

southern California were logged significantly into the 1960s (Verner *et al.* 1992a) and have also been affected by intensive fire suppression. Dense stand conditions in California forests have lead to increased tree mortality, due to competition, drought, insects, disease, and, in some cases, air pollution (University of California 1996). The increased density and continuity of young trees together with increased fuels from fire suppression and tree mortality have created conditions favorable to more intense and severe fires (University of California 1996). Over the last 30 years, the annual acreage burned in the Sierra has been about 19,020 ha (47,000 ac), but in the last ten years, that average was 30,756 ha (76,000 ac) (USFS 2001b).

Paradoxically, the growth of understory trees that contribute to the high degree of canopy closure favored by California spotted owls also increases the risk that wildfire might spread into the canopy and destroy the stand. Because fire suppression has increased density of stands in the Sierra Nevada, the possibility exists that it has led to net improvement in owl habitat in some areas (Weatherspoon *et al.* 1992) with resultant increases in spotted owls (Verner *et al.* 1992a). Weatherspoon *et al.* (1992) characterized forests selected by spotted owls as having the structural components favorable for crown fires.

However, in recent years, relatively few California spotted owl sites have been severely impacted by wildfire (USFS 2001a). From 1993 to 1998, only 15 Protected Activity Centers, a 121 ha (300 ac) management area established around all Forest Service owl sites in 1993, burned in wildfires, and three of those remain occupied (USFS 2001a). This possibly is because of the success of initial attacks on wildfires in Sierran mixed conifer types (Weatherspoon *et al.* 1992) or because California spotted owls often occupy relatively moist areas such as northern aspects (Gould 1977, Barrows 1981, Gutiérrez *et al.* 1992, North *et al.* 2000), lower slopes of canyons (Gould 1977, Gutiérrez *et al.* 1992), or areas close to water (Gould 1977) where average fire intervals are longer (Weatherspoon *et al.* 1992). Weatherspoon *et al.* (1992) noted that most of the large fires in the Sierra Nevada had occurred on the eastside and at low elevations on the westside, outside the areas where spotted owls occur.

During development of the SNFPA, the overall concerns regarding the status of the California spotted owl and its old forest habitat were so pervasive that the Forest Service, the primary land manager in the Sierra Nevada, formally

adopted the assumption that the owl's population was declining as a basic tenet driving land management direction, and in the SNFPA Record of Decision established that "The primary objective is to conserve rare and likely important components of the landscape such as stands of mid and late seral forests with large tree, structural diversity and complexity, and moderate to high canopy cover" (USFS 2001b).

The SNFPA FEIS (USFS 2001a) provided analysis that suggested that many California spotted owl territories might not contain sufficient amounts of suitable habitat to provide for desirable levels of reproduction, based on inferences made from the work by Hunsaker *et al.* (2002) (which was in press at the time of publication of the FEIS). However, during the process of publication of that study, analysis of the data by another Forest Service scientist found that the statistical methodology of Hunsaker *et al.* (2002) was flawed and that the study's conclusion regarding the relationship between habitat and reproductive success could not be supported (Lee 2001). Thus, while the FEIS analysis of the amounts of habitat in home ranges may be of descriptive value, certain of its conclusions as to the possible population implications were not valid. The FEIS reported that, overall, 50 percent of the home ranges contained less than 60 percent of their area in suitable habitat. In the central Sierra Nevada (represented as the Plumas, Tahoe, Eldorado, and Stanislaus National Forests, which contain about 46 percent of the owl sites in the Sierra), 58 percent of the home ranges contained less than 60 percent suitable habitat.

In southern California, recent prolonged drought, particularly on the San Bernardino National Forest, has led to significant mortality in the big-cone Douglas-fir and mixed conifer vegetation types, both of which provide nesting, roosting, and foraging habitat for California spotted owls. The extent of mortality is projected to be 8,094 to 12,140 ha (20,000 to 30,000 ac), much of which is considered suitable nesting/roosting habitat. The San Jacinto Mountains are experiencing especially high mortality. It is anticipated that most of the nesting and roosting habitat in the San Jacinto Mountains will be lost. This area supports about 10 pairs of spotted owls, all of which could be lost (Loe *in press* 2002).

Despite well-founded concerns regarding the current status of the subspecies, there are several factors that suggest that the California spotted owl is not in immediate danger of extinction nor will be in the foreseeable future.

These factors include: (1) The subspecies remains widespread and well-distributed throughout its historic range, despite extensive historical effects on habitat and apparent sub-optimal conditions in current habitat; (2) The estimated numbers of the subspecies combined with its wide distribution reduce the likelihood of widespread extirpation due to a catastrophic event; and (3) Although there are analyses that suggest populations may be declining, the population declines are not conclusively demonstrable.

*Threats to Habitat from Future Timber Harvest, Catastrophic Fire, and Vegetative Management.* With the current status and performance of California spotted owl populations and their habitat in question, the evaluation of potential future threats is a key aspect of this finding. In the following discussion, we evaluate the potential effects of impending management on the habitat of the subspecies.

In this evaluation, we confine the scope of our judgement of the future actions and programs of Federal land management agencies to reasonably foreseeable outcomes of established management direction, rather than more speculative assessment of possible future management scenarios. In particular, and most importantly, this limitation confines us to evaluation of the established management direction for Forest Service lands in the Sierra Nevada, (*i.e.*, SNFPA). As discussed below, we are aware that Forest Service is considering changes in management direction, and that other parties have called for actions that could have more widespread impacts on California spotted owl habitat. However, because such proposals are not incorporated in established management direction, they remain outside the scope of this finding.

Timber harvest on Federal lands in the Sierra Nevada—Timber harvest in coming decades on Forest Service lands in the Sierra Nevada will be governed by the Record of Decision for the SNFPA. The Record of Decision states: "For each national forest affected by this decision, a revised allowable sale quantity (ASQ) will be established at the time of their Forest Plan Revision. Until those revisions are complete, the total annual Probable Sales Quantity (PSQ) green volume for the 11 national forests is estimated to be approximately 191 million board feet (mmbf) for the next five years, which includes approximately 137 mmbf from the pilot project for the Herger-Feinstein Quincy Library Group (HFQLG). The estimated annual volume for the ensuing five years is approximately 108 mmbf. An