

# Appendix F

## PEST AND NONNATIVE INVASIVE SPECIES MANAGEMENT

The Hoosier will evaluate each pest control problem on the Forest using an Integrated Pest Management (IPM) approach before proposing any pest control activity. IPM is a process that attempts to regulate forest pests to achieve resource management objectives. It is the planned and systematic use of detection, evaluation, and monitoring techniques and all appropriate silvicultural, biological, chemical, genetic, and mechanical methods to prevent or reduce adverse effects of pest-caused damages. It is a six-step analysis procedure as follows:

1. Pest identification.
2. Population monitoring - pest biology, natural enemies, population dynamics, etc.
3. Determination of injury level - How much injury or impact must occur before action is taken?
4. Selection of most appropriate control method or methods: biological, chemical, mechanical, genetic, manual, or silvicultural.
5. Determine most effective timing of control application.
6. Monitor and evaluate effectiveness of control project (several years may be needed).

Prevention will be the emphasis of management related to all pest and nonnative invasive species problems. The Forest would also emphasize early detection and treatment of new infestations.

The Forest may use chemicals to control undesirable pests if non-chemical methods are ineffective. In every case, the Forest would carefully consider the effectiveness, specificity, environmental, and economic effects of individual applications. The Hoosier would also involve affected and interested individuals and organizations in our decision.

The Forest would use only Environmental Protection Agency (EPA) registered pesticides. In every case, we would choose the least persistent pesticides to achieve objectives. Application of pesticides would occur in ways that minimize the dose rate, vapor loss, and drift with the lowest toxicity necessary. Pesticides must be used in accordance with State laws.

Prioritization for pest and nonnative invasive species management would follow:

1. Prevention of new infestations
2. Early detection and treatment of new infestations
3. Treatment of sites with the greatest potential for spreading such as trailheads, parking lots, recreation areas, and administrative sites
4. Protection of known endangered, threatened, and sensitive plant and animal sites susceptible to harm from invasive species
5. Protection of Forest special areas and research natural areas
6. Containment and control of established infestations

The most common applications and anticipated needs of pest management include:

#### Pest and Undesirable Vegetation Control

- In recreation areas: (1) to control poison ivy, (2) to reduce the operational expense of trimming around trees and parking barriers and to maintain grassy and herbaceous vegetation along roadsides when mowing is not feasible, (3) to selectively remove vegetation from ponds and lakes to improve fish habitat, improve the area for people fishing, maintain vegetation-free swimming areas, and (4) dam or dike maintenance.
- Control ticks or chiggers in campgrounds, near trails, and in other places where people congregate: Ticks are becoming an increasingly serious problem in many areas due not only to growing populations, but also because of the diseases they carry.
- Wasps and bees may also be sprayed in areas where people congregate to protect visitors.

#### Aquatic Invasive Plant Control

- Aquatic weed control keeps boat ramps and beaches from being overrun with submerged or floating aquatic weeds. No equipment has been developed for mechanical control on small-scale applications such as exist on the Forest. Herbicides available for use have been selected for environmental safety; will not harm fish, people, or other aquatic organisms; and do not require closure of the lakes to swimming or fishing.
- In Forest ponds and lakes, fish populations occasionally become unbalanced. Surveys are periodically done in cooperation with IDNR. If a problem is identified, rotenone may be prescribed to kill the existing fish populations. The pond is then restocked with desirable fish species.

#### Timber Stand Improvement

- Plantation establishment is nearly impossible without control of competing vegetation. Mechanical methods or herbicide use are the preferred treatment methods. It is occasionally necessary to retreat an area after three years to release the seedlings from competing vegetation. The necessity for this type of work is directly related to the acquisition of old open fields.
- Herbicides can be used in improving species composition in young, naturally regenerated hardwood stands. This generally involves control of grapevines but also can include thinning trees to concentrate growth on the higher quality trees in the stand. Herbicides are applied directly to the cut stump of the vine or tree or into a cut "girdle" around the tree to kill it and prevent resprouting.

#### Forest Openings

- Forest opening and natural plant community maintenance is accomplished by bushhogging, mechanical brush removal, burning, herbicide use, or a combination of these methods. Herbicides can control the reestablishment of undesirable plant

species, reducing costs, and increasing the length of time before re-treatment is necessary.

#### Public Utility Right-Of-Way Management

- Public utility rights-of-way and easements may pose vegetation management problems on the Forest. These treatments are implemented by utility companies with permission by the landowners involved, including the Forest Service. Maintenance work is done to ensure the lines are kept clear for uninterrupted public service. Utility corridors are normally treated selectively on the Forest, with both mowing and selective woody vegetation removal by basal spray application of herbicides. Some broadcast spraying is also permitted. The method of maintenance selected is based on existing vegetative conditions, aesthetics, economics, and proximity to streams, ponds, lakes, homes, gardens, and agricultural crops.

#### Insect and Disease Management

- Silvicultural changes can be the single most important action used to mitigate impacts of forest pests on the condition of the forest. Healthy well-managed forest vegetation would result in high levels of productivity. Genetically improved seedlings provide an opportunity to grow forests that are more resistant to insects and diseases. With the proper mix of silvicultural treatments, there is little opportunity for pest populations to reach unacceptable limits.
- Using the principles of IPM to control epidemic insect and disease outbreaks helps protect the Forest and surrounding private woodlands. When outbreaks do occur, natural variations in tree species and stand ages or condition of the immediate area may contain them. When these natural barriers are insufficient, the use of pesticides may be required to protect timber and other resources.
- If an outbreak does occur, the Forest could consider the use of biological and chemical pesticides to prevent an epidemic or reduce adverse effects of pests.
- The Hoosier would apply pesticides using the most economical methods that are specific in reaching their target. Pesticides can be indirectly applied by spraying from the air or ground nearby and by directly brushing or injecting undesirable vegetation. The efficiency of treating the pest and the chance of environmental damage would be taken into account when determining the application method.

#### Nonnative Invasive Plant Control

- Nonnative invasive plants occur across the Forest in scattered locations. Effective control measures are possible for smaller infestations using hand-pulling, mechanical methods, or prescribed burning. However, some invasive plant populations have reached the extent where applying pesticides is the only method feasible to remove or control these infestations. For these larger infestations, the cost of manual or mechanical methods may be prohibitive and could result in excessive soil disturbance or other resource damage. In some instances, the release of biological control insects can be effective in controlling invasive plants.

- Application of selective herbicides can kill target invasive plants while minimizing the effects to desirable vegetation and animal species. In most cases, herbicides would be applied by spot treatment directly to nonnative invasive plant species. This technique minimizes herbicide drift to avoid adverse effects to desirable vegetation and other organisms, including humans.
- An important last step in nonnative invasive plant management is rehabilitation and restoration activities. These actions aid in reestablishing native vegetation and help minimize or reverse the effects from invasive plants. In 1994, the Forest developed a native seed nursery for native plant propagation. Seeds produced from the nursery or collected native seed from forest openings has been used to re-vegetate disturbed areas across the Forest. The Forest would continue using local native seed sources and under normal circumstances, would avoid planting or seeding with nonnative species. When native seed is unavailable or not feasible, the Hoosier would use nonnative annuals or non-persistent perennial species.