CENTER FOR BIOLOGICAL DIVERSITY

Protecting endangered species and wild places through science, policy, education, and environmental law.

November 25, 2003

California Fish and Game Commission
1416 Ninth Street
Sacramento, CA 95814

On December 4, 2003, the California Fish and Game Commission will make a determination on whether to accept the petition to list the western burrowing owl under the California Endangered Species Act ("CESA"). In October 2003 the California Department of Fish and Game ("DFG") forwarded a review of the listing petition recommending that the Commission not accept the petition. This letter addresses some issues the Commission should consider in making your determination. We have attached new information available since the submission of the listing petition and publication of the DFG petition evaluation, including recent research presented at the California Burrowing Owl Symposium, held November 11-12, 2003 in Sacramento and sponsored by the Western Section of the Wildlife Society. We also address inaccuracies and incorrect status information contained in the DFG evaluation.

The Commission is charged with determining whether the petition, together with the DFG's written report and comments and testimony received, present sufficient information to indicate that listing of the species "may be warranted" (Fish and Game Code §2074.2). A California Appellate Court has interpreted this standard as the amount of information sufficient to "lead a reasonable person to conclude there is a substantial possibility the requested listing could occur." (*Natural Resources Defense Council v. California Fish and Game Comm*. 28 Cal.App.4th at 1125, 1129.) If the petition, together with the DFG's report and comments received, indicates that listing "may be warranted" then the Commission must accept the petition and designate the species as a "candidate species" (Fish and Game Code §2074.2).

The information contained in the listing petition and this letter far exceeds the "may be warranted" threshold. Of particular relevance is the CESA definition of an endangered species: a native species which is in serious danger of becoming extinct throughout all, or a significant portion, of its range" (Fish and Game Code §2062); and of a threatened species, a species that although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by CESA (Fish and Game Code §2067). The listing petition, subsequent comments to DFG, and recent regional status reports at the California Burrowing Owl Symposium indicate that the western burrowing owl is in serious danger of becoming extinct in the foreseeable future throughout a significant portion of its range in California. The DFG report fails to even address the issue of whether the owl is endangered or threatened throughout a significant portion of its range, and rather only considered the question of the overall size and stability of the state's owl population.

The listing petition provides evidence that the burrowing owl has been in continuous decline throughout the state since at least the 1940s. The DFG report acknowledges that the best available science on owl population trends throughout the majority of the owl's range indicates a 60% decline of the known breeding groups in little over a decade, and that breeding owls have been extirpated or are on the verge of extirpation from 15 counties. The DFG report acknowledges that the best available science indicates California's owl population declined throughout the majority of its breeding range at an annual rate in abundance of 4-7% from the early 1980s through the early 1990s. All available evidence from the petition, subsequent comments, and status reports at the Burrowing Owl Symposium indicate that this declining trend appears to be continuing in most areas of the state. The DFG report acknowledges that the majority of California's breeding owl population is concentrated in a very small portion of the state representing less than 2% of its habitat range.

Of 51 California counties within the range of the burrowing owl, breeding owls have been extirpated or very nearly extirpated (only 1 or 2 to a dozen or so pairs remaining) from 15 counties (almost 30% of counties) and continue to decline in at least 30 other counties (60% of counties). Breeding owls have been extirpated or very nearly extirpated from roughly 22% of their former geographical range in the state and are declining in an estimated additional 50% of their former geographical range (see Appendix A). Appendix A includes a map and tables depicting the distribution and population trend of breeding owls in California, by county (please note that the map does not include all population declines documented in the Central Valley, as discussed below). We submit that all available evidence shows the burrowing owl is in serious danger of becoming extinct throughout a significant portion of its range in California.

The listing petition followed 14 years of owl conservation efforts by the California Burrowing Owl Consortium ("CBOC") and others, including attempts to engage the state of California in measures to avoid listing: from 1995-1998 the CBOC appealed to The Resources Agency and DFG for consistent statewide planning; the CBOC was involved in legislation initiated by the California Audubon Society to fund a San Francisco Bay burrowing owl conservation strategy, which unfortunately was vetoed in 1999; and the CBOC also encouraged regional planning efforts in the southern S. F. Bay that were rejected by municipalities. Fourteen years of efforts have resulted in only one city adopting a burrowing owl habitat conservation measure, a citywide owl plan approved this year in Morgan Hill - a drop in the bucket measured against catastrophic regional population declines.

Several of the petitioners met with former DFG Director Robert Hight and his staff in October to discuss the listing petition and outline what we believed were the relevant issues before the DFG as they conducted their evaluation of the petition. It was obvious from this meeting and it is also evident from the DFG report that there is concern about the impact on agricultural interests of listing the owl. We discussed with DFG the apparent coexistence of high densities of burrowing owls with existing agricultural practices, pointed out that it is not our intent to burden agricultural operations that maintain high concentrations of owls, and noted that CESA contains an agricultural exemption. California Fish and Game Code §2087(a) allows for "accidental take of candidate, threatened, or endangered species resulting from acts that occur on a farm or a ranch in the course of otherwise lawful routine and ongoing agricultural activities."

A few issues raised in the DFG report are worth highlighting. The DFG report improperly concludes from recent banding records of only one or two owls that there is significant population connectivity between owl populations in the Carrizo Plain, southern Bay Area, and Lemoore in the Central Valley. The DFG review makes an enormous assumption based on a couple of exceptional banding records of burrowing owl movements in implying there is more regular exchange of

individuals between populations. The implication in the DFG report is that owls from large populations in the southern Central Valley and Imperial Valley can successfully emigrate and augment declining populations in other areas of the state. Most owl researchers agree that while owls are capable of dispersing long distances, these couple of instances are anomalies and indeed the majority of the data on banded owls would lead to the opposite conclusion: that owls do not generally disperse significant distances, that owls have a strong fidelity to their natal area, and that there is not much population connectivity. Harman and Barclay (2003) analyzed all known records from 1955-2001 of burrowing owls banded or encountered in California, as reported to the U. S. Fish and Wildlife Service Bird Banding Laboratory. Not one of these 4,553 records showed owls moving between regional populations in California (Harman and Barclay 2003).[1] Again, most owl researchers would support the petition's conclusion that owls from dense populations such as the Imperial Valley cannot be counted on to augment declining populations in the majority of the state.

The DFG report repeats an unfounded claim, citing USFWS (2003) that the recent range contraction of breeding owls along the California coast has occurred in areas that maintained few burrowing owls historically. This is in direct contradiction to information in the petition and this letter showing breeding owls were historically abundant in southwestern California (such as Los Angeles, Orange, and San Diego Counties), where breeding owls are now all but extirpated, and in portions of the greater S. F. Bay Area (such as southwestern Solano, portions of Alameda, eastern Contra Costa, Santa Clara, and Santa Cruz Counties), where breeding owls are declining severely and trending toward extirpation (Bloom et al. 2003; Townsend and Lenihan 2003).

There is consensus among burrowing owl researchers that the reported "significant increases" (USFWS 2003) in relative abundance of breeding owls in California from 1966-2001 based on USFWS Breeding Bird Surveys (BBS) (Sauer et al. 2002) do not accurately reflect the true population trend of the species statewide in California. The DFG report concurs, noting that the value of the BBS data set (Sauer et al. 2002) in assessing burrowing owl status in California "is questionable."[2]

The DFG report concludes that the population trend is unknown for owls in the Central Valley. However, there is compelling evidence for significant owl declines in portions of the northern and middle Central Valley. The DFG report misstates size estimates or assumes owl population size estimates for several areas that are higher than experts on owl populations in these areas indicate. The DFG report emphasizes that burrowing owls can be difficult to detect, suggesting that additional significant owl populations that are currently unknown may be found. Although burrowing owls can be difficult to detect, the statewide status assessment (DeSante and Ruhlen 1995; DeSante et al. 1996) was designed to maximize detection and it focused specifically on burrowing owls.[3] The difficulty of detection is an argument in support of giving the burrowing owl candidate status, so that a status review can be conducted, perhaps repeating the statewide survey and status methodology in all or some areas. Finally, information presented at the Burrowing Owl Symposium indicates that breeding owls have been recently confirmed eliminated from a number of areas in southwestern California where previously they were thought to be near extirpation but still persist in small numbers.

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[1] Sixty-two % of burrowing owls banded in California that have been subsequently encountered were found in the same area (i.e. the same 10' latitude-longitude block) where they were banded (Harman and Barclay 2003). Only 2 owls banded in California have been reported encountered outside the state and only 4 owls banded elsewhere have been encountered in California (Harman and Barclay 2003).

[2] The DFG report concludes that the BBS statewide trend data was skewed by inclusion of 3 survey routes in Imperial County that consistently have very high numbers of owl observations, while the majority of the routes have very low observation numbers.

[3] An unavoidable shortcoming of its approach was that it derived population changes by comparisons with available and mostly anecdotal data.

The DFG report presents no evidence that existing regulatory mechanisms are sufficient to halt ongoing owl population declines. The petition and subsequent comments thoroughly discuss the inadequacy of federal, state, and local regulatory mechanism that could theoretically provide protection to the species and obviate the need for listing. The severe ongoing declines documented in the petition and in status reports presented at the Burrowing Owl Symposium are de facto evidence of this inadequacy.

The DFG report claims that there is no need for concern over the status of burrowing owls in California, as there has merely been a "shift" in owl population density, with high concentrations of owls now occurring in a few agricultural areas. It should be pointed out that it is only through fortunate coincidence, not through careful or intentional management, that owls thrive in the margins of agricultural lands where burrows are tolerated and ground squirrels are not heavily persecuted; changes in land use or water conveyance could rapidly eliminate suitable owl habitat in these areas. DFG's euphemistic definition of a "shift" glosses over the documented significant contraction in breeding range statewide (see Appendix A) and the predictable extinction of breeding owls from the vast majority of their historical range in California if protective measures are not enacted. Accepting extirpation of owls throughout a significant portion of their range as long as large populations persist only in a few agricultural areas does not fulfill the Commission's charge under CESA to "conserve, protect, restore, and enhance" (California Fish and Game Code §2052) a species which is clearly endangered or threatened throughout a "significant portion of its range" (California Fish and Game Code §2062).

In recommending that the Fish and Game Commission not accept the listing petition for the burrowing owl, the Department of Fish and Game failed to address whether the owl is endangered or threatened throughout a significant portion of its range, which is the crux of the issue before you now. We urge the Fish and Game Commission to accept the listing petition and designate the burrowing owl as a candidate species so that a comprehensive status review of the species can be conducted.

Sincerely,

Jeff Miller
Center for Biological Diversity

cc: Department of Fish and Game, Habitat Conservation Planning Branch

Additional information

Below is additional information on the status and population trends of breeding owls that was not presented in the listing petition.

Northern Coastal California

The DFG report dismisses potential historical occurrence of owls in Humboldt County due to a personal communication that burrowing owls in the Wilder collection at HSU are poorly catalogued. The information provided in the petition did not rely upon the Wilder collection. It relied upon the personal observations of Wilder reported in the literature of an owl regularly near its burrow for a year or two between Carlotta and Alton as written by Wilder (1916). It also referenced a breeding season owl observation (April 1943) in the North Fork Eel River watershed as reported by the United States Department of Agriculture and United States Department of the Interior (1996).

Northern Desert Range

The listing petition reported an estimated 90 to 149 pairs of owls within suitable owl habitat in northeastern California (Barclay and Cull 1999). The Department of Fish and Game recently revised this estimate to 60-245 pairs within the Modoc Plateau and Great Basin portions of Lassen, Modoc, Plumas, Sierra, and Siskiyou Counties (Hall 2003), but acknowledged that this estimate is "probably on the high side" (F. Hall, pers. comm., 2003). A copy of Hall (2003) is attached. In his presentation at the recent Burrowing Owl Symposium, Hall said he considered the burrowing owl to be a "trace" species in northeastern California.

Central Valley

The DFG report says the owl population trend for the Central Valley is unknown. However, the petition discusses documented declines in eastern Alameda County in the 1970s (page 24), localized declines in the Stockton area (page 25), severe historical declines and further declines in the 1970s in the Fresno area (page 28), and declines reported in the 1980s in Tulare County (page 29). The petition also discusses (page 54 and Appendix 3) "particularly heavy" recent declines in numbers of breeding groups of owls in the Central Valley as reported by DeSante et al. (1996). As discussed below, there is strong additional evidence for significant declines in portions of the northern and middle Central Valley. The DFG report theorizes that conversion of wetlands may have actually increased burrowing owl habitat in the Central Valley. Although this might have occurred during the short term in some areas, long-term creation of habitat is contradicted by the estimate (Johnson 2003) of a 31% loss of the historical burrowing owl habitat in the southern Sacramento Valley by 2000, as discussed below.

Northern and Middle Central Valley

The DFG report concludes that the petition fails to document owl declines in the Sacramento Valley. However, there is additional evidence burrowing owls have dramatically declined in the southern Sacramento Valley (Colusa, Sutter, Solano, Yolo, and Sacramento Counties and portions of Yuba and Placer Counties) since at least the 1950s (Johnson 2003). The Institute for Bird Populations surveys (DeSante and Ruhlen 1995; DeSante et al. 1996) produced the best scientific data on declines in the Central Valley, documenting the disappearance of 17 of 44, or 39%, of known breeding groups of owls in the southern Sacramento Valley in one decade. North America Breeding Bird Survey data

from 1968-2001, from 6 BBS survey routes in the Sacramento Valley, also show a strong declining trend (Sauer et al. 2002, as per Johnson 2003).[4] Location data compiled from the California Natural Diversity Database ("CNDDB") and the Institute for Bird Populations statewide census (unpublished information, 1995) together comprise 416 known past burrowing owl occurrences that show the owl was historically widely distributed throughout the southern Sacramento Valley (Johnson 2003). Johnson (2003) estimated that by the year 2000, 31% of the historical burrowing owl distribution in the southern Sacramento Valley had been permanently lost to development or conversion to permanent agriculture that is not suitable habitat for owls (such as vineyards, orchards, and flooded agriculture). Although there are more than 108,000 acres of federal wildlife refuges, state wildlife areas, and state ecological reserves in the southern Sacramento Valley, most of these areas are focused on managing habitat for wetland species and the majority of the known owl occurrences are outside of these areas (Johnson 2003). Some portion of an additional 67,000 acres of open space that accidentally serves as wildlife habitat (such as military bases, airports, and campuses) supported owls in past decades (Johnson 2003), but the extent to which they do today is diminished.

Sacramento County

A large owl colony at Sacramento State University containing 45-50 active burrows in 1963 had only 2 pairs remaining by 1979 (Anderson 1979) and is now likely extirpated (B. Johnson, pers. comm., 2003). Owl numbers in Sacramento Regional Water Treatment Plant Bufferlands that are managed for wetlands and are used as a habitat mitigation area declined from 12+ pairs in the 1990s to only 1 pair that did not successfully breed in 2003 (R. Jones, pers. comm., 2003). The wintering population at SRWTPB has also declined over the past 5 years (R. Jones, pers. comm., 2003). At Consumnes River College there were 10-12 pairs in the early 1980s – this population was down to 1 pair by 2003 (B. Johnson, pers. comm., 2003). A formerly large population at Sacramento Executive Airport had owls in densities of 20-30 pairs/mile along levees (Anderson 1979). The owl colony there is significantly smaller today (B. Johnson, pers. comm., 2003). The DFG report asserts that the petition does not include some owls on the southern fringe of Sacramento. The petition (page 22 and footnote 33) does discuss these observations, as reported in the CNDDB.

Yolo County

The DFG report refers to an "undocumented estimate" for Yolo County from 1985. This estimate of 70 to 80 pairs in 1985 was not undocumented. It was made for an environmental impact report based on known owl observations and breeding locations by Brenda Johnson, an ecologist who conducted her Ph.D. dissertation research on burrowing owls, and who now works for DFG. B. Johnson (pers. comm., 2002, 2003) and PHBA (2002) estimated an approximately 50% decline countywide to 30 or 40 pairs in 2000. At U. C. Davis, a large owl colony that had 22 pairs in 1981 declined precipitously and has had no breeding owls since 2002; a population at the Central Valley Reserve with 4-5 breeding pairs in the 1970s is now extirpated; and a colony at Dry Slough with 10 pairs in the 1970s is now extirpated (Johnson 2003). The petition documented several other sizable colonies that have been extirpated recently from Yolo County.

Eastern Contra Costa County

In eastern Contra Costa County, significant but unknown numbers of owls remain in the vicinity of Byron and the Byron Airport (Townsend and Lenihan 2003). There are thought to be

[4] The conclusions of the Breeding Bird Survey data are limited by a small sample size and intermittent counts.

several remaining pairs in Brentwood; up to 3 pairs in West Brentwood; 5 pairs at Brentwood Wastewater; several pairs in south Antioch; and unknown numbers for Byron, Concord, Pittsburgh, and EBRPD Black Diamond Mines Regional Park (Townsend and Lenihan 2003). Concord, Pittsburg, Antioch and Brentwood continue to experience explosive development. This area of Contra Costa has also had a serious ground squirrel poisoning campaign which may have also had a negative effect on burrowing owl numbers as the area still suffers from a lack of burrows (Townsend and Lenihan 2003).

Eastern Alameda County

In eastern Alameda County, unknown numbers of owls remain in the Altamont Hills (Townsend and Lenihan 2003). This population is likely severely threatened by high mortality risk to owls at wind farms in the Altamont Pass Wind Resource Area, where it is conservatively estimated that an astonishing 135 to 270 burrowing owls are killed each year (Smallwood et al. 2003; Smallwood and Thelander in press); the wind farms may be creating a sink not only for resident owls but for migratory and wintering owls as well (Townsend and Lenihan 2003).

Southern Central Valley

The DFG report notes that anecdotal information from DFG staff indicates that southern Central Valley owl populations appear stable. The census by DeSante and Ruhlen (1995) from 1991-1993 estimated 1,427 pairs for the San Joaquin Valley owl population. To derive an estimate of trend for the region, Roberts and O'Rourke (2003) re-visited all the burrowing owl sites recorded in the CNDDB from 1989-1993 (37 sites) for the "South Central Valley" counties (Merced, Madera, Kings, Kern, and San Joaquin Counties) censused during the DeSante and Ruhlen (1995) surveys. Roberts and O'Rourke (2003) classified the habitats at these sites according to habitat suitability and described habitat alteration where it had occurred. Roberts and O'Rourke (2003) documented a loss of owl habitat on 15% of CNDDB record locations in the past decade; 2 of 21 sites (9%) on public land had been visibly altered by development or agricultural activities and 3 of 12 sites (25%) on private land had been altered.[5] Breeding Bird Survey data (1968-2001) from 5 BBS survey routes in the San Joaquin Valley show a statistically significant "marked decline" (Roberts and O'Rourke 2003).[6] Thus the two quantitative sources on population trends within the San Joaquin Valley "suggest a decline in numbers" (Roberts and O'Rourke 2003). Roberts and O'Rourke (2003) also interviewed DFG biologists, U. S. Fish and Wildlife Service biologists, and owl researchers in the San Joaquin Valley – their anecdotal observations suggest a stable trend in the San Joaquin Valley.[7] Roberts and O'Rourke (2003) concluded that owl numbers in the San Joaquin Valle are likely less than in 1993 when surveyed by DeSante and Ruhlen (1995), but that the ability of owls to adapt to agricultural habitats may have buffered presumed habitat loss. A copy of Roberts and O'Rourke (2003) is attached.

Tulare County

The reported owl colony at Colonel Allensworth State Historic Park in Tulare County has further declined to 11 pairs in 2003 (Koshear et al. 2003), down from 23 pairs in 1999 (N. Brown, pers. comm., 2002) despite the implementation of a comprehensive owl mitigation and management plan (Koshear et al. 2003).

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5 "Altered" sites were not necessarily unsuitable for burrowing owls. Only 1 site (3%) changed to a cover type that would not support owls (Roberts and O'Rourke 2003).

6 The conclusions of the Breeding Bird Survey data are limited by a small sample size and intermittent counts.

7 Of 5 DFG biologists surveyed (none were burrowing owl experts), 2 thought owl numbers are increasing and 3 thought owl numbers are stable in the San Joaquin Valley (Roberts and O'Rourke 2003).

S. F. Bay Area

Townsend and Lenihan (2003) provide population estimates for some of the known remaining colonies in the greater S. F. Bay Area, based on personal knowledge, review of technical reports, information and supporting documentation in the burrowing owl listing petition, the California Natural Diversity Database, and interviews with environmental consultants, local burrowing owl researchers, Audubon Society local chapters, and open space managers.[8] With the exception of the San Jose Airport and Moffett Airfield in the south Bay and Camp Parks in Dublin, there are few truly undisturbed owl colonies left, resulting in a reduction of the overall viability of this species in the Bay Area (Townsend and Lenihan 2003). Habitat loss is the most immediate threat to Bay Area owls resulting in population decline and exposure to a higher risk of extinction. Relocation/eviction projects may be accelerating extirpation through harassment of resident owls - biologists in the Bay area are observing signs of stress in the owl population (Townsend and Lenihan 2003). Burrowing owls in the Bay Area appear to have high site fidelity (Townsend and Lenihan 2003). Displaced birds, unfamiliar with new areas, may be less likely to breed and may be more susceptible to mortality from predators and accidents. Off-site mitigation, while setting aside land for owls, is still leading to the loss of breeding locations for the resident owls directly affected by development.

Western Contra Costa County

There are no known recent breeding records in western Contra Costa County (Townsend and Lenihan 2003).

Western and Central Alameda County

Owl colonies in western Alameda County have been severely reduced. A large breeding colony at Oakland Airport, noted by several observers in the literature to have been formerly "one of the largest populations of burrowing owls in the Bay Area" had at least 9-10 breeding pairs from 1965-1966 (Thomsen 1971). The Oakland Airport now may have only 1 or more breeding pairs remaining (Townsend and Lenihan 2003). At least 4 pairs remain along the Hayward/Fremont shoreline (Townsend and Lenihan 2003). This is in contrast to several formerly large colonies documented in the petition in Newark and Fremont, and formerly numerous pairs and colonies in Hayward documented in the petition and recorded by local birders (R. Barklow, pers. comm., 2003). A single owl pair remains at the Martin Luther King Shoreline (Townsend and Lenihan 2003). Breeding owls have been extirpated from the Oakland Hills (Townsend and Lenihan 2003).

In central Alameda County, the largest remaining owl population west of the Altamont Hills is at Camp Parks Military Reservation, where an estimated 11-13 pairs remain (Townsend and Lenihan 2003). Small populations also persist at EBRPD Vasco Caves Regional Park (2-6 pairs); Bethany Reservoir (several pairs); North Livermore Avenue (at least 2-3 pairs in 1996); San Antonio Reservoir (2 pairs); Brushy Peak (2 pairs); and Sweet Ranch (3 pairs) (Townsend and Lenihan 2003).

[8] Townsend and Lenihan (2003) did not conduct a comprehensive survey or formal biological estimate of owl distribution and abundance in the greater Bay Area, but rather only presented information for populations with known data. It is assumed that there are more owls in the greater Bay Area that are not currently known about or for which population information could not be found - this was especially true for eastern Contra Costa and Alameda Counties (Townsend and Lenihan 2003).

Southern San Francisco Bay Region

It has been estimated that there were about 1,000 nesting pairs of owls in the southern San Francisco Bay region in 1970 (J. Barclay, pers. comm., 2003). This contradicts DFG's contention that the recent range contraction of breeding owls along the coast has occurred in areas that maintained few burrowing owls historically.

Southwestern California

Bloom et al. (2003) have been monitoring declines of burrowing owls in southwestern California and report that the owl as a breeding species is on the verge of extirpation from southwestern California. Bloom et al. (2003) relied on their own surveys, recent records from local observers, egg collection records from museums, published literature, and public input to infer range reductions in Santa Barbara, Ventura, Orange, Los Angeles, western Riverside, and western San Bernardino Counties. Bloom et al. (2003) report that remaining owl populations in southwestern California are well known and it is extremely unlikely significant breeding populations have been missed.

Santa Barbara County

The listing petition reported that breeding owls were very nearly extirpated from the western 75% of Santa Barbara County (DeSante and Ruhlen 1995). A status update by Bloom et al. (2003) reports that breeding owls are extirpated from Santa Barbara County and confirms the species is gone from Vandenberg Air Force Base and that there is no breeding in the Cuyama Valley, an area which was listed as a possible breeding location in the DFG report.

Ventura County

The listing petition reported that breeding owls had been extirpated from coastal Ventura County since the 1980s (DeSante and Ruhlen 1995). The DFG report asserts that the Ventura County Bird Atlas project indicates the burrowing owl is a localized breeder with a few known remaining breeding sites such as Mugu Naval Air Station – this information is incorrect. A status update by Bloom et al. (2003) confirms that breeding owls are indeed extirpated from Ventura County and that there is no breeding activity at Mugu Naval Air Station.

Los Angeles County

The listing petition reported that breeding owls had most likely been nearly extirpated from southern Los Angeles County. Bloom et al. (2003) confirm that breeding owls have definitely been extirpated from Los Angeles County west of the San Gabriel Mountains. Information in the petition and Bloom et al. (2003) indicating that breeding owls were historically widespread throughout the Los Angeles basin contradicts DFG's contention that the recent range contraction of breeding owls along the coast has occurred in areas that maintained few burrowing owls historically. The petition reported that a minimum of 10 breeding territories have been active in Antelope Valley in northeastern Los Angeles County most years between 1970-2000. The DFG report suggests that 20-50 owl pairs remain in the Antelope Valley based on information from the Los Angeles Breeding Bird Atlas, however Bloom et al. (2003) suggest that 10 pairs or more is an accurate estimate.

Orange County

Bloom et al. (2003) confirmed that Orange County had "dense populations coastally" until the 1980s, contradicting DFG's contention that the recent range contraction of breeding owls along the coast has occurred in areas that maintained few burrowing owls historically. Bloom et al. (2003) report that breeding owls remain at only a single location in Orange County, at Naval Weapons Station, Seal Beach, where there are currently 6 pairs. Part of the reason this population persists is due to augmentation by owls translocated there from other areas in Orange County (Bloom et al. 2003).

Western San Bernardino County

Bloom et al. (2003) estimate that about 100 pairs remain on private land in southwestern San Bernardino County in the vicinity of Chino and Ontario in small colonies and single pairs, but that the species is so highly fragmented and diminished that the long-term outlook is "very poor" and breeding owls are predicted to disappear. The situation in southwestern San Bernardino County is similar to that in Orange County 15 years ago, when breeding owls began plummeting toward extirpation (Bloom et al. 2003). The lack of breeding pairs or even appropriate habitat captured within existing and proposed reserves is "alarming," and there are not many potential areas for reserves with owl habitat (Bloom et al. 2003).

Western Riverside County

The situation in western Riverside County is similar to that in southwestern San Bernardino County, however there is much more potential for reserves that can capture remaining owl populations and suitable habitat (Bloom et al. 2003). Unfortunately in some of the largest reserves, such as lands preserved in the Western Riverside Multi Species Habitat Conservation Plan, there are not many owls left. Bloom et al. (2003) report that breeding owls are extirpated from Lake Skinner.

San Diego County

Lincer and Bloom (2003) estimate that there were between 250-300 breeding owl pairs throughout San Diego County in the 1970s, with colonies of 1 to 3 dozen owls frequently observed into the early 1980s. This information, along with information in the petition indicating that breeding owls were historically widespread throughout San Diego County, contradicts DFG's contention that the recent range contraction of breeding owls along the coast has occurred in areas that maintained few burrowing owls historically. The listing petition reported 6-8 remaining breeding locations as of 2001. Lincer and Bloom (2003) report approximately 25 widely scattered owl pairs remain in San Diego County, with the two largest concentrations (groups of 7-8 pairs) at North Island Navy Base and along the border at Otay Mesa. Lincer and Bloom (2003) feel that without a significant management effort, it is likely that breeding owls could be on the verge of disappearing from San Diego County.

Coachella Valley

The DFG report references 74 historical and recent burrowing owl observations (a few are actually observations of burrows only) in the Coachella Valley. Review of these 74 records reveals

only a single record of confirmed breeding within the last decade and 31 records of probable breeding[9] within the last decade. The DFG report cites biologist Cam Barrows as estimating 10-20 breeding pairs remain in the Coachella Valley. Cam Barrows further clarified that there are 2-3 confirmed occupied burrowing owl locations and estimated that there are no more than 10 to 20 at the very most, occupied sites in the Coachella Valley (C. Barrows, pers. comm., 2003).

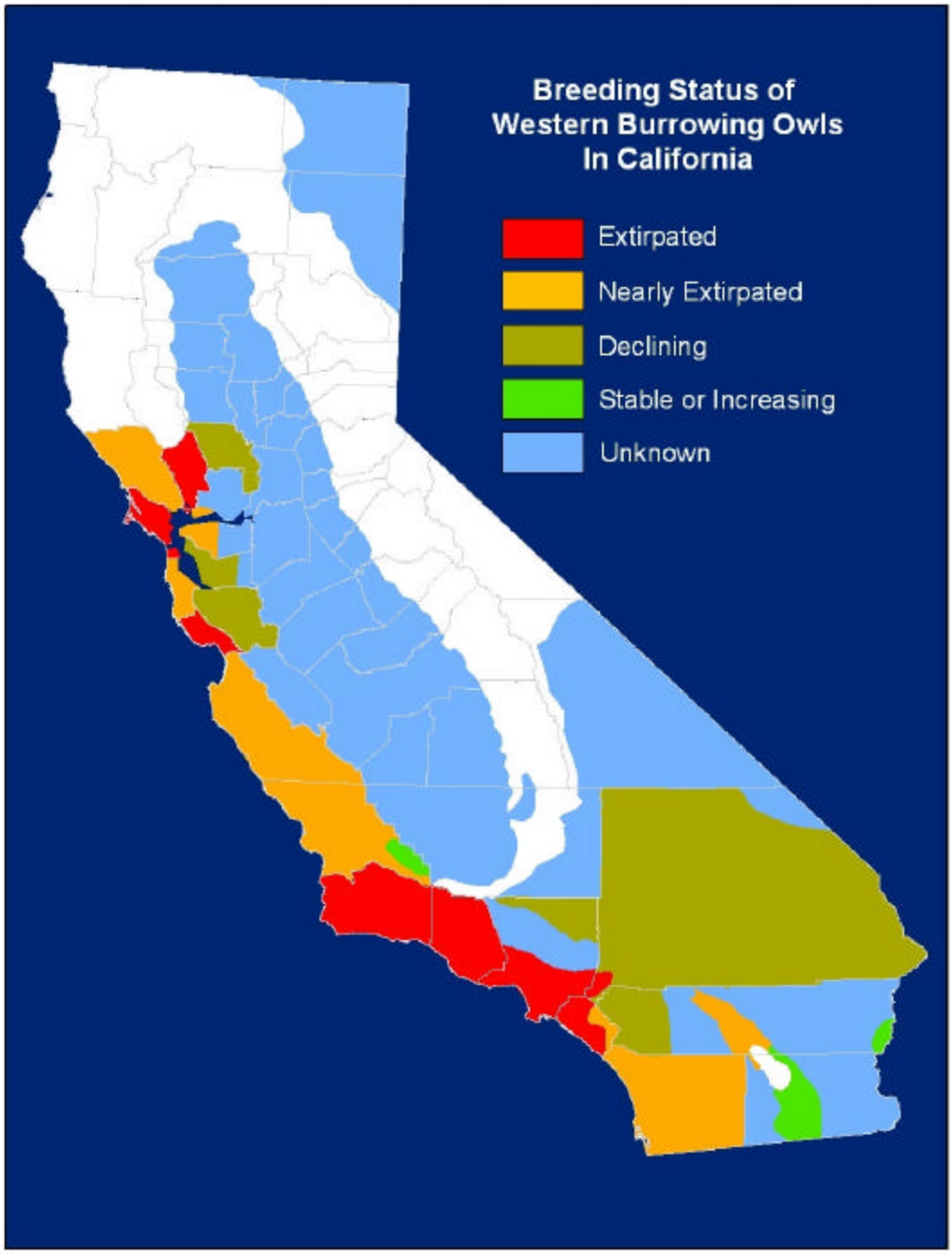
Southern Desert Range

Palo Verde Valley

The DFG report cites biologist Jeff Kidd as estimating that the owl population in the Palo Verde Valley along the lower Colorado River is 500-1,000 breeding pairs. Jeff Kidd indicated that DFG doubled his population estimate: he estimated at most 500 pairs (J. Kidd, pers. comm., 2003).

[9] A site was considered a probable breeding location if: there was evidence of owl occupation of burrows; single or multiple birds were collected or observed during the nesting season (February 1 through August 31); pairs were observed outside of the nesting season; or multiple birds were observed year-round.

Appendix A – Breeding Status of Western Burrowing Owls in California, by County *



* This map does not include all documented declines in the Central Valley

CONTRACTION OF CALIFORNIA BURROWING OWL RANGE

Prepared by Jeff Miller, Center for Biological Diversity, November 24, 2003

Area of California within western burrowing owl range: 103,245 square miles[10]

Breeding owls have been extirpated or are nearing extirpation in 22,255 sq. miles
= 22% of the species' range in California

County/Region	Area within BUOW range (square miles)	Status of breeding owls	Remaining owl pairs (year of estimate)[11]
Humboldt	?	extirpated	
Napa	795	extirpated	0 (1993)
Marin	590	extirpated	0 (1993)
San Francisco	90	extirpated	0 (1993)
Santa Cruz	440	extirpated	0 (1993)
Santa Barbara	2,195	extirpated	0 (2003)[10]
Ventura	1,025	extirpated	0 (2003)[12]
Southwestern Los Angeles	2,040	extirpated	0 (2003)[10]
Western Contra Costa	400	extirpated?	0? (2003)[10]
Southwestern Solano	45	nearly extirpated	≥4? (2003)[13]
Sonoma	1,600	nearly extirpated	1 to 2 (1993)
San Mateo	530	nearly extirpated	1 to 2 (2001)
Monterey	3,325	nearly extirpated	~14 (1992)
Coastal San Luis Obispo[14]	3,015	nearly extirpated	0 to ? (1993, 2003)[15]
Orange	785	nearly extirpated	6 (2003)
San Diego	3,850	nearly extirpated	25 (2003)[16]
Coachella Valley	1,530	nearly extirpated	5-10 (2003)[17]
Total	**22,255 = 22%**		

[10] Derived from Barclay state map in listing petition, Appendix 1

[11] Estimates from DeSante and Ruhlen (1995), DeSante et al. (1996), and information in the listing petition unless otherwise noted.

[12] Bloom et al. (2003)

[13] Townsend and Lenihan (2003)

[14] Estimate of area of coastal S.L.O. County within range of the species; does not include Carrizo Plain.

[15] 17 recent probable breeding observations in coastal S.L.O. County were reported in 2003 to CDFG by biologist Miriam Hulst, Department of Defense.

[16] Lincer and Bloom (2003)

[17] An estimated 5-10 resident pairs in the Coachella Valley were reported in 2003 to CDFG by biologist Cam Barrows.

DECLINES OF BREEDING BURROWING OWLS IN CALIFORNIA

Prepared by Jeff Miller, Center for Biological Diversity, November 24, 2003

Area of California within western burrowing owl range: 103,245 square miles[18]

Breeding owls are declining in an additional 51,832 sq. miles
= 50% of the species' range in California

County/Region	Area within BUOW range (square miles)	Status of breeding owls[19]	Remaining owl pairs (year of estimate)[20]
Northern Central Valley			
Butte	1,147	declining[21]	unknown
Colusa	1,093	declining[22]	unknown
Sutter	603	declining[20]	unknown
Middle Central Valley[23]	11,076	declining	595-600 (1995-1996)
Solano	(784)	declining[20]	unknown
Sacramento	(966)	declining[20]	unknown
Yolo	(1,013)	declining	30-40 (2000)
Southern Central Valley[24]	14,893	declining	1,427 (1995)
San Joaquin Valley[25]		declining?[26]	<1,427 (2003)
Bay Area			
Western Alameda	660	declining	unknown
Santa Clara	1,291	declining	120-141 (1997)
Southwestern California			
Northeastern Los Angeles	1,220	declining	≥ 10 (2003)
Western Riverside	1,802	declining	~100 (2003)[27]
Southwestern San Bernardino	1,003	declining	unknown
Desert			
San Bernardino (desert portion)	17,044	declining	unknown
Total	**51,832 = 50%**		

[18] Derived from Barclay state map in listing petition, Appendix 1

[19] Status from DeSante and Ruhlen (1995), DeSante et al. (1996), and information in the listing petition unless otherwise noted.

[20] Estimates from DeSante and Ruhlen (1995), DeSante et al. (1996), and information in the listing petition unless otherwise noted.

[21] B. Johnson, pers. comm., 2003

[22] Johnson (2003)

[23] As surveyed by DeSante et al. (1996) included Yolo, Sacramento, Solano County, eastern Contra Costa, eastern Alameda, San Joaquin, Stanislaus, Merced, El Dorado, Amador, Calaveras, Tuolumne, and Mariposa Counties.

[24] As surveyed by DeSante et al. (1996) included Fresno, Madera, Tulare, Kings, Kern, and southeastern San Benito Counties.

[25] As surveyed by Roberts and O'Rourke (2003) included San Joaquin, Merced, Madera, Kings, and Kern Counties.

[26] Roberts and O'Rourke (2003)

[27] Bloom et al. (2003)

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