Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

NPS EPMT Annual Report: 2015

EPMT boundaries.

Background

The NPS is mandated to manage invasive species. Management of invasive species helps to protect native ecosystems and ecological processes, improve visitor experiences, and protect native habitat for native pollinators. It is also an important strategy in climate change adaptation. By reducing existing stressors, such as invasive plants, parks enhance the ability of native species to adjust to ongoing climate induced changes. Given the broad use of invasive plant management across parks, this management activity is a major adaptation tool that park managers can use.

NPS invasive plant management is conducted by park staff and 17 Exotic Plant Management Teams (EPMT) located across the U.S. EPMTs were formed in 2000 to assist parks in preventing the introduction of invasive species, identifying and removing new infestations, reducing the impact of existing infestations, and restoring native plant communities. Over time, the EPMT program has become an integral part of the NPS response to a growing invasive species threat and a source of expertise in invasive plant management not otherwise available in most parks.

Each Team is headquartered at one or more host park or Inventory and Monitoring Network facilities, and serves multiple parks over a wide geographic area. In 2015, the Teams served 287 park units and also worked with many non-NPS partners as well. The activities and priorities for each Team are coordinated through a steering committee made up of representatives from the parks they serve.

Program Flexibility and Contributions

Thus far, the EPMT program has remained flexible and resilient in the face of changing budgets and the growing threat invasive plants pose to park resources. Teams garner support from a wide range of partnerships enabling them to continue to provide vital services to the entities they support. Each EPMT provides an outstanding example of resourcefulness and flexibility. For example, in addition to serving partner parks, the Lake Mead EPMT works extensively with state and federal agencies through cooperative agreements that provide funding for landscape scale restoration efforts, while the Team provides the expertise and on-the-ground work. The Florida/Caribbean EPMT provides support to parks through contracts, taking advantage of Florida's cadre of contractors with experience in invasive plant management in natural areas. The California EPMT provides grants to partner parks that fund positions and projects placing resources directly within parks, thus reducing travel costs. The National Capital Region EPMT has been exceptionally innovative in its use of volunteers, including employing remote volunteers to assist with prioritizing invasive species for control.

EPMT resourcefulness is also evident in the contributions garnered throughout the fiscal year. In 2015, the EPMTs received approximately $4.0 million in contributions, including funding and in-kind support from parks, regions, and Inventory and Monitoring Networks. In-kind support included supplies, transportation, lodging, staff and VIP support in the field, administrative support, prescribed fire support, and more. These contributions substantially expand the service and positive impact of the EPMTs.

Allison Kosakowski and Kelly Mathis, Lake Mead EPMT controlling tamarisk along the Muddy River, NV (BLM). NPS Photo.

Southwest EPMT volunteer Crew at Gila Cliff Dwellings National Monument. NPS Photo.

Restoration

Since its inception, the EPMT program has conducted active restoration after invasive plant treatment, and these efforts continue to expand. Many of the Teams devote considerable resources to these restoration efforts. In FY15, the Alaska EPMT collected native seed and restored areas through revegetation with tundra mats, willow plugs, and native seed. The Southwest EPMT is especially active in restoration activities; they have developed a plant materials program, partnerships, a seed collection program, and restoration programs that collectively focus on restoring declining pollinator populations. Urban natural areas play important roles in functioning ecosystems. The Great Lakes EPMT and the Mississippi National River and Recreation Area have been working to reconstruct an oak savanna at Coldwater Spring in Minneapolis, Minnesota. After five years of effort, a well-established reconstructed oak savanna now exists, improving visitor use and enjoyment of the site and supporting increasing numbers of bird species, wildlife sightings, and pollinators.

Summary of Accomplishments

The NPS EPMT Program has had a productive year and a year filled with change, including three long-serving EPMT Liaisons leaving the NPS (Great Lakes EPMT, Florida/Caribbean EPMT & Northeast EPMT) and refilling the North Coast/Cascades EPMT Liaison position. We salute those who have served the program and the parks and thank them for their dedication and hard work.

Among the NPS Invasive Plant Program's most significant accomplishments in 2015 are the near completion of a strategic plan for the Servicewide Invasive Plant Program which includes the EPMT Program. The Teams maintain strong partnerships with youth corps groups such as the Texas Conservation Corps and the Student Conservation Association, providing training and experience to future restoration professionals and the next generation of stewards of our unique park resources. The EPMT program's work with youth continues to be outstanding. In fiscal year 2015, EPMTs worked with 1,331 young people who contributed 100,470 hours to invasive plant management control and restoration efforts across the country.

In 2014, the EPMT program changed data management systems and is currently using the National Invasive Species Information Management System (NISIMS). This has changed how some of our acreages are calculated. Inventory and monitoring acreages are no longer multiplied by the number of species surveyed, as some Teams were doing. Also, revegetation and fire efforts are now being included with

Summary of Accomplishments (cont.)

treatment acres and are being added as gross acres. Another change not reflected in this report is that a number of treatment types that were previously recorded as being mechanical are now recorded as manual, including chainsawing (without herbicide), brush cutting, and weed whacking. These changes will allow the program to better assess the amount of effort that is being applied to control invasive plants in the park.

To learn more about the activities of each EPMT, access individual EPMT program briefs via the following active links within this electronic document: Alaska, California, Florida/Caribbean, Great Lakes, Gulf Coast, Heartland Network, Lake Mead, Mid-Atlantic, National Capital Region, North Coast/Cascades Network, Northeast, Northern Great Plains, Northern Rocky Mountain, Pacific Islands, Southeast, Southeast Coast, Southwest. Program Participants for each team are listed at the end of this document.

Summarized Data for 2015

Measure	Acres
Treated	3,559
Inventoried/Monitored	24,150
Gross Infested Area	303,201
Net Infested Area	15,899
Youth Engagement	
Total Number of Youth Participants and Youth Employees	1,331
Total Hours for Youth Participants and Youth Employees	100,470

*Note that invasive plant management data from the Maui Island and Molokai Island Partnership for the Pacific Islands (PI) EPMT are not included here. The PI acreages are significant.

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Natural Resource Stewardship and Science
Biological Resources Division

Alaska EPMT Annual Report: 2015

The Park Road and Denali (the mountain in the background) in Denali National Park and Preserve. Photo by Sue Salmons.

Background

The Alaska Exotic Plant Management Team (EPMT) provides invasive plant management assistance to 16 national parks in Alaska. These parks cover more than 52 million acres of pristine natural areas and wilderness, including coastal fjords, glacial valleys, tundra, and boreal forests. The majority of national parks in Alaska contain healthy, intact, native ecosystems with few invasive plants. However, invasive plant species are making their way into areas used by people.

The geography of Alaska makes invasive plant management challenging, requiring back country or air travel to reach many park boundaries. Most parks have little or no road access. Recreation use is widely dispersed with access only by boat, backpacking or aircraft. Remote airstrips, trails, cabins and concessionaires can provide avenues for invasive species introduction into wilderness areas where they are difficult to detect, treat and manage. Therefore, the Alaska EPMT program relies heavily on information, knowledge and participation from park staff.

This year, we conducted invasive plant work in Alagnak Wild River (ALAG), Aniakchak National Monument & Preserve (ANIA), Denali National Park & Preserve (DENA), Glacier Bay National Park & Preserve (GLBA), Katmai National Park & Preserve (KATM), Kenai Fjords National Park (KEFJ), Klondike Gold Rush National Historical Park (KLGO) and Wrangell-St. Elias National Park & Preserve (WRST). The team included the Liaison, an NPS Biological Science Technician and interns stationed at four parks. Volunteers and youth crews that focused on specific projects assisted in the Team's efforts.

Program Highlights

Restoration & Outreach for Prevention

Restoration and outreach efforts have been essential in helping to prevent invasive plant infestations from establishing in Alaska's National Parks. KLGO's EPMT has initiated restoration efforts throughout the park. At Sheep Camp, a site 13 miles up the historic Chilkoot Trail, close to 1/5 of an acre previously infested with Reed Canary Grass was restored with native seed. The EPMT conducted outreach sessions with park staff throughout the season and worked with the Taiya Inlet Watershed Council to host the 7th annual White Sweet Clover weed pull event at the airport in the gateway community of Skagway. DENA's EPMT continued restoration efforts within the park this year. A total of 62 lbs. of native seed were collected and nearly three acres were restored through revegetation with tundra mats, willow plugs and native seed gathered in previous years. Outreach efforts included sessions with park staff and tour bus drivers. WRST's EPMT held a native seed collection event in Kennecott for the 2nd year resulting in 12.75 lbs. of seed collected. The event increased invasive plant awareness among local residents as well as maintained a native seed base for future restoration. The EPMT hosted several outreach events including the 3rd annual Glennallen weed -pull event. More than 1,300 lbs. of invasive plants were removed in this event. These ongoing efforts and community events provide an opportunity to connect with Gateway communities and citizens concerned with the issue of invasive plants in and around Alaska's national parks.

Chemical control of Reed Canary Grass at the Sheep Camp restoration site in Klondike Gold Rush National Historical Park. NPS Photo.

EPMT crew member, Peter Frank, conducting an *Elodea* spp. survey at Grizzly Lake In Wrangell-St. Elias National Park and Preserve. NPS Photo.

Program Highlights (cont.)

Invasive Plant Control & Restoration at Klondike National Historical Park

Skagway, the gateway community of KLGO, is a popular stopover for cruise ships and those interested in visiting the town's historic district or hiking the Chilkoot Trail. KLGO receives traffic via the road and historic rail lines between Skagway and Canada. This type of visitation, along with these transportation corridors and KLGO's proximity to the town of Skagway, have made it vulnerable to non-native plant invasion.

A multi-year project to control reed canarygrass (*Phalaris arundinacea*) and restore the area, was initiated in 2011 at Sheep Camp. This campsite is heavily used by hikers along the Chilkoot Trail, so controlling this highly invasive plant was a priority. Heavy tarps were laid over about 1/5 of an acre in 2011 to eradicate the infestation through suppression, but with no success. Many plants were also found outside of the covered areas and beyond the original infestation farther up the trail. This year's effort included removing the tarps, chemically treating plants, and seeding with native seed. The native plant community surrounding the restored area is diverse and our hope is that these plants will augment the native seeding effort and colonize within the voids. This effort will be monitored annually with herbicide treatment follow-up and restoration as necessary.

Summary of Accomplishments

The efforts of NPS staff, interns, volunteers and youth crews yielded 405.5 surveyed acres and 16 treated acres in seven park units this year. Three lakes in WRST and one in KEFJ were surveyed for the presence of *Elodea* spp. with none found. Treatments for infestations of perennial sowthistle (*Sonchus arvensis*) and reed canarygrass in GLBA continued this year. After two years of chemical control, the densities of these infestations have been reduced by 90 and 97.6% respectively. An infestation of orange hawkweed (*Hieracium aurantiacum*) at the NPS office in Juneau showed a 96.4% reduction in density in just one year of chemical treatment. More than 7,000 hours of service was amassed by youth involved in EPMT projects in seven parks this year. Youth involvement in invasive plant management is essential for the continued success of the Team and provides young people with invaluable resource management experience.

Summarized Data for 2015

Measure	Acres
Treated	16
Inventoried/Monitored	359
Gross Infested Area	165
Net Infested Area	27
Youth Engagement	
Total Number of Youth Participants and Youth Employees	21
Total Hours for Youth Participants and Youth Employees	7,600

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Biological Resources Division

California EPMT Annual Report: 2015

Essential jubata grass (*Cortaderia jubata*) follow-up treatments on east-facing cliffs below the San Francisco icon, the Golden Gate Bridge, Golden Gate National Recreation Area. Photo by Danny Franco.

Background

The California Exotic Plant Management Team (EPMT) serves 14 parks that are located within the California Floristic Province. Regarded for its exceptionally high concentration of endemic plants, this region is one of 25 world biodiversity hotspots. Of 3,500 vascular plants found in California, over two-thirds of the species are found nowhere else in the world.

Within the National Parks served by the EPMT, over 290,000 gross acres are infested with invasive plants and treatments are often complex, as project sites range from the remote and wild Kern Canyon of Sequoia and Kings Canyon National Parks (NP) to the more urban landscapes of Golden Gate National Recreation Area. The enormity of the issue and reduction in program funding demands judicious dedication of financial resources, careful prioritization of treatments, and promotion of partnerships.

The California program operates as a grant, project management, and technical assistance model. This allows for enhanced project management flexibility to opportunistically capitalize on the strengths of each park to carry out strategically savvy treatments. Programmatic flexibility helps parks that have challenging treatment timing issues, and outside practitioner expertise needs. The expense, complexity, and technical aspect of these projects requires judicious allocation of funding to secure the skill sets needed for the job. This year, our program's highlights focus on projects that have protected high value habitat and creatively used inter-park or intra-park interdisciplinary approaches to getting specialized work accomplished.

Program Highlights

Pinnacles National Park's Rapid Response to Italian Thistle in Four Upper Watershed Canyons

Italian thistle (*Carduus pycnocephalus*) is one of the highest-priority invasive plant species within Pinnacles National Park. This spiny annual spreads aggressively along stream channels and popular trails. Each plant can produce up to 20,000 seeds that can persist in the soil for 8-10 years. Since 2003, Pinnacles NP staff have successfully treated over 500 acres of Italian thistle in the park. In 2012, unknown source populations were found in four upper watershed canyons by NPS Inventory & Monitoring staff. These canyons, rich with native wildflower and grass species, lie upstream of thousands of acres that are susceptible to invasion by Italian thistle. One site immediately below Bear Gulch Reservoir was accessed for the first time in 2015 by rappelling. The park leveraged the work sponsored by the EPMT program by securing volunteers associated with other resource disciplines with the required technical climbing expertise. The EPMT program supported the park's early detection and response prioritization of these upper watershed infestations and has helped Pinnacles NP reduce the cover of Italian thistle in these canyons from 4.67 to 2.34 acres. With advances made this year, Pinnacles NP is on track to bring these valuable resource sites to a maintenance control level by the end of 2016.

Pinnacles NP staff safely and carefully removing Italian thistle plants below Bear Gulch Reservoir, Mike Shelley (left) and Gavin Emmons (right). NPS Photo.

Heather Smith, of Yosemite National Park, treats cheatgrass at Terminal Geyser, a hydrothermal feature in the backcountry of Lassen Volcanic National Park. NPS Photo.

Program Highlights (cont.)

Protecting Thermal Sites from Cheatgrass Invasion

Lassen Volcanic (LAVO)NP contains the largest network of hydrothermal features west of Yellowstone NP. Unfortunately, cheatgrass (*Bromus tectorum*), a notoriously invasive annual, is threatening endangered plant communities at two prominent backcountry sites, Terminal Geyser and Boiling Springs Lake. Cheatgrass aggressively competes with Lassen's only endangered plant, geysers panicum (*Panicum acuminatum* var. *thermale*), a rare grass that requires the unique, highly acidic soils in these sites. Because of persistent steam and thermally altered soils snow does not accumulate and allows cheatgrass to germinate by early March, well ahead of native plant life -cycles. The park attempted hand pulling, weed whacking, wilting, and germination-inhibiting herbicide treatments. The success of the treatments was insufficient, due to atypical soil conditions. In 2013, with the aid of EPMT project funds, the park transitioned to spring season treatments and alleviated staff shortages by tapping an experienced crew from Yosemite NP during a phenologically appropriate time. Consistent foliar herbicide treatments have resulted in a reduction - from 1.47 to .84 canopy acres - at these sites. We expect the 43% reduction will greatly increase next year as the seed bank continues to be depleted following three successful years of post-emergent treatments.

Summary of Accomplishments

In FY15, the California EPMT program funded both surveys and treatments of infestations at nine parks. Overall, the parks treated 69 acres; 86% were herbicide treatments and 14% were manual techniques. Seven parks used an integrated treatment approach; using both manual and herbicide treatments. LAVO conducted 68% of the overall survey efforts this season looking for presence (or absence) of cheatgrass. Documenting areas where the target species is not present is critical to understanding the status of species across our broad and often complex park landscapes. This understanding is critical to producing strategically savvy plans. An example of this involves the LAVO cheatgrass survey. Of the 2,270 acres surveyed for cheatgrass, park staff found only 0.44% of the area infested by this particularly invasive species. This analysis, when examined within the context of landscape-scale management, provides hope that parks can bring these particularly challenging invasive plants under control through smart planning and persistence.

Summarized Data for 2015

Measure	Acres
Treated	69
Inventoried/Monitored	5432
Gross Infested Area	944
Net Infested Area	54
Youth Engagement	
Total Number of Youth Participants and Youth Employees	104
Total Hours for Youth Participants and Youth Employees	8,270

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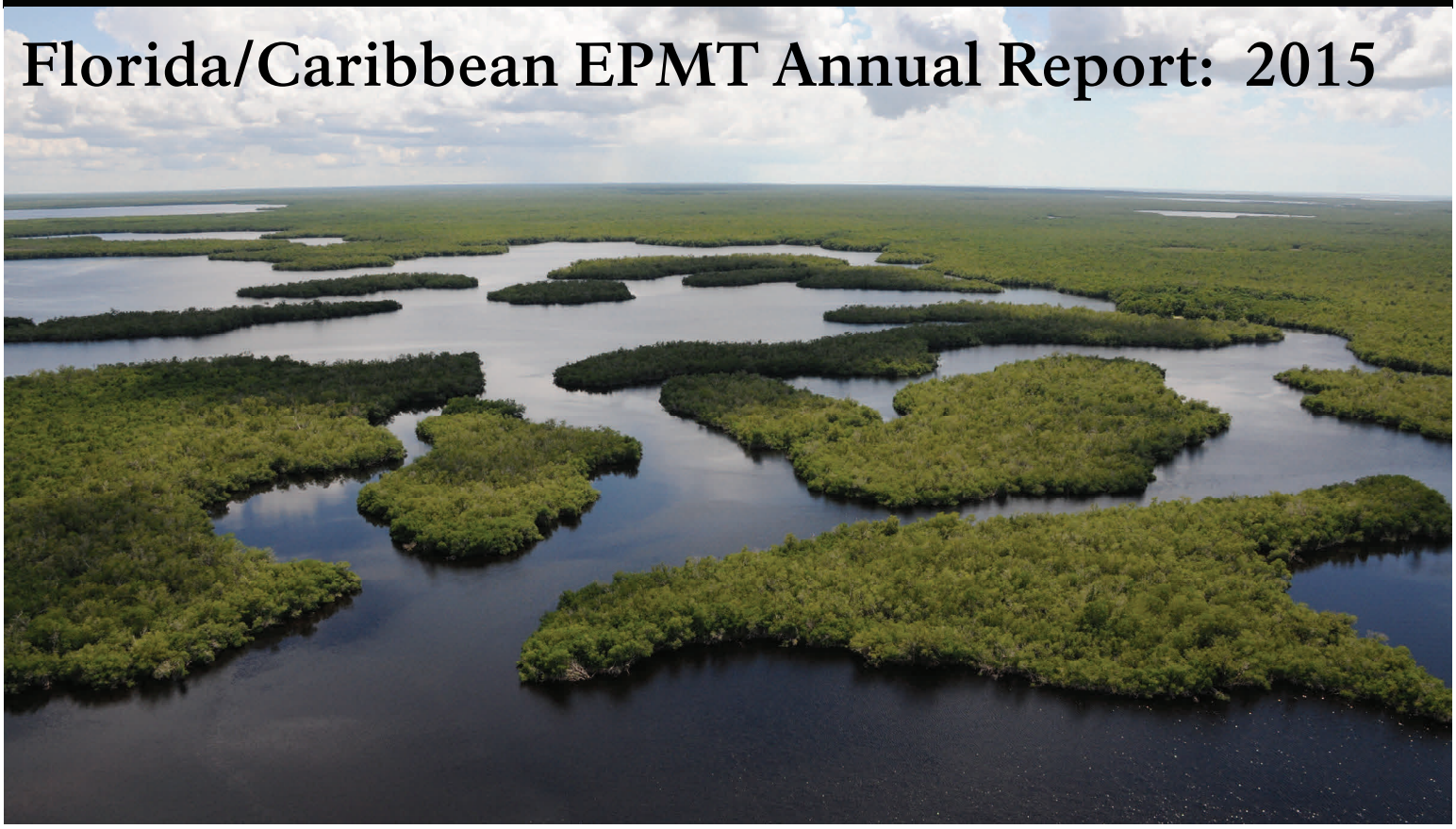
Florida/Caribbean EPMT Annual Report: 2015



Everglades National Park. Photo by Helena Giannini, NPS South Florida/Caribbean Inventory & Monitoring Network (SFCN).

Background

The Florida/Caribbean Exotic Plant Management Team (FLC EPMT) supports fifteen National Park Service units in Florida and the Caribbean by augmenting existing exotic plant control efforts, including inventory and monitoring, education, and research. Control is accomplished through cost-effective regional contractors, with smaller projects carried out by seasonal NPS crews and volunteers. Florida and the Caribbean have the unfortunate distinction of having one of the worst invasive species problems in the country, with over 1.5 million acres of conservation areas infested with invasive plants. These invasive plants have a detrimental effect on native plant communities by reducing native plant diversity and altering ecological processes such as fire behavior and impacts to surface water conveyance. In Florida and the Caribbean, over 400,000 acres of the approximately 2 million acres of National Park Service lands are infested with invasive plants. Invasive plant species are particularly problematic in this region due to the tropical climate, which favors the survival and establishment of a number of introduced ornamental plants, as well as many other invasive species.

Work conducted by the Florida/Caribbean EPMT is guided by a steering committee consisting of representatives from Florida and Caribbean NPS units, the US Army Corps of Engineers, the US Fish and Wildlife Service, and the State of Florida. The steering committee meets annually to review the efficiency of the program, prioritize projects, and develop a treatment schedule for the fiscal year.

Program Highlights

Coastal Palmetto Bay Restoration Project

In 2013 FLCEPMT partnered with The Institute for Regional Conservation, South Florida Water Management District, Palmetto Bay Village Center, Miami-Dade County, Tropical Audubon Society and Fairchild Tropical Botanic Garden to restore 370 acres of wetland and associated upland in coastal Biscayne Bay. This project was completed in August 2015 through a USFWS grant. All proposed goals were completed as follows:

1) treat habitat altering invasive species,
2) restore natural fire regimes,
3) remove fill and debris to restore natural water flow,
4) install nesting boxes,
5) establish long-term monitoring plans, and
6) increase community awareness.

In 2015, FLCEPMT continued to treat exotic plants at the site. A mulch trail was created and interpretive signs were placed along the path using an additional grant awarded by the Florida Exotic Plant Pest Council. To complete the project, the site was mowed once more to simulate a fire and a 3-foot high fence that spans the frontage of the property was installed to delineate the site.

Coastal Palmetto Bay Restoration Project. Photo by Mike Berg, NPS FLCEPMT Seasonal Crew.

Biscayne National Park Spoil Island Restoration. Photo by Robert Muxo, NPS SFCN.

Program Highlights (cont.)

Biscayne Spoil Island Restoration

The Florida/Caribbean EPMT joined Biscayne National Park (NP) to restore the easternmost spoil island at the mouth of the Princeton Canal. Restoring spoil islands reduces water quality impacts to coastal waters and provides improved habitat for coastal birds and wildlife. These projects also offer opportunities to involve the public, educate them about environmental restoration, and give them the chance to observe wildlife in their native habitat.

Initial treatment was halted when juvenile vultures were found on the island. Two weeks later, the juveniles were not observed and work was resumed. Using chainsaws and a wood chipper, the crew cleared invasive plants such as Brazilian pepper (*Schinus terebinthifolius*), seaside mahoe (*Thespesia populnea*), carrotwood (*Cupaniopsis anacardioides*), and earleaf acacia (*Acacia auriculiformis*); the latter two were newly identified non-native species in Biscayne NP. Mangroves and other native vegetation were left intact. Biscayne NP held several volunteer work days in October to mulch, fertilize, and plant over 1000 native plant species in the interior of the island.

Summary of Accomplishments

In 2015 the Florida/Caribbean EPMT, through a combination of private contractors and in-house seasonal crews, treated over 404 canopy acres at 9 of the 15 NPS units served by the team. This included treating over 60 different plant species and utilizing 196 volunteer hours. In 2015, Florida Fish and Wildlife Conservation Commission provided the team with $410,000 in contract services for projects at Everglades NP, Big Cypress National Preserve, Gulf Island National Seashore (NS), and Canaveral NS. The team also received $150,000 from the US Fish and Wildlife Service for Canaveral NS.

FLCEPMT participated in EDRR at the Homestead Air Reserve base to treat golden false beard grass (*Chrysopogon aciculatus*). The team also conducted a systematic reconnaissance flight, along with the South Florida Water Management District, to detect exotic plant infestations and the spread of the Laurel Wilt disease in the area south of Lake Okeechobee.

Summarized Data for 2015

Measure	Acres
Treated	404
Inventoried/Monitored	0
Gross Infested Area	818
Net Infested Area	390
Youth Engagement	
Total Number of Youth Participants and Youth Employees	1
Total Hours for Youth Participants and Youth Employees	1,639

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Biological Resources Division

Great Lakes EPMT Annual Report: 2015

View of Sargent Lake from the outlook on Greenstone Ridge trail, Isle Royale National Park. NPS Photo.

Background

The Great Lakes Exotic Plant Management Team (GL EPMT) provides support to ten 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 region claims diverse aquatic and terrestrial ecosystems. The region contains multiple rare, significant, and globally threatened ecosystems. It is also home to an international biosphere reserve.

Geographical and environmental conditions have mostly limited the impact of invasive species to those of cultural origin. However, visitor use and necessary maintenance activities have introduced new invasive species. The team balances its activity to meet two vastly different needs: (1) long-term, large-scale control and restoration, and (2) early detection and eradication of nascent populations.

To meet those needs the team provides parks with focused regional expertise and skilled on-the-ground control work. Discipline specific knowledge and a network of partners allow the team to anticipate regional threats to individual parks and work toward site-specific management options. As a shared regional resource, the team works with partner parks to either augment existing management efforts or provide parks with management options.

Program Highlights

Transforming Urban Landscapes at Mississippi National River and Recreation Area (MISS)

Urban natural areas play important roles in functioning ecosystems. Urban areas typically contain large amounts of impervious surfaces that leave little green space or suitable habitat for native plants and animals. Providing restored urban natural areas contributes greatly to visitor enjoyment and quality of life, while providing much needed habitat for wildlife and declining pollinator populations.

For over five years the Great Lakes EPMT and Mississippi National River and Recreation Area (MISS) have been working to reconstruct an oak savanna at Coldwater Spring in Minneapolis, Minnesota. The site once served as the Bureau of Mine's Twin Cites Research Campus until it closed in 1996. Abandoned for over 10 years and dominated by invasive plants, the area provided little in the way of visitor enjoyment or quality habitat. The team initiated restoration of the site in 2010 by beginning to remove dense stands of common buckthorn (*Rhamnus cathartica*). After buildings were removed, the EPMT and the park continued to prep the site for revegetation that took place in 2013. Now a well-established reconstructed oak savanna remains at the once abandoned campus. Visitor use and enjoyment have dramatically increased along with bird numbers, wildlife sightings, and pollinators.

Coldwater Spring after restoration, Mississippi National River and Recreation Area (MISS). NPS Photo

Baby's breath (*Gypsophila paniculata*) removal at Pictured Rocks National Lakeshore. NPS Photo

Program Highlights (cont.)

Partners Tackle Early Detection Invader

Baby's breath (*Gypsophila paniculata*) is not typically something people think of as an invasive plant. Although highly prized for ornamental purposes it poses a significant threat to the dune ecosystems surrounding the Great Lakes. While parks such as Sleeping Bear Dunes National Lakeshore have been battling baby's breath for years, it is a relatively new introduction at Pictured Rocks National Lakeshore (PIRO).

The dunes located at PIRO contain several threatened or endangered plants, including federally threatened pitcher's thistle (*Cirsium pitcheri)* and state threatened Lake Huron Tansy (*Tanacetum bipinnatum* ssp. *huronense*). They also serve as critical habitat for endangered Piping Plovers (*Charadrius melodus*).

While the GL-EPMT and the park were successful at removing plants located on NPS lands, more remained on adjacent property. The park and the team partnered with the Central Upper Peninsula Cooperative Weed Management Area (CUPCWMA) and Alger County Conservation District to help alert and provide education to affected landowners. The project was met with outstanding support. Through the CUPCWMA all known locations were treated, helping to stop the spread of this potentially destructive invader.

Summary of Accomplishments

In 2015 the Great Lakes EPMT treated invasive plants in seven national parks across four states. A total of 66 acres of land that contained invasive plants was treated in some of the Great Lakes parks' highest priority sites. The team was successful at reducing or controlling early detection species such as wild parsnip (*Pastinaca sativa*) at Voyageurs NP, baby's breath at Pictured Rocks National Lakeshore, hybrid and narrow leaf cattails (*Typha* sp.) at Isle Royale National Park, and oriental bittersweet (*Celastrus orbiculatus)* and bishop's goutweed (*Aegopodium podagraria*) at the St. Croix National Scenic Riverway. Prairie and oak savanna restoration efforts continued at the Ice Age National Scenic Trail and Mississippi National River and Recreation Area by clearing additional acres of invasive common buckthorn. The team also returned to complete invasive species maintenance work at Indiana Dunes National Lakeshore, within the park's critically imperiled wetland pannes located at West Beach and Miller Dunes.

Summarized Data for 2015

Measure	Acres
Treated	66
Inventoried/Monitored	22
Gross Infested Area	708
Net Infested Area	69

Youth Engagement	
Total Number of Youth Participants and Youth Employees	7
Total Hours for Youth Participants and Youth Employees	23

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Gulf Coast EPMT Annual Report: 2015

Open pine canopy after brush removal at Big Thicket National Preserve Big Sandy Unit. NPS Photo.

Background

The Gulf Coast Exotic Plant Management Team (GC EPMT) spans the U.S. coast from Mexico to Florida and includes six partner parks and two non-partner parks. This region is warm year-round and experiences high precipitation and plant diversity, including a numberof exotic plants. The riparian corridors of San Antonio Missions National Historical Park (NHP) have been heavily invaded by trees, shrubs, vines, and grasses. Species of concern include Chinaberry tree (*Melia azedarach*), Japanese privet (*Ligustrum japonicum*), and giant cane (*Arundinaria gigantea*). Texas coastal parks are primarily concerned with Brazilian pepper (*Schinus terebinthifolius*), Phragmites (*Phragmites australis*) and old world bluestems. Control efforts for these species have been initiated,with methodologies being tested and best management practices being developed. Plant communities of coastal island parks, such as Gulf Islands National Seashore, are threatened by invasive grasses, including cogongrass (*Imperata cylindrica*) and Phragmites. Woody invasive species also threaten coastal and lowland forest parks (e.g., Big Thicket National Preserve and the Barataria Preserve of Jean Lafitte NHP). Woody invaders targeted for control include Chinese tallow (*Triadica sebifera*), mimosa (*Albizia julibrissin*), and Chinese privet (*Ligustrum sinense*). Lowland forest parks also target vines such as Japanese climbing fern (*Lygodium japonicum*) and aquatic invasive species for control. These species present an ongoing battle due to the large size of the parks and recurring hurricane disturbances. Kudzu (*Pueraria montana*) is the number one concern at both Vicksburg National Military Park and the Natchez Trace Parkway. Considerable progress has been made in controlling this species at these two parks.

Program Highlights

Cooperative Agreement between two DOI partners and the American Youth Works Texas Conservation Corps

FY 2015 was the third and final year of an Interagency Agreement between the National Park Service and US Fish and Wildlife Service serving both Texas parks and wildlife refuges. The emphasis of the program was to combat invasive species affecting endangered species habitats. National Parks and National Wildlife Refuges and their neighboring partners joined to combat the problem on a landscape scale through the use of multiple tools including prevention, control, restoration, monitoring, and education. An integral part of the invasive species program is the use of hand crews, who can work in areas where it is not possible or practical to use heavy equipment or aerial chemical spraying. This program offers opportunities for volunteers, interns, and employees (including youth-based conservation groups) from diverse backgrounds to take part in challenging outdoor projects, get hands-on training, skill development, and career exploration in the preservation, conservation, and restoration of natural resources.

National Park Service Youth Crews work with National Wildlife Refuge staff to restore habitat of the endangered Attwater's Prairie Chicken (*Tympanuchus cupido attwateri*) degraded by invasive species. NPS Photo.

Cutting Golden Bamboo at the Big Thicket National Preserve. Stumps are treated after cutting and retreated when sprouts reach a height of two to three feet. NPS Photo.

Program Highlights (cont.)

Big Thicket National Preserve early detection and rapid response (EDRR)

Recent treatment efforts at Big Thicket National Preserve have shifted to focus on isolated populations of newly detected invasive plant species that can be eradicated from the park and the native plant community restored. Program priorities for invasive species control/eradication now emphasize early detection/rapid response (EDRR) of new infestations to prevent their spread. This year we completed the eradication of the only known large population of trifoliate orange (*Poncirus trifoliata*) in Big Thicket. We also started treatments on a newly discovered population of golden bamboo (*Phyllostachys aurea*) and successfully removed the portion of the population within park boundaries. Coordination with adjacent private land owners will be required for complete elimination of the infestation.

Work this year was accomplished through a partnership with the Austin, Texas based American Youth Works' Service Learning Academy, a charter school for at-risk students. Students are eligible to participate in the Texas Conservation Corps (TxCC) and are contracted by the parks and/or EPMT on a fee-for-service basis.

Summary of Accomplishments

We started the 2015 field season with a 30 + acre prairie restoration project at San Antonio Missions NHP. This was the first prairie restoration project in the region and it will serve as a pilot project for future restoration efforts. Probability of success is high due to thorough site preparation and favorable rain distribution following planting. Following that effort the GC EPMT completed work on a five year cooperative agreement with the US Fish and Wildlife Service and assisted them with project planning and implementation of a pilot invasive plant management program. The team also continued an interagency agreement with the US Army Corps of Engineers for cooperative weed management in Texas. This agreement was designed to focus control efforts on two significant east Texas exotic species (kudzu and Chinese tallow) across boundaries and benefited the Big Thicket National Preserve, Army Corps of Engineer's B. A. Steinhagen Lake and surrounding environments.

Summarized Data for 2015

Measure	Acres
Treated	154*
Inventoried/Monitored	1,920*
Gross Infested Area	825*
Net Infested Area	320*
Youth Engagement	
Total Number of Youth Participants and Youth Employees	74
Total Hours for Youth Participants and Youth Employees	4,380

Kudzu treatment on Town Bluff at the Big Thicket National Preserve and B. A. Steinhagen Lake facilitated by an interagency agreement between the National Park Service and the Army Corps of Engineers. NPS Photo.

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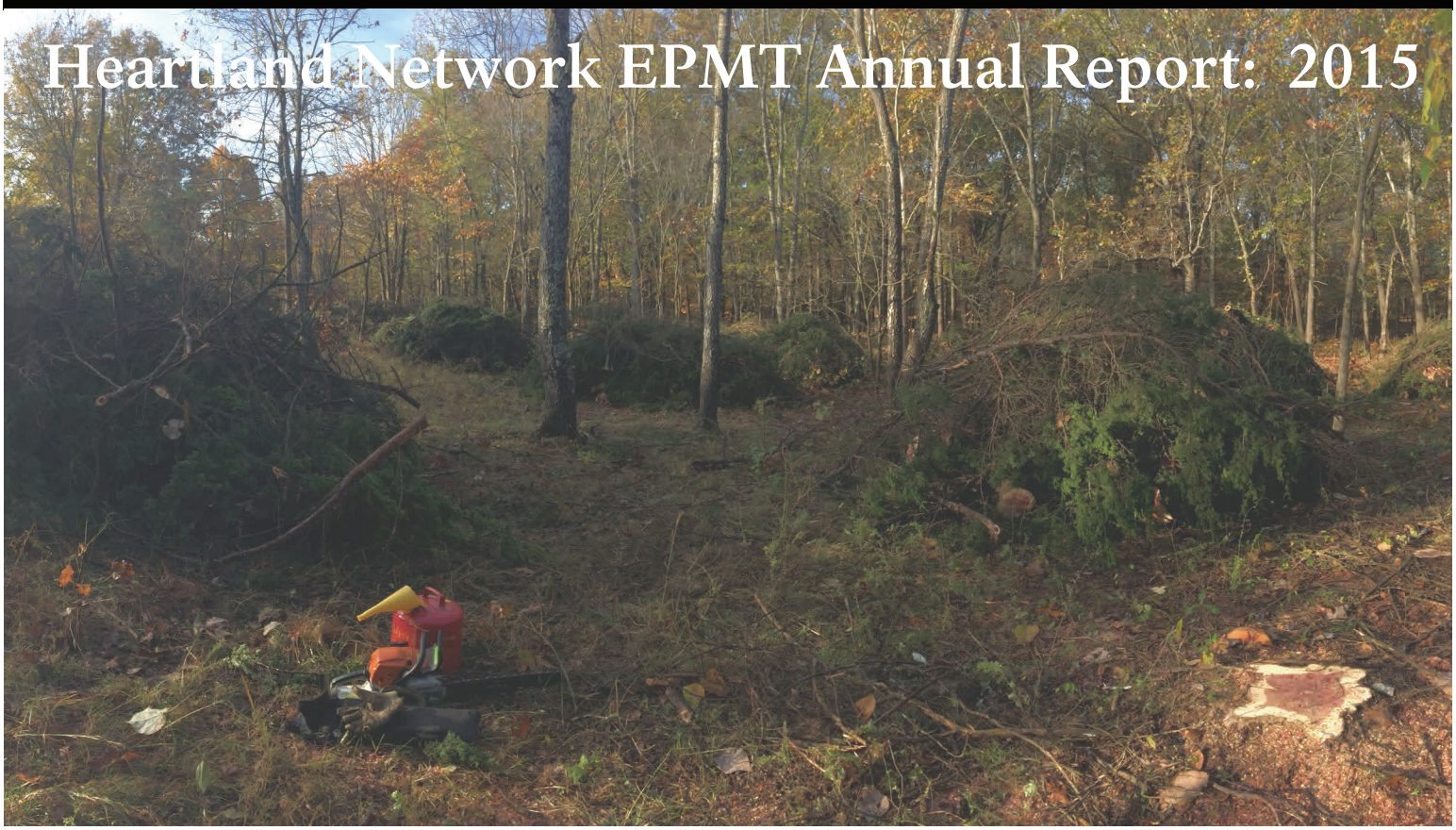
Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Heartland Network EPMT Annual Report: 2015



Ozark forest restoration at Pea Ridge National Military Park, Arkansas. This project follows from the completion of a landscape/vegetation management plan in 2014. Photo by Jordan Bell (NPS).

Background

The Heartland Network Exotic Plant Management Team (EPMT) serves 15 national parks in eight states of the Midwest and Mid-south. The parks include an array of plant communities ranging from unplowed and restored tallgrass prairie in the Flint Hills of Kansas and Sioux quartzite outcrops in Minnesota; eastern deciduous forests from northeastern Iowa and northeastern Ohio to southwest Missouri and southern Indiana; Midwestern riparian woodlands; mixed shortleaf pine-oak-hickory forests in the Ozark and Ouachita Mountains; and a variety of wetlands from southeastern cypress-tupelo swamps to emergent wetlands along tributaries to Lake Erie. The majority of these parks commemorate important historical events, locations, people, and, cultural practices, which requires integrating invasive plant management into cultural and natural landscapes.

The Heartland Network EPMT exists to serve park managers and the resources that they are charged to protect. The EPMT follows the National Park Service's constructive model of identifying "prudent and feasible" invasive plant control projects. Because there is, unfortunately, no single litmus test to assess the prudence or feasibility of a project, the EPMT 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

Landscape Restoration at Pea Ridge National Military Park

The Heartland EPMT was able to assist Pea Ridge National Military Park with park landscape restoration efforts. The plan for these projects was completed as part a vegetation management plan and associated environmental assessment which guides management of the natural and cultural landscape.

Much of the work that the EPMT supported involved the felling of the native Eastern redcedar (*Juniperus virginiana*) that invades native plant communities in the absence of natural fire regimes. The park has experimented with various removal techniques including brush mowing (i.e., tree mastication) and felling by individual sawyers. These removal projects restore oak-hickory woodlands that are typical of the Ozarks highlands. Crews have also controlled sericea (*Lespedeza cuneata*) to prevent its spread under higher light conditions.

Several partnerships have been essential for maintaining this project. The Buffalo National River Fire Program and Fire Use Module have also removed trees, conducted prescribed fire to stimulate understory recovery, and have burned piles of cedars. The EPMT has worked closely with the Conservation Corps of Iowa to complete much of the saw work. The park has also worked closely with the Northern Bobwhite Conservation Initiative since these restoration actions have also proven effective in improving habitat for this iconic game bird.

Crew operations in the restored prairie of Homestead National Monument of America, Beatrice, Nebraska. Photo by Jordan Bell (NPS).

Removal of invasive woody plant species, such as bush honeysuckle, from restored prairie at Herbert Hoover National Historical Site, West Branch, Iowa. Photo by Jessica Salesman (NPS).

Program Highlights (cont.)

Invasive Plant Control in Restored Prairies

Working in Homestead National Monument of America, the EPMT worked with a 13-person crew to control smooth sumac (*Rhus glabra*). This project treated the entire 80-acre area, which is presumably the second oldest prairie restoration in the U.S. The prairie was planted using sod strips that were moved intact as part of a highway construction project.

At Pipestone National Monument, the Heartland EPMT also conducted restoration over the entire extent of the 101-acre prairie. A similarly sized crew of 13 canvassed the entire park to treat Canada thistle (*Cirsium arevense*) and sweetclover (*Melilotus officinalis*). This marks the first comprehensive treatment of this area within a single growing season.

At George Washington Carver National Monument, a total of 140 prairie acres were treated. The species controlled included smooth sumac, winged sumac (*Rhus copallina*), and sericea (*Lespedeza cuneata*). The EPMT treated these same species in 63 acres of high quality restored prairie in Wilson's Creek National Battlefield.

In total, Heartland EPMT staff treated 93 acres of restored prairies, requiring over 1,300 hours of direct, on-the-ground effort.

Summary of Accomplishments

The Heartland Network EPMT continued to strengthen its relationship with a key partner—Conservation Corps Iowa. This year, for the first time, a 4-person crew was co-located with EPMT staff at Wilson's Creek National Battlefield. Again this year, NPS staff participated in the annual training of 36 corps members.

The EPMT continued to develop its project portfolio, which currently consists of 23 projects covering 1,885 acres. In consultation with park managers, these are projects that all have jointly agreed to fund and sustain until completion. These projects have been posted to a shared site, so that all partner parks can access the portfolio. The EPMT will continue to develop existing work into additional projects in 2016.

Summarized Data for 2015

Measure	Acres
Treated	93
Inventoried/Monitored	670*
Gross Infested Area	47,765
Net Infested Area	55
Youth Engagement	
Total Number of Youth Participants and Youth Employees	23
Total Hours for Youth Participants and Youth Employees	12,960

*Data not derived from EPMT standard, the National Invasive Species Information Management System (NISIMS)

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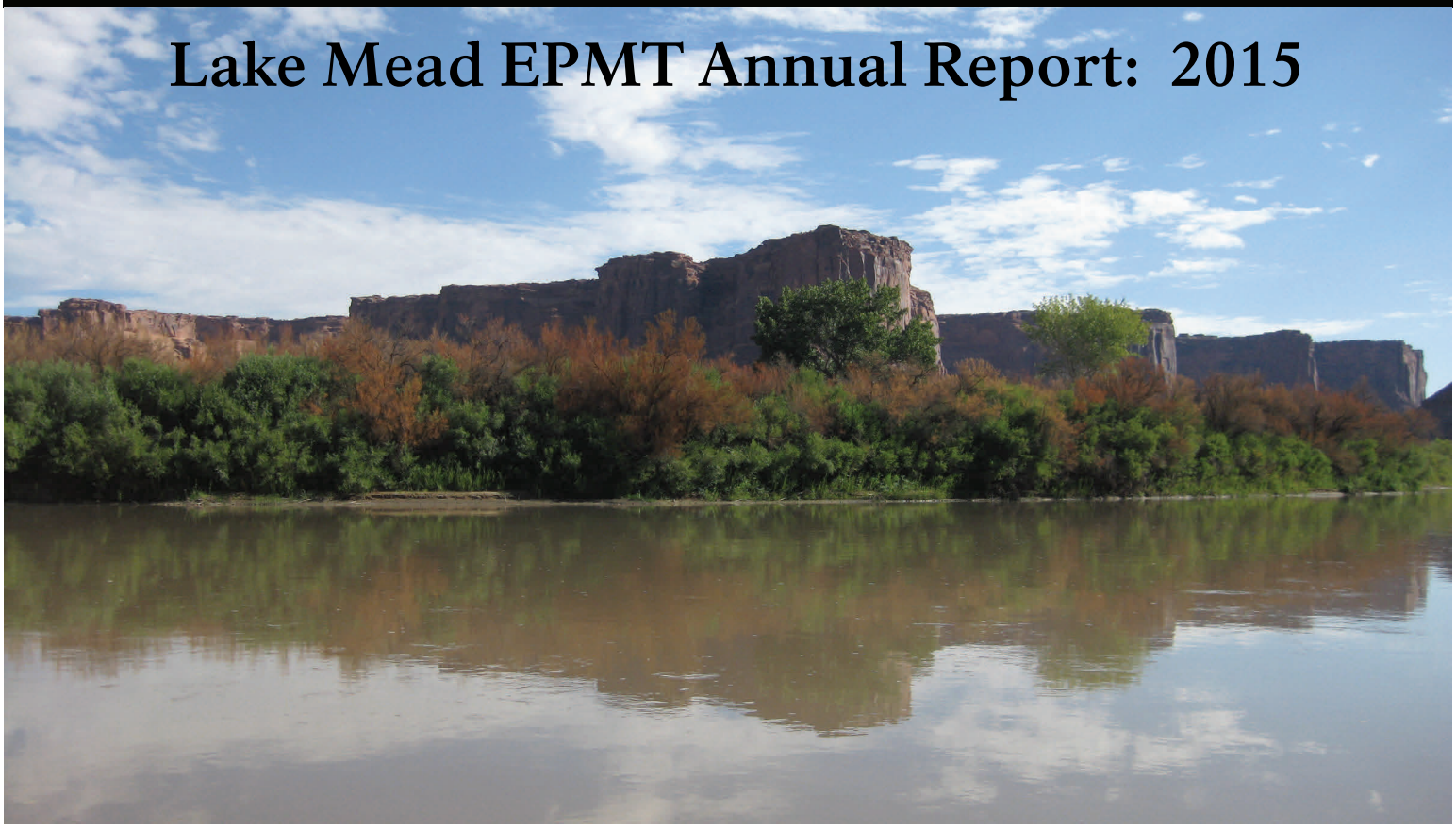
Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Lake Mead EPMT Annual Report: 2015



Tamarisk bio-control along the Green River, Canyonlands National Park. NPS Photo.

Background

The Lake Mead Exotic Plant Management Team (EPMT) was established in 1996, serving as the prototype model for what eventually developed into the NPS EPMT program. The team has conducted on-the-ground projects with field crews in 37 NPS Units, 15 US Fish and Wildlife Service Refuges, seven Bureau of Land Management (BLM) Districts, four National Forests, two Bureau of Indian Affairs Units, Bureau of Reclamation sites, the Marine Corps Yuma Air Station and several state and local land units throughout the southwest. The Team has three primary goals: **1)** provide expertise in the control of weeds from priority areas to preserve, restore and maintain native plant communities; **2)** professionalize invasive plant management within the NPS and among its partners by developing staff expertise; and **3)** improve government efficiencies through interagency cooperation by developing partnerships to effectively manage weeds on a landscape level.

Partnerships are integral to the team's success, leveraging each NPS base dollar with three additional dollars on an annual basis. These partnerships facilitate weed management across agency boundaries and increase our capacity to serve NPS Units.

The EPMT conducts weed control projects continuously throughout the year during all seasons due to the Team's geographic location and its partnerships throughout the region. A year-round operation maximizes the Team's ability to serve its various partners and control a diversity of weeds, while improving efficiency and flexibility in scheduling projects.

Program Highlights

Partnering on the Muddy River, Nevada

The Muddy River (aka Moapa River) in Southern Nevada is primarily fed by warm springs that emerge from the earth's surface, flowing for 30 miles into the Overton Arm of Lake Mead National Recreation Area (NRA). Several rare and endemic aquatic species have evolved in this unique thermal aquatic system. It is also home to the Moapa Band of Paiutes. During the last century in the 1900's the water supported resorts and agriculture. Some of these areas have been purchased during the last 25 years for preservation and restoration purposes. Most of the spring heads are now located within the Moapa Valley National Wildlife Refuge and the upper watershed consists of the Warm Springs Natural Area (managed by the Southern Nevada Water Authority), the Muddy River Reserve (Clark County, NV), the BLM and various private land owners. The Lake Mead EPMT has partnership agreements with many of these entities and in FY15 initiated a large tamarisk and Russian knapweed (*Acroptilon repens*, syn. *Centaurea repens*) control project followed by active native plant revegetation with BLM funding sources that expired on December 31, 2014. Our 20 person crew logged nearly 7,000 hours of field time and accomplished the project within the timeline, which included cutting a dense 7.5 acre thicket of tamarisk. The Lake Mead NRA native plant nursery provided plants for the revegetation project and plans are underway for burning the slash and to continue weed control on the adjacent county parcels of land.

Andy Pigg, Lake Mead EPMT, controlling tamarisk trees along the Muddy River, NV. Willow cutting revegetation is visible on opposite river bank. NPS Photo.

Buffelgrass treatment on the Yuma Marine Corps Air Station in Fortuna Canyon, Barry M. Goldwater Range. NPS Photo.

Program Highlights (cont.)

Program New Partnership with the Marine Corps

The Yuma Marine Corps Air Station initiated an agreement with the Lake Mead EPMT to conduct weed treatments in the Barry Goldwater Range in Arizona. The University of Arizona is conducting effectiveness monitoring of Sahara mustard (*Brassica tournefortii*) treatments and has developed phone applications for the Marine Range staff to report weed observations. This data is then used to determine treatment areas and mobilization timing of our EPMT crew. The EPMT prioritized treatment of an emerging population of buffelgrass (*Pennisetum ciliare*) in a remote canyon and in two other locales that were documented by a previous floristic survey. This was an early detection scenario that was ideally suited for our crew and was very significant, since buffelgrass is not widespread or well established in this part of Arizona. Monitoring has proven these treatments to be very effective. The partnership agreement has been extended with new funds for FY16.

Summary of Accomplishments

In FY15, the Team conducted projects in 13 NPS Units, four National Wildlife Refuges, two National Forests, the Southern Nevada BLM District, the Bureau Of Reclamation Lower Colorado Region, Yuma Marine Corps Air Station, and three Parks and Conservation Areas of Clark County, Nevada. The Team, along with the Southern NV Cooperative Weed Management Area, exchanged 150 one gallon native sacaton grass (*Sporobolus airoides*) for replacement after removal of more than 1,000 invasive fountain grass plants (*Pennisetum setaceum*) from the landscape at Harrah's Casino in Laughlin, NV. The Kyle Canyon Visitor Center and Cold War Memorial would have been overcome by nuisance weeds if not for the hard work of the Team through an agreement with the US Forest Service Spring Mountains NRA. After a seven year commitment, the Team has nearly eliminated exotic ravenna grass (*Saccharum ravennae*) at multiple remote sites within Glen Canyon NRA from 28 infested acres in 2009 to less than 3/4 of an acre in 2015.

Summarized Data for 2015

Measure	Acres
Treated	95
Inventoried/Monitored	15,027
Gross Infested Area	2,764
Net Infested Area	177
Youth Engagement	
Total Number of Youth Participants and Youth Employees	9
Total Hours for Youth Participants and Youth Employees	12,480

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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 EPMT Annual Report: FY2015

Golden bamboo removal at Colonial National Historical Park. NPS Photo.

Background

The Virginia Invasive Vegetation Management Team (VIVMT) precedes the Exotic Plant Management Team Program by at least a year (1999 vs. 2000). The Mid-Atlantic Exotic Plant Management Team (MA EPMT) was formed from the VIVMT team in 2003. VIVMT emphasized invasive plant control and restoration and in 2001 implemented some of the first restoration projects for a traveling team. The team restored 12.1 acres at 3 parks by planting native grass seed, trees, and broadcasting native seeds. Since that time the MA EPMT has grown from an initial eight parks to include 18 parks from Maryland, Pennsylvania, Virginia, and West Virginia, with a 19th park to be added in 2016, Fort McHenry National Monument and Historic Shrine.

The core parks of the MA EPMT include Shenandoah National Park (host park), Eisenhower National Historic Park, Hopewell Furnace, Thomas Stone, and Hampton National Historic Sites, Appomattox Courthouse, Colonial, and Valley Forge National Historical Parks, Appalachian National Scenic Trail, Bluestone National Scenic River, Booker T. Washington and George Washington Birthplace National Monuments, Gettysburg and Fredericksburg and Spotsylvania National Military Parks, Gauley River National Recreation Area, New River Gorge National River, Petersburg National Battlefield, and Richmond National Battlefield Park.

The team uses an IPM approach where prevention, early detection, continued response, and the least-toxic control methods are

Background (cont.)

emphasized. Manual, cultural, bio-control, and chemical methods are used. in an interactive approach to gain the most effective control. New techniques and equipment are frequently tested and integrated into the program when beneficial.

Program Highlights

Golden bamboo removal at Colonial National Historical Park

Wanting to improve the Yorktown Battlefield vista, Colonial National Historical Park (COLO) decided to remove a 4.5 acre golden bamboo (*Phyllostachys aurea*) stand. Before removal and restoration work can begin National Historic Preservation Act Section 106 (NHPA S106) compliance work must be completed. To assist in the completion of the compliance work the MA EPMT removed golden bamboo from ten transects to provide access for archaeologists to conduct their surveys. Each transect was roughly three meters wide and 100-150 meters long. To remove the almost 40 foot tall bamboo stems, the team, three COLO employees, and one volunteer used chainsaws to fell and buck the golden bamboo. Within the completed transects compliance contractors will use specialized equipment to survey for archaeological sites. Once all compliance has been completed the final bamboo removal and site restoration can begin.

Restoration site at George Washington Birthplace National Monument. NPS Photo.

Common reed control on private land adjacent to George Washington Birthplace National Monument. NPS Photo.

Program Highlights (cont.)

George Washington Birthplace National Monument (GEWA) Restoration

After control of common reed (*Phragmites australis*) the team applied for and received a $23,550 grant from the National Park Foundation through Subaru to prevent the re-establishment of common reed, to stabilize the shoreline, and prevent additional erosion from occurring on a spit of sand between the Potomac River and Pope's Creek. Over 5,784 grasses, shrubs, and trees were planted during four planting days (two in June 2014 and two in May 2015). Volunteers, Westmoreland County 4-H club, park staff, an SCA member, and the team all participated in planting native plants along the 2 acre stretch of GEWA. Successful completion of this project will offer multiple protections for this area for some time to come.

Concomitant with this restoration project was an influx of money from BRD for additional common reed control on property adjacent to GEWA. Through a general agreement between GEWA, MA EPMT, and private landowners an additional 4.5 acres of common reed were treated in the fall of 2015. Additional landowners will be contacted for future work. Control efforts will continue on the adjacent landowner's property until common reed is eradicated in the

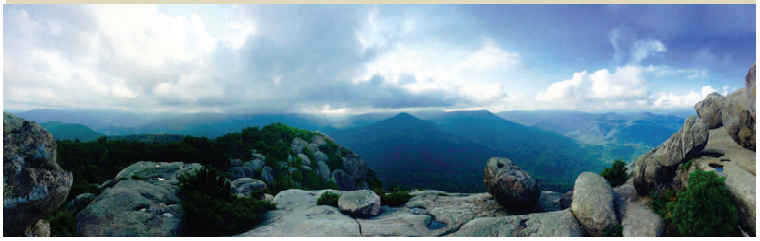
Summary of Accomplishments

The team worked at 15 of our 18 parks this year. We did not work at Gauley River National Recreation Area due to the park's request that we focus efforts at Bluestone National Scenic River and New River Gorge National River. We also did not work at Thomas Stone National Historic Site due to the park's request to focus efforts at GEWA. Additionally, we did not work at Appomattox Courthouse National Historical Park during FY15, but did so in October 2015.

The team continued work at the Smithsonian Conservation Biology Institute treating wavyleaf basketgrass (*Oplismenus hirtellus* ssp. *undulatifolius*). This is the second year of treatment for this EDRR species.

Summarized Data for 2015

Measure	Acres
Treated	270
Inventoried/Monitored	25
Gross Infested Area	8
Net Infested Area	4
Youth Engagement	
Total Number of Youth Participants and Youth Employees	33
Total Hours for Youth Participants and Youth Employees	3,365



Shenandoah National Park (MA-EPMT host park). NPS Photo.

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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 Region EPMT Annual Report: 2015

The Potomac Gorge—protected by the Chesapeake & Ohio Canal National Historical Park and George Washington Memorial Parkway park units. NPS Photo.

Background

The National Capital Region Exotic Plant Management Team (NCR EPMT) supports parks from the center of the District of Columbia to the foothills of the Appalachian Mountains. In addition to National Capital Region parks, the NCR EPMT assists non-National Capital Region parks and non-NPS partners: Assateague Island National Seashore, the Appalachian National Scenic Trail, the U.S. Fish and Wildlife Service (at the National Conservation Training Center) and the Virginia Department of Conservation and Recreation (at Crow's Nest Preserve).

The National Capital Region Exotic 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 exotic pest plants and re-establishing native plants and natural processes.
4) Prevents the spread of invasive species through training and careful stewardship of tools and equipment.

The NCR EPMT works closely with our partner parks and agencies to inventory and monitor invasive plants, train staff and volunteers, implement treatment and restoration efforts, and share resources and information.

Program Highlights

Potomac Gorge Stewardship

In 2015 the NCR EPMT implemented the first year of a project to protect globally rare habitat in the Potomac Gorge. The project involves land managed by both the Chesapeake and Ohio Canal National Historical Park (CHOH) and the George Washington Memorial Parkway (GWMP). The entire project includes seed collection, rare plant propagation, and re-vegetation; the primary activity is invasive plant control in high priority sites. In 2015 control efforts were conducted by Student Conservation Association (SCA) interns and NCR EPMT staff across many sites and plant communities.

The gorge restoration project follows-up on the recommendations of a 2002 Site Conservation Plan developed in partnership with the Nature Conservancy (TNC). TNC funds ran out a few years ago, so this project was an opportunity to follow up on some of the great work done by TNC.

Based on the great success of 2015 efforts, additional funds have been secured to support more work in 2016. We will be recruiting three 16-week SCA interns to conduct work in the Potomac Gorge next year under the direction of EPMT staff. In addition, CHOH will recruit an eight-month SCA intern to recruit and coordinate volunteers. The interns will directly bring youth to work in our parks and they will recruit and lead additional youth volunteers.

SCA interns working in the Potomac Gorge. NPS Photo.

Wavyleaf basket grass (*Oplismenus hirtellus* ssp. *undulatafolius*) at Fort Foote. NPS Photo.

Program Highlights (cont.)

Fort Foote

National Capital Parks-East (NACE) secured funding for a cyclic maintenance project to control invasive plants on the historic earthworks at Fort Foote in Prince George's County, MD. The project protected the historic structures and landforms and reduced the potential for invasive plants to spread to other areas of the park. While working at Fort Foote, the NCR EPMT discovered and treated early detection species wavyleaf basket grass (*Oplismenus hirtellus* ssp. *undulatafolius*), trifoliate orange (*Poncirus trifoliata*), and heavenly bamboo (*Nandina domestica*). In addition, the only known NCR population of bigleaf periwinkle (*Vinca major*) was identified and treated.

Fort Foote is less than three miles from the DC border and is, therefore, in a developing part of Maryland. The park supports some high quality coastal plain forests and is the only place in NCR where the NCR EPMT have seen juvenile Eastern Box Turtles.

NCR EPMT and park staff met to discuss a potential meadow restoration project at Fort Foote for FY16. This rare gem of a healthy natural area is being impacted by a host of invasive species and our discovery of a handful of early detection species will help sustain it in good condition.

Summary of Accomplishments

The NCR EPMT started field work in February 2015 and continued into October. Thanks to collaborations with park and non-park partners the EPMT was able to cover 220 acres in 2015 (up from 149 treated and re-treated acres in 2014). Starting in May the crew size increased to nine seasonal staff and four interns - allowing substantially more flexibility in completing tasks efficiently.

Outreach, partnerships, and a concerted focus led to more mapped and treated populations of the NCR EPMT's Early Detection targets.

The Team's work will continue into November and start up again in early 2016. The NCR EPMT looks forward to supporting parks in the coming years.

Summarized Data for 2015

Measure	Acres
Treated	220
Inventoried/Monitored	60
Gross Infested Area	4,253
Net Infested Area	218
Youth Engagement	
Total Number of Youth Participants and Youth Employees	31
Total Hours for Youth Participants and Youth Employees	8,877

NCR EPMT treating jetbead (*Rhodotypos scandens*) at Harper's Ferry. NPS Photo.

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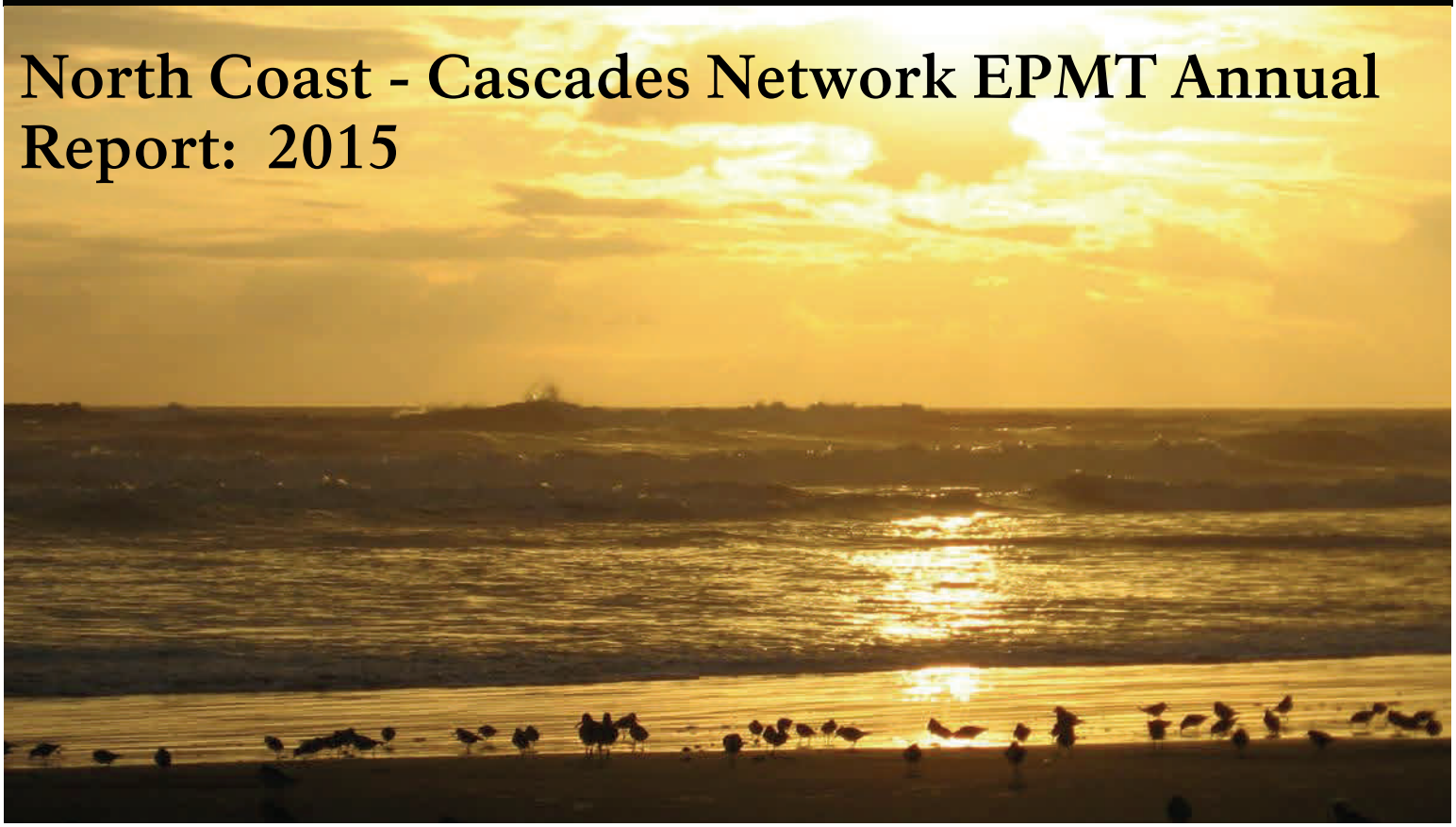
Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

North Coast - Cascades Network EPMT Annual Report: 2015



Sunset at Kalaloch Beach, Olympic National Park. Photo by Dan Campbell, NCCN-EPMT.

Background

From the open range of the Palouse prairie in Idaho and Washington to the high desert of eastern Oregon, along the creeks and rivers fed by the glacial North Cascades and Olympic mountains, and in the rainforests and remnant prairies of the northwest coast, the North Coast - Cascades Network Exotic Plant Management Team (NCCN EPMT) provides professional invasive plant management services to its partner parks representing approximately 2.1 million acres of federal lands in the Pacific Northwest.

The Team focuses on fostering projects that assist with the restoration of degraded park resources, preventing the spread of non-native species into fragile wilderness areas, and expanding ecosystem-level partnerships to combat invasive plant species with other stakeholders. Crews perform work in a wide variety of environments from highway right-of-ways, agricultural fields, and reclaimed homesteads to coastal beaches, dynamic river valleys, and remote, mountainous wilderness environments. Projects range from Early-Detection, Rapid-Response (EDRR) scenarios to long-term, ecological restoration efforts. In addition to providing a skilled workforce for field work, EPMT staff also provide technical expertise and training for other stakeholders and work to foster cooperation among a diverse suite of land-management entities.

Program Highlights

Cooperative Weed Management

In 2002, the NCCN EPMT began to develop a working relationship with local and tribal governments to address the invasion of knotweed species along coastal rivers of the Olympic Peninsula of Washington state. In August of 2015, NCCN EPMT aided knotweed control efforts undertaken by the Quileute Nation and the Clallam County Noxious Weed Board on the Quillayute River. This marks the 10th year of collaborative efforts between the three land management entities. In addition to tackling knotweed populations on county and tribal lands, source populations upstream within Olympic National Park (OLYM) were treated. In 2016, the team will work with the Quinault Indian Nation to treat areas of the Quinault Watershed managed by the tribe, Olympic National Forest , and Olympic National Park.

Once again, the NCCN EPMT collaborated with Olympic National Park staff and the Washington Conservation Corps to treat weed populations in the Elwha River Valley, the site of a 700+ acre restoration project. Crews worked to prevent the spread of extant weed populations and support the restoration of native plant populations within the dynamic floodplain of the Elwha River.

Treatment of Bohemian knotweed on neighboring Quileute Nation land, Quillayute River, WA. NPS Photo.

Prairie Restoration Plots at San Juan Island National Historical Park, Friday Harbor, WA. NPS Photo.

Program Highlights (cont.)

Disturbed Landscapes

The NCCN EPMT continued its work on poison hemlock populations surrounding agricultural fields at Ebey's Landing National Historical Reserve (EBLA). Work was performed in November 2015 to treat restoration plots at a remnant prairie site within the Reserve. Similarly, the team treated restoration plots, as well as performed a test treatment of Canada thistle (*Cirsium arvense*), within the American Camp portion of San Juan Island National Historical Park (SAJH).

NCCN EPMT, Lewis and Clark National Historical Park (LEWI), and Student Conservation Association (SCA) interns continued a cooperative treatment of various species, including Scotch broom (*Cytisus scoparius*), spurge laurel (*Daphne laureola*), and English holly (*Ilex aquifolium*) on recently acquired, formerly private lands at LEWI. The Yeon Property, as it is named, spans 97 acres along the Pacific Coast of Oregon.

In addition to treating spurge laurel and English holly distributed throughout stands of shore pine, NCCN EPMT staff initiated treatments of Scotch broom infestations that are encroaching into the coastal dunegrass vegetation.

Summary of Accomplishments

The NCCN EPMT continued to assist its park partners in meeting management goals, forging new partnerships, and strengthening existing ones. One new partnership was developed with the Quinault Indian Nation and Olympic National Forest to address cross-boundary infestations on the Olympic Peninsula of Washington state, setting the stage for work in FY2016. Through coordination with partner parks, and state and county agencies, the team was able to treat a suite of 25 species throughout eight NPS units in Washington and Oregon. The team continued its yearly treatment of invasive weed populations in developed areas, agricultural fields, frequently-disturbed parklands, and remote wilderness areas and worked to promote science-based weed management efforts throughout the Pacific Northwest.

Summarized Data for 2015

Measure	Acres
Treated	209
Inventoried/Monitored	23
Gross Infested Area	262
Net Infested Area	23
Youth Engagement	
Total Number of Youth Participants and Youth Employees	0
Total Hours for Youth Participants and Youth Employees	0

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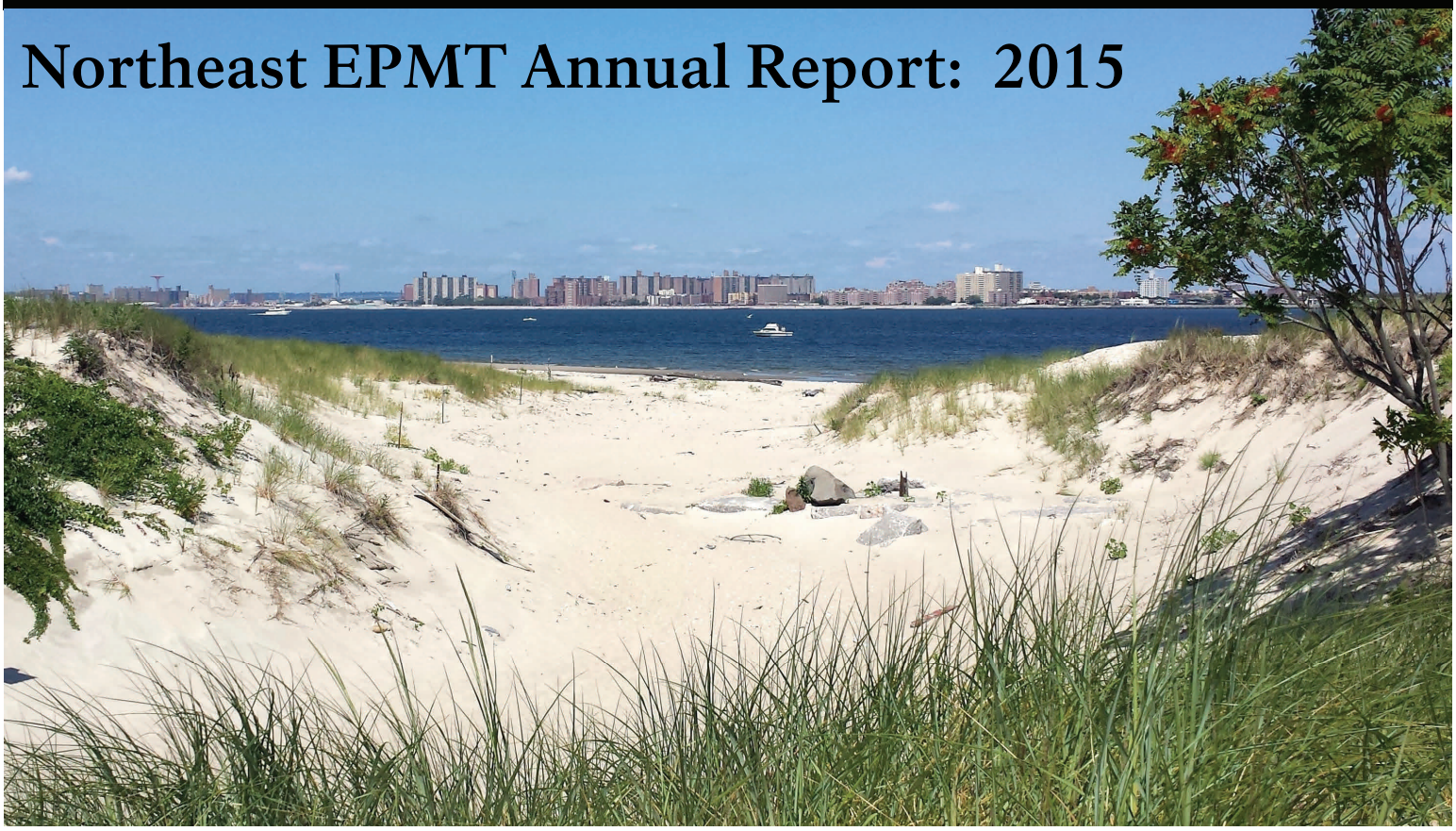
Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Northeast EPMT Annual Report: 2015



Gateway NRA. August 2015. View of the Brooklyn Skyline from Breezy Point. NPS Photo.

Background

The Northeast Exotic Plant Management Team was established in 2003 and is stationed at Delaware Water Gap National Recreation Area (NRA). The Team serves 25 partner parks in eight states, from Pennsylvania north to Maine, in the National Park Service's Northeast Region. The Team commonly visits nine to twelve parks a year, depending on regional priorities, projects, and available resources.

The EPMT is highly trained and equipped with specialized equipment for managing invasive plants. The Team provides parks with expertise and control capabilities that go beyond what parks can attain. Along with on-site control work, the EPMT offers a broad range of services to its parks, including inventory and monitoring, technical advice, training, outreach, assistance with restoration projects, partnerships, planning, early detection of new infestations and rapid response to control them.

The EPMT's parks range in size from nine acres to over 100,000 acres. The majority are relatively small parks with missions to preserve and interpret important historical and cultural sites. The wide range in size and missions of the parks can be a challenge. The Team must work with each park, help it define and rank its priorities, and determine how best the EPMT can serve the park while maintaining the Team's focus on invasive plant management in natural areas.

To ensure its resources are best used, the EPMT focuses on projects that are achievable, cost-effective, produce measurable effects at high-priority sites, and are readily maintainable over time.

Program Highlights

Early Detection Monitoring: Constant Need, Differing Approaches

Early detection (ED) monitoring is critical for averting invasive plant infestations. At Fire Island National Seashore and Gateway NRA, impacted by Hurricane Sandy three years ago, new populations of Japanese sedge (*Carex kobomugi*) are still being discovered. These infestations are now well established, requiring more time and effort to contain.

Carrying out an intensive ED inventory across an entire park is rarely feasible. Therefore, effort is often expended on areas where there is a high probability of discovering new invasive species and/or infestations (e.g., parking lots, trails, stream edges, etc.). However, staff at Boston Harbor Islands (BOHA) NRA has developed an ED protocol aimed at the entire land mass. Each small island and coastal unit has been divided into search zones. The plan is to search each zone for a pre-defined list of ED species following a grid pattern. Presence or absence of target species is documented, along with the area of the zone searched using GPS. The Team and park staff tested and critiqued the protocol this year, noting the positive features, and suggesting methods to make the protocol easier to use. This is one situation where an intensive inventory procedure is realistic.

Boston Harbor Islands NRA, World's End, June 2015. World's End rocky coastline at low tide, June 2015. Owned by The Trustees of Reservations and part of the unique partnership of the Boston Harbor Islands NRA. NPS Photo.

Delaware Water Gap NRA, September 2015. Park employee Larry Hilaire treats stumps of autumn olive (*Elaeagnus umbellata*) in an old agricultural field being prepared for planting native grasses and forbs. NPS Photo.

Program Highlights (cont.)

Agricultural Fields: Restoration/Rehabilitation Continues

Restoration/rehabilitation is a key component of EPMT work. This year, the Team and staff of Delaware Water Gap NRA focused on a newly acquired 20-acre field in New Jersey. This former agricultural field came choked with invasive plants. It will now be converted into a native grassland making it a major addition to open space along the Delaware River. Woody plants were mowed and stump treated. Invasive plants were treated with herbicide. This suppression of invasive plants prepared the area for planting of appropriate native species.

At Gateway NRA, a major restoration of the North and South Gardens at the Jamaica Bay Wildlife Refuge is underway. The Gardens' trails circle the 45-acre West Pond, an important birding area. However, surrounding uplands are overrun by invasive woody and herbaceous vegetation. The EPMT had begun treatment, but it was clear that a much larger operation was necessary. The Nature Conservancy and private parties joined Gateway NRA to fund the restoration, including hiring a contractor to remove invasive plants and plant native species. The EPMT has been providing technical assistance on herbicides, application methods, timing, and more for the contract. The Team will continue its technical resource role and will follow up with monitoring and control of reinvasions.

Summary of Accomplishments

Since 2003, the EPMT and staff at Delaware Water Gap NRA have converted over 500 acres of former agricultural fields into a patchwork of native grasslands and shrublands. By sustaining the native vegetation, the historical character of the park is retained. Shrubland birds are returning and a variety of native forbs offer abundant food for pollinators.

The same tools are being utilized at Saratoga National Historical Park. In the park's key time period (1770's), this area was open farmland. Many fields had become infested with invasive knapweed species. To create/maintain habitat for grassland and shrubland birds, the Team has been using chemical control with good results. A number of fields once choked with knapweed's purple blooms now have a predominance of native species.

Summarized Data for 2015

Measure	Acres
Treated	259
Inventoried/Monitored	34
Gross Infested Area	1,273
Net Infested Area	51
Youth Engagement	
Total Number of Youth Participants and Youth Employees	2
Total Hours for Youth Participants and Youth Employees	948

Delaware Water Gap NRA, November 2015. Volunteers enjoy ripping down dead Wisteria vines at Ramirez Solar House. The vines were treated by NE EPMT earlier in the year. NPS Photo.

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Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Northern Great Plains EPMT Annual Report: 2015

NGP EPMT crew treating Canada thistle in the Sage Creek Wilderness Area of Badlands National Park. NPS Photo.

Background

The Northern Great Plains Exotic Plant Management Team (NGP EPMT) works with fourteen partner parks in four states and two National Park Service regions. The goal of the NGP EPMT is to help parks preserve native plant communities and historic landscapes by managing the spread of exotic invasive species. The NGP EPMT also continues to work with park personnel to accomplish restoration activities such as prescribed fire, native plant material development and seeding. The area served by the NGP EPMT is large, approximately 452,000 acres, and the ecology is diverse. Vast grasslands are found in some parks, others are part of the forested Black Hills, and some include parts of the Missouri, Niobrara or Knife Rivers.

Integrated Pest Management strategies including chemical, biological, mechanical, and cultural methods are used to manage exotic and invasive plants. Each year NGP EPMT staff offer a week-long training session in the principles and practices of integrated pest management for park staff, partners and NGP EPMT seasonal employees.

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

Program Highlights

NPS Academy Intern Completes Projects at Mt. Rushmore National Memorial

Collaboration between the NGP EPMT and Mt. Rushmore National Memorial resulted in a NPS Academy Student Conservation Association intern funded by the NPS Academy program to be stationed at Mt. Rushmore for the 12 week program. The intern, Amie Schiller, was able to complete several projects during her time at the park. Projects included exotic invasive species inventory and treatment, hazard tree inventory, and planting a pollinator garden in the developed area of Mt. Rushmore. Amie was also able to assist the NGP EPMT crews at Jewel Cave and Wind Cave National Park, as well as helping the Northern Great Plains Inventory and Monitoring Program read vegetation plots at Wind Cave.

Engaging youth in protecting our natural resources was a priority this year and this project demonstrates the benefits of employing youth to work in our parks. They gained an understanding of the complexities in managing natural resources and the unique challenges of conducting active management of resources in those areas. We will continue our partnerships with youth organizations in the future and hope to expand opportunities for youth to include other natural resource disciplines in the parks that we serve.

NPS Academy SCA intern Ami Schiller planting pollinator garden at Mt. Rushmore National Memorial. NPS Photo.

NGP EPMT and Montana Conservation Corps crews treating invasive species in the Bodmer Unit of Ft. Union Trading Post National Historical Site. NPS Photo.

Program Highlights (cont.)

Bodmer Unit at Ft. Union Trading Post National Historic site in Controlled Status

The NGP EPMT and Ft. Union Trading Post staff have worked since 2002 to control invasive species such as leafy spurge (*Euphorbia esula*), Canada thistle (*Cirsium arvense*), and musk thistle (*Carduus nutans*) in the Bodmer Unit of the park. Although treatments were not conducted every year, crews have been diligent in treating high priority areas. New herbicides such as Dupont™'s Perspective® have reduced the number and amount of herbicides used in the park as well as increasing efficacy of the current treatments. Field crews can now use one herbicide in one treatment instead of 2 or 3 herbicides spread over several treatments, as in the past.

The Bodmer Unit is a unique cultural landscape in that it was the site of Karl Bodmer's paintings of Ft. Union and Native Americans when he accompanied Prince Maximilian on his expedition to the American West in the summer of 1833. Although the landscape has changed since the 1830's, we still hope visitors can experience the site similar to what Karl Bodmer captured in his famous watercolor paintings. Now that the site is in a controlled state for invasive species, it will allow NGP EPMT and park staff to focus on other high priority areas within the park and continue to improve the ecological condition of this important cultural landscape.

Summary of Accomplishments

It was another high precipitation year in the Northern Great Plains, so invasive plants, such as leafy spurge, Canada thistle and yellow sweetclover (*Melilotus officinalis*) were very prevalent. We continued treatment at 11 of our partner parks. Our partnership with Montana and Minnesota Conservation Corps increased our capacity to assist parks in managing invasive species; Conservation Corps crews were able to assist at 6 parks this past year. Helicopter operations were continued in high priority areas at Theodore Roosevelt National Park. We also continued work with Colorado State University, local ranchers and Agate Fossil Beds National Monument on the Niobrara River researching control options for yellow-flag iris. This included a novel approach of trampling the iris. We will further explore this unique approach to iris control with the local high school in Harrison, NE.

Summarized Data for 2015

Measure	Acres
Treated	316
Inventoried/Monitored	0
Gross Infested Area	1315
Net Infested Area	317
Youth Engagement	
Total Number of Youth Participants and Youth Employees (reported by partner parks)	0
Total Hours for Youth Participants and Youth Employees (reported by partner parks)	0

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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 EPMT Annual Report: 2015

Mountains and valleys of the Northern Rocky Mountain Region. NPS Photo.

Background

The Northern Rocky Mountain Exotic Plant Management Team (NRM EPMT) serves seventeen parks across Colorado, Idaho, Montana, Utah, and Wyoming. Since its inception in 2003, the NRM EPMT program emphasizes the systematic, long-term management and control of invasive plant species. The Northern Rocky Mountains Region is vast and diverse, encompassing high and low elevation sagebrush steppe, forests, sub-alpine meadows, and wetland and riparian areas. Many parks in this network are small (median size is 14,464 acres) and a number of them don't have staff members available to address even their highest priority invasive species.

The NRM EPMT is currently a 9-person crew strategically divided into three small crews based at larger parks throughout the network. All 17 partner parks receive work annually and all but three parks received multiple visits in 2015. Repeat visits are critical for most project areas to ensure all invasive plants in a project area are located and removed. Much of our effort is focused on controlling state listed noxious weeds, as well as providing rapid response to new and/or particularly problematic invaders. The NRM EPMT program relies heavily on the region's seasonal dichotomy, working lower elevation parks in Utah and Idaho early in the growing season and higher elevation, northern parks later in the summer.

Program Highlights

Improving Effectiveness Monitoring at Yellowstone NP

The NRM EPMT program has been assisting Yellowstone NP treat three invasive hawkweed species, meadow (*Hieracium caespitosum*), orange (*H. aurantiacum*), and whiplash (*H.* x*flagellare*), throughout the park since 2007. Though we have significantly reduced many of these mostly roadside infestations, species type, elevation, winter snowpack, spring temperatures, and even daily sunlight patterns all influence hawkweed flowering and persistence within a given area. Further, difficult terrain at some sites and distinguishing between closely related native species are additional challenges to effective hawkweed treatment.

In 2015, it was clear the NRM EPMT program needed more accurate data regarding the effectiveness of herbicide treatments conducted at Yellowstone hawkweed sites. In June, the program initiated plot level effectiveness monitoring on select areas and treatments. The NRM EPMT followed a rapid monitoring protocol developed by the Yellowstone Center for Resources in 2013 to establish three monitoring sites. Sites were measured and then treated. This will be repeated in 2016 and beyond. Conclusions will be drawn to other hawkweed sites to perfect our removal of these aggressive invasive plants.

NRM EPMT crew leader counting flowering whiplash hawkweed (*Hieracium xflagellare*) plants in Yellowstone National Park prior to treatment. NPS Photo.

NRM EPMT crew members shuttling gear and equipment across the Yampa River in Dinosaur National Monument. NPS Photo.

Program Highlights (cont.)

Finding Success Through Challenging Logistics at Dinosaur NM

River corridors are high priorities for invasive weed management efforts at Dinosaur National Monument (DINO) because they contain valuable wildlife habitats, offer important recreational benefits, and often serve as weed vectors downstream. Unfortunately, these areas are often the most difficult to access, as weed infestations often occur on beaches and terraces removed from park trails and roads. Coordinating weed treatments in these areas routinely involves long drives and hikes, river floats and crossings, and additional safety precautions to ensure crew personnel, gear, and herbicides arrive where they are needed most.

In 2015, the NRM EPMT was able to safely tackle more logistically complex weed management projects at DINO because of treatment successes in other areas. Since 2011, Russian knapweed (*Acroptilon repens*) has been reduced in the Cub Creek watershed by 98%. This striking success not only offers a formula for future treatment efforts, but it has allowed the NRM EPMT crew to turn its attention to new areas along the Green and Yampa Rivers to protect other high value areas infested with similar invasive species.

Summary of Accomplishments

The NRM EPMT made significant headway in all partner parks, as nearly 282 acres were treated. A total of 35 invasive species were addressed in 16 National Parks. In 2015, Canada thistle (*Cirsium arvense*) was the most commonly encountered invasive species and covered the second most treated acreage (at 52 infested acres). The NRM EPMT generally saw a rise in all thistle populations in served parks. In total, nearly 4,100 person hours were spent on the ground treating invasive weeds in parks served by the NRM EPMT.

The NRM EPMT program continues to strike a balance between contributing to long-term, large-scale control of nascent weed populations and detecting and removing new invaders. Open and effective communication and park collaboration are cornerstones of the program and crews work as a collective and with park staff regularly.

Summarized Data for 2015

Measure	Acres
Treated	282
Inventoried/Monitored	1
Gross Infested Area	59,714
Net Infested Area	288
Youth Engagement	
Total Number of Youth Participants and Youth Employees	2
Total Hours for Youth Participants and Youth Employees	1,000

NRM EPMT crew's bounty of musk thistle (*Carduus nutans*) seed heads removed from Murder Canyon in Fossil Butte National Monument. NPS Photo.

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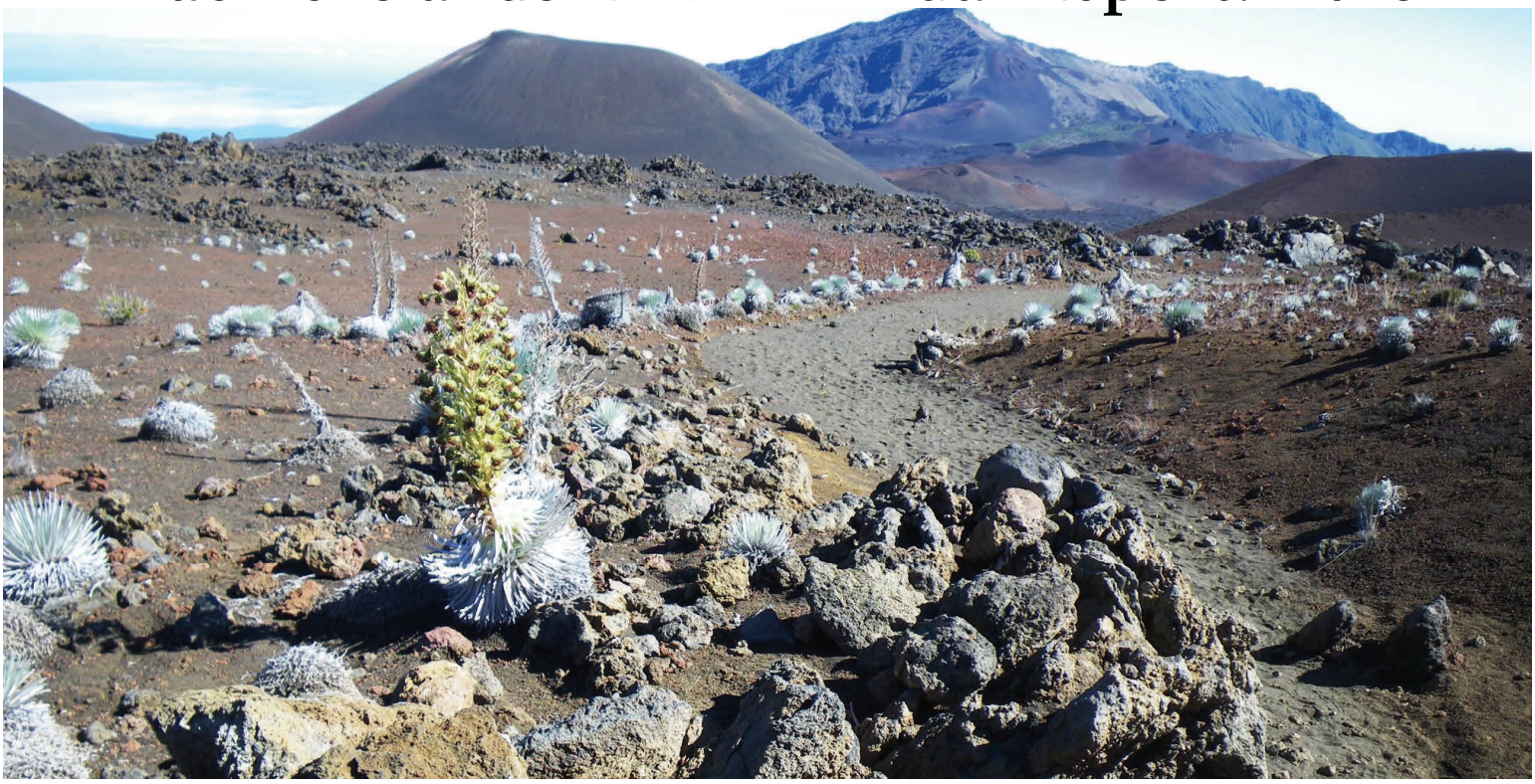
Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Pacific Islands EPMT Annual Report: 2015



Iconic view of Haleakala Crater with endangered silversword (*Argyroxiphium sandwicense* subsp. *macrocephalum*) plants, Haleakala National Park. NPS Photo.

Background

Native ecosystems in the Hawaiian Island parks are gravely threatened by invasive species. Over 80 alien plant species in the Hawaiian parks displace native vegetation, commonly forming single-species stands over extensive areas. At risk are native ecosystems dominated by endemic species displaying remarkable examples of adaptive radiation, unique to the world. These areas include the greatest extent of tropical rain forest and dry forest under federal protection in the US.

Hawaii contains approximately 44 percent of the nation's Endangered and Threatened plant species. The Pacific Islands Exotic Plant Management Team (PI EPMT) serves six parks in the Pacific Island Cluster: Haleakala and Hawai`i Volcanoes National Parks; Kalaupapa, Kaloko-Honokohau, and Pu`uhonua o Honaunau National Historic Parks; and Pu`ukohola National Historic Site. Successful strategies and control techniques developed in the two larger parks transfer to the smaller parks in the partnership.

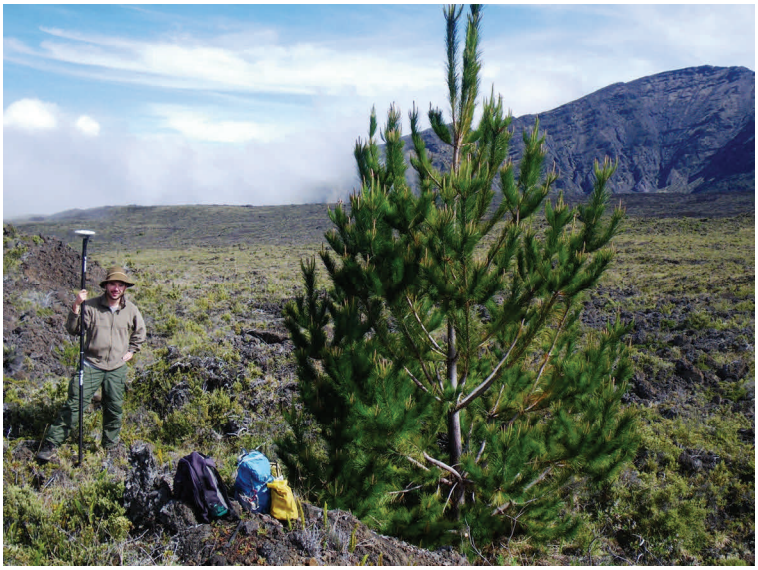
The team concept has been ideal for the Pacific Island Cluster because of the time-tested model of big parks detailing crews and providing expertise to smaller parks. The PI EPMT utilizes two invasive plant control strategies widely practiced with considerable success: 1) Control of incipient species inside and outside the parks to proactively mitigate potential impacts. 2) Control of multiple threatening weeds in Special Ecological Areas within existing management units. The EPMT also serves as a technical support entity to other parks and shareholders in the Pacific Basin when a request serves the protection and restoration of native ecosystems.

Program Highlights

Protecting and Restoring Natural Areas at Hawai'i Volcanoes National Park (HAVO)

PI EPMT crews worked alongside HAVO crews to expand weed control across large contiguous rainforest tracts in the park. In 2015, intensive efforts were directed to knockdown dense infestations of Kahili ginger (*Hedychium gardnerianum*), one of the world's most invasive plants, across 307 acres, and to remove over 5,000 other disruptive invasive woody plants including strawberry guava (*Psidium cattleianum*), faya tree (*Morella faya*), Florida prickly blackberry or sawtooth blackberry (*Rubus argutus*), and Himalayan raspberry (*Rubus ellipticus*). PI EPMT staff co-led safety and operational briefings for this work, and were also critical in recruiting and organizing volunteer workforces, which totaled approximately 50% of ginger removal efforts. The areas treated are significant, as they contain the most utilized trail network in the park, and are the primary places where visitors can experience upland Hawaiian rainforests, view endemic honeycreeper birds, and a number of rare endemic plants. Long-term maintenance and follow-up control will be performed by HAVO staff.

Specialized work rappelling to control invasive rain forest weeds, HAVO. NPS Photo.



Student Biotech Jon Marshall confirms location of invasive pine prior to treating, HALE. NPS Photo.

Program Highlights (cont.)

Protecting Haleakala Crater from Invasive Pine Trees (HALE)

Three species of pine tree are invasive and can be highly disruptive to the iconic landscape of alpine and sub-alpine areas of HALE. Pine seeds were released by a 2007 catastrophic wildfire on adjacent land. Existing vegetation management crews control areas accessible by ground but cannot access hazardous cliffs. The EPMT invested significant effort collaborating with park experts and partners to refine treatment methods for inaccessible areas via helicopter. This treatment allows precise management of individual trees, while preserving native landscapes, sensitive species, and vegetation communities. Following initial treatment it is apparent that current methodology is viable. Trials in 2015-2016 will further inform future efforts. The project is unique due to numerous factors such as the sensitivity of the surrounding habitat, resistance of the invasive trees to treatment, extreme terrain, elevation, and challenging weather conditions. The EPMT is serving a critical function by developing the methodology, while arresting further seed deposition from landscape altering invasive trees. The PI EPMT is structured to serve as an integral and flexible component in the refinement of new treatment techniques, incorporating innovative solutions.

Summary of Accomplishments

As a catalyst for innovation and development of methods suited to the unique conditions in the Pacific Islands and capitalizing on the expertise garnered from decades of prior work, the PI EPMT was very successful in 2015. Miconia (*Miconia calvescens*) is possibly the most destructive invasive tree to tropical island ecosystems. Collaborating with the University of Hawaii and others, we have largely kept Miconia out of highly intact Kipahulu Valley. In 42 months, we have treated more than 2,000 individuals in an incipient infestation adjacent to Kipahulu, measuring a population exponential annual decay of 3%, with minimal additional seed input. This data will drive the economics of future control. On the Big Island, the EPMT removed 662 invasive fountain grass plants park-wide. The EPMT provides a key capacity to rapidly respond to newly identified infestations and to organize and conduct survey and removal efforts. In adjacent communities, collaborative efforts reduce abundance of this fire-loving species, benefiting the park by limiting ingress seed rain.

Summarized Data for 2015

Measure	Acres*
Treated	796
Inventoried/Monitored	0
Gross Infested Area	179,676
Net Infested Area	13,227
Youth Engagement	
Total Number of Youth Participants and Youth Employees	409
Total Hours for Youth Participants and Youth Employees	5,757

*Note that invasive plant management data from the iMaui Island and Molokai Island Partnership are not included here,. These acreages are significant.

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Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Southeast EPMT Annual Report: 2015

During periods of low water the SE EPMT is able to comb the dense banks to treat invasive Mimosa (*Albizia julibrissin*),Canyon Mouth area, LIRI. NPS photo.

Background

The Southeast Exotic Plant Management Team (SE EPMT) partners with 20 national park units in Kentucky, Tennessee, Virginia, North Carolina, South Carolina, Alabama, and Georgia in addressing invasive plant threats. From inception in FY 2004, the Team has been based in Asheville, North Carolina at the Blue Ridge Parkway. The partner parks served by the SE EPMT encompass over 500,000 acres and occur in the Piedmont, Appalachian Highlands and Cumberland Plateau physiographic provinces of the southeast US. All of these park units are located within the Appalachian Highlands and Cumberland Piedmont Inventory and Monitoring Networks.

The Team is supervised by the SE EPMT liaison with on-the-ground activities overseen by a crew leader. In 2015, the SE EPMT, in partnership with American Conservation Experience, placed the 82nd student intern since the Team's inception. Extensive and varied training and hands-on natural resource management provide each intern with the foundation to move forward in their professional pursuits.

The exotic plant species of primary concern for the SE EPMT continue to be those that thrive in disturbed habitats or adapt readily to areas of low light and moisture extremes. These include such species as Chinese privet (*Ligustrum sinense*) and multiflora rose (*Rosa multiflora*) in open disturbed sites and Japanese stiltgrass (*Microstegium vimineum*), garlic mustard (*Alliaria petiolata*) and Japanese honeysuckle (*Lonicera japonica*) in closed canopy woodlands. The majority of acres treated by the Team in 2015 were dominated by these five species.

Program Highlights

Treatment Overview

In 2015 the SE EPMT continued to build on long term goals for several partner parks. Riparian corridor and cobble bars within the Big South Fork are perennial locations for removal of mimosa (*Albizia julibrissin*). The Team has been focusing on seedlings and younger trees. Along the Blue Ridge Parkway in Virginia, the Team prepared a site for an upcoming prescribed burn. This site was primarily old field with islands and borders dominated by oriental bittersweet (*Celestras orbiculatus*) that had infested large canopy trees. An Integrated Pest Management approach was utilized in all cases. Currently, no parks served by the SE EPMT utilize biological controls for exotic plant management. Biological control is employed in the treatment of the Hemlock Woolly Adelgid (*Adelges tsugae*), a forest pathogen threatening native eastern hemlock populations.

SE EPMT surveying for and removing mimosa, Obed Wild and Scenic River. NPS Photo.

Using cut-stump treatment on princess tree (*Paulownia tomentosa*) in the Watson Gap area of Cumberland Gap National Historic Site, an area previously used for coal mining. NPS photo.

SE EPMT Team Leader, Toby Obenauer, conducting ATV Rider Safety Certification Course for NPS staff at Little River Canyon National Preserve. NPS photo.

Program Highlights (cont.)

Young Adult Engagement in Natural Resources Careers

One of the strengths of the SE EPMT is our engagement of young adults interested in pursuing natural resource careers. Each intern placed with the SE EPMT receives extensive training in preparation to complete invasive, exotic plant management projects. Many SE EPMT former interns now hold permanent, term and/or seasonal position with NPS and other land management agencies. In 2015, Eric Shaver (SE EPMT '14) acquired a seasonal position with Grand Tetons National Park on a 16 person exotic plant management crew. In 2016, Eric will return to serve as one of the Team Leaders for that program. Also in 2015, Elliott Phillips (SE EPMT '14) secured a seasonal position with Florida State Parks working on prescribed burns and exotic plant management projects. Both of these former interns have indicated that the hands on experience they gained with the SE EPMT gave them the 'edge' over other candidates for these positions.

Summary of Accomplishments

As in previous years, the SE EPMT sought to develop partnerships that result in more efficient control efforts and provide training opportunities for park staff and adjoining land managers. Exotic plant identification and control methods training programs were held for park staff at Abraham Lincoln Birthplace National Historic Site (Kentucky), Cowpens National Battlefield (South Carolina), Kings Mountain National Military Park (South Carolina), and Little River Canyon National Preserve (LIRI) (Alabama). Other partners the SE EPMT has continued to work with include the US Forest Service, Tennessee, North Carolina, and Southeast Exotic Pest Plant Councils, The Nature Conservancy, and the American Conservation Experience. Developing partnerships and educational opportunities are key components to the success of the SE EPMT in invasive, exotic plant management.

Summarized Data for 2015

Measure	Acres
Treated	180
Inventoried/Monitored	0
Gross Infested Area	1,576
Net Infested Area	170
Youth Engagement	
Total Number of Youth Participants and Youth Employees	19
Total Hours for Youth Participants and Youth Employees	3,408

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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 EPMT Annual Report: 2015

Overlooking Cape Hatteras National Seashore (NS) from the Cape Hatteras Lighthouse in Buxton, NC. NPS Photo.

Background

The Southeast Coast Exotic Plant Management Team (SEC EPMT) serves 15 park units in the Carolinas, Georgia, and Alabama. Network parks range from protected seashores and forested wilderness to urban recreational areas and preserved cultural landscapes. The SEC EPMT is stationed at Congaree National Park (CONG), which encompasses one of the last remnants of intact old growth bottomland forest and designated wilderness. The team began as a pilot project in 2005, and unlike most EPMTs, was permanently funded through two base increases to Congaree's operating budget in 2009 and 2010. Although funded differently, the SEC EPMT goals for invasive plant management are similar to the National EPMT Program.

In fiscal year 2015, the SEC EPMT was led by Lauren Serra (Liaison) and Amorita Brackett (Field Crew Leader). The crew was comprised of Student Conservation Association (SCA) youth interns under the Americorps Direct program's Youth in the Great Outdoors initiative. SEC EPMT had overlapping crews this year, with one ten-month crew beginning in October 2015, while the other crew finished up during the winter. The October team of three interns was a shared partnership with Fort Pulaski National Monument (FOPU), and after initial training, the interns spent three months at FOPU on invasive plant projects. The Field Crew Leader served a seven-week detail with the NCR EPMT during the spring and that salary lapse was used to fill a 60-day Biological Science Technician critical hire position once the interns left in the summer.

Program Highlights

Gaining Control over Weed Infestations

Through SEC EPMT efforts, strides have been made in removing invasive plants at parks. This year, the data showed control over 19 gross acres of weed infestations at seven parks, including 8.7 gross acres of Chinese privet (*Ligustrum sinense*) at Horseshoe Bend National Military Park (NMP). After removal of the initial privet infestation along the Nature Trail and collaborative, bi-yearly EPMT-park treatment efforts, the Tallapoosa River is now visible to park visitors. Follow-up treatments by Ocmulgee National Monument (OCMU) staff to SEC EPMT treatments of Chinese tallow (*Triadica sebifera*) has also had a positive affect on aesthetics. The control of 3.1 gross acres of tallow in the natural area has improved the view of the Great Temple Mound, part of OCMU's cultural landscape.

While the viewsheds that have been created are temporary, they are examples of ground gained because of dedicated follow-up invasive plant maintenance treatments by park staff and volunteers. Treatments in these areas are resulting in native plant recruitment. At OCMU, a Climate Change grant the SEC EPMT received is being used to plant trees to accelerate the restoration of a forested wetland following invasive plant removal. Contol of weed infestations was also observed at CONG with the control of 2.7 gross acres of golden bamboo (*Phyllostachys aurea*), and less than one acre populations of common reed (*Phragmites australis*) at Cape Hatteras NS and kudzu (*Pueraria montana*) at Chattahoochee National Recreation Area.

Horseshoe Bend NMP's Tallapoosa River is now visible following control of Chinese privet (*Ligustrum sinense*) before (left) and after (right); dormant. NPS Photo.

Staff from Ocmulgee National Monument and SEC EPMT crew members pose after hand-pulling tung oil (*Vernicia fordii*) at Cumberland Island NS. NPS Photo.

Program Highlights (cont.)

Collaboration and Partnerships

The SEC EPMT took a number of opportunities to initiate collaborations and partnerships in FY15. As part of their invasive plant training with the SEC EPMT, OCMU staff conducted treatment at Cumberland Island NS. While the SEC EPMT interns were based at FOPU, they conducted an In-Service invasive plant training to staff. Further, chainsaw training was held at Cape Lookout NS that included SEC EPMT and OCMU personnel. As part of a SCA Americorps Direct grant, the SEC EPMT posted an instrumental tool for connecting parks on social media where crewmembers maintained a blog describing their adventures with the SEC EPMT.

Through their collaborations and partnerships, the SEC EPMT and its partners had numerous achievements. The SCA crew members conducted a local community "Lunch and Learn" on invasive plant biology and the EPMT program at CONG. CONG volunteers also provided GIS and plant identification skills to the team, and pulled 132 pounds of beefsteak (*Perilla frutescens*) in one day. As the result of continued involvement with South Carolina EPPC, SEC EPMT formed a new partnership with Georgia's Division of Forestry to support EDRR efforts. SE EPMT provided ATV training for the SEC EPMT at Kings Mountain NMP. Kings Mountain staff also provided an S-212 saw instructor to certify the SEC EPMT interns.

Summary of Accomplishments

During FY2015, the SEC EPMT served 13 parks, including conducting treatments at 10 of the 11 network parks and a joint EPMT treatment effort at Assateague Island NS. The team was able to embark on new projects, as well as maintain the invasive plant management investments that have been made at parks over the past five years. The SEC EPMT treated 37 invasive plant species, including a few species that were new to the team. The team continues to offer invasive plant management and herbicide training to network parks, with the goal that park staff will be able to conduct follow-up maintenance treatments. The SEC EPMT Steering Committee was instrumental in ranking and prioritizing projects at parks. Not only were all parks that submitted a project served, the SEC EPMT was able to partake in beneficial training to further their skillsets. Field assistance from

Summary of Accomplishments (cont.)

park staff and volunteers, lodging, travel per diem, supplies, equipment, and training contributions from Southeast Coast network parks, the Southeast Regional Office, and the EPMT program, in conjunction with CONG base funding, provided critical support that made the SEC EPMT accomplishments possible.

Summarized Data for 2015

Measure	Acres
Treated	25
Inventoried/Monitored	92
Gross Infested Area	166
Net Infested Area	24
Youth Engagement	
Total Number of Youth Participants and Youth Employees	15
Total Hours for Youth Participants and Youth Employees	8,168

More Information

Lauren Serra — **803-695-0214**
Ecologist, Southeast Coast EPMT Liaison — **lauren_serra@nps.gov**

Congaree National Park
100 National Park Rd
Hopkins, SC 29061

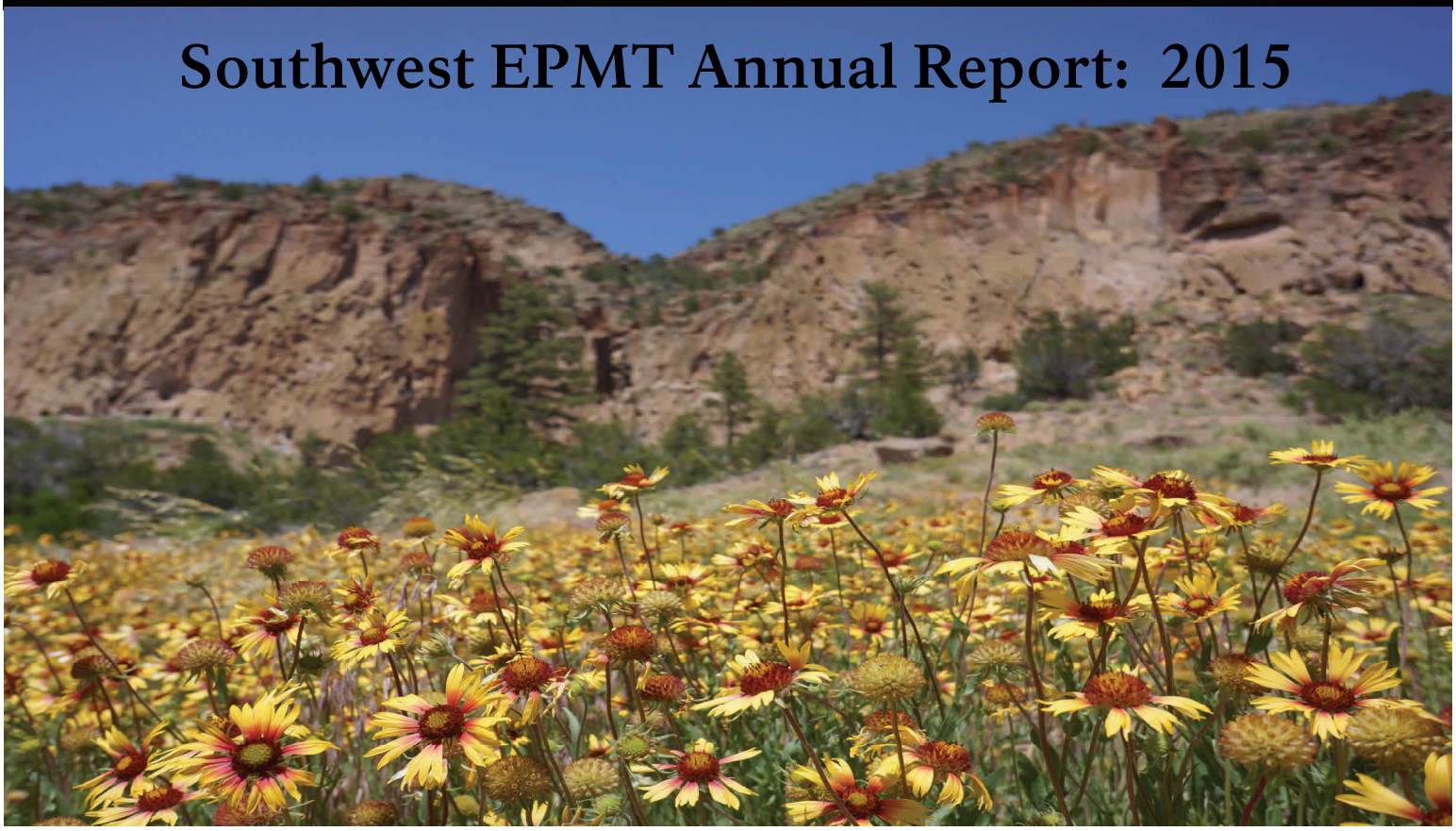
Amorita Brackett — **803-647-3985**
Southeast Coast EPMT Field Crew Leader — **amorita_brackett@nps.gov**

Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Southwest EPMT Annual Report: 2015



Wildflowers for pollinators at Bandelier National Park. Photo by Charles Schelz (NPS).

Background

The Southwest Exotic Plant Management Team (SW EPMT) is ideally situated to play a central role in the restoration of disturbed native ecosystems and habitat throughout the Southwest. The SW EPMT's **vision is:** ***to collaborate with park staff, with other programs within the NPS, with park neighbors, local communities, and other state and federal agencies, to restore the native ecosystems of our parks and surrounding lands.***

The SW EPMT is a network of 54 national parks in six Southwest states that supports a number of programs related to the international issues of invasive plants, ecosystem fragmentation, and habitat destruction. The SW EPMT is working with a wide-ranging coalition of land management agencies, non-profit, and conservation groups to restore native plant biodiversity and the ecosystems that support our native flora and faunal heritage.

The SW EPMT is working with parks to incorporate native ecosystem biodiversity into our diverse portfolio of restoration projects with the following goals: 1) ***Restore park ecosystems***; 2) ***develop a restoration support infrastructure***; 3) ***work in collaboration***; 4) ***create a platform for research***; and 5) ***provide educational opportunities and experiences***.

In the words of Aldo Leopold, "The land ethic simply enlarges the boundaries of the community to include soils, waters, plants and animals, or collectively: the Land." The SW EPMT is committed to restoring the land.

Program Highlights

Increasing and Improving Pollinator Habitat

A good example of a collaborative effort the SW EPMT is involved in is a pollinator restoration project including the plant materials, seed collection, and restoration programs and a number of other partnerships. This work involves looking at the restoration of nectar landscapes from the bottom of the food chain to support pollinator recovery. This bottom-up approach translates into expanding plant materials effort across the region to connect restoration efforts from seed to seed. We are working closely with six park units in Arizona to plan, build, and expand pollinator gardens at Tonto National Monument (NM), Saguaro National Park (NP), Tumacácori National Historical Park (NHP), Coronado NM, and Chiricahua NM. With partnerships and the close collaboration of these parks, the SW EPMT is implementing seed collection, plant propagation, and active restoration planting to support pollinator populations in general, and monarch butterflies in particular.

SW EPMT and many Southwest parks are growing thousands of milkweeds and thousands of other pollinator plants that can support restoration of nectar landscapes in the National Parks in FY16. Because of the relationships we've developed in 2015 we will be able to provide plant materials support of park restoration efforts in ways that cross institutional boundaries by working actively on all agency lands and with shared financial responsibility.

SW EPMT Milkweed Propagation for Pollinator Gardens. Photo by S. Buckley (NPS).

SW EPMT Youth Group Working at Borderland Restoration Greenhouse. Photo by S. Buckley (NPS).

Program Highlights (cont.)

Plant Materials

The SW EPMT realizes the lack and importance of high quality local native plant materials, and has expended a lot of resources to remedy the problem. We are using the collaborative clout of a number of agencies and organizations to fund an infrastructure that serves all partners. We are approaching this problem from two angles: seed collection and development of regional plant material growing centers. The SW EPMT has just released a call for proposals on Grants.gov to employ Native American youth in the propagation of native plants for our restoration projects.

In collaboration with the BLM-Safford field office, the SW EPMT entered into an Interagency Agreement in FY15 to support the development of the Madrean Archipelago Plant Materials program. This project has potential to become international through coordination with the Mexican government and Mexican conservation groups.

The SW EPMT is managing a pilot botany intern crew that has received over $100,000 in support from the BLM-Safford and BLM-Tucson offices, the Coronado National Forest (USFS), the SW EPMT, and the NPS Intermountain Region and Biological Resources Division. The three-person interagency crew is designed to support seed collection, rare plants research, and invasive species mapping on multi-agency lands throughout the Southwest.

Summary of Accomplishments

The SW EPMT is well situated to expand our collaborative efforts throughout the region in the restoration of connected native ecosystems. We have partnerships in place to support the expansion of available plant materials, ongoing research on restoration, and are supporting outreach efforts throughout the Intermountain Region.

The SW EPMT was able to send crews to 31 parks in 2015. Most of this work was restoration planning and exotic plant control. We were able to restore 37.95 acres in 6 parks in 2015, and are slowly but steadily transitioning to a restoration and research model by also incorporating soil ecology and preparation, seed collection, and plant propagation and planting as crew activities.

Summarized Data for 2015

Measure	Acres
Treated	105
Inventoried/Monitored	485
Gross Infested Area	969*
Net Infested Area	485*
Youth Engagement	
Total Number of Youth Participants and Youth Employees	271
Total Hours for Youth Participants and Youth Employees	21,595

*Data not derived from EPMT standard, the National Invasive Species Information Management System (NISIMS)

More Information

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Capulin Volcano National Monument
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FY2015 Exotic Plant Management Team – Program Participants

Alaska EPMT Program Participants

Leadership
Chris Overbaugh (Liaison), Peter Frank (Data Manager shared with WRST), Guy Adema (Supervisor)

Crew (Interns based at parks)
Wendy Mahovlic, Peter Frank, David Krimmel, Morgan Gantz (CBG Intern), Daniel Watson (SCA Intern), Nicole Landry (SCA Intern), Aleksandra Voznitza (SCA Intern), Naramena McCray (SCA Intern), David Golden (SCA Intern), Shannon Apgar-Kurtz (SCA Intern)

Region/Network Support
Alaska Regional Office – Guy Adema, Joel Cusick, Angie Southwould

Park Support
Denali National Park – Carl Roland
Gates of the Arctic National Park – Jeff Rasic
Glacier Bay National Park and Preserve – Lewis Sharman
Katmai National Park and Preserve – Whitney Rapp, Troy Hamon
Kenai Fjords National Park – Christina Kriedeman
Klondike Gold Rush National Historic Park – Theresa Thibault, Jessica Wilbarger
Western Arctic National Parklands – Peter Neitlich, Marci Johnson
Wrangell-St. Elias National Park and Preserve – Miranda Terwilliger, Eric Veach

Partners and Cooperators
Alaska Association of Conservation Districts
Taiya Inlet Watershed Council (TIWC)
Resurrection Bay Conservation Alliance
Skagway Public Library
Copper Basin Cooperative Weed Management Area
Student Conservation Association
Chugach National Forest
USFWS

Volunteers
Student Conservation Association, Elena Hammer, Megan Koster, Shannon Millard, Jason Verhaeghe, Shawna Ashlock, Oliver Onufer, Natalie Onufer, Anita Onufer, Colleen Marinucci and Sue Salmons

Steering Committee
Alaska Regional Office – Guy Adema
National EPMT Advisory Group Rep. – Eric Veach
Central Alaska Park Representative – Carl Roland
Southeast Alaska Park Representative – Lewis Sharman
Southwest Alaska Park Representative – Sharon Kim
Arctic Parks Representative – Dave Swanson
I&M Program Manager – Mike Bower

California EPMT Program Participants

Leadership
Bobbi Simpson (Liaison), Gordon White (Supervisor)

Crew
Park Staff (Golden Gate National Recreation Area, Lassen Volcanic National Park, Redwood National and State Parks, Pinnacles National Park, Point Reyes National Seashore (PORE), Santa Monica Mountains National Recreation Area (SAMO), Sequoia & Kings Canyon National Parks, Whiskeytown National Recreation Area (WHIS), Yosemite National Park, and CaEPMT), Shelterbelt Builders, Riparian Repairs, Great Tree Tenders, Los Angeles and Marin County Fire Programs , NPS Fire Programs (WHIS, PORE, SAMO), Backcountry Horsemen, Golden Gate Parks Conservancy,

Yosemite Conservancy, Point Reyes National Seashore Association Technicians

Region/Network Support
Pacific West Regional Office – Jay Goldsmith (Chief, Resource Management)
Pacific West Regional Office – Erv Gasser (IPM Coordinator)

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

Partners and Cooperators
American Conservation Experience
Back Country Horsemen, Burned Area Rehabilitation (NIFC)
California Agricultural Commissioners and Sealers Association
California Association of Resource Conservation Districts
California Department of Fish and Game
California Department of Food and Agriculture
California Department of Transportation
California Invasive Plant Council
Geoscientists-in-parks
Golden Gate National Parks Conservancy
Humboldt State University Special Programs Foundation
Los Angeles Conservation Corps
Marin County Fire
Point Reyes National Seashore Association
San Francisco Bay Network Inventory and Monitoring Group (NPS)
San Francisco Bay Area Fire Program
Santa Monica National Recreation Area LA County Fire
Santa Monica Youth Corps
Santa Monica Mountains Fund
Sequoia National Forest
Sierra Nevada Conservancy
Student Conservation Association
USDA Forest Service
USDI California Bureau of Land Management
Whiskeytown National Recreation Area (NPS Fire Program)
Yosemite Conservancy
Youth Conservation Corps

Volunteers
American Conservation Corps, Geoscientists in Parks, Youth Conservation Corps

Steering Committee
Pacific West Region, Jay Goldsmith (Chief of Resources Management)
Golden Gate National Parks, Alison Forrestel (Vegetation Chief)
Redwoods National Park, Stassia Samuels (Plant Ecologist)
Santa Monica National Recreation Area, Irina Irvine (Restoration Ecologist)
Yosemite National Park, Garrett Dickman (Botanist)
CaEPMT, Bobbi Simpson (Liaison)

Florida / Caribbean EPMT Program Participants

Leadership
Tony Pernas (Liaison), Shea Bruscia (Data Manager)

Crew
Mike Berg, Chris Muina, Joe Ingram

Region/Network Support
Southeast Region – Chris Furqueron (IPM Coordinator)
South Florida and Caribbean Inventory and Monitoring Network
Brooke Shamblin, Kevin Whelan, Judd Patterson, Jed Redwine

Park Support
Big Cypress National Preserve – William Snyder
Biscayne National Park – Shelby Moneysmith, Vanessa McDonough
Buck Island Reef National Monument – Ian Lundgren, Zandy Hillis-Starr
Canaveral National Seashore – Kristen Kneifl
DeSoto National Memorial – Jorge Acevedo
Dry Tortugas National Park – Tracy Ziegler, Kayla Nimmo
Everglades National Park – Hillary Cooley, Jonathan Taylor
Fort Matanzas National Monument – Kurt Foote
Gulf Islands National Seashore – Mark Nicholas
Timucuan Ecological and Historic Preserve – Shauna Allen, Cicely Pontiflet

Virgin Islands National Park –Thomas Kelly

Partners and Cooperators
Florida Wildlife Conservation – Linda King, Dennis Giardina, Jackie Smith, Jennifer Ketterlin
Miami-Dade County – Jane Dozier, Dallas Hazelton, Jeff Fobb, Frank Ridgely
US Department of Agriculture – Andrew Derksen, Josh Friers
US Army Corps of Engineers – Jon Lane, Jessica Spencer
US Fish & Wildlife Service – William Thomas
South Florida Water Management District – LeRoy Rodgers, Christen Mason, Christina Stylianos, Manny Porras

Steering Committee
Big Cypress National Preserve – JD Lee
Biscayne National Park – Brian Carlstrom
Buck Island Reef National Monument/Christiansted National Historic Site/Salt River National Historic Park and Ecological Reserve – Joel Tutein
Canaveral National Seashore – Myrna Palfrey-Perez
Desoto National Memorial – Jorge Acevedo
Everglades National Park/Dry Tortugas National Park – Pedro Ramos
Castillo de San Marcos National Monument/Fort Matanzas National Monument – Gordie Wilson
Gulf Islands National Seashore – Daniel Brown
Timucuan Ecological and Historic Preserve/Fort Caroline National Memorial – Barbara Goodman
Virgin Islands National Park – Brion Fitzgerald

Gulf Coast EPMT Program Participants

Leadership
Eric Worsham (Liaison), Chris Furqueron (Supervisor)

Crew
Texas Conservation Corps, American YouthWorks, Cutting Edge Forestry

Region/Network Support
Southeast Region Office – Chris Furqueron, supervisor (IPM Coordinator)
Intermountain Region Office – Myron Chase (IPM Coordinator), Mark Sturm (Biological Resources Program Manager)

Park Support
Host Park - Big Thicket National Preserve – Wayne Prokopetz (superintendent) Kenneth Hyde (Chief Resource Management)

Partners and Cooperators
Texas Conservation Corps
American YouthWorks
Colorado State University
Cutting Edge Forestry
Ladybird Johnson Wildflower Center
Rice University
Saul D. Petty
Union Forestry
University of Texas
US Army Corps of Engineers
USFWS Invasive Species Coordinator for Texas & Oklahoma

Volunteers
AmeriCorps, American Youth Works, Texas Conservation Corps

Steering Committee
Big Thicket National Preserve – Wayne Prokopetz (superintendent) Kenneth Hyde (Chief Resource Management)
Gulf Islands National Seashore – Gary Hopkins (Biologist)
Jean Lafitte National Historic Park and Preserve – Dusty Pate (Natural Resource Program Manager)
Natchez Trace Parkway – Lisa McInnis (Natural Resource Management)
Palo Alto Battlefield National Historic Park – Rolando Garza (Integrated Resource Manager)
San Antonio Missions National Historic Park – Greg Mitchell (Biologist), Greg Smith (Chief RM/VP)
Vicksburg National Military Park – Sara Strickland (Natural Resource Program Manager)

Great Lakes EPMT Program Participants

Leadership
Isaiah Messerly (Crew Leader), Rebecca Key (Data Manager), Tammy Keniry (Admin Assistance), Kelly Garrison (IT Support)

Crew
Adam Sieges, Drew Zawacki

Park Field Crews
Apostle Islands National Lakeshore - Elizabeth Newton
Ice Age National Scenic Trail (IATR) - Pam Schuler (Park Manager), Multiple Volunteers
Isle Royale National Park - Sara Kerfoot
Mississippi National River & Recreation Area - Neil Smarjesse, Oliver Liu
PRIO - Rebecca Holmquist, Laura Siegert
Voyageurs National Park - John Snyder (Resource Manager)

Region/Network Support
Carmen Thomson (Midwest Regional Office)

Park Support
See Steering Committee section
Additional Contacts: John Madden (IATR), Scott Weyenberg (Saint Croix National Scenic Riverway)

Partners and Cooperators
Northwood Cooperative Weed Management Area
St. Croix Red Cedar Cooperative Weed Management Area
US Fish & Wildlife Service – Whittlesey Creek National Wildlife Refuge
Tana Route - Great Lakes I&M Vegetation Monitoring Crew (at VOYA)

Steering Committee
Apostle Islands National Lakeshore – Peggy Burkman
Grand Portage National Monument – Brandon Seitz
Ice Age National Trail – Pam Schuler
Isle Royale National Park – Paul Brown
Indiana Dunes National Lakeshore – John Kwilosz
Mississippi River and Recreation Area – Nancy Duncan
Pictured Rocks National Lakeshore – Bruce Leutscher
St. Croix National Scenic Riverway – Jill Medland
Sleeping Bear Dunes National Lakeshore – Amanda Brushaber
Voyageurs National Park – John Snyder
NPS Midwest Regional Office – Julie Stumpf

Heartland EPMT Program Participants

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

Crew
Jordan Bell (Project Coordinator), Andrew Bishop (Project Coordinator), Jessica Salesman (Project Coordinator), Chad Gross (Cartographer)

Partners and Cooperators
Conservation Corps of Iowa

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

Board of Directors
Effigy Mounds National Monument – Jim Nepstad (Superintendent)
Herbert Hoover National Historic Site – Pete Swisher (Chair / Superintendent)
Hopewell Culture National Historical Park – Dean Alexander (Superintendent)
Lincoln Boyhood National Memorial – Kendell Thompson (Superintendent)
Pipestone National Monument – Glen Livermont (Superintendent)
Midwest Regional Office – Carmen Thomson (Regional I&M Program Manager)
Heartland Network – Mike DeBacker (HTLN Program Coordinator)

Technical Committee
Arkansas Post National Memorial – Kirby McCallie
Buffalo National River – Caven Clark
Cuyahoga Valley National Park – Meg Plona
Effigy Mounds National Monument – Rodney Rovang

George Washington Carver National Monument – Lana Henry
Herbert Hoover National Historic Site – Mike Wilson
Homestead National Monument of America – Jesse Bolli
Hopewell Culture National Historical Park – Bruce Lombardo
Hot Springs National Park – Shelley Todd
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 EPMT Program Participants

Leadership
Curt Deuser (Liaison), Tarl Norman (Crew Supervisor), Timothy Federal (Data Manager), Dwayne Coleman (Squad Leader), Kelly Mathis (Crew Leader), Sue Knowles (Administrative Assistant; shared position with LAKE RM), Scott Briggs (Budget Assistant; shared position with LAKE RM)

Crew
Joseph Castello, Dawn Hulton, Timothy Marsh, Kevin Reichling, Matthew Duffy, Alexander Heeren, Daniel Townsend, Michael Contrivo, Nicholas Brasier, Darrin Gobble, Daniel McLendon, Maura Schumacher, Ashley Kroon, Keith Brothers, Allison Kosakowski, Schylar Gholson, Eric Teitelbaum, Andy Pigg, Travis Fulton, and Alex Poirier

Region Support
Jay Goldsmith (PWR) and Mark Sturm (IMR)

Lake Mead NRA Host Park Support:
Jennifer Haley (Chief of Resource Management and Visitor Services), Sue Knowles (Administrative Assistant), Lila Walker, (Administrative Officer), Scott Briggs (Budget Assistant), Russ Brengman (Safety Officer), Patrick Gubbins (Deputy Superintendent)

Park Support
Arches NP and Canyonlands NP (Southeast Utah Group): Clay Kark, Clay Allred, and Cheryl Decker
Joshua Tree NP: Miriam Vamstad and Mason Price
Death Valley NP: Josh Hoines and Kirtsen Lund
Glen Canyon NRA: Lonnie Pilkington and Brad Jorgensen
Bryce Canyon NP: Eric Vasquez and Katie Johnson
Capitol Reef NP: Gary Lenhart and Sandra Borthwick
Great Basin NP: Ben Roberts, Patrick Mingus and Meg Horner
Mojave NP: Anne Kearns and Andrew Kaiser
Zion NP: Brian Black and David Firmage
Lake Mead NRA: Alice Newton, Carrie Norman, Dara Scherpenisse and Kelly Wallace
Parashant NM: Rosie Pepito, Raymond Klein and Jennifer Fox
Pipe Spring NM: Amber Van Alfen and Brian Black
Manzanar NHS: Jeff Burton, Gerry Enes, and Troy Strawn

Partners and Cooperators
Bureau of Land Management - Southern NV District: Lauren Brown, JJ Smith and Sean McEldery
US Fish and Wildlife Service - Havasu NWR: Brandon Melton, Martin Uriostegue and Daryl Magnuson; Pahranagat NWR: Amy Lavoie and Jim Docktor; Bill Williams NWR: Kathleen Blair; AZ ISST Coordinator: Brenda Zaun
US Forest Service - Spring Mountains NRA: Jennifer Brickey; Coconino NF: Laura Moser
Bureau of Reclamation - Lower Colorado River Region: Marc Maynard, Bill Martin, Jessica Stegmeier and Becky Blasius
Clark County, Nevada Desert Conservation Program - Muddy River Reserve: Liz Bickmore and Boulder City Conservation Easement: John Brekke
Clark County Wetlands Park and Nature Preserve - Brandon Barrow
Marine Corps Yuma Air Station - Abigail Rosenberg, Del Maslen and Richard Cerka
University of Arizona - Jim Malusa (Research Botanist)
Mohave County, AZ Parks Department/Davis Camp - Joe Donovan and Roberto Martinez

Volunteers
Lamar, Daryl, Pat and Pat Riley

Mid-Atlantic EPMT Program Participants

Leadership
Brian Lockwood (Liaison), Nathan Wender (Crew Leader), Wayne Millington (Supervisor – partial), Casey Reese (Supervisor – partial)

Crew
Jonathan Mikolin, James Cary, Lyddia Wilson, Tabitha Futrell – SCA, Rebecca Polzin – SCA

Region Support
Northeast Regional Office – Wayne Millington, supervisor (Regional IPM Coordinator)
Casey Reese, supervisor (Regional IPM Coordinator)
Carmen Chapin, (Chief Natural Resource Management)

Park Support
Host Park – Shenandoah National Park – Jim Northup (Superintendent), Jim Schaberl (Chief, Natural and Cultural Resources), Jake Hughes (Lead Biological Science Technician – exotics)
Appomattox Courthouse NHP – Brian Eick
Appalachian NST – Casey Reese
Booker T. Washington NM – Timothy Sims
Colonial NHP – Dorothy Geyer
Fredericksburg and Spotsylvania County Battlefields Memorial NMP – Gregg Kneipp
Gettysburg NMP and Eisenhower NHS – Zach Bolitho, and Randy Krichten
George Washington Birthplace NM and Thomas Stone NHS – Melissa Cobern and Amy Muraca
Hampton NHS – Paul Bitzel, Anna Von Lunz, Amanda Ramey, Elizabeth Derr
Hopewell Furnace NHS and Valley Forge NHP – Kate Jensen
New River Gorge NR, Bluestone NSR, and Gauley River NRA – John Perez
Petersburg NB – Dave Shockley and Tim Blumenschine
Richmond NBP – Kristen Allen

Partners and Cooperators
Student Conservation Association
Smithsonian Conservation Biology Institute
Virginia Department of Agriculture and Consumer Services

Volunteers (hours contributed)
James Akerson

Steering Committee
Appomattox Courthouse NHP – Brian Eick
Appalachian NST – Casey Reese
Booker T. Washington NM – Timothy Sims
Colonial NHP – Dorothy Geyer
Fredericksburg and Spotsylvania County Battlefields Memorial NMP – Gregg Kneipp
Gettysburg NMP and Eisenhower NHS – Zach Bolitho
George Washington Birthplace NM and Thomas Stone NHS – Melissa Cobern, Amy Muraca
Hampton NHS – Paul Bitzel, Anna Von Lunz, Elizabeth Derr
Hopewell Furnace NHS and Valley Forge NHP – Kate Jensen
New River Gorge NR, Bluestone NSR, and Gauley River NRA – John Perez
Petersburg NB – Timothy Blumenschine
Richmond NBP – Kristen Allen
Shenandoah NP – Jim Schaberl

North Coast / Cascades Network EPMT Program Participants

Leadership
Cheryl Decker (Liaison, 8/17/15 – present), Todd Neel (Liaison, 10/1/14 – 10/31/14), Dan Campbell (Data Manager/Crew Supervisor; Acting-Liaison 11/3/14 – 3/1/15)

Crew
Cody Hagen (Lead, Oct. 2014), Sophie Wilhoit, Eric Teitelbaum

Region/Network Support
Pacific West Region Office – Erv Gasser (IPM Coordinator)
NCCN Science Advisor – Regina Rochefort

Park Support
Ebey's Landing National Historical Reserve – Roy Zipp
Lake Chelan National Recreation Area – Vicki Gempko
Lewis and Clark National Park – Carla Cole, Chris Clatterbuck

Mount Rainier National Park – Lou Whiteaker, Julie Hover
North Cascades National Park / Ross Lake National Recreation Area – Jack Oelfke, Mignonne Bivin
Olympic National Park – Louise Johnson
San Juan Island National Historic Park – Jerald Weaver

National Capital Region EPMT Program Participants

Leadership
Mark Frey (Liaison), Ryan Tietjen (Team Leader), Vacant (Data Manager)

Crew
Casey Cate (Squad Leader), Josh Rudder (Squad Leader), William Bloomhardt (Squad Leader), Aleksandra Voznitza (Squad Leader), Allison Hay, Brandon Hack, Erica Carlsson, Richard Abanes, Nathan Finney, Taylor Brann, Casey DeMarisco (intern), Naomi Hawk (intern), Steve Ramanand (intern), Jillian Seagraves (intern)

Region Support
National Capital Region Office – Carol Pollio (Chief of Natural Resources and Sciences)

Park Support
Antietam National Battlefield – Joe Calzarette (Natural Resources Program Manager)
Appalachian National Scenic Trail – Casey Reese (Natural Resource Manager)
Assateague Island National Seashore – Bill Hulslander (Chief, Resource Management), Jonathan Chase (Biological Science Technician)
Catocin Mountain Park – P. Scott Bell (Chief, Resources Management), Becky Loncosky (Biologist)
Chesapeake and Ohio Canal National Historical Park – Michele Carter (Natural Resources Program Manager), Andrew Landsman (Biologist)
George Washington Memorial Parkway – Brent Steury (Natural Resources Program Manager), Erik Oberg (Biologist), Ken Adams (Biological Science Technician)
Harpers Ferry National Historical Park – Mia Parsons (Chief, Resource Management), Dale Nisbet (Natural Resource Specialist)
Manassas National Battlefield Park – Bryan Gorsira (Natural Resources Program Manager), Courtney Asher (Biological Science Technician)
Monocacy National Battlefield– Andrew Banasik (Natural Resources Program Manager)
National Capital Parks - East – Tanya Gossett (Chief, Resource Management), Mikaila Milton (Biologist)
National Mall and Memorial Parks – Mary Willeford Bair (Natural Resource Specialist)
Prince William Forest Park – Ken Ferebee (Acting Chief, Resource Management), Eric Kelley (Biologist)
Rock Creek Park – Nick Bartolomeo (Chief, Resource Management), Ana Chuquin (Biological Science Technician)
Wolf Trap National Park for the Performing Arts – Chris Schuster (Gardener)

Partners and Cooperators
Animal and Plant Health Inspection Service – Charlie Brown (APHIS National Weed Manager)
Appalachian Trail Conservancy – Michele Miller (Resource Program Manager) and Marian Orlousky (Northern Resource Management Coordinator)
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)
Anacostia Watershed Society – Jorge Bogantes Montero (Natural Resource Specialist)
DC Cooperative Weed Management Area – Damien Ossi (Wildlife Biologist)

Volunteers (hours contributed)
Alexandra Ashby (2), Chris Bischak (4), Jackie Boyster (4), Dan Breen (4), Keith Coombs (4), Nicole Dutcher (4), Steph Frederick (4), Peggy Hammond (4), Darcy Herman (9), Renee Johnson (4), Christine Khoury (120), Allison Mastalerz (2), Laura Plaze (3), Mary Randolph (48), Tom Reyes (4), Lindsay Ringer (4), Stephen Ross (27), Donna Shorrock (4), Chris Traft (4), Katarzyna Trzopek (1), Nicolai Werner (42), Alex Zelles (4)

Steering Committee
Antietam National Battlefield – Joe Calzarette

Catoctin Mountain Park – P. Scott Bell
Chesapeake and Ohio Canal National Historical Park – Michele Carter
George Washington Memorial Parkway – Brent Steury
Harpers Ferry National Historical Park – Dale Nisbet
Manassas National Battlefield Park – Bryan Gorsira
Monocacy National Battlefield– Andrew Banasik
National Capital Parks-East – Mikaila Milton
National Mall and Memorial Parks – Mary Willeford Bair
Prince William Forest Park – Vacant
Rock Creek Park – Ana Chuquin
Wolf Trap National Park for the Performing Arts – Chris Schuster
NCR-EPMT Liaison – Mark Frey
NCR Chief of Natural Resources and Science – Carol Pollio
NCR Integrated Pest Management Specialist – Jil Swearingen
NCR Research Coordinator – Diane Pavek
NCR Inventory & Monitoring Network Program Manager – Pat Campbell

Northeast EPMT Program Participants

Leadership
Betsy Lyman (Liaison), Brian McDonnell (Team Leader)

Crew
Gabriella Ciabattoni, Maxwell Dolphin (Biotech Seasonals)

Region/Network Support
Casey Reese, NER IPM Coordinator; Carmen Chapin, NER Chief of Natural Resources

Park Support
Allegheny Portage Railroad National Historic Site – Kathy Penrod (Natural Resource Specialist), Doug Snavely (JOFL Maintenance)
Boston Harbor Islands National Recreation Area (BOHA) – Marc Albert (Natural Resource Specialist), Valerie Wilcox (Natural Resource Technician), Andrew Petit de Mange (Natural Resource Technician), Alex Etkind (BOHA biotech), Suzanne Meek (GIS intern)
Cape Cod National Seashore – Stephen M. Smith (Plant Ecologist) , Julianna (SCA intern)
Delaware Water Gap National Recreation Area – Larry Hilaire (Wildlife Biologist), Jeffrey Shreiner (Ecologist), Amanda Stein (Biologist)
Fire Island National Seashore – Jordan Raphael (Park Biologist), Lindsey Ries (Wildlife Biologist), Hannah (high school intern), Kelsey (Biological Technician), Tom (Biological Technician)
Frederick Law Olmsted National Historic Site - Mona McKindley (Gardener)
Gateway National Recreation Area – Doug Adamo (Chief, Natural Resources), Brooke Costanza (Biological Technician), Jeanne McArthur-Heuser (Interpretive Park Ranger), Tami Pearl (Assateague Island Biological Technician on detail as Gateway NRA Biologist), George Frame
Morristown National Historical Park – Robert Masson (Natural Resource Specialist)
Upper Delaware Scenic and Recreational River – Don Hamilton (Chief, Natural Resources), Jamie Myers (Biologist)

Partners and Cooperators
Appalachian National Scenic Trail -
Marian Orlousky (Appalachian Trail Conservancy (ATC))
Linda Rohleder (New York-New Jersey Trail Conference (also ATC)), Shelby Timm (NY/NJ TC team leader), Justin, Brian, Cody (NY/NJ TC team)
Steve, Charlie, Daniel (botanists and ATC trail club members at Day Mountain, Dalton, MA)
Boston Harbor Islands National Recreation Area – Russ Bowles (UMASS boat captain (partner of BOHA--transports EPMT to BOHA islands)

Northern Great Plains EPMT Program Participants

Leadership
Brennan Hauk (Liaison), Angela Jarding (Data Manager), Carmen Thomson (Supervisor)

Crew
Mark Slovek, John Shoup, Lee Vaughan, Aaron Chapman, Maura Schumacher, Nick Brasier,

Montana Conservation Corps, Minnesota Conservation Corps

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

Park Support
Host Parks - Badlands National Park - Milt Haar and Theodore Roosevelt National Park – Bill Whitworth

Partners and Cooperators
Northern Great Plains I&M Network
Colorado State University
NRCS Bismark Plant Materials Center
USGS
Northern Great Plains Fire Management
Wayne Duckwitz
NRCS Bismark Plant Materials Center

Steering Committee
Badlands National Park – Milton Haar (Ecologist)
Ft. Union Trading Post National Historic Site – Andy Banta (Superintendent)
Midwest Region I&M-EPMT Program Manager – Carmen Thomson (I&M Program Manager)
Niobrara National Scenic River – Steve Thede (Superintendent)
Theodore Roosevelt National Park – Bill Whitworth (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 EPMT Program Participants

Leadership
Steven Bekedam (Liaison), Gary Ludwig (Glacier National Park (GLAC) Team Leader), Mickey Pierce (Yellowstone National Park (YELL) Team Leader), Andrew Ringholz (YELL Team Leader)

Crew
Arley Canfield (GLAC biotech), Alex Poirier (GLAC biotech), Walt Householder (YELL biotech), Pat Clark (YELL biotech), Allyson Rose (YELL biotech)

Regional Support
Intermountain Regional Office – Mark Sturm (Biological Resources Lead), Brian Smith (Program Administrative Assistant), Stella Gonzales (Budget Analyst)

Park Support
Bear Paw National Battlefield – Heidi Becker (Natural Resources Program Manager)
Bighole National Battlefield – Jimmer Stevenson (Maintenance Foreman)
Bighorn Canyon National Recreation Area – Ryan Felkins (Natural Resource Manager)
City of Rocks National Reserve – Kristen Bastis (Chief, Integrated Resource Management), Trenton Durfee (Biological Science Technician), 1 intern with the resource program
Craters of the Moon National Monument and Preserve – Jim Bromberg (Vegetation Ecologist), 3 members of the CRMO vegetation crew
Dinosaur National Monument – Tamara Naumann (Biologist), Patrick Fleming (Crew Leader)
Fossil Butte National Monument – Arvid Aase (Archaeologist), 1 biological science technician and 1 SCA intern
Glacier National Park – Dawn LaFleur (IPM Biologist), Matt Kennedy (GLAC Crew Leader), Debbie Gilk (Administrative Assistant)
Golden Spike National Historic Site – Leslie Crossland (Park Superintendent), Alycia Hayes (Cultural Resource Specialist)
Grant–Kohrs Ranch National Historic Site – Jason Smith (Natural Resource Specialist)
Grand Teton National Park – Dan Reinhart (Vegetation Branch Lead), John Vladimirtsev (Biologist), Jason McDannold (GRTE Crew Leader)
Hagerman Fossil Beds National Monument – JoAnn Blalack (Chief, Integrated Resource Management), Ray Vader (Maintenance Foreman)
John D. Rockefeller Memorial Parkway – John Vladimirtsev (Biologist), Jason McDannold (GRTE Crew Leader)
Little Bighorn National Battlefield – Chris Ziegler (Chief, Integrated Resource Management), Mariane Doane (Biologist)
Minidoka National Historic Site – JoAnn Blalack, (Chief, Integrated Resource Management), Ray Vader (Maintenance Foreman)

Rocky Mountain National Park – Hanem Aboulezz (Restoration Ecologist), Brian Kolokowsky (Crew Leader), 4 members of ROMO vegetation crew
Yellowstone National Park – Roy Renkin (Vegetation Ecologist), Sue Mills (Natural Resource Specialist), Alana Darr (Administrative Assistant), Brian Teets (North District Crew Leader), Troy Nedved (West District Crew Leader)

Partners and Cooperators
Montana Conservation Corp – Chris Nesset
Box Elder County (UT) Cooperative Weed Management Area – Steve Johnson, weed superintendent
Wyoming Game and Fish Department - Jerry Altermatt

Steering Committee
Bear Paw National Battlefield – Jason Lyon, NEPE, Chief of Integrated Resource Management
Bighole National Battlefield – Jimmer Stevenson
Bighorn Canyon National Recreation Area – Ryan Felkins
City of Rocks National Reserve – Kristen Bastis
Craters of the Moon National Monument and Preserve – Jim Bromberg
Dinosaur National Monument – Tamara Naumann
Fossil Butte National Monument – Arvid Aase
Glacier National Park – Dawn LaFleur
Golden Spike National Historic Site – Leslie Crossland
Grant–Kohrs Ranch National Historic Site – Jason Smith
Grand Teton National Park – Dan Reinhart
Hagerman Fossil Beds National Monument – JoAnn Blalack
John D. Rockefeller Memorial Parkway – John Vladimirtsev
Little Bighorn National Battlefield – Chris Ziegler
Minidoka National Historic Site – Ray Vader
Rocky Mountain National Park – Hanem Aboulezz
Yellowstone National Park – Sue Mills
NRM-EPMT Liaison – Steven Bekedam
IMR Biological Resources Program Lead – Mark Sturm

Pacific Islands EPMT Program Participants

Leadership
Jeremy Gooding (Liaison), Steve Robertson (Chief, Resources Management Division: Haleakala National Park), Rhonda Loh (Chief, Resources Management Division: Hawaii Volcanoes National Park), David Benitez (Ecologist: Hawaii Volcanoes National Park))

Crew
Hawaii Volcanoes National Park Resources Management, Haleakala National Park Vegetation Management, Maui Invasive Species Committee (MISC) Field Crews, Partner Park on-site experts)

Region/Network Support
Pacific West Regional Office

Park Support
Host Park: Haleakala National Park

Partners and Cooperators
Partner Parks - Haleakala National Park, Hawaii Volcanoes National Park, Kalaupapa National Historic Park, Kaloko-Honokohau National Historic Park, Pu'uhonua o Honaunau National Historic Park, Pu'ukohola National Historic Site
Maui Invasive Species Committee (MISC) - University of Hawai'i – Pacific Cooperative Studies Unit, University of Hawai'i – College of Tropical Agriculture and Human Resources, National Park Service, Haleakala National Park, Maui County Department of Water Supply, Maui County Office of Economic Development, Hawai'i Department of Agriculture, Hawai'i Department of Land and Natural Resources, Hawai'i Invasive Species Council, The Nature Conservancy of Hawaii, U.S. Department of Agriculture – Forest Service, Tri-Isle Resource Conservation and Development Council, Inc., U.S. Fish and Wildlife Service
East Maui Watershed Partnership (EMWP)-Hawai'i Department of Land and Natural Resources Haleakala Ranch, County of Maui Department of Water Supply, The Nature Conservancy Hawaii, East Maui Irrigation, University of Hawaii – Pacific Cooperative Studies Unit, Haleakala National Park

Leeward Haleakala Watershed Restoration Partnership (LHWRP) - See: http://lhwrp.org/
Three Mountain Alliance - 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, *In association with the Pacific Cooperative Studies Unit and the University of Hawaii
Darcy Hu, PhD., CESU Coordinator & Science Advisor, Pacific West Regional Office, Hawai'i-Pacific Islands, Hawaii National Park, HI 96718
National Park Service, Pacific West Regional Office (PWR) Agreements - Lilette Baltodano, Financial Agreements Officer, Justine Bersonda, Contract Specialist, William Nash, Contract Specialist, Alexander Salgado, Procurement Clerk

Volunteers
Hawaii Ocean View Community Association, Sierra Club of Hawaii, Friends of Haleakala National Park, Maui Job Corps, Pacific Whale Foundation, Seabury Hall Winterim Program, BSC Troop 35, University of Hawaii Maui College, Ron Nagata Ohana, AmeriCorps, Volcano Charter School, Mililani Middle School, Friends of Hawaii Volcanoes National Park, Forest Restoration Group, Paul and Jane Field

Steering Committee
Maui Nui (Islands of Maui, Molokai, Lanai, & Kahoolawe):
- Liaison, Pacific Islands Exotic Plant Management Team
- Resources Management Chief, Haleakala National Park
- Active Members of Maui Invasive Species Committee
- Manager, Molokai Invasive Species Committee
- Resources Management Chief, Kalaupapa National Historic Park
- Relevant Subject Matter Experts as Appropriate

Island of Hawaii (Big Island):
- Resources Management Chief, Hawaii Volcanoes National Park
- Ecologist, Hawaii Volcanoes National Park
- Pest Control Worker, Hawaii Volcanoes National Park
- Resources Management Chief, Kaloko-Honokohau National Historic Park
- Resources Management Chief, Pu’uhonua o Honaunau National Historic Park
- Resources Management Chief, Pu’ukohola National Historic Site
- Relevant Subject Matter Experts as Appropriate

Southeast EPMT Program Participants

Leadership
Nancy Dagley (Liaison), Toby Obenauer (Crew Leader)

Crew
Greg Zickgraf, Miles Lampo, Daniel McLendon, and Elliott Phillips

Region/Network Support
Chris Furqueron (Chief - IPM, Invasives, and EPMT Program)

Volunteers
Jane Hargreaves, Arthur Miller, Diane Riggs

Steering Committee, Park Contacts, technical and field assistance
Abraham Lincoln Birthplace National Historical Park - Jennifer Jones
Andrew Johnson National Historic Site - Lizzie Watts
Appalachian Trail Conservancy - Amy Snyder
Big South Fork National River & Recreation Area, Obed Wild & Scenic River - Marie Tackett
Blue Ridge Parkway - Bambi Teague
Carl Sandburg Home National Historic Site - Irene Van Hoff
Chickamauga & Chattanooga National Military Park - Jim Szyjkowski
Cowpens National Battlefield, Kings Mountain National Military Park, Ninety Six National Historic Site - Chris Revels
Cumberland Gap National Historical Park - Jenny Beeler
Fort Donelson National Battlefield - Brian McCutcheon
Great Smoky Mountains National Park - Kris Johnson

Guilford Courthouse National Military Park - Vicki Boyce
Little River Canyon National Preserve, Russell Cave National Monument - Mary Shew
Mammoth Cave National Park - Bobby Carson
Shiloh National Military Park - Marcus Johnson
Stones River National Battlefield - Gib Backlund

Southeast Coast EPMT Program Participants

Leadership
Lauren Serra (Liaison), Amorita Brackett (Crew Leader)

Crew
Sean Kelsay, Amanda George, Jamela Thompson, Lina Montopoli, Marko Capoferri, Gregory Whitaker (Student Conservation Association Interns)

Region/Network Support
Southeast Regional Office - Chris Furqueron (Branch Chief - IPM, Invasives, and EPMT Programs)
BRD's Exotic Plant Management Team Program Network, including NCR-EPMT for Brackett's Detail

Park Support
Cape Hatteras National Seashore / Fort Raleigh National Historic Site / Wright Brothers National Monument – Sara Strickland, Randy Swilling, Dave Hallac
Cape Lookout National Seashore – Pat Kenney, Jeri DeYoung, Jon Altman, Sue Stuska, Steve Sabol
Chattahoochee River National Recreation Area – Allyson Read, Paula Capece, Deanna Greco, Joseph Jarquin
Congaree National Park – Theresa Yednock, Frank Henning, Tracy Stakely, Liz Struhar, Laura Tyler
Cumberland Island National Seashore – Doug Hoffman, John Fry
Fort Frederica National Monument – Laura Pickens, Mary Beth Wester
Fort Pulaski National Monument – Laura Rich-Acosta, Melissa Memory, Miguel Roman, George Toomer
Fort Sumter National Monument (Fort Moultrie) / Charles Pinckney National Historic Site – Rick Dorrance
Horseshoe Bend National Military Park – Brian Robinson, Doyle Sapp, Todd Roeder, Tammie Renicker
Kennesaw Mountain National Battlefield Park – Thomas Sparks, Carlos Hurston
Moores Creek National Battlefield – James Sutton, Ricardo Perez
Ocmulgee National Monument – Kevin Wyrick, Allen Huckabee, Jim David, Gabrielle Smith, Irving Brock
Kings Mountain National Battlefield - Alex Scronce

Partners and Cooperators
Kennesaw Mountain Trail Club
Old-Growth Bottomland Forest Research and Education Center
Georgia Division of Forestry
South Carolina Exotic Pest Plant Council
The Student Conservation Association

Steering Committee
Tracy Stakely (Superintendent, Congaree National Park)
Pat Kenney (Superintendent, Cape Lookout National Seashore)
John Fry (Chief of Resource Management, Cumberland Island National Seashore)
Chris Furqueron (Branch Chief - IPM, Invasives, and EPMT Programs, SERO)
Paula Capece and Deanna Greco (Natural Resources Program Manager, Chattahoochee River National Recreation Area)
Ricardo Perez (Superintendent, Moores Creek National Battlefield)

Volunteers
Miriam Oudejans, Keith Bradley, James Lyles, Palmetto Garden Club, Ed Siggelko, John Hart, Liz Skelly (Congaree National Park Volunteer-In-Parks Program)
Harry Carpenter, Doug Tasse, Scott Mackay, Danny Leigh (Kennesaw Mountain Trail Club)
Arthur Caldwell (Ocmulgee National Park Volunteer-In-Parks Program)

Southwest EPMT Program Participants

Leadership

Charles Schelz (Program Manager/Liaison/Ecologist, Based in Tucson), Steve Buckley (Botanist/Ecologist, Based in Tucson), Mark Jacobson (Biological Technician/ GIS Technician ,Based in Tucson), Eric Lassance (Crew Leader/Biological Technician, Based in Tucson), Patrick Wharton (Crew Leader/Biological Technician, Based at Capulin Volcano NM)

Crew

Texas Youth Conservation Corp, Austin, Texas, American Conservation Experience, Flagstaff, Arizona, Arizona Youth Conservation Corps, Tucson and Flagstaff, Arizona, Sky Island Alliance, Tucson, Arizona, Borderlands Restoration, Patagonia, Arizona, Northern Arizona University, Flagstaff, Arizona

Regional/Network Support

Intermountain Region Office – Mark Sturm, supervisor (Natural Resources Division, Biological Resource Program Manager), Myron Chase (IPM Coordinator)

Park Support

Host Park 1 – Saguaro National Park – Darla Sidles (Superintendent), Scott Stonum (Chief Resource Management) and Sonoran Desert Inventory and Monitoring Program – Andy Hubbard (Program Manager)

Host Park 2 – Capulin Volcano National Monument – Peter Amato (Superintendent), Zach Cartmell (Chief Resource Management)

Partners and Cooperators

US National Park Service, Inventory and Monitoring Program (Federal)
Texas Youth Conservation Corps
American Conservation Experience
Arizona Youth Conservation Corps
Sky Island Alliance (Arizona, New Mexico, NGO)
Colorado State University, Fort Collins
Arizona State University
Desert Southwest Cooperative Ecosystem Studies Unit (University of Arizona)
Northern Arizona University
University of Idaho, Moscow
University of Nevada, Las Vegas
Borderlands Restoration, L3C (Arizona)
Commission for Environmental Cooperation (Federal)
Cuenca Los Ojos (Mexico)
University of Arizona Southwest Center (Arizona)
Hummingbird Monitoring Network (NGO)
Institute for Applied Ecology–Southwest Program (NGO)
Madrean Archipelago Plant Propagation Center (MAPP) (Southwest)
Make Way for Monarchs (National)
Monarch Joint Venture (National)
Natural Resources Conservation Service, Los Lunas PMC (New Mexico)
Natural Resources Conservation Service, Tucson PMC (Arizona)
Southwest Monarch Study (Southwest, NGO)
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)

Volunteer

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

Steering Committee

Big Bend National Park – Joe Sirotnak
Capulin Volcano National Monument – Zach Cartmell (Chair)
Carlsbad Caverns National Park - Luis Florez
El Malpais/El Morro National Monuments - Mitzi Frank
Great Sand Dunes National Park - Phyllis Bovin
Mesa Verde National Park - George San Miguel
Montezuma Castle National Monument - Tina Greenawalt
Saguaro National Park – Dana Backer
Washita Battlefield National Historic Site - Dick Zahm
Southern Plains Network I & M Program – Rob Bennetts

Intermountain Region Office NRSS – Mark Sturm

Servicewide Invasive Plant Program – Terri Hogan