

Wildlife

Old Growth Associated Species

Introduction

Old growth is defined in Amendment 21 of the Forest Plan as “a community of forest vegetation that has reached a late stage of plant succession.” The generic description is as follows:

- The age of the dominant cohort of trees is significantly older than the average time interval between natural disturbances (interval will vary depending upon forest cover type and habitat type);
- Forest composition and structure are different from younger stands;
- Rates of change in composition and structure of the stand are slow relative to younger forests;
- There is a significant showing of decadence (wide range of defect and breakage in both live and dead trees).



In The Dictionary of Forestry (Helms 1998), old growth forests are described as having:

- Large trees for the species and site;
- Accumulations of large dead standing and fallen trees;
- Decay or breakage of tree tops, boles, or roots;
- Multiple canopy layers;
- A wide variation in tree size and spacing; and
- Canopy gaps and understory patchiness.

The characteristics of old growth forest described above provide habitat for many plant and animal species. For the purpose of this discussion, old growth associated species includes any wildlife species that use the various attributes of old growth forests for some or all of their ecological needs. These needs may include nesting, denning, security, or foraging habitat. For some species, closed canopy old growth provides snow capture and reduces snow depths, insulates the animals from cold winds, and provides protection from predators. Some species, such as the fisher, are strongly tied to canopy cover and mature forest structure for the majority of their habitat needs. More open canopies, or open understories, provide foraging opportunities for prey and predator species alike. Wildlife may use interior old growth habitat as shelter from sun, heat, dryness, or wind and old growth cover may provide protection from predators. Some old growth associated wildlife species need only a portion of their home range to be in old growth. Examples include the Canada lynx, northern goshawk, American marten, pileated woodpecker, and bald eagle. Other species such as southern red-backed voles, chestnut-backed chickadee, Swainson’s thrush, and northern flying squirrels, have relatively small home range sizes (less than 100 acres), with the necessary proportion of this home range being in old growth unknown.

The following table displays 31 old growth associated species designated in the Forest Plan's Amendment 21 that may be found in the Swan Valley, along with their associations with various old growth habitat elements.

TABLE 3-58.
HABITAT REQUIREMENTS OF OLD GROWTH ASSOCIATED WILDLIFE SPECIES
(Based on Warren 1998 and LRMP Amendment 21 FEIS)

Species	Cover Type in Affected Area	Canopy	Edge	Larger Patches	Snag	Down Log	Occurrence
American Marten	Mixed mesic, lodgepole, spruce/fir forests	Closed	-	+	X	X	Known current
Bald Eagle (S)	Mixed mesic forests, near large lake or river	Open		+	X		Known current
Black-backed Woodpecker (S)	Lower Montane & Montane; post-fire or insect-epidemic forests	Open			X		Known current
Boreal Owl	Mixed mesic and spruce/fir forest mosaic	Closed			X	X	Known current
Brown Creeper	Mixed mesic, lodgepole, and spruce/fir forests	Closed	-		X		Known current
Canada Lynx (T)	Mixed mesic, lodgepole, and spruce/fir forests; gentle terrain		+	+	X	X	Known current
Chestnut-Backed Chickadee	Mixed mesic and spruce/fir forests, especially cedar-hemlock	Closed	-		X		Known current
Fisher (S)	Mixed mesic and lodgepole forests	Closed				X	Known current
Flammulated Owl (S, F)	Lower Montane and Montane, single-story.	Open			X		Known current
Golden-crowned Kinglet	Mixed mesic, lodgepole, and spruce/fir forests	Closed		+	X		Known current
Hairy Woodpecker	Mixed mesic, lodgepole, and spruce/fir forests	Open			X	X	Known current
Hammond's Flycatcher (F)	Mixed mesic and spruce/fir forests	Closed					Known current
Harlequin Duck (S)	Swift mountain streams, riparian old growth (weak association)	Open				X	Known current
Hermit Thrush	Dry mixed mesic and spruce/fir forests	Open		+			Known current
Lewis' Woodpecker	Lower Montane ponderosa pine and old burns	Open			X		Known current
Northern Flying Squirrel	Mixed mesic and lodgepole forests			+	X	X	Known current
Northern Goshawk	Single or multistory old growth; clear forest floor	Closed		+	X		Known current
Pileated Woodpecker	Mixed mesic forests	Closed		+	X	X	Known current
Pine Grosbeak	Mixed mesic, lodgepole, and spruce/fir forests						Known current

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TABLE 3-58.
HABITAT REQUIREMENTS OF OLD GROWTH ASSOCIATED WILDLIFE SPECIES
(Based on Warren 1998 and LRMP Amendment 21 FEIS)

Species	Cover Type in Affected Area	Canopy	Edge	Larger Patches	Snag	Down Log	Occurrence
Pygmy Nuthatch	Large single-story ponderosa pine and mixed mesic forests	Open			X		Known current
Red-Breasted Nuthatch	Mixed mesic, lodgepole, and spruce/fir; relatively dry	Open		+	X		Known current
Silver-haired Bat	Mixed mesic and lodgepole forests; caves and snags				X		Suspected
Southern Red-backed Vole	Mixed mesic, lodgepole, and spruce-fir forest				X	X	Known current
Swainson's Thrush (F)	Mixed mesic and lodgepole forest with shrub understory			+			Known current
Tailed Frog	Cold, high gradient headwater streams					X	Known current
Three-toed Woodpecker	Mixed mesic, lodgepole, and spruce/fir forests; post-fire				X		Known current
Townsend's Warbler	Mixed mesic and lodgepole forest; dense understory	Closed	-	+			Known current
Varied Thrush	Mixed mesic and spruce/fir forests, especially cedar-hemlock	Closed		+			Known current
Vaux's Swift (F)	Mixed mesic and spruce/fir forests; large hollow snags				X		Known current
White-breasted Nuthatch	Large single-story ponderosa pine	Open			X		Known current
Winter Wren	Mixed mesic and spruce/fir forests, especially cedar-hemlock		-	+	X		Known current

T = Threatened
S = Sensitive
F = Forest-dwelling Neotropical migrant with apparently declining populations
- = negative correlation (where known)
+ = positive correlation (where known)
X = important habitat component

Analysis Area

Spatial Bounds

The effects analysis area for direct, indirect, and cumulative effects to old growth associated wildlife species is predominately the managed portion of the Lion Creek Drainage (9,290 acres). Most of the proposed salvage units are located within this drainage and all of the proposed blowdown salvage that would occur in existing old growth stands is located in the Lion Creek Drainage. This old growth analysis area is large enough to include the home ranges of old growth associated species, and is representative of the effects of fire, natural tree mortality, timber harvest, and road management, across the landscape. A multi-scale assessment has also been conducted to address habitat diversity concerns.

Temporal Bounds

The length of time for effects from the proposed salvage treatment is approximately 3 - 5 years. This is based on the probable contract length for the proposed salvage project, and the timeframes for related activities.

Data Sources, Methods, & Assumptions Used

Data used included stand exams, field surveys of snags and downed logs, old growth surveys, 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 old growth habitat, and 2) potential effects to old growth associated wildlife species.

Affected Environment

Historic Conditions

Historically, old growth forests in the Swan Valley ranged from open, patchy stands, maintained by frequent low-severity fire, to a mosaic of dense and open stands maintained by mixed-severity fires (Freedman and Habeck 1985; Arno et al 1995). Old growth structure and composition, and the amount of old growth in a watershed, varied strongly with topography and elevation, and were shaped by a complex disturbance regime of fire, insects, and disease. Historically, old growth was most likely to develop in the valley bottoms and along streams, where fires burned less frequently and usually with less intensity. Drier site old growth, with ponderosa pine as the dominate tree species, occurred on more well drained soils, often on the flats between stream bottoms. These stands were maintained by lower intensity ground fires that were not lethal to the ponderosa pine, but which inhibited the growth of less fire tolerant species beneath the ponderosa pine. Because severe, stand-replacing fires burn at irregular intervals in response to weather patterns and fuel accumulations, variations in the amount of old growth in a local area could be expected over time.

Historical Range of Variability is a way of describing the normal fluctuations that occurred in ecosystems over time and can be a basis for defining the limits of acceptable ecosystem change (Morgan et al. 1994, USDA 1999). The 75 percent range around the median of the historical variability is assumed to provide an acceptable level of habitat (Hann et al. 1997, USDA 1999). Based on various information sources, the amount of old growth on the Flathead National Forest historically would have been on the order of 15 to 60 percent (USDA 1999). Generally, across the Flathead National Forest and the entire Columbia River Basin, there was a higher percentage of old forest across the landscape than there is currently. For more information on old growth habitat conditions across the Flathead National Forest, see the FEIS for the Forest Plan, Amendment 21 (USDA 1999).

Existing Conditions

Over the last 100 years, old forests in the Interior Columbia Basin have declined by 27 to 60 percent and large residual trees and snags have decreased by 20 percent (Quigley et al. 1996). These changes have contributed to declining habitat conditions for numerous species of wildlife associated with old growth forests. This decrease in old growth forest has occurred within all sub-basins of the Flathead National Forest (Forest Plan Amendment 21). Based on a broad regional review using FIA Data, approximately 11.0 percent of the Flathead National Forest is old growth forest, with a 90

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percent confidence interval lower bound of 9.0 percent and an upper bound of 13.1 percent (Bush 2007). When comparing the historical range of variability for old growth, or the normal fluctuations that occurred in ecosystem conditions or processes through time, it appears that in the Swan Valley, old growth forest types, or late-seral classes, are currently below the historical minimum value for all terrestrial community groups; lower montane, montane, and subalpine (USDA 1999). In the Goat Creek Drainage, the point estimate for percent old growth was 2.38 percent, with lower and upper bounds of 0.00 to 6.72 percent. In the Lion Creek Drainages, the point estimate for percent old growth was 12.99 percent, with lower and upper bounds of 3.57 to 24.18 percent (Bush 2004).

In the Swan Valley, the major differences between current conditions and historical conditions, are that the total amount of old growth forest habitat covers less land area, the patches of old growth forest are smaller in size, and remaining old growth forest habitat has changed both structurally and in distribution (Hart 1994). This translates into smaller blocks of older forest that are not as “secure” for old growth associated species as larger blocks of old growth forest with more interior area. The decline can be largely attributed to land clearing in the valleys, timber harvest, and road construction. A map showing the juxtaposition of old growth forest, late seral (mature trees >15 inches dbh), mid seral (pole-size trees to immature trees 5 to 15 inches dbh), and early seral (seedling/sapling trees) is included in Project File Exhibit F-3 to display the patches of old growth and the existing connectivity.

In the Lion Creek Drainage, where most of the proposed salvage units are located, old growth forest was identified using “The Western Montana Zone Old Growth Type Characteristics” (Green et al. 1992 [Amended]). Approximately 10 percent of the forested stands (761 acres) in this area are old growth. In this calculation, permanent non-forested lands, including wet areas, rock, and individual private lands, were not considered in the base acres. Plum Creek Timber Company timberlands were included in the overall (base) acreage; however, only old growth forest stands on NFS lands are part of the calculation of percent old growth because the availability of old growth habitat on private lands is uncertain (Project File Exhibit F-3). Please refer to Map 3-5 for a display of old growth stands in the analysis area. The existing old growth forest stands are more numerous on the mid and upper level slopes of the Swan Range. As would be expected, conversion of old growth forest has occurred at a higher rate in the valley bottoms. Lower elevation old growth forest is less prevalent than higher elevation old growth forest in the Lion Creek Drainage and throughout the Swan Valley.

There is one proposed unit (Unit 1, 15 acres) in the Goat Creek Drainage, located in an isolated Forest Service Section within the Swan River State Forest (DNRC). Within Sections 17 and 19, T23N, R17W, there are approximately 22 acres of old growth on NFS lands. According to DNRC, the larger area, made up of Swan State Forest lands, currently has 12,116 acres of old growth; approximately 31 percent of the total area (Project File Exhibit R-3). There is also one proposed unit (Unit 26, 27 acres) in the Piper Creek Drainage, T22N, R17W, in Section 18. Approximately 30 acres of old growth forest on National Forest land have been identified in Section 18, in the vicinity of proposed Mid Swan Blowdown Unit 26.

Patch size of old growth forest is an important characteristic in its function as habitat. As mentioned previously, one of the changes from historical conditions is the fragmentation, or disruption of continuity, of old growth forest patches that are presently available across the Swan Valley. Old growth associated wildlife species use other habitats as well, but rely on old growth for at least a portion of their habitat needs. Many of these species are sensitive to fragmentation. The average patch size (uninterrupted continuity) of old growth in the Lion Creek Area is 62 acres. There are approximately 12 “patches”, ranging from 9 acres to 180 acres.

The northern goshawk is associated with old growth habitats for a portion of its territory, specifically closed canopy old growth in larger patch sizes. Consequently, the goshawk can be used as an indicator species for old growth conditions with these characteristics. The overstory canopy is usually a relatively closed canopy (50 to 90 percent), with a more open understory for foraging (Squires and Reynolds 1997, USFWS 1998, Samson 2005, Squires and Kennedy 2006, Beier and Drennan 1997). The average patch size of core nesting areas appears to be somewhat dependent on available

habitat conditions; 30 acres recommended in the southwestern United States (Reynolds et al. 1992), 40 acres found by Clough (2000) in west central Montana, 148 acres found by McGrath et al. (2003) in Oregon and Washington, and approximately 80 acres found by Patla (1997) in Idaho. Live trees large enough to support a large platform nest are required. Hayward and Escano (1989) found that nest sites in northwest Montana were often located in older stands that support widely-spaced large trees, and that had water and large forest openings within 0.3 mile of the nest. Adjacent to the nest site, there is a post-fledging area (approximately 200 to 500 acres), which is, along with the nesting area, usually defended by an adult pair. The size, shape, and habitat composition of these areas varies with local conditions, but is generally in pole-sized or larger forest with closed (50 percent to greater than 70 percent) canopies. Northern goshawk foraging areas are heterogeneous, with goshawks preying on a variety of medium-sized forest birds and mammals, and hunting forest edges and openings as well as forest cover.

Within the Lion Creek Area, there are at least 2 potential goshawk territory blocks (Project File Exhibit F-3). Potential nesting habitat ranges from patches of 63 acres to 525 acres. Post-fledging habitat ranges from patches of approximately 350 acres to 525 acres. Private lands, both corporate and individual, were included as foraging habitat. However, due to the uncertainty of conditions on private lands, potential nesting and post-fledging habitat were only identified on NFS lands.

The Flathead National Forest examined the amount and distribution of goshawk habitat found on NFS lands within the Flathead National Forest (USDA 2000). Goshawk habitat was summarized for individual subbasins; in the 469,280-acre Swan Valley Subbasin; approximately 203,972 acres of suitable habitat were identified. Northern goshawks are known to occur in the Swan Valley. There are no known nest sites in any of the proposed blowdown salvage units.

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-10) 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 Old Growth Associated Species are not included in this section. Those activities that cumulatively affect these species are listed below.

Alternative A – No Action Direct and Indirect Effects

There would be no salvage treatment, or associated activities, proposed with this alternative. There would be no direct effects to old growth habitats on NFS lands or to old growth associated wildlife species using these lands. This alternative would sustain habitat for old growth associated species, at least over the short-term.

Blowdown trees are a natural occurrence in older forests, and the accumulation of significant amounts of down woody debris on the forest floor is an important characteristic of old growth forest habitat. In several of the old growth forest stands where salvage is proposed, the addition of down woody debris is probably an improvement over pre-wind event conditions. (For more on standing and down woody habitat, see the Wildlife Section on Snag and Down Woody Associated Wildlife Species).

It is possible that an indirect effect of Alternative A would be an increased likelihood of a more intense wildfire event in the blowdown area. Indirectly, taking no action to reduce fuel buildups could increase the potential for a loss of old growth forest in the project area. The level of effects would depend on the size and intensity of the wildfire.

***Alternative A – No Action
Cumulative Effects***

Natural vegetative processes would continue on NFS lands within the project area. Older mature forest stands would become old growth stands. Existing old growth forest would experience increased tree mortality in the overstory, with younger trees growing into the natural openings; the stands would take on an uneven-aged character. The amount of old growth habitat across the landscape would fluctuate as older trees are replaced by younger trees and as younger forests grow into future old growth.

Cumulative affects from existing and possible future changes in land ownership are reflected in the old growth analysis. Old growth and mature forests on private lands are not assumed to contribute to present or future old growth in the analysis area. Consequently, possible cumulative affects from increased human occupancy related to changes in land ownership, and/or increased development of existing private lands, do not have a foreseeable effect on the amount or distribution of old growth on NFS lands. On private lands, it is assumed, for cumulative effects purposes, that old growth does not exist.

***Alternative B
Direct and Indirect Effects***

Alternative B proposes salvage of blowdown in four old growth forest stands: Unit 2 (9 acres), Unit 5 (8 acres), Unit 13 (11 acres), and Unit 18 (33 acres; 28 acres old growth).

Old Growth Associated Species Displacement

Proposed activities in Alternative B could temporarily displace old growth habitat associated wildlife species if treatments are occurring in old growth stands or in stands adjacent to old growth. Specifically, displacement of old growth associated species would most likely occur in Units 2, 3, 5, 6, 13, 15, 16, 18, and 19. The displacement would be short-term, one year or less. Timing restrictions in place for grizzly bear (spring period; April 1 – June 15) would help to mitigate displacement of old growth associated species during the spring period (See Design Criteria, Table 2-14).

As described previously, the northern goshawk is an indicator species for old growth habitats, specifically closed canopy old growth in larger patch sizes. Under Alternative B, there are proposed units in forest stands that potentially provide nesting and post-fledging habitat (Project File Exhibit F-3). Units 2, 5, and 13 provide potential nesting habitat for the northern goshawk. Units 3 and 10 provide potential post-fledging habitat. There is no known goshawk nesting occurring in these stands at this time. Following salvage harvest of blowdown trees, the stands would still provide potential habitat characteristics (e.g., patch size, large trees, canopy cover). Similarly, for other old growth associated species, proposed salvage would not decrease the number of standing, large trees or the density of canopy cover.

Interior Integrity of Existing Old Growth

New “edge” is created when stands adjacent to old growth habitat are converted from a late or mid seral structural stage to an early seral (seedling/sapling) structural stage. The creation of edge adjacent to old growth forest has two negative effects on old growth: It directly affects the adjacent old growth stand or old growth block by reducing the interior integrity of the stand or block, and it narrows or eventually severs the connection between different old growth patches. The proposed salvage of blowdown trees would not create new edge adjacent to any old growth stands. Salvage of existing trees that have already blown down is not a “conversion” treatment.

The wind event itself created new “edge” and blew down entire old growth stands in several instances. Unit 6 and a portion of Unit 11 provided old growth habitat prior to the wind event. Almost every tree in Unit 6 and a significant portion of the large trees in Unit 11 were blown down. These stands do not currently have enough large, older trees standing to provide important old growth habitat for old growth associated species.

Snag/Down Woody Habitat

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 old growth associated species, particularly the marten, fisher, and pileated woodpecker (Bull et al. 2005). Research suggests that retaining the bulk of the largest material may decrease these effects (Bull and Blumton 1999, Porter et al. 2005). Under Alternative B, all snags would be retained in the existing old growth units (Units 2, 5, 13, and 18). To maintain appropriate coarse woody material in old growth stands, approximately 27 to 30 tons per acre would be retained, where available. Retained down woody material would consist of the longest (e.g., 16 foot or longer) and largest (e.g., 15 inches dbh or greater) pieces necessary to achieve the overall goal of 27-30 tons per acre. These larger pieces would be most beneficial to old growth associated wildlife species. Please refer to the Design Criteria in Table 2-14 for more details on snag and down material to be left on site.

Ground Disturbance in Old Growth Forest Stands

Salvage logging in old growth Units 2, 5, 13, and 18 would cause ground disturbance to the existing old growth forest stand. The ground disturbance has the potential to affect ground vegetation and introduce weed sources (See Soils and Invasive Plant Sections). In order to lessen the impact of ground disturbance from logging equipment and log skidding, no landings would be created in old growth units and forwarder logging would be required.

Despite the use of forwarders and the restriction on the placement of landings, salvage of blowdown within old growth forest stands has the potential to create ‘openings’ where logs are skidded to an existing road. These small openings may encourage ATV use or firewood removal, which can decrease the quality of old growth habitat for associated species. Post sale monitoring of old growth units is proposed to identify where this type of disturbance may be occurring and to mitigate for it, if possible.

Temporary Roads

Alternative B proposes 0.3 miles of new temporary road and 1.0 mile of use of historic road templates. There is no temporary road construction in any of the units located in old growth forest stands. In Unit 18, there is an old temporary road template that would be used to access the unit (0.5 miles). There is also new temporary road proposed (0.1 miles) that is located partially in Unit 18, but not within the existing old growth stand.

The temporary road in Unit 18 would be reclaimed after use. Despite the reclamation of this temporary road, it may be very difficult to discourage firewood cutters or ATV use because of the proximity of this unit to Highway 83 and the flat, easily accessible landscape.

The construction of temporary roads can create the same “edge effect” as described above when stand conversion occurs due to logging (e.g., clearcut). The edge created by constructing temporary roads would, however, be much less and in most instances insignificant. Under Alternative B, there would be no significant openings (edge) created next to old growth forest stands as a result of temporary road construction.

***Alternative B
Cumulative Effects***

Past land management activities in the area, including timber management, road construction, residential development, and agricultural conversion, have decreased the amount of available old growth forest and have fragmented the patches of old growth that are left into smaller blocks.

Timber harvest activities on PCTC lands and on NFS lands in the Swan Valley peaked during the mid to late 1980's, although lower levels of timber harvest continue up to the present on all ownership lands. There are other forest health timber harvest projects on NFS lands in the vicinity of the Mid Swan Blowdown Salvage Project Area; the Meadow Smith Project and the Cooney McKay Project. Cumulative effects for the Mid Swan Blowdown Salvage Project would include the effects of the Meadow Smith and Cooney McKay Projects on NFS lands, as well as ongoing and proposed timber harvest on PCTC lands.

The Mid Swan Blowdown Salvage Project is located near the community of Condon, Montana. There are part-year and yearlong residences in the area, as well as many recreational opportunities. The level of human activity in the area increases the chance for disturbance or displacement of old growth associated species. There is also an increased risk for the removal of snags (firewood), an important component of old growth habitat. Other human activity in the area includes various road use permits, easements, and ongoing outfitter guide permits.

In addition to NFS lands and private lands within the Old Growth Analysis Area, there are corporate timberlands, PCTC, and State of Montana lands (State). The existing condition for old growth forest does not include any old growth on PCTC lands or State lands. Consequently, there would be no decrease within the analysis area in the existing amount of old growth forest, as described above, due to harvest activities on PCTC lands or State lands or due to the sale of PCTC lands. Land sales, or timber harvest on other ownerships, may, however, break up the continuity of mature forest near and adjacent to old growth patches on NFS lands. The existing intermingled ownership pattern in the Swan Valley presents difficulties in managing old growth habitat connectivity with patch sizes that occurred historically.

It is anticipated that, in the future, this condition would 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.

Significant adverse cumulative effects to old growth associated species are not expected as a result of implementing Alternative B because;

1. Salvage of blowdown in old growth stands would not alter the old growth habitat characteristics of large, live standing trees, snags, or canopy cover,
2. The proposed treatments in mature forest stands (non old growth) would not convert mid or late seral stands to younger stands,
3. Non old growth stands would continue to develop into old growth, if that is their present trajectory, and
4. Although salvage of blowdown trees would alter the current amount of down woody in the old growth stands, large amounts of down woody material would be retained in sizes that would be beneficial for old growth associated wildlife species and would meet or exceed minimum forest plan standards for such material where it currently exists.

Alternative C ***Direct and Indirect Effects***

There is no blowdown salvage proposed in existing old growth stands under Alternative C. In addition, a portion of Unit 8 has been eliminated from Alternative C (7 acres less) and all down woody debris within that portion of unit 8 would be retained. All other treatment units and acreages are the same as Alternative B.

Old Growth Associated Species Displacement

Potential displacement of old growth associated wildlife species would be much less in Alternative C than in Alternatives B or D, because there are no salvage activities proposed in old growth habitats. However, proposed activities in Alternative C could temporarily displace old growth habitat associated wildlife species if treatments are occurring in stands adjacent to old growth. Units 3, 6, 15, 16, and 19 are adjacent to old growth forest stands. Salvage activity in adjacent stands would be less likely to displace old growth associated species; any potential disturbance would be short-term; a year or less. Timing restrictions in place for grizzly bear (spring period, April 1 – June 15) would help to mitigate displacement of old growth associated species during the spring period (See Design Criteria, Table 2-14).

As described previously, the northern goshawk is an indicator species for old growth habitats. Under Alternative C, there are no proposed units in forest stands that potentially provide nesting habitat (Project File Exhibit F-3). Units 3 and 10 provide potential post-fledging habitat. These forest stands would continue to provide post-fledging habitat following blowdown salvage.

Interior Integrity of Existing Old Growth

Salvage activities proposed under Alternative C would not create new edge adjacent to any old growth stands. Salvage of existing trees that have already blown down is not a “conversion” treatment.

Snag/Down Woody Habitat

Under Alternative C, there would be no reduction of snags or down woody material in existing old growth stands. The newly created snags and down woody debris that resulted from the wind event would not be removed as part of salvage operations.

Ground Disturbance in Old Growth Forest Stands

There would be no ground disturbance in existing old growth habitat under Alternative C.

Temporary Roads

Alternative C proposes no new temporary road and 0.5 miles of use of historic road templates. There is no temporary road construction proposed in old growth forest stands.

The construction of temporary roads can create the same “edge effect” as when stand conversion occurs due to logging (e.g., clearcut). The edge created by constructing temporary roads would, however, be much less and in most instances insignificant. Under Alternative C, there would be no significant openings (edge) created next to old growth forest stands as a result of temporary road construction.

Alternative C Cumulative Effects

As described previously, past land management activities in the area have decreased the amount of available old growth forest and have fragmented the patches of old growth forest that is left into smaller blocks.

Under Alternative C, there would be no salvage of blowdown in old growth stands. There would still be the potential, however, for removal of snags and down woody debris from old growth forest habitat by firewood cutters, particularly near open roads.

Timber harvest activities on PCTC lands, other private lands, and on NFS lands in the area continue up to the present. Cumulative effects in the Mid Swan Blowdown Salvage Analysis Area would include the effects of the Meadow Smith and Cooney McKay Projects on NFS lands, as well as on-going and proposed timber harvest on PCTC lands.

As described above, in addition to NFS lands and private lands within the Old Growth Analysis Area, there are PCTC and State lands. The existing condition for old growth forest does not include any old growth on PCTC or State lands. Consequently, there would be no decrease within the analysis area in the existing amount of old growth forest, as described above, due to harvest activities on PCTC or State lands or due to the sale of PCTC lands.

Although the existing intermingled ownership pattern in the Swan Valley presents difficulties in managing old growth habitat connectivity with patch sizes that occurred historically, it is anticipated that the Montana Legacy Project would result in larger blocks of public land that can be managed in larger patch sizes.

Significant adverse cumulative effects to old growth associated species are not expected as a result of implementing Alternative C because; (1) salvage of blowdown in old growth stands would not occur, (2) the proposed treatments in mature forest stands (non old growth) would not convert mid or late seral stands to younger stands, and (3) non old growth stands would continue to develop into old growth, if that is their present trajectory.

Alternative D Direct and Indirect Effects

Alternative D is similar to Alternative B in that it proposes salvage of blowdown in four old growth forest stands: Units 2, 5, 13, and 18. Alternative D differs from Alternatives B and C by eliminating salvage of blowdown in RHCAs.

Old Growth Associated Species Displacement

Proposed activities in Alternative D could temporarily displace old growth habitat associated wildlife species when treatments are occurring in old growth stands or in stands adjacent to old growth. Specifically, displacement of old growth associated species would most likely occur in Units 2, 3, 5, 6, 13, 15, 16, 18, and 19. The displacement would be short-term, one year or less. Timing restrictions in place for grizzly bear (spring period, April 1 – June 15) would help to mitigate displacement of old growth associated species during the spring period.

As described previously, the northern goshawk is an indicator species for old growth habitats, specifically closed canopy old growth in larger patch sizes. Under Alternative D, there are proposed units in forest stands that potentially provide nesting and post-fledging habitat. Units 2, 5, and 13 provide potential nesting habitat for the northern goshawk. Units 3 and 10 provide potential post-fledging habitat. There is no known goshawk nesting occurring in these stands at this time. Following

salvage harvest of blowdown trees, the stands would still provide potential habitat characteristics (e.g., patch size, large trees, canopy cover). Similarly, for other old growth associated species, proposed salvage would not decrease the number of standing, large trees or the density of canopy cover.

Interior Integrity of Existing Old Growth

The proposed salvage of blowdown would not create new edge adjacent to any old growth stands. Salvage of existing trees that have already blown down is not a “conversion” treatment.

The wind event itself created new “edge” and blew down entire old growth stands in several instances. Unit 6 and a portion of Unit 11 provided old growth habitat prior to the wind event. Almost every tree in Unit 6 and a significant portion of the large trees in Unit 11 were blown down. These stands do not currently have enough large, older trees standing to provide important old growth habitat for old growth associated species.

Snag/Down Woody Habitat

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 old growth associated species, particularly the marten, fisher, and pileated woodpecker (Bull et al. 2005). Research suggests that retaining the bulk of the largest material may decrease these effects (Bull and Blumton 1999, Porter et al. 2005). Under Alternative D, all snags would be retained in the existing old growth units (Units 2, 5, 13, and 18). To maintain appropriate coarse woody material in old growth stands, approximately 27 to 30 tons per acre would be retained, where available. Retained down woody material would consist of the longest (e.g., 16-foot or longer) and largest (e.g., 15 inches dbh or greater) pieces. These larger pieces would be most beneficial to old growth associated wildlife species.

Ground Disturbance In Old Growth Forest Stands

Salvage logging in old growth Units 2, 5, 13, and 18 would cause ground disturbance to the existing old growth forest stand. The ground disturbance has the potential to affect ground vegetation and introduce weed sources. In order to lessen the impact of ground disturbance from logging equipment and log skidding, no landings would be created in old growth units and forwarder logging would be required.

Despite the use of forwarders and the restriction on the placement of landings, salvage of blowdown within old growth forest stands has the potential to create ‘openings’ where logs are skidded to an existing road. These small openings may encourage ATV use or firewood removal, which can decrease the quality of old growth habitat for associated species.

Temporary Roads

Alternative D proposes 0.1 mile of temporary road and 1.0 mile of use of historic road templates. There is no temporary road construction in any of the units located in old growth forest stands. In Unit 18, there is an historic road template that would be used to access the unit (0.5 mile). There is also new temporary road proposed (0.1 miles) that is located partially in Unit 18, but not within the existing old growth stand.

The temporary road in Unit 18 would be reclaimed after use. Despite the reclamation of this temporary road it may be very difficult to discourage firewood cutters or ATV use due to the proximity of this unit to Highway 83 and the flat, easily accessible landscape.

Under Alternative D, there would be no significant openings (edge) created next to old growth forest stands as a result of temporary road construction.

Alternative D Cumulative Effects

As described for Alternatives B and C, past land management activities in the area, including timber management, road construction, residential development, and agricultural conversion, have decreased the amount of available old growth forest and have fragmented the patches of old growth that are left into smaller blocks.

There are other forest health timber harvest projects on NFS lands in the Mid Swan Blowdown Salvage Project Area (the Meadow Smith Project and the Cooney McKay Project). Cumulative effects for the Mid Swan Blowdown Salvage Project would include the effects of the Meadow Smith and Cooney McKay Projects on NFS lands, as well as ongoing and proposed timber harvest on PCTC lands.

The Mid Swan Blowdown Salvage Project is located near the community of Condon, Montana. There are part-year and yearlong residences in the area, as well as many recreational opportunities. The level of human activity in the area increases the chance for disturbance or displacement of old growth associated species. There is also an increased risk for the removal of snags (firewood), an important component of old growth habitat. Other human activity in the area includes various road use permits, easements, and ongoing outfitter guide permits.

In addition to NFS lands and private lands within the Old Growth Analysis Area, there are PCTC and State of Montana lands (State). The existing condition for old growth forest does not include any old growth on PCTC lands or State lands.

Although the existing intermingled ownership pattern in the Swan Valley presents difficulties in managing old growth habitat connectivity with patch sizes that occurred historically, it is anticipated that the Montana Legacy Project would result in larger blocks of public land that can be managed in larger patch sizes.

Significant adverse cumulative effects to old growth associated species are not expected as a result of implementing Alternative D because;

1. Salvage of blowdown in old growth stands would not alter the old growth habitat characteristics of large, live standing trees, snags, or canopy cover,
2. The proposed treatments in mature forest stands (non old growth) would not convert mid- or late-seral stands to younger stands,
3. Non old growth stands would continue to develop into old growth, if that is their present trajectory, and
4. Although salvage of blowdown trees would alter the current amount of down woody in the old growth stands, large amounts of down woody material would be retained in sizes that would be beneficial for old growth associated wildlife species.

Regulatory Framework and Consistency

The NFMA requires that the Forest Service “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.” In addition, NFMA regulations state that “the overall goal of the ecological element of

sustainability is to provide a framework to contribute to sustaining native ecological systems by providing ecological conditions to support diversity of native plant and animal species in the plan area.” According to NFMA, “This will satisfy the statutory requirement to provide for diversity of plant and animal communities based on suitability and capability of the specific land area in order to meet multiple use objectives.”

Amendment 21 to the Forest Plan was signed in January 1999. It has a goal to “maintain and recruit old growth forests to an amount and distribution that is within the 75 percent range around the median of the historical range of variability. Where current conditions are below this amount, actively manage to recruit additional old growth.” Amendment 21 further states that management actions within old growth stands should be limited to those actions that “maintain or restore old growth composition and structure consistent with native disturbance and succession regimes, or reduce risks to sustaining old growth composition and structure.”

Implementation of all alternatives would comply with the standards contained in the Forest Plan relative to old growth. Alternatives A and C would have the least potential for affecting old growth associated wildlife species.