June 26, 2025

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Subject: **2025 Crotch's Bumblebee Survey Report for the Proposed Moreno Valley Farm Project, City of Moreno Valley, Riverside County, California.**

Dear Mrs. Riggs,

This letter report presents the 2025 results of a focused Crotch's bumble bee (*Bombus crotchii*) survey conducted by Osprey Environmental Associates Inc. (OSPREY) for the proposed Moreno Valley Farm Project, City of Moreno Valley, Riverside County, California. This report has been prepared to fulfill the reporting requirements of the California Department of Fish and Wildlife (CDFW). All figures referenced in this report can be found in Appendix A, while site photographs are provided in Appendix B.

PROJECT LOCATION

The 9.9-acre project site is located at 21160 Box Springs Road, in the City of Moreno Valley, Riverside County, California, and includes Assessor Parcel Numbers (APNs): 256-200-002, 256-200-003, and 256-200-004 (Figure 1- Project Location). The approximate centroid of the project location is 33°56'51.80"N, 117°17'35.92"W (WGS1984).

CROTCH'S BUMBLE BEE BACKGROUND

Crotch's bumblebee (CBB) is among several bumblebee species recommended for listing as endangered under the California Endangered Species Act (CDFW 2023). This species is typically found across wildland and rural regions of California, ranging from sea level up to elevations of around 6,000 feet. It inhabits a variety of environments, including both native and non-native grasslands, coastal marshes, shrublands, chaparral, oak-juniper and piñon woodlands, as well as transitional desert habitats near the Mojave and Colorado deserts.

Like many bumblebee species, CBB typically nests underground in existing cavities, such as abandoned rodent burrows. Adults, including queens, workers, and males, are active during the day and visit a broad array of flowering plants for nectar and pollen.

CBB is known to forage on flowers from a wide range of plant families, such as *Asclepidaceae, Asteraceae, Boraginaceae, Brassicaceae, Ericaceae, Fabaceae, Hydrophyllaceae, Lamiaceae, Orobanchaceae, Plumbaginaceae, Polygonaceae,*

Scrophulariaceae, and Solanaceae. Preferred genera include *Asclepias, Salvia, Astragalus, Acmispon*, and *Vicia*.

In early spring, mated females (gynes) emerge from overwintering in soil burrows to establish new colonies, supplying their young with nectar and pollen (CDFW 2023). As the colony develops, non-reproductive workers are produced to support the growing brood. By early to mid-summer, males and new reproductive females appear. These workers and males live only a few weeks, resulting in peak population numbers in late spring and summer. By fall, only gynes remain, and the species becomes nearly undetectable through the winter months when they lie dormant underground.

METHODS

HABITAT ASSESSMENT

Methods used to perform the habitat assessment were based on the CDFW Considerations for CESA Candidate Bumble Bee Species document (CDFW 2023). Literature and database queries were performed to assist in determining the presence or potential occurrences of the CBB in project area. The following resources were reviewed:

- CDFW California Natural Diversity Database (CNDDB) for areas within 5 miles of the project (CNDDB 2025)
- iNaturalist Observation Database for areas within 5 miles of the project (iNaturalist 2025)
- Bumble Bee Watch for areas within 5 miles of the project (Xerces Society 2025)

On May 20, 2025, OSPREY conducted a focused habitat assessment for CBB within the proposed project footprint and an additional 25-foot buffer area. This combined area is hereafter referred to as the study area (Figure 2- CBB Study Area).

The assessment was conducted via pedestrian survey to systematically evaluate the presence and quality of key habitat features associated with CBB life history requirements, including potential foraging resources, nesting habitat, and overwintering (hibernacula) microhabitats.

During the assessment, vegetation communities and land cover types were field-mapped at a scale of 1 inch = 200 feet using satellite aerial imagery as a base map. Following the field effort, all mapped vegetation polygons were digitized and spatially quantified using ArcGIS Pro geospatial analysis software.

Vegetation classification was performed following the Manual of California Vegetation (MCV), second edition (Sawyer et al. 2009), where appropriate. In cases where direct correlation to MCV alliances or associations was not feasible, classifications were assigned based on the professional judgment of the biologist, ensuring consistency with conservation standards and habitat management practices.

FIELD SURVEY(S)

OSPREY Senior Biologist and CDFW Memorandum of Understanding (MOU) permit holder for CBB, Marshall Paymard, conducted focused surveys within the study area in accordance with the CDFW Survey Considerations for CESA Candidate Bumble Bee Species (June 6, 2023). Surveys were performed during the CBB colony's active season (April–August), with at least three surveys spaced at least two weeks apart.

All surveys were conducted under favorable weather conditions—temperatures between 65°F and 90°F, wind speeds below 8 mph—and during daylight hours, beginning no earlier than one hour after sunrise and concluding at least two hours before sunset (Table 1). Mr. Paymard walked meandering transects, appropriately spaced to ensure full visual coverage of the study area, while searching for bumble bees and potential nest sites such as small mammal burrows. Survey efforts met the required minimum of one person-hour per three acres of suitable habitat.

Table 1. Schedule of Surveys

Survey Number	Date	Hours	Personnel	Conditions (temperature, cloud cover, wind speed)
1	May 20, 2025	0900-1200	MP	75°F-82°F, 0%, 0-1 mph
2	June 03, 2025	1130-1335	MP	72°F-76°F, 5%, 1-3 mph
3	June 17, 2025	1000-1238	MP	74°F-83°F, 0%, 0-1 mph

MP=Marshall Paymard

RESULTS

HABITAT ASSESSMENT

A CNDDB query identified four (4) recorded occurrences of CBB within a 5-mile radius of the study area (CNDDB 2025). The closest record is located approximately two miles to the east of the study area. Additionally, iNaturalist data show 28 verified observations of CBB within the same 5-mile radius (iNaturalist 2025). The Xerces Society's Bumble Bee Atlas documents three (3) CBB occurrences within the 5-mile search area (Xerces Society 2025).

Vegetation.and.Land.Cover.Types..

Disturbed Habitat (DH)

Disturbed habitat includes undeveloped areas that have been significantly altered by human activity, resulting in modified soil conditions and diminished ecological function. These areas retain an earthen substrate and, where vegetation occurs, it consists primarily of ruderal species.

During the habitat assessment, two blooming species were recorded within this habitat type: shortpod mustard (*Hirschfeldia incana*), which covered approximately 10% of the

area with all individuals observed in bloom, and red-stemmed filaree (*Erodium cicutarium*), which was also in bloom and covered less than 5% of the study area.

This land cover type accounts for 8.2 acres or 83% of the study area and has been recently cleared and disked (see Figure 2-Land Cover Types).

Urban/Developed

The urban/developed land cover type includes areas that have been extensively modified by human activities and generally lack natural soil substrates. This area is characterized by buildings and impervious surfaces such as asphalt, concrete, or compacted gravel, and may also contain planted and irrigated trees and shrubs associated with residential, commercial, or infrastructure development.

Approximately 1.7 acres or 17% of urban/developed land occur within the study area (see Figure 2).

Foraging.Habitat

The study area provides limited foraging habitat for CBB. As noted previously, much of the site has been recently cleared and disked, resulting in sparse vegetative cover. Shortpod mustard occupies approximately 10% of the area, while red-stemmed filaree covers less than 5%. These two ruderal species represent the primary, and largely sole, nectar sources currently available within the study area, offering minimal foraging opportunities for CBB.

Nesting.Habitat

Potential nesting resources for CBB—such as exposed bare ground, abandoned rodent burrows, and debris or concrete piles—are scarce to nonexistent within the study area. This lack of suitable nesting habitat is likely attributable to the extensive anthropogenic disturbance and recent clearing activities that have significantly altered site conditions.

Overwintering.Habitat

Potential overwintering habitat for CBB, such as accumulations of leaf litter, woody debris, or brush piles that could provide insulated microsites for overwintering queens, is essentially absent within the study area. These features are either lacking entirely or occur so sparsely that they do not offer meaningful overwintering opportunities, similar to the limited availability of suitable nesting habitat.

FIELD SURVEY(S)

No CBB or other *Bombus* species were detected during any of the field surveys. Only common honeybees (*Apis mellifera*) were observed foraging within the study area.

CONCLUSION

The focused habitat assessment and field surveys conducted in 2025 within the study area indicate that the site provides limited suitable habitat for CBB. Despite documented occurrences of CBB within a five-mile radius, no CBB or other *Bombus* species were

detected during the three focused surveys carried out under optimal weather and seasonal conditions.

The study area is predominantly comprised of disturbed habitat (82%), recently cleared and disked, supporting only sparse ruderal vegetation. Shortpod mustard and red-stemmed filaree are the primary blooming species, occupying approximately 10% and less than 5% of the site respectively, thus offering minimal foraging resources for CBB. Urban/developed land accounts for the remaining 18%, characterized by buildings, impervious surfaces, and ornamental plantings.

Potential nesting and overwintering habitats—such as exposed bare ground, abandoned rodent burrows, leaf litter accumulations, woody debris, and brush piles—are either scarce or entirely absent, likely due to extensive anthropogenic disturbance and recent site clearing. Consequently, the overall suitability of the study area to support CBB populations appears limited.

These findings suggest that the project site currently provides minimal opportunities to support CBB foraging, nesting, or overwintering, which is consistent with the absence of CBB detections during focused surveys.

Should you have any questions regarding this report or require additional information, please do not hesitate to contact me at (949) 356-8476 or mpaymard@ospreyenv.com.

Sincerely,

Marshall Paymard
Senior Biologist

REFERENCES

Bumble Bee Watch. 2025. Citizen Science Database. Available at: https://www.bumblebeewatch.org/maps/. Accessed June 2025.

California Department of Fish and Wildlife (CDFW). 2025a. California Natural Diversity Database (CNDDB) RareFind 5: Records of Sensitive Elements. Available at: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed May 2025.

California Department of Fish and Wildlife (CDFW). 2023. Survey Considerations for the CESA Candidate Bumble Bee Species. Guidance Document, June 6, 2023.

INaturalist. 2025. Explore Observations: Crotch's Bumble Bee (*Bombus crotchii*). Available at: https://www.inaturalist.org/observations?nelat=33.9687381&nelng=-

116.911644&subview=map&swlat=33.831022&swlng=-117.071477&taxon_id=271451. Accessed June 2025.

Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. A manual of California Vegetation, 2nd ed. California Native Plant Society Press, Sacramento, California. Available at: http://vegetation.cnps.org/. Accessed 2025.

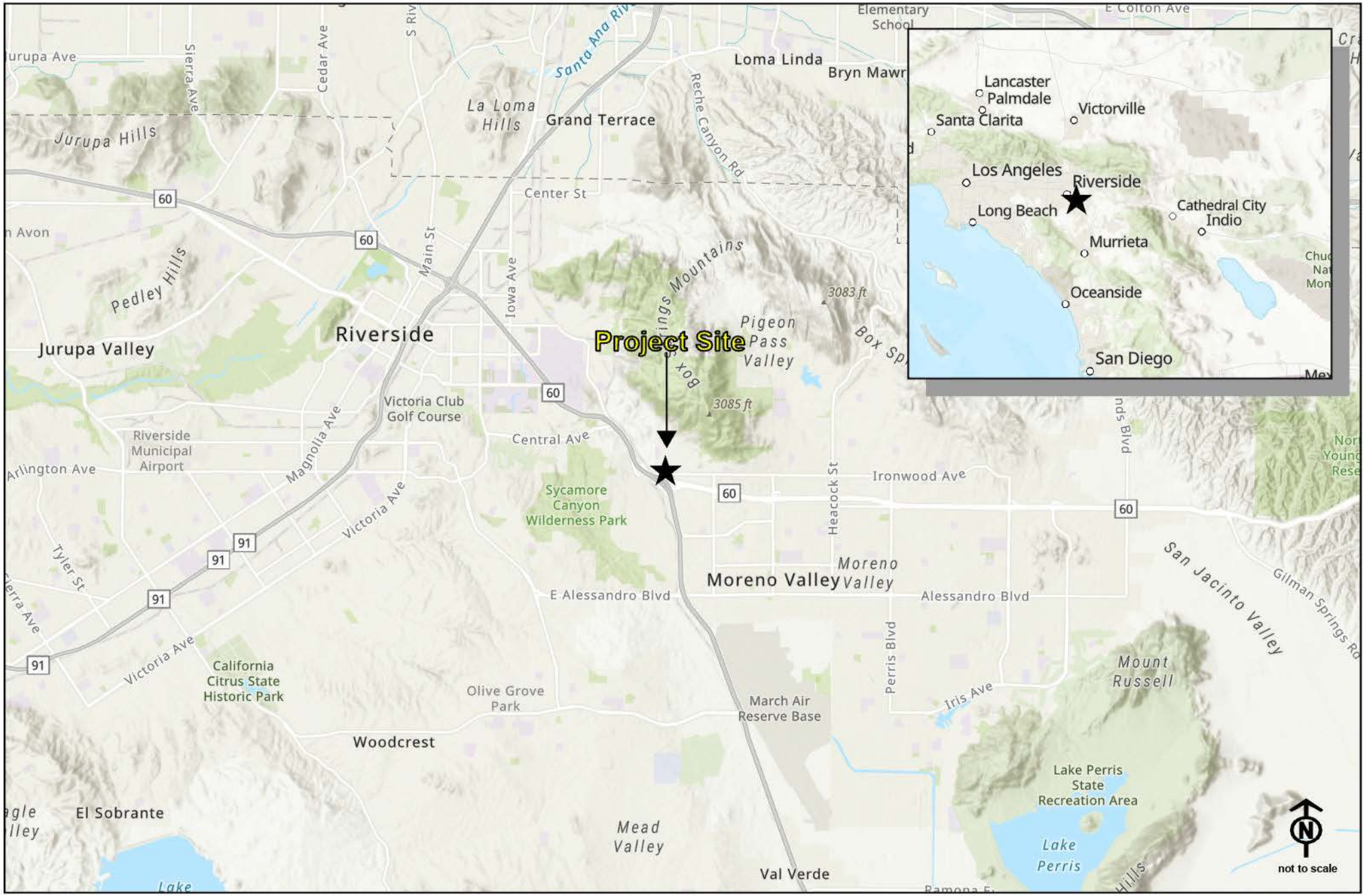

Figure 1 Project Location

2025 Crotch's Bumblebee Survey Report for the Proposed Moreno Valley Farm Project

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Disturbed Habitat
Urban/Developed

Figure 2 Land Cover Types

2025 Crotch's Bumblebee Survey Report for the Proposed Moreno Valley Farm Project

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