Terrestrial Wildlife

Affected Environment

Species specific habitat needs as well as the habitat availability within the project area are listed within the following effects analysis by species. The effects analysis further describes the changes to this habitat for each alternative. When describing vegetation aggregates as it relates to wildlife habitat California Wildlife Habitat Relationship (CWHR) mapping is used. Map 6, found in the Map Package, Appendix A, shows these CWHR types for the project area. Tables 40 and 41, in Appendix D, show the existing acres by CWHR type and changes to CWHR type, if any, from treatments in each action alternative.

Mitigation and Monitoring

Within this project area under the action alternatives, special considerations have been given to perennial streams to leave higher levels of biodiversity (see EIS and BE/BA for a description of Old Forest Linkages), higher levels of biodiversity are planned for retention around large oaks and large tree groups have been designated across the project area which will advantage those species which utilize dense large tree groups and their prey species. Surveys will be conducted for California spotted owls and northern goshawks prior to implementation of any project activities, as well, surveys for these species will be conducted on a schedule as outlined in the LRMP, as amended, during project implementation (USDA-FS 2001a). Additionally, as a result of the involvement of UC Berkeley as a part of the SNAMP project, fisher activity in the project area will be intensively monitored.

Alternative 1 – No Action

Direct Effects

There would be no direct effects to any terrestrial wildlife species under this alternative.

Indirect Effects

The continued immediate threat of wildfire would remain unabated. In failing to make an attempt at density management of the stands the eventual changes through drought stress and subsequent insect and disease mortality acceleration, the threat of stand replacing fire would be exacerbated. Additionally, the high probability of a drying climate change in the Western United States would potentially further compound these effects.

Cumulative Effects

According the Council on Environmental Quality (CEQ) NEPA regulations, “cumulative impact” is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions (40 CFR 1508.7). Effects are spatial and temporal. In determining cumulative effects, the effects of the past, present and future actions were added to the direct and indirect effects of the proposed action and alternatives. Table 2 on page 25 of this document list those activities.

Under Alternative 1, no additional cumulative effects will occur.

Alternative 2 – Proposed Action

This alternative leads to a lower level removal of larger trees within the project treatment units. Those areas within the current fisher den site buffer would be reduced to a removal of surface and ladder fuels. While no currently designated habitat (PPN, SMC, MHC and RFR, 4D and 5D types) are intended to be reduced below those designations, understory and some co-dominates will be removed. Those 4D and 5D habitat types have been identified as being the most important to old growth species such as California spotted owls, northern goshawks or Pacific fisher for denning, resting and breeding habitat. None of those habitats will be reduced to less than their current designation. This alternative will lead to higher growth rates amongst the remaining stems, leading to old growth characteristics the fastest and reduce potential mortality from drought stress and subsequent beetle and disease mortality.

Direct Effects

The most probable direct effect to species will be a noise disturbance effect, potentially leading to an energetic response in avoiding project activities. No direct mortality from project activities would be expected as complete surveys of old forest threatened, endangered or sensitive (TES) species will be completed prior to project activities occurring and those locations and an appropriate perimeter around them would be avoided until after the appropriate Limited Operating Periods are completed. With respect to the Pallid bat, which is known to use sloughing bark of large snags, every effort would be made to avoid damaging or removing those snags.

Indirect Effects

Maintenance of the highest areas of biodiversity Old Forest Linkages (OFL), and oak understory characters as well as large tree groups will provide cover for species of concern and their prey. It is poorly understood as to the rate of recovery of those areas that are manipulated; whether they will be immediately begin to be reused by old forest species or whether there will be some lag time. That is one of the questions we are attempting to address with the Universities Sierra Nevada Adaptive Management Study; however, it is expected that without some form of density management of the stands, eventual higher levels of mortality and reduced growth rates within those stands will occur. With respect to stand-replacing wildfire events, this alternative provides the highest level of protection possible without diminishing the ability of those stands to support species of concern and their prey.

Cumulative Effects

This area includes private in-holdings, permanent roads, dispersed camping, occasional Off-Highway vehicle use, and day-use areas, and several timber plantations. Road maintenance, culvert maintenance, hazard tree removal, management of plantations including gopher control, pre-commercial and commercial thinning, conifer planting and release operations, brush removal, and timber harvest all occur. On private property, there has been homebuilding, maintenance of access roads, and brush removal (hazard reduction). The potential for additional construction of homes on the private in-holdings within the project area is low within the foreseeable future.

Current projects within the Fresno River watershed area include Sonny Meadows North, South and Cedar Valley fuels reduction projects which will have effects to the habitat similar to the proposed project. There are no reasonably foreseeable projects in the watershed that have a proposed action developed so that effects can be predicted. Reasonably foreseeable Forest Service projects, including projects generated by the Healthy Forest Initiative and the National Fire Plan, in the nearby area include continuing vegetation management activities such as fuels management activities (mastication, pruning, slash disposal, brush removal, fuelbreak

maintenance), hazard tree removal, maintenance of roads and culverts and possibly prescribed burning.

Not all areas shown as being covered with 70% or more cover within potential treatment areas will be treated. Steep slopes, Streamside Management Zones, Old Forest Linkages, etc. will not be treated. Habitat will remain the same from the perspective that we are not proposing any treatments in these areas. Only about 2/3 of the mastication treatment areas acreage will actually be treated, if funded. Other portions are either too steep, too rocky; contain too much oak, etc. for treatment. Therefore, some of the areas shown as dense cover within these proposed treatment areas will remain dense cover.

There is a 30-inch diameter limit. In all previous thinnings, pockets of trees too large to remove had to be left that had greater than proposed leave basal area stocking levels. There is no reason to think that the same situation will not occur on this project. Timber marking crews do not always mark trees for removal down to the desired leave basal area. Crews have habitually left more trees than the prescription called for. Minimal to no harvest will be done in archeological sites. Trees within arch sites will generally remain following harvest.

To the south of the Sugar Pine project lies the Progeny Sale Area. This area was thinned several years ago. Crowns are beginning to close back in. Much of the area is shown as 70% or more crown closure. Post sale work (thinning and piling or mastication) is being completed within the next year or two. Suitable denning and nesting habitat should be available in much of this area as treatments are undertaken within Sugar Pine.

The district has been thinning younger stands for the past 12 to 15 years to the same specifications. Since thinning is done from below, suppressed and intermediate trees (those with the poorest crowns) are removed first. If additional trees need to be removed to reach the desired leave basal area, co-dominant trees are then removed until the desired basal area is reached or diameter restrictions require retention of the remaining stems whichever occurs first. Thinning from below generally retains the largest crowned trees. Thinnings have called for a 15 to 20 year reentry period. Experience has shown crowns recapture the sites fairly rapidly. Reproduction pockets growing in openings are planned to be pre-commercially thinned and slash treated. These thinned trees will then be able to maintain good health and vigor. Crown cover, where present, even in more open areas will recover over time.

Plantations will be thinned to maintain good health and vigor. Plantations will be able to more rapidly fill in crown closures by maintaining rapid growth.

Potential Cumulative Effects by Species

Pacific Fisher

The area considered in determining the cumulative effects of past, present, and reasonably foreseeable activities on fisher encompasses the Kings River project area, the Sierra NF, and the Southern Sierra Fisher Conservation Area (SSFCA), which is approximately 1,018,000 acres in size. This conservation area is defined by an elevational band from 3,500 to 8,000 feet on the Sierra and Sequoia National Forests and includes the known occupied range of the fisher in the Sierra Nevada (USDA-FS 2001:A-45). This is an appropriate scale for cumulative effects analysis because the SSFCA is an integral component of the conservation strategy described in the 2001 SNFPA ROD (USDA-FS 2001:43). Maintaining the capability for movement and dispersal of fisher between southern Sierra Nevada populations and populations found in northern California is one of the key objectives of the SSFCA and is another reason why the SSFCA represents an appropriate scale for the analysis of cumulative effects.

Since about the mid 1960s, past activities have included clearcutting and salvage logging (1960s to 1972), sanitation and salvage harvests (1972 through 1978), clearcutting, shelterwood cutting, and salvage harvests (1978 through 1992), and commercial thinning from below and salvage in recent times. The only fires to burn substantial amounts of timber were the Rock Fire in 1981, the Big Creek Fire in 1995 and the North Fork Fire in 2001, with each fire burning about 3000 acres of forest. Clearcuts or burned areas that took place prior to 1972 are most likely successful plantations today exhibiting size class 3 and density class M stands. Other, more recent disturbances, while they may be reforested have probably not yet reached size class 3.

Availability of suitable resting/denning habitat versus foraging habitat

Within the SSFCA, we examined the availability of suitable resting/denning habitat versus foraging habitat. The availability of suitable resting/denning habitat is considered to be more limiting to fisher populations than the availability of foraging habitats (USDA-FS 2006). We used data presented by Freel (1991) to help inform the definitions of resting/denning versus foraging habitat. Also, we validated these habitat definitions by comparing them to CWHR Version 8.1 (CDFG 2005) and discussing them with fisher research scientists (Dr. W. J. Zielinski, Dr. K. Purcell, and R. Truex, pers. comm., 21 Sept 2006). This discussion resulted in the identification of an alternative method for describing fisher reproductive habitat.

In general, we found Freel's (1991) definition for resting and denning habitat matched the CWHR's definition of reproductive habitat. However, we noted that CWHR's definition of foraging habitat included several "S" and "P" densities that were not used by Freel. Interestingly, the discussions with research scientists, particularly Dr. Zielinski, indicated recent field work shows fisher are using most CWHR types for foraging. Nonetheless, we retained the somewhat more restrictive Freel model for the sake of consistency of approach and did not include the S and P densities as foraging habitat. We do not believe this appreciably changes the habitat picture, since foraging habitat is clearly not limiting to fisher. The fisher scientists believe that reproductive habitat is limiting to fisher.

CWHR version 8.1 was used as a basis to define what we consider to be a minimum habitat map, based solely upon forest types, ages, and canopy densities listed therein as HIGH quality reproductive habitat. We further restricted the forest types considered to provide reproductive habitat from those listed in CWHR, based upon personal communication with Dr. Bill Zielinski (21 Sept 2006). This resulted in the elimination of the following types: aspen, eastside pine, lodgepole pine, red fir, and subalpine conifer. This generated a more restrictive map of high quality reproductive habitat.

Past, present, and reasonably foreseeable activities on the Bass Lake Ranger District are described at the beginning of Chapter 3 of the DEIS. The scale for cumulative effects also includes the Sierra National Forest and Sequoia National Forest.

On the Bass Lake Ranger District, there is one present project (Sonny Meadows South – 1,400 or more acres of commercial thinning that will not result in changes to suitable habitat) and two reasonably foreseeable projects (Sonny Meadows North with 955 acres of treatments and Sugar Pine with approximately 915 acres of commercial thinning) that could influence the cumulative effect on fisher habitat. While Sonny Meadows North will not result in any changes in suitable habitat, nor will the Sugar Pine project result in a reduction in quality of suitable habitat on about 816 acres. On the High Sierra District, there is one present project (Jose Basin 1 – 1,263 acres of commercial thinning) where habitat would be degraded on 60 acres and 8 acres of foraging habitat would be diminished temporarily.

American Marten

The area considered in determining the cumulative effects of past, present, and reasonably foreseeable activities on marten encompasses the Sierra NF. This is an appropriate scale for cumulative effects for a wide-ranging species (such as the marten) that has also been selected as a Management Indicator Species for the Sierra NF. Based on the following analysis, a determination of viability for the marten will be made.

In addition to the previously mentioned habitat risk factors, there are two important uncontrollable habitat risk factors for martens: (1) development and (2) climate change. Climate change is beyond the scope of this analysis and areas of large-scale development are not planned for the Sugar Pine project area.

Biological Evaluations for many of the past projects in the Sierra NF were reviewed to help inform the present analysis. Our review of these documents revealed the following basic information about effects to marten from these activities:

- Twenty-six (26) total project Biological Evaluations (BEs) were reviewed, dating back to 1993 on the Sierra NF.
- Determinations reached were:
  - No effect – 7 BEs
  - May affect individual marten, but not likely to lead to a trend toward Federal listing or loss of viability – 15 BEs
  - May affect individual marten, and likely to lead to a trend toward Federal listing or loss of viability – 0 BEs
  - Marten were not addressed in the document we reviewed due to lack of habitat or other reasons – 4 BEs
- Types of projects: Fuels reduction, harvest, hazard tree removal, and thinning were the proposed activities that were most often represented in the sample of BEs in which the marten was analyzed.
- Relative to "May Affect" projects, the described impacts to marten most often fell in the following categories:
  - Temporary disturbances
  - Foraging area may be burned if underburning gets out of control
  - Removed hazard trees could serve as resting or denning sites
  - Habitat altered or removed
  - Reduction of habitat quality (e.g., reduction in canopy cover)
  - Habitat will be entered
  - Noise disturbance (FEIS)

Northern Goshawk

The Northern Goshawk has a continuous distribution throughout the Sierra Nevada with a network of 56 managed territories on the Sierra National Forest. Given the scope and scale of the Sugar Pine project relative to the size of the Sierra Nevada and the goshawk's overall North American distribution, the area considered in determining the cumulative effects of past, present, and reasonably foreseeable activities on the Northern Goshawk will focus on the Sierra NF.

Based on the following analysis, a determination of viability for the Northern Goshawk will be made.

Biological Evaluations for many of the past projects in the Sierra NF were reviewed to help inform the present analysis. Our review of these documents revealed the following basic information about effects to Northern Goshawks from these activities:

- Twenty-six (26) total project Biological Evaluations (BEs) were reviewed, dating back to 1993 on the Sierra NF.
- Determinations reached were:
  - No effect – 4 BEs
  - May affect individual goshawks, but not likely to lead to a trend toward Federal listing or loss of viability – 20 BEs
  - May affect individual goshawks, and likely to lead to a trend toward Federal listing or loss of viability – 0 BEs
- Northern Goshawk was not addressed in the document we reviewed due to lack of habitat or other reasons – 2 BEs
- Types of projects: Fuels reduction, harvest, hazard tree removal, thinning, and underburning were the proposed activities that were most often represented in the sample of BEs in which the Northern Goshawk was analyzed.
- Relative to "May Affect" projects, the described impacts to Northern Goshawks most often fell in the following categories:
  - Noise disturbances
  - Loss of foraging area if underburn gets out of control
  - Loss of plucking trees
  - Habitat quality reduction

As with other species, the SNFPA (USDA-FS 2001) provided our analysis of Northern Goshawks with useful historical and habitat information. Evidence suggests the low number of goshawk breeding territories (ranging from 12 reported in the SNFPA (USDA-FS 2001) to the 56 such territories known to exist today) has increased since some of the earliest data were reported by Grinnell and Miller (1944 – as cited in USDA-FS 2001), because there has been no apparent change in the geographic distribution of Northern Goshawks in the Sierra Nevada since then. Thus, goshawk numbers in the Sierra NF remain fairly stable. Reasons for this, as put forth by the SNFPA (USDA-FS 2001), include (1) vegetation management practices, (2) the fact that the Sierra NF is near the southernmost edge of the goshawk's range, and (3) survey efforts for goshawks may be lower on the Sierra NF.

The major risk factors identified by the SNFPA (USDA-FS 2001) for goshawks are the effects of vegetation management and wildfires on the amount and distribution of quality habitat. Unfortunately, goshawk biologists are unsure of what constitutes "high quality" Northern Goshawk habitat in the Sierra Nevada, and as a result, historical patterns of land-use and its effects on goshawks are difficult to interpret. Brian Woodbridge (pers. comm., 8 Sept 2006), however, stated that the 4D CWHR size/density class, and perhaps also 5D, is used most frequently by nesting goshawks. Immediately after the implementation of the Proposed Action, the amount of suitable habitat would not appreciably decrease.

Because the alternatives put forth in this project will result in long-term increases in Northern Goshawk suitable habitat over time, along with the relatively stable geographic distribution and population levels of goshawks in the area, and the project's goal of increasing large diameter trees, the cumulative effects of vegetation management activities in the Sugarpine treatment units taken together with past, present, and reasonably foreseeable activities on the Forest will not result in a loss of viability for the Northern Goshawk." (FEIS)

Great Gray Owl

While this species may move through the project area during winter movements, as there is no suitable breeding habitat within the project area, there are no expected direct or indirect negative effects to these species from the project; therefore, there are no expected cumulative effects from the project.

California Spotted Owl

At a forest-wide scale, there currently are 321 designated Home Range Core Areas and 258 Protected Activity Centers encompassing over 113,000 acres. Over 450,000 acres of suitable habitat currently exist on the Forest. Considering the proposed activities, ongoing actions, and reasonably foreseeable activities, less than one percent of suitable habitat on the Sierra National Forest would be affected.

Since about the mid 1960s, past activities have included clearcutting and salvage logging (1960s to 1972), sanitation and salvage harvests (1972 through 1978), clearcutting, shelterwood cutting, and salvage harvests (1978 through 1992), and commercial thinning from below and salvage in recent times. The only fires to burn substantial amounts of timber were the Rock Fire in 1981, the Big Creek Fire in 1995 and the North Fork Fire in 2001, with each fire burning about 3000 acres of forest. Clearcuts or burned areas that took place prior to 1972 are most likely successful plantations today exhibiting size class 3 and density class M stands. Other, more recent disturbances, while they may be reforested have probably not yet reached size class 3.

In its 12-month finding in which it decided to not list the California Spotted Owl as threatened or endangered, the U.S. Fish and Wildlife Service (USFWS) concluded that the scale, magnitude, or intensity of effects on the California Spotted Owl resulting from fire, fuels treatments, timber harvest, and other activities did not rise above the threshold necessitating protection of the species under the Endangered Species Act (USFWS 2006). The USFWS reached this conclusion after considering the impacts of the Forest Service implementation of the SNFPA ROD. The USFWS conclusion (2006) is supported by:

- Data which indicate that California Spotted Owl populations in the Sierra Nevada are stable and comprise 81% of the species' known territories.
- The anticipation that current and planned fuels-reduction activities throughout the range of the species will have a long-term benefit by reducing the risk of stand replacing wildfire; these activities embrace those described by the SNFPA ROD.
- Barred Owls represent only about 2% of California Spotted Owl habitat in the Sierra Nevada.
- Protection measures are being implemented for the California Spotted Owl on private lands, including the largest private landholders within the range of the species (FEIS).

Pallid Bat

The area considered in determining the cumulative effects of past, present, and reasonably foreseeable activities on pallid bats encompasses the Sierra NF. Based on the following analysis, a determination of viability for the bat will be made.

Biological Evaluations for many of the past projects in the Sierra NF were reviewed to help inform the present analysis. Our review of these documents revealed the following basic information about effects to pallid bats from these activities:

- Twenty-six (26) total project Biological Evaluations (BEs) were reviewed, dating back to 1993 on the Sierra NF. The species was not listed as Forest Service sensitive until the updated list from June 1998.
- Determinations reached were:
  - No effect – 4 BEs
  - May affect individual bats, but not likely to lead to a trend toward Federal listing or loss of viability – 10 BEs
  - May affect individual bats, and likely to lead to a trend toward Federal listing or loss of viability – 0 BEs
  - Pallid bat was not addressed in the document we reviewed due to lack of habitat or other reasons – 12 BEs
- Types of projects: Fuels reduction, hazard tree removal, thinning, and underburning were the proposed activities that were most often represented in the sample of BEs in which the pallid bat was analyzed.
- Relative to "May Affect" projects, the described impacts to pallid bats most often fell in the following categories:
  - Loss of roosting trees/snags
  - Displacement because of smoke from underburning
  - Noise disturbance

Pallid bats occur most frequently below 6,000 feet and are especially sensitive to the removal of hardwoods (USDA-FS 2001). Except for 4D and 5D, CWHR rates all size classes and densities in blue oak woodlands as High for pallid bat, in terms of meeting its foraging needs. Montane hardwood conifer and montane hardwood habitats are rated Low for pallid bat by CWHR (CDFG 2005). Currently, there are 32,600 acres of blue oak woodlands and 251,000 acres of montane hardwoods and montane hardwood conifers below 8,000 ft on the Sierra NF in CWHR size classes 2 and higher. The protection, maintenance, and enhancement of such westside foothill oaks and montane oaks are expected to benefit pallid bats by ensuring the continued availability of roosting sites. Indeed, all alternatives proposed in the SNFPA would lead to an increase in oak species (USDA-FS 2001).

Cumulative effects discussed in the SNFPA stated that there have been no recent changes in the range or distribution of the pallid bat (USDA-FS 2001). For these reasons, and given the long-term objective for increasing the number of large trees across the landscape, the intention of reducing fuels, and the foregoing discussion of effects, the cumulative effects of vegetation management activities in the Sugar Pine treatment areas taken together with past, present, and reasonably foreseeable activities on the Forest will not result in a loss of viability for the pallid bat.

Townsend's Big-eared and Western Red Bat

There are no expected direct or indirect negative effects to these species from the project; therefore, there are no expected cumulative effects from the project.

Alternative 3

This alternative leads to a lower level of removal of larger trees within the project treatment units. Those areas that are within current fisher den site buffer will be treated for surface and ladder fuels only. For a detailed description of those fuels to be removed, please see the Fuels Treatment portion of the DEIS. While no currently designated habitat (PPN, SMC, MHC and RFR, 4D and 5D types) are intended to be reduced below those designations, understory and some co-dominates will be removed. Those 4D and 5D habitat types have been identified as being the most important to old growth species such as California spotted owls, northern goshawks or Pacific fisher for denning, resting and breeding habitat. None of those habitats will be reduced to less than their current designation. This alternative will lead to highest growth rates of retained trees outside of the fisher den site buffer, stems, leading to old growth characteristics the fastest and reduce potential mortality from drought stress and subsequent beetle and disease mortality. Those retained stems within the den site buffer will receive some small relief from the removal of fuel ladders but not to the extent of those trees outside of the buffer area.

Direct Effects

The most probable direct effect to species will be a noise disturbance effect, potentially leading to an energetic response in avoiding project activities. There would be no appreciable difference in the direct effects inside or out of the den site buffer. No direct mortality from project activities would be expected as complete surveys of old forest TES species will be completed prior to project activities occurring and those locations and an appropriate perimeter around them would be avoided until after the appropriate Limited Operating Periods are completed. With respect to the Pallid bat, which is known to use sloughing bark of large snags, every effort would be made to avoid damaging or removing those snags.

Indirect Effects

Maintenance of the highest areas of biodiversity Old Forest Linkages (OFL), and oak understory characters as well as large tree groups will provide cover for species of concern and their prey. It is poorly understood as to the rate of recovery of those areas that are manipulated, whether they will be immediately begin to be reused or whether there will be some lag time. That is one of the questions we are attempting to address with the Universities Sierra Nevada Adaptive Management Study; however, it is expected that without some form of density management of the stands, eventual higher levels of mortality and reduced growth rates within those stands will occur. With respect to stand replacing wildfire events this alternative provides the highest level of protection possible without diminishing the ability of those stands to support species of concern and their prey.

Cumulative Effects

The Cumulative Effects for Alternative 3 will be identical to those for Alternative 2 with the exception of a lower canopy treatment with limited mid-level canopy treatment within the current fisher den site buffer area.

Alternative 4

This alternative leads to no removal of large trees within the project treatment units. The project area will be treated for surface and ladder fuels only. For a detailed description of those fuels to be removed, please see the Fuels Treatment portion of the DEIS. No currently designated habitat (PPN, SMC, MHC and RFR, 4D and 5D types) are to be reduced below those designations, understory and ladder fuels only will be removed. This action alternative will lead to the lowest

growth rate leading to old growth characteristics within the project area and a higher potential mortality from drought stress and subsequent beetle and disease mortality.

Direct Effects

The most probable direct effect to species will be a noise disturbance effect, potentially leading to an energetic response in avoiding project activities. There will be no change CWHR type across the project with the exception of prescribed burn areas which occasionally see small torching of trees resulting in small canopy losses, typically less than 1 acre in size. No direct mortality from project activities would be expected as complete surveys of old forest TES species will be completed prior to project activities occurring and those locations and an appropriate perimeter around them would be avoided until after the appropriate Limited Operating Periods are completed. With respect to the Pallid bat, which is known to use sloughing bark of large snags, every effort would be made to avoid damaging or removing those snags by lining them out within the prescribed burn areas.

Indirect Effects

Maintenance of the highest areas of biodiversity Old Forest Linkages (OFL), and oak understory characters as well as large tree groups will provide cover for species of concern and their prey. It is poorly understood as to the rate of recovery of those areas that are manipulated, whether they will be immediately begin to be reused or whether there will be some lag time. That is one of the questions we are attempting to address with the Universities Sierra Nevada Adaptive Management Study; however, it is expected that without some form of density management of the stands, eventual higher levels of mortality and reduced growth rates within those stands will occur. With respect to stand replacing wildfire events this alternative provides the highest level of protection possible without diminishing the ability of those stands to support species of concern and their prey.

Cumulative Effects

The cumulative effects of Alternative 4 will consist of only treating lower canopy and moderate mid level fuels.