

MEMORANDUM

DATE: February 4, 2010

TO: Mike Amling, Principal in Charge

FROM: Jill Carpenter, Biologist

SUBJECT: Bat Habitat Suitability Assessment for the I-5 HOV Lane Extension Project Located in Orange County (LSA Project No. RMN0901)

This memorandum discusses the results of a Bat Habitat Suitability Assessment conducted on December 8 and 9, 2009, along Interstate 5 (I-5) from 0.1 mile (mi) south of the Avenida Pico Undercrossing to 0.1 mi south of the San Juan Creek Road Undercrossing in the Cities of San Clemente, Dana Point, and San Juan Capistrano in south Orange County. The biological study area (study area) comprises various bridge and culvert structures and surrounding vegetated areas located within and adjacent to the existing State right-of-way (ROW) along I-5.

This assessment was conducted to evaluate the potential for bat foraging and roosting activity, and to locate potential bat roosting sites within the study area. Many bats use crevices in bridges as day roosts and the open spaces between bridge beams for night roosting. Bat species that commonly use man-made structures such as bridges and culverts for day and/or night roosting include the Mexican free-tailed bat (*Tadarida brasiliensis*), big brown bat (*Eptesicus fuscus*), pallid bat (*Antrozous pallidus*), and Yuma myotis (*Myotis yumanensis*). Other species that may use these types of structures for roosting include small-footed myotis (*Myotis ciliolabrum*), California myotis (*Myotis californicus*), western mastiff bat (*Eumops perotis*), silver-haired bat (*Lasionycteris noctivagans*), western canyon bat (*Parastrellus hesperus*),¹ and Townsend's big-eared bat (*Corynorhinus townsendii*).

Day roosts are used by bats during the day for shelter from the elements and from predators, while a night roost refers to a structure (natural or man-made) located near or in the foraging area in which bats roost during the evening between foraging bouts as an energy-saving strategy. Because bats have separate roosting and foraging habitat requirements, it is expected that some bats may use one area for foraging and another for roosting. Therefore, when assessing an area with regard to potential project-related alterations to habitat, a landscape-level approach is required to adequately determine potential impacts to bat species.

During this habitat suitability assessment, potential foraging habitat was assessed throughout the biological study area on the basis of vegetation composition, existence of adjacent habitat, and accessibility, while potential day- and night-roosting sites were identified based on the examination of bridge and culvert structures for suitable crevices and roosting habitat as well as any presence of bat sign (e.g., guano, urine staining, or vocalizations). Large trees in the study area that are suitable for

¹ Formerly known as *Pipistrellus hesperus*.

foliage-roosting species were noted, but roosting activity at these locations could not be confirmed due to the nature of this roosting behavior (these species tend to roost singly, beneath leaves, and may roost in a different location each night). Potential and confirmed bat roosting locations are illustrated on Figure 1. Photographs of the site are provided on Figure 2.

The presence of day-roosting bats within the study area was confirmed by direct visual observation at two locations within the study area. The first location was a concrete tunnel culvert where the Prima Deshecha Cañada drainage channel passes beneath I-5 northwest of Avenida Vaquero. This tunnel also serves as a vehicular access route for the Shorecliffs Golf Club, which is bisected by I-5. At least 20 Mexican free-tailed bats were observed in several crevices within this culvert; in addition, a concrete box culvert immediately downstream of this tunnel culvert contained suitable habitat for night-roosting bats. The second location where bats were observed was at a concrete tunnel culvert for the Segunda Deshecha Cañada drainage channel beneath I-5 southeast of East Avenida Pico. At this culvert, approximately 3 of the bats observed were identified as Mexican free-tailed bats. An additional 5 bats were observed that were not Mexican free-tailed bats and may have been *Myotis* bats; however, this was difficult to confirm visually due to the height of the crevice, as well as the fact that when the spotlight was shined on the bats they retreated farther into the crevice and were no longer visible for examination. In addition to confirmed day-roosting habitat, bat guano and staining found along the walls in various areas within this culvert suggest probable night roosting throughout this culvert.

Potential day roosting habitat was also observed at several bridge structures in the study area. Some of the I-5 overcrossings and undercrossings contained crevices suitable for day- and/or night-roosting bats; however, due to the lack of sign (e.g., guano, urine staining) and their location (over heavy vehicular traffic and away from foraging areas), the likelihood of bats roosting at many of these locations is low. Although no suitable day-roosting habitat was observed on the steel structures in the I-5 bridge over San Juan Creek, it is possible that bats may use crevices in the concrete abutments for day roosting, and corners or areas between steel beams for night roosting. The proximity of this structure to foraging habitat along San Juan Creek increases the likelihood that suitable parts of the structure may be used for night roosting, particularly by bats coming from day roosts located far off site. However, it was difficult to closely examine the abutments and beams due to inaccessibility, the height of the bridge, and the lack of a suitable vantage point. In addition, it was difficult to ascertain the presence of sign beneath the majority of the bridge span due to the presence of water in the drainage.

Although the majority of the vegetation in the study area comprises ruderal, nonnative species and/or ornamental plantings such as eucalyptus (*Eucalyptus* spp.), riparian habitat consisting of willows (*Salix* spp.), and mulefat (*Baccharis salicifolia*) is present in areas adjacent to culverts and along drainages throughout the study area. Patches of native vegetation consisting of coastal sage scrub or riparian vegetation are also present in the study area. Any of these areas and their associated insect fauna may provide foraging habitat for a variety of bat species. In addition, mature native and ornamental trees in adjacent residential areas and along I-5 may also provide roosting habitat for foliage-roosting species such as hoary bats (*Lasiurus cinereus*), western red bat (*Lasiurus blossevillii*), and other bat species, particularly because these trees are in proximity to foraging habitat along and within San Juan Creek and its tributaries.

Potential roosting and foraging habitat is present throughout the study area. Although suitable bat roosting habitat can be identified at any time of the year, adequate evaluation of the potential use of

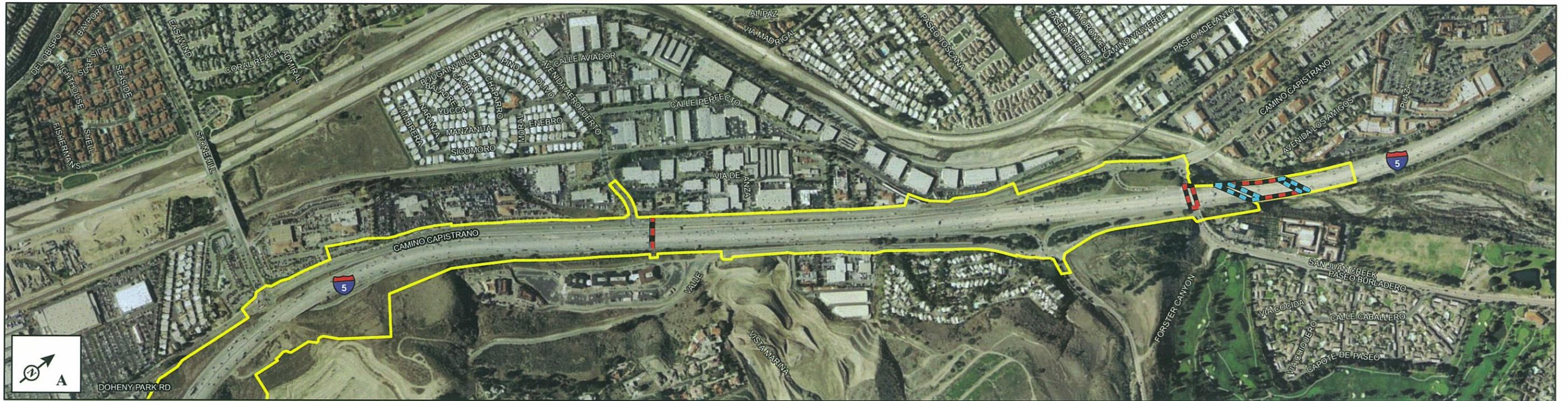
any suitable day and night roosting sites in this study area was difficult because this assessment was conducted in the winter, when maternity colonies typically present in the spring and summer months may no longer be present. Although guano typically accumulates beneath crevices utilized by day-roosting bats and may often be used as an indicator of the extent to which bats may use a particular crevice, recent heavy rain events may have washed accumulated guano away immediately prior to this assessment and lack of guano could therefore not be associated with the degree of potential for roosting bats. The study area will require further investigation through nighttime emergence observations and acoustic monitoring to yield more precise information with regard to identification of bat species that are using the confirmed and potential day and night roosts. Exit counts should also be conducted as part of the nighttime emergence observation to determine the approximate number of bats using the day roosts.

If day-roosting bats are present or their presence are assumed in parts of structures that will be directly impacted by construction activities, exclusionary devices should be placed under the direction of a qualified bat biologist in the fall (September or October) preceding construction to exclude bats from directly affected work areas and avoid potential direct impacts. It is particularly important to avoid direct impacts to bats during the maternity season (typically from March through August in southern California), when flightless young are present. In addition, although bridge and culvert roosts can be relatively easy to identify, tree roosts are more subtle and require close examination. To avoid potential direct impacts to roosting bats, if tree removal or trimming is necessary for project construction, large trees and snags should be examined by a bat biologist prior to removal or trimming to ensure that no roosting bats are present.

Night roosts are needed for bats to rest while foraging. When a night roost near a foraging area is eliminated, bats must travel farther to rest. Subsequently, bats expend more energy and have less time to forage, potentially resulting in negative effects to the bats. Although a day roost may double as a night roost during the evening if it is close to a foraging area, night roosts are used only in the evening. Therefore, there would be few to no impacts to bats at structures identified as night roosts or potential night roosts if construction activity is limited to daytime hours, the existing structures used by the bats for roosting are not removed or altered, vegetation adjacent to these structures is not cleared, and the airspace to access the structures is not restricted. If nighttime construction activity is anticipated, or if major modifications will be made to the bridges or culverts that may reduce their suitability for night roosting, appropriate measures should be considered to minimize impacts to night-roosting bats. Such measures could include, but are not limited to, minimization of night lighting beneath the structure and construction of alternative roosting habitat.

Impacts to bats may be exacerbated if several structures containing bat roosting habitat in a given area will be disturbed simultaneously, as this would reduce the total availability of suitable crevices for roosting and may require additional mitigation, including but not limited to, the creation of on-site alternative roosting habitat. As construction plans pertaining to these bridge and culvert structures are finalized, consultation and communication between engineers and a qualified bat biologist to refine measures early in the construction planning process in order to minimize impacts to bats in a timely, cost-effective, and structurally successful manner.

Attachments: Figure 1 – Bat and Roost Locations
Figure 2 – Site Photographs



- Legend**
- Biological Study Area
 - + Bats Observed
 - Potential Day Roosts
 - Potential Night Roosts

0 400 800
FEET

SOURCE: Bing (2008)
I:\RMN0901\GIS\BatSurvey_Split.mxd (2/4/2010)



FIGURE 1
Sheet 1 of 2

I-5 HOV Extension
Bat and Roost Locations
12-ORA-005 PM 3.30/8.70
12840-0F960K
EA# OF9600



View looking north at the Prima Descheca Cañada tunnel beneath I-5. This tunnel contains several crevices suitable for day-roosting bats.



View looking up at a possible roost crevice at the southern entrance to the Prima Descheca Cañada tunnel beneath I-5.



View of a portion of the Segunda Descheca Cañada tunnel beneath I-5 containing guano and staining indicative of night-roosting bats.



View looking northeast of foraging habitat immediately upstream from the Segunda Descheca Cañada tunnel beneath I-5.

FIGURE 2

*Bat Habitat Suitability Assessment
I-5 HOV Lane Extension Project
Site Photographs*