

harvested on the three forests during the late 1990s. However, in the first two years of implementation, the project has harvested a total of about 60 mmbf (M. Carroll-Martin, USFS, pers. comm. 2003), so anticipated effects described in the FEIS, which included a decrease in owl habitat of 5 to 8 percent (USFS 2001a), may be occurring at a slower rate than anticipated.

Effects of future habitat modification by fuel treatments and wildfire—Under the SNFPA, fuel treatments will be applied on a relatively small portion of the Sierra Nevada. Prescribed fire treatments would be used on less than six percent of the forested area; prescriptions thinning trees below 30 cm (12 in) dbh on about three percent; thinning of trees 30 to 51 cm (12 to 20 in) dbh on less than one percent; and thinning of trees over 51 cm (20 in) dbh on less than one half of one percent (derived from data in USFS 2001a and K. Barber, USFS, pers. comm. 2003). However, because spotted owl habitat is in a condition that favors the spread of intense wildfire, many of the treatments will be focused on spotted owl habitat.

According to a database of treatments projected to occur over the next 20 years provided to us by the Forest Service (Service 2001), SNFPA mechanical treatments will treat approximately 25 percent of suitable owl habitat in the Sierras. However, these treatments will not be equally distributed among the forests. Mechanical treatments on the Lassen, Plumas, and Tahoe National Forests (forests comprising the QLG pilot project area) will treat 31, 28, and 31 percent, respectively, of spotted owl habitat.

According to the SNFPA FEIS (USFS 2001a), only a small amount of spotted owl habitat is expected to be rendered completely unsuitable by fuels treatments and wildfire. The total habitat area projected to be lost to both causes in the first decade is about 26,304 ha (65,000 ac) and in the second decade, about 23,876 ha (59,000 ac). The projection for the second decade is less because the most intense fuels treatments will take place in high risk areas in the first decade. In total, this loss would represent about three percent of the estimated existing habitat over the next twenty years. On a landscape basis, this loss will be overcome by a projected overall increase in high quality habitat of about 13 percent over the next fifty years (USFS 2001a). This increase is expected to occur as today's young and mid-aged stands mature into larger size classes, assisted by the thinning and reduction in intense wildfire that are among the objectives of the SNFPA. Habitat

suitability for the primary prey species, the northern flying squirrel and dusky-footed woodrat, is also projected to increase (USFS 2001a).

The primary area where fuel treatments would remove large trees and reduce canopy cover to the point of unsuitability for owls would be the Defense zone of the wildland/urban interface. The FEIS estimated that about four percent of the known spotted owl activity centers fell within the Defense zone (USFS 2001a). More recent analysis indicates that the Defense zone overlaps some portion of 21 percent of all PACs; and Defense zone prescriptions could apply on an average of 35 ha (86 ac) of those affected PACs. However, only about four percent of the overall PAC acreage in the Sierra Nevada occurs within the Defense zone (Klaus Barber, USFS, pers. comm. 2003), so this effect should be limited.

While the S and Gs provide some protection for a 152 m (500-foot) radius (about 7 ha (18 ac)) around known activity centers that are found in the Defense zone, canopy cover in the remainder of the Defense zone could potentially be reduced to the point that it will probably be unsuitable for nesting, roosting, or foraging by spotted owls. The portion of those PACs that will actually be changed from suitable to unsuitable is unknown; this will depend on the original condition and the site-specific treatment. This effect could lead to reduced productivity on these sites through reduction of foraging habitat (Blakesley *in litt.* 2002a, Bart 1995a). While the fuel treatment prescription for the Defense zone could potentially be applied on over 137,591 ha (340,000 ac) only about seven percent of the Defense zone area overlaps PACs. The Defense zone treatments will also affect foraging areas that are associated with other more distant PACs, but this effect should be limited to a relatively small proportion of the foraging area by the narrow linear nature of the Defense zone.

During the early decades of SNFPA implementation, less severe habitat modification by fuel treatments and wildfire outside the Defense zone will be considerably more extensive. This habitat modification will probably be the most important factor affecting California spotted owl populations in the next few decades, and such, needs careful evaluation in this finding.

In general, treatments that remove habitat features such as large trees, snags, logs, and woody debris or that reduce canopy cover may be detrimental to California spotted owls, at least until these features can be regenerated by continuing growth of forest stands. As

described in previous sections, large trees, high degrees of canopy closure, and large snags and logs are associated with owl nesting, roosting, and foraging habitat, and with the habitat of their primary prey in much of the Sierra, the northern flying squirrel. Alternately, treatments that retain sufficient canopy cover and habitat features to support California spotted owls, while at the same time reducing the risk of catastrophic fire, may benefit the species (Weatherspoon *et al.* 1992, Larry L. Irwin and Jack Ward Thomas, National Council for Air and Stream Improvement, Inc., *in litt.* 2002).

The primary aspects of fuel treatments that would potentially affect spotted owl habitat are (1) removal of trees larger than 51 cm (20 in.) diameter, which may reduce numbers of existing and potential nesting trees and large diameter snags and logs, with an accompanying reduction of canopy cover; and (2) removal of trees 30 to 51 cm (12 to 20 in.) in diameter, with resultant reduction in canopy closure, and perhaps to a lesser degree, reduction in numbers of existing nest trees and recruitment of potential nesting trees and large diameter snags and logs.

Throughout the area of the SNFPA, a general S&G precludes the removal of any tree over 76 cm (30 in.) dbh. The prescriptions that would allow any extensive harvest of trees of over 51 cm (20 in.) dbh (except for incidental removal for operability) are confined to the Defense zone. In addition, outside the Defense zone, removal of trees over 51 cm (20 in.) dbh would be limited to moderate quality habitat (*i.e.*, CWHR 4M and 4D) in the threat zone where this zone overlaps Old Forest Emphasis areas or where home range core areas exceed a habitat quantity standard. Thus, except for possible eventual long-term effects on recruitment of large trees that might result from continued extensive thinning of small understory trees (Franklin and Fites-Kaufmann 1996), most effects of the SNFPA on large trees are confined to the Defense zone and, with limitations, to other areas outside PACs only if their removal is necessary to allow mechanical treatments.

Therefore, since effects on large trees are limited, most of the effects of the SNFPA would be anticipated to result from the harvest of trees in the 30 to 51 cm (12 to 20 in.) size class. A small minority of spotted owl nests have been found in trees in this size class (USFS 2001a), but all known nest sites will be protected, so loss of existing nest trees is not expected. Trees in this size class also contribute to roost sites, but most