Figure 8—Blowdown on the Superior National Forest increased fuel loadings and the forest's susceptibility to insect infestations.

Figure 9—A December 2000 ice storm inflicted moderate to heavy damage across 340,000 acres of Ouachita National Forest and private lands in Arkansas. Damaged trees were more susceptible to insect and disease infestations, and fuel loads increased the risk of catastrophic wildland fire.

have professional knowledge of the behavior of insect and disease populations and other factors that are likely to be affected by blowdown events or ice storms, such increased threat of wildland fire.

Determining the Existence of an Insect or Disease Epidemic

Except for cases of wind throw, blowdown, or ice-storm damage, HFRA Section 102(a)(4) requires the existence of an epidemic on, or adjacent to, NFS or BLM land and the imminent risk that the epidemic will spread. Resource managers need to understand the potential for such insect and disease epidemics to develop and spread.

What Is an Insect or Disease Epidemic? *Epidemic* refers to populations of damaging insects and pathogens that build up, often rapidly, to injuriously high levels (figure 10). *Epidemic* is synonymous with *outbreak*. Ecologically, an outbreak is often an explosive increase in the abundance of a particular species over a relatively short period. For example, Douglas-fir tussock moth populations can increase to tree-killing levels and then subside over a 3- or 4-year period. Other outbreaks, such as dwarf-mistletoe, may take years to increase to damaging levels and can persist for decades.

Some factors that could be considered when determining whether an epidemic exists include:

- Current population levels relative to endemic levels
- Observed rates and extent of population increase and/or spread
- Species composition of the stand
- The age and size of the trees in the stand
- Stand densities or stocking levels
- Climate and seasonal weather patterns
- Disturbance events such as wind, snow, and ice storms

Insect or disease epidemics result from vulnerable stand conditions (*hazard*, see the *Glossary*) and increasing pest populations (*risk*, see the *Glossary*). An understanding of implications of a particular outbreak will come from an evaluation of the interaction of species, forest conditions, and weather-related phenomena, such as extended periods of drought and high winds.

The Field Manager (DOI BLM) or Forest Supervisor (USDA Forest Service) will determine whether an epidemic exists under Section 102(a)(4) of the HFRA after consulting with forest health specialists (entomologists and pathologists) who know the factors that are relevant to such a determination.

Figure 10—Epidemic levels of insects or diseases, such as this southern pine beetle outbreak at the Sam Houston National Forest in Texas, produce forest conditions that have all the ingredients leading to a fast-moving, high-intensity catastrophic wildland fire.

Evaluating the Threats Posed to Ecosystem Components or Forest or Rangeland Resources

Factors to consider when evaluating the threat that insect or disease epidemics pose to ecosystem components or forest or rangeland resources include:

- Forest and stand conditions
- Pest populations and their rate of increase or decrease
- Weather-related conditions such as drought
- Fire
- Tree damage from a variety of causes

Forest and stand conditions determine the effects of insects or disease. For example, the greatest biological factor affecting bark beetle populations is the availability of food, which is determined by the conditions of their host species within a forest. Attributes of a given stand that influence bark beetle activity include: species composition, the age and size of the trees, and the density of the trees.

Drought stress is caused by prolonged periods of extremely low precipitation that reduce soil moisture below the requirements for trees. Drought stress can predispose trees to insect and disease epidemics by compromising or inhibiting their defense mechanisms. Prolonged periods of drought are associated with mortality caused by root diseases, bark beetles, and woodborers. Increased moisture also can increase the likelihood of infection by pathogens, such as the exotic white pine blister rust, and other pathogens that affect a tree's foliage.

Fire often kills trees or severely stresses them by injuring their foliage, stem, or root systems. Many species of insects are attracted to trees injured by fires. Bark beetle populations that are active in stands before a fire, combined with susceptible stand conditions, could increase the likelihood of additional tree mortality after a fire. Fire can also indirectly affect the hazard when fire cycles are interrupted, leading to changes in the species composition, density, and structure of a stand, which can affect the incidence and likelihood of spread of many pathogens, such as dwarf mistletoe and root diseases, and increase the hazard to damage by many species of insects, such as the western spruce budworm and Douglas-fir tussock moth.

It is important to identify the potential short- and long-term effects of these events on ecosystem components or forest and rangeland resources so treatments can be developed to reduce harmful effects. Coordination among fuel specialists, ecologists, silviculturists and forest health specialists is important.

Computerized hazard- and risk-rating models are available for several forest insect and disease pests. These models are linked to forest stand development models, such as the *Forest Vegetation Simulator* and should be used whenever possible to help increase reliability when assessing the spread of insect or disease epidemics. Such assessments should be made by forest health specialists who have professional knowledge of the behavior of insect and disease populations, the factors that contribute to the outbreak, development, and spread of epidemics, and the potential effects of epidemics on ecosystem components.

Forest health specialists should provide expert advice to resource managers on the actions that are available to reduce threats to ecosystem components or forest and rangeland resources.

Effective management strategies for direct and indirect control of insect or disease outbreaks include prevention, suppression, and restoration. Prevention strategies are designed to change the conditions that render forests susceptible to epidemics. Suppression strategies are designed to suppress or control existing populations of insects and pathogens. Restoration strategies reestablish an ecosystem's ecological integrity so that the ecosystem's components are functioning and capable of self-renewal.

Documentation

The analysis and documentation for threats from insects and disease under Section 102(a)(4) of the HFRA are intended to be integrated with the analysis and documentation done under current NEPA guidance and other relevant guidance. This documentation should be included in the NEPA documents normally prepared during project planning, the Decision Records or Records of Decision prepared before project implementation, or in the project file itself.

Insect or disease risk-reduction projects carried out under the HFRA should document the factors considered and the methods used in making determinations. Where possible, the hazards and risks supporting any determination that a "significant threat" exists should be quantified. The short- and long-term effects of proposed treatments and the effects of taking no action should be described as provided for in the *Judicial Review* section.

Threatened and Endangered Species

Section 102(a)(5) of the HFRA authorizes projects that will enhance protection from catastrophic wildland fire for threatened and endangered species or their habitats and that maintain and

restore such habitats. Projects are authorized on NFS and BLM lands containing threatened and endangered species habitat where:

A—Natural fire regimes are identified as being important for, or wildland fire is identified as a threat to, a threatened or endangered species, or the habitat of a threatened or endangered species, in a:

- Species recovery plan prepared under Section 4 of the ESA (16 U.S.C. 1533), or a
- Notice published in the Federal Register determining a species to be endangered or threatened, or designating critical habitat.

AND

B—The authorized hazardous-fuel reduction project will provide enhanced protection from catastrophic wildland fire for the endangered species, threatened species, or the habitat of the threatened or endangered species
AND

C—The Secretary complies with any applicable guidelines specified in any management or recovery plan described in A.

Determining the Threat of Fire and the Need for Enhanced Protection

Many threatened and endangered species require fire to maintain their habitat. Disturbances, such as fire, provide the ecological basis for conservation management in many forest ecosystems. The endangered red-cockaded woodpecker (figure 11) and Kirtland's warbler are two examples. Projects that return fire to the ecosystem in a manner that improves or maintains habitat effectiveness should be considered important for such species. If such projects also provide enhanced protection from catastrophic wildland fire for threatened and endangered species or their habitat, they may be authorized under the HFRA.

Some threatened and endangered species can be adversely affected by wildland fire. Whether a potential wildland fire may pose a risk to a species, and the degree of risk, depend on many factors, including the likelihood that a fire may occur; the fire's size, intensity, and severity; fire frequency; the time of year of the fire; the availability of needed replacement habitat; and the species' habitat requirements. These factors should be considered when determining the threat of wildland fire to species and habitats (figure 12). Fire regime condition class assessments also should be considered when determining whether a treatment or series of treatments would reduce the likelihood of an uncharacteristically severe wildland fire and benefit the species overall.

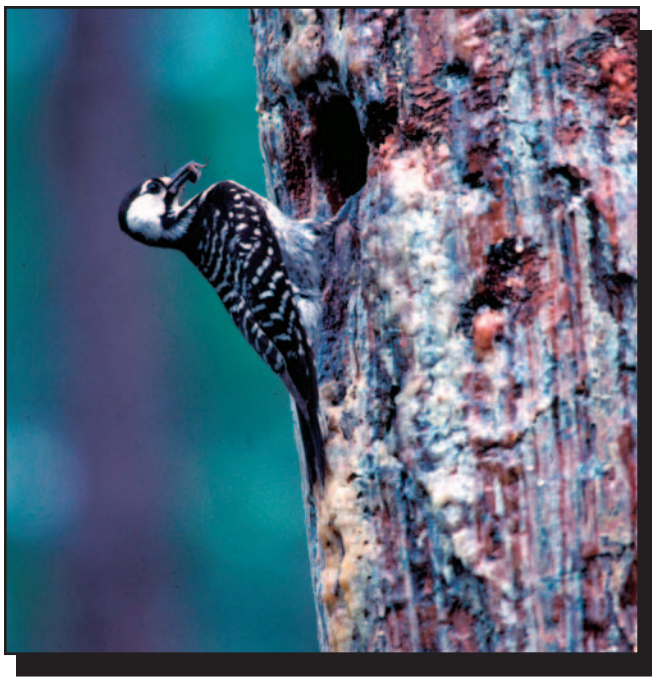

Figure 11—The red-cockaded woodpecker is an example of an endangered species that depends on frequent fires to maintain its habitat.

Figure 12—Rangeland resources often occur within a wildland-urban interface. Rangeland treatment can help reduce fuel and improve habitat management for species such as the sage grouse, which has been petitioned for listing under the ESA.

Threatened and endangered species recovery plans, final listing rules, the Fire Effects Information System, the NatureServe Explorer, USDA Forest Service and DOI BLM resource management plans, and the scientific literature are important sources of information when determining whether hazardous-fuel treatment will benefit threatened and endangered species or their habitat (see *References*). The expected effects of wildland fire on species limiting factors and the threats to a species are key considerations.

Many threatened and endangered species have approved recovery plans that identify specific tasks needed to recover species and ecosystems and the significance of fire (natural and prescribed) to the species. All final rules to list species under the ESA identify the factors that contributed to a need to list the species. These rules may include information on fire's ecological importance for the species.

The potential beneficial and adverse effects to the species, over the short and long term, need to be identified when determining whether a project will produce a net positive benefit. Resource managers should refer to the 2002 HFI *Net Benefits Guidance* (see *References*) issued by the USFWS and NOAA Fisheries for a more thorough discussion.

Coordination among fuel and fire specialists, ecologists, biologists, and researchers—internal and external—is especially important. The design and evaluation of fuel treatments at project and landscape scales should be appropriate for the geographic ranges of any relevant threatened and endangered species.

Projects based on Section 102(a)(5) of the HFRA must comply with guidelines in approved threatened and endangered species recovery plans or final listing rules and with the management requirements they include. If such rules or plans do not identify the need to reduce the risk of wildland fire, resource managers should weigh the positive and adverse effects that fuel-reduction activities would have on the species, using the best available information (see *References*).

Documentation

The analysis and documentation for projects under Section 102(a)(4) of the HFRA are intended to be integrated with the analysis and documentation done under current NEPA guidance and other relevant guidance. This documentation should be included in the NEPA documents normally prepared during project planning, the Decision Records or Records of Decision prepared before project implementation, or in the project file itself.

All projects implemented under this section of the HFRA should include documentation in the administrative record on the factors that were analyzed and the assumptions that were made when determining the net benefit to threatened and endangered species as provided for in the *Judicial Review* section.

Old-Growth and Large-Tree Retention

The old-growth and large-tree retention provisions of the HFRA only apply to "covered" projects. Covered projects, as defined in Section 102(e)(1)(B), include all projects authorized under the HFRA on NFS and BLM lands, except those carried out under Section 102(a)(4).

Old Growth

Section 102(e)(2) provides that the USDA Forest Service and DOI BLM, when carrying out covered projects using HFRA authority, are to "fully maintain, or contribute toward the restoration of, the structure and composition of old-growth stands according to the pre-fire suppression old-growth conditions characteristic of the forest type, taking into account the contribution of the stand to landscape fire adaptation and watershed health, and retaining the large trees contributing to old-growth structure."

Section 102(e)(3) provides that old-growth direction in resource management plans established on or after December 15, 1993, (so-called "newer plan direction") is sufficient to meet the requirements of Section 102(e)(2) and will be used by agencies carrying out projects under the HFRA. December 15, 1993, refers to the date old-growth direction was adopted into the plan, which may have been after the date the current plan was originally adopted (if the plan was amended to include updated old-growth direction). For example, old-growth direction would not need to be revised in plans encompassed by the *Northwest Forest Plan Record of Decision,* because these plans contain old-growth standards adopted after December 15, 1993.

Any amendments or revisions to management direction for old growth made after December 3, 2003, must be consistent with Section 102(e)(2) for the purpose of carrying out "covered" projects in old-growth stands.

Resource management plan direction governing old-growth resources can take a variety of forms. For example, plans may refer to old growth or may use related terms that refer to late-successional forest conditions. In addition to the term *old growth*, plans may use terms such as *ecological old growth*, *old forests*, *late-successional forests* or *reserves*, *late-successional habitat* or *vegetation*, *climax forest* or *vegetation*, *overmature forests*, or a *mature* and *overmature timber inventory stratum* or *habitat*

class. For the purposes of implementing the HFRA, the use of terms that are equivalent to *old growth,* such as those above, should be considered to be the same as *old growth* as used in the HFRA. In this *Field Guide*, the term *old growth* is intended to refer to the various terms that are equivalent to *old growth* in resource management plans.

The direction for old-growth stands contained in newer resource management plans (those issued after December 15, 1993) should guide the development of projects carried out under the HFRA within these stands. When the resource management plan is revised or amended, the direction for old-growth stands in the parent plan should be reviewed with regard to covered projects if resource managers want to continue using HFRA authorities.

To comply with Section 102(e), field units must have a process in place to identify old-growth stands or their equivalent before they use HFRA authorities. The HFRA does not mandate particular definitions of old growth or the specific process to identify old-growth stands, nor does the HFRA require that old-growth stands be mapped.

The HFRA does not require revisions or amendments to resource management plans, nor does the HFRA require a review of management direction for old-growth stands adopted before December 15, 1993, unless a unit elects to use HFRA authority. However, if units are amending or revising their resource management plans, or contemplate doing so, they should consider the benefits of being able to use the HFRA authority.

Under Section 102(e)(4), for plans containing old-growth management direction adopted before December 15, 1993, resource managers expecting to use HFRA authorities have up to 2 years or, if the plan was in the revision process as of December 3, 2003, up to 3 years, to review existing management direction for old growth. Existing old-growth management direction in the plan applies during the review period. When reviewing the older management direction, the unit should:

- Take into account any relevant scientific information that has become available since adoption of the older management direction.

- Determine whether the older management direction provides for maintaining and restoring old-growth stands to a pre-fire suppression condition, as provided by Section 102(e)(2).

Based on this review, the agencies will determine whether additional plan direction is needed for covered projects within old-growth stands.

If a review of older management direction is not completed within the 2- or 3-year timeframes described above, forest stands must be dropped from any HFRA project proposal if someone provides "substantial supporting evidence" during scoping that the stands are old-growth stands (Section 102(e)(4)(C)). Managers may examine whether these areas can be treated using standard legal authorities, rather than those provided in the HFRA.

Substantial supporting evidence may include maps or records identifying old-growth stands, accompanied by plot data showing that the stands meet old-growth stand attributes or criteria established by the applicable resource management plan.

The *References* section contains USDA Forest Service ecological old-growth definitions that may be a useful starting point for reviewing management direction in older plans (those adopted before December 15, 2003). These definitions were not necessarily developed for determining the "pre-fire suppression old-growth condition" as directed by the HFRA. Resource managers should evaluate these definitions closely to determine whether they need to be modified for identifying, maintaining, and restoring old-growth stands under the HFRA.

In making this evaluation, resource managers should consider the appropriate reference condition for old growth. While the HFRA refers to a "pre-fire suppression old-growth condition," fire behavior patterns had been modified substantially in many areas 50 years or more before the era of active fire suppression. Such changes in fire behavior commonly were associated with the elimination of burning by native peoples and a dramatic increase in livestock numbers, which modified grasses and other fine fuels. In selected forest types where such changes occurred, it may be desirable to establish reference conditions that existed before the era of active fire suppression. The HFRA does not prohibit this. The *References* section provides examples of regional planning direction and assessment-level old-growth information that may be useful when evaluating resource management plan direction to maintain and restore old-growth stands to a pre-fire suppression condition.

Various approaches to amending old-growth direction in resource management plans are possible (if such amendments are deemed necessary). These include:

- Amendments for each resource management plan

- Project-specific amendments

- Development of multiforest old-growth management guidelines based on specific forest types, followed by resource management plan amendments to meet those new guidelines

In situations where the plan does not contain old-growth management direction, if resource managers want to carry out a hazardous-fuel-reduction project (figure 13) under the HFRA, the large-tree retention requirements in Section 102(f) should be used until the plan is amended to incorporate direction in conformity with Section 102(e)(2). In these situations, if plans are not amended or revised to include old-growth management direction consistent with Section 102(e)(2) within 2 years of the HFRA's enactment, or within 3 years if the plan was being revised at the time of the HFRA's enactment (December 3, 2003), forest stands must be dropped from a HFRA project proposal if someone provides "substantial supporting evidence" during scoping that these stands are old growth.

Research studies, such as the study by Kauffman and others in dry ponderosa pine and Douglas-fir landscapes in the southern Rocky Mountains (2003, see *References, Old-Growth and Large-Tree Retention, Project-Level Guidance*), may provide useful insights when developing treatment strategies for maintaining or restoring old growth to pre-fire suppression conditions. Tools, such as the *Vegetation Dynamics Development Tool* and the *Forest Vegetation Simulator*, coupled with the *Fire and Fuels Extension* (see *References, Old-Growth and Large-Tree Retention, Project-Level Guidance*), may also be useful when modeling prescriptions to restore or maintain pre-fire suppression old-growth conditions in particular forest types. Regional or State offices can help units accomplish these aims by hosting workshops or providing guidance for the major forest types within their region or State.

Large-Tree Retention

Section 102(f) governs vegetation treatments in covered projects outside of old growth, and where the resource management plan does not contain old-growth management direction. The section requires such treatments to be carried out in a manner that:

- Will "modify fire behavior, as measured by the projected reduction of uncharacteristically severe wildland fire effects for the forest type (such as adverse soil impacts, tree mortality, or other impacts)." In achieving this objective, vegetation treatments are to focus "largely" on small-diameter trees, thinning, strategic fuel breaks, and prescribed fire (figures 14 and 15).

Figure 13—Hazardous-fuel treatments authorized by the HFRA in old-growth stands are intended to retain the "large trees contributing to old-growth structure." This old-growth ponderosa pine stand in the Lassen National Forest (California) was thinned, leaving large trees. Some of the trees that were removed were large enough to cut for lumber at a sawmill. Smaller trees were chipped and used as fuel to produce electricity.

Figure 14—After decades of wildland fire exclusion, some ecosystems, such as this ponderosa pine forest in southern Oregon, have become overgrown and unhealthy, leaving them unsuitable for wildlife and hazardous to communities nearby.

Figure 15—Ecosystem health has been restored and the risk of high-intensity wildland fire has been reduced after mechanical treatments, followed by low-intensity burning, in the ponderosa pine forest shown above.

- Maximize "the retention of large trees, as appropriate for the forest type, to the extent that the large trees promote fire-resilient stands."

The HFRA also states that the large-tree retention requirements of Section 102(f) must not prevent agencies from reducing wildland fire risk to communities, municipal water supplies, and at-risk Federal land.

In areas where large-tree retention requirements apply, resource managers should design projects that retain large trees to the extent possible, while they also:

- Are appropriate for the forest type
- Will reduce uncharacteristically severe wildland fire effects within the treated area
- Will meet the objective of reducing wildland fire risk to communities, municipal water supplies, and at-risk Federal land

Specific vegetation treatment methods to be applied within these areas should be guided by the key objectives described above.

Silviculture prescriptions should be designed for forest vegetation treatments that integrate fuel and other resource objectives to meet the resource management plan direction. The silviculture prescription should prescribe for retention of large, fire-resilient trees (generally intolerant tree species adapted to fire processes) and retain large trees to the degree this practice is consistent with the objective of maintaining or restoring fire-resilient stands. However, large trees of selected species that are not adapted to fire processes may need to be removed to promote greater fire resiliency. Similarly, the removal of small- to mid-sized trees will generally be needed to reduce fuel ladders within the treatment area, curtailing uncharacteristically severe wildland fire effects and enabling use of prescribed fire. Trees in a variety of size classes may need to be removed in these areas to reduce wildland fire risk to communities, municipal water supplies, and at-risk Federal land. These practices are allowed under the HFRA.

In determining characteristic large-tree sizes appropriate for the forest type, resource managers may explore using the ecological definition of old growth developed for the forest type as one means of identifying diameter ranges for the tree species covered by the definition. USDA Forest Service ecological definitions for forest types are listed in the *References* section.

Resource managers should consider using growth models and other simulation tools when developing treatment strategies for areas where large-tree retention provisions apply. Models, such as the *Forest Vegetation Simulator* coupled with the *Fire and Fuels Extension* (see *References, Old-Growth and Large-Tree Retention, Project-Level Guidance),* allow treatment scenarios to be analyzed through time to determine their effects on fire behavior at the stand level and to help predict fire effects. Through using this kind of model, practitioners can determine the optimal treatment or set of treatments within a particular forest type that will help achieve the objective of retaining large trees, to the extent that is consistent with the objective of promoting fire-resilient stands.

Administrative Review

The DOI BLM administrative review process was not modified by the HFRA.

Section 105(a) of the HFRA replaces the USDA Forest Service's administrative appeals process with an objection process that occurs before the decision approving authorized fuel-reduction projects under the act. The Secretary of Agriculture has established interim final regulations for a predecisional administrative review process for authorized hazardous-fuel reduction projects on NFS lands. The interim final rules were published January 9, 2004 (69 FR 1529, *http://www.regulations.gov/fredpdfs/04-00473.pdf*).

Only authorized hazardous-fuel reduction projects, as defined by the HFRA (Section 101(2)), on NFS lands that have been analyzed in an EA or EIS are subject to these special procedures.

Participation in the predecisional review process is available to individuals and organizations who have submitted specific written comments related to the proposed authorized hazardous-fuel-reduction project during opportunities for public comment provided when an EA or EIS is being prepared for the project (Section 105(a)(3), 36 CFR 218.6).

Written objections, including any attachments, must be filed with the reviewing officer within 30 days after the publication date of the legal notice of the EA or final EIS in the newspaper of record (Section 218.4(b)). It is the responsibility of objectors to ensure that their objection is received in a timely manner.

Before the issuance of the reviewing officer's written response, either the reviewing officer or the objector may request to meet to discuss issues raised in the objection and their potential resolution. The reviewing officer has the discretion to determine whether or not adequate time remains in the review period to make a meeting with the objector practical. All meetings are open to the public.

The reviewing officer will issue a written response, but is not required to provide a point-by-point review, and may include instructions to the responsible official, if necessary. In cases

involving more than one objection to a proposed authorized hazardous-fuel-reduction project, the reviewing officer may consolidate objections and issue one or more responses.

The responsible official may not issue a record of decision or decision notice concerning an authorized hazardous-fuel-reduction project until the reviewing officer has responded to all pending objections.

Judicial Review

Persons may bring a civil action challenging an authorized hazardous-fuel-reduction project in a Federal District Court only if they raised the issue during the administrative review process and they have exhausted the administrative review process established by the Secretary of Agriculture or the Secretary of the Interior.

Section 106 of the HFRA establishes direction governing judicial review of lawsuits challenging hazardous-fuel-reduction projects authorized under the act. The section:

- Requires lawsuits to be filed in the U.S. District Court where the project is located (Section 106(a)).
- Encourages expeditious judicial review of authorized fuel-treatment projects (Section 106(b)).
- Limits preliminary injunctions and stays to 60 days, subject to renewal. At each renewal, parties to the action shall provide the court with updated information on the project (Sections 106(c)(1) and (2)).
- Directs courts to balance the impact of the short- and long-term effects of undertaking or not undertaking the project when weighing the equities of any request for an injunction of an authorized hazardous-fuel-reduction project (Section 106(c)(3)).

Documentation

The agencies' analyses and documentation of the short- and long-term effects of action or taking no action (figures 16 and 17) will be important to the court's evaluation of any request for injunctive relief.

Although a no-action alternative does not always have to be considered for HFRA-authorized projects, it is important that the specialists' report retained in the project files document the anticipated short- and long-term effects of proposed HFRA treatments.

The analysis and documentation for the short- and long-term effects of action or taking no action are intended to be integrated with the analysis and documentation done under current NEPA guidance and other relevant guidance.

Documentation from the long list that follows would include only information directly relevant to evaluating the short- and long-term effects of implementing or not implementing the proposed project:

Fuel Conditions and Fire Behavior

- Describe the area based on the type of fire and fire behavior expected in foreseeable fire scenarios.
- Address the short- and long-term effects of proposed treatments and of taking no action.
- Describe the desired condition from a fire-behavior perspective. What target fuel conditions will provide a change in unwanted fire behavior to meet the description of purpose and need in the EA or EIS? Include a description of the results of taking no action. What is likely to happen if the fuel conditions are not treated?
- Provide maps of recent fires and photos of present conditions. Describe in words, computer simulations, photographs, or some combination of the three, what the area will look like with and without treatment.
- Gather and document pertinent scientific information.

Threatened and Endangered Species

- Document the presence of threatened or endangered species, or of any threatened or endangered species that potentially could be affected, either by wildland fires (with or without fuel reduction) or by the fuel-reduction action itself.
- Document the importance of fire (wildland or prescribed) to any threatened or endangered species or to the ecosystem on which they depend.
- Document the risk of future wildland fires, including fires of different intensity.
- For any threatened or endangered species involved:
  - —Document the threats or benefits that are possible or likely from future wildland fires if hazardous fuel is not reduced.

Figure 16—The Bucktail fire burned through this treated stand on the Uncompahgre National Forest in western Colorado. Burning within the stand was low intensity and patchy, despite the dead trees and branches on the forest floor.

Figure 17—This stand (adjacent to the stand shown in figure 16) burned much more intensely the same day. Because this stand had not been treated, environmental damage was significantly greater.

—Document which habitat components would be improved by hazardous-fuel reduction, even if wildland fires never occur.

—Document which habitat components would be protected from the adverse effects of future wildland fires by hazardous-fuel reduction.

—Document which habitat components would be improved by wildland fires because hazardous-fuel reduction will change the fire regime or condition.

- For the above evaluations, document both the short- and long-term (or any other relevant timeframe) situations regarding such risks, threats, benefits, components, and effects.

Insects and Disease

- Describe the hazard- or risk-assessment procedures used (such as published risk assessments, local guidelines, or field visits by consulting entomologists or pathologists).
- Describe procedures used (such as field survey, inventory data, or aerial photo interpretation) to establish vegetative conditions when assessing the hazard or risk (see *Glossary*) associated with insects and diseases within the stand or landscape.
- Include maps of recent or current disturbances, such as insect or disease activity, wind throw, ice damage, and so forth, including estimates of the disturbances' effects.
- Provide treatment alternatives with supporting literature describing how they address the description of purpose and need in the EA or EIS.
- Address the short- and long-term effects of proposed treatments and of taking no action.
- Discuss treatment methods that are not appropriate—for example, the limited scope of the proposed treatment may not effectively address the disturbance.
- Document any consultation with entomologists or pathologists.

Municipal Watersheds and Water Supplies

- Describe the expected effects of the worst-case fire scenario on water supply, water quality, contaminants, and water supply facilities, including the immediate and long-term effects on watershed functions and human uses.
- Provide a similar analysis of the expected effects if no fuel-reduction measures are implemented within the municipal watershed or close to the water system infrastructure, over the short and long terms.
- Evaluate the list of factors included in the *At-Risk Municipal Watersheds* section of this *Field Guide* to inform the decision-maker of the short- and long-term consequences of taking no action and of implementing the proposed fuel-reduction projects.
- Include copies (or references to them) in the files of available published and unpublished reports, data, and any other information about the municipal watershed and the community water supply system. Maps or descriptions of the water intake locations, pipelines, and treatment facilities are considered to be sensitive data and must be kept in locked, secure cabinets or computers, or as otherwise required by the U.S. Environmental Protection Agency and the U.S. Department of Homeland Security.

General information on the scientific basis for modifying wildland fire behavior and severity by changing forest structure can be found in the Rocky Mountain Research Station's report RMRS–GTR–120 (see *References*).

Setting Priorities and Collaborating

The HFRA provides expedited NEPA procedures for authorized fuel-reduction projects on NFS and BLM lands in the WUIs of at-risk communities. Under HFRA Section 101(1), an at-risk community is one that:

- Is an interface community as defined in the Federal Register notice of January 4, 2001 (66 FR 753), or a group of homes and other structures with basic infrastructure and services (such as utilities and collectively maintained transportation routes) in or adjacent to Federal land
- Has conditions conducive to a large-scale wildland fire

- Faces a significant threat to human life or property as a result of a wildland fire

The HFRA is intended to build on work carrying out fuel treatments in and around communities under the *National Fire Plan* (*http://www.fireplan.gov*) and *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy Implementation Plan* (May 2002, *http://www.fireplan.gov/reports/11-23-en.pdf*).

The HFRA encourages the development of Community Wildfire Protection Plans (figure 18). Section 101(3) describes a Community Wildlfire Protection Plan as one that:

- Is developed in the context of the collaborative agreements and guidance established by the Wildland Fire Leadership Council and agreed to by the local government, local fire department, and State agency responsible for forest management, in consultation with interested parties and the Federal land-management agencies that manage land in the vicinity of an at-risk community.
- Identifies and sets priorities for areas needing hazardous-fuel-reduction treatments and recommends the types and methods of treatment on Federal and non-Federal lands that will protect one or more at-risk communities and their essential infrastructure.
- Recommends measures to reduce the chance that a fire will ignite structures (figure 19) throughout an at-risk community.

For at-risk communities that have not yet designated their WUIs as part of a Community Wildfire Protection Plan, the HFRA has a default definition of WUI (Section 101(16)(B (ii)). It is an area:

- Extending ½ mile from the boundary of an at-risk community.
  OR
- Extending 1½ miles from the boundary when other criteria are met—for example, a sustained steep slope, a geographic feature that could help when creating an effective firebreak, or Condition Class 3 land.
  OR

Figure 18—Effective collaboration at the community level is a cornerstone of all HFRA activities. This meeting took place at the Croatan National Forest in North Carolina.

Figure 19—One of the keys to effective fire management is treating fuels adjacent to structures and on private and Federal land throughout the wildland-urban interface.

- Adjacent to an evacuation route. There is no distance limitation for evacuation routes.

The HFRA directs the USDA Forest Service and DOI BLM, in accordance with *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy Implementation Plan* (May 2002), to "develop an annual program of work for Federal land that gives priority to authorized hazardous fuel reduction projects that provide for protecting at-risk communities or watersheds or that implement Community Wildfire Protection Plans" (Section 103(a)). The USDA Forest Service and DOI BLM will consider recommendations made in such plans (Section 103(b)(1)).

Additionally, Section 103(d)(2) requires that when providing financial assistance for authorized hazardous-fuel-reduction projects on non-Federal land, Federal agencies will consider recommendations made by at-risk communities that have developed Community Wildland Fire Protection Plans and give priority in allocating funding to communities that have adopted such plans or that have taken measures to encourage willing property owners to reduce fire risk on private property.

Federal involvement in planning and developing Community Wildfire Protection Plans under Section 103(b) is exempt from the Federal Advisory Committee Act and NEPA. Except as otherwise provided in Section 104 of the HFRA, NEPA requirements continue to apply when Federal actions are implemented in the WUI and elsewhere.

Identifying At-Risk Communities

Communities may identify themselves as *at risk* based on an analysis following the *National Association of State Foresters Field Guidance on Identifying and Prioritizing Communities At Risk* (June 27, 2003), or during development of their Community Wildfire Protection Plans. The State Foresters' guide and the Federal Register notice with the current list of at-risk communities are available at: *http://www.fireplan.gov/reports.*

As communities identify themselves as *at risk* and approach Federal agencies to work collaboratively, joint development of plans and projects will ensure that investments in hazardous-fuel reduction are the most economical and effective ways to reduce risk (see the *Interagency Memorandum of Understanding for Fuel Treatment Collaboration* at: *http://www.fireplan.gov/*).

Developing Community Wildfire Protection Plans

Communities may, at their option, develop Community Wildfire Protection Plans. The HFRA encourages the development of Community Wildfire Protection Plans and outlines their contents (see above). A Community Wildfire Protection Plan identifying WUIs need not be limited to the default definitions. It is under such plans that at-risk communities will recommend the WUIs within which HFRA-authorized projects may take place on NFS and BLM land. For at-risk communities that have not yet designated their WUIs as part of Community Wildfire Protection

Plans, the default definition of WUI (described above) establishes the maximum distance a WUI can extend from the boundary of an at-risk community (figure 20).

Under Section 103(d)(1)(C) projects that are already well into the NEPA planning process can use existing definitions of WUI for up to 1 year from the date of the act's passage (the project's decision notice must be issued by December 3, 2004).

Federal agencies should be partners in the preparation of Community Wildfire Protection Plans to the extent that a community desires, within budgetary constraints. In the WUI, these plans will provide a seamless guide for fuel reduction across ownerships, identifying those treatments to be completed by public agencies and those to be completed by private landowners. Implementing a Community Wildfire Protection Plan will fulfill the requirements for a collaboration in the *Implementation Plan*.

On February 27, 2003, the DOI BLM directed field offices to work with communities to complete Community Assessment and Mitigation Plans (OFA IM-2003-020). These plans are intended to meet the same requirements as the HFRA Community Wildfire Protection Plans. Communities meeting the DOI BLM guidance should not have to revise their plans unless the plans are missing a component of the HFRA requirements. To avoid any confusion in maintaining two names for plans that are intended to serve the same purpose, DOI BLM field offices should recommend that communities refer to their assessment and mitigation plans as Community Wildfire Protection Plans.

The National Association of State Foresters is working with the Western Governors Association, the National Association of Counties, and the Society of American Foresters to develop a user-friendly guide to help communities get started in developing, or finalizing, their Community Wildfire Protection Plans (see *http://www.fireplan.gov/content/reports*). Regional, State, local, Tribal, or area administrators, or other Federal officials, Tribal leaders, and governors will collaborate on setting priorities and coordinating planning across jurisdictions to facilitate accomplishments at the local level. Ongoing communication should facilitate the exchange of technical information for fully informed decisions.

Figure 20—This complex wildland-urban interface illustrates the need for a Community Wildfire Protection Plan. Protecting such homes scattered throughout the forest can be a serious challenge for wildland firefighters.

Setting Priorities Collaboratively

At the local level, successful implementation of fuel treatments must include decisionmakers collaborating with Federal, State, and local governments, Tribes, community-based groups, landowners, and other interested persons. Collaboration will be used to establish priorities, cooperate on activities, and increase public awareness and participation to reduce the risks to communities and surrounding lands. While land-management agencies make the decisions on matters affecting public lands, these collaborative efforts will produce programs that can be supported broadly and implemented successfully.

Direction for collaborating and setting annual fuel-treatment funding priorities for projects on Federal land is documented in a memorandum from the Chief of the USDA Forest Service and the Assistant Secretary for Policy, Management, and Budget, DOI (fuel collaboration letter, *http://www.fireplan.gov/*).

The *Development of a Collaborative Fuels Treatment Program* memorandum of understanding signed in January 2003 provides a general framework of collaboration for hazardous-fuel treatments (*http://www.fireplan.gov/content/reports*). The memorandum provides that, working in partnership, the Federal agencies, State and local governments, and Tribes will ensure that projects are strategically located and implemented across the landscape and ownerships. Five Federal agencies (the DOI BLM, USDA FS, BIA, NPS, and USFWS), the National Association of State Foresters, the National Association of Counties, and the Intertribal Timber Council signed this memorandum.

Providing Financial Assistance for Projects on Non-Federal Lands

Federal financial assistance for hazardous-fuel-reduction projects on non-Federal lands may be available through cooperative assistance programs such as *State Fire Assistance*, a USDA Forest Service program administered through the State Foresters, and *Community Assistance*, a wildland-urban interface DOI BLM program.

New Mexico has established the *Collaborative Forest Restoration Program* based on the Community Forest Restoration Act of 2000 (Title VI, P.L. 106-393). This program provides grants for collaborative forest-restoration and small-diameter tree utilization projects on Federal, State, Tribal, county, and municipal lands. In 2005, the USDA Forest Service will report to Congress on how well the program has met its objectives and on the potential that such programs could be expanded to other States in the Intermountain West (figures 21 and 22).

Under the authority of the Wyden Amendment, managers of Federal lands may spend funds to conduct treatments on adjacent non-Federal lands to treat private lands where treatments are designed to improve the viability of, and otherwise benefit, fish, wildlife, and other biotic resources. Some USDA Forest Service appropriations are available for managers to assist their non-Federal neighbors with hazardous-fuel treatments if projects proposed on USDA Forest Service lands pose a threat to the neighbors. Federal resource managers may also spend National Fire Plan funds on non-Federal land projects under certain circumstances. Direction for the use of Federal funds is subject to annual change in appropriations law.

In all cases where Federal funds are proposed for use on non-Federal lands, resource managers must work closely with their grants and agreements specialists. Appropriate options and procedures may vary by region, State, forest, or field office.

Grants and agreements specialists will provide advice regarding the most appropriate authority and legal instrument for implementing such projects or transferring funds and will help ensure that all applicable requirements are met. In addition, resource managers must work closely with their agency NEPA, ESA, and National Historic Preservation Act coordinators to ensure that the appropriate procedures and consultation requirements of these acts are met, specifically those regarding the use of Federal funds on non-Federal lands.

The Secure Rural Schools and Community Self-Determination Act

Commonly called *Payments to States*, the Secure Rural Schools and Community Self-Determination Act (P.L. 106-393) can provide resources for collaboration and community planning, as well as funds for fuel-reduction and ecosystem-restoration projects.

The act is intended to stabilize payments that help counties support roads and schools, provide projects that enhance forest ecosystem health, provide employment, and improve cooperative relationships among Federal land-management agencies and those who use and care about Federal lands.

In Title II of the Secure Rural Schools Act, counties have the option to set aside funds to be used for ecological restoration projects on Federal lands. The communities are represented by a resource advisory committee that recommends projects and funding levels to the local Federal land-management agency. Counties can set aside funds under Title III of the act for other activities, including community forestry projects on non-Federal land and community fire planning and education.

More information on *Payments to States* can be found at: *http://wwwnotes.fs.fed.us:81/r4/payments_to_states.nsf.*

Figure 21—The Rio Grande bosque in New Mexico had high fuel loadings before fuel-reduction treatments.

Figure 22—Fuel loading was significantly reduced by a combination of thinning and prescribed-fire treatments in the Rio Grande bosque. Wildland fire is less of a threat when stands are in this condition than when they are in the condition shown in figure 21 (the same stand before treatment).

Monitoring

The HFRA contains provisions requiring that the USDA Forest Service and DOI BLM monitor the results of a representative sample of authorized hazardous-fuel-reduction projects and submit a report every 5 years that includes an evaluation of the progress toward project goals and recommendations for project modifications.

Fire sciences research funded by the National Fire Plan is assessing monitoring schedules and protocols to meet the requirements of the HFRA, as well as those of the National Fire Plan. Recommendations for implementation will be made to the Wildland Fire Leadership Council.

Multiparty Monitoring

Section 102(g)(5) of the HFRA instructs the USDA Forest Service and DOI BLM to establish a collaborative multiparty monitoring, evaluation, and accountability process when significant interest is expressed in such an approach. The process will be used to assess the positive or negative ecological and social effects of authorized fuel-reduction projects, as well as those undertaken under Section 404 (applied silvicultural assessments) of the HFRA.

Diverse stakeholders, including interested citizens and Tribes, should be included in the monitoring and evaluation process. The requirement for multiparty monitoring is not directly connected to the requirements for monitoring a representative sample of projects, but shall be used where "significant interest is expressed," in the judgment of the field unit involved. The USDA Forest Service and DOI BLM both have experience with multiparty monitoring, which can be an effective way to build trust and collaborate with local communities and diverse stakeholders, including interested citizens and Tribes. Multiparty monitoring will be subject to available funding and the ability of stakeholders to contribute funds or in-kind services.

An excellent publication on protocols and guidelines for multiparty monitoring of community-based forest restoration projects is available at the Collaborative Forest Restoration Program Web site: *http://www.fs.fed.us/r3/spf/cfrp/monitoring/.*

Additional information on multiparty monitoring is available online at: *http://www.fs.fed.us/forestmanagement/index.shtml* (click on the *Stewardship Contracting Success Stories* link there) and *http://www.pinchot.org/community.html*.

Monitoring Maintenance of Treated Areas

Section 102(g)(8) of the HFRA requires the USDA Forest Service and DOI BLM to develop a process for monitoring the need to maintain treated areas over time. For example, areas requiring treatment to move from Condition Classes 2 or 3 to Condition Class 1 also will require periodic treatments. Proposed actions and alternative descriptions should include an estimated maintenance treatment schedule and cost. As field units accomplish their projects, they will need to plan for future maintenance and monitor completed projects to ensure that the proposed maintenance treatment schedule is accurate. Maintenance treatments are to be scheduled into the annual program of work. Field units should consider the maintenance workload when assessing their ability to implement fuel treatments (figures 23 and 24).

Reporting Accomplishments

Accomplishments for all projects using HFRA authority must be tracked and reported by fire regime and condition class. The National Fire Plan Operations and Reporting System (NFPORS) is the interdepartmental system for reporting National Fire Plan accomplishments, including those involving hazardous-fuel reduction. The interdepartmental functionality of NFPORS is critical because the HFRA applies to both the DOI BLM and the USDA Forest Service. Data consistency between agencies is important.

The NFPORS database has been updated for reporting HFRA accomplishments. Field units will need to report fire regime and condition class determinations before and after treatments for all projects using the HFRA and HFI authorities, as well as for those funded by the National Fire Plan. Field units reporting accomplishments using the HFRA and HFI authorities will follow their agency's NFPORS reporting schedules and data-quality standards.

Procedures for determining fire regime and condition class at the project scale can be found at: *http://www.frcc.gov/.* Information on NFPORS can be found at: *http://www.fireplan.gov/.*

Tracking Acres Burned

Section 102(g)(7) of the HFRA requires tracking the acres burned and the degree of severity for large wildland fires (as defined by the Secretary). Details on the reporting requirements for this section are under discussion.

Figure 23—Maintaining stand and fuel conditions is a continuous requirement. This stand in Florida was burned in July 2001.

Figure 24—Vegetation recovery and regrowth 2 years after the photo in figure 23 suggests that this stand will need retreatment soon.