

## 7.0 MAMMALS - SL, SO, SS

### 7.1 Pallid Bat (*Antrozous pallidus*) – Category SL

#### Management Units with Known Occurrences

Pallid bat is distributed from western Canada south to central Mexico and is found throughout much of California (Jameson and Peeters 1988). This species roosts in a variety of crevices and cavities from natural rock crevices, caves, and tree hollows to artificial structures such as bridges, tunnels, mines, and buildings (Stokes et al. 2005). They are most commonly found in abandoned mines in San Diego County and appear to be located wherever there are historical mining districts, including within the MSCP area (Sherwin 2005). In western San Diego County, pallid bat forages in oak savannah, grassy oak and sycamore terraces, native grasslands, and open scrublands. Historically, this species was widespread throughout the MSPA but has declined drastically in the last 50–60 years (Miner and Stokes 2005; Stokes et al. 2005).

Within the MSPA, the pallid bat has been detected at 13 preserves in MUs 3, 5, 8, 9, and 10 (see Table of Occurrences or online map: <http://arcg.is/2jZ4m8H>). There are 4 preserves with pallid bat observations in MU3, including Honey Springs Ranch in Jamul and Marron Valley in Dulzura. Two night roosts were documented with small numbers of individuals (1 to 6) at Dulzura Creek Bridge and Cottonwood Creek Cave #3 in the early 2000s (1 individual; Stokes et al. 2005); however, there were no pallid bat signs observed at the Dulzura Creek Bridge during the 2015–early 2016 survey (Stokes 2016). Pallid bats were observed foraging at these 2 preserves in the past, as well as in Hollenbeck Canyon Wildlife Area in MU3. Foraging pallid bats were detected at El Capitan (ICF Jones and Stokes 2008b), El Monte (ICF Jones and Stokes 2008a), and Boulder Oak Preserves (ICF Jones and Stokes 2007) in MU4, and at Boden Canyon Ecological Reserve and Ramona Grasslands Preserve in MU5. Foraging pallid bats have also been found at Mount Olympus and Wilderness Garden Preserves in MU8.

#### Management Categorization Rationale

Pallid bats should be managed as a Species Management Focus Category SL Species due to high risk of loss from Conserved Lands in the MSPA and because managing

vegetation alone will not ensure its persistence (see Vol. 1, Table 2-4). The pallid bat is at a high risk of loss from the MSPA as it is sensitive to urban development and has been lost from large areas of the MSPA where it occurred in the 1930s and 1940s (Miner and Stokes 2005; Stokes et al. 2005). It is currently known only in very small numbers in 4 MUs, and is at high risk of multiple threats (see Vol. 3, App. 1, Species Profiles).

The pallid bat has declined in the MSPA because of habitat loss and fragmentation, especially oak savannahs, native grassland, and open scrub vegetation communities, and because of extermination or disturbance of bat colonies (Miner and Stokes 2005; Stokes et al. 2005). The pallid bat is especially sensitive to urbanization and is extirpated from areas with more than rural development. Bats require multiple roosts with different temperature ranges to accommodate changing seasonal climate conditions, and these roosts need to be within nightly commute distances to foraging habitat. Bats are vulnerable to destruction of roosts (e.g., construction of water projects and transportation routes) or catastrophic events at roosts (e.g., fire, human disturbance) that adversely affect a large number of individuals at once. Recreational activities like cave or mine exploration and rock climbing near roosts can adversely affect reproductive success and survival, and can even cause bat colonies to abandon roosts (Miner and Stokes 2005).

Population recovery is slow as bats are relatively long-lived with low productivity. Pallid bats eat large, terrestrial insects, such as Jerusalem crickets and may be impacted by changes to habitat such as invasion of nonnative annual grasses and loss of bare ground (Stokes, pers. comm.). Pesticides can harm bats from ingestion of poisoned prey or by being sprayed inadvertently at day roosts (Miner and Stokes 2005). A warming and drying climate predicted for the arid southwest could also adversely affect reproduction by reducing surface water available for drinking by lactating bats (Adams and Hayes 2008). A recent study in an arid region of the west showed that lactating female bats visited water to drink 13 times more often than nonreproductive females. Modeling predicts that bat occurrences could decline with increasing aridity and warming forecast for the future.

### **Management and Monitoring Approach**

The overarching goal for pallid bat is to protect diurnal, nocturnal, and maternity roosts from destruction and human disturbance and enhance foraging habitat within commuting distance of nocturnal and maternity roosts to increase resilience

to environmental and demographic stochasticity, maintain genetic diversity, and improve chances of persistence over the long-term (>100 years).

For the 2017–2021 planning cycle, the management and monitoring approach is to:

- (1) Finalize the results of research begun in 2015 on pallid bat to identify nocturnal, diurnal, and maternity roosts, foraging areas, and water sources associated with roosts in order to identify seasonal and annual changes in use and important foraging areas, monitor reproductive status, collect habitat covariates associated with roosting and foraging habitat, and assess threats to bats at all preserves where they occur, and to develop management recommendations.
- (2) Inspect the vicinity of pallid bat roosts on an annual basis (see Table of Occurrences), taking care not to disturb bats, and use a regional monitoring protocol to collect covariate data on human activities and other threats to determine management needs. Perform routine management activities such as protecting occurrences from disturbance through fencing, signage, and enforcement.

For details and the most up-to-date goals, objectives, and actions, go to the MSP Portal [Pallid Bat summary page](https://portal.sdmmp.com/view_species.php?taxaid=180006): [https://portal.sdmmp.com/view\\_species.php?taxaid=180006](https://portal.sdmmp.com/view_species.php?taxaid=180006).

### **Pallid Bat References**

- Adams, Rick A., and Mark A. Hayes. 2008. Water Availability and Successful Lactation by Bats as Related to Climate Change in Arid Regions of Western North America. *Journal of Animal Ecology* 77(6):1115–121. DOI:10.1111/j.1365-2656.2008.01447.x.
- ICF Jones and Stokes. 2007. *Final Area Specific Management Directives for Boulder Oaks Open Space Preserve San Diego County Technical Appendices*. Prepared for the County of San Diego.
- ICF Jones and Stokes. 2008a. *Baseline Biological Resources Evaluation El Monte County Park*. Prepared for the County of San Diego.

- ICF Jones and Stokes. 2008b. *Baseline Biological Resources Evaluation for the El Capitan Preserve*. Prepared for the County of San Diego.
- Jameson, E. W., and H. J. Peeters. 1988. *California Mammals*. Berkeley, California: University of California Press.
- Miner, K. L., and D. C. Stokes. 2005. *Bats in the South Coast Ecoregion: Status, Conservation Issues, and Research Needs*. USDA Forest Service Gen. Tech. Rep. PSW-GTR-195.
- Sherwin, R. 2005. Townsend's Big-Eared Bat. Western Bat Working Group. <http://wbwg.org/western-bat-species/>.
- Stokes, D. C. 2016. *Progress Report for Focused Pallid Bat (*Antrozous Pallidus*) and Townsend's Big-Eared Bat (*Corynorhinus Townsendii*) Surveys in San Diego County, California*. Prepared for the San Diego Management and Monitoring Program and the United States Geological Survey.
- Stokes, D. C., C. S. Brehme, S. A. Hathaway, and R. N. Fisher. 2005. *Bat Inventory of the Multiple Species Conservation Program Area in San Diego County, California, 2002–2004*. U.S. Geological Survey, Western Ecological Research Center final report prepared for the County of San Diego and California Department of Fish and Game.