Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

NPS EPMT Annual Report: FY 2016



Exotic Plant Management Team boundaries.

Background

Management of invasive species, a National Park Service (NPS) and president's mandate via Executive Orders 13112 and 13751, is conducted by park staff and 17 Exotic Plant Management Teams (EPMT) that are located across the U.S. and serve 287 park units, as well as many non-NPS partners. EPMTs were formed in 2000 through the Natural Resource Challenge to assist parks in reducing the impact of invasive plants and restoring native plant communities. Over time, the EPMT program, with the support of many program partners, 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 while maintaining a stellar record of safety.

This was an exciting year for Lake Mead (LAKE) EPMT that celebrated its 20 year anniversary. LAKE EPMT was conceived in 1994 and founded in 1996 after successful tamarisk (*Tamarix* spp.) control methodologies were developed and standardized at Lake Mead National Recreation Area (LAKE) while conducting work funded by the NPS Water Resources Division.

Resources Teams Protect

Management of invasive species helps to protect native ecosystems and ecological processes, preserve cultural resources, improve visitor experiences, and protect habitat for native animals. 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 for park managers.

Resources Teams Protect (cont.)

The work of the EPMTs protects resources from the more than 52 million acres of pristine natural areas and wilderness of Alaska to the culturally sensitive ethnographic resources used for ceremonial purposes by the Grand Portage Band of Lake Superior Chippewa protected by the Great Lakes EPMT. Other culturally significant resources include battlefields and historic sites served by the Northeast EPMT and Hawaii's culturally and ecologically significant Ohia tree, threatened by rapid Ohia death, that the Pacific Islands EPMT works to protect. EPMT partner parks fall within biodiversity hotspots like those served by the California EPMT within the California Floristic Province. Here, over two-thirds of the 3,500 documented vascular plant species are found nowhere else in the world. Protecting these unique resources is the primary objective of each of the EPMTs.

Citizen Science

The EPMTs continued to engage volunteers in invasive plant management and took advantage of this year's BioBlitzes to identify new species invasions LAKE, National Capitol Region, Southeast (SE) and Southeast Coast (SEC) EPMTs assisted with their local BioBlitzes and included information on invasive plants that may be found at each of the park units. A new infestation of bufflegrass (*Pennisetum ciliare*) was identified during LAKE's BioBlitz, and was treated. BioBlitzes that SE and SEC EPMTs were involved with included early detection of six invasive plant species. Two new infestations were found at Fort Pulaski National Monument. All BioBlitz events utilized iNaturalist to record species occurrences.



Florida/Caribbean EPMT and Everglades National Park Digital Aerial Sketch Mapping Project. NPS Photo.



North Coast-Cascades EPMT staff treating knotweed as part of the collaborative Quinault River watershed restoration effort. NPS Photo.

Science and Technology

The EPMTs continued to research the most effective methods for eliminating invasive plant infestations and restoring areas. For instance, Northern Rocky Mountain (NRM) EPMT is monitoring the effectiveness of two different herbicides using two different application methods for eliminating cheatgrass (*Bromus tectorum*) at Yellowstone National Park. Plots will be monitored in spring of 2017 to quantify treatment effectiveness. NRM EPMT has also been monitoring treatment at Grant-Kohrs Ranch National Historic Site to determine the optimum treatment strategy for leafy spurge (*Euphorbia esula*) and yellow toadflax (*Linaria vulgaris*). Cover of both species has been drastically reduced since 2005. Heartland (HTLN) EPMT has identified 33 project sites where they are testing different methods for controlling tree of heaven (*Ailanthus altissima*). Further, Southwest EPMT has been working with park staff at Navajo National Monument and Colorado State University to identify how to best restore two sites that are threatened by erosion. This range of science-based processes improves the management of our nation's resources.

New technologies were also tested by the EPMTs this year to increase efficiencies in collecting data and identifying new infestations. In particular, the Northern Great Plains EPMT along with Theodore Roosevelt National Park conducted invasive plant inventories using drones. Images are currently being analyzed, and will be compared to the data collected on the ground. Using drones could save a considerable amount of time and money in inventorying remote locations at parks. The Florida/Caribbean EPMT used aerial sketch mapping to map invasive species occurrences on the landscape and determine efficacy of treated areas. Additional technologies being tested include those for collecting data in the field. In particular, three teams have begun to use Collector for ArcGIS to capture spatial and attribute data. This particular application may be used with mobile devices, which tend to be much cheaper than GPS units and more user-friendly. To date, Collector has proven to be an efficient tool in the field.

Restoration and Large Landscape Efforts

EPMTs work within and beyond park boundaries on the landscape, watershed, and ecosystem scales to support restoration. At the park level, the HTLN 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

Restoration and Large Landscape Efforts (cont.)

to rely on evidence-based scientific data to support projects. The Gulf Coast EPMT targeted the entire length of the Mississippi section of the Natchez Trace Parkway for treatment of kudzu. The Mid-Atlantic EPMT participated in a watershed scale multi-partner project to promote native grassland communities within the New River Gorge National River that included treating non-native invasive plants, conducting prescribed burns, and future hydroseeding with several species of native warm season grasses to establish native diversity and habitat for grassland birds, pollinators, and other wildlife. Further, the North Coast-Cascades Network EPMT, Quinault Nation, and Olympic National Forest partnered to comprehensively treat knotweed in the Quinault and Queets River watersheds. Across the NPS, EPMT efforts support restoration on a local scale, but also on the landscape scale.

Summarized Servicewide Data for 2016

Measure	Acres
Treated	3,922
Inventoried/Monitored	46,843
Gross Infested Area	94,856
Net Infested Area	3,430
Youth Engagement	
Total Number of Youth Participants and Youth Employees	952
Total Hours for Youth Participants and Youth Employees	107,473

More Information

Terri Hogan
NPS Invasive Plant Program Manager
970-267-7306
terri_hogan@nps.gov

1201 Oakridge Drive, Suite 200
Fort Collins, CO 80525

Jennifer Sieracki
Biological Resources Division Data Manager
970-225-3517
jennifer_sieracki@nps.gov

Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Alaska EPMT Annual Report: FY 2016



Native *Dryas drummondii* grows in Glacier Bay National Park and Preserve (NPP). Glacial recession causes natural disturbance where non-native plants may establish. NPS Photo.

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 park units 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. 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, the team conducted invasive plant work in Alagnak National Wild & Scenic 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, Data Manager, two NPS Biological Science Technicians and interns stationed at five parks. Volunteers and youth crews focused on specific projects and assisted in the Team's efforts.

Program Highlights

Partnerships and Cooperative Efforts

Partnerships are becoming an important component of our team's invasive plant control work. This year, in cooperation with the Alaska Department of Transportation (DOT), the team conducted initial chemical control work in right-of-way areas adjacent to WRST and DENA.

The team also partnered with the Copper River Watershed Project to control 12.5 gross infested acres (GIA) of *Melilotus albus* (white sweet clover) in right-of-way areas adjacent to the Slana section of WRST. Manual treatments had been conducted at this site for over a decade with no success at reducing the density or spread of this species. With relatively few non-native plant species present in this section of the park, preventing the establishment of this highly invasive plant species is a high priority. A total of 6.71 acres within the 12.5 GIA were treated over the course of the season.

The team also conducted initial chemical control on several infestations of *Vicia cracca* (bird vetch) in DOT right-of-way areas adjacent to DENA. Small, isolated infestations of this species have been mapped and controlled in developed areas just inside the park since 2004. Eliminating the threat at the park's border will help to ensure that this species is not reintroduced into these areas of the park at a larger scale or introduced to more remote areas of the park.



Staff from Copper River Watershed Project work with EPMT members to control white sweet clover in right-of-ways adjacent to WRST. NPS Photo.



Wendy Mahovlic demonstrates manual removal techniques to volunteers as an Outreach component of EPMT work in DENA. NPS Photo.

Program Highlights (cont.)

Restoration & Outreach for Prevention

This year in DENA, the crew, along with many volunteers, collected 14 lbs of native seed and utilized native seed collected in previous years to restore approximately one acre at the park's headquarters and adjacent housing areas. Outreach efforts continued in the park this year and included sessions with trail crews, maintenance staff, and tour bus drivers, as well as two weed pull events. National Trails Day brought more than forty staff and community members together to remove 116 lbs of various non-native plants from the vicinity of the park's visitor center. A group of students from the Orange County School of Arts assisted the crew in removing 52 lbs of *Crepis tectorum* (narrowleaf hawksbeard) from areas close to the entrance of the park.

In WRST, the crew collected 35.7 lbs of native seed from various locations in the park, which will be used in future restoration projects. The crew presented various educational talks to students, staffed interpretive booths at the annual 4th of July celebration in McCarthy and Kenny Lake Fair and hosted the fourth annual Glennallen weed-pull event, where close to 900 lbs of *Melilotus albus* was removed.

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.

Summary of Accomplishments

The efforts of NPS staff, interns, volunteers, and youth crews yielded close to 407 surveyed acres and 15 treated acres in eight park units this year. More than 11,600 hours of service were amassed by youth involved in EPMT projects. Nineteen lakes in WRST, twelve in KATM and one in KEFJ were surveyed for the presence of *Elodea* spp. with none found. Ongoing chemical treatment project successes include: (1) a 98.6% density reduction of *Sonchus arvensis* (perennial sow thistle) on Strawberry Island within GLBA after three years of treatments, and (2) after two years of treatments of *Hieracium aurantiacum* (orange hawkweed) and *Ranunculus repens* (creeping buttercup) at the NPS Inventory & Monitoring office in Juneau, the densities have been reduced by 97.5% and 74% respectively. Also of note: An Alaska ranked S2S3 rare plant, *Lactuca biennis*, was found for the first time on Strawberry Island; potentially released due to sow thistle control.

Summarized Data for 2016

Measure	Acres
Treated	15
Inventoried/Monitored	407
Gross Infested Area	173
Net Infested Area	21
Youth Engagement	
Total Number of Youth Participants and Youth Employees	57
Total Hours for Youth Participants and Youth Employees	11,620



Alaska rare plant, *Lactuca biennis,* was found growing within the original perennial sow thistle infestation on Strawberry Island in Glacier Bay National Park & Preserve. NPS Photo.

More Information

Chris Overbaugh — **907-644-3452**
EPMT Liaison — **chris_overbaugh@nps.gov**

National Park Service
240 W 5th Avenue
Anchorage, AK 99501

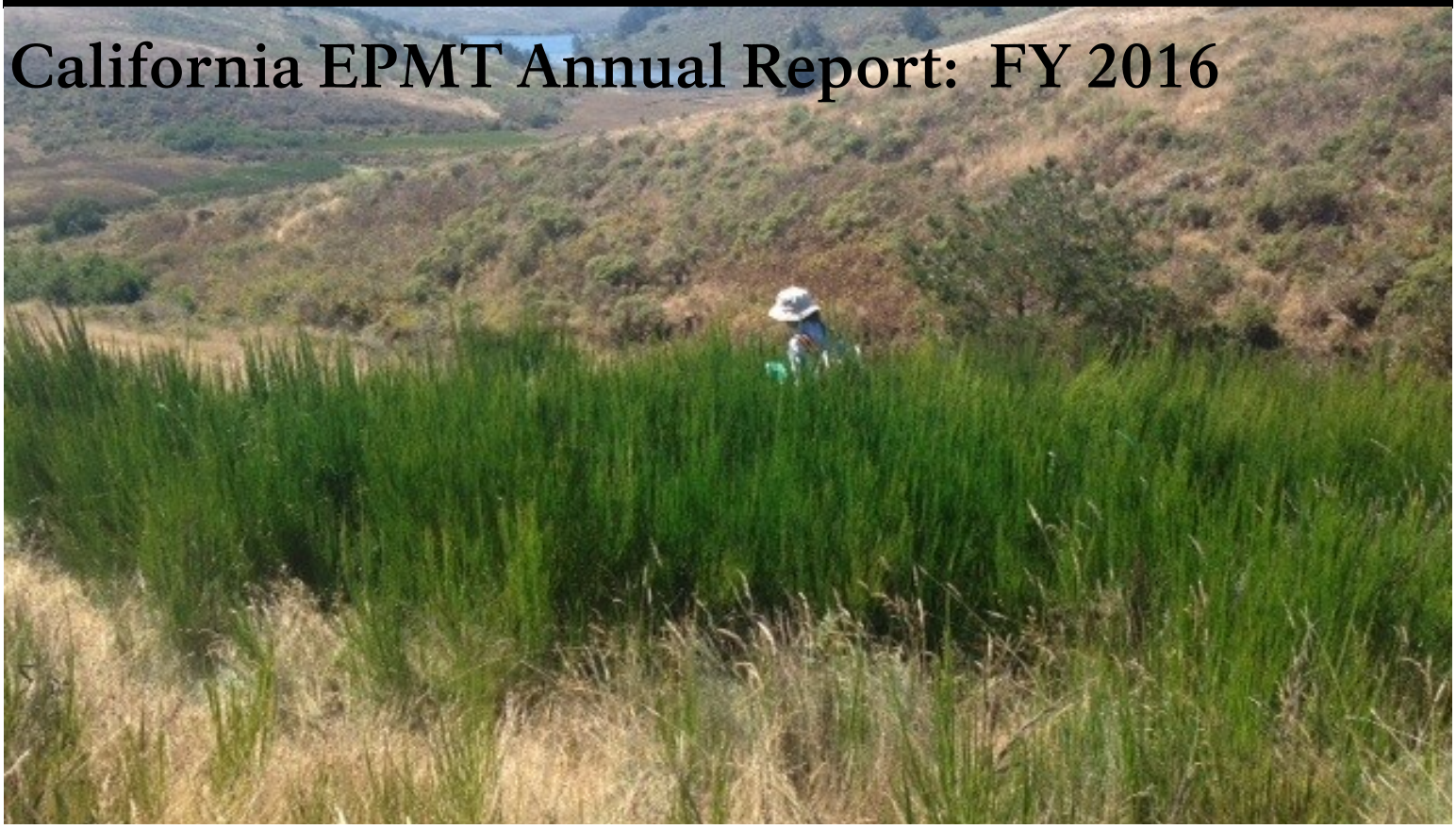
Peter Frank — **907-822-7283**
EPMT Data Manager — **peter_frank@nps.gov**

Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

California EPMT Annual Report: FY 2016



Scotch broom treatment after winter rains release extensive growth at Point Reyes National Seashore (NS). NPS Photo.

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. Invasive plants and treatments are often complex, as project sites range from the remote and wild Lassen Volcanic thermal pools to the more urban landscapes of Santa Monica Mountains National Recreation Area (NRA). The parks served by the EPMT program in California have identified over 8,000 acres infested by invasive plants. The enormity of the issue and the reduction in program funding demands judicious dedication of financial resources, careful prioritization of treatments, and strategic use of partnerships.

The program highlights for this year feature two projects that the EPMT has diligently managed over the long term: 1) management of reed canarygrass (*Phalaris arundinacea*) and velvet grass (*Holcus lanatus*) at Sequoia and Kings Canyon National Parks (NP), and 2) native plant community recovery at Channel Islands NP. To be successful with many invasive plant efforts—particularly large scale ones—this type of commitment and discipline to continue treating sites over the long term is required. This tenacity has certainly paid off for Sequoia and Kings Canyon and Channel Islands National Parks.

Program Highlights

Long-Term EPMT and Park Commitment Restores Healthy Wetlands in the Sierra Nevada

Two invasive perennial grasses, reed canarygrass and velvetgrass, are key threats to montane wet meadows in Sequoia and Kings Canyon NP. Fortunately, their distributions are limited. Park and EPMT staff treated reed canarygrass on NPS land from 2002 to 2007 using mowing, herbicide, and hand-pulling. Treatments were effective within the season, but the seed bank was persistent and competitive native plants were slow to colonize the thick thatch left behind by reed canarygrass. In 2009, the parks expanded treatments to private inholdings and began active revegetation with highly-competitive natives species. They also began controlling secondary invasions of velvetgrass and committed to long-term control. After 15 years, the parks can finally claim success: reed canarygrass has declined from 55% to 0.2% mean cover, native plants have increased from 25% to 80% mean cover, and velvet grass reinvasion has been curtailed. In 2016, the California EPMT funded park staff and volunteers to treat additional velvetgrass sites in Grant Grove, covering 10.6 gross and 0.9 canopy acres. These parks have found that intensive work is needed well beyond the three to five-year horizon for these species, but a 15-20 year commitment can ultimately restore these meadows.



Reed canarygrass in Bradley Meadow in June 2001 before treatment (left), and Bradley Meadow after treatment in 2013 (right). Diverse native vegetation now dominates. NPS Photos.



Integrated fennel treatments at Channel Islands NS (left). Restored native coastal sage scrub and chapparel after treatment (right). NPS Photos.

Program Highlights (cont.)

Channel Islands National Park: Native Plant Communities Recover

More than 100 years of grazing by non-native ungulates and the introduction of invasive species in Channel Islands NP resulted in degradation of coastal sage scrub and chaparral plant communities. The park, together with island partner, The Nature Conservancy, has adopted an aggressive archipelago- and ecosystem-wide approach to invasive species management. This strategy involves prioritizing invasive species, obtaining funding jointly, sharing information, and coordinating treatment efforts. Beginning in 2007, the EPMT has been a key partner in the park's effort to control sweet fennel (*Foeniculum vulgare*) on Santa Cruz Island. After nine years of management with an array of partners, including Santa Monica Mountains NRA Trails Council, Student Conservation Association, Channel Islands Restoration, and Los Angeles Conservation Corp, only 250 gross acres of fennel requires annual follow-up treatment of seedlings. The initial treatment required two full-time equivalent staff (FTE) for two years; now maintenance control requires two FTEs for two pay periods each spring. With the support of the EPMT, the popular Del Norte trail and campground has been transformed from a "fennel forest" to a trail lined with native coastal sage scrub species and expansive views of the Santa Barbara Channel.

Summary of Accomplishments

Yosemite NP protected an array of ecosystems by treating 35 recently discovered and previously unknown invasive species in the park. Among the targeted species were notoriously invasive jointed and barbed goatgrasses (*Aegilops cylindrica* and *A. triuncialis*), rush skeletonweed (*Chondrilla juncea*), perennial pepperweed (*Lepidium latifolium*) and dalmatian toadflax (*Linaria dalmatica*). Whiskeytown NRA discovered the high priority weed stinkwort (*Dittrichia graveolens*) in the park that was thought to be introduced by contaminated road base in 2014. A third early detection and rapid response by the EPMT program has focused on Japanese knotweed (*Fallopia japonica*) along Lagunitas Creek within Golden Gate NRA.

Summarized Data for 2016

Measure	Acres
Treated	107
Inventoried/Monitored	1345
Gross Infested Area	2,509
Net Infested Area	147
Youth Engagement	
Total Number of Youth Participants and Youth Employees	68
Total Hours for Youth Participants and Youth Employees	3,644

More Information

Bobbi Simpson
EPMT Liaison

Point Reyes National Seashore
1 Bear Valley Rd.
Point Reyes Station, CA 94956

415-464-5190
bobbi_simpson@nps.gov

Dustin Nelson
Data Manager

415-464-5121
dustin_nelson@nps.gov

Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Florida/Caribbean EPMT Annual Report: FY 2016



Historic lighthouse at Boca Chita Key, Biscayne National Park. NPS Photo.

Background

The Florida and Caribbean Exotic Plant Management Team (FLC EPMT) supports 15 National Park Service units in Florida and the Caribbean by expanding existing exotic plant control efforts including inventory and monitoring, control, education, restoration, and research. Due to the temperate, tropical, and sub-tropical climate zones found within the team's 2.68 million acre range, many of these invasive species create a unique challenge. Just over 400,000 acres of those lands are infested with invasive species. It was determined that cost effective control is best accomplished by using contractors in the larger units, while volunteers and other park employees are used in the smaller, more manageable units. Some common species that are targeted include: Brazilian peppertree (*Schinus terebinthifolius*), smallleaf climbing fern (*Lygodium microphyllum*), guineagrass (*Megathyrsus maximus*), cogongrass (*Imperata cylindrica*), Chinese tallow (*Triadica sebifera*), Australian pine (*Casuarina equisetifolia*), and melaleuca (*Melaleuca quinquenervia*).

An annual steering committee meeting is held to review and approve the strategic direction and tactical program of the team, prioritize projects, ensure the team provides useful information that is relevant to management, and develops a treatment schedule for the fiscal year. The ranking committee consists of representatives from Florida and Caribbean NPS units, the US Army Corps of Engineers, US Fish and Wildlife Service, and the State of Florida. These meetings are typically held at a different park unit before each fiscal year begins.

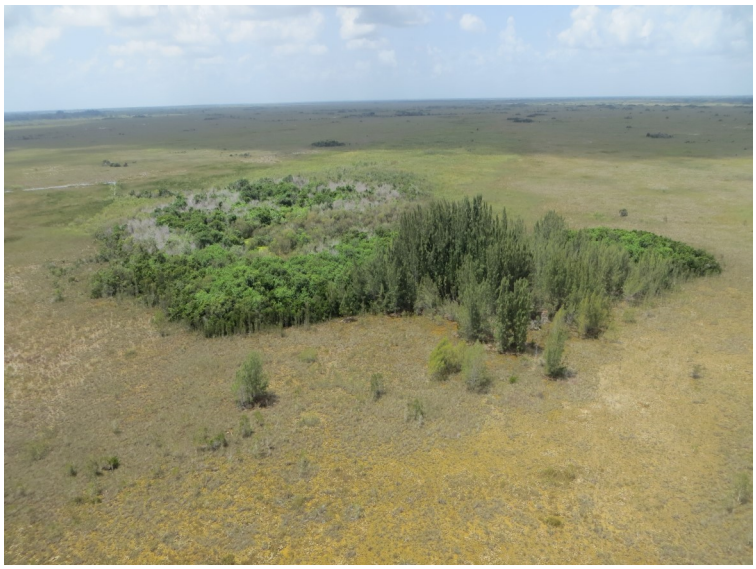
Program Highlights

Digital Aerial Sketch Mapping

FLC EPMT assisted Everglades National Park (NP) in an aerial mapping project of invasive plant species in a 64,000 acre area in the North Eastern Everglades. A 250 x 250 meter grid was created for the project area and loaded on to two touchscreen GeoLink sketch mapping devices. As the two mappers flew overhead in a helicopter, they recorded whether there were any exotics in each grid cell and the median percent cover for each species observed within each cell. The data was then processed by the data manager using ArcGIS. A sum of the percent of exotics found in each grid cell was determined. A different point file was also created to identify where the outlier single tree species were located in each grid cell.

The purpose of completing this process was to give the contractors a better way of bidding on the project. The contractors have a fixed price for grid cells that have percent covers between a certain range. Not only does this help them with the bidding process, but it also tells the crews where to find the exotic plant species without having to canvas the entire area.

This process also helps the land managers by providing before treatment data. At different intervals after the treatment has occurred, more flights can be conducted to check the efficacy of the treatment. Using this information, land managers can make decisions about future projects.



Digital Aerial Sketch Mapping Project at Everglades National Park. NPS Photo.



Corridors of Invasiveness Project, Biscayne National Park. NPS Photo.

Program Highlights (cont.)

Corridors of Invasiveness

In 2016, FLC EPMT assisted the NPS South Florida Caribbean Inventory and Monitoring Network in their annual "Corridors of Invasiveness" vital sign project. The purpose of this project is to achieve the early detection of new potential exotic plants and to facilitate rapid treatment of these plants while infestations are small and isolated, otherwise known as early detection and rapid response (EDRR). Surveys are conducted along disturbed "corridors" in Everglades National Park, Biscayne National Park, and Big Cypress National Preserve on an annual rotation.

The 2016 surveys were conducted in Biscayne National Park. The 12 sites surveyed consisted of campgrounds, hiking trails, canals, and roads. A total of 45 exotic species were found within the park, six of those being new species never identified in the park before. The new exotic species encountered were laurel fig (*Ficus microcarpa*), Sprenger's asparagus-fern (*Asparagus aethiopicus*), lilac tasselflower (*Emilia sonchifolia*), shoebutton ardisia (*Ardisia elliptica*), Australian umbrella tree (*Schefflera actinophylla*), and Brazilian jasmine (*Jasminum fluminense*). Some of the smaller infestations were treated with herbicide or hand pulled, while the larger infestations were recorded for potential future treatment.

Summary of Accomplishments

In 2016 the FLC EPMT, through a combination of private contractors and team efforts, treated over 150 canopy acres at five of the 15 NPS units served by the team. Six contract funded projects were completed in Everglades NP, Big Cypress National Preserve, Canaveral National Seashore, and Salt River Bay National Historic Park and Ecological Preserve. The team accumulated over 2,000 youth engagement hours through Florida International University and the Student Conservation Association.

FLC EPMT created a SOP for using the Collector for ArcGIS® application on iOS products that stream-lined the National Invasive Species Information Management System (NISIMS) data collection and reporting processes. This new ESRI application makes data collection in the field faster and is more user friendly than other collection methods.

Additionally, FLC EPMT welcomed a new liaison, Brian Lockwood, who transferred over from the Mid Atlantic EPMT in June.

Summarized Data for 2016

Measure	Acres
Treated	150
Inventoried/Monitored	0
Gross Infested Area	1,224
Net Infested Area	150
Youth Engagement	
Total Number of Youth Participants and Youth Employees	2
Total Hours for Youth Participants and Youth Employees	2,000

More Information

Brian Lockwood
EPMT Liaison
Florida and Caribbean EPMT
18001 Old Cutler Road
Suite 419
Palmetto Bay, Florida 33157

786-249-0073
Brian_lockwood@nps.gov

Shea Bruscia
EPMT Data Manager

786-249-3005
shea_bruscia@partner.nps.gov

Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Great Lakes EPMT Annual Report: FY 2016



Partridge Falls at Grand Portage National Monument. NPS Photo.

Background

The Great Lakes Exotic Plant Management Team (GL EPMT) provides support to 11 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 (e.g., ornamentals, intentionally planted); 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 control work. Discipline, specific knowledge, and a network of partners allow the team to anticipate threats to individual parks and work toward site-specific management options. As a shared regional resource, the GL EPMT either augments existing management efforts at parks or provides parks with management options.

Program Highlights

Protecting Culturally Sensitive Plants at the Grand Portage National Monument (GRPO)

Non-native invasive plants, long known to affect native ecosystems, can also impact culturally sensitive resources. At the Grand Portage National Monument (NM) located in far northeastern Minnesota, two culturally sensitive plants, sweetgrass (*Anthoxanthum hirtum*) and wild caraway (*Carum carvi*) are being negatively influenced by a non-native invasive vetch (*Vicia cracca*). Sweetgrass is one of four sacred plants used in ceremony by the Grand Portage Band of Lake Superior Chippewa, and is used as a material for handcrafts. Wild caraway, although an introduced species, has been ethnographically significant throughout the park's period of significance (1790-present).

In order to preserve sweetgrass and wild caraway plants, the GL EPMT initiated chemical control of the encroaching vetch populations in late June. Working with Grand Portage NM staff, carefully directed spot applications were made to reduce vetch while limiting damage to the culturally important species. Even though additional management is needed to control vetch populations, this was an important step in reversing the negative effects invasive plants pose to the resource. Active management by the GL EPMT will ensure these plants' ethnobotanical use is preserved and their presence can document and interpret national natural heritage.



Top: Grand Portage Band of Lake Superior Chippewa ceremony (ca. 1955) in the east village meadow. NPS Photo.
Bottom: The same meadow in 2016 where vetch is impacting wild caraway and sweetgrass. NPS Photo.

Program Highlights (cont.)

Parks Partner for Restoration

Prairie and oak savanna restoration are common goals at three GL EPMT network parks. While prairie and oak savanna once covered much of the Midwest, less than one tenth of one percent of the original extent remains. Colonization, agriculture, fire suppression, and invasive species have all contributed to the dramatic decline of the once vast ecosystem.

Ice Age National Scenic Trial (IATR), St. Croix National Scenic Riverway (SACN), and Mississippi National River and Recreation Area (MISS) have been working to preserve remnants of what were historically prairie and oak savanna ecosystems. The majority of these areas are heavily infested with common buckthorn (*Rhamnus cathartica*), a highly invasive shrub. Three separate project areas encompassing a total of 430 acres will be reconstructed or restored over the next several years. The team and the three network parks have shared valuable knowledge gained from restoration successes, participated in vegetation and fire management planning, on the ground control work, seed mix design, and planting of native forbs and grasses. In FY 2016, over 80 acres of ubiquitous buckthorn shrubs were removed and 6 acres have been prepared for replanting in early FY 2017.

Summary of Accomplishments

The GL EPMT focused on strengthening working relationships with partners in 2016. The field crew moved its base of operations from the Great Lakes Network Office in Ashland, WI to the St. Croix National Scenic Riverway in St. Croix Falls, WI. This helped reduce travel costs while increasing the team's ability to better monitor efficacy of treatments. Being located in a park, the team was able to provide more training opportunities to volunteers, park, and EPMT staff.

With help from Heartland EPMT, a new working relationship was established with the Conservation Corps of Minnesota and Iowa. The new relationship will advance larger restoration projects at two national parks initially, and hopefully more in the future.

In FY16, over 59 acres were treated in high priority park projects at 9 of 10 network parks and one non-network park.



GL EPMT, MISS, and IATR volunteers working together removing buckthorn at IATR in Cross Plains, WI. NPS Photo.

Summarized Data for 2016

Measure	Acres
Treated	60
Inventoried/Monitored	49
Gross Infested Area	561
Net Infested Area	59
Youth Engagement	
Total Number of Youth Participants and Youth Employees	10
Total Hours for Youth Participants and Youth Employees	862

More Information

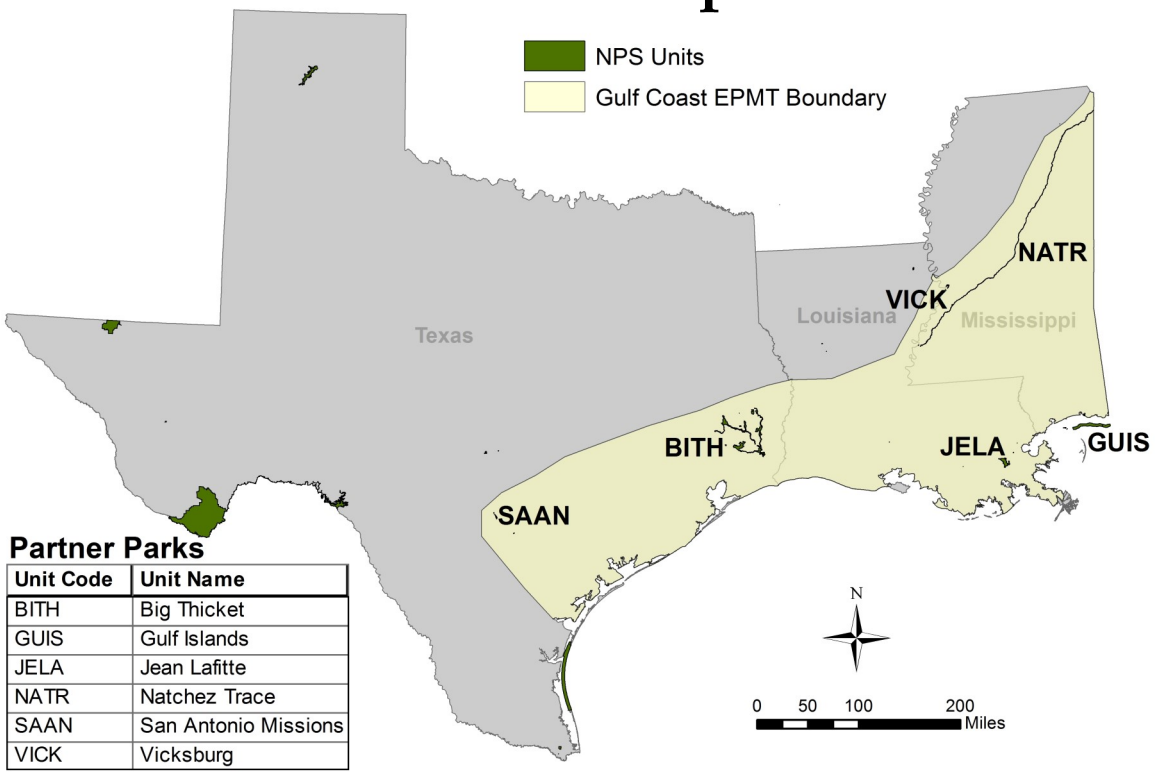
Vacant - EPMT Liaison — **715-483-2283**
National Park Service - St. Croix National Scenic Riverway
401 North Hamilton St.
St. Croix Falls, Wi 54024

Isaiah Messerly, EPMT Field Crew Leader Biologist — **715-483-2299** **Isaiah_messerly@nps.gov**

Rebecca Key, EPMT Data Manager — **715-682-0631 ext. 232** **Rebecca_key@nps.gov**
National Park Service - Great Lakes Network Office
2800 Lake Shore Drive East, Suite D
Ashland, WI 54806

Tammy Keniry, Administrative Officer — **715-682-0631 x 225** **Tammy_Keniry@nps.gov**

Gulf Coast EPMT Annual Report: FY 2016



Partner Parks

Unit Code	Unit Name
BITH	Big Thicket
GUIS	Gulf Islands
JELA	Jean Lafitte
NATR	Natchez Trace
SAAN	San Antonio Missions
VICK	Vicksburg

Partner Parks of the Gulf Coast Exotic Plant Management Team.

Background

The Gulf Coast Exotic Plant Management Team (EPMT) spans the Gulf Coast region from Mexico to Florida and includes seven partner parks and two non-partner parks. This is a region of relatively warm year-round temperatures, high precipitation, and high plant diversity, including a high diversity of exotic vegetation. The riparian corridors of San Antonio Missions National Historical Park (NHP) have been heavily invaded by Chinaberry tree (*Melia azedarach*), Japanese privet (*Ligustrum japonicum*), Japanese honeysuckle (*Lonicera japonica*), giant cane (*Arundinaria gigantea*), golden bamboo (*Phyllostachys aurea*) and cat's claw vine (*Macfadyena unguis -cati*). Texas coastal parks are primarily concerned with Brazilian pepper (*Schinus terebinthifolius*), common reed (*Phragmites australis*), and old world bluestems (*Dichanthium* spp and *Bothriochloa* spp). Control efforts for these species have been initiated. Methodologies and best management practices are being developed. Coastal island parks such as Gulf Islands National Seashore (NS) have concerns with cogongrass (*Imperata cylindrica*) and common reed, which are adapted to low lying wet areas, as well as the woody species of the lowland forest parks. Lowland forest parks in east Texas and Louisiana which include the Big Thicket National Preserve and the Barataria Preserve of Jean Lafitte NHP face threats from Chinese tallow tree (*Triadica sebifera*), mimosa (*Albizia julibrissin*), Japanese climbing fern (*Lygodium japonicum*),

Background (cont.)

Chinese privet (*Ligustrum sinense*), Japanese honeysuckle, and numerous aquatic invasive species. These species present an ongoing battle due to the large size of the parks and recurring hurricane disturbances. Kudzu (*Pueraria montana*) is the primary concern at both Vicksburg National Military Park (NMP) and Natchez Trace Parkway (PKWY). Considerable progress has been made in recent years in controlling this species at these two parks.

Program Highlights

Gulf Coast EPMT / Natchez Trace Parkway Kudzu Eradication Partnership

Natchez Trace PKWY conducted a particularly robust kudzu treatment effort this year, far surpassing treatment efforts of all previous years. This was accomplished by collaboration and partnership of the Gulf Coast EPMT with Natchez Trace PKWY, including the pooling of resources and monetary contributions from both partners. The collective effort allowed treatment of all kudzu along the entire length of the Mississippi section of the parkway, a first for the EPMT and the park. In previous years, funding limited treatments to only specific sections of the parkway. The results of this year's work will be evident along the parkway in the spring and summer of 2017.



NPS staff treat kudzu with an aquatic approved herbicide along a creek drainage in a northern Mississippi section of the Natchez Trace PKWY. NPS Photo.



Staff treat kudzu on Town Bluff at the Big Thicket National Preserve and B. A. Steinhagen Lake facilitated by an interagency agreement between the NPS and the Army Corps of Engineers. NPS Photo.

Program Highlights (cont.)

Cooperative Agreement with Texas A&M AgriLife Research and University of Texas-Austin Ladybird Johnson Wildflower Center

The Gulf Coast Cooperative Ecosystem Studies Unit (CESU) is one of seventeen partnerships established nationally by the CESU National Council to facilitate research, technical assistance, and educational activities in support of federal agencies, including the NPS and their partners. The Gulf Coast CESU partnership brings together multiple federal agencies, academic institutions and non-governmental organizations from a distinct biogeographic area to address management needs in an interdisciplinary, ecosystem-oriented context. The Institute of Renewable Natural Resources of Texas A&M University (College Station, TX) serves as the institutional lead for the program.

The Gulf Coast EPMT entered into this cooperative agreement with the goal of identifying and delineating management area boundaries, and gross and net infested, treatment, retreatment, inventoried, and monitored areas within those management boundaries for all exotic plant species of concern contained within San Antonio Missions NHP and Big Thicket National Preserve in Texas, Jean Lafitte NHP and Preserve in Louisiana, Gulf Islands NS and Vicksburg National Military Park in Mississippi, and Natchez Trace PKWY in Mississippi, Alabama, and Tennessee.

Summary of Accomplishments

This year we spatially mapped occurrences of exotic invasive vegetation in five Gulf Coast EPMT partner park units to meet the requirements of the NPS National Invasive Species Information Management System (NISIMS). Sites at the sixth and final park will be mapped in the spring of 2017. Integration of spatial and tabular data along with greater potential for detailed reporting has long been a goal of the EPMT program.

Summarized Data for 2016

Measure	Acres
Treated	0
Inventoried/Monitored	0
Gross Infested Area	479
Net Infested Area	270
Youth Engagement	
Total Number of Youth Participants and Youth Employees	58
Total Hours for Youth Participants and Youth Employees	2,837

More Information

Eric D. Worsham
EPMT Liaison

409-363-3609
eric_worsham@nps.gov

3755 Milam, Ste c
Beaumont, TX 77701

Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Heartland Network EPMT Annual Report: FY 2016



Conservation Corps Iowa crews working on behalf of NPS to control eastern redcedar in Pea Ridge National Military Park, Arkansas. NPS Photo.

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 solely 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

Tree-of-heaven Control in Buffalo National River

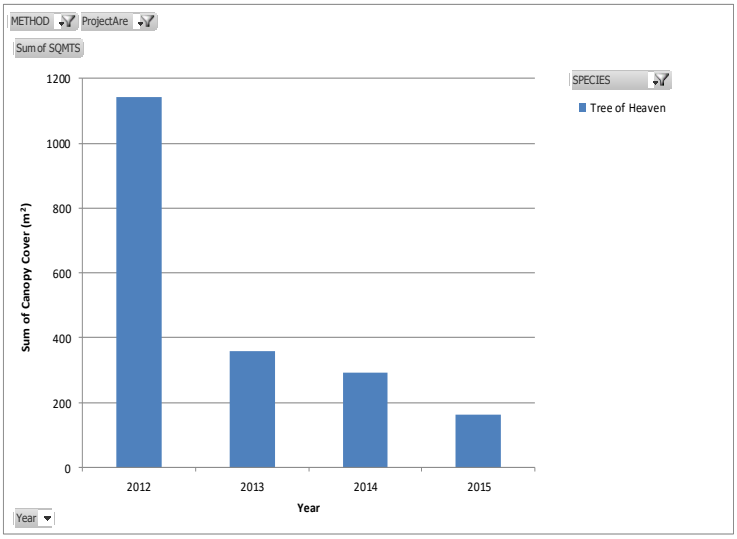
The Buffalo National River protects 135 miles of free-flowing streams in the Ozark Mountains of Northern Arkansas. The park includes 88,385 acres, consisting predominantly of forest, that follow the river corridor. These forests, which protect outstanding examples of natural areas, also include tree-of-heaven (*Ailanthus altissima*), an invasive tree that has become locally wide-spread. This tree, which germinates and grows in low-light conditions, can potentially alter the canopy composition in these forests.

For this reason, the Heartland EPMT removes tree-of-heaven from strategic locations to allow the forest to continue on a more natural successional pathway. Currently the project consists of 33 project sites that encompass 153.1 acres along the river course. Many of these sites have been treated annually over a six-year period. The first year of control involves felling large canopy trees. As a dioecious tree that regenerates effectively from seed, targeting female trees is critical. Treatment in subsequent years involves control of re-sprouting stems and newly-germinated seedlings.

In 2016, we initiated cutting in three new sites, totaling 7.8 acres. We also continue to evaluate a small study to identify the potential of cutting the bark and then applying herbicide to control trees in place without felling. In carefully selected areas, this technique may allow the EPMT to more effectively expand the scope of the project.



Conservation Corps of Iowa crew bucking up a felled canopy dominant tree-of-heaven in the Buffalo National River. NPS Photo.



Decline of tree-of-heaven cover following treatment in Woolum Project Areas, Buffalo National River. Canopy trees were cut in 2012 with follow-up treatments in 2013 –2015.

Program Highlights (cont.)

Restoration of Bloody Hill Prairies, Wilson's Creek National Battlefield

The Heartland Network EPMT works in eight parks with an interest in managing prairies, many of which represent restorations within a cultural landscape. This is the case for the Bloody Hill prairies that mark some of the heaviest fighting in the Battle of Wilson's Creek. The park restored these prairies in phases during the late 1960s and early 1970s as some of the earliest restoration work in the park.

While these prairies form a critical part of the park's cultural landscape, park managers have been challenged with controlling invasive plant species within this area. The mixture of species invading the prairie includes native woody species, such as smooth sumac (*Rhus glabra*), winged sumac (*Rhus copallinum*), and American plum (*Prunus americana*). Chinese bushclover, also known as sericea, (*Lespedeza cuneata*) is the dominant non-native species.

The approach used to control these species is a joint effort between the park's maintenance team, the fire program based at Ozark National Scenic Riverways and the EPMT. The EPMT treated the dominant invasive species this July in over 50.7 acres of the prairie. The fire program then burned the area in October. The EPMT will again follow up in the spring, taking advantage of the open conditions that the prescribed fire has created.

Summary of Accomplishments

The EPMT portfolio of projects currently consists of 31 projects spanning 2,172 acres. In FY2016, the EPMT continued work on 13 of these projects that covered 824 acres.

We have increasingly begun to assess effectiveness of our projects, using a study design that has been accepted for publication in *Invasive Plant Science and Management.* A preliminary edition of this work was presented at the 2015 Natural Areas Conference in Little Rock, Arkansas.

Further, the EPMT hosted six interns from March through October of FY16 and 10 temporary crews throughout the year. Interns also worked with the Buffalo National River fire team as part of their work.

Summarized Data for 2016

Measure	Acres
Treated	62*
Inventoried/Monitored	1,981*
Gross Infested Area	2,788*
Net Infested Area	62*
Youth Engagement	
Total Number of Youth Participants and Youth Employees	25
Total Hours for Youth Participants and Youth Employees	15,520

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

More Information

Craig Young
Terrestrial Program Leader
417-732-6438 x281
craig_young@nps.gov

Jordan Bell
Project Leader
417-732-6438 x405
jordan_bell@nps.gov

Chad Gross
Data Manager
Heartland Network (I&M/EPMT)
Wilson's Creek National Battlefield
6424 W. FR 182
Republic, MO 54738
417-732-6438 x401
chad_gross@nps.gov

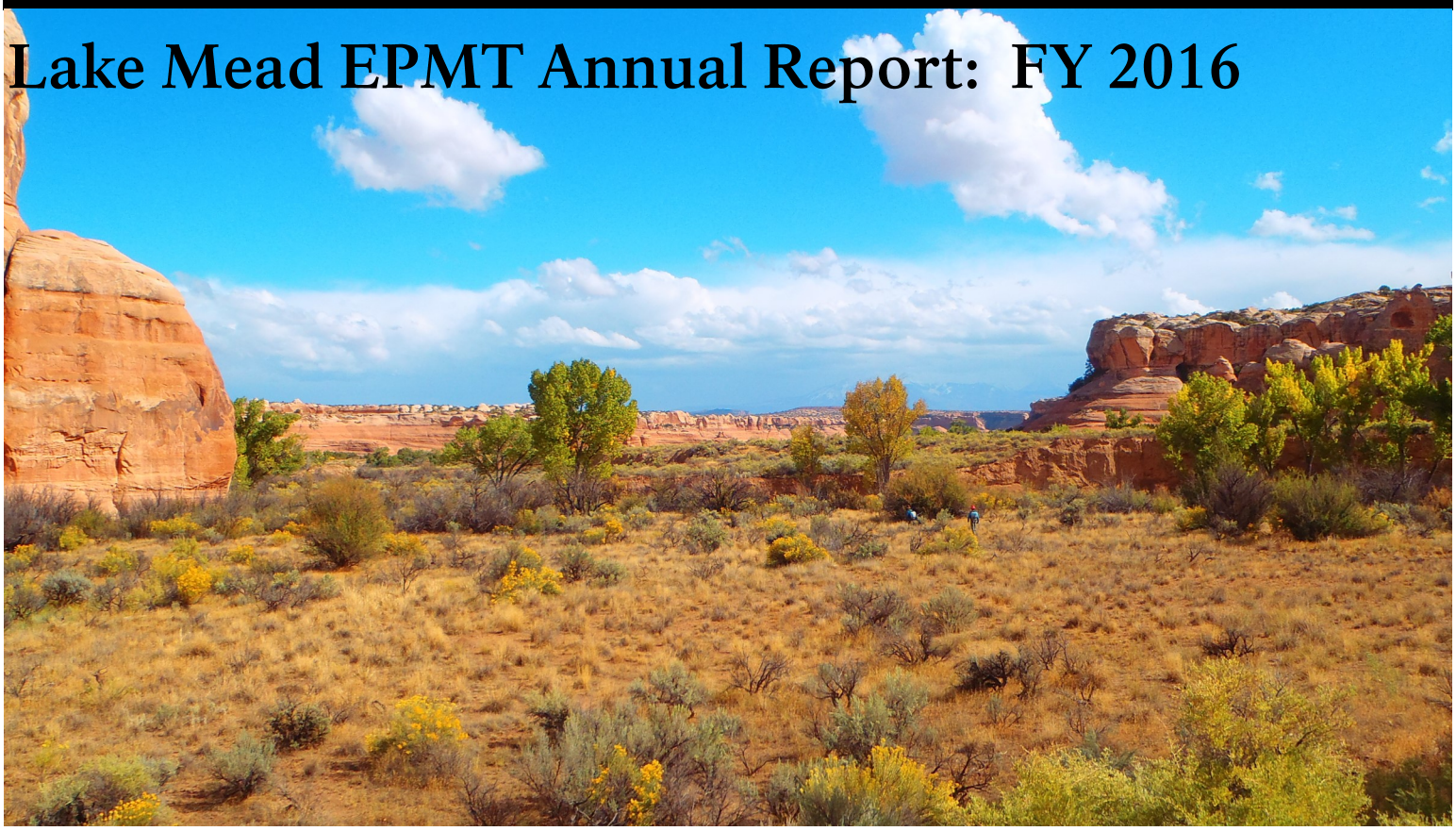
Jessica Salesman
Project Leader
Effigy Mounds National Monument
151 Hwy 76
Harpers Ferry, IA 52146
563-873-3491 x402
jessica_salesman@nps.gov

Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Lake Mead EPMT Annual Report: FY 2016



Two LAKE EPMT members hiking in on a Russian knapweed project, Upper Salt Wash in Arches National Park, Utah. NPS Photo.

Background

The Lake Mead Exotic Plant Management Team (LAKE EPMT) was established in 1996, serving as the prototype model for what eventually developed into the NPS EPMT program. Since then, the team has conducted on the ground projects with field crews in 37 NPS units, 15 U.S. Fish and Wildlife National Wildlife Refuges, seven Bureau of Land Management (BLM) Districts, four U.S. Forest Service National Forests, two Bureau of Indian Affairs units, and the Marine Corps Yuma Air Station, plus has worked with the Bureau of Reclamation and several state and local entities 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 its partners by developing staff expertise, 3) improve government efficiencies through interagency cooperation by developing partnerships to effectively manage weeds on a landscape level.

Partnerships are integral to LAKE EPMT'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. Total annual funds of more than one million dollars support a 20 person crew in the field on a daily basis.

LAKE EPMT conducts weed control projects during all seasons each year. A year round operation maximizes the Team's ability to serve its various partners, control a diversity of weeds, and improve efficiency and flexibility in scheduling projects.

Program Highlights

20 Year Anniversary of the Lake Mead EPMT Program

This was an exciting year for LAKE EPMT as it experienced its 20 year anniversary. It all started in 1994 after successful tamarisk (*Tamarix* spp.) control methodologies were developed and standardized at Lake Mead National Recreation Area (NRA) while conducting experiments funded by the Water Resources Division of the NPS. In 1995, Zion National Park staff requested assistance from Lake Mead NRA to implement a tamarisk control project and provide training to their park staff. The next year, a joint Pacific West Region and Intermountain Region Natural Resources Preservation Program (NRPP) Project Proposal was funded from 1996-2000 to support a travelling crew conducting exotic plant control in 15 NPS units throughout the Mojave Desert and Colorado Plateau ecoregions. This project unofficially became the prototype model for what became the Exotic Plant Management Team Program. There are now 17 EPMT's established in the NPS. LAKE EPMT has remained steadfast to our primary goals of developing organizational capacity and providing expertise in the field of exotic plant management to all of our partners. The team also continues to promote the interagency approach to maximize efficiency of weed management. We honor the 116 LAKE EPMT "alumni" who have worked extremely hard, enduring tough environmental conditions to protect, restore and maintain native plant communities from the deleterious effects of exotic invasive plants throughout thousands of acres of natural areas.



Travis Fulton (left) and Darrin Gobble (right) of the LAKE EPMT conduct tamarisk control at the old St Thomas school, Lake Mead National Recreation Area. NPS Photo.



Travis Fulton, LAKE EPMT, controlling fountain grass at Joshua Tree National Park. NPS Photo.

Program Highlights (cont.)

Partnering with Cultural Resource Preservation

The Lake Mead NRA Cultural Resources Branch was awarded NPS Cultural Resource Protection Funds in fiscal year 2016 to fund the LAKE EPMT to remove tamarisk from the historic town site of St. Thomas, NV. The town site was inundated by Lake Mead after the construction of Hoover Dam for seventy plus years; however, due to receding lake levels during the last 15 years, the town has been exposed above the shoreline. The park constructed a trailhead, trails, information kiosks, and interpretive signs about St. Thomas to support the increased visitation to the area. However, dense exotic tamarisk trees blocked trail access and completely enveloped and obscured most of the town's remnant resources from viewing. Many visitors benefitted from this tree removal immediately, as they observed the work in progress. There are plans to continue conducting more of this work with these funds in fiscal year 2017.

Challenging Fountain Grass Control at Joshua Tree National Park

LAKE EPMT continued to treat fountain grass (*Pennisetum setaceum*, synonym *Cenchrus setaceus*), the exotic perennial bunch grass which is capable of increasing wildfire danger in the park. Most of the fountain grass populations are located in several remote isolated rocky canyons and hillsides. The terrain is difficult and challenging requiring long hikes with gear and backpack sprayers. Although a daunting task, the fountain grass is still in relatively early stages of establishment in the park and is not widespread throughout the surrounding Mojave Desert. However, more resources (e.g., funding, attention, effort, and possibly drone technology) are needed to keep this grass from negatively impacting the parks unique ecosystem.

Summary of Accomplishments

In FY16, LAKE EPMT conducted projects in 12 NPS units and nine external agency partners' units, including Bureau of Land Management, US Fish and Wildlife Service, Bureau of Reclamation, US Forest Service, US Marine Corps, and three partnership agreements with Clark County, NV.

Summarized Data for 2016

Measure	Acres
Treated	198
Inventoried/Monitored	13,124
Gross Infested Area	3,420
Net Infested Area	95
Youth Engagement	
Total Number of Youth Participants and Youth Employees	6
Total Hours for Youth Participants and Youth Employees	9,120

More Information

Curt Deuser — **702-293-8979**
EPMT Liaison — **curt_deuser@nps.gov**
Supervisory Restoration Ecologist

601 NV Way
Boulder City, NV 89005

Tarl Norman — **702-293-8790**
EPMT Supervisory Exotic Plant Specialist — **tarl_norman@nps.gov**

Tim Federal — **702-293-8648**
EPMT Data/GIS Manager — **tim_federal@nps.gov**

Kelly Mathis — **702-293-8976**
EPMT Crew Leader/Exotic Plant Specialist — **kelly_mathis@nps.gov**

Andy Pigg — **702-293-8976**
EPMT Crew Leader/Exotic Plant Specialist — **andy_pigg@nps.gov**

Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Mid-Atlantic EPMT Annual Report: FY 2016



MA EPMT crew members spray Japanese knotweed at New River Gorge National River. NPS photo.

Background

The Mid-Atlantic Exotic Plant Management Team (MA EPMT), stationed at Shenandoah National Park (NP), began in 1999 as the Virginia Invasive Vegetation Management Team. In 2003, in order to fill the gap for the growing need for invasive plant management at a national level, the MA EPMT was established along with six other EPMTs. The MA EPMT now provides invasive plant management support to 19 NPS units in Maryland, Pennsylvania, Virginia, and West Virginia. The MA EPMT's goal is to incorporate integrated pest management strategies and best management practices to provide the most effective and efficient, but least toxic management solutions to control non-native invasive plant species that present threats to the resources we are protecting and preserving.

This year MA EPMT provided invasive plant control support to Appomattox Court House National Historic Site (NHS), Appalachian National Scenic Trail (NST), Bluestone National Scenic River, Booker T. Washington National Monument (NM), Colonial National Historic Park (NHP), Fredericksburg and Spotsylvania National Military Park (NMP), Gettysburg NMP, George Washington Birthplace NM, Hampton NHS, Hopewell Furnaces NHS, New River Gorge National River (NR), Petersburg National Battlefield (NBP), Richmond NBP, Thomas Stone NM, Shenandoah NP, and Valley Forge NHP.

Program Highlights

Prescribed Fire Preparation

New River Gorge NR, sought the help of the MA EPMT to treat non-native invasive plants prior to carrying out a prescribed burn in an effort to promote native grasses and improve habitat for grassland birds. The team, utilizing a UTV sprayer and trailer mounted skid sprayer, treated autumn olive (*Elaeagnus umbellata*), multiflora rose (*Rosa multiflora*), and Canada thistle (*Cirsium arvense*) in a 40 acre field near the Grandview section of the park. MA EPMT incorporated a mixture of herbicides to selectively control the non-native woody vegetation. It took two days to complete invasive plant treatment at the restoration site.

Following this treatment, staff from the National Park Service, US Forest Service, and Job Corps participated in setting controlled fires to burn 27 acres of the treated field in late September. The burned area will be hydro-seeded in 2017 with several species of native warm season grasses to establish native diversity and habitat for grassland birds and other wildlife. Continued management with periodic burns will be carried out every two to three years and non-native invasive plant control will further improve the natural conditions and promote the native habitat preferred by grassland birds.



Wavyleaf basketgrass treatment adjacent to the Appalachian National Scenic Trail in Virginia. NPS photo.



Prescribed burn to improve grassland bird habitat at New River Gorge National River. NPS photo.

Program Highlights (cont.)

Wavyleaf Basketgrass Control

The MA EPMT focused much attention to *Oplismenus undulatifolius*, or wavyleaf basketgrass (WLBG), in 2016. WLBG, which is an early detection species, is a perennial, invasive grass that spreads through reproductive and vegetative processes. Stolons provide WLBG an avenue to expand via vegetative reproduction and the awns of mature seeds are covered in a sticky, glue-like substance, making it possible for seed to be dispersed long distances from parent plants.

WLBG occurs in three different park units located in two states, Maryland and Virginia. The largest infestation occurs in Shenandoah NP. Shenandoah park staff estimate WLBG is scattered across 800-900 acres. In addition to Shenandoah, MA EPMT treats WLBG on a section of the Appalachian NST in Virginia and Thomas Stone NM in Maryland. Two trips were made to treat a newly discovered infestation at Thomas Stone NM where 100 gallons of glyphosate mixture were sprayed across 70 acres of forest. Combined, MA EPMT spent 800 man hours treating invasive plants on 220 gross acres of WLBG in 2016.

Summary of Accomplishments

Volunteer James Akerson, MA EMPT Liaison 2003-2011, lead nine volunteer events in support of the MA EPMT during the 2016 field season. Events occurred on the Appalachian NST near Linden, Virginia. Major accomplishments include the participation of 162 youth volunteers and 21 adults providing 500 hours of invasive plant control, the removal of 800 pounds of garlic mustard (*Alliaria petiolata*), and another successful year of continued youth engagement and outreach.

The MA EPMT also had a successful year providing invasive plant control support to 16 park units. The crew began traveling in early April and continued until late September. A total of 38 invasive plant species were treated across 246 acres. The MA EPMT hopes 2017 will be another safe and successful year.

Summarized Data for 2016

Measure	Acres
Treated	246
Inventoried/Monitored	453
Gross Infested Area	2,331
Net Infested Area	164
Youth Engagement	
Total Number of Youth Participants and Youth Employees	175
Total Hours for Youth Participants and Youth Employees	3,540

More Information

Casey Reese
Supervisory Biologist

Regional IPM Coordinator
Northeast Regional Office
National Park Service

267-800-8503
casey_reese@nps.gov

Nathan Wender
EPMT Field Crew Leader

Shenandoah National Park
3655 US HWY 211-E
Luray, VA 22664

540-999-3500
nathan_wender@nps.gov

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: FY 2016



NCR EPMT staff and interns systematically search for and treat invasive plants in the Rock Creek Military Meadow area in Washington DC. 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-National Park Service (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 2016, the NCR EPMT continued 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 2016, 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 presented an opportunity to follow up on some of the great work done by TNC.

Over the course of 16 weeks interns and staff worked in 16 sites throughout the Potomac Gorge, including 14 sites in CHOH and two Sites in GWMP. Many days were spent working on islands in the Potomac River. In part, because the islands are often hard to get to, they often contain plant communities that have not been as heavily impacted by humans and deer. In these areas a relatively small investment in controlling invasive plants results in an early weed-free area — very uncommon near an urban area.



Will Bloomhardt treats Japanese barberry at Manassas National Battlefield. NPS Photo.



Crossing through the crescent field and Monocacy National Battlefield in preparation for treating Japanese hop. NPS Photo.

Program Highlights (cont.)

National Capital Region Invasive Plant Management Plan / EA

The National Capital Region (NCR) is making strides to reduce the impacts of invasive plants on park resources by working on a region-wide Invasive Plant Management Plan and Environmental Assessment (IPMP/EA) to guide our work with invasive plants. In 2015 and 2016 the plan was drafted and released for public comment. The final decision document is expected to be signed in FY17.

NPS staff, contractors, and volunteers use a wide range of techniques to control invasive plants. The plan includes Best Management Practices (BMPs) on preventing the spread of invasive plants, prioritization of plants to treat and sites to protect, and techniques to control plants once they are established. The BMPs outline strategies that help protect soil, water, wildlife, and native plants. Control techniques covered in the plan include manual, mechanical, physical, cultural, chemical, and biological methods.

The plan was designed to ensure NPS actions complied with the National Environmental Policy Act (NEPA) but also covers compliance with the Endangered Species Act (ESA) and the National Historic Preservation Act (NHPA). In addition, the plan includes information to help parks comply with other laws and regulations.

Summary of Accomplishments

The NCR EPMT started field work in February 2016 and continued into October. Thanks to collaborations with park and non-park partners the EPMT was able to treat 237 acres in 2016. Starting in May, the crew size increased to nine seasonal staff and four interns, allowing substantially more flexibility in completing tasks efficiently.

After three years with the NCR EPMT, Team Leader Ryan Tietjen took a job with the BLM Eastern States Office. Squad Leader Aleksandra Vozntiza was hired to replace him in July 2016.

The Team's work will start up again in early 2017. The NCR EPMT looks forward to supporting parks in the coming years.

Summarized Data for 2016

Measure	Acres
Treated	237
Inventoried/Monitored	81
Gross Infested Area	4,511
Net Infested Area	185
Youth Engagement	
Total Number of Youth Participants and Youth Employees	46
Total Hours for Youth Participants and Youth Employees	14,235

More Information

Mark Frey
EPMT Liaison
202-339-8317
mark_frey@nps.gov

Center for Urban Ecology
4598 MacArthur Blvd., NW
Washington, DC 20007

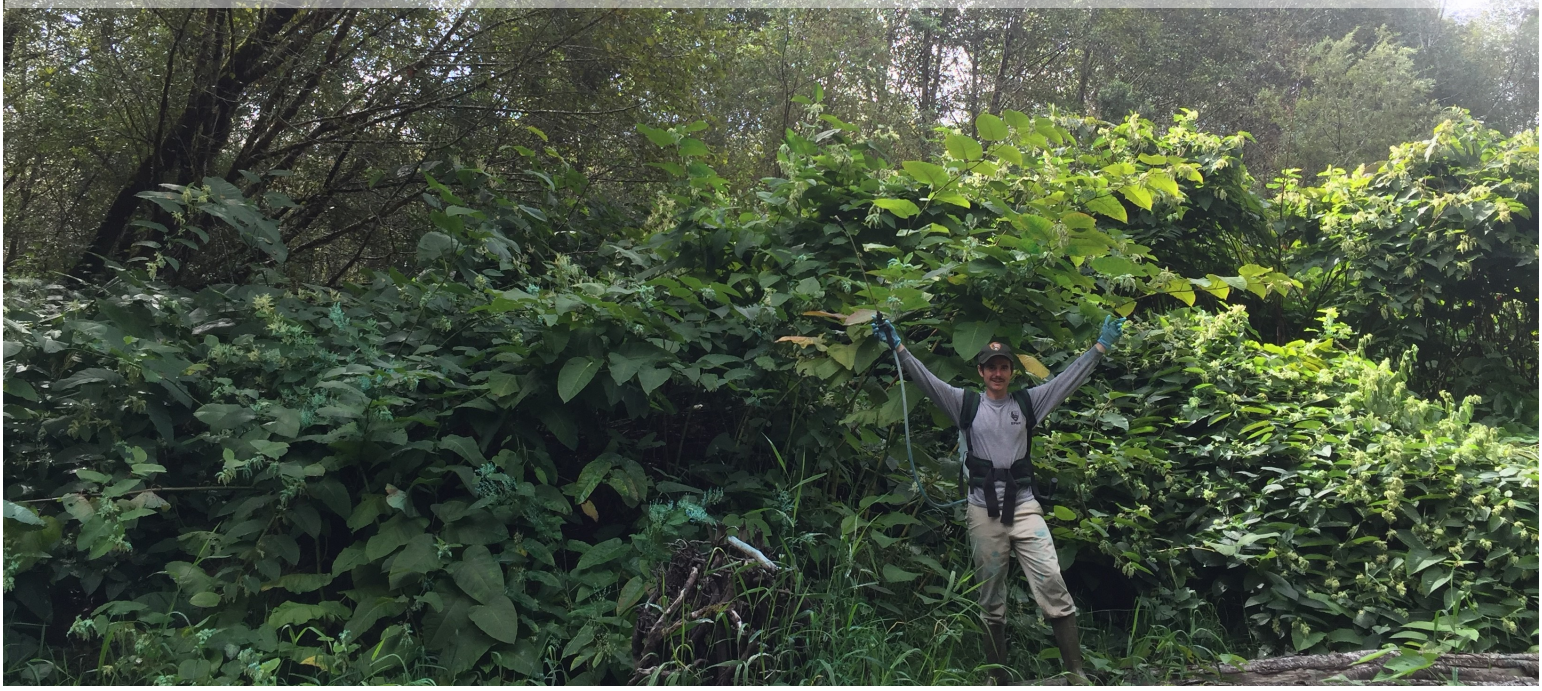
Alex Voznitza
EPMT Field Crew Leader
202-339-8319
aleksandra_voznitza@nps.gov

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: FY2016



John Clevenger, North Coast and Cascades EPMT, providing scale for giant knotweed infestation on the Quinault River, Olympic Peninsula. NPS Photo.

Background

Located in the Pacific Northwest, the North Coast-Cascades Network (NCCN) Exotic Plant Management Team (EPMT) is composed of nine park units located in northwestern Oregon and the western half of Washington. Tall mountains and a maritime climate produce a tremendous environmental gradient, varying in elevation from sea level to glaciers, and in annual precipitation from almost 200 inches to less than 20 inches per year. These environmental patterns shape the variety and distribution of plant communities and ecosystems within these parks. 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 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.

Program Highlights

Partnering with the Quinault and Quileute Nations, Olympic Peninsula

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. Knotweed grows vigorously and creates dense colonies that exclude native vegetation and alter natural ecosystems. Established populations are dense, persistent, and difficult to eradicate.

In 2016, the NCCN EPMT, Quinault Nation, and Olympic National Forest partnered to comprehensively treat knotweed in the Quinault and Queets River watersheds. Funding was provided to the Quinault Nation by a grant from the Environmental Protection Agency. In August and September, the crew treated 24 dense acres of giant knotweed (*Polygonum sachalinense*) in difficult terrain on the Quinault River, re-treated 95 gross acres of Japanese knotweed (*Fallopia japonica* var. *japonica*, synonym *Polygonum cuspidtatum*) surrounding Lake Quinault, and eight acres of gorse (*Ulex europaeus*) at Seacrest on the coastline.

Another knotweed partnership continues between Olympic National Park, the Quileute Nation, and Clallum County who share boundaries along the Quillayute River; 40 acres were treated in a collaborative project this season.



Collin McAvinchey and Sophie Wilhoit, NCCN EPMT, treat meadow hawkweed on State Route 20 roadsides in the North Cascades Complex, Ross Lake National Recreation Area. NPS Photo.



Jerry Mark, NCCN EPMT, treats Himalayan blackberry in an agricultural field, Ebey's Landing National Historical Reserve. NPS photo.

Program Highlights (cont.)

Additional Projects

The NCCN EPMT continued its work on poison hemlock (*Conium maculatum*) populations surrounding agricultural fields at Ebey's Landing National Historical Reserve. Additionally, this year the EPMT treated 59 acres of Himalayan blackberry (*Rubus bifrons*, synonym *Rubus armeniacus*) in surrounding reserve farms and fields. The team also assisted with a prairie restoration project near the visitor center.

The EPMT treated a plethora of species, primarily meadow hawkweed (*Hieracium caespitosum*), on State Route 20 that dissects Ross Lake National Recreation Area in the North Cascades complex of parks. They also treated a variety of species on the Lake Crescent Highway in Olympic National Park (OLYM) as a preventative strategy prior to upcoming disturbance from a Federal Highways project. Other projects at OLYM included roadside work on the Hurricane Ridge Road, assistance with maintenance yard weed work, and post-burn treatment after the Paradise fire (2015). The NCCN EPMT assisted with endangered butterfly habitat plots at San Juan Island National Historical Park and continued with Scotch broom (*Cytisus scoparius*), spurge laurel (*Daphne laureola*), and reed canary grass (*Phalaris arundinacea*) treatments at Lewis and Clark National Historical Park (LEWI). At Mount Rainier National Park (MORA) the crew re-treated bohemian knotweed (*Fallopia* X *bohemica*, synonym *Polygonum* X *bohemicum*) at T-Woods and invasive thistles at the relatively newly acquired Carbon River properties.

Summary of Accomplishments

Through coordination with partner parks, county agencies, Cooperative Weed Management Areas, and the Quinault and Quileute Nations, the team was able to treat over 25 species covering 815 gross infested acres in seven National Park Service (NPS) units and on adjacent tribal lands in Washington and Oregon, while providing consultation and expertise to these and others. Despite an almost complete turnover of staff, the NCCN EPMT continued to assist its park partners in meeting management goals, forging new partnerships, and strengthening old ones.

Summarized Data for 2016

Measure	Acres
Treated	31
Inventoried/Monitored	81
Gross Infested Area	815
Net Infested Area	30
Youth Engagement	
Total Number of Youth Participants and Youth Employees	6
Total Hours for Youth Participants and Youth Employees	6,240

More Information

Cheryl Decker
EPMT Liaison
360-854-7336
Cheryl_Decker@nps.gov

North Cascades National Park
810 State Route 20
Sedro-Woolley, WA 98284

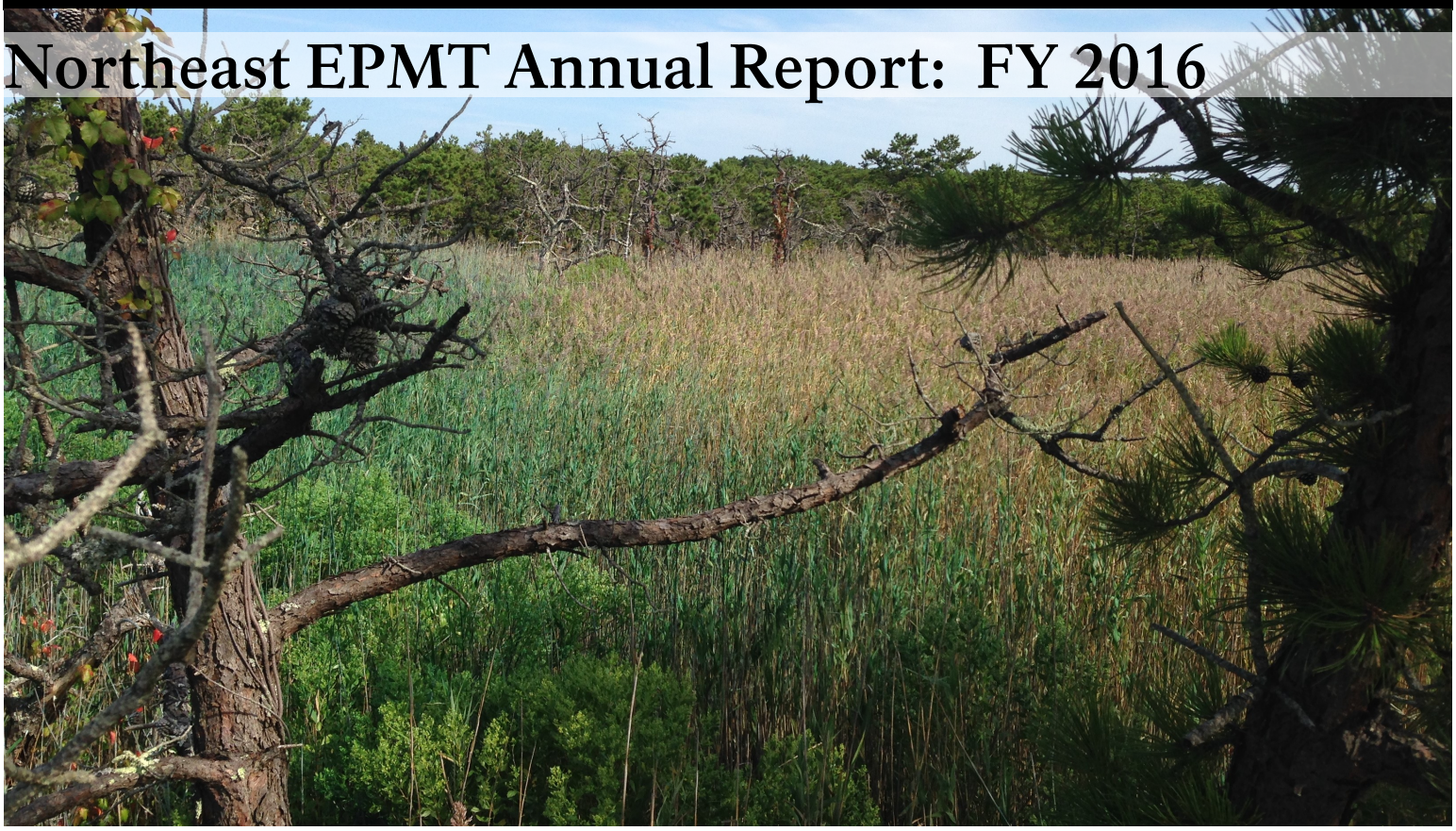
Sophie Wilhoit
EPMT Crew Leader/ Acting Data Manager
360-565-3076
Sophie_Wilhoit@nps.gov
Olympic National Park
600 E Park Ave
Port Angeles, WA 98362

Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Northeast EPMT Annual Report: FY 2016



Boundary between area treated for common reed, *Phragmites australis* (left), and area left untreated (right) at Cape Cod National Seashore. NPS Photo.

Background

The Northeast Exotic Plant Management Team (NE EPMT), duty stationed at Delaware Water Gap National Recreation Area, was established in 2003 and serves 25 partner parks in eight states from Pennsylvania to Maine. Along with on-site control work, the EPMT offers a broad range of services to its parks, including: grant based funding, inventory and monitoring, technical advice and training, assistance with restoration projects, and early detection of new infestations and rapid response to control them.

The parks served by the NE EPMT range in size from nine acres to over 100,000 acres. The majority of these parks have relatively small acreages with mandates to preserve and interpret culturally significant sites, including National Battlefields and National Historic Sites. The NE EPMT works effectively with parks to define and rank invasive species priorities and establishes management goals on projects that are achievable, cost-effective, and produce measurable results over time.

In 2016, due to staffing changes in the program, the NE EPMT adapted its approach to ensure that parks continue to receive support and service from the team. The approach that was taken was modeled after the California EPMT and focused on providing small grants directly to parks through a competitive proposal and ranking process. As a result, five exotic plant management projects were funded at seven different parks. Additional treatment, training, and technical support was provided by the NE EPMT to parks in the region.

Program Highlights

Supporting National Initiatives: Helping Pollinators

During 2015 and 2016, the NE EPMT partnered with Delaware Water Gap NRA to restore a 22-acre field at the former Rosenkrans property. This field is immediately adjacent to the Delaware River, near the Walpack Bend, and had been in active agricultural production until 2011. Upon acquiring the property, the park planned to take the field out of production, and maintain it in native vegetation to promote pollinator conservation, supporting President Obama's June 2014 memorandum, *Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators.* To help achieve the memorandum's goals, the Council on Environmental Quality (CEQ) issued an October 22, 2014 addendum to its sustainable landscape guidance, *Supporting the Health of Honey Bees and other Pollinators.* This guidance will help federal agencies incorporate pollinator friendly practices in landscaping improvements on federal lands. In 2015, the field was cut, and the regrowth was treated with herbicides twice to minimize the prevalent weeds. In 2016, the field was planted with a mixture of regionally native grasses and forbs. Five grass species and 11 forbs were planted with a seed drill. The 11 forbs included many species favored by insect pollinators. Over 485 pounds of seed were sown. Some of the native seed germinated in 2016, but greater results are expected in 2017 and 2018 as a lag of two to three years is expected before maximum results are seen.



Volunteers and NPS employees after a day of clearing invasive plants on Grape Island, Boston Harbor Islands National Recreation Area. NPS Photo.



Brown knapweed (*Centaurea jacea*) less than two days after chemical treatment. Nodding is symptomatic of treatment. NPS Photo.

Program Highlights (cont.)

A Shift in Perspective

Through the 2016 NE EPMT's grant based proposal request, Boston Harbor Islands National Recreation Area (BOHA) partnered with Saugus Iron Works National Historic Site and Frederick Law Olmstead National Historic Site to seek funds for a seasonal biological science technician, plus equipment and materials, to be shared among the Boston Metro Area parks and work on high priority exotic vegetation management projects. A former NPS natural resource management employee was hired and duty stationed at BOHA. This employee provided exemplary service to all three parks, including carrying out invasive plant inventories, developing management strategies and goals, and carrying out exotic plant control work. All parks that received support from this position viewed the approach as being a successful way to accomplish a great deal of work with minimal resources. A summary of these accomplishments is being developed as well as, most importantly, an evaluation to determine whether this model could be used at other parks in the Northeast Region.

Summary of Accomplishments

The NE EPMT has had a long history of management of Japanese sedge, *Carex kobomugi*, notably at Gateway National Recreation Area (GATE) and Fire Island National Seashore (FIIS). Prior years' efforts at the Jamaica Bay Unit of GATE and FIIS seem to be paying dividends. Re-treating previous areas, we used less than 10% of the previous year's total volume of spray mixture, indicating better than 90% control. Many of the new patches treated in 2015 appeared to be completely eradicated, as no trace of the infestation was found in 2016.

In addition to this effort, there was a great deal of time spent adapting to a new way of carrying out invasive plant management at the parks. Through the implementation of the grant based proposal system, limited resources were able to be distributed to parks which resulted in a suite of different approaches to resolving high priority projects at the park level. The NE EPMT hopes 2017 will be another safe and successful year.

Summarized Data for 2016

Measure	Acres
Treated	53
Inventoried/Monitored	104
Gross Infested Area	1,441
Net Infested Area	133
Youth Engagement	
Total Number of Youth Participants and Youth Employees	5
Total Hours for Youth Participants and Youth Employees	403

More Information

Casey Reese
Supervisory Biologist
Regional IPM Coordinator
267-800-8503
casey_reese@nps.gov

Northeast Regional Office
National Park Service

Brian McDonnell
EPMT Team Leader
Delaware Water Gap NRA
1978 River Rd.
Bushkill, PA 18324
570-588-0534
brian_mcdonnell@nps.gov

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: FY 2016



Post prescribed fire invasive species treatment at Devils Tower National Monument. 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 to restore sites to the desired resource condition. 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. The NGP EPMT uses Integrated Pest Management (IPM) strategies including chemical, biological, mechanical, and cultural methods to manage invasive plants. Each year NGP EPMT staff offer a week-long training session in the principles and practices of IPM for park staff, partners, and NGP EPMT seasonal employees.

Field crews for the NGP EPMT are based at either Badlands National Park (BADL) or Theodore Roosevelt National Park (THRO), and travel to other parks in the network. This year, NGP EPMT members completed field work at 12 of the partner parks in the network. The Montana Conservation Corps and Minnesota Conservation Corps were also integrated into field crews to increase capacity and efficiency of operations.

Program Highlights

Invasive Plant Surveys Utilizing United States Geological Survey (USGS) Drones Conducted at Theodore Roosevelt National Park

Through a project between the NGP EPMT and THRO, a National Park Service (NPS) Academy Student Conservation Association intern, Ismael Diaz, was funded and stationed at THRO for 12 weeks. The intern was able to complete several projects during his time at the park. His primary focus was completing ground surveys and mapping of invasive species that included leafy spurge (*Euphorbia esula*), Canada thistle (*Cirsium arvense*), and yellow sweet-clover (*Melilotus officinalis*). These areas were then flown over with a USGS drone with various cameras to determine how well the drone was able to identify infestations of invasive species. Analysis is ongoing, but if this proof-of-concept project is successful, it will dramatically alter how invasive plants are inventoried and surveyed over large areas. Ismael also assisted in other aspects of the drone research that included prairie dog colony mapping and wildlife surveys.

Engaging youth in protecting our natural resources was a priority this Centennial year. This project demonstrated the benefits of employing youth to work in our parks where they gained an understanding of the complexities of managing natural resources and the unique challenges of conducting active management of resources within national parks. We will continue our partnerships with youth organizations in the future and hope to expand their opportunities to include other natural resource disciplines in the parks that we serve.



Staff seeding native plant species in annual grass research plots at Scotts Bluff National Monument. NPS Photo.



Northern Great Plains EPMT staff completing mapping during USGS drone project. NPS Photo.

Program Highlights (cont.)

Annual Grass Research Project Underway

A collaborative effort between USGS researchers, Northern Great Plains Inventory and Monitoring Network, Northern Great Plains Fire Management, several NPS Units, the NPS Biological Resources Division, and NGP EPMT has kicked off a research project to identify best management practices for managing annual grasses in the Northern Great Plains. The goal of this study is to reduce uncertainties about the role of prescribed fire, alone or in combination with, herbicide application or native seed sowing, as a management tool for invasive annual brome grasses in NGP parks. An adaptive management plan will be developed through this research to assist parks in selecting appropriate science-based decisions for annual grass management in the Northern Great Plains.

This project will continue for several years in BADL and Scotts Bluff National Monument. It includes components to increase availability of local source-identified native plant materials for restoration and best management practices for their use in restoration.

Summary of Accomplishments

The partnership with Montana and Minnesota Conservation Corps continues to increase our personnel. Conservation Corps crews were able to implement treatment at six parks this past year and included crews trained specifically in invasive species management.

Helicopter operations were continued in high priority areas at THRO, Wind Cave National Park (WICA), and BADL. A new aerial spraying contract for BADL and WICA Park resulted in more efficient use of aerial resources and reduced administrative costs and time expended on contract instruments. A bio-control program for Canada thistle has begun at WICA in cooperation with park staff. The bio-control program focused on areas above the cave zone where herbicide is not used. If the bio-control releases are successful, we will expand their use at parks with sensitive resources, such as caves or springs, that may preclude the use of herbicides in certain areas.

Summarized Data for 2016

Measure	Acres
Treated	557
Inventoried/Monitored	14,708
Gross Infested Area	2,824
Net Infested Area	545
Youth Engagement	
Total Number of Youth Participants and Youth Employees	Reported by parks
Total Hours for Youth Participants and Youth Employees	Reported by parks

More Information

Brennan Hauk
EPMT Liaison
605-341-2801
brennan_hauk@nps.gov

231 E St. Joseph St.
Rapid City, SD 57701

Angela Jarding
Data Manager
Northern Great Plains I&M Data Management Team
605-341-2809
angela_jarding@nps.gov

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: FY 2016



Atop Lunch Tree Hill, Grand Teton National Park. NPS Photo.

Background

The Northern Rocky Mountain Exotic Plant Management Team (NRM EPMT) serves 17 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 lack staff with the expertise needed to address even their highest priority invasive species.

The NRM EPMT is currently a nine-person crew strategically divided into three small crews based at two larger parks within their service area. All 17 partner parks receive work annually, and all but three parks received multiple visits in 2016. Repeat visits are critical for most project areas to ensure all invasive plants 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 in Wyoming and Montana later in the summer.

Program Highlights

Refining a Treatment Approach for Cheatgrass across High Elevation Parks

Cheatgrass (*Bromus tectorum*) is a growing concern for the northern Rocky Mountain Region and is a high priority for several parks including Grand Teton (GRTE), Rocky Mountain (ROMO), and Yellowstone (YELL) National Parks. This invasive annual grass easily outcompetes native sagebrush steppe vegetation because of its winter and early spring growth and its extensive and fast-growing roots and shoots. This behavior is accentuated by a warming climate at higher elevations. Survey and treatments have varied across these parks from aggressive front country treatments at ROMO to targeted surveys of large restoration pastures at GRTE. For comparison, in 2016 the NRM EPMT treated nearly 80 of 150 surveyed acres of ROMO, but only 2.6 acres across 550 surveyed acres of GRTE.

This past fall, the NRM EPMT partnered with YELL to conduct herbicide trials at a single roadside site in the park's famed Lamar Valley. Eight acres were treated using two different rates of Plateau (imazapic) herbicide and two application methods (backpack sprayers vs. UTVs). Experience has shown that UTVs may be needed to deliver enough herbicide to cheatgrass patches, a potential roadblock for more remote applications. Plot level reductions in cheatgrass cover will be measured in the spring of 2017 as the program develops a strategic park wide approach to address this invasive plant.



NRM EPMT crew member taking a breather while treating meadow and orange hawkweed (*Hieracium caespitosumm* and *h. aurantiacum*) at Yellowstone National Park. NPS Photo.



NRM EPMT crew members searching for spotted knapweed (*Centaurea stoebe*) at Bighole National Battlefield. NPS Photo.

Program Highlights (cont.)

Continued Progress at Grant Kohrs Ranch NHS

Present-day cattle ranching and haying operations make Grant-Kohrs Ranch National Historic Site a very unique park with interesting weed management challenges. The NRM EPMT program has been assisting the park in their efforts since 2003 as leafy spurge (*Euphorbia esula*) and yellow toadflax (*Linaria vulgaris*) have been particularly problematic.

To determine an optimum treatment strategy for both species, the park and the NRM EPMT partnered in 2005 with the University of Montana to collect plot level monitoring data on selected areas and weed treatments. Twenty permanent sampling plots were established throughout the Clark Fork River riparian area. Three years of data have now been gathered. As seen below, overall canopy cover has been reduced to a fraction from the past for both noxious weeds. Several introduced forage grasses now occupy these areas and, though there has been an improvement, our next step will be to work with park staff to develop restoration strategies to reintroduce native species.

Species	2005*	2010	2015
leafy spurge (*E. esula*)	15.4 %	1.4 %	1.2 %
yellow toadflax (*L. vulgaris*)	6.9 %	0.8 %	1.1 %

* considered the baseline condition

Summary of Accomplishments

The NRM EPMT made significant headway in all partner parks, as nearly 240 infested acres were treated mainly by chemical means. A total of 28 species were addressed in 16 NPS units. In total, just over 4,300 person hours were spent treating noxious weeds in parks served by the NRM EPMT.

The NRM EPMT continues to strike a balance between contributing to long-term, large-scale control and removal of early detection and eradication of nascent populations. The program expanded its partnerships in 2016 working and developing financial agreements with both the Montana and Utah Conservation Corps. Several field projects were completed in 2016 in Grand Teton and Yellowstone National Parks.

Summarized Data for 2016

Measure	Acres
Treated	239
Inventoried/Monitored	615
Gross Infested Area	56,195
Net Infested Area	239
Youth Engagement	
Total Number of Youth Participants and Youth Employees	10
Total Hours for Youth Participants and Youth Employees	4,500

More Information

Steven Bekedam — **307-344-2185**
EPMT Liaison — **steven_bekedam@nps.gov**

P.O. Box 168
Yellowstone National Park
Yellowstone, WY 82190

Andrew Ringholz — **307-344-2654**
EPMT Crew Leader — **andrew_ringholz@nps.gov**

Gary Ludwig — **406-250-3928**
EPMT Crew Leader — **gary_ludwig@nps.gov**
Glacier National Park
West Glacier, MT 59936

Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Pacific Islands EPMT Annual Report: FY2016



PI EPMT protects diverse and fragile ecosystems including pioneer communities on active volcanoes (pictured here) and surrounding rainforests providing habitat for numerous endemic and endangered plants and animals. Hawai'i Volcanoes 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, and 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

Addressing Rapid Ohia Death to Protect Natural Areas at Hawai'i Volcanoes National Park (HAVO)

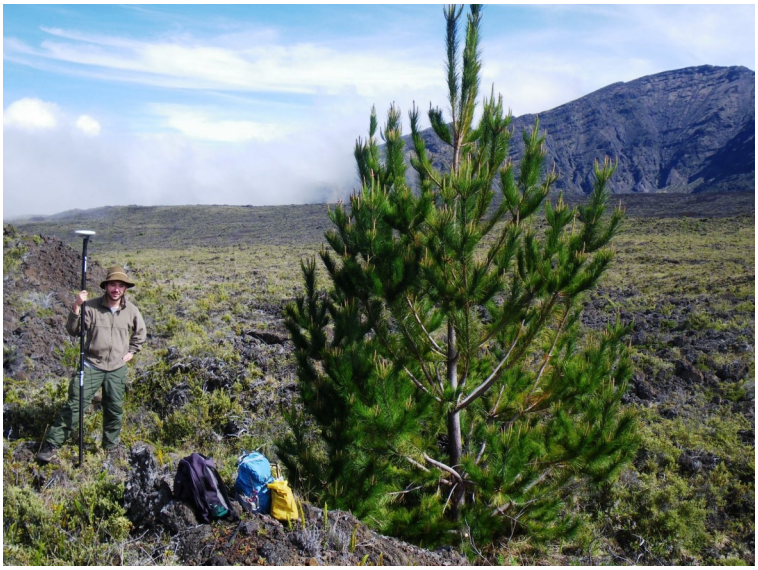
PI EPMT HAVO led Rapid Ohia Death (ROD) monitoring and sanitation efforts on National Park Service (NPS) lands on Hawai`i Island. Over 54 worker days were spent sampling 151 trees park wide; 14 infected trees were identified. Ten were felled and covered with tarps to prevent more widespread spore dispersal, which could infect surrounding areas. PI EPMT HAVO staff aerially surveyed 10,000 acres in the Kahuku unit of the park, site of the principle ROD infestation, and assisted the State of Hawaii with surveys of 60,000 acres outside park boundaries. EPMT staff have presented ROD distribution, diagnostic, and prevention information to over 100 park staff and continue to participate in monthly ROD interagency meetings.

The Power of Volunteer Stewards (HAVO)

PI EPMT HAVO staff provides oversight and coordinates large volunteer projects in the park, notably the inter-divsional Stewardship at the Summit program. In FY16, invasive kahili ginger (*Hedychium gardnerianum*) thickets and 8,218 invasive shrubs and trees were cleared from 31.6 acres of native forests in the park. Kahili ginger is among the world's most invasive plants, and one of the top targets for the NPS lands in Hawaii. A total of 132.6 worker days were spent in the field by 315 volunteers, including 193 youth volunteers and 13 international volunteers. PI EPMT HAVO staff were essential for recruiting and organizing volunteer workforces.



Youth volunteers after a hard day's work removing invasive knotweed alongside HAVO PI EPMT staff, HAVO. NPS Photo.



Student Biological Science Technician 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. Building on 2015's trials and efforts, control of pine trees within the Haleakala Crater continued in 2016. This project aims to control an incipient pine invasion to prevent spread that, among other things, would result in decreased viewshed, limited wildlife viewing, and modification of native species and ecologically invaluable habitat. Stemming from a wildfire in 2007 on lands adjacent to the park, staff have accomplished pine control on all ground accessible areas of the park. Being that this is a single age cohort of pines makes this project time sensitive, with a goal of treatment prior to maturity. Infested inaccessible slopes have been the focus of the aerial control efforts. With aviation managing staff, herbicide handlers, and the contracted helicopter, the project continues to produce desirable results. The EPMT invested significant effort collaborating with park experts and partners to refine treatment methods for inaccessible areas via helicopter.

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 2016. PI EPMT HAVO managed over 20 hours of helicopter flight time in FY 2016, supporting missions to map and control invasive plants, deploy crews and camp supplies, map infestations, and assist other park missions. This work requires expertise not readily available in parks but necessary to the safe and effective treatment of invasive species in the Pacific Island's rugged terrain.

Safety is of paramount importance to the PI EPMT work. PI EPMT crews worked alongside HAVO crews as part of HAVO's safe and highly productive alien plant control team. In 2016, a combined 1,287 worker days were spent controlling invasive vegetation in the field. PIEPMT staff has played a key role in building a culture of safety and team members routinely lead safety and operational briefings as well as risk assessments for project work, undoubtedly contributing to the team's outstanding safety record.

Summarized Data for 2016

Measure	Acres*
Treated	1289
Inventoried/Monitored	12,520
Gross Infested Area	12,369
Net Infested Area	970
Youth Engagement	
Total Number of Youth Participants and Youth Employees	234
Total Hours for Youth Participants and Youth Employees	3,415

More Information

Jeremy Gooding
Pacific Islands EPMT Liaison
c/o Haleakala National Park
P.O. Box 369
Makawao, HI 96768
808-281-1542
jeremy_gooding@nps.gov

David Benitez
PI EPMT Ecologist and Data Manager
Hawaii Volcanoes National Park
P.O. Box 52
Hawaii National Park, HI 96718
808-985-6085
david_benitez@nps.gov

Jon Makaike
PI EPMT Pest Controller and Field Crew Lead
808-985-6097
jon_makaike@nps.gov

Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Southeast EPMT Annual Report: FY 2016



Volunteers work with the SE EPMT to remove invasive thistles, Stones River National Battlefield, TN. NPS Photo.

Background

The Southeast Exotic Plant Management Team (SE EPMT) serves 20 National Park (NPS) units located in seven states in the southeastern US. Some of the parks, such as Big South Fork River and Recreation Area, are predominantly undeveloped and offer the visitor a wilderness experience. Other units exist to provide an historical record of past events and are typically located in developed urban areas. The SE EPMT partner parks extend from the Cumberland Plateau in Kentucky, Tennessee, and Alabama east through the Appalachian Highlands of Virginia, Tennessee, and North Carolina and into the Piedmont of North and South Carolina. The SE EPMT works in association with the Cumberland Piedmont Inventory and Monitoring Network (CUPI I&M) and the Appalachian Highlands Inventory and Monitoring Network (APHI I&M). Co-location of the SE EPMT and APHI I&M Network in Asheville, NC allows the two programs to share overhead costs and other programmatic resources.

The SE EPMT operates as a fully equipped and trained travelling strike team comprised of one permanent field crew leader and up to three student interns and/or seasonal bio-techs. Each year partner parks work with the SE EPMT Liaison to develop and schedule proposed projects. Once projects are finalized and a final plan is written the SE EPMT implements the work. Frequently, park staff and/or volunteers will assist with project duties. Most of the parks have developed long term projects including a restoration component.

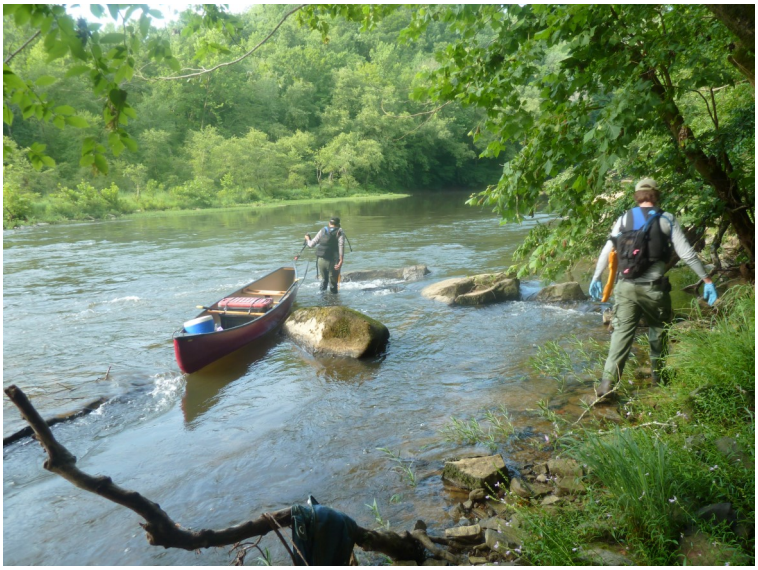
Program Highlights

Kudzu Control in Southeastern Parks

One of the long term projects the SE EPMT is focused on is the control and eradication of kudzu (*Pueraria montana*) at Cumberland Gap National Historic Park. This species, as well as tree-of-heaven (*Ailanthus altissima*), has been the focus of the teams work at the park for several years. Numerous occurrences of kudzu throughout the park are most likely remnants of erosion control efforts implemented during road construction and farming in the mid 1900s. Control efforts often require access by rope and basic climbing equipment, as sites are typically on steep slopes. Contrary to popular belief, kudzu control and eradication is possible through physical removal from trees and other trellis-like features, and the judicious use of appropriate herbicides. Four other SE EPMT partner parks have had kudzu infestations that are currently in control status. These sites are revisited on a semi-annual basis to ensure there is no successful re-sprouting.



SE EPMT treating kudzu over old railroad bed, Cumberland Gap National Historic Park, KY/TN/VA. NPS Photo.



SE EPMT treating mimosa (*Albizia julibrissin*) along river corridor, Big South Fork River and Recreation Area, TN/KY. NPS Photo.

Program Highlights (cont.)

Native Warm Season Grass Establishment at SC NPS Units

In the early fall of 2015, representatives from the NPS, the US Department of Agriculture and the South Carolina Native Plant Society began a collaboration to establish native warm-season grasses at Cowpens National Battlefield (NB), Kings Mountain National Military Park (NMP), and Ninety-Six National Historic Site (NHS), all located in South Carolina. Cowpens NB was identified for the pilot project and three sites were chosen for treatment. Soil tests have been conducted and collection of locally available native grass seed completed. Additional seed will be augmented by sources within the southeast U.S. Seeding of these sites will begin in early 2017. The long term goals for this project include wildlife and pollinator enhancement, reduced need for mowing, reduced carbon footprint, and reduction of invasive plants. In 2017, additional restoration sites will be identified for Kings Mountain NMP and Ninety-Six NHS.

Summary of Accomplishments

This past field season (FY 2016) marked the 12th year that the SE EPMT has provided invasive plant control, training, and outreach to our partner parks. This season also marks the 12th year without time lost due to accident or injury. Operational from October – December 2015 and March – September 2016, the SE EPMT provided assistance to 16 partner parks. Treatment and control of more than 215 acres occurred at 11 partner parks. Of the 23 invasive plant species treated, the three most prevalent species were Chinese privet (*Ligustrum sinense*), oriental bittersweet (*Celastrus orbiculatus*), and mimosa (*Albizia julibrissin*). Inventories in 12 partner parks totaled more than 491 acres, and included newly acquired properties in two parks. Training was conducted in four park units, and included ATV operator certification and recertification, safe and effective herbicide application, invasive plant identification, and wildland sawyer certification. In addition, 2016 offered the opportunity for the SE EPMT to assist their South Carolina NPS units in conducting their first BioBlitz focused on birds. The BioBlitz also included early detection for six invasive plant species not previously known to those parks.

Summarized Data for 2016

Measure	Acres
Treated	215
Inventoried/Monitored	491
Gross Infested Area	1,531
Net Infested Area	211
Youth Engagement	
Total Number of Youth Participants and Youth Employees	24
Total Hours for Youth Participants and Youth Employees	5,904

More Information

Nancy Dagley
EPMT Liaison
828-407-5651
nancy_dagley@nps.gov

67 Ranger Dr.
Asheville, NC 28805

Toby Obenauer
EPMT Field Crew Leader
828-407-5652
toby_obenauer@nps.gov

Shea Bruscia
Florida/Caribbean EPMT Data Manager
786-249-3005
shea_bruscia@nps.gov
18001 Old Cutler Rd., Suite 419
Palmetto Bay, FL 33157

Program Brief

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Biological Resources Division

Southeast Coast EPMT Annual Report: FY 2016



SEC EPMT crew members remove Chinese privet (*Ligustrum sinense*) along a trail at Kennesaw Mountain National Battlefield Park. NPS Photo.

Background

The Southeast Coast Exotic Plant Management Team (SEC EPMT) serves 15 park units in North and South Carolina, Georgia, and Alabama. Partner parks range from protected seashores and forested wilderness to urban recreational areas and preserved cultural landscapes. 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 in the southeast U.S. The team was initiated as a pilot project in 2005, and by 2010 was permanently funded through CONG's base operating budget. Although funded differently than the majority of EPMTs, the SEC EPMT strives to achieve similar goals for invasive plant management. In fiscal year 2016, the SEC EPMT was led by Lauren Serra (Liaison) and Amorita Brackett (Field Crew Leader). A crew of three was comprised of Student Conservation Association (SCA) youth interns under the Americorps Direct program's *Youth in the Great Outdoors* initiative. This ten-month crew was shared with CONG, of which eight months were devoted to the SEC EPMT program. With contributions from partner parks, the team was able to fund data management through an agreement with the University of Georgia.

Program Highlights

Early Detection Rapid Response

There have been several instances where new exotic plant occurrences were documented and treated by the SEC EPMT. Isolated populations of leadtree (*Leucaena leucocephala*) and cogongrass (*Imperata cylindrica*) were successful early detection rapid response (EDRR) species at Cumberland Island National Seashore. At Fort Pulaski National Monument common reed (*Phragmites australis*) is being managed as an EDRR species to minimize potential threats to the ecosystem and future treatment costs. Park staff and Georgia Forestry Commission maintenance-level treatments and monitoring have been essential for controlling these plants before they spread.



The SEC EPMT treats leadtree in an early detection rapid response effort at Cumberland Island National Seashore. NPS Photo.



During the *Wings Across South Carolina BioBlitz* invasive plant cards were distributed to collect EDRR information at parks. NPS Photo.



SEC EPMT, Boy Scouts of America volunteers, and park staff plant trees to restore an area at Ocmulgee National Monument. NPS Photo.

Program Highlights (cont.)

Outreach to the Local Community

The SEC EPMT was involved in several outreach projects that allowed the program to connect with the local community and strengthen partnerships. For the *Wings Across South Carolina BioBlitz*, the SEC and SE EPMTs collaborated to educate program participants and park visitors about the importance of EDRR on invasive plants. Invasive plant cards, developed with assistance from the Inventory and Monitoring Network, were adopted by South Carolina State Parks to educate staff. The outreach display, which contained South Carolina Exotic Pest Plant Council (SC-EPPC) materials, was also used at CONG's Swampfest event. At Ocmulgee National Monument, the team participated in a park Centennial event that utilized Boy Scouts of America volunteers to plant trees as a restoration effort to facilitate ecosystem adaptation to climate change following control of a superinvader, Chinese tallow (*Triadica sebifera*). The SEC EPMT assisted with the mutual involvement of Kennesaw Mountain National Battlefield Park and Chattahoochee National Recreation Area in a *Science Olympiad Tournament* by formulating test questions to educate local, urban school groups on the importance of invasive species.

Summary of Accomplishments

The SEC EPMT served all partner parks in 2017, including inventory of two parks managed by Fort Sumter National Monument that were last mapped in 2007. While serving 13 park units, 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 to ten years. The SEC EPMT treated 35 invasive plant species and continues to offer invasive plant management and herbicide training to partner parks. The SEC EPMT Steering Committee was instrumental in prioritizing projects. Partnerships were strengthened, including Georgia Department of Natural Resources' sponsorship of the crew's *Becoming an Outdoors Woman* training and the Southeast Coast Inventory and Monitoring Network collaboration on EDRR efforts. SEC EPMT's liaison continues to serve on the South Carolina Exotic Pest Plant Council (EPPC) board, and this year the Southeast EPPC annual meeting was held in South Carolina. The liaison is also involved with both CONG and EPMT Safety Committees. The field crew leader attended Wilderness First Responder refresher training and served a 12 week detail with NCR EPMT.

Summary of Accomplishments (cont.)

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

Summarized Data for 2016

Measure	Acres
Treated	37
Inventoried/Monitored	458
Gross Infested Area	591
Net Infested Area	35
Youth Engagement	
Total Number of Youth Participants and Youth Employees	20
Total Hours for Youth Participants and Youth Employees	4,337

More Information

Lauren Serra
EPMT Liaison
803-695-0214
lauren_serra@nps.gov

Congaree National Park
100 National Park Rd
Hopkins, SC 29061

Amorita Brackett
EPMT Field Crew Leader
803-647-3985
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: FY 2016



Colorado River in Glen Canyon National Recreation Area (NRA). NPS Photo.

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, other programs within the NPS, 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 degradation. 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, primarily through native seed collection and plant propagation**; 3) **work in collaboration with agencies, and public and private groups**; 4) **encourage and support invasive plant control and ecological restoration research**; and 5) **provide educational opportunities and experiences, especially for youth, Native Americans, and disadvantaged communities**.

Program Highlights

General Overview of Highlights

The SW EPMT has been successful in increasing its capacity to provide parks with native seed collected in the park, and live plants from that seed. Mainly because of our close ties and partnerships with the Bureau of Land Management, U.S. Forest Service, and US Fish and Wildlife Service, this multi-agency effort has expanded from one crew in 2015 to four crews in 2016.

The SW EPMT has also increased its capacity to grow live plant material for restoration projects quickly and efficiently through its agreements with the Madrean Archipelago Plant Propagation Center in Arizona and the Pueblo at Santa Ana Nursery in New Mexico. We are in the planning stages to increase this capacity further by developing agreements with the Museum of Northern Arizona and with the State of Texas.

The SW EPMT is working directly with four regional research universities to study improved treatments, restoration methods, ecosystem structure and function, and climate change adaptation. The SW EPMT Liaison worked with a number of parks and programs within the NPS, and with outside agencies to secure additional research funding.

In FY16 the SW EPMT created work experience and training opportunities in restoration and exotic plant control for youth and we have been successful in increasing Native American youth participation.



SW EPMT crew working on erosion control at Bandelier National Park. NPS Photo.



SW EPMT native youth building a Zuni bowl at Bandelier NP. NPS Photo.

Program Highlights (cont.)

Research Projects

In 2016, the SW EPMT worked with the University of Nevada, Las Vegas, to develop plans to start a watershed restoration research project in side canyons of Glen Canyon Natural Recreation Area (GLCA) that have become impacted by exotic species, especially Ravenna grass (*Tripidium ravennae* ssp. *ravennae* , synonym *Saccharum ravennae*). This key project will connect Native American youth to their National Parks through involvement in a landscape-scale conservation project that will restore and protect critical habitats in GLCA.

The SW EPMT is working with park staff at Navajo National Monument (NAVA) and Colorado State University to research how to successfully restore two highly eroded areas that threaten the world renowned Keet Seel and Inscription House archeological sites. Both of these sites are threatened by ongoing erosion brought on by a lack of established vegetation due to a history of cattle and horse grazing, and by a recent increase in storm intensity. This project also includes a partnership with the Yuma Crossing Natural Heritage Corporation to work with native tribes to build a fence and restore these areas.

The SW EPMT has also partnered with park staff at Pecos National Historical Park and Tuzigoot National Monument and researchers at the University of Nevada, Las Vegas (UNLV) to help plan the restoration of an area infested with exotic plants (primarily *Kochia scoparia*). Researchers at UNLV will experiment with different restoration and treatment types, and soil treatments, to examine the most effective control and restoration methods.

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 sent crews to 29 parks in 2016. Most of this work was restoration and exotic plant control. We were able to restore 24.77 acres in nine parks, 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 2016

Measure	Acres*
Treated	426*
Inventoried/Monitored	426*
Gross Infested Area	1,094*
Net Infested Area	114*
Youth Engagement	
Total Number of Youth Participants and Youth Employees	206
Total Hours for Youth Participants and Youth Employees	19,296

* Acreage not reported in the EPMT standard, the National Invasive Species Information Management System (NISIMS).

More Information

Charles Schelz
EPMT Liaison
520-400-1011
charles_schelz@nps.gov

Southwest EPMT Headquarters
12661 E. Broadway Blvd.
Tucson, AZ 85748

Eric Lassance
EPMT Crew Leader
520-549-7755
eric_lassance@nps.gov

Jeanine Foley
EPMT Crew Leader
Valles Caldera National Preserve
303-549-6305
jeanine_foley@nps.gov

Marcus Jernigan
EPMT Biologcal/GIS Technician
520-561-0538
marcus_jernigan@nps.gov

Ashlee Simpson
EPMT Seed Collection Crew Leader (Intern)

FY2016 Exotic Plant Management Team – Program Participants

Alaska EPMT Program Participants

Leadership
Chris Overbaugh (Liaison), Peter Frank (Data Manager shared with WRST), Jason Taylor (Supervisor)

Crew (Interns based at parks)
Jamie Lay, Christine DeVries, Nicole Zampieri, Valeria Briones, Kylie Mosher, Jacob Dekraai, Natalie Balkam

Region/Network Support
Alaska Regional Office – Jason Taylor, Joel Cusick, Angie Southwould

Park Support
Denali National Park – Wendy Mahovlic
Glacier Bay National Park and Preserve – Lewis Sharman
Katmai National Park and Preserve – Carissa Turner, Robert Peterson
Kenai Fjords National – ParkChristina Kriedeman, Renee Sniegocki
Klondike Gold Rush National Historic Park – Jami Belt
Wrangell-St. Elias National Park and Preserve – Peter Frank, Maura Schumacher

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
Copper Basin Watershed Council

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

Steering Committee
Alaska Regional Office – Jason Taylor
Kenai Fjords National Park Superintendent – 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 (Channel Islands National Park, Golden Gate National Recreation Area, John Muir National Historic Site, Point Reyes National Seashore, Whiskeytown National Recreation Area, Lassen Volcanic National Park, Yosemite National Park, Sequoia and Kings Canyon National Parks, Santa Monica Mountains National Recreation Area, Pinnacles National Park, CaEPMT), Shelterbelt Builders, Great Tree Tenders, Marin County Fire Programs , NPS Fire Programs (WHIS, PORE, SAMO), Backcountry Horsemen, Golden Gate Parks Conservancy, Yosemite Conservancy, Point Reyes National Seashore Association Technician

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
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
Federal Highways Administration
Geoscientists-in-parks
Golden Gate national Parks Conservancy
Marin County Fire
Outward Bound Adventures
Point Reyes National Seashore Association
Riparian Repairs
San Francisco Bay Network Inventory and Monitoring Group (NPS)
San Francisco Bay Area Fire Program
Santa Monica Mountains Fund
Santa Monica National Recreation Area LA County Fire
Santa Monica Youth Corps
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
University of California, Davis

Volunteers
American Conservation Corps, Cesar Chavez Volunteers, Geoscientists in Parks, Recreational Equipment Incorporated (REI)

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
Brian Lockwood (Liaison August and September), Chris Furqueron (Acting Liaison September-July), Shea Bruscia (Data Manager Intern)

Region/Network Support
Southeast Region – Chris Furqueron (IPM Coordinator), Darrell Echols (Chief, Division of Science and Natural Resources Management)
South Florida and Caribbean Inventory and Monitoring Network – Brooke Shamblin, Mario Londono, Judd Patterson

Park Support
Big Cypress National Preserve – Tony Pernas, William Snyder
Biscayne National Park – Shelby Moneysmith, Vanessa McDonough
Buck Island Reef National Monument/Christiansted National Historic Site/Salt River National Historic Park and Ecological Reserve – Zandy Hillis-Starr
Canaveral National Seashore – Kristen Kneifl
DeSoto National Memorial – Jorge Acevedo,
Chuck Oshaben
Dry Tortugas National Park – Kayla Nimmo
Everglades National Park – Hillary Cooley, Jonathan Taylor
Fort Matanzas National Monument – Kurt Foote
Gulf Islands National Seashore – Mark Nicholas, Cass Bromley

Timucuan Ecological and Historic Preserve – Shauna Allen, Cicely Pontifle
Virgin Islands National Park –Thomas Kelly, Shane McKinley

Partners and Cooperators
Florida Fish and 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 – Tamara Whittington
Biscayne National Park – Margaret Goodro
Buck Island Reef National Monument/Christiansted National Historic Site/Salt River National Historic Park and Ecological Reserve – Joel Tutein
Canaveral National Seashore – Kristen Kneifl
Desoto National Memorial – Jorge Acevedo
Dry Tortugas National Park – Pedro Ramos
Everglades National Park/Dry Tortugas National Park – Pedro Ramos
Fort Matanzas National Monument/Castillo de San Marcos National Monument – Gordie Wilson
Gulf Islands National Seashore – Daniel Brown
Timucuan Ecological and Historic Preserve/Fort Caroline National Memorial – Chris Huges
Virgin Islands National Park – Brion Fitzgerald

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, Paul Schiller, Ben Heins

Park Field Crews
Grand Portage National Monument – Brandon Seitz, Sadie Libal
Ice Age National Scenic Trail – Pam Schuler, Dan Watson
Mississippi National River and Recration Area – Neil Smarjesse, Kadie Gullickson
Pictured Rocks National Lakeshore – Matt Vandermolen, Laura Siegert
Saint Croix National Scenic Riverway – Ben Heins, Michael Bell
Voyageurs National Park – John Snyder, Scott Crozier, Dan Maturen

Region/Network Support
Midwest Region Office – Carmen Thomson

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

Partners and Cooperators
Northwood Cooperative Weed Management Area
St. Croix Red Cedar Cooperative Weed Management Area
Grand Portage Reservation Tribal Council

Steering Committee
Apostle Islands National Lakeshore – Peggy Burkman
Grand Portage National Monument – Brandon Seitz
Ice Age National Scenic Trail – Pam Schuler
Isle Royale National Park – Mark Romanski
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 – Julie Christian
Voyageurs National Park – John Snyder

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), Jessica Salesman (Project Coordinator), Chad Gross (Cartographer/Data Manager)

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 (Crew Leader), Andy Pigg (Crew Leader), Kelly Mathis (Crew Leader)

Crew
Joseph Castello, Nicholas Brasier, Darrin Gobble, Daniel McLendon, Maura Schumacher, Ashley Kroon, Schylar Gholson, Andy Pigg, Travis Fulton

Region Support
Pacific West Region Office – Jay Goldsmith
Inter-Mountain Region Office – Mark Sturm

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 National Park and Canyonlands National Park (Southeast Utah Group): Kelli Quinn, Jacob Suter, Clay Kark, Liz Ballenger
Joshua Tree National Park: Neil frakes
Death Valley National Park: Josh Hoines and Kirtsen Lund
Bryce Canyon National Park: Eric Vasquez and Katie Johnson
Capitol Reef National Park: Sandra Borthwick and Terry Fisk
Great Basin National Park: Ben Roberts and Meg Horner
Mojave National Park: Andrew Kaiser
Zion National Park: David Firmage
Lake Mead NRA: Alice Newton, Carrie Norman, Steve Daron and Kelly Wallace
Parashant National Monument: Rosie Pepito and Jennifer Fox
Pipe Spring National Monument: Brian Black

Manzanar National Historic Site: Jeff Burton, Gerry Enes, and Troy Strawn
Tule Springs Fossil beds National Monument: John Burpee

Partners and Cooperators
Bureau of Land Management - Southern NV District: JJ Smith, Sean McEldery, Aleta Nafus, Corrin Floyd
US Fish and Wildlife Service - Havasu NWR: Brandon Melton, Daryl Magnuson; Pahranagat NWR: James (Rob) Vinson, Jim Docktor; Desert NWR: Amy Sprunger, Sarah Bullock Bill Williams NWR: Kathleen Blair; AZ ISST Coordinator: Brenda Zaun, Ashley Hall
US Forest Service - Spring Mountains NRA: Jennifer Brickey; Coconino NF: Laura Moser, Lindsay Smythe, Katrina Tso
Bureau of Reclamation - Lower Colorado River Region: Marc Maynard, Bill Martin, Brandon Barrow, Andrew Trouette
Clark County, Nevada Desert Conservation Program - Muddy River Reserve: Tina Mozelewski; Boulder City Conservation Easement: John Brekke, Stefanie Ferrazzano
Clark County Wetlands Park and Nature Preserve – Liz Bickmore
Marine Corps Yuma Air Station - Abigail Rosenberg, Del Maslen, Richard Cerka
University of Arizona - Jim Malusa (Research Botanist)
Mohave County, AZ Parks Department/Davis Camp - Joe Donovan, Roberto Martinez

Volunteers
Lamar, Daryl, Pat

Mid-Atlantic EPMT Program Participants

Leadership
Brian Lockwood (Liaison), Nathan Wender (Crew Leader), Casey Reese (Supervisor)

Crew
Jonathan Mikolin, Lyddia Wilson, Dyllan Chapins

Region Support
Northeast Regional Office – 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), Solim Garcia (IT)
Appomattox Courthouse National Historical Park – Brian Eick
Appalachian National Scenic Trail – James Von Haden
Booker T. Washington National Monument – Timothy Sims
Colonial National Historical Park – Dorothy Geyer
Fredericksburg and Spotsylvania County Battlefields Memorial National Military Park – Gregg Kneipp
Gettysburg National Military Park and Eisenhower National Historic site – Zach Bolitho, Randy Krichten
George Washington Birthplace National Monument and Thomas Stone National Historic Site – Melissa Cobern, Amy Muraca
Hampton National Historic Site and Fort McHenry National Monument and Historic Shrine – Tina Capetta, Amanda Ramey, Elizabeth Derr
Hopewell Furnace National Historic Site and Valley Forge National Historical Park – Kate Jensen
New River Gorge National River, Bluestone National Scenic River, and Gauley River National Recreation Area – John Perez, Layne Strickler
Petersburg National Battlefield – Tim Blumenschine
Richmond National Battlefield Park – Kristen Allen

Partners and Cooperators
Smithsonian Conservation Biology Institute

Volunteers
James Akerson

Steering Committee
Appomattox Courthouse National Historical Park – Brian Eick

Appalachian National Scenic Trail – James Von Haden
Booker T. Washington National Monument – Timothy Sims
Colonial National Historical Park – Dorothy Geyer
Fredericksburg and Spotsylvania County Battlefields Memorial National Military Park – Gregg Kneipp
Gettysburg National Military Park and Eisenhower National Historic Site – Zach Bolitho
George Washington Birthplace NM and Thomas Stone National Historic Site – Melissa Cobern, Amy Muraca
Hampton National Historic Site – Tina Capetta, Elizabeth Derr
Hopewell Furnace National Historic Site and Valley Forge National Historical Park – Kate Jensen
New River Gorge National River, Bluestone National Scenic River, and Gauley River National Recreation Area – John Perez
Petersburg National Battlefield – Timothy Blumenschine
Richmond National Battlefield Park – Kristen Allen
Shenandoah National Park – Jim Schaberl

National Capital Region EPMT Program Participants

Leadership
Mark Frey (Liaison), Liz Matthews (Acting Liaison August and September), Ryan Tietjen (Team Leader until March 2016), Amorita Brackett (Acting Team Leader April and May), Alex Voznitza (Team Leader starting in July), Vacant (Data Manager)

Crew
Frank Szajko (Squad Leader), Alex Voznitza (Squad Leader), William Bloomhardt (Squad Leader), Allison Hay, Nathan Finney, Taylor Brann, Scott Baron, Steve Ramanand, Dylan Taylor, Anna Catalano, Erik Rigaux, Josh Williams, Rachel Skoza, Kryztal Medina-Torres

Region Support
National Capital Region Office – Pat Campbell (Chief of Natural Resources and Sciences)

Park Support
Antietam National Battlefield – Joe Calzarette (Natural Resources Program Manager)
Appalachian National Scenic Trail – Vacant
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), Colin Davis (Biologist)
Harpers Ferry National Historical Park – Mia Parsons (Chief, Resource Management), Dale Nisbet (Natural Resource Specialist), Darlene Hassler-Godwin (Archeologist)
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 – David Eck (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), Pat McMurray (Grounds Supervisor)

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)
Lina Arcila (8), Alex Ashby (4), Chris Bischak (4), Jack Boyster (4), Arthur 'butch" Bradshaw (4), Jaime Cleek (8), Keith Coombs (4), Connie Cowan (9), Nicole Dutcher (16), Catalina Estrada (4), Steph Frederick (4), Jesse Fujikawa (4), Peggy Hammond (4), Lindsey Harriman (8), Darcy Herman (4), Sylvan Kaufman (4), Lauren Kelly (4), Stephanie Martin (8), Allison Mastalerz (4), Sara McClure (12), Marysa Milinichik (4), Jerod Myers (4), Laura Plaze (2), Justin Poinsatte (4), Mary Randolph (4), Allison Ray (8), Tom Reyes (8), Lindsay Ringer (4), Dave Sperry (8), Lisa Stelzner (8), Chris Traft (8), Letha Uzenski (8), Rebecca White (4), Alex Zelles (4)

Steering Committee
Antietam National Battlefield – Joe Calzarette
Catoctin Mountain Park –Beck Lonkosky
Chesapeake and Ohio Canal National Historical Park – Michele Carter
George Washington Memorial Parkway – Colin Davis
Harpers Ferry National Historical Park – Darlene Hassler-Godwin
Manassas National Battlefield Park – Bryan Gorsira
Monocacy National Battlefield– Andrew Banasik
National Capital Parks-East – Tanya Gossett
National Mall and Memorial Parks – Missy Mertz
Piscataway Park – Christine Smith
Prince William Forest Park – Vacant
Rock Creek Park – Nick Bartolomeo
Wolf Trap National Park for the Performing Arts – George Liffert
NCR-EPMT Liaison – Mark Frey
NCR Chief of Natural Resources and Science – Pat Campbell
NCR Integrated Pest Management Specialist – Jil Swearingen
NCR Research Coordinator – Diane Pavek
NCR Inventory & Monitoring Network Program Manager – Geoff Sanders

North Coast / Cascades Network EPMT Program Participants

Leadership
Cheryl Decker (Liaison), Dan Campbell (Supervisor and Data Manager through mid-June 2016), Sophie Wilhoit (Crew Lead), Eric Teitlebaum (Crew Lead)

Crew
Collin McAvinchey, Tori Klotz, Nicole Swensgard, Jerry Mark, Jon Clevenger

Region/Network Support
Pacific West Region Office – Erv Gasser (IPM Coordinator)

Park Support
Host Parks: North Cascades national Park – Karen Tayler-Goodrich (Superintendent), Jack Oelfke (Chief Resource Management); Olympic National Park – Sarah Creachbaum (Superintendent), Louise Johnson (Chief Resource Management)

Partners and Cooperators
Quinault Nation
Quileute Nation
Clallum County Noxious Weed Control
Washington State Extension Service
Washington State Parks
Pacific Northwest Invasive Plant Council
Skagit Fisheries Enhancement Group

Steering Committee
Olympic National Park – Janet Coles, Louise Johnson
North Cascades National Park – Regina Rochefort, Mignonne Bivin, Jack Oelfke

Mount Rainier National Park – Arnie Peterson
Lewis and Clark National Historical Park – Carla Cole, Chris Clatterbuck
Ebey's Landing National Historical Reserve – Roy Zipp
San Juan Island National Historical Park – Elexis Freddy
Fort Vancouver National Historic Site – Tracy Fortman

Northeast EPMT Program Participants

Leadership
Casey Reese (Acting Liaison), Brian McDonnell (Team Leader)

Crew
Gabriella Ciabattoni (Biotech Seasonal, 1st Quarter, FY2016, William Fuchs (Biotech Seasonal, Boston Metro Parks)

Region/Network Support
Northeast Regional Office – Casey Reese, (NER IPM Coordinator); Carmen Chapin, (NER Chief of Natural Resources)

Park Support
Allegheny Portage Railroad National Historic Site – Kathy Penrod, Doug Snavely (JOFL Maintenance)
Boston Harbor Islands National Recreation Area – Marc Albert, Andrew Petit de Mange, William Fuchs
Cape Cod National Seashore – Stephen M. Smith
Delaware Water Gap National Recreation Area – Larry Hilaire, Amanda Stein, Tom Witter (DEWA VIP)
Fire Island National Seashore – Jordan Raphael, Matt Zampariell, Alyssa Huddle (FIIS SCA interns)
Frederick Law Olmsted National Historic Site - Mona McKindley
Gateway National Recreation Area – Doug Adamo, Patricia Rafferty, Dana Filippini, George Frame, Jeanne McArthur-Heuser, Laura Platt (GATE Seasonal Biotech), Andrew Townsend (GATE Seasonal Biotech)
Morristown National Historical Park – Robert Masson
Upper Delaware Scenic and Recreational River – Jamie Myers

Partners and Cooperators
Appalachian National Scenic Trail – Marian Orlousky (Appalachian Trail Conservancy (ATC)), Linda Rohleder (New York-New Jersey Trail Conference (also ATC))
Boston Harbor Islands National Recreation Area – Russ Bowles (UMASS boat captain (partner of BOHA--transports EPMT to BOHA islands)
Gateway National Recreation Area – Adam Thornbrough, Kristen King (NYC Parks)

Northern Great Plains EPMT Program Participants

Leadership
Brennan Hauk (Liaison), Carmen Thomson (Supervisor)

Crew
Mark Slovek, Lee Vaughan, Kirsten Tucker, Florence Nash, Julianna Ellis, Elizabeth Pena, Erica Leicht, 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 and Theodore Roosevelt National Park

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

Volunteers
Montana Conservation Corps
Minnesota Conservation Corps

Steering Committee

Badlands National Park – 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), Andrew Ringholz (Yellowstone National Park (YELL) Team Leader), Stephanie Harper (Assistant YELL Team Leader)

Crew

Arley Canfield (GLAC biotech), Tyler Jack (GLAC biotech), Tim Wilson (YELL biotech), Pat Clark (YELL biotech), Samantha Bussan (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 – Wallace Keck (Park Superintendent), Trenton Durfee (Biological Science Technician)
Craters of the Moon National Monument and Preserve – Gina Pearson (vegetation Ecologist), 6 members of the CRMO vegetation crew
Dinosaur National Monument – Tamara Naumann (Biologist), park 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)
Grant–Kohrs Ranch National Historic Site – Jason F. 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 – Denise Swanke (Park Superintendent), Mariane Doane (Biologist)
Minidoka National Historic Site – JoAnn Blalack, (Chief, Integrated Resource Management), Ray Vader (Maintenance Foreman)
Rocky Mountain National Park – Jim Bromberg (Vegetation Ecologist), Brian Kolokowsky (Crew Leader), 6 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, Tess Kroefsky, and 4 crew members (assisted on 4 projects for a total of 20 work days)
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 – Wallace Keck
Craters of the Moon National Monument and Preserve – Gina Pearson
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

Southeast EPMT Program Participants

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

Crew
Kaitlin Finan, Adam O'Neil, Thomas McShane

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

Park Support
Abraham Lincoln Birthplace National Historical Park – Jennifer Jones
Andrew Johnson National Historic Site – Lizzie Watts
Big South Fork National River & Recreation Area – Mari Tackett
Blue Ridge Parkway – Bambi Teague
Carl Sandburg Home National Historic Site – Irene Van Hoff
Chickamauga & Chattanooga National Military Park – Jim Scyjkowski
Cowpens National Battlefield – Chris Revels
Cumberland Gap National Historical Park – Jenny Beeler
Fort Denelson National Battlefield – Brian McCutcheon
Guilford Courthouse National Military Park – Vicki Boyce
Great Smoky Mountains National Park – Kris Johnson
Kings Mountain National Military Park – Chris Revels
Little River Canyon National Preserve – Mary Shew
Mammoth Cave National Park – Bobby Carson
Ninety Six National Historic Site – Chris Revels
Obed Wild & Scenic River – Marie Tackett
Russell Cave National Monument – Mary Shew
Shiloh National Military Park – Marcus Johnson
Stones River National Battlefied – Brenda Waters

Partners and Cooperators
Appalachian Trail Conservancy – Amy Snyder

Steering Committee
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 – Mari Tackett
Blue Ridge Parkway – Bambi Teague
Carl Sandburg Home National Historic Site – Irene Van Hoff
Chickamauga & Chattanooga National Military Park – Jim Scyjkowski
Cowpens National Battlefield – Chris Revels
Cumberland Gap National Historical Park – Jenny Beeler
Fort Denelson National Battlefield – Brian McCutcheon
Guilford Courthouse National Military Park – Vicki Boyce
Great Smoky Mountains National Park – Kris Johnson
Kings Mountain National Military Park – Chris Revels

Little River Canyon National Preserve – Mary Shew
Mammoth Cave National Park – Bobby Carson
Ninety Six National Historic Site – Chris Revels
Obed Wild & Scenic River – Marie Tackett
Russell Cave National Monument – Mary Shew
Shiloh National Military Park – Marcus Johnson
Stones River National Battlefied – Brenda Waters

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 (Chief - IPM, Invasives, and EPMT Programs), Christopher Barrow (Southeast Region GIS Coordinator/Geographer
BRD's Exotic Plant Management Team Program Network

Park Support
Host Park Congaree National Park – Tracy Stakely (Superintendent), Liz Struhar (Chief, Resource Management), Theresa Yednock (Biological Science Technician, Laura Tyler (Administrative Officer)
Cape Hatteras National Seashore/Fort Raleigh National Historic Site/Wright Brothers National Monument – Randy Swilling, Dave Hallac
Cape Lookout National Seashore – Pat Kenney, Jeri DeYoung, Jon Altman, Ashley Dunn, Jessica DeBoer, Britt Brown
Chattahoochee River National Recreation Area – Allyson Read, Deanna Greco, Ardrianna Mclane, Joseph Jarquin
Cumberland Island National Seashore – Doug Hoffman, John Fry
Fort Frederica National Monument – Laura Pickens, Steve Theus, Chad Thomas
Fort Pulaski National Monument – Laura Rich-Acosta, Melissa Memory, Candice Wyatt, Miguel Roman
Fort Sumter National Monument (Fort Moultrie)/Charles Pinckney National Historic Site – Rick Dorrance, Michelle Haas, Dawn Davis
Horseshoe Bend National Military Park – Brian Robinson, Barbara Tagger, Tammie Renicker, Steve Crowder
Kennesaw Mountain National Battlefield Park – Carlos Hurston
Moores Creek National Battlefield – James Sutton, Ricardo Perez
Ocmulgee National Monument – Kevin Wyrick, Allen Huckabee, Jim David
Kings Mountain National Battlefield - Alex Scronce, Chris Revels

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
SECN Inventory & Monitoring Division
University of Georgia – Nancy O'Hare (SEC-EPMT Data Manager)

Volunteers
Congaree National Park Volunteer-In-Parks Program – Sean Kelsay, Keith Bradley
Kennesaw Mountain Trail Club – Harry Carpenter, Doug Tasse, Danny Leigh, Austin Lette
Ocmulgee National Park Volunteer-In-Park Program – Allen Huckabee, Boy Scout Troop 220

Steering Committee
Cape Lookout National Seashore – Pat Kenney (Superintendent)
Chattahoochee River National Recreation Area – Deanna Greco (Chief of Planning and Resource Management)
Congaree National Park – Tracy Stakely (Superintendent)

Cumberland Island National Seashore – John Fry (Chief of Resource Management)

Moores Creek National Battlefield – Ricardo Perez (Superintendent)
Southeast Region Office – Chris Furqueron (Chief – IPM, Invasives, and EPMT Program)

Southwest EPMT Program Participants

Leadership
Charles Schelz (Liaison), Steven Buckley (Supervisor/Botanist), Eric Lassance (Crew Leader/GIS), Jeanine Foley (Crew Leader), Marcus Jernigan (Crew Lead, Botanist/GIS)

Crew
Texas Youth Conservation Corp, American Conservation Experience, Arizona Youth Conservation Corps, Sky Island Alliance, Borderlands Restoration, Arizona Youth Conservation Corps – Conservation Legacy Program

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)
Host Park 3 – Valles Caldera National Preserve (Last 6 months of FY16), Jorge Silva-Banuelos (Superintendent), Robert Parmenter (Chief Science and 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 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)
Fred Phillips Consulting (Flagstaff, AZ)
Yuma Crossing Natural Heritage Corporation

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

Steering Committee
Carlsbad Caverns National Park – Luis Florez
Great Sand Dunes National Park and Preserve – Phyllis Bovin
Mesa Verde National Park – George San Miguel
Montezuma Castle National Monument – Tina Greenawalt

El Malpais/El Morro National Monuments – Mitzi Frank
Washita Battlefield National Historic Site – Dick Zahm
Saquaro National Park – Dana Backer
Petrified Forest National Park – Andrew Bridges
Azetec Ruins National Monument – Dana Hawkins
Southern Plains Network I&M Program – Rob Bennetts
Intermountain Region Office – Mark Sturm
National Exotic Plant Management Team – Terri Hogan