

National Park Service
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Natural Resource Stewardship and Science
Biological Resource Division



Northern Rocky Mountain Exotic Plant Management Team

Annual Work Plan
Fiscal Year 2016



Partner Parks of the Northern Rocky Mountain Exotic Plant Management Team:

Bear Paw Battlefield, Big Hole NB, Bighorn Canyon NRA, City of Rocks NR, Craters of Moon NM&P, Dinosaur NM, Fossil Butte NM, Glacier NP, Golden Spike NHS, Grand Teton NP, Grant-Kohrs Ranch NHS, Hagerman Fossil Beds NM, John D. Rockefeller Jr. Memorial PKWY, Little Bighorn Battlefield NM, Minidoka NHS, Rocky Mountain NP, Yellowstone NP

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Reference:

Bekedam, S. 2016 Annual Work Plan. National Park Service, Northern Rocky Mountain Exotic Plant Management Team (NRM EPMT), Mammoth, WY, 62 pp.

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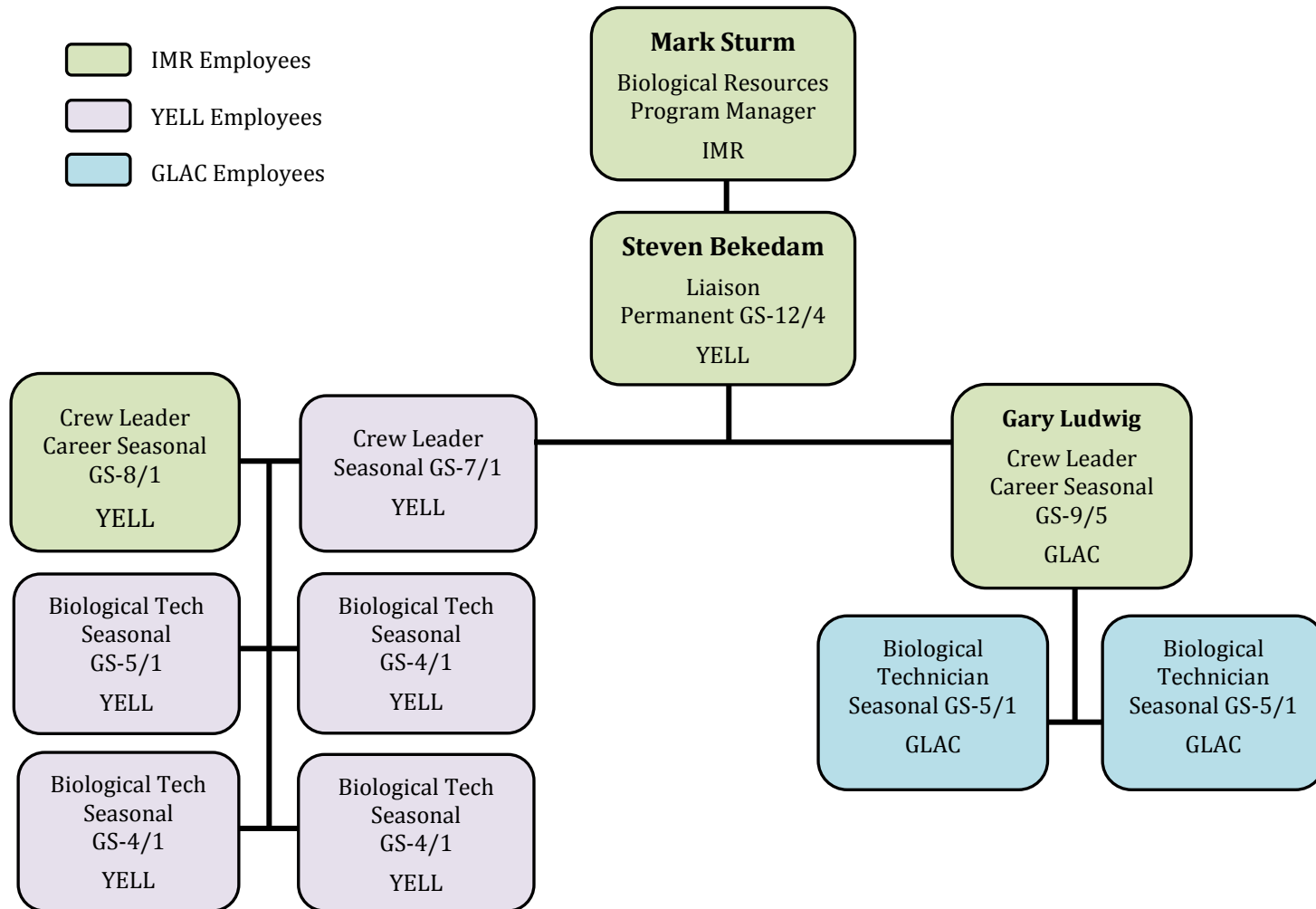
Introduction

As defined by the Northern Rocky Mountain Invasive Plant Management Team (NRM EPMT) Charter, an Annual Work Plan will be developed each fiscal year that identifies invasive plant management issues facing each partner park, the control strategies and tactics that will likely be implemented, the individuals responsible, the NRM EPMT budget, and anticipated accomplishments and products. Further it will also outline the structure and organization of the NRM EPMT including personnel, housing, anticipated host park support, purchasing, training, safety, and annual report requirements.

The 2016 Annual Work Plan is divided into five sections: the current organization chart of the NRM EPMT, the structure and organization of the NRM EPMT as it is currently defined, individual partner park-proposed weed management priorities and tactics for the 2016 field season, work objectives for the NRM EPMT liaison in addition to his administrative duties, and a 2016 projects list, work schedule, and anticipated expenses as of the spring prior to field work.

2016 Organization Chart

Boxes include name, title/role, home office location, and grade level of those individuals employed by the NRM EPMT program in 2016. Black lines indicate direct supervision. Note that crew leaders at YELL share in the direct supervision of crew members as they often rotate work responsibilities throughout the field season.



Structure and Organization

Employee Hiring

The EPMT liaison in coordination with host park staff at Yellowstone National Park (YELL) and Glacier National Park (GLAC) will hire seasonal crew members and crew leader positions, as needed and these will be official employees of each host park. Hiring of the liaison will be coordinated by the IMR Biological Resources Program Lead (IMR Program Lead), the YELL Supervisory Resource Management Specialist (YELL RM), the GLAC IPM Biologist (GLAC IPM), and at least two other members of the NRM EPMT steering committee. This committee will also review any open permanent positions to determine whether the crew leader or liaison position should be rehired as permanent, term, or permanent seasonal.

Personnel Management

The IMR Biological Resources Program Lead will supervise the NRM EPMT liaison. Development of performance standards for the liaison will be provided by the IMR Biological Resources Program Lead (IMR Program Manager). The IMR Program Manager will complete the liaison's annual performance evaluation.

Permanent, career seasonal (STF) crew leaders will officially be IMR employees yet supervised by the liaison with input from resource managers at GLAC and YELL. Travel administration shall be completed by GLAC and YELL respectively. Other supervisory functions will be performed by the liaison with the IMR Program Manager providing backup supervisory/administrative services.

Seasonal staff of the EPMT shall be employees of the host parks, with supervision by crew leaders and the liaison. The liaison will be responsible for hiring at YELL and will provide as many administrative functions as possible (travel approval, scheduling, day-to-day supervision, etc.), with the YELL RM staff approving time and attendance of crew members. The liaison will consult with the GLAC IPM Biologist who will hire seasonal employees for the crew based at GLAC. The GLAC IPM Biologist serves as the on-site supervisor for the seasonal employees at GLAC with input from the NRM EPMT crew leader based at GLAC.

Employee Housing

Host parks will allocate government housing for EPMT employees in accordance with the standards applied to other park volunteers and employees. To date, YELL has agreed to strive for housing at least three EPMT crew members; GLAC currently houses the program's two seasonal EPMT crew members. If government housing is not available, host parks will assist the EPMT liaison find alternative housing in neighboring areas.

Work Space

Each host park will provide EPMT staff with office, shop and storage space. Office support equipment (telephone, copiers, fax, and printers) will be provided by the host parks using existing park operations equipment. Any needed replacement equipment will be purchased using EPMT or IMR regional funds. Supplies used by the EPMT will be purchased as necessary, in addition to any office furniture needed beyond what is currently available in the host parks.

Staff Support

Each host park will provide computer support; basic GIS support (training and consultation); safety program oversight, and basic personnel, purchasing, travel and timekeeping services, where feasible. The EPMT liaison will work with the appropriate YELL/GLAC/IMR staff specialists for major purchases and coordinate necessary personnel, travel, and timekeeping needs when appropriate.

Purchasing

The EPMT liaison and crew leaders will have delegated micro-purchase (less than \$3,000) authority for immediate supply needs. The liaison will review, reconcile, and retain all IMR and YELL credit card statements. The GLAC IPM biologist will review, reconcile, and retain all statements for GLAC employees. All purchases requiring a contracting warrant (greater than \$3,000) will be provided by the partner parks or IMR. All capitalized property will be tracked and inventoried by the liaison and crew leaders. The liaison will be the Cognizant Employee (CE) for the fleet, reviewing and retaining all fleet charge card statements. Purchasing and property records for the EPMT will be forwarded to IMR upon request.

Safety and Training

Job safety will be stressed at all times. The EPMT liaison will be responsible for assuring that all necessary training for team members is accomplished. Minimum training requirements will default to what is required of host parks, YELL and GLAC, as at least seasonal crew members will be park employees. The NRM EPMT liaison and GLAC IPM biologist along with crew leaders will coordinate and cooperate to arrange and/or provide training at the beginning of the field season in the following subjects: orientation to NPS, ethics, computer security, communications training (i.e. radio use), principles of operational leadership, basic first aid and CPR, state pesticide certification and re-certification training for primary states of field activities, hazard material communication, basic hazardous spill training, UTV use and safety, supervisory training for crew leaders, and chainsaw, aircraft, and fire training, when appropriate. Additional training will be provided, as needed.

Additional topics to be covered throughout the season include: pesticide safety, calibrations, proper herbicide mixing and storage techniques, weed identification, and weed inventory (survey) and monitoring techniques and protocols (GIS/GPS and plot work). Field exercises will be conducted in all of the appropriate training categories as necessary.

The NRM EPMT will also perform weekly tailgate sessions on seasonally appropriate topics (exposure, dehydration, etc.) and routinely conduct daily safety talks (including after action reviews) as needed. All hazards will be identified through Job Hazard Analyses (JHAs) and these will be reviewed and updated annually and discussed and signed by all team members. To date, these include backcountry driving, herbicide application, chainsaw use, and UTV operations.

Partner parks will be responsible for ensuring necessary wilderness and risk assessments (Minimum Tools Analyses, GAR assessments, etc.) are completed and current and shared with NRM EPMT for certain restrictive and high risk activities and projects. Parks are also responsible for ensuring NRM EPMT crew members receive additional training on park-specific safety requirements and job hazards (supplemental JHAs).

Additional Administrative Responsibilities

All parties (the NPS Intermountain Regional Office, the NRM EPMT, and its 17 partner parks) are committed to active coordination in pursuit of an integrated and balanced approach to invasive plant management across the region. All parties take on a number of responsibilities in addition to those discussed above to ensure the NRM EPMT operates synergistically with individual park programs.

NRM EPMT Responsibilities:

NRM EPMT overall efforts will focus on augmenting park efforts to eradicate known new invaders and treat high priority species while serving as a technical expert in the field of invasive plant management. The NRM EPMT commits to the following list of additional responsibilities:

- The EPMT will follow the procedures outlined in the national EPMT Standard Operating Procedures and the 2007 NRM EPMT Standard Operating Procedures (*in revision*).
- A mutually beneficial field schedule will be developed by the liaison incorporating steering committee and NRM EPMT crew leader recommendations.
- Operations data will be recorded weekly by crew leaders and forwarded monthly to liaison for quality assurance and synthesis.
- EPMT crew leaders will provide copies of treatment data sheets to partner park contacts immediately following weed treatment activities or projects completed in each park.
- EPMT crew leaders will document all work performed by the EPMT in partner parks associated with managing invasive plants (as trip reports). The liaison will summarize information from these trip reports into the annual Partner Parks Report.
- EPMT crew leaders will be responsible for regularly inspecting vehicles and making sure any needed service and repairs are completed in a timely fashion. Vehicles will be serviced regularly and minor repairs will be performed, as needed, either at the YELL fleet maintenance or private service center.
- EPMT crew leaders or liaison will forward trip reports and pertinent information to the partner park representatives in a timely manner regarding all work conducted. The NRM EPMT will keep partner parks informed and will provide needed information for parks to submit accurate herbicide use information into the NPS Pesticide Use Proposal System (PUPS) database. Currently this is being provided within the final annual Partner Parks Report.
- NRM EPMT will share maps and GIS information and any other information collected electronically and, if appropriate, in hard copy.
- Annual EPMT reports will be provided to IMR, Biological Resource Division (BRD) and partner parks.

Host Park / Partner Park Responsibilities:

Additional tasks need to be completed by partner parks and host parks for NRM EPMT work to proceed smoothly throughout the field season. These include:

- Host parks will provide EPMT crews with park orientation and training programs.
- Host parks will assist with housing, offices space and IT needs, and herbicide and equipment storage arrangements.

Host Park / Partner Park Responsibilities (continued):

- Partner parks will designate a point of contact (POC) to work with the liaison to ensure EPMT work can proceed quickly and efficiently while in his/her park. This POC will also be responsible for receiving any reports of safety issues encountered by field crews.
- Each partner park's in-kind support for the EPMT program will be documented and submitted to the liaison annually. This support will be reported on annually for use in future planning.
- Partner parks will provide EPMT with relevant invasive plant management records upon request, including weed distribution maps prior to the start of the season, to aid with annual project planning.
- Partner parks will coordinate with local county, state, federal and private weed managers to facilitate EPMT work, as necessary.
- Once EPMT and park staff has agreed on the appropriate target species and herbicides to be used, partner parks will ensure NPS Pesticide Use Proposal System (PUPS) requests have been submitted and approved for herbicide use, prior to EPMT project start dates.
- Partner parks responsible for invasive plant management will spend sufficient time orienting the EPMT to park operations, any relevant known or potential safety hazards, their invasive plant concerns, and assist the team with treatment efforts if possible.
- Partner parks will work to complete environmental compliance for their invasive vegetation management programs.
- Park staff may be requested to assist with monitoring the effects of NRM EPMT control efforts.

Compliance

Park invasive plant management will involve continuation of pre-existing park and EPMT field operation programs. In the past, invasive plant management programs in the NRM EPMT network parks have been relatively non-controversial, with the exception of criticism from area weed managers (county, local ranchers, etc.) that some parks were not actively controlling weeds. The EPMT program has and continues to enhance and expand partner park weed control efforts.

Non-native, invasive vegetation management planning and compliance is the responsibility of the individual partner parks and most of the 17 partner parks have updated or are in the process of updating invasive vegetation management plans and associated environmental compliance. The NRM EPMT liaison and crew leaders will continue to provide assistance with this planning.

An integrated approach described in the Northern Rocky Mountains Invasive Plant Management Plan and Environmental Assessment (EA) (November 2011) guides efforts in ten of the smaller parks served by the NRM EPMT program. Dinosaur National Monument completed an Invasive Plant Management Plan and EA in 2005. Yellowstone NP's Invasive Vegetation Management Plan and EA (February 2013) guides weed management efforts in that park. Currently, Glacier National Park, Grand Teton NP, and John D. Rockefeller, Jr. Memorial Parkway are in the process of updating their management plans and environmental analyses.

Partner Park Details

Table 2. Current Steering Committee Members of the NRM EPMT as of March 15, 2016.

Name	Park	Position	Telephone
Heidi Becker	BEPA	natural resource specialist	208-843-7049
Ryan Felkins	BICA	park biologist	307-548-5414
Jimmer Stevenson	BIHO	maintenance foreman	406-689-3155 ext. 1027
Wallace Keck	CIRO	park superintendent	208-824-5911
Jim Bromberg	CRMO	vegetation ecologist	208-527-1351
Tamara Naumann	DINO	park ecologist	970-374-3051
Arvid Aase	FOBU	park curator	307-877-4455
Dawn LaFleur	GLAC	IPM biologist	406-888-7864
Leslie Crossland	GOSP	park superintendent	435-471-2209 ext. 23
Jason Smith	GRKO	natural resource specialist	406-846-2070 ext. 232
Dan Reinhart	GRTE/JODR	vegetation program lead	208-824-5519 ext. 109
JoAnn Blalack	HAFO	integrated resource manager	208-933-4134
Jon Vladimirtsev	GRTE/JODR	vegetation biologist	208-824-5519 ext. 105
Denice Swanke	LIBI	park superintendent	406-638-3201
Loren (Ray) Vader	MIIN	maintenance foreman	208-933-4142
Hanem Abouelezz	ROMO	restoration ecologist	970-586-1258
Sue Mills	YELL	resource specialist	307-344-2515

Following are general details as to where the NRM EPMT will conduct field activities in fiscal year 2016. Activities proposed for DINO and any other partner parks occurring in FY2017 are also discussed as summer crews are typically extended for these efforts. For this plan, narratives for Grand Teton NP and John D. Rockefeller Parkway and Hagerman Fossil Beds NM and Minidoka NHS are combined as their treatment priorities are typically shared. Estimates for the amount of workload (as a percentage) are also listed next to EPMT tactics that will be taken in 2016.

These details are offered to provide guidance and clarity to partner parks and the NRM EPMT and to foster better communication and coordination. They provide NRM EPMT a better understanding of what parks desire from them and it gives parks a better understanding of what NRM EPMT crews will focus on during their annual field activities. In no way is it meant to restrict field crews into working only on a partner park's specifically defined priorities. Changes to work schedules and park priorities can be requested and implemented through consultation with the NRM EPMT liaison, crew leaders, and/or EPMT steering committee if necessary (e.g. when one park's priorities conflict with another).

Several terms need to be defined for this work plan. NRM EPMT defines the term "eradicate" as a weed management approach where survey efforts are exhaustive and all known plants are aggressively and permanently removed and efforts are continued until the seed bank is exhausted. This term is typically applied to projects where infestations are well defined and relatively isolated and a treatment is proven effective. Though difficult, this approach is very possible for a number of noxious weed projects undertaken by the NRM EPMT and its partner parks. In contrast, the term "contain" is used to refer to a strategy where a buffer zone around an infested area is the work priority and it is maintained free of invasive plants in the interest of keeping the surrounding landscape weed free. This tactic is fairly uncommon. Finally, "suppress" is used to define a strategy where maybe not every plant is located and removed but the effects on infested areas are reduced over time knowing full well that some plants continue to set seed and other propagules may be invading from the surrounding landscape. This approach could lead to eradication at some future time once the population is reduced. This tactic is very typical of the work performed by the EPMT.

Bear Paw National Battlefield

Weed Management Projects in 2016:

Three high priority invasive species at Bear Paw National Battlefield (BEPA) continue to be Canada thistle (*Cirsium arvense* (L.) Scop.), field bindweed (*Convolvulus arvensis* L.), and alfalfa (*Medicago sativa* L.) as they reduce habitat available for native species and degrade the sacred ground of the battlefield. The park's focus is to eradicate current populations and monitor for newly established populations within the park boundary. BEPA spans 190 acres and only one staff member is present year round. This makes effective treatment difficult to accomplish and BEPA requests NRM EPMT assistance in 2016 to complete one early season objective:

Priority #1: Suppress Canada Thistle, Field Bindweed and Alfalfa from Park Boundaries

These three species occur at various locations across the park. These species decrease the aesthetics and significance of the battlefield, and hinder establishment of native species. BEPA staff does address existing populations when time permits. However, they do not have enough time and manpower to cover the entire park site. Past assistance from EPMT crews the last six or so years has greatly contributed to the reduction of all three species. The extent of these infestations is not large; however, if all species are not able to be treated during one visit the priorities are as follows: 1) Canada thistle, 2) field bindweed, 3) alfalfa. Eradication may not be possible as it is relatively unknown as to how common these species occur beyond park boundaries.

Anticipated Tactics: (100% of EPMT workload)

Canada thistle in particular has been drastically reduced across the battlefield. It's been so effective the EPMT has been making more effort in recent years to address other species of management interest, namely alfalfa. Supplementing park efforts with 3 NRM EPMT crew members for two targeted spray days would complete this work task.

Proposed Assistance:

The BEPA ranger may be able to provide some assistance to conduct vegetation management projects in 2016 primarily in the form of logistics. Accommodations are available to NRM EPMT staff at Chinook Motor Inn or the Bear Paw Motel.

The NRM EPMT proposes the field schedule below in order to meet the invasive plant treatment needs requested by Bear Paw NB in 2016. All crew travel at BEPA will be full per diem as no park housing or local camping options are available. Conceivably the GLAC crew could work the previous week, switching places with GLAC (east) work, and this will be a decision based on plant phenology.

2016 NRM EPMT Field Schedule (BEPA):

PP	Dates	YELL 1 (3)	Dates	YELL 2 (3)	Dates	GLAC (3)
PP17	7/25-7/28	HAFO - RSW	7/25 - 8/1	FOBU	7/25-7/29	GLAC - east *
	7/29-8/1	YELL * - spurge			7/30-8/1	BEPA *

Bear Paw National Battlefield

Anticipated Accomplishments and Products:

NRM EPMT staff manages all treatment records and spatial datasets associated with these areas at BEPA. Very little new GPS work is anticipated in 2016 unless new sites or species are discovered. As in year's past, the NRM EPMT will compile trip reports for this high priority project and estimate treated acres and effectiveness assisted by consultations with park staff.

Individual(s) Responsible:

BEPA Ranger, 406-357-3130

Heidi Becker, NEPE Natural Resource Specialist, 208-843-7049

Big Hole National Battlefield

Weed Management Projects in 2016:

Three of the highest priority invasive species at Big Hole National Battlefield (BIHO) are spotted knapweed (*Centaurea stoebe* L.), Canada thistle (*Cirsium arvense* (L.) Scop.), and hoary alyssum (*Berteroa incana* L.). BIHO is most concerned about spotted knapweed as it likely reduces habitat available for Lemhi penstemon (*Penstemon lemhiensis* (D.D. Keck) D.D. Keck & Cronquist). This species is listed as sensitive by the US Forest Service and Bureau of Land Management (G3/S3, rare but not imperiled with 21-100 occurrences in the state of Montana). Its largest recorded population, however, occurs within the park boundary. Lemhi penstemon is reportedly in decline range wide due to changes in fire regimes and resulting competition from native and non-native vegetation. The park's focus is to eradicate current populations of spotted knapweed and monitor for newly established populations within areas where Lemhi penstemon occurs. BIHO spans a sizeable area (655 acres) and resource staff is limited. Concerns over lack of qualified staff at critical knapweed growth stages and increasingly reduced habitat for a sensitive species, BIHO requests NRM EPMT assistance in 2016 to complete two mid-season objectives:

Priority #1: *Eradicate Spotted Knapweed from Park Boundaries*

Spotted knapweed has established itself at various locations across the park with the most remote populations occurring on two, large hillsides totaling over 100 acres. Past assistance from EPMT crews has contributed to an overall decline in spotted knapweed numbers on the two hillsides. BIHO staff does address the existing populations; however, they do not have enough time and manpower to cover the entire park site.

Anticipated Tactics: (75% of EPMT workload)

Proper timing and repeat treatments are critical for the control of spotted knapweed. Typically, treatments in June are too early for plants hiding within intact shrub communities and August is too late as plants have already gone to seed. Park staff do hand spray individual plants when they find them in late June during penstemon monitoring. Supplementing these efforts with 3 NRM EPMT crew members for a total of 4-6 backpack spray days in July would complete this work task.

Priority #2: *Eradicate Canada Thistle and Hoary Alyssum from Park Boundaries*

Canada thistle and hoary alyssum occur at various locations across the park, and are common around the park visitor center, housing areas, and lower meadows. Due to the high visitor use during the time these species set seed, it is of concern to park management that visitors (and staff) could potentially spread these species elsewhere in the park, specifically to where Lemhi penstemon and Camas (*Camassia quamash*) are located. Camas is culturally significant to the Nez Perce people, and therefore is a species of greatest concern to the park. The area to be treated is roughly 16 acres and needs multiple treatments each year; assistance from the EPMT crew will help facilitate this.

Anticipated Tactics: (25% of EPMT workload)

As with efforts to control Canada thistle at other partner parks, two tactics can be taken at BIHO: 1) early summer treatment to budding plants, and/or 2) fall treatment to plants going into winter dormancy. Historically, the NRM EPMT has attempted control of Canada thistle when it's also

Big Hole National Battlefield

appropriate to treat other high priority noxious weeds, in mid-June and mid-July. Hoary alyssum can also be treated at this time. The NRM EPMT will pursue summer treatments as shown in the schedule below. Supplementing park efforts with three 1 week work trips with 3 NRM EPMT crew members to reach sites with backpack and truck mounted sprayers would effectively complete this work task.

Proposed Assistance:

The BIHO maintenance program can provide some assistance to conduct vegetation management projects in 2016. Maps of spotted knapweed inventories taken on the two hillsides will be provided to EPMT staff before treatment as these areas are typically treated along with Lemhi penstemon monitoring. Accommodations are provided to EPMT staff at the park housing complex free of charge.

The NRM EPMT proposes the field schedule below in order to meet the invasive plant treatment needs requested by Big Hole National Battlefield in 2016. All crew travel at BIHO is expected to be full per diem as in previous years. Depending on phenology, the GLAC crew of the NRM EPMT breaks off from their responsibilities at nearby GRKO to conduct treatments at BIHO.

2016 NRM EPMT Field Schedule (BIHO):

PP	Dates	YELL 1 (3)	Dates	YELL 2 (3)	Dates	GLAC (3)
PP15	6/27-7/1	YELL - hawkweed	6/27-6/30	YELL - hawkweed	6/27-6/30	BIHO
7/4	7/5-7/7	YELL - hawkweed	7/5-7/7	CRMO - RSW	7/5-7/7	GLAC - west
PP17	7/11-7/14	YELL - hawkweed	7/11-7/14	CIRO - knapweed	7/11-7/18	GRKO / BIHO
	7/18-7/21	YELL - hawkweed	7/18-7/21	GOSP - RSW		

The schedule proposed above is similar to work conducted at BIHO in 2015. However, based on consultations with GLAC crew members more time will be spent addressing thistles across the park's lower meadows in 2016.

Anticipated Accomplishments and Products:

NRM EPMT staff manages all spatial datasets and field data forms associated with these areas. The NRM EPMT will compile an annual summary report (as an annual Partner Parks Report) for high priority projects and estimate treated acres based on consultation with park staff.

Individuals Responsible:

Jimmer Stevenson, BIHO Maintenance, 406-689-3155 ext. 1027
Heidi Becker, NEPE Natural Resource Manager, 208-843-7049

Bighorn Canyon National Recreation Area

Weed Management Projects in 2016:

Bighorn Canyon NRA (BICA)'s weed management focus in 2016 will be to continue to slowly eradicate mostly small populations of a variety of noxious perennials and riparian trees, Russian Olive (*Elaeagnus angustifolia* L.) and tamarisk (*Tamarix ramosissima* Ledeb.). BICA spans a large area with numerous side canyons and visitor use areas (boat docks, etc.) where these plants can gain a foothold. The primary park concern is the lack of qualified staff to address the park's problematic riparian, invasive trees. BICA requests NRM EPMT assistance in 2016 to complete two early and late-season objectives:

Priority #1: *Eradicate Russian Olive and Tamarisk throughout the YTWHMA*

Bighorn Canyon requests that the NRM EPMT continue its annual focus on Russian olive and tamarisk in 2016. The park requests that the NRM EPMT continue to work in the Yellowtail Wildlife Habitat Management Area (YTWHMA) which the park co-manages with the Wyoming Game and Fish Department.

Anticipated Tactics: (80% of EPMT workload)

Fortunately, riparian trees can be treated almost anytime throughout the field season and historically the NRM EPMT has established early and late season visits to address them at BICA. Mature Russian olive and tamarisk trees are effectively treated using the cut stump method (i.e. clean cutting the main bole of the tree and applying Element 4 herbicide to the exposed cambium). Also, crews apply a foliar spray mixture to resprouting trees. This same approach will be taken in 2016.

Priority #2: *Suppress other Early Season Noxious Weeds Around the North District*

In the past, the NRM EPMT has opportunistically addressed other early and mid-season noxious weeds in the North District of Bighorn Canyon NRA when they address invasive plants at nearby Little Bighorn Battlefield NM. Species they've addressed at BICA include: spotted and diffuse knapweed (*Centaurea stoebe* L. and *diffusa* Lam., respectively), burdock (*Arctium minus* L.), babysbreath (*Gypsophila paniculata* L.), bull thistle (*Cirsium vulgare* L.), and Canada thistle (*Cirsium arvense* (L.) Scop.). These infestations have typically been located around the Fort Smith and Afterbay areas, and the shoreline of Bighorn Lake.

Anticipated Tactics: (20% of EPMT workload)

Because the NRM EPMT has time in May available for this priority, these species will continue to be treated as a "first pass" in anticipation of follow up by park staff throughout the summer. Milestone and Telar are used alone and in combination to target various weeds in the rosette stage.

Proposed Assistance:

The in-park weed crew will continue its assault on Russian knapweed (*Acroptilon repens* (L.) DC.), Canada thistle (*Cirsium arvense* (L.) Scop.), houndstongue (*Cynoglossum officinale* L.), and a number of other invasive plants throughout the NRA. BICA will continue to provide in kind support to the NRM EPMT in the form of chemicals, saw fuel, GIS support, and other logistical needs. Unfortunately, park housing may not be available in 2016.

Bighorn Canyon National Recreation Area

The NRM EPMT proposes the field schedule below in order to meet the invasive plant treatment needs requested by Bighorn Canyon NRA in 2016. All crew travel at BICA-S will be backcountry per diem as park housing is provided. BICA-N will require full per diem and hotel lodging.

2016 NRM EPMT Field Schedule (BICA):

PP	Dates	YELL 1 (3)	Dates	YELL 2 (3)	Dates	GLAC (3)
PP11	5/2-5/4	Training	5/2-5/4	Training	5/4	Training
	5/5-5/9	GOSP	5/5-5/9	HAFO	5/3-5/9	BICA
PP12	5/16-5/23	CRMO	5/16-5/23	CRMO	5/16-5/21	BICA-N / LIBI
					5/22-5/23	GLAC
PP21	9/18-9/24	GRTE	9/18-9/24	GRTE	9/18-9/24	BICA

Anticipated Accomplishments and Products:

NRM EPMT staff manages all spatial datasets and field data forms associated with these areas. The NRM EPMT will compile a trip report for each of the two high priority projects and estimate treated acres based on consultation with park staff.

Individuals Responsible:

Ryan Felkins, park biologist, 307-548-5414

City of Rocks National Reserve

Weed Management Projects in 2016:

City of Rocks has a number of priorities and challenges when considering efforts to control invasive plants found within park boundaries. With over a hundred thousand visitors per year popular particularly amongst rock climbers, addressing invasive plants in high traffic areas (i.e. common weed vectors) is the park's top priority. Popular rock climbing areas and visitor pullouts such as Bath Rock, Elephant Rock, Parking Lot Rock, and Bread Loaves and 22 miles of maintained trails, along with 8 miles of county maintained roads, make up the majority of this priority.

NRM EPMT is crucial in assisting the park to keep existing invasive and new invasive weed species controlled in most areas of the park. With CIRO's size, remoteness, and terrain, it would be next to impossible to get to all the locations that are in need of treatment every year. Further, seasonal staff turnover makes consistency difficult and time consuming. NRM EPMT assistance also helps the park because its knowledgeable crew members are finding and identifying problem areas that park staff can then help control at a later date. CIRO requests NRM EPMT assistance in 2016 to complete three mid-season objectives:

Priority #1: *Suppress Canada Thistle within National Reserve and State Park Boundaries*

Canada thistle (*Cirsium arvense* (L.) Scop.) is the most widespread and common invasive found in CIRO and is the park's top priority for management. Castle Rocks State Park, a separate unit also managed by CIRO staff, has several larger patches of Canada thistle that have been aggressively treated for the last several years and significant progress has been made by the NRM EPMT. In 2015, the Almo wetlands area was particularly problematic and these areas will need to be surveyed and retreated in 2016.

Anticipated Tactics: (60% of EPMT workload)

As with efforts to control Canada thistle at other partner parks, two tactics can be taken at CIRO: 1) early summer treatment to budding plants, and/or 2) fall treatment to plants going into winter dormancy using Milestone (or Habitat in wetter areas) in both cases. Historically, park staff and the NRM EPMT have attempted Canada thistle control in mid-July as the plants begin bolting and this approach has been fairly successful. Through discussions with park staff, supplementing park efforts with 3 crew members in mid-July to reach sites with backpack and truck mounted sprayers would effectively complete this work task.

Priority #2: *Suppress Other Noxious Weeds in High Traffic Areas*

Spotted knapweed (*Centaurea stoebe* L.), bull thistle (*Cirsium vulgare* (Savi) Ten.) and houndstongue (*Cynoglossum officinale* L.) are often found in the same location as Canada thistle and in high traffic areas. Whitetop (*Cardaria draba* L.) and field bindweed (*Convolvulus arvensis* L.) are found predominantly in the fields behind the park visitor center and have been treated for 3-4 seasons. Houndstongue, knapweed, and bull thistle have been located in several campsites and riparian areas.

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Anticipated Tactics: (20% of EPMT workload)

Fortunately, most of these other noxious weeds in need of treatment can be addressed in between the crew's efforts to address the park's Canada thistle patches. Herbicide mixes may be employed for greater efficiency where multiple species may be encountered in one location. Adding one additional trip in mid-June (in addition to the crew's visit in July) with 3 EPMT crew members to reach sites with backpack and truck mounted sprayers would effectively complete this work task.

The EPMT has also become aware of several problematic knapweed areas beyond park boundaries, namely on main entrance road to the Reserve. We worry these may be weed sources to interior patches and in 2016 the crew will be working with local landowners and permittees to address them. Contact has already been made with both landowners and the Cassia County weed superintendent.

Priority #3: Suppress Other Noxious Weeds in Other High Priority Areas

The California Trail corridor, park campsites and Indian Grove are other high priority areas that are routinely invaded by noxious weeds. Emigrant Canyon has also been an area that the park, along with EPMT assistance, has aggressively treated in the past. The canyon burned in 2000 and has since had an outbreak of Canada thistle and bull thistle.

Anticipated Tactics: (20% of EPMT workload)

Through discussions with park staff, supplementing park efforts with 3 EPMT crew members during the first two work trips would effectively complete this work task. Sites are chemically sprayed using appropriate herbicides for each individual species. Herbicide mixes may be employed for greater efficiency where multiple species may be encountered in one location.

Proposed Assistance:

City of Rocks National Reserve will assist as in years past, namely in the form of camping accommodations and the occasional park field staff person. CIRO will require most required herbicides and surfactants necessary to treat all targeted species.

The NRM EPMT proposes the field schedule below in order to meet the invasive plant treatment needs requested by City of Rocks NR in 2016. Crew travel at CIRO will be backcountry field camping. Park campground sites have been reserved and yurts may be available.

2016 NRM EPMT Field Schedule (CIRO):

PP	Dates	YELL 1 (3)	Dates	YELL 2 (3)	Dates	GLAC (3)
PP14	6/13-6/20	GRTE / JODR	6/13-6/20	CIRO	6/13-6/16	GRKO *
					6/20-6/23	GLAC (east) *
PP16	7/11-7/14	YELL – hawkweeds	7/11-7/14	CIRO	7/13-7/15	BEPA
	7/18-7/21	YELL – hawkweeds	7/15-7/18	GOSP	7/20-7/24	GLAC (east)

The schedule proposed above has one change from 2015. Last year a 3-person crew (YELL2) made a short 2-day visit to CIRO in PP20 to readdress priority #1 (*C. thistle*). It was timely as there was an

City of Rocks National Reserve

expansion of Canada thistle at CIRO in 2015 and crews were able to spend a couple more days “knocking down” these areas. Due to scheduling changes in the fall, EPMT crews will not return for a fall visit in 2016.

Anticipated Accomplishments and Products:

NRM EPMT staff manages all treatment records and spatial datasets associated with these areas at CIRO. Very little new GPS work is anticipated in 2016 unless new sites or species are discovered. As in year’s past, the NRM EPMT will compile trip reports for these high priority projects and estimate treated acres and effectiveness assisted by consultations with park staff.

Individuals Responsible:

Trenton Durfee, CIRO Resource Specialist, 208-824-5919
Wallace Keck, CIRO Park Superintendent, 208-824-5911

Craters of the Moon National Monument and Preserve

Weed Management Projects in 2016:

Craters of the Moon NM&P (CRMO) is unique in that most weed management challenges in the park occur over large expanses of very difficult rocky terrain. Park staff has ranked different weed management objectives across six distinct management areas prioritized by the threat posed by the weed species of interest, the resources at risk, the accessibility of the area, and the probability of success and CRMO hires a 3-4 person in-park crew capable of addressing most of these objectives. Overall, rush skeletonweed (*Chondrilla juncea* L.) is CRMO's most problematic noxious weed and the park is putting more effort into locating weed-free areas (i.e. kipukas within lava fields) rather than treat thousands of acres where it currently exists.

There are several objectives in-park crews cannot complete alone and balancing weed phenology with the availability of NRM EPMT work crews, CRMO requests NRM EPMT assistance in 2016 to complete three early season objectives:

Priority #1: Eradicate Dyers Woad from the Region

Though nearest infestations are close to 50 miles to the southeast of the park, Dyer's woad (*Isatis tinctoria* L.) was first discovered in CRMO in 2007 during an observational survey of Sand Kipuka Research Natural Area (RNA) of the Wapi Lava Field. Over two hundred sites ranging from a single plant to several thousand plants are addressed each year. In-park crews do address these areas from early May through mid-June but they do not have enough time and manpower to reach all sites spread out over a large area during several critical times of the growing season. CRMO requests NRM EPMT assistance to conduct several repeat treatments across all known infestations to completely prevent seed set.

Anticipated EPMT Tactics: (70% of EPMT workload)

Multiple site visits need to be made from early May through mid-June using 5-6 seasonal water caches to aggressively survey and treat Dyer's woad at CRMO. All preferred herbicides require 7-10 days for impacts to appear so timing of return visits is crucial. Escort herbicide alone is best applied early in the season prior to bolting. Escort is typically combined with 2,4-D later in the season to obtain quicker control of adult plants. Once seeds begin to form, seed stalks must be ripped off as woad has the ability to set viable seed within a week following any herbicide application. Plants with well-developed green to black seeds need to be double bagged and removed off site as it has been shown that at least 20% of green, seemingly underdeveloped, seeds are viable.

Infestations continue to decline and supplementing in-park crews for two one-week work trips with 3-6 crew members to reach sites on foot with backpack sprayers would effectively complete this work task. Plants may be treated mechanically if the timing is right. Plants need to be bolting and ground should be wet to allow crews to hand pull plants. Park staff and NRM EPMT will assess conditions to determine if this option is possible in 2016.

Priority #2: Suppress Rush Skeletonweed from High Priority Areas

In 2000, the Echo Crater Fire burned over 1,000 acres in central portions of the originally designated Monument at CRMO. This area is also designated wilderness, the first of its kind for the NPS. Starting in 2012, park crews have located and treated approximately 20-25 rush skeletonweed

Craters of the Moon National Monument and Preserve

(RSW) sites throughout the burned area each ranging from 5-15 plants.

In 2008, a human-caused fire burned 1,800 acres of near-pristine sagebrush in Little Park, CRMO. RSW has been found scattered throughout the burned area since 2010, showing preference for smaller rocky outcrops and roadsides. Moreover, CRMO is concerned about other high priority areas (namely Carey Kipuka) becoming invaded by proximity. An early season survey and treatment using a larger workforce that could cover the entire area would allow in-park crews to target smaller, denser infestations within the burn as the season progresses.

In 2013, Lava Lake Land and Livestock, a neighboring land owner in the northwest portions of CRMO, made the park aware of several large patches of RSW in the Pioneer Hills just north of the CRMO boundary. Park staff treated these patches that year though they didn't reach all plants and treatment was late in the season.

CRMO requests EPMT assistance to address potentially all of these areas in 2016. A mid-season survey and treatment using a larger workforce that could cover these entire areas would control these small, dense infestations before they expand and become more problematic.

Anticipated EPMT Tactics: (20% of EPMT workload)

These areas take extensive effort to cover and treat and supplementing in-park crews with 3 EPMT crew members for 2-3 days of effort would provide an effective suppression effort in 2016. Typical with RSW, early treatments when plants are rosettes or early bolting in stature are difficult to locate. More effective treatments are when plants are large and flowering.

Priority #3: *Eradicate Leafy Spurge from Park Boundaries*

It is unclear when spurge first became established in the park but sites first discovered in 2004 make up the north and northeast edges of a large multiagency infestation. Eradication from park boundaries is still very possible and an interagency BLM/NPS treatment strategy involves the establishment of a large containment line around the entire perimeter, spot chemical treatments on the periphery, about a dozen releases of biological controls across the larger (BLM) containment area, and routine helicopter surveys across the western and northern infestation boundaries. As with Dyer's woad, small pockets of spurge are spread across a large area that park crews cannot efficiently treat in a short window of time. CRMO requests NRM EPMT assistance to conduct a single spring treatment of all known infestations prior to seed set.

Anticipated EPMT Tactics: (10% of EPMT workload)

To date, 130 spurge sites (most with < 20 plants) have been mapped across about 1,000 acres of southern edges of the Carey Lava Field. No plants have been located at over half of these sites, some for over 3 years now. However, spurge is known to "reappear" after several seasons. Further, 3-4 new sites are typically discovered each year and some of these have been quite large (over 500 plants). Spurge sites are chemically sprayed in the early summer with Tordon and many are treated again by park staff in the fall using Plateau. Sites need to be systematically surveyed and treated to a diameter of 30 meters surrounding each GPS point due to spurge's extensive root system.

Craters of the Moon National Monument and Preserve

Supplementing the in-park crew with 3 NRM EPMT crew members for one single spray day would complete this work task.

Proposed Assistance:

Craters of the Moon NM&P has its own vegetation management crew capable of addressing most of the park's weed management priorities. This 3 to 5 person crew will work with the NRM EPMT on all three high priority projects. CRMO's vegetation ecologist will also assist as in years past. CRMO has GPS units and park crews able to complete all mapping aspects of all three projects. CRMO will also provide most of the herbicides and surfactants necessary to treat all targeted species.

The NRM EPMT program proposes the field schedule below in order to meet the invasive plant treatment needs requested by Craters of the Moon NM&P in 2016. All crew travel at CRMO will be backcountry per diem and field camping (either at the Little Cottonwood Field Station or Lake Walcott State Park) as in previous years.

2016 NRM EPMT Field Schedule (CRMO):

PP	Dates	YELL 1 (3)	Dates	YELL 2 (3)	Dates	GLAC (3)
PP12	5/16-5/23	CRMO – woad	5/16-5/23	CRMO – woad	5/16-5/21	BICA-N / LIBI
					5/22-5/23	GLAC
PP13	5/31-6/2	GOSP	5/31-6/2	GOSP	5/31-6/1	CRMO – spurge
5/30	6/3-6/6	CRMO – woad	6/3-6/6	HAFO/MIIN	6/2-6/6	CRMO – woad
PP15	6/27-6/29	YELL - hkweed	6/27-6/29	YELL - hkweed	6/27-6/30	BIHO – knapweed
7/4	7/5-7/8	YELL / MCC	7/5-7/8	CRMO – RSW	7/5-7/7	GLAC – knpwd, tdflex

The schedule proposed above has several changes from 2015:

- The GLAC crew will not address rush skeletonweed (RSW) in PP13 as it did in 2015. It's simply too early to address this species in early June. This will allow GLAC and YELL1 crews to join park staff to address park priority #1 (woad) for more time in PP13.
- Instead, a portion of the YELL2 crew will travel to CRMO during PP15 to address larger patches of RSW. Assistance at YELL by the Montana Conservation Corp allows this flexibility.

Anticipated Accomplishments and Products:

CRMO staff manages all spatial datasets associated with these areas and very little new GPS work is necessary. The NRM EPMT would compile trip reports for each of the three high priority projects and estimate treated acres based on consultation with park staff.

Individual(s) Responsible:

Jim Bromberg, Vegetation Ecologist, 208-527-1351
Todd Stefanic, Wildlife Biologist, 208-527-1352

Dinosaur National Monument

Weed Management Projects in 2016:

Weed management decisions at Dinosaur NM (DINO) are driven primarily by guidance in the park's 2005 Invasive Plant Management Plan. Essentially, prevention and early detection of high priority noxious weeds get top priority. This effort is followed by a placed-based approach that examines an area's degree of habitat value, recreation value, vector characteristics (roads, drainages, etc.), ecological impact or potential impact of the target weed, and management feasibility.

Typically, riparian areas are the highest priority throughout the park due to of their high value habitats, high recreational value, vector issues, and degree of damaging weeds present, including tamarisk (*Tamarix ramosissima* Ledeb.), Russian olive (*Elaeagnus angustifolia* L.), leafy spurge (*Euphorbia esula* L.), bull thistle (*Cirsium vulgare* (Savi) Ten.), Canada thistle (*Cirsium arvense* (L.) Scop.) and Russian knapweed (*Acroptilon repens* (L.) DC.).

Park staff addresses a number of weed species throughout the year in and out of the riparian areas of DINO. However, there are several objectives in-park crews cannot complete alone where a large crew is critical. Balancing weed phenology with the availability of NRM EPMT work crews, DINO requests NRM EPMT assistance in 2016 to complete three late season objectives:

Priority #1: Address Noxious Weeds in the Cub Creek Watershed

The Cub Creek watershed has been a focus area since the park's Invasive Plant Management Plan was completed in 2005. This area is a top priority because a number of significant resources (namely wetlands, riparian, designated cultural landscape, historic and prehistoric cultural resources, wildlife, and special status species) are all concentrated in a small area. The valley has been heavily infested with Russian knapweed since the mid-1990s.

An inventory conducted there in 2002-2003 identified Russian knapweed (78 acres), Canada thistle (10 acres), bull thistle (2.4 acres), Russian olive (4.3 acres), and tamarisk (39 acres). Resurveys in 2010 following several years of aggressive treatment found Russian knapweed (18 ac.), Canada thistle (4.7 ac.), bull thistle (0.1 ac.), Russian olive (0.3 ac.), and tamarisk (9.8 ac.). These measures indicate that significant effort has been made and the park will continue to make this a top priority for management. DINO requests NRM EPMT assistance in 2016 to conduct noxious weed treatments across all known infestations to continue the progress already accomplished.

Anticipated Tactics: (30% of EPMT workload)

Since NRM EPMT's initial assistance in October 2008, Russian knapweed infestations have been reduced by more than 90% using a fall treatment of Milestone herbicide. This same approach will be used by the NRM EPMT and park staff in 2016 to continue to eradicate this and other noxious weeds throughout the watershed.

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Priority #2: *Eradicate Noxious Weeds throughout Jones Hole Creek*

DINO has worked over many years to eliminate tamarisk from this tributary. Then park staff teamed with the EPMT to suppress invaders that followed, namely Canada thistle and burdock (*Arctium minus* Bernh.). This effort has sustained itself well and no work is proposed in 2016.

Priority #3: *Eradicate Noxious Weeds throughout Deerlodge Park*

This area is located at the east end of Dinosaur National Monument and includes a large area of floodplain associated with the Yampa River. It supports a large, multi-age cottonwood gallery forest with an herbaceous and shrub understory. Deerlodge Park supports bald eagle, osprey, river otter, many migratory bird species, black bear, bobcat, etc. It is also the put-in point for boaters launching on the Yampa River. It is heavily infested with Russian knapweed, some Canada thistle and Russian olive, and a small amount of leafy spurge. DINO requests NRM EPMT assistance to systematically conduct a late season treatment of primarily Canada thistle and Russian knapweed.

Anticipated Tactics: (20% of EPMT workload)

The same approach employed for Cub Creek will be used here by the NRM EPMT and park staff. The NRM EPMT will need to be deployed on both sides of the river, which involves some complicated logistics.

Priority #4: *Address Noxious Weeds at Mitten Park Spring and Other High Priority Areas*

With past successes in other areas, DINO requested NRM EPMT assistance with several other areas in 2015, namely Mitten Park Spring and Yampa Bench Road. Mitten Spring had received concentrated attention with tamarisk removal and Russian knapweed and Canada thistle are now prevalent. Logistics involved a 2-day effort to package and shuttle gear and supplies and float portions of the Yampa River. Yampa Bench Road was a recently burned area that needed survey and treatment.

Anticipated Tactics: (50% of EPMT workload)

Work here in 2016 will again involve some complicated logistics and depend on the “maintenance” condition of other treatment areas.

Proposed Assistance:

DINO staff work with volunteers to remove tamarisk and leafy spurge from the river corridor by mechanical means. The park introduced tamarisk leaf beetles in 2006 and has been monitoring their progress since 2008. They achieved their eradication goal for Russian olive in 2012 (with help from the NRM EPMT) and have followed up with a revisiting of sites to search for and treat resprouts and new seedlings/saplings. Park staff also visit prior treatment areas to check for and treat recurring patches of other invasive species (Canada thistle, burdock, Russian knapweed, musk thistle).

DINO anticipates once again providing housing, logistics, and overall project supervision. The park anticipates providing one seasonal employee to assist the NRM EPMT for 3-4 days of that person's

Dinosaur National Monument

time and the park ecologist will assist as time allows. The park would also cost-share with the NRM EPMT for herbicides, surfactant, and dye.

The NRM EPMT proposes the field schedule below in order to meet the invasive plant treatment needs requested by Dinosaur NM in 2016. Crew travel will be backcountry as the park will provide park housing.

2016 NRM EPMT Field Schedule (DINO):

PP	Dates	YELL 1 (2)	Dates	YELL 2 (2)	Dates	GLAC (3)
PP22	10/3-10/9	DINO	10/3-10/9	DINO	10/2-10/9	DINO
10/10						

Anticipated Accomplishments and Products:

NRM EPMT staff manages all treatment records and spatial datasets associated with these areas at DINO. Very little new GPS work is anticipated in 2016 unless new sites or species are discovered. As in year's past, the NRM EPMT will compile trip reports for these high priority projects and estimate treated acres and effectiveness assisted by consultations with park staff.

Individuals Responsible:

Tamara Naumann, Ecologist, 970-374-3051

Fossil Butte National Monument

Weed Management Projects in 2016:

Fossil Butte National Monument (FOBU) is unique in that appears to be one of the most noxious weed-free parks served by the NRM EPMT. That said, the park has a number of small infestations of a variety of weed species that need to be kept in check and few park staff are available to address them. Further, a recent draft report in 2014 by the Northern Colorado Plateau (NCPN) Inventory & Monitoring (I&M) program shows a number of weed species are on the rise, particularly annual Japanese and downy brome (*Bromus japonicus* Thunb. and *tectorum* L., respectively) and perennial, rhizomatous grasses including creeping foxtail (*Alopecurus arundinaceus* Poin.), quackgrass (*Elymus repens* (L.) Gould), and smooth brome (*Elymus inermis* Leyss.).

Two to three park staff members make some effort to control mainly black henbane (*Hyoscyamus niger* L.), yellow sweetclover (*Melilotus officinalis* (L.) Lam.), musk thistle (*Carduus nutans* L.), bull thistle (*Cirsium vulgare* (Savi) Ten.), Canada thistle (*Cirsium arvense* (L.) Scop.), downy brome (*B. tectorum* L.), spotted knapweed (*Centaurea stoebe* L.), hoary cress (*Cardaria draba* (L.) Desv.), field bindweed (*Convolvulus arvensis* L.), flixweed (*Descurainia sophia* L.), and sow thistle (*Sonchus* sp.). However, there are several objectives in-park crews cannot complete alone or in any systematic manner. Balancing weed phenology with the availability of NRM EPMT work crews, FOBU requests NRM EPMT assistance in 2016 to complete mid-season objectives:

Priority #1: Suppress Canada and Musk Thistle Infestations Parkwide

Canada thistle is the most noxious weed at FOBU and is the focus of the majority of the crew's annual treatment efforts. It makes up few infested acres (less than 2 acres total); however, it occurs over 1,000 gross infested acres across multiple canyons. Musk thistle is also present in most of these same areas but it is spread over more acres as it can tolerate drier conditions. NRM EPMT and park crews have been successful in at least suppressing both weeds in a number of areas. Though eradication is the desired goal for all known infestations, these weeds are at extremely low cover (<1%) in most places and introductions are likely still occurring from lands surrounding the park. Therefore, complete eradication just may not be possible. FOBU requests NRM EPMT assistance in 2016 to conduct noxious weed treatments across all infestations known to date.

Anticipated Tactics: (60% of EPMT workload)

Canada thistle can be successfully treated at FOBU during the summer as plants begin to bud using Milestone herbicide. Flowering musk thistle plants are typically "dead headed" (flower heads clipped, bagged, and removed) and those not yet in flower (rosettes, bolting plants, etc.) are chemically sprayed. Supplementing park efforts with a late August visit with 3 EPMT crew members to reach sites with backpack sprayers would effectively complete this work task. However, for the last few years the park has deferred to other partner park needs in late August. Instead, late July has been the crew's scheduled visit in recent years and this approach has proven successful as it's a balance between the phenological stages of multiple weeds. This approach will again be taken by the NRM EPMT in 2016.

Priority #2: Eradicate Other Nascent Noxious Weed Infestations Parkwide

The NRM EPMT crew routinely assists with other high priority weeds at FOBU. These include bull thistle (*C. vulgare*), houndstongue (*Cynoglossum officinale* L.), and spotted knapweed (*C. stoebe*).

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Field bindweed (*C. arvensis*) also needs to be treated and/or retreated in certain cases. These plants remain a significant concern for FOBU and the park requests NRM EPMT assistance to conduct systematic weed treatments across all known infestations of these species.

Anticipated Tactics: (30% of EPMT workload)

Over the years as NRM EPMT crew members treat Canada thistle, they survey and treat other noxious weed species within the same areas. Manual control is the park's preferred method of treatment for several of these species (namely spotted knapweed and bull thistle), particularly where these plants or patches are isolated and can be easily pulled with little soil disturbance. The NRM EPMT proposes to also address this priority during its one-week work trip to the park in late July.

Priority #3: *Control Invasive Perennial Grasses in Select Areas of the Park*

As stated above, perennial and annual grasses have continued to expand in size and distribution across FOBU in recent years. Perennial rhizomatous grasses including quackgrass, creeping foxtail, and smooth brome have been particularly favored for unknown reasons, though livestock trailing in the park may have an influence.

In light of this, the NRM EPMT has been test treating creeping foxtail since 2013. In 2015, the EPMT expanded these trials and also test treated several smooth brome patches. These test areas have always been near roads and trails for easy resurvey and assessment. If proven effective, the NRM EPMT is open to expanding their efforts. The park requests the EPMT continue to develop a treatment strategy for creeping foxtail after completing other noxious weed priorities.

Anticipated Tactics: (10% of EPMT workload)

Early indications are that some creeping foxtail control can be attained even though EPMT crews arrive when this species is setting seed. Unfortunately, crews are finding small foxtail patches in very remote areas and treating them must weigh the value of the area and its logistical challenges. In consultation with park staff, the NRM EPMT will continue to assist in the systematic treatment of creeping foxtail and smooth brome infestations. Rodeo herbicide has been shown to be the most effective treatment.

Proposed Assistance:

FOBU anticipates hiring one seasonal biotech to mechanically and chemically treat invasive plants from May to September. They will record herbicides used and how many plants are mechanically removed. If a third party provides funding, the park will also provide a 90-day intern through the Student Conservation Association (SCA) to assist with weed control efforts from June through August.

The NRM EPMT proposes the field schedule on the following page in order to meet the invasive plant treatment needs requested by Fossil Butte NM in 2016. All crew travel at these parks will be local hotel lodging as in previous years.

Fossil Butte National Monument

2016 NRM EPMT Field Schedule (FOBU):

PP	Dates	YELL 1 (3)	Dates	YELL 2 (3)	Dates	GLAC (3)
PP17	7/25-7/29	HAFO - RSW	7/25-8/1	FOBU	7/25-7/29	GLAC (east)
	7/30-8/1	YELL - ?			7/30-8/1	BEPA

Anticipated Accomplishments and Products:

NRM EPMT staff manages all treatment records and spatial datasets associated with these areas at FOBU. As in year's past, the NRM EPMT will compile trip reports for these high priority projects and estimate treated acres and effectiveness assisted by consultations with park staff.

Individuals Responsible:

Arvid Aase, Park Curator, 307-877-4455

Glacier National Park

Weed Management Projects in 2016:

At least 127 non-native species of plants have either invaded or been deliberately introduced into Glacier National Park (GLAC). Of these, 18 non-native species are of sufficient concern to be targeted for control measures. Spotted knapweed (*Centaurea stoebe* L.) and ox-eye daisy (*Leucanthemum vulgare* Lam.) have invaded disturbed areas throughout the park. Common timothy (*Phleum pratense* L.) and other exotic grasses were introduced intentionally for horse grazing and unauthorized grazing of other stock within the park has spread nonnative weeds as well. Common reed [*Phragmites australis* (Cav.)] is a relatively recent invader discovered in the park's interior. GLAC hires a crew of 8-10 seasonal crew members to comprehensively address their most problematic invasive species, highlighting larger infestations and known vector and disturbance areas. Control measures have been only partially successful in slowing the spread of many of these infestations. GLAC requests NRM EPMT assistance to address four weed management objectives in 2016:

Priority #1: Control Leafy Spurge in Big Prairie

Leafy spurge (*Euphorbia esula* L.) has long had a foothold in the Big Prairie area of GLAC. When treatment began in the early 2000s, it was estimated that there was approximately 100 acres infested. GLAC started treating the perimeter and over the years have done passes with utility terrain vehicles (UTVs) in the middle sections as well as the perimeters to try to break up the big patches. Another focus has been to keep the infestations from getting close to the river and road corridors. Work has also included backpack spraying of satellite populations. This strategy has been very successful and the park is down to treating 26 acres as of 2014. This has been a successful effort with the consistent attention of both park and EPMT crews working together. Unfortunately, early phenology due to dry conditions prevented the EPMT program from assisting with this project in 2015. GLAC requests NRM EPMT to continue this very successful collaboration in 2016.

Anticipated Tactics: (25% of EPMT workload)

This joint effort has been the first week of July for many years and is again scheduled for 2016. The GLAC crew could switch a visit with Big Hole NB the last week of June to address this need a little earlier if necessary. Tordon has been found most successful at controlling leafy spurge at GLAC.

Priority #2: Contain Meadow Hawkweed in the North Fork Area

GLAC has a complex of invasive hawkweeds, namely orange hawkweed (*Hieracium aurantiacum* L.) and meadow hawkweed (*H. caespitosum* Dumort.) These infestations are scattered along 30 miles of remote roads and are beginning to spread into adjacent meadows. In 2015, the NRM EPMT crew did not assist the park crew with these hawkweed treatments again due to early phenology. The park requests the EPMT continue its assistance with this endeavor in 2016.

Anticipated Tactics: (25% of EPMT workload)

This joint effort has been the first week of July for many years and will continue. As with priority #1, the GLAC crew could switch to address this need in late June if necessary. Milestone herbicide has been found most successful at controlling hawkweeds.

Glacier National Park

Priority #3: Suppress Knapweed, Meadow Hawkweed, and Yellow Toadflax in the Lubec Area

GLAC requests assistance with the Lubec Area to address spotted knapweed, meadow hawkweed, and yellow toadflax. GLAC inherited an old railway bed a number of years ago and there are numerous noxious weeds in this area. The park has been trying to survey and treat as many areas as possible each season and request as many resources as possible. The NRM EPMT has assisted the park with this endeavor for several years and GLAC requests the NRM EPMT continue their assistance in 2016.

Anticipated Tactics: (20% of EPMT workload)

Timing for this project is critical and is typically in late June and early July. The NRM EPMT has reserved several field weeks to address this priority at GLAC in late June and early July.

Priority #4: Suppress Knapweed Populations throughout the Park's Eastside

This is an on-going effort to contain the park's knapweed infestations along the east side of the park. GLAC resource crews are routinely short staffed and GLAC requests NRM EPMT assistance.

Anticipated Tactics: (30% of EPMT workload)

Timing for this project is typically in late July when knapweed populations are in full flower. The NRM EPMT has reserved at least one week in late July to exclusively address this priority at GLAC. Additional crew time is available in early August to manually treat (handpull) knapweed in certain areas.

2016 NRM EPMT Field Schedule (GLAC):

PP	Dates	YELL 1 (3)	Dates	YELL 2 (3)	Dates	GLAC (3)
PP12	5/18-5/23	CRMO	5/16-5/23	CRMO	5/16-5/22 5/23	BICA-N / LIBI GLAC
PP14	6/13-6/20	GRTE	6/13-6/20	CIRO	6/13-6/16 6/20-6/23	GRKO* GLAC *
PP15	6/27-7/1 7/5-7/7	YELL YELL	6/27-7/1 7/5-7/7	YELL YELL	6/27-7/1 7/5-7/7	BIHO* GLAC (east?) *
PP17	7/27-7/31 8/3-8/5	HAFO/MIIN YELL	7/27-8/3	FOBU	7/25-7/29 7/30-8/1	GLAC (east) * BEPA *
PP18	8/10-8/17	GRTE	8/10-8/14 8/17-8/19	HAFO/MIIN YELL	8/8-8/11 8/15-8/18	GLAC †

* field work depends on local phenology; parks may be swapped within the PP.

† Though crews will be in GLAC during PP18, they will likely be on intermittent and unavailable; crew leader will be summarizing crew activities/data and taking paid leave.

Glacier National Park

Proposed Assistance:

GLAC has an in-park vegetation management crew of approximately 10 crew members that address a great number of weed management objectives throughout the field season. GLAC provides the NRM EPMT with seasonal housing, crew supervision, and a great amount of administrative support throughout the fiscal year. The NRM EPMT proposes the field schedule above in order to meet the invasive plant treatment needs requested by Glacier NP in 2016. All crew travel to the east side of GLAC will be backcountry as in previous years in park provided housing.

Anticipated Accomplishments and Products:

NRM EPMT staff manages only some of the treatment records and spatial datasets associated with these areas at GLAC. The EPMT relies on GLAC crews to document other high priority projects. Very little new GPS work is anticipated in 2016 unless new sites or species are discovered. As in year's past, the NRM EPMT will compile trip reports for these high priority projects and estimate treated acres and effectiveness assisted by consultations with park staff.

Individuals Responsible:

Dawn LaFleur, park biologist, 406-888-7864

Matt Kennedy, GLAC crew leader, 406-888-7984

Golden Spike National Historic Site

Weed Management Projects in 2016:

Golden Spike National Historic Site (GOSP) is unique because it is a narrow park with a number of large private neighbors and weed influences. Unfortunately, GOSP has a very small staff and few are qualified to address weed species parkwide. Overall, dyers woad (*Isatis tinctoria* L.) and rush skeletonweed (*Chondrilla juncea* L.) are GOSP's most problematic noxious weeds as these are rapidly and continuously invading from surrounding private and public lands. In recent years, work crews have been engaged with county weed superintendents to address infestations beyond park boundaries.

Most, if not all, of GOSP highest priorities for weed control cannot be completed by the small number of park staff. Balancing weed phenology with the availability of NRM EPMT work crews, GOSP requests NRM EPMT assistance in 2016 to complete four early and mid-season objectives:

Priority #1: *Eradicate Dyers Woad from the Park*

Dyer's woad was first discovered in GOSP in 2001 and knowing the plants current status throughout northern UT, it's not surprising. It is far and above northern Utah's largest noxious weed problem. It has been found across a total of 525 gross acres (or 20%) of GOSP but currently it is mostly scattered across a few select areas. GOSP requests NRM EPMT assistance to continue their efforts to eradicate this weed from the park. They request the NRM EPMT conduct several repeat treatments across all known infestations to completely prevent seed set.

Anticipated EPMT Tactics: (30% of EPMT workload)

Multiple site visits need to be made from early May to June to aggressively survey and treat Dyer's woad at GOSP. All preferred herbicides require 7-10 days for impacts to appear so timing of return visits is crucial. Telar herbicide alone is best applied early in the season prior to bolting plants and it can be combined with 2,4-D later in the season to obtain quicker control. Once seeds begin to form, seed stalks must be ripped off as woad has the ability to set viable seed within a week following any herbicide application. Plants with well-developed green to black seeds need to be double bagged and removed off site.

Woad infestations at GOSP are on the decline but the NRM EPMT has to continue its diligence. Providing EPMT service to GOSP for two one-week work trips with 3-6 crew members to reach sites with backpack sprayers would effectively complete this work task.

Priority #2: *Suppress Rush Skeletonweed Throughout the Park*

Rush skeletonweed (RSW) was first discovered in GOSP in 2009 and the plant is rapidly expanding throughout the region. In 2014, crew members from the Northern Colorado Plateau I&M Network discovered 32 patches of RSW in late July, all in the Big Fill region of the park. This was after the NRM EPMT mapped and applied 100 gallons across several areas of RSW (totaling about 180 gross acres) in mid-July 2014. In 2015, NRM EPMT highlighted these locations and applied roughly 38 gallons over the same areas. GOSP requests NRM EPMT assistance to conduct treatments across all known infestations to prevent this weed from getting a stronghold at GOSP.

Golden Spike National Historic Site

Anticipated EPMT Tactics: (30% of EPMT workload)

RSW is and will continue to be a large challenge at GOSP among other park units. Wind-born seed makes complete control over large areas extremely difficult. Further, given the NRM EPMT work schedule, repeat and timely visits to address this weed are challenging. Surveys too early (prior to June 15th in most years) won't discover bolting plants. Fortunately, RSW flowers from mid-June through mid-August and a later season visit in July will be exclusively devoted to this priority.

Priority #3: Control Scotch Thistle Throughout the Park

The NRM EPMT has been treating Scotch thistle (*Onopordum acanthium* L.) at GOSP since 2006. Unfortunately, it still persists, mostly throughout the main administration area of the park and the western portions of the Big Fill Area. In 2014, it is unclear why but Scotch thistle drastically increased. There are large patches of thistle on private lands to the north of the park and weed seeds are likely coming in from these areas. Northern areas need to be highlighted for future survey and treatment. In the meantime, GOSP requests NRM EPMT assistance to address Scotch thistle in all areas of the park.

Anticipated EPMT Tactics: (30% of EPMT workload)

Several herbicides have been applied to Scotch thistle over the years as crew members are often treating it as they survey and treat other noxious weeds. Escort, Telar, Milestone, 2,4-D are all used in isolation and as a mix to address this species. The best time to treat Scotch thistle is late June through mid-July. The NRM EPMT proposes two one-week work trips, one in early June and one in July, with 3-6 crew members to effectively complete this work task.

Priority #4: Control New Invaders to the Park

The NRM EPMT has been historically treating a number of other species at GOSP, mostly when they occur in and around patches of Dyer's woad, RSW, and Scotch thistle. The list includes both common and moth mullein (*Verbascum thapsus* L. and *blattaria* L., respectively), whitetop (*Cardaria draba* L.), field bindweed (*Convolvulus arvensis* L.), and Russian thistle (*Salsoli kali* L.). Several other new invasive species were discovered by both the NRM EPMT and the NCPN I&M Program in 2014, including perennial pepperweed (*Lepidium latifolium* L.), Dalmatian toadflax (*Linaria dalmatica* (L.) Mill.), Canada thistle (*Cirsium arvense* (L.) Scop.), and several patches of quackgrass (*Elymus repens* L.). GOSP requests that the NRM EPMT address these patches before they grow in number and size.

Anticipated EPMT Tactics: (10% of EPMT workload)

As seen below, the NRM EPMT has proposed three one-week work trips, one in mid-May, one in early June, and one in July. Crews will highlight these new weed patches as they address other priorities.

Proposed Assistance:

The NRM EPMT proposes the field schedule below in order to meet the invasive plant treatment needs requested by Golden Spike NHS in 2016. All crew travel at GOSP will be backcountry per diem as in previous years as the park provides housing in the form of two FEMA trailers.

Golden Spike National Historic Site

2016 NRM EPMT Field Schedule (GOSP):

PP	Dates	YELL 1 (3)	Dates	YELL 2 (3)	Dates	GLAC (3)
PP11	5/2-5/4	training	5/2-5/4	training	5/2	training
	5/9-5/13	GOSP	5/9-5/13	HAFO	5/3-5/9	BICA-S
PP13	5/31-6/2	GOSP	5/31-6/2	GOSP	5/31-6/1	CRMO – spurge
	6/3-6/6	CRMO – woad	6/3-6/6	HAFO/MINN	6/2-6/6	CRMO – woad
PP16	7/11-7/14	YELL	7/11-7/14	CIRO	6/1-6/3	CRMO – spurge/RSW
	7/18-7/21	YELL	7/15-7/18	GOSP	6/4-6/8	CRMO – woad

The schedule proposed above has essentially no changes from 2015. Proposed but not instituted in 2015 was a fall season visit to GOSP. This field visit was not necessary in 2015 and isn't proposed in 2016.

Anticipated Accomplishments and Products:

NRM EPMT staff manages all treatment records and spatial datasets associated with these areas at GOSP. Very little new GPS work is anticipated in 2016 unless new sites or species are discovered. As in year's past, the NRM EPMT will compile trip reports for this high priority project and estimate treated acres and effectiveness assisted by consultations with park staff.

Individuals Responsible:

Leslie Crossland, park superintendent, 435-471-2209 ext. 23

Grand Teton National Park / John D. Rockefeller Memorial Parkway

Weed Management Projects in 2016:

Invasive plants have increasingly spread in GRTE including along park roads, developments and more recently along backcountry trails. While in-park crews do address many infestations, GRTE does not have enough time and manpower to reach all sites spread out over a large area of the park during several critical times of the growing season. A concerted effort would help GRTE get a better handle and hopefully, more effectively control spreading infestations.

Weed management at Grand Teton NP and J.D. Rockefeller MP (GRTE and JODR respectively) includes extensive treatment and re-treatment of invasive weed species listed in the park's invasive weed database. These include over 120 known populations of species such as spotted knapweed, musk thistle, houndstongue, and oxeye daisy, to name a few. The weed management program in GRTE also includes working with county weed and pest districts to survey and treat primary roads, using park staff to treat along secondary roads, park developments, and on highly used backcountry trails. A final challenge in GRTE is working with project managers to develop revegetation and weed treatment plans associated with ground disturbance projects such as road construction and improvements, water and wastewater replacements, and fiber optic line installations, to name a few. Though the park hires a large seasonal crew that treat high priority weed species by a number of different means, GRTE requests NRM EPMT assistance in 2016 to complete three early to late-season objectives:

Priority #1: *Suppress all Noxious Weeds in the Three Rivers Ranch Area*

The Three Rivers Ranch Area of GRTE has been an important area of GRTE for a variety of reasons and the NRM EPMT has been addressing large patches of noxious weeds in this area since 2010. In particular, bear use of this area has increased. Invasive plant species of concern in this area include musk thistle (*Carduus nutans* L.), bull thistle (*Cirsium vulgare* (Savi) Ten.), Canada thistle (*Cirsium arvense* (L.) Scop.), houndstongue (*Cynoglossum officinale* L.), Dalmatian toadflax (*Linaria dalmatica* (L.) Mill.) and common tansy (*Tanacetum vulgare* L.). Though significant progress has been made, it's a huge area with multiple weeds to address.

Anticipated EPMT Tactics: (30% of EPMT workload)

In 2016, NRM EPMT crews will again survey and control weeds in the Three Rivers Ranch area as in years past. This includes one section of road and the adjoining access road. Weed treatments will involve the use of mostly backpack sprayers and a UTV with boom and/or hand sprayer around mid-June, the time at which most of these priority weeds are most vulnerable to chemical applications. Typically because a suite of noxious weeds are addressed the NRM EPMT crew applies a mixture of herbicides, typically Milestone and Telar.

Priority #2: *Survey and Treat Select Cheatgrass Populations*

Recently introduced, cheatgrass is starting to become established within the lower elevation habitats of GRTE. These are mostly associated with areas such as sagebrush meadows, abandoned hayfields and surrounding areas that the park is working toward reclamation and park storage and work sites that are abandoned pits. Cheatgrass also is expected to increase distribution due warmer climate and drought scenarios. NRM EPMT assistance is requested in late-September.

Grand Teton National Park / John D. Rockefeller Memorial Parkway

Anticipated EPMT Tactics: (15% of EPMT workload)

In 2016, GRTE and NRM EPMT will explore the potential to control cheatgrass weeds in target areas defined at a future date of the field season. This would include applications of Plateau herbicide that are preemergent to cheatgrass germination. Weed treatments will involve the use of backpack sprayers, UTV with boom or hand sprayers and truck mounted wand sprayers in mid to late September when cheatgrass is vulnerable to preemergent chemical applications.

Priority #3: Survey and Suppress Houndstongue Populations

Houndstongue has increasingly spread in GRTE including along park roads, developments and more recently along backcountry trails. While in-park crews address many infestations, GRTE does not have enough time and manpower to reach all sites spread out over large areas of the park during several critical times of the growing season. A concerted effort in mid-June would help GRTE get a better handle and hopefully, more effectively control this spreading infestation. Focal areas are more remote and furthest reaches of core infestations.

Anticipated EPMT Tactics: (15% of EPMT workload)

NRM EPMT has opportunistically treated houndstongue (*C. officinale* L.) in areas they've been addressing historically as well as other priority areas defined by park staff. However in 2015 due to changes in phenology and other considerations, the NRM EPMT crew did not address this park need. NRM EPMT will continue to assist park efforts on this priority in 2016.

Priority #4: Survey and Eradicate All Noxious Weeds from Several Vector Areas

GRTE crews treat a number of vector areas including park roads (including those through John D. Rockefeller MP), developments and more recently along backcountry trails. GRTE does not have enough time and manpower to reach all sites spread out over large areas of the park during several critical times of the growing season. Yellow and Dalmatian toadflax (*Linaria vulgaris* L. and *dalmatica* L. respectively) are particularly problematic and widespread. A concerted effort in mid-June and early August would help GRTE more effectively control these species.

Anticipated EPMT Tactics: (40% of EPMT workload)

NRM EPMT crews will opportunistically treat other noxious weeds in June and August in areas like the Moran Cemetery, park sewage lagoons, Coulter Bay park housing and campground, Death Canyon, etc. where we have made significant progress in year's past. Treatments typically involve a combination of herbicides that are effective on multiple species.

Proposed Assistance:

GRTE annually hires large revegetation and weed management crews to address a number of vegetation management objectives. These crews balance their efforts between more remote and isolated infestations and the park's large number of noxious weed vectors including roadways, trails, developed areas, airstrips, etc. The NRM EPMT crew is provided access to the program's FEMA trailer (either at Coulter Bay or Flagg Ranch) to house crew members during crew field visits.

Grand Teton National Park / John D. Rockefeller Memorial Parkway

The NRM EPMT proposes the field schedule below in order to meet the invasive plant treatment needs requested by Grand Teton NP and John D. Rockefeller NMP in 2016. All crew travel at these parks will be backcountry per diem as a program FEMA trailer is available as in previous years.

2016 NRM EPMT Field Schedule (GRTE):

PP	Dates	YELL 1 (3)	Dates	YELL 2 (3)	Dates	GLAC (3)
PP14	6/13-6/20	GRTE	6/13-6/20	CIRO	6/13-6/16 6/20-6/23	GRKO GLAC
PP18	8/8-8/15	GRTE	8/8-8/15 8/17-8/19	HAFO YELL	8/8-8/11 8/15-8/18	GLAC
PP21	9/18-9/24	GRTE	9/18-9/24	GRTE	9/18-9/24	BICA

Anticipated Accomplishments and Products:

NRM EPMT staff manages all treatment records and spatial datasets associated with these areas at GRTE. Very little new GPS work is anticipated in 2016 unless new sites or species are discovered. As in year's past, the NRM EPMT will compile trip reports for this high priority project and estimate treated acres and effectiveness assisted by consultations with park staff.

Individuals Responsible:

Dan Reinhart/Jon Vladimirtsev, Vegetation Ecology and Management, (307)733-3678/733-3484

Grant-Kohrs Ranch National Historic Site

Weed Management Projects in 2016:

Long term ranching, active livestock grazing and haying operations, heavy metal contamination in the Clark Fork River designated Superfund area, and a varied history of weed control efforts make Grant-Kohrs Ranch NHS (GRKO) unique. Unfortunately, weed management efforts were historically limited when the ranch was in private hands due to a lack of understanding of the aggressiveness of certain noxious weeds. However, large reductions in several noxious weeds have been achieved over the last 15 years due to the collective efforts of both park and NRM EPMT crews, particularly with spotted knapweed (*Centaurea stoebe* L.), Canada thistle (*Cirsium arvense* (L.) Scop.), leafy spurge (*Euphorbia esula* L.), and yellow toadflax (*Linaria vulgaris* Mill.). An abundant soil seed bank, irrigation and transportation corridors, heavy metal contaminated soil areas, and adjacent neighboring infestations continue to make weed management at GRKO a serious challenge.

Weed management efforts have to be deliberate and consistent and GRKO is challenged with this task as they do not have staff available to support regular, broad, parkwide efforts. GRKO requests NRM EPMT assistance with a number of weed management priorities throughout the entire season.

Priority #1: *Suppress Canada Thistle Across the Park*

Canada thistle is one of the primary invasive threats to the sub-irrigated vegetation communities at GRKO. In 1998, 260 acres and in 2002, 150 acres were sprayed by aerial application. Persistent spot treatments by the NRM EPMT have reduced Canada thistle to isolated infestations throughout 960 acres of sub-irrigated lands. In 2015, crews found more Canada thistle than in recent years but treatments were timed perfectly to address this increase and we expect to see sizeable reductions.

Anticipated EPMT Tactics: (15% of EPMT workload)

Canada thistle will be herbicide spot treated using Transline (or Milestone according to supplemental labeling) in the irrigated pastures cut for hay and Milestone in irrigated and sub-irrigated pastures not cut for hay. High intensity/ short duration cattle grazing will be used by park staff as a control tool in grazing demonstration areas. Handpulling is not recommended because of the rhizomatous nature of Canada thistle.

Priority #2: *Suppress Leafy Spurge and Yellow Toadflax in Riparian Areas of the Park*

GRKO's management objective is to contain leafy spurge and toadflax throughout the park to prevent them from spreading into uninvaded areas. Once dominant and extensive, leafy spurge and yellow toadflax were common in the park's riparian areas. Because of annual and persistent efforts, large infestations throughout 130 acres of riparian areas are now scattered spot infestations that can be addressed in a matter of 3-4 days. GRKO requests the NRM EPMT continue to make efforts at removing these species.

Anticipated EPMT Tactics: (20% of EPMT workload)

Continued use of Plateau in the riparian area will be utilized on leafy spurge and Telar will be used on yellow toadflax. A 2,4-D amine herbicide will be used as an option for leafy spurge control earlier in the season, when Plateau has potential to impact cool season species. Small spot infestations of leafy spurge are found along irrigation ditches within West Field 1. Hand pulling has been used in past years to prevent these infestations in and along ditches from going to seed and

Grant-Kohrs Ranch National Historic Site

hand pulling will continue to be used as a control tool along ditches. Isolated leafy spurge patches have also been identified in Big Gulch and West Field's 2 through 4. In addition to applying Plateau later in the season, 2,4-D amine will be used as an option for early season control in these fields when the environmental conditions are suitable.

Priority #3: Suppress Spotted Knapweed Across the Park

Spotted knapweed is another invasive that is a priority for continued management. Significant progress had been made reducing large continuous infestations to spot infestations. Herbicide spot application with Milestone is recommended along road sides, disturbed areas, the east edge of Taylor field, and in pastures that are not irrigated including the native uplands and effluent fields.

Anticipated EPMT Tactics: (15% of EPMT workload)

Spotted knapweed will be spot treated by backpack sprayers using Milestone herbicide with the focus on road sides, disturbed areas (including a City of Deer Lodge effluent line ROW through the North Range pasture), the east edge of Taylor field, and in pastures that are not irrigated including the native uplands and effluent fields.

Priority #4: Contain / Suppress Whitetop and Perennial Pepperweed

Whitetop is the earliest maturing invasive at GRKO. It typically will have set seed by July 1. Whitetop is found in spot infestations throughout the park especially in the corrals, along roadsides, in areas with poor soil conditions, and in areas that have had disturbance (i.e. squirrel burrows, ditch banks, etc.). Perennial pepperweed does not flower as early as whitetop, but is found in similar environments. Both of these invaders are found upstream and outside of the GRKO boundary along the Westside Irrigation ditch and the park would like NRM EPMT to continue to address them.

Anticipated EPMT Tactics: (20% of EPMT workload)

Ideal timing is mid to late June as whitetop and pepperweed mature early in the season. Because these invasive species are found in scattered infestations throughout the sub-irrigated park land and because they are rhizomatous, early season herbicide application using Telar XP will be implemented by the NRM EPMT. Telar XP will be applied at a rate of less than 1 and 1/3 ounces per acre to avoid any grazing or haying restrictions. Special focus will be given to areas along the Westside Irrigation ditch once it enters the park. Cooperation with the ditch company will be pursued to mitigate weed spread along the ditch and into GRKO.

Priority #5: Suppress Cheatgrass and Other Invasive Plants along Railroad Right-of-Way

Cheatgrass infests portions of the North Range pasture that has experienced past disturbance and is also starting to be found in isolated infestations throughout GRKO's culturally significant native upland pastures. Cheatgrass is also a primary invader along a culturally significant pair of railroad tracks that run through the heart of GRKO and its interpretive points of interest.

Grant-Kohrs Ranch National Historic Site

Anticipated EPMT Tactics: (10% of EPMT workload)

Because no vegetation is desired within the historic railroad right of way, a non-selective herbicide will be utilized early and throughout the season. A glyphosate product has been used in the past and will again be applied in 2016. Late season applications of Plateau will be used to address the isolated patches in the dry uplands and revegetation with culturally appropriate species will be implemented.

Priority #6: *Contain Tall Buttercup in Stuart Hayfield and Baby's Breath in the Gravel Pit Range*

Tall buttercup is found primarily in the Stuart hayfield area. New spot infestations outside of the Stuart hayfield will be targeted for spot herbicide application. As resources allow, portions of the Stuart hayfield impacted by tall buttercup will be addressed with Milestone if the hayfield is dry enough to treat. In recent years, this has not been possible. All hay cut in Stuart Field will be stacked and fed in Stuart field to mitigate spread to other areas of the ranch.

Baby's breath is not a state listed noxious weed but is a high priority species for management. Infestations are found primarily in the Gravel Pit Range pasture and infestations will be addressed with spot herbicide application where identified.

Anticipated EPMT Tactics: (5% of EPMT workload)

Ideal timing for these species is mid to late June and even into July. Because these invasive species are found in scattered infestations, they will be addressed during this timeframe as the NRM EPMT crew addresses other early season species.

Priority #7: *Proactively Address Areas Impacted by Superfund Remediation*

It is anticipated that in summer of 2016, the Montana DEQ will begin its largescale effort to mitigate mine tailings in the GRKO portion of the Clark Fork River. As a start, up to two feet of top soil throughout the historic floodplain will be removed and replaced via a number of predetermined access routes. Disturbed areas will become prime habitat for weed establishment. The park requests NRM EPMT assistance to target new spot infestations of noxious weeds (mainly spotted knapweed, Canada thistle, leafy spurge, yellow toadflax, and cheatgrass) in these newly disturbed areas, staging areas, and along new access routes in 2016.

Anticipated EPMT Tactics: (15% of EPMT workload)

Likely timing for these species is mid to late June and even into July though a number of areas may also be treated in the fall for perennial species like Canada thistle and cheatgrass. Because these invasive species are found in scattered infestations, they will be addressed during this timeframe as the NRM EPMT crew addresses other early season species and during a fall visit.

Proposed Assistance:

Grant-Kohrs Ranch NHS anticipates again hiring two Montana State University biological technicians, one Pathways Intern, and one seasonal ranch worker whose duties will include

Grant-Kohrs Ranch National Historic Site

assisting with vegetation management projects parkwide in 2016. The park resource management specialist will assist with directing these staff members and will also provide support. The interns will provide key support for park-wide GPS mapping of spot infestations multiple times throughout the growing season, will provide hand pulling support for containment of houndstongue infestations, and hand pulling for suppression of leafy spurge in sensitive habitat areas to prevent seed production. Updated infestation maps will be provided to the NRM EPMT to make efficient use of their time.

GRKO has requested funding from Montana Department of Environmental Quality (MDEQ) for continued support for suppression by the NRM EPMT of invasive species within the Clark Fork riparian corridor, adjacent pastures, haul routes, staging areas, and access points.

The NRM EPMT proposes the field schedule on the following page in order to meet the invasive plant treatment needs requested by Grand-Kohrs Ranch NHS in 2016. All crew travel at these parks will be full per diem with local hotel lodging in the town of Deerlodge, MT.

2016 NRM EPMT Field Schedule (GRKO):

PP	Dates	YELL 1 (3)	Dates	YELL 2 (3)	Dates	GLAC (3)
PP14	6/13-6/20	GRTE	6/13-6/20	CIRO	6/13-6/16	GRKO
					6/20-6/23	GLAC
PP15	6/29-7/1	YELL	6/29-7/1	YELL	6/27-7/1	BIHO/GRKO *
	7/6-7/9	YELL	7/6-7/9	YELL	7/6-7/9	GLAC
PP16	7/11-7/14	YELL	7/11-7/14	CIRO	7/11-7/18	GRKO/BIHO *
	7/18-7/21	YELL	7/18-7/21	GOSP		
PP19	8/22-8/29	GRKO	8/22-8/29	GRKO	8/22-8/29	GRKO
PP23					10/17-20	GRKO

* *field work depends on local phenology; parks may be swapped within the PP.*

Anticipated Accomplishments and Products:

NRM EPMT staff manages all treatment records and spatial datasets associated with these areas at GRKO. Very little new GPS work is anticipated in 2016 unless new sites or species are discovered. As in years past, the NRM EPMT will compile trip reports for this high priority project and estimate treated acres and effectiveness assisted by consultations with park staff.

Individuals Responsible:

Jason Smith, Natural Resource Specialist, 406-846-2070 ext. 232

Hagerman Fossil Beds National Monument

Weed Management Projects in 2016:

Hagerman Fossil Beds National Monument (HAFO) has the unfortunate condition of being heavily invaded by a number of widespread invasive species. This is due to the park's lower elevation, its history of agricultural disturbance and landslides, and recent fires that have occurred with increased frequency in the park from 2008 to 2014. Cheatgrass (*Bromus tectorum* L.) is by far the most widespread invasive plant at HAFO. As of 2012, the Upper Columbia Basin (UCBN) I&M program found cheatgrass cover to be ubiquitous, occurring with > 99% frequency in all monitoring frames. In 2010, the Long Butte Fire burned over 75% of the park's sagebrush communities and recovery efforts, both unaided and a large scale reseeding effort in 2011, had limited success. Its dominance is cyclical but non-native tumble mustard, *Sisymbrium altissimum* L., is also very common at HAFO.

Given these current realities, HAFO's weed management program is driven by the desire to reduce both noxious and more damaging invasive species and return higher priority areas to at least a semi-natural state, i.e. some complement of more aggressive native species. HAFO's highest priority areas are those locations where the park receives significant visitor connections and high recreational use. HAFO maintains both a large stretch of the Oregon Trail and important duck hunting opportunities along the Snake River.

On a species basis, Canada thistle (*Cirsium arvense* (L.) Scop.), scotch thistle (*Onopordum acanthium* L.), bull thistle (*Cirsium vulgare* (Savi) Ten.), rush skeletonweed (*Chondrilla juncea* L.), tamarisk (*Tamarix ramosissima* Ledeb.), and Russian olive (*Elaeagnus angustifolia* L.) are the highest priorities for treatment parkwide.

However, besides park maintenance staff that mows portions of some park facilities and trails, the park has no other resources available to conduct weed management objectives. Further, HAFO has acquired wildfire rehabilitation funding to support the NRM EPMT. In the absence of in-park work crews, HAFO requests NRM EPMT assistance in 2016 to complete four objectives:

Priority #1: Suppress Canada Thistle Across the Entire Park

NRM EPMT crews have been mostly successful in a number of areas but Canada thistle remains a significant threat and high priority for the park. HAFO requests NRM EPMT assistance in 2016 to conduct noxious weed treatments across all known infestations to date.

Anticipated Tactics: (20% of EPMT workload)

As with efforts to control Canada thistle at other partner parks, it can be treated at HAFO during the summer as plants begin to bud using Milestone (or Habitat in wetter areas). Historically, NRM EPMT crews have attempted Canada thistle control in late July as the plants bolt/bud and it's working well. We've seen over 90% control within a single season. Offering a late July-early August visit with 3 crew members to reach sites with backpack and truck mounted sprayers would effectively complete this work task. Both Milestone and Habitat will be applied depending on local conditions.

Hagerman Fossil Beds National Monument

Priority #2: Eradicate Russian Olive from Northern Gulches

For several reasons, the NRM EPMT has continued to make Fossil Gulch and its small seeps and canyons to the north a priority for Russian olive work. The response has been encouraging as local patches of native willow and Great Basin wildrye are thriving with the additional water. Challenges remain in both upper Fossil Gulch and on higher terraces. These areas are difficult to access and treat.

Anticipated Tactics: (30% of EPMT workload)

For 2016, the NRM EPMT will continue its progress to contain Russian olive to the main Snake River corridor. All adult trees will be cut down by chainsaw and stumps will be treated with Garlon herbicide. Smaller resprouts and saplings encountered will be foliar sprayed with Habitat herbicide. EPMT crews will start by ensuring that areas above the pumphouse are kept free of resprouting trees. Upper reaches of Fossil Gulch will need to be accessed by UTV if park approved. Upper terraces and seeps will need to be accessed from the rim where possible.

Priority #3: Suppress Rush Skeletonweed in the Southwest Area of the Park

Both the 2010 Long Butte Fire and heavily invaded neighbors make rush skeletonweed a growing priority for HAFO. The NRM EPMT will continue to make the southwestern portions of HAFO a priority for treatment as BLM lands to the south are heavily infested. This will be another objective where a UTV has been very useful to transport crew members and herbicides to “backcountry” areas of HAFO. If approved, the NRM EPMT would be interested in utilizing a UTV for this work.

Anticipated Tactics: (25% of EPMT workload)

Milestone is by far the most effective herbicide for RSW if plants are treated from bolting to flowering. The NRM EPMT will focus their efforts on this park priority in late July and early August of 2016.

Priority #4: Survey and Suppress Noxious Weeds Across two Small 2014 Wildfires

Two wildfires called Bell Rapids and Fossil 2 burned several hundred acres of HAFO’s lower terraces in 2014. Park staff acquired burned area rehabilitation funding to curb any early noxious weeds in 2015 and it appears funds will again be available in 2016. The park requests NRM EPMT assistance to conduct several aggressive treatments throughout both areas.

Anticipated Tactics: (15% of EPMT workload)

As with other recent wildfires at HAFO, the NRM EPMT will comprehensively survey and treat these wildfire areas to control any noxious weeds that attempt to gain a foothold. To date, only RSW has been found and treated.

Hagerman Fossil Beds National Monument

Priority #5: Suppress Cheatgrass and Tumble Mustard at Park Overlooks and Trailheads

As stated, one of HAFO's highest priorities for treatment is areas where the park receives significant recreational use. Snake River and Oregon Trail overlooks and viewpoints are particularly significant. Cheatgrass and biennial mustards have impacted much of these areas and they are serving as vectors to other areas. The park requests assistance by the NRM EPMT to address these areas in the fall of 2016 as time allows.

Anticipated Tactics: (10% of EPMT workload)

The NRM EPMT can address this priority both in early May and in late September and will comprehensively survey and treat these vector areas using backpack sprayers to address the densest areas first. For cheatgrass, fall application of preemergent or early postemergence Plateau herbicide has proven highly effective for reducing weed patches from 50 to 80% after one year of application (personal observation).

Proposed Assistance:

HAFO offers assistance in the form of program funding assistance and some limited field support by the HAFO maintenance division. In particular, HAFO occasionally offers use of their UTV for transporting crew members and supplies.

The NRM EPMT proposes the field schedule below in order to meet the invasive plant treatment needs requested by HAFO in 2016. All crew travel at these parks will be full per diem and lodging as a program FEMA trailer is no longer available.

2016 NRM EPMT Field Schedule (HAFO):

PP	Dates	YELL 1 (3)	Dates	YELL 2 (3)	Dates	GLAC (3)
PP11	5/2-5/4	Training	5/2-5/4	Training	5/2	Training
	5/5-5/9	GOSP	5/9-5/12	HAFO	5/3-5/9	BICA
PP13	5/31-6/2	GOSP	5/31-6/2	GOSP	6/1-6/3	CRMO – spurge / RSW
5/30	6/3-6/6	CRMO	6/3-6/6	HAFO/MIIN	6/4-6/8	CRMO – woad
PP17	7/25-7/29	HAFO/MIIN	7/25-8/1	FOBU	7/25-7/29	GLAC
	7/30-8/1	YELL			7/30-8/1	BEPA
PP18	8/8-8/15	GRTE	8/8-8/12	HAFO/MIIN	8/8-8/11	GLAC
			8/15-8/17	YELL	8/15-8/18	
PP21	9/18-9/24	GRTE	9/18-9/21	GRTE	9/18-9/24	BICA
			9/22-9/24	HAFO		

Anticipated Accomplishments and Products:

NRM EPMT staff manages all treatment records and spatial datasets associated with these areas at HAFO. Very little new GPS work is anticipated in 2016 unless new sites or species are discovered.

Hagerman Fossil Beds National Monument

As in year's past, the NRM EPMT will compile trip reports for this high priority project and estimate treated acres and effectiveness assisted by consultations with park staff.

Individuals Responsible:

JoAnn Blalack, chief of integrated resources, 208-933-4115

Ray Vader, maintenance foreman, 208-933-4142

Little Bighorn Battlefield National Monument

Weed Management Projects in 2016:

Little Bighorn Battlefield (LIBI) is one of the smallest parks served by the NRM EPMT. The largest weed management challenge seems to be finding a balance between aggressive treatment and the sensitivity of its cultural resources dispersed throughout the battlefield. This is particularly challenging for any large scale efforts to control noxious weeds. Balancing weed phenology with the availability of NRM EPMT work crews, LIBI requests NRM EPMT assistance in 2016 to complete two early season objectives:

Priority #1: *Suppress St. John's Wort Throughout the Battlefield*

NRM EPMT continues to find large infestations of St. Johnswort that have increased in size and density in the past two years and 2015 was another banner year. The park requests EPMT assistance to continue to control this pervasive species.

Anticipated Tactics: (75% of EPMT workload)

As noted on the work schedule below, the NRM EPMT will address this priority by completing chemical treatments of plants located throughout the battlefield.

Priority #2: *Suppress Other Noxious Weeds in Select Areas of the Park*

Roadsides and other areas of the battlefield are routinely being invaded by noxious weeds like field bindweed (*Convolvulus arvensis* L.), Canada thistle (*Cirsium arvense* (L.) Scop.), and houndstongue (*Cynoglossum officinale* L.). The park requests NRM EPMT assistance in addressing these scattered populations.

Anticipated Tactics: (25% of EPMT workload)

NRM EPMT crew members will survey historic treatment areas, be mindful of new infestations, and chemically treat any weeds encountered.

Proposed Assistance:

LIBI offers assistance in the form of general logistical support and some limited field support by the LIBI resource division. The LIBI biologist may assist in the field in 2016. The NRM EPMT proposes the field schedule below in order to meet the invasive plant treatment needs requested by Little Bighorn NB in 2016. All crew travel will be full per diem and local lodging.

2016 NRM EPMT Field Schedule (LIBI):

PP12	5/16-5/23	CRMO	5/16-5/23	CRMO	5/16-5/22	BICA-N / LIBI
					5/22-5/23	GLAC

Anticipated Accomplishments and Products:

NRM EPMT staff manages all treatment records and spatial datasets associated with these areas at LIBI. Very little new GPS work is anticipated in 2016 unless new sites or species are discovered. As

Little Bighorn Battlefield National Monument

in year's past, the NRM EPMT will compile trip reports for this high priority project and estimate treated acres and effectiveness assisted by consultations with park staff.

Individuals Responsible:

Marian Doane, park biologist, 406-638-3225

Denice Swanke, park superintendent, 406-638-3201

Minidoka National Historic Site

Weed Management Projects in 2016:

Minidoka National Historic Site (MIIN) is surrounded by agriculture and is routinely invaded by a number of widespread invasive species. Besides park maintenance staff that mows the perimeter of park facilities and trails, the park has no other resources available to conduct weed management objectives. Further, several cultural resources at MIIN are being negatively impacted by nonnative vegetation (2016 project to address historic foundations). MIIN requests the NRM EPMT to continue to make progress on three weed management priorities:

Priority #1: *Control All Vegetation Invading Historic Foundations*

Prior to being designated a unit of the National Park System in 2001, MIIN was listed on the National Register of Historic Places in 1979. Sixteen historic concrete foundations that were once part of the warehouse infrastructure of the Minidoka Relocation Center are currently being negatively impacted by noxious vegetation. Cracks have developed in the concrete, allowing precipitation to infiltrate and vegetation to become established, further undermining and decomposing the foundations.

In 2014, park resource staff successfully acquired cultural resource cyclic funding to address this issue using services provided by the NRM EPMT. This funding will again be received in 2016. The primary objective is to remove invasive vegetation in and around the 16 concrete foundations and in 2014, this was a targeted effort by park maintenance staff and NRM EPMT crews.

Anticipated Tactics: (25% of EPMT workload)

The NRM EPMT will address this priority by completing chemical treatments of all foundations throughout the field season. Herbicide will be glyphosate based to control a broad spectrum of invasive plants.

Priority #2: *Eradicate All Noxious Weeds from the Park Dumpsite*

In 2014, the NRM EPMT crew began addressing noxious weeds throughout the expanded “dump site” which has been heavily infested with Canada thistle (*Cirsium arvense* (L.) Scop.), musk thistle (*Carduus nutans* L.) and Scotch thistle (*Onopordum acanthium* L.). Rush skeletonweed (*Chondrilla juncea* L.) was also located and treated. This area has long been a vector of noxious weeds to the surrounding landscape and the park requests the EPMT continue to eradicate all weeds throughout the area.

Anticipated Tactics: (25% of EPMT workload)

As with other projects, the NRM EPMT addresses noxious weeds at MIIN in a combined effort with nearby HAFO. As noted on the work schedule below, treatments will begin in June and continue through mid-August.

Priority #3: *Eradicate Other Noxious Weeds Throughout the Park*

Thistles, rush skeletonweed, field bindweed (*Convolvulus arvensis* L.), Russian olive (*Elaeagnus angustifolia* L.), and common burdock (*Actium minus* L.) are also problematic along the river corridor before the entrance station, the main housing block, the newly build baseball field, and

Minidoka National Historic Site

around the old swimming hole. Russian knapweed (*Acroptilon repens* L.) occurs in select areas as well.

Anticipated Tactics: (50% of EPMT workload)

The NRM EPMT addresses noxious weeds at MIIN in a combined effort with nearby HAFO where the crew will invest 1-2 work days per visit at MIIN. As noted on the work schedule below, treatments will begin in June and continue potentially through September.

Proposed Assistance:

2016 NRM EPMT Field Schedule (MIIN):

PP	Dates	YELL 1 (3)	Dates	YELL 2 (3)	Dates	GLAC (3)
PP13	5/31-6/2	GOSP	5/31-6/2	GOSP	6/1-6/3	CRMO – spurge / RSW CRMO – woad
5/30	6/3-6/6	CRMO	6/3-6/6	HAFO/MIIN	6/4-6/8	
PP17	7/25-7/28	HAFO/MIIN	7/25-8/1	FOBU	7/25-7/29	GLAC
	7/29-8/1	YELL			7/30-8/1	BEPA
PP18	8/8-8/15	GRTE	8/8-8/12	HAFO/MIIN	8/8-8/11	GLAC
			8/15-8/17	YELL	8/15-8/18	

Anticipated Accomplishments and Products:

NRM EPMT staff manages all treatment records and spatial datasets associated with these areas at MIIN. Very little new GPS work is anticipated in 2016 unless new sites or species are discovered. As in year's past, the NRM EPMT will compile trip reports for this high priority project and estimate treated acres and effectiveness assisted by consultations with park staff.

Individuals Responsible:

Ray Vader, MIIN maintenance foreman, 208-933-4115
JoAnn Blalack, chief of integrated resources, 208-933-4115

Rocky Mountain National Park

Weed Management Projects in 2016:

Rocky Mountain National Park (ROMO) has over 100 non-native species of which just over 40 are high priority for park management. Of those, approximately a dozen species are being actively managed through mostly manual and chemical means. Areas that are of high priority in ROMO include high elevation isolated infestations, trailheads and roadways that provide corridors for invasive species spread, lower elevation meadows with great landscape viewing opportunities, and high visitor use areas where individuals may track seeds. The higher elevations at ROMO tend to result in shorter growing seasons for many species. Thus ROMO priorities for the EPMT in late September tend to focus on cheatgrass (*Bromus tectorum* L.) and thistles, both Canada (*Cirsium arvense* (L.) Scop.) and musk (*Carduus nutans* L.), species that are all susceptible to late season treatments. Because these species occur in relative abundance at ROMO, EPMT assistance is requested to help the park's in-park crew treat the following:

Priority #1: *Control of Cheatgrass Around Park Headquarters*

The headquarters area of the park is a gateway for all invasive plant species entering from the community of Estes Park. While this is not necessarily high priority habitat or an area of unique resource value, it is the first area that visitors see as they enter the park and provides a corridor for invasive plants to spread further into the park. It is thus a priority for ROMO to control cheatgrass and other species from the border of the park to the entrance gates. Research and park experience indicates that cheatgrass is successfully reduced if a late fall application of pre-emergent herbicides is used. This has been found to be quite effective while being less harmful to native plant species that have gone into seasonal dormancy.

Anticipated EPMT Tactics: (60% of EPMT workload)

Research and park experience shows that cheatgrass is successfully reduced if crews apply a fall application of pre-emergent herbicides. This approach works because germinating cheatgrass seedlings are controlled and any residual herbicide does less impact to native plants that have already gone into seasonal dormancy. Supplementing in-park crews for one-week with a large EPMT work force that will apply treatments with backpack sprayers would effectively complete this work task.

Priority #2: *Control of Cheatgrass Surrounding Moraine Park Meadow*

The Lumpy Ridge area of ROMO tends to get little attention from natural resource staff yet is a highly used area by park visitors. Lumpy Ridge supports some unique vegetation communities, and is also known for its healthy population of mountain lions. Various invasive plants including thistles, common mullein, sweetclover, knapweeds, and cheatgrass occur at the trailhead and up the trail. While many of these species have been targeted here by the park crew over the last couple of seasons, the crew has not been able to return to this site late enough in the season to treat cheatgrass. There is a need for crews to head up the trail to target isolated patches of cheatgrass and then continue pushing cheatgrass all the way back to the trailhead and parking lot.

Rocky Mountain National Park

Anticipated EPMT Tactics: (30% of EPMT workload)

Research and park experience shows that cheatgrass is successfully reduced if crews apply a fall application of pre-emergent herbicides. This approach works because germinating cheatgrass seedlings are controlled and doing less impact to native plants that have already gone into seasonal dormancy. Supplementing in-park crews for one-week with a large EPMT work force that will apply treatments with backpack sprayers would effectively complete this work task.

Priority #3: *Control Thistles in Moraine Park Meadow and Other High Priority Areas*

Moraine Park has seen multiple human uses over the past century from the construction and demolition of a lodge to a 9-hole golf course. While these were all past history of this iconic meadow, a restoration project in 2008 involved the final removal and grading of the historic golf tees and a rising of the meadow's water table to near historic levels. A decade or so ago this area was described as a sea of purple, alluding to the vast infestations of Canada thistle and musk thistle that had overrun the meadow. While this is not the case anymore, Canada thistle is still found throughout the 500+ acre meadow, and continued treatment is necessary. Since this meadow is also part of the 2012 Fern Lake Fire burn area, a corridor for weed movement now exists from the meadow to the alpine tundra. To prevent this spread to more interior locations in the park and to the alpine, crews will start at the interior end of the meadow spot treating Canada thistle to eventually eradicate this species from this area of the park.

Anticipated EPMT Tactics: (10% of EPMT workload)

EPMT experience and discussions with park staff indicate that chemical treatment of these thistles in the fall (late September) is incredibly effective. Canada thistle is particularly vulnerable to herbicides working as the plant draws late season resources to the plant's root system. Supplementing in-park crews for one-week with a large EPMT work force that will apply treatments with backpack sprayers would effectively complete this work task.

Proposed Assistance:

Because of the elevation range at ROMO, the season is short and invasive plants need to be treated within a relatively small window of time. Rocky Mountain National Park has its own invasive plant management crew capable of addressing most weed management priorities in mid to late summer. The park crew, which ranges from 5 to 8 people, will work with the EPMT on all three projects. ROMO has Trimble GPS units and park crew will be able to complete all mapping of treatment areas. ROMO will provide herbicides and surfactants necessary to treat the targeted species. A park biologist will also be available to help direct activities and plan logistics such as housing and other needs.

The NRM EPMT proposes the field schedule below in order to meet the treatment needs requested by Rocky Mountain NP in 2016. Housing in the park may be available and will be coordinated by park staff through the park's housing coordinator. If housing is not available, EPMT will secure hotel accommodations.

Rocky Mountain National Park

2016 NRM EPMT Field Schedule (ROMO):

PP	Dates	YELL 1 (3)	Dates	YELL 2 (2)	Dates	GLAC (3)
PP20	9/9-9/15	ROMO	9/9-9/15	ROMO	9/9-9/15	ROMO
9/5						

The schedule proposed below has one change from 2015:

- Crews will assist ROMO staff in PP20 rather than PP21 to avoid late season challenges including year-end close outs with park seasonal employees and heavy visitor traffic with elk rutting and Public Lands Day. Unfortunately, at this time this offers ROMO one less field day as it includes the Labor Day holiday.

Anticipated Accomplishments and Products:

ROMO staff manages all spatial datasets associated with these areas. The NRM EPMT would compile trip reports for each of the three high priority projects and estimate treated acres based on consultation with park staff.

Individuals Responsible:

Hanem Abouelezz, restoration ecologist, 970-586-1301

Brian Kolokowsky, Invasive Plant Crew Lead, 970-586-1364

Yellowstone National Park

Weed Management Projects in 2016:

During the last 25 years, the number of nonnative plant species documented in Yellowstone National Park (YELL) has increased from 85 in 1986 (Whipple 2001) to 217 species today. Although not all of these nonnative plants endanger the park's native habitats, many are highly invasive and can alter native plant communities and the wildlife that depends on them. The full extent of invasive plants in YELL in acres has not been determined, but the area's most vulnerable to invasion are those most frequently used by the 3 million annual visitations to the park—467 miles of paved roads, 900 miles of backcountry trails, 2,650 miles of rivers, 12 front country developed areas, and 302 backcountry campsites (YELL's 2013 Invasive Vegetation Management Plan). YELL has three 3 to 4-person resource management crews working in the five districts throughout the park; however, a great number of areas (namely areas in the north district) are still significantly overwhelmed by the workload. YELL is requesting NRM EPMT assistance in 2016 to help the park address the following:

Priority #1: *Suppress Hawkweed in Known Locations*

The NRM EPMT has been treating hawkweed in YELL for over ten years. A total of 18 infestations have been now been identified and almost all are treated annually. Four invasive species are addressed: meadow hawkweed (*Hieracium caespitosum* Dumort.), orange hawkweed (*Hieracium aurantiacum* L.), kingdevil hawkweed (*Hieracium floribundum* Wimm. & Grab.) and whiplash hawkweed (*Hieracium flagellare* Willd.), with meadow and orange being the most dominant. YELL again requests NRM EPMT assistance to address hawkweeds in 2016.

Anticipated EPMT Tactics: (75% of EPMT workload)

Hawkweed treatments are incredibly challenging as there are several native hawkweeds in the park, the weed has to be in flower for correct identification, the treatment window varies widely from season to season, and the plant appears to be highly plastic and chemical treatments need to be effective within days of application. Native white hawkweed (*Hieracium albidiflorum* Hook.) presents the greatest challenge in terms of identifying the right plants for treatment. White hawkweed tends to prefer more shaded areas of forest regeneration but areas may need to be flagged to allow sites to reach full flower prior to treatment.

A large NRM EPMT work force of 3-6 crew members will systematically apply chemical treatments with backpack sprayers for several weeks from late June to mid-July to effectively complete this work task. The NRM EPMT program will also receive contributions from the Montana Conservation Corp to address larger and more complex areas. Several chemical treatments have been attempted but Milestone herbicide appears to be most effective. Telar will be used when more immediate control is desired, which is common. The NRM EPMT crew will also continue and potentially expand effectiveness monitoring started in 2015.

Priority #2: *Assist in the Suppression of Noxious Weeds in the North District of the Park*

Though the North District of YELL has a park crew of 4 seasonal biotechnicians, they are routinely overwhelmed by the workload of suppressing a number of noxious weeds across large areas that have become heavily invaded through spread by wildlife, high visitor use, etc. In years past, the NRM EPMT periodically contributes crew members to the pursuit of weed suppression in the local

Yellowstone National Park

Mammoth area and the park request this to continue in 2016. Noxious weeds addressed include houndstongue (*Cynoglossum officinale* L.), musk thistle (*Carduus nutans* L.), bull thistle (*Cirsium vulgare* (Savi) Ten.), spotted knapweed (*Centaurea stoebe* L.) and Dalmatian toadflax (*Linaria dalmatica* (L.) Mill.).

Anticipated Tactics: (15% of EPMT workload)

NRM EPMT crews will contribute assistance periodically throughout the entire summer season. The NRM EPMT will coordinate with local YELL weed management crews.

Priority #3: Assist Park Staff in the Development of Treatment and Communication Strategies

YELL would like to better formulate and define treatment strategies for invasive plants both at the RM District level and parkwide and is requesting NRM EPMT input to do so. They would also like assistance in identifying the best ways to communicate these strategies to park management and the public.

Anticipated EPMT Tactics: (10% of EPMT workload)

The NRM EPMT liaison will continue to investigate local efforts made to prioritize the removal of the park's invasive plants. The NRM EPMT will work with park staff to develop work priorities based on priority species in addition to setting place-based criteria. A funding proposal is currently being generated to fund a susceptibility modeling effort on the west side of Yellowstone NP. This would serve as a model for other areas.

Proposed Assistance:

Generally, Yellowstone NP provides the NRM EPMT extensive administrative support with purchasing, training, travel, crew housing, payroll, etc. Beyond that, depending on the issue, the park's district crews and NRM EPMT work closely and well together and aid each other with various concerns like herbicide supplies, temporary replacements of malfunctioning equipment, etc.

The NRM EPMT proposes the field schedule on the following page in order to meet the treatment needs requested by Yellowstone NP in 2016. The NRM EPMT crew will utilize park provided seasonal housing and no travel costs are anticipated in 2016.

Yellowstone National Park

2016 NRM EPMT Field Schedule (YELL):

PP	Dates	YELL 1 (3)	Dates	YELL 2 (3)	Dates	GLAC (3)
PP15	6/27-6/29	YELL	6/27-6/29	YELL	6/29-7/1	GLAC
	7/5-7/8	YELL	7/5-7/8	CRMO	7/6-7/9	GRKO/BIHO
PP16	7/11-7/14	YELL	7/11-7/14	CIRO	7/11-7/18	GRKO/BIHO
	7/18-7/21	YELL	7/18-7/21	GOSP		
PP17	7/25-7/28	HAFO	7/25-8/1	FOBU	7/25-7/29	GLAC
	7/29-8/1	YELL			7/30-8/1	BEPA
PP18	8/8-8/15	GRTE	8/8-8/12	HAFO/MIIN	8/8-8/11	GLAC
			8/15-8/17	YELL	8/15-8/18	GLAC

Anticipated Accomplishments and Products:

NRM EPMT staff manages all treatment records and spatial datasets associated with these areas at HAFO. Very little new GPS work is anticipated in 2016 unless new sites or species are discovered. As in year's past, the NRM EPMT will compile trip reports for this high priority project and estimate treated acres and effectiveness assisted by consultations with park staff.

Individuals Responsible:

Sue Mills, Resource Specialist, 307-344-2515

Liaison 2016 Work Objectives

1) Continue to implement safety plans and expand treatment effectiveness monitoring.

Candidate projects that may require treatment effectiveness monitoring include areas that have been treated for multiple years with similar approaches but some treatments are not meeting management objectives for an unknown reason. For the NRM EPMT, ground treatment will continue to be the primary focus of the program but more effort may be needed to determine the effectiveness of our treatments applied to more problematic invasive plants. Though some successes are clearly evident, NRM EPMT has a few examples of very dynamic systems where the treatment effect is not clear.

Photopoint monitoring will also be more of a focus in 2016. The new NISIMS data management system allows for the collection of photographs used for long term monitoring and the NRM EPMT program has several areas where we've collected this information already starting in 2014; it needs to be repeated and housed in the NISIMS system per the program standard.

2) Work with 1-2 parks to develop native restoration projects.

NRM EPMT is very interested in pursuing restoration projects and developing funding proposals to get them in place. Prime candidates would be areas where plant infestations can be locally eradicated, facilitated recovery is necessary, and where the NRM EPMT can play an active role in site recovery.

3) Work closely with 1-2 parks to strategically define their weed management priorities.

Hard to accept but the harsh reality of weed management today is not every weed can be controlled everywhere. Scarce resources have to be strategically allocated so that high priority areas and plants can be effectively addressed. Determining highest priorities is unique of course to the management area in question, the likelihood of success, the resources available, etc. Unfortunately, in most cases Invasive Plant Management Plans that have been developed across the Service don't provide enough rationale for these difficult implementation level land management decisions.

NRM EPMT is very interested in assisting partner parks develop more strategic approaches to better meet their weed management objectives. Recently, YELL has been interested in developing and applying susceptibility models to their local planning, etc. Once highly susceptible areas can be isolated, stakeholders can determine where these areas correspond to their highest resource priorities (best condition plant communities, critical wildlife habitat areas, areas of high visitor use, etc.). The goal would be to develop a park level strategic plan that ties weed management actions to Invasive Plant Management Plans and other direction documents.

Table 3. 2016 Field Projects of the NRM EPMT (in order of current priority by park).

#	Park	Project	Crew Size	Dates
1	BEPA	<i>Suppress Canada Thistle, Field Bindweed, and Alfalfa from Park Boundaries</i>	3	7/30 – 8/1
2	BIHO	<i>Eradicate Spotted Knapweed from Park Boundaries</i>	3	6/27 – 6/30
			3	7/15 – 7/18
3	BIHO	<i>Eradicate Canada Thistle and Bull Thistle from Park Boundaries</i>	3	6/27 – 6/30
			3	7/15 – 7/18
4	BICA	<i>Eradicate Russian Olive and Tamarisk throughout the YTWHMA</i>	3	5/3 – 5/9
			4	9/18 – 9/24
5	BICA	<i>Suppress other Early Season Noxious Weeds Around the North District</i>	3	5/16 – 5/19
6	CIRO	<i>Suppress Canada Thistle within National Reserve and State Park Boundaries</i>	3	6/13 – 6/20
			3	7/11 – 7/14
7	CIRO	<i>Suppress Other Noxious Weeds in High Traffic Areas</i>	3	6/13 – 6/20
			3	7/11 – 7/14
8	CIRO	<i>Suppress Other Noxious Weeds in Other High Priority Areas</i>	3	6/13 – 6/20
			3	7/11 – 7/14
9	CRMO	<i>Eradicate Dyers Woad from the Region</i>	5	5/16 – 5/23
			3 then 6	6/2 – 6/6
10	CRMO	<i>Suppress Rush Skeletonweed from High Priority Areas</i>	3	7/5 – 7/8
11	CRMO	<i>Eradicate Leafy Spurge from Park Boundaries</i>	3	5/31 – 6/1
12	DINO	<i>Address Noxious Weeds in the Cub Creek Watershed</i>	6	10/3 – 10/9
13	DINO	<i>Eradicate Noxious Weeds throughout Jones Hole Creek</i>	6	10/3 – 10/9
14	DINO	<i>Eradicate Noxious Weeds throughout Deerlodge Park</i>	6	10/3 – 10/9
15	DINO	<i>Address Noxious Weeds at Mitten Park Spring and Other High Priority Areas</i>	6	10/3 – 10/9
16	FOBU	<i>Suppress Canada and Musk Thistle Infestations Parkwide</i>	3	7/25 – 8/1
17	FOBU	<i>Control Other Nascent Noxious Weed Infestations Parkwide</i>	3	7/25 – 8/1
18	FOBU	<i>Control Invasive Perennial Grasses in Select Areas of the Park</i>	3	7/25 – 8/1
19	GLAC	<i>Control Leafy Spurge in Big Prairie</i>	3	7/5 – 7/7
20	GLAC	<i>Contain Meadow Hawkweed in the North Fork Area</i>	3	5/23
21	GLAC	<i>Suppress Knapweed, Meadow Hawkweed, and Yellow Toadflax in the Lubec Area</i>	3	6/20 – 6/23
			3	8/8 – 8/18 *
22	GLAC	<i>Suppress Knapweed Populations throughout the Park's Eastside</i>	3	7/25 – 7/29
			3	8/8 – 8/18 *
23	GOSP	<i>Eradicate Dyers Woad from the Park</i>	3	5/5 – 5/9
			6	5/31 – 6/2
24	GOSP	<i>Suppress Rush Skeletonweed Throughout the Park</i>	6	5/31 – 6/2
			3	7/15 – 7/19
25	GOSP	<i>Control Scotch Thistle Throughout the Park</i>	6	5/31 – 6/2
			3	7/15 – 7/19

Table 3. 2016 Field Projects of the NRM EPMT (in order of current priority by park) (continued).

#	Park	Project	Crew Size	Dates
26	GOSP	<i>Control New Invaders to the Park</i>	3	5/5 – 5/9
			6	5/31 – 6/2
			3	7/15 – 7/19
27	GRTE	<i>Suppress all Noxious Weeds in the Three Rivers Ranch Area</i>	3	6/13 – 6/20
			3	8/8 – 8/15
28	GRTE	<i>Survey and Treat Select Cheatgrass Populations</i>	5	9/18 – 9/24
29	GRTE	<i>Survey and Suppress Houndstongue Populations</i>	3	6/13 – 6/20
30	GRTE	<i>Survey and Eradicate All Noxious Weeds from Known Vector Areas</i>	3	6/13 – 6/20
			3	8/8 – 8/15
31	GRKO	<i>Suppress Canada Thistle Across the Park</i>	3	6/13 – 6/16
			3	7/11 – 7/14
			9	8/22 – 8/29
32	GRKO	<i>Suppress Leafy Spurge and Yellow Toadflax in Riparian Areas of the Park</i>	9	8/22 – 8/29
33	GRKO	<i>Suppress Spotted Knapweed Across the Park</i>	3	7/11 – 7/14
34	GRKO	<i>Contain / Suppress Whitetop and Perennial Pepperweed</i>	3	6/13 – 6/16
35	GRKO	<i>Suppress Cheatgrass and Other Invasive Plants along Railroad Right-of-Way</i>	3	6/13 – 6/16
			9	8/22 – 8/29
36	GRKO	<i>Contain Tall Buttercup in Stuart Hayfield and Baby's Breath in the Gravel Pit Range</i>	3	6/13 – 6/16
37	GRKO	<i>Proactively Address Areas Impacted by Superfund Remediation</i>	3	7/11 – 8/29
38	HAFO	<i>Suppress Canada Thistle Across the Entire Park</i>	3	7/25 – 7/29
			3	8/8 – 8/12
39	HAFO	<i>Survey and Suppress Noxious Weeds Across two Small 2014 Wildfires</i>	3	7/25 – 7/29
			3	8/8 – 8/12
40	HAFO	<i>Eradicate Russian Olive from Northern Gulches</i>	3	5/5 – 5/9
			3	6/3 – 6/6
41	HAFO	<i>Suppress Rush Skeletonweed in the Southwest Area of the Park</i>	3	7/25 – 7/29
			3	8/8 – 8/12
42	HAFO	<i>Suppress Cheatgrass and Tumble Mustard at Park Overlooks and Trailheads</i>	3	9/22 – 9/24
43	LIBI	<i>Suppress Other Noxious Weeds Throughout the Park, Namely St. John's Wort</i>	3	5/20 – 5/22
44	LIBI	<i>Suppress Other Noxious Weeds in Select Areas of the Park</i>	3	5/20 – 5/22
45	MINN	<i>Control All Vegetation from Historic Foundations</i>	3	6/3 – 6/6
			3	7/25 – 7/29
46	MINN	<i>Eradicate All Noxious Weeds from the Park Dumpsite</i>	3	6/3 – 6/6
			3	7/25 – 7/29
			3	8/8 – 8/12

Table 3. 2016 Field Projects of the NRM EPMT (in order of current priority by park) (continued).

#	Park	Project	Crew Size	Dates
47	ROMO	<i>Control of Cheatgrass Around Park Headquarters</i>	7-8	9/9 – 9/15
48	ROMO	<i>Control of Cheatgrass Surrounding Moraine Park Meadow</i>	7-8	9/9 – 9/15
49	ROMO	<i>Control Thistles in Moraine Park Meadow and Other High Priority Areas</i>	7-8	9/9 – 9/15
50	YELL	<i>Eradicate Hawkweed from Known Locations †</i>	3	7/5 – 7/21
			6	6/27 – 6/29
51	YELL	<i>Assist in the Suppression of Noxious Weeds in the North District of the Park</i>	3	Summer
52	YELL	<i>Assist Park Staff in the Development of Treatment and Communication Strategies</i>	1	Fiscal year

* Though crews will be in GLAC from 8/8 to 8/18, they likely will be on intermittent and unavailable.

† A crew of 4 from the Montana Conservation Corp will also be assisting the NRM EPMT complete hawkweed treatments from 7/5 to 7/14.

Draft Work Schedule for 2016 *

		Yellowstone		South		Glacier
PP10	4/18-4/21					
	4/25-4/28	Leader EOD-prep/plan;		Leader EOD-prep/plan;		Leader EOD-prep/plan;
PP11	5/2-5/4	Crew EOD-train	5/2-5/4	Crew EOD-train	5/2/2015	Crew EOD-train
	5/9-5/13	GOSP - dyer's woad	5/9-5/13	HAFO - Olive, tamarisk	5/3-5/9	BICA-S ⁵ - Olive, tamarisk
PP12	5/16-5/23	CRMO ⁵ - dyer's woad	5/16-5/23	CRMO ⁵ - dyer's woad	5/16-5/22	BICA-N / LIBI ⁵ - St. Johnswort
					5/23	GLAC - hawkweeds, knapweed
PP13	5/31-6/2	GOSP - dyer's woad / RSW	5/31-6/2	GOSP - dyer's woad / RSW	5/31-6/3	CRMO ⁵ - spurge, dyer's woad
5/30 holiday	6/3-6/6	CRMO ⁵ - dyer's woad	6/3-6/6	HAFO/MIIN ⁵ - RSW / Olive	6/3-6/6	
PP14	6/13-6/20	GRTE/JODR ⁵	6/13-6/20	CIRO ⁵ - knapweed, whitetop, thistle	6/13-6/16	GRKO* - pepperweed
		YELL - hawkweeds (liaison)			6/20-6/23	GLAC (east) – knapweed?
PP15	6/27-6/29	YELL – hawkweeds	6/27-6/29	YELL* - hawkweeds	6/27-6/30	BIHO*
7/3 holiday	7/5-7/8	YELL/MCC* - hawkweeds	7/5-7/8	CRMO - RSW	7/5-7/7	GLAC (west) - knapweed, toadflax
PP16	7/11-7/14	YELL/MCC* - hawkweeds	7/11-7/14	CIRO - knapweed, thistles	7/11-7/18	GRKO / BIHO* ⁵
	7/18-7/21	YELL* - hawkweeds	7/15-7/18	GOSP ⁵ - RSW, thistles		
PP17	7/25-7/29	HAFO/MIIN - RSW/thistles	7/25-8/1	FOBU ⁵ - thistles, knapweed	7/25-7/29	GLAC (east)* - knapweed
	7/29-8/1	YELL ⁵ - spurge?			7/30-8/1	BEPA ⁵
PP18	8/8-8/15	GRTE/JODR ⁵ – toadflax	8/8-8/12	HAFO/MIIN - thistles	8/8-8/11	GLAC lead - AL/reporting
			8/15-8/17	(return to YELL)?	8/15-8/18	/ Crew members (intermittent)
PP19	8/22-8/29	GRKO ⁵ - Riparian corridor	8/22-8/29	GRKO ⁵ - Riparian corridor	8/22-8/29	GRKO ⁵ - Riparian corridor
			payroll funded by MT EQD (if avail)			
PP20	9/9-9/15	ROMO ⁵ - thistles / cheatgr	9/9-9/15	ROMO ⁵ - cheatgrass / thistles	9/9-9/15	ROMO ⁵ - thistles / cheatgrass
9/5 holiday						
PP21	9/18-9/24	GRTE ⁵ - cheatgrass	9/18-9/24	GRTE ⁵ - cheatgrass and HAFO - cheatgrass	9/18-9/24	BICA-S ⁵ - olive (4 sawyers)
PP22	10/3-10/9	DINO ⁵	10/3-10/9	DINO ⁵	10/2-10/9	DINO ⁵
10/10 holiday				Crew Leaders GIS/Reporting		
PP23	10/17-10/20	Crew Leaders GIS/Reporting			10/17-10/20	GRKO ⁵

* Regular Travel, Backcountry Travel/Park Housing, Host Park Work (no travel)

Program Expenses

The total allocation for NRM EPMT in 2016 is \$301,200, same as in 2015. Project funding to date totals \$49,300. Planning will be based on these figures, with some built in flexibility so that if additional funding is available, or if there are program cuts, there will be a plan in place for adjustments. Table 4 lists a summary of anticipated expenses for the NRM EPMT program in FY2016.

Table 4. 2016 NRM EPMT Total Program Costs.

#	Cost Component	Total Cost
1	Personnel Compensation and Benefits	\$ 295,000
	Savings by Project Funding (HAFO)	- \$ 9,500
	Savings by Project Funding (MIIN)	- \$ 16,500
	Savings by Project Funding (GRKO)	- \$ 10,000
2	Travel	\$ 33,200
	Savings by Project Funding	- \$ 4,100
3	Fuel	\$ 500
	Savings by Project Funding	- \$ 500
4	Rent, Utilities, and Administrative Support	\$ 2,600
5	Supplies and Materials	\$ 10,000
	Savings by Project Funding	- \$ 8,000
6	Equipment and Maintenance	\$ 3,000
7	Training	\$ 0
8	Agreements	\$ 3,000
TOTAL		\$299,000

Stable base funding for the EPMT program over the past couple of years is encouraging; however, with personnel costs continuing to rise, the program crew structure will continue to require modification. Effectively serving all NPS units in five states is difficult enough without funding and crew shortages. Fortunately, several partner parks are supporting crew activities in 2016 to the tune of \$50,000. The NRM EPMT liaison will ensure that the funds are spent as intended and as efficiently as possible.

Personnel Compensation and Benefits

An estimated \$295K will be required in 2016 to fund all ten members of the NRM EPMT program. For FY2016, this supports the GS-12 program liaison, one GS-09 and two GS-07 crew leaders, and five GS-05 and one GS-04 crew members. This is only possible because \$35K is available in project funding from three partner parks. Personnel costs are significantly higher in 2016 because we are supporting the full 9-member field crew this year and there will be increased payroll costs due to COLA increases, step increases, and seasonal health care benefits.

Travel

A total of just over \$33,000 for crew travel is an estimate based on past experience and the needs of the 9 field crew members and the program liaison. These costs vary by crew member, the parks each member visits, and the accommodations available at each partner park. Costs mostly mirror those in FY2015. Additional costs are expected in FY2016 due to the loss of the Ewing/Snell Ranch House due to a fire at BICA.

Fuel

Only \$500 of local fuel purchased directly from Yellowstone NP is listed here as it is anticipated that our other program vehicle fuel needs will again be centrally billed to IMR as they were in 2015. This amount can be transferred to soft funding sources if available.

Rent, Utilities, and Administrative Expenses

The amount allotted here was to cover cell phones, administrative expenses, and license requirements. GLAC cell phone costs are approximately \$300 and we annually set aside \$1,000 for each host park, YELL and GLAC, in the event they chose to reimburse a portion of the volumes of administrative support they provide the program.

Supplies and Materials

There is always a need for supplies and materials for field and office work, especially our routine use of personal protective equipment, plastic bags, and herbicide products. The \$10,000 expense estimated was based on an examination of program needs over the past 5 years and the fact that new tires, GPS units, uniform items, and other expenses were purchased with year-end funds in FY2015.

Equipment and Maintenance

The EPMT program's utility vehicle (UTV) at GLAC needed \$700 of additional end-of-season repairs and there always seems to be cracks in vehicle windshields, the occasional flat tire, etc. It is likely that \$3,000 will be more than adequate.



Agreements

The NRM EPMT will be actively pursuing a year end agreement option with any remaining base funds free up from the use of soft funding sources or any year end funding available at the regional level. This will likely allow the program to have access to additional personnel funds in FY2017.