

*Stanislaus National Forest:* A 1992 survey (Martin 1992) in the Stanislaus National Forest located mountain yellow-legged frogs at only 2 of 16 locations surveyed, and at these locations, the numbers of adults detected were small (under five). Jennings and Hayes (1994) indicate that the species has been extirpated from a number of historic locations. There are approximately 80 extant populations of mountain yellow-legged frogs on the Stanislaus National Forest; of these, only about 8 appear to have more than 10 adults, and only 2 populations are known to have 25 to 30 adults (L. Conway, USFS, pers. comm. 2002).

*Yosemite National Park:* From 1914 to 1920, Grinnell and Storer conducted a biological survey along a transect across the Sierra Nevada. They documented mountain yellow-legged frogs at 14 sites throughout Yosemite National Park and noted the species was abundant in this area. Numerous frogs were found in lakes and streams at high elevations (Grinnell and Storer 1924). "Hundreds of frogs" were found at Young Lake and frogs were "very numerous" at Westfall Meadow (Camp 1915, as cited in Drost and Fellers 1994). Large numbers of specimens were collected; for example, 25 were taken at Vogelsang Lake (Grinnell 1915, as cited in Drost and Fellers 1994).

The mountain yellow-legged frog was documented at several additional locations in Yosemite National Park from 1957 to 1960 (Heller 1960). At Johnson Lake, Mullally and Cunningham (1956) reported a mountain yellow-legged frog population decline between 1950 and 1955, though they did not quantify the decline. They attributed this decline to the unusually long and cold winter of 1951–1952. Some of Yosemite's "densest aggregations of frogs ever noted" by Mullally and Cunningham (1956) were in lakes near Ostrander Lake south of Glacier Point; they attributed the absence of frogs in Ostrander Lake to the presence of non-native trout.

Between 1988 and 1991, Bradford *et al.* (1994a) randomly selected and surveyed four mountain yellow-legged frog populations documented in Yosemite between 1955 to 1979. Although they did not resurvey all of the mountain yellow-legged frog populations previously reported from within the park, they reported that the four resurveyed populations were extirpated (Bradford *et al.* 1994a). In 1992 and 1993, Drost and Fellers (1996) revisited 38 of the original 40 sites surveyed by Grinnell and Storer from 1914 to 1920, and surveyed other sites with potential mountain yellow-legged

frog habitat. The mountain yellow-legged frog had declined by approximately 80 percent from the locations documented by the 1924 study (Drost and Fellers 1996). A distribution map of mountain yellow-legged frogs produced by Jennings and Hayes (1994) also documents extinctions and indicates a population decline of this species from Yosemite National Park. Colwell and Beatty (2002) surveyed 35 lakes with appropriate mountain yellow-legged frog habitat within the Tuolumne and Merced River drainages of Yosemite National Park in 1992 and 1993; only 3 lakes were found to have mountain yellow-legged frogs.

Currently in Yosemite National Park, 251 mountain yellow-legged frog sites exist, most of which occur within 23 different basins that have multiple breeding populations with habitat that is connected hydrologically, so that the populations in each basin function as a metapopulation (R. Knapp *in litt.* 2002). Six sites have populations with over 100 adult mountain yellow-legged frogs each, 1 site has a population with between 51 and 100 adults, and 41 sites have populations between 10 and 50 adults each. In addition, 203 sites have fewer than 10 adults each. Of the 251 mountain-yellow-legged frog sites in the park, evidence of breeding has been found in 71 populations.

*Inyo National Forest:* Jennings and Hayes (1994) document the extirpation of some mountain yellow-legged frog populations from the Inyo National Forest. In 1994, 15 known locations had mountain yellow-legged frog populations (Parker 1994). Currently, 7 basins within the Inyo National Forest have known extant mountain yellow-legged frog populations or populations that function as metapopulations (C. Milliron, *in litt.* 2002). Some of these populations are stable, consisting of several hundred individuals representing all age classes (L. Sims, USFS, *in litt.* 2002). Chytrid fungus (see Factor C, Disease, below) has been documented at an additional population location that is now extinct (C. Milliron, *in litt.* 2002).

*Sierra National Forest:* In 1955, Mullally and Cunningham (1956) reported encountering mountain yellow-legged frogs along Paiute Creek "very sparingly" at approximately 2,300 m (7,700 ft), with frogs becoming more abundant at higher elevations. The "densest populations" were found above 3,050 m (10,000 ft) in the Humphrey's Basin area, and a "great many, including tadpoles" were noted at and near Pine Creek Pass, with frogs also seen at Golden Trout and Desolation Lakes.

Jennings and Hayes (1994) indicated that the mountain yellow-legged frog has become extirpated at a number of historical locations in the Sierra National Forest. Knapp and Matthews (2000) report on mountain yellow-legged frog population declines associated with fish stocking within the John Muir Wilderness Area of the Sierra National Forest (see Factor C, Disease, below). In 1995 and 1996, Knapp and Matthews (2000) surveyed 669 lakes, ponds, and other water bodies in the John Muir Wilderness Area. Mountain yellow-legged frog adults were found in 4 percent of these water bodies, and frog larvae in 3 percent (Knapp and Matthews 2000). In 2002, Knapp conducted resurveys at the 28 water bodies that had been occupied by mountain yellow-legged frogs in 1997, and also at 118 of the 641 sites where frogs were not detected in 1997. Knapp found no change in mountain yellow-legged frog status at 39 percent of these 28 previously occupied water bodies, but found that the frogs at 61 percent of the 28 previously occupied sites had gone extinct, while colonization had occurred at 10 percent of 118 previously unoccupied sites (R. Knapp *in litt.* 2002).

Although not all potential mountain yellow-legged frog habitats have been surveyed within the Sierra National Forest, approximately six subwatersheds have extant metapopulations (H. Eddinger, USFS, *in litt.* 2002). These subwatersheds are in the upper headwaters of the South Fork Merced River, South Fork San Joaquin River, and North Fork Kings River. They include the Mono Creek Basin, the Bear Creek Basin, the Paiute Creek Basin, the Humphreys Creek Basin, the Big Creek Basin, and the Dinkey Creek Basin.

*Sequoia and Kings Canyon National Parks:* Relatively few records exist for mountain yellow-legged frog prior to 1955 in the Sequoia and Kings Canyon National Parks. From 1955 to 1979, the species is known to have occurred in at least 21 sites scattered throughout Sequoia and Kings Canyon National Parks, although historic abundance is not known (Bradford *et al.* 1994a). In 1978–1979, the headwaters of seven creek systems were surveyed for mountain yellow-legged frogs in the national parks. Frogs were found at 27 sites greater than 200 m (660 ft) apart (Bradford *et al.* 1994a). A distributional map of mountain yellow-legged frogs produced by Jennings and Hayes (1994) indicates numerous historic sightings and collections of the species within both national parks, as well as numerous extinctions. The species was already noted to have disappeared from