Data Management, Liaison Support), Carmen Thomson (Supervisor)

Crew
Mark Slovek, Lee Vaughan (BADL), Blake McCann (THRO), Montana Conservation Corps, Minnesota Conservation Corps

Region/Network Support
Interior Regions 3, 4, and 5 (Great Lakes/ Mississippi River Basin/ Missouri River Basin) – Carmen Thomson, supervisor (I&M Program Manager)

Park Support
Host Parks - Badlands National Park and Theodore Roosevelt National Park

Partners and Cooperators
Northern Great Plains I&M Network
NRCS Bismark Plant Materials Center – Wayne Duckwitz
USGS- Amy Symstad, Heather Baldwin
Northern Great Plains Fire Management- Wind Cave National Park

Volunteers
Montana Conservation Corps
Minnesota Conservation Corps

Steering Committee
Badlands National Park – Eddie Childers (Wildlife Biologist)
Ft. Union Trading Post National Historic Site –Alice Hart (Superintendent)
Midwest Region I&M-IPMT Program Manager – Carmen Thomson (I&M Program Manager)
Niobrara National Scenic River – Susan Cook (Superintendent)
Theodore Roosevelt National Park – Blake McCann (Natural Resource Program Manager)
Northern Great Plains Fire Management – Dan Swanson (Fire Ecologist)
Wind Cave National Park – Greg Schroeder (Natural Resource Program Manager)

Northern Rocky Mountain IPMT

Leadership
Steven Bekedam (Liaison), Molly Murphy (Colorado National Monument Team Leader), Andrew Ringholz (Yellowstone National Park Team Leader)

Crew
Arley Canfield (GLAC biotech), Chelsea Aguero (GLAC biotech), Lindsay Civin (MCC intern), Robert Lescarbeau (MCC Intern)

Regional Support

Interior Regions 6, 7, and 8 Office – John Mack (Biological Resources Lead), Brandie MacIntyre (Program Administrative Assistant), Deborah England (Budget Analyst)

Park Support

Host Parks - Colorado National Monument, Glacier National Park, and Yellowstone National Park
Bear Paw National Battlefield – Jimmer Stevenson (Maintenance Foreman)
Bent's Old Fort NHS - Adam Heberlie (Biological Science Technician)
Big Hole National Battlefield – Jimmer Stevenson (Maintenance Foreman)
Bighorn Canyon National Recreation Area – Ryan Felkins (Park Biologist)
Black Canyon of the Gunnison NP – Danguole Bockus (Park Biologist)
Capulin Volcano NM – Adam Heberlie (Biological Science Technician)
City of Rocks National Reserve – Shalene Dickard (Chief, Integrated Resource Management)
Colorado National Monument – Jessica Resnik (Chief, Integrated Resource Management)
Craters of the Moon National Monument and Preserve – Linda Manning (Chief, Integrated Resource Management)
Curecanti National Recreation Area – Danguole Bockus (Park Biologist)
Dinosaur National Monument – Emily Spencer (Natural Resource Specialist),
Florissant Fossil Beds National Monument – Seth Maile (Lead Park Ranger)
Fossil Butte National Monument – Arvid Aase (Museum Curator)
Glacier National Park – Dawn LaFleur (IPM Biologist)
Golden Spike National Historic Site – Brandon Flint (Park Superintendent)
Grant–Kohrs Ranch National Historic Site – Jason F. Smith (Natural Resource Specialist)
Grand Teton National Park – Jeanine Foley (Vegetation Biologist)
Great Sand Dunes National Park – Dewane Mosher (Park Biologist)
Hagerman Fossil Beds National Monument – Linda Manning (Chief, Integrated Resource Management)
John D. Rockefeller Memorial Parkway – Jeanine Foley (Vegetation Biologist)
Little Bighorn National Battlefield – Wayne Challoner (Park Superintendent), Mariane Doane (Biologist)
Minidoka National Historic Site – Linda Manning (Chief, Integrated Resource Management)
Rocky Mountain National Park – Jim Bromberg (Vegetation Ecologist)
Sand Creek Massacre National Historic Site – Adam Heberlie (Biological Science Technician)
Yellowstone National Park – Sue Mills (Natural Resource Specialist), Brian Teets (North District Crew Leader)

Partners and Cooperators

American Conservation Experience – Keean Ruane
Montana Conservation Corps – Amanda Pfaff, Angela Davis, Bryan Wilson
University of Montana, Marilyn Marler
U.S. Geological Survey, Dr. Amy Symstad
Box Elder County, UT Noxious Weed Control

Steering Committee

Bear Paw National Battlefield – Kathryn (Katy) Matthews
Black Canyon of the Gunnison NP – Danguole Bockus
Colorado National Monument – Jessica Resnik
Glacier National Park – Dawn LaFleur
Grand Teton National Park – Jeanine Foley
Grant–Kohrs Ranch National Historic Site – Jason Smith
Hagerman Fossil Beds National Monument – Gilbert Moreno

Sand Creek Massacre National Historic Site – Adam Heberlie
Yellowstone National Park – Sue Mills
NRM IPMT Liaison – Steven Bekedam
Regional Biological Resources Program Lead – John Mack

Pacific Islands IPMT

Leadership

Jeremy Gooding (Liaison), Sierra McDaniel (Lead, Natural Resources Management, Hawaii Volcanoes National Park), Paul Hosten (Chief, Integrated Resources Management Division, Haleakalā National Park), Dr. Rhonda Loh (Superintendent, Hawai‘i Volcanoes National Park), Stacey Torigoe (Ecologist, Hawai‘i Volcanoes National Park), Woody Mallinson (Natural Resource Program Manager, Haleakalā National Park)

Field Crews (Parks and Partners)

Hawai‘i Volcanoes National Park Natural Resources Management: Jon Maka‘ike and Dwayne Montoya-Aiona, Crew Leads and the entire NRM Crew
Haleakalā National Park Vegetation Management: Adam O’Neill, Biological Science Technician, Andrew DellaVilla, Biological Science Technician.
Data Manager: Leila Morrison (HALE), Danny Duda (HAVO).
Partner Parks - Resource Management Staff and Leads at Kalaupapa National Historical Park, Kaloko-Honokōhau National Historic Park, Pu‘uhonua o Hōnaunau National Historic Park, & Pu’u Kohōlā Heiau National Historic Site
Big Island Invasive Species Committee (BIISC) Field Crews
Hawaiian Ocean View (HOVE) Community Association

Region/Network Support

Interior Regions 8 ,9,10, 12 (Lower Colorado Basin, Columbia-Pacific Northwest, California-Great Basin, Pacific Islands) Office – Denise Louie (Natural Resources and Science Lead), Brent Johnson (Vegetation Ecologist & IPM Coordinator),
Pacific Islands Office – Melia Lane-Kamahele (Manager)

Park Support

Haleakalā National Park – Awapuhi Dancil and David Rummel
Hawai‘i Volcanoes National Park – Malia Banashek

Partners and Cooperators

Partner Parks - Haleakalā National Park (Host), Hawai‘i Volcanoes National Park, Kalaupapa National Historical Park, Kaloko-Honokōhau National Historic Park, Pu‘uhonua o Hōnaunau National Historic Park, Pu‘ukoholā National Historic Site
University of Hawai’i at Mānoa (UHM) – Dr. Paul Krushelnycky, Researcher, Department of Plant and Environmental Protection Sciences.
University of Hawai‘i, Hilo (UHH) – Dr. Ryan Perroy, Associate Professor, Geography and Environmental Science
University of Hawai‘i, Mānoa (UHM) – Dr. Clifford Morden, Professor, Botany and Center for Conservation Research and Training
University of Florida (UFL) – Dr. James Leary, Assistant Professor, Center for Aquatic and Invasive Plants
KUPU – See: https://www.kupuhawaii.org/

Leeward Haleakalā Watershed Restoration Partnership (LHWRP) – See: http://lhwrp.org/
Plant Extinction Prevention Program (PEPP), Hawai'i – Hank Oppenheimer (Maui Nui PEPP Coordinator)
Hawaii Wildfire Management Organization (HWMO) – See: https://www.hawaiiwildfire.org
East Maui Watershed Partnership (EMWP)- Hawai'i Department of Land and Natural Resources, Haleakalā Ranch, County of Maui Department of Water Supply, The Nature Conservancy Hawai'i, East Maui Irrigation, University of Hawai'i PCSU, Haleakalā National Park
Three Mountain Alliance – University of Hawai'i PCSU, Hawai'i Department of Public Safety, Hawai'i Department of Land and Natural Resources, Kamehameha Schools, National Park Service, The Nature Conservancy, US Fish and Wildlife Service, USDA Forest Service, US Geological Survey, USDA Natural Resources Conservation Service

Volunteers

Friends of Hawai'i Volcanoes National Park
Friends of Haleakalā National Park, Ron Nagata Ohana

Steering Committees

Maui Nui (Islands of Maui, Molokai, Lanai, & Kahoolawe) - Liaison Pacific Islands IPMT, Resources Management Chief Haleakalā National Park, Active Members of Maui Invasive Species Committee, Manager Molokai Invasive Species Committee, Resources Management Chief Kalaupapa National Historical Park, relevant subject experts as appropriate
Island of Hawai'i (Big Island): Resources Management Chief, Park Ecologist, and Pest Control Workers from Hawai'i Volcanoes National Park, Resources Management Leads Kaloko-Honokōhau and Pu'uhonua o Hōnaunau National Historical Parks, Jackson Letchworth (KAHO), Staff at Pu'ukoholā National Historic Site, subject experts as appropriate

Southeast IPMT

Leadership

Lauren Serra (Liaison), Toby Obenauer (Crew Leader), Shea Bruscia (Data Manger, Florida Caribbean IPMT)

Crew

William Culbertson, Logan Lilla, Casey Hayes (American Conservation Experience)

Region/Network Support

Interior Region 2 South Atlantic Gulf – Mark Frey (Acting Chief, Science and Natural Resources Management), Kelly Irick (Acting Branch Chief, Science and Natural Resources Management), Amorita Brackett (Southeast Coast IPMT), Brian Lockwood (Florida Caribbean IPMT), Josue Urbaez (IT Specialist)
Inventory & Monitoring Network - Brian Witcher (Appalachian Highlands Program Manager), Evan Raskin (Appalachian Highlands Assistant Data Manger/Biologist), Teresa Leibfreid (Cumberland Piedmont Ecologist), Clare Bledsoe (Cumberland Piedmont Biologist), Ellen Cheng (Quantitative Ecologist)
Fire Management – Alex Scronce (Wildland Fire Operations Specialist, KIMO), Wylie Paxton (Appalachian/Piedmont/Coastal Zone), Justin Shedd (Regional Wildland Fire GIS Specialist)

Park Support

Host Park - Blue Ridge Parkway – Bambi Teague (Supervisory Biologist), Chris Ulrey (Plant Ecologist), Tracy Swartout (Superintendent), Andy Otten (Landscape Architect-Project Specialist, Denver Service Center-Transportation)

Abraham Lincoln Birthplace National Historical Park – Jennifer Jones (Interpretation), Stacy Humphreys (Chief of Interpretation and Resources Management, Catherine Bragaw (Superintendent)

Andrew Johnson National Historic Site –Josh Hines (Supervisory Facility Operations Specialist), David Foster (Superintendent)

Appalachian National Scenic Trail

Big South Fork National River & Recreation Area / Obed Wild & Scenic River – Marie Tackett (Botanist), Niki Nicholas (Superintendent), Cody Karsner (Biological Science Technician), Tyler Chitwood (Seasonal), Connor Kurz (Wildlife Technician), American Conservation Experience Conservation Corps

Carl Sandburg Home National Historic Site – Irene Van Hoff (Biological Science Technician), Polly Angelakis (Superintendent)

Chickamauga & Chattanooga National Military Park – Jim Szyjkowski (Chief of Resource Management), Kiel Rommel (Preservationist / TTAP Supervisor), Brad Bennett (Superintendent), and Abbey Vander Sluice, Hannah McLaren, Emily Mathis, Chance Williams (Historic Preservation Team Interns)

Cumberland Gap National Historical Park – Jenny Beeler (Biologist), Charles Sellers (Superintendent)

Fort Donelson National Battlefield – David Hamby (Chief of Heritage Preservation & Maintenance), Brian McCutchen (Superintendent)

Great Smoky Mountains National Park – Kris Johnson (Supervisory Forester), Cassius Cash (Superintendent), American Conservation Experience Conservation Corps

Guilford Courthouse National Military Park – Vicki Boyce (Maintenance), Mike Lewter (Maintenance Supervisor), James Hill (Superintendent)

Little River Canyon National Preserve / Russell Cave National Monument – Mary Shew (Resources Management Specialist), Shawn Waddel (Biological Science Technician), Steve Black (Superintendent)

Mammoth Cave National Park – Tim Pinion (Chief of Science and Resources Management), Brice Leech (Natural Resources Specialist), Barclay Trimble (Superintendent)

Shiloh National Military Park – Marcus Johnson (Natural Resource Management), Dale Wilkerson (Superintendent)

Southern Campaign of the American Revolution Parks Group - Cowpens National Battlefield / Kings Mountain National Military Park / Ninety Six National Historic Site - Diana Bramble (Superintendent, COWP/KIMO), Adam Baker (Maintenance, COWP) and Grey Wood, George McCarty (Maintenance, NISI)

Stones River National Battlefield – Brenda Pennington (Superintendent), Randy Anderson (Facilities and Natural Resources Manager), Brenda Pennington (Superintendent)

Partners and Cooperators

American Conservation Experience

Appalachian Trail Conservancy

Arboretum at Chapel Hill

Federal Highways Administration – NPS Denver Service Center

North Carolina Forestry Commission

North Carolina Invasive Plant Council

North Carolina Native Plant Society (i.e. Cullowhee)

South Carolina Cogongrass Taskforce

South Carolina Exotic Pest Plant Council

South Carolina Native Plant Society

Town of Marshall, NC

USDA APHIS – Columbia, SC
USDA National Forests of NC

Volunteers
Interior Region 2's Science and Natural Resources Management Division – Dylan Lockwood, Joseph Lamb

Steering Committee
Big South Fork National River & Recreation Area / Obed Wild & Scenic River – Marie Tackett
Chickamauga & Chattanooga National Military Park – Jim Szyjkowski
Cowpens National Battlefield / Kings Mountain National Military Park – Diana Bramble
Cumberland Gap National Historical Park – Jenny Beeler
Little River Canyon National Preserve / Russell Cave National Monument – Mary Shew

Southeast Coast IPMT

Leadership
Lauren Serra (Liaison), Amorita Brackett (Crew Leader), Shea Bruscia (Data Manger, Florida Caribbean IPMT)

Crew
Michaela Palmieri - MOCR, Miles Gorman - HOBE, Cody Cox - HOBE, Isabella Hackney – FOPU, Marcus Ryan Brazell - FOPU, Alex McTavish – OCMU (American Conservation Experience), Julieanne Montaquila – SECN I&M (Scientist in Parks)

Region/Network Support
Interior Region 2 South Atlantic Gulf – Mark Frey (Acting Chief, Science and Natural Resources Management), Kelly Irick (Acting Branch Chief, Science and Natural Resources Management), Toby Obenauer (Southeast IPMT), Southeast IPMT Crew (American Conservation Experience Interns), Brian Lockwood (Florida Caribbean IPMT), Welles Tisdale (GIS Specialist)
Inventory & Monitoring Network - Brian Gregory (Southeast Coast Program Manager/Aquatic Ecologist), Forbes Boyles (Southeast Coast Botanist), Ellen Cheng (Quantitative Ecologist)
Appalachian/Piedmont/Coastal Fire Management Zone – Wylie Paxton and the Fire Effects Crew, Rob Klein (Fire Ecologist), Justin Shedd (Regional Wildland Fire GIS Specialist)

Park Support
Host Park - Congaree National Park – K Lynn Berry (Superintendent), David Shelley (Chief of Resource Stewardship and Science), Theresa Yednock (Biological Science Technician), Eric Frey (Biologist), Laura Tyler (Administrative Officer), Alice DaRosa (Administrative Support Assistant), and John Torrence, Leona McManus (Maintenance), Charles Aznive (Chief of Maintenance), Jonathan Manchester (Interpretation Park Ranger), Greg Cunningham (Chief of Interpretation, Education and Visitor Services), Jason Johnson (Chief Ranger), Kacey Kai (Seasonal Interpretation Park Ranger), Youth Conservation Corps
Cape Hatteras National Seashore / Fort Raleigh National Historic Site / Wright Brothers National Monument – Dave Hallac (Superintendent), Meaghan Johnson (Chief of Resource Management and Science National Parks of Eastern North Carolina), William P Thompson (Supervisory Biological Science Technician)
Cape Lookout National Seashore – Jeff West (Superintendent), Jon Altman (Biologist), American Conservation Experience Conservation Corps
Chattahoochee River National Recreation Area - Read (Biologist), Ann Honious (Superintendent), Annie Couch (Crayfish Creek Project)
Cumberland Island National Seashore – Doug Hoffman (Biologist), Michael Seibert (Chief of Resources), Gary Ingram (Superintendent)

Fort Frederica National Monument – Michael Seibert (Chief of Resources), Steve Theus (Site Manager)
Fort Pulaski National Monument – Melissa Memory (Superintendent), Candice Wyatt (Biological Science Technician), Emily Forlenza (Facility Manager)
Fort Sumter and Fort Moultrie National Historical Park / Charles Pinckney National Historic Site – Tracy Stakely (Superintendent), Kate Funk (Curator)
Horseshoe Bend National Military Park – Barbara Tagger (Superintendent), and Brian Robinson, Steve Crowder (Maintenance)
Kennesaw Mountain National Battlefield Park – Patrick Gamman (Superintendent), Carlos Hurston (Facility Manager)
Moores Creek National Battlefield – Matthew Woods (Superintendent)
Ocmulgee Mounds National Historical Park – Carla Beasley (Superintendent), Christina Valdes (Biological Science Technician)

Out-Of-Network Park Support
Kings Mountain National Battlefield - Alex Scronce (Interior Region 2, Forestry Technician), James Nichols (American Conservation Experience Intern)
Reconstruction Era National Historical Park – Scott Teodorski (Superintendent)

Partners and Cooperators
American Conservation Experience
Garden Club of America – Weed Wrangle
Georgia Forestry Commission, Forest Health
Kennesaw Mountain Trail Club
North American Invasive Species Management Association
North Carolina Coastal Federation - Phragmites Work Group
North Carolina Department of Environmental Quality, Aquatic Weed Control Program
North Carolina Department of Transportation
North Carolina Invasive Plant Council
North Carolina State University, College of Natural Resources
Old-Growth Bottomland Forest Research and Education Center
Palmetto Garden Club
South Carolina Association of Naturalists
South Carolina Department of Natural Resources, Heritage Trust Program
South Carolina Department of Parks, Recreation & Tourism
South Carolina Exotic Pest Plant Council
South Carolina Native Plant Society, Upstate Chapter

Volunteers
Congaree National Park – Corinna Brackett, Larissa Brackett
Kennesaw Mountain National Battlefield Park – Danny Leigh (Kennesaw Mountain Trail Club)

Steering Committee
Chattahoochee River National Recreation Area – Ann Honious
Congaree National Park – K Lynn Berry
Cumberland Island National Seashore / Fort Frederica National Monument – Michael Seibert
Fort Pulaski National Monument – Melissa Memory
Moores Creek National Battlefield – Matthew Woods

Southwest IPMT

Leadership
Jason Martin (Liaison), Michael Turner (Deputy Liaison, Crew Lead), Anna Wheeler (Crew Leader/GIS), Marcus Jernigan (Botanist/GIS)

Crew
American Conservation Experience, Southwest Conservation Corps (Conservation Legacy and Ancestral Lands Programs), Tucson Audubon Society Coati Crew

Regional/Network Support

Interior Regions 6, 7, and 8 Office John Mack, supervisor (Natural Resources Division, Biological Resource Program Manager), Adam Strong (IPM Coordinator)

Park Support

Host Park 1 – Desert Research Learning Center/Sonoran Desert Inventory and Monitoring Program – Andy Hubbard (Program Manager)

Host Park 2 – Petroglyph National Monument (Nancy Hendricks, Superintendent)

Partners and Cooperators

US National Park Service, Inventory and Monitoring Program (Federal)
Borderlands Restoration
Cuenca Los Ojos
Hummingbird Monitoring Network
Institute for Applied Ecology–Southwest Program
Natural Resources Conservation Service; Tucson Plant Material Center
Sky Island Alliance
Southwest Monarch Study
US Fish and Wildlife Service
US Forest Service
Bureau of Land Management
US Geological Survey
University of Nevada, Las Vegas
New Mexico Tech
The Xerces Society
American Conservation Experience
Southwest Conservation Corps
Pueblo of Santa Ana Garden Center
National Phenology Network
USDA Forest Service's Human Health and Ecological Risk Assessments for commonly used Herbicides and Pesticides
Weed Research and Information Center
Sonoran Desert Museum
Tucson Audubon Society
Southwest Vegetation Management Assoc.
Southwest Seed Partnership

Steering Committee

Carlsbad Caverns National Park – Rodney Horrocks
Mesa Verde National Park – Tova Spector
Montezuma Castle National Monument – Sara Eno
El Malpais/El Morro National Monuments – Eric Weaver
Washita Battlefield National Historic Site – Dick Zahm
Saquaro National Park – Jeff Conn
Petrified Forest National Park – Bill Parker
Azetec Ruins National Monument – Dana Hawkins
Intermountain Region Office – John Mack