

Status of breeding Purple Martins in Sacramento in 2003



Thomas S. Leeman, Environmental Science Associates, 8950
Cal Center Drive, Suite 300, Sacramento CA 95826

Daniel A. Airola, Jones & Stokes, 2600 V Street, Sacramento,
CA 95818

Dan Kopp, 8295 La Riviera Drive, Sacramento, CA 95826

The Purple Martin (*Progne subis*) is recognized by the California Department of Fish and Game (DFG) as a First Priority Species of Special Concern as a result of substantial declines in range and population in the state (Remsen 1978, Williams 1998). This species formerly nested in tree cavities and buildings throughout California's Central Valley, but following the arrival of the European Starling (*Sturnus vulgaris*), has virtually disappeared from the region except for a small population that has persisted in Sacramento (Airola and Grantham *in press*). This paper reports on results of habitat surveys, population monitoring, color banding, and blood sampling, and other management actions conducted and evaluated in 2003.

Martins have nested in weep holes in freeway and street overpasses in Sacramento since the mid-1960s (Airola and Grantham *in press*), and in bridges along Highway 1 in several coastal counties since the 1980s (Williams 1998, Roberson 2002). Weep holes are vertical holes constructed into the underside of some hollow box girder elevated freeways, overpasses and bridges to relieve air pressure and drain condensation (Kostka et al. 2003). Regular monitoring of Sacramento colonies began in the early 1990s. Grantham and Airola monitored known breeding colonies in 1991 and 1992, and Grantham continued to monitor one of these sites until 1997; Williams (1998) monitored Sacramento colonies from 1993 to 1995. No systematic monitoring occurred after these dates until 2002.

In 2002, Airola reinitiated monitoring efforts and coordinated a group of volunteers to systematically survey potential habitat in the Sacramento area and to document breeding population sizes at all known colonies in 2002. A summary of work conducted on the biology of Purple Martins breeding in Sacramento through 2002, including trends in colony number and sizes, habitat characteristics, and evaluation of management actions will be published elsewhere (Airola and Grantham, *in press*). The 2002 survey identified 7 nesting colonies, up from 4 known colonies in the early-mid 1990s (Airola and Grantham, *in press*). These discoveries prompted us to undertake more systematic survey of potential nesting habitat in the Sacramento area in 2003.

Surveys of Potential Nesting Habitat

Airola and Kopp subjectively evaluated bridge sites in the Sacramento area to estimate their suitability as potential martin nesting sites based on the characteristics of the 7 previously used sites. Characteristics used in estimating suitability included: bridge design (i.e., box girder construction), bridge length >80 m, availability of >6 m of unobstructed vertical airspace beneath the site, relatively low traffic volumes, and adequate unobstructed martin flight access (see Airola and Grantham, *in press*). Suitability of visited sites was characterized as high, low, and unsuitable; high- and low-suitability sites were surveyed for martins, and if martins were found, the sites were surveyed more intensively to estimate numbers of breeding pairs.

Of 101 bridge sites visited (including 7 previously identified colonies), Airola and Kopp considered 67 unsuitable for martin use, 9 of low suitability, and 25 of high suitability. Most of the unsuitable sites consisted of standard freeway overpasses that were too short and supported substantial traffic volumes beneath them; no such sites have been found to support nesting martins in Sacramento. Of high suitability sites, 10 were active (nesting occurred, see subsequent section), 2 were occupied but not active (martins were seen at the site but no nesting documented) and 13 were not occupied (no martins observed). We consider the inactive and unoccupied sites ranked as highly suitable (Table 1) as priority sites for future monitoring to determine if colonization occurs.

Nesting Population Estimates at Occupied Colonies

As described in more detail in Airola and Grantham (*in press*), trained volunteers visited each occupied colony every 4-8 days through the breeding season (mid-May to early August). Because nest sites are inaccessible for direct observation, monitors plotted martin use of weep holes on site maps. Data collected included number of hole visits observed, age and sex of birds using each hole (recorded as after-second-year [ASY] males, non-ASY-males, or unknown) and breeding behaviors. A hole was considered to support a breeding pair based on the observation of:

- young within nest holes,
- diagnostic nesting behaviors (i.e., adults observed carrying food to, or fecal sacs from the hole), or
- a combination of frequency and duration of hole use, observation of nest building, presence of dead young, or accumulations of fecal material beneath holes.

During the 2003 breeding season, we documented 154 nesting pairs of Purple Martins breeding at 10 locations in the Sacramento area (Figure 1, Table 2).

Table 1. Suitable bridge sites not actively used by nesting Purple Martins in the Sacramento area in 2003.

Bridge Site	Specific Location	Suitability		Occupied — Not active
		Low	High	
Interstate 80	I-50 interchange	X		
	Reed Avenue	X		
	Northgate Blvd.	X		
	Natomas East Main Drain		X	
Union Pacific Railroad and Auburn Blvd.—Roseville Road Overpasses	Arden Way			X
	Airbase Drive			X
	Walerga Road	X		
	Elkhorn Blvd.		X	
Capital City Freeway	Antelope Blvd.		X	
	6 th to 15 th Streets	X		
	21 st to 26 th Streets M to Q streets		X	
Interstate 50	Folsom Blvd. ^A		X	
	Mayhew Road	X		
	Folsom Blvd. ^B		X	
American River	Howe Ave. Bridge		X	
	Sunrise Blvd. Bridge	X		
	Havel Ave. Bridge		X	
Natomas East Main Drain	Hwy. 160/Northgate	X		
	Arden-Garden connector/Bannon Slough		X	
	Discovery Park Freepoint Blvd.		X	
Interstate 5	Discovery Park Freepoint Blvd.		X	
	San Juan Rd. overpass of Union Pacific Railroad and Natomas Main Drain		X	
Other sites	Union Pacific overpass of Laguna Blvd.		X	
TOTALS		9	13	2

A = Folsom Blvd. between Bradshaw Road and Watt Avenue; B = Folsom Blvd. near Ironpoint Road.

