Wildlife

Snag and Down Woody Dependent Species

Introduction

Snags, broken-topped live trees, downed logs, and other woody material are required by a wide variety of species for nesting, denning, roosting, perching, feeding, and cover (Bull et al. 1997). Snags and down, dead, material are also used for communication purposes:

- Singing, (songbirds),
- Drumming (grouse and woodpeckers),
- Calling (squirrels, jays, birds of prey), and
- Sight recognition posts.

Small mammals and birds use standing and down dead material for food storage and for hunting. Downed logs and stumps are important for travel, both below the snow in the winter, and as travel cover throughout the year. It is estimated that about one third of the bird and one third of the mammal species that live in the forests of the Rocky Mountains use snags for nesting or denning, foraging, roosting, cover, communication, or perching.

On the Flathead National Forest, at least 42 species of birds and 10 species of mammals are dependent on dead wood habitat for nesting, feeding, or shelter (USDA 1999). The more mobile species that depend on dead wood habitat include black bears, Canada lynx, wolverines, marten, fisher, bats, woodpeckers, and small owls. Less mobile species that depend on dead wood include snowshoe hares (the primary prey of Canada lynx), red-backed voles (the primary prey of marten, fisher, boreal owl, and several other species), shrews, bryophytes, lichen, fungi, and protozoa. As downed woody material further decays, it plays an important role in nutrient cycling, soil fertility, and erosion control.

Snags and their management have become a major conservation issue in managed forests across the western United States. Biologists have recognized for a long time that snags and downed woody material provide important wildlife habitat, but only in the last decade or so have managers begun to understand that not only is tree decay an important ecological process that affects wildlife habitat (Bull et al. 1997), but snags and dead wood are an essential, important part of the larger ecosystem. An insufficient number of suitable snags may limit or eliminate populations of cavity-using species (Thomas et al. 1979, Saab 1998).

Although various sizes of snags and down woody are used, larger birds and mammals require larger dead trees. The larger-diameter downed trees provide stable and lasting structure and offer better

protection from weather extremes (Bull 2002). Longer down woody pieces provide better runways, shelter, and under-snow access.

Analysis Area

Spatial Bounds

The Mid Swan Blowdown Salvage Project Area was considered for the evaluation of direct and indirect effects on snag and downed woody associated species. This approximately 4,480-acre area is large enough to include the home ranges of several individuals or pairs of a species, and is representative of the effects of fire, natural tree mortality, timber harvest, and road management across the landscape. The actions proposed in the alternatives that could directly or indirectly affect snag or downed woody associated wildlife species are contained within this area. The Upper Swan Valley was considered in the cumulative effects analysis. A multi-scale assessment was also conducted to address habitat diversity concerns for dead tree dependent species (Project File Exhibit F-4).

Temporal Bounds

The length of time for effects from the proposed salvage treatment is approximately 3 to 5 years. This is based on the probable contract length for the Mid Swan Project, and the time frames for related activities.

Data Sources, Methods, & Assumptions Used

Data used included field surveys of snags and downed logs, project area field visits, research literature, and GIS and dataset information for features such as general forest attributes, habitat type, and forest type.

Measurement Indicators

The effects analysis will focus on: 1) effects to snag and downed woody habitat, and 2) potential effects to snag/downed woody associated wildlife species.

Affected Environment

Historic Conditions

Forest ecosystems in the western United States have adapted in response to disturbances such as wildfire, insects, disease, and windstorms. Snags and down woody material have always occurred on the landscape, a direct result of these disturbance factors, either on a large scale, or on a very small scale, as individual trees grow old and die. Ritter and others have described snag populations as occurring in either “pulses” of snags following a large disturbance event, or as “continuous” populations of scattered individuals (Ritter et al. 2000).

In the Swan Valley, historically, snag habitat and down woody material, though always present in varying amounts, experienced greater “pulses” across the landscape and in localized areas as a result of natural disturbances. Warmer and drier areas historically underwent more frequent, lower-intensity fires, and typically supported fewer snags and large downed logs than cooler and moister environments, where the stands reached climax conditions before experiencing stand-replacing fire.

In the Swan Valley, western larch, ponderosa pine, and cottonwood snags appear to receive the most use by wildlife, with lesser use of Douglas fir, other true fir species, spruce, and lodgepole pine trees.

Existing Conditions

The average amount of downed woody material in a forest stand differs greatly depending on the geographic location and site specific characteristics, such as aspect, elevation, forest type, etc. For example, Grier and Logan (1977) found an average of 85 tons per acre in older Douglas fir/hemlock forests in western Oregon. In British Columbia, old growth forest stands have been observed to have as much as 480 tons per acre (Feller 2003). A study in Oregon and Washington on old growth forests describes an average of 53 tons per acre across nine different stands (Franklin et al. 1981). Brown and See (1981) found 8 to 21 tons per acre in ponderosa pine stands in the northern Rocky Mountains. In the Good Creek Area, on the Tally Lake Ranger District, Flathead National Forest, surveys identified approximately 20 tons per acre of downed wood in mid-seral forest stands and approximately 31 tons per acre in late-seral forest stands. During the Crazy Horse Fire Salvage Analysis in the Swan Valley (USDA 2004), field surveys found an average of approximately 20 tons per acre in unburned late seral forest stands.

Hillis, Pengeroth, and Leach (2003) assessed the status of snag habitat and snag-dependent species across the Forest Service's Region One. West of the Continental Divide, the analysis was designed to address the habitat needs of the pileated woodpecker, a keystone species, whose needs meet or exceed those of other cavity nesters, with very few exceptions.

The following table compares the status of snags at both the Forest and Regional Scales.

TABLE 3-59
LEVELS OF MATURE AND OLD FOREST AT THE FOREST AND REGIONAL (WEST OF THE CONTINENTAL DIVIDE) SCALES RELATIVE TO THE HISTORIC RANGE OF VARIABILITY

	Flathead NF	Region One
Acres of potential habitat	1,455,982 acres	10,520,384 acres
Acres of existing habitat	720,062 acres	5,128,766 acres
Existing – potential	49.5%	48.8%
Historic Range of Variability	24.7 to 72.1%	24.7 to 72.1%

Table 3-59 suggests that there has been no substantial departure in snag densities from historic levels at either the Forest or Regional scale.

Recently, large fires in Montana have created a "pulse" of snag habitat across the landscape. The Crazy Horse Fire (over 11,000 acres), which burned in the Upper Swan Valley in late summer 2003, created a large amount of snags. In 2006, the Holland Peak Fire burned over 1,800 acres just south of the project area. Most of this acreage was heavily forested. As the dead standing trees continue to fall to the ground within the Crazy Horse Fire Area and Holland Peak Area, there would be an increase in downed woody material.

Environmental Consequences

The Mid Swan Project consists of three action alternatives and a No Action Alternative. The alternatives are described in detail in Chapter 2 of this EA. The Cumulative Effects Worksheet, located in the Wildlife Project File (Project File Exhibit F-9) considers and describes proposed

activities in addition to the past, current, and reasonably foreseeable activities listed at the beginning of this chapter in Tables 3-1 and 3-2. Those activities that cumulatively contribute indiscernible effects to Snag and Down Woody Species are not included in this section. Those activities that cumulatively affect these species are listed below.

Alternative A - No Action
Direct, Indirect, and Cumulative Effects

Under this alternative there would be no reduction of snags as a result of proposed salvage activities and no reduction of down woody logs or debris. New snags created as a result of the wind event would not be salvaged and existing snags would eventually fall over and add to the downed woody material in the area. Blowndown trees from the recent wind event would not be salvaged; they would be retained and continue to provide habitat for wildlife species associated with downed woody material. There would be less potential displacement of wildlife species from snag/down woody habitat under this alternative.

No direct effects to wildlife that depend on snag or downed woody material for all or part of their habitat needs are anticipated as a result of implementing Alternative A. Indirectly, there may be an increased likelihood under Alternative A of more intense, stand-replacing fires in some habitats within the project area due to the increased risk compared to historic conditions. Such fires would have the effect of increasing the amount of snag habitat and reducing the amount of down woody debris (at least shortterm) compared to current conditions.

In the past, human-caused threats to snag and downed woody associated species have included timber management, road building, agricultural conversion, residential development, firewood cutting, fire suppression, and disease control. Under Alternative A, these activities would continue.

Alternatives B and D
Direct and Indirect Effects

These alternatives are discussed together due to the similarity of their effects on snag and downed woody associated wildlife species.

Salvage Harvest in Old Growth Forest Stands

Old growth habitats are very important to snag and downed woody associated wildlife species. These habitats frequently have an abundance of larger snags and down woody material. Reducing the amount of snags or down woody material in old growth stands can remove habitat features that are essential or very important to many wildlife species (Bull et al. 2005).

Salvage in Units 2, 5, 13, and 18 would occur in existing old growth forest stands. Under Alternative B and Alternative D, the Design Criteria for salvage in old growth would retain all snags (See Table 2-14). However, although snags are not targeted for removal, they are sometimes removed inadvertently due to logging activity; or if they are deemed a hazard to the woods workers, they are removed for safety reasons. Under Alternatives B and D, there is the potential for a small decrease in snag habitat in old growth stands where salvage is proposed.

In the old growth salvage units, down woody material suitable for wildlife use would be reduced during salvage operations for commercial utilization, as a result of heavy equipment use, or to facilitate reforestation. The effect to downed woody associated species would be a potential decrease in available habitat in these old growth salvage units.

Research suggests that retaining the bulk of the largest downed woody material may decrease the negative effects to downed woody habitat associated species (Bull and Blumton 1999, Porter et al.

2005). Graham (1994) recommends that managers in the Rocky Mountains retain 12 to 25 tons per acre of down woody debris in moist forest types and 5 to 12 tons per acre in drier forest types. Brown et al. (2003) identified optimum ranges of coarse woody debris for providing acceptable risk of fire hazard while providing for wildlife needs. A range of 5 to 20 tons per acre for warm dry forest types, and 10 to 30 tons per acre for other forest types, was recommended.

To maintain appropriate down woody material in the old growth units, at least 27 to 30 tons per acre would be retained, where available (See Design Criteria, Table 2-14). The longest pieces (e.g., 16-foot logs or longer) with the largest size (e.g., 15 inches DBH or greater) would be retained to achieve the tonnage objective. These amounts and kind of down woody material specified in these Design Criteria were developed by the Wildlife Biologist and Silviculturist to balance habitat needs, ecological contributions, and fire hazard.

Salvage Harvest in Non-Old Growth Forest Stands

Snag and down woody habitat would be reduced in non-old growth salvage units. There would be a decrease in available habitat for wildlife species that are dependent on or associated with snag habitats or down woody habitats.

To mitigate the effects on snag associated species in non-old growth treatment units, 4 snags average per acre that are 12 to 20 inches DBH with a minimum height of 10 feet, and 4 snags average per acre that are greater than 20 inches DBH with a minimum height of 10 feet would be left, where available (See Design Criteria, Table 2-14).

To mitigate the effects on wildlife species associated with down woody habitats, in the non-old growth units, at least 12 tons per acre would be retained, where available. The longest pieces (e.g., 16 foot logs or longer) with the largest size (e.g., 15 inches DBH or greater) would be retained to achieve the tonnage objective. Numbers of snags per acre and amounts and kinds of down woody material specified in these Design Criteria were developed by the Wildlife Biologist and Silviculturist as discussed above.

Temporary Roads

Approximately 0.3 miles of temporary road and 1.0 mile of use of historic templates would be needed to access salvage units under Alternative B. An estimated 0.1 mile of temporary road and 1.0 mile of use of historic templates would be needed under Alternative D. Some snags may be cut down to put in the temporary roads and some woody debris could be moved. Snags removed to clear for temporary roads would be left on the ground as down woody material. The roads would be reclaimed following vegetative treatments. Public use of closed roads would not be permitted, reducing the risk of losing potential snag tree or down woody habitat to firewood cutters.

Security/Mortality Risk

Under Alternatives B and D, it is possible that project implementation would directly affect snag or downed woody associated wildlife species through disturbance or incidental mortality. It is also possible that the more open canopies caused by the wind event, and the subsequent salvage of the blowndown trees, may create openings that facilitate increased firewood gathering. This could lead to decreased habitat and habitat security for snag and downed woody associated species.

Alternatives B and D
Cumulative Effects

Human-caused threats to snag and downed woody associated species include activities that reduce the availability or use of snag/downed woody habitat. Activities that have reduced dead tree habitat in the Mid Swan Blowdown Salvage Project Area, and throughout the Swan Valley, are timber management, road building, agricultural conversion, residential development, firewood cutting, fire suppression, and disease control.

On many of the roads in the salvage area, public access has been restricted through seasonal or yearlong road closures. This has helped to reduce the loss of important snag habitat to firewood cutters.

Recently, PCTC has offered up tracts of land in the southern portion of the Swan Valley for sale to the Forest Service, conservation buyers, or other private individuals. There is a concern that an increase in private parcels of land in the Swan Valley could further fragment wildlife habitat and reduce the availability of snag and down woody habitat. It is anticipated, however, that this condition may improve due to the Montana Legacy Project, a project whereby many of the PCTC sections in the Swan Valley have been purchased by The Nature Conservancy and The Trust for Public Land, to be eventually conveyed to the Forest Service. This future land conveyance would create larger blocks of public land that can be managed in larger patch sizes. The Lands Section of this EA provides a detailed discussion of this change in land ownership.

Recent fires on the Flathead National Forest in 1988, 1994, 2000, 2001, 2003, 2006, and 2007 recruited large numbers of snags. At the Flathead National Forest scale, fires within the last 6 years within stands greater than 9 inches DBH (trees large enough to provide a potentially suitable snag) occurred at 125.5 percent of the average historic conditions (Hillis, Pengeroth, and Leach 2003). These same fires, however, reduced available down woody debris for the short term. Over time, the snags would decay and fall down, creating new down woody habitat within the fire areas. Significant adverse cumulative effects to snag and downed woody associated species are not expected as a result of implementing Alternative B or Alternative D because:

1. Salvage of blowdown in old growth stands would retain all snags;
2. The proposed treatments in mature forest stands (non old growth) would retain snag habitat, and;
3. Although salvage of blowndown trees would alter the current amount of down woody habitat in treated stands, large amounts of down woody material would be retained in sizes that would be beneficial for down woody associated wildlife species.

Alternative C
Direct and Indirect Effects

Salvage Harvest in Old Growth Forest Stands

There would be no salvage activities in existing old growth forest stands under Alternative C. Old growth habitats are very important to snag and downed woody associated wildlife species; frequently having an abundance of larger snags and down woody material.

Salvage Harvest in Non-Old Growth Forest Stands

Snag and down woody habitat would be reduced in non-old growth salvage units. There would be a decrease in available habitat for wildlife species that are dependent on or associated with snag habitats or down woody habitats.

To mitigate the effects on snag associated species, 4 snags average per acre that are 12 to 20 inches DBH with a minimum height of 10 feet, and 4 snags average per acre that are greater than 20 inches DBH with a minimum height of 10 feet would be left, where available.

To mitigate the effects on wildlife species associated with downed woody habitats, at least 12 tons per acre would be retained, where available. The longest pieces (e.g., 16-foot logs or longer) with the largest size (e.g., 15 inches DBH or greater) would be retained to achieve the tonnage objective.

Temporary Roads

In Alternative C, there would be no new temporary road constructed but 0.5 miles of historic road templates would be used. Some snags may be cut down to use the historic templates and some woody debris may be moved. Snags removed to clear for temporary use would be left on the ground as down woody material. The roads would be reclaimed following vegetative treatments. Public use of closed roads would not be permitted, reducing the risk of losing potential snag tree or down woody habitat to firewood cutters.

Security/Mortality Risk

It is possible under Alternative C that project implementation would directly affect snag or downed woody associated wildlife species through disturbance or incidental mortality. It is also possible that the more open canopies caused by the wind event, and the subsequent salvage of the blowndown trees, could create openings that facilitate increased firewood gathering. This could lead to decreased habitat and habitat security for snag and downed woody associated species.

Alternative C
Cumulative Effects

In the Mid Swan Blowdown Salvage Project Area, and throughout the Swan Valley, timber management, road building, agricultural conversion, residential development, firewood cutting, fire suppression, and disease control have reduced the amount of snag and down woody wildlife habitat. In addition, there is a concern that an increase in private parcels of land in the Swan Valley may further fragment wildlife habitat and reduce the availability of snag and down woody habitat.

Recently, PCTC has offered up tracts of land in the southern portion of the Swan Valley for sale to the Forest Service, conservation buyers, or other private individuals. It is anticipated that the recent Montana Legacy Project would eventually create larger blocks of public land that can be managed to retain important snag and down woody habitats for wildlife species associated with these habitat characteristics.

As described above, recent fires on the Flathead National Forest have recruited large numbers of snags. These same fires, however, reduced available down woody debris for the short term. Over time, the snags would decay and fall down, creating new down woody habitat within the fire areas.

Significant adverse cumulative effects to snag and down woody associated species are not expected as a result of implementing Alternative C because:

1. There is no salvage of blowdown in old growth stands; there would be no damage or reduction of snag habitat in these important stands from salvage activities,

2. The proposed treatments in mature forest stands (non old growth) would retain snag habitat, and

3. Although salvage of blowndown trees would alter the current amount of down woody habitat in treated stands, large amounts of down woody material would be retained in sizes that would be beneficial for down woody associated wildlife species.

Regulatory Framework and Consistency

The National Forest Management Act requires the Forest Service to “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives.” A wide variety of wildlife species are dependent on the existence of standing snags and downed woody material. The Forest Plan’s Amendment 21 (USDA 1999) provides the current direction for snags and down woody material. Sufficient vegetation structure is to be retained, including large diameter trees, in timber harvest areas. To comply with Amendment 21, the retention amount must be consistent with native disturbance and succession regimes and provide for long-term snag and coarse woody debris recruitment, essential soil processes, species habitat (including feeding and dispersal habitat for small mammals and birds), and long-term structural diversity of forest stands. In the absence of a site-specific landscape analysis to derive snag retention levels, minimum retention levels have been established as the standard.

All of the Mid Swan Blowdown Salvage alternatives would comply with standards in the Forest Plan for wildlife snag and down woody habitat and associated wildlife species. Alternative C has no proposed treatment in old growth stands and would be the least impactive action alternative relative to snag/downed woody related wildlife species because old growth forest has abundant snag and downed woody habitat and these habitats would not be disturbed.