

**DRAFT**

June 15, 2001

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**To:** Files

**From:** Ronald W. Schlorff

**Subject:** 2001 Bank Swallow population survey, Sacramento River

On June 12 and 13, surveys for nesting bank swallows were conducted by staffs of the CEQA/CESA Program of the Habitat Conservation Planning Branch, Northern California-North Coast Region, and the U.S. Fish and Wildlife Service, Sacramento National Wildlife Refuge, using a jet boat owned and operated by the Service. All colonies were located and the total burrow numbers at each colony were double 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 proceeded southward to the last colony that was located at RM 145.6 Left (L). As in previous surveys, the reach from Redding to Red Bluff was estimated based on an earlier survey. This 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– 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>
236.5	R	573913-4439157	150
235.0	R	574521-4437801	110
233.4	L	??	420
232.8	L	574826-4435780	1730
232.0	L	575999-4434657	50
231.8	?	576048-4434286	50
228.2	L	576400-4428887	110
227.0	L	576240-4428067	300
226.0	L	??	50
226.0	R	??	10
221.4	L	578592-4421694	1350
212.0	L	581478-4413236	1800
211.4	R	580340-4411656	230
205.5	R	581900-4405314	50
203.0	L	583374-4402952	130
195.2	L	589896-4397920	900
193.0	R	590560-4394628	340
192.0	L	590120-4393220	430
189.8	R	587555-4391977	1260
185.1	L	586953-4367706	290
185.0	R	586546-4387194	250
184.0	?	586821-4386139	60

(continued)

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<u>River Mile</u>	<u>Side</u>	<u>GPS reading</u>	<u>Average burrow count (rounded to nearest 10)</u>
182.5	L	587469-4384630	1670
181.4	R	585934-4383222	640
174.2	R	585549-4373947	230
173.5	R	586192-4373468	1420
171.8	L	586509-4372243	270
171.4	R	585643-4372243	160
169.6	R	586351-4369289	50
165.2	L	585918-4363702	970
162.7	L	585607-4360300	450
162.1	R	585259-4359536	240
156.6	L	584365-4352858	1270
156.5	R	584299-4351972	520
156.1	L	584642-4351711	90
155.9	R	584345-4351726	200
147.2	L	586419-4343830	850
145.6	L	586562-4342606	70
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*

\*Estimated from the 2000 survey

### RESULTS SUMMARY

Total Colonies counted = **38**      Total burrows counted = **19,170**  
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. = **51**      Survey total Burrows = **21,520**  
Average Burrows per Colony = **420** (rounded to nearest 10)  
Burrow Occupancy Rate = **0.45**  
Number of Pairs (0.45 x 20,470) = **9,680** ( rounded to nearest 10)  
2000 Number of Pairs = **9,210**  
Population trend = up approx. **5** percent over last year; down **26** percent from 1986  
baseline of **13,170** pairs in **72** colonies.  
Average colony size has increased from **410** burrows/col. In 1986 to the current **420**  
burrows/col. (**102** percent of baseline figure)

**River Reach 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>	4,660 burrows	9 cols.	Ave. =	520 burrows per col.
<b>RM 169-199</b>	7,070 burrows	14 cols.	Ave. =	500 burrows per col.
<b>RM 200-243</b>	6,540 burrows	15 cols.	Ave. =	440 burrows per col.
<b>RM 244-292</b>	1,290 burrows (est.)	5 cols.	Ave. =	260 burrows per col.
<b>Totals:</b>	<b>21,520 burrows</b>	<b>51 cols.</b>	<b>Ave. =</b>	<b>420 burrows per col.</b>

**SUMMARY AND DATA INTERPRETATION**

Results of the 2001 bank swallow population survey on the Sacramento River indicate continued, but slight, improvement in total numbers of pairs (up 5% over 2000). 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 the past three surveys in 1999 to 2001 when numbers began to increase again. During the period of 1986-98, the bank swallow population had declined to a low of just under 5,000 pairs. At that time, there was concern that the population was close to extirpation, and a petition for endangered status was drafted for presentation to the Fish and Game Commission.

The exact reason for the long decline for 13 years and the abrupt turnaround of the past three years is not fully understood but may be related to a variety of environmental factors, especially rainfall patterns. 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 up (2001 results still indicate a 26% decline from the 1986 baseline figure), the total number of colonies in recent years is much lower. In 1986 there were 72 different locations on the Sacramento River supporting active colonies; in 2001 there were only 51 colony sites. Today's colonies are larger and fewer, a situation that may make the species at greater risk to suffer catastrophic loss if a big colony is impacted by natural or man-made causes. We located 7 colonies larger than 1,000 burrows, and two of those were close to 2,000 burrows in size (1,730 and 1,800).

Although the bank swallow population continues to rebound over the past three years, it is still threatened by activities that will reduce its habitat. The trend has been to fewer but larger colonies, thus concentrating the population to a few breeding centers of critical importance. Such concentration of the population exposes it to

potential catastrophic loss. There are 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. Fortunately, several of the large 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. A large number of colonies still exist on lands not protected by any means, however.

The apparent reason for the recent 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 1986. The population may have taken 16 + years to recover its breeding potential after a period of 25 years (1960 to 1985) of catastrophic losses of all reproduction at several colonies. There are no estimates for the population on the Sacramento River prior to the 1986 study which estimated 13,170 pairs. However, there are documented accounts from DFG 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. Legal protection of the bank swallow under the federal Migratory Bird Treaty Act, and later (1989) the California Endangered Species Act, curtailed this form of mortality starting in 1986.

Despite the recent increases to levels not seen for nearly a decade, I believe that the population remains a candidate for endangered status. As mentioned above, a listing petition has already been drafted and may be submitted to the Fish and Game Commission if the population starts to decline again. I recommend that falling below 5,000 pairs again should trigger action to emergency list as endangered. According to the Population Viability Analysis we have conducted on this species in 1992, bank swallows on the Sacramento River continue to be in grave danger of further declines or disappearing entirely within the next few decades because the population is below a threshold of risk level of 10,000 pairs. The trend of government and privately financed riprapping projects, if they severely impact nesting habitat or cause mortality to young birds, could hasten the extirpation of the bank swallow from its distribution on the Sacramento River.

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