3.15 Snag and Snag Associated Species

3.15.1 Scope of the Analysis

Snags play an important role in creating biodiversity on the landscape. They provide holes that are homes for birds and small mammals, and decaying trees that are infested with insects provide food for woodpeckers, other birds, and some rodents.

Large-diameter snags of western larch, ponderosa pine, Douglas-fir, quaking aspen, and paper birch are favored tree species for nest sites for many wildlife species that utilize snags. Large-diameter snags provide nest habitat for the greatest variety of cavity nesters and stand longer than smaller snags. Although most cavity nesters select for the largest snags available in a geographic area, a few species like the black-backed, downy, and three-toed woodpeckers prefer smaller trees. Larger and taller snags have greater volume and are more likely to have the appropriate amount of decay than smaller ones at the preferred heights for nest excavation and foraging (Bull et al. 1997: 21-31).

At the Nez Perce National Forest scale, for snags and down logs, the forest-wide standard is to retain sufficient structure, including large diameter live trees, in timber harvest and surrounding areas to provide for long-term snag and coarse woody debris recruitment, essential soil processes, wildlife habitat, and long-term structural diversity of forest stands. The Nez Perce National Forest Plan, Appendix N (1987) calls for maintaining at least 1.4 snags per acre in upland areas and 1.8 snags per acre in riparian areas. All such snags are to be greater than 12 inches dbh (diameter-at-breast-height) and 1 snag per 10 acres is to be greater than 20 inches dbh. It is not necessary to meet these standards on every acre. Leave trees and snags should be in a clumped distribution throughout cutting units. Effort should be made to retain desired number of trees and snags on a 100-acre basis. The quality, amount, and distribution of snags within the project area would be verified during project planning.

The Nez Perce National Forest used the 2000-2002 Forest Inventory and Analysis (FIA) survey to estimate the percentage of the Forest that meets snag requirements outline in the Forest Plan. The FIA survey is a general purpose, national inventory that is designed for strategic assessments (Czaplewski et al. 2003). FIA provides a representative sample of all forests, regardless of their classification. The estimated average number of snags per acre on the Nez Perce National Forest with diameter at breast height (dbh) 10 inches and larger ranges from 10.31 to 13.58 and snags per acres greater than 20 inches dbh ranges from 1.50 to 2.59 (See Table 3.15.1) (Bush and Zeiler 2004). Based on this information, forest-wide, the Nez Perce National Forest is currently meeting snag standards. In addition, the very wide extent and magnitude of wildfires and the mountain pine beetle epidemic has substantially changed snag habitat available to wildlife species across the Forest.

<table>
<thead>
<tr>
<th>Snag criteria</th>
<th>90% confidence interval lower bound</th>
<th>Estimated mean</th>
<th>90% confidence interval upper bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snags per acre &gt;10” dbh (1/24th acre plots) (2004)</td>
<td>10.31 snags/ac</td>
<td>11.90 snags/ac</td>
<td>13.58 snags/ac</td>
</tr>
<tr>
<td>Snags per acre &gt;10” dbh (1/4 acre plots) (2007)</td>
<td>9.9 snags/ac</td>
<td>11.4 snags/ac</td>
<td>13.0 snags/ac</td>
</tr>
<tr>
<td>Snags per acre &gt;15” dbh (1/24th acre plots) (2004)</td>
<td>3.63 snags/ac</td>
<td>4.53 snags/ac</td>
<td>5.48 snags/ac</td>
</tr>
<tr>
<td>Snags per acre &gt;15” dbh (1/4 acre plots) (2007)</td>
<td>3.5 snags/ac</td>
<td>4.2 snags/ac</td>
<td>5.0 snags/ac</td>
</tr>
<tr>
<td>Snags per acre &gt;20” dbh (1/24th acre plots) (2004)</td>
<td>1.50 snags/ac</td>
<td>2.03 snags/ac</td>
<td>2.59 snags/ac</td>
</tr>
</tbody>
</table>
Based the FIA estimates by Bush and Zeiler 2004, the average number of snags per acre within the Lower Salmon River 5th code watershed with diameters 10 inches and larger ranges from 5.6-15.4 (5.0-14.5, Bush et al. 2007) and snags per acre greater than 20 inches dbh ranges from 0.5-4.6 (0.9-3.7, Bush et al. 2007).

The primary threats to species using snag and downed wood habitats are the removal of live and dead trees for timber production or firewood. Along with fragmentation and habitat loss due to timber harvest and salvage, and extensive stand-replacing wildfires after decades of fire suppression, intense, stand-replacing fires tend to consume already existing snags and down wood that are in the later stages of decay.

3.15.2 Regulatory Framework and Management Direction

3.15.2.1 Nez Perce National Forest Plan

None of the proposed actions would have an adverse effect on the viability of post-fire, early-seral, late-seral/old growth, or snag associated wildlife species, because sufficient habitat remains in untreated areas and snags and dead woody material would be retained to meet wildlife habitat needs. Reforestation and protection of the regenerated forest would assure the recovery of wildlife habitat in the burned area.

As stated under the regulatory framework, the objective for managing sensitive species is to ensure population viability throughout their range on National Forest lands and to ensure they do not become Federally listed as threatened or endangered. The Forest Plan supports this direction but does not set specific standards and guides for sensitive species. Proposed activities are consistent with this direction to the extent that proposed management actions do not adversely affect viability of existing sensitive wildlife populations.

3.15.3 Analysis Methods and Indicators

Reviewed stand exam information to estimate the number and size of snags per acres existing prior to the fire within the Antler Salvage project area.

Estimated the number and size of snags per acres remaining post harvest by the project area and treatment units.

3.15.4 Indicators

- Amount of snags modified by treatments.

3.15.5 Conclusions

3.15.5.1 Existing Condition

Salvage logging would reduce the number of useable snags within the project area. Approximately, 16% of the project area is identified for fire salvage activities. However, this expected reduction is insignificant compared to the abundance created by the fire. Overall, snags have greatly increased in the short-term in the project area.

Snag densities have been impacted from past timber harvest, road building, or firewood cutting on the Nez Perce National Forest. However, recognized shifts in forest process dynamics.
associated with fire suppression and increased activity by insects and diseases are occurring which appear to be increasing rates of snag numbers on many areas of the Forest.

Nez Perce Forest Plan goals, objectives, and standards for old growth, snags and riparian habitats help conserve habitats for species using dead wood habitats. Based on the information presented, there appears to be little risk of loss of population viability of snag associated on the Nez Perce National Forest. The actions taken on the Nez Perce National Forest are consistent with maintaining habitat for viable populations of these species at all scales.

3.15.5.2 ENVIRONMENTAL CONSEQUENCES

3.15.6 Existing Condition

An abundance of snags exists along the Salmon River from Johnson Bar west to Kelly Creek as a result of the Black Butte Fire and other fires over the past decade. Those species that are associated on snags in an early-seral, post-fire environment have an exorbitant amount of habitat.

Prior to the Black Butte Fire, snag densities within the Antler Salvage project area (3815 acres) were estimated at 18 snags per acre greater than 12 inches dbh (Table 11). The Black Butte Fire created innumerable snags.

Table 3.15.2 show the density of snags for the Antler Salvage project area pre-fire, post-fire/post-harvest conditions.

<table>
<thead>
<tr>
<th>Area of Interest</th>
<th>Condition</th>
<th>Snag Densities - snags per acre (spa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Area (3815 acres)</td>
<td>Pre-fire</td>
<td>Total: 9 snags per acre (13-20” dbh: 9 spa, average: 16” dbh; 20+” dbh: 9 spa, average: 28” dbh)</td>
</tr>
<tr>
<td>Units (625 acres)</td>
<td>Post-fire/Post-harvest</td>
<td>Total: 10 snags per acre (9-14” dbh: 5 spa; 14+” dbh: 5 spa)</td>
</tr>
<tr>
<td>Project Area (unharvest acres, 3190 acres)</td>
<td></td>
<td>Total: 128 snags per acre (9-14” dbh: 69 spa; 14+” dbh: 59 spa)</td>
</tr>
</tbody>
</table>

3.15.7 Environmental Consequences

3.15.7.1 DIRECT AND INDIRECT EFFECTS

Alternative 1

The no action alternative would maintain snag densities at present levels, benefiting species that utilize snags for nesting, foraging, and roosting sites. The amount of habitat may even increase as additional trees die and insect populations increase. Habitat for snag associated species would increase. Populations of species that require snags are expected to expand locally as insects invade burned areas.

As snags fall over time, snag habitat would decline. Snag-fall rates vary for different tree species and size classes. Only the largest would likely remain standing over the long-term, post-fire. There is an increased potential for reburn under this alternative (due to fuels accumulation from fallen snags), which could reduce current snag habitat if remaining snags are burned, yet habitat could be created if adjacent mature stands are affected by a fire. Suitable nesting substrate would also be lost to firewood gathering activities. The loss of snags due to firewood gathering is expected to be low due to the accessibility of the area for this activity.
This alternative would leave the greatest number of snags, which is highly desirable for snag associated species.

**Alternative 2**

No activity is proposed in riparian habitat conservation areas (RHCAs). The assumption is that riparian areas would meet Forest Plan standards for snag retention in terms of the density and size of snags for treatment units. Approximately 44% of the harvest units after treatment would have very few medium and large diameter snags remaining except those that are less than 6 inches in diameter (areas which have anywhere from 90-100% of the trees/snags removed). Approximately 46% of the harvest units would have several snags remaining after treatment where approximately 50% to 80% of the timber would be removed. Overall, it is estimated that approximately 10 snags per acre would remain after treatment over the entire 625 acres identified for treatment (see Table 3.15.2). In reviewing the distribution and size of harvest units, the combined acreage for units 21 and 22 near 100 acres. Based on this information, a mitigation measure is in place for units 21 and 22 to leave 5 broken top snags per acre greater than 20 inches in diameter that are between 20 and 40 feet tall or greater where available to meet Forest Plan standards. The rationale for broken top snags is that they are less likely to be felled for safety reasons during harvest and slash treatment activities.

The number of available fire-killed trees within the analysis area is expected to decrease with harvest activities as dead and dying trees would be removed. Snags potentially lost to firewood gathering activities within the analysis area are expected to be minimal due to the fact that access into the area is limited. The majority of the large diameter snags in proposed harvest units would be removed. This reduces the amount of nesting, foraging, and roosting sites for many wildlife species, as well as down wood recruitment. Snags that are considered unmerchantable and less than 10 or 12 inches in diameter would remain within the units, along with riparian leave strips and the rest of Black Butte fire area outside of the project area would remain as habitat for many wildlife species that require snags throughout part or most of their life history cycle.

In addition to habitat being modified as a result of this project, the patchiness of the remaining habitat would increase as well. Due to past fire and salvage efforts within and adjacent to the project acre, the sizes of forest openings are over several hundred acres and are devoid of snags and down wood. Harvest activities associated with this project would increase the sizes of the forest openings, especially in the Scott, Witsher, and Bullion Creek watersheds. Due to the fragmentation of forested habitats, many animal species may expend too much energy foraging to maintain their territory or to rear young.

Snags may be created as green trees are inadvertently damaged from helicopter rotor wash and conventional logging machinery, as well as during treatment of slash material in those units identified as a mosaic burn and having a portion of trees to be removed during harvest activities. In addition, with the influx of beetle attacks on stressed, live trees after harvest, additional snag habitat would be created.

**3.15.7.2 Cumulative Effects**

As a result of the Black Butte Fire, habitat has been created for many snag associated species. The no action alternative would maintain current habitat for wildlife species. The reduction of fire-killed trees and potential snags would reduce the amount of habitat that would have otherwise been used by black-backed woodpeckers and other snag associated species.

Timber harvest and firewood cutting have reduced snag density in many areas. In the Antler Salvage project area, the impact of firewood cutting would be relatively minor, due to limited road access. The number of available fire-killed trees within the project area is expected to decrease with harvest activities as dead and dying trees would be removed. The proposed action would reduce the amount of snags by 2% in the burn area and 16% within the project area. This figure includes leave patches within the units, riparian leave strips, and other burn areas not slated for harvest within the project area, as well as the rest of Black Butte fire area.
Current snag densities have been impacted from past timber harvest or firewood cutting. Snags would continually be lost during harvest activities for safety reasons, as well as for firewood cutting, which is expected to be minimal because the area is not very accessible. Snags are also constantly being lost and created resulting from natural wildland fires and other natural disturbances, as well as with prescribed burning activities. Some of these snags fall and provide much needed ground structure and habitat. Proposed timber harvest would reduce snag densities in treated areas. Activities that reduce the potential for wildfire and epidemics or outbreaks of insect populations also reduces habitat for many species, such as the project in the Little Slate Creek drainage, north of the project area.

Even with the loss of fire-killed trees and potential snags through salvage activities, the amount of habitat left on the landscape is sufficient in meeting the needs of many woodpecker and other snag associated species. Although individual species may be adversely impacted by implementing the action alternative in the vicinity of a nest, none of the proposed alternatives should affect population viability of snag associated species at the local or Forest level. Total snag density and large snag density in both treated and untreated areas would meet or exceed Forest Plan (1987) standards.

3.15.6 Irreversible and Irretrievable Commitments (3.1.8/H3)

The removal of nesting and foraging habitat for snag associated species with the implementation of the action alternative would be an irretrievable commitment of the resources. Retrieval of large diameter, old snags could take hundreds of years. However, the number of snags removed would only be a small percentage of the total amount that currently exists in and around the project area.

With respect to irretrievable effects, the loss of suitable habitat occurs when an area that was once suitable for wildlife species is no longer available as a result of a series of actions. The no action alternative maintains current habitat conditions. The action alternative would reduce the amount of standing snags on approximately 625 acres and reduce habitat for some species, yet increase habitat for others that prefer open forest conditions. However, project activities create mainly temporary disturbances and any irretrievable effects would vary by individual wildlife species.

3.15.8 Consistency with the Forest Plan and Environmental Law

Snag retention guidelines would comply with Forest Plan standards. Broken top trees and snags and other nonmerchantable snags should be retained if they do not pose a safety hazard. Draws and riparian areas would not be harvested thus snag densities would be in excess of the Forest Plan and habitat for snag associated species would be met in the project area and surrounding landscape.