

**DRAFT**

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**To:** Files

**From:** Ronald W. Schlorff

**Subject:** 2003 Bank Swallow population survey, Sacramento River

On June 10 and 11, 2003, staffs of the Species Conservation and Recovery Program of the Habitat Conservation Planning Branch of the California Department of Fish and Game, Sacramento, and the U.S. Fish and Wildlife Service, Sacramento National Wildlife Refuge, conducted breeding surveys on the Sacramento River for the State threatened bank swallow. The survey employed a jet boat owned and operated by the Refuge. The boat used on this year's survey was a newly purchased model in the Refuge's inventory. All colonies were located and the total burrow numbers at each colony were double tally counted and averaged for a 10% allowable difference during the two days of survey. The GPS locations of colonies, at the downstream base, also were recorded. The survey started at a point just below the Red Bluff Diversion Dam at River Mile (RM) 243.0 and continued southward to the last colony that was located at RM 145.5 Left (L). As in previous surveys, the reach from Redding to Red Bluff was estimated based on results of an earlier survey. For the third survey year, the reach from Colusa (RM 144.0) to the confluence with the Feather River (RM 80.0) will be based on estimates provided in 2000 by Mr. Craig Swolgaard, an independent researcher (this reach has extensive riprap from Colusa to Knights Landing to a point about 54 miles downstream). The following are the results of counts indexed by RM; left bank side (L) and right bank side (R), traveling southward with the current of the River.

<b><u>River Mile*</u></b>	<b><u>Side</u></b>	<b><u>GPS reading*</u></b>	<b><u>Average total burrow count (Rounded to nearest tenth)</u></b>	
242.8	L	568760-4444925	60	
241.8	L	570170-4444900	80	
239.2	R	573141-4442977	90	La Barranca Unit
236.5	R	573615-4439465	490	Moony Island Unit
235.0	R	574735-4437599	150	Ohm Unit
234.0	L	575260-4436639	460	
232.8	R	574777-4435793	1640	Flynn Unit
228.3	L	576205-4429102	290	Blue Heron Is. Unit
226.5	L	576230-4428057	770	
221.4	L	578525-4421659	980	
219.6	R	577970-4419195	770	
212.0	L	581460-4413205	670	
210.0	R	580404-4411429	940	
209.0	L	580292-4410652	60	
207.7	L	580887-4408047	100	
205.5	R	581910-4403940	570	
201.5	R	582742-4403940	160	

(Continued)

<u>River Mile</u>	<u>Side</u>	<u>GPS reading</u>	<u>Average burrow count (rounded to nearest 10)</u>
195.5	L	589850-4397810	190
195.0	R	589578-4397400	390
194.0	R	590540-4394654	150
192.5	L	589910-4393261	490
189.8	R	587525-4392036	370
186.0	R	587365-4389131	210
185.5	L	587006-4387641	660
184.0	R	587024-4385968	200
183.5	L	587389-4384610	880
181.5	R	585944-4383202	300
178.0	L	586260-4378999	10
177.0	L	586179-4377618	170
175.5	L	586721-4375807	220
174.5	L	586167-4375125	680
173.5	R	585410-4374548	30
172.5	R	586338-4373436	890
172.0	L	586433-4372226	290
171.5	R	585898-4371285	320
170.0	L	586518-4370027	70
170.0	R	586288-4369459	140
167.0	L	586422-4365331	200
166.5	R	585820-4364717	260
165.5	L	585782-4363663	580
162.5	R	585268-4359520	170
157.0	L	583370-4354541	50
156.5	L	584372-4352856	1350
156.5	R	583951-4352825	120
156.0	R	584251-4351969	680
155.0	L	583763-4350462	190
147.0	L	586609-4343890	300
145.5	L	586000-4342453	110
131.5	L?	??	80**
130.0	?	??	290**
129.0	?	??	90**
128.0	?	??	140**
100.0	?	??	190**
87.0	?	??	130**
83.0	?	??	20**
82.0	?	??	120**

\* Exact locations will change for each year's survey  
 \*\*Estimated from the 2000 survey

### RESULTS SUMMARY

Total Colonies counted = **48**      Total burrows counted = **18,950**  
 Estimated Cols. Redding to Red Bluff = **5**      Est. Burrows = **1,290**  
 Estimated Cols. Colusa to Feather R. Confluence = **8**      Est. Burrows = **1,060**  
 Survey Total Cols. = **61**      Survey Total Burrows = **21,300**  
 Average Burrows per Colony = **350** (rounded to nearest 10)  
 Burrow Occupancy Rate = **0.45**  
 Estimated Number of Pairs (0.45 x 21,300) = **9,590** (rounded to nearest 10)  
**2002** Estimated Number of Pairs = **8,330**  
 Population trend = **UP** approx. **13.0** percent from **2002**; **Down 27** percent from 1986  
 baseline of **13,170** pairs in **72** colonies.  
 Average colony size has **Decreased** from **410** burrows/col. in 1986 to the current **350**  
 burrows/col. (**85** percent of baseline figure)

#### River Reach Burrow Count Summary ( ave. figures rounded to nearest 10):

<b>RM 81-143</b>	1,060 burrows(est.)	8 cols.	Ave. =	130 burrows per col.
<b>RM 144-168</b>	4,010 burrows	11 cols.	Ave. =	360 burrows per col.
<b>RM 169-199</b>	6,660 burrows	20 cols.	Ave. =	330 burrows per col.
<b>RM 200-243</b>	8,280 burrows	17 cols.	Ave. =	490 burrows per col.
<b>RM 244-292</b>	1,290 burrows (est.)	5 cols.	Ave. =	260 burrows per col.
<b>Totals:</b>	<b>21,300 burrows</b>	<b>61 cols.</b>	<b>Ave. =</b>	<b>350 burrows per col.</b>

### SUMMARY AND DATA INTERPRETATION

Results of the 2003 bank swallow population survey on the Sacramento River indicated an increase in estimated pair numbers to 9,590 after a three year period of increase from 1999 to 2001, followed by a reduction to 8,330 in 2002. In 1986, when the first survey was conducted, about 13,170 pairs were estimated breeding along the 211 miles of river bank habitat between Redding and the Feather River confluence on the Sacramento River. Since that time, the population has declined in numbers of pairs until 1999 to 2001 when numbers began to increase again. This year's results (9,590) represent a level comparable with 2001 (9,680 pairs), 1990 (9,440 pairs), and 1989 (9,950 pairs). During 1986-98, the Sacramento River bank swallow population had

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a generally declining trend to 4,990 pairs, the lowest population ever documented in the 18 consecutive years of monitoring. Since the population was deemed close to

extirpation in 1998, a petition for endangered status was drafted for presentation to the Fish and Game Commission.

The reason for the general population decline for 13 years and subsequent turnaround of the 1999-2003 years is not fully understood, but it may be related environmental factors, especially rainfall and bank erosion patterns and the consequent variations in habitat quality. Declines corresponded to the drought years of the mid-late 1980's. There also may have been changes occurring on the wintering ground in north central South America. While the bank swallow numbers are generally up in the past five years, the average number of colonies counted recently is still lower compared to earlier survey results. In 1986, there were 72 different locations on the Sacramento River supporting active colonies; in 2002 there were only 57 colony sites (79 percent as many). But colony number in 2003 was an encouraging total of 61. Average colony size in 2003 (350 burrows per colony) was 60 burrows less than in 1986. In 2003, we documented only two colonies larger than 1,000 burrows compared with 7 located in 2001 (the last year with 9,000+ pairs). There were, however, an additional two colonies between 900 and 1000 burrows in 2003.

Although the bank swallow population generally continues to rebound over the past five years, it is still threatened by activities that will reduce its habitat. Until this year the trend has been to fewer but larger colonies, thus concentrating the population to a few breeding centers of critical importance. Such a concentration of the population exposes it to the risk of a catastrophe. This year saw a return to larger sized and more total colonies, an encouraging sign if it continues.

There are still planned new bank protection sites on the Sacramento River. If all proposed sites were rip-rapped then the habitat for the population could be severely affected resulting in further declines in the future. A large number of colonies found in this year's survey were located on Sacramento River National Wildlife Refuge lands and are thus afforded a measure of security and protection. Additional colonies are located on State lands of the Department of Fish and Game. However, a large number of colonies still exist on lands and are not protected from habitat alteration due primarily to bank protection.

The apparent reason for the recent general population increases is not fully known but may be related to the fact that no mortality caused by bank protection activities has occurred at nesting colonies since 1985. The population may have taken these 20+ years to recover its breeding potential after a previous period of 25 years (1960 to 1985) of catastrophic losses of all reproduction at many colonies. There are no estimates for the population on the Sacramento River prior to the DFG's 1986 study which estimated 13,170 pairs. However, there are documented accounts from DFG

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biologists and other observers indicating that, during that previous era, active colonies were routinely destroyed by bank protection activities during the height of the breeding season. This activity, because it collapsed and buried many active and occupied

burrows, likely resulted in the take of all young bank swallows at many colonies for a period of several years. Enforcement of the legal protection of the bank swallow under the federal Migratory Bird Treaty Act in 1985-88, and the California Endangered species Act (1989, when the species was listed by the Fish and Game Commission as a threatened species, to the present) has curtailed this form of mortality at most State and federally sponsored bank protection projects.

Despite the recent increases to levels not seen for several years, the population remains a candidate for endangered status. The general decline for several years from 1986 followed by the more recent pattern of increases and decreases from year to year underscores the need for annual monitoring of the population before changes in status are contemplated. As mentioned above, a listing petition for endangered status has been drafted and may be submitted to the Fish and Game Commission if the population declines for a few consecutive years. Falling below 5,000 pairs again could trigger recommendation to "emergency list" the bank swallow as an endangered species. According to the Population Viability Analysis we have conducted on this species in 1992, bank swallows on the Sacramento River continue to be in danger of further population declines or eventual extirpation. The reason for this is that, despite recent increases, the population today still remains below a risk threshold level of 10,000 pairs. The trend of government and privately financed rip rapping, and other methods of erosion control projects, if they severely impact nesting habitat or cause mortality to young birds, could hasten the extirpation of the bank swallow population from the Sacramento River.

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