Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

IPMT Annual Report: FY 2020

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

Park staff and 17 Invasive Plant Management Teams (IPMT) manage invasive species in national parks, which is mandated by the NPS and US Department of the Interior (DOI). The national NPS Invasive Plant Program (IPP) funds fifteen of the IPMTs. The Heartland Inventory and Monitoring Network and DOI Region 2 oversee the other two teams. The IPMTs are located across the US and serve 290 park units as well as non-NPS partners. This program is an integral part of the NPS response to a growing invasive species threat and provides 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. Teams protect natural, cultural, and significant ethnographic resources by providing substantial on-the-ground invasive species management support (4,331 acres treated and more than 14,000 acres inventoried in fiscal year (FY) 2020) and much more. They spearhead prevention and early detection and rapid response actions to prevent or eradicate incipient invasive plant populations dramatically reducing future costs. They also lead restoration efforts to increase native plant community resiliency and reduce susceptibility to future invasions. The IPMTs effectively leverage program dollars through resourceful, productive, and mutually beneficial partnerships with contributions valued at more than $3.6 million in FY 2020. Teams engage youth on a substantial scale with over 1,002 youth participants contributing 105,876 hours in 2020. They also provide a range of valuable training opportunities to park staff, engage the public and future

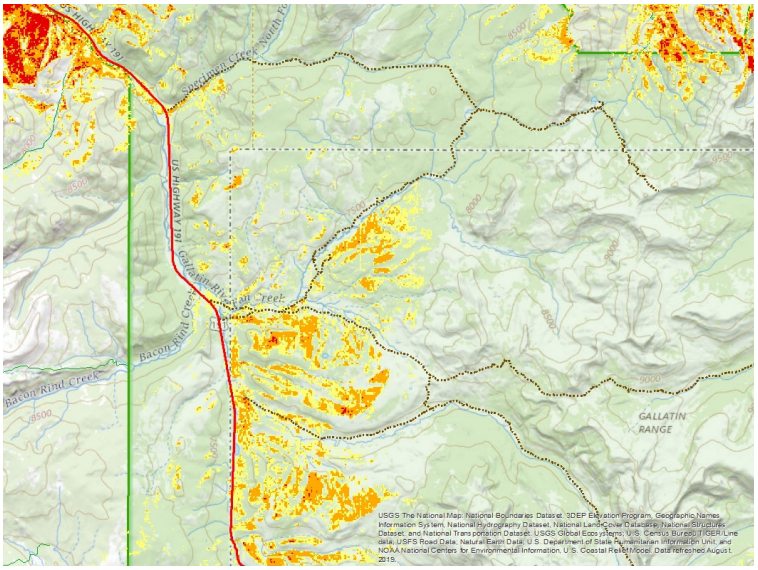
Background (cont.)

stewards of our national parks through creative and effective outreach and education activities and initiatives, and develop creative solutions to utilize limited IPMT funds to assist parks. The IPMTs' innovation, flexibility, and efficiency facilitates their contributions to the protection and preservation of the natural and cultural resources entrusted to the NPS for this and future generations.
The IPMT program is also supported by an Advisory Group (IPMTAG). The IPMTAG provides oversight, strategic direction, and invaluable support to the program.

IPMT Program Celebrates 20 Years of Service

The IPMT program was created in 2000 through the Natural Resource Challenge to assist parks in reducing the impact of invasive plants and restoring native plant communities. It celebrated its 20th year of service to the NPS in 2020. To share the IPMTs' contributions to the NPS, approximately 20 articles and social media posts were developed. A committee created posters for each region to highlight the work of regional IPMTs. The program planned an all-IPMT boots-on-the-ground post-fire invasive plant management project, NPS Chainsaw Safety Maintenance and Operations (CSMO) training, and alumni gathering at Santa Monica Mountains National Recreation Area but these were cancelled due to COVID-19 travel restrictions. Instead, IPMTs will conduct individual projects in 2021 to celebrate 20 years of the program's existence and link them through social media posts. The alumni gathering has yet to be rescheduled.

What the IPMTs Protect: Kenai Fjords National Park, Abra Cove area of Aialik Bay on the park's coast. NPS Photo.



Science, Technology, and Innovation: Results of a habitat suitability model (yellow for low suitability, orange for medium suitability, and red for high suitability) for orange hawkweed in the northwest corner of Yellowstone National Park.

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 Michigan, west coast 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 teams' invasive plant management work also protects a range of species of concern and the habitat they require to survive including 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.

Science, Technology, and Innovation

Our national parks are in trouble due to the threat of invasive species that disrupt ecosystems, compromise irreplaceable historic structures, and pose risks to human and animal health. The problem is getting worse as new species are introduced and park staff are unable to control established species using the limited range of traditional management tools that they rely upon. However, we can stem the tide of invasive species by using proven, innovative methods and technology, and science as modeled by the Invasive Plant Management Teams that are on the front line adopting these new methods.

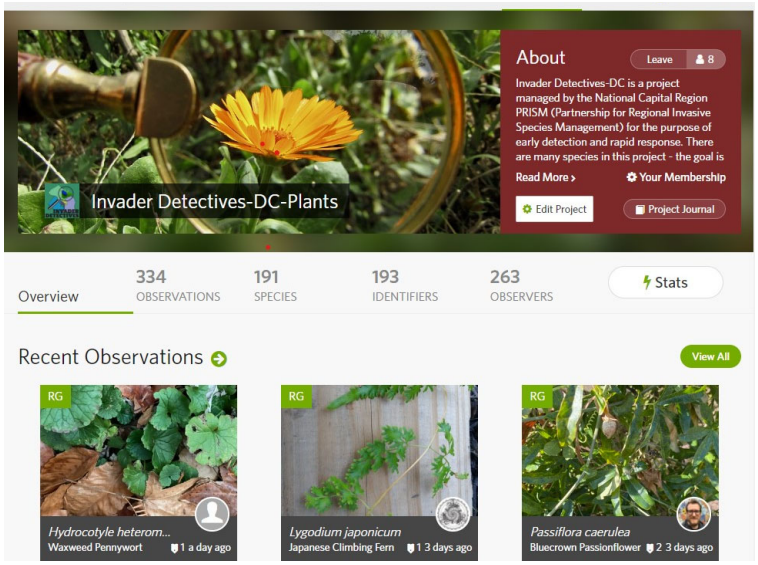
Collaboration provides technologic and scientifically based solutions to park challenges. The Great Lakes (GL) IPMT has collaborated with a local company to design and test new herbicide application technology. In-line herbicide dosing systems mix a selected

Science, Technology, and Innovation (cont.)

percentage of herbicide directly from concentrate, eliminating mixing and loading by hand. This saves time and herbicide dosing systems reduce handling of concentrated herbicides, mixing errors, and herbicide waste increasing productivity and improving human and environmental safety. The Northern Rocky Mountain (NRM) IPMT collaborated with Yellowstone National Park (YELL), the Greater Yellowstone Coordinating Committee, the Custer Gallatin National Forest, and the University of Idaho to develop habitat suitability models for four high priority invasive plant species to aid in defining high priority areas and habitats, improving visitor information and prevention measures, and targeting future surveys and treatments of these invasive plants. The Pacific Islands IPMT collaborates with the University of Hawai'i to determine potential future suitable habitat for the federally threatened and iconic Haleakalā silversword (*Argyroxiphium sandwicense*), populations of which have declined by 60% over the past several decades. Results of experimental outplantings across climatic gradients will help guide management by identifying areas most important for future propagation and invasive plant control.

Restoration

IPMTs begin the restoration process by controlling invasive plants. They also contribute to other aspects of restoration like native plant propagule collection. The Mid-Atlantic (MA) IPMT is helping to mitigate the loss of grassland ecosystems that provide important habitat on a local scale at Cedar Creek and Belle Grove National Historical Park by converting fallow agricultural fields to native meadow. The park and the IPMT conducted invasive plant control followed by planting of native grasses in 2019 and 2020. The MA IPMT will continue to plant native species, monitor the plantings, and treat non-native plant encroachments until native plants are well established and high quality habitat is available for grassland species. Long term maintenance will consist of rotational periodic mowing or burning. The Northeast IPMT conducted removal of glossy buckthorn (*Rhamnus frangula*) on Bass Harbor Marsh, Acadia National Park's largest salt marsh, which drains numerous pristine habitats on the west side of Mount Desert Island. Glossy buckthorn poses the greatest threat to this salt marsh which supports rare populations of sweetgrass (*Anthoxanthum nitens*) that are used in traditional basket making. Conservation of this species is a top priority within the park. This work will continue with partner support to protect this unique ecosystem and the important ethnobotanical resource it supports.



Early Detection: Invader Detectives is a project on iNaturalist that will be used to look for novel invasive species in the region. NPS Photo.

Fire and Invasive Species: Firefighters exposed to invasive species on incidents can become vectors for invasive species spread. NPS Photo.

Prevention and Early Detection and Rapid Response

Prevention and early detection and rapid response (EDRR) are the most effective means to control invasive species. Teams proactively manage invasive species to prevent their spread into uninfested areas and act quickly to eradicate new populations.

Education and outreach is an effective prevention strategy. The Alaska and Southeast Coast IPMTs installed boot brush stations at Kenai Fjords (KEFJ) and Congaree (CONG) National Parks respectively. Stations near the KEFJ Seward Harbor boat ramps and at CONG's visitor center educate park staff and visitors on the importance of cleaning shoes, clothing, and gear before heading out to work and when entering and exiting trails. At CONG, the station was installed through a partnership with the North American Invasive Species Management Association's (NAISMA) PlayCleanGo© campaign. The NPS has a Memorandum of Understanding with NAISMA, Wildlife Forever, and the US Fish and Wildlife Service to facilitate broader adoption and placement of national invasive species prevention campaigns that also includes the Clean Drain Dry© and Stop Aquatic Hitchhikers© initiatives.

After prevention EDRR is the most effective means of managing invasive species. Teams target species that have not yet become established but have the potential to do significant harm to park resources. The Gulf Coast IPMT targeted trifoliate orange (*Poncirus trifoliata*) at Vicksburg National Military Park and the Southeast IPMT targeted kudzu (*Pueraria montana*) at Little River Canyon National Preserve to reduce spread within the parks' natural areas. The North Coast/Cascades Network IPMT focuses on smooth brome (*Bromus inermis*) at the Paradise region of Mount Rainier National Park to protect sensitive subalpine meadows. Stinknet (*Oncosiphon piluliferum*) is an EDRR target of the Southwest IPMT because it poses a significant threat to the Sonoran Desert ecosystem by readily spreading fire through upland desert ecosystems which are not fire-adapted.

Collaborative efforts to increase public awareness of the effects and spread of non-native invasive plant species, engage the public, and collaborate across boundaries increase opportunities to stop invasive species before they become a problem. The National Capital Area IPMT in collaboration with the National Invasive Species Council, the National Capital Region Partnership for Regional Invasive Species Management, and other partners, developed the Invader Detectives Project to detect new invasive species in the region using iNaturalist.

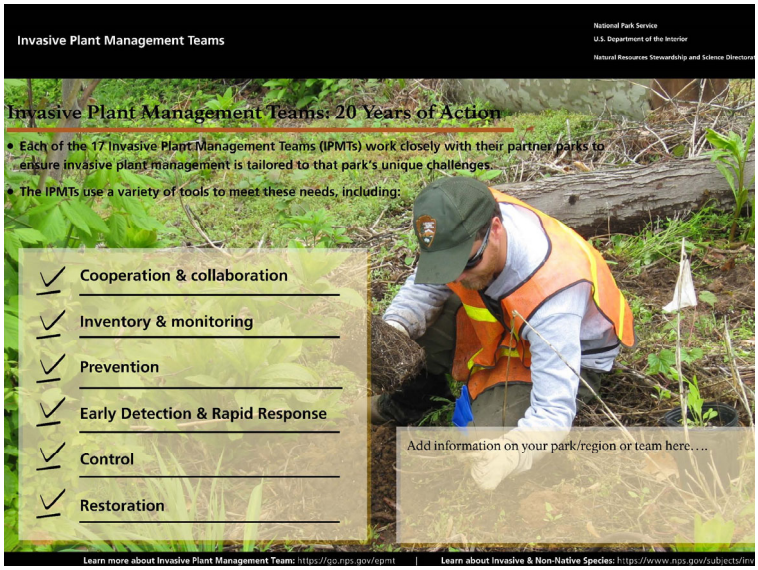
Fire and Invasive Species

Natural fire events benefit fire-adapted native ecosystems but fire promoting invasive plants can result in more frequent, hotter fires that alter ecosystems and threaten native plant and animal communities and invasive plants often make major leaps in the aftermath of a big fire. In California, fires have resulted in new infestations. The most destructive fire in the history of the NPS was the Carr Fire in 2018. It burned 97% of Whiskeytown National Recreation Area (WHIS), including 100 structures, and claimed several lives. In the season following the fire, WHIS adjusted the configuration of the invasive plant management crews in anticipation of a vigorous flush of invasive annual grasses. Timely early detection and rapid response actions by the California IPMT prevented the expansion of existing infestations along fire control lines, in staging areas, and in access corridors. New introductions were limited to local spread from infestations along rights of way and major highways into and through the park.

Collaboration

Collaboration is key to effective protection of NPS's rare and unique resources. In fiscal year 2020, the Florida/Caribbean IPMT worked closely with Biscayne National Park (BISC) staff to complete restoration of spoil islands. This work began in 2015. Everglades National Park Fire Program staff eliminated plant debris, accumulated from the invasive plant management work, through a prescribed burn followed by planting of native plants. Wilson's Creek National Battlefield supports 120 acres of high quality restored prairie. Restoration of these sites began in the park in the 1980s. Park staff, fire staff from Ozark National Scenic River, Heartland Network (HTLN) IPMT staff, and HTLN Inventory and Monitoring (I&M) ecologists staff all work collaboratively to manage these prairie sites. Prescribed fire in these prairies top-kills woody plants. The HTLN IPMT then treats woody re-sprouts. If there are lapses in planned prescribed burning, treatment by IPMT staff assists in holding the line against woody plants that upon reaching a certain size may be less susceptible to prescribed fire. As part of this collaboration in 2020, I&M ecologists reported an area of high bull thistle density that was detected during routine monitoring. Park staff immediately mowed this area the day after the initial report. Efforts like these exemplify the high level of cooperation among programs that is in place to successfully manage invasive plants in these national parks.

Safety and COVID-19: Lake Mead IPMT conduct date palm (*Phoenix dactylifera*) treatment at Blue Point Spring, Lake Mead National Recreation Area. NPS Photo.



IPMT Program 20th Anniversary: A committee created posters for each region to highlight the work of regional IPMTs.

Safety and COVID-19

The IPMTs exemplify safety in the field with no reported lost time injuries in FY 2020 in spite of the challenging conditions within which they work (i.e., working in remote areas over rugged terrain). Some injuries occurred that required minor first aid responses and follow up mitigation measures such as tailgate safety debriefings and changes in operations. For example, IPMT staff incidents included a wrist injury after a long week of chainsaw cutting and swamping, exposure to poison ivy, embedded ticks, and several stings from yellowjackets. Teams addressed these issues through after action reviews and adding mitigation measures into the existing training program.

IPMTs model a culture of safety. They routinely provide annual training to IPMT staff, interns, and park staff. Liaisons and crew leads assure that crew members are trained in all aspects of safety within their operations including pesticide use and storage safety, truck and trailer operation, CSMO, Operational Leadership, hazard communication, utility and all-terrain vehicle operation, and first aid. Before deploying, IPMTs conduct pre-deployment briefs, follow pre-deployment checklists, develop site safety and operational plans, review Job Hazard Analyses (JHAs) for each task, and develop General Assessments of Risk for each project. A standing IPMT Safety Committee continued for the seventh year. This committee, composed of IPMT, park, and regional staff, provides invaluable support to the IPMTs by taking actions and providing recommendations that help to substantially mitigate program safety concerns. In FY 2020 the committee focused on providing resources on modes of action for commonly used herbicides and gathered COVID-19 mitigation resources.

It is important to recognize the project accomplishments and risk management successes achieved throughout fiscal year 2020. The COVID-19 pandemic limited park and IPMTs' ability to engage, house, and transport seasonal employees, interns, and volunteers. For some teams, invasive plant work was largely conducted by existing park staff as part of overall duties or by interns stationed in parks and was reduced compared to "typical" years. IPMTs implemented COVID-19 safety measures in accordance with Center for Disease Control guidelines. These included COVID-19 safety Standard Operating Procedures, JHAs, risk assessments, and personal protective equipment. IPMTs that were able to travel adopted travel safety protocols, including disinfectant travel kits, working in smaller units, and single occupancy vehicles and rooms. IPMTs maintained productivity and high quality work despite the pandemic.

Safety and COVID-19 (cont.)

The Lake Mead (LAKE) IPMT is an example of working safely and effectively through a pandemic. Park visitation at LAKE National Recreation Area increased during the pandemic and the LAKE IPMT assisted the park with visitor services early in the year. After developing specific COVID-19 prevention field safety protocols the LAKE IPMT transitioned to local invasive plant control and restoration field work. Once travel protocols were developed, the IPMT initiated limited travel in small groups on projects determined to be mission essential (e.g. post wildfire rehabilitation). That the team's work is outdoors in remote areas and the ability to social distance within the IPMT made it compatible with COVID-19 prevention measures.

Summarized Data for 2020

Measure	Acres
Treated	4,331.55
Inventoried/Monitored	14,373.26
Gross Infested Area (Acres where an individual target species was found, regardless of infestation level.)	38,155.83
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.)	3,696.42
Youth Engagement	
Total Number of Youth Participants and Youth Employees	1,417
Total Hours for Youth Participants and Youth Employees	100,144

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Program Brief

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Natural Resource Stewardship and Science
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Alaska IPMT Annual Report: FY 2020

Kenai Fjords National Park Invasive Plant Management Team technician, Sierra Sampson, uses a Trimble GPS unit to collect data during a survey for invasive plants in the Abra Cove area of Aialik Bay on the park's coast. 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 in Alaska protect healthy, intact, native ecosystems; however, invasive plants are making their way into areas used by people.

The geography of Alaska makes invasive plant management challenging, requiring backcountry or air travel to reach many parks. Recreational use is widely dispersed with access by boat, backpacking, or aircraft. Remote airstrips, trails, cabins, and concessionaire activities can provide avenues 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 conducted invasive plant surveys and control projects in Denali National Park and Preserve, Katmai National Park and Preserve (KATM), and Kenai Fjords National Park (KEFJ). The COVID-19 outbreak made it difficult for parks to engage seasonal employees, interns, and volunteers. Limited housing and social distancing requirements reduced the number of crews and personnel available for monitoring and treatment activities. Thus, invasive plant work was largely conducted by existing park staff as part of their overall duties and was reduced compared to "typical" years.

Program Highlights

Kenai Fjords National Park 2020 IPMT Summary

Expectations for a productive season were low at the beginning of the summer as health and safety concerns related to the COVID-19 pandemic resulted in seasonal staff reductions and travel restrictions. Despite a reduced crew, approximately 75% percent of all known invasive plant populations in the front country of the Exit Glacier area of KEFJ were surveyed (83.5 acres) and treated (1.34 acres). More time was available for retreatments, which provided the opportunity to resurvey populations and apply herbicide to newly sprouted plants later in the season. Retreatments help meet the goal of reducing the overall density of invasive plants during one growing season. Trips to the coast via boat were limited to day trips due to COVID-19 safety concerns. NPS staff surveyed for invasive plants at the park's coastal public use cabins and at a few of the popular kayaker campsites on two separate trips.

KEFJ staff also focused on outreach and prevention. Park staff coordinated with partners to install new boot brush stations near the two Seward Harbor boat ramps, where visitors to the park's coastal areas meet local water taxis and guides. Educating park staff about the importance of cleaning shoes and clothing before heading out to work in the backcountry was also an area of focus. Hand-held boot brushes where provided to park staff working in the backcountry as a

University of Alaska Anchorage (UAA) staff member uses a rake to survey for aquatic invasive plants in Gates of the Arctic National Park & Preserve. UAA Photo.

Elodea spp. environmental DNA (eDNA) water samples taken at Addison Lake, Kenai Fjords National Park. NPS Photo.

Program Highlights (cont.)

Kenai Fjords National Park 2020 IPMT Summary (cont.)

portable tool to help prevent the spread of invasive plants. Park staff also worked with partners at the Kenai Peninsula Cooperative Invasive Species Management Area (KP-CISMA), helping with yellow sweet clover (*Melilotus officinalis*) herbicide treatments along a road corridor and removing seed heads from reed canary grass (*Phalaris arundinacea*) to prevent plants from going to seed before a fall herbicide application on adjacent federal lands.

KEFJ staff had a productive summer under the circumstances, but look forward to having a full crew and being able to travel to the remote invasive plant populations that are a priority for treatment.

Summarized Data for 2020

Measure	Acres
Treated	1.35
Inventoried/Monitored	86.26
Gross Infested Area	86.81
Net Infested Area	1.35
Youth Engagement	
Total Number of Youth Participants and Youth Employees	0
Total Hours for Youth Participants and Youth Employees	0

Summary of Accomplishments

National Park Service staff surveyed approximately 86 acres and treated 1.35 acres in three parks this year for the AK IPMT with most of the work occurring in KEFJ. Invasive plant management efforts in KEFJ resulted in a decline of common dandelion infestation densities at all sites annually treated. Treatments reduced the Dinglestadt Glacier infestation by 99 %, the Herman Leirer Roadside infestations by 96 %, and the 'Nike Stripe' infestation has been eradicated. In the remote backcountry of KATM, park and AK IPMT staff reduced the overall density of common dandelion (*Taraxacum officinale*) at Fure's Cabin by 80 percent since treatments began in 2011.

Elodea spp. continues to be a significant concern across Alaska and was found in additional water bodies in the Fairbanks area. While these water bodies are not on NPS lands, they serve as bases for aircraft that do access NPS lands. The National Park Service will work with a variety of partners to address concerns related to *Elodea* spp.

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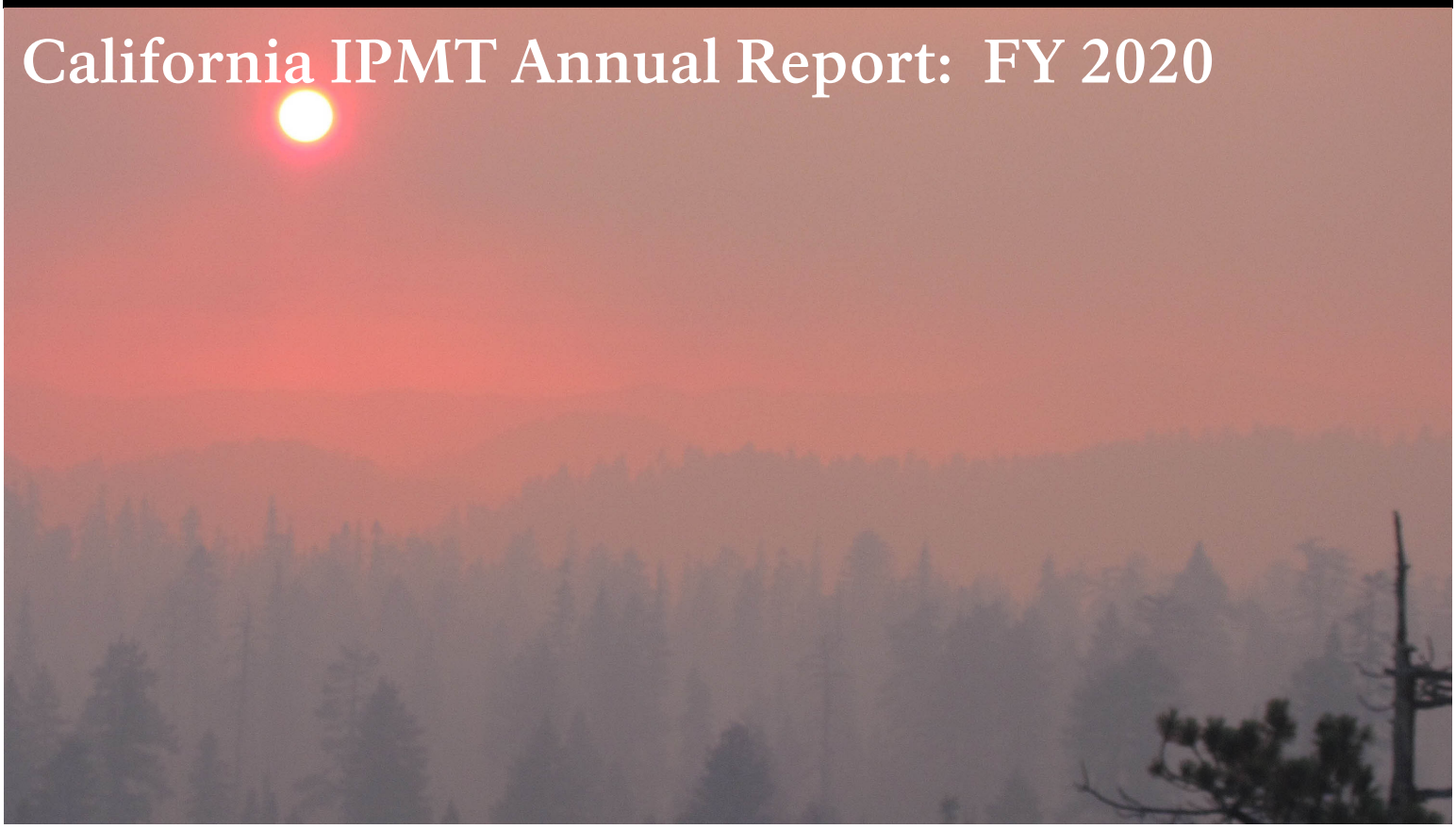
Natural Resource Stewardship and Science
Biological Resources Division

California IPMT Annual Report: FY 2020



Wildfire smoke fills the Sierra Foothills before sunset from Yosemite National Park. NPS Photo.

Background

The California Invasive Plant Management Team (CA IPMT) serves 14 parks in the California Floristic Province, one of 25 global biodiversity hotspots. The state of California spends approximately $82 million annually to protect habitat and other values through outreach, control, and monitoring of invasive plants (Cal-IPC: http://www.cal-ipc.org/holding-pen/cost/). The National Park Service (NPS) also preserves critical habitat for many of California's unique species.

The CA IPMT is tailored to help partner parks overcome a variety of challenges by providing technical assistance and project funding. The CA IPMT grant funding model was developed to alleviate the timing complications, travel cost, and overhead of a travelling crew. The model augments the local invasive plant management capacity and enables partners to leverage local resources to successfully implement priority projects when and where they are most appropriate.

This year highlights the increasingly active fire season in California, the role of fire in the spread of invasive plants, and the response of CA IPMT partners. In the past decade, more than 50% of the units experienced significant wildfire activity. Almost all units experienced indirect impacts through closures, power loss, and hazardous smoke levels. The effects of large wildland fire incidents on invasive plant programs may last for years. The lessons learned in California, and responses of invasive plant programs, may help other units prepare as the role of extreme fire events in the ecosystem continues to grow well beyond California.

Program Highlights

The Connection Between Wildland Fire and Invasive Plants

Although wildfires are a natural component of most of California's ecosystems, fire season is trending toward an increasingly early start, a later end, and more acres burned each year. Climate change is a key driver of this trend. After a short reprieve in 2019, California again experienced an unprecedented fire season aided by historic heat waves and dry lightning. In July 2020, the Caldwell Fire burned 70% of Lava Beds National Monument. In August, the Woodward Fire burned in Point Reyes National Seashore, and the Moraine, SQF Complex, and Rattlesnake Fires burned in Sequoia and Kings Canyon National Parks. In September, the Zogg Fire closed Whiskeytown National Recreation Area (WHIS) and fires burned in Yosemite and Sequoia National Parks from October into November. The state set a new 4 million acre record for total acres burned, double the previous total.

Natural fire events benefit fire-adapted native ecosystems but invasive plants often make major leaps in the aftermath of a big fire. In constructing fire control lines, firefighting personnel and equipment can spread invasive plant propagules that find ideal conditions for rapid expansion. There are many examples of invasive plant spread associated with wildland fire suppression and suppression-repair efforts across the west. Invasive plant managers work to mitigate this potential.

Firefighters exposed to invasive species on incidents can become vectors for invasive species spread. NPS Photos.

Program Highlights (cont.)

Strategic Invasive Plant Management and Fire.

The most destructive fire in the history of the NPS was the Carr Fire in 2018. It burned 97% of WHIS, including 100 structures, and claimed several lives. Although direct suppression impacts in WHIS were limited to only a few miles of dozer and hand lines, much of the fire burned at high severity. In the season following the fire, WHIS adjusted the configuration of the invasive plant management crews in anticipation of a vigorous flush of invasive annual grasses. Timely early detection and rapid response actions prevented the expansion of existing infestations along fire control lines, in staging areas, and in access corridors. New introductions were limited to local spread from infestations along rights of way and major highways into and through the park. These patterns resemble those on other incidents.

Larger, longer, and hotter fires also result in more multi-jurisdictional fires. When fires cross boundaries, so do fire-fighting activities. In that environment, invasive plants can advance across land management boundaries. This is of critical concern for the CA IPMT because most units are surrounded by lands that are significantly more infested with priority invasive plants. While there are good invasive species BMPs for fire managers, the nature of emergency management is such that multi-jurisdictional fires are likely to remain one of biggest challenges to the pursuit of strategic, landscape-level, invasive plant management in California.

Summary of Accomplishments

In fiscal year (FY) 2020, the CA IPMT surveyed approximately 2,700 acres for invasive plants and treated target species on over 600 acres. Despite the pan-demic, staff, volunteers and interns collected inventory data or conducted treatments. The year was very challenging for everyone but the CA IPMT's success in 2020 demonstrated the flexibility and resilience of the California model. Most partner parks carried out local IPMT projects with internal staffing with little disruption. Units that planned to carry out projects with non-local interns or volunteers were more affected by the pandemic and some deferred 2020 work to FY 2021 with grants and agreements. Impressively, the record-breaking fire season that could have resulted in missed treatments largely just delayed reporting. The CA IPMT continues to adjust its model to further increase its flexibility in the future.

Left: Dozer control lines 'in the black' are burned on both sides. These areas are among the most vulnerable to invasion even after repair. Right: A helicopter delivers weed-free strawbales for firefighters to construct emergency erosion control features. US Forest Service Photos.

Summarized Data for 2020

Measure	Acres
Treated	33.283
Inventoried/Monitored	2,659.44
Gross Infested Area	608.524
Net Infested Area	28.079
Youth Engagement	
Total Number of Youth Participants and Youth Employees	
Total Hours for Youth Participants and Youth Employees	

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Program Brief

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Florida/Caribbean IPMT Annual Report: FY 2020

View of Kirby Strand, Big Cypress National Preserve, an important natural resource protected by the Florida/Caribbean Invasive Plant Management Team's work. 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 15 National Park Service (NPS) units in Florida and the Caribbean by expanding existing invasive plant management efforts, including inventory and monitoring, control, education, restoration, and research. The FLC IPMT contracts crews from four private companies for large eradication projects and implements smaller projects with park staff and volunteers. Large and small projects alike create challenges due to the climate and extent of infestations. There are temperate, tropical, and sub-tropical climate zones within the team's 2.68 million acre range, and invasive plant species infest over 400,000 acres. The species that are targeted for control include Brazilian peppertree (*Schinus terebinthifolius*), small-leaf climbing fern (*Lygodium microphyllum*), Australian pine (*Casuarina equisetifolia*), Burma reed (*Neyraudia reynaudiana*), and punktree (*Melaleuca quinquenervia*).

A steering committee meets annually to review and approve the FLC IPMT strategic direction and financial plan, rank projects, ensure that the FLC IPMT provides information that is relevant to management, and develop a treatment schedule for the fiscal year. The committee consists of representatives from the Unified Interior Region 2 (NPS legacy Southeast Region), the US Army Corps of Engineers, and the Florida Fish and Wildlife Conservation Commission (FWCC). These meetings are held at a different park unit each year.

Program Highlights

Biscayne National Park Spoil Island and Peninsula Restoration

The landscape of Miami-Dade County and adjacent coastal waters has been substantially altered by development throughout the 20th century. Extensive dredging of canals, harbors, and channels resulted in the creation of numerous 'spoil islands' (lands created by placement of dredged materials) throughout the coastal waters of Biscayne Bay. Spoil islands and peninsulas are problematic from an environmental standpoint for several reasons, including continual erosion from rain, storm events, and wave action. Invasive vegetation often colonizes and populates them, providing low quality habitat to coastal wildlife.

FLC IPMT and Biscayne National Park (BISC) staff completed restoration of the eastern C-102 spoil island in 2015 and the western C-102 spoil island in 2017. Invasive plant treatment began in fiscal year (FY) 2020 on the C-102 peninsula, with a focus on seaside mahoe (*Thespesia populnea*), Burma reed, and half flower (*Scaevola taccada*), which pose a substantial risk to native plant communities in the park. The Everglades National Park (EVER) Fire Program staff eliminated plant debris through a prescribed burn and then planted native species. The FLC IPMT and BISC conducted supplemental planting on the two C-102 spoil islands to replace vegetation lost due to Hurricane Irma. These plants included coastal transitional species and hardwood hammock species. Each of these three sites will be monitored for any new signs of invasive plant infestations.

Planting native species on the C-102 peninsula at Biscayne National Park. NPS Photo.

Helicopter and spray rig being assembled at Big Cypress National Preserve. NPS Photo.

Program Highlights (cont.)

Big Cypress National Preserve Aerial Treatment of Lygodium Species

Pine flatwoods, cypress forests, mixed hardwood swamps, hardwood hammocks, and open scrub dominate the landscape of Big Cypress National Preserve (BICY). The park is also home to federally listed endangered species including the Florida panther (*Puma concolor couguar*) and the red cockaded woodpecker (*Leuconotopicus borealis*). Because Japanese fern (*Lygodium japonicum*) and small-leaf climbing fern (*Lygodium microphyllum*) threaten these resources, the park has prioritized management of the highly invasive ferns.

Big Cypress National Preserve received FL IPMT funding to implement systematic aerial treat of all climbing fern infestations north of Interstate 75 within BICY. During a comprehensive reconnaissance flight and prior to treatment, staff used digital tablets to map infestations. Infestations were treated using a helicopter equipped with a quad-spot sprayer that lowered under native canopies to precisely target the invasive plants. Park staff monitored treatment areas for herbicide coverage and retreated any areas not covered. Future monitoring will confirm the effectiveness of the treatment.

Summary of Accomplishments

In January 2020, the FLC IPMT held its ranking meeting at Castillo de San Marcos in St Augustine, FL. The ranking team elected to fund all five proposals submitted by park representatives. Contributions from the FWCC funded additional projects in BICY, Canaveral National Seashore, and EVER.

FLC IPMT staff conducted training and participated in traings to gain certifications. In January 2020, the crew leader of the Southeast IPMT conducted the NPS Chainsaw Safety Program for Non-Wildland Fire Operators training at BISC. Participants included members of FLC IPMT, the South Florida and Caribbean Inventory and Monitoring Network, and BISC staff. All trainees passed the field and written portions of the training. The team also attended a training at the regional office and obtained the certification to become Resource Advisors (READs) for future incident response.

Summarized Data for 2020

Measure	Acres
Treated	2,287.448
Inventoried/Monitored	0
Gross Infested Area	11,394.3
Net Infested Area	2,257.598
Youth Engagement	
Total Number of Youth Participants and Youth Employees	1
Total Hours for Youth Participants and Youth Employees	2,088

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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 2020

Great Lakes Invasive Plant Management Team staff traveling to Peaslee Island, Saint Croix National Scenic Riverway for invasive shrub control. NPS Photo.

Background

The Great Lakes Invasive Plant Management Team (GL IPMT) provides support to 12 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 area encompasses diverse aquatic and terrestrial ecosystems including rare, significant, and globally-threatened ecosystems. It is also home to an international biosphere reserve.

Due to geographical and environmental conditions, invasive species present within this area are mostly of cultural origin (ornamental and intentionally planted species). However, visitor use and necessary maintenance activities have also introduced invasive species.

The GL IPMT balances its activity to meet two needs that represent the extremes of invasive species management: (1) long-term, large-scale control and restoration, and (2) early detection and eradication of nascent populations. To meet those needs, the IPMT provides parks with regional expertise and skilled control work in invasive plant management. Discipline-specific knowledge and a network of partners allow the GL IPMT to anticipate threats to individual parks and implement site-specific management strategies. As a shared regional resource, the team augments existing management efforts at some parks while providing other parks their only avenue for managing or controlling invasive plants.

Program Highlights

Silver Linings at the Saint Croix National Scenic Riverway

Over the last several years the Saint Croix National Scenic Riverway (SACN) has been working toward large-scale restoration of prairie and oak savanna ecosystems. These ecosystems have been diminished to a fraction of their original extent in the mid-west. Non-native invasive plants such as common buckthorn (*Rhamnus cathartica*) and honeysuckles (*Lonicera* spp.) contribute to the loss. It can take several years to control these species and control over large areas is challenging. As invasive plant control, restoration, and other park projects expand, required maintenance of previously treated areas can quickly exceed program capacity.

Although travel restrictions due to the COVID-19 pandemic had a negative impact on projects in other parks, the GL IPMT was able to work closely with the vegetation crew in their host park, SACN, to complete critical follow-up control work on over 200 acres of prairie and oak savanna. This included a rapid response effort for Japanese hedge parsley (*Torilis japonica*), discovered while completing follow-up treatments. Youth involvement through a continued partnership with the Conservation Corps of Minnesota & Iowa increased the team's capacity. The boost in personnel and resources ensured that previous gains were not lost. With follow-up control work complete, revegetation has begun. The park is now looking to expand restoration to reclaim additional acres of prairie and oak savanna.

Great Lakes IPMT forestry mower removing dense stands of brush during savanna restoration at Saint Croix National Scenic Riverway. NPS Photo.

Direct injection herbicide dosing system retrofitted on the teams existing Utility Terrain Vehicle mounted spray unit. NPS Photo.

Program Highlights (cont.)

Partnerships and Technology Increase Team Productivity and Safety

Partnerships continued to play an important role in 2020. Over the last serval years, the GL IPMT has collaborated with a local company to design and test new herbicide application technology. In-line herbicide dosing systems mix a selected percentage of herbicide directly from concentrate, eliminating mixing and loading by hand. In addition to saving time, herbicide dosing systems reduce handling of concentrated herbicides, mixing errors, and herbicide waste. Incorporating the new technology into field operations has increased productivity and improved human and environmental safety. The team will continue to test the systems to ensure that results are consistent and accurate before recommending use in partner parks.

In addition to herbicide application technology, the GL IPMT partnered with the North Country National Scenic Trail and the Northern Great Plains IPMT to purchase a remotely-operated forestry mower that can remove brush, spray weeds, and mow vegetation on slopes up to sixty degrees. The mower can remove three acres of dense brush in one day, something that would take a crew of sawyers several days to complete. This will reduce chainsaw operations in high-risk areas with dense invasive brush populations.

Summary of Accomplishments

The GL IPMT adapted to challenges in fiscal year (FY) 2020 to remain productive, efficient, and safe while providing assistance to its 12 partner parks. The team treated over 113 acres of invasive plants, and provided technical support where travel was restricted.

In early FY 2020, after several years of buckthorn control work, the team planted eight acres of native prairie/savanna seed at Ice Age National Scenic Trail, increasing the total number of restored acres at that site. In February GL IPMT liaison Isaiah Messerly attended one of the first National Park Service Chainsaw Safety Maintenance and Operation Journeyman Faller train-the-trainer classes at Cuyahoga Valley National Park. The training will increase the team's ability to handle large tree removal projects and build partner park program capacity by increasing the number of instructors and qualified tree fellers. The training helped the team complete critical follow-up control work on over 200 acres of prairie and savanna at SACN.

Summarized Data for 2020

Measure	Acres
Treated	113.6655
Inventoried/Monitored	0
Gross Infested Area	651.467
Net Infested Area	92.807
Youth Engagement	
Total Number of Youth Participants and Youth Employees	15
Total Hours for Youth Participants and Youth Employees	7,498

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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 2020

The work of the Gulf Coast Invaisve Plant Management Team protects important natural resources like the native bald cypress (*Taxodium distichum*) and dwarf palmetto (*Sabal minor*) within the Barataria Preserve unit of Jean Lafitte National Historical Park and Preserve in southeast Louisiana. NPS photo.

Background

The Gulf Coast Invasive Plant Management Team (GC IPMT) supports eight National Park Service (NPS) units 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 Historical 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 Historical 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 2020 the GC IPMT and a youth intern developed new reference documents to help park staff manage invasive species. One of the documents is a National Pollution Discharge Elimination System (NPDES) permitting reference, which parks can use as a starting point when planning to use pesticides in or near water. This reference covers all states and territories where GC IPMT 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. The document, which will be finalized and distributed to parks during early fiscal year (FY) 2021, will help simplify a complex process for park staff.

The GC IPMT also developed 14 species-specific documents that are posted within the NPS Washington Office Integrated Pest Management online species strategy library. These reference documents include 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.

Airboat transportation to spoil islands of Padre Island National Seashore in TX, for treatments of four species primarily including Brazilian peppertree, during fall 2019. NPS photo.

Attendees of the Unified Region 2 natural resource and inventory & monitoring training in Asheville, NC during October 2019. NPS photo.

Program Highlights (cont.)

Non-native Invasive Plant Treatments for Three Gulf Coast Parks

The GC IPMT field season was suspended during spring and early summer due to the COVID-19 pandemic and then further delayed by severe weather events including hurricanes Laura and Sally. However, later during the year, the GC IPMT funded survey and treatment projects, which included searches for the early-detection species trifoliate orange (*Poncirus trifoliata*) at Vicksburg National Military Park. When detected, the contractors treated this species. In FY 2020, the GC IPMT funded and coordinated surveys and treatments across 464 acres within parks.

Training for Park Resource Managers

During October 2019, the GC IPMT liaison attended a three-day training event in Asheville, NC for park resource managers across Unified Region 2 and east Texas. The liaison presented portions of three training sessions and participated in the Gulf Coast Network Science and Technical Advisory Committee meeting which included representatives from each of the GC IPMT's eight partner parks. Events like these offer an opportunity to share IPMT resources and expertise and broaden collaboration within the NPS.

Summary of Accomplishments

The GC IPMT continues to increase efficiency by visiting partner parks only every other year. Parks served by the team during FY 2020 included Natchez Trace Parkway , which traverses Tennessee and Mississippi, Vicksburg National Military Park in Mississippi, and Padre Island National Seashore in Texas. The team's liaison oversaw 1,915 hours of surveys and treatments covering more than 460 acres at three parks. Seven target species were treated including trees (tamarisk, *Tamarix* spp.; lead tree *Leucaena leucocephala*), shrubs (Chinese privet, *Ligustrum sinense*; oleander, *Nerium oleander*; Brazilian pepper-tree, *Schinus terebinthifolius*; trifoliate orange), and vines (kudzu, *Pueraria montana*). The team also provided training and developed over a dozen reference documents to aid park staff with invasive plant management. In spite of the weather and Covid-19 challenges and delays, the GC IPMT was productive and provided needed service to partner parks.

Summarized Data for 2020

Measure	Acres
Treated	48.361
Inventoried/Monitored	0
Gross Infested Area	121.011
Net Infested Area	108.446
Youth Engagement	
Total Number of Youth Participants and Youth Employees	1
Total Hours for Youth Participants and Youth Employees	1,027

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Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Heartland IPMT Annual Report: FY 2020

Watershed Conservation Corps members working to clear Eastern redcedar at Wilson's Creek National Battlefield. Photo by Caleb Sanders.

Background

The Heartland Network Invasive Plant Management Team (HTLN IPMT) serves 16 national parks in eight states of the Midwest and mid-South. The parks encompass an array of plant communities, including 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 the 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 solely to serve park managers and the resources that they are charged to protect. The IPMT follows the National Park Service's constructive model of identifying "prudent and feasible" invasive plant control projects. Because there is no single test to assess the prudence or feasibility of a project, the HTLN 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

Eastern Redcedar Removal from Ozarks Glades and Supporting Youth

The HTLN IPMT focused on its host park, Wilson's Creek National Battlefield (WICR), due to COVID-19 travel limitations. The team completed a project to remove Eastern redcedar (*Juniperus virginiana*), a native species that invades open glades within the Ozarks. Glades are thin-soiled, rocky, often treeless plant communities that include endemic Ozarks' flora. The project, which was initiated in 2018 and originally scheduled for completion in 2024, covers 62 acres and encompasses all high quality glades in the park.

The IPMT, park staff, and the fire team at Ozark National Scenic Riverways (OZAR) will burn the piles. Following fire, the IPMT will evaluate the need to control amur honeysuckle (*Lonicera maackii*), sericea (*Lespedeza cuneata*), and post-fire colonizers such as bull thistle (*Cirsium vulgare*) and tree-of-heaven (*Ailanthus altissima*).

Through this project, the HTLN IPMT supported the establishment and development of a new youth conservation program: Watershed Conservation Corps (WCC). WCC operates as a unit of the Watershed Committee of the Ozarks. The Committee is based in Springfield, Missouri and focuses on the protection of water resources, education, and habitat management in the Springfield Plateau. WCC has established membership with the 21st Century Conservation Corps and will continue to offer outdoor employment opportunities to young adults in the Ozarks region.

Conservation Corps Iowa and Watershed Conservation Corps working with National Park Service staff to control invasive plants in native prairie at Wilson's Creek National Battlefield. Photo by Caleb Sanders.

Eastern redcedar (*Juniperus virginiana*) ready for fire treatment following removal from glades at Wilson's Creek National Battlefield. Photo by Caleb Sanders.

Program Highlights (cont.)

Prairie Management at Wilson's Creek National Battlefield

Wilson's Creek National Battlefield supports 120 acres of high quality restored prairie. Restoration of these sites began in the 1980s. In 2020, the HTLN IPMT surveyed and controlled invasive plants within all of the park's restored native prairie.

Park staff, fire staff from OZAR, HTLN Inventory and Monitoring (I&M) ecologists, and HTLN IPMT staff work collaboratively to manage the prairie sites. Prescribed fire is an important management tool. Fire top-kills woody plants that the IPMT can then treat with herbicide as they re-sprout, makes sites more accessible for IPMT treatment, and often flushes seed banks of invasive plants such as sericea and sweetclover (*Melilotus officinalis*). If there are lapses in planned prescribed burning, treatments by IPMT staff help hold the line against woody invasive plants that upon reaching a certain size may be less susceptible to prescribed fire.

In 2020, I&M ecologists found an area of high bull thistle density during routine monitoring. They reported the infestation and park staff mowed the area the following day. Such efforts demonstrate the importance of cooperation among programs to successfully manage invasive plants in these national parks.

Summary of Accomplishments

The HTLN IPMT portfolio currently has 28 projects spanning over 3,000 acres. In fiscal year 2020, the team continued work on five projects that covered approximately 450 acres and fully surveyed George Washington Carver National Memorial and WICR for invasive plants. The IPMT continued to strengthen its on-going relationship with Conservation Corps Iowa and supported the development of Watershed Conservation Corps. Both organizations are affiliated with the 21st Conservation Service Corps.

The IPMT also published a journal article focusing on the effectiveness of tree-of-heaven control in the Buffalo National River. The study, which spanned eight years, demonstrated a clear decrease in invasive plant cover, supporting HTLN IPMT's treatment methods.

Summarized Data for 2020

Measure	Acres
Treated	14.836
Inventoried/Monitored	0
Gross Infested Area	1,997.669
Net Infested Area	12.94
Youth Engagement	
Total Number of Youth Participants and Youth Employees	17
Total Hours for Youth Participants and Youth Employees	9,440

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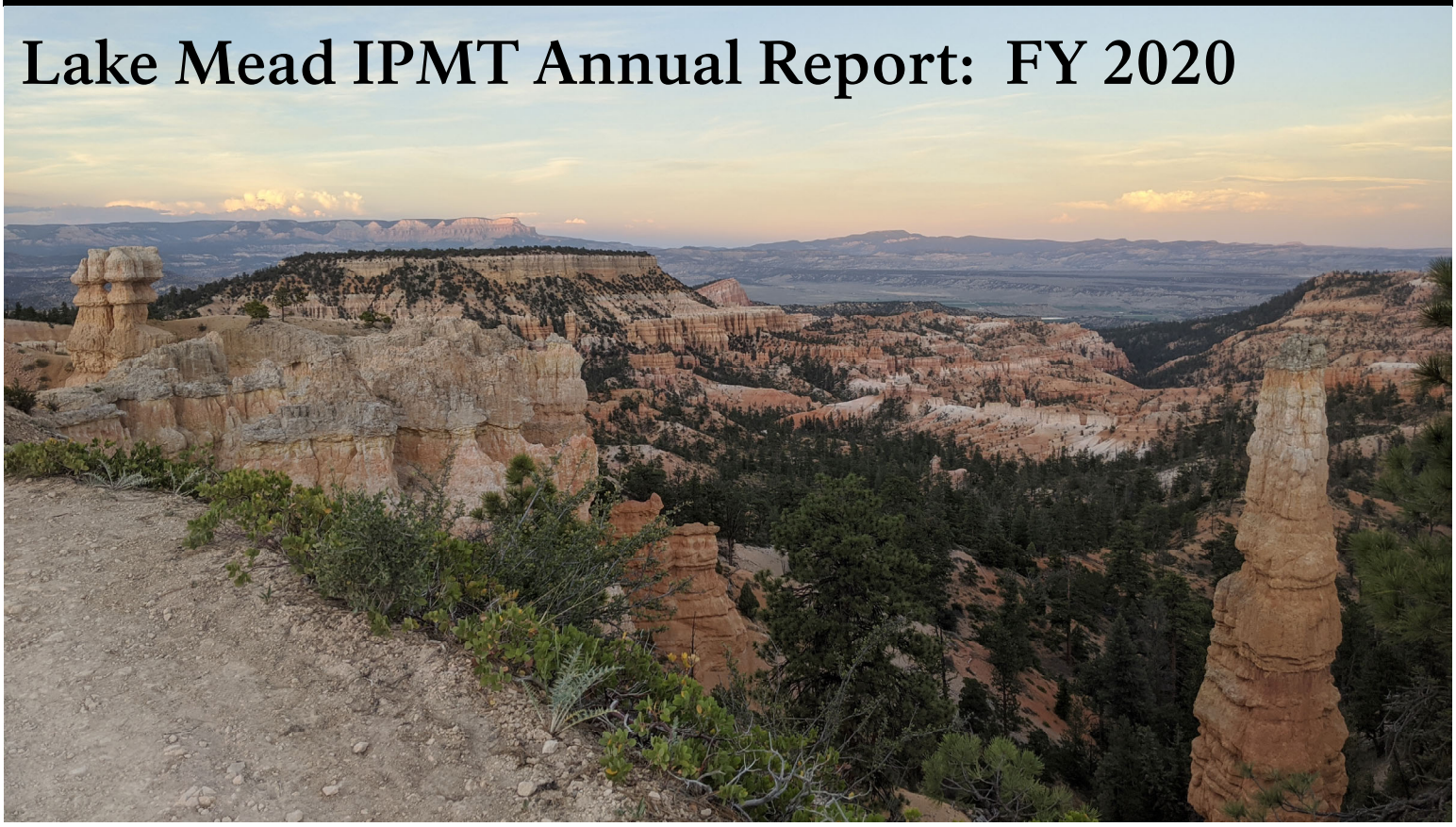
Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Lake Mead IPMT Annual Report: FY 2020



Bryce Canyon National Park at sunset. This is one of seventeen parks served by the Lake Mead Invasive Plant Management Team. NPS Photo.

Background

The Lake Mead Invasive Plant Management Team (LAKE IPMT) was established in 1996 and served as the model for what developed into the National Park Service (NPS) IPMT program. Their field crews have conducted projects on land managed by the NPS, the Bureau of Land Management (BLM), US Fish and Wildlife Service Refuges, National Forests, Bureau of Indian Affairs units, Bureau of Reclamation (BOR), Marine Corps Yuma Air Station, and sites managed by state and local entities. The three primary goals of the LAKE IPMT 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. They facilitate invasive plant management across agency boundaries and increase the LAKE IPMT's capacity to serve NPS units. Annually, partnerships leverage three dollars for each NPS base dollar. With combined funding in excess of one million dollars, the IPMT fields a crew of up to 20 people throughout the year. The LAKE IPMT's geographic location and cooperation with many regional partners allow for year-round operation, which maximizes efficiency and the control of diverse invasive plant species.

Program Highlights

Scheduling Work and Challenges in a Pandemic

Since the LAKE IPMT implements field projects on a year round basis, they were able to accomplish many projects in the fall and winter of 2019/2020 before work was limited by the COVID-19 pandemic. The IPMT hired and trained nine new members during the late summer of 2019, which added capacity and increased momentum in early fiscal year (FY) 2020. Typical fall work includes control of invasive woody species such as Russian olive (*Elaeagnus angustifolia*) and deep rooted perennial herbaceous species such as camelthorn (*Alhagi maurorum*). Fall is also a good time to apply pre-emergent herbicide to control invasive annual brome grasses (*Bromus* spp.) that establish in the winter and die in late spring. These dead and dried grasses become hazardous fuels responsible for spreading vast wildfires. Pre-emergent treatments are strategically located to reduce wildfire spread and to protect infrastructure and lands beyond the actual treatment footprint. A 20-year IPMT program anniversary project event was planned for April 2020 at Santa Monica National Recreation Area. LAKE IPMT leadership and the NPS IPMT program lead conducted a site reconnaissance in December 2019. However, as the world changed due to the COVID-19 pandemic, the project was cancelled and the 15-person IPMT transitioned to telework in late March through late April.

Lake Mead IPMT crew members conduct date palm (*Phoenix dactylifera*) treatment at Blue Point Spring, Lake Mead National Recreation Area. NPS Photo.

Brandon Blackburn conducts bull thistle (*Cirsium vulgare*) treatment within the Lonely Fire at Bryce Canyon National Park. NPS Photo.

Program Highlights (cont.)

Essential Work Projects

Park visitation at Lake Mead National Recreation Area (LAKE) increased during the pandemic and, in lieu of telework, the IPMT helped provide visitor services in congested areas such as entrance stations, beaches, and trailheads. LAKE IPMT staff helped with traffic control and conducted preventative search and rescue at popular trails throughout the park. The team also began collecting monthly traffic data used by the park to determine visitation numbers. The park funded these alternative work assignments, which helped to keep IPMT staff from furlough. After developing COVID-19 prevention and field safety protocols, the LAKE IPMT transitioned back to invasive plant control and restoration field work, serving local partners in May and June. Once travel protocols were developed, limited travel resumed and small groups conducted projects determined by partners to be mission essential. Hazard fuel treatments and post wildfire rehabilitation began in July and continued throughout the remainder of the year. The inherent nature of the work, which is outdoors and in remote areas, and the ability of the team to socially distance made it compatible with COVID-19 prevention measures.

Summary of Accomplishments

In FY 2020, the LAKE IPMT worked with two National Forests, four BLM districts, eight NPS units, the BOR's Lower Colorado River Multi-Species Conservation Program, Marine Corps Air Station Yuma, the Southern Nevada Water Authority, and Clark County. Although a few projects were cancelled due to the pandemic, IPMT staff were able to accomplish many planned projects. With less travel and more local work time, they completed an invasive date palm (*Phoenix dactylifera*) and fan palm (*Washingtonia filifera*) control project at LAKE, funded by the Southern Nevada Public Lands Management Act, a couple of years ahead of schedule. Another highlight included conducting projects for a new partner with the BLM Winnemucca District in Nevada. The team performed phenomenally well and readily adapted to different roles during the stressful global crisis.

Summarized Data for 2020

Measure	Acres
Treated	414.68
Inventoried/Monitored	7,448.72
Gross Infested Area	1,294.84
Net Infested Area	430
Youth Engagement	
Total Number of Youth Participants and Youth Employees	15
Total Hours for Youth Participants and Youth Employees	27,040

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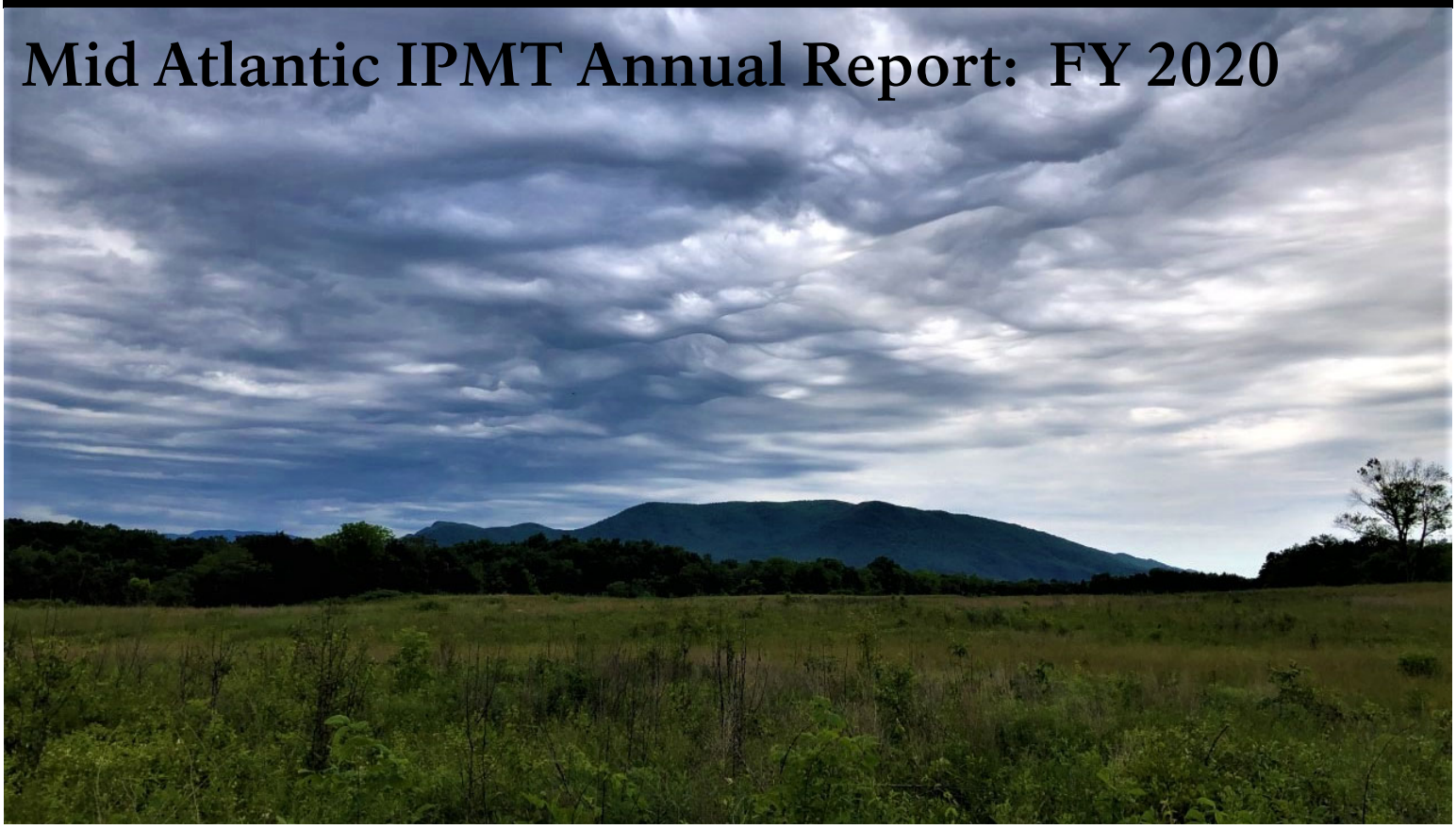
Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Mid Atlantic IPMT Annual Report: FY 2020



This view of Signal Knob from Morning Attack Field at Cedar Creek and Belle Grove National Historical Park showcases a cultural landscape protected by the Mid-Atlantic Invasive Plant Management Team. 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 units located in Virginia. In 2003, to meet a growing need for national invasive plant management, the MA IPMT was established along with six other teams. The team now provides invasive plant management support to 21 National Park Service (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 majority have relatively small acreages with mandates to preserve and interpret culturally significant sites. These small sites provide unique opportunities to enhance visitor experiences through natural resource preservation. 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 as needed throughout the year.

Program Highlights

Improving Habitat for Grassland Species

Since the 1800s, grassland ecosystems have decreased by 80 percent in the United States and remain one of the most imperiled landscapes in the country due to conversion to agriculture, development, fire suppression, and forest succession. As grasslands decline so do the species relying on them, including grassland birds like the grasshopper sparrow (*Ammodramus savannarum*), northern bobwhite (*Colinus virginianus*) and eastern meadowlark (*Sturnella magna*), as well as charismatic insect species such as the monarch butterfly (*Danaus plexippus*) and rusty patched bumble bee (*Bombus affinis*). To help mitigate these losses on a local scale, Cedar Creek and Belle Grove National Historical Park, in partnership with the MA IPMT, has committed to converting dormant agricultural fields to native meadow. The current condition of the fields in terms of habitat is poor and overall biodiversity is low. High densities of invasive plants including Sericea lespedeza (*Lespedeza cuneata*), thistle (*Cirsium arvense*), tall fescue (*Schedonorus arundinaceus*), Japanese honeysuckle (*Lonicera japonica*), and callery pear (*Pyrus calleryana*) overwhelm the native plant species important for wildlife, pollinators, and overall meadow biodiversity. Treating invasive species and establishing native grassland plants will improve important habitat for wildlife and pollinators, improve aesthetics for enhanced visitor experiences, maintain historical landscapes, and create awareness of the need and importance of grassland ecosystems and biodiversity for broader ecosystem health.

Meadow conversion progression at Cedar Creek and Belle Grove National Historical Park. Top photo: May 2020. Bottom photo: August 2020. NPS photos.

MA IPMT staff scout for wavyleaf grass along a remote stream in Shenandoah National Park. NPS Photo.

Program Highlights (cont.)

Improving Habitat for Grassland Species (cont.)

The MA IPMT began the first stage of meadow restoration in the spring of 2019, treating six acres of tall fescue with a mixture of glyphosate and imazapic. An application of glyphosate followed in the summer of 2019. Staff planted a mixture of little bluestem (*Schizachyrium scoparium*), Virginia rye (*Elymus virginicus*), and native forbs in the fall of 2019 and spring of 2020. Invasive plants, especially musk thistle (*Carduus nutans*) and common mullein (*Verbascum thapsus*), invaded where the germination rate of native seed was low. Management throughout the 2020 field season was required. Despite encroachment by invasive plant species, the plantings were successful overall and resulted in the establishment of Virginia rye and little bluestem by the fall of 2020.

The MA IPMT treated another 30 acres for fescue, thistle, and lespedeza in October 2020 and will plant native grass and forbs in 2021. The team will continue to plant native species, monitor the plantings, and treat non-native plant encroachments until native plants are well established, plant diversity increases, and high quality habitat is available for grassland species. Long term maintenance will consist of rotational periodic mowing or burning.

Summary of Accomplishments

Fiscal year 2020 was a safe and successful year for the MA IPMT. The team remained productive throughout the 2020 field season, treating 90 acres and inventorying more than 1,000 acres. MA IPMT staff members made great progress on the battle against wavyleaf basketgrass (*Oplismenus undulatifolius*). Staff treated 50 net acres and located and mapped several new infestations of wavyleaf basketgrass at SHEN.

The MA IPMT provided on the ground invasive plant control, restoration support, and technical guidance to 12 of its 21 partner park units, two nongovernmental organizations, one municipality, and four private cooperators. The team also supported partner parks by funding invasive plant control contracts and facilitating the purchase of herbicide and invasive plant control equipment.

Summarized Data for 2020

Measure	Acres
Treated	89.786
Inventoried/Monitored	1,017.267
Gross Infested Area	647.154
Net Infested Area	90.049
Youth Engagement	
Total Number of Youth Participants and Youth Employees	6
Total Hours for Youth Participants and Youth Employees	3,200

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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 2020

A population of black fountain grass (***Cenchrus purpurascens***) along the Potomac Heritage Trail in George Washington Memorial Parkway. NPS Photo.

Background

The National Capital Area Invasive Plant Management Team (NCA IPMT) supports units of the National Park Service (NPS) 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 (NCTC), 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 National Parks and partners located in Virginia, Maryland, West Virginia, and the District of Columbia.

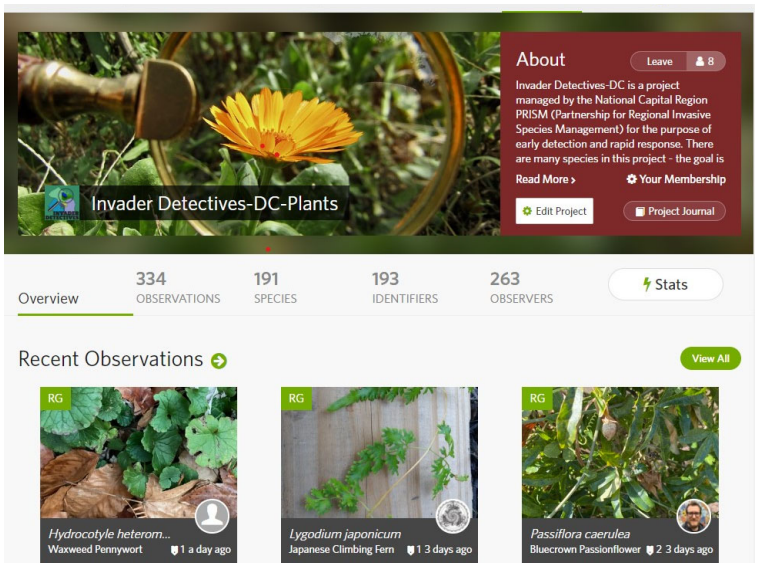
Program Highlights

Early Detection and Rapid Response: Invasive Grass Species of Concern in the National Capital Area Parks

The goal of Early Detection and Rapid Response (EDRR) is to quickly respond to invasive species before they become widely established in the environment. The NCA IPMT was able to locate and treat two EDRR grass species, wavyleaf basketgrass (*Oplismenus undulatifolius*) and black fountain grass (*Cenchrus purpurascens*), in areas where these species were not known to occur previously.

Both grasses can rapidly spread through natural areas and crowd out native vegetation. Wavyleaf basketgrass has seeds that often disperse by sticking to surfaces like clothing, footwear, and fur. Black fountain grass is used in landscaping and frequently escapes into natural areas as its large number of seeds are dispersed by wind, water, and animals.

Invasive species know no boundaries. It is imperative that federal, state, and county agencies work together to increase public awareness of the effects and spread of non-native invasive plant species and the importance of planting suitable native vegetation instead of harmful invasive plants.



Invader Detectives is a project on iNaturalist that will be used to look for novel invasive species in the region. NPS Photo.

The team surveys and treats invasive aquatic species along the Chesapeake and Ohio Canal within Chesapeake and Ohio Canal National Historical Park. NPS Photo.

Program Highlights (cont.)

Invader Detectives: Engaging the Public in Invasive Plant Detection

Early detection of invasive species is a crucial first step toward preserving natural habitats. In collaboration with the National Invasive Species Council, the National Capital Region Partnership for Regional Invasive Species Management, and other partners, the Invader Detectives Project was created to detect new invasive species in the region using the iNaturalist project function with 2020 being the development phase of the project. Project filters remove native and invasive species already known to occur in the area so that only species undocumented with research grade observations (a minimum of two agreeing identifications are made on a verifiable observation) appear in the project.

Two projects are used to cover all taxa: the Plants project excludes all non-plants by kingdom and around 4,800 native and common plant taxa; the Non-plants project excludes the plant kingdom and around 8,370 native and common non-plant taxa. Additionally, iNaturalist can be used to monitor unidentified/unknown species by filtering observations by quality grade and/or taxonomic rank.

These projects help detect new invasive species in the DC metro area for quick management action before they become a major issue in the region. They also engage the public in searching for and identifying invasive species which increases stewardship of public lands.

Summary of Accomplishments

It is important to recognize the project accomplishments and risk management successes achieved in fiscal year 2020 despite the challenges faced by the team. With a reduced staff, from 10 down to four crew members, NCA IPMT was able to complete 72 invasive plant control projects in more than 5,800 acres within the NCA. While field operations were suspended from March through June, NCA IPMT staff finalized a series of Best Management Practices that include treatment recommendations for 52 invasive plant species found in the NCA. During this time the IPMT staff also created a Weed Warrior Training for NCA parks to train a new cohort of volunteers dedicated to invasive plant control in order to protect natural areas entrusted to the NPS.

Summarized Data for 2020

Measure	Acres
Treated	307.73
Inventoried/Monitored	103.97
Gross Infested Area	5,829.74
Net Infested Area	115.92
Youth Engagement	
Total Number of Youth Participants and Youth Employees	11
Total Hours for Youth Participants and Youth Employees	10,262

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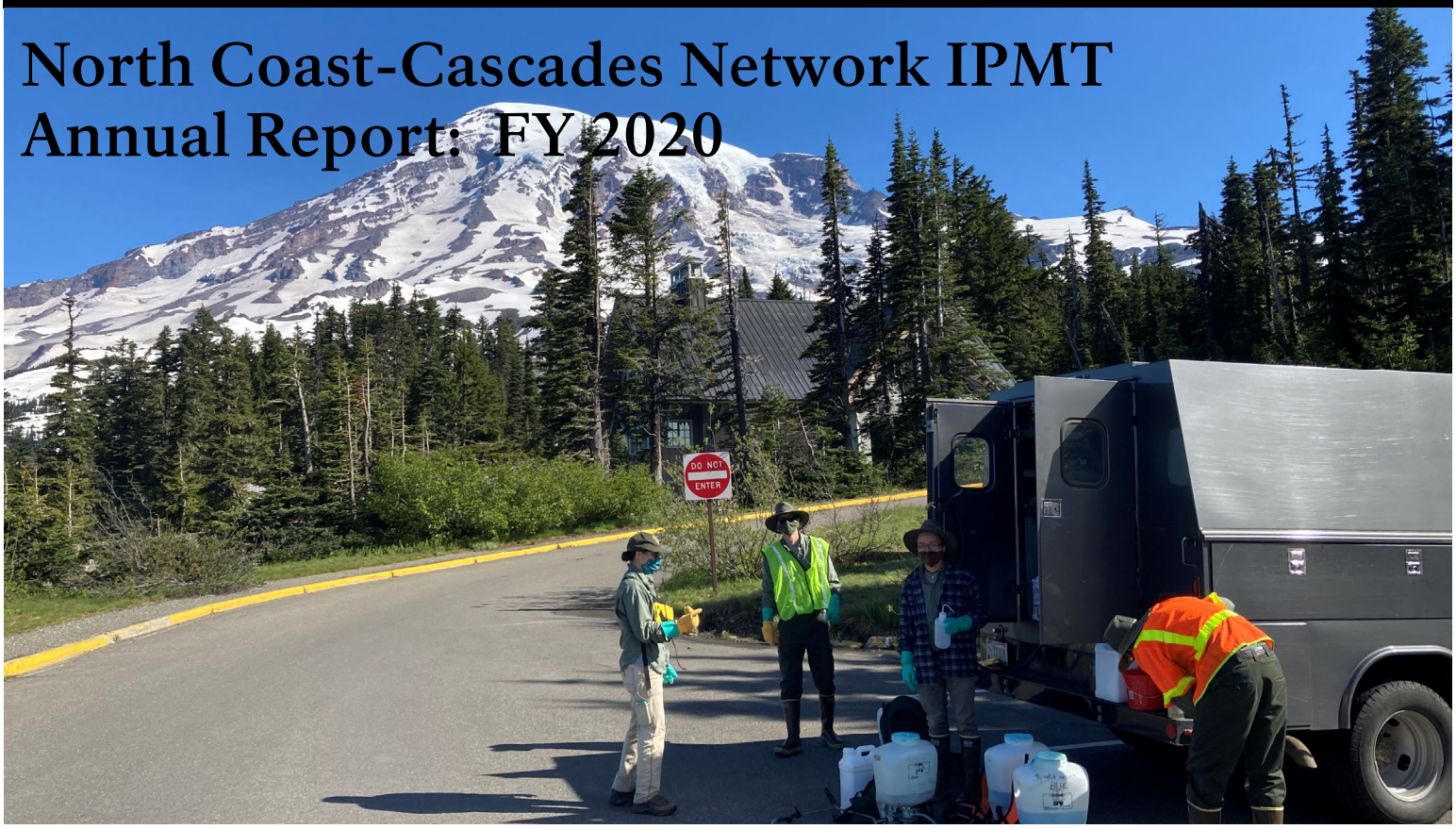
Program Brief

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 2020



North Coast-Cascades Network Invasive Plant Management Team technicians prepare an herbicide mix to treat invasive smooth brome at Mount Rainier's Paradise. NPS photo.

Background

From the ring peaks of North Cascades National Park Complex, 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 invasive plant mitigation for network partners. The NCCN IPMT also 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 using an ecosystem-based approach to invasive plant control. Team members have helped design riparian restoration projects, collected native conifer seeds for propagation, and managed a range of invasive plant species in a variety of environments. The NCCN IPMT specializes in large-scale, comprehensive invasive plant control and is particularly effective at treating populations in hard-to-reach areas including the backcountry of its partner parks.

The NCCN IPMT, where relevant, uses new technologies to meet conservation goals, conducts research, and works closely with industry specialists to ensure that its methods and tools are current, effective, and as environmentally friendly as possible. For example, the IPMT is integrating winter applications of carefully calibrated pre-emergent herbicides to combat some invasive species that germinate over long periods. These species previously required multiple treatments over the course of a season.

Program Highlights

Smooth Brome in Paradise

The NCCN IPMT began treatment of smooth brome (*Bromus inermis*) at the Paradise region of Mount Rainier National Park (MORA). This highly invasive grass was identified at Paradise in 2019 by NCCN IPMT staff and MORA natural resource managers.

MORA's vegetation management program has long been installing native plants adjacent to parking areas at Paradise. High visitation, over two million visitors annually, heavily impacts the park's native plant communities due to the physical presence of people and the constant influx of invasive plant materials. The subalpine meadows at Paradise are of particular conservation concern due to their fragility and susceptibility to human and climate impacts.

The IPMT performed chemical control on smooth brome using a mixture of glyphosate and non-ionic surfactant. The smooth brome was intermixed with planted and naturally occurring native plants. The team applied the herbicide with extreme care to avoid accidental treatment of native plants. In fact, NCCN IPMT was so concerned with protecting native plants that half of the team individually wicked smooth brome plants with a gloved hand.

The NCCN IMPT will continue to treat the smooth brome at Paradise to prevent further spread of this invasive grass into Mount Rainier's sensitive subalpine meadows.

Technician Eddie Silahua surveys wetlands in Ross Lake National Recreation Area's Big Beaver Valley. NPS Photo.

NCCN IPMT and OLYM staff stand in a former reed canary grass infestation in OLYM. NPS Photo.

Program Highlights (cont.)

Reed Canary Grass in Big Beaver Valley

The NCCN IPMT has been mapping and treating invasive reed canary grass (*Phalaris arundinacea*) in Ross Lake National Recreation Area's Big Beaver Valley since 2017. Big Beaver Valley, which lies nestled in the backcountry between multiple North Cascade peaks, is uniquely hard to access for invasive plant control. The entrance to the valley, located on Ross Lake, is accessible only by boat. Boating adds to the already complicated logistics for treating and surveying plants in remote areas with difficult terrain. Further complicating matters, treatment is most effective in summer months when heat, humidity, and nuisance insects are at their most inhospitable and much of the valley is nearly inaccessible due to deep standing water and incredibly dense vegetation.

The team was resourceful in the face of these many challenges and used inflatable kayaks to access difficult riparian areas to locate and treat target grasses. The NCCN IPMT treated approximately four acres of reed canary grass with imazapyr in 2020. Unfortunately, IPMT staff also found invasive Canada thistle (*Cirsium arvense*) while treating reed canary grass. On a positive note, the IPMT's treatment effectiveness and thoroughness increase each year as verified by surveys and treatment efforts in 2020. Treatment and surveys will continue in 2021.

Summary of Accomplishments

The NCCN IPMT's greatest achievement in 2020 was maintaining productivity and high quality work despite the raging COVID-19 pandemic. With few exceptions, the IPMT met the needs of project partners while remaining committed to protecting the health of staff and partners. The IPMT benefited from having a fantastic crew .They were willing and able to tolerate the difficulties of 2020 and exceeded all expectations while doing so.

The NCCN IPMT continued to successfully manage rush skeletonweed (*Chondrilla juncea*) at Lake Chelan National Recreation Area, further reduced Japanese knotweed (*Fallopia japonica*) populations at MORA, and made significant inroads on a serious reed canary grass infestation at Olympic National Park.

Summarized Data for 2020

Measure	Acres
Treated	206.67
Inventoried/Monitored	4.15
Gross Infested Area	1,356.07
Net Infested Area	43.41
Youth Engagement	
Total Number of Youth Participants and Youth Employees	7
Total Hours for Youth Participants and Youth Employees	8,480

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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 2020

Northeast Invasive Plant Management Team staff faces an impenetrable wall of glossy buckthorn (*Rhamnus frangula*) at Bass Harbor Marsh, Acadia National Park. NPS Photo.

Background

The Northeast Invasive Plant Management Team (NE IPMT), duty stationed at Delaware Water Gap National Recreation Area (DEWA), was established in 2003 and serves 25 partner parks in eight states from Pennsylvania to Maine in Unified Interior Region 1. The parks served by the NE IPMT range in size from nine acres to over 100,000 acres. The majority of these parks have relatively small acreages 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 service under a range of conditions, including reduced staffing. 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 treatment, training, and technical support to many of the parks within Unified Interior Region 1.

Program Highlights

Supporting a New Restoration Project at Acadia National Park

Bass Harbor Marsh, Acadia National Park's (ACAD) largest salt marsh, drains numerous pristine habitats on the west side of Mount Desert Island. This salt marsh supports rare populations of sweetgrass (*Anthoxanthum nitens*) that are used in traditional basket making. Conservation of this species is a top priority within the park.

Glossy buckthorn (*Rhamnus frangula*) poses the greatest threat to the park's wetlands. In 2019, surveys found a large infestation of glossy buckthorn near the marsh's outflow. Although the park supports its own invasive plant management team, this new site challenged the park's capacity. A grant from the NE IPMT supported an intern and a seasonal crew member in 2020. This allowed initial cut-stump treatments to begin and, with assistance from volunteers, glossy buckthorn and other invasive shrubs were removed from 14 acres of mixed coastal forest. The Friends of Acadia and the Schoodic Institute, both park partners, established pretreatment monitoring transects in the marsh to monitor treatment effectiveness. This work will continue with partner support to protect this unique ecosystem and the important ethnobotanical resource it supports.

A spotted lanternfly (*Lycorma delicatula*) adult resting amid the lichen on a tree of heaven (*Ailanthus altissima*). NPS Photo.

Minuteman National Historic Park Stewards viewing their handiwork after clearing the invasive plants from a rock wall near the Old North Bridge. NPS Photo.

Program Highlights (cont.)

A Two for One Deal

The NE IPMT is targeting an invasive insect by controlling an invasive plant. The spotted lanternfly (*Lycorma delicatula*), a planthopper native to Asia, caused over $42 million of damage to Pennsylvania agriculture in the first three years after it was discovered in 2014. Plant nurseries, grape growers, and Christmas tree growers have been especially hard hit. One of the preferred hosts of the spotted lanternfly is the tree of heaven (*Ailanthus altissima*), an invasive tree also from Asia. One of the best management practices to control the insect has been to control the tree.

DEWA spans two counties in Pennsylvania within a spotted lanternfly quarantine zone and tree of heaven is a common invasive species in the park. To help slow the spread of the spotted lanternfly, the park began a tree of heaven management program with support from the NE IPMT. With NE IPMT funding, the park hired two biological science technicians to search for and treat tree of heaven in areas identified as at risk to spotted lanternfly infestation. The primary goal is to eliminate the trees within the park ahead of the advancing insect spread, denying the insect a favorite host and slowing the spread of this very damaging species. In 2020 the park initiated a successful campaign by treating tree of heaven over 250 acres.

Summary of Accomplishments

The NE IPMT provided direct in-the-field vegetation management service to two Region 1 parks. Pre– and post– emergent applications were made at Upper Delaware Scenic and Recreational River, and post-emergent treatments were conducted at DEWA. The IPMT liaison conducted several on-line vegetation management training sessions for partner parks and the larger National Park Service vegetation management community.

Through the grant process, the NE IPMT distributed approximately $118,000 to support invasive plant projects in nine parks. Two new grant partners, Saint-Gaudens National Historic Site and ACAD, successfully competed for funds.

Summarized Data for 2020

Measure	Acres
Treated	174.32
Inventoried/Monitored	12.54
Gross Infested Area	1,145.75
Net Infested Area	243.42
Youth Engagement	
Total Number of Youth Participants and Youth Employees	153
Total Hours for Youth Participants and Youth Employees	5,572

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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 2020

The Northern Rocky Mountain Invasive Plant Management Team protects important cultural and natural features within parks like the Breadloaves area of City of Rocks National Reserve. Public Photo.

Background

The Northern Rocky Mountain Invasive Plant Management Team (NRM IPMT) serves 25 parks in Colorado, Idaho, Montana, northern New Mexico, Utah, and western Wyoming. The Northern Rocky Mountains Region is vast and diverse, encompassing high and low elevation sagebrush steppe, forests, subalpine 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 lack staff expertise to address even their highest priority invasive species. Since its inception in 2003, the NRM IPMT has supported the parks in its network by emphasizing the systematic, long-term management and control of invasive plants.

The NRM IPMT is currently a nine person crew strategically divided into three smaller crews based at two large parks and one small park within the team's network. The program partners with other work crews to address distant parks. In 2020, the team worked in 15 of the program's partner parks and made multiple visits to seven parks. Repeat visits are critical for many project areas to ensure that all invasive plants are located and removed. Much of the NRM IPMT's effort focuses on controlling state listed noxious weeds, as well as providing rapid response to new and/or particularly problematic invaders. The team 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 in the summer. Field efforts typically continue into the early fall to address perennial invasive plants as they enter dormancy.

Program Highlights

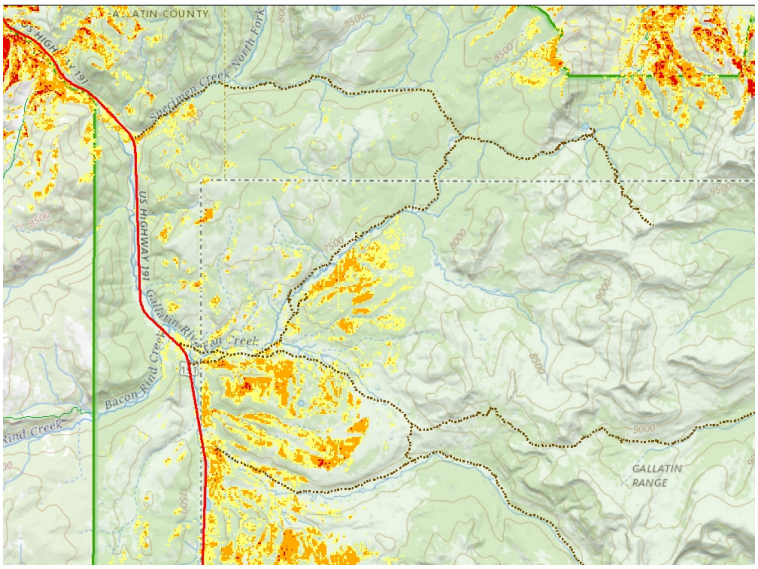
Addressing Invasive Grasses at Dinosaur National Monument (DINO)

DINO staff have observed that high value and popular visitor use areas are becoming more vulnerable to wildfire, resulting in a rapid increase in the cover of invasive annual grasses (IAGs). These grasses outcompete native bunchgrasses and create a continuum of fine fuels that increase fire risk. This is particularly true for Echo Park, a very popular area at the confluence of the Yampa and Green Rivers.

In September of 2019, the park contracted Moffat County, CO to treat test plots of cheatgrass (*Bromus tectorum*) in Echo Park with indaziflam (Esplanade®), an herbicide used in areas heavily impacted by IAGs but with native grasses still prevalent. Staff with park, regional, and national NPS offices established six 10 by 30 foot plots to test three indaziflam treatments (5 oz/acre, 7 oz/acre, and control). The NRM IPMT helped the park collect post treatment cover and stem counts in June of 2020. Initial results were impressive. Invasive annual grass cover was extremely low in both herbicide treatments and most native bunchgrasses within the treatment plots produced seed. Effectiveness monitoring will continue for two more years.

With new found confidence, the NRM IPMT worked with park staff to treat another 15 IAG-infested acres with indaziflam herbicide at a rate of 7 oz/acre in early October of 2020. IPMT and park staff will build on initial successes to reduce fire risk and improve native plant communities throughout Echo Park.

NRM IPMT crew leader Andrew Ringholz applying indaziflam (Esplanade®) herbicide prior to cheatgrass germination across a large bench at Echo Park in Dinosaur National Monument. NPS Photo.



Results of a habitat suitability model (yellow for low suitability, orange for medium suitability, and red for high suitability) for orange hawkweed in the northwest corner of Yellowstone National Park.

Program Highlights (cont.)

Using Habitat Suitability Modeling to Define High Priority Habitats

Over the past three years, the NRM IPMT program has collaborated with Yellowstone National Park (YELL), the Greater Yellowstone Coordinating Committee, the Custer Gallatin National Forest, and the University of Idaho to develop habitat suitability models for four high priority invasive plant species. These models use biometric data (elevation, aspect, vegetation type, etc.) from known infestations to predict where new infestations may exist based on similar conditions. This information helps the NRM IPMT and partners identify high priority areas and habitats, improve visitor information and prevention measures, and target future surveys and treatments of these invasive plants. The University of Idaho has extensive experience developing habitat suitability models for various land management agencies, including a 2015 model to predict leafy spurge (*Euphorbia esula*) occurrence in eastern Idaho along the boundaries of YELL. Agency partners gathered initial occurrence data to build the models and then worked with University researchers over the summers of 2018 and 2019 to ground truth and refine the model outputs. Over the winter, the NRM IPMT program and park staff are defining target conservation areas and developing action plans that incorporate these models to prioritize future invasive plant work.

Summary of Accomplishments

In 2020, the NRM IPMT treated 23 invasive plant species across more than 9,000 infested acres mainly by chemical means in 15 National Parks. IPMT staff committed 2,190 person hours to treatment of predominantly state and federal listed noxious weeds 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. The IPMT hosts several steering committee meetings annually to review and approve the strategic direction and financial plan of the team, ensure that the team provides information that is relevant to management, and develop an invasive plant treatment schedule for the fiscal year.

Summarized Data for 2020

Measure	Acres
Treated	429.01
Inventoried/Monitored	72.08
Gross Infested Area	9,427.24
Net Infested Area	132.59
Youth Engagement	
Total Number of Youth Participants and Youth Employees	19
Total Hours for Youth Participants and Youth Employees	3,590

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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 2020

Student Conservation Association intern Leila Morrison searching steep slopes, cliffs, and unstable scree for invasive wildfire promoting pine trees (*Pinus* spp.) and pampas grass (*Cortaderia jubata*), Haleakalā National Park. NPS Photo by S.Torigoe.

Background

For over two decades, the Pacific Islands IPMT (PI IPMT) has served six core parks in the Hawaiian Islands: Hawai'i Volcanoes (HAVO) and Haleakalā (HALE) National Parks; Kalaupapa, Kaloko-Honokōkahu, and Pu'uhonua O Hōnaunau National Historical Parks; and Pu'ukoholā Heiau National Historic Site. Invasive species continue to be the greatest immediate threat to the unique ecology of the Pacific Islands followed closely by shifts in climate. These climatic shifts alter habitat conditions and move ecological balances away from mostly endemic native plants and animals and towards less diverse invasive-dominated monocultures.

The PI IPMT supports and develops specialized integrated treatment strategies to use within the National Park Service and across boundaries. For example, direct involvement with parks and partnership entities leverages IPMT-developed precision helicopter invasive plant control and mapping technologies at several parks. Precision applications can target single outlier invasive plants or localized remote infestations. Much of this work provides additional benefits to parks by controlling invasive species that create wildland fire fuels thereby reducing fire potential along park access routes and boundaries.

The IPMT works to build capacity for Pacific Island parks and is an important keystone for leveraging limited local resources. Collaborative relationships with agencies, partnerships, parks, and private landowners multiply the PI IPMT's capacity to accomplish invasive species management. Maintaining these existing relationships and developing new collaborative partnerships is critical to the team's continued success.

Program Highlights

Leading the Charge: Using Technology to Restore Biodiversity

At HAVO and HALE, the PI IPMT continued to develop mobile ArcGIS Collector maps for invasive plant control data collection. Implementing mobile data collection and cloud data editing on ArcGIS Online streamlines data collection and management workflows while minimizing post-processing time for remote and field staff. The PI IPMT also supported the installation of a real-time GPS correction station at HALE, which allows for high-accuracy (<5cm) data collection with cell connectivity in the park.

The IPMT assisted in restoring over 50 individuals of a critically endangered catchfly, Haleakala schiedea (*Schiedea haliakalae*), to the cliff's edge of Haleakalā Crater. This unique alpine habitat has been maintained free of invasive incipient pine trees, Andean pampasgrass (*Cortaderia jubata*), and faya tree (*Morella faya*) over the past two decades through continued aerial spraying and ground control.

Herbicide trials on Florida blackberry (*Rubus argutus*) with dilute cut-stump imazapyr yielded promising results with over 80% reduction in stem count each year in preliminary treatments in subalpine shrubland on the northwestern slopes of Haleakalā. These results will be of interest to other landowners in Hawai'i controlling Florida blackberry and bring management one step closer to eradicating this highly invasive species from high quality native habitats.

Haleakalā National Park/IPMT biotech Adam O'Neil controls invasive Himalayan ginger (*Hedychium gardnerianum*) in Kipahulu Valley by cutting and treating exposed rhizomes. NPS Photo by S. Torigoe.

Pr

Pacific Islands IPMT mission in Kaupo Gap Maui, preparing for wet-weather sweeps to control incipient Brazilian peppertree (*Schinus terebinthifolius*) in regenerating thick native shrubland hidden above the visible fence in clouds. NPS Photo.

Program Highlights

University Collaboration, Invasive Plants, and Long-Term Climate Issues

The PI IPMT celebrated completion of the pine tree aerial precision spray project in Haleakalā Crater. After five years of intensive operations, the PI IPMT estimates that control efforts eliminated more than 90% of over 5,000 invasive pine trees (primarily Monterey pine, *Pinus radiata*) that threatened the alpine ecosystem. However, treatment actions do not fully capture all steps required to preserve this iconic national resource.

Changing climate conditions have already had dramatic impacts on the federally threatened and iconic Haleakalā silversword (*Argyroxiphium sandwicense*). Collaborative research with the University of Hawai'i revealed that reductions in rainfall led to a 60% decline in the silversword population over the past few decades, and that there is a high probability of extinction in the most populous lower elevation portion of its range in the coming century. Results of experimental outplantings across climatic gradients indicates that propagation in wetter habitats, including outside the current range, can mitigate for warmer temperatures and provide a larger buffer against drier future conditions. These areas may serve as critical range extensions to the currently suitable but shrinking higher elevation habitat. This work is helping guide management by identifying areas most important for future propagation and invasive plant control.

Summary of Accomplishments

Safely accomplishing PI IPMT's mission goals has been the cornerstone principle for the team since its inception in 2000. The IPMT completed another year with no reportable accidents or injuries.

Despite operational challenges related to the 2020 year, the IPMT fully served four of six partner park units and responded to dozens of requests for technical consultation and review for non-IPMT served entities, including project scoping and implementation recommendations, remote sensing possibilities, and feasibility assessments.

The PI IPMT provided leadership for a summer 4-person local youth program removing more than 5,000 invasive faya trees (*Morella faya*) from 500 acres of forest, while also removing 823 invasive fire promoting grasse individuals from near a park boundary covering more than 150 miles of roadside.

Summarized Data for 2020

Measure	Acres
Treated	256.64
Inventoried/Monitored	0
Gross Infested Area	18,883.22
Net Infested Area	442.04
Youth Engagement	
Total Number of Youth Participants and Youth Employees	612
Total Hours for Youth Participants and Youth Employees	15,445

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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 2020

This mountain viewshed from the Blue Ridge Parkway showcases a natural resource protected by the Southeast Invasive Plant Management Team. NPS Photo.

Background

The Southeast Invasive Plant Management Team (SE IPMT) supports 20 national park units in seven states in the Southeast Region. The network of parks served by the SE IPMT lies 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 significant 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 functions as a self-contained, mobile strike team comprised of a field crew leader and two to four team members. In fiscal year 2020, the team was led by acting liaison Brian Lockwood, then permanent liaison Lauren Serra, and field crew leader Toby Obenauer. Oversight of the SE and Southeast Coast (SEC) IPMTs was combined under one liaison. To foster future land management professionals, the SE IPMT crew works with youth interns. One member of the American Conservation Experience travelled with the team for five months, then worked remotely during the COVID-19 pandemic. The pandemic truncated the travel season and delayed the start of new interns.

Program Highlights

Collaborative Invasive Plant Treatments at Parks

The SE IPMT collaborated with other IPMTs to share skills, train staff, and share equipment for invasive plant treatments in parks. The team treated invasive plants at Biscayne National Park (BISC) in the Florida/Caribbean (FLC) IPMT network and Ocmulgee Mounds National Historical Park (OCMU) in the SEC IPMT network. The SE IPMT youth intern joined the SEC IPMT crew at two additional SEC parks to remove Chinese privet (*Ligustrum sinense*). While at Congaree National Park, the intern also gained safety and leadership skills and certifications.

The SE IPMT worked with collaborators within its own partner parks. At CHCH they worked with a Historic Preservation Team of youth interns to treat invasive plants on the cliffs at Eagles Nest. In anticipation of a bridge relocation, they collabrated with the NPS Transportation Program to prevent the dispersal of oriental bittersweet (*Celastrus orbiculatus*) at the Blue Ridge Parkway. The SE IPMT performed Early Detection and Rapid Response (EDRR) on kudzu (*Pueraria montana*) at Little River Canyon National Preserve, reduced parrot feather (*Myriophyllum aquaticum*) at Carl Sandburg Home National Historic Site, and removed hazardous trees at Ninety Six National Historic Site (NISI). A hydroseeding project at Kings Mountain National Military Park (KIMO) seeded native plant species following treatment of Japanese stiltgrass (*Microstegium vimineum*), stabilized a steep bank, and reduced mowing.

Treatment of invasive plants by Southeast IPMT on the cliffs at Eagles Nest, Chickamauga & Chattanooga National Military Park. NPS Photo.

Southeast IPMT Crew Leader instructs chainsaw training at Biscayne National Park. NPS Photo.

Program Highlights (cont.)

Outreach and Training Resources for Parks, Programs, and Partners

The SE IPMT provided training and resources to parks, IPMTs, and partners to advance plant management activities. The field crew leader taught chainsaw classes at BISC and NISI in accordance with the National Chainsaw Safety Policy. He also provided two utility vehicle safety trainings and classes on invasive plants towards Continuing Education Credits for pesticide licensing in Madison County, NC. Interns with the Southern Campaign of the American Revolution Parks Group were trained in plant identification, invasive plant removal, and herbicide use. The SE IPMT shared a guide of recommendations to boost the efficacy of invasive plant treatments with parks and other IPMTs and also provided technical expertise and safety templates. They developed best management practices for invasive plant species at MACA. At the Unified Interior Region 2's Natural Resource Training, the SE, SEC, FLC, and Gulf Coast IPMTs showcased the 20 year anniversary of the IPMT program with an outreach poster and presentations. The liaison supported iNaturalist EDRR efforts among IPMT, Inventory and Monitoring, and partner park staff. The SE IPMT and Cowpens National Battlefield provided technical guidance to South Carolina State Parks regarding the restoration of native rivercane (*Arundinaria tecta*).

Summary of Accomplishments

The SE IPMT surveyed for invasive plants at four partner parks, treated 19 invasive plant species at five partner parks, joined the SEC and FLC IPMTs to treat invasive plants at four of their parks, and provided technical assistance across the network and IPMT program. At Russell Cave National Monument, IPMT staff treated the state champion blue ash (*Fraxinus quadrangulata*) to protect it from the threat of emerald ash borer (*Agrilus planipennis*), an invasive forest pathogen. Because of COVID-19 travel restrictions, SE IPMT provided herbicide to Guilford Courthouse National Military Park. The liaison attended Facilitation to Support Collaboration training. The field crew leader completed Resource Advisor training and maintained Wilderness First Responder certification. The crew held regular tailgate safety meetings, and completed yearly reviews for Safety Data Sheets, labels, and Job Hazard Analyses. Data management was courtesy of the FLC IPMT.

Summarized Data for 2020

Measure	Acres
Treated	36.8
Inventoried/Monitored	106.87
Gross Infested Area	710.67
Net Infested Area	62.04
Youth Engagement	
Total Number of Youth Participants and Youth Employees	5
Total Hours for Youth Participants and Youth Employees	1,616

More Information

Lauren Serra
Liaison

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Liaison (Acting)

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Data Manager

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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 2020

Commemorating the first flight on December 17, 1903 in sculpture at Wright Brothers National Memorial. 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, with historic Revolutionary and Civil War sites in between. Inland, the SEC IPMT serves parks like Chattahoochee River National Recreation Area in the Atlanta metro area and 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 is approximately 80% 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 program entered into a General Agreement with the park, reallocating the SEC IPMT's base funds, personnel, and oversight to Interior Region 2's Science and Natural Resources Management Division. Although their funding structure differs from most IPMTs, the SEC IPMT has similar goals for invasive plant management. In fiscal year 2020, the SEC IPMT was led by Lauren Serra (liaison) and Amorita Brackett (field crew leader). The SEC IPMT crew, comprised of three American Conservation Experience youth interns, conducted invasive plant treatments at multiple parks before the COVID-19 pandemic put an early end to the field season.

Program Highlights

Collaborative Invasive Plant Surveys and Treatments

The SEC IPMT crew was stationed with the Eastern North Carolina parks group for two months, which provided many opportunities for collaboration. The IPMT and park staff surveyed for and treated invasive plants at Moores Creek National Battlefield, Fort Raleigh National Historic Site, CAHA, and Wright Brothers National Memorial (WRBR). At WRBR, survey and treatment efforts improved the areas of maritime forest that are vital to the Outer Banks ecosystem. The team also restored the historic view of Monument Hill, the iconic dune where the Wright Brothers launched their airplane, by removing woody vegetation.

The SEC IPMT worked extensively with the Southeast (SE) IPMT, sharing trainings, resources, and expertise. The teams joined OCMU staff to control invasive species and planted native cane (*Arundinaria* spp.) in riparian areas. The SE IPMT's youth intern joined the SEC IPMT at Charles Pinckney National Historic Site to remove Chinese privet (*Ligustrum sinense*). Together, the crews were certified in chainsaw and utility vehicle operations by the SE IPMT Crew Leader and attended CONG-hosted safety training. The SEC IPMT crew put their training to use at Horseshoe Bend National Military Park. A collaborative effort with the South Carolina Department of Natural Resources Heritage Trust Program provided invasive plant survey data for two out-of-network parks, Reconstruction Area National Historical Park and the Congaree Bluffs Heritage Preserve.

The SEC IPMT crew among brush piles of Chinese privet (*Ligustrum sinense*) following cut-stump treatment at Horseshoe Bend National Military Park. NPS Photo.

In partnership with the North American Invasive Species Association, SEC IPMT, and Congaree National Park, staff installed a boot brush station to prevent the spread of invasive plants by removing propagules from boots. NPS Photo.

Program Highlights (cont.)

Outreach and Education

The SEC IPMT leveraged partnerships to increase outreach and education. The SEC IPMT crew leader and CONG partnered with the North American Invasive Species Management Association's PlayCleanGo© campaign to install a boot brush station at the park's visitor center. Signage at the station defines invasive species, includes photos of two common invasive plants at CONG, explains that invasive plant seeds can be transported via boots and equipment, and asks visitors to clean their shoes on the boot brush when entering and exiting park trails. The exhibit is designed to reduce the spread of invasive plant material by CONG visitors. The SEC IPMT also worked closely with NPS and state programs to increase outreach efforts. The liaison served on the board for the South Carolina Exotic Pest Plant Council, attended the SEC Network Inventory and Monitoring (SECN) annual steering committee meeting, and led the IPMT 20th Anniversary Outreach Committee. The IPMT trained park staff in the use of GPS and GIS and contributed to OCMU's vegetation management plan. The SEC IPMT continued to collaborate with the SECN and Fire Effects Monitoring Program in the Appalachian/Piedmont/Coastal Fire Management Zone to share vegetation data and update the Early Detection and Rapid Response watch list for species on the move and NPSpecies lists for parks.

Summary of Accomplishments

The SEC IPMT served 13 partner parks and treated approximately 50 plant species at 10 of those parks. The liaison was a member of the South Carolina Association of Naturalists, vice chair of CONG's Safety, Environmental, and Wellness Committee, and provided input on CONG's Resource Stewardship Strategy. The crew leader held regular tailgate safety meetings, completed yearly reviews of Job Hazard Analyses and Safety Data Sheets, assured the crew's pesticide licensing, and maintained Wilderness First Responder certification. Park contributions, which were essential to the team's success, included in-kind funding, field assistance from staff and volunteers, travel per diem, housing, supplies, equipment, and training. Data management was provided by project funding for an agreement with North Carolina State University and the Florida/Caribbean IPMT Data Manager.

Summarized Data for 2020

Measure	Acres
Treated	20.64
Inventoried/Monitored	858.76
Gross Infested Area	2,824.62
Net Infested Area	75.23
Youth Engagement	
Total Number of Youth Participants and Youth Employees	58
Total Hours for Youth Participants and Youth Employees	3,247

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 2020

Ancestral Lands Conservation Corps crew hiking into the Alamo Canyon project site at Bandelier National Monument. NPS Photo.

Background

The Southwest Invasive Plant Management Team (SW IPMT) of the National Park Service (NPS) serves 46 NPS units and adjacent land owners 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 a number of 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

Early Detection and Rapid Response to a Highly Invasive Species

Stinknet (*Oncosiphon piluliferum*) was first documented in the Sonoran Desert in 2003. The plant grows well during wet winters and can carpet the desert floor, crowding out native wildflowers. When dead, it contributes to the spread of fire through upland desert ecosystems that are not fire-adapted. Stinknet has been found at Casa Grande Ruins (CAGR), Organ Pipe Cactus National Monument, and Saguaro National Park (SAGU). A SW IPMT staff member discovered it at Tonto National Monument (TONT) in January 2020.

At CAGR, a Sonoran Desert Monitoring Network crew noted that stinknet was spreading in lower portions of that park. To halt the spread, SW IPMT and park staff focused on manually removing it and other invasive winter annuals in March 2020 when plants were in full bloom and highly visible. Much of CAGR has suitable habitat for stinknet, making it a top priority for treatment.

In April and May of 2020, the SW IPMT and SAGU staff surveyed for and treated stinknet in and around the Tucson Mountain District, focusing on roadsides, trailheads, trails, and the adjacent private property of willing landowners. With continued efforts the IPMT hopes to prevent this species from proliferating at SAGU and damaging the richly diverse desert ecosystem there. Early-detection and rapid-response actions related to stinknet in these and other parks will continue to be a priority for the SW IMPT in coming years.

An Ancestral Lands crew member works on cutting a large Russian olive tree (*Ulmus pumila*) in Bandelier National Monument. NPS Photo.

A dense patch of stinknet (*Oncosiphon piluliferum*) at Casa Grande Ruins National Monument. NPS Photo.

Program Highlights (cont.)

Engaging the Next Generation of Stewards at Bandelier National Monument

From September 29-October 8, 2020, the SW IPMT crew leader, Chris Davis, and a four-person Ancestral Lands Conservation Corps saw crew took action to control two woody invasive species that threaten plant communities and wildlife habitat in Bandelier National Monument (BAND). The SW IPMT partners with Ancestral Lands Conservation Corps to "bond people to places and harness their power to restore, improve, and preserve our communities and ecosystems." The organization pairs an intern with an agency to nurture and grow young leaders through on-the-ground action across the United States.

The saw crew and SW IPMT carried out mechanical treatment of Siberian elm (*Ulmus pumila*) and Russian olive (*Elaeagnus angustifolia*) along the Rio Grande river in the Alamo Canyon region of BAND. They cut trees low to the ground and treated stumps with triclopyr herbicide. Though very successful, work in this remote site was logistically complex as it required a 7.5-mile hike into camp and transport of all work equipment and supplies by boat. The SW IPMT and BAND will continue to work on the project in Alamo Canyon for several more years to remove the remaining stands of mature Siberian elm trees from the lower reaches of the canyon.

Summary of Accomplishments

In fiscal year (FY) 2020 the SW IPMT worked with 14 parks to treat and survey invasive plants across approximately 440 acres. To complete this work, the program engaged 62 youth who contributed 3,721 hours. The SW IPMT also entered into a partnership with the Tucson Audubon Society to establish the Collaborative Audubon Treatment and Inventory Squad (COATIS). The COATIS operates as a three-person strike team and works with the SW IPMT, the US Fish and Wildlife Service, and SAGU on a rotational schedule performing invasive plant treatment and management.

Summarized Data for 2020

Measure	Acres
Treated	19.23
Inventoried/Monitored	441.95
Gross Infested Area	59.94
Net Infested Area	2.56

Youth Engagement	
Total Number of Youth Participants and Youth Employees	62
Total Hours for Youth Participants and Youth Employees	3,721

More Information

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National Park Service
U.S. Department of the Interior

Biological Resources Division, Natural Resource Stewardship and Science

FY2020 Invasive Plant Management Team – Program Participants

Alaska IPMT

Leadership
Chris Overbaugh (Liaison) - Vacant as of 5/2020 - recruitment ongoing as of 12/2020
Peter Frank (Data Manager)
Grant Hilderbrand (Supervisor)

Crew (Interns based at parks)
SCA interns: None - COVID-19
YCC: None – COVID-19

Region/Network Support
Grant Hilderbrand, Joel Cusick, Angie Southwould. Angela Holeton

Park Support
Denali NPP - Wendy Mahovlic
Katmai NPP - Kelsey Griffin, Robert Peterson & Tammy Carmack
Kenai Fjords NP - Christina Kriedeman and Sierra Sampson

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
Martin Hutten (Liaison), Brent Johnson (Supervisor)

Crew
Park Staff
Golden Gate National Recreation Area, Whiskeytown National Recreation Area, Lassen Volcanic National Park,
Pinnacles National Park
Santa Monica Mountains National Recreation Area,
Sequoia and Kings Canyon National Parks, Yosemite National Park, and Point Reyes National Seashore Association)
Timothy Federal, Nikk Novero, Tara Larson, and Sarah Reed

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), Irina Irvine (Ocean and Coastal Resources Program Manager)

Park Support
Host Park – Point Reyes National Seashore, Cicely Muldoon (Superintendent)

Partners and Cooperators
Cabrillo National Monument Conservancy
Cabrillo National Monument Foundation
California Invasive Plant Council
Geoscientists-in-parks
Golden Gate National Parks Conservancy
Mountains Restoration Trust
Pinnacles National Park Foundation
Point Reyes National Seashore Association
Santa Monica Mtns Fund
Student Conservation Association
Susanville Indian Rancharia
University of California at Davis via Cooperative Ecosystems Studies Unit
Yosemite Conservancy
Youth Conservation Corps

Volunteers
American Conservation Corps
Point Reyes National Seashore Association
Student Conservation 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, Irina Irvine (Ocean and Coastal Resources Program Manager)
CaIPMT, Bobbi Simpson (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 – Zandy Hillis-Starr, Clayton Pollock, Nathaniel Holloway
Canaveral National Seashore – Kristen Kneifl
DeSoto National Memorial – Wayne Boyd, Kristen Kneifl
Dry Tortugas National Park – Kayla Nimmo, Meaghan Johnson, Clayton Pollock
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 – Tyrone Brandyburg
Canaveral National Seashore – Jay Grass
Desoto National Memorial – Wayne Boyd
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 – Daniel Brown
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 Weipert
Conservation Corps of MN. and IA: Catherine Huber, Ariana Severson

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 Steering Committee section
Additional Contacts: Dan Watson (IATR), Pam Schuler (IATR), Neil Smarjesse (MISS), Scott Weyenberg (SACN), 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
John Anfinson, Superintendent, Mississippi National River and Recreation Area
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 – Ken Hendrickson
Pictured Rocks National Lakeshore – Bruce Leutscher
St. Croix National Scenic Riverway – Scott Weyenberg
Sleeping Bear Dunes National Lakeshore – Julia Gehring
Voyageurs National Park – John Snyder

Gulf Coast IPMT

Leadership
Dale McPherson (Liaison),
Shea Bruscia (Florida / Caribbean IPMT Data Manager)

Region/Network Support
Interior Region 2 South Atlantic Gulf – Mark Frey (Branch Chief, Division of Science and Natural Resources Management), Darrell Echols (Division Chief, Division of Science and Natural Resources Management), Christopher Barrow (Regional GIS Coordinator), Celinda Hicks and Demetria Smith-Wilson (Contracting Officers)
Gulf Coast Inventory and Monitoring Network – Martha Segura (Network Coordinator)

Intern Support
Conservation Legacy – Austin Rinehart

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

Heartland 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 IPMT

Leadership
Curt Deuser (Liaison), Tarl Norman (Crew Supervisor, vacated in November 2019), Anna Wheeler (Acting Data Manager), Andy Pigg (Crew Leader and Acting Operations Leader), Darrin Gobble (Crew Leader, vacated in January 2020)

Crew
Brandon Blackburn, Jessica McCulloch, Corbin Gentzler, Matthew D'Ambrosi, James Roberts, Andrew Barnes, Jason Harris, Hannah Andrascik, Joseph Ingram, Matthew Gorentz, Emily Cochran, John Myers, Lillian Setters, Maegan Stephenson, Grady Workman, and Andrea Gibbens

Region Support
Interior Regions 8, 9,10, 12 (Lower Colorado Basin, Columbia-Pacific Northwest, California-Great Basin, Pacific Islands) Office – Jay Goldsmith, Denise Louie, Brent Johnson
Interior Regions 6, 7, and 8 Office - John Mack, supervisor (Natural Resources Division, Biological Resource Program Manager)

Lake Mead NRA Host Park Support
Michael J Boyles and Allen Calvert (Acting Chief of Resource Management and Visitor Services), Wendy Foster and Brad Morris (Administrative Assistant), Scott Briggs (Budget Officer), Beth Ransel (Deputy Superintendent), and Margaret Goodro (Superintendent)

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 and Jane Rodgers
Death Valley National Park: Ali Ainsworth and Carol Fields
Bryce Canyon National Park: Eric Vasquez
Capitol Reef National Park: Sandra Borthwick
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, Daron Hayes
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, and Tyler Warner
Battle Mountain District: Anna O'Brien, Kenneth Shedden and Brock Uhlig
Elko District: Sam Cisney
Cal Ridgecrest District:Alex Neibergs and Marty Dickes

Winnemucca District: Michael McCampbell
US Fish and Wildlife Service - Cibola NWR: Nancy Spencer Morris, Linda Miller, Ryan Woody
US Forest Service
Spring Mountains NRA: Corrin Floyd
Coconino NF: Amanda Roesch and Katherine Landry
Bureau of Reclamation – Lower Colorado River MSCP Program: Jessica Stegmeier
Clark County, Nevada Desert Conservation Program - Muddy River Reserve: Caryn Wright; Boulder City Conservation Easement: John Brekke, Stefanie Ferrazzano
Clark County Wetlands Park and Nature Preserve – Liz Bickmore and Ben Jurand
Marine Corps Yuma Air Station - Bobby Law, Del Maslen, Richard Cerka, Randy English
University of Arizona - Jim Malusa and Max Li(Research Botanist)
Nevada Department Of Wildlife: Anthony Miller
Southern Nevada Water Authority: Nick Rice and Jason Eckberg.

Mid-Atlantic IPMT

Leadership
Casey Reese (Liaison), Nathan Wender (Crew Leader)

Crew
John Whitmoyer, Casey Allen, Michael Martin, Jonathan Mikolin

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 – Jennifer Flynn (Superintendent), Jim Schaberl (Chief, Natural and Cultural Resources), Jake Hughes (Biologist – Invasive Plants/Restoration), John Dengler (IT), Cary Wood (IT)
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
Colonial National Historical Park – Dorothy Geyer
Fredericksburg and Spotsylvania County Battlefields Memorial National Military Park – Gregg Kneipp
Gettysburg National Military Park and Eisenhower National Historic site – Zach Bolitho, Randy Krichten, Dafna Reiner, Andrew Molloy
George Washington Birthplace National Monument and Thomas Stone National Historic Site – Melissa Cobern, Tim Sveum
Hampton National Historic Site and Fort McHenry National Monument and Historic Shrine – Tina Capetta, Elizabeth Derr
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
Richmond National Battlefield Park – Kristen Allen

Partners and Cooperators
Appalachian Trail Conservancy
Blue Ridge PRISM

Smithsonian Conservation Biology Institute
Jim Latane
Lawrence Latane
Potomac Appalachian Trail Club
Town of Elkton, VA
Dale Hoak, Danny Somers

Volunteers
James Akerson
Blue Ridge PRISM

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 – Gregg Kneipp
Gettysburg National Military Park and Eisenhower National Historic Site – Zach Bolitho
George Washington Birthplace NM and Thomas Stone National Historic Site – Melissa Cobern, Tim Sveum
Hampton National Historic Site – Tina Capetta, Elizabeth Derr
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
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), Laurel Mahoney (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)
Catoctin Mountain Park – Lindsey Donaldson (Chief, Resources Management), Becky Loncosky (Biologist)
Chesapeake and Ohio Canal National Historical -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)
Manassas National Battlefield Park – Bryan Gorsira (Natural Resources Program Manager), Allison Hay (Biologist)

Monocacy National Battlefield– Andrew Banasik (Superintendent), Kaitlyn Parness (Biological Science Technician)
National Capital Parks - East – Mike Comisso (Chief, Resource Management), Mikaila Milton (Biologist)
National Mall and Memorial Parks – Leslie Frattaroli (Natural Resource Specialist)
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 – Steve Hay (Facility Manager), 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 – 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), Jorge Bogantes Montero (Anacostia Watershed Society, Natural Resource Specialist), Jeanne Braha (Rock Creek Conservancy, Executive Director)
Appalachian Conservation Corps – Michelle Marsich (Associate Program Director)
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
Harpers Ferry National Historical Park – Eric Kelley
Manassas National Battlefield Park – Bryan Gorsira
Monocacy National Battlefield– Andrew Banasik
National Capital Parks-East – Mike Comisso
National Mall and Memorial Parks – Leslie Fratarolli
Piscataway Park – Christine Smith
Prince William Forest Park – Gregg Kneipp
Rock Creek Park – Nick Bartolomeo
Wolf Trap National Park for the Performing Arts – George Liffert
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
NCR 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
David Riddell, Salvadore Silaua, Theo Claire, Harrison Friedman--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 – Karen Taylor-Goodrich (Superintendent), Jack Oelfke (Chief Resource Management);
Olympic National Park – Sarah Creachbaum (Superintendent), Janet Coles (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 – Jack Oelfke
Mount Rainier National Park – Beth Fallon, Kim Popeck
Lewis and Clark National Historical Park – Carla Cole
Ebey's Landing National Historical Reserve – Roy Zipp
San Juan Island National Historical Park – Sara Dolan
Fort Vancouver National Historic Site – Tracy Fortman

Northeast IPMT

Leadership
Casey Reese (Interior Region 1 IPM Coordinator), Brian McDonnell (Liaison)

Crew
Michelle Stevens (Biotech Seasonal and data manager)

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

Park Support
Allegheny Portage Railroad National Historic Site – Doug Snavely (JOFL Maintenance) Brenda Wasler, (Natural Resource Manager WEPA)
Boston Harbor Islands National Recreation Area – Marc Albert, Andrew Petit de Mange, Tom Prior, (Biotech Seasonal, BOHA)
Cape Cod National Seashore – Stephen M. Smith
Delaware Water Gap National Recreation Area, host park – Larry Hilaire, Tom Witter (DEWA VIP)
Fire Island National Seashore – Jordan Raphael
First State NHP - Alan McLoughlin, Sonja Werth
Flight 93 NM - Stephen Clark, Doug Snavely, Brenda Wasler

Frederick Law Olmsted National Historic Site - Elliott Doughty
Gateway National Recreation Area – Patricia Rafferty, Dana Filippini, George Frame
Home of Franklin D. Roosevelt National Historic Site - Dave Hayes
Minuteman NHP - Margie Coffin-Brown (NR Manager), Ada Fox & Noel MacNeil, (MIMA bio techs)
Morristown National Historical Park – Robert Masson
Sagamore Hill NHS - Scott Gurney
Saratoga NHP - Chris Martin, Linda White, Cindy VanDerwerker, Jeff Wells
Upper Delaware Scenic and Recreational River – Don Hamilton, Jessica Newbern

Partners and Cooperators
Appalachian National Scenic Trail – Marian Orlousky (Appalachian Trail Conservancy (ATC)), Linda Rohleder (New York-New Jersey Trail Conference (also ATC))
Morristown National Historical Park - New Jersey Invasive Species Strike Team

Northern Great Plains IPMT

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

Crew
Mark Slovek, Lee Vaughan, Anna Wheeler, Megan Davenport, Zach Hoyer, 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
Colorado State University
NRCS Bismark Plant Materials Center – Wayne Duckwitz
USGS
Northern Great Plains Fire Management

Volunteers
Montana Conservation Corps
Minnesota Conservation Corps

Steering Committee
Badlands National Park – Eddie Childers (Wildlife Biologist)
Ft. Union Trading Post National Historic Site –Andy Banta (Superintendent)
Midwest Region I&M-IPMT Program Manager – Carmen Thomson (I&M Program Manager)
Niobrara National Scenic River – Steve Thede (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), Gary Ludwig (Glacier National Park Team Leader), Andrew Ringholz (Yellowstone National Park Team Leader)

Crew

Arley Canfield (GLAC biotech), Jordan Herron (GLAC biotech), Casey Ahlborn (MCC intern)

Regional Support

Interior Regions 6, 7, and 8 Office – John Mack (Biological Resources Lead), Julie Ziruolo (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)
Bighole 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 – Phil Barlow (Maintenance Foreman)
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 – James (Jim) Yelton (Chief of Facilities), 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), Alana Darr (Administrative Assistant), Brian Teets (North District Crew Leader)

Partners and Cooperators

American Conservation Experience – Keean Ruane
Montana Conservation Corps – Chris Nesset, Dillon Pride, Angela Davis, Bryan Wilson
Southwest Conservation Corps – Anna Hendricks, Dylan Lang
University of Montana, Dr. Peter Rice

Steering Committee

Bear Paw National Battlefield – Jimmer Stevenson
Bent's Old Fort NHS - Adam Heberlie
Bighole National Battlefield – Jimmer Stevenson
Bighorn Canyon National Recreation Area – Ryan Felkins

Black Canyon of the Gunnison NP – Danguole Bockus
Capulin Volcano National Monument – Adam Heberlie
City of Rocks National Reserve – Shalene Dickard
Colorado National Monument – Jessica Resnik
Craters of the Moon National Monument and
Preserve – Linda Manning
Curecanti National Recreation Area – Danguole Bockus
Dinosaur National Monument – Emily Spencer
Florissant Fossil Beds NM – Seth Maile
Fossil Butte National Monument – Arvid Aase
Glacier National Park – Dawn LaFleur
Golden Spike National Historic Site – Phil Barlow
Grand Teton National Park – Jeanine Foley
Grant–Kohrs Ranch National Historic Site – Jason Smith
Great Sand Dunes NP and Preserve – Dewane Mosher
Hagerman Fossil Beds National Monument – Linda Manning
John D. Rockefeller Memorial Parkway – Jeanine Foley
Little Bighorn Battlefield National Monument – Jim Yelton
Minidoka National Historic Site – Linda Manning
Rocky Mountain National Park – Jim Bromberg
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), Steve Robertson (Chief, Integrated Resources Management Division, Haleakalā National Park, Ret.), Dr. Rhonda Loh (Superintendent, Hawai‘i Volcanoes National Park), David Benitez (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 RM Crew
Haleakalā National Park Vegetation Management: Stacey Torigoe, Biologist. Michelle Osgood, Horticulturalist. Adam O’Neill, Biological Science Technician.
Student Conservation Association (SCA). Biological Science Technician: Leila Morrison.
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

Maui Invasive Species Committee (MISC) & Molokai-Maui Invasive Species Committee (MoMISC) Partners & Affiliates – See: https://mauiinvasive.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

VIPs (Carrie Wyler)

Friends of Hawai'i Volcanoes National Park

Friends of Haleakalā National Park, Ron Nagata Ohana, AmeriCorps

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 Chief Kaloko-Honokōhau and Pu'uhonua o Hōnaunau National Historical Parks, Staff at Pu'ukoholā National Historic Site, relevant subject experts as appropriate

Southeast IPMT

Leadership

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

Crew

Dylan Lockwood (American Conservation Experience)

Region/Network Support

Interior Region 2 South Atlantic Gulf – Mark Frey (Regional Branch Chief, Acting Chief of Science and Natural Resources Management), Darrell Echols (Chief of Science and Natural Resources Management), Amorita Brackett (Southeast Coast IPMT)

Inventory & Monitoring Network - Brian Witcher (Appalachian Highlands Program Manager), Evan

Raskin (Appalachian Highlands Assistant Data Manger/Biologist), American Conservation Experience Intern (Appalachian Highlands), Teresa Leibfreid (Cumberland Piedmont Ecologist), Clare Bledsoe (Cumberland Piedmont Biologist), Ellen Cheng (Quantitative Ecologist)

Fire Management – Wylie Paxton and the Fire Effects Crew (Appalachian/Piedmont/Coastal Zone), Rob Klein (Appalachian/Piedmont/Coastal Zone Fire Ecologist), Bob Boensch (Mississippi River Zone Fire Ecologist), Justin Shedd (Regional Wildland Fire GIS Specialist)

Park Support

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

Abraham Lincoln Birthplace National Historical Park – Jennifer Jones (Interpretation)

Andrew Johnson National Historic Site – David Foster (Superintendent)

Appalachian National Scenic Trail

Big South Fork National River & Recreation Area / Obed Wild & Scenic River – Marie Tackett (Botanist), Niki Nicholas (Superintendent)

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), Abbey Van der Sluice (Historic Preservationist), Brad Bennett (Superintendent), Historic Preservation Team Interns

Cumberland Gap National Historical Park – Jenny Beeler (Biologist)

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)

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

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

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 - Sarah Cunningham (Acting Superintendent), Alex Scronce (Wildland Fire Operations Specialist, KIMO), Grey Wood and George McCarty (Maintenance, NISI), Randy Fowler (Maintenance, COWP)
Stones River National Battlefield – Brenda Pennington (Superintendent), Randy Anderson (Facilities and Natural Resources Manager)

Partners and Cooperators
American Conservation Experience
Appalachian Trail Conservancy
Arboretum at Chapel Hill
Federal Highways Administration
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

Steering Committee
Big South Fork National River & Recreation Area / Obed Wild & Scenic River – Marie Tackett
Chickamauga & Chattanooga National Military Park – Jim Szyjkowski
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 Biologist)

Crew
Katelyn Costa, Hannah Hartman, Chloe Landes-Michelli (American Conservation Experience)

Interior Region 2 South Atlantic Gulf – Mark Frey (Regional Branch Chief, Acting Chief of Science and Natural Resources Management), Darrell Echols (Chief of Science and Natural Resources Management), Christopher Barrow (GIS Coordinator/ Geographer), Welles Tisdale (GIS Specialist), Brian Lockwood (Florida Caribbean IPMT), Toby Obenauer (Southeast IPMT), Dylan Lockwood (Southeast IPMT American Conservation Experience Intern)
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), John Torrence, Leona McManus, and Charles Aznive (Maintenance), Jonathan Manchester (Interpretation - Park Ranger), Greg Cunningham (Chief of Interpretation, Education and Visitor Services), Jason Johnson (Chief Ranger)
Cape Hatteras National Seashore / Fort Raleigh National Historic Site / Wright Brothers National Monument – Dave Hallac (Superintendent), Tracy Ziegler (Chief of Resource Management and Science),

Meaghan Johnson (Deputy Chief of Resource Management and Science), Jami P Lanier (Cultural Resource Manager), Melvin Walston (Maintenance Supervisor), William P Thompson (Biological Science Technician), Sabrina Henry (Environmental Protection Specialist), Konrad Losch (GIS Program Manager), Carolyn Campbell (Biologist)

Cape Lookout National Seashore – Jeffrey West (Superintendent), Jon Altman (Biologist)

Chattahoochee River National Recreation Area - Deanna Greco (Chief, Planning and Resource Management), Allyson Read (Biologist), Jalyn Cummings (Acting Chief of Planning and Resource Management)

Cumberland Island National Seashore – Doug Hoffman (Biologist), John Fry (Chief, Resource Management)

Fort Frederica National Monument – Michael Seibert (Chief, Resource Management), Steve Theus (Site Manager), Chad Thomas (Chief of Facilities Management), Sydne Tursky (Student Conservation Association Intern)

Fort Pulaski National Monument – Melissa Memory (Superintendent), Candice Wyatt (Biological Science Technician), Emily Harte (Chief of Facilities and Resource Management), Laura Waller (Integrated Resource Program Manager)

Fort Sumter National Monument (Fort Moultrie) / Charles Pinckney National Historic Site – Tracy Stakely (Superintendent), Benjamin Byrnes (Chief Ranger, Visitor & Resource Protection), Kate Funk (Curator), Matthew Wood (Park Guide)

Horseshoe Bend National Military Park – Barbara Tagger (Superintendent), Brian Robinson and Steve Crowder (Maintenance), Tammie Renicker (Administrative Officer)

Kennesaw Mountain National Battlefield Park – Nancy Walther (Superintendent), Carlos Hurston (Facility Manager)

Moores Creek National Battlefield – Matthew Woods (Superintendent), Michael Glenn and Hope Isabelle Barnhill (Maintenance)

Ocmulgee Mounds National Historical Park – Carla Beasley and Giselle Mora-Bourgeois (Acting Superintendent), Allen Huckabee and Christina Valdes (Biological Science Technician)

Out-Of-Network Park Support

Kings Mountain National Battlefield - Alex Scronce (Forestry Technician), KP Arrup (American Conservation Experience Intern)

Reconstruction Era National Historical Park – Scott Teodorski (Superintendent)

Partners and Cooperators

American Conservation Experience - Peter Woodruff, Zoe Gordon, Madison Douthitt

Garden Club of America – Cayce McAlister

Georgia Forestry Commission, Forest Health - Chip Bates, Bill Harvey, Mark McClure

Kennesaw Mountain Trail Club

North American Invasive Species Management Association - Krista Lutzke

North Carolina Coastal Federation - Phragmites Task Force

North Carolina Department of Environmental Quality, Aquatic Weed Control Program - Rob Emens

North Carolina Department of Transportation

North Carolina Invasive Plant Council

North Carolina State University, College of Natural Resources – Jelena Vukomanovic, Joshua Randall

Old-Growth Bottomland Forest Research and Education Center

Palmetto Garden Club – Martha Faucette, Elisabeth Williamson (President)

South Carolina Association of Naturalists

South Carolina Department of Natural Resources, Heritage Trust Program

South Carolina Department of Parks, Recreation & Tourism (Matthew Lawson, Lindsey Troutman, Stacy Scherman)

South Carolina Exotic Pest Plant Council - David Jenkins (President)

South Carolina Native Plant Society, Upstate

Chapter - Eva Pratt, Janie Marlow, Dan Whitten (President)

Volunteers
Congaree National Park - Keith A. Bradley (Botanist), USC Business School and Exchange Student Program
Kennesaw Mountain National Battlefield Park – Danny Leigh and Harry Carpenter (Kennesaw Mountain Trail Club)
Ocmulgee Mounds National Historical Park – Ron Hoppel

Steering Committee
Chattahoochee River National Recreation Area – Deanna Greco
Congaree National Park – K Lynn Berry
Cumberland Island National Seashore – John Fry
Fort Pulaski National Monument – Melissa Memory
Moores Creek National Battlefield – Matthew Woods

Southwest IPMT

Leadership
Jason Martin (Liaison), Jeanine Foley (Crew Leader/GIS), Chris Davis (Crew Leader/GIS), Marcus Jernigan (Botanist/GIS)

Crew
American Conservation Experience, Southwest Conservation Corps (Conservation Legacy and Ancestral Lands Programs), Sky Island Alliance, Borderlands Restoration,

Regional/Network Support
Interior Regions 6, 7, and 8 Office John Mack, supervisor (Natural Resources Division, Biological Resource Program Manager), John Nelson (IPM Coordinator)

Park Support
Host Park 1 – Desert Research Learning Center/Sonoran Desert Inventory and Monitoring Program – Andy Hubbard (Program Manager)
Host Park 2 – Valles Caldera National Preserve - Jorge Silva-Banuelos (Superintendent), Robert Parmenter (Chief Science and Resource Management)

Partners and Cooperators
US National Park Service, Inventory and Monitoring Program (Federal)
American Conservation Experience
Arizona Youth Conservation Corps
Sky Island Alliance (Arizona, New Mexico, NGO)
University of Nevada, Las Vegas
Borderlands Restoration, L3C (Arizona)
Cuenca Los Ojos (Mexico)
University of Arizona Cooperative Extension
Institute for Applied Ecology–Southwest Program (NGO)
Madrean Archipelago Plant Propagation Center (MAPP)
Natural Resources Conservation Service, Los Lunas PMC (New Mexico)
Natural Resources Conservation Service, Tucson PMC (Arizona)
Santa Ana Pueblo Nursery
US Fish and Wildlife Service (Federal)
US Forest Service, Coronado National Forest (Federal)
US Forest Service, Region 3 (Federal)
US Bureau of Land Management (Federal)
US National Park Service, Desert Research Learning Center (Federal)
The Xerces Society (National, NGO)
Fred Phillips Consulting (Flagstaff, AZ)
Yuma Crossing Natural Heritage Corporation

Volunteer
AmeriCorps, American Conservation Experience, Arizona Youth Conservation Corps, Sky Island Alliance, Borderlands Restoration

Steering Committee

Carlsbad Caverns National Park – Rodney Horrocks
Mesa Verde National Park – Tova Spector
Montezuma Castle National Monument – Tina Greenawalt
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