WILDLIFE RESOURCE ASSESSMENT

BACKGROUND

Two special status animal species occur within the fire perimeter. These are the limestone salamander (*Hydromantes brunus*), state-listed threatened species, and foothill yellow-legged frog (*Rana boylii*), BLM sensitive species. Potential habitat (elderberry shrubs) for a third special status species occurs within the fire perimeter. This is the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), federally-listed threatened species. Valley elderberry longhorn beetle have not been documented to occur within the fire area.

Limestone salamander

The limestone salamander is listed as threatened under California's Endangered Species Act. The range of the limestone salamander is restricted to 31 occurrences along a 20-mile stretch of the Merced River between the headwaters of Lake McClure, near the community of Bagby, and the mouth of Sweetwater Creek, near Briceburg. (Lehman, 1989; Sutton, 2006). There is also 1 isolated sighting on the South Fork Merced on Sierra National Forest near Hite Cove (Sutton, 2006). Twenty-one of 31 confirmed population sites, and 29 of 38 sites containing suitable habitat are on BLM lands. The species occurs nowhere else in the world. The largest known population occurs at Hell Hollow (Tordoff 1981).

Limestone salamander potential habitat is characterized by 1) northwest to east facing slopes 34 degrees and steeper; 2) numerous rock outcrops and moss covered talus, and; 3) oak/buckeye woodland with a thick shrub understory.

BLM designated the Limestone Salamander ACEC in 1986 to include confirmed sites and potential habitat of the limestone salamander. The limestone salamander is one of California's rarest native amphibians. BLM expanded the ACEC area to include more confirmed sites and potential habitat of the limestone salamander in the Sierra RMP approved February 2008. The ACEC encompasses approximately 2,000 acres of confirmed and potential limestone salamander habitat and adjacent BLM lands along the Merced River and its tributaries in western Mariposa County.

A limestone salamander ACEC plan was written in 1989, and includes nine planned actions to meet the management objectives which are to: prevent all surface disturbing activities which would alter or degrade confirmed or potential limestone salamander habitat on BLM lands; maintain vegetative cover in the ACEC within specifications outlined in the plan, and prevent loss or destruction of vegetative cover to wildfire; identify additional limestone salamander population sites and consolidate BLM holdings within the species' range, and adjust ACEC boundaries as necessary to increase habitat protection; and promote public use values in the ACEC which are compatible with general wildland management goals and which do not conflict with the limestone salamander's habitat needs, and integrate management of the ACEC with other BLM programs in the Merced River corridor to meet this objective.

This salamander prefers moist conditions, and is found on north- and east-facing moss covered talus

slopes. The salamander spends much of the year deep in the talus, and only emerges to the surface during the wet season.

Eight Limestone Salamander ACEC units occur within the fire perimeter.

Foothill yellow-legged frog

The foothill yellow-legged frog is listed as a BLM sensitive species. The situation for foothill yellow-legged frogs in the Sierra Nevada is bleak; there are no populations in the southern Sierra Nevada foothills that are likely to remain viable for more than a decade. Populations in the northern Sierra are more numerous and generally larger, but they may be in decline as well. Foothill yellow-legged frogs are susceptible to a wide range of environmental impacts including loss of habitat, pesticides, competition/predation from nonnative species (e.g. warm-water fish, bullfrogs, crayfish), disease, water impoundments, logging, mining, and grazing in riparian zones. In the Sierra Nevada foothills of California, air-borne pesticides (that move east on the prevailing winds blowing across the highly agriculturalized Central Valley) are likely to be the primary threat to foothill yellow-legged frogs (LeNoir et al., 1999; Sparling et al., 2001; Hayes et al., 2002b). The populations of foothill yellow-legged frogs in greatest decline are all downwind of highly impacted (mostly agriculturalized) areas, while the largest, most robust frog populations are along the Pacific coast.

This species inhabits partially shaded, rocky streams at low to moderate altitudes, in areas of chaparral, open woodland, and forest (Nussbaum, Brodie and Storm 1983; Hayes and Jennings 1988). It seeks cover at the bottom of a pool when startled. Its breeding and non-breeding habitats are the following, in order of decreasing favorability: (1) partially shaded, small perennial streams , 30-1,000 m asl, with at least some cobble-sized rocks, riffle areas and a stream depth rarely greater than 1 m; (2) intermittent , small, partly shaded, rocky streams displaying seasonal riffle habitat; (3) large (consistently greater than 1 m in stream depth), partly shaded, perennial streams with rocky or bedrock habitat; and (4) open perennial streams with little or no rocky habitat. Breeding takes place in pools of streams, and eggs are usually attached to gravel or rocks at the edge of pools or streams (Nussbaum, Brodie and Storm 1983). In northern California, eggs were found attached to cobbles and boulders at lower than ambient flow velocities, near confluences of tributary drainages in wide, shallow reaches , and most breeding sites were used repeatedly (Kupferberg 1996).

Extant populations of foothill yellow-legged frogs are not evenly distributed in California. In the Pacific northwest, 40% of the streams support populations of foothill yellow-legged frogs, while that number drops to 30% in the Cascade Mountains (north of the Sierra Nevada), 30% in the south coast range (south of San Francisco), and 12% in the Sierra Nevada foothills.

There is one known population of foothill yellow-legged frog within the burn perimeter in Sherlock Creek, a tributary of the Merced River. This population appears to be robust, with tadpoles, morphs, and adults all seen within the stream. The portion of the stream with the largest numbers of frogs extends from Drunken Gulch downstream to the Merced River. However, there are frogs using the stream upstream of Drunken Gulch as well.

Valley elderberry longhorn beetle (VELB)

VELB (*Desmocerus californicus dimorphus*) is listed as a threatened under the Federal Endangered Species Act. Because VELB is an obligate specialist on elderberry, reduction in the amount or quality of suitable riparian woodland habitat has had a significant impact to the VELB. Riparian woodland habitat has been largely reduced and severely fragmented by flood control, intensive agricultural production, and urbanization. Another possible threat to VELB is the invasion of the argentine ant, an introduced ant species that has impacted native ants and other ground-dwelling arthropods. Argentine ants may predate on VELB eggs.

The VELB is completely dependent on its host plant, elderberry (*Sambucus* species), which is a common component of the remaining riparian forests and adjacent upland habitats of California's Central Valley and associated foothills up to 3000 feet. *Sambucus* serving as hosts for the VELB occurred in several plant communities: riparian forest, savanna or grassland, oak woodland, and mixed chaparral-foothill woodland. The VELB was more frequently encountered in riparian forest margin and elderberry savanna than other situations. Host plants grew in the open, without overstory, and also as understory plants. Elderberry shrubs/trees with many exit holes were most often large, mature plants; young stands were seldom infested. The VELB seems to prefer stems for larval development and pupation which are larger than an inch or two in diameter. The beetle was most likely to occur in situations where plants were not isolated from one another.

The beetle has only been found in association with its host plant, elderberry (*Sambucus* spp.). Adults feed on the foliage and perhaps flowers, and are present from March through early June. During this period the beetles mate, and the females lay eggs on living elderberry plants. The eggs are about 2.5-3.0 mm long, reddish brown, and are shaped like an elongate football with longitudinal ridges. The female places the eggs singly or in small groups in bark crevices or at the junctions of stem/trunk or leaf petiole/stem. Presumably the eggs hatch shortly after they are laid. Larvae bore into the pith of larger stems and roots. When larvae are ready to pupate, they work their way up from the roots through the pith of the elderberry, open an emergence hole through the bark and return to the pith for pupation. The entire life cycle encompasses two years, however, the duration of each life stage is unknown. Adult emergence occurs at about the same time the elderberry flowers.

There is only one known occurrence of elderberry shrubs within the fire perimeter. This occurrence is on Black Mountain Road near the North Fork Merced. There are also known occurrences within areas impacted by fire suppression activities. These are Buckhorn Road, Schilling Road, and Rancheria Road.

ISSUES

- One California state-listed threatened species occurs within the fire area. This is the limestone salamander, *Hydromantes brunus*.
- The fire area contains portions of the Limestone salamander Area of Critical Environmental Concern (ACEC).
- One BLM sensitive animal species occurs within the fire area in Sherlock Creek. This is the foothill yellow-legged frog, *Rana boylii*.

- The south slope of Sherlock Creek had some of the highest severity burns in the entire fire perimeter. These slopes are modeled to have high rates of soil erosion coming off the slopes which will lead to sedimentation in the creek.
- Elderberry shrubs which provide potential habitat for the federally-threatened valley elderberry longhorn beetle were impacted directly by the fire and through fire suppression activities.

FIRE EFFECTS ON SPECIAL STATUS SPECIES

A. Limestone salamander

Limestone salamander life history includes a long period (dry season) when the salamander is deep within the talus. The salamander only emerges to the surface during the wet season. Because the salamander was not on the surface at the time of the fire, no direct mortality to limestone salamander is believed to have occurred.

Indirect effects could include loss of vegetation on the talus slopes. The vegetation would shade the talus maintaining the cool, moist conditions that the salamanders require to survive. Soil erosion into the salamander habitat is also a possible, indirect fire impact. An August 18-20 assessment of the habitat indicated that most of the Limestone Salamander ACEC units within the burn perimeter experienced a low severity burn that left all the riparian vegetation intact. The low severity burn areas are not expected to erode significantly. The intact riparian vegetation will also assist in preventing soil erosion into the limestone salamander habitat, as well as provide the necessary shade to maintain cool, moist conditions for the salamanders. One unit on the North Fork Merced did undergo a moderate to high severity burn, however the riparian habitat remained intact.

Indirect fire impacts are not significant to the limestone salamander or its habitat for the above stated reasons.

The fire suppression effort at the “Dozer Rodeo” area near Saxon Creek did impact a portion of the Limestone Salamander ACEC and limestone salamander habitat. A northeast-facing moss covered talus slope was bulldozed during this suppression effort. The rocks were overturned. The habitat is basically destroyed. Because of the patchy distribution of the habitat, and the fact that not much can be done to restore the habitat, no rehabilitation efforts specific to limestone salamander are recommended for this slope.

B. Foothill yellow-legged frog

Direct mortality of foothill yellow-legged morphs and tadpoles was observed on the main Merced at the mouth of Sherlock Creek. Several morphs and tadpoles were found dead in a small pocket of water on the beach. There were at least two live morphs still in the small pool. There was also one dead tadpole and a few dead fish observed in the creek. It is unknown whether this mortality was caused by the fire.

Indirect impacts to foothill yellow-legged frog are anticipated in the form of increased sedimentation into the creek. The south slopes of Sherlock Creek received some of the highest severity burns within the entire fire perimeter. Modeling suggests that these slopes will experience high rates of soil erosion.

This soil erosion will lead to sedimentation in the creek. High levels of sedimentation may inhibit the attachment of egg masses to the substrate. Excessive accumulation of silt on the egg masses may have adverse effects on embryo development. Silt reduces the interstitial spaces available for use by tadpoles, reduces algal growth on which the tadpoles feed, and can have significant negative impacts on aquatic macroinvertebrates, in turn affecting the adult foothill yellow-legged frog prey base.

C. Valley elderberry longhorn beetle

Elderberry bushes were lost to fire in the area of Black Mountain Road in Township 3S, Range 18E, Section 30. Elderberry bushes were also lost to fire suppression activities in a few areas. These areas included Buckhorn Road in Township 3S, Range 17E, Section 23, Schilling Road in Township 3S, Range 17E, Section 8, and "Dozer Rodeo" area in Township 4S, Range 18E, Section 16. It is estimated that less than 12 shrubs were lost to fire and fire suppression activities in the fire area.

RECOMMENDATIONS

- Monitor limestone salamander habitat post-fire to determine status of the population.
- Monitor foothill yellow-legged frog population post-erosion events in Sherlock Creek to determine status of the population.
- Treat south-facing slopes of Sherlock Creek to reduce soil erosion and sedimentation into the creek. This treatment would be in the form of rice straw spread on the less steep, high-severity burn areas.
- Monitor areas where elderberry shrubs were lost to fire or fire suppression activities to determine status of the shrubs.