STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

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December 24, 2013

TO ALL AFFECTED AND INTERESTED PARTIES:

This is to provide you with a Notice of Findings regarding the Townsend's big-eared bat (*Corynorhinus townsendii*) which will be published in the California Regulatory Notice Register on December 27, 2013.

Sincerely,

Sheri Tiemann
Associate Governmental Program Analyst

Attachment

CALIFORNIA FISH AND GAME COMMISSION

NOTICE OF FINDINGS

Townsend's Big-eared Bat

(*Corynorhinus townsendii*)

NOTICE IS HEREBY GIVEN that, pursuant to the provisions of Section 2074.2 of the Fish and Game Code, the California Fish and Game Commission, at its June 26, 2013, meeting in Sacramento, California, accepted for consideration the petition submitted to list the Townsends Big-eared Bat as a threatened or endangered species. The Commission determined, based on the best available science, the extensive information contained in the petition, the Department of Fish and Wildlife petition evaluation report, and oral testimony that designating Townsend's Big-eared Bat as an endangered or threatened species under CESA may be warranted (see Sections 2073.5 and 2074.2 of the Fish and Game Code).

Pursuant to subdivision (a)(2) of Section 2074.2 of the Fish and Game Code, the aforementioned species is hereby declared a candidate species as defined by Section 2068 of the Fish and Game Code.

Within one year of the date of publication of this notice of findings, the Department of Fish and Wildlife shall submit a written report, pursuant to Section 2074.6 of the Fish and Game Code, indicating whether the petitioned action is warranted. Copies of the petition, as well as minutes of the June 26, 2013, Commission meeting, are on the Commission web site or available for public review from Sonke Mastrup, Executive Director, Fish and Game Commission, 1416 Ninth Street, Box 944209, Sacramento, California 94244-2090, phone (916) 653-4899. Written comments or data related to the petitioned Action should be directed to the Commission at the aforementioned address.

Sonke Mastrup

Executive Director

California Fish and Game Commission

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December 24, 2013

TO ALL AFFECTED AND INTERESTED PARTIES:

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Sincerely,

Sheri Tiemann
Associate Governmental Program Analyst

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II
STATUTORY REQUIREMENTS

A species is endangered under CESA if it "is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, over exploitation, predation, competition, or disease." (Fish & G. Code, § 2062.) A species is threatened under CESA if it is "not presently threatened with extinction [but] is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by [CESA]...." (*Id.*, § 2067.) The Commission exercises exclusive statutory authority with respect to whether a species should be listed as endangered or threatened under CESA. (*Id.*, § 2070.)

The Commission makes the determination as to whether a species currently faces a serious danger of extinction throughout all or a significant portion of its range, (or for a listing as threatened whether such a future threat is likely) on a case-by-case basis after evaluating and weighing all available biological and management information.

Non-emergency listings involve a two-step process. First, the Commission considers a petition to list the species and determines whether the petitioned action "may be warranted." (Fish & G. Code, § 2074.2.) If it determines the action "may be warranted," the species is designated as a candidate, related regulatory protection attaches to the species following published notice, and the Department commences a year-long scientific, peer-reviewed study of the species' status in California. (Fish & G. Code, §§ 2074.6, 2084, 2085.) At the second step of the listing process, the Commission considers the Department's statusreport and information provided by other parties, and makes a final decision whether to formally list the species as endangered or threatened. (*Id.*, § 2075.5.)

To be accepted by the Commission as an initial matter, a petition to list a species under CESA must include sufficient scientific information that listing may be warranted. (Fish & G. Code, § 2072.3; Cal. Code Regs.,tit. 14, § 670.1, subds. (d), (e).) The petition must include information regarding the species' population trend, range, distribution, abundance and life history; factors affecting the species' ability to survive and reproduce; the degree and immediacy of the threat to the species; the impact of existing management efforts; suggestions for future management of the species; the availability and sources of information about the species; information about the kind of habitat necessary for survival of the species; and a detailed distribution map. (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1).)

Within 10 days of receipt , the Commission forwards the petition to the Department for an initial evaluation. (Fish & G. Code, § 2073.) Within 90 days thereafter, CESA directs the Department to submit an initial report to the Commission evaluating the information for and against the petitioned action, and including a recommendation on whether the petitioned action may be warranted. (Fish & G. Code, § 2073.5.) The Department may request and be granted a time extension of up to 30 additional days to submit its initial evaluation report to the Commission. (*Ibid.*) Upon receipt of the Department's initial report, the Commission schedules the petition for consideration at a noticed public hearing. (*Id.*, § 2074.) At the hearing, the Commission considers the petition itself, the Department's initial written evaluation of the petition, and other comments and information received by the Commission regarding the petitioned action. The Commission, in turn, considers whether there is sufficient scientific information to indicate the petitioned action may be warranted. (*Id.*, § 2074.2.)

The requisite standard of proof to be used by the Commission in deciding whether listing may be warranted was described in *Natural Resources Defense Council* v. *California Fish and Game Commission* (1994) 28 Cal.App.4th 1104 (*NRDC*). In *NRDC*, the court determined that "the section 2074.2 phrase 'petition provides sufficient information to indicate that the petitioned action may be warranted' means that amount of information, when considered in light of the Department's written report and the comments received, that would lead a reasonable person to conclude there is a substantial possibility the requested listing could occur[.]" (*Id.* at p. 1125.) This "substantial possibility" standard is more demanding than the low "reasonable possibility" or "fair argument" standard found in the California Environmental Quality Act (CEQA), but is lower than the standard for a preliminary injunction, which would require the Commission to determine that a listing is "more likely than not" to occur. (*Ibid.*) Distinguishing the fair argument standard under CEQA, the *NRDC* court also noted the "substantial possibility" standard at candidacy under CESA involves an exercise of the Commission's discretion, and a weighing of evidence for and against listing. (*Ibid.*)

In *Center for Biological Diversity v. California Fish and Game Commission* (2008) 166 Cal.App.4th 597 (*CBD*), the court acknowledged "the Commission is the finder of fact in the first instance in evaluating the information in the record." (*Id.* at p. 611, citing *NRDC*, 28 Cal.App.4th at p. 1125.) The court explained:

> "If the information clearly would lead a reasonable person to conclude that there is a substantial possibility that listing could occur, rejection of the petition is outside the Commission's range of discretion under section 2074.2. (*Id.* at p. 611.)
>
> [T]he standard, at this threshold in the listing process, requires only that a substantial possibility of listing could be found by an objective, reasonable person. The Commission is not free to choose between conflicting inferences on subordinate issues and thereafter rely upon those choices in assessing how a reasonable person would view the listing decision. Its decision turns not on rationally based doubt about listing, but on the absence of any substantial possibility that the species could be listed after the requisite review of the status of the species by the Department[.]"
>
> (*Ibid.*)

Thus at candidacy, without choosing between conflicting inferences, the Commission must objectively evaluate and weigh the information both for and against the listing action and determine whether there is a substantial possibility that the listing could occur. (*Id.* at p. 612.) In order for the Commission to reject a petition, the scientific evidence viewed as a whole must establish the absence of a substantial possibility that the listing could occur.

III
REASON FOR FINDING

The following discussion sets forth and provides an explanation of the bases for the Commission's determination that the petition provides sufficient information to indicate that the petitioned action to list the Northern spotted owl (NSO) as threatened or endangered may be warranted. The discussion below is not a comprehensive overview of all information considered by the Commission in reaching its determination. However, all written and oral comments, and other information presented to the Commission regarding the petition are considered part of the administrative record of proceedings. The Commission made its determination based upon and after considering its administrative record of proceedings.

Guided by the *NRDC* and *CBD* cases, the Commission now finds, pursuant to Fish and Game Code section 2074.2, subdivision (a)(1), that the petition and other information provide sufficient information to indicate that the petitioned action may be warranted. The Commission also finds that the information before the Commission would lead a reasonable person to conclude that there is a substantial possibility that the listing could occur.

The specific bases for these findings are as follows:

1. **Population Size and Abundance:**

The petition (pages 12-15) does not include direct information about the population size or abundance of NSO populations in California, nor does it discuss abundance range-wide. The Department deemed the relevant information found in the literature cited in the petition and other scientific documents consulted for its evaluation report to be inconclusive to determine the abundance of NSO range-wide or in California, and concluded that further research and analysis is required to determine the abundance for NSO populations in California. (Evaluation Report, page 6.)

Based on information in the petition and other data available to the Department at the time of its evaluation, the Department's report states that there is uncertainty about whether the declining population trends from specific study areas has translated into an overall decrease in abundance of NSO in California. (Evaluation Report, page 6.) However, based on the studies and the potential threats, the Department acknowledges that abundance may have declined. (Evaluation Report, page 6.)

Comments received from Humboldt Redwood Company (HRC) assert that HRC has, "through our surveys and monitoring over time, found that HRC's forestlands contain a very high density of NSO occurring on the managed landscape." (4/4/13 letter to FGC, page 1.)

2. **Population Trend:**

The petition summarizes the population trend of NSO (pages 3, 12-15), but does not assess the species' current population trend in California specifically. The petition describes declining population trends over the entire range of NSO, including California, Oregon, and Washington in the United States, and British Columbia, Canada. The petition (pages 13-14) primarily cites a recent study (Forsman et al. 2011) that analyzed eleven study areas spanning Washington, Oregon and northern California cumulatively comprising approximately 9% of the NSO's range. This study indicates an average annual decline of 2.9% for the entire population from 1985 to 2006. For California, two of the three study areas identified declining annual population trends over the analysis period; 1.7% for NSO in Northwest California (1988-2006) and 2.8% for NSO within Green Diamond (1990-2006) land ownership. The third California study area (Hoopa: 1992-2006) is apparently stable, with a point estimate of decline that is not statistically significant.

The evaluation report notes that, while the Department maintains a spotted owl occurrence database that consists of occurrences for both NSO and California spotted owls, until recently the database has not been regularly updated due to budget constraints and therefore population trend data for northern spotted owl populations in California are not readily available to the Department. (Evaluation Report, page 5.) Reports from Mendocino Redwood Company (MRC 2010), Humboldt Redwood Company (HRC 2012), and Green Diamond Resource Company (Green Diamond 2011)

summarized survey results over at least a 10-year period and estimated population trend as characterized by territory occupancy. Respectively, the first report indicated a stable occupancy rate; the second, a varying but apparent overall downward trend; and the third a downward trend over the 10+ year time frame. (Evaluation Report as amended, page 5.) The annual progress report for federal lands in Northwestern California shows a fairly stable NSO population over the last 15 years, however, a body of recent research indicates that increasing threats from barred owls and other factors may negatively influence this trend in the future (Franklin et al. 2012) (Evaluation Report, page 5.)

The petition also discusses and cites literature that indicates population trends on public land declined at a slightly lower rate than those on privately owned and managed lands (Anthony 2006, Davis et al. 2011, Forsman et al. 2011) (page 14). These studies consider the difference to be largely due to the management guidelines developed in the Northwest Forest Plan including the retention of late seral forest stands and other high quality NSO habitats required in the plan. For 8 sites located on federal lands in portions of California, Oregon and Washington from 1985 to 2008, the NSO population trend shows a 2.8% decline each year. The annual decline for just the Northwestern California NSO study area during this period was 1.7% (Davis et al. 2011).

Comments received from HRC assert that "there does not appear to be evidence of a steady decline, and to the contrary there appears to be a stable or slightly increasing number of NSO." (4/4/13 letter to FGC, page 1.) Comments received from Mendocino Redwood Company (MRC) assert that "occupancy estimates for NSO territories show, at a minimum, a dynamically stable population trend over the past 13 years" and "territory occupancy remained relatively constant over this time and increased slightly during the past three years." (4/5/13 letter to FGC, page 1.) Comments received from Sierra Pacific Industries (SPI) cite a "5-year landscape survey strategy" on "170,000 acres of SPI ownership," the results of which "indicated over the 23 years to date since 1989, the study area...demonstrates a stable population..." (4/5/13 letter to FGC, page 2.) Campbell Timberland Management (CTM) asserts that, "[a]lthough we have not conducted an analysis of annual rates of population change for the NSO on the [approximately 165,000 acres of industrial timberlands] ownerships, other analyses have been conducted suggesting the populations of NSOs occurring on the ownerships are stable." CTM concludes that "[e]ven though our analyses are not robust indicators of annual rates of population change as they do not consider contributions of variables such as immigration, productivity, and other vital rates in open populations, it provides evidence of no discernible decline of NSOs in the study area regardless of contributory effects." (4/5/13 letter to FGC, pages 1-2.) Crane Mills asserts that "[b]ased on our analysis, we can safely conclude that the NSO population in and around our Main Block ownership is stable and has been over the last 24 years." (4/11/13 letter to FGC, page 3.)

Based on information in the petition and other data consulted for the petition evaluation, the Department concluded in its report that there is sufficient evidence to conclude that population trends are declining and warrant further evaluation to determine the extent of the decline in terms of the population's threat of extinction. (Evaluation Report, page 5.)

3. **Population Range and Distribution:**

The petition (pages 7-10) accurately describes the known historic and current NSO range in California that runs south from Siskiyou to Marin County in Northwestern California. It also discusses that the ranges of the NSO and California spotted owl meet at the southern end of the Cascade Range, near the Pit River area (Gutiérrez and Barrowclough 2005). The petition (Figure 1 on page 8) identifies all

the occupied physiographic provinces in the U.S. occupied by NSO, including three in California: California Coast, California Klamath, and California Cascades (USFWS 2008b).

The petition does not discuss a recent restriction or contraction of the species range or any changes or stability of the range in California; however, the factors identified as contributors to range reduction in the northern part of the species' range may also be factors in many California locations. (Evaluation Report, page 6.)

The petition (pages 9-10) includes very limited information addressing NSO distribution. The current distribution map included with the Department's report shows an increase in the total number of known records, but does not readily impart any new information about the distribution of NSO in California. (Evaluation Report, page 6 and Appendix B.)

The Department did not find evidence to indicate that the distribution of NSO has changed during the time period of years for which surveying/monitoring of the species distribution has occurred. (Evaluation Report, page 6.)

4. **Kind of Habitat Necessary for Survival:**

The petition (pages 11-12) lists general, range-wide habitat characteristics necessary for NSO survival, including relatively large areas of complex, older forests for breeding, foraging, roosting and dispersal life history functions (Forsman et al. 2011). However, the petition does not specifically describe habitats that exist in California, nor how available habitat types influence NSO populations found in the state. The only habitat information related to California in the petition attributed to Franklin et al. (2000) is nonspecific to habitat types (page 12).

The petition cites research supporting the assertion that both the amount and the spatial distribution of nesting, roosting, foraging, and dispersal habitat influences NSO reproductive success and long-term population viability (pages 11-12). The petition and the Department's report agree that there have been extensive studies supporting a strong association of northern spotted owls with older forests throughout its range. (Evaluation Report, page 8.)

Citing Diller and Thome (1999), the petition states that breeding occupancy is related to the presence of mature and old-growth forests in Northwestern California, as NSO usually occur in the oldest forests available on private lands (page 12). Then, citing several studies (Carey et al. 1992, Rosenberg and Anthony 1992, Buchanan et al. 1995, LaHaye and Gutiérrez 1999, Lehmkuhl et al. 2006) the petition identifies understory structural characteristics of late-successional forest habitats as important for NSO and its prey (page 12). These conclusions are supported by the referenced studies and the information the Department has in its possession. (Evaluation Report, page 8.)

The petition states that NSO fecundity, production, survival, and recruitment are positively correlated to a larger proportion of older forest habitats in a pair's home range (Forsman et al. 2011, Bart and Forsman 1992, Franklin et al. 2000, Dugger et al. 2005, Olson et al. 2004)(page 12). Additionally, the effects of barred owls have been found to increase with a decrease in the proportion of old forest habitat in a home range (Dugger et al. 2011); however, most of these studies cited are associated with habitats in Southern Oregon and would need further analyses to determine how strongly this correlates with habitats found in California. (Evaluation Report, page 8.)

The petition describes dispersal habitat (page 12) as forested stands with adequate tree size and canopy closure to provide for foraging opportunities and protection from avian predators. The Petition asserts that population growth can occur only if there is adequate habitat in an appropriate configuration to allow for the dispersal of owls across the landscape; including dispersing juveniles, nonresident sub-adults, and adults that have not yet recruited into the breeding population (page 12). The Department's report cites studies (e.g., Davis and Lint 2005) showing a distinct lack of dispersal habitat connectivity within two of the three California Provinces (California Coast and Cascades Provinces). (Evaluation Report, page 8.) However, the Department notes that this and other studies show that a variety of habitats are used for dispersal, and more information is needed to determine what key elements of dispersal habitat structure are required for a sustainable population range-wide and in California (LaHaye and Gutiérrez 1999, Thome et al. 1999, Franklin et al. 2000, Gonzales 2005, Phillips et al. 2010). (Evaluation Report, page 8.)

Comments received from the California Forestry Association (CFA) assert that "Habitat for the NSO is abundant and of high quality on California's private forestlands. The dynamic yet stable population of [NSO] on private forestlands in California is indicative of the high-quality habitat that is present on these lands. California's private forestlands are some of the most productive in the nation, for not only the sustainable production of forests and their products, but also for the production of prey and food sources for the [NSO]. This abundant food source actually results in a smaller home range for many [NSOs], quite often resulting in higher densities of NSO on private forestlands than public." (4/12/13 letter to FGC, page 2.)

Comments received from the Sierra Club's Redwood Chapter and Sierra Club California criticize the "U.S. Fish and Wildlife Service strategy for spotted owl recovery centered on the creation of a network of federally-owned 'late-successional reserves' as habitat islands for [NSO], while largely ignoring habitat destruction elsewhere. As a result, [NSO] have been nearly extirpated on state and private lands throughout the region, and their population status on federal lands remains precarious." (4/10/13 letter to FGC, page 1, 4/16/13 letter to FGC, page 1.)

5. **Degree and Immediacy of Threat:**

The petition (page 3 and pages 15-25) discusses the degree and immediacy of threat to NSO, relying on sources ranging from USFWS federal listing documents to specific focused studies. The petition provides information that spans potential or documented threats to NSO range-wide, including impacts to the owl populations and prey base, loss of critical habitats by fire, logging and urban development, and other potentially increasing impacts by barred owls, predation, and disease.

The Department's report notes that while the petition did not discuss potential impact and degree of threat from climate change, the research readily available suggests it poses a threat that warrants a full evaluation (Franklin et al. 2000, Spies et al. 2010, Glenn et al. 2011). (Evaluation Report, page 10.)

While loss of late-seral forest and other required habitat elements across the NSO's range is well-documented (USFWS 2011a, Moeur et al. 2005, Raphael 2006, Courtney et al. 2004), the petition describes extensive habitat loss in Washington and Oregon over the last 20 years (Courtney et al. 2004, Davis and Lint 2005, Campbell et al. 2010) but does not cite studies discussing historic or recent habitat loss for California. The petition instead identifies twenty-seven Sierra Pacific Industries (SPI) timber harvesting plans (THPs) (Table 3 in the Petition) as activities "destroying northern spotted owl habitat in violation of the ESA Section 9 'Take' prohibition" (pages 16-17), and

concludes that over 2833 ha (7000 ac) of NSO habitat have been or will be destroyed by these plans. However, no supporting data was provided with the petition for the information in the table, and the Department's report concludes that a more in-depth evaluation is needed to assess the impacts of timber harvest activities in California for direct, indirect and cumulative effects to NSO populations. (Evaluation report, page 10.)

The petition and the Department's report agree that one of the greatest threats to the NSO, both in California and across its range, is the increasing competition by the barred owl. Barred owls have expanded westward and now completely overlap the range of the NSO. The barred owl is known to prey upon, hybridize with, displace and out-compete northern spotted owls (USFWS 2011a). The petition and the Department's report agree that the barred owl poses an increasing threat to NSO due to competition for breeding and foraging habitats, and the associated significant negative effects on NSO reproduction and survivorship. (Evaluation report, page 11.)

The Department's report shows a north to southward trend in the expansion of the barred owl range, with this threat recently moving into California. Studies cited in the Department's report indicate that the barred owl may be the primary reason for the near-extirpation of NSO in Canada, as well as the factor in the marked declines in Washington and Oregon (Forsman 2011, USFWS 2011a, USFWS 2012b, Dark et al. 1998, Kelly et al. 2003). (Evaluation report, page 11.) After a period of initial invasion, barred owl populations increase as do their potential impacts to NSO. Currently, the California portion of the NSO's range is experiencing the post-invasion increase in barred owls. As in other parts of the NSO's range, the barred owl may be the primary reason for recent declines in California. Recent scientific information (Diller et al. 2010) cited in the Department's report suggests a strong negative link between barred and NSO. The related research cited above on Green Diamond Resource Company land found in most cases that NSO reoccupied areas where barred owls were removed. (Evaluation report, page 11.)

The petition further identifies predation and West Nile Virus as potential threats that may have a negative impact on the northern spotted owl populations in the future (page 18). A more thorough evaluation of current research is required to determine the extent to which these factors may influence owl population viability in California. The Department's report identifies Trichomoniasis as a disease that has been recently identified in NSO carcasses (CDFG 2012b) but which requires more analysis prior to understanding the disease or its impact on the species. (Evaluation report, page 11.) While the petition suggests certain correlations regarding predation and disease impacts to NSO, the Department's report concludes that, in the absence of research specific to diseases and predation effects in California, the scientific uncertainty limits conclusions regarding the importance of these factors in affecting the viability of NSO populations without further evaluation. (Evaluation report, page 11.)

Much of the information included in the petition supporting the degree and immediacy of threat was derived from studies conducted outside of California. However, the Department's report points out that, while the magnitude and mechanisms of the threats may differ between California and other portions of the NSO's range, the non-California studies provide useful information regarding potential in-state threats. (Evaluation report, page 11.)

Comments received from the Sustainable Forest Action Coalition raise the threat of fire and state that "[w]ithout the flexibility to properly manage our public and private forest land, our state faces even more issues that are at least as or more critical than this current NSO issue...Allowing management on these forest lands is our only hope for reduction in size, number and intensity of wildfires...It is common that these fires are destroying more NSO, Goshawk, fisher and other

species habitat than has ever been impacted by proper forest management." (4/11/13 letter to FGC, page 2.)

Comments received from the Sierra Club's Mother Lode Chapter list "habitat loss due to aggressive logging practices, competition from the barred owl, and the absence of species recovery efforts" as threats "heavily impact[ing]" NSO. (4/15/13 letter to FGC, page 1.) Comments received from Forests Forever assert that "[c]oupled with continued habitat loss is the very significant threat posed by the barred owl, which displaces [NSO] and thrives in the highly fragmented and simplified industrial forest landscapes." (7/19/13 letter to FGC, page 1.)

6. **Existing Management Efforts:**

The petition (pages 19-23) asserts that there are overall regulatory and management inadequacies between federal lands, non-federal lands, and within each U.S. state within the NSO's range. The petition points to the inadequacy of federal protections to stop declines in NSO populations in California, noting that the NSO population has not stabilized since the 1990 Federal Endangered Species Act (ESA) listing in spite of the protections afforded by the Northwest Forest Plan (NWFP) (Davis et al. 2011, USFWS 2011a). The Petition concludes that this is due to insufficient protections and a lack of recovery planning outside of late-successional reserves established on federal lands by the NWFP (page 19).

The petition cites DellaSala 2011 for the proposition that management deficiencies occur in the following areas:

> *(a) variable and often inadequate protection given to owls and owl habitat;*
> *(b) lack of landscape-scale planning, especially on non-federal lands;*
> *(c) use of survey protocols and other standards that fail to incorporate current relevant science;*
> *(d) prevalence of discretionary guidelines and/or unclear or unsuitable direction;*
> *(e) failure to consistently require involvement of personnel with biological expertise in evaluating/assessing ecological information.* (page 19.)

The Department's report explains that, while it conducted "take" consultations of all THPs until June 1999, its involvement in biological assessment and evaluation for the species in THP review has been limited in the last few years. Subsequently, the U.S. Fish and Wildlife Service (USFWS) picked up the work until about spring 2008, when the California Department of Forestry and Fire Protection (CAL FIRE) began reviewing THPs following USFWS guidelines and supported by technical assistance from USFWS regarding specific plans and issues. Beginning January 1, 2013, the Department will resume full participation in the THP review process. (Evaluation report, page 12.)

The petition asserts that NSO's federal threatened designation under ESA, which prohibits all non-permit take, is insufficient to ensure the long-term survival of NSO in California (page 19). The Department's report indicates that the USFWS has issued survey guidance, including updates (most recently, USFWS 2011b) to identify situations where a development project may take an NSO. (Evaluation report, page 12.)

The Department's revised report indicates that NSO is currently designated a species of special concern in California, and governmental entities and land managers are required to evaluate any potential impacts to native biological resources during CEQA review. Projects that have the

potential to impact NSO are required to comply with the California Environmental Quality Act (CEQA) or an equivalent Certified Regulatory Program such as the Forest Practices Act. (Evaluation report, pages 12-13.) To comply with CEQA dictates, projects must avoid "take" under the federal ESA and must be developed to identify and mitigate significant direct and cumulative significant impacts. CAL FIRE has also developed guidance specific to California to avoid take of NSO by timber harvest (CALFIRE 2012). (Evaluation report, page 13.)

Comments received from Green Diamond Resource Company (GDRCo) assert that "[e]xisting management efforts to protect and conserve the NSO in California have been and continue to be effective because of the direct requirements of the ESA, and because of the response of the State of California and landowners to the federal ESA listing of the NSO that has been in place for over 20 years." (4/12/13 letter to FGC, page 3.) GDRCo additionally states that "listing of the NSO under the CESA will not improve on the existing procedures and standards for the protection and conservation of NSO that apply to federal actions and state and local projects in California," however, such a listing "does have the potential to interfere with existing conservation efforts dedicated to NSO in California" by interfering with the implementation of habitat conservation plans. (4/12/13 letter to FGC, page 5.) Comments received from the CFA laud "California's robust regulatory process" which ensures that timber harvesting plans "contain provisions for the protection of NSO individuals, nests, related activity centers, and the surrounding forest habitat." (4/12/13 letter to FGC, page 2.)

Comments received from the Sierra Club's Redwood Chapter assert that, "[a]lthough listed as 'threatened' under the federal ESA for more than 20 years, [NSO] populations continue to decline, with an acceleration of the trend in recent years. In California, vast areas that once offered prime habitat no longer support any [NSO] at all. Relentless habitat loss, competition from the invasive barred owl, and inadequate regulatory mechanisms are combining to push this species ever closer to extinction." (4/10/13 letter to FGC, page 1.) Comments received from Forests Forever cite the "inadequacy of regulatory mechanisms, especially the lack of recovery efforts on state and private lands," for the conclusion that "[w]ithout CESA protections, a more holistic view of species recovery and landscape-scale conservation that includes private and state owned lands, the [NSO] is likely to go extinct in the foreseeable future." (4/11/13 letter to FGC, page 1.) Forests Forever additionally states that "[t]he heavy reliance on fragmented reserves on federal lands without a comprehensive approach to [NSO] conservation on non-federal lands has proven to be a critical error, and one of the primary reasons why recovery has failed." (7/19/13 letter to FGC, page 1.)

IV
FINAL DETERMINATION BY COMMISSION

The Commission has determined and hereby finds based on its administrative record of proceedings that there is sufficient scientific information to indicate that listing NSO as endangered or threatened may be warranted. In making this determination, the Commission finds its administrative record includes sufficient scientific information to lead a reasonable person to conclude there is a substantial possibility that the listing could occur. In short:

- Data indicates the NSO population trends in California may be in decline and warrant further examination to determine the extent of the decline in terms of the threat of extinction;

- Information indicates the loss of suitable habitat from either timber management activities, catastrophic wild fires, or both may be a threat to the northern spotted owl across its entire range. Again, however, further examination of the loss of suitable habitat is warranted to assess the impacts of, among other things, timber harvest activities in California for direct, indirect, and cumulative effects to northern spotted owl populations;

- Information indicates that another threat to the northern spotted owl in California may be increased competition by the barred owl (*Strix varia*). Evidence indicates barred owls may pose a threat to northern spotted owls due to competition for breeding and foraging habitats, and the associated significant negative effects on northern spotted owl reproduction and survivorship; and

- Disease and effects of climate change on habitat are uncertain, but pose potential new threats to the northern spotted owl in California that also merit further consideration to assess existing science regarding the species' status in California.

Fish and Game Commission

Dated: December 11, 2013

Sonke Mastrup
Executive Director

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

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December 24, 2013

TO ALL AFFECTED AND INTERESTED PARTIES:

This is to provide you with a Notice of Findings regarding the American pika which will be published in the California Regulatory Notice Register on December 27, 2013.

Sincerely,

Sheri Tiemann
Associate Governmental Program Analyst

Attachment

NOTICE OF FINDINGS
American pika
(Ochotona princeps schisticeps)

NOTICE IS HEREBY GIVEN that the Fish and Game Commission (Commission), at its May 22, 2013 meeting in Los Angeles, California, made a finding pursuant to Fish and Game Code section 2075.5, that the petitioned action to add the American pika *(Ochotona princeps schisticeps)* to the list of threatened or endangered species under the California Endangered Species Act (CESA)(Fish & G. Code, § 2050 et seq.) is not warranted. (See also Cal. Code Regs., tit. 14, § 670.1, subd. (i)(1).)

NOTICE IS ALSO GIVEN that, at its December 11, 2013, meeting in San Diego, California, the Commission adopted the following findings outlining the reasons for its rejection of the petition.

I.
BACKGROUND AND PROCEDURAL HISTORY

Petition History

The Center for Biological Diversity (Petitioner) submitted a petition to the Commission on August 21, 2007, to list the American pika (*Ochotona princeps*) as a threatened species, pursuant to CESA. As an alternative, the Petitioner asked that the Commission list each of the then recognized five subspecies of the American pika occurring in California as, variously, either endangered or threatened species. The Commission received the petition on August 22, 2007. The Commission referred it for evaluation to the Department on August 30, 2007. On September 12, 2007, the Department asked the Commission to grant the Department an additional 30 days, for a total 120 days, to evaluate the petition pursuant to Fish & Game Code section 2073.5. On October 19, 2007, the Commission granted this request.

The Department evaluated the petition, using the information in that document and other relevant information available at that time, and found that the scientific information presented in the petition was insufficient to indicate that either of the petitioned actions may be warranted. That is, the Commission found in its independent judgment at the time that the petition did not provide sufficient scientific information to indicate that the following actions may be warranted: 1) State listing of the pika as a threatened species, or 2) State listing of any of the five subspecies of the pika occurring in California as, variously, either endangered or threatened species. The Department's review of additional scientific information supported these findings. The Department recommended in its December 21, 2007, evaluation report to the Commission, pursuant to Fish and Game Code section 2073.5, subdivision (a), that the Commission reject the petition.

On April 10, 2008, the Commission determined that the petition provided insufficient information to indicate the petitioned action may be warranted. On June 24, 2009, the Commission set aside its April 10, 2008 decision, and again determined that the petition did not provide sufficient information to indicate the petitioned action may be warranted. The Petitioner challenged the Commission's actions on both occasions in related litigation. As a result of the litigation, the Commission reconsidered Petitioner's petition to list the American pika as threatened or endangered under CESA, including a new submission by Petitioner dated May 15, 2009. The Commission treated the petition, including Petitioner's new submission, as an amended petition pursuant to Fish and Game Code section 2073.7, and also determined the amendment to be substantive. At its February 3, 2011 meeting, the Commission transmitted the amended petition to the Department for review.

The Petitioner submitted another comment letter to the Commission on March 31, 2011. The Commission voted at its May 4, 2011, meeting that the March 31, 2011, letter submitted by the Petitioner amounted to yet another substantive amendment of the petition. The Commission indicated in a memorandum to the Department dated May 13, 2011, that the Department's evaluation report should be submitted to the Commission on or before August 2, 2011. On June 27, 2011, the Department requested that the Commission grant the Department an additional 30 days, for a total 120 days, to evaluate the amended petition, pursuant to Fish and Game Code section 2073.5, subdivision (b). On August 3, 2011, the Commission granted this request.

The Department submitted its initial evaluation of the amended petition to the Commission on August 23, 2011, with a recommendation to reject the petition. At the October 19, 2011, Commission meeting, the Department presented a summary of its evaluation of the petition. At that meeting, the Department Director presented a new recommendation to the Commission, indicating the Commission should accept the petition, designate the American pika as a candidate species under CESA, and direct the Department to conduct a 12-month review of the status of the species in California. The Commission voted to accept the petition based on its determination that there was sufficient information to indicate that the petitioned action may be warranted. On November 11, 2011, the Commission published notice of its findings to accept the amended petition for further review under CESA, as well as notice of the American pika's designation as a candidate species under State law (Cal. Reg. Notice Register 2001, No. 45–Z, p. 1826). With related notice of its candidacy, the CESA prohibition against unauthorized "take" of the American pika is currently in effect. (Fish & G. Code, § 2080, 2085).

Consistent with the Fish and Game Code and controlling regulation, the Department commenced a 12-month status review of the American pika following published notice of its designation as a candidate species under CESA. As part

of that effort, the Department solicited data, comments, and other information from interested members of the public, and the scientific and academic community; and the Department submitted a preliminary draft of its status review for independent peer review by a number of individuals acknowledged to be experts on the American pika, possessing the knowledge and expertise to critique the scientific validity of the report. (Fish & G. Code, §§ 2074.4, 2074.8; Cal. Code Regs., tit. 14, § 670.1, subd. (f)(2).) The effort culminated with the Department's final Status Review of the American pika (*Ochotona princeps schisticeps*) in California (February 25, 2013) (Status Review), which the Department submitted to the Commission at its meeting in Santa Rosa, California, on April 17, 2013. The Department recommended to the Commission based on its Status Review and the best science available to the Department that designating the American pika as a threatened or endangered species under CESA is not warranted. (Fish & G. Code, § 2074.6; Cal. Code Regs., tit. 14, § 670.1, subd. (f).) Following receipt, the Commission made the Department's Status Review available to the public, inviting further review and input. (*Id.*, § 670.1, subd. (g).)

On May 22, 2013, at its meeting in Los Angeles, California, the Commission considered final action regarding the Center's petition to designate American pika as an endangered or threatened species under CESA. (See generally Fish & G. Code, § 2075.5; Cal. Code Regs., tit. 14, § 670.1, subd. (i).) In so doing, the Commission considered the petition, as amended, public comment, the Department's 2008 Candidacy Evaluation Report, the Department's 2013 Status Review, and other information included in the Commission's administrative record of proceedings. Following public comment and deliberation, the Commission determined, based on the best available science, that designating American pika as an endangered or threatened species under CESA is not warranted. (Fish & G. Code, § 2075.5(1); Cal. Code Regs., tit. 14, § 670.1, subd. (i)(2).) At the same time, the Commission directed its staff in coordination with the Department to prepare findings of fact consistent with the Commission's determination for consideration and ratification by the Commission at a future meeting.

Species Description

The American pika is a small mammal in the Order Lagomorpha. Until recently, the American pika was considered to consist of 356 subspecies belonging to five distinct evolutionary lineages. The five formerly recognized California subspecies are now regarded as one subspecies, *Ochotona princeps schisticeps.* The American pika occurs in most of the western United States and the Canadian provinces of Alberta and British Columbia. In California, it is found from the Oregon border south through the Cascade region to Tulare and Inyo counties in the Sierra Nevada. The American pika inhabits the range above the

mid-montane conifer belt in California's Sierra Nevada and other high elevation mountain ranges. Although often considered to be rare below 2,500 m elevation in California, American pikas have been reported at multiple locations below that elevation in the southern portion of their range, and in northeastern California they have been found as low as 1,250 m in elevation. The American pika primarily lives in high-elevation patches of talus with adjacent herbaceous or shrub vegetation, as well as in old lava formations.

American pikas are predominantly diurnal, although during hot weather they may adjust their daily activity pattern to avoid excessive heat. American pikas are territorial and their populations in many locations function as meta-populations. Dispersal by American pika from a population is generally believed to be more likely at high-elevation (cooler) sites than at warmer low-elevation sites. The American pika is herbivorous and engages in both feeding and haying (haypiling) while foraging. Haying is the caching of food for later consumption. The American pika harvests herbaceous vegetation or tall grasses for storage in hay piles, which allows them to survive harsh winters.

American pikas behaviorally thermoregulate in response to high ambient temperatures by reducing activity on warm days or during mid-day hours. The American pika does not hibernate but remains active throughout the winter, using cover to abate the effects of extremely cold temperatures and to access stored food. High temperature is a primary factor controlling the initial dispersal success of juveniles, primarily at low-elevation sites. In general, temperatures within the rock matrix of talus fields have been found to be lower and less variable than on the surface of the talus in the summer. Generally, winter temperatures within talus are warmer than the external air.

The population size for the American pika in California is uncertain but, based on the best available scientific information, it appears well-distributed and relatively stable.

Federal Status

The American pika is not currently listed as endangered or threatened nor is it a candidate for listing under the federal Endangered Species Act. In October 2007, the Center petitioned the U.S. Fish and Wildlife Service (Service) to list the American pika and conduct a status review of each of the recognized subspecies of American pika. The Service advised the Center that the petition could not be addressed at that time because existing court orders and settlement agreements for other listing actions required nearly all of the listing funding. Subsequently, the Center filed a notice of intent to sue over the Service's failure to publish a petition finding. The Service then entered into a settlement agreement requiring the Service to submit a petition finding to the Federal Register by May 1, 2009, and to submit a status review finding to the Federal Register by February 1, 2010. On February 10, 2010, the Service published the results of its status review, in which

it concluded that the American pika did not meet the criteria for listing under the federal Endangered Species Act (USFWS 2010). The Service acknowledged that the American pika is potentially vulnerable to the impacts of climate change in portions of its range, but that the best available scientific information indicated that the species will be able to survive despite higher temperatures and that there is enough suitable high elevation habitat to prevent the species from becoming threatened or endangered.

II.
STATUTORY AND LEGAL FRAMEWORK

The Commission has prepared these findings as part of its final action under CESA regarding the Center's petition to designate American pika as an endangered or threatened species under CESA. As set forth above, the Commission's determination that listing American pika is not warranted marks the end of formal administrative proceedings under CESA prescribed by the Fish and Game Code and controlling regulation. (See generally Fish & G. Code, § 2070 et seq.; Cal. Code Regs., tit. 14, § 670.1.) The Commission, as established by the California Constitution, has exclusive statutory authority under California law to designate endangered, threatened, and candidate species under CESA. (Cal. Const., art. IV, § 20, subd. (b); Fish & G. Code, § 2070.)[1]

The CESA listing process for American pika began in the present case with the Center's submittal of its petition to the Commission in September 2007. (Cal. Reg. Notice Register 2007, No. 38-Z, p. 1572.) The regulatory process that ensued is described above in some detail, along with related references to the Fish and Game Code and controlling regulation. The CESA listing process generally is also described in some detail in published appellate case law in California, including

- *Mountain Lion Foundation v. California Fish and Game Commission* (1997) 16 Cal.4th 105, 114-116;
- *California Forestry Association v. California Fish and Game Commission* (2007) 156 Cal.App.4th 1535, 1541-1542;
- *Center for Biological Diversity v. California Fish and Game Commission* (2008) 166 Cal.App.4th 597, 600; and
- *Natural Resources Defense Council v. California Fish and Game Commission* (1994) 28 Cal.App.4th 1104, 1111-1116.

The "is not warranted" determination at issue here for American pika stems from Commission obligations established by Fish and Game Code section 2075.5.

[1] The Commission, pursuant to this authority, may add, remove, uplist, downlist, or choose not to list any plant or animal species to the list of endangered or threatened species, or designate any such species as a candidate for related action under CESA. (See also Cal. Code Regs., tit. 14, § 670.1, subd. (i)(1)(A)-(C) and (2).) In practical terms, any of these actions is commonly referred to as subject to CESA's "listing" process.

Under this provision, the Commission is required to make one of two findings for a candidate species at the end of the CESA listing process; namely, whether the petitioned action is warranted or is not warranted. Here with respect to American pika, the Commission made the finding under section 2075.5(1) that the petitioned action is not warranted.

The Commission was guided in making this determination by various statutory provisions and other controlling law. The Fish and Game Code, for example, defines an endangered species under CESA as a native species or subspecies of a bird, mammal, fish, amphibian, reptile or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, over exploitation, predation, competition, or disease. (Fish & G. Code, § 2062.)

Similarly, the Fish and Game Code defines a threatened species under CESA as a native species or subspecies of a bird, mammal, fish, amphibian, reptile or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. *(Id.*, § 2067.)

Likewise as established by published appellate case law in California, the term "range" for purposes of CESA means the range of the species within California. (*California Forestry Association v. California Fish and Game Commission*, *supra*, 156 Cal. App.4th at p. 1540, 1549-1551.)

The Commission was also guided in making its determination regarding American pika by Title 14, section 670.1, subdivision (i)(1)(A), of the California Code of Regulations. This provision provides, in pertinent part, that a species shall be listed as endangered or threatened under CESA if the Commission determines that the species' continued existence is in serious danger or is threatened by any one or any combination of the following factors:

1. Present or threatened modification or destruction of its habitat;
2. Overexploitation;
3. Predation;
4. Competition;
5. Disease; or
6. Other natural occurrences or human-related activities.

Fish and Game Code section 2070 provides similar guidance. This section provides that the Commission shall add or remove species from the list of endangered and threatened species under CESA only upon receipt of sufficient scientific information that the action is warranted. Similarly, CESA provides policy direction not specific to the Commission per se, indicating that all state agencies, boards, and commissions shall seek to conserve endangered and threatened species and shall utilize their authority in furtherance of the purposes

of CESA. (Fish & G. Code, § 2055.) This policy direction does not compel a particular determination by the Commission in the CESA listing context. Yet, the Commission made its determination regarding American pika mindful of this policy direction, acknowledging that "'[l]aws providing for the conservation of natural resources' such as the CESA 'are of great remedial and public importance and thus should be construed liberally." (*California Forestry Association v. California Fish and Game Commission*, *supra*, 156 Cal. App.4th at pp. 1545-1546, citing *San Bernardino Valley Audubon Society v. City of Moreno Valley* (1996) 44 Cal.App.4th 593, 601; Fish & G. Code, §§ 2051, 2052.)

Finally in considering these factors, CESA and controlling regulations require the Commission to actively seek and consider related input from the public and any interested party. (See, e.g., *Id.*, §§ 2071, 2074.4, 2078; Cal. Code Regs., tit. 14, § 670.1, subd. (h).) The related notice obligations and public hearing opportunities before the Commission are also considerable. (Fish & G. Code, §§ 2073.3, 2074, 2074.2, 2075, 2075.5, 2078; Cal. Code Regs., tit. 14, § 670.1, subds. (c), (e), (g), (i); see also Gov. Code, § 11120 et seq.) All of these obligations are in addition to the requirements prescribed for the Department in the CESA listing process, including an initial evaluation of the petition and a related recommendation regarding candidacy, and a 12-month status review of the candidate species culminating with a report and recommendation to the Commission as to whether listing is warranted based on the best available science. (Fish & G. Code, §§ 2073.4, 2073.5, 2074.4, 2074.6; Cal. Code Regs., tit. 14, § 670.1, subds. (d), (f), (h).)

III.
FACTUAL AND SCIENTIFIC BASES FOR THE COMMISSION'S FINDING

The factual and scientific bases for the Commission's finding that designating American pika as an endangered or threatened species under CESA is not warranted are set forth in detail in the Commission's administrative record of proceedings. The evidence in the administrative record in support of the Commission's determination includes, but is not limited to, the Department's 2008 Candidacy Evaluation Report and 2013 Status Review, and other information specifically presented to the Commission and otherwise included in the Commission's administrative record as it exists up to and including the Commission meeting in Los Angeles, California, on May 22, 2013, and up to and including the adoption of these findings.

The Commission finds the substantial evidence highlighted in the preceding paragraph, along with other evidence in the administrative record, supports the Commission's determination that the continued existence of American pika in the State of California is not in serious danger of becoming extinct or threatened by one or a combination of the following factors:

1. Present or threatened modification or destruction of its habitat;

2. Overexploitation;
3. Predation;
4. Competition;
5. Disease; or
6. Other natural occurrences or human-related activities.

The Commission also finds that the same evidence constitutes sufficient scientific information to establish that designating American pika as an endangered or threatened species under CESA is not warranted. The Commission finds in this respect that the American pika is not in serious danger of becoming extinct throughout all, or a significant portion, of its range. Similarly, the Commission finds that, although the dynamics and effects of climate change due to global warming are real, the American pika is not presently threatened with extinction and it is also unlikely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by CESA.

The following Commission findings highlight in more detail some of the scientific and factual information and other evidence in the administrative record of proceedings that support the Commission's determination that designating American pika as an endangered or threatened species under CESA is not warranted:

1. The primary threat to the continued existence of the species is considered to be future climate change, which may reduce the area available as suitable habitat for American pika in California. However, some data suggest the American pika may be able to contend with a generally warmer and drier future climate.

2. The species is currently widely distributed in California and is thought to be common where it occurs. Although climate change has occurred and will continue to occur, the American pika has existed in western North America for millennia, during a period characterized by repeated periods of warming and cooling, suggesting the species may be able to persist during projected future changes.

3. The overall population size for the American pika in California is unknown and cannot be accurately determined because of the lack of available data on population numbers, densities, and trends over time across their range. However, resurveys of distribution at historically-occupied pika sites have been conducted in several areas in California, as well as in the Great Basin ranges of Nevada. In California, these studies have found pikas occupying some but not all of the historical sites. More study is necessary to fully understand the American pika's re-colonization behavior of historical sites. A recent meta-analysis of several resurvey projects found that the amount of talus habitat in the vicinity of the historical site had the

strongest ability to predict whether pikas still occupied the site. Elevation was another significant factor, with low elevation sites more likely to have lost pikas than high elevation sites. However, the extent of low elevation talus habitat available to American pika in California is not presently known.

4. The climate modeling studies reviewed by the Commission as part of its analysis of the pika CESA listing petition, as amended, do not typically consider aspects of a species' ecology other than the apparent correlations of species occurrence with (typically) coarse-scale climate variables. Nor do the models consider the capacity of the species to behaviorally or physiologically adapt to different climatic conditions. Additionally, the studies do not consider changes in human adaptation that could influence the model projected climate change. In sum, a number of survey studies on American pikas in California and elsewhere have explored the relationships between pika occurrence and climate variables. Although climate has been implicated in recent loss of pikas from some historically-occupied sites in some studies, other studies have not found such a pattern.

5. Because of the American pika's thermoregulatory characteristics, it has been suggested that several climate change effects could threaten the continued existence of the species, including mortality and stress associated with increasing temperatures; changes in foraging and dispersal behavior; mortality and stress associated with more extreme cold in the winter; changes in nutrient and water availability in forage plants; increased competition or predation; and combined effects of all these factors. However, American pika have been found in low-elevation areas (for example, Lava Beds National Monument) and studies on talus temperatures show ameliorative benefits of the talus ecology for the American pika (warmer in winter, cooler in summer), both of which suggest that American pika may be sufficiently adaptable to rising temperatures to persist despite global warming.

6. Other potential indirect effects on pikas due to climate change, such as how climate change may affect disease dynamics and predator-prey relations are presently unknown. Livestock grazing near talus habitat may affect pika habitat and cause pikas to change their foraging behavior. Mining may disturb or directly injure pikas. However, these potential impacts are not clearly understood.

7. The Commission considered factors such as overexploitation, predation, competition, and disease to not be a serious threat to the American pika currently or in the foreseeable future.

IV.

ADDITIONAL CONSIDERATIONS INFORMING THE COMMISSION'S FINAL DETERMINATION

The Commission's determination that designating American pika as an endangered or threatened species under CESA is not warranted is informed by various additional considerations. In general, the Fish and Game Code contemplates a roughly 12-month long CESA listing process before the Commission, including multiple opportunities for public and Department review and input, and peer review specifically whenever possible. (See generally Fish & G. Code, § 2070 et seq.; Cal. Code Regs., tit. 14, § 670.1.) The CESA listing process for American pika, in contrast, is approaching the 7-year mark. This length of time is not unusual compared to other recent CESA listing actions by the Commission.[2] What the length of time does underscore in the present case, however, is the depth, breadth, and complexity of the scientific and legal issues that the Commission has considered in making its final determination regarding American pika. This section highlights some of those issues to more fully document the Commission's final determination in the present case.

From the initial receipt of the Center's petition in August 2007 through the Commission's decision in May 2013 that listing is not warranted, the Commission received numerous comments and other significant public input regarding the status of American pika from a biological and scientific standpoint, and with respect to the petitioned action under CESA, including the listing process generally. Similarly, the Commission received many comments focusing on the current and historical status of American pika throughout all or a significant portion of its range. The Commission also received comments regarding the status of American pika under the federal Endangered Species Act (ESA)(16 U.S.C. § 1531 et seq.). Finally, the Commission received various comments and other important information regarding a number of scientific issues related to the status of American pika in California. The Commission, as highlighted below, was informed by and considered all of these issues, among others, in making its final determination that designating American pika as an endangered or threatened species under CESA is not warranted. (Fish & G. Code, § 2075.5(1); Cal. Code Regs., tit. 14, § 670.1, subd. (i)(2).)

SCIENTIFIC DETERMINATIONS REGARDING THE STATUS OF THE AMERICAN PIKA IN CALIFORNIA

CESA directs the Department to prepare this report regarding the status of the American pika in California based upon the best scientific information. Key to the Department's related analyses are relevant factors highlighted in regulation.

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[2] For example, with respect to the California tiger salamander, a species recently designated as endangered or threatened under CESA, the Commission received the petition on January 30, 2004, and adopted findings that listing is warranted on May 20, 2010. (See Cal. Reg. Notice Register 2004, No. 9-Z, p. 270; Cal. Reg. Notice Register 2010, No. 23-Z, p. 855).

Under the pertinent regulation, a "species shall be listed as endangered or threatened ... if the Commission determines that its continued existence is in serious danger or is threatened by any one or any combination of the following factors: (1) present or threatened modification or destruction of its habitat; (2) overexploitation; (3) predation; (4) competition; (5) disease; or (6) other natural occurrences or human-related activities." (Cal. Code Regs., tit. 14, § 670.1 (i)(1)(A)).

Also key from a scientific standpoint are the definitions of endangered and threatened species, respectively, in the Fish and Game Code. An endangered species under CESA, for example, is one "which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, over exploitation, predation, competition, or disease." (Fish & G. Code, § 2062.) A threatened species under CESA is one "that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts required by [CESA]." (Id., § 2067.)

Present or Threatened Modification or Destruction of Habitat

Projections of the effects human-caused climate change would have on the American pika are predicted based on climatic models and models of future habitat extent. These models indicate a possible reduction in the amount of suitable habitat for the American pika in California by the end of this century (2100). However, some of the models that predict American pika habitat failed to predict currently occupied habitat. Alternatively, some of the reduction in climatically suitable habitat conditions for the American pika in California may be ameliorated by behavioral and physiological mechanisms. In summary, the best available scientific information suggests a substantial reduction in the geographic range of the American pika in California could occur by 2100, but the effect on the species' future existence at that time is currently uncertain. A generally warming climate with more extreme weather conditions may have several impacts to American pika populations, including reduced opportunities for successful dispersal between habitat islands, reduced overwinter survival (reduced winter snowpack will reduce insulation cover and create harsher winter conditions or, conversely, heavier snowpack from extreme winters could delay spring emergence of forage vegetation), and these factors may interact with others to increase population impacts. There is significant, current uncertainty about the degree of continued warming and the effect of this continued warming on the ability of the American pika to persist in California during and after the timeframe current modeling suggests climate change may pose a significant threat to the species (2100 and after). In short, the Commission considers future habitat impacts of projected climate change may be a threat to the continued existence of the American pika in California by the end of the century, but not

until then at the earliest based on the best scientific information currently available.

Overexploitation

The American pika in California is designated as a nongame mammal, and therefore may not be legally taken. (See, e.g., Cal. Code Regs., tit. 14, § 472). There is no indication that American pikas have been harvested for recreational or commercial purposes. A few individual American pikas have been captured over the past several years for research purposes; only one mortality from these studies has occurred. The Commission determines based on the best scientific information available, there is not a threat to the species' continued existence due to overexploitation.

Predation

American pikas are subject to predation by a variety of native predators and are adapted to contend with predation pressure by several characteristics, such as vigilant behavior, central-place foraging with good escape cover, and relatively moderate reproduction rate. It is possible climate change may affect the predator-prey relationships for the pika, either by allowing additional predator species to move into areas occupied by the pika or by negatively impacting some current pika predators by altering their preferred prey. Climate change may force individual pikas to contend with greater predation risk while foraging or dispersing, or may relieve them of some predation risk. The Department concluded, and the Commission so finds, that the effects of predation as a threat to pika populations are uncertain, as are any climate change change-induced effects on predation, to American pikas. There is not sufficient scientific evidence to indicate that predation is a current threat to the continued existence of the species in California or that it will be in the foreseeable future

Competition

The Commission does not consider native competitors to the American pika in California to be a threat to the continued existence of the species. However, climate change may allow additional competitor species to move into areas occupied by the American pika and to impact those American pika populations. Additional or new competitors may reduce the fitness of individual pikas and reduce the viability of American pika populations where the competitors invade. However, it is also possible that some native competitors will be adversely affected by climate change, thus relieving American pikas of some competition from these species. The Department concluded, and the Commission so finds, that the effect and magnitude of climate change on species competition with American pikas are currently unknown. There is not sufficient, current scientific evidence to indicate that competition is a threat to or that it will be a threat in the foreseeable future to the continued existence of the American pika in California.

Disease

Diseases occur naturally in American pika populations. Health assessments of American pika populations in California are just beginning. As with the other factors, however, it is possible that climate change may facilitate the transmission or increase the virulence of diseases currently endemic in American pika populations. The Commission could not currently determine the magnitude of the risks to pika populations from disease, nor from the interaction of climate change and disease. The best scientific information available to the Department and the Commission from disease studies in other pika populations suggests this factor is not currently a threat nor will it be a threat in the foreseeable future to the continued existence of the species in California.

Other Natural Occurrences or Human-related Activities

The Commission does not consider mining or grazing to be significant threats to the continued existence of the American pika in California. Other human-related activities contribute to global climate change (e.g. fossil fuel emissions, land use practices, agricultural practices), and therefore indirectly threaten American pika populations in California through the habitat, competition, predation, and disease pathways discussed above. Most human-related (anthropogenic) contributions to global climate change are projected to increase in the future. The Commission finds that anthropogenic contributions to climate warming may pose a threat to the species by the end of the 21st century, but that the species is not currently in serious danger of becoming extinct throughout all or a significant portion of its range in California and the same is true of the foreseeable future.

Summary of Key Findings

Based on the criteria described above, the best scientific information available to the Commission indicates the American pika is not currently in serious danger of becoming extinct in California in the next few decades, nor at any time by the end of the century even if existing climate change models and the currently predicted trajectory of suitable pika habitat in California comes to fruition at that time. At the present time, in contrast, the species is widespread through its known range in California and the uncertainty of the models precludes the ability of the Commission to categorically know or state the danger of the threat to the species. Models predict reduction in American pika habitat and therefore populations, distribution, and abundance, but not extinction.

It will be imperative for the Department and for the conservation community to study and monitor the distribution and abundance of the American pika over the next few decades, and as climate change models become more data driven, to be able to better assess the foreseeable future. Such monitoring will ultimately inform the Department from a scientific basis whether the American pika is

trending toward a serious danger of becoming extinct, or not. In that regard, the Department has made a number of future management recommendations, including:

- Habitat-specific demographic information for the American pika, as per Kreuzer and Huntly (2003), should be collected by the Department and its partners. Such studies would inform conservation planning for the American pika by allowing better evaluation of habitat areas needing protection, as well as adaptation planning for climate change.
- Comprehensive genetic studies of American pika populations in California and adjacent states should be conducted to provide a better understanding of the genetic structure of the schisticeps subspecies. Such information is essential for conservation planning.
- Research and consider implementing management activities that would ensure that American pika populations persist despite projected climate change impacts.
- Continue and expand monitoring efforts for pika populations and their habitat as part of comprehensive climate change monitoring and adaptation planning for high-elevation small mammal communities in California.[3]
- Assess and recommend measures to reduce potential significant impacts to American pika populations associated with activities such as mining and livestock grazing, as part of the environmental review process for such projects.
- Assess the greenhouse gas emissions associated with proposed projects and activities reviewed under the California Environmental Quality Act. Such assessments and associated recommendations should be made by the Department as part of its general approach to the issue of climate change.
- Adaptation planning for climate change impacts on California's wildlife is an on-going task of the Department. See the California Climate Change

[3] The Department, along with federal and academic partners, led the formation in 2009 of the California Pika Consortium (CPC). The CPC consists of pika researchers, wildlife and land management agency representatives, and non-government organization members with its major purpose of facilitating communication on issues related to the American pika and other high-elevation small mammals in California. The group has generally met once or twice a year since its first meeting in 2009 to share information, prioritize research topics, discuss standardized field techniques, and to visit natural and human-made pika sites in the eastern Sierra Nevada and western Great Basin. The CPC served as the model for the formation of the North American Pika Consortium (NAPC), which pursues similar goals throughout the geographic range of pikas in North America; CPC members are actively engaged with NAPC activities. These two organizations provide a forum for discussions of American pika biology, conservation, and adaptation planning. The Department will continue to rely on the CPC for information related to the American pika.

Adaptation Strategy (California Natural Resources Agency 2009 and DFG's Vision Document, DFG Climate Science Web Page) for more information. The Department, along with its diverse group of stakeholders, is also actively working to address climate change adaptation actions for fish, wildlife, and habitats across the state. Integrating climate change considerations into Department functions, management activities, and conservation planning efforts such as the state Wildlife Action Plan, are serious undertakings by the Department that have placed it on the path towards successfully addressing climate change and the many challenges it presents.

- Complete the Mammal Species of Special Concern update to determine whether the American pika should be designated as a Species of Special Concern.[4] Conduct the follow-up climate-change analysis for the American pika and other at-risk mammal taxa currently funded by a State Wildlife Grant. Depending on the results of these analyses, the American pika may be among those species prioritized for additional research and monitoring if funding is available.

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[4] "Species of Special Concern" (SSC) is a Department administrative designation intended to alert biologists, land managers, and others to a species' declining status and to encourage them to afford these species additional management consideration. SSCs are defined as species, subspecies, or distinct populations of an animal native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria: is extirpated from the State or, in the case of birds, in its primary seasonal or breeding role; is listed as federally-, but not State-, threatened or endangered; meets the State definition of threatened or endangered but has not been formally listed; is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status; has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status (Comrack et al. 2008).

The Mammal Species of Special Concern (MSSC) list had been in a state of ad hoc revision since the list was established in 1986 (Williams 1986). The American pika is not currently designated as an MSSC. The MSSC list is now undergoing a formal update and revision using an objective, criterion-based method developed by the Department (see Shuford and Gardali 2008 for a recent published example of the current method). As part of the update process, the American pika is being evaluated, scored, and ranked using eight criteria along with all other mammalian taxa naturally occurring in California. It is too early in the evaluation process to ascertain whether the American pika will be on the updated MSSC list. Additional evaluation of climate change impacts to California mammals, including the American pika, will be made in a follow-up analysis for the MSSC project.

Finally, the issues highlighted in this section represent only a portion of the complex issues aired and considered by the Commission during the CESA listing process for American pika. The issues addressed here in these findings represent some, but not all of the information, issues, and considerations affecting the Commission's final determination. Other issues aired before and considered by the Commission are addressed in detail in the Commission's administrative record of proceedings.

V.
FINAL DETERMINATION BY THE COMMISSION

The Commission has weighed and evaluated all information and inferences for and against designating American pika as an endangered or threatened species under CESA. This information includes scientific and other general evidence in the Center's 2007 petition, as amended, the Department's 2008 Candidacy Evaluation Report and 2013 Status Review, and the Department's related recommendations based on the best available science, written and oral comments received from members of the public, various public agencies, and the scientific community; and other evidence included in the Commission's administrative record of proceedings. Based upon the evidence in the administrative record the Commission has determined that the best scientific information available indicates that the continued existence of American pika in California is not in serious danger or threatened in the foreseeable future by present or threatened modifications or destruction of the species' habitat, overexploitation, predation, competition, disease, or other natural occurrences or human-related activities; stated another way, the Commission did not find sufficient evidence of endangerment at this time. (See generally Cal. Code Regs., tit. 14, § 670.1, subd. (i)(1)(A); Fish & G. Code, §§ 2062, 2067.) The Commission finds for the same reason that there is not sufficient scientific information at this time to indicate that the petitioned action is warranted. (See *Id.*, § 2070.) The Commission finds, as a result, that designating American pika as an endangered or threatened species under CESA is not warranted and that, with adoption of these findings, American pika for purposes of its legal status under CESA shall revert to its status prior to the filing of the Center's 2007 petition. *(Id.*, § 2075.5(2); Cal. Code Regs., tit. 14, § 670.1, subd. (i)(2).)

Fish and Game Commission

Dated: December 11, 2013

Sonke Mastrup
Executive Director