U.S. Department of the Interior
National Park Service
Natural Resource Program Center
Biological Resource Management Division

Northern Rocky Mountain Exotic Plant Management Team

Partner Parks: *Bear Paw Battlefield, Big Hole NB, Bighorn Canyon NRA, City of Rocks NR, Craters of Moon NM&R, 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*

NORTHERN ROCKY MOUNTAIN EXOTIC PLANT MANAGEMENT TEAM

Northern Rocky Mountain Exotic Plant Management Team

FY 2013 Report

Table of Contents

In-Kind Contributions

PROGRAM SUMMARY

The 17 partner parks served by the Northern Rocky Mountain Exotic Plant Management Team (EPMT or Team) consist of more than 4.5 million acres spread across five states (Colorado, Idaho, Montana, Utah, and Wyoming) and two NPS regions (Intermountain and Pacific West). Encompassing high desert, forests, sub-alpine meadows, sagebrush-steppe, wetland and riparian areas, as well as unique thermal features, the area is so immense and diverse that the team is separated into two crews: a three-person crew hosted by Glacier National Park (GLAC) and a 6-person crew stationed at Yellowstone National Park (YELL).

Since its inception in 2003, the NRM EPMT has assisted partner parks with protecting and improving the health of native habitats in these diverse areas. The Team's goals emphasize the systematic, long-term management and control of invasive plant species. Much of the effort is focused on controlling state listed noxious weeds, as well as providing rapid response to new invaders. The Team employs scientifically-based Integrated Pest Management, so that its actions on the ground are effective, efficient and safe for the public and the environment.

In 2013, the team surveyed (inventoried or monitored) nearly 21,000 acres and treated or retreated 285 acres of invasive non-native plants (see below). Remember that each acre surveyed counts separately for each species found, so that this number can seem inflated when multiple non-native species occupy many acres (see APCAM definitions, following individual park reports). The large number of surveyed acres also reflects the crews' ability to use UTVs to cover larger areas and the addition of several large new project locations in several parks. In the case of Yellowstone, the crew found and treated a source population of hawkweed beyond the original boundaries of the treated population. The increased number of acres surveyed and treated also reflects the addition of Dinosaur NM (DINO) and Rocky Mtn NP (ROMO) into the official NRM EPMT network.

Acres	2006	2007	2008	2009	2010	2011	2012	2013
Inventoried	14,262	9,470	7,578	4,018	4,909	5,275	6,429	4,237
Monitored	1,062	5,526	8,306	2,859	6,317	10,376	14,628	16,555
Gross Infested	5,680	7,625	9,251	4,918	8,477	12,574	17,494	17,364
Infested	597	461	616	105	121	265	189	303
Treated	518	409	584	102	146	168	142	260
Retreated	0.7	38.6	9.2	1.6	25	56	39.3	26
Total Treated	518.7	447.6	593.2	103.6	171	224	182	285

Field work of the NRM EPMT went exceptionally smoothly again this year, largely because the entire 2012 crew returned (with one exception in Glacier) and brought their fantastic skills and enthusiasm with them. Gary Ludwig and Mickey Pierce did their usual competent jobs of leading the field crews. Andy Ringholz once again offered to unofficially assume the assistant crew leader position at Yellowstone, without benefit of an increase from his GS-05 salary.

Incorporating DINO and ROMO into the work plan has been relatively easy, despite the long travel times to the Colorado parks. The crew likes having the extra pay periods and working together at the end of the season. Unfortunately, the government shutdown cut the 2013 visits to these parks short - the crew was only able to work one day at ROMO before they were called home and DINO lost the entire visit. However, both new parks still want to have the team visit at the end of the season, when the more northerly parks are finished for the year.

SPECIAL AND/OR COOPERATIVE PROJECTS

- For a third and final year, the NRM EPMT assisted Hagerman Fossil Beds National Monument staff in treating the invasive plants that erupted after a major fire in 2010. These treatments were part of the recovery from this fire, which was funded under a BAR (Burned Area Restoration) project. This allowed the team to visit this park several extra times, with travel costs and most salary covered by this fund.
- This was also the third year of the Craters of the Moon NM&P project to control dyer's woad. As with last year, the EPMT only sent three crew members to join some of the park weed crew during the May visit, while nine went for the second visit in June. Funding for this project also ended this year.
- The South crew continued work at Castle Rocks State Park, which is run in cooperation with City of Rocks NM.
- Three of the Yellowstone crew participated in the second annual GYCC spray days in August. This year, the 70 participants – all professionals from county and federal agency weed programs - worked together to treat toadflax (*Linaria spp*) and other invasive plants around Cooke City and Silver Gate, MT, at the northeast entrance to Yellowstone NP.

STAFFING SUMMARY

The NRM EPMT consists of three permanent staff (one full-time, two subject to furlough, one of which is currently vacant) and usually seven or eight seasonal members. The team is divided into two crews hosted by Glacier NP (3 crew members) and Yellowstone NP (6 crew members plus the liaison), with seasonal staff hired by the host parks. The Yellowstone crew is frequently split so that we can serve multiple parks at the same time; we call these the Yellowstone and the South crews. This year, the South crew was once again led by Andy Ringholz, who returned for the third year, acting as crew leader at the same GS-05 level he has had for three years.

We wish to welcome Mark Sturm, Jim Cheatham, Jim Bromberg and Tamara Naumann to our groups. Mark is now the IMR supervisor for the Liaison and any other permanent staff on the Team. Of course, Dan Reinhart continues to be on-site supervisor/contact for the liaison and Dawn LaFleur for the Team Leader at Glacier. Tamara Naumann is the park contact and steering committee advisor from Dinosaur NM. Jim Cheatham and Jim Bromberg are the steering committee advisor and park contact, respectively, for Rocky Mountain NP. All four bring a wealth of knowledge to the effort.

Administrative: Sue Salmons (Liaison), Gary Ludwig (Team Leader), Mickey Pierce (Seasonal Crew Leader)

Crew: Arley Cantwell, Pat Clark, Ashley Coletti, Heather Golden, Walt Householder, Alex Poirier, Andy Ringholz

By host park:
Yellowstone: Sue Salmons (Liaison), Mickey Pierce (Crew Lead), Andy Ringholz (acting Crew Lead for the South Crew), Pat Clark, Ashley Coletti, Heather Golden, Walt Householder
Glacier: Gary Ludwig (Team Leader), Arley Canfield, Alex Poirier

Park and Regional Contacts: Myron Chase (IMR IPM), Jannis LeBlanc (BEPA & BIHO), Jimmer Stevenson (BIHO), Ryan Felkins (BICA-south), Bill Pickett (BICA), Trenton Durfee (CIRO), Steven Bekedam (CRMO), Tamara Naumann (DINO), Zoe Johnston (FOBU), Dawn LaFleur (GLAC), Tammy Benson (GOSP), Jason Brengle (GRTE & JODR), Jason Smith (GRKO), Ray Vader (HAFO & MIIN), Jim Bromberg (ROMO), Brian Teets and Troy Nedved (YELL)

Steering Committee: Mark Sturm (IMR), Jason Lyon and Jannis LeBlanc (BEPA & BIHO), Cassity Bromley and Bill Pickett (BICA), Kristen Bastis (CIRO), John Apel and Steve Bekedem (CRMO), Tamara Naumann (DINO, Arvid Aase (FOBU), Dawn LaFleur (GLAC), Tammy Benson (GOSP), Jason Smith (GRKO), Kelly McCloskey and Jason Brengle (GRTE & JODR), JoAnn Blalack (HAFO& MIIN), Melana Stichman (LIBI), Jim Cheatham (ROMO), Dan Reinhart (YELL)

Cooperators: Seasonal staff from CIRO, CRMO, FOBU, GLAC, GRTE, LIBI, ROMO, and YELL.

PARK REPORTS

BIGHORN CANYON NATIONAL RECREATION AREA

Bighorn Canyon contains 55 miles of the Bighorn Lake, which formed following construction of the Yellowtail Dam, and 119,605 acres, which straddles the northern Wyoming and southern Montana borders surrounding the lake. Much of the land has been previously disturbed in part due to rangeland grazing prior to the parks' establishment. Due to this history of disturbance, a variety of weeds have invaded the park. The team focused on Russian olive, spotted knapweed, salt cedar, Canada thistle and burdock.

The GLAC team visited BICA-S September 9-16 to treat Russian olive in the Yellowtail riparian habitat. In addition, they visited the North district for two days in early June (in conjunction with a visit to LIBI) to treat various infestations around Fort Smith and along the shoreline of Bighorn Lake. The primary park contacts were Ryan Felkins and Bill Pickett.

In the South district, the team concentrated on removing Russian olive in the Yellowtail Wildlife Management area. Since 2006, Wyoming Fish and Game Department has hired private contractors to remove mature olive trees with grinders and mulchers. The EPMT's main responsibility has been to cut and stump-treat trees that are inaccessible to the contractor due to uneven or soft terrain. To date, 1500 acres have been treated by the contractors, with a projected date of 2014 to complete initial treatment of the remaining 500 acres.

The team's work in the North district focused on knapweed and thistle infestations around the Fort Smith and Afterbay areas, and the shoreline of Bighorn Lake.

Accomplishments at Bighorn Canyon National Recreation Area

Acres	2006	2007	2008	2009	2010	2011	2012	2013
Inventoried	60	453.5	528.5	104.5	58.5	-	52.5	30
Gross	50.3	408.4	734	126	94.5	-	328.6	284
Infested	6.4	14.5	24.4	2.9	5	-	14	13.5
Treated	6.4	14.5	24.4	2.9	5	-	8.5	7
Monitored	9.6	10.8	282.5	56.8	47.3	-	276.8	267
Retreated	-	-	-	-	-	-	0	0

Treated Weed Species

Spotted knapweed	*Centaurea maculosa*
Canada thistle	*Cirsium arvense*
Houndstongue	*Cynoglossum officinale*
Russian olive	*Elaeagnus angustifolia*
Saltcedar	*Tamarix ramosissima*

CITY OF ROCKS NATIONAL RESERVE

City of Rocks National Reserve (CIRO) covers 14,464 acres and is located in southern Idaho. The park protects unique geological and historic features of the region and is jointly run by NPS and the state of Idaho.

A 3-person crew made two trips to CIRO - June 18-23, August 16-19. The crew's primary contact was Trenton Durfee. They were assisted at the beginning of the first visit for two days by park staff that included two resource techs and six YCC. The team focused on spotted knapweed, Canada thistle, Bull thistle, Scotch thistle, and common mullein using manual removal and herbicide treatments, as appropriate.

The large crew for two days on the first visit made it possible to tackle a few of the bigger infestations. Combined with less dense infestations in areas that were treated in previous years, the larger crews also allowed the team to expand previously treated polygons, as well as look at new sites this year.

The EPMT continued retreating the usual thistles and knapweed species at CIRO, treated a lot more common mullein, and added houndstongue, Russian thistle and common burdock to this year's treatments. The Russian thistle that they tackled was a brand new species for the EPMT to treat at CIRO. It occurred along about a mile of roadway in an area where the county put in some culverts and did some road grading; this left exposed soil on which the Russian thistle erupted.

Areas treated in 2013 included Camp Rock, Bread Loaves, Bath Rock and Elephant Rock, as well as expanded versions of the Almo wetlands and Emery Springs. New areas included the disturbed roadway from the Almo entrance to the Circle Creek Junction with the road, areas on the Circle Creek drainage and a place called Indian Grove.

Accomplishments at City of Rocks National Reserve

Acres	2006	2007	2008	2009	2010	2011	2012	2013
Inventoried	45.3	163.6	567.8	39.5		177.5	22.0	105.4
Gross	25.2	14.4	399	24.8		786.3	415.5	633.5
Infested	8.5	12.1	8.4	4.1	24.6	8.7	5.9	9.6
Treated	4.3	12.1	8.3	4.1	22.6	0.7	4.5	8.1
Monitored	0	0	7.3	0	24.1	716.2	716.1	803.2
Retreated	0	0	0.1	0	1.5	6.3	1.4	1.5

Treated Weed Species

Common burdock	*Arctium minus*
Musk thistle	*Carduus nutans*
Spotted knapweed	*Centaurea maculosa*
Canada thistle	*Cirsium arvense*
Bull thistle	*Cirsium vulgare*
Houndstongue	*Cynoglossum officinale*
Russian thistle	*Salsola iberica*
Common mullein	*Verbascum Thapsus*

CRATERS OF THE MOON NATIONAL MONUMENT AND PRESERVE

The NPS administered area of Craters of the Moon National Monument and Preserve (CRMO) covers 467,063 acres, located in south-central Idaho. The landscape contains three major lava flows along the Great Rift Volcanic System with scattered islands of cinder cones. These flows isolate small sections of sagebrush prairie that have developed unique plant associations.

The first visit to Craters of the Moon this year was May 12 - 16 by 3 EPMT crew members with help from 2 of the CRMO resource folks who also helped on the second visit June 3rd – 9th. The second visit included all 9 EPMT crew members. After the dyers woad project was completed, additional CRMO resources folks assisted the EPMT to treat the widely scattered leafy spurge areas. The primary contact was Steven Bekedam, Vegetation Ecologist. The CRMO resource management staff was led by Gilbert Moreno.

The team worked mainly in the Wapi area, the Carey Flow and northeast of the Laidlaw Region in an area called Little Park, with a goal to eliminate dyer's woad and leafy spurge and to prevent rush skeleton weed from spreading further into these more pristine areas.

The primary focus for both trips was dyer's woad - mainly in the Wapi Area. On the second visit, once the dyer's woad project was completed, the Yellowstone crew moved to some backcountry leafy spurge around the Carey Flow and rush skeletonweed treatments in an area called Little Park.

For both the woad and the spurge, the areas in which we have placed our efforts in the past are looking pretty good and much of what is now out there lies beyond the treated areas in patches that are being newly discovered. The extent of the outlying population is still a question, but we are now able to spend more time searching as the known infestations are being reduced.

In the case of rush skeletonweed, the primary focus is to prevent its spread into pristine areas to the east. This requires a lot of surveying with very little spraying being done. This will have to be a continuous process, however, as dense populations to the west and upwind may move seed to the east.

Accomplishments at Craters of the Moon National Monument and Reserve

Acres	2006	2007	2008	2009	2010	2011	2012	2013
Inventoried	1779.3	4758.5	2476.6	1049	8237	2389	4.0	80.0
Gross	67.1	41.2	397.4	838	8371	3409	4702.3	4402.1
Infested	12.8	27.1	24.7	6.4	43.3	2.9	3.9	3.0
Treated	9.5	19.1	8.6	6.4	21.1	1.0	3.0	2.0
Monitored	0	33.5	0	0	3190	2355	5120.0	5100.0
Retreated	0	0	0	0	14.5	1.4	0.9	1.0

Treated Weed Species

Rush skeletonweed	*Chondrilla juncea*
Leafy spurge	*Euphorbia esula*
Dyer's woad	*Isatis tinctoria*

DINOSAUR NATIONAL MONUMENT

Dinosaur National Monument (DINO) straddles the Utah/Colorado border close to Wyoming. The 200,000 acre park protects fossil strata and cultural/archeological artifacts, as well as the riparian and mountain meadow habitat that surrounds them. Seven crew members from the YELL and GLAC crews converged on DINO October 9 – 14, 2012 – the fifth visit to this park that is now an official partner park within the Northern Rocky Mtn. EPMT. Primary contact is Tamara Naumann, Botanist.

One of the greatest treatment successes in our network is here in DINO, specifically the Cub Creek area. Since our initial treatment in October 2008, we have reduced the infestation density of Russian knapweed by more than 90% using a fall treatment of Milestone herbicide. Our initial efforts during that first year involved almost a full week of blanket spraying extremely large dense populations of knapweed that was introduced during ranching operations several decades ago. By 2012, the infestations were reduced to such an extent that only one day was required to treat small scattered populations throughout the entire treatment site.

Each year, the crew has taken on more sites and species. The crew also treated Canada thistle and common burdock along the banks of Jones Creek in the North West corner of the monument. Our efforts in the past few years appear to have reduced to density of both plants by approximately 50%. Other sites and target plants the crew treated during our visit were Russian knapweed and Canada thistle in the Rainbow Park area, and Russian knapweed in Echo Park in the Green River riparian zone. The crew also spent a day assisting the BLM cutting and stump spraying salt cedar and Russian olive.

In October 2013, the trip to DINO was cancelled due to the government shutdown. Everyone will be anxiously waiting to see how much resurgence the weeds make because of the year's hiatus.

Accomplishments at Dinosaur National Monument

Acres	2009	2010	2011	2012	2013
Inventoried	126.0	126.0	290.0	232.0	463.0
Gross	126.0	126.0	288.0	239.8	588.0
Infested	31.4	8.6	8.9	6.2	8.7
Treated	31.4	8.5	8.9	4.2	8.7
Monitored	0	30.0	0	16.0	126.0
Retreated	0	0.3	0	1.4	0

Treated Weed Species

Russian knapweed	*Acroptilon repens*
Common burdock	*Arctium minus*
Musk thistle	*Carduus nutans*
Spotted knapweed	*Centaurea maculosa*
Canada thistle	*Cirsium arvense*
Bull thistle	*Cirsium vulgare*
Russian olive	*Elaegnus angustifolia*
Salt Cedar	*Tamarix ramossisima*

FOSSIL BUTTE NATIONAL MONUMENT

FOBU covers 8,213 acres located in southwest Wyoming and protects extensive lake-bed fossil strata. The landscape is high desert dominated by sagebrush and perennial grasses.

Three members of the YELL crew visited this park on July 29 – Aug 5. Their primary contact was Zoe Johnston, Biological Technician at Fossil Butte National Monument (FOBU), who along with 2 volunteers provided some additional help.

The team focused mostly on herbicide applications to Canada thistle, musk thistle, bull thistle, creeping meadow foxtail and spotted knapweed, with a little bit of work on houndstongue, whitetop (though most had gone to seed by then) and black henbane.

Last year, most of the team's time was taken up with Canada thistle. The crew re-treated these areas again in 2013, but the populations were significantly reduced. Only one Canada thistle area - which was not visited last season - was of high density. This allowed more time to further extend the areas covered and treat some additional species, as well as return to some areas that hadn't been visited for several seasons.

The EPMT covered many sites this season in its single visit at FOBU. These included Millet Canyon, North Murder Canyon, Middle Canyon, Moosebones Canyons, around Cundick Ridge, an area around the Historic Cabin (east of the quarry), parts of the South drainage in the Park proper and four different spots in the vicinity of Chicken Creek and Upper Chicken Creek Rd.

Accomplishments at Fossil Butte National Monument

Acres	2006	2007	2008	2009	2010	2011	2012	2013
Inventoried	123.8	566.8	524	106.3	240.6	899	150.0	16.0
Gross	4.4	223.1	222.5	107	257.8	870	546.7	335.3
Infested	4.4	2.5	2.4	3.9	2.0	4.1	4.1	3.6
Treated	4.4	2.5	2.4	3.9	1.8	2.1	4.1	3.6
Monitored	0	0	0	60	28.4	238	633.0	899.0
Retreated	0	0	0	0	0.2	1.1	0	0

Treated Weed Species

Creeping meadow foxtail	*Alopecurus arundinaceus*
Musk thistle	*Carduus nutans*
Spotted knapweed	*Centaurea maculosa*
Canada thistle	*Cirsium arvense*
Bull thistle	*Cirsium vulgare*
Houndstongue	*Cynoglossum officinale*
Whitetop	*Cardaria draba*
Black henbane	*Hyoscyamus niger*

GLACIER NATIONAL PARK

Glacier National Park (GLAC), located in northwest Montana, covers 1,026,689 acres. The landscape is dominated by mountains, with extensive forest cover west of the continental divide and open prairies east of the divide. GLAC hosts the Montana crew; their primary contact and on-site supervisor is Dawn LaFleur, Integrated Pest Management Biologist at GLAC.

The team spent 301 worker hours at Glacier Park during the months of May through September. They focused their efforts on spotted knapweed, hawkweeds, St John's wort, oxeye daisy and thistles, mainly on the west side of the park. Travel/housing issues restricted the crew from going to the east side where the team has previously assisted park staff with high priority sites.

An unusually hot, dry spring and summer greatly limited the treatment window by drying out target plants earlier than usual. Despite these setbacks, the team was able to treat/retreat more than 31 acres. In early July, working with the park's IPM crew, the EPMT treated large infestations of leafy spurge and yellow toadflax in Big Prairie in the northwest corner of the park. The 175 acre prairie is bisected by an abandoned airstrip that was most likely the initial source of these infestations. Initial large scale treatments began in 2003 and since that time infested acreage has been reduced by 76%.

The EPMT crew then concentrated efforts on hawkweed populations in the North Fork area of the park. These infestations, scattered along 30 miles of remote roads, are beginning to spread into adjacent meadows. We will closely monitor these areas and increase our efforts there in the future as time allows.

Another challenge facing the NRM EPMT and GLAC IPM crew are the spreading infestations of oxeye daisy along the higher reaches of the Going-To-The-Sun Road. In GLAC, the daisy only seems to respond to Milestone treatments in the rosette stage when they are difficult to find. As a result, these infestations are increasing in range and density along the Sun Road. We may have to explore different treatment options in the future in order to address this issue.

Accomplishments at Glacier National Park

Acres	2006	2007	2008	2009	2010	2011	2012	2013
Inventoried	65.3	15.5	82	8	0	55.7	3.0	0
Gross	622.2	507	687	144	182	673	233.0	761.0
Infested	143.0	63	89	11	16	29.7	22.0	25.0
Treated	143	63	89	11	14	29.7	18.3	25.0
Monitored	441	495	607	136	184	630	236.0	762.0
Retreated	.7	0	1.4	0	2.4	32.7	0.1	6.3

Treated Weed Species

Spotted knapweed	*Centaurea maculosa*
Oxeye daisy	*Chrysanthemum leucanthemum*
Bull thistle	*Cirsium vulgare*
Houndstongue	*Cynoglossum officinale*
Leafy spurge	*Euphorbia esula*
Orange hawkweed	*Hieracium auranticum*
Meadow hawkweed	*Hieracium pretense*
St John's wort	*Hypericum perforatum*
Yellow toadflax	*Linaria vulgaris*
Curly dock	*Rumex crispus*

Golden Spike National Historic Site

Golden Spike (GOSP) covers 2,735 acres in northern Utah and is dedicated to preserving the site where the western and eastern branches of the railroad connected in 1869. The area is high desert that has been heavily disturbed by the railroad and nearby agriculture.

The NRM-EPMT provided two trips to GOSP, with the first one spanning two pay periods from May 14 – 24th. There were a couple rain delays during this trip. The majority of this first visit we had two team members who were joined by a third during the last few days. There were three people for the second trip August 13 - 15. Our primary contact for GOSP was Tammy Benson, Chief of Operations at the GOSP.

On the early trip the targets were primarily dyer's woad and rush skeletonweed. Rush skeletonweed is a relatively new arrival at GOSP, although it is thriving throughout the region outside the park. During the second trip the primary target was rush skeletonweed along with remnant thistle populations.

This year the park had a warm, wet spring and was much greener than last year, which caused the skeletonweed to explode but did not seem to affect the dyer's woad. Skeletonweed is very small in May and its green, almost leafless stems are hard to see in the tall grass. However, the crew still treated more rush skeletonweed than dyer's woad within the park on this trip. Seeds of both these plants continue to come in from adjacent private lands just outside the park boundary.

After treating the drastically reduced population of dyer's woad within park boundaries, the crew spent time in May getting further into heavily infested areas just outside the park, including a massive infestation at the base of the mountain just above the park. Here the crew also had help from two people from Box Elder County, who had the use of ATVs. This was the most thorough job ever done on the dyer's woad in and around GOSP.

Accomplishments at Golden Spike National Historic Site

Acres	2006	2007	2008	2009	2010	2011	2012	2013
Inventoried	101.9	591.6	534.4	24.5	1014	564	291	1360.0
Gross	22.0	9.4	6.8	7.53	639	724	608	1453.9
Infested	6.8	2.4	1	3.56	3.6	11.7	2.4	7.6
Treated	1.5	1.4	1	3.56	0.6	8.1	2.38	7.3
Monitored	0	16.7	0	40	692	791	898	852.5
Retreated	0	0	0	0	3	2.6	0.03	0.3

Treated Weed Species

Hoary cress	*Cardaria draba*
Rush skeletonweed	*Chondrilla juncea*
Field bindweed	*Convulvulus arvensis*
Dyer's woad	*Isatis tinctoria*
Scotch thistle	*Onopordum acanthium*

GRAND TETON NATIONAL PARK/JOHN D. ROCKEFELLER MEMORIAL PARKWAY

Grand Teton NP (GRTE) covers 308,654 acres, is located in the northwest corner of Wyoming, and protects majestic mountains and wildlife. The landscape varies from sagebrush dominated valleys with riparian areas to forests to hills and rocky mountainous terrain. The Yellowstone crew visited GRTE three times this season with three crew members, June 17 - 24, July 29 – Aug 5, and August 16 - 20. Our primary contact was Jason Brengle, Plant Biologist.

The team spent the majority of their time at two large sites called the R Lazy S Hayfield and Three Rivers. These sites were both abandoned agricultural fields that are gradually being restored to native vegetation. The primary target species were houndstongue and musk thistle, with smaller amounts of yellow toadflax, Canada thistle, mullein, and oxeye daisy. The R Lazy S hayfield is an area that EPMT has not visited for five years, although the park crew has done some work. This field was in some places completely inundated with a carpet of bushy houndstongue up to 3 feet tall. Three Rivers is a huge area the crew has been treating for a few seasons. As the treated infestations of thistles in the main field have been reduced, the crew has expanded the management area to cover adjacent smaller open areas, the forested sections between them and the access road.

In addition this season the crew also spent a few hours each at the dry storage area, the sewage lagoon and the residential area around the Colter bay area. We look forward to getting back here next season to monitor 2013 treatments and continue our efforts.

Accomplishments at Grand Teton National Park/John D. Rockefeller Memorial Parkway

Acres	2006	2007	2008	2009	2010	2011	2012	2013
Inventoried	1549	3466.2	695	879	330	396	1619	350.0
Gross Infested	16463	4116.3	2385	911.2	1297	2379	4118	2224.0
Infested	30.5	83.4	305	8.8	20.7	107.1	67.4	104.2
Treated/retreated*	30.5	83.5	305	8.8	62.0	107.1	67.4	104.2
Monitored	134.1	1684.2	2730	1148	461	2285	2891	2124.0

*Treated and Retreated are combined because of the huge size and complexity of some areas as well as what may have had been previously treated by park staff.

Treated Weed Species

Musk thistle	*Carduus nutans*
Spotted knapweed	*Centaurea maculosa*
Oxeye daisy	*Chrysanthemum leucanthemum*
Canada thistle	*Cirsium arvense*
Bull thistle	*Cirsium vulgare*
Houndstongue	*Cynoglossum officinale*
Yellow toadflax	*Linaria vulgaris*
Common tansy	*Tanacetum vulgare*
Common mullein	*Verbascum thapsus*
Black henbane	*Hyoscyamus niger*
Sweetclover	*Melilotus officinalis*

GRANT-KOHRS RANCH NATIONAL HISTORIC SITE

Grant-Kohrs Ranch National Historic Site (GRKO), located in west central Montana, encompasses 1,617 acres. Preserved as an historic ranch, cattle have historically grazed most of the land and are an integral aspect of this park.

The GLAC crew visited GRKO June 17-20, July 10-11, and July 29-31. In late August, the YELL team joined the GLAC team at GRKO to treat infestations in the Clark Fork Riparian zone. Their primary contact was Jason Smith, Natural Resource Management Specialist.

All weed infestations at GRKO have shown a marked decrease in density since our initial visit in 2003. An increase in total treated acres over FY 2012 is due to an increase in the density of spotted knapweed infestations in the effluent fields. Serving as sewage treatment fields for the town of Deer Lodge, these fields, totaling 125 acres are irrigated throughout the summer providing an ideal habitat for invasive weeds. In order to treat these infestations at the optimum time, we decided to divide our visits to GRKO into three shorter trips instead of two extended trips as we have in the past. This strategy allowed us to treat the effluent fields when the knapweed was in early flower making it easier to find.

The next big challenge at GRKO will be the increasing infestations of cheat grass and field bindweed. The GRKO staff, in cooperation with University of Montana staff is conducting experiments on these target species in order to find the optimum treatment.

Accomplishments at Grant-Kohrs Ranch National Historic Site

Acres	2006	2007	2008	2009	2010	2011	2012	2013
Inventoried	857	208	559	1.75	15	24	4	25.0
Gross	1029	1788	2623	803	803	950	1872	2720.0
Infested	243	195	137	21	15	10.5	37	57.0
Treated	213	170	124	21	15	10.5	37	57.0
Monitored	262	1639	2109	803	791	1031	1913	2720.0
Retreated	0	0	6.6	0	0	0	0	2.9

Target Weed Species

Hoary cress	*Cardaria draba*
Musk thistle	*Cardus nutans*
Spotted knapweed	*Centaurea maculosa*
Canada thistle	*Cirsium arvense*
Houndstongue	*Cynoglossum officinale*
Leafy spurge	*Euphorbia esula*
Babysbreath	*Gypsophila paniculata*
Field bindweed	*Convolvulus arvensis*
Perennial pepperweed	*Lepidium latifolium*
Yellow toadflax	*Linaria vulgaris*
Scotch thistle	*Onopordum acanthium*
Tall buttercup	*Ranunculus acris var frigidus*

HAGERMAN FOSSIL BEDS NATIONAL MONUMENT

Hagerman Fossil Beds National Monument (HAFO) covers 4,288 acres located in southwest Idaho. The park is known for is rich fossil deposits including the Hagerman horse. HAFO and Minidoka National Historic Site are managed jointly. The EPMT team works at both of these parks during most visits.

This year a 3-person crew worked in HAFO on May 17 – 22, July 16 – 21 and again from Sept 10 – 15, with one or so days spent at Minidoka NM during each visit. Their primary contact was Ray Vader, a HAFO & MIIN seasonal maintenance employee. These multiple visits were possible because the park had a major fire in 2010 and the travel and some salary for the crew were covered by the fire recovery funds. This was the last year these funds will be available.

Last year, the crew began the season by foliar-spraying Russian olive re-sprouts that erupted after the fire. This season, we began by girdling and spraying the remaining trees. Native willows are resprouting here since the fire, so we wanted to keep the Russian olive from returning. On the other two visits, the crew continued spraying olive re-sprouts, however, they also treated rush skeletonweed, Canada thistle and multiple other species, which together represented 88 % of our treated acres.

This season the EPMT sprayed a total of 14 different species. This was possible primarily because some of the areas that have been treated in previous years, such as the Archeology Field below the maintenance and trailer yard, contained far fewer houndstongue plants. We added more species to the list since we were already there spraying. It will be interesting to see how these less dominant species respond.

Accomplishments at Hagerman Fossil Beds National Monument

Acres	2006	2007	2008	2009	2010	2011	2012	2013
Inventoried	545.5	140.4	742.5	119.5	328	609	317.6	274.0
Gross	87.1	2.1	40.5	82.8	562	1044	297.7	584.2
Infested	50.1	1.1	8.8	6.5	5.8	23.5	13.6	11.3
Treated	23	1.1	8.4	6.5	1.9	3.7	12.0	8.8
Monitored	0	123.5	55	25	269	624	212	1083.0
Retreated	0	0	0	0	0.3	13.4	1.6	2.0

Target Weed Species

Common burdock	*Arctium minus*
Musk thistle	*Carduus nutans*
Lambsquarters	*Chenopodium glabra*
Rush skeletonweed	*Chondrilla juncea*
Canada thistle	*Cirsium arvense*
Bull thistle	*Cirsium vulgare*
Houndstongue	*Cynoglossum officinale*
Common teasel	*Dipsacus fullonum*
Russian olive	*Elaeagnus angustifolia*
Purple loosestrife	*Lythrum salicaria*
Curly dock	*Rumex crispus*
Russian thistle	*Salsola iberica*
Saltcedar	*Tamarix ramosissima*
White clover	*Trifolium repens*

LITTLE BIGHORN BATTLEFIELD NATIONAL MONUMENT

Little Bighorn Battlefield NM (LIBI) covers 761 acres, located in the southeast corner of Montana, just north of the Montana/Wyoming border, and memorializes the battle between General George Custer's US 7th Cavalry and the Sioux and Cheyenne nations under Sitting Bull.

The GLAC crew visited LIBI May22 and 23, in conjunction with a trip to Bighorn Canyon-N. Their main park contact was Chris Zeigler, Cultural Resource Management Specialist.

The team concentrated their efforts on large infestations of St. John's wort that have increased in size and density in the past two years. New infestations of hoary cress and diffuse knapweed were inventoried and treated. The success of our past treatments of Russian olive and tamarisk in the riparian zone has allowed us to redirect our attention to St. John's wort and other infestations in the park. As the density of these infestations decreases, we hope to begin focusing on other invasives such as cheatgrass and various agronomic mustards that are having a greater impact on the cultural landscape.

Accomplishments at Little Bighorn Battlefield National Monument

Acres	2006	2007	2008	2009	2010	2011	2012	2013
Inventoried	38	0	39	55	0	0	14	6.6
Gross	40	27	31	30	33	0	36	59.6
Infested	28	13	2	.5	2.2	0	0.66	0.2
Treated	15	13	2	.5	2.2	0	0.66	0.2
Monitored	15	26	0	55	89	0	22	53.3
Retreated	0	0	0	0	0	0	0	0

Target Weed Species

St. John's wort	*Hypericum perforatum*
Bush honeysuckle	*Lonicera tatrica*
Saltcedar	*Tamarix ramosissima*

MINIDOKA NATIONAL HISTORIC SITE

Minidoka National Historic Site (MIIN) covers 75 acres, located in southern Idaho, set aside to preserve the internment camp set up during World War II. The land was once farmed but now lays fallow. Due to the great disturbance, many weeds now infest the monument. The site is jointly managed with Hagerman Fossil Beds NM and the EPMT works in both sites on most visits.

The 3-person EPMT crew visited MIIN on May 20 & 21, July 19, September 13 and ½ day the 14th. Their primary contact was Ray Vader, a HAFO & MIIN seasonal maintenance employee.

This season the crew began work on the newly acquired dump site which adds another 80 heavily infested acres and many species of noxious weeds to the historic site.

Canada, musk and Scotch (cotton) thistle were treated at the new Dumpsite area, as well as rush skeletonweed, mullein and spotted knapweed. In addition, the thistles, skeletonweed, field bindweed, Russian olive and common burdock were treated in other areas, including the river corridor before the entrance station, the main housing block area and the hill north of the maintenance building. In all, more work was completed in Minidoka this season than in any year prior in EPMT's history. We hope to continue this effort to make the new dump site one of the "prettier" dumps in the country.

Accomplishments at Minidoka National Historic Site

Acres	2006	2007	2008	2009	2010	2011	2012	2013
Inventoried	12.8	14.2	478.1	60	5	68.4	7.0	175.0
Gross	3.1	8.9	46	30	15.5	13.1	17.6	466.8
Infested	0.8	3.4	0.5	0.275	0.4	0.7	2.3	5.3
Treated	0.2	3.3	0.5	0.275	0.175	0.5	2.2	4.5
Monitored	0	0.1	12.4	20	21.5	11.1	20.1	522.0
Retreated	0	0.1	0	0	0.25	0.2	0.2	0.8

Target Weed Species

Common burdock	*Arctium minus*
Musk thistle	*Carduus nutans*
Spotted knapweed	*Centaurea maculosa*
Rush skeletonweed	*Chondrilla juncea*
Canada thistle	*Cirsium arvense*
Bull thistle	*Cirsium vulgare*
Field bindweed	*Convolvulus arvensis*
Russian olive	*Elaegnus angustifolia*
Scotch thistle	*Onopordum acanthium*
Common mullein	*Verbascum thapsis*

NEZ PERCE NATIONAL HISTORIC PARK

BEAR PAW BATTLEFIELD

Bear Paw Battlefield (BEPA) commemorates the site where Chief Joseph and 800 members of the Nez Perce tribe surrendered to the U.S, Army while attempting to flee to Canada. The terrain is a mix of dry upland hills and extensive riparian habitat.

The GLAC crew visited BEPA July15-17 and focused their efforts on infestations of Canada thistle, houndstongue, alfalfa and field bindweed in and adjacent to the riparian area. The primary contact was Stephanie Martin.

The slight increase in treated acreage from 2012 reflects our increased attention on alfalfa infestations. While confined mostly to the entrance road and parking area, alfalfa has been spreading to other areas of the battlefield and will be difficult to completely eradicate due to the influx of seed from neighboring private land. The three small field bindweed infestations, while decreasing in density appear to be increasing in acreage and are not responding well to our treatments using Telar herbicide. The Glacier team has recommended to NEPE staff that a fall application of Paramount herbicide might yield better results, as it has at LIBI.

The large increase in gross infested acreage and monitored acres reflects more accurate mapping techniques.

Accomplishments at Bear Paw Battlefield

ACRES	2010	2011	2012	2013
Inventoried	32	0	12.5	0
Gross	26.3	10.5	15	38.0
Infested	2.2	0.8	1.05	1.2
Treated	2.2	0.8	1.05	1.2
Monitored	0	12	13	38.0
Retreated	0	0	0	0

Treated Weed Species

Houndstongue	*Cynoglossum officinalis*
Canada thistle	*Cirsium arvense*
Field bindweed	*Convolvulus arvensis*
Alfalfa	*Medicago sativa*

BIG HOLE NATIONAL BATTLEFIELD

The Big Hole National Battlefield (BIHO) covers 655 acres, located in the southwest corner of Montana, and is one of 38 sites in the Nez Perce National Historic Park commemorating the Nez Perce attempted escape to Canada. The land is relatively free of weeds and there is good opportunity to reduce and perhaps even eliminate the relatively small infestations identified. The team focused on spotted knapweed, Canada thistle, and common tansy.

The GLAC crew visited BIHO July 8-9, and performed a follow-up visit July 31-August 1. The primary contact was Jimmer Stevenson.

The team treated Canada thistle along the five irrigation canals that cross the battlefield. Canada thistle, the most abundant invasive in the park, has been reduced by 98% as a result of herbicide treatments that began in 2003.

Spotted knapweed represents the most tenacious invasive weed in the park due to its persistent seed bank. Despite this, infested acreage of knapweed has been decreased by 96% since 2005.

The team also treated small populations of common tansy and false hoary alyssum along the edge of the Battlefield road and parking lot. These infestations have been reduced by 95%, and with continued treatment may be completely eradicated from the Battlefield in the near future.

The large increase in gross infested and treated acres from last year reflects better mapping techniques, as well as the addition of 2 large meadows to our treatment areas. These meadows, the Howitzer field and the Horse pasture, are relatively weed-free with only small infestations of knapweed present. Despite the light density of these infestations, we concentrated our efforts there in advance of a prescribed burn, originally planned for fall of 2013.

Accomplishments at Big Hole National Battlefield

Acres	2006	2007	2008	2009	2010	2011	2012	2013
Inventoried	8.5	0	0	0	0	0	0	0
Gross	122.9	87	87	87	31	87	190	310.0
Infested	4.4	0.7	0.43	0.28	0.26	2.0	0.92	0.7
Treated	4.4	0.7	0.17	0.16	0.26	0.67	0.73	0.6
Monitored	110	87	87	87	34	87	190	310.0
Retreated	.4	0	0.26	0.12	0	0	0.19	0.03

Treated Weed Species

Hoary false madwort	*Berteroa incana*
Spotted knapweed	*Centaurea maculosa*
Canada thistle	*Cirsium arvense*
Field bindweed	*Convolvulus arvensis*
Common tansy	*Tanacetum vulgare*

ROCKY MOUNTAIN NATIONAL PARK

Rocky Mountain National Park (ROMO) comprises 265,600 acres in the heart of the Colorado Rocky Mountains west of Denver. With elevations from 7,700' to 14,000', there more than 60 peaks higher than 12,000'. Set aside as a national park in 1915, the park protects the natural and cultural heritage contained in this gorgeous and popular area. The ecosystems comprise montane pine forests and meadows, subalpine meadows and alpine tundra.

The NRM EPMT started working in ROMO in September/October 2011 (fiscal year 2012), assisting the park crews in the fall. Primary contact for the team is Jim Bromberg, Exotic Plant and Restoration Specialist, with Jim Cheatham, Biologist, sitting on the steering committee now that ROMO is an official partner park. The seven person NRM EPMT visited ROMO from October 1-5, 2012; they returned to the park in September 2013 and worked one day before being brought home because of the government shutdown.

The team started out helping with fall treatments on cheatgrass along the trails and treating leafy spurge. However, since the Onahu Fire in 2010 and the Fern Lake fire in 2012, there has been a flush of thistles in Moraine Park and elsewhere that have become a major target.

Accomplishments at Rocky Mountain National Park

Acres	2012	2013
Inventoried	181.1	1,377.8
Gross	179.4	1,426.3
Infested	27.7	29.4
Treated	27.7	20.3
Monitored	0	100.6
Retreated	0	0.5

Treated Weed Species

Musk thistle	*Carduus nutans*
Canada thistle	*Cirsium arvense*
Leafy spurge	*Euphorbia esula*

YELLOWSTONE NATIONAL PARK

Yellowstone National Park (YELL) covers 2,197,388 acres, located in northwest Wyoming, southwest Montana, and eastern Idaho. It protects diverse wildlife and geothermal features. The landscape is highly variable including sagebrush flats, forest, mountains and hydrothermal areas.

YELL hosts the NRM EPMT liaison and six crew members that include the 3-person team previously stationed at Craters of the Moon. Primary park contacts were Dan Reinhart, Resource Management Operations Coordinator and Brian Teets, North District Biological Technician; the team also worked with Troy Nedved in the Madison District, and seasonal crews in the North and Madison Districts. This year all six of the crew worked at YELL July 6 - 12, then three members of the crew returned on July 15 – 22 and August 12 – 15. The team's primary assignment has been treating the orange and yellow hawkweed complex. Once the season for treating hawkweeds was finished, the team assisted park staff with multiple species but primarily, spotted knapweed and houndstongue.

In addition to treating all the known hawkweed sites in July, the crew began to explore beyond these infestation boundaries. Several new infestations were found and treated, resulting in three times the acres sprayed for hawkweed as in any previous year - with about 2/3 of it being within a single new site.

In August, three crew members spent four days working with the park's North District Resource crew treating spotted knapweed and houndstongue in the Mammoth area. Three of the EPMT crew also worked August 7 and 8 as part of a GYCC cooperative work project. Multiple regional professional weed groups worked together in the Silver Gate and Cooke City area just outside Yellowstone. During this day and a half the EPMT crew sprayed more than an acre of infested area (around 20 gross infested acres) on a number of species – Canada thistle, oxeye daisy, yellow toadflax, common tansy, houndstongue and bladder campion. These cooperative spray days are expected to continue in future years.

Accomplishments at Yellowstone National Park

Acres	2006	2007	2008	2009	2010	2011	2012	2013
Inventoried	7963.8	447.5	268.7	1595	0	91	3700	331.0
Gross Infested	1918.6	1056	1830.6	1740	859	1627	3872	1166.0
Infested	32.4	10.6	11.82	15.5	17	26.5	15.44	17.3
Treated/retreat	30.4	10.56	11.82	15.5	17	26.5	15.44	17.3
Monitored	75.8	1049	2180.8	495	988	1737	1470	963.0
Restored	0	0	0	0	0	0	0	0

Treated Weed Species

Spotted knapweed	*Centaurea maculosa*
Oxeye daisy	*Chrysanthemum leucanthemum*
Canada thistle	*Cirsium arvense*
Bull thistle	*Cirsium vulgare*
Houndstongue	*Cynoglossum officinale*
Orange hawkweed	*Hieracium aurantiacum*
Yellow hawkweed	*Hieracium caespitosum*
Whiplash hawkweed	*Hieracium flagellare*
Yellow toadflax	*Linaria vulgaris*
Common tansy	*Tanacetum vulgare*
Bladder campion	*Silene vulgaris*

Common mullein	*Verbascum Thapsus*

APCAM 6.4 DEFINITIONS FOR *ACRES* FOR NRM EPMT

* All of these terms apply to single species measurements. When there is more than one weed species in an area, the above measurements need to be applied to each species (population) individually!

Inventoried
Any area covered during the course of weed management / control activities. An area may be considered "inventoried" regardless of the presence / absence of target weed species. Inventoried areas that contain target species also include the spaces between populations where applicable. Inventoried area is obtained by GPSing the perimeter, GPSing perimeter points or digitizing onscreen using landform or landmarks reference.

Gross Infested Area
The gross infested area is defined as the general perimeter of the infestation. Gross infested areas contain the target species and the spaces between populations or individuals. A gross infested area is described by a polygon, or a line feature (i.e. riparian course, roadway) which is buffered to account for the maximum distribution of individuals within the inventoried area.

Infested Area
Actual area occupied by weed species within the gross infested area, which does not contain the spaces between individuals and populations. The total infested area (within the *gross infested area*) may be comprised of multiple infested areas, described by polygons, buffered points, buffered lines, or be calculated as the result of a stem count in which each individual is assigned a coverage multiplier.

Treated Area
Treated area is either the infested area or subset of an infested area which has received treatment action. Treatment area is calculated using the same standards as infested area.

Monitored Area
Any area revisited for the purposes of survey or to assess treatment efficacy: gross infested, infested, or treated area. Area may be done by sweep (as in inventoried) or permanent monitoring points set in "infested" areas. Monitored areas (acreages) may reflect more than one monitoring visit / year due to the potential for multiple generations in a season, and the need to monitor for re-treatment.

Retreated Area
Actual area of re-treatment (of original treated area within the same season) is comprised of a subset of the entire original treatment area.

HERBICIDE USE REPORT

-SEE FOLLOWING PAGES-

HERBICIDE USE TABLES NRM EPMT – FISCAL YEAR 2013

Park Code	Herbicide	EPA #	Undiluted Product (lb-Dry)	Undiluted Product (gal)	Acres Treated	Weed Species Targeted
BICA	ELEMENT 4	62719-40		5.6	5.7	Russian olive *(Elaeagnus angustifolia)*
	GARLON 4	62719-40		0.007	0.01	Salt Cedar *(Tamarix ramosissima)*
	MILESTONE	62719-519		0.006	0.14	Common burdock *(Arctium minus)*
				0.003	0.08	Diffuse Knapweed (*Centaurea diffusa*)
				0.0002	0.005	Spotted knapweed *(Centaurea maculosa)*
				0.016	0.35	Canada thistle *(Cirsium arvense)*
				0.002	0.06	Bull Thistle (*Cirsium vulgaris*)
				0.007	0.15	Babysbreath *(Gypsophila paniculata)*
				0.026	0.56	Houndstongue (*Cynoglossum officinale*)
	TELAR XP	352-654	0.014		0.15	Babysbreath *(Gypsophila paniculata)*

Park Code	Herbicide	EPA #	Undiluted Product (lb-Dry)	Undiluted Product (gal)	Acres Treated	Weed Species Targeted
CIRO	ESCORT	352-439	0.01323		0.0047	Spotted knapweed *(Centaurea maculosa)*
					0.0280	Canada thistle *(Cirsium arvense)*
					0.0047	Bull Thistle (*Cirsium vulgaris*)
					0.0094	Houndstongue (*Cynoglossum officinale*)
					0.0470	Common mullein *(Verbascum thapsus)*
	MILESTONE	62719-519		0.4268	0.2210	Common burdock *(Arctium minus)*
					0.0160	Musk Thistle (*Carduus nutans*)
					0.0857	Spotted knapweed *(Centaurea maculosa)*
					2.3534	Canada thistle *(Cirsium arvense)*
					2.5227	Bull Thistle (*Cirsium vulgaris*)
					0.0094	Houndstongue (*Cynoglossum officinale*)
					3.6780	Common mullein *(Verbascum thapsus)*
	RODEO	62719-324		0.1992	0.5310	Russian thistle (*Salsola iberica*)
	TELARXP	352-654	0.0221		0.1090	Common burdock *(Arctium minus)*
					0.0160	Musk Thistle (*Carduus nutans*)
					0.0030	Spotted knapweed *(Centaurea maculosa)*
					0.0050	Canada thistle *(Cirsium arvense)*
					0.0160	Houndstongue (*Cynoglossum officinale*)
					0.0080	Common mullein *(Verbascum thapsus)*
CRMO	2,4-D AMINE	1381-103		0.4844	1.4800	Dyer's woad (*Isatis tinctoria*)
	ESCORT	352-439	0.086		1.4800	Dyer's woad (*Isatis tinctoria*)
	MILESTONE	62719-519		0.0079	0.1570	Rush skeletonweed (*Chondrilla juncea*)
	TORDON 22K	62719-6		0.1348	0.2510	Rush skeletonweed (*Chondrilla juncea*)
					0.1080	Leafy Spurge (*Euphorbia esula)*

Park Code	Herbicide	EPA #	Undiluted Product (lb-Dry)	Undiluted Product (gal)	Acres Treated	Weed Species Targeted
DINO	GARLON 4	62719-40		0.070	0.008	Russian olive (*Elaeagnus angustifolia)*
	MILESTONE	62719-519		0.4076	6.250	Russian knapweed (*Acroptilon repens*)
					0.325	Common burdock (*Arctium minus)*
					0.215	Musk Thistle (*Carduus nutans*)
					1.881	Canada thistle (*Cirsium arvense)*
					0.023	Bull Thistle (*Cirsium vulgaris*)
FOBU	MILESTONE	62719-519		0.1411	0.125	Creeping meadow foxtail (*Alopecurus arundinacia*)
					0.016	Hoary cress (*Cardaria draba*)
					0.362	Musk Thistle (*Carduus nutans*)
					0.790	Spotted knapweed (*Centaurea maculosa)*
					2.106	Canada thistle (*Cirsium arvense)*
					0.147	Bull Thistle (*Cirsium vulgaris*)
					0.067	Houndstongue (*Cynoglossum officinale*)
					0.004	Black henbane (*Hyocymus niger*)
	RODEO	62719-324		0.0313	0.125	Creeping meadow foxtail (*Alopecurus arundinacia*)
					0.045	Musk Thistle (*Carduus nutans*)
					1.368	Canada thistle (*Cirsium arvense)*
					0.098	Bull Thistle (*Cirsium vulgaris*)
	TELAR XP	352-654	0.0706		0.016	Hoary cress (*Cardaria draba*)
					0.127	Musk Thistle (*Carduus nutans*)
					0.340	Canada thistle (*Cirsium arvense)*
					0.045	Bull Thistle (*Cirsium vulgaris*)
					0.067	Houndstongue (*Cynoglossum officinale*)

Park Code	Herbicide	EPA #	Undiluted Product (lb-Dry)	Undiluted Product (gal)	Acres Treated	Weed Species Targeted
GLAC	2,4-D AMINE	1381-103		1.67	6.7	Leafy Spurge (*Euphorbia esula)*
				0.72	2.9	Yellow toadflax (*Linaria vulgaris*)
	MILESTONE	62719-519		0.57	12.20	Spotted knapweed *(Centaurea maculosa)*
				0.06	1.35	Canada thistle *(Cirsium arvense)*
				0.003	0.08	Orange hawkweed *(Hieracium aurantiacum)*
				0.045	0.96	Yellow hawkweed *(Hieracium pretense)*
				0.006	0.13	St Johns Wort *(Hypericum perforatum)*
				0.01	0.20	Curly dock *(Rumex crispus*)
				0.026	0.56	Common mullein *(Verbascum thapsus)*
	TORDON 22K	62719-6		1.67	6.70	Leafy Spurge (*Euphorbia esula)*
				0.72	2.90	Yellow toadflax (*Linaria vulgaris*)

Park Code	Herbicide	EPA #	Undiluted Product (lb-Dry)	Undiluted Product (gal)	Acres Treated	Weed Species Targeted
GOSP	CORNBELT 4LB. AMINE	11773-2		0.250	0.560	Rush skeletonweed (*Chondrilla juncea*)
					0.300	Dyer's woad (*Isatis tinctoria*)
	GARLON 4 ULTRA	62719-527			0.810	Rush skeletonweed (*Chondrilla juncea*)
					0.050	Field bindweed *(Convulvulus arvensis)*
					0.300	Dyer's woad (*Isatis tinctoria*)
	MILESTONE	62719-519		0.130	1.955	Rush skeletonweed (*Chondrilla juncea*)
					0.050	Field bindweed *(Convulvulus arvensis)*
	TELAR XP	352-654	0.131		0.074	Field bindweed *(Convulvulus arvensis)*
					0.300	Dyer's woad (*Isatis tinctoria*)
	OUTSIDE GOSP					
	CHAPARRAL	62719-597	0.4375		0.25	Rush skeletonweed (*Chondrilla juncea*)
					3.75	Dyer's woad (*Isatis tinctoria*)
	GARLON 4 ULTRA	62719-527			0.280	Rush skeletonweed (*Chondrilla juncea*)
					4.310	Dyer's woad (*Isatis tinctoria*)
	MILESTONE	62719-519		0.8771	0.295	Rush skeletonweed (*Chondrilla juncea*)
					0.009	Canada thistle *(Cirsium arvense)*
					0.006	Field bindweed *(Convulvulus arvensis)*
					0.560	Dyer's woad (*Isatis tinctoria*)
					0.262	Scotch thistle (*Onopordum acanthium*)
	TELAR XP	352-654	0.4853		0.045	Rush skeletonweed (*Chondrilla juncea*)
					0.009	Canada thistle *(Cirsium arvense)*
					0.006	Field bindweed *(Convulvulus arvensis)*
					4.340	Dyer's woad (*Isatis tinctoria*)
					0.262	Scotch thistle (*Onopordum acanthium*)

Park Code	Herbicide	EPA #	Undiluted Product (lb-Dry)	Undiluted Product (gal)	Acres Treated	Weed Species Targeted
GRKO	MILESTONE	62719-519		0.1	2.28	Hoary cress (*Cardaria draba*)
				0.38	8.2	Spotted knapweed *(Centaurea maculosa)*
				0.6	13.1	Canada thistle *(Cirsium arvense)*
				0.0004	0.01	Houndstongue (*Cynoglossum officinale*)
				0.013	0.28	Babysbreath *(Gypsophila paniculata)*
				0.07	1.53	Perennial pepperweed *(Lepidium latifolium)*
				0.016	0.36	Scotch thistle *(Onopordum acanthium)*
	PLATEAU	241-365		1.28	13.7	Leafy Spurge (*Euphorbia esula)*
				0.56	6.0	Yellow toadflax (*Linaria vulgaris*)
	ROUNDUP PRO	524-529		0.69	0.7	Cheatgrass (*Bromus tectorum*)
	TRANSLINE	62719-259		1.7	10.7	Spotted knapweed *(Centaurea maculosa)*
	TELAR XP	352-654	0.0015		0.02	Hoary alyssum (*Berteroa incana*)
			0.178		2.28	Hoary cress (*Cardaria draba*)
			1.07		13.7	Leafy Spurge (*Euphorbia esula)*
			0.02		0.28	Babysbreath *(Gypsophila paniculata)*
			0.12		1.53	Perennial pepperweed *(Lepidium latifolium)*
			0.46		6.0	Yellow toadflax (*Linaria vulgaris*)

Park Code	Herbicide	EPA #	Undiluted Product (lb-Dry)	Undiluted Product (gal)	Acres Treated	Weed Species Targeted
GRTE	ESCORT	352-439	0.375		1.520	Musk Thistle (*Carduus nutans*)
	MILESTONE	62719-519		5.487	48.861	Musk Thistle (*Carduus nutans*)
					0.092	Spotted knapweed *(Centaurea maculosa)*
					0.166	Ox-eye daisy (*Chrysanthemum leucanthemum*)
					25.641	Canada thistle *(Cirsium arvense)*
					0.0005	Bull Thistle (*Cirsium vulgaris*)
					28.460	Houndstongue (*Cynoglossum officinale*)
					0.0005	Black henbane (*Hyocymus niger*)
					0.111	Yellow toadflax (*Linaria vulgaris*)
					0.089	Sweet clover (*Melilotus officinalis*)
					0.007	Common tansy *(Tanacetum vulgare)*
					0.001	Field pennycress (*Thlaspi arvense*)
					0.704	Common mullein (*Verbascum thapsus*)
	TELAR XP	352-654	6.217		48.861	Musk Thistle (*Carduus nutans*)
					0.092	Spotted knapweed *(Centaurea maculosa)*
					0.166	Ox-eye daisy (*Chrysanthemum leucanthemum*)
					25.641	Canada thistle *(Cirsium arvense)*
					0.0005	Bull Thistle (*Cirsium vulgaris*)
					28.460	Houndstongue (*Cynoglossum officinale*)
					0.0005	Black henbane (*Hyocymus niger*)
					0.111	Yellow toadflax (*Linaria vulgaris*)
					0.089	Sweet clover (*Melilotus officinalis*)
					0.007	Common tansy *(Tanacetum vulgare)*
					0.001	Field pennycress (*Thlaspi arvense*)
					0.324	Common mullein (*Verbascum thapsus*)

Park Code	Herbicide	EPA #	Undiluted Product (lb-Dry)	Undiluted Product (gal)	Acres Treated	Weed Species Targeted
HAFO	GARLON 4	62719-40		0.6797	0.713	Canada thistle *(Cirsium arvense)*
					0.012	Bull Thistle (*Cirsium vulgaris*)
					0.036	Common teasel (*Dipsacus fullonum fullonum*)
					1.625	Russian olive *(Elaeagnus angustifolia)*
					0.024	Curly dock *(Rumex crispus*)
					0.416	White clover (T*rifolium repens*)
	GARLON 4 ULTRA	62719-527		0.375	0.050	Salt cedar (*Tamarix ramosissima*)
	HABITAT	241-426		0.7969	1.105	Russian olive *(Elaeagnus angustifolia)*
					0.020	Purple loosestrife (*Lythrum salicaria*)
	MILESTONE	62719-519		12.386	0.178	Common burdock (*Arctium minus*)
					0.007	Musk Thistle (*Carduus nutans*)
					0.100	Lambs quarters (*Chenopodium glabra*)
					3.446	Rush skeletonweed (*Chondrilla juncea*)
					2.581	Canada thistle *(Cirsium arvense)*
					0.041	Bull Thistle (*Cirsium vulgaris*)
					0.115	Houndstongue (*Cynoglossum officinale*)
					0.177	Common teasel (*Dipsacus fullonum fullonum*)
					0.024	Curly dock *(Rumex crispus*)
					0.416	White clover (T*rifolium repens*)
					0.007	Common mullein (*Verbascum thapsus*)
	TELAR XP	352-654	0.29354		0.178	Common burdock (*Arctium minus*)
					0.039	Canada thistle *(Cirsium arvense)*
					0.007	Musk Thistle (*Carduus nutans*)
					0.029	Bull Thistle (*Cirsium vulgaris*)
					0.115	Houndstongue (*Cynoglossum officinale*)
					0.141	Common teasel (*Dipsacus fullonum fullonum*)

					0.007	Common mullein (*Verbascum thapsus*)

Park Code	Herbicide	EPA #	Undiluted Product (lb-Dry)	Undiluted Product (gal)	Acres Treated	Weed Species Targeted
MIIN	MILESTONE	62719-519		0.0262	0.020	Common burdock (*Arctium minus*)
					0.0294	Rush skeletonweed (*Chondrilla juncea*)
					0.525	Canada thistle *(Cirsium arvense)*
					0.003	Bull Thistle (*Cirsium vulgaris*)
					0.0094	Field bindweed *(Convulvulus arvensis)*
					0.009	Scotch thistle (*Onopordum acanthium*)
					0.006	Common mullein (*Verbascum thapsus*)
	OUTSIDE MIIN					
	RODEO	62719-324		0.0586	0.080	Russian olive *(Elaeagnus angustifolia)*
	GARLON 4	62719-40		0.1094	0.125	Musk Thistle (*Carduus nutans*)
					0.016	Rush skeletonweed (*Chondrilla juncea*)
					0.625	Canada thistle *(Cirsium arvense)*
	MILESTONE	62719-519		0.22984	0.617	Musk Thistle (*Carduus nutans*)
					0.030	Spotted knapweed *(Centaurea maculosa)*
					0.253	Rush skeletonweed (*Chondrilla juncea*)
					2.409	Canada thistle *(Cirsium arvense)*
					1.154	Scotch thistle (*Onopordum acanthium*)
					0.116	Common mullein (*Verbascum thapsus*)

Park Code	Herbicide	EPA #	Undiluted Product (lb-Dry)	Undiluted Product (gal)	Acres Treated	Weed Species Targeted
NEPE-BEPA	MILESTONE	62719-519		0.024	0.52	Canada thistle *(Cirsium arvense)*
				0.006	0.13	Field bindweed *(Convulvulus arvensis)*
				0.024	0.50	Alfalfa (*Medicago sativa*)
	TELAR XP	352-654	0.01		0.13	Field bindweed *(Convulvulus arvensis)*
NEPE-BIHO	MILESTONE	62719-519		0.00005	0.001	Hoary allysum (*Berteroa incana*)
				0.02	0.44	Spotted knapweed *(Centaurea maculosa)*
				0.01	0.21	Canada thistle *(Cirsium arvense)*
				0.00023	0.005	Field bindweed *(Convulvulus arvensis)*
				0.00005	0.001	Common tansy *(Tanacetum vulgare)*
	TELAR XP	352-654	0.00008		0.001	Hoary allysum (*Berteroa incana*)
			0.0004		0.005	Field bindweed *(Convulvulus arvensis)*
ROMO	MILESTONE	62719-519		0.997	4.830	Plumeless thistle (*Carduus acanthoides*)
					4.558	Musk Thistle (*Carduus nutans*)
					9.991	Canada thistle *(Cirsium arvense)*
	PLATEAU	241-365		0.113	1.441	Leafy spurge (*Euphorbia esula*)

Park Code	Herbicide	EPA #	Undiluted Product (lb-Dry)	Undiluted Product (gal)	Acres Treated	Weed Species Targeted
YELL	GARLON 4 ULTRA	62719-527		0.434	0.908	Orange hawkweed (*Hieracium aurantiacum)*
					0.060	Yellow hawkweed (*Hieracium caespitosum)*
					0.090	Whiplash hawkweed (*Hieracium flagellare)*
	HI-DEP	2217-703		0.689	0.008	Ox-eye daisy (*Chrysanthemum leucanthemum*)
					0.353	Orange hawkweed (*Hieracium aurantiacum)*
					6.936	Yellow hawkweed (*Hieracium caespitosum)*
					0.090	Whiplash hawkweed (*Hieracium flagellare)*
					0.008	Yellow toadflax (*Linaria vulgaris*)
	MILESTONE	62719-519			3.780	Spotted knapweed (*Centaurea maculosa)*
					0.108	Ox-eye daisy (*Chrysanthemum leucanthemum*)
					1.050	Canada thistle (*Cirsium arvense)*
					0.240	Bull Thistle (*Cirsium vulgare*)
					2.250	Houndstongue (*Cynoglossum officinale*)
					1.261	Orange hawkweed (*Hieracium aurantiacum)*
					7.804	Yellow hawkweed (*Hieracium caespitosum)*
					0.460	Whiplash hawkweed (*Hieracium flagellare)*
					0.108	Yellow toadflax (*Linaria vulgaris*)
					0.150	Bladder campion (*Silene vulgaris*)
					0.050	Common tansy (*Tanacetum vulgare)*
					0.060	Common mullein (*Verbascum thapsus*)

FINANCIAL REPORT FY2013

The NRM EPMT received $297,700 in program funds to conduct operations for 2012, representing a 4% cut from 2012; an additional $5,000 was transferred from the newly revived Southwest EPMT. Expenditures by category are detailed in the following Table. In addition, the Team received funding from two park project accounts. Craters of the Moon NM&R provided funding that paid salary for the entire team to treat dyer's woad in June. This was the final year for this project. Fire recovery money from Hagerman Fossil Beds NM paid for travel, fuel and salary for crews for multiple visits. These visits allowed the crew to treat many of the larger flushes of weeds that germinated after the fire that swept through most of the park in 2010.

These contributions are not fully reflected in the attached Table of In-kind Contributions. This Team could not function without this kind of reported and unreported support from partner parks. Thank you.

Craters of the Moon - Dyer's Woad Project

Financial Summary - FY2013		
Total Allocation	$13,000	
Personnel		
Permanent	---	
Subject to Furlough	2,496	
Seasonal	10,553	
TOTAL	13,049	

Hagermann Fossil Beds - Fire Recovery Project

Financial Summary - FY2013		
Total Allocation	$16,785	
Personnel		
Permanent	---	
Subject to Furlough	---	
Seasonal	11,614	
TOTAL	11,614	
Travel/Training		
Permanent	---	
Subject to Furlough	---	
Seasonal	3,102	
TOTAL	3,102	
Fuel/Vehicle/Supplies		
Fuel	1,072	
Supplies	915	
Total Expenditures	$16,702	

Base Funds

Financial Summary - FY2013		
Total Allocation	$ 302,700	
Personnel		
Permanent	103,680	1 FTE (1 Position)
Subject to Furlough	35,951	1 FTE (2 Positions, 1 Vacant)
Seasonal	115,566	3 FTE (7 Positions)
TOTAL	255,197	5 FTE (10 Positions)
Administrative Overhead		
WASO/Region		
Parks	1,959	
Assessment (computers & safety)		
TOTAL	1,959	
Operations		
Rent		
Utilities	1,057	Cell Phones
TOTAL	1,057	
Travel/Training		
Permanent	79	Includes back country and
Subject to Furlough	2,840	regular travel
Seasonal	21,821	Back country = $5,583
TOTAL	24,520	Regular = $18,858
Vehicles		
Acquisition		
Maintenance	1,968	
Fuel (BOC 22)	8,193	
TOTAL	10,161	
Equipment (BOC23)		
TOTAL	0	
Information Technology		
Purchases (Laptops)		
Repair		
License (GPS/GIS)	564	
TOTAL		
Field Supplies		
TOTAL	4,721	
Herbicide		
TOTAL	4,973	
Miscellaneous		
TOTAL	0	
Total Expenditures	**303,154**	

Total Funds

Source	Allocated	Expended
BASE	**302,700**	**303,154**
CRMO	**13,000**	**13,049**
HAFO	**16,785**	**16,702**
TOTAL	**$332,485**	**$332,905**

FY2013 In-Kind Contributions																
Park Code		YELL	GLAC	BICA	CRMO	CIRO	DINO	FOBU	GOSP	GRKO	GRTE & JODR	HAFO & MIIN	NEPE-BEPA	NEPE-BIHO	LIBI	ROMO	Totals
Personnel	Crew Leader															323	323
	Park Staff	15,200	5,000	335	6,200	2,274	1,423	600	505	1,981	3,200	1,250	250	100	451	9235	48,004
	VIP							600	220								820
	IDPR –state staff																0
Operations Equipment	Computers Office Setup	720	1,000														1,720
	Office Supplies	500	500														1,000
	Shop Space Materials		1,000														1,000
	Equipment										250	70					320
	Vehicle Fuel										100	97					197
Maintenance	Equipment																0
	Building	1,800						20				50					1,870
Herbicides					100	160	130			1000	1,200						2,590
Travel	Travel																0
	Training		1,000														1,000
	Housing		500	500	300		603		850		854			250		477	4,334
	Office Space	4,700	1,000														5,700
	Computer Assistance	3,000	1,000														4,000
	GIS Assistance		1,000														1,000
TOTALS		25,920	12,000	835	6,600	2,434	2,156	1,220	1,575	2,981	5,604	1,467	250	350	451	10,035	Grand Total $ 73,878