State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
South Coast Region
3883 Ruffin Road
San Diego, CA 92123
(858) 467-4201
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

November 13, 2020

Amber Anderson
Wildland Fire Specialist
City of Santa Barbara Fire Department
925 Chapala Street
Santa Barbara, CA 93101
cwpp@SantaBarbaraCA.gov

Subject: **City of Santa Barbara Community Wildlife Protection Plan (Project) Draft Program Environmental Impact Report (DPIER) SCH #2020070069**

Dear Ms. Anderson:

The California Department of Fish and Wildlife (CDFW) received a Notice of Availability of a DPEIR from the Santa Barbara Fire Department (SBFD) for the Project pursuant the California Environmental Quality Act (CEQA) and CEQA Guidelines. CDFW previously submitted comments in response to the Notice of Preparation of the DPEIR.

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

CDFW ROLE

CDFW is California's **Trustee Agency** for fish and wildlife resources and holds those resources in trust by statute for all the people of the State. (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a).) CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. (*Id.*, § 1802.) Similarly for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

CDFW is also submitting comments as a **Responsible Agency** under CEQA. (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381.) CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's lake and streambed alteration regulatory authority. (Fish & G. Code, § 1600 et seq.) Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), the project proponent may seek related take authorization as provided by the Fish and Game Code.

PROJECT DESCRIPTION SUMMARY

Proponent: Santa Barbara Fire Department

Objective: The proposed Project is the result of implementation of the updated Community Wildfire Protection Plan, a community planning document which updates the City's policies regarding wildfire preparedness calling for an increase in the vegetation/fuels management activities within the City and incorporation of new fuel management techniques. The objective of the DPEIR is to cover the aspects in the Community Wildfire Protection Plan (CWPP) that propose management activities that may result in physical changes to the environment.

The Project will reevaluate the areas that are classified as the City's High Fire Hazard Areas and reclassify them based on the CALFIRE standards for High Fire Severity Zones (HFSZ) and Very High Fire Hazard Severity Zone (VHFHSZ), resulting in a net increase in average of the areas classified fire hazard zones which may be subject to vegetation management activities for the purpose of fuel modification.

Vegetation management is categorized into five categories and fuel treatment expectations/management standards within each category is defined by the level of fire hazard

severity (HFSZ or VHFSZ). The vegetation management categories that will result in treatment activities within the City limits include the following:

- *Defensible Space*: area adjacent to buildings or structures managed by landowners;
- *Roadside Clearance*: maintenance of vegetation adjacent to roadways;
- *City Vegetation Management Units (VMUs):* vegetation in areas outside of defensible space where vegetation management occurs in cooperation between the affected landowners and City; and,
- *Community Fuels Treatment Network (CFTN)*: area along the northern portion of the City limits to provide a break between continuous decadent stands of chaparral fuel and a strategic last line to protect more highly populated areas.

Locations where vegetation management activities for the purpose of defensible space and roadside clearance are herein collectively referred to as High Fire Hazard Areas (HFHA's).

Proposed vegetation management methods include, manual (e.g., hand pulling, cutting, planting), mechanical (e.g., mowing, masticating, felling, yarding), biological (e.g., grazing), and/or prescribed fire (e.g., burn piles, broadcast burning, air curtain destructors).
Specific management objectives include:

- Grassland Habitats (California annual grassland, coastal perennial grassland): Mowing or grazing of grasses to no more than 4 inches; retention of oak saplings and seedlings; removal of dead ground cover; removal of dead limbs, branches, and twigs in shrub overstory.

- Scrub Habitats (coastal sage scrub, chaparral): Increasing spacing between shrubs by twice the height of the shrubs; increasing vertical spacing between shrubs and trees to create at least 8 feet of space beneath the tree canopy.

- Woodland Habitats (including southern oak woodland): Increasing vertical spacing between canopies and shrub and grasses below; removing dead and dying trees; no removal of oaks 4 inches or more in diameter at 4 feet, 6 inches above the ground; prioritizing the retention of healthy native understory shrubs; removing limbs less than 6 feet above the ground; creating at least 8 feet of vertical space underneath the tree canopy and above understory shrubs.

- Eucalyptus Stands: Canopy thinning from selective removal of trees; thinning from removal of trees below the canopy; thinning of stands supporting 10 to 16 trees per 1,000 square feet; prioritizing retention of healthy trees and removal of trees less than 8 inches in diameter; removal of loose, stringy bark.

Location: The Project is located within the jurisdictional limits of the City of Santa Barbara, with the exception of the Santa Barbara Airport. The City is located between the coastal Santa Ynez Mountains and the Pacific Ocean, approximately 100 miles northwest of Los Angeles (Figure 1). The City borders the Los Padres National Forest and unincorporated areas of Montecito, Mission Canyon, Hope Ranch, and Eastern Goleta Valley.

Timeframe: The DPEIR does not specify start and end dates. The DPEIR is an update to the original 2004 CWPP. The updated plan and its associated Programmatic Environmental Report will likely be in place until conditions change, warranting future updates.

COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations below to assist the SBFD in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. Editorial comments or other suggestions may also be included to improve the document. Based on the potential for the Project to have a significant impact on biological resources, CDFW concludes that a Program Environmental Impact Report is appropriate for the Project.

COMMENT #1: Best Management Practices, Biological Resources Evaluation and MM-BIO-1

Issue: Reliance on pre-construction surveys may result in sensitive biological resource going undetected, resulting in undisclosed impacts.

Specific Impact: Depending on seasonality of the pre-Project survey, as described in MM-BIO-1 and the Best Management Practice (BMP) related to biological resource evaluations, special status species may be undetectable, unidentifiable, or absent from the site during that specific season,

however, impacts from vegetation management activities could result loss of foraging, nesting or breeding features which are important for the long term stability of the population.

Why impact would occur: If special status species or sensitive natural communities utilize a project-level Project site, but go undetected, direct impacts to species, or indirect impacts due to loss of habitat features result in undisclosed impacts.

In the absence of additional mitigation measures, such implementation exclusion fencing and avoidance buffers or seasonal work periods, there may be loss of individual species or local populations or sensitive species.

Evidence impact would be significant: CEQA Guidelines §15070 and §15071 require the document to analyze if the Project may have a significant effect on the environment as well as review if the Project will 'avoid the effect or mitigate to a point where clearly no significant effects would occur'. Relying on pre-project surveys, the preparation of future management plans, or mitigating by obtaining permits from CDFW are considered deferred mitigation under CEQA. In order to analyze if a project may have a significant effect on the environment, the Project related impacts, including survey results for species that occur in the entire Project footprint, need to be disclosed in for the public comment period in subsequent, project-level, CEQA review. This information is necessary to allow CDFW to comment on alternatives to avoid impacts, as well as to assess the significance of the specific impact relative to the species (e.g., current range, distribution, population trends, and connectivity).

The DPEIR defers impact assessment and disclosure to pre-construction botanical and wildlife surveys. Absent survey data during the project-level CEQA review period, CDFW and the public are unable to determine the extent of impacts or to provide meaningful avoidance, minimization, or mitigation measures related to biological resources.

Impacts to rare species should be considered significant under CEQA unless they are clearly mitigated below a level of significance. Inadequate avoidance, minimization, and mitigation measures for impacts to these sensitive species will result in the Project continuing to have a substantial adverse direct, indirect, and cumulative effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or United States Fish and Wildlife Service.

Recommended Potentially Feasible Mitigation Measure(s):

Mitigation Measure #1: In the Final PEIR, BMP's and MM-BIO-1 should be revised to indicate that appropriate surveys shall be conducted to document the presence/absence of rare species prior to project-level CEQA review. Based on the survey results, the final project-level CEQA document should propose avoidance and specific mitigation for Project impacts to rare species. For animal species, available protocols should be used to guide survey efforts. Surveys should be timed during the appropriate season for maximum detection of sensitive wildlife species. Additional survey protocols are listed in comments below.

COMMENT #2: Direct and Indirect Impacts to Special Status Plant Species

Issue: Page 4.3-39 of the DPEIR includes a discussion of the potential impacts to special status plant species from proposed modifications from creation of defensible space in High Fire Hazard Areas (HFHA) and vegetation management in designated VMU's. While the DPEIR recognizes the potential impacts to special status plant species, it states that impacts to special status plant species would be less than significant. CDFW is concerned that the proposed mitigation measures are inadequate to reduce potential impacts to less than significant.

Specific impact: Consistent with the DPEIR, CDFW agrees that Project related activities could result in adverse impacts to individuals or populations of special status plants. Direct impacts to plants may result from mowing of annual special status species prior to seed dehiscence, soil compaction from use of heavy machinery in VMU's, or trampling of special status plants by grazing livestock. Direct impacts could result in direct removal of individual plants or impacts to plants or populations that reduce the viable seed bank. Alteration of microclimatic conditions or introduction of invasive plant species which may outcompete special status plant species as a result of Project-related activities may indirectly impact special status species. Unmitigated impacts resulting in a decline in existing special status plant species would be considered a significant impact.

Why impact would occur: The proposed MM-BIO-1 states that pre-Project surveys no more than 10 days prior to initiation of activities would be conducted by a City qualified biologist to determine if suitable habitat is present, and if suitable habitat is determined to be present, that additional focused surveys will be conducted. While CDFW agrees that surveys for special status plant

species should be conducted prior to Project-related activities involving vegetation alterations, MM-BIO-1 does not acknowledge that accurate survey data collection must account for the phenology of potential special status species.

CDFW advises against reliance on pre-Project surveys for special status plant species completed immediately before (or within 10 days of) initiation of Project related activities. Depending on seasonality of the pre-Project survey, special status plant species may be undetectable (but present in the seed bank) or unidentifiable due to lack of adequate flowering specimens, leading to undisclosed impacts on special status plant species.

If special status plant species are determined to be present, in the absence of additional mitigation measures, such implementation occurrence flagging and avoidance buffers or seasonal work periods, there may be loss of individual plants or local occurrences.

Evidence impact would be significant: The 52 plant species which may occur within the project site, listed in Table 3.4-5, meet the definition of Rare or Endangered under CEQA Guidelines §15125 (c) and/or §15380 (referred to as special status plant species in this Comment Letter). Given the limited range and small population sizes of special status plant species within California and elsewhere, CDFW would consider population reduction and habitat loss which may result from Project activities would to be a significant impact.

Recommended Potentially Feasible Mitigation Measure(s):

Mitigation Measure # 1: In order to adequately address special status plant species, prior to implementation of Project activities in site specific locations, a qualified biologist should conduct botanical surveys for special status plant species, including those listed by the California Native Plant Society (http://www.cnps.org/cnps/rareplants/inventory/), during the blooming period for all sensitive plant species potentially occurring within the Project area. Page 4.3-40 states that "*habitat for several special-status plant species potentially occurs in all of the vegetation communities in the VMUs"* on page 4.3-40, and lists species with potential to occur based off of vegetative community type in Table 4.3-5 (pgs. 4.3-41-43). CDFW recommends that each Project specific analysis utilize Table 4.3-5 to generate a scoping list of potential special status plant species that may be present in the Project area.

Mitigation Measure #2: If special status plant species are identified within or adjacent to the Project area, species specific avoidance and minimization measures should be developed to avoid impacts to special status plants. Avoidance and minimization measures may include measures such as: seasonal work periods to avoid blooming season, use of hand tools avoid soil compaction from heavy machinery, flagging of no-work buffers of an appropriate distance to avoid impacts to a specific population or individual, maintaining a biological monitor on site to ensure that design elements are effective at providing the intended protection. Survey results and avoidance plan should be submitted to CDFW for review and comment. If State or federally listed plant species are identified, consultation with the relevant agency to ensure full avoidance or mitigation is recommended. CDFW protocols for surveying and evaluating impacts to rare plants available at: https://www.wildlife.ca.gov/Conservation/Plants.

Mitigation Measure #3: If avoidance is not feasible, CDFW recommends a ratio of no less than 4:1 for both the acreage and number of plants impacted. Any mitigation for impacts to special status plant species should include specific measurable criteria for success. Monitoring for these of mitigation areas should occur for a sufficient period to allow trends to be analyzed and demonstrate the occurrence is stable over time. No negative trend in plant individuals (counted separately as flowering, seed set and non-flowering individuals), and no positive trend in non-native plant cover should occur over the monitoring period.

Mitigation Measure #4: For species that are determined to be present and unavoidable in a Project work site, CDFW recommends a Documented Conservation Seed Collection of the impacted rare plant species be deposited at either Santa Barbara Botanic Garden or the California Botanic Garden (formerly known as Rancho Santa Ana Botanic Garden). A Documented Conservation Seed Collection is when seed from a special status plant species is collected and stored as part of a permanent genetic collection in a protected location. This collection preserves the genome, and any unique alleles that are present in any given occurrence, for future study and reintroduction projects. Funding should be provided to maintain the collection, as well as conduct periodic germination and viability tests, in perpetuity. Documented conservation collections (long-term storage) are important for conserving rare, gene pool representative germplasm designated for long-term storage to provide protection against extinction and as a source material for future restoration and recovery.

Recommendation #1: CDFW recommends MM-BIO-1 be split into separate, "species guild" and/or species-specific mitigation measures (e.g. plants, amphibians and reptiles, fish, mammals, birds). CDFW recommends that the proposed mitigation measures under Comment # 2 be adopted as measures to avoid impacts to special status plant species.

COMMENT #3: Direct and Indirect Impacts to Invertebrate Special Status Species

Issue: The DPEIR states that the Crotch bumble bee is not documented in the proposed CWPP area, and that potential for it to occur is low, however, there are 17 records listed in the CNDDB index of Crotch bumble bee within Santa Barbara County. Records include an occurrence within Skofield Park, an undeveloped area with suitable habitat for Crotch bumble bee within the CWPP Project area. The location of the occurrence is defined as a VHSFZ which would be subject to fuel modifications. Additional, more recent occurrences (2000 and 2017), are documented in the neighboring city of Goleta, which has similar habitat types and climactic conditions as the Project Area. Due to documentation of Crotch bumble bee within and adjacent to the Project area, CDFW would consider impacts to the species potentially significant.

CDFW is concerned that MM-BIO-1 relies on site evaluations beginning 10 days prior to initiation of vegetation management activities and lacks specific details on survey methodology for Crotch bumble bee if suitable habitat is identified. Additionally, it is not clear that the proposed BMP's, including "*ensuring heavy equipment is not placed in ecologically sensitive areas*" and "*limiting the size and quantity of heavy machinery*" (see page 4.3-54), would be implemented adequately to avoid impacts to Crotch bumble bee.

Specific Impact: Page 4.3-48, and 4.3-54 of the DPEIR discusses the potential impacts to the species. CDFW agrees that potential activities proposed including but not limited to mowing, and grazing, removal of dead limbs, branches, and twigs, or prescribed fire could result in disturbance or take of Crotch bumble bee ground nests or overwintering queens.

Why Impact Would Occur: The DPEIR does not provide adequate avoidance and minimization measures for Crotch bumble bee. Flight season, between February-October (peak season between March-September for drones), Crotch bumble bee needs adequate flowering vegetation to sustain the annual colonies (Thorpe et al., 1983). Wide scale vegetation management to thin shrubs and remove annual herbaceous ground cover could result in a reduction of nectar sources for foraging bees which could negatively impact existing Crotch bumble bee populations. Mated queens overwintering sites and annual nesting colonies may be located just under the surface of loose soil, or under the cover of underground abandoned rodent nests, empty hollow logs, under rocks, or under dense grass. Near surface disturbances because of mowing or grazing could result in disturbance or take of nest.

Evidence Impact Would Be Significant: On June 12, 2019, CDFW accepted a petition for Crotch bumble bee as a candidate species for listing under CESA. As a CESA candidate, the species is granted full protection of a threatened or endangered species under CESA. Inadequate presence or absence surveys, or inadequate avoidance and minimization measures if the species is presumed present, could result in significant degradation or reduction of available habitat, reductions of long-term population viability of the species, or direct take.

Recommended Potentially Feasible Mitigation Measure(s) (Regarding Project Description and Related Impact Shortcoming)

Mitigation Measure #1: Due to suitable habitat within the Project site, within one year prior to vegetation alterations, a qualified entomologist familiar with the species behavior and life history should conduct surveys to determine the presence/absence of Crotch's bumble bee. Surveys should be conducted during flying season when the species is most likely to be detected above ground, between March 1 to September 1 (Thorp et al. 1983). Survey results including negative findings should be submitted to CDFW prior to initiation of Project activities. If "take" or adverse impacts to Crotch's bumble bee cannot be avoided either during Project activities or over the life of the Project, SBFD must consult CDFW to determine if a CESA incidental take permit is required (pursuant to Fish & Game Code, § 2080 et seq.).

Mitigation Measure #2: Plan mowing activities outside of crotch bumble bee flight season (March 1-September 1). Mowing activities should be completed at the highest cutting height possible, or at a minimum of 12 inches, to prevent disturbance of established nests or overwintering queen hibernacula.

Mitigation Measure #3: To maintain a sustained nectar source for foraging bees, leave one or more patches (as large as possible) of meadow, lawn, or edge habitat unmowed for the entire year

in order to create a mosaic of patches with structurally different vegetation. Management plans should be sent to CDFW for review and comment.

Recommendation #1: CDFW recommends MM-BIO-1 be split into separate, "species guild" and/or species-specific mitigation measures (e.g. plants, amphibians and reptiles, fish, mammals, birds) and adopt mitigation measures 1-3, as provided in this comment, as measures to avoid impacts to Crotch Bumble bee. Additionally, the BMP's included on page 4.3-54 could be incorporated and expanded upon in the mitigation measures section to specifically address how ensuring heavy equipment is not placed in ecologically sensitive areas and limiting the size and quantity of heavy machinery will be implemented to avoid impacts to Crotch bumble bee.

COMMENT #4: Direct and Indirect Impacts to Special Status Fish Species

Issue: Page 4.3-48 of the DPEIR states that southern steelhead are present in several major creeks in the CWPP area, including zones F, G, H, and R (Mission Creek, San Roque Creek, and Arroyo Burro Creek, see Figure 3-4 of the DPEIR). Page 4.3-55 states that Steelhead critical habitat occurs in VMUs 27, 28, 43, and 45, and rearing habitat occurs in VMUs 27 and 28. Vegetation alterations adjacent to steelhead occupied streams could degrade the quality of habitat available for fish. MM-BIO-1 does not provide adequate detail to ensure surveys will be effective to identify presence or absence of steelhead. The DPEIR does not specify mitigation measures adequate to reduce the potential impact to less than significant.

Specific impact: Alterations of vegetation associated with a streambed area may result in increased sedimentation, impacting water quality. Livestock grazing activities near the streambed area could result in nutrient deposits impacting water quality. Clearance of overhanging vegetation may reduce shading over the streambed area, resulting in changes to water temperature. Removal of vegetation associated with the stream bank could reduce insect populations, which is an important source of food for juveniles.

Why impact would occur: Steelhead spawn in cool, clear, well-oxygenated streams with suitable gravel size (Reiser et. al, 1979). The egg incubation and larval development stage, success is dependent of water temperature, dissolved oxygen, and suspended sediment deposition (Stoecker and Conception Coast, 2002). Vegetation alterations within or adjacent to the streambed area may adversely effect habitat directly or indirectly.

Clearance of vegetation within or adjacent to steelhead occupied streambed areas may cause temporary or long-term increases in sedimentation deposition into the water. Adverse effects from increased sedimentation in the streambed area could reduce the salmonid carrying capacity of the stream though smothering of eggs, and alteration of sheltering habitat for emerging fry. Increased sedimentation in the streambed area could reduce the salmonid carrying capacity of the stream though smothering of eggs, the life stage when southern steelhead are most vulnerable to mortality.

Vegetation removal could cause a reduction in canopy cover over the streambed area, reducing shading effects and impacting water temperatures. Increasing water temperatures of streams that can slow growth, increase predation risk, and increase susceptibility to disease (Stoecker and Conception Coast, 2002).

Vegetation alterations along the stream bank could reduce the abundance of terrestrial and aquatic insects, an important food source for juvenile steelhead (Stoecker and Conception Coast, 2002).

Evidence impact would be significant: Population of southern steelhead trout have declined throughout its range and is listed as federally endangered by the National Marine Fisheries Service (NOAA Fisheries). Improvements to Mission Creek, including the removal of fish barriers at Tallant Road Bridge and the Upper and Lower Caltrans Channels, have increased the range and available habitat for southern steelhead. Project activities causing adverse impacts to water quality, temperature, or other factors that could impact southern steelhead populations (at current levels or future levels) or undermine active restoration efforts would be considered significant.

Recommended Potentially Feasible Mitigation Measure(s) (Regarding Project Description and Related Impact Shortcoming)

Mitigation Measure #1: CDFW has concluded that the Project may result in the alteration of streams. For any such activities, the Project applicant (or "entity") must provide notification to CDFW pursuant to Fish and Game Code, section 1600 et seq. Based on this notification and other information, CDFW determines whether a Lake and Streambed Alteration Agreement (LSAA) with the applicant is required prior to conducting the proposed activities. Please visit CDFW's Lake and Streambed Alteration Program webpage to for information about LSAA notification and online

submittal through the Environmental Permit Information Management System (EPIMS) Permitting Portal (CDFW 2020b).

CDFW's issuance of an LSAA for a Project that is subject to CEQA will require CEQA compliance actions by CDFW as a Responsible Agency. As a Responsible Agency, CDFW may consider the CEQA document from the County for the Project. To minimize additional requirements by CDFW pursuant to Fish and Game Code, section 1600 et seq. and/or under CEQA, the CEQA document should fully identify the potential impacts to the stream or riparian resources and provide adequate avoidance, mitigation, monitoring, and reporting commitments for issuance of the LSA.

Any LSAA permit issued for the Project by CDFW may include additional measures protective of streambeds on and downstream of the Project site. The LSAA may include further erosion and pollution control measures. To compensate for any on-site and off-site impacts to aquatic resources, additional mitigation conditioned in any LSAA may include the following: avoidance of resources, on-site or off-site creation, enhancement or restoration, and/or protection, and management of mitigation lands in perpetuity.

Mitigation Measure #3: Adult steelhead are expected to be in the area during periods of high flow (January 1st to March 31st) and smolt are likely to be in the area during periods of receding flows (March 1st to July 31st). No work should occur in or adjacent to the stream during these times unless permitted by National Marine Fisheries Service (NMFS), and consultation with CDFW has occurred. CDFW and the NMFS should be contacted to coordinate additional fish salvage and avoidance measures.

Mitigation Measure #4: Precautions to minimize turbidity/siltation may require the placement of silt fencing, coir logs, coir rolls, straw bale dikes, or other siltation barriers so that silt and/or other deleterious materials are not allowed to pass to downstream reaches. Materials composing the silt barrier shall not pose an entanglement risk to fish or wildlife.

Mitigation Measure #5: Vegetation that is removed during Project activities should not be stockpiled in or near a stream channel, or in areas where it has the potential to enter a stream channel or drainage. Native vegetation stockpiling may occur in upland and open space areas, where it will not impact native vegetation, and where wildlife can utilize these materials. Non-native vegetation shall be disposed of properly and not stockpiled.

Mitigation Measure #6: No vegetation trimming in excess of what is necessary to allow the level of access needed to complete the Project activities to meet the stated objectives of the Project. Native vegetation shall not be trimmed or removed for purposes of aesthetics or recreational access, and work shall only be performed with hand tools.

Recommendation #1: CDFW recommends that the measures included in MM-BIO-1 addressing steelhead be split into a standalone mitigation measure(s). The condition(s) should include additional details on survey methodology including seasonal survey windows. CDFW recommends BMP's included on page 4.3-55 be incorporated and expanded upon in the mitigation measures section to specifically address how proposed measures will be implemented to avoid impacts to southern steelhead, other aquatic organisms, and their habitat.

COMMENT #5: Direct and Indirect Impacts to Special-Status and Common Bird Species

Issue: The DPEIR states that impacts to nesting special status birds from defensible space creation, activities in vegetation management units, would be cumulatively significant and unavoidable (see page 3.4-53, 58, & 73), however the DPEIR has not exhausted all mitigation possibilities.

Specific impact: The DPEIR separates special status bird species into three guilds, tree nesting and roosting raptor guild, riparian guild, and other upland guild birds. Table 1 summarizes the species with potential to occur within the Project area, with habitat suitability specifics included:

Table 1 – Special Status Bird Species with Potential to Occur in the Project Area

Guild	Common name	Species	Status	Habitat type, CWPP Zone, or CWPP VMU
Tree nesting and roosting raptor guild	Coopers hawk	*Acipter cooperii*	SSC	riparian woodland/creek, southern oak woodland, and eucalyptus woodland, oak woodlands near Elings Park, where suitable foraging habitat occurs
Tree nesting and roosting raptor guild	White-tailed kite	*Elanus leucurus*	FP	riparian woodland/creek, southern oak woodland, and eucalyptus woodland, oak woodlands near Elings Park, where suitable foraging habitat occurs
Tree nesting and roosting raptor guild	Merlin	*Falco columbarius*		riparian woodland/creek, southern oak woodland, and eucalyptus woodland
Riparian bird guild	Yellow warbler	*Setophaga petechia*	SSC	F, G, H, I, and R, and VMU's near creeks in northern and southwestern parts of the CWPP area
Riparian bird guild	Yellow breasted chat	*Icteria virens*		Suitable breeding habitat in F, G, H, I, and R (most likely in Arroyo Burrow and zone R), and VMU's near creeks in northern and southwestern parts of the CWPP area
Other upland bird guild	Southern California rufous crowned sparrow	*Aimophila ruficeps canescens*		grassland and open scrub habitats,
Other upland bird guild	Grasshopper sparrow	*Ammodramus savannarum*	SSC	grassland and open scrub habitats,
Other upland bird guild	Burrowing owl	*Athene cunicularia*	SSC	grassland and open scrub habitats,
Other upland bird guild	California horned lark	*Eremophila alpestris actia*		grassland and open scrub habitats,
Other upland bird guild	Loggerhead shrike	*Lanius ludovicianus*	SSC	grassland and open scrub habitats,
Other upland bird guild	Olive-sided flycatcher	*Contopus cooperi*	SSC	Woodland habitat with mature trees

Riparian Bird Guild
The DPEIR states that for yellow-breasted chat and yellow warbler, and other species within the riparian bird guild that "*direct habitat impacts to these species would be limited by the relatively low potential for these species to occur*"(see page 4.3-52) and for yellow-breasted chat, yellow warbler, because these species are not known to breed in the proposed HFHA, and because highly suitable habitat is limited, impacts to yellow-breasted chat and yellow warbler from proposed modifications in the HFHA would be less than significant (see page 4.3-51). CDFW considers direct impacts to these special status bird species, if present, to be a significant impact with potential to reduce or eliminate already limited local populations.

Other Upland Bird Guild
The DPEIR states that burrowing owls have a small potential to nest in the Project area. Burrowing owls have been known to use highly degraded and marginal habitat where existing burrows or stem pipes are available. Nest and roost burrows of the burrowing owl are most commonly dug by ground squirrels, but they have also been known to use a variety of other species dens or holes (Gervais, et al., 2008). Impacts to burrowing owl (as well as other ground nesting species such as rufous-crowned sparrow, grasshopper sparrow, and California lark) could result from vegetation clearing and other ground disturbing activities. Project disturbance activities may result in crushing or filling of active owl burrows, causing the death or injury of adults, eggs, and young. In addition, the Project will remove burrowing owl foraging habitat by eliminating native vegetation that supports essential rodent, insect, and reptile that are prey for burrowing owl.

Additionally, large scale vegetation management may have significant negative effects on local populations of special status and common species for all guild classifications.

Why impact would occur: Impacts may occur due to direct impacts to nests and nesting birds, or adverse impacts to available nesting habitat.

Direct impacts to active nests:
MM-BIO-4 allows for Project-related activities to be completed in nesting season, which is between February 1- September 15 for this bioregion (and as early as January 1 for raptors). Animal population samples have a tendency for animal counts to underrepresent the true numbers of animals present in the survey area due to incomplete detectability of cryptic individuals and variable detectability over space and (Williams et al., 2002). Native bird species and their nests are cryptic in nature, and nesting bird surveys may be prone to human error, resulting in potential for take of nests that have gone undetected.

Impacts to ground and underground species (rufous-crowned sparrow, grasshopper sparrow, and California lark and burrowing owl respectively) and their juveniles may be injured or crushed by use of heavy machinery used in VMU areas. If prescribed fire is used, nests and juveniles may be subject to disturbance or mortality.

MM-BIO-4 requires up to a 300-foot buffer for passerine species and up to a 500-foot buffer for raptors. Use of heavy machinery and powered hand tools to complete removal and mastication may cause noise disturbances in which a 300-foot or 500-foot buffer may be inadequate to mitigate from impacts to active nests. Noise has also been shown to reduce the density of nesting birds (Francis et al. 2009) and cause increased stress that results in decreased immune responses (Kight et al., 2011). Anthropogenic noise can disrupt the communication of many wildlife species including frogs, birds, and bats (Sun et al., 2005, Patricelli et al, 2006, Gillam et al.,2007, Slabbekoorn et al., 2008).

Impacts to available nesting and foraging habitat:
Vegetation management activities and implementation of defensible space will result in removal of native vegetation, downed logs, and standing dead trees, reducing the available foraging and nesting habitat for special status and common species of birds.

Evidence impact would be significant: Migratory nongame native bird species and their nests are protected by international treaty under the Federal Migratory Bird Treaty Act (MBTA) of 1918 (50 C.F.R., § 10.13). Sections 3503, 3503.5, 3011, and 3513 of the California Fish and Game Code prohibit take of all birds and their nests including raptors and other migratory nongame birds (as listed under the Federal MBTA). Many species of special concern are afforded extra protections because they meet the definition for Rare or Endangered under CEQA Guidelines §15125 (c) and/or §15380.

The Project area which supports white-tailed kite, a fully protected species in the State of California and may not be taken or possessed at any time (Fish & Game Code, § 3511). A metadata analysis of avifauna abundance in North America from 1970-2018 suggests a 29% decline in the abundance of avifauna, noting marked declines in special status and common species (Rosenberg

et al., 2019). Fuel modification activities could lead to the direct mortality of common and sensitive avian species. The loss of occupied habitat could yield a loss of foraging potential, nesting sites, or refugia and would constitute a significant impact absent appropriate mitigation.

Recommended Potentially Feasible Mitigation Measure(s) (Regarding Environmental Setting and Related Impact Shortcoming)

Mitigation Measure #1: The SBFD should revise of MM-BIO-4 and the BMP related to Nesting Bird Protection (see page 3-38) to avoid all Project-related vegetation management activities during nesting bird season, which is between February 1 and September 15 for the bioregion of the Project area.

Mitigation Measure #2: CDFW recommends that the SBFD identify habitat of similar or greater habitat value at a ratio of no less than 1:1 for common native bird species and 2:1 for if special status bird species are known to inhabit the area prior to initiation of project-level activities. Any mitigation proposed as mitigation lands should be protected in perpetuity with a conservation easement, financial assurance and dedicated to a qualified entity for long-term management and monitoring. Under Government Code section 65967, the lead agency must exercise due diligence in reviewing the qualifications of a governmental entity, special district, or nonprofit organization to effectively manage and steward land, water, or natural resources on mitigation lands it approves.

or

Mitigation Measure #3: If the SBFD can demonstrate why it is not feasible for specific vegetation management activities to be conducted outside of nesting bird season, CDFW recommends the SBFD specify that nesting bird surveys will be conducted by a designated biologist no more than 5 days prior to initiation of vegetation removal (when weather conditions are conducive to bird activity and visual detection). The designated biologist should document the presence of any bird species utilizing the project-level Project sites. The survey area should cover habitat that will be directly affected, plus up to a 300-foot buffer for non-special-status birds and up to a 500-foot buffer for raptors and other special status species. If the project is in a relatively remote area, the access road leading to/from the project-level Project site, the designated biologist should survey vegetation that overlaps the roadway, plus a 100-foot buffer.

If species specific protocol surveys are available, those should be used in lieu of the survey methodology above. To reduce impacts to burrowing owl, CDFW recommends that the Project adhere to CDFW's March 7, 2012, *Staff Report on Burrowing Owl Mitigation*. All survey efforts should be conducted prior to any Project activities that could result in habitat disturbance to soil, vegetation or other sheltering habitat for burrowing owl.

Mitigation Measure #4: CDFW recommends that the designated biologist document the presence of and species found to be used to incorporate species specific mitigation measures with specific performance criteria, that appropriately offset detrimental impacts to into the site-specific plan. Site specific measures should include designating a minimum 300-foot minimum avoidance buffers for all non-special status passerine birds and 500-foot minimum avoidance buffer for all special status passerine and raptor species until the nest becomes inactive or the young have fledged and will no longer be impacted by the Project.

Mitigation Measure #5: CDFW recommends that the SBFD identify replacement habitat of similar or greater habitat value to the species present at the project-level Project site at a ratio of no less than 2:1 for common native bird species and 3:1 for special status bird species prior to initiation of project-level activities. Any mitigation proposed as mitigation lands should be protected in perpetuity with a conservation easement, financial assurance and dedicated to a qualified entity for long-term management and monitoring. Under Government Code section 65967, the lead agency must exercise due diligence in reviewing the qualifications of a governmental entity, special district, or nonprofit organization to effectively manage and steward land, water, or natural resources on mitigation lands it approves.

Recommendation #1: CDFW recommends the SBFD separate MM-BIO-1 into category specific mitigation measures and adopt Mitigation Measures 1-5 of this comment as measures to reduce impacts to special-status and common bird species.

COMMENT #6: Impacts to Natural Communities and Sensitive Natural Communities

Issue: The DPEIR uses 2011 GIS data from the City of Santa Barbara to map generalized vegetative communities across the Project area. The communities mapped include coastal bluff, chaparral, coastal strand/beach, California annual grassland, Coastal perennial grassland, California annual grassland, coastal perennial grassland, riparian woodland, coastal sage scrub,

and southern oak woodland. Table 4.3-7 and Table 4.3-9, included on page 4.3-60 and 43-64 through 4.3-65, notes that within each generalized vegetation classification listed, there may be sensitive natural communities that consist of vegetative alliances and/or associations that are considered rare or unique that are included in HFHA or VMU's. CDFW is concerned that vegetation alteration activities, which have expanded in scope with the current edition of the CWPP, may result in degradation or type conversion of natural communities and sensitive natural communities.

Specific impact: Disturbance can play a large role in influencing invasion of non-native and invasive species (Keeley, et al., 2005). In a case study of recently burned coastal sage scrub and chaparral communities in southern California, woody canopy closure and alien seed banks were found to directly influence the dominance of non-native species after 5 years of recovery (Keeley, et al., 2005). Changing the frequency of disturbance to chaparral or coastal sage scrub vegetative communities with regular vegetation management activities may alter selection regime, making conditions favorable for nonnative or invasive species.
Why impact would occur:

Coastal Sage Scrub:
Coastal sage scrub communities are the most widespread within the greater Project area, with 231.3 acres of coastal sage scrub in proposed VMU units. The average historical fire return interval for southern California coastal sage scrub communities (*Artemisia californica* alliance) is between 72-120 years (Fire Effects Information Systems, USDA, 2012). Case studies measuring the recovery response to disturbances suggest that reduced recovery time has contributed to the spread of invasive species in coastal sage scrub environments including *Artemisia californica* dominant alliances (Malanson et al., 1985, Keeley et al., 2012, Diffendorfer et al., 2002).

Chaparral:
The DPEIR states that "*the proposed VMUs support approximately 32.8 acres of chaparral, most of which (26.9 acres) occurs in Unit 28, in the northeastern extreme of the proposed CWPP area (Table 4.3-9). As Unit 28 is within the existing HFHA, significant parts of it are already subject to defensible space requirements*". The DPEIR also states that there is a possibility for sensitive natural communities to be present (presence/absence will be evaluated for project-level Project documentation).

Chaparral species have adapted a variety of methods for postfire regeneration, including postfire reseeders and postfire resprouters. In obligate reseeders such as Ceanothus species (often a keystone genus in chaparral habitats), mature plants are killed by fire and the seed bank is activated by the heat from fire activity, resulting new individuals sprouting. For many chapparal species, long fire free periods are required for many species to properly regenerate. When keystone, obligate seeders suffer closely spaced fires, their populations may be replaced with resprouter-dominated chaparral, resulting in a loss in species and structural diversity of the habitat (Zedler et al., 1983).

Resprouting vegetation may still be negatively impacted by decreasing fire return intervals. The average historical fire return interval for chamise California chaparral communities (*Adenostoma fasciculatum* alliance) is between 33-120 years (Fire Effects Information Systems, USDA, 2018). Case studies measuring the response to shortened intervals in chamise California chaparral communities have marked significant changes in density and composition (Zedler et al., 1983).

Evidence impact would be significant: Habitat loss and invasive plant invasions are a leading causes of native biodiversity loss. Removal of vegetation could result in direct loss of habitat supporting common and special status species who depend on that vegetation for nesting and foraging. Fuel modification activities may contribute to increases in both population numbers and distribution of invasive plant species. Invasive plant species spread quickly and can displace native plants, prevent native plant growth, and reduce native plant species diversity. The creation of new fire breaks or fuel modifications zones serve as conduits for the introduction of nonnative and invasive plant species into adjacent, previously undisturbed areas (Zink et al., 1995). Unintended introduction of invasive plant species as a result of this Project could cause habitat degradation within and adjacent to the Project site, impacting the common and special status species who depend on the vegetation as nesting and foraging habitat.

The Project is increasing the scope of defensible space modification in HFHA's from 4,776.78 acres to 5,323.96 acres (see Table 3-2), increasing the scope of operations by 547.18 acres. The Project is increasing the vegetation management units from 1,201.68 acres to 1876.59 acres (See Table 3-7), increasing the scope of operations by 674.91 acres. The net increase of managed land is 1,222.09 acres. Within those areas, coastal sage scrub composes of 223 acres of VMU's and 41.5 acres of HFHA's subject to fuel modification zones. Chaparral composes 32.8 acres of VMU's. Widespread vegetation management, which increases the frequency of disturbance to a level outside natural fire return intervals and alters the selective regime for native species could lead to

widespread habitat degradation, of both sensitive and common natural communities, that would be significant.

Recommended Potentially Feasible Mitigation Measure(s) (Regarding Environmental Setting and Related Impact Shortcoming)

Mitigation Measure #1: A specific vegetative management plan should be created, considering factors such as, existing vegetation communities using the Manual of California Vegetation or association-based classification to determine the rarity of the ranking (S1-S3), time since previous treatment, existing shrub canopy cover, distance from non-native species, prevalence of non-native species in and adjacent to the Project area, species specific regeneration methods, and presence or absence of special status species. Risk for negative impacts to existing habitat should be carefully considered prior to site-specific project initiation. Where invasive species like Mediterranean annual grasses and forbs are present near proposed treatments, CDFW recommends treatments in intact habitats adjoining areas supporting these species be minimized. CDFW recommends post-treatment follow-up monitoring at years 1, 5, and 10, to identify and address changed conditions stemming from fuel modifications. An adaptive management plan should be developed and funded to effectively control and remove noxious and problematic weeds in post treatment years.

Mitigation Measure #2: To minimize potentially significant impacts from invasive plant introduction or type conversion, CDFW recommends scheduling repeat maintenance activities based on species specific fire regime adaptations. The United States Forest Service has created the Fire Effects Information System (FEIS), which is a database with useful information on native species fire regime and other species information to help inform management best practices. The FEIS can be reached at: https://www.feis-crs.org/feis/faces/SearchByOther.xhtml.

Mitigation Measure #3: If avoidance is not possible, CDFW recommends that impacts to sensitive natural communities be offset by no less than a 5:1 mitigation ratio (or higher depending on community rarity ranking) of preserved land of similar habitat in a condition of equal or higher value. If the SBFD can demonstrate why vegetation management activities must be conducted more frequently than is necessary to maintain natural patterns of disturbance frequency (see Mitigation Measure #2), offsite mitigation at a ratio of no less than 2:1 should be identified and secured prior to initiation of site-specific projects.

If part of mitigation includes site enhancement or restoration, CDFW recommends any revegetation plan proposed for mitigation for special status plant communities be submitted to CDFW for review and comment. The mitigation for unavoidable impacts to sensitive natural communities should strive to develop a more superior habitat quality and quantity than that which was impacted by any anthropogenic modifications to offset the temporal loss of several growing seasons that would likely occur while achieving any revegetation success criteria. This should include higher mitigation ratios of areas occupied by targeted special status plant communities and increased level of protection of revegetated areas to prohibit human-caused degradation.

All lands counting toward avoidance and preservation in the DEIR should be placed under a conservation easement with an appropriate non-wasting endowment for management in perpetuity. All revegetation/restoration areas that will serve as mitigation should include preparation of a separate restoration plan, to be approved by USFWS and CDFW prior to any ground disturbance. The restoration plan should include restoration and monitoring methods; annual success criteria; contingency actions should success criteria not be met; long-term management and maintenance goals; and, a funding mechanism to assure for in perpetuity management and reporting. Areas proposed as mitigation should have a recorded conservation easement and be dedicated to an entity which has been approved to hold/manage lands (AB 1094; Government Code, §§65965-65968).

Mitigation should not substitute for implementation of an alternative that would completely avoid impacts to very sensitive habitats. Completely avoiding impacts to very sensitive habitats would significantly reduce adverse impacts of any development on these sensitive habitats.

Recommendation #1: CDFW recommends the SBFD separate MM-BIO-1 into category specific mitigation measures, including a measure(s) to evaluate any site-specific project plan for specific vegetative alliances and adopt Mitigation Measures 1-3 of this comment as measures to reduce impacts to natural communities and sensitive natural communities.

Editorial Comments and/or Suggestions

Comment #7: Section 3.4 under the Fish Guild subheading on page 4.3-55 states that "*Avoidance measures noted in Appendix E and Section 3 would be specifically identified in the Work Plan.*

Section 3 of Appendix E further states that entry into streambeds shall not be authorized, and that treatment within 25 feet of the top of the bank shall be limited to easily accessible dead brush, which may only be conducted if the work will not damage the bank structure.", however, MM-BIO-2 is contradictory to this statement, setting guidelines for working within the creek or 25 foot buffer area. CDFW requests the SBFD clarify if Project activities will require entry to the streambed area. If Project-related activities are planned within a streambed area, consistent with MM-BIO-5, CDFW would require a Lake and Streambed Alteration notification be submitted.

Comment #8: The DPEIR states that the current vegetation management activities within and near stream channels are conducted with an existing 2015 LSAA (Agreement number not provided). A standard LSAA has an expiration date of 5 years. CDFW requests that the SBFD consult with CDFW to ensure the LSAA has not expired and/or is not in need of an extension, and to confirm that the actions described in the CWPP are consistent with the covered activities of the LSAA. CDFW recommends the SBFD initiate consultation prior to issuance of the Final PEIR, and that resolutions made between the two parties can be incorporated into the document.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make subsequent or supplemental environmental determinations. (Pub. Resources Code, § 21003, subd. (e).) Accordingly, please report any special status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). The CNNDB field survey form can be found at the following link: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/CNDDB_FieldSurveyForm.pdf. The completed form can be mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov. The types of information reported to CNDDB can be found at the following link: http://www.dfg.ca.gov/biogeodata/cnddb/plants_and_animals.asp.

FILING FEES

The Project, as proposed, would have an impact on fish and/or wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089.)

CONCLUSION

CDFW appreciates the opportunity to comment on the DPEIR to assist the SBFD in identifying and mitigating Project impacts on biological resources.

Questions regarding this letter or further coordination should be directed to Audrey Kelly, Environmental Scientist at (805) 861-8475 or Audrey.Kelly@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Erinn Wilson-Olgin
B6E58CFE24724F5...

Erinn Wilson-Olgin
Environmental Programs Manager I

Ec: California Department of Fish and Wildlife – South Coast Region

Steve Gibson, Senior Environmental Scientist (Supervisory)
Steve.Gibson@wildlife.ca.gov

Audrey Kelly, Environmental Scientist
Audrey.Kelly@wildlife.ca.gov

Kelly Schmoker, Senior Environmental Scientist (Specialist)
Kelly.Schmoker@wildlife.ca.gov

Jennifer Ludovissy, Staff Services Analyst
Jennifer.Ludovissy@wildlife.ca.gov

Office of Planning and Research, State Clearinghouse – Sacramento
State.Clearinghouse@opr.ca.gov

REFERENCES

Kight, C. R., and J. P. Swaddle. 2011. How and why environmental noise impacts animals: An integrative, mechanistic review. Ecology Letters 14:1052–1061.

Diffendorfer, J. E., Chapman, R. E., Duggan J. M., Fleming G. M, Mitrovitch, M., Rahn, M. E., and Del Rosario, R., 2002. Coastal Sage Scrub response to disturbance. A literature review and annotated bibliography review. Department of Biology Department of Biology San Diego State University San Diego State University 5500 Campanile Drive 5500 Campanile Drive San Diego, CA 92182.

Gillam, E. H., and G. F. McCracken. 2007. Variability in the echolocation of Tadarida brasiliensis: effects of geography and local acoustic environment. Animal Behaviour 74:277–286.

Gervais, J.A., Rosenberg, D.K., and Comrack, L.A. Burrowing Owl (Athene cunicularia). Shuford, W.D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Giessow, J. H. 1997. Effects of fire frequency and proximity to firebreak on the distribution and abundance of non-native herbs in coastal sage scrub. Master of Science. San Diego State University, San Diego.

Keeley, J.E., Brennan, T.J. Fire-driven alien invasion in a fire-adapted ecosystem. Oecologia 169, 1043–1052 (2012).

Keeley, J.E., Baer-Keeley M., Fotheringham, C. J. 2005. Alien plant dynamics following fire in Mediterranean-climate California shrublands. Ecological Applications, 15(6), 2005, pp. 2109–2125

Kight, C. R., and J. P. Swaddle. 2011. How and why environmental noise impacts animals: An integrative, mechanistic review. Ecology Letters 14:1052–1061.

Malanson, G. 1985. Fire Management in Coastal Sage-scrub, Southern California, USA. Conservation, 12(2), 141-146.

Patricelli, G., and J. J. L. Blickley. 2006. Avian communication in urban noise: causes and consequences of vocal adjustment. Auk 123:639–649.

Reiser, D. W., and T.C. Bjornn. 1979. Habitat requirements of anadromous salmonids. 54pp. in W.R. Meehan, ed. Influence of Forest and Range Management on Anadromous Fish Habitat in Western North America. Pacific N.W. Forest and Range Exp. Sta. USDA FOR. Serv., Portland. Gen. Tech. Rep. PNW-96.

Rosenberg, K.V., Dokter, A.M., Blancher, P.J., Smith, S.C., SMITH, P.A., Stanton, J.C., Panjabi, A., Helft, L., Parr, M., and Marra, P.P., 2019. “Decline of the North American Avifauna.” Science, American Association for the Advancement of Science.

Slabbekoorn, H., and E. A. P. Ripmeester. 2008. Birdsong and anthropogenic noise: Implications and applications for conservation. Molecular Ecology 17:72–83.

Stoecker, M.W., and Conception Coast Project. 2002. Steelhead Assessment and Recovery Opportunities in Southern Santa Barbara County, California. 3887 State Street Suite 24 Santa Barbara, Ca 93105.

Sun, J. W. C., and Narins, P. M., 2005. Anthropogenic sounds differentially affect amphibian call rate. Biological Conservation 121:419–427.

U.S. Department of Agriculture, Forest Service, Missoula Fire Sciences Laboratory. 2012. Information from LANDFIRE on fire regimes of coastal sage scrub communities. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Missoula Fire Sciences Laboratory (Producer).

USDA, Forest Service, Missoula Fire Sciences Laboratory. 2018. Fire regimes of California chaparral communities: Information from the Pacific Southwest Research Station and LANDFIRE. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture,

Forest Service, Rocky Mountain Research Station, Missoula Fire Sciences Laboratory (Producer).

Thorp, Robbin W., Horning Jr, Donald S., and Dunning, Lorry L. 1983. Bumble Bees and Cuckoo Bumble Bees of California. Bulletin of the California Insect Survey 23.

Williams, B. K., Nichols, J. D., Conory, M. J. 2001. Analysis and Management of Animal Populations, Modeling, Estimation, and Decision Making. Academic Press, San Diego, CA.

Zedler, P. H., Gautier, C. R., McMaster, G. S., 1983. Vegetation Change in Response to Extreme Events: The Effect of a Short Interval between Fires in California Chaparral and Coastal Scrub.

Zink, T. A., M. F. Allen, B. Heindl-Tenhunen, and E. B. Allen. 1995. The effect of a disturbance corridor on an ecological reserve. Restoration Ecology 3:304-310.