

## Memorandum

Date: August 1, 2012

To: Sonke Mastrup  
Executive Director  
Fish and Game Commission

From: Charlton H. Bonham  
Director



Subject: **Initial Review of Petition to List the Gray Wolf (*Canis lupus*) under the California Endangered Species Act (CESA)**

The Department of Fish and Game (Department) has completed its initial evaluation of the petition to list the gray wolf (*Canis lupus*) under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.). Dated February 27, 2012, and submitted by the Center for Biological Diversity, Big Wildlife, the Environmental Protection Information Center, and Klamath-Siskiyou Wildlands Center (collectively, the petitioners), the Fish and Game Commission (Commission) received the petition on March 12, 2012, referring it to the Department the next day (Cal. Reg. Notice Register 2012, No. 15-Z, p. 494.). The Commission granted the Department a 30-day extension to complete its initial evaluation on June 20, 2012.

The Department conducted and completed its initial evaluation as required by the Fish and Game Code and related regulation. Specifically, the Department evaluated the petition on its face and in relation to other relevant information to determine in its own opinion whether there is sufficient information to indicate that the petitioned action may be warranted (Fish & G. Code, § 2073.5, subd. (a).). The focus of the Department's evaluation is scientific, and we present our analysis and related recommendation to the Commission from that perspective (Cal. Code Regs., tit. 14, § 670.1, subd. (d).). The Department does so understanding that, for purposes of listing determinations under CESA, the species' range at issue is California (*California Forestry Association v. California Fish and Game Commission* (2007) 156 Cal. App. 4<sup>th</sup> 1535, 1551.).

In many ways the petition to list gray wolf presents unprecedented challenges for the Department. Although the Center for Biological Diversity (Center) has submitted nine of the last ten CESA listing petitions to the Commission, the Center and its co-petitioners did not submit any of the materials referenced in the petition to the Commission or the Department and in some cases presented no references to support a claim. The petition on its face, in this respect, does not provide sufficient information to indicate that the petitioned action may be warranted.

Even so, the Department is still charged by law to evaluate the petition on its face in relation to other relevant information it possesses or receives during its initial review. That information includes all the material referenced in the petition, which the Department obtained through its own effort, and other material identified by source in

the Department's evaluation report. A review of that relevant information in relation to the petition leads the Department to recommend that the Commission accept the petition for further consideration. The Department believes based on its initial scientific evaluation that there is sufficient information to indicate at this time that the petitioned action may be warranted. (Fish & G. Code, § 2073.5, subd. (a)(2).) In so doing, the Department also expresses no opinion as to whether actual listing is warranted.

In making its recommendation and highlighting the challenges mentioned above, the Department emphasizes that there is very little scientific information regarding wolves that is specific to California. Indeed, in reviewing available information for each of the topic areas identified in the controlling regulation the lack or limited nature of verifiable scientific information and related uncertainty is a common theme. The only scientific certainty at this time, for example, is the documented presence of a single male wolf, "OR-7", that crossed into the State for the first time in December 2011. In terms of other information specific to the State, anecdotal historic reports and the fossil record suggest that wolves were likely broadly distributed in California at some time prior to the species' extirpation in the early twentieth century. The documented occurrence of OR7 in California is, in this respect, both historic and a scientific certainty.

The documented presence of OR7 is an important part of, but not the tipping point for the Department's recommendation to designate the wolf as a candidate species under CESA. Other relevant information possessed by the Department indicates that wolf populations are increasing and expanding in other Western States; that California may include suitable habitat to sustain a population of wolves, if established; and that it is possible, given existing information, that naturally dispersing wolves from other states will enter California at some time in the future and may establish a breeding population. In combination, available information leads the Department to believe that there is sufficient scientific information at this time, particularly with respect to the most biologically critical factor, population size (*i.e.*, one), to indicate that the petitioned action may be warranted.

Importantly, as the Commission likely knows, the Department already has a strong start planning for the management of wolves should the range expansion that started in other states continue to include California. Even prior to the arrival of OR7, the Department had begun compiling historical information and documentation regarding wolves in California. With the arrival of OR7, the Department immediately made a significant effort to communicate with and listen to the many stakeholders with important interests tied to the presence of wolves in California. Since that time, we have continued to consistently coordinate with other agencies, local governments, and stakeholders for the purpose of beginning to develop a management plan for the species in California. As we look to future, and notwithstanding our recommendation today, I continue to believe that advance planning for the management and conservation of the wolf is the best course moving forward for both the species and the people of California.

Sonke Mastrup, Executive Director  
August 1, 2012  
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If you have any questions or need additional information, please contact Dan Yparraguirre, Deputy Director of the Wildlife and Fisheries Division at (916) 653-4673 or Dr. Eric Loft, Chief of Wildlife Branch at (916) 445-3555.

Attachment

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**State of California  
Natural Resources Agency  
Department of Fish and Game**

**REPORT TO THE FISH AND GAME COMMISSION**

**EVALUATION OF THE PETITION**

**FROM THE CENTER FOR BIOLOGICAL DIVERSITY,  
BIG WILDLIFE, THE ENVIRONMENTAL PROTECTION INFORMATION CENTER,  
and the KLAMATH-SISKIYOU WILDLANDS CENTER**

**TO LIST GRAY WOLF (*Canis lupus*)  
AS AN ENDANGERED SPECIES  
UNDER THE  
CALIFORNIA ENDANGERED SPECIES ACT**

**August 1, 2012**



\*photo courtesy of Oregon Dept. of Fish & Wildlife (ODFW)

**Charlton H. Bonham, Director  
Department of Fish and Game**



## EXECUTIVE SUMMARY

The Center for Biological Diversity, Big Wildlife, the Environmental Protection Information Center, and the Klamath-Siskiyou Wildlands Center (collectively, the Petitioners) submitted a petition (Petition) to the California Fish and Game Commission (Commission) dated March 5, 2012 to list the gray wolf (*Canis lupus*) (wolf) as an Endangered Species pursuant to the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.). The Commission received the Petition on March 12, 2012, referring it to the Department of Fish and Game (Department) for an initial evaluation on March 13, 2012. (Cal. Reg. Notice Register 2012, No. 15-Z, p. 494.) On June 20, 2012, the Commission granted a request by the Department for an additional thirty (30) days to complete its initial evaluation of the Petition. The Petition as submitted to the Commission and referred to the Department does not include the scientific literature referenced in the Petition.

The evaluation set forth below and this report overall presents the Department's initial scientific evaluation of the Petition as required by Fish and Game Code section 2073.5. (See also Cal. Code Regs., tit. 14, § 670.1, subd. (d).) Consistent with that authority, this report evaluates the scientific sufficiency of the Petition on its face and in relation to other relevant information the Department possesses or that it received during its review. As part of its effort the Department gathered on its own volition and reviewed the information referenced in, but not included with the Petition as submitted to the Commission. In addition to the face of the Petition and the referenced material, the Department also considered other relevant information in its possession. In general, separate from the material referenced in the Petition, the sources of information considered by the Department in preparing this report are identified in the References Section below. Of note in terms of other relevant information considered by the Department are the *2011 Gray Wolves in California* (CDFG) evaluation planning document and the Federal/State Coordination Plan for Gray Wolf Activity in California (USFWS/APHIS/CDFG 2012)

For the reasons highlighted in this Executive Summary and as addressed in detail below, the Department recommends that the Commission accept the Petition for further consideration under CESA. Having evaluated the Petition on its face and in relation to other relevant information, the Department believes there is sufficient information to indicate at this time that the petitioned action may be warranted. (Fish & G. Code, § 2073.5, subd. (a)(2).) The Department's finding and its recommendation to the Commission is based on an evaluation of the scientific information in the Department's possession at this time relevant to the topic areas enumerated in the controlling regulation. (Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1).) Likewise, in evaluating the scientific sufficiency of the available information, the geographic context for the Department's analysis and recommendation is the species' range in California. (*California Forestry Association v. California Fish and Game Commission* (2007) 156 Cal. App. 4<sup>th</sup> 1535, 1551.)

The Petition relies heavily on studies of the Rocky Mountains Gray Wolf Distinct Population Segment (DPS) of *Canis lupus*, including relevant information from

Oregon, Idaho, Washington, and Montana wolf populations. The Petition itself, both on its face and in terms of referenced material, provides no direct evidence or other information specific to the current status of wolves in California. Indeed, the Department recognizes that information related to gray wolves in California specifically is limited to the fossil record, historical anecdotal records, and the documented, intermittent presence of a single individual for the first time in more than 80 years. The current abundance of wolves in California from a scientific perspective is one. This limited information is not sufficient to make initial scientific conclusions about wolf population trend directly related to California.

Against this backdrop the Petition focuses primarily on information from Oregon and Idaho gray wolf populations. The Petition also presents modeling and related projections to support a hypotheses regarding a possible wolf population in California should the species become established in the State at some point in the future. In general, the Petition asserts listing is appropriate under CESA because of the documented increase and expansion of wolf populations in Western States other than California, and because modeling suggests suitable habitat exists in California to support a wolf population should the species become established in the State.

Anecdotal evidence exists that wolves were present historically in California in the Sierra Nevada, southern Cascades, Modoc Plateau, and Klamath Mountains and possibly in other areas, although their occurrence in these areas is poorly documented. There was some historical reporting of the presence of multiple wolves, or a pack of wolves, in some areas of California that indicates the likely presence of a population(s). Historical population information is unavailable and only two scientifically confirmed historical wolf occurrences are known. The paucity of documented reliable observations in California suggests that the population was not large and has been extirpated for approximately 80 years.

Gray wolves are expanding in the American west with substantial populations in Wyoming, Montana and Idaho, and smaller, recently established reproducing populations in Washington and Oregon. Gray wolves are very mobile. Wolf packs are dynamic entities and single wolves can disperse over long distances. These factors create the potential that additional gray wolves may disperse into California, most likely from Oregon, or through Oregon or Nevada from Idaho.

Wolves are habitat generalists and historically occupied diverse habitats in North America, including tundra, forests, grasslands, and deserts. Their primary habitat requirements include adequate ungulate prey and water. Generally, wolves are present in areas with adequate prey where the likelihood of human contact is relatively low.

Wolves are known to prey mainly on elk and deer. California elk populations are much smaller than those in states with current gray wolf populations, leaving mule deer as the most likely prey species for wolves in California. However,

California's deer populations are considered to be near their lowest numbers since the early 1900's.

The Petition identifies human impacts on wolves as the major threat to the establishment of a sustainable wolf population in California. Humans impact wolf populations through intentional predation (shooting or trapping), vehicle collisions, exposure to diseases from domestic animals, and through habitat destruction and fragmentation. Based on review of studies from other states the Department generally agrees that if wolves become established in California, impacts from human interaction would likely be the major threat.

Under current law, any non-domestic wolf in California is protected as endangered under the federal Endangered Species Act (ESA) (16 U.S.C. § 1531 et seq.). Wolves, as a species native to California, are also afforded protection under the California Fish and Game Code. (See, e.g., Fish & G. Code, §§ 2000, 4150.) Other existing California statutes also provide some protection, including the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.).

The Petition identifies several suggestions for the future management of wolves in California, including conservation planning for wolf re-colonization, planning for conflict between wolves and humans, outreach and education efforts, and relocation of wolves to California if they are not established naturally. In-depth scientific study of gray wolves and how they relate to California's habitats, resource management, economics, recreation, and human attitudes would be necessary before drawing conclusions about what future management actions would be important to sustain wolves in California.

To summarize, by failing to include any referenced material with the Petition as submitted to the Commission, the Petition on its face does not include sufficient information, scientifically or otherwise, to indicate that the petitioned action may be warranted. Having reviewed and evaluated other relevant information, however, including the material referenced in the Petition and other information in the Department's possession, the Department believes there is sufficient scientific information available at this time to indicate that the petitioned action may be warranted. In making this recommendation to the Commission, the Department emphasizes that, at present, only extremely limited information regarding wolves in California currently exists and even then, from a scientific perspective, that information only supports hypotheses, as opposed to constituting verifiable scientific evidence. As to the science available at this time and the reasonable inferences that can be drawn from that information, it indicates to the Department at this time that wolves were likely broadly distributed in California historically; that humans likely purposefully extirpated the species in California early in the twentieth century; and that a single lone wolf, a dispersing young male named "OR7," entered California in December 2011, remaining largely in the State since that time. In the Department's opinion, other relevant information indicates that wolf populations are increasing and

expanding in the Western States outside of the State; that California may include suitable habitat to sustain a population of wolves, if established; and that it is possible, given that information, that naturally dispersing wolves from other states will enter California and may establish a breeding population. With that, when the Department considers the Petition on its face and in relation to other relevant information, it believes there is sufficient scientific information at this time, particularly with respect to the most biologically critical factor, population size, to indicate that the petitioned action may be warranted. (See Fish & G. Code, § 2073.5, subd. (a)(2); Cal. Code Regs., tit. 14, § 670.1, subd. (d).)

## **INTRODUCTION**

The subject of this evaluation report is the Petition to list the gray wolf as an Endangered Species in California pursuant to CESA submitted by the Petitioners to the Commission on March 12, 2012. This evaluation report is intended to inform the Commission's related determination as to whether the Petition, when considered with this evaluation report and other related information before the Commission, provides sufficient information to indicate the petitioned action may be warranted. (See generally Fish & G. Code, §§ 2073.5, 2074.2; Cal. Code Regs., tit. 14, § 670.1, subds. (d), (e).) The Department's charge and focus in its advisory capacity to the Commission is scientific. Consistent with controlling law, the Department has conducted its initial review of the Petition and bases its recommendation to the Commission focused on the sufficiency of scientific information. (*Id.*, subd. (d)(1).)

## **GENERAL PETITION PROCESS INFORMATION**

A petition to list or delist a species under CESA must include "information regarding the population trend, range, distribution, abundance, and life history of a species, the factors affecting the ability of the population to survive and reproduce, the degree and immediacy of the threat, the impact of existing management efforts, suggestions for future management, and the availability and sources of information. The Petition shall also include information regarding the kind of habitat necessary for species survival, a detailed distribution map, and other factors the Petitioner deems relevant." (Fish & G. Code, § 2072.3.)

## **BACKGROUND ON GRAY WOLF LIFE HISTORY AND ECOLOGY**

The following background discussion provides an overview of gray wolf life history and ecology from ranges where the gray wolf occurs and has been studied. Because wolves in California have never been studied scientifically, it is uncertain whether all the information applies to California or will apply to future conditions in California.

### **Life History**

*Taxonomy.* Gray wolves are the largest wild members of the dog family (Canidae) in North America. Gray wolves, as currently classified by the United States Fish and Wildlife Service (USFWS), are established in the Western Great Lakes and Northern Rocky Mountain (NRM) Distinct Population Segments (DPSs). Western Washington, Western Oregon, and Northern California are outside of the NRM DPS, but any



wolves in these geographic areas are also classified as gray wolves (USFWS 2011b).

The USFWS (2011b) is currently evaluating whether Mexican wolves in the American southwest should be classified as *Canis lupus baileyi* or as a DPS of *Canis lupus*. The USFWS is currently proposing that the eastern gray wolf be recognized as a full species, *Canis lycaon* (USFWS 2011b). Red wolves (*Canis rufus*) were originally widespread throughout the southeastern United States but were declared extinct in the wild in 1980. They have since been reintroduced in North Carolina.

Wolves are often confused with coyotes (*Canis latrans*) and domestic dogs (*C. lupus familiaris*), and wolf hybrids, which result from the mating of a wolf and a domestic dog.

*Physical Characteristics.* Depending upon sex and geographic region, adult gray wolves range from 18-80 kg (40-175 lb) in weight (Mech 1974). Males are generally slightly heavier and larger than females, and vary in length from 1.3-1.6 m (4.2-5.4 ft). Shoulder height ranges from 66-81 cm (26-32 in) (Utah Division of Wildlife Resources 2005). Male wolves inhabiting the Northern Rocky Mountains average over 45 kg (100 lbs) but may weigh up to 60 kg (130 lbs) (USFWS 2009a). Gray wolves generally weigh about twice as much as coyotes (Dixon 1916).

The fur of gray wolves is most often grizzled gray, but varies from white to coal black (Young and Goldman 1944). Additionally, wolf features are generally less “pointed” than those of coyotes; their ears are more rounded and their muzzles are broader (Young and Goldman 1944). Wolves can usually be distinguished from domestic dogs by their relatively longer legs, larger feet and narrower chest (Banfield 1974). In contrast to many domestic dogs, wolves have straight tails that do not curl up at the tip; a wolf carries its tail slightly below the level of the back though this varies when wolves are at play or frightened (Young and Goldman 1944).

*Social Behavior and Reproduction.* Wolves are social animals and normally live in packs of 2 to 12 animals but much larger packs sometimes occur (USFWS 2003). Pack size is largest in fall and early winter when pups are integrated into the pack. Reductions in pack size by late winter typically occur as a result of mortality and dispersal of younger animals (Paquet and Carbyn 2003).

Packs live within territories that they defend from other wolves. Territory sizes can range from 52 to 1,821 square kilometers (20 to 703 square miles), with the average being around 596 to 932 square kilometers (230 to 360 square miles), depending on available prey and seasonal prey movements (USFWS 2000, Rich 2010). Wolf territories in the NRM DPS tend to be larger (USFWS 2003). Wolves communicate via posture, scents, and vocalizations. Wolves are believed to howl to reinforce social bonds within the pack, sound alarm, locate pack members, and warn other wolves to stay out of their territory (Paquet and Carbyn 2003). Wolves howl more

frequently in the evening and early morning, especially during winter breeding and pup-rearing.

Wolf packs usually include a top-ranking (“alpha”) pair, their offspring from the current year, and non-breeding adults (principally their offspring from previous years, but also sometimes non-related animals). Typically, only the alpha male and female in each pack breed and produce pups (Mech and Boitani 2003; USFWS 2003).

Females and males generally begin breeding as 2-year olds and packs typically produce one litter annually. The gestation period is 62-63 days. Most litters (1 to 11 pups) are born in early to mid-spring and average five pups. Pups are cared for by the entire pack, and on average four pups survive until winter (USFWS 2009a).

Birth usually takes place in a sheltered den, such as a hole, rock crevice, hollow log, or overturned stump. Young are blind and deaf at birth and weigh an average of 450 g (14.5 oz) (Utah Division of Wildlife Resources 2005). Pups generally emerge from dens at 3-4 weeks of age (Paquet and Carbyn 2003). Pups depend on their mother’s milk for the first month, but are gradually weaned and fed regurgitated meat brought by pack members. As pups age, they may leave dens but remain at “rendezvous sites”, usually with an adult, while other adult pack members forage. Specific dens and rendezvous sites are sometimes used from year to year by a given pack (Paquet and Carbyn 2003). By seven to eight months of age, when they are almost fully grown, the pups begin traveling with the adults. After a year or two, wolves may disperse and try to find a mate and form a pack.

Pack social structure is generally adaptable and resilient. Breeding members can be quickly replaced from within or outside the pack, and pups can be reared by another pack member should they become orphaned. Consequently, wolf populations can recover rapidly following severe disruptions, such as high levels of human-caused mortality, or disease (USFWS 2009a).

*Mortality.* Wolves may live up to 13 years in the wild (Mech 1988). In the NRM DPS, however, the average lifespan is less than four years (USFWS 2009a). Causes of mortality for gray wolves include starvation, disease, intraspecific aggression, interspecific conflicts, accidents, and human-related events (e.g., legal and illegal harvest, collisions with vehicles) (Paquet and Carbyn 2003). The USFWS et al. (2011a) summarized the most recent information on wolf mortality from the NRM DPS. “In 2010 all documented human-caused mortality (agency authorized control, hunting, and other human-caused) removed 179 wolves in MT, 142 in ID, and 56 in WY. This meant that 24% of the estimated minimum wolf populations in MT, 17% in ID, and 13% in WY were known to be killed by people in 2010. In addition, past research on radio-collared NRM DPS wolves from 1984-2004 (Murray et al. 2010; Smith et al. 2010) indicated roughly 26% of adult-sized wolves died annually (80% of all mortality was caused by humans) and the population still grew >20% annually.”

*Food Habits.* Wolves travel over large areas to hunt, and may cover as much as 48 km (30 mi.) in a day. They generally prefer the easiest available travel routes (Paquet and Carbyn 2003) and often use semi-regular routes, sometimes referred to as “runways”, through their territory (Young and Goldman 1944). Wolves primarily prey on medium and large mammals, especially ungulates. Other mammals, birds, and large invertebrates are also sometimes taken (Paquet and Carbyn 2003). In areas where wolves and livestock coexist, wolves kill livestock, including sheep, cattle, goats, horses, and llamas.

*Movements.* Although some animals remain with their natal pack, yearling wolves are frequently known to disperse and attempt to join other packs, establish new territories within occupied habitat, or form their own packs in unoccupied habitat (Mech and Boitani 2003). Although the average dispersing distance of Northern Rocky Mountain wolves is about 97 km (60 mi), some animals (albeit a very small percentage) disperse long distances. Individual wolves can disperse over 1094 km (680 mi) from their natal pack, with actual travel distances, documented through global positioning system technology, exceeding 9,656 km (6,000 mi) (USFWS et al. 2011a). In recent years, dispersing wolves have established packs within Washington and Oregon. California is within documented dispersal distances from extant wolves in Oregon, Washington, and Idaho.

*Habitat Requirements.* Wolves are habitat generalists and historically occupied diverse habitats in North America, including tundra, forests, grasslands, and deserts. Their primary habitat requirements are the presence of adequate ungulate prey, and water. As summarized by Paquet and Carbyn (2003), habitat use is strongly affected by the availability and abundance of prey, availability of den sites, ease of travel, snow conditions, availability of protected public lands, density of livestock, road density, human presence, and topography. Suitable habitat generally consists of areas with adequate prey where the likelihood of human contact is relatively low (Mladenoff et al. 1999). Large undeveloped tracts of public land often provide suitable habitat and are generally required for the persistence of regional wolf populations in North America (Paquet and Carbyn 2003). The primary role of wild lands in benefiting wolves appears to be that they reduce human access and, thus, provide indirect protection for wolves (Mech 1995). However, gray wolves continue to expand their range in the U.S., and some wolves live proximate to substantial human development. Haight et al. (1988) concluded that wolves can likely survive in such areas, as long as disjunct populations are linked by dispersal, prey is abundant, and human persecution is not severe.

## **Distribution**

*Historical Occurrence and Distribution in California.* Although gray wolves formerly inhabited California, their historical abundance and distribution is unclear (Schmidt 1991, Shelton and Weckerly 2007). While there are many anecdotal reports of wolves in California, specimens were rarely preserved. The historical range of the wolf in California has been reported to include the Sierra Nevada, southern Cascades, Modoc Plateau, Klamath Mountains, and perhaps the North Coast

Ranges (Stephens 1906; Grinnell et al. 1937; Hall 1981; Paquet and Carbyn 2003). Schmidt (1991) concluded that wolves “probably occurred in the Central Valley, the western slope of the Sierra Nevada foothills and mountains, and the Coast Ranges of California until the early 1800s, although their population size is unknown and may have been small.”

Writings of early California explorers, settlers, and naturalists often refer to wolves. These descriptions were often accompanied by little detail and it is likely that many accounts are either erroneous or unfounded. Coyotes (*Canis latrans*) were often referred to as wolves or prairie wolves in California and other western states in the late 1800s and early 1900s (Grinnell et al. 1937, Bruff 1949), and coyotes in the Sierra Nevada, southern Cascades, and Klamath Mountains were frequently called gray wolves or timber wolves (Grinnell et al. 1937).

Based on available information, including known misidentifications, there is little credibility in many of these reports. An example of such an account is found in an 1827 journal entry describing life near the San Gabriel Mission (Los Angeles County): “Still at the mission...myself and Mr. McCoy went up into the mountains to see if we could find some deer [deer]; I saw two and wounded one, killed a wolf and two ducks...” (Rogers 1918). As no description of the wolf is presented, and no evidence from other parts of the journal indicated the author was familiar with coyotes, it is impossible to determine if the author was referring to *Canis lupus* or *Canis latrans*. Historical documentation from Pedro Fages, a Spanish soldier, describes observing wolves several times on a journey from San Diego to San Francisco in 1769 (Priestly 1937).

Dixon (1916) described fruitless efforts to obtain wolf specimens for the University of California: “For several years past the Museum of Vertebrate Zoology...has endeavored to corroborate reported occurrences of timber wolves in California, but without obtaining a single specimen. Several quite convincing reports of such captures have reached the Museum from time to time, but whenever the skin or skull was secured, the animal always proved to be a large mountain coyote...”

Except for the few cases where authors specifically mentioned both wolves and coyotes, or provided additional information suggesting their wolf observations were authentic, the anecdotal observations described in early writings must be treated with skepticism.

The Department is aware of only two museum verifiable specimens of naturally-occurring wolves from California. Both are males located in the Museum of Vertebrate Zoology (MVZ) at University of California, Berkeley (Jurek 1994). One specimen was collected in the Providence Mountains, San Bernardino County, in 1922 (Johnson, et al. 1948). It weighed roughly 45 kg (100 lbs) and apparently was caught in a steel trap “while pursuing a bighorn sheep” (Grinnell et al. 1937). Johnson et al. (1948) noted that, “This is the only record known to us of the occurrence of wolves in the Providence Mountain area, or, for that matter, anywhere

in southeastern California.” Based on an examination of the skull, the authors concluded that this animal was more closely related to southwestern subspecies than wolves from Oregon. Given taxonomy currently proposed by the U.S. Fish and Wildlife Service (2011b), this animal may have been a Mexican wolf (*Canis baileyi*) (Johnson et al. 1948).

The other specimen was collected in 1924, near Litchfield, in Lassen County. It was fairly old, missing a portion of a hind leg, and was emaciated. Though it weighed only 25 kg (56 lbs), it was estimated that in good condition it would have weighed approximately 39-41 kg (85-90 lbs) (Grinnell et al. 1937).

Taken together, the available information suggests that wolves may have been widely distributed in California, particularly in the Klamath Mountains, Sierra Nevada, Modoc Plateau and Cascade Mountains. However, most of the observations are ambiguous as to whether the observer was reporting a wolf or a coyote and physical specimens are very few in number. In summary, historic anecdotal observations are most consistent with a hypothesis that wolves were not abundant, but widely distributed in California.

### **Current Wolf Information in California**

The first gray wolf detected in California after many decades occurred in December 2011 with the arrival of “OR7,” a radio-collared, sub-adult gray wolf that dispersed from a pack in Oregon. It is believed that OR7 is exhibiting normal dispersal behavior for young male wolves, seeking to find other wolves, to establish his own pack, and/or to become part of an established wolf pack. Current information on the single known wolf in California is available at:  
<http://www.dfg.ca.gov/wildlife/nongame/wolf/> (CDFG 2011b).

OR7 entered California in Siskiyou County, travelling to portions of Siskiyou, Shasta and Lassen Counties until March 6, 2012, when he returned to Oregon. OR7 has since crossed over the state line several more times since and is currently (late June 2012) back in California.

<http://www.dfg.ca.gov/wildlife/nongame/wolf/>

*Background on the Origin of OR7.* The male wolf known as “OR7” was born in Northeastern Oregon in spring 2009. It weighed approximately 41 kg (90 lbs) when collared with a radio transmitter by Oregon Department of Fish and Wildlife (ODFW) in February 2011. Biologists refer to OR7 by that name because he is the seventh wolf radio-collared in Oregon. OR7’s collar transmits location information to satellites on a daily basis and it is expected to continue to function until at least 2013.

OR7 dispersed from the Northeastern Oregon’s Imnaha pack in September 2011. The Imnaha pack was first documented in 2009 and currently occupies much of the Imnaha River drainage (east of the communities of Enterprise and Joseph) in Wallowa County, Oregon. The founding members of this pack migrated into Oregon from Idaho.

Although the Imnaha pack had as many as 16 wolves in 2010, it may now have as few as five animals. Several members died in 2011, and four radio-collared wolves (including OR7) have dispersed from the pack since December 2010. According to ODFW, it is likely that some or all of the remaining pack members may have also dispersed from the pack.

Between September and early November 2011, OR7 followed an approximately southwesterly course. On December 28, 2011, OR7 crossed into California northeast of Dorris, a small town in Siskiyou County.

Since arriving in California, OR7 has traveled in the Southern Cascade Mountains and across portions of the Modoc Plateau. Its average daily movement has been approximately 24 air kilometers (15 air miles). Since animals do not typically walk in straight lines, the actual distance OR7 travels is likely much larger. Dispersing wolves can readily traverse most habitat types and OR7 has passed through ponderosa pine forests, mixed conifer forests, lava flows, sagebrush shrublands, juniper woodlands, and agricultural lands. Although OR7 has used private lands (timberlands in particular), most of its route has traversed public lands.

OR7 has passed back and forth over the California/Oregon border several times over the last five months and, as of June 19, 2012, was in Lassen County, California. The path taken by OR7 through northeast California is somewhat haphazard, viewable in detail at:

<http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=42104&inline=true>

### **Management Status**

The following information provides some background on the legal status of non-domestic gray wolves in California and related public agency management authority (USFWS/APHIS/CDFG 2012). Of note, wolf hybrids and domestically raised wolves have no Federal or State legal status.

The gray wolf is listed as endangered throughout portions of its range, including California, under the Federal Endangered Species Act of 1973 (16 U.S.C. § 1531 *et seq.*)(ESA). Wolves that enter California are therefore protected by the ESA, which for purposes of the wolf is administered and enforced by the USFWS. Under the Federal ESA, the USFWS has lead responsibility for wolves in California.

For species listed as endangered or threatened under the Federal ESA, activities that result in “take” of the species are prohibited. The ESA defines “take” to mean “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” Harass is further defined as “an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering” (50 CFR 17.3).

The gray wolf is not a listed species under CESA and the State's related take prohibition does not apply. (See Fish & G. Code, §§ 86, 2080.) Wolves are considered non-game mammals under the California Fish and Game Code, the taking of which is prohibited by State law except under limited circumstances. (See, e.g., *Id.*, §§ 2000, 4150.) The Fish and Game Code also authorizes the California Fish and Game Commission to promulgate related regulations. (See *Id.*, § 200.)

While the Federal gray wolf recovery program in the Northwestern United States is focused on maintaining viable wolf populations, there are no federally sponsored plans to enhance wolf recovery in California. However, wolves may continue to move into California from adjacent states, and it is anticipated that more animals may disperse to California in the future. In recognition of the fact that wolf packs may become established in California in the future, the Department and cooperators, which include USFWS and USDA APHIS Wildlife Services, have developed a coordination plan that will help ensure the State will be prepared to respond to incidents involving wolves (USFWS/APHIS/CDFG 2012).

The Department currently has a cooperative agreement with the USFWS, under Section 6 of the ESA, that provides authority to manage for the conservation of federally endangered or threatened species (including gray wolves) within the State, but the agreement does not authorize lethal take of those species. If the gray wolf is delisted under the Federal ESA, principal management authority will revert to the State. In anticipation of this possibility, the Department has initiated development of a State wolf conservation and management framework in advance of an implementable management plan. Tribal governments also exercise wildlife management authority on their reserved lands and they maintain certain rights to wildlife resources on ceded lands in the State. (See, e.g., FGC § 12300.)

*California Fish and Game Code Relevant to Wolves.* The California Fish and Game Code and Title 14 of the California Code of Regulation include several provisions germane to wolves. These include:

*Fish and Game Code section 2000.* This section provides a general prohibition on the take as defined by State law of any bird, mammal, fish, reptile, or amphibian, except as provided by the Fish and Game Code or in related regulations.

*Fish and Game Code section 2150.* This section provides a legal framework to authorize possession of wild animals by permit.

*Fish and Game Code section 2157, subdivision (a).* This section provides: "Every person holding a permit issued pursuant to §2150 shall uniquely identify each wild mammal that poses a risk to the health and safety of the public and report this identification to the department to maintain in a registry. (b) The commission shall adopt regulations that address the following: (1) Identify the mammals that pose a risk to the health and safety of the public and are subject to subdivision (a). This

identification shall include the following species of mammals: wild cats, elephants, nonhuman primates, bears, and wolves.”

*Fish and Game Code sections 4150 and 4152.* This section provides: “All mammals occurring naturally in California which are not game mammals, fully protected mammals, or fur-bearing mammals, are nongame mammals.” These sections include general prohibitions on take of nongame animals. However, nongame animals may be taken when damaging crops or property.

*Fish and Game Code section 6530, subdivision (a).* This section provides, in pertinent part, that: “It is unlawful to import into this state for commercial purposes, to possess with intent to sell, or to sell within the state, the dead body, or any part or product thereof, of any polar bear, leopard, ocelot, tiger, cheetah, jaguar, sable antelope, wolf (*Canis lupus*), zebra, whale, cobra, python, sea turtle, colobus monkey, kangaroo, vicuna, sea otter, free-roaming feral horse, dolphin or porpoise (*Delphinidae*), Spanish lynx, or elephant.”

California Code of Regulations, Title 14, section 670, subdivision (c)(2)(K). This section identifies wolves, in pertinent part, as a “restricted species” subject to permits for possession.

## **EVALUATION OF THE PETITION**

The discussion below presents the Department’s topic-area specific evaluation of the Petition on its face and in relation to other relevant information. (See generally Cal. Code Regs., tit. 14, § 670.1, subd. (d).)

**Population Trend** (“Executive Summary” [starting on page 1] and “Distribution of Gray Wolf in California” [starting on page 14] in the Petition)

The Petition includes a discussion of wolf population trend on page 1 and on pages 14 through 16. The discussion references and relies on wolf population trend information from the Rocky Mountains Gray Wolf Distinct Population Segment of *Canis lupus*, including relevant information from Oregon, Idaho, and Washington.

The Petition on its face does not provide any direct scientific evidence of a wolf population trend in California. Likewise, although the Petition discusses OR7, available historical documentation and current data on the single wolf known to be in California does not establish and does not provide enough scientific information to analyze and determine the population trend of wolves in California. The Petition, instead, discusses dispersal rates and suitable habitat projections in California to estimate possible wolf population numbers once, but only if the species expands into and becomes established in California.

As to population trend, the Department has also considered the face of the Petition in relation to other relevant information in its possession. Other relevant



information supports the fact that gray wolf populations are expanding in other areas outside of California (Boyd and Pletscher 1999, Mech et al. 1995, Mech et al. 1998). This other information supports the hypothesis that the potential for a breeding population of wolves to be established in California will increase if the wolf populations continue to increase in Oregon and Idaho.

The Petition indicates and the Department confirms that one radio-collared gray wolf dispersing from Oregon (known as OR7) has been detected in Northern California since December of 2011. This wolf represents the first unambiguous documentation of an individual of the species in California since the 1920's. The Petition indicates that the presence of OR7 is known because the animal is radio-collared and that there is the possibility that other wolves exist undetected in California. However, it is unlikely that a functioning pack of wolves exists undetected in California due to the lack of incidental detection by state/federal studies and monitoring activities along the Oregon border, and the lack of reports of other activities that may be associated with an active wolf pack (e.g. livestock predation, howling).

The Petition (page 5) states: "With a source population in Idaho and growing source populations in Eastern Oregon and the Washington Cascades, wolves are likely to continue to naturally disperse to California and to establish a breeding population." Research and monitoring in other states confirms the continued expansion of dispersing wolves and the potential for wolves becoming established in suitable habitats of southern Oregon and northern California. Wolf dispersal distances are generally under 161 km (100 mi) although longer dispersal distances by both males and females have been documented (Boyd and Pletscher 1999, Mech et al. 1995, Mech et al. 1998). In contrast to statements in the Petition, however, there is no scientific certainty that the wolf population in Oregon will continue to increase and expand or that the population will disperse to California.

Habitat models developed by Carroll et al. (2001 and 2006) predicted that there may be potential suitable wolf habitat in California and projected wolf population numbers into the future. Carroll et al. have speculated that up to 470 wolves could occupy Northern California (Southern Cascades and Modoc Plateau) habitat, with the potential for additional wolves in the Coastal and Sierra Nevada Mountains. The models have no certainty applied to them and have not been validated with scientific data to support or refute them. These models are based on some unsubstantiated remote sensing data inputs for prey and competition variables that would need ground truth comparisons with actual prey data to confirm projected wolf numbers. Additional important factors that may further influence the distribution and density (and therefore population size in a given area) of wolves include the availability and abundance of prey, availability of den sites, ease of travel, snow conditions, availability of protected public lands, densities of livestock and road densities (as measures of human activity), human presence, and topography (Mladenoff et al. 1999, Paquet and Carbyn 2003). In a review of studies from several regions, prey density explained 72 percent of the variation in wolf density (Fuller 1989). A smaller core area can support a viable wolf population if prey biomass per unit area is high

(Fritts and Carbyn 1995; Wydeven et al. 1995). In summary, while models exist that appear to support certain hypotheses, they do not and cannot be relied upon at this time to predict wolf habitat suitability or population density and trend in California with scientific certainty.

**Range** (“Ecology of the Gray Wolf: Taxonomy” starting on page 7] and “Distribution of Gray Wolf in California; Historic Distribution and Range” [page 14] in the Petition)

The Petition discusses wolf range on page 7, and on pages 14 through 16. The information included in the Petition for wolf range is based on historical documentation, habitat modeling estimates, and the movement of one known wolf, OR7. There is little known information available beyond anecdotal historical reports concerning the range of gray wolves in California. As stated previously, available historical documentation and current data on a single known wolf in California does not provide enough information to analyze and determine the species range with any scientific certainty. The Petition, in turn, does not provide any direct scientific evidence of the gray wolf range in California and the only current information that exists is based on the well-documented travels of OR7. Whether the current travels of OR7 can be considered part of wolf range in California from a scientific perspective will likely depend on future information related to whether a population successfully establishes and reproduces in such areas, as opposed to the transient movements of a first in many decades, single dispersing young male wolf.

The Petition accurately indicates that the wolf is a species native to California absent from the State, based on available information, for approximately 80 years. The Petition also accurately describes the range of the Rocky Mountains Gray Wolf DPS of *Canis lupus* as “distributed discontinuously in mountainous areas throughout western North America,” which is consistent with the range as described in various USFWS and other related documents (USFWS 2011b).

The Petition includes a discussion of historical accounts to document the potential historical range of the wolf in California. Early accounts dating back to the mid-1700s indicate wolves were likely present in the Central Valley (Sacramento and San Joaquin Valleys), the Sierra Nevada and Cascade Mountains, Mono Lake area and the Modoc Plateau. In Southern California, wolves were reported in historical accounts as present in San Bernardino and Los Angeles Counties, and in the coastal range from San Diego to San Francisco (Priestly 1937). It is unknown whether these historical accounts from Southern California were of gray wolf or Mexican wolf.

The presence of the wolf historically in California is corroborated by fossil records in Kern, Los Angeles, and San Bernardino Counties. Additionally, the Petition refers to anthropological studies by Geddes-Osborne and Margolin (2001) of indigenous groups in California to show that the wolf is present in related artwork, ceremonial clothing, belief systems, and languages, with many of those groups having a specific

word for “wolf.” Still, in a strict scientific sense, the historical range of wolves in California is inconclusive and there is no scientific evidence that establishes or supports hypotheses regarding specific range boundaries. Just as the distribution is uncertain scientifically, so is the question of whether such animals would have been the gray wolf or the Mexican wolf.

Based on the few confirmed and numerous anecdotal wolf records that are available throughout the State (see California Historical Wolf Distribution - Appendix A), *C. l. nubilus* was present historically in the northeastern portion of California. The examiners of the wolf specimen from the Providence Mountains of southern California concluded that the animal was more closely related to southwestern subspecies than wolves from Oregon” (Johnson et al. 1948), supporting their theory that *C.l. baileyi* (Mexican wolf) may have been present in the Southeastern part of the state. There is further speculation about some interbreeding between these two subspecies as individuals with morphology intermediate to the two subspecies described in the Pacific Northwest (Grinnell et al. 1937). Additional evidence and conclusions of uncertain reliability also suggests wolves may have been present throughout much of the state (Schmidt 1991).

In summary, the historical range of wolves in California (and the potential future range) cannot accurately be determined from a scientific perspective at this time because, with only two exceptions, historical data is limited to anecdotal observations that are not scientifically sufficient. That wolves were likely broadly distributed in California historically is a reasonable inference that can be drawn from, but not established per se by available scientific and relevant other information.

**Distribution** (“Distribution of Gray Wolf in California” [starting on page 14] in the Petition)

The Petition includes information on wolf distribution on pages 14 through 16. The related information presented in the Petition is primarily based on historical observations in California, distribution patterns of the Rocky Mountains Gray Wolf Distinct Population Segment populations outside the state, and the recent movement of the one known wolf in California, OR7.

Historical observations and current data on OR7 does not provide sufficient scientific information to analyze and determine an accurate distribution of wolves in California. The Petition on its face, in this respect, does not establish or otherwise provide sufficient scientific information to determine gray wolf distribution in California.

In regard to other relevant information, the information provided in the Petition does support the observation that gray wolf populations are currently expanding in the western United States (Boyd and Pletscher 1999, Mech et al. 1995, Mech et al. 1998) and that the potential for a breeding population to be established in

California at some point in the future will increase if wolf populations continue to increase and their distribution continues to expand in Oregon and Idaho.

The Petition describes the current known distribution of gray wolves in California as one known wolf, OR7. The Petition also speculates that other wolves may have dispersed from Oregon or Idaho packs as OR7 has done yet remain undetected, as many of those packs members were not collared with radio transmitters. The Department has no factual information to confirm or refute the speculation with scientific certainty. While the Petition states that neither the Department nor the U.S. Forest Service (USFS) conduct regular surveys to determine wolf presence, the Petition does not acknowledge that sensitive furbearer studies and other wildlife survey and monitoring work does occur on a regular basis by both the Department and USFS in Northern California (Kovacs 2012, pers. comm.). Similarly, the Department conducts aerial surveys annually for large mammals and waterfowl throughout northern California. These studies and surveys have not detected wolves incidentally in the last three years or in the last number of decades despite having a good chance of doing so based on the mesocarnivore and game surveying methodology employed. Similarly, Department staff have investigated the areas where OR7 is known to have remained for several days and has not detected any evidence of the presence of additional wolves (Kovacs 2012). In the Department's opinion, OR7 continues to exhibit dispersing behavior and recent observations by Department staff (May 8, 2012) continue to indicate that OR7 is still a single, lone animal.

Since the mid-1990s, gray wolves have greatly expanded their distribution and range in the Northern Rocky Mountains and Pacific Northwest. In 2010, Montana had 118 wolf packs, Idaho had 87 and Wyoming had 45 (USFWS et al. 2011a). Gray wolf population number are estimated to have increased from 1999 to 2010 in Montana: from 75 to 560 (Hanuska-Brown et al. 2012); in Idaho: from 156 to 705 (Hoylan et al. 2011); and in Wyoming: from 40 to 250 (USFWS 2011c).

Individual wolves have dispersed to Utah and Colorado although no confirmed packs have been documented at present. Several additional packs are now established in Washington (WDFW 2010) and Northeastern Oregon (ODFW 2010). The Petition accurately describes the expanding distribution and range of the Northern Rocky Mountain wolves, and the potential for continued expansion. Currently, Nevada is not known to be inhabited by gray wolves although they were present in the past (USFWS 2005).

The Petition states wolves will likely continue to expand within Oregon. The Department cannot predict this with any scientific certainty at this time, but will continue to monitor wolf information from Oregon. Dispersing wolves can travel great distances and can readily traverse most habitat types. Assuming current management practices are followed in the future, it is likely wolves will persist in Oregon and additional animals could disperse into northern California.

In summary, the distribution of wolf in California is currently the northern California area being traversed by OR7. Information on distribution outside California may be relevant if gray wolves exhibit similar habitat selection as demonstrated in studies for various other western states. The Department believes that is possible given the generalist habitat selection of wolves. However, that possibility cannot be established with scientific certainty at this time and remains uncertain in the absence of actual data for California.

**Abundance** (“Distribution in California; Current Distribution and Abundance” [page 15] in the Petition)

The Petition includes a discussion of wolf abundance on pages 14 through 16. The information included for wolf abundance, as with wolf distribution, is based on historical documentation, distribution patterns of the Rocky Mountains Gray Wolf Distinct Population Segment populations, and the movement of one known wolf in California, OR7.

The Petition states that the known current abundance of wolves in California is a single male wolf, OR7, and speculates that other wolves may have dispersed or will, in the near future, disperse to California. As stated previously, but for the documented presence of OR7, there is not enough information available about wolf abundance, either historically or currently, to analyze the abundance of wolves in California with scientific certainty. The Petition does not provide any direct scientific evidence for gray wolf abundance in California.

In regard to other relevant information, it supports the assertion in the Petition that, in other areas, gray wolf populations have been shown to expand once established and protected; therefore increasing abundance (Boyd and Pletscher 1999, Mech et al. 1995, Mech et al. 1998). Additionally, the Petition describes the potential for wolf abundance in California based on habitat modeling (Carroll et al. 2001, 2006).

The Petition also states that based on studies of wolf habitat in other areas and habitat modeling, large areas of likely suitable habitat still exist in California and that the Southern Cascades and Modoc Plateau would be able to support between 90 and 470 wolves (Carroll et al. 2001, 2006), with the Northern Coast and Sierra Nevada also having potential suitable habitat. The potential habitat discussed is based on two main limiting factors, human population and road density, with some consideration for other factors. The model predictions have not been validated with actual data on wolf presence in California and therefore should be considered as hypotheses rather than scientific information.

To determine habitat suitability and potential wolf abundance/carrying capacity, a more complex analysis would need to be completed that considered a number of additional factors, including prey composition and availability, predator-prey interactions, topography, habitat variability, fire frequency, and other biological and

environmental factors. The Department is currently working with the USFWS to develop a habitat model based on habitat and predicted prey availability. Additional modeling or study of populations in California (if wolves become established), would be necessary to determine the interactions between wolves, habitat, prey, and humans to develop robust estimates of future wolf abundance in California.

In summary, current scientific information establishes that there is one wolf in the wild in California. Other relevant information suggests the possibility without scientific certainty that there could be other wolves in the State, even though the latter does not appear likely given the lack of any wolf detection by observers or in relation to the travels of OR7. Information on abundance elsewhere is not necessarily relevant as those areas are represented by different ecosystems and different dynamics in the biotic communities that may or may not exist in California. However, low population sizes are particularly vulnerable and subject to extirpation. The demonstrated increase and expansion of wolf populations in the Western United States indicates wolves do have the potential to increase under suitable conditions.

**Life History** (“Ecology of the Gray Wolf: Species Description” [starting on page 5] in the Petition)

The Petition includes life history information about gray wolves on pages 5 through 14. The life history information provided is based primarily on the Rocky Mountain Distinct Population Segment of *Canis lupus*, primarily from Oregon, Idaho and Montana. In general, the Petition information accurately describes life history details for the RM DPS (Mech 1970, Boyd and Pletscher 1999).

The Petition does not provide any direct scientific evidence of wolf life history information in California. Available historical documentation and current information on a single known wolf in California does not provide enough information to analyze and determine accurate life history details for a wolf population specific to California.

The Petition provides a species description of the gray wolf, which accurately defines biological, ecological, and behavioral characteristics based largely on information throughout the world from the traditional wolf resource reference, *The Wolf: the Ecology and Behavior of an Endangered Species* (Mech 1970). The Petition also discusses dispersal rates and the potential for wolves to disperse extremely long distances based on studies in the Rocky Mountains. A review of the cited literature for this information, *Characteristics of Dispersal in a Colonizing Wolf Population in the Central Rocky Mountains* (Boyd and Pletscher 1999), confirms the information presented in the Petition is accurate. However, the Petition does not acknowledge that long dispersals are rare and not fully understood by the scientific community. The average dispersal distance for Northern Rocky Mountain gray wolves is approximately 97 km (60 mi) and individuals generally disperse to areas of less human influences and greater wolf populations. Additionally, research indicates

dispersing wolves are more vulnerable and have higher mortality rates from human causes than wolves that remain within home territories (90% vs. 60%).

The diet of gray wolves is discussed in the Petition in general terms using information based on studies from Alaska, British Columbia, and the Rocky Mountains of the United States and Canada. The list of species consumed includes both large and small prey from a variety of habitats, and includes opportunistic foraging strategies such as scavenging and predation of domestic animals. The Petition further describes hunting behavior, territorial defenses, survivorship, and mortality details. It does not discuss potential prey availability in California and how limitations specific to the State may affect the carrying capacity for wolves in the potential suitable habitat described.

Detailed information on competition, prey variability, influences of trophic cascades (interactions between plant and animal species of different trophic levels in an ecosystem), natural seasonal fluctuations, topography, other environmental constraints and other factors would need to be analyzed in detail in California to accurately predict the size of a wolf population that might be sustained in California. The life history information presented in the Petition is incomplete in this respect. Additional research would be required to determine areas that could support wolf re-establishment and how the addition of wolves would influence other native species and habitats (Ripple and Beschta 2007, Creel and Christianson 2009, Tercek et al. 2010).

In summary, there is no scientific information on the life history of wolves in California specific to the State. Information from elsewhere however, is likely relevant, as well as comparable, if a population of wolves were to become established in California in the future.

**Habitat Necessary for Survival** (“Ecology of the Gray Wolf: Habitat Requirements” [page 11] in the Petition)

The Petition discusses the habitat necessary for survival on pages 11 and 12. The habitats are identified by evaluating suitable habitats in other states, habitat modeling based on vegetation types, density of roads, and some consideration for prey availability (Carroll et al. 2001, 2006), and large, continuous areas of public land (Larson and Ripple 2006) in California.

The Petition does not provide any direct scientific evidence of wolf habitat necessary for survival in California.

Indirect information from other states with wolf populations may provide some insight into the potential habitat(s) necessary for the survival of wolves in California. However, unless wolves become established and are studied, some related details will remain scientifically uncertain. The Petition and other relevant information indicates that wolves can successfully occupy a wide range of

habitats and that the species is not dependent on wilderness areas for survival, according to the USFWS (2000), although large continuous areas of public lands contribute greatly to suitable habitat areas to support a sustaining population (Larson and Ripple 2006).

The Petition describes territory sizes and provides references that are consistent with known potential ranges elsewhere and with the information provided by the Department in the life history section. The Petition also accurately describes the wolf as a generalist species in terms of their habitat use, and describes how they occur in every habitat containing large ungulates including forest, desert, prairie, wetland, tundra, and coastal habitats (Fuller et al. 2003). Page 14 of the Petition, again referencing Fuller et al. (2003) states that wolves are adaptable enough to enter and forage near towns and farms, cross highways, military firing ranges, logging sites, and open areas, and states that wolves have been known to den near these areas. This appears to contradict other information included in the Petition, although some wolves can become more tolerant of human activity. Fuller et al. (2003) noted that patterns of wolf-human interactions have shifted in recent times as humans have become more tolerant of wolves. Most literature shows wolves inhabit large areas of open native habitats and avoid human development (Mech et al. 1988, Mech and Goyal 1993, Mladenoff et al. 1995, Carroll et al. 2006).

The Petition states that wolf populations in other states predominately inhabit forests and nearby open habitats, with prey availability and the extent of human tolerance strongly influencing occupancy. The current limited abundance of large ungulate species (specifically deer, elk, and bighorn sheep) in California, and the loss of their habitat and decline in numbers from historical times, would result in less prey availability to support a wolf population. For example, California does not currently support elk population numbers comparable to other western states such as Idaho, Oregon, Montana, and Wyoming; and California's deer population has been reduced by approximately half since the 1960s, due largely to habitat change.

The Petition states (page 12) that several studies have reported that wolf populations generally do not persist in areas of high road density. These studies show an association of roads with human access with various forms of documented human-caused wolf mortality (removal of livestock predators, illegal killings, legal take, exposure to domestic animal diseases, and car and train collisions). The Petition states that wolves do best in areas of low human density, which can be predicted by low road density. The Petition further states that restoration of habitats would require removal of roads to minimize this primary threat to wolves. These conclusions are supported by research elsewhere (Mech et al. 1988, Mech and Goyal 1993, Mladenoff et al. 1995, Carroll et al. 2006), but have not been substantiated in California from a scientific perspective.

In summary, there is no scientific information specific to California on the habitat that necessary for the survival of wolves in California. Information from other Western



States may be relevant if gray wolves, once established in California, exhibit similar habitat selection as demonstrated in studies for other states. The Department believes that is possible given the generalist habitat selection of wolves, but scientific uncertainty persists in California at this time absent actual data specific to the State.

**Factors Affecting Ability of Population to Survive and Reproduce** (“Ecology of the Wolf; Survivorship” [starting on page 9] and “Nature, Degree and Immediacy of Threat to Gray Wolves in California” [page 17] in the Petition)

The Petition includes a discussion of factors affecting the ability of wolf populations to survive and reproduce on pages 9 and 10, and pages 17 through 20. The Petition describes information relative to Idaho and other areas of established Rocky Mountain gray wolf populations, and the behavior of government and residents in Idaho, Montana, Oregon, and Washington. The Petition discusses human caused mortality and habitat loss as the primary factors affecting wolf populations’ ability to survive and reproduce in other areas.

The Petition provides no direct scientific information specific to California about the factors affecting the ability of wolf populations to survive and reproduce in the State. It is apparent that the wolf was purposely extirpated from California over 80 years ago (Young and Goldman 1944) because of concerns about impacts to humans and agriculture.

Considering the face of the Petition in relation to other relevant information, including the documented presence of OR7 and the comparison of known information from other areas, the factors described in the Petition are feasible to consider for California application. Much of the information included in the Petition may be applicable to gray wolves in California, but until there is enough data to evaluate specifics as related to wolf in regards to human response and habitat loss, and a more detailed evaluation is conducted, factors affecting the ability of wolf populations to survive and reproduce in California cannot be accurately projected or scientifically confirmed at this time.

The Petition states that a primary determinant of the long-term viability of gray wolf populations in California will be human attitudes toward the species. Under “Survivorship, Mortality, and Population Trajectory”, the Petition states: *“Natural mortality probably has little or no effect on most populations in the western U.S., where humans are the largest cause of wolf mortality as a whole and are the only cause that can significantly affect populations at recovery levels (USFWS 2000, Mitchell et al. 2008, Murray et al. 2010, Smith et al. 2010).”*

The references in the Petition cited above support the statement that human threat is the major direct factor for the past decline of wolves in the conterminous United States. Humans impact wolf populations through intentional predation (shooting or trapping) for sport or for protection due to the perceived danger to self, family,

livestock, or game species; vehicle collisions, and exposure to diseases from domestic animals. Historically, wolf extermination was sanctioned by the government, and became a way of life for many rural residents that had little concern for, or knowledge of the ecology of the wolf and the benefits they provide within the ecosystem. However, the Petition conclusion that human caused mortality is the only impact that can significantly affect populations at recovery levels cannot be substantiated from a scientific standpoint by the information provided. Natural mortalities, prey availability, and competition with other predators are all factors that could play a role in the ability of wolves to sustain populations in California.

Habitat loss caused by urban and agricultural development and the associated habitat fragmentation is also correctly identified in the Petition as a threat to wolves (page 20). The Petition notes correctly that the human population of California has grown dramatically in the last century and is projected to continue to grow. Population growth and the associated residential and agricultural development has effectively rendered the Central Valley and many coastal areas uninhabitable for wolves. Recent development patterns indicate human population growth and associated habitat destruction and fragmentation is increasingly occurring in the Sierra Nevada region (Waddell and Bassett 1996, 1997) where modeling indicates potential wolf habitat occurs (Carroll et al. 2006).

Additionally, the Petition includes a discussion of positive effects that wolves could have for the California economy by activities related to eco-tourism, but does not discuss the potential threat to wolves from disturbance associated with those activities. The impact of human activity as a potential threat remains uncertain and difficult to quantify scientifically until it can be observed and monitored.

As discussed in other sections, prey availability, predator competition, and conservation of large areas of land for wolf territories would all be considered important management elements affecting the ability of wolf populations to survive and reproduce. Although studies of wolf populations in other states inform Department expectations about wolf populations in California, the effects on wolf populations of the interactions between the habitats, prey, competitive species and human behaviors unique to California is scientifically uncertain at this time.

In summary, there is no scientific information specific to California at this time regarding the factors affecting survival or reproduction of wolf in the State. Information from elsewhere may be relevant if those factors were to be similarly reflected in California. While the Petition on its face and in relation to other relevant information suggests certain hypotheses, the Department believes in the absence of actual data specific to California that there is scientific uncertainty at this time regarding the factors affecting the ability of wolves to survive and reproduce in the State.

**Degree and Immediacy of Threat** (“Executive Summary” [starting on page 1] and “Nature, Degree and Immediacy of Threat to Gray Wolves in California” [starting on page 17] in the Petition)

The Petition includes a discussion of the degree and immediacy of threat to gray wolves on page 2 and pages 17 through 20. The discussion references and relies on information from USFWS federal listing documents related to Great Lakes region and Rocky Mountains wolves, as well as studies from Wyoming and other states. In general, the Petition asserts that human predation is the primary threat to gray wolves, that habitat loss is another major threat, and that human population growth contributes to both of these major threats. Secondary threats discussed in the Petition include disease, parasites, and natural mortality, all of which the Petition indicates have relatively little if any impact to wolf populations.

As with all other topic areas, the Petition provides no California-specific scientific evidence regarding the degree and immediacy of threat to wolves in the State. And as to that evidence or lack thereof, the Department is not aware of any evidence indicating that the single wolf traveling through a number of counties in California, OR7, has experienced any direct threats by humans. The Department has received some input from residents and local government representatives expressing concern about OR7 and possibility of other wolves in California generally, but no related incidents have prompted or otherwise required the Department to intervene. Negative human reaction to wolves in the future is likely to increase in some areas of the State if another or more wolves generally cross into California and a breeding pack becomes established, especially if there are conflicts with livestock and big game species or if safety concerns arise. The positive reaction by some to date in response to the documented presence of OR7 also suggests a similar response could occur, if not increase, should other wolves appear in California. Until other wolves occur in California and related studies are conducted, however, there is no scientific certainty at this time with respect to the nature and extent that humans will pose a threat to wolves in California.

Information included in the Petition from outside of California concerning the degree and immediacy of threat is relevant nevertheless to understand the reactions humans have to wolves and the direct threat wolves pose to human possessions, livelihoods, and safety. A review of that information supports the conclusions made by the Petition regarding a high degree and immediacy of threat based on past historical information in California and results from other states. Human-related wolf mortality is identified as the primary determinant in wolf population establishment and growth. The Petition includes information to support the types of threats to wolves that may inhabit California now or in the future, through mortality caused by humans, either accidental or intentional, disease, and habitat destruction. Given the absence of wolves in California for the past number decades, however, and OR7’s recent appearance and limited time in the State, the threats to wolves documented

outside of California should be considered potential threats, at most, until the monitoring an established wolf population in the State occurs.

Negative human attitudes toward wolves are largely based on a perceived threat to personal safety or livelihood. The potential for loss of livestock in California is uncertain. Yearly losses in Wyoming over the last 10 years ranged from 43 to 222 livestock and pets killed by wolves, with the worst offending wolves removed (Associated Press 2010). The establishment of programs to compensate livestock losses and control measures for individual wolves that habitually kill domestic animals in other states have shown that these impacts can be minimized. In short, whether and to what extent human attitudes in California toward wolves pose a threat to the species is currently unknown from a scientific perspective.

In summary, there is no California-specific scientific information regarding the degree and immediacy of threats to wolves in the State. Information from elsewhere may be relevant to California if related variables and other factors from other states are similarly reflected in California. Absent actual data in California, the degree and immediacy of threat to OR7 and to wolves generally is unknown scientifically.

**Impact of Existing Management Efforts** (“Nature, Degree and Immediacy of Threat to Gray Wolves in California” [page 21] in the Petition)

The Petition discusses the impact of existing wolf management efforts on page 21. The discussion focuses on the inadequacy of existing regulatory mechanisms with several inaccurate conclusions concerning native California species and State environmental laws. In general, the Petition primarily discusses the inadequacy of Federal protection and the recent delisting of gray wolves in the Great Lakes and Northern Rocky Mountains, where wolves have recovered.

The information provided that directly relates to California either did not support the argument that was presented or was inaccurate. The Petition appears to have misinterpreted wolf listing rationales for both Oregon and Washington, inaccurately stated that wolves were not protected in California, and did not account for preliminary management efforts by the Department in 2011 prior to the single gray wolf entering California.

The related discussion in the Petition, again, provides no direct scientific evidence or relevant information unique to California about the impact of existing management efforts in the State.

The Petition states that the wolf is absent from the California list of game animals. This is correct, as the wolf is considered a nongame animal and falls within that regulatory scheme for native species in California. The Petition also states that the wolf is not listed under CESA, which is accurate. The Petition does not discuss the protections afforded wolves by the California Fish and Game Code, CEQA, other

state statutes, or the work the Department has done to initiate wolf planning and coordination to prepare for the potential of wolves naturally dispersing into the State.

The current planning and management by the Department for wolves includes a preliminary evaluation of historical information, current conditions, potential natural recolonization, and management implications of gray wolves in California (CDFG 2011a). Additionally, a draft Federal/State Coordination Plan for Gray Wolf Activity in California begins to address associated needs for economic and public safety concerns, as well as defining communication roles between federal and state agencies in California (USFWS/APHIS/CDFG 2012). The Department now regularly participates in routine meetings and updates related to OR7 and the topic of wolves in California with the U.S. Fish and Wildlife Service, and with U.S.D.A. Wildlife Services.

The Department has engaged and briefed numerous local governments regarding OR7 and wolves in California, and is in the process of developing outreach to tribal governments in California. Additionally, the Department has kept the public informed about OR7 and wolf management through its website.

An informal partnership with ODFW has also been established for tracking OR7 and other potential dispersing wolves from Oregon. Once a radio-collared wolf crosses into California, Department staff would track its movements and coordinate with cooperating management agencies.

The Department has also conducted a successful stakeholder meeting with several key invited stakeholder groups to discuss the topic of OR7 and wolves in California. This effort to coordinate among and with interested stakeholders will continue as the Department moves forward in planning for wolf conservation and management here in California.

The Petition states that protection under the Federal ESA is not sufficient to ensure the long-term survival of wolves in California. Wolves are currently protected as an endangered species under the ESA in California. The statement that protection is insufficient because USFWS may revise protection for gray wolf listing into finer scale taxonomic or population units and that they have minimal dedicated resources for wolf conservation actions in California is speculative. So too is the possibility of a finer scale population designation that includes potential California populations and coordinated funding opportunities. It can only be said that USFWS has initiated status reviews of Distinct Population Segments of wolves within the United States, which may result in divisions of wolf management units (USFWS 2011b). Additionally, management actions develop as need arises on both Federal and State levels, and until recently the verified occurrence of a wolf in California had not occurred in decades.

The Petition also states that USFWS recognized a wolf management gap in California; *“The FWS noted in 2000 that in California, “The wolf is not mentioned*

*under any management classification and should wolves make their way into the state there would be no existing management protections.”* The Department reviewed the 2000 USFWS reference cited with this statement in the Petition, but could not substantiate the quote and information provided previously indicates the statement is not accurate. OR7, for example, is legally protected in California.

Another inaccurate statement in the Petition concerns existing management and protection for gray wolves in California. The Petition states: “Given the possibility that gray wolves are already naturally dispersing to California and have a high potential to do so in the near future, the California Department of Fish & Game must address this anomaly by listing the gray wolf as an endangered species and develop a management scheme for the protection of the gray wolf. Such an action would be consistent with the approach taken by the States of Oregon and Washington, both of which listed the gray wolf at a time when no individuals were presently located within their respective State boundaries.” In California, in contrast to Oregon and Washington, there is no state mandate that requires federally listed species to be listed under CESA and each species is evaluated individually through a statutorily prescribed process when proposed for listing.

Washington State law specifies that when species are federally listed, the Washington Department of Fish and Wildlife will recommend that they be added to the state’s list (State Endangered Species Act of 1971) and is the reason gray wolves were added to the state endangered species list in 1980. Oregon automatically added all native species that were federally listed to the Oregon state endangered species list when they finalized the Oregon’s State Endangered Species Act in 1989.

In summary, there is no California-specific scientific information regarding the impacts of existing management actions in California on the gray wolf. Information on management actions elsewhere can be relevant to California in that they can better inform California on planning and implementation of management activities. The Department believes in the absence of actual data that there is no scientific certainty regarding whether or how various management activities in California may affect wolves.

**Suggestions for Future Management** (“Nature, Degree and Immediacy of Threat to Gray Wolves in California” [starting on page 17] and “Recommended Management and Recovery Actions” [page 22] in the Petition)

The Petition includes suggestions for future gray wolf management under the section titled recommended management and recovery actions on page 21. Additional recommended management actions are included in the nature, degree and immediacy of threat section on pages 17 through 20. This section in the Petition identifies five recommended management and recovery actions.

The Petition submitted to the Commission provides no direct scientific information specific to California that the recommended management and recovery actions are necessary to sustain the single wolf currently documented to occur in California or with respect to possible future California wolf populations.

The Petition includes a list of management actions identified as necessary to conserve and recover the gray wolf in California. Other management needs are suggested throughout the Petition. Overall, the management needs described are worthy of consideration, though somewhat limited for the scope of wolf conservation planning and management actions that may be needed in California. However, many of these conservation and management actions could proceed regardless of whether the Commission accepts the Petition for further review and lists the gray wolf under CESA.

The Petition describes five focused, recommended management and recovery actions on page 22. The Petition asserts these actions should be considered for the conservation, management and/or recovery of wolves in California. These actions include:

- (1) Listing the gray wolf as endangered.
- (2) Initiating a planning process to create a science-based recovery plan which would identify areas of suitable habitat and clear conservation goals.
- (3) Developing a process to address human-wolf conflicts, as well as wolf-related impacts to livestock and other human property.
- (4) Identifying and resolving barriers to gray wolf dispersal (highways and urban development).
- (5) Supporting the establishment of breeding pairs in California by reintroduction if it does not occur naturally by 2017.

Additional management recommendations are specified or suggested in other sections of the Petition. Potential benefits as a top predator species and the ecological enhancement they can potentially provide to other species and habitats is well recognized, if not completely understood (Ripple and Beschta 2007, Creel and Christianson 2009, Tercek et al. 2010, Estes et al. 2011, Ripple and Beschta 2012).

The Petition indicates the need for a management plan that addresses potential adverse impacts that may occur from recreation, the need for educational outreach, and to address the concerns of the Native American community. The Department agrees that these specific items, in particular, are some of the essential management actions to address the prospect that wolves may naturally disperse to and eventually become established in California.

Although the Petition discusses many of the items that would be required for effective management of wolves in California, the Department does not consider the

list to be complete. Research and monitoring were not addressed. Safety, recreation, ecosystem health and diversity, communication, coordination, education, research, and monitoring are all essential elements that would need to be fully developed for the successful management of wolves in California. Ecological relationships and considerations for how wolves will affect and potentially impact other native species and habitats would need to be thoroughly examined to determine if sustainable wolf populations are feasible in California. Additionally, considerations for management of game species and hunting opportunities would need to be integrated with wolf species conservation and management strategies.

In summary, there is no California-specific scientific information regarding the sufficiency of the future management recommendations for gray wolf. Information from elsewhere is likely relevant and it may inform the development of useful strategies in California. The Department believes that, while an adaptive approach is desirable, existing science regarding what particular actions may be necessary for future management of the gray wolf in California is currently uncertain.

**Distribution Map** (“Distribution of Gray Wolf in California” [starting on page 14] in the Petition)

The Petition did not include a historical distribution map, presumably due to the limited documented evidence that exists for California. The Department has prepared a map which displays the historical records of wolves in California ranked by reliability (Appendix A). The Petition did include a series of maps with three potential suitable habitat scenarios described in Carroll et al. (2006) which are based on wolf habitat studies from areas outside of California. These were based on (1) current conditions, (2) conditions in 2025 (with increased human population and road development), and (3) current conditions with 2000 population numbers and habitat restoration (i.e. less roads).

**Availability and Sources of Information** (“Literature Cited” [starting on page 23] in the Petition)

The Petition includes a list of references cited in the document. The sources were not included with the Petition when submitted to the Commission.



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**APPENDICES (ATTACHMENT as PDF files)**

**Historical Wolf Map – Records (3 pages)**

**Historical Wolf Map – Distribution (1 page)**

# California Wolf Distribution

Based on Known Wolf Records



\*The points on this map are based on historical information which is meant to represent the best approximate location given the description available.



### California Historical and Current Wolf Records

ID	DATE	OBSERVER	LOCATION	DESCRIPTION	SOURCE	COUNTY
Wolf1	12/14/1922	Mr. Watson; Barnett Mine	Providence Mountains, 12 miles W. of Lanfair, CA; E. San Bernardino County	Male, weighted roughly 100 pounds and was caught in a steel trap, while pursuing a bighorn sheep.	Johnson et al. 1948, Grinnell et al. 1937, Young and Goldman 1944;58, Hall 1981, CDFG 2011 (MVZ UC Berkeley #33389)	San Bernardino
Wolf2	1/1/1924	Frank W. Kaehler; Charles G. Poole	Near Litchfield, in Lassen County	Male, was fairly old, missing a portion of a hind leg and was emaciated. Though it weighed only 56 pounds, it was estimated that in good condition it would have weighted approximately 85-90 pounds.	Grinnell et al. 1937, CDFG 2011 (MVZ UC Berkeley #34228) Young and Goldman 1944;58, Hall 1981	Lassen
Wolf3	1/1/1918		San Gabriel Mission, LA County	Killed near San Gabriel Mission, Los Angeles County		Los Angeles
Wolf4	1/1/1769	Pedro Fages	Between Irvine and Ventura, Ventura County	Observation in journal by Spanish soldier, Pedro Fages, traveling from San Diego to San Francisco.	Fages 1937, CDFG 2011	Ventura
Wolf5	1/1/1769	Pedro Fages	San Francisco Bay Area, Santa Cruz County	Observation in journal by Spanish soldier, Pedro Fages, traveling from San Diego to San Francisco.	Fages 1937, CDFG 2011	Santa Cruz
Wolf6	12/1/1826	Beechey	San Francisco Monterey Area, Monterey County	Beechey reported: "Wolves and foxes are numerous, and the cuiotas, or jackalls, range about the plains at night, and prove very destructive to the sheep."	Beechey et al. 1941, CDFG 2011	Monterey
Wolf7	1/1/1841	US Exploring Expedition	Sacramento River Valley, Tehama County	Separate parties of the U.S. Exploring Expedition reportedly observed wolves in the Sacramento River Valley.	Beidleman 2006, CDFG 2011	Tehama
Wolf8	3/5/1844	Mr. Preus	Sacramento River Valley, Shasta County	J.C. Fremont wrote that (Mr. Preus) reports that while entering Sacramento Valley in CA, "had collected firewood for the night and heard barking, and hoping to find some Indian hut, met only two wolves."	Fremont 1887, CDFG 2011	Shasta
Wolf9	4/7/1844	J.C. Fremont	Tule Lakes, near San Joaquin River, San Joaquin County	J.C. Fremont reported seeing "wolves frequently during the day - prowling about for the young antelope, which cannot run very fast."	Fremont 1887, CDFG 2011	San Joaquin
Wolf10	12/1/1849	J. Goldsborough Bruff	Barkley Mountain, between Mill and Deer Creeks, Tehama County	J. Goldsborough Bruff kept an extensive journal and frequently mentioned wolves during his trip across the plains and during his time in the Southern Cascades.	Bruff 1849, Read and Gaines 1944, CDFG 2011	Tehama
Wolf11	12/1/1849	J. Goldsborough Bruff	Pit River, Shasta County	While passing through the vicinity of the Pit River, J. Goldsborough Bruff mentioned passing the carcass of a dead wolf and observing wolf tracks.	Bruff 1849, Read and Gaines 1944, CDFG 2011	Shasta
Wolf12	1/1/1851	George Gibbs	Mountains between Scott and Shasta Valleys, Shasta County	George Gibbs reported observing a "black wolf" in the mountains between the Scott and Shasta Valleys. Clearly familiar with coyotes.	Suckley and Gibbs 1860, CDFG 2011	Shasta
Wolf13	5/1/1860	John Keast Lord	Upper Sacramento River, Shasta County	Reported hearing wolves barking and howling all night and twice driving them from his camp with a "fire-log."	Lord 1866, CDFG 2011	Shasta
Wolf14	5/2/1860	Mule Packers	Upper Sacramento River, Shasta County	John Keast Lord reported a mule killed by the wolves the next day at a nearby camp.	Lord 1866, CDFG 2011	Shasta
Wolf15	1/1/1863	William Brewer	Tuolumne Meadows, Tuolumne County	William Brewer observed a large wolf near Tuolumne Meadows.	Brewer 2003, CDFG 2011	Tuolumne
Wolf16	1/1/1863	Two Men	Hermit Valley, near Mokelumne River, Calaveras Big Trees, Calaveras County	William Brewer met two men who "killed several rare animals - two gluttons, stone martens, silver foxes, a large gray wolf.	Brewer 2003, CDFG 2011	Calaveras
Wolf17	1/1/1894	Mr. Dent	Northern Sierra Nevada, El Dorado & Placer County	Price reported of gray wolf: "This species has been seen several times by Mr. Dent in the dense forests above 6000 ft."	Price 1894, CDFG 2011	El Dorado
Wolf18	1/1/1851	Newberry	North Central CA, Shasta County	Reported the "large gray wolf" as being much less common than coyotes, yet still occurring in all the uninhabited parts of CA and OR	Newberry 1857, CDFG 2011	Shasta
Wolf19	1/1/1911	CDFG/USFS	Alturas, CA, Modoc County	CDFG deputy and USFS ranger reported two wolves trapped in the vicinity of Alturas.	CDFG 2011	Modoc

### California Historical and Current Wolf Records

ID	DATE	OBSERVER	LOCATION	DESCRIPTION	SOURCE	COUNTY
Wolf20	1/1/1912	CDFG/USFS	Alturas, CA, Modoc County	CDFG deputy and USFS ranger reported one wolf trapped in the vicinity of Alturas	Grinnell et al. 1937	Modoc
Wolf21	1/1/1922	CDFG/USFS	Tionesta, CA, Modoc County	CDFG deputy and USFS ranger reported four wolves trapped near Tionesta	Grinnell et al. 1937	Modoc
Wolf22	1/1/1922	U.S. Biological Survey	Modoc County	Charles Poole, CA state lead for Predatory Animal Control, US Biological Survey, mentioned in a 1939 letter to FWS that a wolf was taken in Modoc County, July 1922; "a drift from Oregon".	Poole 1939, Young and Goldman 1944	Modoc
Wolf23	1/1/1930	U.S. Biological Survey	Near Cow Head Lake, Modoc County	Charles Poole described "the last authentic case of timber wolves" in CA as occurring near Cow Head Lake (NE of Fort Bidwell). Poole determined beyond a doubt that there were 5 wolves present, but disappeared heading into Oregon." (between 1922-1939)	Poole 1939, Young and Goldman 1944	Modoc
Wolf24	1/5/1850	J. Goldsborough Bruff	Between Redding and Marysville, near Lassen area, in the foothills (Robert's cabin) Lassen County?	Three large wolves (grey) came near the house, but Robert's dogs ran them off. Wolves are very numerous here. – Yellow, grey, black, & spotted. There are 2 sizes of the former, small and great yellow and same of grey; the largest grey wolf is often a very big fellow.	Bruff 1850; Read and Gaines 1944	Lassen
Wolf25	7/3/1863		Mount Dana, near Mono Lake, Mono County	W.H. Brewer reported: "We botanized, etc. during the morning, and in the afternoon returned to Soda Springs. On our way we saw a large wolf, the only large animal of any considerable size that we have seen here."	Young and Goldman 1944, Brewer, W.H., 1930:412	Mono
Wolf26	1/1/1922	W.H. Brewer	Modoc County	Dr. Joseph Grinnell: we have a skull of a wolf taken with the eastern boundary of CA the past winter.....The last wolves held out along our eastern borders, in Modoc, Lassen, and E. San Bernardino Counties, where individuals were captured in 1922, 1924, and 1922.	(Grinnell, Dixon, and Linsdale, MS) Grinnell 1933, Young and Goldman 1944	Modoc
Wolf27	1/1/1924		Lassen County	Dr. Joseph Grinnell: we have a skull of a wolf taken with the eastern boundary of CA the past winter.....The last wolves held out along our eastern borders, in Modoc, Lassen, and E. San Bernardino Counties, where individuals were captured in 1922, 1924, and 1922.	(Grinnell, Dixon, and Linsdale, MS) Grinnell 1933, Young and Goldman 1944	Lassen
Wolf28	1/1/1922		Eastern San Bernardino County	Dr. Joseph Grinnell: we have a skull of a wolf taken with the eastern boundary of CA the past winter.....The last wolves held out along our eastern borders, in Modoc, Lassen, and E. San Bernardino Counties, where individuals were captured in 1922, 1924, and 1922.	(Grinnell, Dixon, and Linsdale, MS) Grinnell 1933, Young and Goldman 1944	San Bernardino
Wolf29	1/1/1939	USFS	Lassen/Plumas County	USFS 1939 Wolf Number Estimates by County; Lassen NF 16 wolves.	USFS 1939, CDFG 2011	Lassen
Wolf30	1/1/1939	USFS	Tahoe NF(Placer County?)	USFS 1939 Wolf Number Estimates by County; Tahoe NF 4 wolves.	USFS 1939, CDFG 2011	Placer
Wolf31	1/1/1939	USFS	El Dorado County	USFS 1939 Wolf Number Estimates by County; El Dorado NF 12 wolves	USFS 1939, CDFG 2011	El Dorado
Wolf32	1/1/1939	USFS	Tuolumne/Calaveras County	USFS 1939 Wolf Number Estimates by County; Stanislaus NF 6 wolves.	USFS 1939, CDFG 2011	Tuolumne
Wolf33	1/1/1939	USFS	Los Angeles County	USFS 1939 Wolf Number Estimates by County; Angeles NF 5 wolves	USFS 1939, CDFG 2011	Los Angeles
Wolf34	1/1/1939	USFS	Rogue River NF (Del Norte County)	USFS 1939 Wolf Number Estimates by County; Rogue River NF 5 wolves.	USFS 1939, CDFG 2011	Del Norte
Wolf35	10/12/2004	Unknown Observer	Desolation Wilderness, N. Lake Tahoe, El Dorado County	A guy reported seeing two wolves, one with a tracking collar, in the Desolation Wilderness N. Lake Tahoe.	Ron Jurek, Ed Bangs 2004	El Dorado
Wolf36	10/19/2003	Greg Gordon	County ADA, 12 miles northeast of McCloud, California; Siskiyou County Juanita Lake and the areas next to the Butte Valley Wildlife Area at Macdoel in Siskiyou County	Wolf Observation Report from IDFG (Idaho) Website email Ron Jurek, Ed Bangs (FWS).	Ron Jurek, Ed Bangs 2003	Siskiyou
Wolf37	9/22/2006	Jess Hoopes	Macdoel in Siskiyou County	Report of an extremely large black coyote or a timber wolf.	Ron Jurek 2006	Siskiyou

### California Historical and Current Wolf Records

ID	DATE	OBSERVER	LOCATION	DESCRIPTION	SOURCE	COUNTY
Wolf38	8/29/2004	Dale Guthrie	Between Sunol and Calaveras Reservoir, Sunol, Alameda County	A little north of San Jose, and east of Fremont. I was driving to the Sunol Regional Park for a run at about 7AM. The wolf was east of the road, in an area where Tule Elk are often seen.	Ron Jurek 2004	Alameda
Wolf39	12/28/2011	ODFW/CDFG	Siskiyou, Modoc, Lassen, and Tehama Counties	OR7 crosses the state boundary from Oregon into CA.	CDFG 2011	Siskiyou
Wolf40	1/1/1911	Mr. Courtright	Alturas, CA, Modoc County	Courtright trapped two wolves (Reported by E.D. Payne - Forest Ranger).	Grinnell et al. 1937	Modoc
Wolf41	11/1/1911		Alturas, CA, Modoc County	Another man near Alturas caught a wolf the following year (Reported by E.D. Payne - Forest Ranger).	Grinnell et al. 1937	Modoc
Wolf42	2/1/1912	Mr. Courtright	Straw, CA, Modoc County	In the summer of 1922, government men, trapping and poisoning, got four wolves along with more than 200 coyotes. Only the scalps of the animals were preserved, since the pelts were unsalable as fur (Reported by E.D. Payne - Forest Ranger).	Grinnell et al. 1937	Modoc
Wolf43	3/23/1962	David Boas	Woodlake, Tulare County	Wolf killed by David Boas at Woodlake near the boundary of the Sequoia National Park on March 23, 1962 (Reported by Lloyd G. Ingles).	Ingles, Lloyd G. 1963	Tulare
Wolf44	9/25/1908	Charlie Howard	Wolverton, Tulare County	Walter Fry (Sequoia Nature Guide Service, 1932) describes a wolf killed by Charlie Howard at Wolverton on 25 September 1908.	Ingles, Lloyd G. 1963	Tulare
Wolf45	1/1/2012	Guy Hopping	Roaring River, Kings Canyon, Tulare County	The late former Superintendent of General Grant National Park, Mr. Guy Hopping, saw a wolf on Roaring River in the Kings Canyon region and heard one howl about 1912.	Ingles, Lloyd G. 1963	Tulare
Wolf46	1/7/1961	Forrest Hopping	Mineral King, just outside Sequoia NP, Tulare County	The nephew of Guy Hopping, Mr. Forrest Hopping, reported to me (Lloyd G. Ingles) that he sighted a wolf at Mineral King just outside of the Sequoia National Park in July, 1961.	Ingles, Lloyd G. 1963	Tulare
Wolf47	1/1/1960	Howard Bilton	Kern Plateau, Tulare County	Howard Bilton, state trapper and lion hunter, reported seeing wolves no farther back than 1960 in the Kern Plateau area.	Ingles, Lloyd G. 1963	Tulare
Wolf48	1/1/1854	James Capen "Grizzly" Adams	Headwaters of the Merced River (10 miles above the falls)	Same general vicinity though Adams notes he was too far distant from camp to reach it that night, "I had not been sitting long, when a gray wolf, with two fine pups about a month old, approached; and as it was not yet dark, I easily killed her."	Hittell, Theodore H. 1926	Tuolumne