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**NATIONAL PARK SERVICE - INVASIVE SPECIES ACTION PLAN**  
**July 27, 2005**

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## INTRODUCTION

This Action Plan on Invasive Species is intended to comply with Executive Order 13-112 (1999), The National Invasive Species Management Plan (2001) National Park Service Management Policies (2001), the Natural Resource Challenge Action Plan on Exotic Species (2000) and Strategic Performance Goals for Invasive Animals and Plants (2004-2008).

A representative work group of Superintendents, park and regional resource managers and Natural Resource Program Center staff participated in a review of the NPS invasive species response. This review included an assessment of what has been accomplished under the 2000 Natural Resource Challenge Exotic Action Plan, as well as what actions remain. This review was accomplished over a six month period. The above mentioned policies guided the group's development of the current National Park Service Invasive Species Action Plan.

NPS policy states that invasive species will be introduced under limited circumstances and every effort will be made to control invasives.

Executive Order 13-112 on Invasive Species requires all federal agencies to identify actions to prevent introductions, detect and respond rapidly, control populations in a cost-effective and environmentally sound manner, conduct research, develop technologies and promote public education. Federal agencies shall conduct these duties consistent with the National Invasive Species Management Plan, and no agency shall "authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere".

The primary purpose of Exotic Species Section of the Natural Resource Challenge Action Plan was to outline a multi-year, base-increase funding initiative that would result in a comprehensive NPS response to the threat of invasive species. Some aspects of the proposal have been initiated, including the funding of exotic plant management teams and a portion of the park base increases identified in Natural Resource Challenge. Several other proposals have not yet been initiated, and many are reiterated in this plan.

The 2006 National Park Service Invasive Action Plan builds upon the Natural Resource Challenge Action Plan on Exotic species and addresses the categories required under the National Invasive Species Management Plan and Executive Order 13-112 for all park units. These categories include: Prevention, Early Detection and Rapid Response, Control, Education, Research, and Restoration.

This 2006 Invasive Species Action Plan is designed to be a resource document for all NPS park personnel. It provides a set of recommended actions that, if implemented, would provide a coordinated collaborative response to harmful invasive species within our various areas of responsibility.

## PROBLEM STATEMENT

The National Park Service (NPS) stewards the nation's most treasured natural and cultural areas. These special places-- the legacy with which the NPS has been entrusted to protect for present and future generations-- are seriously threatened by non-native aquatic and terrestrial invasive plants and animals. If the NPS does not take swift and determined action, the natural and cultural richness and integrity of these treasures will be forever changed. What is at stake is nothing less than the choice between fulfilling or abdicating our core mission.

The importance of meeting the Service's mission reaches beyond the boundaries of Park Service lands. The parks serve as core protected areas or refugia for preserving the nation's natural and cultural heritage. They are in fact becoming critical benchmarks against which environmental change can be evaluated. The importance of these protected areas is not only their aesthetic beauty and their ecological significance, but also as sources of genetic and pharmaceutical materials. As natural areas throughout the country are compromised, the value of unimpaired NPS lands increases beyond measure.

Invasive species have moved into parks through many mechanisms including transport by human pathways such as vehicles, by animal vectors, wind and water. Humans have been responsible for, in some cases inadvertently, transporting and spreading these species through management practices. In large part, the spread of these species has gone unchecked in many parks and is resulting in dramatic and devastating changes in the natural systems including an overwhelming displacement of native plants and animals.

Is the situation hopeless? Not yet. Parks, the Natural Resource Program Center (NRPC), and NPS regional offices are building an understanding of the species involved, the habitats most at risk, and the scope of the problem. Efforts are being initiated to prevent and detect new invasions, control those that are underway and take additional steps to restore areas when necessary. There is a growing public awareness of the significance of this issue (a recent study shows half of NPS visitors are now aware of the problem).

Yet, there is much to be done before we can say this threat to our nation's natural heritage has been thwarted or even reversed. There are still many members of the public and our own staffs that do not have an understanding of the profound nature of this problem. The effectiveness of the NPS in addressing this fearsome, unrelenting threat is yet to be determined.

## SCOPE AND PURPOSE

The National Park Service possesses only a small piece of the global invasive species problem. All land management agencies are impacted by the spread of these species which move and are being moved continuously across geographic boundaries. This threat has been documented repeatedly by prominent members and organizations in the scientific community including E.O. Wilson, Daniel Simberloff, Peter Vitousek, and the International Union for the Conservation of Nature. The NPS must support a national and cross-boundary response. This will be the only truly effective and efficient means of assessing the national problem and addressing the issues of public awareness, problem assessment, research, prevention and control.

All levels of the NPS organization are beginning to understand the full environmental, economic and human health scope of the invasive species problem and to explore solutions. It is now commonly understood that our park staffs need to be able to: identify and locate invasive species, assess the local need for cooperative action with adjacent land managers, identify state of the art integrated pest management actions, have access to control mechanisms, and be able to maintain, monitor and restore treated areas. All of our employees and visitors who understand the problem will become part of the solution. For these reasons, the National Park Service invasive species response must be effectively integrated at all levels of the organization and must address the key elements of the National Invasive Species Management Plan: Prevention, Early Detection and Rapid Response, Control, Education, Research and Restoration.

This action plan establishes the infrastructure and delivery system necessary to address the highest priority invasive species issues. The proposed action items are based on analyses of current information on invasive species. Information on invasive species is already available from a variety of sources such as existing NPS databases (e.g., NRMAP, APCAM, NPSpecies, and PMDS) and preliminary estimates based on park size, extent of known problems, existing park management efforts and severity of known problems. However, the proposed approach is not inclusive of all actions that may be needed. Although action items outlined below address the key elements of the strategy, other actions will be identified as new information is obtained. Experience in implementing the control, prevention, and assessment elements of this program will give NPS a clearer picture of what may be needed long-term to address the invasive species threat.

Invasive species management can be conducted effectively, but it does require coordination across all NPS programs, to reduce redundancy, establish priorities and conduct work efficiently. Therefore, the roles of each NPS program should be well defined. Adaptive management may require that these roles change as the Park Service identifies the most effective and efficient way to use these programs.

The Invasive Species Branch of the NPS Biological Resources Management Division is comprised of the Invasive Plant Management Program (including Exotic Plant Management Teams), Invasive Animal Management Program, and the Integrated Pest Management Program (IPM) which advises on appropriate control technologies. The

Branch has been charged with coordinating invasive species management and pesticide use efforts, thus providing technical support and guidance.

Exotic Plant Management Teams and park resource managers work together to eradicate invasive species when feasible and to contain them when it is not.

The Office of Inventory, Monitoring, and Evaluation (OIME) is responsible for producing several programmatic inventories that can directly contribute to the ability to manage invasive species, including soils maps and inventories of the occurrence of vascular plants and vertebrate species. In addition, monitoring networks are documenting the distribution and abundance of high priority species of concern to managers, including threatened and endangered species and invasive species. The networks are also identifying ecological indicators for long-term monitoring of ecosystem integrity that reflect the management needs and priorities of network parks. Invasive species - plants, animals, diseases, or all of these - are being identified as high priorities for monitoring.

Other Divisions are also critical in the management and control of invasive species. The Water Division provides expertise in the identification and management and control of selected invasive aquatic animal species. The Fire Program liaison offers assistance on impact or use of fire in invasive species management. Public Health, Maintenance, Concessions all have a role to play and will be called upon to advise and assist in the NPS response to invasive species.

There is room for confusion, overlap, and inefficiencies if those involved in these efforts are not diligent in coordinating their actions. Likewise, care must be taken to ensure some needs are not left undone by any of these parties. For example, not all invasive species or aspects of managing invasive species are currently being adequately addressed. There is a need to improve prevention practices, inventory the location and abundance of existing infestations on all park lands, monitor changes in existing infestation, monitor for new infestations, evaluate environmental consequences of treatments and of not treating, more adequately address aquatic nuisance species (ANS), analyze ANS pathways, and improve ANS control.

## **1 - LEADERSHIP AND COORDINATION**

To be optimally effective in responding to invasive species, the NPS must coordinate actions among all divisions, programs, parks, federal and state agencies, and private partners. Invasive species cross boundaries and a collaborative coordinated response is critical to success. States, non-governmental organizations (NGOs), private landowners, and federal agencies have recognized the need for a coordinated response and have developed invasive species councils, state invasive species management plans, weed management areas, and other cooperative systems. Parks have an opportunity to build capacity and increase their probability of invasive species management success by building and participating in such efforts.

## **ACTION 1A: DEVELOP AND MAINTAIN CAPACITY TO PLAN AND IMPLEMENT AN EFFECTIVE SERVICEWIDE INVASIVE SPECIES MANAGEMENT PROGRAM**

All levels of the NPS need to be involved in planning and implementing a comprehensive invasive species program. There are currently gaps in the organization that limit the Park Service's ability to put forth a fully effective, coordinated effort. Additional staff expertise in invasive species management and partnership development is needed at all levels to be truly effective at meeting the invasive species challenge.

**1A.1: Expand efforts at the national level** to support parks and regions by developing guidance and procedures, assessment protocols, funding criteria, and program priorities; by alerting parks and regions to invasions that are spreading their way; by providing them with emergency and longer-term technical assistance; by identifying and seeking research assistance; and by determining and seeking the staff and financial resources needed by each level of the organization to accomplish the objectives of the program. The Invasive Species Branch in the Biological Resource Management Division will ensure that NPS activities are coordinated, complementary, cost efficient, effective, and integrated with the efforts of existing organizations involved with invasive species issues as directed by Executive Order 13-112.

**Action Agent: Biological Resources Management Division (BRMD), Regions, Parks**

**Lead Agent: BRMD-Invasive Species Branch**

**Timeline: FY05**

**1A.2: Develop NPS capability at a regional or multi-park level** to help build and coordinate park invasive species programs, maximize the effectiveness of Exotic Plant Management Team efforts, and integrate regional and local NPS efforts with work by state and local agencies and organizations. Seek funding for 5-7 field program coordinators who would be located in parks, but would serve the needs of one or more NPS regions or groups of networks. Allocation of these positions would be based upon a review of overall needs demonstrated across the country.

**Action Agent: BRMD, Regions, Networks, Parks**

**Lead Agent: BRMD-Invasive Species Branch**

**Timeline: FY06**

**1A.3: Develop an Invasive Species Advisory Committee** with representation from parks, regions, the Exotic Plant Management Teams, the Integrated Pest Management Program, the Office of Inventory, Monitoring, and Evaluation (OIME), the Water Resources Division, and other Natural Resource Program Center (NRPC) programs. Other disciplines including Fire Management, Cultural Resources, Facilities Management, Visitor and Resource Protection, and Concessions will also be involved to ensure NPS strategy and response to invasive management is current, progressive, and well coordinated. BRMD will contact representatives and hold two phone meetings per year.

**Action Agent: Parks, Regions, BRMD, Networks**

**Lead Agent: BRMD**



**Timeline: FY06**

**1A.4: Identify gaps and overlap in responsibilities among existing internal programs** and propose actions to increase coordination and cooperation, eliminate inefficiencies or to bridge gaps (e.g. overlaps/gaps among the monitoring networks, parks, NRPC programs with respect to the monitoring of invasive species).

**Action Agent: Parks, Regions, NRPC**

**Lead Agent: BRMD**

**Timeline: FY06**

**1A.5: Develop policy and reference manual.** The Reference Manual (RM) and Director's Order (DO) will guide management of invasive terrestrial and aquatic plants and animals on park units. The RM will encompass all aspects of management from best management practices to contract specifications to education and outreach. This practical instruction manual will provide parks and regions with useful information for developing and implementing an invasive management program or response (i.e., planning, strategy development, prevention actions, and monitoring).

**Action Agent: Parks, Regions, NRPC, Networks**

**Lead Agent: BRMD-Invasive Species Branch**

**Timeline: FY07**

## **ACTION 1B: BUILD PARTNERSHIPS**

The NPS through the NRPC and parks should facilitate partnerships, consistency, efficiency, and effectiveness in planning and implementing Executive Order 13-112, as well as national and NPS strategies for invasive species prevention and management. Because invasive species cross boundaries, the NPS must develop partnerships with other relevant agencies and non-governmental organizations to track and respond to invasive species. As invasive species do not recognize political boundaries, site management plans should be inclusive of the parks and their surrounding environs. In some cases, a bioregional scale may be more appropriate. It is further anticipated that there will not be adequate funds or other resources to address all identified needs Servicewide at one time. Therefore, a system, based upon accumulated data, will be implemented to help guide the development of national, regional and local strategies and priorities.

**1B.1: Expand partnerships to maximize results.** Parks and EPMTs will actively participate in local weed management areas and regional and state aquatic nuisance species or invasive species panels to foster coordinated invasive species management and education.

**Action Agent: Parks, Regions, Networks, NRPC, EPMTs**

**Lead Agent: Parks, NRPC**

**Timeline: FY 05-10**

**1B.2: Establish citizen-steward partnership coordinator programs in parks.** The potential for attracting citizen stewards to assist the parks in invasive species management is huge, but NPS needs dedicated coordinators to achieve the full potential.

These positions must be professional and trained to ensure safe, efficient and appropriate use and access to volunteer groups. Parks such as Golden Gate National Recreation Area have shown that citizen-steward partnership coordinators who attract and manage a cadre of volunteers to control invasive species and restore resources pay for themselves many times over. A \$6 million (which includes \$3 million for partnership projects) Servicewide OFS request will be prepared to build citizen-steward partnership programs in parks.

**Action Agent: BRMD, Regions, Parks, Research Learning Centers**

**Lead Agent: BRMD, Office of Natural Resource Information**

**Timeline FY 06-07**

**1B.3: Strengthen agreements to enhance partnerships.** To enhance partnership response to invasive species management, BRMD staff will work with the National Invasive Species Council to develop standard memorandum of understanding (MOU) language for all federal agencies. Currently each agency uses different language for MOUs, which creates barriers to implementation of multi-agency state and federal partnerships. Products will be conveyed to the parks through semi-annual informational newsletters on InsideNPS.

**Action Agent: Parks, Regions**

**Lead Agent: BRMD**

**Timeline: FY07**

**1B.4: Enhance national, regional, and state interagency coordination.** Seek opportunities to expand NPS involvement on Interagency Panels such as the Aquatic Nuisance Species Task Force, Invasive Terrestrial Pathogen and Animal Committee, the Federal Interagency Committee for Management of Exotic and Noxious Weeds, Western Weed Coordinating Committee and the National Invasive Species Advisory Committee. Increase coordination with state and local invasive species committees such as Weed Management Areas, Exotic Plant Pest Councils, state invasive species councils and boards. Encourage participation in professional societies and organizations to increase knowledge and understanding of invasive species issues. Representatives will report and update NPS on relevant issues and activities currently being discussed by their respective panels. The information will be disbursed through InsideNPS on a semi-annual basis via BRMD staff.

**Action Agent: Parks, Regions, Networks, NRPC**

**Lead Agent: BRMD**

**Timeline: FY 05 – 10**

**1B.5 Identify mechanisms to work on lands and waters adjacent to parks in discretionary cooperative efforts.** The NPS will identify mechanisms similar to the Wyden Amendment to work off park lands and waters when that work will benefit park resources. Currently, a number of invasive species exist on adjacent land and the land owners request that the NPS assist in dealing with the harmful invasive species. However, unlike the Forest Service, Fish and Wildlife Service, and Bureau of Land Management the NPS authority does not allow a response.

## **ACTION 1C: COMPLETE INVASIVE SPECIES INVENTORIES AND DEVELOP MANAGEMENT PLANS**

An assessment of the occurrence and distribution of invasive species for the 270 park areas and their surrounding environs that have significant natural resources is a fundamental component of an invasive species management program. The assessment will include six basic elements: 1) assess existing information; 2) design and maintain inventory and monitoring protocols with data stored in compatible invasive species data systems; 3) conduct inventories of invasive plants and animals and their locations in order to identify which areas and species will be targeted for control; 4) prioritize treatment locations and species; 5) develop park, regional, and national management and restoration strategies; and 6) identify and fund relevant research. This assessment will allow the NPS to quantify the invasive species issue and target actions and will serve as the basis for the evaluation of trends over time and space. All inventory activities and database development described in this objective will be coordinated within the NPS to eliminate duplication and ensure that databases are compatible.

### **1C.1: Develop minimum guidelines for invasive species management plans.**

Minimum guidelines/templates for invasive species management plans will be created for use in development of such plans and will address all park management functions where appropriate.

**Action Agent: Regions, Parks, NRPC**

**Lead Agent: BRMD**

**Timeline: FY 06**

**1C.2: Inventory invasive plants and animals for each park unit** with significant invasive species concerns. Baseline information on the distribution and abundance of invasive organisms is not available for most species and most parks. Minimum information requirements will be developed by the Inventory and Monitoring Program and BRMD-Invasive Species Branch. Parks, BRMD, and monitoring networks will collaborate to collect this baseline information. Consideration should be given to gathering data on incipient threats from invasive species not yet in the parks. The NPSpecies database has included the notation of “Encroaching” to facilitate use of this important data in developing prevention prioritization and strategies.

With regard to invasive plants, all networks, parks and EPMTs will use the North American Weed Management Association (NAWMA) standards to guide inventory and monitoring. Inventory and Monitoring networks will be encouraged to use part of their funding to complete invasive species inventories to meet the minimum standards.

**Action Agent: Networks, Parks, I&M Program, EPMT Liaisons**

**Lead Agent: Networks**

**Timeline: FY 07**

**1C.3: Rank invasive plants and animals for each park unit** with significant invasive species concerns. Species will be ranked as to level of threat, invasion potential, and feasibility of control. The BRMD and I&M will provide guidelines for what methodologies are acceptable. In 2005, USGS in cooperation with the OIME is evaluating the utility of alternative prioritization methods. All ranking efforts performed in parks will be annotated with methods used to determine rankings. Additionally, areas of each park unit with a high potential for invasibility shall be identified. This information will be used strategically by parks to prioritize species and areas that will be targeted for prevention and control. Data will be entered into the appropriate NPS databases (e.g. NPSpecies, NRMAP, APCAM, etc.)

**Action Agent: Networks, Parks, EPMT Liaisons**

**Lead Agent: Networks**

**Timeline: FY 07**

**1C.4: Develop site-specific and bioregional management plans.** The information generated in 1C.2 and 1C.3 will be used to prioritize species and areas to target for prevention and control. As invasive species do not recognize political boundaries, site management plans should be inclusive of the parks and their surrounding environs. In some cases, a bioregional scale may be more appropriate. Multi-Region NRPP-NRM, Fee Program proposals will be submitted to assist in funding 1C.2 and 1C.3. These plans may be used as models for other parks working towards planning efforts.

**Action Agent: Parks, Networks, Regions, EPMT Liaisons**

**Lead Agent: Parks, Networks, Regions**

**Timeline: FY 07**

## **2 - PREVENTION**

Preventing the establishment of invasive species is recognized as the most effective and cost efficient means of managing invasive species. The NPS must employ a multifaceted approach to preventing invasions. One key to success is a well-informed public (see also CATEGORY 8 – Develop Education and Public Awareness).

### **ACTION 2A: CURB NPS MANAGEMENT PRACTICES THAT SPREAD INVASIVES WITHIN PARK BOUNDARIES**

The first order of business should be to ensure NPS is not exacerbating the invasive species problem through its own management actions.

**2A.1: Develop minimum best management practices (BMPs) for managing invasive species Servicewide.** Develop national models of best management practices (BMPs) to guide park management actions and planning. Examples of BMPs include adjusting park maintenance and construction activities to minimize introduction and the spread of invasive species within the park (e.g., washing of vehicles and boats used in infested areas, cleaning gear, clothes, shoes waders to avoid seed or organism transplant, use of invasive species free feed mulch, gravel, and soil) , reducing anthropogenic disturbance in natural areas, restoring disturbed sites, and specifying the use of natives in park

construction and landscape activities. To ensure BMPs are practical and successfully implemented, all functions of park management (e.g. law enforcement, maintenance, fire, visitor use, resource management.) will be engaged in the development of BMPs. These BMPs will be included in the Reference Manual on Invasive Species.

**Action Agent: NRPC, Directorates, Parks and Regions**

**Lead Agent: BRMD**

**Timeline: FY 07**

**2A.2. Develop recommendations for native plantings.** BRMD will develop a list of recommended native plant lists specific to regions and ecological settings for use by parks and the Denver Service Center. The goal is to reduce reliance on non-native plant materials and to allow parks to proudly showcase native vegetation as components of our natural and cultural heritage. Restoration proposals require the use of native or non-invasive vegetation in their proposals.

**Action Agent: NRPC, Denver Service Center, Regions, Parks**

**Lead Agent: BRMD**

**Timeline: FY 07**

## **ACTION 2B: REDUCE THE USE OF INVASIVES BY THE PUBLIC**

Since many invasive species are reaching NPS sites from adjacent lands, it is critical that we work with partners to reduce the use of invasive species for landscaping.

**2B.1: Encourage nursery and pet trade to promote responsible ownership and marketing of non-invasive species.** Work with partners to organize volunteers to systematically identify what nurseries and pet stores are carrying and provide them with non-invasive species recommendations.

**Action Agent: BRMD, Regions, Parks**

**Lead Agent: BRMD**

## **ACTION 2C: PREVENT THE INADVERTANT INTRODUCTION OF INVASIVE SPECIES BY THE VISITING PUBLIC**

US National Parks are prime global tourist destinations attracting an international clientele. With visitors converging on US parks from all corners of the globe, potential invasion vectors become international in scale and a clear threat. Inadvertent dispersal of invasive species into parks by domestic visitors threatens park resources as well. In addition to educating the visiting public it is suggested that NPS:

**2C.1: Utilize existing permit systems.** Require visitors to demonstrate their gear is clean (i.e. invasive species-free) as a condition of receiving a use permit (e.g. camping, hiking, boating, angling, backcountry/wilderness etc.)

**Action Agent: Parks**

**Lead Agent: BRMD**

**Timeline: FY 10**

**2C.2: Explore options to intercept and decontaminate visitor vehicles, boats and equipment.** Test the feasibility and effectiveness of an entrance station inspection, education, and decontamination program in one or more parks considered at high-risk from visitors inadvertently bringing in invasive species. This pilot program could include a short entrance station questionnaire about where the visitors are from, what gear they have brought with them, and whether or not they have cleaned/decontaminated their gear (e.g. boots, raingear, boats, tents, vehicles, boats, etc.) prior to arrival. If not, entrants would be directed to a self-decontamination station. Contaminated materials obtained from the decontamination process could be examined, and unidentifiable seeds could be germinated to determine their identity. The park visitors participating in the process could be queried to determine their reaction to this program, and the number and invasiveness of the species obtained could be evaluated to determine whether to implement such a system in a larger number of parks or to dismiss the idea as being either infeasible or ineffective. The effectiveness of such a program could be greatly enhanced by including an outreach component aimed at educating visitors about the need to decontaminate their gear prior to arriving at a park.

**Action Agent: Parks**

**Lead Agent: BRMD**

**Timeline: FY 10**

**2C.3: Recommend/require use of weed free feed for public and vendor livestock.**

Work with the Department of Agriculture and state agencies to develop weed-free certification programs. Work with state agencies and other federal agencies to establish policies and procedures promoting/requiring the use of weed-free feed in NPS units and other federal and state management units.

**Action Agent: Parks, NRPC, Visitor and Resource Protection, Concessions**

**Lead Agent: BRMD**

**Timeline: FY 10**

### **3 - DEVELOP EARLY DETECTION/ RAPID RESPONSE CAPABILITY**

Early detection and rapid response are pivotal components of effective invasive species management. The NPS system will be composed of a park-level detection model, participation in systems to communicate new findings within and outside the NPS and a rapid response component for control and management.

#### **ACTION 3A: DEVELOP AND IMPLEMENT AN EARLY WARNING SYSTEM THAT ALERTS PARKS OF POTENTIAL INVASIVE SPECIES**

NPS units need to be alerted when invasive species are found near their boundaries so they can respond expeditiously.

**3A.1: Implement a system for reporting and rapid communication of plant and animal invasions.** Work with the National Invasive Species Council to develop a national interagency system to report and track changes in the distribution of each

invasive species and to communicate this information on a timely basis. This information should be maintained on a national interagency website so it is readily available to all. In addition, parks, networks and regions should send and receive special alerts when invasive species are found for the first time near park boundaries.

An invasive plant early detection protocol for use in parks is being developed by OIME with cooperation from USGS. Use of a volunteer citizen program for early detection is also being developed by USGS with the support of National Geographic. Additionally a pilot invasive species reporting and action tracking system is under development through the Pacific Basin Information Node/USGS.

**Lead Agent: BRMD**

**Action Agent: Parks, Networks, Regions, BRMD, USGS**

**Timeline: FY 05**

**3A.2: Establish contingency funding to address emergency control responses for newly discovered, potentially explosive invasions.** The Invasive Species Technical Advisory Committee will consider how a contingency funding source (similar to Fire Program emergencies) can be developed to respond rapidly to new invasions such as Gambian Rats, Coqui Frogs, Sudden Oak Death, stinkweed, or Emerald Ash Borer. At present funding is not available to respond quickly to new invasions allowing for some invasive species to be addressed only after costs are prohibitive. The funding cycle is such that projects must be submitted and run through an evaluation cycle 3 years prior to the project being supported. Both invasive plants and animals will be addressed as rapid response capabilities are common to both. NPS will consider the use of an Incident Command System for its response to new infestations and coordinate with other federal programs.

**Lead Agent: BRMD**

**Action Agent: Parks, Networks, Regions, BRMD, Invasive Species Technical Advisory Committee**

**Timeline: FY 06**

**3A.3: Contribute to the development of national standards for all aspects of invasive species management.** Management of invasive species requires cooperation across all jurisdictions. Further, rapid response systems are dependent on clear and timely communication. This cooperation is facilitated by a common understanding of terms and concepts. It is important that standards, similar to NAWMA that have been developed for plants, be developed for other organisms and other aspects of invasive species management. NPS will participate in the development and implementation of national standards.

**Lead Agent: BRMD**

**Action Agent: Parks, Networks, Regions, BRMD Invasive Species Technical Advisory Committee**

**Timeline: FY 07**

## 4 - CONTROL AND MANAGEMENT

It is beyond the capability of present funding and knowledge to eradicate all invasive species. Control and management of invasive species will be guided by priorities determined by parks, coordination with other agencies, collaboration with adjacent landowners and with the best available science (information). Treatments will seek to eradicate infestations or bring them to a maintenance-control level.<sup>1</sup> Implementation and control methods will include a variety of management practices such as herbicide use, site restoration, fencing, bio-control, animal removal and fire. Projects will begin with an initial treatment, followed by a series of follow-up treatments until the site is brought within a defined control level. National Environmental Protection Act (NEPA) and National Historic Preservation Act (NHPA) compliance and monitoring will be conducted as necessary. Where appropriate compliance with NEPA and NHPA will be conducted over landscapes and geographic scales to increase efficiencies and lead to consistent approaches to management. Efficiency will be increased through the use of partnerships, volunteers, teams, and regional implementation strategies.

### **ACTION 4A: PROVIDE RESOURCES TO MEET CONTROL NEEDS FOR TARGETED SPECIES**

Initial control of invasive species beyond the scope of individual park capabilities will be accomplished through three mechanisms: 1) NPS project funding (e.g. BRMD Competitive, NRPP-NRM, NRPP – Small Parks, Regional Block), 2) partnership funds (e.g. state weed management area funds, NFWF Pulling Together funds) and 3) Exotic Plant Management Teams (Sixteen EPMTs, modeled after the Lake Mead NRA demonstration project, have been established to serve 209 parks in control and removal efforts). Restore NRPP-NRM funding to FY 03 levels.

It is currently beyond the capability of EPMTs to maintain and monitor all treated areas. It is the responsibility of the parks to monitor and manage these areas. The focus of the teams has been new infestations and initial treatment of existing infestations. If EPMTs are tasked with all monitoring and retreatment, under current funding regimes, they would quickly be unable to do the initial control work they were created to perform. Unfortunately, many parks are fast approaching, or have already surpassed, their ability to maintain the gains achieved through initial control efforts.

**4A.1 Conduct a Servicewide evaluation of how best to build invasive species control capability.** The Exotic Species Section of the Natural Resource Challenge Report (1999) includes an NR-MAP analysis of the gap between what parks needed in order to implement a comprehensive invasive species management program and what they had. This analysis showed that about 370 additional "FTEs" were needed Servicewide to control non-native invasive plant and animals species in the parks and to deter new invasions. The "FTEs" represent a full-time equivalent of one year's work. However,

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<sup>1</sup> A maintenance-control level is a level of infestation assessed as having little or no impact on natural areas nor spreading into natural areas.



these "FTES" could be full-time, temporary, or permanent employees, seasonal employees, contracted services, or some combination of these.

Since that time, parks have filled out new NR-MAP park profiles and new figures should be available shortly. Preliminary results indicate that although the number of "FTES" being devoted to this effort has increased somewhat, the number of non-native species and acreage of infestation has also increased; and the gap between what the parks need and what they currently have has actually increased. An analysis of this NR-MAP data needs to be conducted as soon as the data is finalized and released that explores different approaches of how these personnel gaps might best be addressed. In some cases, parks may find it advantageous to address their needs on a multi-park or network basis by aggregating staff capabilities in one or more locations to meet their collective needs.

**Lead Agent: BRMD - Invasive Species Branch**

**Action Agent: Parks, Networks, Regions, BRMD Invasive Species Technical**

**Advisory Committee**

**Timeline: FY 06**

**4A.2 Build park base capability to conduct invasive species management.** Park base OFS increase requests need to be developed and given high priority. Some park base increases may be designed to serve multiple parks where this is found to be the most effective and efficient approach. The workgroup tasked with developing this plan considers this to be the most pressing need identified in the plan. Park base funds, used proactively, constitute the best opportunity to manage the spread of invasive species in the most economical way. Without base-funded invasive species programs, parks will likely face an overwhelming problem and potentially irretrievable losses in native species biodiversity. Building additional capacity for initial control will prove futile if there is inadequate capability to maintain areas after initial control is achieved.

**Lead Agent: Parks, Networks, Regions**

**Action Agent: Parks, Networks**

**Timeline: FY 06**

**4A.3: Expand capacity of existing Exotic Plant Management Teams.** NPS Exotic Plant Management Teams were funded at \$300,000 per team in 2000. Demand for services from the teams continues to increase. There is need to build capacity for initial management by providing technical assistance to member parks for treatment, training in pesticide use, inventory and monitoring. Further it is important for the teams to provide effectiveness monitoring, as feasible, and retreatment on a portion of the treated areas until they are brought to a maintenance control level. This ensures that treatments are effective. It also ensures all aspects of managing invasive plants is accomplished, from detection through inventory, treatment through monitoring changes in plant communities, spread of invasions and the effectiveness of treatment. However, regional and park assessments have reduced the amount available for control work by 10%, while costs have increased annually for staff and equipment. Additionally early estimates for EPMT operations did not include data management support to ensure accountability or reporting to GPRA. An increase to base of \$1.60 million (an average increase of \$100,000 per team) will be sought to provide for operation cost increases and data management support

conducted at 209 parks. This funding is also needed to be able to accommodate parks within or adjacent to the original team structure. This would allow for a gradual increase in capacity over time and in many cases will logistically and strategically include parks that are dealing with similar issues as the host EMPT. The additional funds would be distributed among the teams on the basis of such factors as number of parks served and the number of species, complexity of control and acreage targeted for control in those parks.

**Action Agent: BRMD**

**Lead Agent: BRMD**

**Timeline: FY07**

**4A.4: Increase number of Exotic Plant Management Teams.** The 16 existing Exotic Plant Management Teams support 209 parks. However, there are still parks with significant invasive species management needs that remain to be served. Some parks could be covered by expanding existing teams, however some areas of the country have no teams. Three additional teams should be established in MWR, SE and PWR at \$400,000 per team. This additional money, plus the funds included in Action 4A.4 would increase coverage to all significant resource parks within the Park Service.

**Action Agent: BRMD**

**Lead Agent: BRMD**

**Timeline: FY07**

**4A.5: Study feasibility of Invasive Terrestrial and/or Aquatic Animal Management Teams.** NPS will consider the feasibility of creating a limited number of teams to address invasive animal control. The team model has been a cost-effective and professional way to address invasive plants. It has been recommended that this model may be applicable to the control of certain invasive terrestrial and aquatic animals such as feral hogs, coqui frogs, and nutria. However, invasive animal control generally cannot be accomplished with brief visits from control experts and instead requires a concerted effort over a longer period of time than could be provided by a traveling team. Therefore, this idea requires additional study.

**Action Agent: BRMD, Invasive Species Technical Advisory Committee**

**Lead Agent: BRMD**

**Timeline: FY 10**

**4A.6: Restore the Cooperative Conservation Initiative.** This funding source provided critical funding for invasive plant management in FY03 and FY04. This program was a strong catalyst for developing productive partnerships with our neighbors, promoting efficiency and cooperation in addressing invasive species. Unfortunately, it was discontinued in FY05. It is important that this funding source be reestablished.

**Action Agent: BRMD, NRPC, Invasive Species Technical Advisory Committee**

**Lead Agent: BRMD**

**Timeline: FY 10**

**4A.7: Identify existing funding opportunities for invasive terrestrial and aquatic species control.** In view of the limited amount of money available, parks cannot afford

to miss out on any opportunities. A comprehensive list of internal and external potential funding sources for initial control and maintenance will be maintained by the BRMD-Invasive Species Branch. This list will include Cyclical Maintenance, NRPP, BRMD-Competitive, Federal Highway funds, and Public Land Corps. Other types of funding will also be sought out to address initial control types of activities, especially activities related to management actions, road construction or landscape events (e.g. Burned Area Emergency Rehabilitation funding, NPS Fee Program, NPS Line-item construction etc.)

**Action Agent: Parks, Regions, NRPC**

**Lead Agent: Invasive Species Technical Advisory Committee**

**Timeline: FY05 – FY10**

## **5 - RESEARCH**

### **ACTION 5A: COORDINATE, IDENTIFY AND FUND RESEARCH NEEDED TO SUPPORT THE SCIENCE-BASED NPS INVASIVE SPECIES MANAGEMENT PROGRAM**

A successful program will require substantial research support. Examples of issues needing study are habitat invasibility, prediction of species impacts, duration of seed banks, rates of spread, herbicide mobility testing, and development and testing of best control methods.

**5A.1: Develop research priorities** through a Delphi process and in cooperation with other agencies (e.g. USGS Biological Resources Division and Agricultural Research Service), states, and academia. A number of other federal agencies are tasked with invasive species research including Agricultural Research Service, Forest Service, Economic Research Service, Cooperative State Research, Education and Extension Service. We will work with these agencies and academia to ensure that research needs of the parks and NPS Programs are included and reduce research duplication. NPS will develop a comprehensive, annually updated, invasive species research list that will be provided to USGS and others responsible for research for DOI.

**Action Agent: Parks, Regions, NRPC**

**Lead: BRMD-Invasive Species Branch**

**Timeline: FY06**

**5A.2: Encourage funding for high-priority research.** Track research needs to ensure high priority research needs are submitted to compete for NRPP-USGS Research and other potential fund sources. Propose a Joint – Invasive Species Science Program with DOI, DOC and DOA to parallel the Joint Fire Science Program.

**Action Agent: Parks, Regions, NRPC**

**Lead: BRMD**

**Timeline: FY08**

## **6 - INCREASE CAPACITY OF INFORMATION MANAGEMENT**

There are many types of information that need to be managed and disseminated to optimize the effectiveness of the Park Service's invasive species management program. Parks need to be able to document which invasive species exist in the park, the extent of the invasions, which species they have targeted for control, what control efforts they have undertaken, and what has been the long-term result. Parks also need access to up-to-date databases providing: 1) key characteristics of each invasive species (e.g. invasiveness, range, life history, etc.) and 2) state-of-the-art control technologies for each invasive species. NPS also needs to compile and maintain a database of research needs. Most of these databases already exist and just need improvement. The goal should be to provide easy access and sharing of information to enable parks to benefit from the experience of others.

Information plays a vital role in managing invasive species. It is critical that information on the distribution and abundance of invasive species on NPS lands is available to managers. Funds for inventory and monitoring will also be limited. It is therefore important to implement information gathering regimes that will be efficient and effective and equally important that information collected on parks is compatible across ecosystems, parks, scales and time. Information needs to be available for strategic planning as well as site specific management. Information must be available to ascertain the impact of invasive species to the park's natural and cultural resources and to monitor changes to critical ecosystem components such as changes in plant communities, disturbance regimes, spread of invasive species, soil erosion and habitat requirement for T&E species. Further, this information is invaluable in prioritizing treatment areas.

It is also critical that NPS databases be integrated into a larger interagency information system that enables all agencies and organizations involved in invasive species management nationwide to share information.

#### **ACTION 6A: IMPROVE EXISTING NPS DATABASES AND LINK THEM**

NPS has several databases that document important aspects of the invasive species management program. They need to be improved and linked to provide an efficient comprehensive data management system.

##### **6A.1: Adopt North American Weed Management Association Standards.**

All parks will adopt, at a minimum, the North American Weed Management Association (NAWMA) standards for mapping and inventory of invasive plants. This adoption complies with requirements of GPRA Goal 1a1b: Controlling Invasive Plants. BRMD will communicate this requirement and monitor park compliance. Provide training to users.

**Action Agent: BRMD, Parks, Networks, Regions**

**Lead Agent: BRMD**

**Timeline: FY 05**

**6A.2: Improve the quality of the invasive species data in NPSpecies.** NPSpecies documents which invasive species exist in the parks. NPS will continue the process of

validating the data in NPSpecies and gathering additional inventory data. NPS also will link this presence/absence data with NR-MAP.

**Action Agent: BRMD, Parks, Networks, Regions, Office of Natural Resource Information Systems (ONRI)**

**Lead Agent: BRMD and Office of Natural Resource Information Systems (ONRIS)**

**Timeline: FY 05-FY10**

**6A.3: Improve the quality of the invasive species data in NR-MAP.** NR-MAP documents which invasive species exist in the parks, the extent of the invasions, which species they have targeted for control, and how many acres have been targeted. NPS will continue to strengthen the quality control applied to the invasive species data entered into NR-MAP. Requiring metadata has helped, but some Regions have been more thorough than others in ensuring the data quality. NRPC could play a more active role in checking the data for obvious anomalies. This database is limited by the amount of information known by the parks. (If they do not know the extent of an invasion, parks are instructed to enter “one acre” as a placeholder until more accurate information is available.) Each iteration of NR-MAP data should improve as parks learn more about their resources from their inventory and monitoring efforts. NPS will link NR-MAP data with NPSpecies.

**Action Agent: NRPC, Parks, Networks, Regions**

**Lead Agent: Office of Natural Resource Information Systems (ONRIS)**

**Timeline: FY05-FY10**

**6A.4: Improve the APCAM database.** APCAM documents what control efforts have been conducted and the results of those efforts. NPS will revise the APCAM program to make it more user-friendly and extend its use beyond the EPMTs so all invasive species control efforts conducted in a park are captured in this database. NPS will standardize protocols for gathering fundamental invasive species control data to ensure it is meaningful when aggregated at the network, regional and Servicewide levels. The improved database will be made accessible on the Intranet and/or Internet and consideration will be given to linking APCAM with the invasive species information contained in NPSpecies and NR-MAP.

**Action Agent: NRPC, Parks, Networks, Regions**

**Lead Agent: BRMD- Invasive Species Branch**

**Timeline: FY 05-FY10**

**6A.5: Revise GPRA goals in the Performance Management Data System.** The current GPRA goals are:

FIVE-YEAR GPRA GOAL 1: 9.6% (250,000 acres) of park lands have had invasive (non-native) plant invasions effectively controlled (2003 baseline of 2.6 million acres).

FIVE-YEAR GPRA GOAL 2: 4% of uncontrolled populations of invasive (non-native) animals have been effectively controlled.

The current goals capture the percentage of acres targeted for treatment that have been brought to a maintenance control level. There are at least two more measures of progress

that should be added: acres of targeted invasive plants that have been treated and numbers of invasive non-native animal populations that have been treated. These measures would document efforts that have not yet achieved the maintenance control level. Making these amendments will require coordination with other DOI agencies to ensure consistency in DOI GPRA measures.

**Action Agent: BRMD**

**Lead Agent: BRMD**

**Timeline: FY 06**

### **ACTION 6B: SHARE NPS DATA WITH OTHERS AND IMPROVE ABILITY FOR NPS UNITS TO ACCESS THE DATA OF OTHERS**

The invasive species threat can not be addressed unilaterally. NPS units need ready access to lessons learned by other agencies and organizations and should share its experience with others.

**Action 6B.1: NPS will be pro-active in encouraging establishment an Interagency database on the internet that serves as a national repository for life history and control technique information.** There is currently no consistent place parks go to share information they have learned about the key characteristics of each invasive species (e.g. invasiveness, range, life history, etc.) and state-of-the-art control technologies for each invasive species. There are several databases maintained on the Internet that could potentially serve this function (e.g. TNC has such a site). The National Invasive Species Council should either work with one of these sites to make it a comprehensive repository for information from all federal, state, local, and private entities, or it should expand its current web site to serve this function. Standard forms should be established for anyone to submit (1) new information about the ecology of specific invasive species that could be helpful in suggesting control techniques and (2) field results from applying control techniques. A panel of experts should be established to review the submissions, judge their credibility and importance, synthesize all of the information received, and post recommendations on the website as to how best to treat each invasive in various environmental circumstances. Although maintaining such a site with current information will require a significant long-term investment of funds, the benefits of providing up-to-date guidance nationwide on the best control techniques will be much greater.

**Action Agent: BRMD, Office of Natural Resource Information Systems (ONRIS), Regions, Parks**

**Lead Agent: BRMD**

**Timeline: FY 05-10**

### **ACTION 6C: MAKE NPS RESEARCH INFORMATION MORE ACCESSIBLE**

NPS needs to communicate its research needs with researchers, and NPS research results need to be readily accessible.

**6C.1: Develop an up-to-date database of key NPS invasive species research needs that is accessible to academic institutions.** Explore ways to share NPS's top research needs with those interested in conducting invasive species research. NPS needs should also be viewed in a broader context. Work with the National Invasive Species Council and the panel of experts identified in Action 6B.1 to identify what needs to be learned to strategically fight the spread of invasives nationwide.

**Action Agent: Office of Natural Resource Information Systems (ONRIS), BRMD, Regions, Parks, CESUs**

**Lead Agent: Office of Natural Resource Information Systems (ONRIS)**

**Timeline: FY 05**

**6C.2: Share NPS research results more effectively.** Encourage parks to report all invasive species research conducted in parks in the Research Permit and Reporting System or the Investigator's Annual Reporting System. BRMD should synthesize this information and provide parks with an annual summary report on an FTP site.

**Action Agent: BRMD, Regions, Parks**

**Lead Agent: BRMD**

**Timeline: FY 05**

## **7 - RESTORATION**

Executive Order 13-112 requires Federal agencies to "provide for restoration of native species and habitat conditions in ecosystems that have been invaded." Invasive species are found in disturbed and undisturbed environments, and they can cause a wide range of impacts, both to the structure of ecosystems and their processes. For example, the invasive plant, kudzu, covers and shades out other vegetation in the southern U.S., compromising a wide variety of plants and dependent animal species. In the southwestern United States salt cedar or tamarisk (a fast growing plant native to China) forms monocultures in riparian areas, replacing native species, disrupting fire regimes and depleting water resources.

If an invasive species is eradicated in an area and the impact on the environment was minimal, recovery can be rapid. In many cases, however, impacts resulting from invasive species have cascading effects throughout an ecosystem and may be exacerbated by human alterations of the environment. For example, invasive species can dramatically reduce biodiversity, alter the ecosystem processes that provide surface water and other natural resources as well as altering the cultural landscape. These alterations are not easily mended and may require active restoration actions to recover the system or cultural landscape. Depending on the scale, duration, and frequency of the invasion, restoring the ecosystem or cultural resource to its original condition may not be technically or financially feasible. However, most situations fall in the middle and require some level of active restoration in order to re-establish recovery trajectories or outcomes. Removal of invasive species without full consideration of potential restoration needs is likely to leave a site vulnerable to re-invasion.

Although the National Management Plan (2000) has stated that “Restoration is an integral component of comprehensive prevention and control programs for invasive species that may keep invasive species from causing greater environmental disturbances,” in some cases invasive species management efforts have focused on species control with only minimal consideration for associated cultural and natural restoration needs.

#### **ACTION 7A: PROVIDE GUIDANCE IN RESTORATION TECHNIQUES**

Parks and EPMTs need additional guidance in how to most effectively and efficiently restore and revegetate areas impacted by invasive species.

**7A.1: Develop restoration guidelines.** The BRMD-Restoration Program will develop restoration and revegetation guidelines/prescriptions following invasive plant removal based on priority invasive species and major ecosystems. Guidelines should be based on management objectives, outcomes of the native plant genetic workshop and desired future conditions identified by parks for their natural and cultural resources. These guidelines will be posted on the BRMD website.

**Action Agent: BRMD, Restoration Technical Advisory Group (RTAG)**

**Lead: BRMD**

**Timeline: FY 06**

**7A.2: Develop a decision making tool to evaluate restoration alternatives.**

Development of a toolbox or decision tree to consider low cost alternatives for restoration of sites invaded by invasive plants and animals would prove useful to Natural Resource Managers. Application of the Rapid Restoration Assessment Tool (RRAT) for use in ecosystems beyond disturbed riparian areas will be considered. The RRAT is currently being field tested in riparian ecosystems, and the model may have broader applications.

**Action Agent: Parks, Regions, NRPC**

**Lead Agent: BRMD**

**Timeline: FY 06**

**7A.3: Develop guidance and decision tools for removal of invasive animals and restoration of native animal species.** NPS is currently a leader in developing guidance and tools for restoration of native plant communities. Similar work is required with respect to control of invasive animals and restoration of native animal communities.

**Action Agent: Parks, Regions, NRPC**

**Lead Agent: BRMD**

**Timeline: FY 08**

#### **ACTION 7B: INCREASE AVAILABILITY OF GENETICALLY APPROPRIATE PLANT MATERIALS FOR RESTORATION PROJECTS**

Genetically appropriate plant materials are not always available for use in NPS restoration projects.



**7B.1: Increase capacity for producing and storing native plant materials.** BRMD will develop strategies for acquiring and warehousing native plant materials while protecting NPS native genotypes. This will require identification of core species, stratified by soil type, precipitation zone and habitat type. Steps should be taken to ensure that genetic material used in a restoration project matches local genotypes as closely as possible. Information from the native plants genetic workshop (2005) can assist in identifying appropriate genetic materials. NPS also will coordinate with similar ongoing efforts in the BLM, Forest Service, NRCS, and private nurseries. NPS will work with researchers and other agencies to identify seed transfer zones for these core species.

**Action Agent: BRMD**

**Lead: BRMD**

**Timeline: FY 07**

## **8 - DEVELOP EDUCATION AND PUBLIC AWARENESS**

In July 2004, the NPS published a study entitled “Managing Non-Native Plants and Animals in the National Park System: Analysis of Public Opinion.” The study concluded that many members of the public are unaware of the problems produced by non-native species and provided park managers “with an awareness of the importance of educating visitors and the public at large about non-native species. One step toward accomplishing this has been to integrate science education components into proposals and plans to protect park resources by removing non-native plants and animals.”

National Parks are visited by millions of people every year from throughout the country and the world, and these visitors care deeply about the resources the Park Service is mandated to preserve and protect. This gives the NPS a unique opportunity and responsibility to communicate the importance of the invasive species threat. Through displays, exhibits, and interpretive programs, the Park Service can contribute to the public knowledge of invasive species, mechanisms to prevent the introduction and spread of invasive species and personal behaviors that can reduce the spread of invasive species in the United States.

Internal education of NPS staff is also necessary to improve our invasive management response capabilities. Training programs and training materials for park staff and volunteers also will assist in developing a well educated and responsive cadre of responders.

### **ACTION 8A: INCREASE AWARENESS OF THE THREAT POSED BY INVASIVE SPECIES**

Successfully addressing the threat posed by invasive species will require an informed staff, informed visitors, and an informed general public.

**8A.1: Develop and disseminate invasive species curricula.** “Aliens in our Neighborhood” is a comprehensive plan to educate Americans about invasive species. This plan was developed by education specialists and describes an educational program

for the K-12 school environment and adult learning opportunities. Further development and implementation of invasive species curricula designed for elementary and secondary education programs can help teachers educate young people and future visitors to National Parks.

**Action Agent: Office of Natural Resource Information Systems (ONRIS), BRMD, Learning Centers, Parks, Concessions, Networks, Regions**

**Lead Agent: Office of Natural Resource Information Systems (ONRIS), BRMD**

**Timeline: FY 07 – 10**

**8A.2: Complete invasive species component of “Views of the National Parks.”** The NPS is developing “Views of the National Parks” which includes an invasive species education component. This component should be further refined and made accessible to parks. Products will be disseminated to Learning Center operations.

**Action Agent: Office of Natural Resource Information, BRMD, Learning Centers, Concessions, Parks, Networks, Regions**

**Lead Agent: Office of Natural Resource Information Systems (ONRIS) and BRMD**

**Timeline: FY08**

**8A.3: Implement a nationwide awareness campaign.** A partner-based national level awareness campaign similar to the “Smokey Bear” and “Prevent Forest Fires” campaigns is required and being considered by the National Invasive Species Council. The NPS will work with the Council to develop and promote this external outreach effort. The NPS presently participates in the national campaign “Stop Aquatic Hitchhikers”

**Action Agent: Office of Natural Resource Information, BRMD, Learning Centers, Concessioners, Parks, Networks, Regions**

**Lead Agent: Office of Natural Resource Information Systems (ONRIS)**

**Timeline: FY08**

**8A.4: Develop training classes or modules to inform park staff on invasive species topics.** Training opportunities will be developed and provided through the Albright Training Academy. Several levels of training are envisioned including general awareness training of threats to parks by invasive species and park or “network” specific training. The more specific training would detail current and imminent threats to a park or network based on invasive species distribution information and “Alerts” as in 3A.1. Feedback into the 3A.1 “Information System” would be encouraged through reporting new sightings of target invasive species. Use of Tel-Net and internet based training is encouraged to access the widest audience within the NPS.

**Action Agent: BRMD, Albright Training Center**

**Lead Agent: BRMD**

**Timeline: FY08**