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Mr. Robert R. Treanor
Executive Director
Fish and Game Commission

January 19, 1994

Agenda Item for the Fish and Game Commission's February 3-4, 1994 Meeting
Re: Receipt of the Department of Fish and Game's Annual Report on the Status
of Recovery of the Threatened Bank Swallow (*Riparia riparia*)

On March 3, 1989, the Commission listed the bank swallow as a threatened bird species pursuant to Section 2070 of the Fish and Game Code and Section 670.1, Title 14 of the California Code of Regulations. This action was taken based on a Department petition that indicated that the species had declined rangewide within California, it was extirpated from approximately 50 percent of its historic range, and it faced further reduction in populations and habitat due to ongoing bank protection projects on the Sacramento River, Feather River, and major tributaries. These two riparian systems provide habitat for over 70 percent of the remaining population. Department studies in 1986 and 1987, followed by monitoring, established the scientific basis for the petitioned action. In addition, the Department reported in 1978 on the status of the bank swallow and concluded that the total population of breeding bank swallows within the State was extremely low relative to that of other species of swallows. The report identified the primary reason for the decline and continuing threat to breeding colonies as channelization of rivers. Most of the colonies in the Sacramento Valley are threatened by planned bank protection projects proposed by the U. S. Army Corps of Engineers.

Since its listing, a recovery plan for the bank swallow has been completed. It was the first such plan for a solely State-listed species. A recovery team made up of representatives of the Department, State Reclamation Board, U.S. Army Corps of Engineers, State Lands Commission, and members of the public was formed. Some of the issues discussed at team meetings since 1989 include development of the recovery plan, mitigation experiments at bank protection projects, and annual population surveys. Each population survey that has been conducted since the Department's initial study in 1986 has included biologists and/or engineers from the various agencies and groups that make up the recovery team. The 1993 survey was conducted by staff of the Department's Wildlife Management Division and an Environmental Specialist from the U.S. Army Corps of Engineers.

1993 survey

→ In 1992, the Department initiated a population viability analysis (PVA) of the Sacramento River population of bank swallows to attempt to determine the risks of extinction and reduction based solely on the current biological factors affecting these birds. A very important factor facing the current population is simply their small breeding numbers. The findings of the analysis indicate that a small population of 10,000 pairs has a substantial risk of falling to 1,000 pairs or disappearing entirely. However, the results of the 1993 survey indicated an estimated population on the Sacramento River of only about 6,000 pairs. A summary of the bank swallow population information and bank swallow population survey results are attached. Breeding pair estimates were derived by multiplying the total burrow count figures (an index of population trend) by an objective estimate of burrow occupancy (45 percent).

This analysis has been used to estimate the level of population needed to ensure a margin for safety from extinction and allow for recovery and delisting. Even under the most ideal conditions, a population of the current size may require an increase to as many as 50,000 pairs to ensure a less than 50 percent chance of falling below 5,000 breeding pairs within the span of the next 50 years. Our current population of about 6,000 pairs is close to the lower limit. If the current trend continues in 1994, the population may face a greater threat of extinction. A five-year review of the status of the bank swallow is scheduled for 1994, since it was listed in 1989. The report will be prepared after the results of the 1994 population survey are available. Should those results show continued deterioration, the Department may recommend additional actions for the species in the future.

While most of the State's population of bank swallows exists in the Sacramento Valley and this is the focus of the Department's recovery effort, there are scattered colonies in parts of northern and northeastern California. Some of these colonies are on public lands such as our recently acquired land supporting the colony at Fall River Mills in Shasta County and at the Honey Lake Wildlife Area in Lassen County. However, others are on private lands where various threats exist that must be closely monitored to ensure against adverse impacts of local stream channelization projects or riparian habitat degradation. While these colonies make up a small fraction of the statewide population, it is important to preserve them, especially as the primary populations face the threat of further decline.

Since 1960, more than 130 miles of the Sacramento River have been riprapped under the Sacramento Bank Protection Project, now in its third phase of work. Since 1986, approximately 211 miles of the Sacramento River have been surveyed and documented as active or potential habitats for the bank swallow. In light of the fact that the birds make their nests by burrowing into the vertical face of eroding earth banks on both sides of the river, doubling the 211 lineal mileage gives a total available potential habitat of 422 miles. Since about 130 miles of bank is currently under tons of rock and unusable by the bank swallow for nest sites, it must be subtracted from the 422 to leave 292 miles. For various habitat suitability reasons, not all of this mileage is used by the birds. However, a significant fraction is and it can be identified as potential habitat due primarily to soil characteristics and local erosion patterns of the river. In 1986, approximately 12,000 pairs of bank swallows were found on the Sacramento River. This represented about 41 pairs per mile of river. Using a very conservative analysis based on the 1986 pair density, habitat for an additional 8,000 pairs has been lost since 1960 due to bank protection projects. Additional miles of riprap are planned to be installed in 1994. These work sites will impact potential habitat for the bank swallow and thus increase the difficulty in recovery of this State-listed species. Because the bank swallow relies on eroding soils in which to construct its nesting burrows, it has been very difficult to develop effective mitigation for the impacts of projects which are designed to stop natural erosion of earthen banks. An artificial earth bank structure designed to replace lost natural habitat would have to be maintained to specifications to make it suitable for nesting. The danger of having an entire population of birds solely dependent on artificial structures for their continued existence presents a serious biological risk. It would also present a biological limitation to proposing delisting for the species.

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A copy of the recovery plan is attached for the Commission's reference. If you have any questions regarding the matter, please contact Mr. Terry M. Mansfield, Chief of the Department's Wildlife Management Division, at 1416 Ninth Street, Sacramento, California 95814, telephone (916) 653-7203. Department staff will be available at the February 3-4 meeting to respond to questions or comments from the Commission.

COPY OF ORIGINAL
A. F. F. F. F. F.

Boyd Gibbons^{Per}
Director

Attachments

cc: Ms. Susan Cochrane
Department of Fish and Game
Sacramento, California

Mr. Terry M. Mansfield
Department of Fish and Game
Sacramento, California

BANK SWALLOW POPULATION INFORMATION
 by River Reach on the Sacramento River, California
 1986 to 1993

River Reach	YEAR										Averages by Reach		
	1986	1987	1988	1989	1990	1991	1992	1993					
RM 81 - RM 143 Verona to Colusa													
Number of colonies	13	12	9 ^a	6	6	6	6	9	8			9 ^b	
Total burrows	2,480	3,720	1,870	750	980	1,870	1,650	1,610	1,870			1,870	
Average burrows/colony	190	310	210	130	160	310	180	200	210			210	
RM 144 - RM 168 Colusa to Baine City													
Number of colonies	15	13	18	14 ^a	15	9	14	15	14			14	
Total burrows	6,060	6,600	7,790	6,580	7,440	6,110	6,840	5,230	6,580			6,580	
Average burrows/colony	400	510	430	480	500	680	490	350	480			480	
RM 169 - RM 199 Baine City to Hamilton City													
Number of colonies	15	16	28	21	15	14	15	11	17			17	
Total burrows	7,530	5,070	9,570	6,970	4,850	3,960	4,500	1,950	5,550			5,550	
Average burrows/colony	500	320	340	330	320	280	300	180	320			320	
RM 200 - RM 243 Hamilton City to Red Bluff													
Number of colonies	23	20	16 ^a	16 ^a	15	13	14	10	16			16	
Total burrows	11,530	8,540	6,520	6,520	6,880	4,300	4,050	3,820	6,520			6,520	
Average burrows/colony	500	430	400	400	460	330	290	380	400			400	
RM 243 - RM 292 Red Bluff to Redding													
Number of colonies	6	5	5 ^a	5 ^a	3	5 ^a	5 ^a	5 ^a	5			5	
Total burrows	1,660	1,400	1,290	1,290	820	1,290	1,290	1,290	1,290			1,290	
Average burrows/colony	280	280	280	280	270	280	280	280	280			280	
Survey Total RM 81 - RM 292 Verona to Redding													
Number of colonies	72 ^c	66	76	62	54	47	57	49	60 ^d			60 ^d	
Total burrows	29,260	25,330	27,040	22,110	20,970	17,530	18,330	13,900	21,810			21,810	
Average burrows/colony	410	380	360	360	390	370	320	280	360			360	

^a Averages based on survey information were included as an estimate for years without surveys.
^b Reach averages based on available survey data for that reach; these data are the most illustrative of population trends within the reach.
^c Annual survey totals include reach averages for years without surveys; yearly totals are not as accurate for inferring population trends as reach averages.
^d Totals that have estimates based on reach averages.

BANK SWALLOW POPULATION SURVEY
 Sacramento River
 (Red Bluff Diversion Dam downstream to Verona at confluence with Feather River)
 June 1993

NDD8
EO#

River Mile	Total No. Burrows (N/A = Not Active)	Remarks
242.8 L	N/A	
241.8 L	N/A	Active prior to '91
239.8 L	17	
239.7 L	39	
238.2 R	N/A	
238.0 R	N/A	
236.9 L&R	N/A	
235.1 R	N/A	
234.2 L	N/A	
232.4 R	N/A	
231.9 L	907	Tall bluff
231.1 R&L	N/A	
226.1 L	N/A	
225.5 R	N/A	
225.1 L	N/A	
224.1 R	N/A	Vegetated
223.0 R	N/A	1.0+ mile of face
222.5 L	N/A	
221.9 L	N/A	
221.0 R	56	
218.5 L	N/A	Woodson Bridge site
218.5 R	N/A	
218.3 R	N/A	
213.0 L	N/A	
212.4	N/A	
212.2 R	10	
211.2 R	410	
211.4 R	N/A	
211.7 R	N/A	
210.2 R	N/A	
210.7 L	N/A	
209.9 R	N/A	
209.5 R	N/A	
209.0 L	N/A	
208.7 L	40	
207.1 R	N/A	
206.6 L	N/A	
203.4 L	30	
202.5 R	990	
201.5 R	N/A	
201.3 R	1,310	
198.9 L	N/A	
195.1 R	440	
194.5 L	N/A	Vegetated

NDD8
EO#

River Mile	Total No. Burrows (N/A = Not Active)	Remarks
193.2 R	N/A	
192.4 L	N/A	
191.2 R	N/A	Vegetated
190.5 L	N/A	Golden State Island Artificial Bank
189.0 L	N/A	
187.9 R	20	
187.5 R	N/A	Enhanced, no maint in '93
186.5 R	N/A	Enhanced, no maint in '93
185.4 R	N/A	
185.3 L	N/A	
185.0 L	N/A	
184.7 L	50	
183.9 R	N/A	
182.9 L	220	
182.0 R	N/A	
181.5 R	N/A	
179.0 R	N/A	Riprapped in '86
178.2 L	890	
175.0 L	50	
174.2 R	50	
174.1 R	20	
174.0 R	N/A	
173.4 R	110	
172.0 L	N/A	Enhanced, no maint in '91, '92, or '93
171.5 R	70	
171.1 R	N/A	
170.7 L	30	
169.6 R	N/A	
169.3 L	N/A	
168.8 R	150	
167.9 L	N/A	
167.2 L	280	
166.5 R	N/A	
166.3 R	770	
165.8 L	270	
165.7 L	N/A	
165.2 L	120	
162.7 L	N/A	
162.0 R	N/A	
161.9 R	150	
161.8 L	80	
161.5 L	N/A	
159.5 L	N/A	Riprapped in '88
159.2 L	170	
158.8 R	N/A	
158.6 R	100	Enhanced, no maint in '91, '92, or '93
157.1 L	N/A	
156.9 L	250	
156.5 R	1,620	Largest colony on Sacramento River

NDD#
EO#

River Mile	Total No. Burrows (N/A = Not Active)	Remarks
156.0 L	N/A	Riprapped in '86
155.1 L	N/A	
154.6 L	870	
150.5 R&L	N/A	
147.4 R	N/A	
147.2 R	50	
146.6 L	280	
145.1 R&L	N/A	
144.3 L	70	
144.1 L	N/A	
131.9 L	N/A	
130.9 L	169	
130.3 R	1,101	
130.2 R	N/A	
129.5 R	N/A	
128.1 L	8	
126.1 R	N/A	
126.0 R	19	
121.8 L	N/A	
119.5 R	N/A	
116.5 L	N/A	
111.2 L	N/A	
100.5 L	19	
97.1 L	40	
97.0 L	N/A	
96.5 L	N/A	
88.5 R	N/A	
87.6 L	N/A	
87.5 L	198	
84.0 R	N/A	
83.2 L	N/A	
82.9 R	N/A	
82.5 R&L	N/A	
81.9 R	N/A	
80.5 R	52	Southernmost Sacramento River colony

SUR
Colusa
Yolo
SACTO

208
219
φ13
164
φ12
111
131
φφ7
φφ6
211
φφ5
127
186
φφ4
218

Total sites visited: 113
 Total sites active: 44 (39%)
 Total sites not active: 69 (61%)
 Total no. burrows: 12,595 (est. pairs based on 45% occupancy rate: 5,668)
 Average no. burrows/colony: 129