



Fact Sheet

U.S. Department of the Interior National Park Service Natural Resource Information Division



Pest Management in the National Park Service

February 1997

97-10

Pests are organisms that interfere with objectives of national parks or jeopardize human health and safety. Examples include exotic weeds that displace native vegetation, deer mice (*Peromyscus maniculatus*) that carry the deadly hantavirus, and gypsy moths (*Lymantria dispar*) that defoliate oaks (*Quercus* spp.) in high visibility areas.

The National Park Service faces every imaginable pest. It is responsible for 45,000 buildings, for historic gardens on the estates of past presidents, for cornfields in Civil War battlefields, for many thousands of museum artifacts, and for all the native plants and animals in a variety of habitats from swamps to high mountains. Each can attract pests.

Pest Management Policy

Many insects are commonly regarded as pests, and many plants are regarded as weeds. The National Park Service has a high tolerance for pests and weeds and manages them only if they interfere with the objectives of national parks or jeopardize human health or safety. A strong distinction is made between native species and introduced species (exotics) from abroad. Exotic species can become pests and are managed aggressively. Species that are native to national parks are controlled only under extraordinary circumstances.

The highest level of protection is given to native species in natural areas. In developed areas of parks such as campgrounds and administrative localities, the full range of pest management options is employed.

Agency policy requires an assessment of the probability of successful management of a pest. Turf weeds can be successfully managed with proper mowing, irrigation, and fertilization. However, no successful control exists of downy brome (*Bromus tectorum*, sometimes called cheatgrass), the scourge of western rangelands. Until successful management is devised, the National Park Service will generally tolerate downy brome.

The National Park Service embraces all methods of pest control, including sanitation, exclusion, habitat modification, trapping, and use of beneficial insects. Pesticides are also used but only after all other alternatives have been considered and found to be inadequate.

Risk Reduction

Pests represent real or potential risks. For example, if the maintenance of native vegetation is the objective of a national park, the invasion of the exotic weed leafy spurge (*Euphorbia esula*) puts that objective at risk. In museums, historic fabrics are at risk of destruction by carpet beetles (Family Dermestidae). Employees and visitors face health risks from poison-

ivy (*Toxicodendron radicans*) and stinging insects.

Management of pests also poses risks. The exotic tree of heaven (*Ailanthus altissima*) can be controlled with chain saws or herbicides. If not used properly, the chain saws and the herbicides jeopardize the safety and health of workers. Herbicides and other pesticides also pose risks of environmental damage. Nontarget species can be harmed, and waters can be contaminated.

Pest managers must identify the greater risk: the pests or the control methods. Sometimes, tradeoffs must be made, but the concept of Integrated Pest Management often provides win-win solutions.

Integrated Pest Management

In its simplest form, Integrated Pest Management or IPM involves the combination of two or more pest management methods. For small rodents, exclusion (fixing the door sweeps) can be combined with sanitation (emptying the garbage more frequently). Whereas either method alone would fail, the combination of methods may be successful. IPM was developed as an alternative to the total reliance on pesticides, in this case, rodenticides.

IPM is a decision-making process. It uses information on pest biology to determine

the most effective control of the pest. Because powder post beetles (Family Lyctidae) can survive in a narrow range of humidity, adjusting the humidity can eliminate the beetles. Cockroaches (Family Blatellidae) on the other hand can tolerate a wide range of humidity, and their control therefore requires other strategies.

Pest populations are monitored and control measures are implemented only when predetermined population thresholds are exceeded. Cockroaches are easily monitored with sticky traps. An average catch of 2.5 roaches/trap/night is often used as the threshold that triggers use of a pesticide.

Pesticides are part of the IPM process, but the least toxic chemicals are preferred. Minute quantities of boric acid, applied to the cracks and crevasses where cockroaches hide, has proved more effective than conventional, more dangerous pesticides.

IPM has proved very successful for the National Park Service. Since IPM was formally adopted in the early 1980s, pesticide use has decreased by more than 60%, and the effectiveness of pest management has improved.

The IPM Program

The IPM Program has three levels of organization. At the core level, two professionals work full time on pest management. They are assigned to the Environmental Quality Division under the Associate Director for Natural Resources Science and Stewardship. One incumbent is in the District of Columbia, and the other is stationed in Fort Collins, Colorado. Their major responsibilities are training, technical assistance, and program development.

Approximately 12 IPM Specialists are located in support offices or larger national parks. Some devote full time to IPM, but most have a variety of duties. These specialists meet minimum requirements for IPM training and are the

primary providers of technical assistance to parks.

Each park designates an IPM coordinator who coordinates pest management among the various divisions of a park such as Maintenance, Cultural and Natural Resources, and Concessions.

The three major program functions are training, pesticide management, and technical assistance. A week-long course in the principles of IPM is offered once or twice each year. Since the early 1980s, nearly 700 employees completed the course. Specialized training is occasionally offered, and the Washington office IPM staff is available to conduct short sessions at divisional meetings.

The pesticide approval process has been the backbone of the IPM Program. Before the program was initiated, pesticide use was excessive. A highly centralized system of review and approval was created to bring pesticide use under control. Initially, all approvals were made by the IPM core staff. However, in view of the growing number of trained employees, the approval of pesticide use was eventually delegated. Currently, all proposed uses of pesticide except those with the highest risk--about 5%--are approved by the 12 IPM Specialists in the support offices and in larger parks. The pesticide approval process has been computerized, and efforts are underway to move the process onto the Internet.

Program Funding

No National Park Service funds are earmarked for pest management. However, the U. S. Forest Service annually provides several hundred thousand dollars for management of forest insects and diseases. These funds are distributed to about 20 parks.

The IPM Process

Successful and safe pest management in the National Park Service is accomplished with a nine-step process as follows:

1. Building of consensus among site occupants, pest managers, and decision makers
2. Identification of pests
3. Review of National Park Service policies that affect pest and pesticide management
4. Establishment of priorities by pest or by site
5. Determination of action thresholds or population levels that trigger management
6. Monitoring of pest populations and the environment
7. Application of non-chemical management and obtaining approval and applying pesticides
8. Evaluation of results - continued monitoring
9. Keeping records of activities, successes, and failures

For further information contact:

Terry Cacek
IPM Coordinator
National Park Service
1201 Oak Ridge Drive, Suite 350
Fort Collins, Colorado 80525
Telephone: (970) 225-3542
e-mail: terry_cacek@nps.gov

Carol DiSalvo
IPM Specialist
National Park Service
MS 2749 MIB
P.O. Box 37127
Washington, D.C. 20013
Telephone: (202) 219-8936
e-mail: carol_disalvo@nps.gov

Gary Johnston
Weed Initiative Coordinator
National Park Service
MS 3223 MIB
P.O. Box 37127
Washington, D.C. 20013
Telephone: (202) 208-5886
e-mail: gary_johnston@nps.gov