Night Wings of Southern Alameda County

Abstract

Bats perform substantial ecological services, including insect consumption, pollination, seed dispersal, and nutrient cycling. Their low reproductive rates, and sensitivity to human disturbance makes bats vulnerable to a variety of threats including habitat loss and fragmentation, climate change, pesticides, toxic wastewater, wind farm development, and the fungal disease white-nose syndrome. With the help of the "Bat Brigade" wildlife volunteer group, the East Bay Regional Park District (EBRPD) conducted an 8-year study (2017 to 2024) of bat distribution, abundance, and calls per hour at three locations in Southern Alameda County. A total of 48 bat exit and acoustic surveys were conducted periodically between April and July at Sunol Wilderness Regional Preserve, Lake Del Valle Regional Park and Camp Arroyo Regional Recreation Area. The study confirmed the presence of 7 genera and 9 species of bats, including two (2) California Species of Special Concern, the Pallid Bat (*Antrozous pallidus*), and the Western Red Bat (*Lasiurus blossevilli*). Additionally, the acoustic sampling detected the following species in order of abundance: Yuma Myotis (*Myotis yumanensis*), Mexican Free-tailed Bat (*Tadarida brasiliensis*), and California Myotis (*Myotis californicus*). Lastly, this effort demonstrates the tremendous energy that more than 1,000 volunteers can bring to a wildlife conservation program as community scientists contributing more than 5,000 hours of supervised service annually.

Introduction

Because of their longevity and sensitivity to disturbances, bats are important indicators of ecological health (Loeb et al. 2015). Bats perform substantial ecological services, including insect consumption, pollination, seed dispersal, and nutrient cycling. Their low reproductive rates, and sensitivity to human disturbance makes bats vulnerable to a variety of threats including habitat loss and fragmentation, climate change, pesticides, toxic wastewater, wind farm development, and the fungal disease white-nose syndrome. Managing "nature" in the golden state setting poses many challenges. Public relations, education, and citizen conservationist/community scientists' activities are three keys to meeting those challenges and preserving species that are precious, wild, and free. These volunteer efforts are more than just protecting the lives of a few animals, but are a measure of our humanity, of what we cherish, and the gifts we leave for those who follow after us.

Study Areas

Lake Del Valle Regional Park, located 10 miles south of Livermore in Alameda County, California (37.59838, -121.721992) has been surveyed since 2017. Lake Del Valle is situated within a valley in a rural area at Del Valle Regional Park. The Arroyo del Valle tributary extends southeast from the lake and the surrounding area covered mostly by oaks, pines, and various types of grasses and shrubs.

Sunol Wilderness Regional Preserve, located 6 miles southeast of Sunol in Alameda County, California (37.51575, -121.83141) has been surveyed since 2017. Alameda Creek comprises one of the largest watersheds in the South San Francisco Bay. The creek flows through the area, providing refuge to a number of special status species, including an array of Neotropical migrant birds. There is a mixture of native trees and shrubs, and native and non-native annual and perennial herbaceous plants at this site. The predominant habitat types are annual grassland and valley foothill riparian.

Camp Arroyo Regional Recreation Area, located 5 miles south of Livermore in Alameda County, California (37.61826, -121.75315) has been surveyed since 2020. This location is ringed by agriculture, urban and suburban development, with the Arroyo del Valle tributary on its eastern boundary. The predominant habitat types are annual grassland and valley foothill riparian.

Methods

All locations were monitored using the same bat survey protocols. Bat roost exit surveys were conducted following techniques similar to the Wisconsin Summer Bat Colony Monitoring Program (http://wiatri.net/invetory/bats). Bat Acoustic sampling was conducted using SonoBat® software and Petterson M500-384 ultrasound microphones following the Plan for North American Bat Monitoring Program (NABat). All monitoring sessions and acoustic sampling periods lasted 1.5 -2 hours (between 2030 and 2230) and typically involved 5-25 observers.

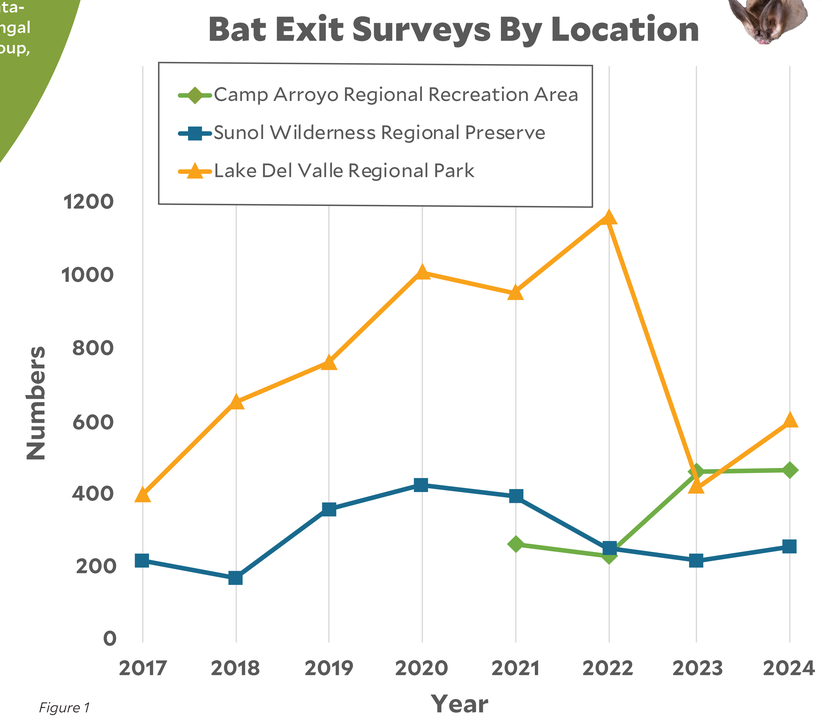

Figure 1

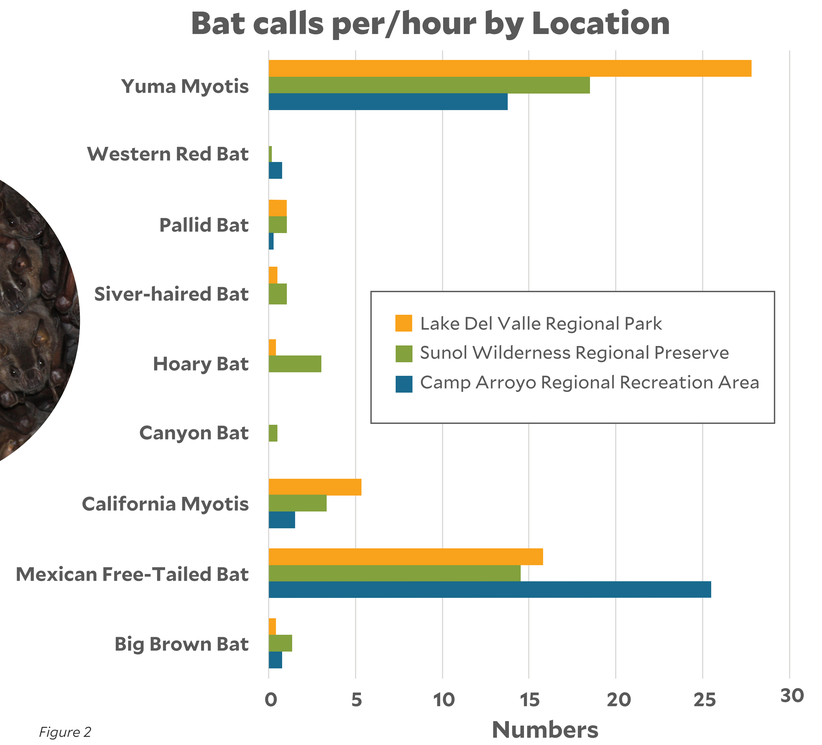

Figure 2

Results

Bats exit survey for all locations showed a general increasing upward trend from 2017 to 2021 followed by a general decline (Figure 1). The high for bat exit surveys at Lake Del Valle was 1,163 in 2022 and 426 in 2020 for Sunol Wilderness Regional Preserve.

Acoustic sampling revealed that 9 species of bats frequent the night sky of Sunol Wilderness Regional Preserve, 7 species of bats are found at Camp Arroyo Regional Recreation Area and 6 species of bats at Lake Del Valle (Figure 2).

The Pallid Bat (*Antrozous pallidus*), California Species of Special Concern, is found at all three locations while the Western Red Bat (*Lasiurus blossevilli*) was only detected at Sunol Wilderness Regional Preserve and Camp Arroyo Regional Recreation Area (Figure 2).

Acoustic sampling revealed that three species of bats dominate the night at all locations in decreasing order of abundance: Yuma Myotis (*Myotis yumanensis*), Mexican Free-tailed Bat (*Tadarida brasiliensis*), and California Myotis (*Myotis californicus*) (Figure 2).

*Pallid Bat (*Antrozous pallidus*), California Species of Special Concern, is the state bat of California; present at all three sites sample in southern Alameda County. Photo by David "Doc Quack" Riensche.*

(right) Wildlife Volunteer's "Bat Brigade" patch is earned by helping to monitor, protect and educate about bats.

Staff and Wildlife Volunteers having fun while monitoring bats at Sunol Wilderness Regional Preserve.

Management Implications & Future Efforts

- District staff and volunteers (Figure 3) will continue monitoring bat distribution and abundance within its land holdings.
- Continued long-term monitoring of all known bat colonies and bat houses as a measure of ecological health.
- Special attention given to the three special status species.

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