

3.7 Biological and Aquatic Resources

Section 3.7, Biological and Aquatic Resources, of this Revised Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (Revised/Supplemental Draft EIR/EIS) provides updates addressing monarch butterfly (*Danaus plexippus*). This species became a candidate for listing under the federal Endangered Species Act (FESA) on December 15, 2020. This document provides information on the biology and ecology of monarch butterfly as well as data sources used to determine the extent of potential habitat within the resource study area (RSA) for the species and provides analysis of project impacts and mitigation measures. Changes in response to the new species designation are being made in the Revised/Supplemental Draft EIR/EIS and the following appendices: Appendix 3.7-A, Special-Status Species Potentially Affected; and Appendix 3.7-B, Scientific Nomenclature. All other appendices to Section 3.7, as well as all technical reports supporting Section 3.7 of the Draft EIR/EIS, remain unchanged.

3.7.6 Methods for Evaluating Impacts

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3.7.6.3 Pre-Field Investigation and Consultation

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Special-Status Species

Biologists consulted the following sources to identify special-status plant and wildlife species that could potentially be affected by the San Francisco to San Jose Project Section (Project Section, or project):

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- **Western Monarch Count Overwintering Site Database**—To identify western monarch overwintering sites, biologists reviewed the western monarch overwintering site map to determine if there are any known overwintering sites within the habitat study area (The Xerces Society for Invertebrate Conservation et al. 2021a).
- **Western Monarch Milkweed Mapper**—To identify western monarch overwintering sites, milkweed occurrences, and monarch sightings, biologists reviewed the western monarch milkweed mapper to determine if monarch butterfly and milkweed plants have been documented within the habitat study area (The Xerces Society for Invertebrate Conservation et al. 2021b).
- **Environmental documents and technical reports:**

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- U.S. Fish and Wildlife Service (USFWS) findings on a petition to list monarch butterfly as a threatened species under FESA (79 *Federal Register* 78775; 85 *Federal Register* 81813).

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3.7.7 Affected Environment

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3.7.7.2 Biological Conditions

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Special-Status Species

This section addresses special-status plant and wildlife species that have a potential to be affected by the project alternatives. Monarch butterfly does not overwinter within the habitat study area but may potentially breed within the footprint of the project alternatives.

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Critical Habitat

Designated critical habitat for several listed species occurs within 0.5 mile of the project footprint. The specific units for the relevant species are shown by alignment subsection in Table 3.7-5 of the Draft EIR/EIS. Critical habitat designation for monarch butterfly has not been proposed and will not be proposed unless it is listed under FESA in the future.

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Wildlife Corridors

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Substantial impacts on monarch butterfly movement are unlikely to occur because of the species' large range, migration patterns, and low density of occurrence in the vicinity of the project area. Localized movement of monarch butterfly between proximate habitat patches, such as San Bruno Mountain in South San Francisco, Brisbane Baylands, and Bayview Park in southeast San Francisco, may result in individuals crossing the project footprint. The existing condition includes two existing sources of strike potential between suitable habitat on the east and west sides of the project footprint: cars traveling on U.S. Highway 101 and trains traveling in the Caltrain corridor.

3.7.8 Environmental Consequences

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3.7.8.2 Special-Status Species

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Project Impacts

Construction and operations of the project would result in permanent and temporary impacts on land cover potentially suitable as habitat for special-status plant and wildlife species, including state- and federally listed species. All aspects of construction and operations have the potential to cause impacts, either from direct removal of habitat or individuals, or from indirect impacts such as introduction of nonnative invasive species or changes in hydrology. Construction impacts on special-status plant species are presented first, followed by construction impacts on special-status wildlife species, then operations impacts on special-status plant species and special-status wildlife species. Table 3.7-12 shows the extent of impacts on special-status plants and wildlife habitat, respectively, by project alternative.

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Table 3.7-12 Impacts on Special-Status Species Habitat by Alternative (acres)

Species ¹	Alternative A			Alternative B		
	Permanent	Temporary	Total	Permanent	Temporary	Total
Monarch Butterfly (FC)						
Suitable Habitat	104.6	35.1	139.7	143.7	19.7	163.4

Sources: *The Xerces Society for Invertebrate Conservation et al. 2021a, 2021b.*
 All tables in the Revised/Supplemental Draft EIR/EIS present only information related to the new or updated analysis.
¹ Status Codes
 Federal
 FC = Candidate for listing under FESA

Construction Impacts

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Impact BIO#2b: Permanent Conversion or Degradation of Habitat for and Mortality of Monarch Butterfly

Construction of the high-speed rail (HSR) track and systems would primarily affect suitable breeding and foraging habitat for monarch butterfly in the San Francisco to South San Francisco Subsection (near the Brisbane light maintenance facility [LMF]) and the San Mateo to San Bruno Subsection (San Francisco International Airport [SFO] West-of-Bayshore property). Construction activities would convert and destroy suitable habitat and could result in individual fatalities of monarch butterfly larvae and adults if they are present in suitable habitat at the time of construction. Additionally, fugitive dust could temporarily affect host or nectar plants by covering leaves and reducing the vigor of plants. Similarly, fugitive dust during construction could also reduce the health and vigor of any monarch butterfly larvae present on host plants affected by fugitive dust, and could also affect the ability of adult monarch butterflies to lay eggs or feed on host and nectar plants covered in fugitive dust.

The project would not cause indirect impacts on habitat from increased cover of nonnative invasive plants because the habitat in the project corridor is heavily disturbed and nonnative invasive species are already widespread. To avoid and minimize impacts on wildlife and plants from construction, the Authority has incorporated a number of impact avoidance and minimization features (IAMF) into the project design, including BIO-IAMF#1: Designate Project Biologist, Designated Biologists, Species-Specific Biological Monitors and General Biological Monitors; BIO-IAMF#3: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training; BIO-IAMF#5: Prepare and Implement a Biological Resources Management Plan; BIO-IAMF#8: Delineate Equipment Staging Areas and Traffic Routes; BIO-IAMF#9: Dispose of Construction Spoils and Waste; BIO-IAMF#10: Clean Construction Equipment; and BIO-IAMF#11: Maintain Construction Sites. As these IAMFs are widely applicable to all species, they would also avoid and minimize impacts on monarch butterfly. These measures and how they would avoid and minimize potential effects are described in Impact BIO#1: Permanent Conversion or Degradation of Habitat for Special-Status Plant Species, in the Draft EIR/EIS.

Direct impacts could include mortality and injury of individual adults, eggs, and larvae, as well as the conversion and disturbance of suitable habitat. Table 3.7-12 shows the areal extent of direct permanent and temporary habitat impacts for the species. Under both project alternatives, HSR infrastructure would permanently convert suitable monarch butterfly habitat, which, if occupied, could result in direct injury and mortality of individuals. Alternative A would have fewer permanent and temporary impacts on suitable monarch butterfly habitat than Alternative B. Under Alternative A, most of the impacts on suitable habitat would occur from construction of the East Brisbane LMF east of the existing Caltrain tracks in the location of a former landfill in Brisbane. Under Alternative B, most of the impacts on suitable habitat would occur within the West Brisbane LMF, west of the existing Caltrain tracks in Brisbane. The majority of the West Brisbane LMF under Alternative B would overlap the formerly degraded and disturbed railyard; however, it would also overlap Icehouse Hill, which contains higher-quality grassland habitat that is more likely to support milkweed and other nectar plant species. Suitable habitat at the SFO West-of-Bayshore property in the San Bruno to San Mateo Subsection and along natural watercourses in the project corridor would also be affected by both alternatives. However, monarch butterfly depends solely on milkweed plants for completing their life cycle, and milkweed plants are not expected to be present in all suitable habitat. Milkweed plants are expected to be restricted to small patches or isolated individual plants in most locations, and thus the estimates of suitable habitat affected are likely overestimating potential impacts on suitable breeding/rearing habitat (Table 3.7-12).

The magnitude of permanent and temporary impacts on suitable habitat would be 104.6 acres and 35.1 acres, respectively, under Alternative A and 143.7 acres and 19.7 acres, respectively, under Alternative B. While actions to minimize habitat disturbance are part of the project, construction would result in loss and disturbance of suitable habitat for monarch butterfly. Construction activities could crush host plants supporting egg masses and larvae, and ground- and vegetation-disturbing activities conducted during the breeding or migratory season could kill adults feeding on nectar plants.

CEQA Conclusion

The impact under CEQA would be significant for both project alternatives because construction activities would have a substantial adverse effect, through both direct mortality and habitat modification, on monarch butterfly. While actions would be implemented before and during construction to reduce the potential for harm to individuals and to minimize the loss of habitat, the project would result in loss of habitat for monarch butterfly and could cause direct impacts on individuals (injury and mortality) if any are present in affected habitat. In the absence of measures to avoid, minimize and offset impacts, such impacts would reduce the breeding habitat for the species and potentially numbers of individuals, which although only constituting a small portion of the range, would contribute to the decline of this species. Mitigation measures to address this impact are identified in Section 3.7.11, CEQA Significance Conclusions. Section 3.7.9, Mitigation Measures, describes these measures in detail.

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Operations Impacts

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Impact BIO#13: Intermittent Disturbance of Habitat for and Direct Mortality of Special-Status Wildlife during Operations

Project operations would include passing HSR trains and inspection and maintenance activities along the Caltrain right-of-way, at stations, and at the Brisbane LMF. Most of the right-of-way has been previously subjected to extensive ground disturbance and provides limited habitat for most special-status wildlife. Prior to on-site maintenance and inspection activities, the Authority would require that all operation and maintenance personnel attend worker environmental awareness program (WEAP) training about sensitive biological resources within and adjacent to the right-of-way (BIO-IAMF#4: Conduct Operation and Maintenance Period WEAP Training). Training materials would identify and describe land cover types that may support special-status wildlife species (i.e., saline emergent wetland, freshwater emergent wetland, all land cover adjacent to the SFO West-of-Bayshore property) and their approximate locations within or adjacent to the right-of-way.

Because inspection and maintenance activities would be a continuation of existing inspection and maintenance activities for Caltrain, they would not cause any new impacts on existing special-status wildlife habitat. Some special-status species, including pollinators such as monarch butterfly, may be able to access the right-of-way during operations. Special-status amphibians, reptiles, and mammals with small body sizes may still occasionally move through or along the right-of-way, but any features that once supported breeding (e.g., aquatic features) would either be removed or degraded during construction. Any individuals that do enter the right-of-way after construction would be subjected to increased mortality risk from the addition of HSR trains operating at speeds up to 110 miles per hour (mph). This impact could also occur inside the San Francisco Bay Conservation and Development Commission's Bay and shoreline band jurisdiction (see Section 3.7.8.10, BCDC Jurisdictional Areas). Because operations impacts on monarch butterfly are primarily associated with this species moving across the project footprint, these impacts are addressed in Section 3.7.8.7, Wildlife Corridors.

CEQA Conclusion

The impact under CEQA would be significant for both project alternatives because project operations would have a substantial adverse effect, through direct mortality, on special-status wildlife species, including species listed under FESA and the California Endangered Species Act. Although special-status wildlife are already subject to high mortality risk from Caltrain operations, additional mortality of any listed species caused by passing HSR trains would be significant because it would reduce the viability of already vulnerable populations (e.g., California red-legged frog and San Francisco garter snake populations at the SFO West-of-Bayshore property, burrowing owls nesting at Norman Y. Mineta San Jose International Airport). Mitigation measures to address this impact are identified in Section 3.7.11. Section 3.7.9 describes the measures in detail.

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3.7.8.7 Wildlife Corridors

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Construction Impacts

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Operations Impacts

Impact BIO#25: Permanent Disruption of Wildlife Movement

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Monarch butterfly has a very broad migratory range/distribution across western North America from its overwintering habitat on the coast toward the north and east. Barriers to movement are not an identified threat to monarch butterflies in the listing petition (Center for Biological Diversity et al. 2014), nor is the RSA near important overwintering habitat (which occurs along the coast) where disruptions to migratory or daily movement patterns could significantly affect the species. Because HSR trains would operate intermittently and because seasonal migration is so diffuse across western North America, the addition of HSR trains along an existing rail corridor is unlikely to introduce a substantial barrier to movement.

CEQA Conclusion

The impact under CEQA would be less than significant for both project alternatives because project operations would not interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors. Therefore, CEQA does not require any mitigation.

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3.7.9 Mitigation Measures

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BIO-MM#1: Prepare and Implement a Restoration and Revegetation Plan

Prior to any ground-disturbing activity, the project biologist would prepare a restoration and revegetation plan (RRP) to address temporary impacts resulting from ground-disturbing activities within areas that potentially support special-status species, wetlands, or other aquatic resources. Restoration activities may include, but not be limited to: grading landform contours to approximate pre-disturbance conditions, revegetating disturbed areas with native plant species (including host and nectar plants for butterflies), and using certified weed-free straw and mulch. The Authority would implement the RRP in all temporarily disturbed areas outside of the permanent right-of-way that potentially support special-status species, wetlands, or other aquatic resources.

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BIO-MM#40: Avoid Direct Impacts on Monarch Butterfly Host Plants

Prior to construction, the project biologist would survey for monarch butterfly larval host plants within suitable habitat. If host plants are found, the project biologist would conduct surveys for adult monarch butterflies during the peak of the flight period to determine presence/absence, or presence may be assumed. Where adult monarch butterflies are present, or assumed to be present, construction personnel would avoid host plants in temporary impact areas during the flight season.

BIO-MM#41: Provide Compensatory Mitigation for Impacts on Monarch Butterfly Habitat

To compensate for permanent impacts on monarch butterfly habitat (breeding and foraging habitat), the Authority would provide compensatory mitigation at a minimum 1:1 ratio for occupied breeding and foraging habitat, unless a higher ratio is required by FESA. The Authority, in accordance with authorizations issued under FESA, would determine the compensatory

mitigation required to offset impacts on habitat for monarch butterfly. Compensatory mitigation could include one or more of the following:

- Purchase of credits from an agency-approved conservation bank
- Acquisition in fee title of USFWS-approved property
- Purchase or establish a conservation easement with an endowment for long-term management of the property-specific conservation values
- An in-lieu fee contribution determined through negotiation and consultation with the USFWS

Mitigation for monarch butterfly would prioritize areas with any future designated critical habitat (if the monarch is listed, and critical habitat is designated) and with existing monarch butterfly populations and suitable milkweed populations to support breeding. The secondary priority would be to create suitable habitat in other areas, if feasible (i.e., establish self-sustaining milkweed populations). The compensatory mitigation areas and methods selected would include appropriate measures to guide management of habitats (e.g., grazing, weed control), monitor populations, and identify methods to establish or reestablish populations, if necessary.

As described under BIO-MM#8: Prepare a Compensatory Mitigation Plan for Species and Species Habitat, the Authority would prepare and implement a compensatory mitigation plan that would include the considerations listed in this measure. The compensatory mitigation plan would also set restoration success criteria and define monitoring requirements so that species habitat can be adaptively managed.

As addressed in the discussion of BIO-MM#8, compensatory mitigation could result in secondary impacts; however, the measures set forth in BIO-MM#9: Implement Measure to Minimize Impacts during Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites, would be implemented to minimize any adverse impacts.

3.7.10 Impact Summary for NEPA Comparison of Alternatives

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Table 3.7-21 Comparison of Project Alternative Impacts for Biological and Aquatic Resources¹

Impacts	Alternative A	Alternative B
Impact BIO#2b: Permanent Conversion or Degradation of Habitat for and Mortality of Monarch Butterfly	The project would disturb or convert habitat for monarch butterfly and could degrade suitable habitat outside of but adjacent to the project footprint. Activities could also result in mortality of individuals if present in affected habitat. Construction BMPs, WEAP training, and biological monitoring during construction would minimize direct and indirect impacts on monarch butterfly under both alternatives.	
Habitat for monarch butterfly	139.7 acres	163.4 acres
Impact BIO#13: Intermittent Disturbance of Habitat for and Direct Mortality of Special-Status Wildlife during Operations	Operations activities would be a continuation of existing inspection and maintenance activities by Caltrain and are not expected to cause any new effects on habitat for special-status wildlife. The addition of HSR trains operating at speeds up to 110 mph would increase the mortality risk for special-status wildlife individuals with small body sizes that may still be able to access the project footprint. Annual environmental awareness training for maintenance personnel would reduce but not eliminate the likelihood of intermittent direct effects on special-status wildlife.	

Impacts	Alternative A	Alternative B
Impact BIO#25: Permanent Disruption of Wildlife Movement	Operations activities would have minimal impacts on wildlife corridors because any wildlife that use these corridors have adapted to these activities by becoming habituated to the regular occurrence of train traffic and operations and maintenance activities or by timing their movement outside peak activity periods.	

BMP = best management practice

WEAP = worker environmental awareness program

All tables in the Revised/Supplemental Draft EIR/EIS present only information related to the new or updated analysis.

¹ Where presented, acreages represent estimates of direct (temporary and permanent) impacts on a given resource.

3.7.10.1 *Special-Status Species*

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Monarch Butterfly

Construction of the project alternatives would cause direct (permanent and temporary) and indirect impacts on suitable habitat for monarch butterfly and could cause direct impacts on individuals (i.e., injury or mortality), if any are present in affected habitat. Impacts would occur where suitable habitat is present in or adjacent to the project footprint. Alternative A would result in the loss of 139.7 acres of suitable habitat, primarily annual grassland at the East Brisbane LMF. Alternative B would result in the loss of 163.4 acres of suitable habitat, primarily ruderal land cover at the West Brisbane LMF and annual grassland land cover at Icehouse Hill. BIO-MM#1, BIO-MM#5: Establish and Implement a Compliance Reporting Program, BIO-MM#8, BIO-MM#9, BIO-MM#11: Compensate for Impacts on Listed Butterfly Habitat, BIO-MM#40, and BIO-MM#41 are available to reduce this impact.

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3.7.10.6 *Wildlife Corridors*

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3.7.11 **CEQA Significance Conclusions**

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Table 3.7-22 CEQA Significance Conclusions and Mitigation Measures for Biological and Aquatic Resources

CEQA Impacts	Impact Description and CEQA Level of Significance before Mitigation	Mitigation Measure ¹	CEQA Level of Significance after Mitigation
Special-Status Species			
Impact BIO#2b: Permanent Conversion or Degradation of Habitat for and Mortality of Monarch Butterfly	Significant for both project alternatives. Construction of the project would remove or disturb suitable habitat for monarch butterfly and could degrade suitable habitat outside of but adjacent to the work areas. Activities could also result in mortality of individuals if present in affected habitat.	BIO-MM#1: Prepare and Implement a Restoration and Revegetation Plan BIO-MM#5: Establish and Implement a Compliance Reporting Program BIO-MM#8: Prepare a Compensatory Mitigation Plan for Species and Species Habitat BIO-MM#9: Implement Measures to Minimize Impacts during Off-Site Habitat Restoration or Enhancement, or Creation on Mitigation Sites BIO-MM#40: Avoid Direct Impacts on Listed Butterfly Host Plants BIO-MM#41: Provide Compensatory Mitigation for Impacts on Monarch Butterfly Habitat	Less than Significant
Impact BIO#13: Intermittent Disturbance of Habitat for and Direct Mortality of Special-Status Wildlife during Operations	Significant for both project alternatives. Operations would result in mortality of special-status wildlife, including species listed under FESA and CESA.	BIO-MM#33: Install Aprons or Barriers within Security Fencing BIO-MM#34: Minimize Permanent Intermittent Impacts on Aerial Species Movement	Less than Significant
Wildlife Movement			
Impacts BIO#25: Permanent Disruption of Wildlife Movement	Less than significant for both project alternatives. Project operations would not prevent continued wildlife use of the corridors over time.	No mitigation measures are required.	N/A

CEQA = California Environmental Quality Act

CESA = California Endangered Species Act

FESA = federal Endangered Species Act

N/A = not applicable

All tables in the Revised/Supplemental Draft EIR/EIS present only information related to the new or updated analysis.

¹BIO-MM#1, BIO-MM#5, BIO-MM#8, BIO-MM#9 apply to monarch butterfly, as well as other species that were identified in the Draft EIR/EIS. No changes were made to these mitigation measures for the Revised/Supplemental Draft EIR/EIS.

Impact BIO#2b: Permanent Conversion or Degradation of Habitat for and Mortality of Monarch Butterfly

The Authority would implement mitigation measures to reduce the impacts on monarch butterfly under Alternative A and Alternative B, including BIO-MM#1, which requires the Authority to include host and nectar plants for butterflies in its restoration and revegetation plan for temporarily impacted areas, and BIO-MM#5, which outlines procedures for reporting compliance with all mitigation measures and regulatory agency authorizations. BIO-MM#8 and BIO-MM#41 would entail preparation and implementation of a compensatory mitigation plan that would require creating, preserving, restoring, or enhancing biological resources (including habitat for special-status species) to compensate for permanent impacts on such resources. BIO-MM#41 includes the details for monarch butterfly that would be incorporated into the compensatory mitigation plan. BIO-MM#9 would minimize impacts on any special-status species occurring on lands proposed for off-site habitat restoration, enhancement, or creation. BIO-MM#40 would require pre-construction surveys for listed butterfly host plants with suitable habitat in work areas. If host plants are found, surveys for adult butterflies will occur to determine if the habitat is occupied, or presence will be assumed. Where adult butterflies are determined to be present or assumed to be present, host plants will be avoided in temporary impact areas. Therefore, the impact would be less than significant because mortality would be minimized, and habitat would be permanently protected to compensate for the permanent loss of habitat available to the species.

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