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TECHNICAL MEMORANDUM

DATE: February 24, 2020

TO: John Kuba, ConnectGen Operating LLC

FROM: Kori Hutchison and Andrea Chatfield, WEST, Inc.

RE: California Spotted Owl Risk Assessment for the Proposed Fountain Wind Project, Shasta County, California

INTRODUCTION

Fountain Wind LLC (Fountain Wind) contracted Western EcoSystems Technology, Inc. (WEST) to provide biological study support for Shasta County in its review of the proposed Fountain Wind Project (Project) in Shasta County, California, under the California Environmental Quality Act (CEQA). The proposed Project falls within the range of the California spotted owl (*Strix occidentalis occidentalis*; CSO) which is designated as a Species of Special Concern (SCC) in California by the California Department of Fish and Wildlife (CDFW; 2019). While the CSO was recently petitioned for listing at the federal level, the US Fish and Wildlife Service (USFWS) determined that the listing was not warranted in a 12-month finding released on November 8, 2019 (USFWS 2019). This finding was based on a thorough review of the best available scientific and commercial information regarding the past, present, and future threats to the CSO (USFWS 2019). In their assessment, the USFWS found that the primary threats to the CSO are large-scale, high-severity fire, increased tree mortality, drought, effects of climate change, and the barred owl (*Strix varia*) invasion (USFWS 2019). The following memorandum provides an assessment of the potential risk to CSO posed by development and operation of the proposed Project.

PROJECT SITE

The Project Site, defined as all areas where Project facilities could be sited, encompasses approximately 4,463 acres (ac; 1,806 hectares [ha]) of privately-owned commercial timberlands within Shasta County in northern California (Figure 1). The Project is located west of the community of Burney and northeast of the larger community of Redding. The east-west running California State Route 299 bisects the northern portion of the Project Site, and the Hatchet Ridge Wind Farm (Hatchet Ridge), in operation since 2010, is located immediately to the northeast (Figure 1). The Lassen National Forest is located to the southeast of the Project and the Shasta-

Trinity National Forest is located to the north and west. The majority of the remaining areas surrounding the Project Site are privately-owned lands managed for commercial timber harvest.

The dominant vegetation type in and around the Project Site is mixed coniferous forest (both post-fire and unburned), with smaller amounts of mixed montane chaparral and mixed montane riparian forest/scrub. The primary land use in this area is commercial timber production, which has resulted in a highly fragmented landscape with no large tracts of undisturbed wildlife habitat across much of the area. Commercial timber operations currently and will continue to alter the landscape within and surrounding the Project Site, with areas of older forest being harvested and replanted with conifer seedlings that eventually transition from a scrub-shrub cover type to densely treed early-seral forest over 10-20 years. Dominant overstory species include a combination of white fir (*Abies concolor*), Douglas fir (*Pseudotsuga menziesii*), incense cedar (*Calocedrus decurrens*), ponderosa pine (*Pinus ponderosa*), sugar pine (*P. lambertiana*), and California black oak (*Quercus kelloggii*). Topography within the Project Site is characterized by gently rolling hills that transition to relatively steep, low mountains, with elevations ranging from approximately 3,700 feet (ft; 1,128 meters [m]) on the western extent of the Project Site to 5,400 ft (1,646 m) near Snow Mountain in the southeast (Figure 2).

In late August, 1992, the Fountain Fire burned approximately 64,000 ac (25,900 ha) in and around the Project Site, including an area encompassing the northern two-thirds of the Project Site (Figure 1). Post-fire management included salvage logging, site preparation, and planting in the year following the fire. In the 27 years since the fire, the previously burned areas within the Project Site are now predominantly covered by dense stands of regenerating, early-seral mixed conifer forest. Management activities in the burned areas is primarily restricted to pre-commercial thinning, while commercial timber harvest operations are currently being conducted only within the southeastern third of the Project Site.

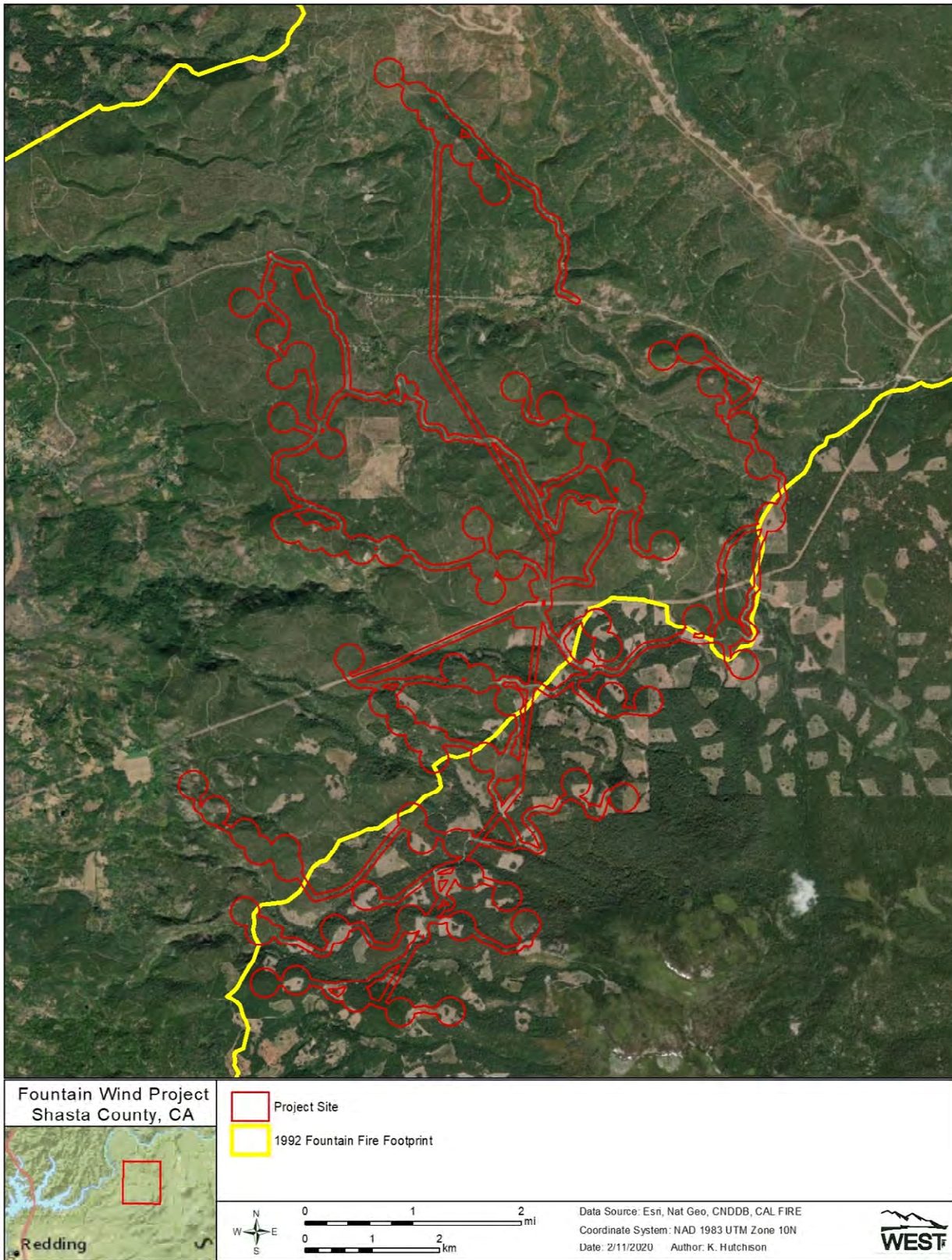


Figure 1. Proposed Fountain Wind Project Site in Shasta County, California.

SPECIES BACKGROUND

Spotted owls are large, brown-eyed owls that inhabit mature forests of western North America. The CSO is one of three subspecies of spotted owl and occurs in the Sierra Nevada mountain range in California and Nevada; in the Coastal, Transverse, and Peninsular mountain ranges in southern and coastal California; and in Sierra San Pedro Martir in Baja California Norte, Mexico (USFWS 2019). For purposes of owl management and conservation, the Pitt River in Shasta County is recognized as the dividing line between the CSO range to the south and the state and federally listed northern spotted owl (*Strix occidentalis caurina*; NSO) to the north (Gutiérrez and Barrowclough 2005). At its closest point, the Pitt River runs approximately 4.7 miles (mi; 7.6 kilometers [km]) north of the Project Site. The majority of CSOs in the Sierra Nevada are found in mid-elevation ponderosa pine, white fir, and mixed-conifer forest types (USFWS 2019). Using various criteria to define a core area (i.e., the area of concentrated use around a nest or roost location), researchers have estimated CSO core areas of between 347 and 2,009 ac (140 and 813 hectares [ha]; Bingham and Noon 1997; Seamans and Gutiérrez 2007, Tempel et al. 2014, Berigan et al. 2012). Suitable nesting/roosting habitat for CSO includes areas of complex-structured/multi-layered forest, high canopy cover, and the presence of old and decadent trees, large snags, and coarse downed woody debris (Gutiérrez et al. 2017). The CSO forages in forested habitats generally similar to nesting/roosting habitat, where their primary prey items are medium-sized small mammals, particularly woodrats (*Neotoma* spp.) and flying squirrels (*Glaucomys sabrinus*; Verner et al. 1992). The species tends to avoid crossing brushy and clearcut forest areas, although they may hunt along the edges (Ward 1990).

Historical Occurrence in the Project Site Vicinity

According to the California Natural Diversity Database (CNDDDB), several occurrences of CSO have been documented in the vicinity of the Project (CDFW 2020b). Three historical activity centers are located within 2.0 mi (3.2 km) southeast of the Project Site (SHA0046, SHA0051, and SHA0124), and one historical activity center is located near the center of the Project Site (SHA0063; Figure 2). The last known positive detections associated with SHA0046 and SHA0051 were individual birds observed in 1994 and 1990, respectively (CDFW 2020b). The last known active nest at SHA0046 was documented in 1992, when a female CSO was observed with two young. No juvenile birds were ever observed at the SHA0051 activity center; however, a pair was observed in 1987. The most recent positive detection near the Project (SHA0124) was an incidental observation of an adult bird with two young reported by a Sierra Pacific Industries forester in 2008, approximately 1.2 mi (1.9 km) southeast of the Project Site between Ward Butte and Green Mountain (CDFW 2020b; Figure 2).

The SHA0063 activity center, located near the center of the Project Site, was based on a 1990 observation of an individual bird of unknown age and sex reported by Roseburg Forest Products (CDFW 2020b); however, this activity center was completely burned in the 1992 Fountain Fire. During a site visit in 2018, a WEST biologist field-verified that there is no remaining suitable habitat for CSO at that location.

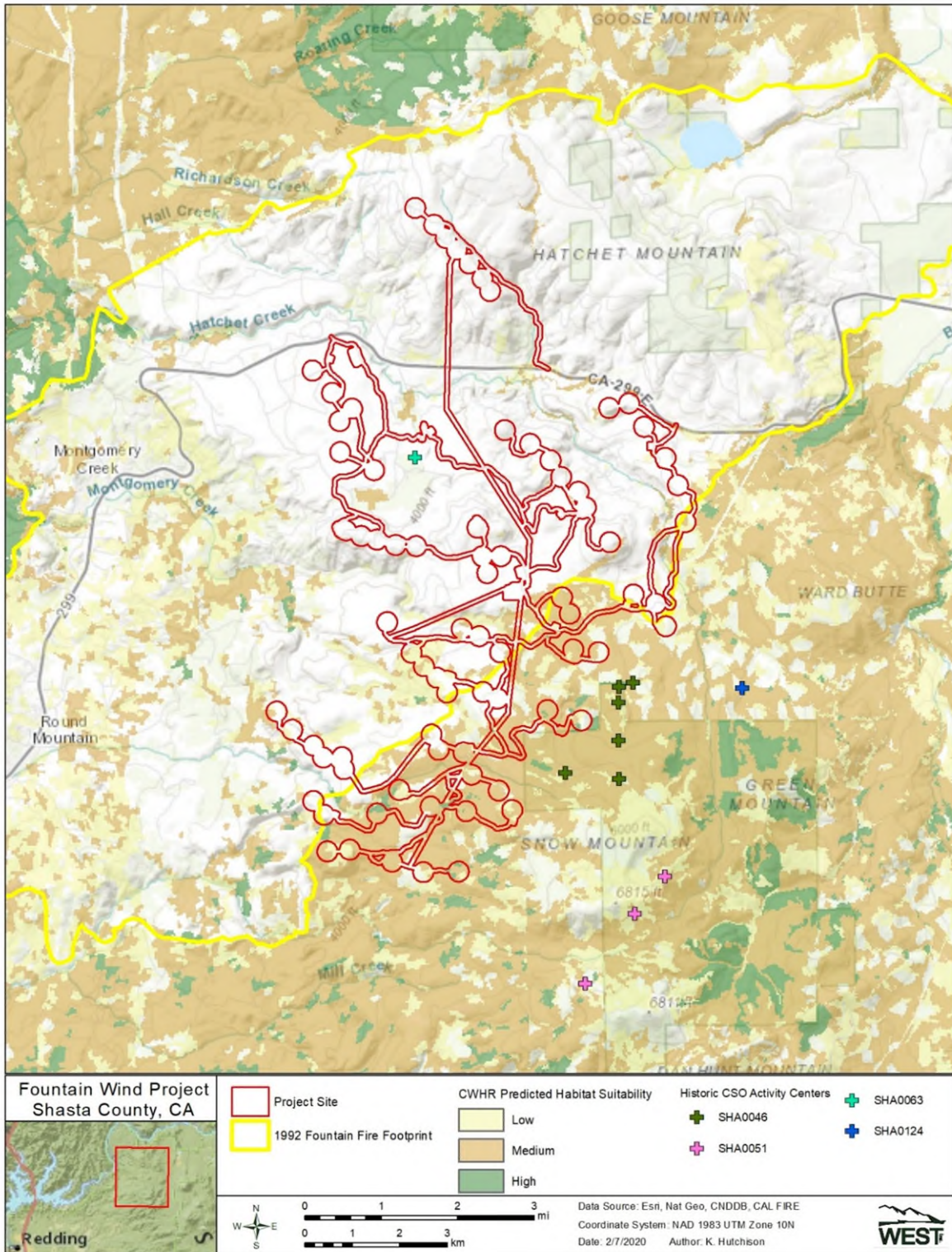


Figure 2. Historic California spotted owl (CSO) occurrences and predicted suitable spotted owl habitat in the vicinity of the Fountain Wind Project in Shasta County, California, as obtained from the California Natural Diversity Database (CNDDDB) and California Wildlife Habitat Relationships (CWHHR).

RISK ASSESSMENT

Habitat Suitability and Potential for Occurrence

The Project Site lies on the northern edge of the CSO range, in the transition zone between the CSO and NSO subspecies ranges. Geographic information system (GIS) data from the California Wildlife Habitat Relationships (CWHR) Predicted Habitat Suitability dataset (CDFW 2020a) and examination of aerial imagery were used to conduct a desktop review of potential CSO habitat overlap with the Project. The CWHR's GIS-based habitat model analyzes and compiles several remotely sensed GIS coverages to predict habitat suitability. The majority of the Project Site (about 3,300 ac [1,335 ha]; 73.9%) falls within the Fountain Fire footprint, which is predominantly classified as non-habitat for CSO in the CWHR dataset (Figures 1 and 2). The southeastern portion of the Project Site, outside of the fire perimeter, does include areas of predicted moderate to high suitability habitat. Based on the CWHR model, approximately 945 ac (382 ha) of the Project Site (21.2%) are classified as having moderate suitability for CSO, with much smaller, isolated patches of high suitability habitat interspersed (Figure 2). These small patches of predicted high suitability habitat amount to only 50 ac (20 ha), or 1.1 % of the total Project Site (Figure 2). While the Project Site overlaps approximately 995 ac (403 ha) of moderate to high suitability CSO habitat, this is a conservative estimate of the amount of habitat that could potentially be removed during Project development as the Project Site encompasses a larger area than that typically required for road and turbine construction to allow for greater flexibility in micro-siting.

Based on historical spotted owl occurrence data from the CNDDDB, the most recent spotted owl detections within 2.0 mi of the Project Site date back to 2008, with the spotted owl detections closest to the Project Site last reported in the early 1990s prior to the Fountain Fire (CDFW 2020b). While historical CSO detections are absent from the unburned portions of the Project Site, it is important to note that focused surveys for CSO have likely not been conducted within Project Site. Given the Project's proximity to much larger and contiguous areas of high suitability habitat on protected public lands (Lassen National Forest to the southeast and Shasta Trinity National Forest to the north and west; Figure 2), it is unlikely that CSOs would select the less suitable habitats within the heavily managed timberlands present within the Project Site.

Potential for Turbine Collisions

Few collision fatalities of forest-dwelling owl species have been documented at wind energy facilities in North America (AWWI 2019, WEST 2019). Because operational wind energy projects are sparse within the range of spotted owls, the potential susceptibility of spotted owls to collisions with turbines was evaluated for the congeneric barred owl, which occurs in similar forested habitats but occupies a much larger range across North America. In a review of publicly available mortality data from 482 studies conducted at 221 North American wind energy facilities between 2014 and 2018, only four barred owl fatalities were documented, out of a total 20,168 avian fatalities (WEST 2019). Two of these barred owl fatalities occurred at facilities in Maine, one occurred at a facility on the border of Oregon and Washington, and one occurred in west-central California (WEST 2019). Other forest-dwelling owl species found as fatalities at North American

wind energy facilities included two flammulated owls (*Psiloscops flammeolus*), two western screech owls (*Megascops kennicottii*), one eastern screech owl (*M. asio*), and one northern saw-whet owl (*Aegolius acadicus*; WEST 2019). Based on AWWI's (2019) recent analysis of 193 post-construction monitoring studies at 130 wind energy facilities in the US between 2002 and 2017, owls compose approximately 1.2% of unadjusted bird fatality incidents; however, the majority of these are barn owls (*Tyto alba*), great horned owls (*Bubo virginianus*), and short-eared owls (*Asio flammeus*; 69 fatality incidents composing 1.0% of overall avian mortality; AWWI 2019). The only forest owl fatality in the AWWI dataset is a single flammulated owl (AWWI 2019). Those species that have been most at risk of turbine collisions (e.g., red-tailed hawk [*Buteo jamaicensis*], American kestrel [*Falco sparverius*], golden eagle [*Aquila chrysaetos*]) are often observed flying within the rotor swept height, or the height of the turbine blades. Spotted owls conduct almost all of their flights within or below the canopy of forests, and tend to avoid flying over large brushy or clearcut areas (Ward 1990). Regardless, there is at least some potential for CSOs to collide with turbine blades while moving between habitat patches, particularly in areas of older forest where the minimum rotor swept height (ranging from 46 to 124 ft [14 to 38 m] depending on turbine model selected) overlaps with the height of the adjacent forest canopy. However, given the generally low quality and fragmented nature of forest habitat present within and immediately adjacent the Project Site, as well as the low documented occurrence of CSO in the Project vicinity, the risk of collision is considered to be low.

CONCLUSION

The majority (about 75%) of the Project Site contains vegetation communities unsuitable, or of low suitability, for CSO. Areas of the Project Site containing moderate to high suitability habitat are present only within the southeastern third of the Project Site, with approximately 945 ac classified as having moderate suitability for CSO and only 50 ac classified as having high suitability for CSO. Furthermore, these areas of predicted high suitability, more suitable for nesting and roosting, are present in very small, isolated patches in the Project Site which may limit the potential for these areas to support CSO roosts or nests. Compared to the Project Site, protected public lands to the north, west, and southeast contain much larger areas of predicted high and moderate suitability habitat for CSO. Although approximately 995 ac of moderate to high suitability CSO habitat occurs within the Project Site, only a portion of this area may need to be cleared for the construction and operation of the Project. The loss of this potential habitat is not likely to have a significant impact to spotted owls in the region. This is supported by the lack of recent (since mid-1990's) CSO detections in areas within or surrounding the Project Site. Given the low anticipated use of the Project site by CSO, the limited extent of mature, complex-structured forest stands within and adjacent to the Project Site, the flight behavior of spotted owls, and the low number of collision fatalities of forest-dwelling owl species documented at wind energy facilities to date, potential impacts to CSO resulting from collision with Project turbines is anticipated to be low.

LITERATURE CITED

- American Wind Wildlife Institute (AWWI). 2019. AWWI Technical Report: A Summary of Bird Fatality Data in a Nationwide Database. February 25, 2019.
- Berigan, W.J.; Gutiérrez, R.J.; Tempel, D.J. 2012. Evaluating the efficacy of protected habitat areas for the California spotted owl using long-term monitoring data. *Journal of Forestry*. 110: 299–303.
- Bingham, B.B.; Noon, B.R. 1997. Mitigation of habitat “take”: application to conservation planning. *Conservation Biology*. 11: 127–139.
- CalFire. 2018. Fire Perimeters (fire18_1). Available online at: <https://frap.fire.ca.gov/frap-projects/fire-perimeters/>
- California Department of Fish and Wildlife (CDFW). 2019. Special Animals List. California Natural Diversity Database. August 2019. Available online: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline>
- California Department of Fish and Wildlife (CDFW). 2020a. California Interagency Wildlife Task Group. CWHR version 9.0 personal computer program. Sacramento, CA. Available at: <https://www.wildlife.ca.gov/Data/CWHR>
- California Department of Fish and Wildlife (CDFW). 2020b. California Natural Diversity Database (CNDDDB). Available at: <http://bios.dfg.ca.gov> and <https://map.dfg.ca.gov/rarefind/view/RareFind.aspx>. Accessed 15 January 2020.
- California Endangered Species Act (CESA). 1984. California Fish and Game Code Sections (§§) 2050-2115.5. (Added by Statutes 1984, chapter 1240, § 2.).
- Gutiérrez, R.J. and G.F. Barrowclough. 2005. Redefining the distributional boundaries of the northern and California spotted owls: implications for conservation. *Condor*. 107: 182–187.
- Gutiérrez, R.J.; Tempel, Douglas J.; Peery, M. Zachariah. 2017. The biology of the California spotted owl. In: Gutiérrez, R.J.; Manley, Patricia N.; Stine, Peter A., tech. eds. *The California spotted owl: current state of knowledge*. Gen. Tech. Rep. PSW-GTR-254. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station: 11-47. Chapter 2.
- Forsman, E. D. 1976. A preliminary investigation of the spotted owl in Oregon. M.S. Thesis, Oregon State Univ., Corvallis. 127pp.
- National Geographic Society (National Geographic). 2020. World Maps. Digital topographic map. PDF topographic map quads. Available online: <http://www.natgeomaps.com/trail-maps/pdf-quads>
- North American Datum (NAD). 1983. NAD83 Geodetic Datum.
- Seamans, M.E.; Gutiérrez, R.J. 2007. Habitat selection in a changing environment: the relationship between habitat alteration and spotted owl territory occupancy and breeding dispersal. *Condor*. 109: 566–576.
- Tempel, D.J.; Gutiérrez, R.J.; Whitmore, S.A.; Reetz, M.J.; Stoelting, R.E.; Berigan, W.J.; Seamans, M.E.; Peery, M.Z. 2014. Effects of forest management on California spotted owls: implications for reducing wildfire risk in fire-prone forests. *Ecological Applications*. 24: 2089–2106.
- US Fish and Wildlife Service. 2019. Endangered and Threatened Wildlife and Plants; 12-month Finding for the California Spotted Owl. Federal Register 84(217):60371-60372.

Verner, J., R. J. Gutierrez and G. I. Gould. (1992). "The California Spotted Owl: general biology and ecological relations." In *The California Spotted Owl: a technical assessment of its current status.*, edited by J. Verner, K. S. McKelvey, B. R. Noon, R. J. Gutierrez, Jr G. I. Gould and T. W. Beck, 55-78. Albany, CA: Gen. Tech. Rep. PSW-GTR-133, U.S. Forest Serv.

Ward, Jr., J. P. (1990). Spotted Owl reproduction, diet and prey abundance in northwest California. Master's Thesis, Humboldt State Univ., Arcata, CA.

Western EcoSystems Technology, Inc. (WEST). 2019. Regional Summaries of Wildlife Fatalities at Wind Facilities in North America. 2019 Report from the Renew Database. Published by WEST, Inc., Cheyenne, Wyoming. December 31, 2019.