

DRAFT

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To: Files

From: Ronald W. Schlorff

Subject: 2004 Bank Swallow population survey, Sacramento River

On June 9 and 10, 2004, staffs of the Resource Assessment Program of the Habitat Conservation Division 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. 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. Field data were recorded electronically on a hand held computer (PDA) and paper forms. 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 fourth 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. Average total burrow count is rounded to nearest tenth.

<u>River Mile*</u>	<u>Side</u>	<u>GPS reading (utm)*</u>	<u>No. Burrows</u>	<u>NWR Units</u>
238.0	R	573490-4441446	310	La BARRanca Unit
236.4	R	573615-4439465	540	Moony Island Unit
234.2	R	574735-4437599	420	Ohm Unit
233.8	L	575260-4436639	70	
232.8	R	574777-4435793	1000	Flynn Unit
231.8	L	576205-4429102	320	Blue Heron Is. Unit
227.0	L	576230-4428057	880	
225.0	L	578525-4421659	110	
221.5	L	577970-4419195	740	
220.0	L	581460-4413205	240	
215.0	L	580292-4410652	1570	
212.0	L	580887-4408047	40	
210.5	L	581910-4403940	140	
205.0	R	582742-4403940	460	

(Continued)

Page 2

<u>River Mile*</u>	<u>Side</u>	<u>GPS reading (utm)*</u>	<u>No. Burrows</u>	<u>NWR Units</u>
205.0	L	589850-4397810	70	
198.9	L	589578-4397400	460	
195.5	L	590540-4394654	110	Capay Unit
191.5	R	589910-4393261	100	
191.0	L	587525-4392036	40	
190.3	L	587365-4389131	360	
189.5	R	587006-4387641	260	Dead Man's Reach
185.5	L	587024-4385968	700	
183.5	R	587389-4384610	300	Llano Seco Ranch (USFWS Conservation Easement)
182.5	L	585944-4383202	760	
181.5	R	586260-4378999	1390	Llano Seco Unit
174.0	L	586179-4377618	90	Llano Seco Unit
173.0	R	586721-4375807	1020	Llano Seco Unit
172.0	L	586167-4375125	320	
171.5	R	585410-4374548	260	
169.8	R	586338-4373436	50	
167.0	L	586433-4372226	60	
165.5	L	585898-4371285	1130	
162.5	L	586518-4370027	90	
161.5	R	586288-4369459	270	Sul Norte Unit
161.3	L	586422-4365331	60	Head Llama (TNC soon to be part of SacRiver NWR)
159.0	R	585820-4364717	100	Thomas Unit (WCB/DFG)
156.8	L	585782-4363663	370	(Drumheller Slough Unit or just north of it)
156.7	R	585268-4359520	60	
156.5	R	583370-4354541	400	
154.0	L	584372-4352856	180	
153.0	R	583951-4352825	20	
146.3	L	584251-4351969	980	
145.5	L	583763-4350462	210	

(Continued)

<u>River Mile*</u>	<u>Side</u>	<u>GPS reading (utm)*</u>	<u>No. Burrows</u>	<u>NWR Units</u>
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 = **43** Total burrows counted = **17,060**
 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. = **56** Survey Total Burrows = **19,410**
 Average Burrows per Colony = **350** (rounded to nearest 10)
 Burrow Occupancy Rate = **0.45**
 Estimated Number of Pairs (0.45 x 19,410) = **8,730** (rounded to nearest 10)
2003 Estimated Number of Pairs = **9,590**
 Population trend = **DOWN** approx. **9** percent from **2003**; **DOWN 34** 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):

RM 81-143	1,060 burrows(est.)8 cols.	Ave. = 130 burrows per col.
RM 144-168	3,930 burrows 13 cols.	Ave. = 300 burrows per col.
RM 169-199	6,220 burrows 15 cols.	Ave. = 410 burrows per col.
RM 200-243	6,910 burrows 15 cols.	Ave. = 460 burrows per col.
RM 244-292	1,290 burrows (est.)5 cols.	Ave. = 260 burrows per col.
Totals:	19,410 burrows 56 cols.	Ave. = 350 burrows per col.

SUMMARY AND DATA INTERPRETATION

Results of the 2004 bank swallow population survey on the Sacramento River indicated a decrease in estimated pair numbers to 8,730 after a three year period of increase from 1999 to 2001, followed by a reduction to 8,330 in 2002 and an increase to 9,590 in 2003. 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 (8,730) represent a 9 percent drop from the 2003 pair estimate which was 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 a generally declining trend to 4,990 pairs (1998), the lowest population ever documented in the 19 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 1999-2004 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). In 2003 there were an encouraging total of 61 colonies. Average colony size in 2003 (350 burrows per colony) was 60 burrows less than in 1986. In 2004, we documented 4 colonies of 1,000 burrows and larger compared with 7 located in 2001. There were, however, an additional two colonies between 800 and 1000 burrows in 2004. Large (1000+ burrows) colonies are an indicator of general health of the population and they may function as breeding centers that could result in the repopulation of former range along the Sacramento River in succeeding years. Unfortunately the drop in colony number from 61 to 57 is not an encouraging sign; we need big colonies and many of them to trend the population toward recovery.

Although the bank swallow population generally continues to rebound over the past six years, it is still threatened by activities that will reduce its habitat. In the recent past there have generally been fewer but larger colonies, thus concentrating the population into a few breeding centers of critical importance. Such a concentration of the population exposes it to the risk of a catastrophe. Last year (2003) saw a return to

Page 5

large sized and more total colonies, an encouraging sign that failed to continue in 2004.

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 general population increases starting in 1999 is not fully understood 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, accounts from DFG biologists, and other observers, indicate that, during that previous era, active colonies were routinely destroyed by bank protection activities during the height of the breeding season. This construction activity, because it collapsed and buried many active and occupied burrows, likely resulted in the death 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 essentially curtailed this form of mortality at most State and federally sponsored bank protection projects. However, we witness annually, while conducting this survey, that human activity, including the covering of active colonies with various kinds of debris in order to curtail erosion of river banks, continues at certain locales.

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 should decline again for a few consecutive years. Falling below 5,000-6,000 pairs again could trigger recommendation to "emergency list" the bank swallow as an endangered species. This action may underscore the need for stronger measures to protect the species and its habitat. It also would be a testament of the true status of the bird's population in the State. According to the Population Viability Analysis we have

Page 6

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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