August 15, 2000

To: Files
From: Ronald W. Schlorff
Subject: 2000 Bank Swallow population survey, Sacramento River

On June 6 and 7, surveys for nesting bank swallows were conducted by staffs of the CEQA/CESA Program of the Habitat Conservation Planning Branch and the U.S. Fish and Wildlife Service, Sacramento National Wildlife Refuge using a jet boat belonging to the Service. All colonies were located and the total burrow numbers at each colony were double counted and averaged during the two days of survey. The GPS locations of colonies 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 145.6L. 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 will be based on estimates provided 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.

River Mile	Side	GPS reading*	Average total burrow count (Rounded to nearest tenth)
241.7	L		180
239.8	L		80
239.5	R		20
238.5	R		220
236.5	R		250
234.1	L		490
232.8	R		2770
232.0	L		200
228.8	L		120
226.0	L		840
226.0	R		80
221.4	L		1710
211.0	L		980
209.2	R		450
195.2	L		480
191.8	R		460
191.2	L		460
189.8	R		2130
187.7	R		130
185.1	L		420

(continued)

River Mile	Side	GPS reading*	Average burrow count (rounded to nearest 10)
182.5	L		1140
181.4	R		270
174.2	R		110
173.5	R		1040
171.8	L		290
168.2	R		190
166.5	R		450
165.2	L		210
162.7	L		280
157.3	L		260
156.5	R		810
146.4	L		400
145.6	L		200
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

*GPS locations to be provide by the Service prior to 2001 survey

RESULTS SUMMARY

Total Colonies counted = **33** Total burrows counted = **18,120**
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. = **46** Survey total Burrows = **20,470**
Average Burrows per Colony = **450** (rounded to nearest 10)
Burrow Occupancy Rate = **0.45**
Number of Pairs (0.45 x 20,470) = **9,210** (rounded to nearest 10)
1999 Number of Pairs = **8,210**
Population trend = up approx. **11** percent over last year; down **30** 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 **450** burrows/col. (**110** percent of baseline figure)

River Reach summary (ave. figures rounded to nearest 10):

RM 81-143 1,060 burrows (est.)8 cols. Ave. = 130 burrows per col.

(continued)

RM 144-168	2,800 burrows	8 cols.	Ave. =	350 burrows per col.
RM 169-199	6,930 burrows	11 cols.	Ave. =	630 burrows per col.
RM 200-243	8,390 burrows	14 cols.	Ave. =	600 burrows per col.
RM 244-292	1,290 burrows (est.)	5 cols.	Ave. =	260 burrows per col.
Totals:	**20,470 burrows**	**46 cols.**	**Ave. =**	**450 burrows per col.**

SUMMARY AND INTERPRETATION

Results of the 2000 bank swallow population survey on the Sacramento River indicate continued improvement in total numbers of pairs. In 1986, when the first survey was conducted, about 13, 170 pairs were estimated 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 two surveys in 1999 and 2000 when numbers began to increase. During the period of 1986-98, the population declined to a low of just under 5,000 pairs. The exact reason for the long decline for 13 years and the abrupt turnaround of the past two years is not fully understood but may be related to a variety of environmental factors, especially rainfall patterns. While numbers are up (2000 results still indicate a 30% decline from the baseline figure), the total number of colonies is much lower. In 1986 there were 72 different locations on the Sacramento River supporting active colonies; in 2000 there were only 46 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.

Even as the bank swallow population continues to rebound dramatically over the past two 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 Wildlife Refuge lands and are thus afforded a measure of security and protection.

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 15+ years to recover its breeding potential after a period of 25 years (1960 to 1985) of catastrophic losses of all reproduction at several colonies. Active colonies were routinely destroyed by bank protection activities during the height of the breeding season annually which

resulted in the take of all young bank swallows at many colonies for a period of several years. Legal protection under the federal Migratory Bird Treaty Act and later 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. A listing petition has been drafted and may be submitted to the Fish and Game Commission if the population starts to decline again. According to the Population Viability Analysis we have conducted on this species, it is still in grave danger of further declines or disappearing entirely within the next few decades because it is below a threshold of risk level of 10,000 pairs. The trend of government and privately financed riprapping projects could hasten the extirpation of the bank swallow from its distribution on the Sacramento River.

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