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Department of the Interior

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List the Tehachapi Slender Salamander as Endangered or Threatened; Proposed Rule

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[FWS–R8–ES–2008–0087]

Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List the Tehachapi Slender Salamander as Endangered or Threatened

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of 12-month petition finding.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 12-month finding on a petition to list the Tehachapi slender salamander (*Batrachoseps stebbinsi*) as threatened or endangered, under the Endangered Species Act of 1973, as amended (Act). After review of all available scientific and commercial information, we find that listing the Tehachapi slender salamander is not warranted. However, we ask the public to submit to us any new information that becomes available concerning threats to the Tehachapi slender salamander or its habitat at any time.

DATES: The finding announced in this document was made on October 11, 2011.

ADDRESSES: This finding is available on the Internet at *http://www.regulations.gov* at Docket Number FWS–R8–ES–2008–0087 and at *http://www.fws.gov/ventura.* Supporting documentation we used in preparing this finding is available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, 2493 Portola Road, Suite B, Ventura, CA 93003; telephone 805–644–1766; facsimile 805–644–3958. Please submit any new information, materials, or questions concerning this finding to the above address or via electronic mail (e-mail) at *tss@fws.gov.*

FOR FURTHER INFORMATION CONTACT: Michael McCrary, Listing and Recovery Program Coordinator, U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office (see **ADDRESSES**) by telephone at 805–644–7166; or by facsimile at 805–644–3958. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Background

Section 4(b)(3)(B) of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*), requires that, for any petition to revise the Federal Lists of Endangered and Threatened Species that contains substantial scientific or commercial information that listing the species may be warranted, we make a finding within 12 months of the date of receipt of the petition. In this finding, we will determine that the petitioned action is: (1) Not warranted, (2) warranted, or (3) warranted, but the immediate proposal of a regulation implementing the petitioned action is precluded by other pending proposals to determine whether species are threatened or endangered, and expeditious progress is being made to add or remove qualified species from the Federal Lists of Endangered and Threatened Species. Section 4(b)(3)(C) of the Act requires that we treat a petition for which the requested action is found to be warranted but precluded as though resubmitted on the date of such finding, that is, requiring a subsequent finding to be made within 12 months. We must publish these 12-month findings in the **Federal Register**.

Previous Federal Actions

On February 28, 2006, we received a petition, dated February 17, 2006, from Mr. Jeremy Nichols of Denver, Colorado, requesting that the Tehachapi slender salamander (*Batrachoseps stebbinsi*) be listed as threatened or endangered in accordance with section 4 of the Act. The petition clearly identified itself as such and contained the name, address, and signature of the petitioning private citizen, as required in 50 CFR 424.14(a).

In response to the petition, we sent a letter to the petitioner dated April 20, 2006, explaining that we would not be able to address the petition until fiscal year 2007. The reason for this delay was that responding to existing court orders and settlement agreements for other listing actions expended our listing funding. We also concluded in our April 20, 2006, letter that emergency listing of the Tehachapi slender salamander was not warranted. We were delayed in responding to the petition until funding became available.

On April 22, 2009, the Service issued its 90-day finding (74 FR 18336), concluding that the petition presented substantial scientific or commercial information to indicate that listing the Tehachapi slender salamander may be warranted. We also announced the initiation of a status review to determine if listing the species is warranted and solicited information to be provided in connection with the status review.

We contracted with Robert Hansen, a recognized scientific expert on the Tehachapi slender salamander, editor of the Herpetological Review, and author of peer-reviewed papers on the species (Hansen 1980, pp. 1–50; Hansen and Stafford 1994, pp. 252–255; Hansen and Wake 2005, pp. 693–695), to develop a technical report (Hansen 2009, pp. 1–30) addressing the species' range and distribution relative to current and foreseeable land uses to assess effects of habitat alteration on the salamander. This notice constitutes our 12-month finding on the February 28, 2006, petition to list the Tehachapi slender salamander as threatened or endangered.

Species Description

Like others in the Family Plethodontidae (the lungless salamanders), the Tehachapi slender salamander breathes through its smooth, thin skin. Species in the *Batrachoseps* genus tend to have elongated bodies and tails, and shorter limbs. Compared to other species of attenuate *Batrachoseps,* the Tehachapi slender salamander has a relatively broad head, long legs, large feet, long toes, a robust body, and a short tail. Both front and hind feet contain four toes and are more webbed than other *Batrachoseps* species. The dorsal color may be dark red, brick red, or light or dark brown with light-tan or black patches that often form a band-like pattern. The Tehachapi slender salamander is characterized by 19 intercostal grooves on each side of the body (Brame and Murray 1968, p. 19). The Tehachapi slender salamander is sexually dimorphic. The average size of adult females is 2.24 inches (in) (57 millimeters (mm), and adult males average 2.13 in (54 mm) snout-to-vent length. Brame and Murray (1968, p. 18) first described the species in 1968.

The Tehachapi slender salamander belongs in the genus *Batrachoseps,* one of 25 genera in the subfamily Bolitoglossinae (Jockusch *in litt.* 2009a, p. 2; Jockusch *in litt.* 2009b, p. 1). The subgenus *Batrachoseps* (under the genus *Batrachoseps*) consists of four groups or clades (a nontaxonomic rank based on genetic or morphological comparisons) comprising 16 species and a few undescribed taxa all of which are adapted to fossorial (subterranean) and semifossorial existences (Jockusch and Wake 2002, pp. 362, 380). The four groups are *attenuatus, nigriventris, pacificus,* and *relictus* (Jockusch *in litt.* 2009a, p. 1). The Tehachapi slender salamander belongs in the *nigriventris* group, along with the black-bellied

slender salamander (*B. nigriventris*), gregarious slender salamander (*B. gregarious*), and Kern Canyon slender salamander (*B. simatus*) (Jockusch *in litt.* 2009c, p. 1; Jockusch and Wake 2002, p. 363). Based on genetic studies, the Tehachapi slender salamander is considered to be closely related to the Kern Canyon slender salamander (Hansen and Stafford 1994, p. 252; Jockusch and Wake 2002, p. 364).

There are two known populations of Tehachapi slender salamander, the Caliente Canyon population and the Tehachapi Mountains population, both of which are described in detail below under the *Range and Distribution* section. We examined information suggesting that the two populations may represent separate species. We evaluated information discussed by Jockusch (1996, pp. 1–231) and Jockusch and Wake (2002, pp. 361–391), regarding the large amount of genetic and morphological differences between the two populations (Nichols 2006, p. 5). Hansen and Wake (2005, p. 694) also suggest that the two may eventually be classified as separate species based on genetic and morphological data. However, based on subsequent genetic research, Jockusch (*in litt.* 2009d, p. 1) concluded that considering the two populations separate species was not warranted at this time. Hansen (2009a, pers. comm.) believes there are not enough differences between the two populations to classify them as separate species or subspecies. Therefore, we conclude at this time that the two populations of Tehachapi slender salamanders are a single species.

Biology and Natural History

Western species of plethodontid salamanders, including the Tehachapi slender salamander, are completely terrestrial amphibians and do not need standing or flowing water for any stage of their life cycle (Zug *et al.* 2001, p. 383). Because their entire life cycle occurs on land, they are vulnerable to desiccation. Thus, the Tehachapi slender salamander, like other plethodontids, requires moist microhabitats. As such, its above-surface activity is greatly reduced outside of the rainy season (Feder 1983, pp. 295–296).

Peak periods of surface activity for the nocturnal Tehachapi slender salamander occur during the rainy season, typically February through March, but may occur earlier depending on the timing of late-fall/early-winter rains (Hansen and Wake 2005, p. 694; Hansen *in litt.* 2009a, p. 2). During wetter years, peak activity may extend to April or early May at higher elevations (Hansen and Wake 2005, p. 694). These salamanders retreat to underground refugia (up to 3 feet (ft) (0.9 meters (m)) below the surface) during the warmer months or during periods of freezing temperatures and are believed to aestivate during this time (Hansen and Wake 2005, p. 694; Hansen *in litt.* 2009b, p. 1; Hansen 2010 pers. comm.).

Specific information on the reproductive biology and behavior of the Tehachapi slender salamander is unknown. There is no reported information on the size and age at sexual maturity, nesting behavior, clutch size, or timing of egg hatching for the Tehachapi slender salamander (Hansen and Wake 2005, p. 694). However, Hansen and Wake (2005, p. 694) suggest that eggs are likely laid underground well below the talus and leaf litter material. The Tehachapi slender salamander cannot dig its own burrows, so it uses spaces dug in leaf litter or talus by other animals, or spaces that result from decaying vegetation (Hansen 2009b, pers. comm.; Hansen and Stafford 1994, p. 254). Jockusch and Mahoney (1997, p. 699) suggest that oviposition in Tehachapi slender salamanders occurs after the first rains in the fall or winter, and only once per season, based on their observations of oviposition occurring in November in the related black-bellied slender salamander.

Little is known about the behavior of *Batrachoseps* species, but feeding and reproduction are assumed to occur during brief periods of surface activity (Hansen *in litt.* 2009b, p. 1). The low metabolic rate of plethodontid salamanders enables them to sustain themselves on their energy reserves when surface conditions are not suitable for foraging. They are believed to be inactive (*i.e.,* do not forage) while underground (Feder 1983, pp. 304–306). The Tehachapi slender salamander has been observed to capture prey, consisting of small terrestrial invertebrates, with its projectile tongue (Hansen and Wake 2005, p. 694). Hansen and Stafford suggest that the diet of the Tehachapi slender salamander is likely to be similar to other related *Batrachoseps,* consisting of small spiders, mites, and insects (Hansen and Stafford 1994, p. 254). Predators of this species are not well known. Other salamander species are known to be preyed upon by birds, such as American crows (*Corvus brachyrhynchos*), common ravens (*Corvus corax*), and jays, as well as raccoons (*Procyon lotor*), skunks, opossums (*Didelphis virginiana*), and snakes (HumboldtHerps 2010, p. 2; Kuchta 2005, p. 266). The only documented predator of the Tehachapi slender salamander that we know of is a ring-necked snake (*Diadophis punctatus*) (Burkhardt *et al.* 2001, p. 245). We are not aware of any information about parasites or diseases affecting this species or information about symbiotic or mutualistic interactions with other organisms.

Habitat Characteristics

Tehachapi slender salamanders are restricted to seasonally mesic microhabitats on north-facing slopes in otherwise dry regions of the Tehachapi Mountains and the southern end of the Sierra Nevada Mountains (Hansen and Wake 2005, p. 694). Suitable habitat consists typically of shaded, north-facing slopes containing talus substrates or areas with considerable leaf litter or downed wood (Jockusch and Wake 2002, p. 362; Hansen and Wake 2005, p. 693; Hansen 2009, p. 2). These heavily shaded, north-facing slopes generally occur on the lower reaches of a hillside where sun exposure is the most limited (Hansen *in litt.* 2010b, p. 1). The species has most often been found to occur on slopes with limestone talus, scattered rocks, fissured rock outcrops, fallen logs, leaf litter under tree canopy cover where moisture and humidity are high compared to nearby sites with reduced canopy cover or greater slope exposure (Hansen and Wake 2005, p. 694; CaliforniaHerps 2008, p. 2; Hansen 2009, p. 2). The species was also recently found on an atypical, more exposed north-facing slope in a new location (Silver Creek) in the northeast corner of its range under large rocks; talus mixed with soil; logs; and in some cases, dead *Yucca* spp. plants (family Asparagaceae) (see Figure 1) (Sweet *in litt.* 2011, p. 1). Habitat that meets the requirements of the Tehachapi slender salamander in the two areas (Caliente Canyon and Tehachapi Mountains areas; see ''Range and Distribution'' section below) where the species occurs is sparse and patchily distributed. These patches of suitable habitat are dominated by *Aesculus californica* (California buckeye), *Platanus racemosa* (California sycamore), and *Quercus chrysolepis* (canyon live oak). Based on survey photographs (Sweet 2011, pp. 8–10), the atypical Silver Creek location in the northeast corner of the range also includes abundant junipers (*Juniperus californica*). The species has been documented to occur from 1,804 to 4,825 ft (550 to 1,471 m) in altitude throughout its range (Hansen 2009, p. 2; Sweet *in litt.* 2011, p. 1).

Movement patterns, individual dispersal, and home range size of the

Tehachapi slender salamander are unknown. However, genetic studies of related *Batrachoseps* species (Jockusch 1996, p. 80; Hansen and Wake 2005, p. 694) indicate that female movement is limited (Jockusch and Wake 2002, p. 381). Jockusch (1996, p. 80) observed genetic differences over short geographic distances (ranging from 1.6 to 25 miles (mi) or 2.5 to 40 kilometers (km)) within a population of a closely related species, the black-bellied slender salamander, indicating that the females had not moved between populations for millions of years. No quantitative studies on movement patterns, individual dispersal, and home range size have been completed for species of *Batrachoseps* except for the California slender salamander (*Batrachoseps attenuatus*). Anderson (1960, p. 369) observed that the California slender salamander movements were limited to approximately 5 ft (2 m), and Maiorana (1978, p. 1020) observed that individuals of the same species stay within a 6.6-ft (2-m) area, on average. Based on the limited data on the California slender salamander, we infer that individual Tehachapi slender salamanders are likely to stay within an area of a few meters during their lifetime (Hansen *in litt.* 2009b, p.1; Hansen *in litt.* 2009c, p. 1).

Range and Distribution

The Tehachapi slender salamander is endemic to Kern County, California (Stebbins 2003, p. 185; Hansen and Wake 2005, p. 693). The general range of the species in the Tehachapi Mountains extends from the Piute Mountains in the north to Fort Tejon State Historic Park (SHP) in the south.

Since the publication of our 90-day finding (74 FR 18336; April 26, 2009), we have obtained additional data regarding the distribution of the Tehachapi slender salamander. In this finding, we have updated the description of the distribution of the Tehachapi slender salamander presented in the 90-day finding to reflect the best available scientific information. As stated above, we relied extensively on Hansen's technical report on the Tehachapi slender salamander in the preparation of this review because it provides the most comprehensive information on confirmed species occurrences throughout the species' range. An occurrence refers to a small patch of habitat (rather than a specific point location), where one or more individuals of the species was observed and verified. Hansen's 2009 report incorporates his past work, information gathered from the September 2008 habitat assessment, all vouchered museum specimen occurrences, and confirmed reports of occurrences from Jockusch and Wake (2002), other species experts, and the California Natural Diversity Database (CNDDB 2007). This report also documents current land uses and land ownership at sites where this species has been reported, assesses habitat quality, and reviews potential threats to the species based on its distribution and natural history. We also report new locations not included in any of the above that were recently found by Christopher Evelyn and Dr. Sam Sweet (University of California, Santa Barbara) in the northeastern portion of the species' range (Sweet 2011, pp. 8–10; Sweet *in litt.* 2011, p. 1).

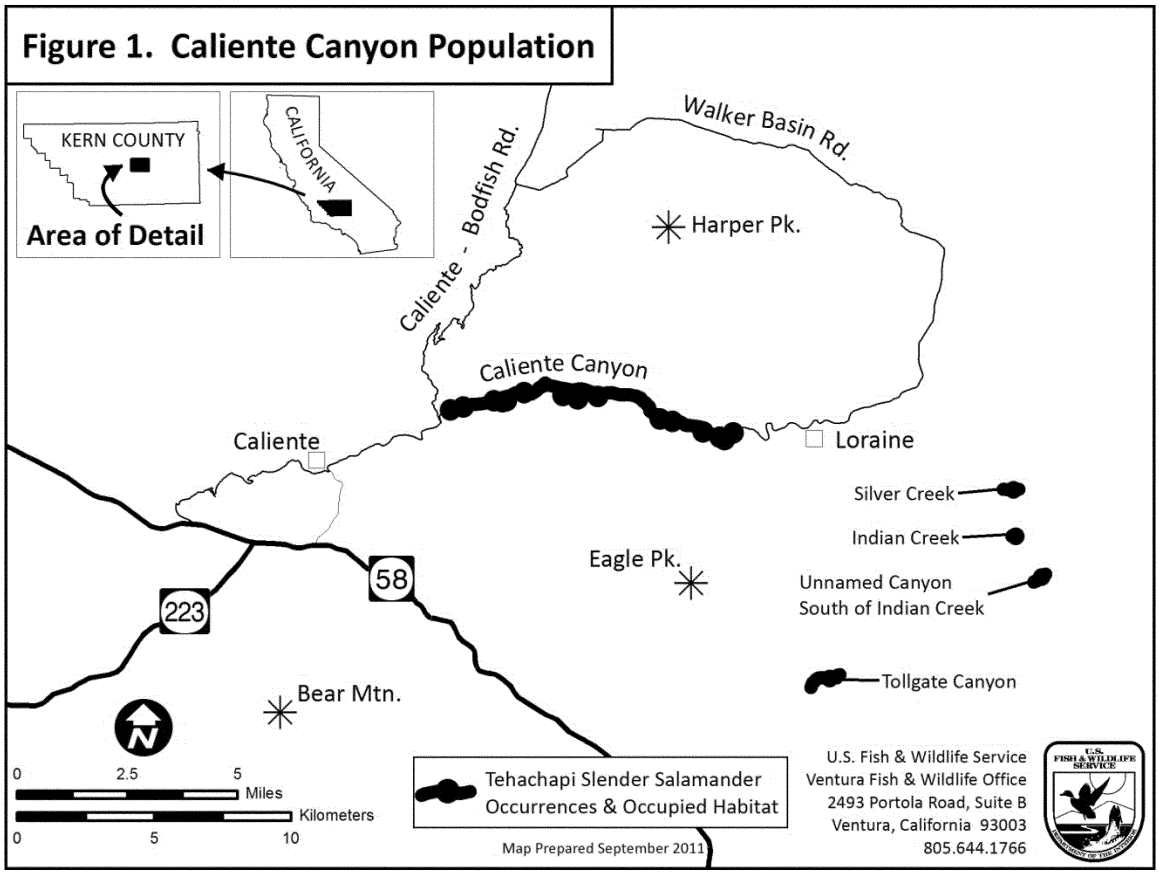
The current known range of the Tehachapi slender salamander consists of two disjunct areas that are separated by approximately 13 mi (21 km) of dry, rugged, mountainous terrain. We consider these two disjunct areas as separate populations, the Caliente Canyon and Tehachapi Mountains populations. The Caliente Canyon population is located northeast of State Highway 58 and west of the Piute Mountains, and lies in the southern foothills of the Sierra Nevada Mountains, south of Kern Canyon. The Tehachapi Mountains population is located southwest of State Highway 58 and extends to Fort Tejon State Historic Park (SHP) (Hansen and Stafford 1994, p. 255). This population lies in the Tehachapi Mountains and the San Emigdio/Mount Pinos area of Kern County, on both sides of Interstate Highway 5. Until recently, the species was known from 21 occurrences (from northeast to southwest), 14 in Caliente Canyon, 6 in the Tehachapi Mountains (including 5 on Tejon Ranch and 1 on Fort Tejon SHP), and 1 near Highway 58 (Tehachapi Pass location, see Figure 1 below) (Hansen 2009, pp. 8–10; ICF Jones and Stokes 2009, p. 4.4–156 and Figure 4.4–8). The 21 previously known occurrence records span a period from 1957 through 2007; most recorded occurrences are on private land. In addition to the 21 previously known occurrences, Christopher Evelyn and Dr. Sam Sweet found 4 new locations in the northeastern portion of the species' range (Sweet 2011, pp. 1–13; Sweet *in litt.* 2011, p. 1), bringing the total known occurrences to 25, including one that is extirpated.

We have defined the ranges of the two populations of the Tehachapi slender salamander as the canyons with known occurrences. Based on the presence of at least one known occurrence, we infer that the habitat up- and downcanyon from the occurrence is likely to be suitable and occupied. By using the best available aerial photographs, we determined the boundaries of each occupied segment based on the up- and downcanyon extent of vegetation that could support the species. We have not calculated the actual acreage of each canyon segment because we cannot determine the actual width of the suitable habitat, but in many cases it probably only extends about 50–100 ft (15–30 m) upslope from the canyon bottom. Instead, each occupied segment includes the approximate linear extent of contiguous suitable habitat within each canyon that has documented occurrences.

The known range of the Caliente Canyon population is based on 18 occurrences (including 4 newly discovered occurrences) and consists of 5 canyon segments totaling approximately 9 linear mi (14.5 km) (Figure 1), including: Caliente Canyon (14 occurrences, 7 linear mi (11.3-km)), Tollgate Canyon (1 occurrence, 0.8 linear mi (1.3 km)), Indian Creek (1 occurrence, 0.5 linear mi (0.8 km)), an unnamed canyon south of Indian Creek (1 occurrence, 0.4 linear mi (0.6 km)), and Silver Creek (1 occurrence, 0.3 linear mi (0.5 km)).

Tehahcapi slender salamanders were first discovered in Caliente Canyon in 1967 (Brame and Murray 1968, p. 18), and Hansen included Caliente Canyon is his 2008 habitat assessment (Hansen 2009, pp. 1–30). However, Hansen's 2009 report does not include any information on the four new occurrences outside Caliente Canyon, which were discovered in 2011. The 14 occurrences in Caliente Canyon closely follow Caliente Creek between the junction of Bealville Road and California Bodfish Road (10 mi (16 km) west of Loraine) and the unincorporated community of Loraine (see Figure 1). Caliente Canyon runs roughly from east to west and has a number of seasonally moist areas on the steep north-facing slopes bordering Caliente Canyon Road. Tehachapi slender salamander habitat in Caliente Canyon is patchily distributed and discontinuous because slope aspect throughout the canyon varies as a result of the natural bends in the canyon and the occurrence of side canyons. Twelve of the 14 occurrences (approximately 85 percent) in Caliente Canyon occur on private land and 2 (approximately 15 percent) occur on Bureau of Land Management (BLM) land (Hansen 2009, p. 3). Suitable habitat for the species may also occur on north-facing slopes of unnamed side canyons that stem from Caliente Canyon (Hansen 2008a, b, pers. comm.; Sweet *in litt.* 2009, p. 2).

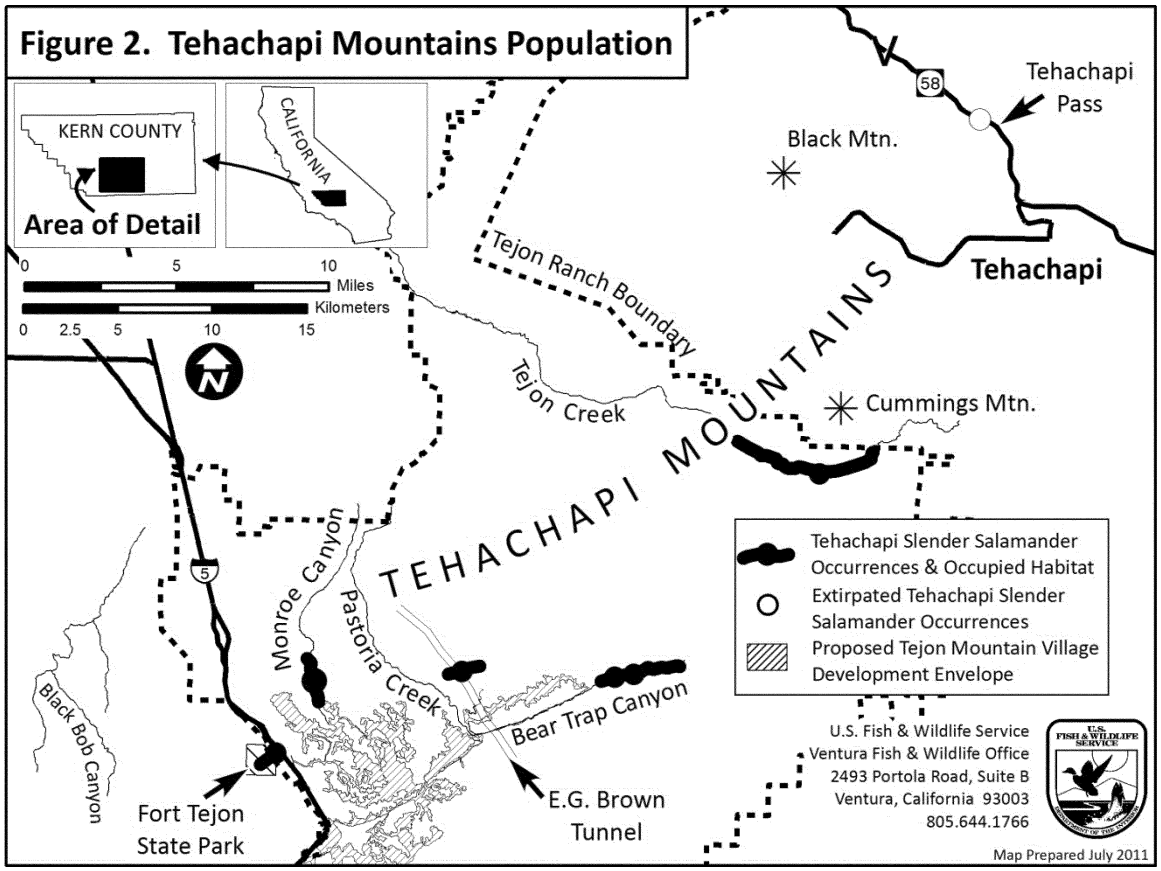
Information is limited for the four newly discovered occurrences of the Caliente Canyon population at this time. The new occurrences range from about 5.75 to 7 mi (9.3 to 11.3 km) south and southeast of the the easternmost occurrence in Caliente Canyon (Figure 1). Based on photos of the new areas taken when the species was first found there (Sweet 2011, pp. 1–13), the habitat in the vicinity of the occurrences in Tollgate Canyon, Indian Creek, and the unnamed canyon south of Indian Creek is typical of Tehachapi slender salamanders—steep, shaded, tree-covered, north-facing slopes, with talus and fallen logs. Although the Silver Creek occurrence is also on a north-facing slope, it is atypical for the species in that it is more exposed than other occurrences, with *Juniperus california* and *Pinus* spp. (pines) predominating instead of *Quercus chrysolepis* and *Aesculus californica.* Three of the four new occurrences for the Caliente Canyon population occur on private land and one occurs on BLM land.



The Tehachapi slender salamander was reported along the Tehachapi Pass, 8 mi (13 km) southwest of Caliente Canyon in 1957, but has not been reported in that area since (Hansen 2009, p. 9). At the Tehachapi Pass location (see Figure 2), the species was observed on the north side of Black Mountain, between State Highway 58 and the Southern Pacific rail line (Hansen 2009, pp. 3, 21). We have no information to indicate whether surveys have been conducted for this species in this area since 1957. Because we do not have current information indicating that the species still occupies this area, whether that habitat still remains, or which population this occurrence belongs to, we do not discuss this historical occurrence further in this review.

The known range of the Tehachapi Mountains population, which is based on six occurrences (Dudek 2008, p. 5–14; Hansen 2009, pp. 9–10), consists of five canyon segments totaling approximately 10.2 linear mi (16.4 km). Four of the five occupied canyons (five of the known occurrences) within this region are on the privately owned Tejon Ranch (see Figure 2), and span from Tejon Canyon in the northeast, to Monroe Canyon 17.5 linear mi (28.2 km) to the southwest. The occupied canyons on Tejon Ranch are in Bear Trap Canyon (two occurrences; approximately 2.7 linear mi (4.3 km)); the Tejon Creek drainage of Tejon Canyon (one occurrence; approximately 5 linear mi (8 km)); an unnamed canyon near the Edmond G. Brown Tunnel between Bear Trap Canyon and Geghus Ridge (one occurrence; approximately 0.5 linear mi (0.8 km)); and the recently discovered occupied location (Dudek 2008, p. 5–14) at Monroe Canyon (one occurrence; approximately 1.5 linear mi (2.3 km). Hansen (2009, p. 4) described the occupied habitat on Tejon Ranch (Bear Trap Canyon specifically) as having moist, loamy soil on north-facing talus slopes with canyon live oak, *Quercus kelloggii* (black oak), *Q. wislizenii* (interior live oak), *Calocedrus decurrens* (incense cedar) and *Aesculus californica* (California buckeye).

The one confirmed occurrence in the Fort Tejon SHP area (approximately 0.5 linear mi (0.8 km)) is located on the west side of Interstate Highway 5, approximately 3 mi (4.8 km) northwest of the unincorporated community of Lebec, California (Hansen 2009, p. 10; CNDDB 1997).



A few reports of Tehachapi slender salamanders have not been confirmed or have been determined to be other species of slender salamander. In 1973, Richman reported the presence of Tehachapi slender salamander in Tulare County (Richman 1973, p. 97). Richman stated that two adult specimens fitting the description of the Tehachapi slender salamander were found under a *Pinus jeffreyi* (Jeffrey pine) log on an east-facing slope in the Sequoia National Forest, Tulare County, California. In a 1980 report to the State of California Resources Agency, Hansen (1980, p. 38) disagreed with Richman's claim that the range of the Tehachapi slender salamander extended to Tulare County. Based on his own collections at the site described by Richman, Hansen (1980, p. 38) stated that the specimens are definitively not *Batrachoseps stebbinsi,* and later found that what Richman described was the first sighting of the Kern Plateau salamander (*B. robustus*) (AmphibiaWeb 2009, p. 4; Hansen and Wake 2005, p. 695; Wake *et al.* 2002, p. 1016). BLM also reported the species occurring in Tulare County (BLM 2009, p. 1); however, this report could not be confirmed (Verner *in litt.* 2008, p. 1). The U.S. Forest Service reported that there are no known occurrences of the species within the lands of the National Forest System (U.S. Forest Service 2009, p. 2). Based on this information, we currently do not believe that the range of the Tehachapi slender salamander extends beyond Kern County.

Potential Suitable Habitat

Although we do not include any potentially suitable habitat outside the canyons that are known to be occupied for the reasons described below, researchers have speculated that suitable habitat occurs in other canyons and that other canyons may be occupied. During his 2008 habitat assessment, Hansen (pers. comm. 2008b; 2009, pp. 5–6) identified additional areas of suitable habitat along Caliente Creek Road between the junction of Bodfish Road and the community of Loraine, and in the southwest reaches of the Fort Tejon SHP in Johnson Canyon, near the border with Los Padres National Forest. Hansen's report identified five general areas containing mesic north-facing slopes as potential habitat for the Tehachapi slender salamander, including: (1) Along Indian Creek Road, southeast of Loraine in Caliente Canyon; (2) drainages in Cummings and Bear Valleys; (3) canyons on Tejon Ranch connected to Clear, Sycamore, Cedar, Chanac, Tunis, and El Paso Creeks; (4) areas in Johnson Canyon within Fort Tejon SHP near the border with Los Padres National Forest; and (5) the northern slopes of the San Emigdio Mountains (*e.g.,* Black Bob Canyon) (Hansen 2009, pp. 5–6). Hansen (2009) did not provide a quantitative estimate of potential habitat. Subsequent to Hansen's 2009 report, Indian Creek has been found to be occupied by the salamander (Sweet *in litt.,* p. 1).

In addition to Hansen's work, Dr. Sweet identified suitable habitat in several tributary canyons extending south of Caliente Canyon (Sweet *in litt.* 2009, pp. 1–2). Within this estimated 30-square-mile (7,770-ha) area, Sweet (*in litt.* 2009, pp. 1–2) described the presence of steep, north-facing slopes containing patches of oak trees, springs and seepages, and areas containing talus. In his 2009 letter, Sweet (*in litt.* 2009, p. 2) stated that he had seen the Tehachapi slender salamander in this area and suggested that they may be widespread in these tributary canyons stemming from Caliente Creek. However, at that time, Sweet was unable to provide the Service with specific occurrence information. Subsequently, Christopher Evelyn and Dr. Sweet verified that at least a few of these canyons are occupied (Sweet 2011, pp. 1–13).

Although other canyons may have some habitat characteristics similar to those that are known to be occupied, we are not speculating here as to either their suitability for Tehachapi slender salamanders or the likelihood that they may be occupied. Although not studied in detail, the species' habitat requirements appear to be highly specific (*e.g.,* specific soil type; narrow range of soil moisture and temperature; substrate type and density; over- and understory structure; presence of appropriate refugia) and habitat that may have the general appearance of being suitable (*e.g.,* north-facing slope with an overstory) may be lacking one or more essential components. Also, the species has seldom been found when these areas of apparently suitable habitat have been searched. For example, on April 5, 2009, as a followup to the 2009 report, Hansen (2009), with assistance from Service biologists, conducted a survey for Tehachapi slender salamanders in San Emigdio Canyon (within the privately owned Wind Wolves Preserve located on the south side of Interstate Highway 5 and northwest of Fort Tejon) and in Johnson Canyon of Fort Tejon SHP. Although these areas included north-facing slopes that visually appeared similar to habitat at known occurrences, no Tehachapi slender salamanders were found. Also, during an extensive study on Tejon Ranch, only one individual Tehachapi slender salamander was found in the 77 drainages surveyed (Dudek 2008, p. 6–5). The one individual that was found in Monroe Canyon is a new occurrence of the species.

The lack of success in finding salamanders in potentially suitable habitat may simply be a function of the species not being at the surface on the day the search was conducted. However, it is also likely that the habitat was not actually occupied because it only had the most general habitat requirements but was missing some important feature required by the species. Therefore, we believe that it is overly speculative to assume that suitable habitat can be readily identified and that habitat that appears to be suitable is in fact occupied.

Population Sizes and Trends

The populations of occupied canyons have not been determined, and we are not aware of any information on actual population trends. The best available information indicates that the number of occurrences has remained relatively stable (Hansen 2009, pp. 3–5, 11, 12). One occurrence (Tehachapi Pass) has been extirpated as a result of road construction, and five new occurrences (Monroe Canyon, Tollhouse Canyon, Indian Creek, an unnamed canyon south of Indian Creek, and Silver Creek) have been found.

Current Status

The Tehachapi slender salamander has been listed as threatened by the State of California since June 1971 (CDFG 2009, p. 7). The species has a global heritage ranking of G2, meaning that the species is classified by NatureServe as globally imperiled (NatureServe 2009, p. 1; Hansen 2009, p. 2). The Tehachapi slender salamander is considered sensitive by BLM (2006, p. 2) and the U.S. Forest Service (2005, p. 78).

Summary of Information Pertaining to the Five Factors

Section 4 of the Act (16 U.S.C. 1533) and implementing regulations at 50 CFR part 424 set forth procedures for adding species to the Federal List of Endangered and Threatened Wildlife. An ''endangered species'' is any species in danger of extinction throughout all or a significant portion of its range. A ''threatened species'' is any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Under section 4(a)(1) of the ESA, a species may be determined to be endangered or threatened based on any of the following five factors:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

In considering what factors might constitute threats, we must look beyond the exposure of the species to the factor to determine whether the species responds to the factor in a way that causes actual impacts to the species. If there is exposure and the species responds negatively, the factor may be a threat and we then attempt to determine how significant a threat it is. If the threat is significant, it may drive or contribute to the risk of extinction of the species such that the species warrants listing as endangered or threatened as those terms are defined by the Act.

In making our 12-month finding, we considered and evaluated all scientific and commercial information in our files, including information received during the public comment period that ended June 22, 2009.

Factor A: The Present or Threatened Destruction, Modification, or Curtailment of the Species' Habitat or Range

Under Factor A, we consider whether the Tehachapi slender salamander is threatened by the present or threatened destruction, modification, or curtailment of its habitat or range by growth and development of human communities, road construction, mining, domestic livestock grazing, and flood control projects (Nichols 2006, p. 6). We will evaluate each of these threats for both the Caliente Canyon population and Tehachapi Mountains population of the Tehachapi slender salamander.

Like other plethodontids, Tehachapi slender salamanders require moisture to maintain the permeability of their skin for gas exchange for respiration (Feder 1983, p. 295). This physiological requirement limits the time during which they are active at the soil's surface to relatively brief, rainy periods between the late fall and early spring (Hansen 2009, p. 2; Hansen and Wake 2005, p. 694). These salamanders forage and breed during periods of surface activity (Feder 1983, p. 296). During the remainder of the year, they retreat into talus or rocky substrates, or deep under fallen logs or leaf litter, which provide refuge from the climatic extremes of the Tehachapi and Sierra Nevada Mountains (Hansen 2009, p. 2).

Given its physiology and life history, this species may be negatively affected by disturbances that remove or reduce surface and soil moisture, relative humidity, or suitable rocky and leafy substrates. Disturbances that reportedly impact Tehachapi slender salamanders through habitat removal and degradation include residential and commercial development, livestock grazing, road construction, mining, and flood control projects (Hansen and Wake 2005, p. 693; Hansen and Stafford 1994, pp. 254–255; Jennings 1996, pp. 928–929). Construction associated with residential and commercial development, new roads, and mines can remove habitat and can also cause erosion that washes away the substrates of talus, woody debris, and leaf litter that the Tehachapi slender salamander uses as refugia. The removal and degradation of habitat can also cause habitat fragmentation, which would require individuals to travel longer distances between suitable habitat patches during brief periods of suitable climate to find mates. In addition, these activities, along with flood control

projects, may alter the hydrology of the mesic environment upon which the species depends (Jennings 1996, pp. 928–929; Hansen and Wake 2005, p. 693; CNDDB 2007). Our evaluation of the extent and magnitude of potential effects caused by these activities is based on existing and expected land uses within the species' range.

Caliente Canyon Population

The main land use within the range of the Caliente Canyon population of the Tehachapi slender salamander is livestock grazing (mainly cattle). Seventeen of the 18 confirmed occurrences of the Caliente Canyon population of the Tehachapi slender salamander are on lands used primarily for livestock grazing. The remaining occurrence is on a 34-ac (13.8-ha) parcel with a private residence located at the base of a north-facing slope. In terms of land ownership, 15 occurrences are on private land, and 3 occurrences are on BLM land.

In 2008, Hansen conducted a habitat assessment of the 14 occurrences in Caliente Canyon (Hansen 2009, pp. 1–30) (Figure 1), which was prior to the discovery of the other 4 occurrences that make up the Caliente Canyon population. In his 2009 report, Hansen (pp. 11–12) noted moderate but localized impacts at 4 of the 14 occurrences in Caliente Canyon from one or more of the following: Cattle grazing, disturbance associated with a residence on a private parcel, or erosion from a nearby road (Hansen *in litt.* 2010a, pp. 1–3). The other 10 occurrences show minor to low levels of disturbance from cattle grazing (Hansen *in litt.* 2010a, pp. 1–5; Hansen 2009, p. 11). Hansen did point out that there was plenty of suitable habitat in good to fair condition at all 14 occurrences that would adequately function for the species (Hansen *in litt.* 2010a, pp. 3–7; Hansen 2010 pers. comm.), and that overall, the habitat in the canyon had remained relatively stable since his first visit in 1979 (Hansen 2009, p. 3).

Livestock grazing could potentially impact Tehachapi slender salamander habitat through trampling and erosion. The degree of cattle-related degradation is directly related to the concentration of cattle in a given area (Hansen *in litt.* 2010a, p. 3). Heavy trampling, particularly during moist conditions, could crush Tehachapi slender salamander burrows and individual salamanders during their surface activity, and could degrade habitat by displacing and removing talus, logs, and rocks that serve as critical components of cover and habitat for the species (Hansen 2010, 2008b, pers. comm.; Kuritsubo 2010 pers. comm.). Habitat cover consisting of talus, leaf litter, and woody debris can be displaced by cattle and further removed by wind and water erosion, potentially making the area less hospitable for the species to burrow and retain moisture for skin respiration. However, impacts from cattle within the range of the Caliente Canyon population of the Tehachapi slender salamander are typically localized, and are generally low to moderate in degree (Hansen *in litt.* 2010a, pp. 1–7). In addition, Tehachapi slender salamander occurrences in Caliente Canyon have persisted for decades in areas grazed by cattle (Hansen 2009, pp. 3, 11). The same is likely true for the four newly discovered occurrences of the Caliente Canyon population.

Although livestock grazing (mainly cattle) occurs throughout Caliente Canyon, Hansen (2009) found a moderate and localized level of habitat degradation from livestock grazing in the vicinity of only 3 of the 14 occurrences in the canyon, but also noted that sufficient habitat in good-to-fair condition remained in these three areas to support the species. One of the three occurrences that show a moderate level of habitat degradation is on BLM land that has been designated as a BLM grazing allotment. BLM manages the allotment in Caliente Canyon for 74 animal unit months (AUMs) (*i.e.,* 6 cows graze throughout the allotment year-round or 74 cows graze in the allotment for 1 month per year) on 470 ac (190 ha) within the Canyon (Kuritsubo *in litt.* 2009b, p. 1). Although the other occurrence in Caliente Canyon on BLM land is also within the grazing allotment, it is considered to be in good condition (Hansen 2009, p. 11). The third occurrence affected by grazing is on private land (Hansen 2009, p. 11). The limited impact of cattle grazing on Tehachapi slender salamander habitat in Caliente Canyon and elsewhere may be because they are free ranging. Cattle tend to graze the grass to a certain height and move on, unless their movement is restricted to a corral or a fenced area. According to Hansen (*in litt.* 2010a, p. 3; 2010 pers. comm.), cattle throughout the range of the species are free ranging, thus trampling and removal of vegetation to the point of exposing bare ground to such an extent that it reduces, fragments, or otherwise makes the habitat unsuitable for the Tehachapi slender salamander is not evident for any of the occurrences throughout the Caliente Canyon population's range.

The fourth occurrence in Caliente Canyon (of the four with visible disturbance) is located on private land near a residence. The area immediately surrounding the point where the species had originally been found showed moderate to high localized disturbance; however, Hansen (*in litt.* 2010a, pp. 1–7; Hansen 2009, p. 11) indicated that sufficient undisturbed habitat remained in the area to support the species.

All of the confirmed occurrences in Caliente Canyon are adjacent to a two-lane, paved road. The impacts of roads on the Tehachapi slender salamander are varied. Road construction, such as construction of State Highway 58 (the section between the unincorporated communities of Keene and Monolith was constructed during the 1960s), Interstate Highway 5 (the section between Lebec and Fort Tejon was completed in 1964), and Caliente Creek Road (date of construction unknown), likely removed Tehachapi slender salamander habitat and likely caused some habitat fragmentation (Cismowski *in litt.* 2010, p. 1; Hansen and Wake 2005, p. 693; Hansen 2009b pers. comm.). Further, road run-off from precipitation may contribute to erosion of the talus, leaf litter, and small rocks that comprise salamander habitat. Hansen noted that erosion was occurring, possibly from run-off from the roads, in the vicinity of 2 of the 14 occurrences in Caliente Canyon (Hansen 2009, p. 11). Erosion at one of the two occurrences is associated with the main paved road through the canyon, while the other is from a narrow, unpaved road (see below). The impact of erosion in the vicinity of these two occurrences was moderate and localized, with sufficient remaining habitat nearby to continue to support the species (Hansen *in litt.* 2010a, p. 3). We are not aware of any new roads planned for construction within the range of this population.

Mining has occurred in the Caliente Creek region of Kern County since the late 1800s (SRK Consulting 2002, p. 6). The Zenda Gold Mine project is located on private land about 1 mi (1.6 km) from one of the occurrences of the Tehachapi slender salamander in Caliente Canyon (Hansen 2009, p. 11). Kern County issued a conditional use permit in 1990 to Equinox, the mine owner at the time, but the permit has since expired and has not been renewed (Kuritsubo 2009b pers. comm.). Although the Zenda Gold Mine is located on private land and is sufficiently distant not to be a threat to any occurrences, Equinox's mining claim also extends onto BLM land in the vicinity of one or more occurrences. Mining companies often hold claims for lands that they may not own that extend beyond what they are currently mining (Kuritsubo 2009c pers. comm.). For example, these areas may be included to

provide access to the actual mine site. Although Equinox's claim extends onto BLM land, they have not conducted any activity on the claim (Falcon *in litt.* 2010, p. 1; SRK 2002, pp. 6–7). Although the claim is still in effect,the county permit for the mine has expired, and there are no mine plans filed with BLM or Kern County under the State Mining and Reclamation Action of 1975 (SMARA) (Falcon *in litt.* 2010, p. 1; Kuritsubo 2009a pers. comm.). Based on the best information available to us, there are no active mines within the range of this population.

One of the two occurrences where erosion has occurred is downslope from Last Chance Canyon Road, a narrow, unpaved road leading to the Zenda gold mine. Hansen (2009, p.11) notes in his 2009 report that construction of this unpaved road eliminated some Tehachapi slender salamander habitat and is causing erosion of the remaining habitat in this area. Regardless of how much the Last Chance Canyon Road is traveled, its mere presence may degrade Tehachapi slender salamander habitat through erosion from wind and runoff from seasonal precipitation. Even so, Hansen (*in litt.* 2010a, p. 1) describes the impacts to the habitat in the general vicinity of the occurrence as moderate and localized, but also noted that sufficient habitat in good-to-fair condition remained to support the species. There are no new mining roads planned within the range of the Caliente Canyon population.

The habitat at the four new occurences of the Caliente Canyon population has not been surveyed, and therefore the habitat assessment below is based on topographic maps, aerial photos, and survey photo records of each location (Sweet 2011, pp. 2–5 and 8–10). The habitat at the Tollgate Canyon occurrence appears to be in good condition, and although grazing likely occurs in the general area, there are no signs of disturbance from grazing. An unpaved road is near the occurrence, but there are many acres of contiguous salamander habitat surrounding the occurrence. There are no paved roads, buildings, mines, or other forms of activity in the area. The habitat at the unnamed canyon south of Indian Creek occurrence appears to be in good condition. This occurrence is on BLM land that is not part of a grazing allotment, and there are no signs of disturbance from grazing. There are no paved or unpaved roads, buildings, mines, or other forms of activity in the area. The habitat at the Indian Creek location appears to be in fair to good condition because grazing is more readily apparent near this occurrence than the two above occurrences. There is also an unpaved road in the vicinity of the occurrence. However, there are no paved roads, buildings, mines, or other forms of activity in the area. The habitat at the Silver Creek occurrence appears to be in fair to good condition because grazing occurs in the area. There is also a building and an unpaved road near this occurrence, but there are many acres of contiguous salamander habitat surrounding the occurrence.

In summary, grazing occurs on much of the private land and the BLM lands that are part of allotments in the range of the Caliente Canyon population of the Tehachapi slender salamander. Of the 14 occurrences in Caliente Canyon, 4 have experienced a moderate level of localized habitat disturbance. Of these four, one occurrence is moderately affected by cattle grazing; one on BLM land is moderately affected by cattle grazing and erosion from an adjacent paved road; one is moderately affected by grazing and erosion from an adjacent narrow, unpaved mine road; and one is moderately affected by a residence. Habitat with little or no disturbance is present in the same areas as these four occurrences. The other 10 occurrences show a minor-to-low level of disturbance from cattle grazing (Hansen *in litt.* 2010a, pp. 1–4; Hansen 2009, p. 11). The only activity in the areas where the 4 new occurrences are located is cattle grazing, with the exception of a single building near one of the occurrences. One of the newly discovered occurrences appears to be in good condition, with little sign of grazing. Another, which is on BLM land that is not part of an allotment, appears to be in good condition. We classify the other two occurrences as being in fair to good condition because there are signs of cattle grazing in their immediate vicinity. There are no flood control projects occurring or planned within areas of known Tehachapi slender salamander occurrences in Caliente Canyon.

Based on the best information we have, there are no planned or proposed land use changes within the range of the Caliente Canyon population of the Tehachapi slender salamander. BLM's land use management plans are updated every 15 to 20 years. Although the BLM land containing three confirmed occurrences may be disposed of (meaning relinquished or sold) based on the current plan, we have no information to indicate that the land will be sold or developed, or that the current grazing practices will change within the next 15 to 20 years (Kuritsubo *in litt.* 2008, p. 1; Kuritsubo 2009b pers. comm.). No new residential or commercial development projects planned on parcels with occupied Tehachapi slender salamander habitat are expected in the foreseeable future (Kern County *in litt.* 2009, p. 9). No permit requests have been submitted to Kern County to restart mining activity in the foreseeable future. Therefore, the Caliente Canyon population of the Tehachapi slender salamander and its habitat are not threatened with destruction or curtailment now and are not likely to be threatened with destruction or curtailment in the future.

Tehachapi Mountains Population

For the reasons discussed above (see ''Potential Suitable Habitat'' section), we define the range of the Tehachapi Mountains population as consisting of five occupied canyon segments totaling 10.2 linear mi (16.4 km), which includes six known occurrences. Four of the canyon segments (five of the occurrences) are on the privately owned Tejon Ranch, and one is on Fort Tejon SHP. The main land uses that are presently occurring within the range of the Tehachapi Mountains population of the Tehachapi slender salamander are ranching, farming, and recreation (Hansen 2009, p. 12; ICF Jones and Stokes 2009, p. 1–4). Currently, specific land uses on the 270,365-ac (109,413-ha) Tejon Ranch include: farming and irrigation systems; livestock grazing and range management activities; film production (which may involve temporary construction and use of explosives); repair, maintenance, and use of roads; maintenance and construction of utilities; and fence construction and maintenance (Dudek 2008, pp. 2–5 through 2–8). There is an existing 2-in (5-cm) water pipeline that overlaps with one confirmed occurrence near Pastoria Creek (Miller *in litt.* 2010b, p. 2). Because this pipeline is already in place, and it does not carry any dangerous substance, we do not find the presence of this pipeline to threaten the Tehachapi slender salamander or its habitat. The closest farming and irrigation activities are approximately 1,000 ft (305 m) from the occupied portion of any canyon, and are, therefore, far enough away not to negatively affect slopes known to be occupied by Tehachapi slender salamanders (Miller *in litt.* 2010b, p. 4).

Possible impacts from cattle grazing are as discussed for the Caliente Canyon population of the Tehachapi slender salamander. There are approximately 14,500 head of cattle (Dudek 2008, p. 2–5) grazing on 255,000 ac (103,195 ha) (Miller *in litt.* 2010b, p. 5) of Tejon Ranch. Cattle grazing on Tejon Ranch are managed by seasonal rotation,

following the availability of green pasture (Miller *in litt.* 2010a, p. 1). While Tejon Ranch's livestock managers continually assess the availability of feed, cattle are allowed to ''drift'' through gates to different pastures where feed is available (Miller *in litt.* 2010a, p. 1). This approach provides for active management of free-range cattle grazing and avoids depletion of vegetation and significant damage of the habitat.

In his 2000 Tehachapi slender salamander survey, Hansen documented that grazing, and to a limited extent logging, were evident in occupied Tehachapi slender salamander habitat (Hansen 2009, p. 12). Specifically, Hansen noted that grazing and logging activities were evident along Bear Trap Canyon in the area known to be occupied (Hansen 2009, p. 5). From 1989 through 1994, Tejon Ranch had a short-term timber harvesting operation targeting hardwoods for fuel on 367 ac (148.5 ha) in an area that includes Bear Trap Canyon (Vance *in litt.* 2009a, pp. 2, 8). To the best of our knowledge, no commercial logging activities are currently in operation and none are proposed on Tejon Ranch (Brauer *in litt.* 2009, p.1; Vance *in litt.* 2009a, p. 1). Hansen reported that the habitat at all of the then known four occurrences on Tejon Ranch was in good condition, despite the presence of grazing (Hansen 2009, p. 12). The fifth, and most recently discovered occurrence in Monroe Canyon, is reported to be in habitat of good condition, with no evidence of disturbance by cattle (Miller *in litt.* 2010b, p. 4).

Wild turkeys (*Meleagris gallopavo*) and pigs (*Sus scrofa*) were introduced on Tejon Ranch in 1989 and 1990, respectively (Miller *in litt.* 2010b, p. 5; Dudek 2008, p. 3–4). There are approximately 1,200 turkeys and 5,000 pigs with free range on 255,000 ac (103,195 ha) on Tejon Ranch (Miller *in litt.* 2010b, pp. 4–5). Similar to livestock grazing, wild pigs and turkeys could degrade and fragment Tehachapi slender salamander habitat by removing talus and leaf litter, thus damaging the soil cover while foraging (Dudek 2008, pp. 5–26, 6–6). Pigs are known to be particularly destructive because of their rooting and tilling behavior (Hansen 2009, p. 4; Dudek 2008, p. 3–4). Although turkeys and pigs overlap with the Tehachapi population of the Tehachapi slender salamander and have the potential to destroy habitat through scraping and rooting, we have no information to indicate that the Tehachapi slender salamander is being threatened by these nonnative species; and no damage from turkeys or pigs has been reported in occupied habitat. In fact, Tehachapi slender salamander habitat on the ranch is reported to be in good habitat condition (Miller *in litt.* 2010b, p. 5; Hansen *in litt.* 2010a, p. 3).

Activities involving ground disturbance associated with construction include film production; repair, maintenance, and use of roads; maintenance and construction of utilities; and fence construction and maintenance. All of these activities could result in the removal of habitat cover (talus, leaf litter, and vegetation), digging, and removal of soil. Such actions may result in habitat degradation, fragmentation, and the injury or mortality of the Tehachapi slender salamander. All of these activities occur on a sporadic and limited basis. We have no evidence that they occur in areas of known Tehachapi slender salamander occurrences.

Overall, current ranch-wide activities on Tejon Ranch have not removed or destroyed the Tehachapi slender salamander's habitat within the range of the Tehachapi Mountain population. Cattle ranching has been practiced since the late 1800s (Tejon Ranch 2011, p. 1), and the presence of cattle has not modified the habitat in any noticeable manner (Hansen 2009, p. 12). Fuel management (vegetation thinning and clearing) does not appear to have any visible effect on habitat. Wild turkeys and pigs cause localized habitat degradation, but apparently no degradation has been documented in this area. Finally, with the exception of one existing water pipeline, farming, irrigation, road repair and construction activities do not occur within occupied habitat.

Tejon Ranch plans to construct a residential and commercial development on their property called Tejon Mountain Village (TMV). The TMV development envelope consists of 7,860 ac (3,181 ha), within which a development footprint of up to 5,533 ac (2,239 ha) is proposed (Letterly *in litt* 2010, p. 1). Although Tejon Ranch does not plan to exceed the 5,533-ac (2,239-ha) footprint, the exact location for construction could be anywhere within the 7,860-ac (3,181-ha) development envelope.

The TMV development would include a total of 3,624 dwelling units, 464,920 square feet (43,192 square meters) of commercial development, two golf courses, an equestrian center, up to 750 hotel rooms, and up to 350,000 square feet (32,516 square meters) of support uses (*e.g.,* hotel lobby support services, food and beverage service, golf clubhouses, equestrian facilities, private recreation facilities) (Dudek 2008, p. 2–11) that would be constructed over approximately 30 years. The TMV development envelope has been designed to completely avoid all occupied habitat (*i.e.,* occupied canyon segments that make up the range of the species) and all known occurrences of the Tehachapi slender salamander. Potentially, the closest development to occupied habitat (*i.e.,* the distance to the boundary of the development envelope) is about 0.5 mi (0.8 km) at Monroe Canyon; all other occupied habitat is a minimum 1 mi (1.6 ha) from any potential development. Therefore, because the species is confined to the identified canyon segments based on the biology of the species, and those canyon segments are outside of the proposed development envelope, we do not expect that construction of the TMV project will result in the loss of any occupied habitat.

The proposed TMV development is expected to reduce the area grazed on the ranch by approximately 2 percent (5,000 ac (2,023 ha) of the 255,000 ac (103,195 ha)), leaving approximately 250,000 ac (101,171.4 ha) available to cattle (Miller *in litt.* 2010b, p. 5). The number of cattle grazing on the ranch would be commensurate with the reduction in area available for grazing, and the reduction in available feed (Miller *in litt.* 2010b, p. 5). As a result, we do not anticipate grazing impacts to increase as a result of the proposed TMV development.

Tejon Ranch has submitted a habitat conservation plan (HCP) to the Service, in support of an application for an incidental take permit (ITP), that addresses 27 species, including the Tehachapi slender salamander, that potentially may be affected by the TMV project and current ranch-wide uses, such as grazing, proposed to be covered under the ITP. The HCP covers approximately 141,886 ac (57,419 ha) of the 270,365-ac (109,413-ha) ranch (Dudek 2008, p. 1–1). In addition to an HCP, a draft Environmental Impact Statement (EIS) on the HCP/ITP has been circulated for public comment in accordance with the National Environmental Policy Act (NEPA). A Final Environmental Impact Report (EIR) that focuses on the TMV project was certified by Kern County in 2009 to comply with the California Environmental Quality Act (CEQA).

Dudek, the consultants preparing the HCP for Tejon Ranch, developed a habitat suitability model to estimate impacts to each of the species addressed in the plan. Based on the model, Dudek estimates up to 3,797 ac (1,537 ha) of suitable habitat for the Tehachapi slender salamander may exist within the

141,886-ac (57,419-ha) HCP boundary (Dudek 2008, p. 5–14; ICF Jones and Stokes 2008, p. 3.1–15). However, both Tejon Ranch and Dudek point out that the habitat suitability model is constrained by broad assumptions and limited information on the species' habitat characteristics; thus, the model likely overestimates the presence of suitable habitat (Dudek 2008, pp. 5–14 and D–31). We concur with Dudek's assessment of the model, and also believe it greatly overestimates the amount of suitable habitat; therefore, the model should be considered a worst-case approach for determining the amount of potentially affected habitat.

As we discussed in the ''Potential Suitable Habitat'' section above, the species' habitat requirements are highly specific, and the Dudek model overgeneralizes suitable habitat. For example, we understand that the species is mostly found on north-facing slopes; however, the model includes east-facing (90 degree) and west-facing (270 degree) slopes (Dudek 2008, p. D–31). Further, information was not available for the model to account for the presence of talus or leaf litter that the species uses for refuge. The model also assumes uniform distribution of habitat, whereas in reality, the species and its habitat are patchily distributed in the landscape. As a result, suitable habitat identified in the model includes areas with unsuitable and inhospitable substrates for the species, and thus the model overgeneralizes and overestimates the amount of Tehachapi slender salamander habitat. For these reasons, we have based our analysis mainly on threats to the known occupied canyons. However, we also recognize the possibility that other suitable habitat exists beyond these canyons and that some of these areas could potentially be occupied, and, therefore, we have also considered the results of the Dudek suitability model as a worst-case approach to assessing the impacts of the TMV project.

Although the TMV development envelope avoids all habitat segments we consider to be occupied and all known occurrences within the Tehachapi Mountains population (*i.e.,* the discrete range of this portion of the species), the habitat suitability model for the Tehachapi slender salamander estimates that 108 ac (44 ha) (16 percent) of the 760 ac (308 ha) of potentially suitable habitat within the proposed TMV development envelope would be removed (ICF Jones and Stokes 2008, p. 4.1–31). The EIR for the proposed TMV project states that short-term and long-term impacts from construction, which would result in the loss of 16 percent of potentially suitable habitat in the project area without the proposed mitigation measures sited in the EIR (ICF Jones and Stokes 2009, pp. 4.4–102 and 4.4–156), could be significant to the Tehachapi slender salamander. However, we believe the EIR's conclusion overstates potential impacts to the Tehachapi slender salamander.. Our reasons are based on the following:

(1) The EIR for the proposed TMV project uses data from the Dudek habitat suitability model for the Tehachapi slender salamander to estimate potential impacts to the species, which as previously discussed, overestimates the amount of suitable habitat for the species on the ranch and likewise, overestimates the number of acres of suitable habitat potentially removed as a result of the project;

(2) the EIR analysis of impacts is based on the estimated number of acres of potentially suitable habitat within the boundaries of the proposed TMV development envelope, but the loss of 108 ac (44 ha) actually represents only 2.8 percent of the potentially suitable habitat within the HCP boundary on the ranch;

(3) we have no indication that the 108 ac (44 ha) is occupied by the species; and

(4) the development envelope does not overlap with occupied habitat or known occurrences of the species.

Although known occupied habitat will not be lost as a result of the proposed development, development will result in the fragmentation of potential modeled habitat in some canyons, and development will occur between some canyons. Although no salamanders were found in the canyons within the development envelope during surveys, (Dudek 2008, p. 6–5), if in fact these canyons are actually occupied (based on a worst-case scenario considering best available information currently identifies this area as unoccupied), salamander movement up- and down-canyon could be restricted in some areas. However, we do not believe salamanders are capable of moving from canyon to canyon because of the dry and rugged terrain that occurs between canyons. Therefore, we do not believe that the proposed development will result in any further isolation of occupied habitat and the effects of fragmentation would be limited to the loss of potential suitable habitat in some of the canyons that occur within the development envelope and would only constitute an impact to the species if those canyons were occupied.

A component of the TMV proposed project includes fuel management (vegetation thinning and clearing) to reduce threats of fire outbreaks and damage. Outside of the development areas, fuel management on 141,886 ac (57,419 ha) of the 270,365-ac (109,413-ha) ranch will consist primarily of cattle grazing, which is used to maintain vegetation at a certain height rather than denude areas to bare ground or involve the removal of shrubs, branches, or trees. In addition to the existing grazing program, fuel management activities in open space areas will include maintenance of the existing fuel break network (*e.g.,* dirt/gravel roads), coordination with State or local agencies for mowing or other fire protection measures along fire prone areas (*e.g.,* highways), and irrigation or vegetation clearing/mowing within 120 ft (36.6 m) surrounding existing structures (*e.g.,* hunting cabins and ranch structures). Within the TMV development envelope, fuel management zones in open space may extend 200 ft (61 m) from new structures and fuel management will be limited to thinning and nonirrigation treatment.

Fuel management may remove some vegetation cover that maintains soil moisture in the mesic microenvironments that provide suitable habitat for the Tehachapi slender salamander; however, it is not expected to affect any of the known occupied habitat or occurrences. Tejon Ranch proposes to develop a fuel management plan, as described in the HCP and Ranch-wide Land Use Agreement, which, if the HCP is approved, will be subject to Service review and approval to ensure consistency with the conservation measures described in the HCP (Dudek 2008, pp. 2–5, 2–6; Agreement 2008, pp. 4, 20). Even without the fuel management plan, fuel management activities are not expected to threaten the existence of the Tehachapi slender salamander now or in the foreseeable future because no occupied habitat is within 200 ft (61 m) of the TMV development.

If the TMV project is realized, new roads would be constructed to gain access to residential, commercial, and recreational areas. However, no new roads are planned near occupied habitat or known occurrences (ICF Jones and Stokes 2009, Figure 3–14). The TMV project does propose to implement road improvements, including an existing ranch road in Bear Trap Canyon, which is one of the canyons occupied by the salamander. This road may approach the very west end of occupied habitat in the canyon, but it is located entirely on the flat, dry terrain below the occupied

north-facing slope and veers entirely out of the canyon at that point. Any improvements to the existing road are expected to be limited because the road will be used only as an Emergency Access Road (ICF Jones and Stokes 2009, Figures 4.4–8 and 3–14; Marshall *in litt.* 2009, p. 1), and any potential impact to the salamander would be at the very west end of occupied habitat. This information is also consistent with the proposed development envelope being situated away from known Tehachapi slender salamander occurrences. Although new roads or road improvements will not affect occupied habitat, they may cross potentially suitable habitat (modeled habitat) and may result in additional fragmentation of potentially suitable habitat.

Although there will be no direct impacts to the known range of the Tehachapi Mountains population (which is based on six occurrences and consists of five canyon segments totaling approximately 10.2 linear mi (16.4 km) of known occupied habitat) from the proposed development of the TMV project, the EIR lists the following potential indirect effects from construction as significant: Construction dust; increased human activity from construction workers; construction-related noise, vibration, and lighting; vehicle collisions, chemical releases, and hydrological modifications (ICF Jones and Stokes 2009, p. 4.4–156); and increased foot traffic and trail usage.

Given that this species is primarily nocturnal and spends most of the year up to 3 ft (0.9 m) underground (*i.e.,* during dry conditions), and given that impacts from construction dust would be limited to above-ground surfaces, it is unlikely to have a negative effect on the fossorial habitat of the species. Impacts from increased human activity, noise, vibrations, lighting, and vehicle collisions are not likely to have an effect on the species' population because they would be primarily limited to the development envelope (Hansen 2010 pers. comm.), which is at a minimum 0.5 mi (0.8 km) removed from any occupied Tehachapi slender salamander habitat and about 0.7 mi (1.1 km) from any known occurrence.

It is possible that chemical releases from a construction activity could affect habitat, depending on the location and time of year (*e.g.,* during the rainy season a release could be washed over a larger area, compared to a release in the dry season); however, chemical releases associated with construction are expected to be restricted to the development envelope and therefore, away from areas of occupied habitat. Even if under unusual circumstances, a chemical release was to move past the development envelope, the closest area to occupied habitat is about 0.5 mi (0.8 km), and we do not believe that any construction-related chemical release would be of sufficient quantity to extend that far.

Stormwater runoff resulting from residential and commercial development can increase water flows due to an increase in impervious surfaces and degrade water quality. Although new roads would be limited to the development envelope, and therefore at a sufficient distance from known occurrences as to not have direct effects on individual salamanders, we do not have information to accurately estimate the frequency and intensity of impacts from runoff that could potentially affect Tehachapi slender salamanders. According to the EIR, hydrological modifications from the TMV development involving stormwater runoff, siltation, and erosion are expected to be only minor (*e.g.,* less than 5 percent) (ICF Jones and Stokes 2009, p. 4.8–32; Letterly *in litt.* 2011, p. 1).

Stormwater runoff from residential and commercial communities can degrade water quality. However, water quality is not expected to experience a noticeable change from existing levels of potential pollutants, including phosphorous, nitrates, ammonia, copper, lead, and zinc (ICF Jones and Stokes 2009, p. 4.8–26; Letterly *in litt.* 2011, p. 1). Therefore, degradation of water quality from stormwater runoff is not expected to have a measurable impact on the Tehachapi slender salamander and its habitat.

In addition to the indirect effects identified in the TMV EIR, potential indirect effects to the Tehachapi slender salamander from increased human presence on TMV include edge effects, changes in microclimate, and increased predation. Terrestrial salamanders are impacted by edge effects. Microclimate conditions within forest edges of habitat often exhibit higher air and soil temperatures, lower soil moisture, and lower humidity compared to interior forested areas (Moseley *et al.* 2009, p. 426). Due to the physiological nature of terrestrial salamanders, they are sensitive to these types of microclimate alterations, particularly to temperature and moisture changes (Moseley *et al.* 2009, p. 426). Generally, more salamanders are observed with increasing distance from some edge types, which is attributed to reduced moisture and microhabitat quality (Moseley *et al.* 2009, p. 426). However, edge effects from the proposed TMV development are expected to be at a sufficient distance from known occurrences as to not substantially impact the species. In addition, the Tehachapi slender salamander's semifossorial behavior further limits the negative impacts from edge effects, as the salamanders emerge to the surface during the rainy season.

Increased human residential, commercial, and recreational use of the area will likely increase the number of potential predators (*i.e.,* dogs, cats, crows, and raccoons) in developed areas. Domestic cats are known to kill amphibians although the proportion of amphibians killed by cats compared to other species is very small (Woods *et al.* 2003, p. 1). Coyotes (*Canis latrans*) also occur in Kern County (see Ralls and White 1995, Cypher and Spencer 1998, Nature Alley 2010) and the Tejon Ranch (ICF Jones and Stokes 2009, p. 4.4–432), and the abundance of cats and raccoons has been found to be much lower where coyotes occur (Crooks and Soulé 1999, p. 563). Crooks and Soulé (1999, p. 565) also found that a large number of owners restrict their cats' outdoor activity when coyotes were present. In addition, the salamander's exposure to predation is very limited due to its short activity period above ground, thus we do not believe that the increased presence of predators would rise to the level of threatening the Tehachapi slender salamander now or in the foreseeable future.

Foot traffic, increased use of trails, and creation of new trails would also likely increase in the vicinity of residential development. Increased use of existing trails can result in erosion and new trails can eliminate habitat and cause erosion. The Tehachapi slender salamander habitat that would most likely be affected would be in Monroe Canyon, which is the closest to the development envelope (minimum of 0.5 mi (0.8 km)). However, foot traffic in this area and any area of potential suitable habitat would most likely be along existing dirt roads and the flatter terrain below or above the steep, talus-covered slopes occupied by the species.

The fifth occupied canyon (one occurrence) of the Tehachapi Mountains population of the Tehachapi slender salamander is Johnson Canyon on Fort Tejon SHP on the west side of the Interstate Highway 5, adjacent to a service road near the entrance to the Park (Hansen 2009, p. 28; CDPR 1989, p. 175). The habitat at this occurrence on Fort Tejon SHP shows minimal, if any, impacts. Fort Tejon SHP provides for passive recreational activities including hiking, picnicking, camping, wildlife viewing, and educational

programs; no livestock grazing is allowed. A narrow, paved road lies at the base of the occupied slope but does not cross any habitat, and there are no plans to widen or change this road. As such, we do not believe that impacts from the road (if any) threaten the existence of the species in the area. No future land use changes on Fort Tejon SHP are planned that would affect the Tehachapi slender salamander (Bylin *in litt.* 2009, p. 1).

In summary, based on the best scientific and commercial information available, we conclude that current ranch-wide activities do not pose a threat to the Tehachapi Mountains population of the Tehachapi slender salamander and its habitat, nor do we anticipate such activities will pose a threat in the future. We also conclude that the proposed TMV development will avoid known occurrences of the species and all occupied habitat (*i.e.,* occupied canyon segments that make up the range of the species) on Tejon Ranch (see ''Tehachapi Mountains Population'' section under Factor A) and is not likely to cause any significant indirect impacts to the Tehachapi Mountains slender salamander or its habitat now or in the future.

Summary of Factor A

Livestock grazing occurs throughout the species' range (with the exception of Fort Tejon SHP), and depending on the intensity, grazing has the potential to degrade Tehachapi slender salamander habitat through trampling, soil scraping, and compaction, which can cause surface soil erosion and desiccation. However, habitat degradation in the range of the salamander is notable at only a few occurrences in Caliente Canyon. Road construction can destroy Tehachapi slender salamander habitat, but no new road construction is planned for either Caliente Canyon or the other occupied canyons that make up the Caliente Canyon population, and roads planned for the TMV project avoid occupied habitat. Erosion from existing roads through Caliente Canyon may be having a localized effect in a few areas in the occupied portion of the canyon, but the overall impact on the range of the Caliente Canyon population is at most minimal. There has been no mining activity within the Caliente Canyon area for almost 20 years, and there are no plans for mining to start again in the foreseeable future.

The one new residential and commercial development planned within the range of the species is proposed on Tejon Ranch. Tejon Ranch's proposed TMV development would remove 108 ac (44 ha) of potentially suitable habitat based on a habitat suitability model. However, the 108 ac (44 ha) are not known to be occupied by the species, and TMV is designed to avoid all occupied habitat and all known occurrences on Tejon Ranch. Indirect effects from development (*e.g.,* construction-associated impacts (lighting, noise, vibrations), increased human presence, predators, soil erosion, runoff, and edge effects) are not expected to rise to a point that would threaten the Tehachapi Mountains population of the species. We are also not aware of any existing or planned flood control projects within the range of the species. For these reasons, we conclude that cattle grazing, roads, mining, flood control projects, and commercial and residential development do not constitute a substantial threat to the Tehachapi slender salamander throughout its range now and are not likely to pose a substantial threat in the future. Therefore, we conclude that the Tehachapi slender salamander is not threatened or endangered throughout all of its range by the present or threatened destruction, modification, or curtailment of its habitat or range.

Factor B: Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

We do not have any information that overutilization for commercial, recreational, scientific, or educational purposes is a threat to the Tehachapi slender salamander. Therefore, we have no information to suggest that the Tehachapi slender salamander is threatened or endangered throughout all of its range now, or within the future, by overutilization for commercial, recreational, scientific, or educational purposes.

Factor C: Disease or Predation

Little is known about predators of the Tehachapi slender salamander. The only known predator of the species is the ring-necked snake; although turkeys and pigs, present on Tejon Ranch, are known to consume amphibians. However, we have no evidence that turkeys and pigs are threatening Tehachapi slender salamanders on Tejon Ranch, and there is no evidence that they are affecting the salamanders' habitat; therefore, we do not consider them a threat to the species.

Potential indirect effects from residential and commercial development within or near Tehachapi slender salamander habitat could include an increase in human and introduced predator presence. This could potentially be the case for the Tehachapi Mountains population of the Tehachapi slender salamander, as indirect, long-term potential effects from the TMV project would include an increase in human and introduced predator presence on the Tejon Ranch. For example, there may be an increase in passive outdoor recreation by adults and children, and their pets (*e.g.,* cats). The increase in human presence may also increase the population of native amphibian predators, including raccoons (*Procyon lotor*) and various species of corvids (such as crows and jays). However, coyotes may also be more abundant near development, and as discussed previously, the abundance of cats and raccoons has been found to be much lower where coyotes occur (Crooks and Soulé 1999, p. 563). The species' nocturnal and subfossorial behavior may also reduce potential impacts from predation by corvids.

There are no reports of the Tehachapi slender salamander being infected with any disease. However, related species have been found to suffer from Chytridiomycosis, a skin infection. Chytridiomycosis is described as an epidermal infection of amphibians caused by the chytrid fungus (*Batrachochytrium dendrobatidis*). Chytridiomycosis has been implicated in mass mortalities, population declines, and extinctions of some amphibian species, but species appear to vary in their susceptibility to the disease (Blaustein *et al.* 2005, p. 1460; Ouellet *et al.* 2005, p. 1431). The chytrid fungus requires moisture for survival, and is most likely transmitted to amphibians by contact with infected water or other amphibians (Johnson and Speare 2003, p. 922). Chytridiomycosis was thought to be restricted to species using aquatic habitat and surface water; however, Cummer *et al.* (2005, p. 248) reported the first case of the chytrid fungus infecting a strictly terrestrial salamander. The infected Jemez Mountains salamander (*Plethodon neomexicanus*), a completely terrestrial species endemic to the Jemez Mountains of New Mexico, suggests that the chytrid fungus can survive in terrestrial habitats (Cummer *et al.* 2005, p. 248). The authors note the origin of the pathogen is unknown, but hypothesize the Jemez Mountains salamander may have been directly or indirectly infected by a sympatric aquatic amphibian carrying the pathogen (Cummer *et al.* 2005, p. 248). Further, these findings suggest that more amphibians are at risk of contracting the chytrid fungus than was previously believed.

Indirect effects from livestock activities may include the risk of aquatic disease transmission, such as chytrid,

from earthen stock ponds that create areas of standing surface water. Earthen stock tanks are often utilized by tiger salamanders (*Ambystoma tigrinum*) (Davidson *et al.* 2003, pp. 601–607), western toads (*Bufo boreas),* Pacific treefrogs (*Hyla regilla),* and introduced bullfrogs (*Rana catesbeiana*), which are known to be vectors for disease (*i.e.,* they can carry and spread disease). It is possible that these species use adjacent upland areas and may transmit disease to the Tehachapi slender salamander in areas where they co-occur (Hansen *in litt.* 2011, p. 1). However, we do not have enough information to draw conclusions on the extent or role western toads, Pacific tree frogs, and bullfrogs may play in disease transmission. Although some small-scale habitat modification is possible, livestock are managed to maintain a grassy habitat under the tree canopies, and the connection between earthen stock tanks for livestock and aquatic disease transmission is unclear. Therefore, we conclude that disease transmission from livestock is not a current threat to the salamander, nor do we believe it will be in the future.

A recent study from the University of California, Berkeley, has shown that the chytrid fungus has infected the California slender salamander, Oregon slender salamander (*Batrachoseps wrighti*), Gabilan Mountains slender salamander (*B. gavilanensis*), and relictual slender salamander (*B. relictus*), all related species sharing the same genus as the Tehachapi slender salamander (Weinstein *in litt.* 2008b, p. 1). Weinstein's study confirms that Chytridiomycosis causes California slender salamander mortality in the lab; however, individuals may fair better in the field because the population has remained stable, despite the presence of the pathogen in the wild population for a minimum of 35 years (Weinstein *in litt.* 2008a, p. 1; Weinstein 2009, p. 1). Results showed that infected salamanders maintained in a dry environment in the lab were able to recover, whereas salamanders in a wet lab environment had high mortality rates (Weinstein, In press, p. 2). These findings not only confirm that the chytrid fungus can infect terrestrial species in the subgenus *Batrachoseps,* but also the possibility that salamanders may recover from the disease in dry environments.

We do not know whether the Tehachapi slender salamander has been, or will be, exposed to the chytrid fungus or that exposure would lead to transmission throughout its range. The likelihood of the Tehachapi slender salamander contracting the pathogen is lower than if it were closely associated with aquatic environments because this species is not associated with bodies of water, occurs in a characteristically dry environment, has limited chances of coming into contact with other amphibians due to its brief above-ground activity during intermittent periods during the year, and has limited dispersal abilities. To the best of our knowledge, no studies have been done to detect the pathogen in the Tehachapi slender salamander, or in the yellow-blotched salamander (also referred to as the yellow-blotched ensatina (*Ensatina eschscholtzii croceator*)) that co-occurs with both populations of the Tehachapi slender salamander (Jockusch *in litt.* 2009d, pp. 1–2; Germano 2006, pp. 123–125; Hansen and Wake 2005, p. 694).

The black-bellied slender salamander, which is a close relative of the Tehachapi slender salamander and co-occurs with the Tehachapi Mountains population, is vulnerable to the chytrid fungus (Jockusch *in litt.* 2009d, p. 1). Some of the black-bellied slender salamanders collected in San Luis Obispo County in the 1990s exhibited symptoms of Chytridiomycosis (Jockusch *in litt.* 2009d, pp. 1–2). Weinstein later confirmed that those specimens indeed carried *Batrachochytrium dendrobatidis* (Jockusch *in litt.* 2009d, p. 1). However, the infected black-bellied slender salamanders were collected in San Luis Obispo County, which is 110 mi (177 km) from the closest confirmed occurrence of the Tehachapi Mountains population of the Tehachapi slender salamander in Kern County. It is unlikely that infected black-bellied slender salamanders in San Luis Obispo County could infect individuals in Kern County due to the distance and the species' limited dispersal abilities. We do not have any evidence of infected black-bellied slender salamanders in Kern County that co-occur with the Tehachapi slender salamander.

Summary of Factor C

We have no evidence that predation is an impact to the Tehachapi slender salamander. Although there is potential for an increase in human and introduced predator presence within the vicinity of occupied salamander habitat that could result in indirect impacts to the salamander, we anticipate that the presence of coyotes and the species' nocturnal and subfossorial behavior will likely reduce potential impacts. We do not have any information to indicate that the chytrid fungus is present in either the Caliente Canyon or the Tehachapi Mountains population of the Tehachapi slender salamander or in co-occurring populations of other species that may carry this fungus. The chytrid fungus is known to have infected a closely related species, the black-bellied slender salamander. However, the infected black-bellied slender salamanders were 110 mi (177 km) from the closest confirmed occurrence of the Tehachapi slender salamander within the Tehachapi Mountains population. Although we do have information that the disease has infected other terrestrial and aquatic salamanders, we do not have any evidence that the disease is present in either the Tehachapi Mountains population or the Caliente Canyon population of the Tehachapi slender salamander, nor is there evidence that this or any other disease currently places this species at risk of extinction. In addition, we do not have any information in our files to suggest that this, or any other disease, will become a threat to either population of the Tehachapi slender salamander in the future. Therefore, we conclude that the Tehachapi slender salamander is not threatened or endangered throughout all of its range now, or in the future, by disease or predation.

Factor D: Inadequacy of Existing Regulatory Mechanisms

In determining whether the inadequacy of existing regulatory mechanisms constitutes a threat to the Tehachapi slender salamander, we focused our analysis on existing Federal and State laws and regulations that apply to the species and its habitats, and that could potentially address any possible significant threats identified under the other Factors. If a threat is minor, listing may not be warranted even if existing regulatory mechanisms provide little or no protection to counter the threat. Regulatory mechanisms may preclude the need for listing if such mechanisms are judged to adequately address the threat(s) to the species such that listing is not warranted. Conversely, threats on the landscape are exacerbated when not addressed by existing regulatory mechanisms, or when the existing mechanisms are inadequate (or not adequately implemented or enforced).

Federal Protections

National Environmental Policy Act

The National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), as amended (NEPA), requires that all activities undertaken, authorized, or funded by Federal agencies be analyzed for potential impacts to the human environment prior to implementation. Under NEPA, all Federal agencies are

required to formally document and publicly disclose the environmental impacts of their actions and management decisions. Documentation for NEPA is provided in an environmental impact statement, an environmental assessment, or a categorical exclusion, and may be subject to administrative or judicial appeal. NEPA does not require that adverse impacts be mitigated. NEPA is required for projects with a Federal nexus (*i.e.,* projects that require a Federal permit, receive Federal funding, or are implemented by a Federal agency). Actions with no Federal nexus are not required to comply with this law. For actions with a Federal nexus, NEPA would apply regardless of the location of the action within the range of the species. Our review finds that there are no significant threats to the species on lands with a Federal nexus for any of the four other Factors.

Clean Air Act

The Clean Air Act of 1970 (42 U.S.C. 7401 *et seq.*) directs the Environmental Protection Agency (EPA) to develop and enforce regulations to protect the general public from exposure to airborne contaminants that are known to be hazardous to human health. In 2007, the U.S. Supreme Court ruled that gases that cause global warming are pollutants under the Clean Air Act, and that the EPA has the authority to regulate carbon dioxide and other heat-trapping gases (*Massachusetts et al.* v. *EPA* 2007 [Case No. 05–1120]).

The EPA published a regulation to require reporting of greenhouse gas emissions from fossil fuel suppliers and industrial gas suppliers, direct greenhouse gas emitters, and manufacturers of heavy-duty and off-road vehicles and engines (74 FR 56260; October 30, 2009). The rule, effective December 29, 2009, does not require control of greenhouse gases; rather it requires only that sources above certain threshold levels monitor and report emissions. On December 7, 2009, the EPA found under section 202(a) of the Clean Air Act that the current and projected concentrations of six greenhouse gases in the atmosphere threaten public health and welfare. EPA's finding itself does not impose requirements on any industry or other entities, but is a prerequisite for any future regulations developed by the EPA. At this time, it is not known what regulatory mechanisms will be developed in the future as an outgrowth of EPA's finding or how effective they would be in addressing climate change. Therefore, the Clean Air Act and its existing implementing regulations do not currently address climate change effects on wildlife, plants, and ecosystems. However, our status review did not reveal information that indicates that climate change is a significant threat to the Tehachapi slender salamander now or within the foreseeable future (see Factor E).

Federal Land Policy and Management Act

As noted earlier, three occurrences of the Caliente Canyon population of Tehachapi slender salamander are on BLM land, while there are no occurrences of the Tehachapi Mountains population on Federal land. Although strongly oriented toward multiple use, the Federal Land Policy and Management Act of 1976, which is BLM's organic act, requires that public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation, human occupancy and use. Typically, land management plans are renewed every 15 to 20 years (Kuritsubo *in litt.* 2010a, p. 1). This law does not require specific protection for the Tehachapi slender salamander against potential threats that may occur on BLM land, such as impacts from grazing. One of the three occurrences on BLM land shows some moderate, localized habitat degradation from cattle trampling, as discussed under Factor A. However, our status review did not reveal information that indicates that livestock grazing is a significant threat to the Tehachapi slender salamander throughout its range (see Factor A).

Sensitive Species Designation by the Bureau of Land Management

As noted earlier, the Tehachapi slender salamander is classified by BLM as a sensitive species. As stated in BLM's Manual, Section 6840, BLM Sensitive Species are managed to promote their conservation and to minimize the likelihood and need for listing under the Act (Kuritsubo *in litt.* 2009a, p. 1). BLM's Bakersfield, California Field Office implements BLM's National and State policy directives (California BLM Manual supplement 6840.2) by evaluating projects for potential Tehachapi slender salamander habitat prior to implementing or authorizing activities that may affect the species (Kuritsubo *in litt.* 2009a, pp. 1–2). If potential habitat is present, then BLM designs the project or places stipulations on the authorization such that impacts to salamander habitat are avoided and/or minimized (Kuritsubo *in litt.* 2007, p. 1). BLM has screened and surveyed for Tehachapi slender salamander habitat for several projects on their lands that fall within the range of the species as part of NEPA compliance.

Two of the three Tehachapi slender salamander occurrences located on BLM land are within an existing grazing allotment (Kuritsubo *in litt.* 2010b, p. 1); the third location on BLM land is in an area that is not leased for grazing (BLM 2011, p. 1). BLM is required by Federal grazing regulations (43 CFR 4100) to periodically (approximately every 5 to 10 years) evaluate all grazing allotments. If grazing is determined to have adverse impacts to Tehachapi slender salamander habitat, BLM regulations require that BLM take action to modify the grazing management to ensure that the negative impact is addressed (Kuritsubo 2009b, pers. comm.). As described in Factor A, we did not find that cattle grazing and trampling are significant threats to the Caliente Canyon population of the Tehachapi slender salamander or its habitat. BLM's land use management plan for this area is in the process of being updated, and is still in draft. All alternatives in the draft plan include measures to provide habitat for sensitive species, including the Tehachapi slender salamander (Kuritsubo *in litt.* 2010a, p. 1). There are no plans for the allotment to change within the next 15 to 20 years (Kuritsubo *in litt.* 2010a, p. 1; Kuritsubo *in litt.* 2009b, p. 1; Kuritsubo 2009b, 2010, pers. comm.).

BLM's organic act and designation of the Tehachapi slender salamander as a sensitive species provide some protection for the species where it occurs on BLM land. However, the benefits to the species are limited because BLM land within the range of the salamander is limited to the Caliente Canyon population and makes up only a small portion (3 of 24 occupied occurrences, or 12.5 percent) of the species' entire range.

State Protections in California

California Endangered Species Act

The Tehachapi slender salamander is listed as threatened under CESA (CDFG 2009, p. 7). CESA provides protections for the Tehachapi slender salamander both through the prohibition against take of State-listed species without authorization (*i.e.,* 2081 incidental take permit) and the requirement that any

take authorized under the statute must be fully mitigated (14 CCR § 783.4). Under CESA, private landowners who wish to implement projects that would result in take of State-listed species must obtain a 2081 permit. Similar to section 10(a)(1)(B) of the Federal Endangered Species Act, 2081 permit applicants must develop an HCP that explains how the impacts of taking Tehachapi slender salamanders would be fully mitigated. HCPs developed to support a 2081 permit request would include conservation measures, often in the form of habitat conservation, to address the loss of Tehachapi slender salamanders. In our experience working with the CDFG in reviewing HCPs on private land in support of incidental take permit applications under CESA and the Federal Endangered Species Act, such plans require measures to avoid, minimize, or mitigate the impacts of the taking, including mortality resulting from habitat removal.

CESA offers protections for the Tehachapi slender salamander on private and State-owned land, comprising the majority of lands that are known to be occupied by the species (*i.e.,* 21 of the 24 occupied occurrences or 87.5 percent). CESA does not necessarily constrain activities on the small portion (12.5 percent) of occupied Tehachapi slender salamander habitat on Federal lands within the Caliente Canyon population. However, as noted above, regulations are in place that provide some protection to Tehachapi slender salamander habitat on BLM land.

California Environmental Quality Act

Another State law that may address threats to the Tehachapi slender salamander is the California Environmental Quality Act (CEQA). CEQA requires review of any project that is undertaken, funded, or permitted by the State or a local governmental agency. If significant effects are identified, the lead agency has the option of requiring mitigation through changes in the project or to decide that overriding considerations make mitigation infeasible (CEQA section 21002). In the latter case, projects may be approved that cause significant environmental impacts, including impacts to listed species and their habitat. Protection of listed species through CEQA is, therefore, dependent upon the discretion of the lead agency involved.

Tejon Ranch's proposed TMV project has undergone CEQA review. The TMV Final Environmental Impact Report (EIR) found that construction activities could result in significant impacts to the Tehachapi Mountain population of the Tehachapi slender salamander without the implementation of specific species and habitat avoidance and mitigation measures (ICF Jones and Stokes 2009, pp. 4.4–102, 4.4–156) (see discussion under Factor A). However, based on our own analysis (described in Factor A) we do not concur with the EIR's conclusions regarding significant impacts to the species, and find that the project design avoids direct impacts, and any indirect impacts that may occur would not likely rise to a level that would threaten the species.

CEQA applies to the entire range of the species. As of the date of this finding, we are not aware of any other projects proposed or planned within the range of the Caliente Canyon population that would require CEQA analysis.

Summary of Factor D

Twenty of the known occupied occurrences of the Tehachapi slender salamander occur on privately owned land, three occur on BLM land and one occurs on State land. Almost all of the private land and two of the three areas on BLM lands (the third area is not part of a BLM allotment) are primarily used for grazing. We did not find that grazing poses a significant threat to the Tehachapi slender salamander or its habitat and thus do not consider existing regulatory mechanisms, including CEQA, CESA, NEPA, FLPMA, and BLM's classification of the Tehachapi slender salamander as a sensitive species, inadequate to address the impacts of grazing on the species and its habitat. If such threats were to emerge in the future due to a change in grazing intensity, then CEQA and CESA would apply on private land and require authorization for take of Tehachapi slender salamander. Additionally, NEPA, FLPMA, and BLM regulations and policies would apply on Federal land and require that potential impacts from grazing or any other development be identified and measures implemented to avoid or minimize such impacts.

The TMV project within Tejon Ranch is the one planned residential and commercial development proposed within the vicinity of known occurrences (5 out of 24 occupied occurrences or approximately 20.8 percent) in the foreseeable future (Kern County *in litt.* 2009, pp. 1–9). The TMV project has been designed to avoid all known occurrences and occupied habitat of the Tehachapi slender salamander and to minimize any indirect effects on the species and its habitat.

In summary, we conclude that the threats to the Tehachapi slender salamander and its habitat on Federal, State, and private lands from grazing and other existing uses, and on private lands from proposed development are low. Existing Federal regulatory mechanisms provide protection for the species on the small portion of Tehachapi slender salamander habitat on BLM lands, and existing State laws provide protection on State and private lands from these threats. We did not find the current limitations of implementing the Clean Air Act to be a significant threat to the Tehachapi slender salamander. We did not find any threats to the Tehachapi slender salamander associated with Factors B or C that would warrant protection through a regulatory mechanism. Climate change and stochastic events pose potentially minor threats to the species (see Factor E); however, the current limitations of regulatory mechanisms addressing these potential threats do not pose a significant threat to the species now or in the foreseeable future. Therefore, we conclude that the species is not threatened now or in the future throughout its range by the inadequacy of existing regulatory mechanisms.

Factor E: Other Natural or Manmade Factors Affecting the Continued Existence of the Species

Under Factor E, we consider whether climate change and stochastic events threaten the Tehachapi slender salamander. Stochastic events are rare, chance events such as epidemics; prolonged drought; and large, severe wildfires.

Climate Change

The term ''climate'' refers to an area's long-term average weather patterns, or more specifically as the mean and variation of surface variables such as temperature, precipitation, and wind, whereas ''climate change'' refers to any change in climate over time, whether due to natural variability or human activity (Intergovernmental Panel on Climate Change (IPCC) 2007, pp. 6, 871). Although changes in climate occur continuously over geological time, changes are now occurring at an accelerated rate. For example, at continental, regional, and ocean-basin scales, recent observed changes in long-term trends include: a substantial increase in precipitation in eastern parts of North America and South America, northern Europe, and northern and central Asia; declines in precipitation in the Mediterranean, southern Africa, and parts of southern Asia; and an increase in intense tropical cyclone activity in

the North Atlantic since about 1970 (IPCC 2007, p. 30). Examples of observed changes in the physical environment include an increase in global average sea level and declines in mountain glaciers and average snow cover in both the northern and southern hemispheres (IPCC 2007, p. 30).

The IPCC used Atmosphere-Ocean General Circulation Models and various greenhouse gas emissions scenarios to make projections of climate change globally and for broad regions through the 21st century (Meehl *et al.* 2007, p. 753; Randall *et al.* 2007, pp. 596–599). Highlights of these projections include: (1) It is virtually certain there will be warmer and more frequent hot days and nights over most of the earth's land areas; (2) it is very likely there will be increased frequency of warm spells and heat waves over most land areas, and the frequency of heavy precipitation events will increase over most areas; and (3) it is likely that increases will occur in the incidence of extreme high sea level (excludes tsunamis), intense tropical cyclone activity, and the area affected by droughts in various regions of the world (Solomon *et al.* 2007, p. 8). More recent analyses using a different global model and comparing other emissions scenarios resulted in similar projections of global temperature change (Prinn *et al.* 2011, pp. 527, 529).

As is the case with all models, there is uncertainty associated with projections due to assumptions used, data available, and features of the models. Despite this, however, under all models and emissions scenarios the overall surface air temperature trajectory is one of increased warming in comparison to current conditions (Meehl *et al.* 2007, p. 762; Prinn *et al.* 2011, p. 527). Climate models and associated assumptions, data, and analytical techniques continue to be refined, and thus projections are refined as more information becomes available (*e.g.,* Rahmstorf 2010 entire). For instance, observed actual emissions of greenhouses gases, which are a key influence on climate change, are tracking at the mid- to higher levels of the various scenarios used for making projections, and some expected changes in conditions (*e.g.,* melting of Arctic sea ice) are occurring more rapidly than initially projected (Raupach *et al.* 2007, Figure 1, p. 10289; Comiso *et al.* 2008, p. 1; Pielke *et al.* 2008, entire; LeQuere *et al.* 2009, Figure 1a, p. 2; Manning *et al.* 2010, Figure 1, p. 377; Polyak *et al.* 2010, p. 1797). In short, the best scientific and commercial data available indicates that increases in average global surface air temperature and several other changes are occurring and likely will continue for many decades and in some cases for centuries (*e.g.* Solomon *et al.* 2007, pp. 822–829; Church 2010, p. 411).

Changes in climate can have a variety of direct and indirect impacts on species, and can exacerbate the effects of other threats. For instance, climate-associated environmental changes to the landscape, such as decreased stream flows, increased water temperatures, reduced snowpacks, and increased fire frequency, or other changes occurring individually or in combination, may affect species and their habitats. The vulnerability of a species to climate change impacts is a function of the species' sensitivity to those changes, its exposure to those changes, and its adaptive capacity (IPCC 2007, p. 883). As described above, in evaluating the status of a species the Service uses the best scientific and commercial data available, and this includes consideration of direct and indirect effects of climate change. As is the case with all other stressors we assess, if the status of a species is expected to be affected that does not necessarily mean it is a threatened or endangered species as defined under the Act.

We recognize that temperatures in southern California where the Tehachapi slender salamander occurs are likely to increase, which could potentially negatively affect the Tehachapi slender salamander. As discussed in the ''Biology and Natural History'' section, the Tehachapi slender salamander's surface activity, during which the species forages and likely finds mates, is limited to periods with high surface moisture and above freezing temperatures. Increased average surface temperatures could cause soils used by Tehachapi slender salamanders to become drier earlier in the year or for longer periods, which may further limit the amount of time they can remain at the surface. If the period when surface moisture is sufficient for activity becomes too short, then the habitat may no longer be suitable for the species.

It is especially difficult with currently available models to make meaningful predictions of climate change for specific, local areas such as the small portion of California where the Tehachapi slender salamander occurs (Parmesan and Matthews 2005, p. 354). However, a climate change stress report for the Tehachapi Mountains (TNC 2009) projects varying levels of drought stress by the end of the 21st Century. The following examples demonstrate possible changes in precipitation and temperature from averaging 15 global climate models (TNC 2009, no page numbers):

(1) The two most likely possibilities of precipitation change are a 40 percent projection that the area will see little (−1 to +1 in (−2.5 to 2.5 cm)) change in precipitation, and a 53 percent projection that the area will receive between 1 and 5 in (2.5 and 12.7 cm)) less precipitation.

(2) The two most likely possibilities of temperature change are a 53 percent projection that the temperature of the area will increase by greater than 10 degrees Fahrenheit (5.6 degrees Celcius), and a 27 percent projection that the temperature of the area will increase by 8 to 10 degrees Fahrenheit (4.4 to 5.6 degrees Celsuis).

On the other hand, Kelly and Goulden (2008, p. 11824) predict that the amount and duration of precipitation may increase for California (in general), and, if this occurs, surface moisture could be maintained despite the warmer temperatures that are predicted. In addition, warming may reduce the degree and duration of extreme cold at higher elevations. Under these conditions, the duration of surface activity for the Tehachapi slender salamander may remain the same.

Climate change can affect plants and animals in a number of ways, including changes in distribution, population size, behavior, and even changes in physiological and physical characteristics (Parmesan and Mathews 2005, p. 373). A number of published studies predict that temperature and precipitation trends may change in the near future, and some describe how biotic communities may respond to such changes (Parmesan and Mathews 2005, pp. 333–374; IPCC 2007a, pp. 1–21; IPCC 2007b, pp. 1–22; Kelly and Goulden 2008, pp. 11823–11826; Miller *et al.* 2008, pp. 1–17; Loarie *et al.* 2008, pp. 1–10; Jetz *et al.* 2007, pp. 1211–1216). During a 30-year study in Southern California's Santa Rosa Mountains, Kelly and Goulden (2008, pp. 11823–11824) observed a geographic shift in plant distributions to higher elevations that was uniform across elevation gradients and that corresponded with an observed increase in surface temperatures and variability in precipitation over the same timeframe. Similarly, a study in California's Cascade and Sierra Nevada Ranges found that plant species tended to move towards higher elevations in response to increasing temperatures regardless of the presence of suitable habitat to the north or south (Loarie *et al.* 2008, p. 3).

Based on the research on plant communities in montane habitats by Kelly and Goulden (2008, pp. 11823–11824) and Loarie *et al.* (2008, p. 3),

populations of Tehachapi slender salamanders may respond to climate change by attempting to shift to higher elevations to follow the shifting vegetation patterns. However, we cannot predict the consequences of any potential shift because there is likely a complex suite of indirect effects for any shift in distribution. For example, the mesic microclimates that define suitable Tehachapi slender salamander habitat are dependent on a combination of vegetation cover (providing shade), slope, and aspect (affecting the amount of sun exposure on a hillside). The more a hillside is exposed to sun, the more it experiences heat and evapotranspiration (and thus, desiccation). For example, steeper north-facing slopes experience less time in the sun than gradual south-facing slopes. In addition, the upper slopes of north-facing hillsides are exposed to sun for longer periods than north-facing canyon bottoms.

Populations of Tehachapi slender salamanders may be limited to shifting their range up-canyon to north-facing slopes at higher elevations. The ability of a population to shift up-canyon would depend on the availability of contiguous (or closely spaced) habitat patches that would provide a movement corridor. We do not expect that the species would be able to shift to different canyons at higher altitudes because of the limited dispersal ability of individuals and the presence of rugged and unsuitable habitat that occurs between most canyons. Also, shifting farther up the slopes that are currently occupied could be limited because the upper reaches of a hillside would be more exposed to sunlight, and thus to increased evapotranspiration and dry surface cover, which are considered unsuitable for Tehachapi slender salamander.

It is possible that some of the Tehachapi slender salamander's range could be reduced (*i.e.,* suitable habitat that is contiguous with the known occurrences could disappear from the lower elevations or from more mesic habitat patches), especially if both temperature increases and precipitation declines. Depending on the degree of temperature rise and precipitation decline, some loss of habitat and reduction in range is likely; however, potential loss of habitat or a range reduction could be compensated for in those areas where up-canyon shifts in distribution are possible.

Overall, the limited range of the Tehachapi slender salamander makes it vulnerable to potential climate change impacts such as habitat alteration (Jetz *et al.* 2007, pp. 1211–1216; Parmesan and Mathews 2005, p. 373) or fragmentation. Habitat fragmentation resulting from warmer, drier conditions could make it difficult for Tehachapi slender salamanders to travel between habitat patches. If temperatures potentially increase and precipitation decreases in the forseeable future (as discussed above), one can expect changes in vegetation such as a shift in vegetation to higher elevations or a reduction of suitable habitat and possibly a reduction in the range of the species. Vegetation changes within the range of the Tehachapi slender salamander will likely be most prevalent in more open, montane habitat that is not representative of the vegetation on the lower, most heavily shaded portions of north-facing slopes where the salamander occurs (TNC 2009, p. 4). Thus, these lower, north-facing slopes may not be altered or fragmented to the degree that the open, montane habitat could be, resulting in the salamander's habitat (*i.e.,* the current known occurrences and the contiguous suitable habitat that makes up the range of the species) remaining relatively stable and acting as refugia for the salamander.

In summary, available climate models predict average temperatures in the Tehachapi Mountains are likely to increase in the future, although there is less certainty as to whether precipitation will remain the same or decrease. However, there is a great deal of uncertainty as to how these changes may affect the Tehachapi slender salamander. How the Tehachapi slender salamander may react to these changes will be the result of a complex array of factors including the degree of temperature increase, the decline in precipitation, if any; the degree to which the specific habitat requirements of the salamander (such as the timing and duration of soil moisture, and under- and overstory composition) will be affected; changes and shifts in plant diversity and abundance; and the ability and opportunity of salamander populations to shift over time.

It is possible that the range of some populations may be reduced, while others are able to shift up-canyon to higher slopes. It may also be that the vegetation on the cooler, lower portions of the north-facing slopes occupied by the salamander may not be subject to the same changes predicted for more open, warmer, and drier slopes. Because of these uncertainties, any prediction about the potential impact of climate change on the Tehachapi slender salamander will be highly speculative. However, with those uncertainties in mind, we believe that, although some loss of habitat in the more exposed portions of the canyons currently occupied by the salamander will occur because of climate change, habitat will remain in the lower, most-shaded portions to support the salamander and in some cases the salamander may be able to shift within the canyon in response to climate change.

In addition to the uncertainties discussed above, habitat loss due to potential future human encroachment could exacerbate the potential effects of climate change by both reducing the availability of suitable habitat the species can move to and increasing the distance between habitat patches (Jetz *et al.* 2007, pp. 1211–1216; Parmesan and Mathews 2005, p. 373). As described under Factor A above and based on the best information currently available, TMV is the one development with County approval near Tehachapi slender salamander occurrences, and this project is not expected to impact the salamander's occurrences nor the adjacent contiguous suitable habitat that makes up the range of the Tehachapi Mountains population of the species. We do not anticipate significant impacts to the species across its range as a result of cumulative effects from human encroachment and climate change due to a combination of the ecology of the species (*e.g.,* its ability to retreat to underground refugia, minimal surface time during the moist periods of the year, generation time) and because the TMV development is designed to avoid all known occurrences and occupied habitat (see ''Climate Change'' discussion above under Factor E, ''Tehachapi Mountains Population'' discussion under Factor A, and the *Biology and Natural History* section).

Stochastic Events

Under Factor E, we also consider whether three risks, represented by demographic, genetic, and environmental stochastic events, are substantive enough to threaten the continued existence of the Tehachapi slender salamander.

In basic terms, demographic stochasticity is defined by chance changes in the population growth rate for the species (Gilpin and Soulé 1986, p. 27). Population growth rates are influenced by individual birth and death rates (Gilpin and Soulé 1986, p. 27), immigration and emigration rates, as well as changes in population sex ratios. Natural variation in the survival and reproductive success of individuals and chance disequilibrium of sex ratios may act in concert to contribute to demographic stochasticity (Gilpin and Soulé 1986, p. 27).

Genetic stochasticity is caused by changes in gene frequencies due to genetic drift, and diminished genetic diversity, and effects due to inbreeding (*i.e.,* inbreeding depression) (Lande 1995, p. 786). Inbreeding can have individual or population-level consequences either by increasing the phenotypic expression (the outward appearance, or observable structure, function, or behavior of a living organism) of recessive, deleterious alleles or by reducing the overall fitness of individuals in the population (Shaffer 1981, p. 131).

Environmental stochasticity is defined as the susceptibility of small, isolated populations of wildlife species to natural levels of environmental variability and related ''catastrophic'' events (*e.g.,* disease epidemics, prolonged drought, wildfire) (Young 1994, pp. 410–412; Mangel and Tier 1994, p. 612; Dunham *et al.* 1999, p. 9). Each risk will be analyzed specifically for the Tehachapi slender salamander.

As a whole, the Tehachapi slender salamander is considered a naturally rare species, due to its restricted and endemic geographic distribution and specific habitat requirements and is likely vulnerable to the threat of genetic stochasticity. The two populations of the Tehachapi slender salamander have relatively small geographic ranges and limited dispersal abilities, and we do believe that any contact between the two populations is unlikely because of the distance and type of terrain between them. This conclusion is supported by the substantial genetic differences between the two populations (Jockusch *in litt.* 2009e, p. 1).

As with all species of *Batrachoseps,* Tehachapi slender salamanders are sedentary and individuals travel no more than about 10 ft (3 m) (Hansen *in litt.* 2009b, p. 1). For example, a study reported that the California slender salamander stayed within a 5-ft (1.5-m) area over 2 years of observations (Yanev 1980, p. 533). Analyses of the fossil record of currently threatened species suggest that species with these characteristics are at a higher risk of extinction than are mobile, widely distributed species (Jablonksi 1986, pp. 129–133; Manne *et al.* 1999, p. 260; Dynesius and Jansson 2000, p. 9116; Payne and Finnegan 2007, pp. 10506–10511). However, other than the one occurrence near the Tehachapi Pass (see Figure 2), and the area along the Tejon Pass (*i.e.,* the Interstate Highway 5 corridor), there is no evidence that the species distribution has significantly changed over the past 200 years (Hansen *in litt.* 2011, p. 1). The four occurrences of Tehachapi slender salamander discovered in 2009 are all located within the general range of the Caliente Canyon population; though distributed over a a wider area than previously thought (Sweet *in litt.* 2011, p. 1). Occupied habitat in Caliente Canyon is more patchily distributed than in any of the other occupied canyons, with a few gaps between habitat of more than a mile. These gaps are beyond the limited dispersal ability of individuals, and movement up and down canyon across large gaps may only occur under extreme circumstances (such as a major flood).

Habitat in the other occupied canyons is more contiguous, and movement up and down canyon is likely to occur. The average distance between occupied canyons for both the Caliente Canyon and Tehachapi Mountains populations is about 4 mi (6.4 m), indicating that genetic exchange between canyons is unlikely. However, although the species may be vulnerable to genetic stochasticity, we have no evidence of a genetic bottleneck or inbreeding depression. We do not have information to indicate that these have occurred.

The vulnerability of the species to demographic stochasticity may be indicated by skewed sex ratios or a small or reduced number of offspring. However, there are no data that would indicate such a threat to the species exists.

Stochastic (chance) events such as epidemics, severe drought, or large, severe fires can threaten the persistence of species with restricted ranges because a single event can occur within all or a large portion of their range. Species that are relatively sedentary are probably less able than mobile animals to recolonize parts of their range where they have been extirpated. The Tehachapi slender salamander's characteristics of being rare, patchily distributed, and sedentary could further increase the species' risks of extinction from stochastic events (Hansen and Wake 2005, p. 694). In the absence of information identifying threats to the species and linking those threats to the rarity of the species, the Service does not consider rarity alone to be a threat. However, we need to consider potential threats (*e.g.,* fire, drought) that might be exacerbated by rarity, as discussed below.

Epidemics and large, severe fires are two kinds of stochastic events that could negatively affect populations of the Tehachapi slender salamander. The only lethal disease we are aware of that could behave as an epidemic in populations of this salamander is chytridiomycosis (see Factor C), but we have no information of this species contracting the disease or whether it would be lethal in wild populations of the Tehachapi slender salamander (see Factor C). Further, we do not know of any other salamander species, or other amphibians, that co-occurs with either population that has been affected by the fungus in Kern County that could pass along the infection through physical contact.

The State of California has experienced cycles of drought for many years. For example, between 1928 and 1987 the U.S. Geological Survey (USGS) reported five severe droughts across California, including the longest drought in the State's history from 1929 to 1934 (USGS 2004, p. 2). The Tehachapi slender salamander has persisted through these periods of severe drought. During periods of severe drought, Tehachapi slender salamanders likely remain in a state of aestivation below ground. Plethodontids are known for their low metabolism and ability to survive long periods without feeding (Feder 1983, pp. 304–305). Therefore, based on their metabolism and demonstrated ability to persist during periods of severe drought in the past, we do not believe that severe drought will threaten the species in the foreseeable future.

The Tehachapi slender salamander could be at some risk from large, severe wildfires in the foreseeable future. Studies suggest that forests in California will experience longer fire seasons and more frequent, extensive, and severe fires by the end of this century (Lenihan *et al.* 2003, p. A–13; Miller *et al.* 2008, pp. 1–15). An increase in fire frequency and extent will likely lead to an increase in fire impacts, including soil erosion, sediment runoff, and habitat fragmentation (Miller *et al.* 2008, p. 13). Therefore, fire could have a negative impact on the species in the future if the frequency and intensity of forest fires increases as predicted.

The impacts of forest fires on the Tehachapi slender salamander are not well understood. Fire outbreaks would likely occur during the dry season when salamanders are aestivating below ground where they are afforded some level of protection. However, the vegetation canopy that helps retain surface moisture and the leaf litter and downed logs that are important components of the salamander's habitat would be affected. As discussed in the Climate Change section above, there is also a great deal of uncertainty about future climate change within the range of the species and in turn, over the future of fire. However, the Tehachapi slender salamander has persisted in Caliente Canyon (and surrounding

occupied canyon areas) and the Tehachapi Mountains, which are prone to forest fires, for thousands of years. Therefore, we conclude that forest fires are a concern, but do not rise to the level of a significant threat to the Caliente Canyon and Tehachapi Mountains populations of the Tehachapi slender salamander.

Summary of Factor E

Because of the rarity and limited dispersal ability of the species, genetic stochasticity is a concern. However, we do not have any evidence of genetic bottlenecks or inbreeding depression to indicate that genetic stochasticity is a significant threat. Nor do we have any information to indicate that demographic stochasticity or a disease outbreak is likely to be a significant threat in the future. Environmental stochasticity, particularly wildfire, is a concern; however, we do not believe that this rises to a level that threatens the persistence of the species over the long-term.

Changes in climate can have a variety of direct and indirect impacts on species such as the Tehachapi slender salamander, and can exacerbate the effects of other threats. However, there is a great deal of uncertainty as to how climate change may affect the Tehachapi slender salamander, and any prediction about the potential impact of climate change on the Tehachapi slender salamander will be highly speculative. However, with those uncertainties in mind, we believe that, although some loss of habitat in the more exposed portions of the canyons currently occupied by the salamander will occur because of climate change, habitat will remain in the lower, most-shaded portions to support the salamander and in some cases the salamander may be able to shift within the canyons in response to climate change.

A species may also be affected by more than one threat in combination. Within the preceding review of the five listing factors, we have identified several threats that could have interrelated impacts on the Tehachapi slender salamander. For example, potential suitable habitat may be lost or altered as a result of a combination of development (Factor A) and effects of climate change (Factor E). Likewise, predation (Factor C) in combination with a stochastic event (Factor E), such as a forest fire could result in a major loss of individuals in one or more populations. However, as we discuss above, regardless of its source, we do not believe that the threats discussed above, either individually or in combination, are of sufficient imminence, intensity or magnitude to affect the status of the Tehachapi slender salamander.

We conclude that the best available information concerning Factor E indicates that the Tehachapi slender salamander is not threatened individually or cumulatively by the effects of climate change or demographic, genetic, or environmental stochasticity. Therefore, we conclude that the Tehachapi slender salamander is not threatened or endangered throughout all of its range now or in the future by other natural or manmade factors.

Finding

We have assessed the best scientific and commercial information available regarding threats faced by the Tehachapi slender salamander. We have reviewed the petition, scientific literature, information available in our files, and all information submitted to us following our 90-day petition finding (74 FR 18336; April 22, 2009). We also consulted with recognized Tehachapi slender salamander experts, Federal land managers, and local governments, and arranged for a recognized Tehachapi slender salamander expert to assess potential threats to the habitat and range of the species relative to current and planned land uses and occurrences of the species.

Potential threats include development, road construction, mining, domestic livestock grazing, introduced species, and flood control projects. Based on the best available information, we find that the evidence supports a finding that listing the Tehachapi slender salamander is not warranted.

While only two Tehachapi slender salamander populations are known, information in our files does not indicate whether these populations are in decline, stable, or increasing; however, the Caliente Canyon population is now known to be made up of five populations, rather than the previously known single population (Sweet *in litt.* p. 1). The best available information indicates that this species is naturally rare. While rare species may face threats from normal population fluctuations due to predation, disease, changing food supply, and stochastic (random) events, our evaluation of the best available information indicates that these potential threats do not threaten the continued existence of the Tehachapi slender salamander.

The range of the salamander within the Caliente Canyon area is primarily on land used for grazing, an activity for which data shows only minor to moderate signs of degradation from livestock use. Some localized habitat at 3 of the 18 occurrences (approximately 16.7 percent) show signs of moderate impact from cattle trampling; however, habitat in good to fair condition that would support the species remains at the 3 occurrences. There are no proposed projects associated with residential or commercial development, road construction, or mining anywhere near known occurrences within Caliente Canyon.

The primary land use within the range of the Tehachapi Mountains population is also livestock grazing, and we do not have any information that indicates that use by cattle has resulted in significant habitat degradation of any of the five canyons known to be occupied by this population. Tejon Ranch is planning a large-scale residential and commercial development project, TMV. However, the TMV development envelope is designed to avoid known salamander occurrences and all occupied habitat within the species range for the Tehachapi Mountains population. In a worst-case scenario, 2.8 percent of the potentially suitable habitat for the species on the Tejon Ranch will be lost to development. Indirect impacts from the TMV project are expected to be restricted to the immediate vicinity of development well away from all occupied habitat and known occurrences of the species. Therefore, we believe that the development is not a significant threat to the species.

We do not have any indication that flood control projects occur or are planned to occur within either the Caliente Canyon or Tehachapi Mountains area.

The impact of climate change is a concern for the species, and although there is uncertainty, we believe that some loss of habitat in the more exposed portions of the canyons that are currently occupied by the salamander will occur because of climate change. However, we also believe that habitat will remain in the lower, most-shaded portions of canyons to support the salamander and in some cases the salamander may be able to shift within the canyon in response to climate change. Because of the rarity and limited dispersal ability of the species, genetic stochasticity is also a concern. However, we do not have any evidence of genetic bottlenecks or inbreeding depression to indicate that genetic stochasticity is a significant threat.

There are regulatory mechanisms in place, such as CESA, CEQA, and BLM's special status designation for the

species, that provide adequate protections from threats for both populations of the species.

In summary, the main activity in the range of the Tehachapi slender salamander at the present time is cattle grazing, which is likely to remain the only activity within the range of the Caliente Canyon population. We have determined that the impacts of grazing are limited to a few areas in Caliente Canyon, and sufficient habitat to support the species remains in these areas; few impacts from grazing have been observed in the canyons known to be occupied by the Tehachapi Mountains population. Therefore, we have determined that cattle grazing is not a significant impact to the species now or in the foreseeable future. Second, we have determined the proposed residential and commercial development on Tejon Ranch will not have a significant impact on the species because the footprint of the development has been designed to avoid all known occurrences of the salamander and does not overlap with any habitat that is likely occupied. Third, we have determined that indirect impacts from the proposed development will not be significant because they are not likely to extend far enough from the proposed development footprint to affect known occurences or occupied habitat and because the salamander is above ground for only a few months of the year and remains under talus and fallen logs when it is at the surface. Fourth, although climate change is a concern, we have determined that the impacts of climate change will not be significant because there is some uncertainty as to how the climate in the area where the species occurs will change and that sufficient habitat will remain to support the species. Finally, we have determined that the cumulative impacts of all of the five factors on the species will not be significant because, based on the best available information, the interrelated current and anticipated impacts of development, road construction, mining, domestic livestock grazing, introduced species, flood control projects, climate change, and stochastic events do not threaten the Tehachapi slender salamander. Considering all of the identified impacts in combination, sufficient habitat will remain to support the species.

Therefore, on the basis of the best scientific and commercial information available, we find that the species is not at risk of extinction across its range now or in the foreseeable future and as a result find that listing the species range-wide as threatened or endangered under the Act is not warranted at this time.

Distinct Vertebrate Population Segments

After assessing whether the species is threatened or endangered throughout its range, we next consider whether a Distinct Vertebrate Population Segment (DPS) or whether any significant portion of the Tehachapi slender salamander's range is in danger of extinction or likely to become so within the foreseeable future.

Distinct Population Segment

As previously noted, we have determined that there are two separate populations of the Tehachapi slender salamander. Under section 4(a)(1) of the Act, we must evaluate five threat factors to determine whether a species should be listed as endangered or threatened. Section 3(16) of the Act defines ''species'' to include ''any subspecies of fish or wildlife or plants, and any distinct population segment (DPS) of any species of vertebrate fish or wildlife which interbreeds when mature'' (16 U.S.C. 1532(16)). To interpret and implement the DPS portion of the definition of a species under the Act and Congressional guidance, the Service and the National Marine Fisheries Service published an interagency *Policy Regarding the Recognition of Distinct Vertebrate Population Segments under the Act* (DPS Policy) on February 7, 1996 (61 FR 4722). The DPS Policy allows for more refined application of the Act that better reflects the conservation needs of the taxon being considered and avoids the inclusion of entities that may not warrant protection under the Act.

Under our DPS Policy, we consider three elements in a decision regarding the status of a possible DPS as endangered or threatened under the Act. We apply them similarly for additions to the List of Threatened and Endangered Wildlife and Plants (List), reclassification, and removal from the List. They are: (1) discreteness of the population segment in relation to the remainder of the taxon; (2) the significance of the population segment to the taxon to which it belongs; and (3) the population segment's conservation status in relation to the Act's standards for listing (whether the population segment is, when treated as if it were a species, endangered or threatened).

Analysis for Discreteness

Under the DPS policy, a population segment of a vertebrate taxon is considered to be discrete if it meets one of the following conditions:

(1) It is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors. Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation.

(2) It is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the Act. We note that the standard set forth in the DPS policy is that a DPS be ''markedly separated'' from other populations—thus, while absolute separation is not required, there must be sufficient separation such that ''large numbers'' of individuals are not migrating between populations.

Markedly Separated From Other Populations of the Taxon

The Caliente Canyon and Tehachapi Mountains populations of the Tehachapi slender salamander both meet the discreteness element of the DPS policy. The general region where the Tehachapi slender salamander occurs consists of semi-arid terrain containing localized areas of mesic habitat favorable to salamanders (Hansen *in litt.* 2009a, p. 13). The Caliente Canyon group of occurrences is isolated from the Tehachapi Mountains occurrences by a minimum of 13 mi (21 km) of rugged terrain, much of which is dry, unsuitable habitat (Hansen *in litt.* 2009a, p. 11). There is no evidence of movement between the Caliente Canyon and Tehachapi Mountains populations due to the sedentary nature of the species, and the distance and rugged terrain between them (Hansen *in litt.* 2009a, p. 11). In addition, genetic studies show that the Caliente Canyon and Tehachapi Mountains populations have been isolated from each other for over a million years (Hansen *in litt.* 2009a, p. 11; Hansen 2009b pers. comm.; Jockusch 1996, p. 91; Jockusch *in litt.* 2009f, p. 2).

Further, we have no evidence of breeding and gene flow between the Caliente Canyon population and the Tehachapi Mountains population. Genetic exchange between these populations is prevented by the distance and lack of suitable movement corridors between them (Hansen 2009a, pers. comm.). Hansen suggests that interbreeding of Tehachapi slender salamanders between occupied canyons within the two populations rarely occurs due to a number of factors, including: patchy distribution of Tehachapi slender salamanders, distance between occupied habitat, lack of suitable habitat corridors between occupied canyons, and the sedentary

characteristics of the salamanders (Hansen 2009b pers. comm.).

In addition to the distance and the physical and genetic isolation between the two populations, there are reported differences in morphology (appearance) and habitat between the Caliente Canyon population and the population found in the Tehachapi Mountains (Jockusch and Wake 2002, p. 383; Hansen and Wake 2005, p. 694). As stated in the DPS policy, ''Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation.'' For example, Tehachapi slender salamanders in Caliente Canyon tend to have more noticeable brick-red/copper coloration, and tend to be larger with proportionately larger tails than salamanders living in the Tehachapi Mountains (Hansen 2009b pers. comm.; Hansen *in litt.* 2009d, p. 1). Tehachapi slender salamanders in the Caliente Canyon area occur at much lower elevations (1,804 ft (550 m)) than those in the Tehachapi Mountains (3,100 ft (945 m)) (Hansen 2009, p. 1; Sweet *in litt.* 2011, p. 1). Tehachapi slender salamanders in Caliente Canyon are more often found under rocks and talus. On the other hand, salamanders in the Tehachapi Mountains are more often found under leaves, woody debris, and talus (Hansen and Wake 2005, p. 694). Based on the physical separation of the two populations and the evidence that they do not interbreed, including differences in genetics and morphology, we find that the Caliente Canyon and Tehachapi Mountains populations are discrete.

International Border Issues

A population segment of a vertebrate species may be considered discrete if it is delimited by international governmental boundaries across which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the Act. Given that the range of the species as a whole lies entirely within the United States borders, international border issues do not apply in this situation.

In summary, available information on the Tehachapi slender salamander indicates that the Caliente Canyon population and Tehachapi Mountains population are markedly separated from one another by distance, gene flow, and to a lesser degree, morphology and habitat use and, therefore, meet the criteria for being discrete. If a population segment is considered discrete pursuant to one or more of the conditions described in our DPS policy, its biological and ecological significance will be considered in light of Congressional guidance.

Analysis of Significance

If a population segment is considered discrete under one or more of the conditions described in our DPS policy, its biological and ecological significance will be considered in light of Congressional guidance that the authority to list DPSs be used ''sparingly'' while encouraging the conservation of genetic diversity. In making this determination, we consider available scientific evidence of the discrete population segment's importance to the taxon to which it belongs. Since precise circumstances are likely to vary considerably from case to case, the DPS policy does not describe all the classes of information that might be used in determining the biological and ecological importance of a discrete population. However, the DPS policy does provide four possible reasons why a discrete population may be significant. As specified in the DPS policy (61 FR 4722), this consideration of the population segment's significance may include, but is not limited to, the following:

(1) Persistence of the discrete population segment in an ecological setting unusual or unique to the taxon;

(2) Evidence that loss of the discrete population segment would result in a significant gap in the range of a taxon;

(3) Evidence that the discrete population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historic range; or

(4) Evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.

A population segment needs to satisfy only one of these criteria to be considered significant. Furthermore, the list of criteria is not exhaustive; other criteria may be used as appropriate.

Ecological Setting

The Caliente Canyon and Tehachapi Mountains populations are 13 mi (21 km) apart, and we would not generally expect that ecological differences would occur in that short distance, and the habitat of the two populations is similar. However, as discussed previously, the range of the Caliente Canyon population is as much as 1,300 ft (396 m) lower in elevation than that of the Tehachapi Mountains population. This elevational difference exposes the two populations to different climatic conditions. For example, the lower Caliente Canyon populations experience higher temperatures for a longer period of time than any of the Tehachapi Mountains populations, and snowfall occurs less often and remains on the ground for shorter periods of time at the lower elevations. These differences are likely to result in differences in the length and timing of surface activity between the two populations. There are also minor differences in either the material available on the surface or the surface material selected by the two populations, with the Caliente Canyon population most often found under rocks and talus, while the Tehachapi Mountains population is more often found under leaves, woody debris, and talus (Hansen and Wake 2005, p. 694). Although differences exist in the ecological setting of the two populations, we do not find these differences to be great enough to be considered unusual or unique for the taxon.

Gap in the Range

Because the species consists of only two, discrete populations that constitute 47 percent and 53 percent, respectively, of the species known range, the loss of either the Caliente Canyon population to the north or the Tehachapi Mountains population to the south would create a substantial gap in the range of the species.

Whether the Population Represents the Only Surviving Natural Occurrence of the Taxon

Both populations of the Tehachapi slender salamander are in entirely natural settings, and there are no populations that have been introduced outside the range of the species and there are no captive populations. Consequently, this factor is not applicable to our determination regarding significance.

Marked Differences in Genetic Characteristics

As discussed previously, a high level of divergence (greater than 5 percent) in mtDNA exists between the Caliente Canyon and Tehachapi Mountains populations (Jockusch *in litt.* 2009e, p. 1; Jockusch *in litt.* 2009f, pp. 1–2). However, mtDNA represents only five females of the two populations (Jockusch *in litt.* 2009e, p. 1). Jockusch's (*in litt.* 2009d, p. 1) preliminary findings on nuclear DNA (based on only two individuals), which represents both sexes, found less divergence than with mtDNA. Although this research indicates that there may be genetic differences between the two populations, because of the small

sample size, the available information is too inconclusive and limited for us to find that the two populations are markedly genetically different from each other.

Conclusion of Distinct Population Segment Review

We find that, because there are only two populations of the species, the loss of either would result in a significant gap in the overall range of the species. However, we do not find that either population represents the only surviving natural occurrence or that either population is markedly genetically different. Therefore, because each population meets one of the considerations for significance in our DPS policy, we find that both the Caliente Canyon and Tehachapi Mountains populations are significant under the policy.

The Caliente Canyon and the Tehachapi Mountains populations of the Tehachapi slender salamander are both discrete and significant. The two populations have been physically separated by distance and barriers such as dry, unsuitable habitat for over a million years, and there is no evidence of gene flow between the two. The two populations are each significant because loss of either one would result in a substantial gap in the range of the species. For these reasons, we find that the Caliente Canyon population and the Tehachapi Mountains population each constitute a distinct population segment of the Tehachapi slender salamander.

Summary of Information Pertaining to the Five Factors

Section 4 of the Act (16 U.S.C. 1533) and implementing regulations at 50 CFR part 424 set forth procedures for adding species to the Federal List of Endangered and Threatened Wildlife. An ''endangered species'' is any species in danger of extinction throughout all or a significant portion of its range. A ''threatened species'' is any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. In making this finding, we summarize below information regarding the status and threats to the two DPS's of the Tehachapi slender salamander in relation to the five factors in section 4(a)(1) of the Act. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act. In making our 12-month finding, we considered and evaluated all scientific and commercial information in our files, including information received during the public comment period that ended June 22, 2009.

Factor A: The Present or Threatened Destruction, Modification, or Curtailment of the Species' Habitat or Range

Because the Factor A analysis for the entire range of the species specifically discussed these threats for the Caliente Canyon population, the same analysis applies for the Caliente Canyon DPS. Likewise, the analysis of threats under Factor A for the Tehachapi Mountains population, equally applies to the Tehachapi Mountains DPS. The threats are briefly summarized below for each DPS. Please refer to the Factor A analysis for the entire range of the species for details.

Summary of Factor A of the Caliente Canyon DPS

Overall, 4 out of 18 occurrences showed relatively localized signs of moderate disturbance from cattle grazing, residential use, or erosion from a nearby road. Disturbance specifically associated with cattle trampling was seen at 3 out of 18 occurrences (approximately 16.7 percent). However, sufficient habitat in good-to-fair condition to support the species remains at all 4 locations, while all of the habitat at the other 14 occurrences is in good to fair condition. No new road construction is planned within the range of the Caliente Canyon population; however, erosion associated with an existing road in Caliente Canyon is affecting habitat in a few localized areas. Mining activity within the Caliente Canyon area is not occurring, and there are no confirmed plans for mining to start again in the foreseeable future. In addition, there are no plans for new residential or commercial development within the Caliente Canyon DPS of the species. We are also not aware of any flood control projects within the range of the DPS or any planned flood control projects. For these reasons, we conclude that cattle grazing, roads, mining, flood control projects, and commercial and residential development do not constitute a substantial threat to the Caliente Canyon DPS of the Tehachapi slender salamander. Therefore, we conclude that this DPS is not threatened or endangered throughout all of its range within the future by the present or threatened destruction, modification, or curtailment of its habitat or range.

Summary of Factor A of the Tehachapi Mountains DPS

Four of the five canyons (five of the six known occurrences) occupied by the Tehachapi Mountains DPS are found on Tejon Ranch. Current land use on Tejon Ranch in the area where occupied canyons and potential habitat for the Tehachapi slender salamander are located includes cattle grazing, farming, and recreation. We know that cattle grazing and rooting from pigs and turkeys can affect the habitat of Tehachapi slender salamander through trampling and erosion. However, habitat at all known occurrences on Tejon Ranch is in good condition, despite the presence of cattle, turkeys, and pigs (Hansen *in litt.* 2010a, p. 3; Miller *in litt.* 2010b, p. 4). Therefore, we have no evidence that indicates that cattle grazing or rooting from pigs and turkeys are threats to the Tehachapi Mountains DPS on Tejon Ranch.

None of the four occupied canyons fall within the 7,860-ac (3,181-ha) proposed TMV development envelope, and all occupied habitat and occurrences are will be at least 0.5 mi (0.8 km) away from any development. Although Tejon Ranch's planned TMV project may remove 108 ac (44 ha) of potentially suitable habitat, the TMV project is designed to avoid all occupied habitat and all known occurrences of the Tehachapi slender salamander within the project development area and footprint. Because the TMV development is designed to avoid direct impacts to the DPS, and indirect effects from the development (including increased presence of humans, pets, and predators) are not considered to be a significant threat to the species, the proposed residential and commercial development is not considered a threat to the Tehachapi Mountains DPS.

There are no known flood control projects or mining projects occurring or planned to occur within the range of this DPS. In addition, there are no known threats of habitat removal or degradation for the species on Fort Tejon SHP. Therefore, we conclude that this DPS is not threatened or endangered throughout all of its range within the future by the present or threatened destruction, modification, or curtailment of its habitat or range.

Factor B: Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

We are not aware of any information that indicates overutilization for commercial, recreational, scientific, or educational purposes is a threat to the Caliente Canyon DPS or the Tehachapi

Mountains DPS of the Tehachapi slender salamander. Therefore, we conclude that neither DPS is threatened or endangered throughout all of its range within the future by overutilization for commercial, recreational, scientific, or educational purposes.

Factor C: Disease or Predation

As discussed under Factor C for the species as a whole, we do not know whether the Tehachapi slender salamander has been, or will be, exposed to a deadly pathogen, such as the chytrid fungus. However, related terrestrial species of salamanders have been found to suffer from Chytridiomycosis, including the California and black-bellied slender salamanders. As previously discussed, Weinstein's study showed that Chytridiomycosis causes mortality of a fully terrestrial salamander species in a moist lab environment; however, individuals were able to recover in a dry lab environment. Her study suggests that individuals of terrestrial slender salamander species may fair better in the field (Weinstein *in litt.* 2008a, p. 1; Weinstein 2009, p. 1).

We do not have any information to indicate that the chytrid fungus is present in the Caliente Canyon DPS of the Tehachapi slender salamander or any other species with which it co-occurs. The black-bellied slender salamander, which has been infected by chytrid in San Luis Obispo County (110 mi or 177 km away), only co-occurs with the Tehachapi Mountain DPS of the Tehachapi slender salamander. Other amphibian species that could co-occur with the Tehachapi slender salamander that have been known to carry chytrid include the Pacific tree frog, western toad, and bullfrog; however, the disease has not been detected in these species in the range of the Tehachapi slender salamander in Kern County. Based on the limited information available, it appears that the Tehachapi Mountains DPS runs a slightly higher risk of contracting chytrid from a co-occurring species than the Caliente Canyon DPS. However, based on our current understanding of the transmission and the ability of fully terrestrial slender salamander species to recover from the effects of chytrid, we do not believe that this risk rises to the level of threatening the continued existence of either DPS.

As discussed in Factor C for the species as a whole, potential indirect effects from residential or commercial development within or near Tehachapi slender salamander habitat could include an increase in human and predator presence. This could potentially be the case for the Tehachapi Mountains DPS of the Tehachapi slender salamander, as indirect, long-term potential effects from the TMV project would include an increase in human and predator presence at Tejon Ranch. An increased presence of humans, domestic animals, and predators will be primarily concentrated within the TMV development envelope, although it is possible for predators to disperse to areas of occupied Tehachapi slender salamander habitat. We do not have any evidence to indicate that these indirect effects will rise to a level that would threaten the existence of the Tehachapi slender salamander.

We do not have any evidence that predation threatens the persistence of either the Caliente Canyon or Tehachapi Mountains DPS. Pigs and turkeys are present within the Tehachapi Mountains DPS and are known to prey on amphibians; however, currently available information does not indicate that they are affecting Tehachapi slender salamanders. Therefore, we conclude that the Caliente Canyon and Tehachapi Mountains DPSs of the Tehachapi slender salamander are not threatened or endangered throughout all of their range within the future by disease or predation.

Factor D: Inadequacy of Existing Regulatory Mechanisms

To the extent that we identify possibly significant threats in the other Factors, we consider under this factor whether those threats are adequately addressed by existing regulatory mechanisms. Thus, if a threat is minor, listing may not be warranted even if existing regulatory mechanisms provide little or no protection to counter the threat. Please refer to the Factor D discussion in the species section for a description of the relevant regulatory mechanisms that may provide some protections for one or both DPSs.

Federal Protections

NEPA is required for projects within the Caliente Canyon and Tehachapi Mountains DPSs if there is a Federal nexus (*i.e.,* projects that require a Federal permit, receive Federal funding, or are implemented by a Federal agency). Although NEPA requires analysis and disclosure of impacts to the human environment, including biological resources such as the Tehachapi slender salamander, it stops short of requiring that protection measures be implemented.

EPA policies to implement the Clean Air Act in addressing climate change caused by greenhouse gas emissions are still evolving. Our status review did not reveal substantial information that indicates that climate change poses a significant threat to the Tehachapi slender salamander throughout its range including both the Caliente Canyon and Tehachapi Mountains DPSs (see Factor E).

BLM's organic act and designation of the Tehachapi slender salamander as a sensitive species provide some protection for the species where it occurs on BLM land. Although we find that BLM's policies protect Tehachapi slender salamander habitat, the benefits to the species are limited because only a small portion of the Tehachapi slender salamander's range within the Caliente Canyon DPS occurs on BLM land (approximately 16.7 percent), and there is no BLM land within the range of the Tehachapi Mountains DPS.

State Protections

CESA provides protection to the species on privately owned and State-owned land (*i.e.,* 21 of the 24 occupied occurrences or 87.5 percent), but not necessarily on the small portion (12.5 percent) of occupied habitat on Federal lands within the Caliente Canyon population.

CEQA applies to both the Caliente Canyon and Tehachapi Mountains DPSs; however, as of the date of this finding, there are no projects proposed or planned within the range of the Caliente Canyon DPS that would require CEQA. The EIR associated with Tejon Ranch's proposed TMV project addresses occurrences of the Tehachapi slender salamander within the Tehachapi Mountains DPS. The Final EIR serves to confirm a project design that avoids all known occurrences and occupied habitat of the Tehachapi slender salamander on Tejon Ranch.

There are no other development projects proposed within the Tehachapi Mountains DPS; therefore, threats of habitat removal and degradation from commercial and residential development (see Factor A) do not rise to a level that would threaten the DPS at this time or within the future.

Summary of Factor D

As discussed in Factors A, B, C, and E, we did not find a specific factor that threatens the continued survival of the Tehachapi slender salamander within the Caliente Canyon or the Tehachapi Mountains DPSs. Therefore, we find that neither DPS is threatened by the inadequacy of existing regulatory mechanisms throughout its range now, or within the future.

Factor E: Other Natural or Manmade Factors Affecting the Continued Existence of the Species

As discussed in the analysis of threats under Factor E for the Tehachapi slender salamander across its entire range, the petitioner stated the Tehachapi slender salamander is threatened by climate change caused by anthropogenic emissions of greenhouse gases, and by stochastic events due to its small, narrowly distributed populations (Nichols 2006, p. 8).

Climate Change

The possible effects to the populations within the Caliente Canyon and Tehachapi Mountains areas, as discussed in Factor E for the species, are identical for each DPS. Please refer to the Factor E discussion for the species for further details. Based on a review of available information, we believe that some loss of habitat in the more open, exposed parts of occupied canyons will occur as a result of climate change. However, we also believe that habitat will remain in the lower, most-shaded portions of canyons to support the salamander and in some cases the salamander may be able to shift within the canyon in response to climate change. Therefore, we find that neither the Caliente Canyon nor Tehachapi Mountains DPS of the Tehachapi slender salamander is threatened by climate change throughout its range, now or within the future.

Stochastic Events

Under this factor we explore whether three risks, represented by demographic, genetic, and environmental stochastic events, are substantive to threaten the continued existence of the Tehachapi slender salamander within the Caliente Canyon and the Tehachapi Mountains DPSs. Because of the rarity and limited dispersal ability of the species, genetic stochasticity is a concern. However, we do not have any evidence of genetic bottlenecks or inbreeding depression to indicate that genetic stochasticity is a significant threat. Nor do we have any information to indicate that demographic stochasticity or a disease outbreak is likely to be a significant threat in the foreseeable future. Environmental stochasticity (particularly wildfire) is a concern; however, we do not believe that this rises to a level that threatens the persistence of the species over the long-term.

A species may also be affected by more than one threat in combination. Within the preceding review of the five listing factors, we have identified several threats that could have interrelated impacts on the Tehachapi slender salamander. For example, potential suitable habitat may be lost or altered as a result of a combination of development (Factor A) and effects of climate change (Factor E). Likewise, predation (Factor C) in combination with a stochastic event (Factor E), such as a forest fire could result in a major loss of individuals in one or more populations. However, as we discuss above, regardless of its source, we do not believe that the threats discussed above, either individually or in combination, are of sufficient imminence, intensity or magnitude to affect the status of either the Caliente Canyon or Tehachapi Mountains DPS of the Tehachapi slender salamander.

Therefore, we conclude that neither the Caliente Canyon nor the Tehachapi Mountains DPS is threatened or endangered throughout its range within the future by other natural or manmade factors.

Finding for Distinct Population Segments

As previously mentioned for the finding for the species as a whole, we have carefully assessed the best scientific and commercial information available regarding threats faced by the Caliente Canyon DPS and the Tehachapi Mountains DPS of the Tehachapi slender salamander. We have reviewed the petition, scientific literature, information available in our files, and all information submitted to us following our 90-day petition finding (74 FR 18336; April 22, 2009). We also consulted with recognized Tehachapi slender salamander experts, Federal land managers, and local government, and arranged for a recognized Tehachapi slender salamander expert to assess potential threats to the habitat and range of the species relative to current and planned land uses and species occurrences.

Potential threats include development, road construction, mining, domestic livestock grazing, introduced species, and flood control projects. Based on the best available information, we find that there is little evidence to support a finding that listing either DPS is warranted based on these identified threats.

While the available information suggests that the number of individuals in each DPS appears to be few and that they are narrowly distributed, we do not have any trend data to indicate that the number of individuals within each DPS is in decline, stable, or increasing.

The range of the Caliente Canyon DPS is primarily on land used for grazing and showed generally low signs of degradation from livestock trampling and erosion, with only 3 of 18 occurrences exhibiting moderate degradation in some portions of their habitat. There are no proposed projects associated with residential or commercial development or mining anywhere near known occurrences within Caliente Canyon.

The primary land use within the range of the Tehachapi Mountains DPS is also livestock grazing, but we do not have any information that indicates that grazing has resulted in significant habitat degradation. Tejon Ranch is planning a large-scale residential and commercial development project, TMV. The TMV development envelope avoids all known occurrences and adjacent contiguous habitat, and occurs at a sufficient distance from the species' dispersal range. Because the DPS' confirmed occurrences are discretely distributed and isolated, the proposed development is not expected to affect movement patterns or breeding. The approved EIR estimates that 108 ac (44 ha) of potentially suitable habitat within the TMV development envelope would be lost due to construction. The loss of 108 ac (44 ha) is likely an overestimation of the amount of suitable habitat that exists, due to the constraints of modeling projections, but even using this 108 ac (44 ha) value as a worst-case assumption, only 2.8 percent of the potentially suitable habitat on the Tejon Ranch would be lost to development.

Indirect effects from development—including increased human presence, runoff and erosion, and predators—are not expected to pose a significant threat to the Tehachapi Mountains DPS. Depending on the nature of the potential impact, the source of the impact is either far enough removed from any known occurrence or occupied habitat so as not to constitute a threat, or there is some other factor, such as the species' nocturnal and subfossorial behavior, that greatly reduces the potential threat. Therefore, impacts from development are not expected to threaten the Tehachapi Mountains DPS. We do not have any indication that flood control projects occur or are planned to occur within either the Caliente Canyon or Tehachapi Mountains DPSs.

The impact of climate change is a concern for the species, and while there is uncertainty, we believe that some loss of occupied habitat will occur because of climate change in the more exposed portions of the canyons salamander. However, we also believe that habitat will remain in the lower, most-shaded portions of canyons to support the salamander, and in some cases the

salamander may be able to shift within the canyon in response to climate change. Because of the rarity and limited dispersal ability of the species, genetic stochasticity is also a concern. However, we do not have any evidence of genetic bottlenecks or inbreeding depression to indicate that genetic stochasticity is a significant threat.

There are regulatory mechanisms in place, such as CESA, CEQA, and BLM's special status designation for the species, that provide adequate protections for both DPSs of the species given the types and minor degree of potential threats faced by the species. Therefore, we find that listing the Caliente Canyon DPS or the Tehachapi Mountains DPS as threatened or endangered under the Act is not warranted at this time.

And finally, we determined that both of the DPSs are not affected cumulatively by all of the five factors. Therefore, based on our conclusions for each of the five factors singly and cumulatively, we find that there are no threats of sufficient imminence, intensity, or magnitude to cause a substantial decrease in distribution, or loss of viability of either DPS throughout their range. Therefore, we do not find that either DPS is in danger of extinction (endangered), or likely to become endangered or threatened throughout their range within the foreseeable future. Consequently, listing the Caliente Canyon DPS or the Tehachapi Mountains DPS as threatened or endangered under the Act is not warranted at this time.

Significant Portion of the Range Analysis

The Act defines ''endangered species'' as any species which is ''in danger of extinction throughout all or a significant portion of its range,'' and ''threatened species'' as any species which is ''likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.'' The definition of ''species'' is also relevant to this discussion. The Act defines the term ''species'' as follows: ''The term 'species' includes any subspecies of fish or wildlife or plants, and any distinct population segment [DPS] of any species of vertebrate fish or wildlife which interbreeds when mature.'' The phrase ''significant portion of its range'' (SPR) is not defined by the statute, and we have never addressed in our regulations: (1) The consequences of a determination that a species is either endangered or likely to become so throughout a significant portion of its range, but not throughout all of its range; or (2) what qualifies a portion of a range as ''significant.''

Two recent district court decisions have addressed whether the SPR language allows the Service to list or protect less than all members of a defined ''species'': *Defenders of Wildlife* v. *Salazar,* 729 F. Supp. 2d 1207 (D. Mont. 2010), concerning the Service's delisting of the Northern Rocky Mountain gray wolf (74 FR 15123, Apr. 12, 2009); and *WildEarth Guardians* v. *Salazar,* 2010 U.S. Dist. LEXIS 105253 (D. Ariz. Sept. 30, 2010), concerning the Service's 2008 finding on a petition to list the Gunnison's prairie dog (73 FR 6660, Feb. 5, 2008). The Service had asserted in both of these determinations that it had authority, in effect, to protect only some members of a ''species,'' as defined by the Act (*i.e.,* species, subspecies, or DPS), under the Act. Both courts ruled that the determinations were arbitrary and capricious on the grounds that this approach violated the plain and unambiguous language of the Act. The courts concluded that reading the SPR language to allow protecting only a portion of a species' range is inconsistent with the Act's definition of ''species.'' The courts concluded that once a determination is made that a species (*i.e.,* species, subspecies, or DPS) meets the definition of ''endangered species'' or ''threatened species,'' it must be placed on the list in its entirety and the Act's protections applied consistently to all members of that species (subject to modification of protections through special rules under sections 4(d) and 10(j) of the Act).

Consistent with that interpretation, and for the purposes of this finding, we interpret the phrase ''significant portion of its range'' in the Act's definitions of ''endangered species'' and ''threatened species'' to provide an independent basis for listing; thus there are two situations (or factual bases) under which a species would qualify for listing: a species may be endangered or threatened throughout all of its range; or a species may be endangered or threatened in only a significant portion of its range. If a species is in danger of extinction throughout an SPR, it, the species, is an ''endangered species.'' The same analysis applies to ''threatened species.'' Therefore, the consequence of finding that a species is endangered or threatened in only a significant portion of its range is that the entire species shall be listed as endangered or threatened, respectively, and the Act's protections shall be applied across the species' entire range.

We conclude, for the purposes of this finding, that interpreting the SPR phrase as providing an independent basis for listing is the best interpretation of the Act because it is consistent with the purposes and the plain meaning of the key definitions of the Act; it does not conflict with established past agency practice (*i.e.,* prior to the 2007 Solicitor's Opinion), as no consistent, long-term agency practice has been established; and it is consistent with the judicial opinions that have most closely examined this issue. Having concluded that the phrase ''significant portion of its range'' provides an independent basis for listing and protecting the entire species, we next turn to the meaning of ''significant'' to determine the threshold for when such an independent basis for listing exists.

Although there are potentially many ways to determine whether a portion of a species' range is ''significant,'' we conclude, for the purposes of this finding, that the significance of the portion of the range should be determined based on its biological contribution to the conservation of the species. For this reason, we describe the threshold for ''significant'' in terms of an increase in the risk of extinction for the species. We conclude that a biologically based definition of ''significant'' best conforms to the purposes of the Act, is consistent with judicial interpretations, and best ensures species' conservation. Thus, for the purposes of this finding, a portion of the range of a species is ''significant'' if its contribution to the viability of the species is so important that, without that portion, the species would be in danger of extinction.

We evaluate biological significance based on the principles of conservation biology using the concepts of redundancy, resiliency, and representation. *Resiliency* describes the characteristics of a species that allow it to recover from periodic disturbance. *Redundancy* (having multiple populations distributed across the landscape) may be needed to provide a margin of safety for the species to withstand catastrophic events. *Representation* (the range of variation found in a species) ensures that the species' adaptive capabilities are conserved. Redundancy, resiliency, and representation are not independent of each other, and some characteristic of a species or area may contribute to all three. For example, distribution across a wide variety of habitats is an indicator of representation, but it may also indicate a broad geographic distribution contributing to redundancy (decreasing the chance that any one event affects the entire species), and the likelihood that some habitat types are less susceptible to certain threats, contributing to

resiliency (the ability of the species to recover from disturbance). None of these concepts is intended to be mutually exclusive, and a portion of a species' range may be determined to be ''significant'' due to its contributions under any one of these concepts.

For the purposes of this finding, we determine if a portion's biological contribution is so important that the portion qualifies as ''significant'' by asking whether, *without that portion,* the representation, redundancy, or resiliency of the species would be so impaired that the species would have an increased vulnerability to threats to the point that the overall species would be in danger of extinction (*i.e.,* would be ''endangered''). Conversely, we would not consider the portion of the range at issue to be ''significant'' if there is sufficient resiliency, redundancy, and representation elsewhere in the species' range that the species would not be in danger of extinction throughout its range if the population in that portion of the range in question became extirpated (extinct locally).

We recognize that this definition of ''significant'' establishes a threshold that is relatively high. On the one hand, given that the consequences of finding a species to be endangered or threatened in an SPR would be listing the species throughout its entire range, it is important to use a threshold for ''significant'' that is robust. It would not be meaningful or appropriate to establish a very low threshold whereby a portion of the range can be considered ''significant'' even if only a negligible increase in extinction risk would result from its loss. Because nearly any portion of a species' range can be said to contribute some increment to a species' viability, use of such a low threshold would require us to impose restrictions and expend conservation resources disproportionately to conservation benefit: Listing would be rangewide, even if only a portion of the range of minor conservation importance to the species is imperiled. On the other hand, it would be inappropriate to establish a threshold for ''significant'' that is too high. This would be the case if the standard were, for example, that a portion of the range can be considered ''significant'' only if threats in that portion result in the entire species' being currently endangered or threatened. Such a high bar would not give the SPR phrase independent meaning, as the Ninth Circuit held in *Defenders of Wildlife* v. *Norton,* 258 F.3d 1136 (9th Cir. 2001).

The definition of ''significant'' used in this finding carefully balances these concerns. By setting a relatively high threshold, we minimize the degree to which restrictions will be imposed or resources expended that do not contribute substantially to species conservation. But we have not set the threshold so high that the phrase ''in a significant portion of its range'' loses independent meaning. Specifically, we have not set the threshold as high as it was under the interpretation presented by the Service in the *Defenders* litigation. Under that interpretation, the portion of the range would have to be so important that current imperilment there would mean that the species would be *currently* imperiled everywhere. Under the definition of ''significant'' used in this finding, the portion of the range need not rise to such an exceptionally high level of biological significance. (We recognize that if the species is imperiled in a portion that rises to that level of biological significance, then we should conclude that the species is in fact imperiled throughout all of its range, and that we would not need to rely on the SPR language for such a listing.) Rather, under this interpretation we ask whether the species would be endangered everywhere without that portion, *i.e.,* if that portion were completely extirpated. In other words, the portion of the range need not be so important that even being in danger of extinction in that portion would be sufficient to cause the remainder of the range to be endangered; rather, the *complete extirpation* (in a hypothetical future) of the species in that portion would be required to cause the remainder of the range to be endangered.

The range of a species can theoretically be divided into portions in an infinite number of ways. However, there is no purpose to analyzing portions of the range that have no reasonable potential to be significant *and* threatened or endangered. To identify only those portions that warrant further consideration, we determine whether there is substantial information indicating that: (1) The portions may be ''significant,'' and (2) the species may be in danger of extinction there or likely to become so within the foreseeable future. Depending on the biology of the species, its range, and the threats it faces, it might be more efficient for us to address the significance question first or the status question first. Thus, if we determine that a portion of the range is not ''significant,'' we do not need to determine whether the species is endangered or threatened there; if we determine that the species is not endangered or threatened in a portion of its range, we do not need to determine if that portion is ''significant.'' In practice, a key part of the portion status analysis is whether the threats are geographically concentrated in some way. If the threats to the species are essentially uniform throughout its range, no portion is likely to warrant further consideration. Moreover, if any concentration of threats applies only to portions of the species' range that clearly would not meet the biologically based definition of ''significant,'' such portions will not warrant further consideration.

Tehachapi Slender Salamander

The Caliente Canyon and the Tehachapi Mountains DPSs together constitute the entirety of the range of the Tehachapi slender salamander. The distinct and geographically separate areas occupied, respectively, by the Caliente Canyon DPS and the Tehachapi Mountains DPS, constitute the two significant portions of the range of the Tehachapi slender salamander. Significant threats to either DPS would constitute a significant threat to the Tehachapi slender salamander in a significant portion of its range. We have previously determined, however, that neither DPS is threatened or endangered across its range. Therefore, we conclude that the Tehachapi slender salamander is not in danger of extinction or likely to become endangered in the foreseeable future, in a significant portion of its range.

We acknowledge that the Ninth Circuit Court of Appeals decision in *Defenders of Wildlife* v. *Norton*, 258 F.3d 1136 (2001) can be interpreted to require that in determining whether a species is threatened or endangered throughout a significant portion of its range, the Service should consider whether lost historical range (as opposed to current range) constitutes a significant portion of the range of the species at issue. While this is not our interpretation of the statute, we conclude that there are no such areas for the Tehachapi slender salamander, the Caliente Canyon DPS, or the Tehachapi Mountains DPS. As we discussed in detail in our assessment of threats to each species, there is no evidence of meaningful range contraction for the species; in fact, the range of the Caliente Canyon DPS and therefore, the species is now known to be larger than previously believed. Therefore, we do not believe the species is threatened or endangered in a significant portion of its range due to lost historical habitat.

We next evaluate whether there are any significant portions of the ranges of either the Caliente Canyon DPS or the

Tehachapi Mountains DPS where the species is in danger of extinction or is likely to become endangered in the foreseeable future.

Caliente Canyon DPS

The Caliente Canyon DPS consists of sections of five canyons, totaling about 9 linear mi (14.5 km). To determine whether the Caliente Canyon DPS is threatened in a significant portion of its range, we first addressed whether any portions of the range of the DPS warrant further consideration. Our analysis indicates that the conservation status of the Caliente Canyon DPS is essentially the same throughout its range; there is no area within the range of the DPS where potential threats to this species are significantly concentrated or are substantially greater than in other portions of the range. And, as we explained in detail in our analysis of the status of the species, none of the threats faced by the species, alone or in combination, are sufficient to place it in danger of extinction now (endangered) or in the foreseeable future (threatened). The main potential threat to the Caliente Canyon DPS is livestock grazing, which occurs throughout most of the range of this DPS; however, the impacts of grazing to the species are minor and are not concentrated in any geographic portion of the range of the DPS. For these reasons, we find that there are no portions of the Caliente Canyon DPS's range that warrant further consideration as significant portions of the range.

Tehachapi Mountains DPS

To determine whether the Tehachapi Mountains DPS is threatened in a significant portion of its range, we also first addressed whether any portions of the range of the DPS warrant further consideration. Our analysis indicates that the conservation status of the Tehachapi Mountains DPS is essentially the same throughout its range; there is no area within the range of the DPS where potential threats to this species are significantly concentrated or are substantially greater than in other portions of the range. And, as we explained in detail in our analysis of the status of the species, none of the threats faced by the species, alone or in combination, are sufficient to place it in danger of extinction now (endangered) or in the foreseeable future (threatened).

A large development project (Tejon Ranch TMV project) is planned within the general vicinity of half of the occurrences of the Tehachapi Mountains DPS. However, the TMV development envelope is configured to avoid all known occurrences and occupied habitat of the species within this DPS. The TMV project, if implemented, will likely affect 108 ac (44 ha) out of the estimated 3,797 ac (1,537 ha) (or less than three percent) of habitat that may be suitable for the Tehachapi Mountains DPS on Tejon Ranch. We do not have evidence that the 108 ac (44 ha) of potentially suitable habitat likely to be affected by the TMV project is significant to the survival and recovery of the DPS. The five occupied canyons that make up the Tehachapi Mountains DPS are widely distributed across the DPS's range. We found no evidence that individuals of this DPS are concentrated in any geographic portion of the range that would increase the vulnerability of this DPS to a particular threat. For these reasons, we find that there are no portions of the Tehachapi Mountains DPS's range that warrant further consideration as significant portions of the range.

We do not find that the Caliente Canyon DPS or the Tehachapi Mountains DPS is in danger of extinction now, nor do we find that either DPS is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Therefore, listing the Caliente Canyon DPS or the Tehachapi Mountains DPS as threatened or endangered under the Act is not warranted at this time.

We request that you submit any new information concerning the status of, or threats to, these species to our Ventura Fish and Wildlife Office (see **ADDRESSES** section) whenever it becomes available. New information will help us monitor this species and encourage its conservation. If an emergency situation develops for this or any other species, we will act to provide immediate protection.

References Cited

A complete list of references cited is available on the Internet at *http://www.regulations.gov* and upon request from the Ventura Fish and Wildlife Office (see **ADDRESSES** section).

Author

The primary authors of this notice are the staff of the Ventura Fish and Wildlife Office (see **ADDRESSES**).

Authority: The authority for this action is section 4 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: September 23, 2011.

Rowan Gould,

Acting Director, U.S. Fish and Wildlife Service.

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