

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



EXOTIC PLANT MANAGEMENT TEAM Annual Report – FY 2002



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INTRODUCTION

The national parks are home to complex communities of native plants and animals that have developed over millions of years. The delicate natural balance within these communities is threatened by the invasion of exotic plants. These exotic plants are able to reproduce rapidly because the animals and diseases that keep them in check in their home ranges are missing. For example, melaleuca trees from Australia threaten to replace the wet prairies of the Everglades. Leafy spurge, an import from Eurasia, easily replaces the grasslands of the Northern Great Plains. When the populations of native plants are reduced, the animals that depend upon them lack the food and shelter needed for survival.

Today, exotic plants infest approximately 2.6 million acres in the national park system, reducing the natural diversity of these places. Drawing funds from the Natural Resource Challenge, the National Park Service Biological Resource Management Division (BRMD) is establishing rapid response Exotic Plant Management Teams (EPMT) to control exotic plants. Modeled after the approach used in wildland fire fighting, EPMTs provide highly trained, mobile strike forces of plant management specialists who assist parks in the control of exotic plants.

In fiscal year (FY) 2002, five new tactical EPMTs joined the four existing EPMTs. These nine EPMTs have been lauded for their work in controlling nuisance exotic plants. These field- or park- based teams are as follows: (1) Florida Partnership EPMT (based at Everglades NP, Florida), (2) National Capital Region EPMT (based at Rock Creek Park, Washington, DC), (3) Chihuahuan Desert/ Southern Shortgrass Prairie EPMT (based at Carlsbad Caverns NP, New Mexico), (4) Pacific Islands EPMT (based at Haleakala NP, Hawaii), (5) Lake Mead EPMT (based at Lake Mead National Recreation Area, Arizona and Nevada), (6) Northern Great Plains EPMT (based at Theodore Roosevelt National Park, North Dakota), (7) California EPMT (based at Point Reyes National Seashore, California), (8) Gulf Coast EPMT (based at Big Thicket National Park, Texas) and (9) Columbia Cascades EPMT (based at North Cascades and Olympic National Parks, Washington).

Each EPMT serves multiple parks within a broad geographic area. They work through steering committees to identify, develop, conduct, and evaluate

exotic species removal projects and undertake appropriate native species restoration efforts. Each of

the nine established teams has developed site- specific strategies for combating exotic plants that reflect the needs and resources of the more than 95 parks they serve.

The success of the EPMT derives from its ability to adapt to local conditions and needs. Each team employs the expertise of local experts and the capabilities of local agencies. Each sets its own work priorities based on the following factors: severity of threat to high- quality natural areas and rare species; extent of targeted infestation; probability of successful control and potential for restoration; opportunities for public involvement; and park commitment to follow-up monitoring and treatment.

As a result of demonstrated success by the nine current EPMTs, seven new EPMTs are proposed for FY2003. These new teams include: Colorado Plateau EPMT, Northern Rocky Mountain EPMT, Great Lakes Network EPMT, Mid Atlantic Network EPMT, Northeast Regional EPMT, Alaska EPMT, and Appalachian Highlands and Cumberland/Piedmont EPMT. (See Appendix A for a Map of Current and Future EPMT Locations.) These new teams were selected from 14 very competitive proposals. Criteria for proposal review included significance of resources at risk, severity of threat to resources, readiness, program design, and cost- effectiveness. The seven new EPMTs are in the process of recruiting staff and will be ready to begin controlling exotic plants in FY2003. With these new teams, almost 50% of all parklands will be served by an EPMT.

EPMTs are part of the long- term control of invasive plants set by the Natural Resource Challenge. Actions by EPMTs also address GPRA goal IA1B “Containing exotic plant disturbances.” They also satisfy agencies needs to implement Executive Order 13112 on Invasive Species, which includes the Invasive Species Council National Management Plan.

EPMT Program Accomplishments

ACCOMPLISHMENTS

• Gross Infested Area Treated (acres)	68,751
• Acres retreated	330
• Acres inventoried	29,304
• Acres monitored	34,865
• Acres restored	8
• Lost-time injuries	0

The Exotic Plant Management Teams marked their third full year of operation in 2002 with a substantial list of accomplishments. They identified, treated, inventoried, or monitored more than 100 high-priority exotic plant species on 130,083 acres with no lost time to injuries. Strategic monitoring and targeted treatment have helped the National Park Service meet its Government Performance and Results Act goal 1A1B for containing exotic species for FY 2002.

In FY 2002, EPMTs continued building the technical capacity needed to assist parks and other governmental and private partners meet a growing demand for information on and technical resources for managing exotic plants in natural areas. This technical capacity includes use of a Web-based data system that tracks the progress of each project site and a corresponding Geographic Information System (GIS) map. This database, fielded in FY2002, illustrates the active link between monitoring and management. (See Appendix B) for an overview of this database along with selected screen shots.) In addition, an EPMT website (<http://www.nature.nps.gov/epmt>) is regularly updated to facilitate information transfer to the public and land management agencies, and to publicize EPMT activities and accomplishments.

Work on the FY 2003 edition of the EPMT Operations Handbook was begun this fiscal year. The Handbook, originally completed in FY2001, is a full-service guidance manual that provides information on all aspects of EPMT operations for current and new EPMTs. The current edition of the Handbook is provided to agencies outside of NPS who are seeking information on how to create and use EPMTs.

Several members of the EPMT staff participated in the NPS Invasive Plant Species Inventory and Monitoring Workshop held in Fort Collins, Colorado in June of 2002. The objective of the workshop was to develop standard guidelines for inventory, monitoring, and mapping of invasive plant species in parks.

In response to the September 11th terrorist attacks, the State of Hawaii established the Emergency Environmental Workforce to provide employment to displaced workers in the tourism industry. The 17 workers provided by the Workforce contributed 5,380 hours to the Pacific Islands EPMT. The primary target for their effort was Miconia, an aggressive tree from Central America that is poised to overrun the pristine rainforest of the Kipahulu Valley Biological Reserve in Haleakala National Park.

The EPMT concept is validated by the enthusiastic support of its partners. For example, every dollar spent on weed control by the Florida Partnership EPMT is matched by the State of Florida. The University of Florida, University of Virgin Islands and US Department of Agriculture have all partnered with the Florida Partnership EPMT to study the ecological and economic impacts of exotic plants in the Virgin Islands. Finally, partnerships with three federal agencies, Nevada State Parks, and Clark County, Nevada allowed the Lake Mead EPMT to double its crew to 15 persons, enabling them to greatly increase the number of acres treated.

EPMTs are working successfully toward meeting the Natural Resource Challenge objectives of controlling damaging exotic plant species and preserving this country's natural heritage, now and for future generations.

EPMT PROGRAM HIGHLIGHTS

- EPMTs treated over 68,000 acres and inventoried over 29,000 acres
- Loggerhead Key in Dry Tortugas NP is now free of exotic species
- At Devil's Postpile NM early detection and action was taken to stop a potentially serious invasion of woolly mullein, with discovery and removal of 59 plants
- The Chihuahuan Desert/Southern Shortgrass Prairie Team increased its treatment of tamarisk 3-fold over the previous year, treating over 340 acres of this difficult species
- The EPMTs had some extra benefits - the Florida Partnership EPMT discovered a new cultural site and artifacts in the course of its work, and the Pacific Island EPMT hosted additional workers left unemployed by the tourism slowdown following the September 11 terrorist attacks

CALIFORNIA EPMT

Partner parks (all located in the state of California): Cabrillo NM, Channel Islands NP, Devils Postpile NM, Golden Gate NRA, John Muir NHS, Lassen Volcanic NP, Point Reyes NS, Redwood NP, Santa Monica Mountains NRA, Sequoia and Kings Canyon NP, Whiskeytown-Shasta-Trinity NRA, Yosemite NP

ACCOMPLISHMENTS

• Gross Infested Area Treated (acres)	756
• Acres Retreated	0
• Acres Inventoried	0
• Acres Monitored	0
• Acres Restored	0
• Lost-time Injuries	0

This was the California Exotic Plant Management Team's first season. As such, many of this fiscal year's activities were logistical in nature. The 12 California partner parks began by developing an annual work plan in October 2001. The Team Liaison was hired in January - began work in February - and hired the majority of the team by the end of April. Fieldwork began immediately with 12 back-to-back park assignments over the course of five months.

The overall strategy of the California Team is to focus on outlying invasive populations, rather than densely populated, more established infestations. The objective of this approach is to halt the spread of exotic plants in relatively rare or pristine areas, thereby preventing large-scale invasions before they become unmanageable. As anticipated with this proactive initial attack approach, site access was arduous and the scope of the outlying infestations was relatively small in size or finely dispersed across the landscape.

Over the course of five months, the team removed approximately two million feet of exotic species and surveyed a total of 963 acres. Of the 25 species that were removed, woolly mullein, foxglove and bull thistle were some of the more prolific. This season alone team members removed 37,949 woolly mulleins, 32,904 foxgloves and 26,660 of bull thistles were extracted from the landscape. Extensive field surveys revealed previously unknown populations of these species. For example, woolly mullein, previously



Eucalyptus cut- stump treatment at Cabrillo NM

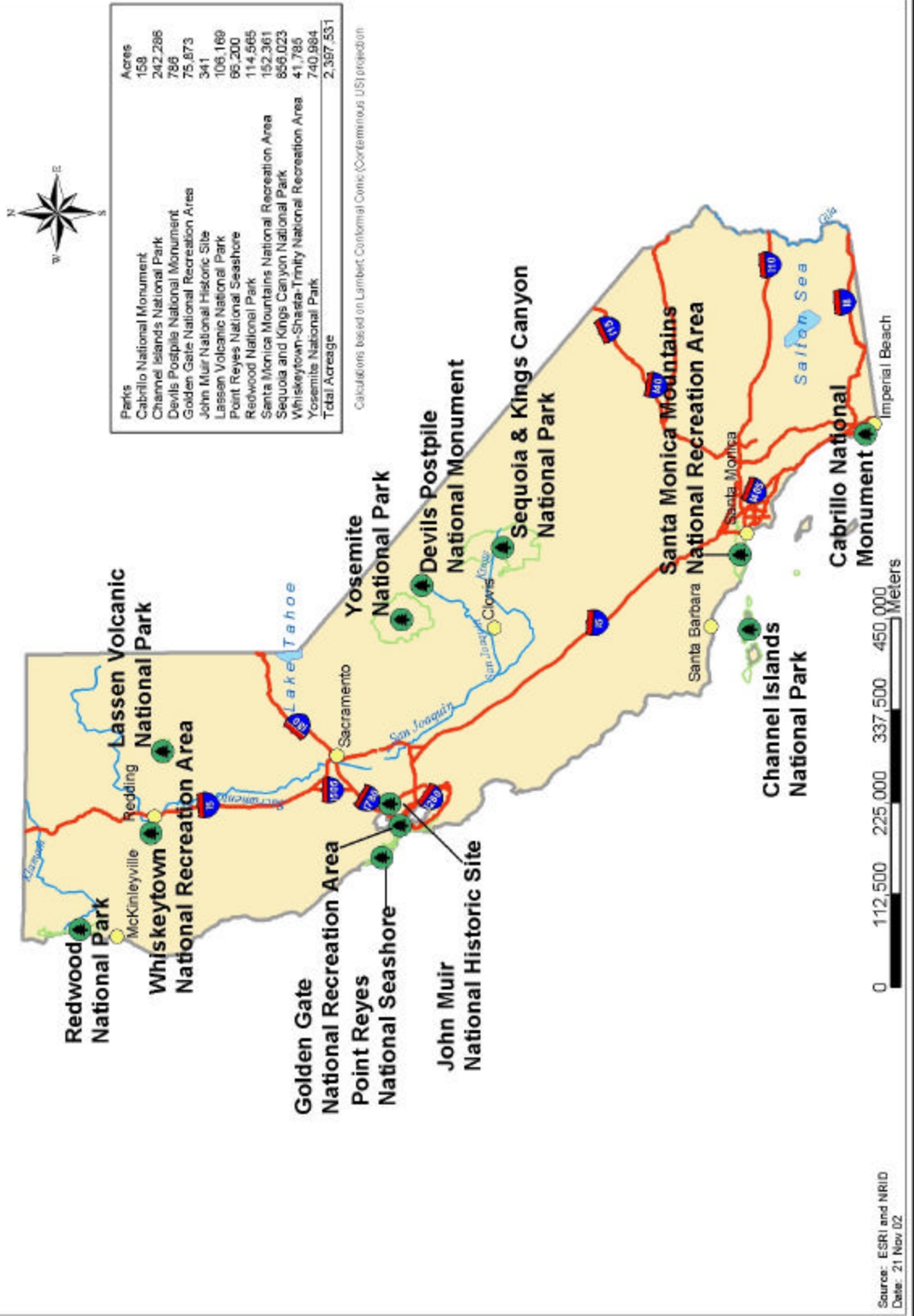
unknown to occur in the relatively pristine Devil's Postpile National Monument, was documented and the potentially explosive seed population of 59 plants was completely removed.

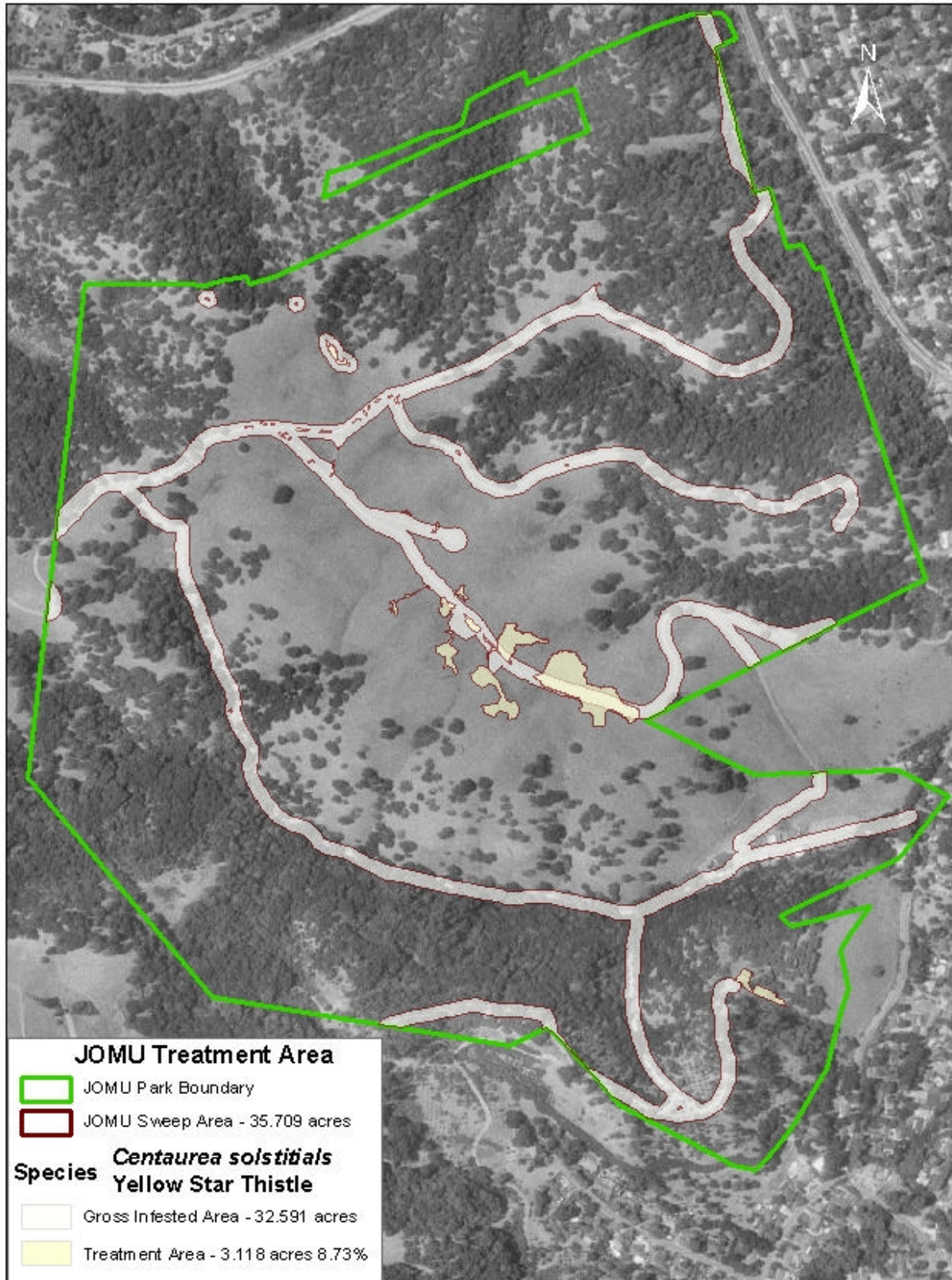
The California EPMT was generously supported by donations of services and/or funds by host park Point Reyes National Seashore, partner parks, volunteers and the NPS Pacific West Region. When dollars actually spent were combined with the converted monetary value of services, the annual support amounted to over \$100,000—or approximately 25% of the overall program cost. Thanks in a large part to this support, a solid base of equipment, staging facilities and administrative infrastructure is in place for a successful FY2003 season.

- Targeted Weed Species**
- thoroughwort
 - cheat grass
 - purple starthistle
 - yellow starthistle
 - bull thistle
 - pampas grass
 - artichoke thistle
 - Scotch broom
 - cape ivy
 - foxglove
 - woolly mullein

**California Exotic Plant Management Team
Host and Partner Parks**

National Park Service
U.S. Department of the Interior



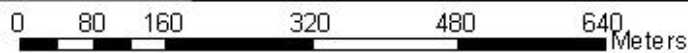


JOMU Treatment Area

- JOMU Park Boundary
- JOMU Sweep Area - 35.709 acres

Species *Centaurea solstitialis*
Yellow Star Thistle

- Gross Infested Area - 32.591 acres
- Treatment Area - 3.118 acres 8.73%



Source: USGS DOQQ Bitter Lake Valley NE, CAGIS -GeoExplorer3
Date: 14 Nov 02

Scale 1:8,000

CHIHUAHUAN DESERT/SOUTHERN SHORTGRASS PRAIRIE EPMT

Partner parks and states: Bent's Old Fort NHS, CO; White Sands NM, NM; Carlsbad Caverns NP, NM; Washita Battlefield NHS, OK; Big Bend NP, TX; Amistad NRA, TX; Alibates Flint Quarries NM; Capulin Volcano NM, NM; Fort Davis NHS, TX; Lake Meredith NRA, TX; and Guadalupe Mountains NP, TX, NM

ACCOMPLISHMENTS

• Gross Infested Area Treated (acres)	407
• Acres Retreated	16
• Acres Inventoried	357
• Acres Monitored	107
• Acres Restored	4
• Lost-time Injuries	0

The Chihuahuan Desert/Southern Shortgrass Prairie Exotic Plant Management Team serves 11 partner parks spread across 400 miles of the desert southwest. To illustrate the significance of this team's impact, it is important to understand that an acre of exotic Saltcedar in the southwest uses four acre-feet of water every year (approximately 1,300,000 gallons of water). Therefore, its removal contributes to restoring native systems and saving valuable water resources. The tree-sized weeds must be chain-sawed stem-by-stem, which is slow arduous work. Nevertheless, the Chihuahuan Desert/Southern Shortgrass Prairie Team enthusiastically treated over 407 acres—a three-fold increase over FY2001.



Treating saltcedar at Carlsbad Caverns NP

In order to improve productivity, this EPMT and Lake Meredith NRA, conducted a wetblade demonstration project on several acres of smaller diameter Saltcedar on May 23- 24, 2002. The wetblade is a tractor-mounted mower that applies herbicide as it cuts.

Outreach and partnership actions continue to enhance the accomplishment record of this EPMT. Volunteers and interagency partners contributed 215 hours to weed control efforts in partner parks served by this EPMT. The New Mexico State Highway Department, the Bureau of Land Management (BLM), the Natural Resources Conservation Service (NRCS), the Chihuahuan Desert/Southern Shortgrass Prairie Exotic Plant.

Management Team and the NPS White Sands National Monument have joined forces to conduct treatments on Saltcedar, African rue, Russian knapweed and Malta star thistle in southwestern New Mexico. In southeastern New Mexico, this EPMT, the BLM, and the Lea County Soil and Water Conservation District conducted weed awareness training for Lea County residents. The New Mexico State Highway Department has been another partner working to control exotic plants along 25 acres of highway right-of-ways, which provide access to Carlsbad Caverns NP and Guadalupe Mountains NP. In an effort to expand international cooperation and training in invasive weed management on the southern border, work was done with the NPS Spanish Colonial Research Center to produce a one-page National EPMT informational handout translated in Spanish. This EPMT has been invited to Mexico to conduct training on treatment of Saltcedar invading natural areas in that country.

Targeted Weed Species

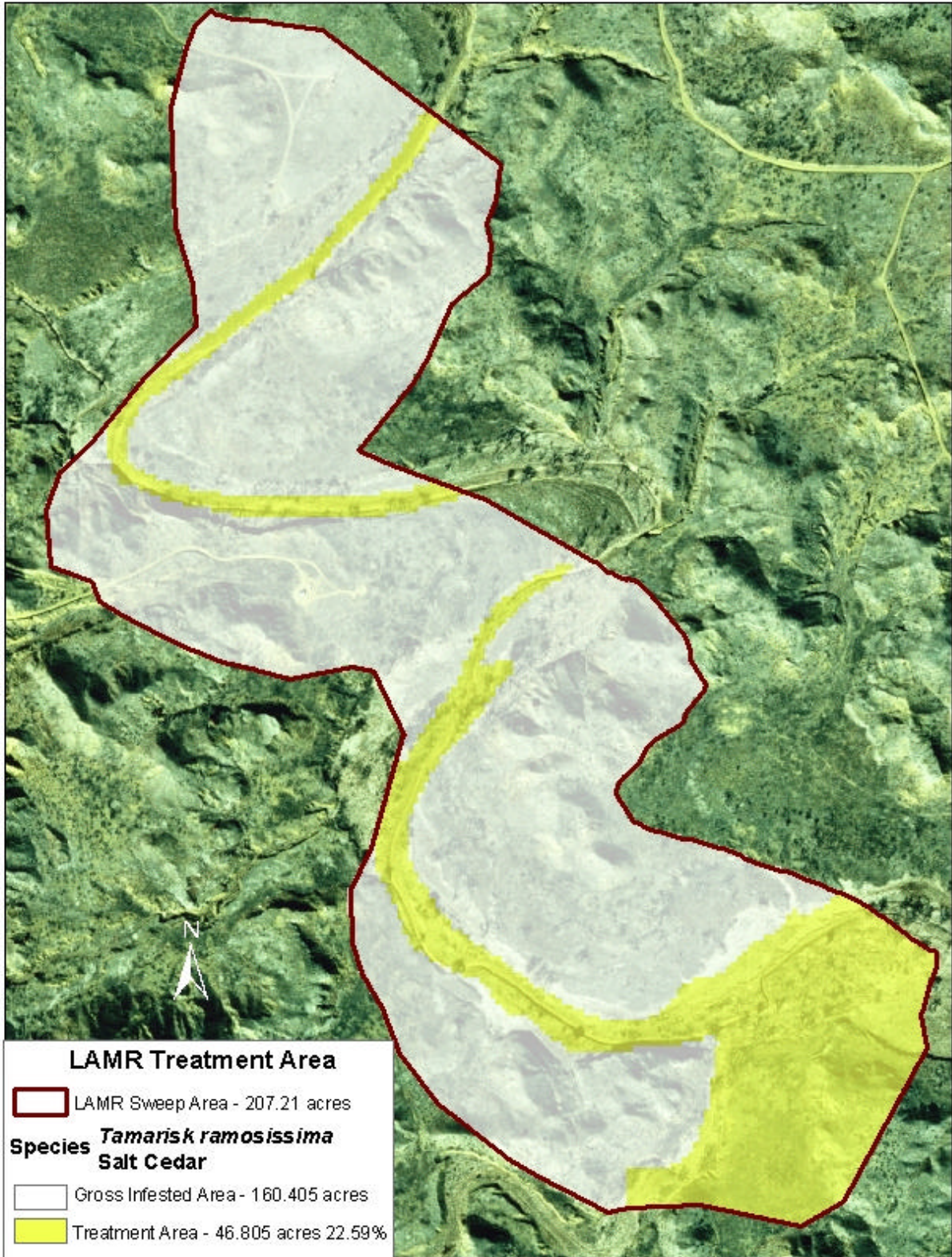
- Saltcedar
- Russian olive
- Malta starthistle
- horehound
- yellow sweetclover
- Russian knapweed
- Canada thistle
- Scotch thistle
- African rue



Calculations based on Lambert Conformal Conic (Continous US) projection

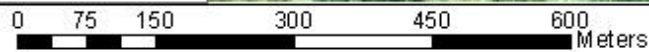
Source: ESRI and NRIID
Date: 22 Nov 02

0 170,000 340,000 510,000
Meters



LAMR Treatment Area

- LAMR Sweep Area - 207.21 acres
- Species** *Tamarisk ramosissima*
Salt Cedar
- Gross Infested Area - 160.405 acres
- Treatment Area - 46.805 acres 22.59%



Source : USGS DOQQ, Albers, Raster, SWR GIS - GeoExplorer 3
Date: 8 Nov 02

Scale - 1:8,100

COLUMBIA CASCADES EPMT

Partner parks and states: Ebey's Landing NH Reserve, WA; Fort Clatsop NMem, OR; Fort Vancouver NHS, WA; Mount Rainier NP, WA; North Cascades NP, WA; Ross Lake NRA, WA; Lake Chelan NRA, WA; Olympic NP, WA; San Juan Island NHP, WA

ACCOMPLISHMENTS

- Gross Infested Area Treated (acres) 1,842
- Acres retreated 115
- Acres inventoried 1,842
- Acres monitored 428
- Acres restored 0
- Lost-time injuries 0

The Columbia Cascades EPMT services nine National Park units in the Pacific Northwest covering over 1.86 million acres. This nine- person team is charged with assisting its partners in the successful management of a number of exotic, invasive plant species that are having a variety of negative impacts. For example, there has been a reduction in spawning habitat for threatened or endangered salmon because of changing riparian dynamics. In addition, there has been a reduction in the biodiversity of native riparian flora because of the formation of dense monocultures of Japanese knotweed at North Cascades and Olympic National Parks.

Control efforts have focused on the hand/mechanical removal of rapidly expanding populations, especially along corridors entering wilderness areas (trails, park roads). Herbicide has been applied judiciously on a few, difficult- to- control species. First year chemical treatments of established satellite populations of Japanese knotweed in North Cascades and Olympic National Parks appear to have been highly successful. These treatments are being conducted using a methodology that has proven in multiple situations to be highly effective, and is being used to control the species in cooperative management units where property holdings include state, federal, private landowners, and non- governmental conservation agencies. At San Juan Island National Historic Park, planning is underway with the University of Washington to introduce biological control to supplement chemical control of Canada thistle in sensitive dune communities. Partnership efforts supported numerous costly projects. Partners included: Skagit, Whatcom, Okanogan, and Clark counties; the Washington Department of Ecology; the Washington Department of Agriculture; the Washington Department of Transportation;

Washington State Parks; private landowners; the Nature Conservancy; Seattle City Light and the Lower Elwha Tribe.



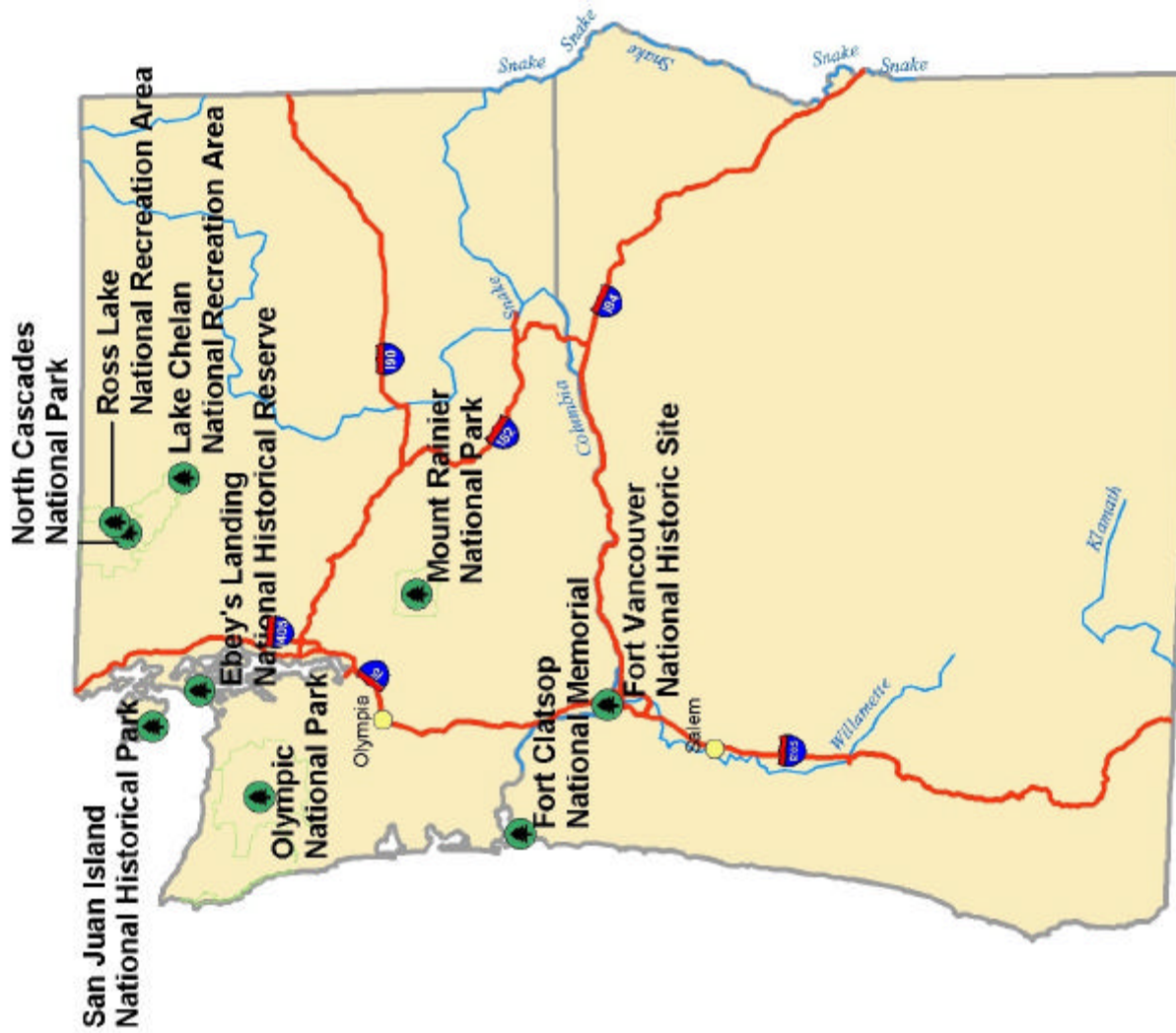
Mechanical removal of Canada thistle at South Beach - San Juan Island

First year control efforts have greatly assisted in furthering the development of long-term exotic species management strategies for all partner parks. Second year efforts will include an increase in partnering efforts, expanded services to all partner parks, and the solicitation of additional methods to increase treatment efficacy and cost- effectiveness across the network.

- Targeted Weed Species**
- Japanese knotweed
 - Canada thistle
 - English ivy
 - orange hawkweed
 - poison hemlock
 - herb Robert
 - English holly
 - reed canary grass

Columbia Cascades Exotic Plant Management Team Host and Partner Parks

National Park Service
U.S. Department of the Interior

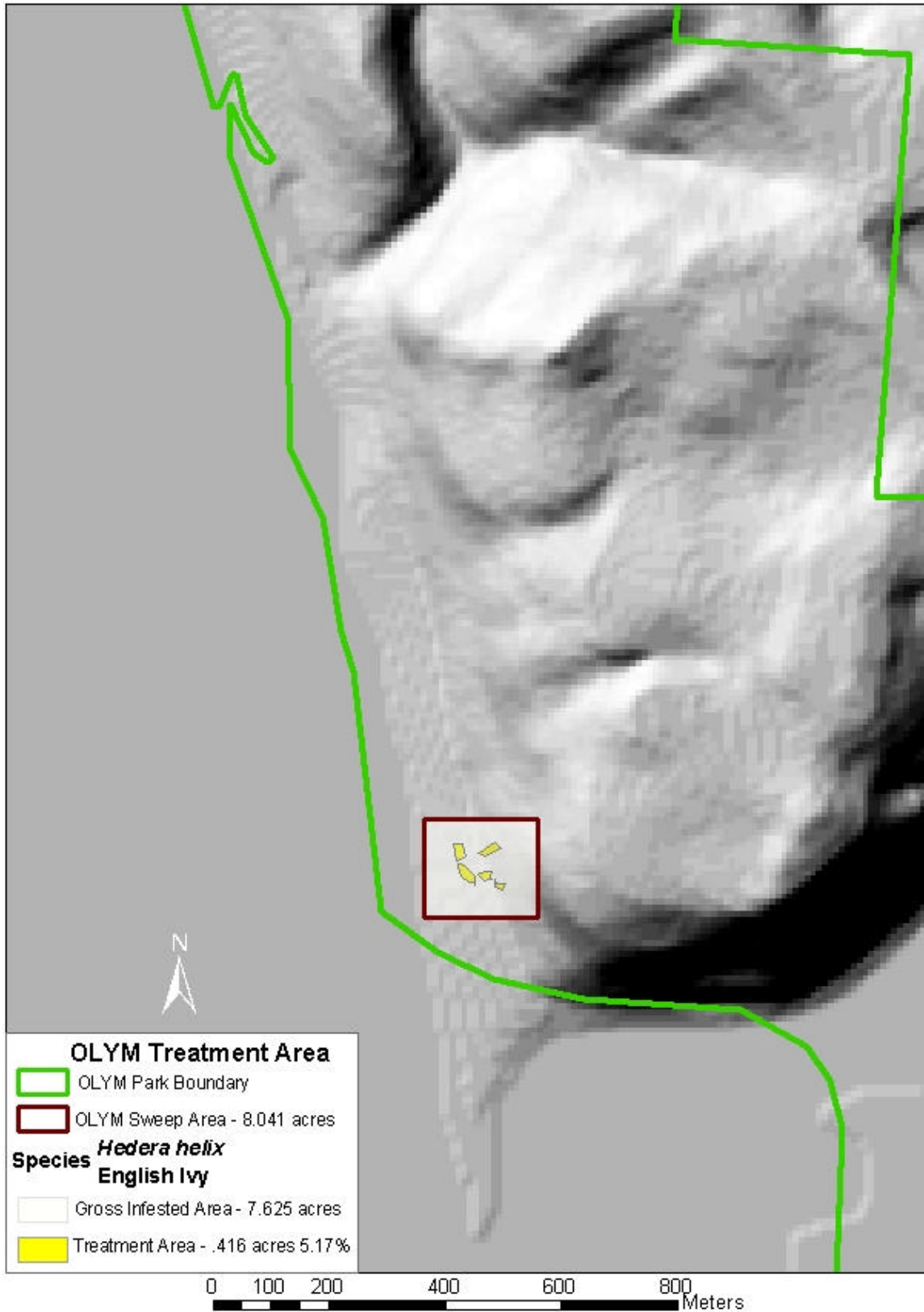


Parks	Acres
Ebey's Landing National Historical Reserve	18,140
Fort Clatsop National Memorial	133
Fort Vancouver National Historic Site	220
Mount Rainier National Park	237,172
North Cascades National Park Complex	64,155
Lake Chelan National Recreation Area	510,554
Ross Lake National Park	119,178
Olympic National Park	926,379
San Juan Island National Historical Park	1,754
Total Acreage	1,622,020



Source: ESRI and NRIID
Date: 19 Nov 02

Calculations based on Lambert Conformal Conic (Contiguous US) projection



Source : USGS DEM La P 431 , COCAG IS - GeoExplorer 3
Date : 19 Nov 02

Scale - 1:10,000

FLORIDA PARTNERSHIP EPMT

Partner parks and states: Big Cypress NP, FL; Biscayne NP, FL; Everglades NP, FL; Canaveral NS, FL; Castillo de San Marcos NM, FL; DeSoto NMem, FL; Dry Tortugas NP, FL; Fort Caroline NMem, FL; Fort Matanzas NM, FL; Gulf Islands NS, FL; and Timucuan Eco & HPres, FL

ACCOMPLISHMENTS

- Gross Infested Area Treated (acres) 9,560
- Acres Retreated 0
- Acres Inventoried 7,586
- Acres Monitored 0
- Acres Restored 0
- Lost-time Injuries 0

The Florida Partnership EPMT (FLEPMT) is not an EMPT in the “traditional” sense. There are no NPS control crews traveling from park to park. Instead, the FLEPMT is a partnership with the successful State of Florida Department of Environmental Protection (DEP) Upland Invasive Plant Management Program. This program was established in 1997 in an effort to curb the spread of exotic pest plants on public conservation lands. Through this program, the state partners worked with over 400 public land managers to control exotic plants. Exotic plant control projects are selected through regional working groups with on-the-ground control provided by private contractors through service contracts using established fee schedules.

In 2000, DEP and the NPS entered into a partnership to establish the FLEPMT. Under this partnership the NPS selects and submits projects to DEP. The control costs for the projects are divided and control is accomplished using DEP contractors.

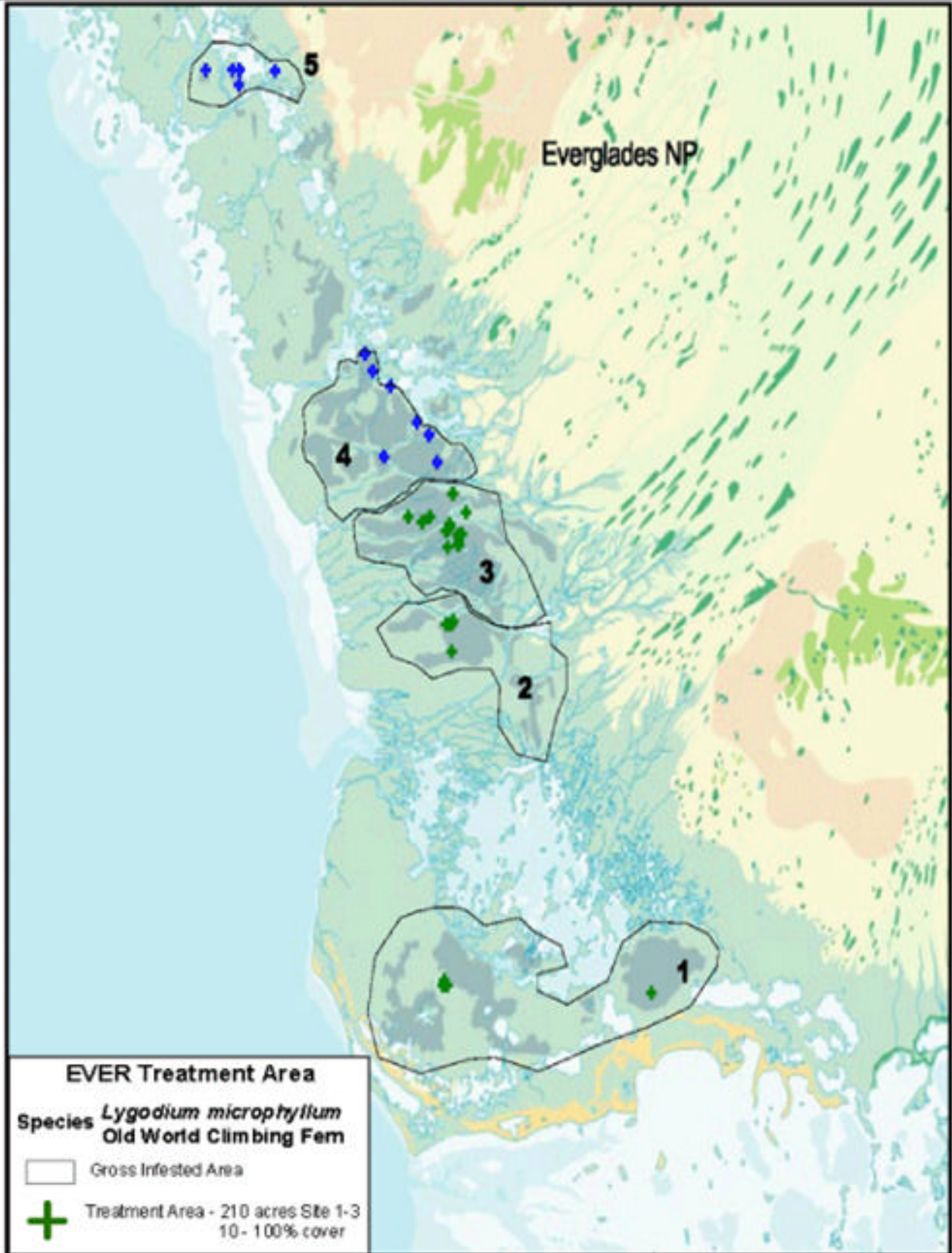
In FY2002 the FLEPMT partnership provided for the treatment of 1,973 acres of exotic pest plants on six NPS units (Big Cypress NP, Biscayne NP, Canaveral NS, Everglades NP, Fort Matanzas NM, and Gulf Islands NS).

This EPMT program is on the ground day-in and day-out throughout the year. The exotic plant controllers cover park areas that have not been walked on for years. This year, park staff found a new cultural site with artifacts from one of Miami’s pioneer families “Parson” Jones on Porgy Key while searching the island to remove exotic plants.



Treating seaside mahoe at Everglades NP

- Targeted Weed Species**
- melaleuca
 - Brazilian pepper tree
 - Australian pine
 - Asiatic colubrina
 - Chinese tallow
 - Cogon grass
 - Old World climbing fern
 - Eurasian watermilfoil
 - water hyacinth
 - Brazilian pepper



Source: FL GIS

Date: 18 Nov 02

GULF COAST EPMT

Partner parks and states: Jean Lafitte NHP and Pres, LA; Gulf Islands NS, MS; Natchez Trace Pky, MS; Vicksburg NMP, MS; San Antonio Missions NHP, TX; Big Thicket Npres; TX

ACCOMPLISHMENTS

- | | |
|---------------------------------------|-------|
| • Gross Infested Area Treated (acres) | 1,195 |
| • Acres retreated | 40 |
| • Acres inventoried | 776 |
| • Acres monitored | 0 |
| • Acres restored | 0 |
| • Lost- time injuries | 0 |

Exotic plant management is a critical problem along the Gulf Coast due to a sub-tropical climate, a long growing season and the exceptional botanical richness of the region. The parks that make up the Gulf Coast EPMT are important refugia for a wide variety of wildlife species. Few of the invasive plant species threatening the parks provide food for wildlife. The Gulf Coast parks provide critical stopover and nesting habitats for neotropical migrants. Invasive exotics degrade the habitat for this group of rare and declining fauna.

The Gulf Coast EPMT worked through a series of cooperative contracts in FY2002 at strategic locations to control exotic species and preserve habitat for native species. An example of the type of work conducted is the control of exotic Chinaberry and glossy privet at San Antonio Missions NHP. The park hired a seasonal employee and contracted for the months of July - September 2002. The seasonal staff and tree contractor

successfully cleared (80%) of both Chinaberry and glossy privet from all targeted areas of the park. Where exotics represented 50- 100% cover, approximately half was removed. This was to ensure that too much vegetation would not be removed at one time (vegetation that might be used by wildlife including migratory birds). In other areas, attempts were made to remove as close to 100% of the target species as possible. In most cases, Chinaberry and glossy privet trees were cut down, chipped and removed from the project area. To prevent plants from regenerating after mechanical control, there was a limited use of herbicides. Cut stump, hack and squirt, foliar and basal applications were used throughout the park.

Looking toward the future of NPS invasive control needs, the Gulf Coast EPMT Team Liaison met with NASA scientists, managers and researchers to discuss a cooperative partnership to enhance invasive plant GIS and monitoring capabilities.

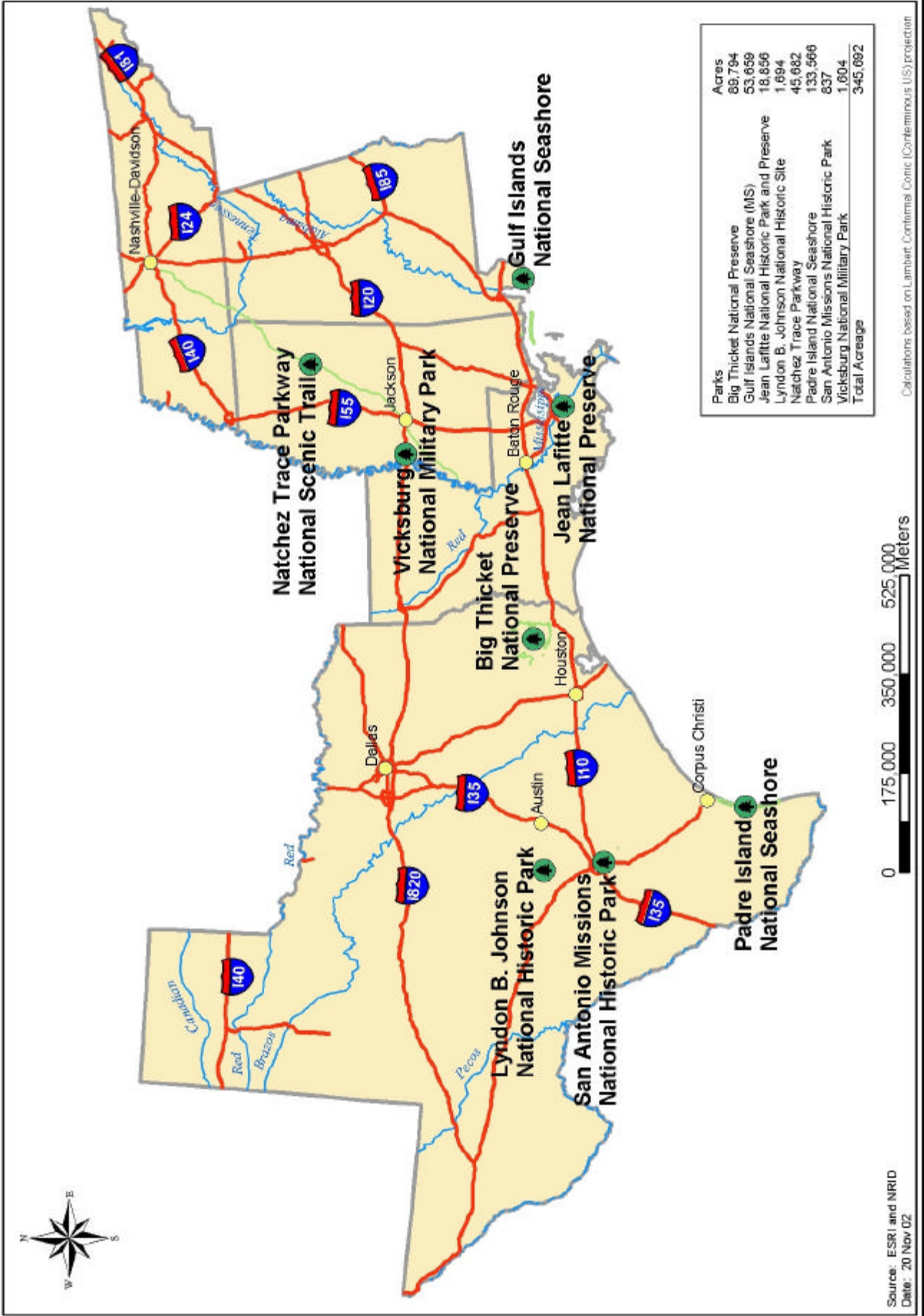


Chinaberry control at San Antonio Mission NP

- Targeted Weed Species**
- Chinese tallow
 - Chinese privet
 - cogon grass
 - glossy privet
 - Chinaberry
 - Japanese climbing fern
 - Japanese honeysuckle
 - Johnson grass
 - kudzu
 - water hyacinth

Gulf Coast Exotic Plant Management Team Host and Partner Parks

National Park Service
U.S. Department of the Interior



LAKE MEAD EPMT

Partner Parks and states: Arches NP, UT; Cedar Breaks NM, UT; Canyonlands NP, UT; Capitol Reef NP, UT; Death Valley NP, CA; Dinosaur NM, CO/UT; Grand Canyon NP, AZ; Great Basin NP, NV; Hovenweep NM, UT; Hubbell Trading Post NHS, AZ; Joshua Tree NP, CA; Manzanar NHS, CA; Mesa Verde NP, CO; Mojave NP, CA; Natural Bridges NM, UT; Parashant NM, AZ; Pipe Spring NM, AZ; Yucca House NM, CO; Zion NP, UT

ACCOMPLISHMENTS

- Gross Infested Area Treated (acres) 489
- Acres retreated 95
- Acres inventoried 0
- Acres monitored 0
- Acres restored 0
- Lost-time injuries 0

The Lake Mead EPMT has primarily focused its weed control activities within riparian and wetland habitats. Riparian areas, springs and wetlands are the most unique and valuable habitats in the arid west. They provide rare water sources for wildlife and support diverse plant communities. These water dependent communities also act as evolutionary islands that support many rare and endemic species. Unfortunately, these areas are also the most threatened habitats in the West. Exotic species invasion has significantly impacted these areas.

Saltcedar is a common invader of riparian areas throughout the West. It is responsible for consuming vast amounts of water thus negatively impacting native plants and animals that depend on the water for survival. Saltcedar and other exotic plants commonly

form dense impenetrable thickets that exclude wildlife and change soil chemistry. Fortunately the control of Saltcedar and other exotic species has proven to be an effective habitat restoration method.

The Lake Mead EPMT has been able to selectively control exotic plant species using low impact methods that do not harm adjacent desirable vegetation. Native plants usually recovery quickly following the removal of the weed plants. The team has also successfully transplanted hundreds of native trees in selected areas after exotic plant control. In some cases, the team has observed water flowing out of the ground within hours after the removal of Saltcedar.

The Lake Mead EPMT has become an interagency team that receives supplementary funds by local resources. It is responsible for implementing exotic plant control throughout Southern Nevada for the Bureau of Land Management, the U.S. Forest Service, the US Fish and Wildlife Service and Clark County, NV. These partnerships and additional funding enable the Lake Mead EPMT to hire more crewmembers and to work on a watershed basis surrounding Lake Mead NRA. The partners benefit by having a larger crew implementing their projects within a limited time frame.

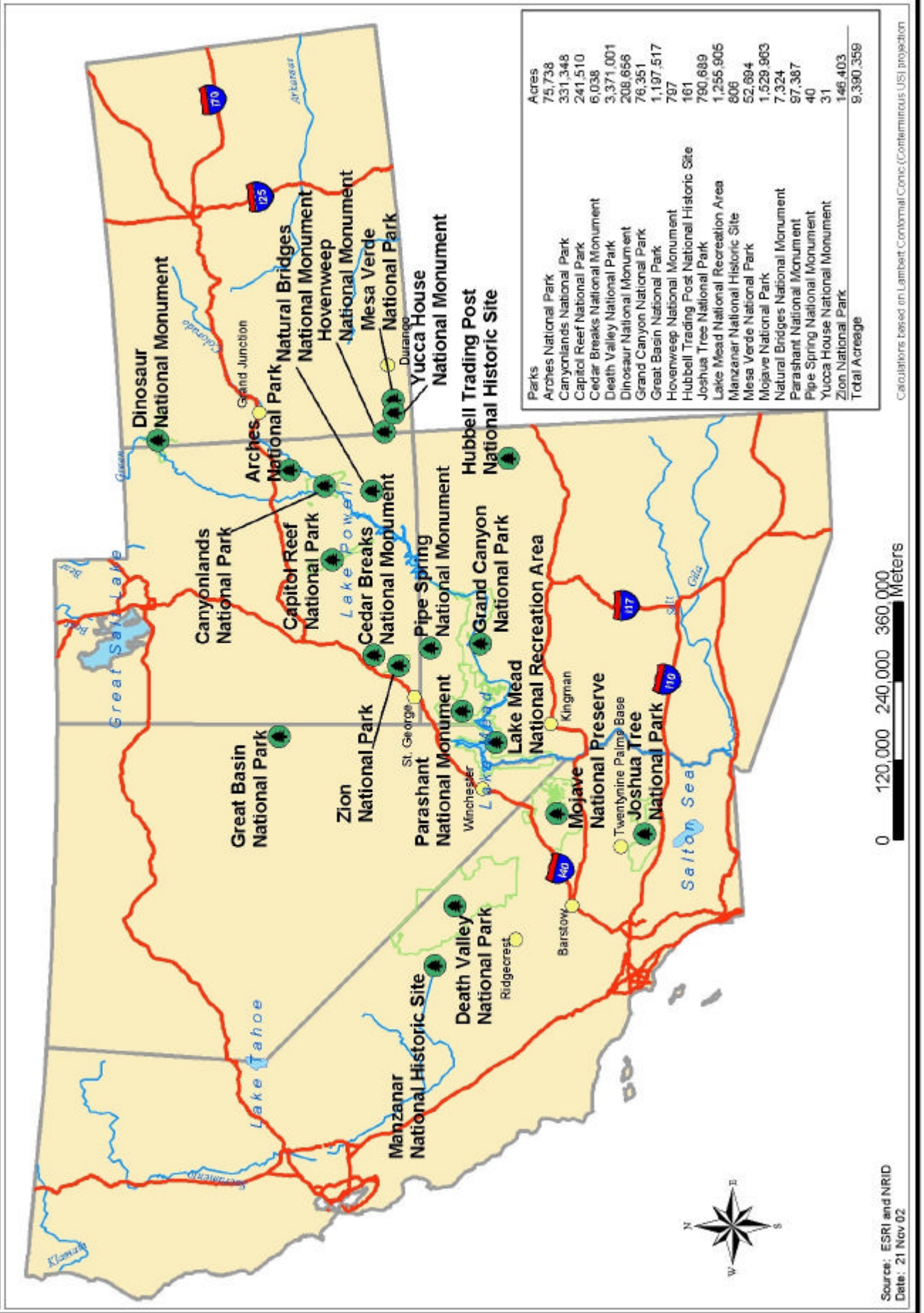


LAME EPMT gearing up in the Valley of Fire

- Targeted Weed Species**
- saltcedar
 - Russian olive
 - Himalayan blackberry
 - tree of heaven
 - Russian knapweed
 - fountain grass
 - palm trees
 - musk thistle
 - spotted knapweed
 - perennial pepperweed

Lake Mead Exotic Plant Management Team Host and Partner Parks

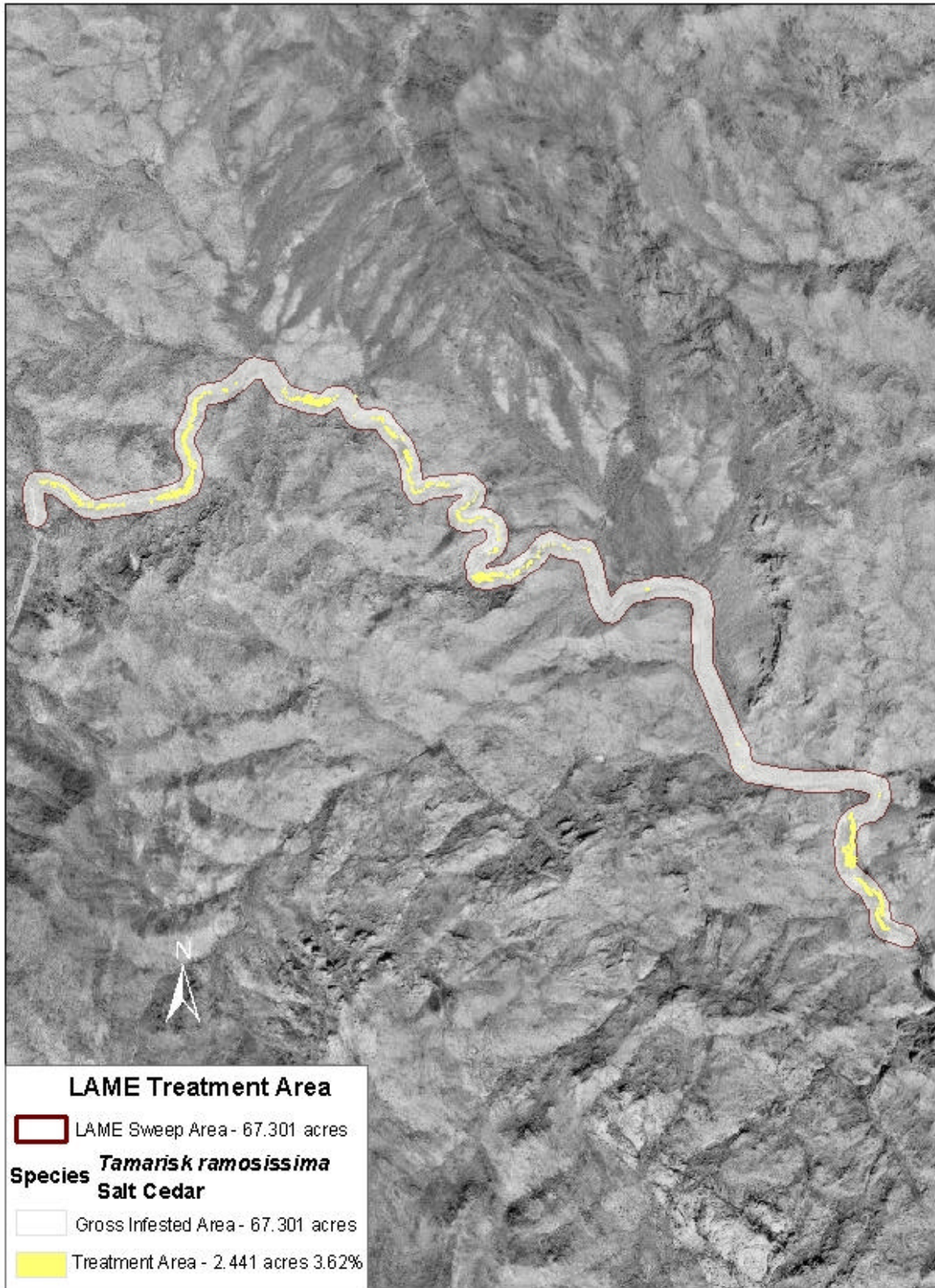
National Park Service
U.S. Department of the Interior




Source: ESRI and NRD
Date: 21 Nov 02

0 120,000 240,000 360,000 Meters


Calculations based on Lambert Conformal Conic (Continiguous US) projection




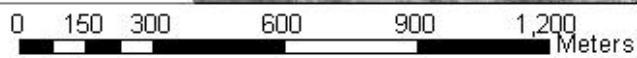
LAME Treatment Area

 LAME Sweep Area - 67.301 acres

Species *Tamarisk ramosissima*
Salt Cedar

 Gross Infested Area - 67.301 acres

 Treatment Area - 2.441 acres 3.62%



Source: USGS 0000 Spirit Mountain SE, LAME GIS - GeoExplorer 3
Date: 18 Nov 02

Scale - 1:16,500

NATIONAL CAPITAL REGION EPMT

Partner parks and states: Antietam NB, MD; Catoctin Mountain Park, MD; Chesapeake and Ohio Canal NHP, MD; George Washington MPKWY, VA; Harpers Ferry NHP, WV; Manassas NBP, VA; Monocacy NB, MD; Prince William Forest Park, VA; Wolf Trap Farm Park, VA; National Capital Parks East, DC; National Capital Parks - Central, Appalachian National Scenic Trail and Rock Creek Park; DC, Northeast Region - Colonial National Historical Park, Fredericksburg and Spotsylvania County Battlefields Memorial National Military Park and Petersburg National Battlefield.

ACCOMPLISHMENTS

• Gross Infested Area Treated (acres)	804
• Acres retreated	54
• Acres inventoried	4,349
• Acres monitored	0
• Acres restored	4
• Lost- time injuries	0

The National Capital Region Exotic Plant Management Team (NCR EPMT) served 16 NPS units during FY2002—13 in the National Capital Region and 3 in the Northeast Region. The NCR EPMT spent 524 workdays eradicating exotic vegetation. Twenty-four days of technical assistance in the form of NEPA compliance, training and planning were provided to partner parks.

Three sites of Kudzu on the George Washington Memorial Parkway, National Capital Parks- East and Chesapeake and Ohio Canal NHP were eradicated, and the sites are recovering with native vegetation for a total of five acres. One new species of St Johnswort was discovered and mapped for Virginia and Manassas NBP.

Cooperative projects with the Florida EPMT and the future Mid Atlantic Network EPMT were conducted in eight NPS units, three in the Northeast Region and five in the National Capital Region. In conducting these



Restoring native plants after weed control at Prince William Forest Park

cooperative projects, several new treatment techniques were shared between the teams. One shared example includes the technique for treatment of tree- of- heaven and royal paulownia tree with basal bark treatment and cylinder ejectors during the winter season. The Florida Partnership EPMT provided an airboat to help access sites of common reed phragmites and purple loosestrife.

The NCR EPMT conducted 22 outreach programs including three Founders Day, two Public Lands Day, two Earth Day Celebration work projects and the Sustainability Fair where over 400 plus contacts were made. Assistance was provided to the Northeast Region to develop and set up two FY2003 EPMTs at Shenandoah NP and Delaware Water Gap.

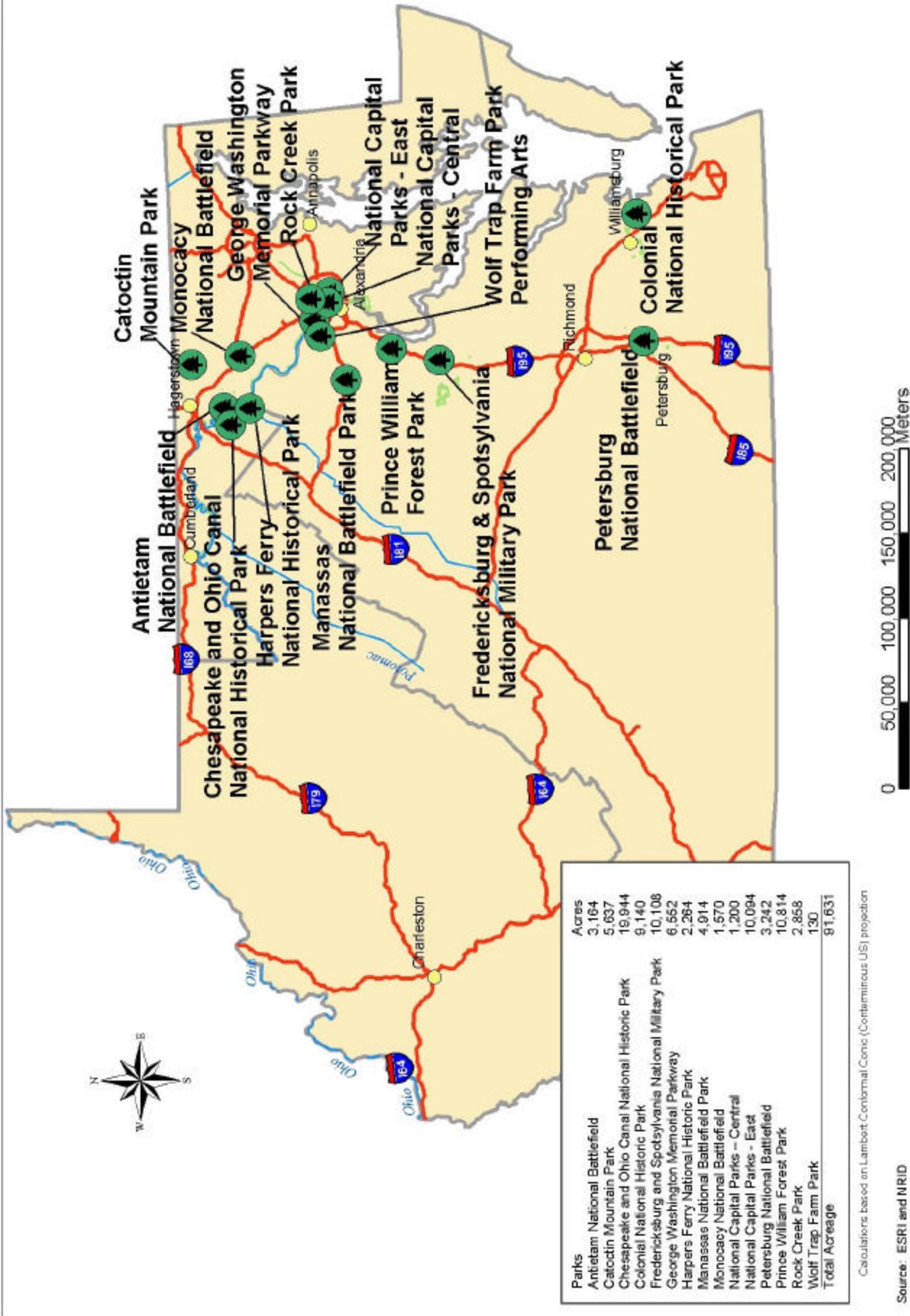
Partnership building continued with the Nature Conservancy, the Maryland Department of Natural Resources, the US Fish and Wildlife Service, the Hard Bargain Farm, and the National Park Service STEP, YCC, SCA and Internship programs.

- Targeted Weed Species**

 - multiflora rose
 - Japanese barberry
 - bittersweet
 - wineberry
 - Chinese wisteria
 - Japanese wisteria
 - tree- of- heaven
 - princess tree
 - Chinese privet
 - Japanese honeysuckle
 - common reed phragmites
 - purple loosestrife

National Capital Region Exotic Plant Management Team Host and Partner Parks

National Park Service
U.S. Department of the Interior



Parks	Acres
Antietam National Battlefield	3,164
Catoctin Mountain Park	5,637
Chesapeake and Ohio Canal National Historical Park	19,944
Colonial National Historical Park	9,140
Fredericksburg and Spotsylvania National Military Park	10,106
George Washington Memorial Parkway	6,552
Harpers Ferry National Historical Park	2,284
Manassas National Battlefield Park	4,914
Monocacy National Battlefield	1,570
National Capital Parks - Central	1,200
National Capital Parks - East	10,094
Petersburg National Battlefield	3,242
Prince William Forest Park	10,814
Rock Creek Park	2,858
Wolf Trap Farm Park	130
Total Acreage	91,631

Calculations based on Lambert Conformal Conic (Continiguous US) projection

Source: ESRI and NRIID
Date: 22 Nov 02

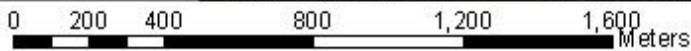


HAFE Treatment Area

- HAFE Park Boundary
- HAFE Sweep Area - 138.622 acres

Species *Ailanthus altissima*
Ailanthus

- Gross Infested Area - 138.622 acres
- Treatment Area - 87.262 acres 62.94%



Source : Image HARPERS.SID, NCR GIS - Trimble PRO XR
Date : 14 Nov 02

Scale - 1:20,000

NORTHERN GREAT PLAINS EPMT

Partner parks and states: Agate Fossil Beds NM, NE; Missouri NRR, NE; Niobrara National Scenic River, NE; Scottsbluff NM, NE; Fort Union Trading Post NHS, ND; Knife River Indian Villages NHS, ND; Theodore Roosevelt NP, ND; Badlands NP, SD; Jewel Cave NM, SD; Mount Rushmore NM, SD; Wind Cave NP, SD; Devils Tower NM, WY; Fort Laramie NHS, WY

ACCOMPLISHMENTS

• Gross Infested Area Treated (acres)	958
• Acres retreated	9
• Acres inventoried	14,394
• Acres monitored	3
• Acres restored	0
• Lost-time injuries	0

Task Force Meeting. In addition, the Team Liaison met with the newly funded USDA/ARS program “Team Melaleuca” for two days to assist their program towards the implementation phase.

The Northern Great Plains Exotic Plant Management team has multiple goals, all of which revolve around containing and removing the spread of invasive species. General goals include increasing public awareness about noxious weeds and the economic and environmental costs associated with such weeds; creating name recognition for the Exotic Plant Management Program; and working to foster partnerships between the various groups and entities collectively engaged in controlling and managing noxious weeds. The Northern Great Plains EPMT will use scientifically based research that enable the team and other parks to effectively manage and control invasive species. The team will emphasize and use Integrated Pest Management techniques for the systematic long-term management and control of invasive species in the northern Great Plains.



Biological control of leafy spurge at Devils Tower NM

Despite suffering a drought in much of the northern Great Plains during its first field season, the Northern Great Plains Exotic Plant Management Team endured the rigors of hot dry weather to enjoy several successes. The team collected and distributed approximately 5 million *Aphthona* spp. flea beetles during a very short period of time. The insects were collected and distributed to Devils Tower, Jewel Cave, and Theodore Roosevelt National Parks.

Data collection, including mapping and reconnaissance, was a major effort for the team during its inaugural year. Although emphasis was placed on locating and mapping exotic plants, several areas were treated for Canada thistle and leafy spurge.

In an effort to promote public awareness of the benefits of biological control and integrated pest management, a one hour presentation was given to weed supervisors and other federal, state and local governments at the 15th Annual Nebraska Leafy Spurge

- Targeted Weed Species**
- leafy spurge
 - Canada thistle
 - purple loosestrife
 - houndstongue
 - common mullein
 - field bindweed
 - Russian knapweed
 - Scotch thistle
 - musk thistle
 - diffuse knapweed

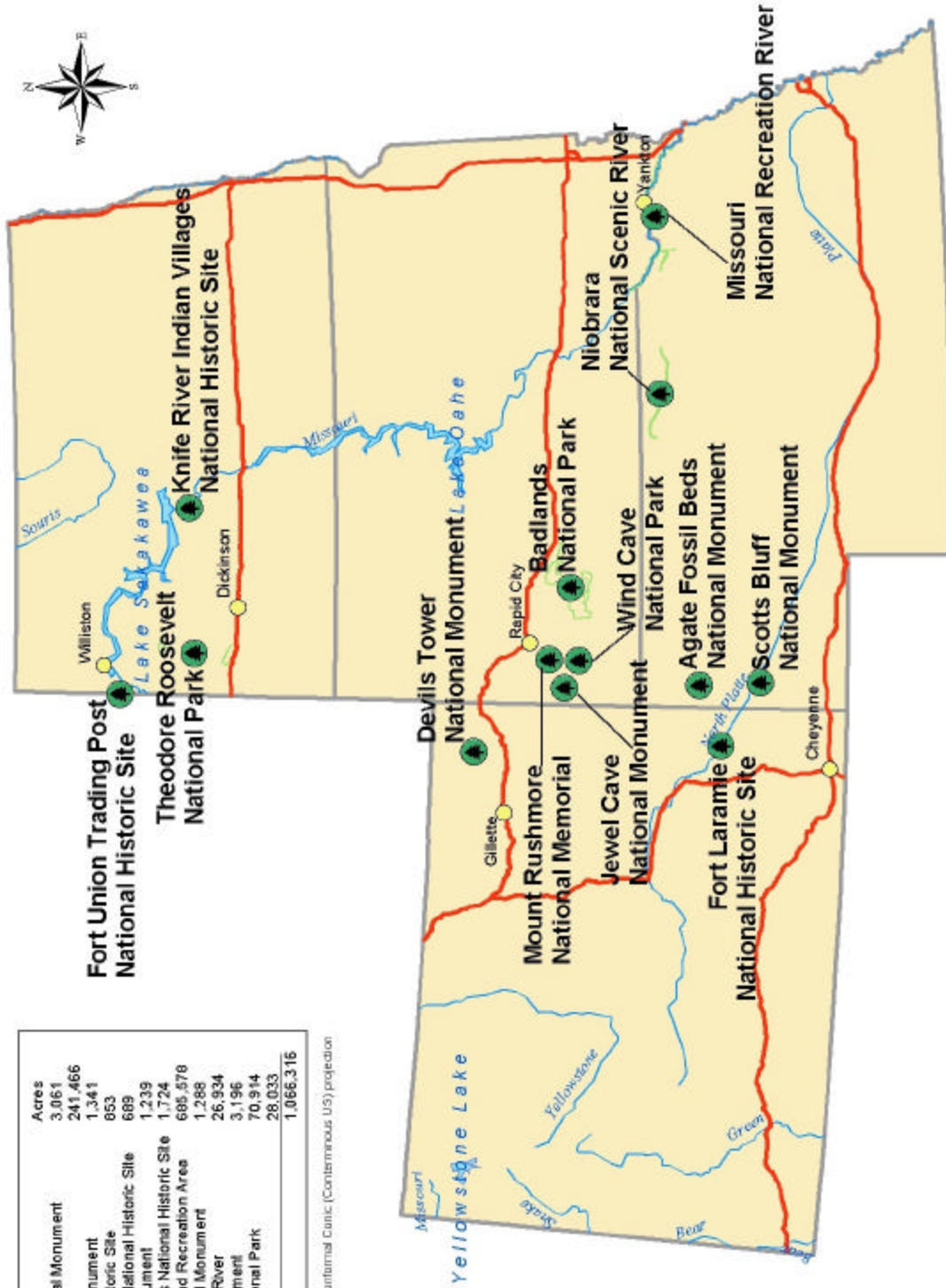
Northern Great Plains Exotic Plant Management Team Host and Partner Parks

National Park Service
U.S. Department of the Interior

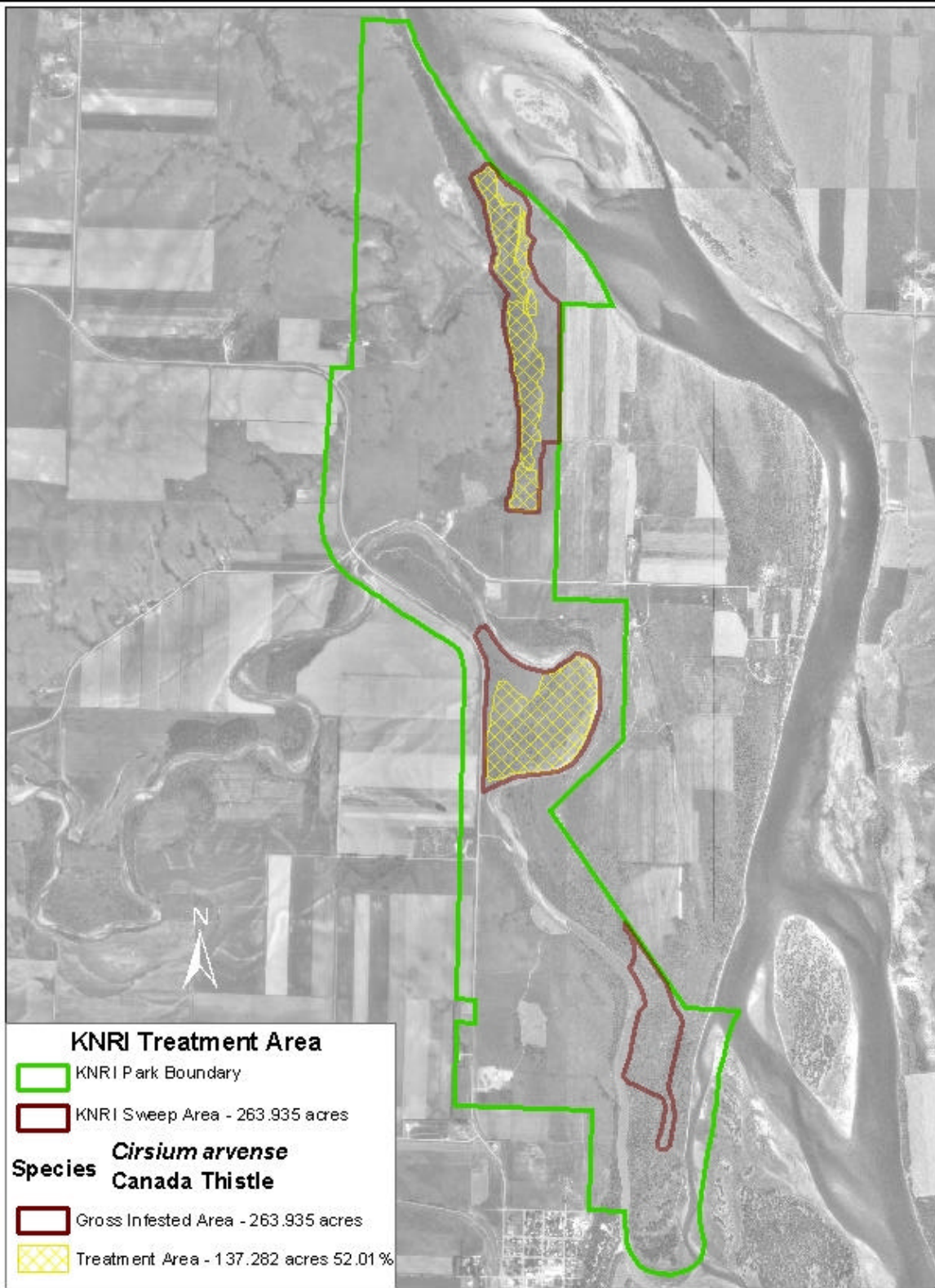


Parks	Acres
Agate Fossil Beds National Monument	3,061
Badlands National Park	241,466
Devils Tower National Monument	1,341
Fort Laramie National Historic Site	853
Fort Union Trading Post National Historic Site	689
Jewel Cave National Monument	1,239
Knife River Indian Villages National Historic Site	1,724
Missouri National River and Recreation Area	685,578
Mount Rushmore National Monument	1,288
Niobrara National Scenic River	26,934
Scottsbluff National Monument	3,196
Theodore Roosevelt National Park	70,914
Wind Cave National Park	28,033
Total Acreage	1,066,316

Calculations based on Lambert Conformal Conic (Continiguous US) projection



Source: ESRI and NRD
Date: 22 Nov 02

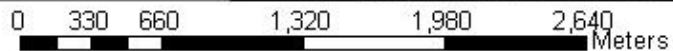


KNRI Treatment Area

- KNRI Park Boundary
- KNRI Sweep Area - 263.935 acres

Species *Cirsium arvense*
Canada Thistle

- Gross Infested Area - 263.935 acres
- Treatment Area - 137.282 acres 52.01%



Source : USGS DOQQ Station NE, Riverside South SW,
Garrison Dam South SE, Station SE, NGP GIS
Date : 15 Nov 02

Scale - 1:33,800

PACIFIC ISLANDS EPMT

Partner parks (all located in Hawaii): Haleakala NP, Hawaii Volcanoes NP, Kaloka-Honokohau NHP, Kalaupapa NHP, Puukohola Heiau NHS, and Pu'uhonua o Honaunau NHP

ACCOMPLISHMENTS

• Gross Infested Area Treated (acres)	52,740
• Acres retreated	0
• Acres inventoried	0
• Acres monitored	34,327
• Acres restored	0
• Lost-time injuries	0

Exotic invasive plant species are serious threats to the national park areas of the isolated Hawaiian Islands. The Pacific Islands Exotic Plant Management Team (PI EPMT) experienced a stellar year in FY2002, expanding on existing informal partnerships and controlling invasive weeds to protect Kalaupapa National Historical Park and Haleakala National Park.

unemployed as a result of the terrorist attacks. The cooperative interagency crews were trained and led by the PI- EPMT to battle fourteen invasive weeds threatening Haleakala NP. The workforce hit the ground in December 2001. In mid- April 2002, funding from the State was exhausted, so the PI- EPMT extended operations through June 30th by providing funding and continued overhead support. Total time spent with personnel on the ground for the duration of the effort exceeded 8,970 worker hours, representing approximately 5,380 hours of increased capacity fighting invasive species. The primary target for the program was *Miconia calvescens*, an aggressive species from Central America that is poised to overrun the pristine rainforest of Kipahulu Valley Biological Reserve in Haleakala NP.



Controlling pokedatree at Haleakala NP

In addition to a productive year battling invasive weeds, the PI- EPMT participated in numerous presentations and outreach activities at formal conferences, community events and meetings. The PI- EPMT can attribute much of their productivity to a year without a single lost-time injury.

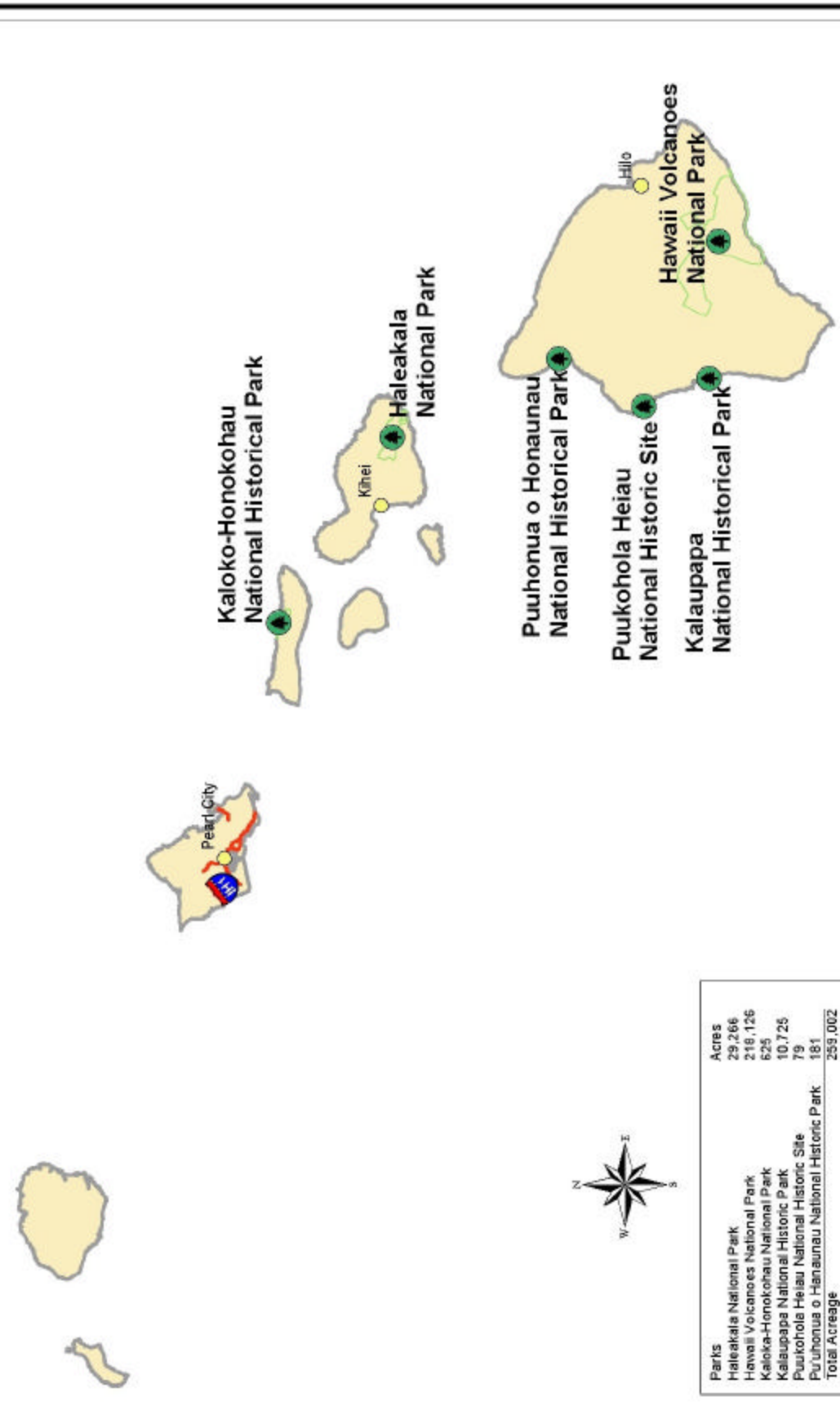
The PI- EPMT continued work with the Maui Invasive Species Committee (MISC) and the Molokai subcommittee of MISC. MISC is a voluntary partnership of county, state and federal agencies, non-profit organizations and businesses working together to battle invasive alien pests.

- Targeted Weed Species**
- miconia
 - Australian tree fern
 - fountaingrass
 - cane tibouchina
 - Brazilian pepper
 - thatching grass
 - faya tree
 - Strawberry guava
 - Koster's curse

In response to the economic downturn from the September 11th terrorist attacks and increased awareness of invasive species problems, the State of Hawaii funded the Emergency Environmental Workforce (EEWF) program in November 2001. The PI- EPMT partnered with MISC to host 17 workers

Pacific Islands Exotic Plant Management Team Host and Partner Parks

National Park Service
U.S. Department of the Interior

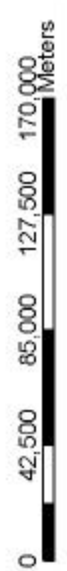


Parks	Acres
Haleakala National Park	29,266
Hawaii Volcanoes National Park	219,126
Kaloko-Honokohau National Park	625
Kalaupapa National Historical Park	10,725
Puukohola Heiau National Historic Site	79
Puuhonua o Honaunau National Historic Park	181
Total Acreage	259,002



Calculations based on Albers Equal Area Conic (Hawaii) projection

Source: ESRI and NPS
Date: 22 Nov 02



Haleakala NP - Western Slope of Haleakala Crater
Pacific Islands EPMT

National Park Service
U.S. Department of the Interior

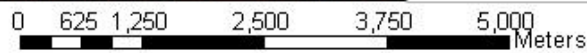


HALE Treatment Area

- HALE Park Boundary
- HALE Sweep Area - 2480.261 acres

**Species *Cortaderia jubata*
Andean Pampas Grass**

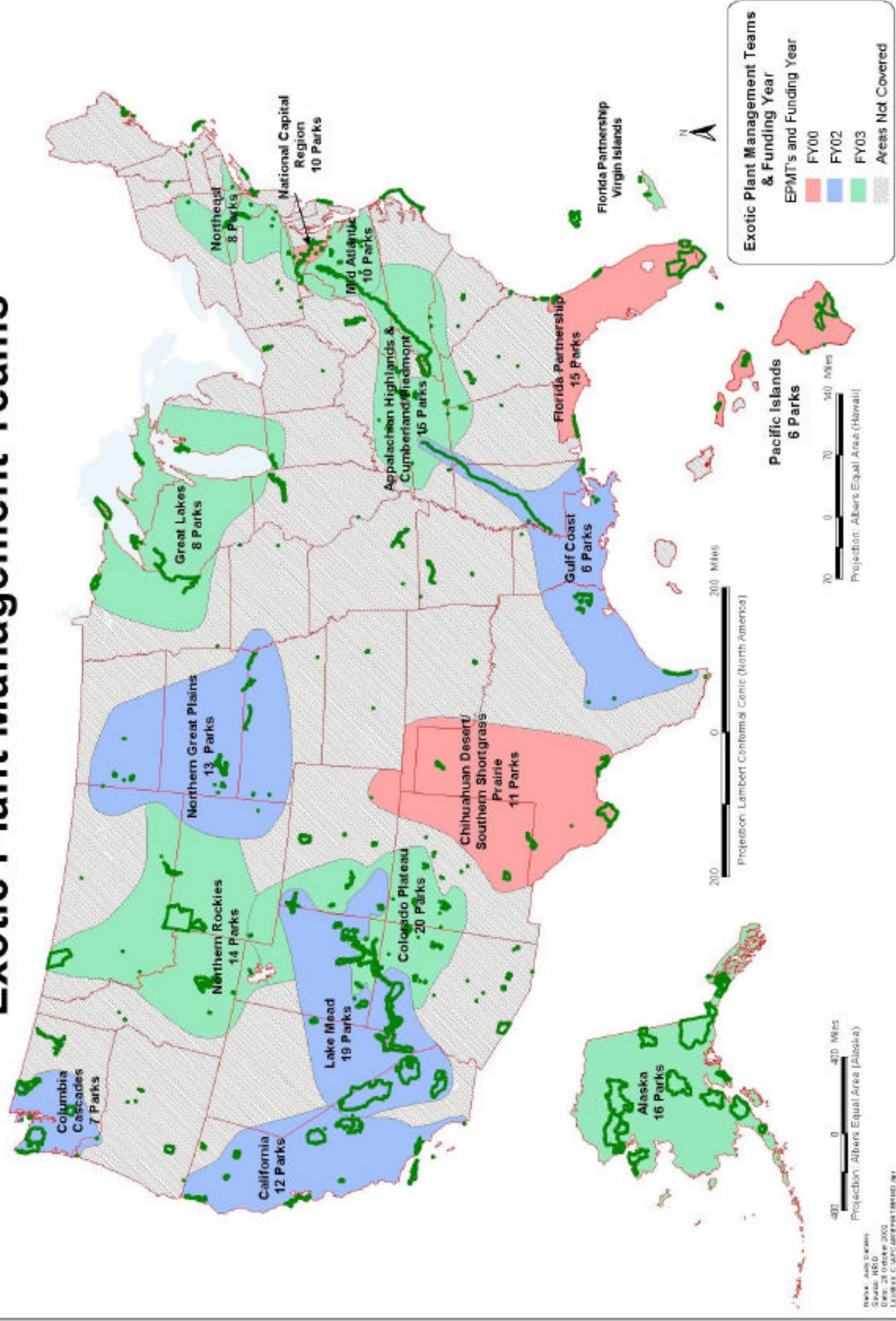
- Gross Infested Area - 2480.261 acres
- Treatment Area - .031 acres .001%



Source : NRID, Landsat7, Max1, FIGS - GeoExpber13
Date : 13 Nov 02

Scale - 1:69,000

National Park Service Exotic Plant Management Teams



APPENDIX B

The Alien Plant Control and Monitoring Database Overview

Description:

The Alien Plant Control and Monitoring database (APCAM) allows for the collection of data related to the inventory, monitoring and controlling of exotic plants. In addition, data regarding weather, collected plant material, digital photographs, and spatial relationships can be stored by APCAM. These additional components of APCAM contribute to monitoring and data analyses. Furthermore, these components, in conjunction with the budgetary tracking spreadsheet, allow for correct and concise reporting to congressional officials.

Purpose:

In collaboration with the Exotic Plant Management Teams (EPMT) the APCAM database was designed to inventory and monitor exotic plants. This standardization allows for easy data transfer between the teams and drastically simplifies the reporting process to the Biological Resources Management Division.

The APCAM database was designed using the National Park Service (NPS) Natural Resources Inventory and Monitoring Division's Database Template. The data dictionary is compliant with the fields outlined by North American Weed Management Association (NAWMA), in conjunction with the guidelines for inventory mapping and monitoring of invasive plants. These guidelines were developed at the NPS Invasive Plant Inventory and Monitoring Workshop held in June 2002 for use by NPS I&M Networks. The APCAM database satisfies the minimum Federal Geographic Data Committee's (FGDC) standards for geo spatial metadata collection. APCAM also utilizes the taxonomic naming standards used by NPSpecies and the NPS Taxonomic Database and the pesticide/herbicide naming conventions and reporting protocols established by NPS's Pesticide Use Proposals (PUP's) database.

Content:

Data Entry Modules:

Abiotic	Heli Flight Log
APCAM	LocationID
Associated Spp	Photos
Biocontrol Collection	Plants Collected
Biotic	Restoration
Disturbances	Trip Reports
Eradicated Spp	Values At Risk
EventID	Weather
Frogs	Work Orders

Reports:

- Acres
Gross Infested Acres Treated
Acres Treated per Species
Acres Inventoried per Species
Acres Monitored per Species
Acres Retreated per Species
Acres Restored per Species
Acres Eradicated per Species

- Person Hours

Person Hours per Team

Person Hours for Preparation and Travel

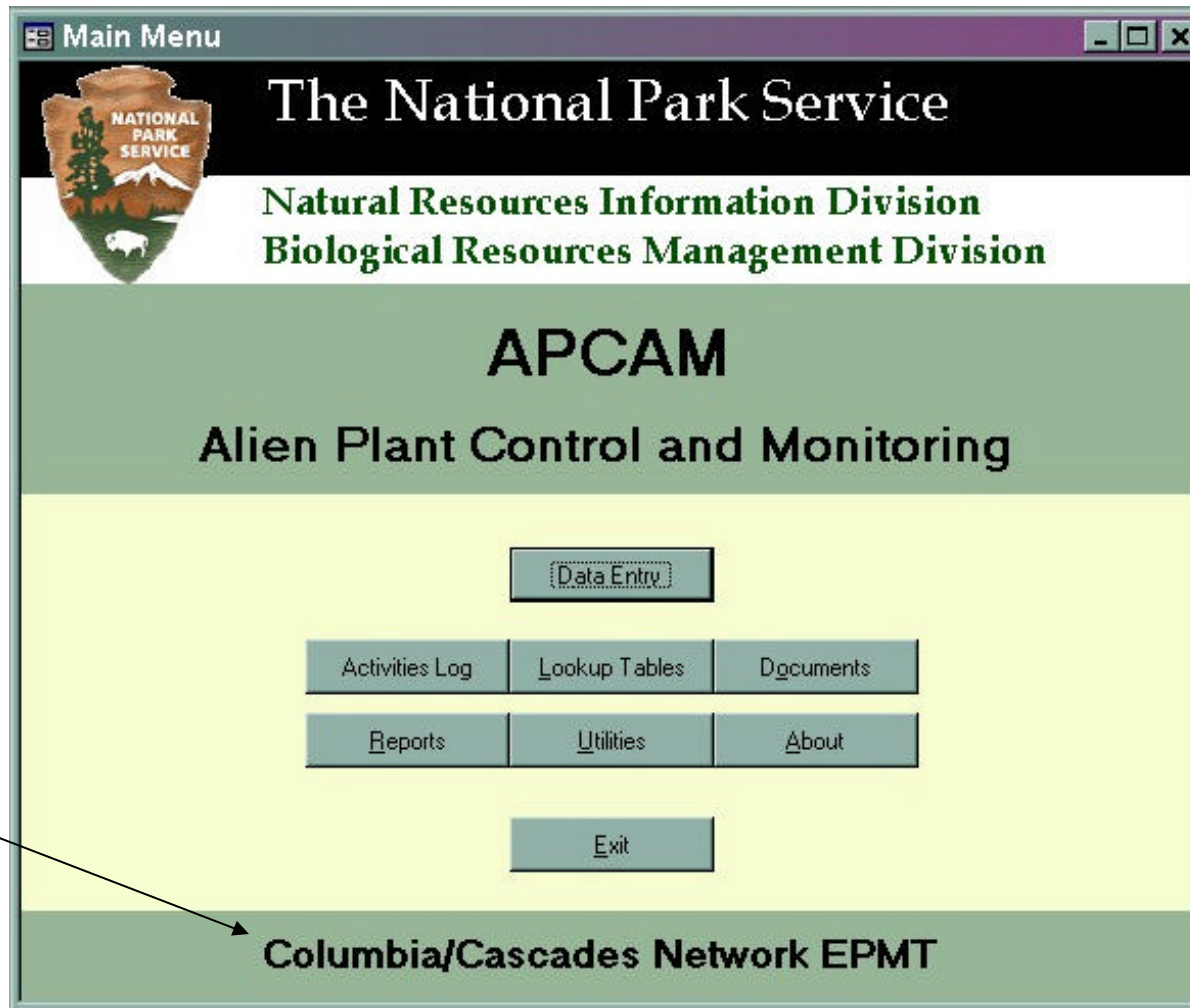
Person Hours by Activity

- Summary
Trip Report Summary
- Herbicides
Herbicide Totals in Gallons
Herbicide Totals in Pounds
- To Do
Location ID's that need GPS'ing
Location ID's that need Georeferencing Data
Location ID's that need Digitizing

Documents:

Field Form – Excel Spreadsheet
Income and Expenditure Form – Excel Spreadsheet
Data Dictionary Creator and Field Description

APCAM Main Menu



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Dynamic Team Information

APPENDIX B

APCAM Data Entry for field data collection