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# 8.0 Species Management



# 8.0

## Species Management

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The DOE-RL does not manage wildlife populations on the Hanford Site nor fish populations in the Columbia River per se. The DOE-RL recognizes the Washington State Department of Fish and Wildlife and U.S. Fish and Wildlife Service and the National Marine Fisheries Service, as appropriate, as the cognizant state and federal agencies, with responsibility for fish and wildlife management. The DOE-RL, however, does assist the fish and wildlife management agencies by providing monitoring data on selected populations, conducting impact assessments for individual species of concern and adjusting its actions accordingly, protecting and/or manipulating habitat, and otherwise cooperating with the agencies on wildlife issues of mutual interest.

This section focuses on management actions that DOE-RL can take insofar as they involve single species or class of species concerns. Included are sections on integrated pest management, species introductions, and management actions associated with state or federally listed species or recreationally and/or commercially important species.

### 8.1 Integrated Pest Management

Pests are defined as animals or plants in a location or situation where they are not desired. Because pest species and the methods used to control them can pose significant problems for non-target biological resources (as well as for people and property), DOE-RL has adopted the use of integrated pest management strategies and methods to control pests at Hanford facilities. Although originally developed for agriculture, and based on economic thresholds, these strategies now are applied to structural and industrial pest control situations such as occur at Hanford. The relevance of this approach to biological resource management at

Hanford is that it reduces potential impacts to non-target biological resources of concern.

#### 8.1.1 Description

Pest control is required by law and regulation and represents a good business practice. Pest control can be beneficial to both non-pest species and site employees. Integrated pest management is a decision-making process created to control biological pests that achieves long-term, environmentally sound pest control through a combination of a wide array of technologies and management practices (GSA 1993; NPCA 1994). Pest control practices generally fit within one of five categories:

- cultural: modify management and use patterns of an area
- physical: create physical perturbations disruptive to the pest species
- biological: enhance or introduce desirable species that compete with or prey on pest species
- chemical: apply chemical agents, usually pesticides or fertilizer
- no action: allow a pest situation to resolve itself or take no action because of other overriding considerations.

#### 8.1.2 Purposes and Benefits

Certain species on the Hanford Site can become pests by impacting employee health and safety (e.g., mosquitos, wasps, or mice), actively causing the spread of radioactive or hazardous chemical materials (e.g., deep-rooted shrubs or forbs, termites or ants, birds, or burrowing rodents or carnivores),

creating a threat to nearby agriculture (e.g., noxious weeds), or occurring in areas that could result in harm to species and/or habitats of concern (e.g., nest parasites or undesirable plants). An effective pest control program serves to protect human health and property. A pest control program founded on the principles of integrated pest management also serves to ensure that impacts to non-target biological resources are minimized. Finally, a pest control program can be used to protect biological resources of concern from adverse impacts from pest species. Pest species that may negatively impact biological resources of concern at Hanford are considered Level B resources (see Section 4.4).

An integrated pest management strategy interacts with and complements other components of the Hanford Site biological resources management strategy. Professional pest managers (e.g., from the Hanford Site Integrated Pest Management Services organization) will use the information in the BRMaP to identify species and habitats of concern that could be impacted by pest control practices. Control of pest species is then weighed against impacts to non-target species and habitats before prescribing control methods. Impacts are either avoided or minimized by adjusting the timing of when the control method is applied, selecting the least harmful yet still-effective method (e.g., prescribing structural modifications rather than chemical treatment), or establishing buffer areas to prevent impacting potentially sensitive non-target resources (e.g., long-billed curlew nesting sites).

### 8.1.3 Legal and Policy Basis

Control of pest species is conducted on the Hanford Site in a manner that complies with federal, state, and local laws and regulations. Several federal and state laws and regulations play a role in shaping Hanford's Integrated Pest Management program by either defining what constitutes a pest species or by placing restrictions on control practices. The laws include, but are not limited to the following:

- Federal Noxious Weed Act
- Revised Code of Washington Chapter 17.10—Noxious Weed—Control Boards

- Migratory Bird Treaty Act
- Revised Code of Washington Title 77—Game and Game Fish
- Federal Insecticide, Fungicide and Rodenticide Act
- Revised Code of Washington Chapter 15.58—Washington Pesticide Control Act
- Revised Code of Washington Chapter 17.21—Washington Pesticide Application Act.

Control of noxious weeds is mandated by both federal and state statutes. Washington law and regulations (Revised Code of Washington 17.10 and its implementing regulation, Chapter 16-750 of the Washington Administrative Code) require all landowners to control noxious weeds on their property and impose specific penalties for failure to do so. Definitions of noxious weeds differ somewhat between federal and state laws. The state definitions focus on the destructiveness or competitiveness of the plant species and its difficulty of control. Several categories of noxious weeds are defined that relate to the state distribution and degree of threat posed by the weed and the severity of the fine for failure to control it. The plant has to be non-native to the state to be considered a noxious weed (see Section 8.1.4).

Although Washington does not define what the object of the plant's destructiveness or competitiveness needs to be to be considered noxious, federal definitions do include weeds that can directly or indirectly injure the fish and wildlife resources of the United States. Moreover, federal implementing regulations (i.e., 7 CFR 61, Section 2814) authorize federal agencies to manage undesirable plants (a somewhat broader definition than noxious) in cooperation with state agencies and by use of an integrated management system approach.<sup>1</sup> Finally, DOE is a signatory to a Federal Interagency Memorandum of Understanding,<sup>2</sup> in accordance with which agencies agree to control noxious and exotic (non-native) weeds on federally managed lands.

The Migratory Bird Treaty Act places restrictions on actions that could harm migratory birds, including

<sup>1</sup> The Federal Noxious Weed Act of 1974 was amended by the Food, Agriculture Conservation and Trade Act of 1990, Section 1453. This section established federal law in regard to the management of undesirable plants on federal lands.

<sup>2</sup> Memorandum of Understanding for the Establishment of a Federal Interagency Committee for the Management of Noxious and Exotic Weeds. 1994.

those considered to be pests. Failure to comply could result in enforceable penalties. Permits that allow the harming or collecting of birds, nests, or eggs protected under the Migratory Bird Treaty Act are available from the U.S. Fish and Wildlife Service. Permits also may be required under Washington State law if certain species, not limited to birds, are to be impacted by control measures (RCW 77.12.265 and 77.16.120).

Pesticide application is regulated by a number of restrictions including federal and state law, DOE Orders, and contractor guidance manuals.

### 8.1.4 Implementation

*General*—Overall implementation of integrated pest management operations at Hanford is directed via the *Integrated Biological Control Management Plan* (Fluor Hanford 2000). The plan provides guidance on:

- how to select the most appropriate control practice
- how to choose and apply a chemical control agent (when other control practices are not viable options; thus, non-chemical pest control methods are the preferred method and use of a chemical agent must be justified accordingly)
- action thresholds that specify the level of pest activity at which control measures are initiated<sup>3</sup>
- strategies that can be applied for different situations.

An integrated pest management approach takes advantage of all pest management options possible including, but not limited to, the judicious use of pesticides (EPA 1993). By using information on the life cycles of pests and their interactions with the environment, the success of other less hazardous (to non-target resources) control measures can

preclude reliance on pesticides. When pesticides are found to be necessary, the pesticide and its application method will be selected on the following criteria (subject to other considerations not strictly related to protecting biological resources):

- pesticide has low mammalian toxicity<sup>4</sup>
- pesticide and its application method focus on the target species and minimize impacts to non-target species
- pesticide is biodegradable (residual effective for its purpose but poses no long-term impact to the environment).

The application of any pesticide on Hanford will be accomplished in such a manner that avoids or minimizes the potential of impact to non-target biological resources.

The use of introduced biological control agents for pest control is discussed in Section 8.2.

*Ecological Compliance Review Requirements*—Some integrated pest management activities may require an ecological compliance review before an action is performed (see Section 5.1). In general, the methodology to determine the need for an ecological compliance review is defined in the *Ecological Compliance Assessment Management Plan* (DOE-RL 1995). Pest control practices that take place in occupied buildings typically do not require an ecological compliance review; however, practices that occur inside unoccupied buildings (i.e., those that could be occupied by bat species of concern) or outside may require such a review. For routine practices, a review may be required only once; thereafter, provided there are no significant changes, the initial review should suffice.<sup>5</sup> At a minimum, however, an ecological compliance review shall be requested each time before spraying pesticides or performing any other integrated pest management activity in areas containing Level IV habitat/plant community

<sup>3</sup> Action thresholds will be individually assessed with objective and subjective criteria for each pest, location, hazard, situation, and unique set of extenuating circumstances pertaining to impacts on personnel health, morale, activities, and property use.

<sup>4</sup> Pesticides generally are tested for their toxicity on mammalian species.

<sup>5</sup> Certain routine maintenance practices at Hanford may have already been the subject of an environmental review and may be covered by a categorical exclusion. For example, the use of vegetation control measures as part of interim remediation of active and inactive waste sites has been previously reviewed (Memorandum from Westinghouse Hanford Company, NEPA Documentation to B. J. Hobbs: "Categorically Excluded Routine Maintenance: Noxious Weed Control, Hanford Site, Richland, Washington). As for all previously reviewed actions, they are not valid: for previously unsurveyed areas, if actions go beyond the scope of what was previously reviewed, or if biological conditions or the status of particular biological resources have changed (e.g., a protected species, not previously present, may now be impacted by an action or an already present species is now listed).

resources or in areas that contain federal or state listed species. In addition to an ecological compliance review, practices that may harm federally protected migratory birds, their nests, or their eggs may require mitigation and/or a permit. When in doubt as to requirements, the pest control manager and/or practitioner should contact the Hanford Biological Resources Laboratory for guidance.

Because of health or safety considerations, some situations may arise for which pest control is required immediately (i.e., within 24 hours). All reasonable efforts shall be made to notify the Hanford Biological Resources Laboratory staff of impending actions. Emergency applications of pesticides or pest control activities will take into consideration, when possible, avoidance of impact to non-target species and habitats. When such impacts are unavoidable, additional reasonable mitigation will be implemented.

*Control of Pest Animals*—Certain species such as the house mouse (*Mus musculus*), the domestic pigeon (*Columba livia*), and the starling (*Sturnus vulgaris*) are common pest species on the Hanford Site. Control of these species is not typically controversial, and management actions generally do not require specific approval in each instance. Other species, however, though not typically thought of as pests in their natural habitat, can on occasion become pests. Usually this occurs when a species invades a human-created habitat in which the invading species may have deleterious impacts on human health or property. Examples of such species include the western rattlesnake (*Crotalus viridis*), barn swallow (*Hirundo rustica*), and deer mouse (*Peromyscus maniculatus*). Control of these species should be in accordance with the Nuisance Wildlife Control permit for the Hanford Site issued by the Washington Department of Fish and Wildlife and implemented by the Animal Control Operations organization within Integrated Pest Management Services, as well as with the ecological compliance review requirements described above. Additionally, control actions involving federally protected migratory birds may require a permit from the U.S. Fish and Wildlife Service.

The action required for pest control shall not be in excess of the needed level of effort to control the situation. Steps for control shall utilize the method of least environmental impact. Table 8.1 summarizes

some possible types of management actions that could be taken to control an animal pest species.

*Control of Noxious Weeds and Undesirable Plants*—A special category of nuisance vegetation has been legislatively classified as “noxious weeds” and has been targeted throughout the state of Washington for eradication or strict control. Noxious weeds are non-native species that once they are introduced proliferate because of the lack of natural predators or because they can out compete native plant species in disturbed habitats. Because these species pose a threat to natural environments or crop species, they have been targeted for special attention by regulatory agencies. Within the state of Washington noxious weeds are grouped into three categories: Class A species require eradication, Class B species require control (i.e., prevent seed production and the spread of the species into areas it does not presently occupy), and Class C species require measures similar to Class A (Chapter 16-750 of the Washington Administrative Code). Washington State designated noxious weeds that potentially occur on Hanford are indicated in Table 8.2. Figure 8.1 shows the distribution of some currently mapped noxious weed locations across the Hanford Site. The map is preliminary in that not all species or all locations have been mapped.

As a subset of integrated pest management, control of noxious weeds and unwanted vegetation (e.g., on waste sites) on Hanford is implemented through a number of guidance documents, such as the *Guidelines for Coordinated Management of Noxious Weeds at the Hanford Site* (Roos 1996) and the *Industrial Vegetation Management* manual (Looney 1995). Table 8.1 summarizes some possible types of management actions that could be taken to control a plant pest species.

The control of noxious weeds and other undesirable plants is not simply a component of integrated pest management; it also is an important component of biological resource management in general. The control of these species, especially when their presence may be impacting Level IV resource areas, should receive strong consideration for control actions. The use of appropriate control strategies when plant populations are small and localized is the most cost-effective means of minimizing the impacts of noxious weeds and other undesirable plants to biological resources of concern.

Table 8.1 Possible Management Actions for Pest Control

Type of Pest	Hazard Posed	Possible Management Actions
Vegetation	Radioactive	Physical removal or herbicides; education
Vegetation	Nonradioactive (fire, native species competitor)	Physical removal; biological predators; cultural changes; habitat modifications; herbicides; education
Animal: arthropods	Health or safety	Physical removal; habitat modifications; sanitation improvements; pesticides; education
Animal: arthropods	Radioactive	Physical removal or pesticide treatment followed by habitat modifications and/or sanitation improvements; education
Animal: non-arthropods	Radioactive	Capture and radiological survey: destroy if contaminated or relocate if non-contaminated; determine attractant; habitat modification; education
Animal: non-arthropods	Health or safety	Determine attractant; capture and relocation; habitat modification; education

### 8.1.5 Roles and Responsibilities

The Office of Site Safety of DOE-RL has oversight responsibility for Hanford’s Integrated Pest Management program. Notwithstanding this role, the Office of Site Safety should coordinate, as needed, with DOE-RL’s Office of Site Services when pest management actions may either impact biological resources of concern (whether as targets or non-targets) or when actions are taken for the express purpose of protecting biological resources from Level B (i.e., undesirable) biological resources.

Integrated Pest Management Services is the lead organization responsible for the control of biological pests on the Hanford Site. Examples of the types of pest control responsibilities include the following:

- control insects, rodents, snakes, and other nuisance wildlife in and around facilities
- rescue injured or trapped animals
- dispose of road-killed animals
- control industrial (e.g., at hazardous waste site) weeds
- manage noxious weeds
- accomplish all the above in accordance with applicable federal and state laws and regulations

and DOE-RL requirements (e.g., requesting ecological compliance reviews when necessary).

More specific roles and responsibilities are delineated in the Integrated Pest Management Plan (Giddings 1996). Hanford contractors support the implementation of integrated pest management practices within the charter of their organizations. For example, crafts groups implement exclusion recommendations in support of Integrated Pest Management Services pest control recommendations (see Table 2–1 in Giddings 1996). All contractors are subject to the review and permit requirements identified in this section.

The conduct of ecological compliance reviews are the responsibility of the Hanford Biological Resources Laboratory or the Natural Resources Section of the Environmental Restoration Contractor, as appropriate. See Section 5.1.4 for details.

### 8.1.6 Stakeholders

Stakeholders for the Hanford Site Integrated Pest Management program include the U.S. Fish and Wildlife Service and Washington State Department of Fish and Wildlife. These agencies may need to be consulted to acquire needed permits and permission for pest control activities insofar as they affect biological resources. Additionally, these

Table 8.2 Washington State Designated Noxious Weeds Potentially Occurring on the Hanford Site

Scientific Name	Common Name	Class
<i>Sorghum halepense</i>	Johnsongrass	A
<i>Alhagi psedalhagi</i> (= <i>A. maurorum</i> )	Camelthorn	B
<i>Acroptilon repens</i>	Russian knapweed	B
<i>Carduus acanthoides</i> <sup>a</sup>	Plumeless thistle	B
<i>Cenchrus longispinus</i>	Longspine sandbur	B
<i>Centaurea diffusa</i>	Diffuse knapweed	B
<i>Centaurea maculosa</i> (= <i>C. biebersteinii</i> )	Spotted knapweed	B
<i>Centaurea solstitialis</i>	Yellow starthistle	B
<i>Chondrilla juncea</i>	Rush skeletonweed	B
<i>Cyperus esculentus</i>	Yellow nutsedge	B
<i>Lepidium latifolium</i>	Perennial pepperweed	B
<i>Linaria genistifolia dalmatica</i>	Dalmation toadflax	B
<i>Lythrum salicaria</i>	Purple loosestrife	B
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	B
<i>Sonchus arvensis arvensis</i>	Perennial sowthistle	B
<i>Sphaerophysa salsula</i>	Swainsonpea	B
<i>Agropyron repens</i>	Quackgrass	C
<i>Cardaria draba</i>	Hoary cress	C
<i>Cirsium arvense</i>	Canada thistle	C
<i>Cirsium vulgare</i>	Bull thistle	C
<i>Conium maculatum</i>	Poison hemlock	C
<i>Convolvulus arvensis</i>	Field bindweed	C
<i>Hypericum perforatum</i>	Common St. Johnswort	C
<i>Gypsophila paniculata</i>	Babysbreath	C
<i>Kochia scopria</i>	Kochia	C
<i>Linaria vulgaris</i>	Yellow toadflax	C
<i>Secale cereale</i>	Cereal rye	C
<i>Solanum dulcamara</i>	Bitter nightshade	C
<i>Tamarix spp.</i>	Saltcedar	C
<i>Tanacetum vulgare</i>	Common tansy	C
<i>Tribulus terrestris</i>	Puncturevine	C
<i>Verbascum thapsus</i>	Common mullein	C
<i>Xanthium spinosum</i>	Spiny cocklebur	C

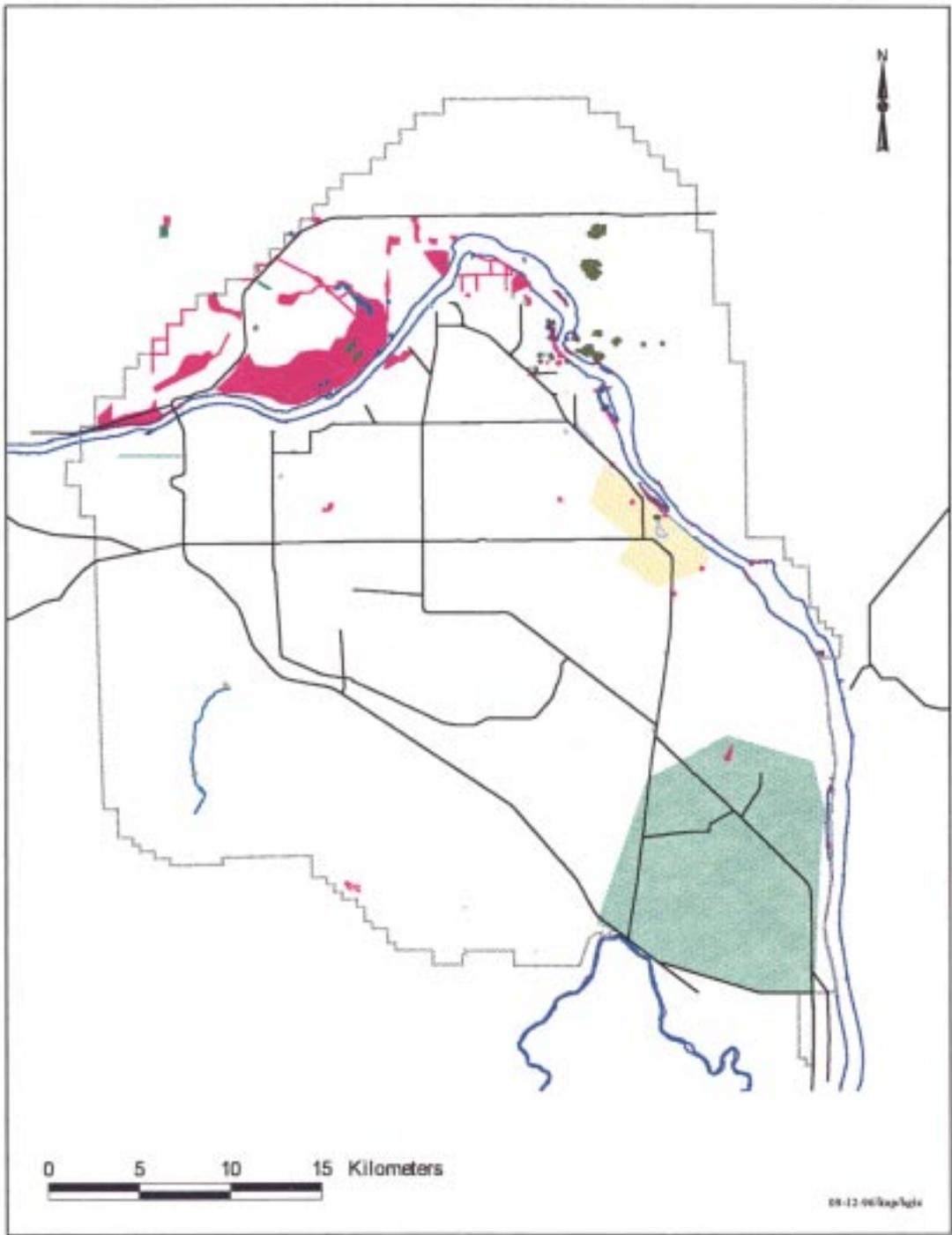


Figure 8.1 Distribution of Noxious Weeds Across the Hanford Site (Map)

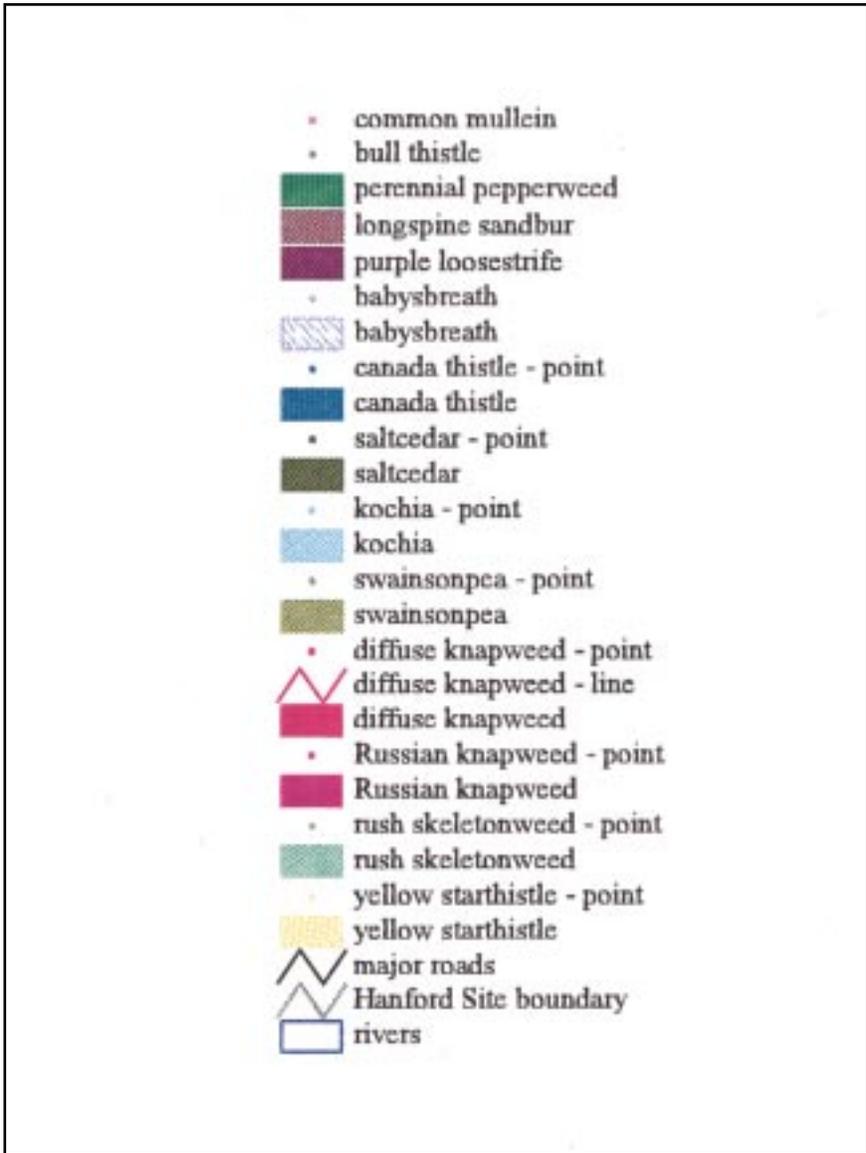


Figure 8.1 Distribution of Noxious Weeds Across the Hanford Site (Legend)

agencies, along with the local Tribes, can help identify biological resources of concern for which impacts from integrated pest management practices should be avoided or minimized. Practices that could adversely affect listed federal species will require at least informal consultation with the Fish and Wildlife Service under the Endangered Species Act. Noxious weed control efforts will be of interest to the U.S. Department of Agriculture and to state and county weed boards. Finally, the control of undesirable plants at Hanford may be of interest to federal and state resource agencies, Tribes, and local conservation organizations that are concerned about protecting Hanford's native biological resources.

## 8.2 Species Introduction

The significant biological resource values of the Hanford Site have resulted in large measure from the more than 55 years of protection of its native fauna and flora through restricted development and non-intrusive land use. As a result, the Site retains much of its pre-1940 biological diversity. To a large extent, native species thrive, although there have been losses or dramatic reductions in some species that were once characteristic of the area.

Much of the reduction in Hanford's biodiversity can be attributed to the introduction (mostly unintentional) of non-native species, both animal and plant.<sup>6</sup> Native species, whether plants or animals, often do not fare well in direct competition with introduced non-natives. Cheatgrass, for example, when once established in disturbed shrub-steppe soils, is highly competitive and capable of preventing the natural reestablishment of many native plant species.

The continued introduction of non-native species to Hanford could do irreparable harm to both the abundance and diversity of the native flora and

fauna. A number of state and federal laws and regulations and presidential Executive Orders address this threat to natural ecosystems. Among these are the following:

- Federal Noxious Weed Act and its implementing regulations (7 CFR 61)
- Executive Order 11987—Exotic Organisms
- Revised Code of Washington Title 77—Game and Game Fish.

The role of the federal noxious weed laws and regulations in regard to plant species introductions was described in Section 8.1. More broadly, Executive Order 11987 directs executive (federal) agencies to restrict the introduction of any plant or animal exotic (non-native) species into the natural ecosystems on lands and waters under their control or ownership. An exception may be permitted if either the Secretary of Agriculture or the Secretary of the Interior finds that such introduction will not have an adverse effect on natural ecosystems.<sup>7</sup> It is DOE-RL's policy to prohibit the intentional introduction of non-native species on all Hanford Site lands under its immediate control and management authority and on leased properties. Exceptions to this policy in regard to the use of non-native plants outside of native habitats for landscaping or waste management purposes are addressed in Section 7.2.

Washington State law (RCW 77.16.150) through its implementing regulation (WAC 232-12-271) establishes criteria for planting aquatic plants (and seeds) and releasing wildlife. This includes the reintroduction of species in areas that they formerly inhabited. Persons other than the director of the Department of Fish and Wildlife are prohibited from planting aquatic plants/seeds or releasing any species, subspecies, or hybrids of animals that do not already exist in the wild in Washington. If the aforementioned organisms do exist in Washington, they may be planted or released in their

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<sup>6</sup> As discussed in Chapter 6.0, increases in artificial biodiversity can represent losses in native biodiversity even if native species are not immediately lost.

<sup>7</sup> Although not strictly dealing with the issue of introductions to natural ecosystems, a recent Executive Memorandum (discussed at 59 FR 43122) directed the use of regionally native plants (as well as reducing the amount of chemical applied) on federally landscaped grounds. Additionally, although major restoration of natural habitats was not envisioned to be accomplished under the memorandum, part of its intent was to: (1) maintain and promote the existing natural habitat, (2) minimize disturbance to the natural habitat, and (3) integrate design and construction of federal projects with the surrounding natural habitat.

established range by permit obtainable from the director. It will be the policy of the DOE-RL to observe the provisions of Washington State law regarding the release of wildlife and planting of aquatic plants and seeds on all Hanford Site lands under its immediate control and management authority and on leased properties.

An exception to the general prohibition on the introduction of non-native species to the Hanford Site may occur in association with the use of biological control agents as part of an integrated pest management strategy. The Washington State Department of Agriculture approves the use of specific biological control agents. These agents are selected on the basis that they are natural predators of a particular pest species but may not be present if the pest species has been introduced to a new environment. Also, these agents are generally host-specific; therefore, they should die out after the host is eradicated. Specific biological control agents can be considered for release on the Hanford Site provided they have been:

- approved by the state Department of Agriculture
- determined to be in compliance with RCW 77.16.150 and WAC 232-12-271
- received an ecological compliance review (see Section 5.1).

Because the Hanford Site retains huge expanses of native shrub-steppe habitat, it is possible that the Site could be used as a recovery area for species of concern, historically present on the Site but now more or less extirpated, that are in decline regionally. It will be DOE-RL's policy to cooperate with the appropriate Washington State or federal agencies for the reintroduction of species of concern if all of the following criteria are met:

- Hanford is suitable habitat for the species.
- Hanford lands are within the natural range of the species.
- Reintroduction can be accomplished for the public good.
- Reintroduction would not adversely impact the DOE-RL mission or operations supporting that mission.

## 8.3 Listed or Otherwise Protected Species Requiring Special Management

Species requiring special management include all species identified as Level II and above (as defined in Section 4.3.2). (Although Level I species require monitoring, they do not qualify for any additional management attention.) Management of these species will focus on three classes of management action:

- evaluation and management of DOE-RL impacts
- species/habitat tracking
- focused enhancement.

These management actions will be implemented in a graded approach that reflects the level of concern for each species group. The level or intensity of management is adjusted appropriately to fit each species group. This graded approach is shown in Table 8.3.

Impacts on resources due to implementation of proposed projects will be evaluated during the ecological compliance review process outlined in Section 5.1. Details of this process are defined in DOE-RL (1995). Via the graded approach, impact management will be implemented at four different levels. Species tracking consists of monitoring for status and trends. Monitoring will be implemented at three levels.

Focused enhancement includes restoration/compensatory mitigation actions in response to project impacts plus non-project-specific enhancement in response to unacceptable declines in the resource within the Hanford ecosystem or the Columbia Basin Ecoregion. Focused enhancement will be implemented at three levels as described in the table.

Table 8.3 Management Levels for Species of Concern at Hanford

Species Group	Classes of Management Actions		
	Impact Management Level	Species/Habitat Tracking Level	Focused Enhancement Level
State monitor species	<p><i>Low</i></p> <p>Avoid or minimize impacts to the extent possible without impacting the project's budget or schedule.</p>	<p><i>Low</i></p> <p>Monitor the species habitat on a periodic basis (less than annual) and note occurrences during: (1) the annual Ecological Compliance Assessment Project baseline environmental surveys, and (2) the monitoring of habitat and species outside the baseline areas (i.e., 600 Areas) that occurs under the Ecosystem Monitoring Project.</p>	<p><i>Low</i></p> <p>Will receive low consideration for focused enhancement when restoration/compensatory mitigation actions are considered or when significant declines on Hanford or within the Columbia Basin ecoregion, unless it is otherwise a state or federal listed species or candidate species.</p>
State sensitive/candidate	<p><i>High</i></p> <p>Avoid and/or minimize the impact to the maximum extent possible. Residual impacts, if significant, may require mitigation by rectification and/or compensatory mitigation.</p>	<p><i>Low</i></p> <p>Monitor the species habitat on a periodic basis (less than annual) and note occurrences during: (1) the annual Ecological Compliance Assessment Project baseline environmental surveys, and (2) the monitoring of habitat and species outside the baseline areas (i.e., 600 Areas) that occurs under the Ecosystem Monitoring Project.</p>	<p><i>High</i></p> <p>Will receive high consideration for focused enhancement when restoration/compensatory mitigation actions are considered or when significant declines occur on Hanford or within the Columbia Basin ecoregion.</p>
State threatened/endangered	<p><i>High</i></p> <p>Avoid and/or minimize the impact to the maximum extent possible. Residual impacts, if significant, may require mitigation by rectification and/or compensatory mitigation.</p>	<p><i>High</i></p> <p>Monitor the species habitat and, except for plants, track species locations/numbers on an annual basis.</p>	<p><i>High</i></p> <p>Will receive high consideration for focused enhancement when restoration/compensatory mitigation actions are considered or when significant declines occur on Hanford or within the Columbia Basin ecoregion.</p>

Table 8.3 Management Levels for Species of Concern at Hanford (continued)

Species Group	Classes of Management Actions		
	Impact Management Level	Species/Habitat Tracking Level	Focused Enhancement Level
Federally designated migratory birds	<p><i>Medium</i></p> <p>Avoid the impact to the maximum extent possible (i.e., do not harm the bird or its habitat) and minimize impacts that are unavoidable (i.e., time the work so that habitat but not the bird, or its nest or eggs, are impacted). If direct impacts to migratory birds cannot be avoided or minimized, then a recommendation will be made for the project to obtain an incidental take permit under the Migratory Bird Treaty Act from the U.S. Fish and Wildlife Service.</p>	<p><i>Low</i></p> <p>Monitor the species habitat on a periodic basis (less than annual) and note occurrences during: (1) the annual Ecological Compliance Assessment Project baseline environmental surveys, and (2) the monitoring of habitat and species outside the baseline areas (i.e., 600 Areas) that occurs under the Ecosystem Monitoring Project.</p>	<p><i>Low</i></p> <p>Will receive low consideration for focused enhancement when restoration/compensatory mitigation actions are considered or when significant declines occur on Hanford or within the Columbia Basin ecoregion, unless it is otherwise a state or federal listed species or candidate species.</p>
Federal candidate	<p><i>High</i></p> <p>Avoid and/or minimize the impact to the maximum extent possible. Residual impacts, if significant, may require mitigation by rectification and/or compensatory mitigation.</p>	<p><i>Medium</i></p> <p>Monitor the species habitat and note occurrences on an annual basis under the Ecosystem Monitoring Project and track species location annually under the Ecological Compliance Assessment Project's baseline surveys.</p>	<p><i>High</i></p> <p>Will receive high consideration for focused enhancement when restoration/compensatory mitigation actions are considered or when significant declines occur on Hanford or within the Columbia Basin Ecoregion.</p>

## 8.4 Management of Some Recreationally and/or Commercially Important Species

### 8.4.1 Ungulate Management

The Rattlesnake Hills elk herd, which frequents the ALE Unit and adjoining lands, has grown steadily during recent years (see [www.pnl.gov/ecology/ecosystem](http://www.pnl.gov/ecology/ecosystem) for the latest documented census results). Although the elk occupy both the Hanford Site

and nearby private property, the herd occupied the Hanford Site almost exclusively during the years that it grew from about five animals in 1972 until it reached nearly 200 by 1992. By 1994, the herd approached 300 animals. At that point, the elk began causing crop damage on private property and attracted hunters to those lands. Hunters subsequently shot elk on private land without first obtaining permission, which led to trespass complaints from the landowners. The Washington Department of Fish and Wildlife began meeting with the landowners, including the DOE-RL, to address elk-related problems.

Table 8.3 Management Levels for Species of Concern at Hanford (continued)

Species Group	Classes of Management Actions		
	Impact Management Level	Species/Habitat Tracking Level	Focused Enhancement Level
Federal proposed/ threatened/ endangered	<p><i>Special</i></p> <p>Potential impacts to these species will be evaluated during the ecological compliance review process. Any finding of impact will trigger, at a minimum, informal consultation with the Fish and Wildlife Service under Section 7 of the Endangered Species Act. Any mitigation recommendations for these species will be defined by the Fish and Wildlife Service through the consultation process. No project action that could impact these species will be initiated until consultation is completed and mitigation actions have been identified.</p>	<p><i>High</i></p> <p>Monitor the species habitat and track species locations/ numbers on an annual basis.</p>	<p><i>Special</i></p> <p>Enhancement actions for federal threatened or endangered species depends on specific action recommendations defined in conservation plans and agreements between DOE-RL and the Fish and Wildlife Service.</p>

Other Hanford-related elk issues revolve around the question of whether elk are causing excessive habitat damage on the ALE Unit and whether continued growth of the herd will prompt the herd to expand into the Hanford central core area where waste management facilities are located. The shrub-steppe (and riparian) communities of the Hanford Site developed over the past several thousand years without the influence of large herds of ungulates, though small numbers of deer, antelope, and elk may have been present (Daubenmire 1970; Mack and Thompson 1982). As relatively recent invaders to the Site, the elk herd potentially could affect adversely these fragile communities. As the Hanford Site biological resources monitoring strategy (see Chapter 6.0) becomes more defined in subsequent years, DOE-RL or the future land administrator will need to monitor possible elk-induced habitat impacts and make appropriate management adjustments.

Since the elk colonized Hanford in the early 1970s, DOE-RL has monitored the elk population growth and provided information to the Washington State

Department of Fish and Wildlife for their use in managing the herd. DOE-RL also initiated research to determine whether immunocontraception of the elk herd might provide the state with a management tool for limiting future herd growth. There exists a continued need for all affected parties, including the Washington Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, DOE-RL, and private landowners to cooperate on policies and actions that will permit the elk herd to stabilize at a level that minimizes adverse impacts on both federal and private lands. Beginning in 1998 and continuing to the present, the Washington Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, and the Richland Office of the Department of Energy have been reviewing and implementing actions that could be initiated to effectively reduce the Rattlesnake Hills elk herd.

#### 8.4.2 Hunting, Fishing, and Trapping

When addressing hunting, fishing, and trapping, the Hanford Site can be divided into separate management units that are based on several distinct areas of management responsibilities. The ALE

Unit and the central core (consisting of all lands south and east of the Columbia River exclusive of the ALE Unit) of the Site are closed to outdoor recreation as a result of DOE-RL administrative direction and enforcement through trespass restrictions. The ALE Unit is a National Environmental Research Park, a designated Research Natural Area, and a National Monument. Plant and animal species are protected on the ALE Unit, and no hunting or trapping is permitted. No fish-holding water occurs on the ALE Unit. The basis for restriction of trespass within the central core has been both for security and public safety reasons. Even with the change in Hanford mission from weapons material production to environmental restoration, the basis for continuing trespass restrictions within the central core seems to have changed little in recent years. Thus, access for the purposes of hunting or trapping seems to be a static issue at this time.

Saddle Mountain Unit, which lies north of the Columbia River on the western portion of the Site, is managed by the Fish and Wildlife Service via a revocable use permit with DOE-RL. Hunting, fishing, and trapping on that portion of the Site also is restricted. Public use policy for Saddle Mountain Refuge is determined by the Fish and Wildlife Service.

North and east of the Columbia River is a portion of the Hanford Site managed by the Washington State Department of Fish and Wildlife (also via a revocable use permit with DOE-RL). The area is known as the Wahluke Unit and is managed for outdoor recreation, which includes hunting, fishing, and trapping. Future hunting, fishing, and trapping uses will be determined by the U.S. Fish and Wildlife Service comprehensive land use planning process. Access to that portion of the Site for hunting, fishing, and trapping is available to the public during the appropriate, legally established hunting, fishing and trapping seasons. There is access to the Columbia River along the shoreline within this area.

At the boundary of the central core, in areas below the normal high water line (not under DOE-RL control), and the Columbia River and on the Columbia River islands, hunting, fishing, and trapping also are permitted for that portion of the River below the wooden powerline crossing at the old Hanford Townsite. The Columbia River and all islands in the River and the Benton County shoreline below the highwater mark, including any peninsula originating on the Benton County shoreline, between Vernita Bridge and the wooden powerline crossing the River near the old Hanford townsite are closed to all hunting by the state Department of Fish and Wildlife.

Although DOE-RL is owner / administrator for portions of several islands on the Columbia River, ownership and management responsibility among the several other state and federal agencies is not always clearly defined and obvious to the public. Because of boat access, one DOE-RL island (Wooded Island) has been generally available to the public for hunting, fishing, and trapping. Because state regulation of hunting, fishing, and trapping on the island does not interfere with any DOE-RL-related responsibilities on Wooded Island, state regulation of hunting is viewed by DOE-RL as valid and appropriate (Appendix B addresses the applicability of state hunting and fishing regulations on federal property).

The harvest of deer along and within the Hanford Reach seems to have increased in the last several years as deer hunters routinely hunt the Columbia River Islands. During that time, several deer tagged from within the central core have been taken by hunters during legal hunting seasons. Evidence also suggests that trespass on both the ALE Unit and the central core for the purpose of hunting has increased in recent years, particularly since the Hanford helicopter patrols were eliminated.