

CRATERS OF THE MOON NATIONAL MONUMENT  
INTEGRATED PEST MANAGEMENT PLAN

DRAFT  
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## TABLE OF CONTENTS

### Executive Summary

- I. Introduction
- II. Legal Authorities and Requirements
  - A. Federal Laws
    - 1. Federal Laws and Regulations
    - 2. NPS Policy and Regulations
    - 3. NPS Guidelines
  - B. Idaho State Laws
  - C. Butte/Blaine County Laws
- III. Park Management Strategies
  - A. Objectives
  - B. IPM Process (decision tree)
    - 1. Building Consensus
    - 2. Review of NPS Policy
    - 3. Identifying Pests
    - 4. Establishing Priorities
    - 5. Establishing Thresholds
    - 6. Monitoring Pests
    - 7. Integrated Pest Management
      - a. Implementing Treatment Strategies
      - b. Determining When to Use Chemical Treatment
    - 8. Evaluating Treatment
    - 9. Documentation
  - C. Education
- IV. Roles and Responsibilities
- V. Safety
  - A. Certification
  - B. Pesticided Information
  - C. Pesticide Storage
  - D. Pesticide Disposal
  - E. Training
  - F. Notification
  - G. ~~Spills~~ *USE & HANDLING*
  - H. ~~Spills~~
- VI. Documentation
  - A. Monitoring Procedures and Forms
  - B. Pesticide Use Proposals and Approvals, Form 10-21A
  - C. Pesticide Use Logs
  - D. Labels and MSDS's
  - E. Past Management Actions Taken
  - F. Purchasing (Pesticides, Contracts)
  - G. IPM Policy for Special Use Permits, Concessions Contracts, ROW, etc.
  - H. Cooperative Agreements
  - I. Administration of Documents and Files

## VII. Management Zones

- A. Structural (interior/exterior)
  - 1. VC/Shop/Residential/Log Storage/Campground Restrooms
  - 2. Museum/Exhibits
- B. Landscapes
  - 1. VC/Residential
    - a. Turf
    - b. Xeriscape
  - 2. Roads
  - 3. Trails
  - 4. Caves
  - 5. Riparian
  - 6. Wilderness

## Appendix

- 1. Specific Pest Action Plans
  - A. Plant Species
  - B. Invertebrate Species
  - C. Vertebrate Species
- 2. Technical/Professional Contacts
  - A. Federal/NPS
  - B. State/County
  - C. Private/Commercial
- 3. Suppliers
  - A. Pesticides, application equipment
  - B. Safety Equipment
- 4. General Bibliography
  - A. IPM Management
  - B. General Zones???
  - C. Pests??
- 5. Compliance
- 6. Maps
  - A. Management Zones
  - B. Caves Map
  - C. Exotic Plant locations
- 7. Labels, MSDS's
- 8. Cooperative Agreements
- 9. Laws
- 10. Glossary of Terms / *Acronyms*
- 11. Approval Procedures
- 12. Notification of Spaying
- 13. Certification/Trained Personnel

## EXECUTIVE SUMMARY:

## I. INTRODUCTION

Craters of the Moon National Monument (CRMO) was established as a unit within the National Park Service (NPS) by presidential proclamation in 1924, and presently occupies 54,000 acres in the eastern Snake River Plain in southern Idaho. In addition to the Organic Act of 19\_\_ which mandates that lands managed by the National Park Service will be preserved and protected in their natural state for all generations to come, the enabling legislation for CRMO states, ...“Whereas, this area contains many curious and unusual phenomena . . . and has a weird and scenic landscape peculiar to itself; ...warning is hereby expressly given to all ... not to appropriate, injure, destroy or remove any feature of this Monument...” The mandate to protect and preserve the native plant and animal life and natural processes is clear.

Non-native species, without the presence of the natural population control factors present in their native habitat, invade an area and begin to spread rapidly, competing with native species for the basic necessities for life, and eventually dominating the sight, usually wiping out the native populations. As the native plants and animals begin to disappear, the habitat is altered and the ecosystem is replaced. Presently, a number of exotic/pest plant and animal species reside within the monument boundaries that present a threat to the native flora, and fauna and natural processes that the service has been charged with protecting.

The pest species at CRMO are predominately exotic plants, but also include a few animal species such as house sparrows and pigeons that compete for nesting sites and are causes for human health concerns, insect species that infest museum collections and cause damage to objects in the collections and to books and files stored in the park's library, and animal species that carry pathogens that are of great concern to public health and safety such as a deer mouse infected with the hantavirus.

Historically, staffs at CRMO have focused pest control efforts almost entirely on visible and familiar exotic plant species found mostly along the roadways with the boundaries. Unidentified exotic plants and those growing outside of the roadside areas have gone untreated and unknowingly allowed to spread. No formal inventories for exotic plant species have been conducted, and at present, no formal monitoring programs are in place. The number of staffs involved in exotic plant suppression has been grossly limited.

An effort to locate and identify pests in the museum collection was undertaken in 1990. The program was one year in duration and monitored areas around and adjacent to the collection storage cabinets, but not inside the cabinets themselves. At present, only casual observations of items in the collection have been. The development of a formal monitoring program is needed.

Although no formal agreements regarding pest management issues, specifically exotic plant species, have been made with land management agencies adjacent to the monument boundaries, monument resources staff have working cooperatively with the Burely, Shoshoe and Idaho Falls Bureau of Land Management (BLM) Districts, the Idaho State Highway Department and the Butte County Cooperative Extension Office.

An Integrated Pest Management (IPM) plan is needed at Craters of the Moon National Monument to guide park managers in the IPM process which includes determining the levels at which pest species become intolerable and when control efforts should be initiated; where and at what frequency treatments should be applied; and what control strategies should be employed and how effective these treatments are in achieving the management objectives. The IPM process is designed to ensure that the most environmentally sound approach to pest management is the one selected for treatment.

The IPM process utilizes, in combination, compatible pest management techniques to maintain pest damage below what is considered unacceptable levels while providing for the health and safety of the public, park staff and the natural environment. These techniques include, mechanical, physical, cultural, and (only when absolutely necessary and when used in conjunction with other pest management techniques) chemical controls as are described in NPS-77.

In addition to providing guidance for the IPM process, a critical goal of this plan is to ensure success of the program through understanding and agreement on program objectives between park divisions of management, maintenance, interpretation, and cultural and natural resources. To be effective, pest control must become a major and long-term TEAM project that has the support of all divisions and staff.

## II. LEGAL AUTHORITIES AND REQUIREMENTS

### A. FEDERAL LAWS

#### 1. Federal Laws and Regulations

##### a). Pesticide Use, Safety, Storage and Disposal

The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and the regulations established by the Environmental Protection Agency (EPA) (40 CFR 116-117, 165, 170-172) are the primary guidance governing pesticied registration, pesticide usage, the training and certification of pesticide applicators, and the criminal and civil penalties associated with the misuse of pesticides. The storage and disposal of most pesticides are aslo governed by FIFRA, with specific directions provided on the label. In addition, a number of pesticides have ben classified as hazardous waste under the Resource Conservation and Recovery Act. The pesticides which have been classified as hazardous materials are listed in 40 CFR 261.30-33. FIFRA also delegates the enforcement of FIFRA to the individual States.

The Migratory Bird Treaty Act, requires a permit from the U.S. Fish and Wildlife Service (FWS) if proposed activities will affect migratory birds.

Under the Endangered Species Act, the EPA and FWS are developing a program that will prohibit or limit the use of certain pesticides within the range of endangered species. These requirements will become part of pesticied labels and labeling, and the prohibitions will be enforceable under FIFRA.

Occupational Health and Safety (OSHA) Hazard Communication Standard (29 CFR 1910, 1200), employers must provide workers with training, protective equipment, and information about hazardous substances. The employer is also required to maintain Material Safety Data Sheets about these substances and provide the employee with a copy if it is requested by the employee.

b) Protection of Natural Resources, Management of Exotic/Pest Species (IPM)

Organic Act of 1926, created the National Park Service in the DOI. The purpose of which is to promote and regulate the use of the Federal areas known as national parks, monumentes, reservations... by such means ast to conform to the fundamental purpose of the parks...to conserve the scenery, natural, and historic objects and the wildlife therein, to provide for the enjoyment of the same in such a manner and by such means that will leave them unimparied for future generations.

Lacy Act directs the NPS to ensure that no (native) plant or animal shall be removed from the NPS.

Redwoods Act of 1968 assigned the Secretary with the absolute duty, which is not to be compromised, to fulfill the mandate of the 1916 Act to take what ever action and seek what ever releaf as will safeguard the units of the NPS.

NEPA - National Environmental Policy Act directed that all federal agencies will be regulated on their actions in the environment and to make sure that agencies evaluate the impact of their actions.

2. NPS Policy and Regulations

a) Pesticide Use, Safety, Storage and Disposal

Departmental Policy (DM 517 1) requires approval by the Department of the Interior's Office of Environmental Affairs when pesticide use projects meet certain criteria, including; all pesticide uses classified as Restricted Use by the U.S. EPA; pesticide uses that involve aquatic application or situations in which the applied pesticide could reasonably be expected to get into water areas; pesticide uses that consist of one application to more than 2,560 acres (four sections). In addition, this policy states that implementation of the IPM policy requires training for all employees involved in the management of pest problems, especially for those who use pesticides, supervise those who use pesticides, or purchase pesticides (contracting personnel).

b) Protection of Natural Resources, Management of Exotic/Pest Species (IPM)

The NPS policy establishing integrated pest management as the preferred method for managing pest species in the MPS has evolved from previous policies, executive orders, and a presidential memorandum (August 2, 1979). In accordance with NPS Management Policies:

Integrated pest management procedures will be used to determine when to control pests and whether to use mechanical, physical, chemical, cultural, or biological means... The choice to use a chemical pesticide will be based on a review by regional and Washington

office coordinators of all other available options (e.g., mechanical, physical, biological, cultural, and regulatory) and a determination that these options are either not acceptable or not feasible.... Chemical pesticides that are not specifically exempt from reporting (regardless of who the applicator is) will be used only with prior approval by the Director on an annual basis. (4:13, 14)

Exotic Plants/Animals Management Policies, U.S. NPS, DOI 1988, Chapter 4:12 states: Non-native plants and animals will not be introduced into natural zones, except in rare cases where they are the nearest living relative to the extirpated species. Existing exotics will be managed whenever such species threaten park resources. Chapter 4:13 states that IPM procedures will be used in NPS sites.

### 3. NPS Guidelines

#### a). Pesticide Use, Safety, Storage and Disposal

Guide for Pesticide Use in the National Park System, page 2, section C states that the department will utilize IPM research, education, assistance programs wherever practicable.

NPS guidelines apply to any pesticide use within the National Park System, except for cleaning solutions, and state that all proposed pesticide use must be approved prior to use by submitting the Pest Management Report Form 10-21A. In addition, all pesticide use on the grounds or in park facilities, including the residences, must fully conform to all NPS policies and guidelines, and be approved as directed by WASO. Personal insect repellents purchased by NPS for use by park personnel, must fully conform to NPS pesticide approval as well, however, non-NPS purchased and personally used insect repellents do not.

#### b). Protection of Natural Resources - Management of Exotic/Pest Species

Proposed use of any biological control agents also requires approval from the IPM Coordinator at the Columbia Cascades Cluster Office in Seattle. (Other restrictions??)

## **B. IDAHO STATE LAWS**

#### a). Pesticide Use, Safety, Storage and Disposal

Pesticide use rules and regulations in the state of Idaho are derived from the Idaho Pesticide Act of 1976 (Title 22, Chapter 34), as amended, and the Idaho Chemigation Act of 1989 (Title 22, Chapter 14). These laws agree with FIFRA and are enforced by the Idaho State Department of Agriculture (ISDA). They also state that ISDA has the authority to restrict the use of some pesticides, and the right to inspect any premise at any reasonable time to observe the use, storage, documentation records, or equipment of pesticides. They set the requirements for licensing and the regulations for the proper use and handling of pesticides and for documentation and record keeping practices.

#### b). Natural Resource Protection - Management of Exotic/Pest Species????????

## C. LOCAL LAWS???????

### III. PARK MANAGEMENT STRATEGIES

The primary purpose of implementing a pest management program is to protect the native flora and fauna and the natural processes in areas that the Service have been given charge over, and to provide for the health and safety of park personnel and the visiting public. Non-native species present a real threat to native species and ecosystems by invading the habitat and out-competing the native species, eventually replacing them, while other pest species are themselves, or carry, health and safety hazards which are of concern to humans.

#### A. OBJECTIVES:

1. to develop an IPM plan that complies with all Federal, Idaho State and NPS laws and regulations.
2. to provide for the safety of park personnel and the public in the control of pest species that present a health and/or safety hazard and in the application of pesticides.
3. to develop a plan that is user friendly and provides adequate information and guidance to enable management to take safe and effective IPM action for pest control while minimizing the reliance on pesticides.
4. establish an IPM program that all park divisions "buy in to" and support, that is understandable and implemented, and is successful in controlling pest species.
5. develop a model IPM plan to serve as a guide for other NPS areas.

#### B. THE IPM PROCESS - The Decision Tree (the 9-step process)

##### 1. Building Consensus

The success of the IPM program begins with the recognition of its importance. Managing pest species within the monument is not the sole responsibility of the resource management division, but requires the support, assistance and people-power of all park personnel and the public.

The support of each park discipline is necessary to carry out IPM actions from each division offering staffs to assist with IPM projects and activities; to administration assisting with the funding of the program and purchasing and contracting for IPM projects; to maintenance providing the trade skills needed to pest-proof facilities; to rangers enforcing laws and policies related to IPM; to interpretation and the cooperating association "getting the word out" and educating the public about the efforts and purpose of IPM and their role and responsibilities to program.

Individual staff can also do their part by keeping facilities clear of food and garbage that attracts pest species, being familiar with those plant species that are exotic and either removing the plant themselves and/or informing the IPM coordinator of the plant location so s/he can take action to remove the plant, and by reporting the presence and location of exotic animal species or those species that may be a health and safety concern.

It takes everyone working together to make IPM work.

## 2. Review of NPS Policy

The IPM program at CRMO will operate within the guidelines set by Federal, Idaho State and County Laws, and NPS Guidelines in NPS-77 chapter 2, and will meet all Compliance (XXX, EA) standards.

## 3. Identifying the Pest

It is crucial that prior to considering ANY treatment, especially any chemical treatment, for a pest species, the pest species is correctly identified. Plant and insect keys are available in the CRMO library, and expertise is available for consultation with the IPM Coordinator at the NPS Columbia Cascades Cluster System Support Office in Seattle, Botanists at the Shoshoe and Idaho Falls BLM offices, and at any of the Idaho State Colleges and/or Universities.

## 4. Establishing Methodologies for Setting Priorities

When there are a number of pest species, it can become impossible to try to control all of them when resources are limited. The realization that all pests may not be tended to becomes very real, and the need for setting priorities becomes a necessity. The following incidents should take precedence:

- any species that is, or carries, a threat to the health and safety of humans is a priority and must be tended to immediately
- Any plant species that is listed as an Idaho State Noxious Weed is also a priority and efforts to control the species should be taken. Communication and cooperation with the Butte County Extension Office is highly recommended when dealing with these species.
- Any pest species that is causing damage to museum specimens should be considered serious and immediate action taken to rid the collection of the pest, preventing the spread of the pest and any further damage.

For the remaining exotic plant species, the NPS has published a booklet titled Handbook for Ranking Exotic Plants for Management and Control. As stated on page 3 of the booklet, "...using an analytical tool, such as the Exotic Species Ranking System, can ensure that ecological knowledge is applied to the decision process and can remedy some of the problems associated with decisions based on judgment and precedent alone...." CRMO will implement the ranking system in its approach to controlling exotic plant species. This ranking method may also be modified and used for pest species other than plants.

## 5. Establishing Methods for Setting Action Thresholds

The presence of a single individual of one pest species, in some cases, may be cause for immediate action, whereas, the presence of a single individual of another pest species may not always constitute an action. When time, money and staff are limited and it is necessary to set priorities, it then becomes just as important to set action thresholds to determine when a species needs immediate action taken to prevent further damage or spread. In addition, unnecessary pest management activities waste money and resources, may prolong or even worsen the problem, and

may disrupt food chains of which the native pest species may be part of.

An action threshold is the point at which no additional injury can be tolerated; a point at which if no action is taken, the resource will suffer irreparable and/or unacceptable damage, and/or a park objective is threatened by the level of a pest species population. Determining an action threshold is an attempt to differentiate between the mere presence of pests and the occurrence of pests in high enough densities to cause damage to the resource. In addition, it is important when determining the action threshold to take into account the preparation time necessary before the action can begin. Preparation should include any necessary consultations, research, and pesticide approval and purchase if these factors were not already addressed in the species specific action plans.

In establishing thresholds, one must:

*determine the degree of damage or threat that is tolerable.* Species such as spotted knapweed carry a high degree of threat due to the aggressively invasive nature of the plant, whereas, yellow sweetclover has a lower degree as it tends to stay confined to the shoulders of the highway. Additionally, the degree of damage or threat will vary dependent on the location of the pest. Mullen growing along the roadsides may not be considered as great a threat as a patch of mullein that has appeared in the wilderness zone. It is critical also to incorporate the priorities established in step 4 into the process of determining the degree of damage or threat.

*determine the level of injury-* the point at which the size of the pest population size is sufficient to cause unacceptable injury. In the case of exotic plants; again using spotted knapweed and yellow sweetclover as examples; the level of injury for spotted knapweed may be LOW because the presence of a single individual poses a threat while the level of injury for yellow sweetclover may be high because it doesn't tend to spread much.

*research the life stages of the pest species* and past control efforts to determine when the pest is most susceptible to treatment and the type of treatment that is most effective.

*determine whether the pest species is a native or an exotic.* The tolerance level of a native pest species may be high; such is the case with the mistletoe growing in the limber pines and the tent callipillars whose populations explode cyclicly, intensely impacting the antelope bitterbrush. Whereas, the tolerance threshold for the presence of a single pigeon in Indian Tunnel is very low since they are an exotic species, in addition to the health concerns they raise. Location of the native pest species will also determine the action threshold level. Deer mice, as carriers of the hantavirus, have a "seek and destroy" action threshold of one for any park offices or residence, whereas, in other parts of the monument, there is no threshold for the "seek and destroy" action for this native, naturally occurring species. However, the "posting of warning signs" action threshold may be 1 for caves frequently visited by the public.

*determine the location of the pest species.* Action thresholds may vary dependant on the management zone that the pest species is found. As an example, mullen found in the wilderness may have an action threshold of one, whereas, mullein found in the developed

area may have a threshold of one per a 10 foot square area (hypothetically)..

For additional guidance on setting action thresholds, see the Integrated Pest Management for Park Rangers - A Training Manual, pages 6-9 and 49-64, by William Olkowski and Helga Olkowski, February 1983, National Park Service - National Capital Region.

#### 6. Monitoring Pests and the Environment

Monitoring is THE most important step in the IPM program. It includes; understanding the pest biology; sampling; decision making; record keeping; evaluation; and education and communication. When conducted on a regular basis, monitoring will help to identify presence/absence of a pest species, identify trends and keep you abreast of the approaching action threshold. It is critical that a monitoring program is developed for each pest species, both present pests and those that are suspected of being a potential pest, particularly with regard to the museum collection and aggressive plant invaders that may be lurking just outside the boundaries of the park.

The most effective method of monitoring is one that utilizes quantitative (number counts) sampling that is conducted on a regular basis and where findings are recorded. Recommended monitoring techniques for each pest species should be a part of the pest species action plan found in Appendix 1. A monitoring schedule/calendar that includes all of the pest species should be constructed and included in this plan upon completion of the species actions plans.

#### 7a. Implementation of Treatment Strategies

Pest management strategy is an overall approach for preventing or suppressing pest populations based on ecological understanding, and Integrated Pest Management defines itself exactly in that it is a management strategy that "integrates", combines, a number of techniques together in an effort to develop the most effective approach with the least detrimental impact on the environment.

First, several considerations must be made regarding the possibility of adverse effects when selecting pest management strategies, including the disruption of natural controls, hazards to human health, the effects on nontarget species, the overall damage to the environment, how effective treatments will be in reducing the pest population below the action level, how feasible it will be to effectively implement treatments, and how cost effective the treatment is over the short and long term.

Next, the IPM concept is based on the fact that combined strategies for pest management are more effective in the long run than a single type of treatment. IPM techniques include: *cultural* - habitat and human activities modification/alteration, *mechanical and physical* - weeding, pruning, mowing, heat/cold exposure, erecting barriers, use of mechanical traps, *biological* - use/introduction of natural predators or parasites, *and chemical* - use of EPA-registered pesticides. Every Species Action Plan should detail the recommendations for the application of the strategies that are appropriate for use regarding that particular pest.

Keep in mind that chemical controls are used only as a last resort, and then only when used in

combination with all the other controls and in its least toxic form to start.

#### 7b. When Chemical Treatment is Required...

When all efforts at cultural, mechanical, physical and biological have failed and it becomes time to call in the forces with chemical controls, approval for use is required and must be obtained as directed by WASO. Approval procedures will likely be changing regularly as NPS efforts to reorganize and cut costs continue. Memos and directives regarding the procedures for pesticide application should be added to Appendix 11 as they are received.

All pesticide application should be done in accordance with all Federal, Idaho State and county laws, and DOI and NPS directives and guidelines. NPS guidelines require that park units abide by State regulations and requirements for pesticide application. The state of Idaho, pesticide application, if done as part of a job requirement, must be performed by an Idaho State licensed applicator or while under the supervision of one who is. When licensed park personnel are not available, it is recommended that application be done by a licensed pesticide application contractor.

#### 8. Evaluating the Results of Treatment

To determine the effectiveness of the treatment strategy (ies) in controlling the pest species, it is crucial that monitoring is continued following treatment. The evaluation process is not only used to assess efficacy, but also to determine the environmental effects of the treatment actions and to identify needed modifications to the pest management program.

Evaluation results should be documented and kept in the species action plan files to provide a historical record of activities and to justify future activities.

#### 9. Document, Document, Document

Not only is it helpful to present and future park staff with IPM responsibilities to know what what past monitoring efforts may have revealed and what the results of past treatment practices were, it is also a legal responsibility and requirement to keep accurate and current records. NPS policy requires park staff whose responsibilities may include the application of pesticides to be licensed by, and work under the laws and policies set by the state in which the park resides. In the State of Idaho, licensed "commercial" and "limited" (typed needed for CRMO staff) pesticide applicators are required to keep records of all pesticide applications for a period of three years, and that include; the name and address of the owner or the property treated; the specific crop, animal or property treated; the trade or brand name of the pesticide applied; the rate of application or dilution applied; the date of application; and the full name of the operator applying the pesticide. In addition, the NPS requires the annual submittal of pesticide use logs which should include all pesticide applications done by park personnel, contractors, special use permittees, etc. The call for the submittal of Pesticide Use Logs and Pesticide Use Proposals usually comes out in early spring.

### **C. EDUCATION AND IPM**

## **IV. ROLES AND RESPONSIBILITIES**