

2010 – 2011 Bank Swallow Status Report, Sacramento and Feather Rivers

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- **with contributions from the Department of Water Resources (DWR), US Fish and Wildlife Service (USFWS), and other members of the Bank Swallow Technical Advisory Committee**

Summary

The estimated number of Bank Swallows in Sacramento River surveys was reduced by about one-third in 2010 and 2011 relative to the preceding decade (Figure 1). The Sacramento River and its tributaries are considered to support more than 70% of the California population of this species. This serious recent decline, on top of previous declines in Bank Swallow populations in the State, is causing concern among members of the Bank Swallow Technical Advisory Committee.

Background

The Bank Swallow (*Riparia riparia*) was listed as a California threatened species in 1989, and a recovery plan prepared in 1992 (CDFG 1992). The Department of Fish and Game's (DFG) North Central Region participates in a multi-party Bank Swallow working group, which formed after rocking of a major Bank Swallow colony site in 2005, and has since been renamed the Bank Swallow Technical Advisory Committee (BANS-TAC). Currently, BANS-TAC is working to develop an up-to-date conservation strategy for the species. Some previous years' monitoring reports are archived on the online DFG Document Library.

Bank Swallows congregate in breeding colonies and construct nesting burrows in near-vertical river banks and similar formations. These burrows are readily counted. Previous reports have used an occupancy factor (e.g., 45 percent) to convert burrow counts to Bank Swallow pair estimates. Our recent work, however, recommends use of burrow counts directly as an index of Bank Swallow population (Wright et al. 2011); therefore, this report revises the past practice of reporting estimated pair numbers and instead reports all counts, both present and past data, in numbers of burrows. As a rule of thumb, breeding pairs are roughly half the number of counted burrows (Wright et al. 2011).

Over the period from 1999 up to 2009, the Bank Swallow population along the Sacramento River appeared relatively stable with about 16,000-18,000 burrows in the long-term monitoring section, which extends from Red Bluff to Colusa (see below).

Sacramento River – Long-term monitoring section: Red Bluff to Colusa (data from USFWS – Joe Silveira, Jennifer Isola, and DWR – Adam Henderson, Danika Tsao)

This section (river mile [RM] 243 – 144; termed Reaches 2 and 3) has been monitored for Bank Swallow burrows almost annually since 1986, constituting a unique data set for a threatened species. USFWS, DWR and DFG staff coordinate in conducting the monitoring surveys, which take place during the first weeks of June.

Bank Swallow burrows in this section declined substantially in 2010 and 2011 relative to the preceding decade (Figure 1). In 2010 we counted 10,660 burrows in the long-term monitoring section, a 34% decline from the previous year's count. The 2011 count in this section also remained low with 11,700 burrows counted. The 2010 and 2011 counts bracketed a figure of 11,000 burrows, which is 35% below the figure of 17,000 burrows around which monitoring counts hovered from 1999-2009.

Viewed over the entire scope of data since 1986, the recent reduction suggests a return to the 1993-1998 years of substantially lower Bank Swallow population along the middle Sacramento River (Figure 2).

Sacramento River – Flanking reaches: Redding to Red Bluff, and Colusa to Verona (data from DWR, DFG North Region, and DFG North Central Region)

The 2011 monitoring count for the Redding to Red Bluff section (RM 298-244, Reach 1) was 994 burrows in 6 colonies, compared to 2010: 667 burrows in only 2 colonies; 2009: 1253 burrows, 6 colonies¹; and 2008: 1358 burrows, 6 colonies.

The 2011 monitoring count for the Colusa to Verona section (RM 143-80, Reach 4) was 500 burrows in 6 colonies. This was down from 2010 during which 1344 burrows in 10 colonies were counted, and from 2009 during which 1364 burrows in 11 colonies were counted.

¹ 2009 Reach 1 data include one colony on Cow Creek close to its confluence with the Sacramento River. This colony was not active during 2010 or 2011.

1999 – 2011 Results
 Annual Bank Swallow Survey
 Sacramento River
 Red Bluff (RM 243) to Colusa (RM 143)

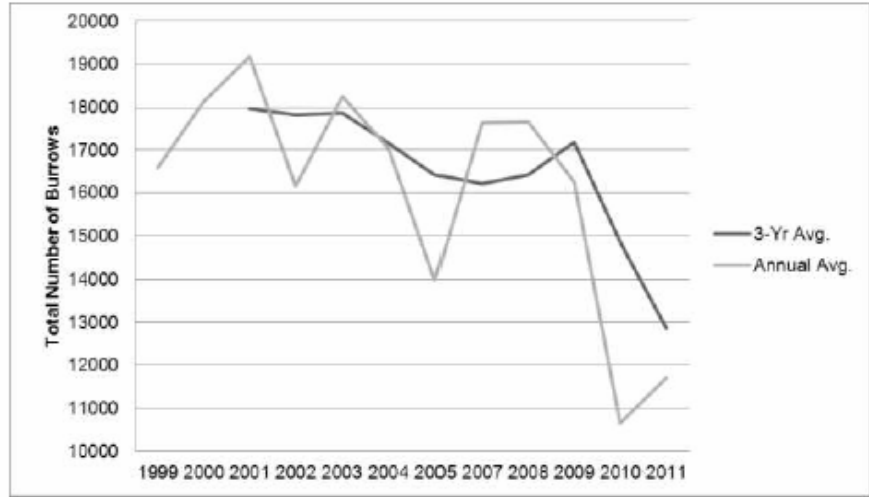
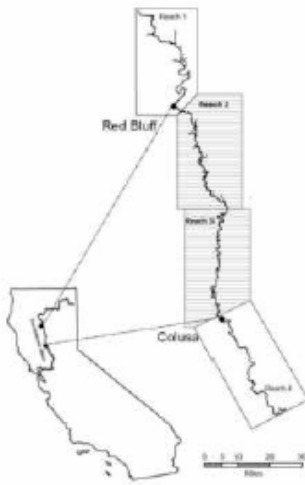


Figure 1. Annual burrow counts and 3-year moving-average number of burrows of Bank Swallows on the long-term monitoring section: Red Bluff to Colusa, Sacramento River. Numbers of nesting pairs are approximately half the numbers of burrows. Counts dropped substantially in 2010 and 2011. (Figure courtesy of USFWS: J. Silveira and J. Isola)

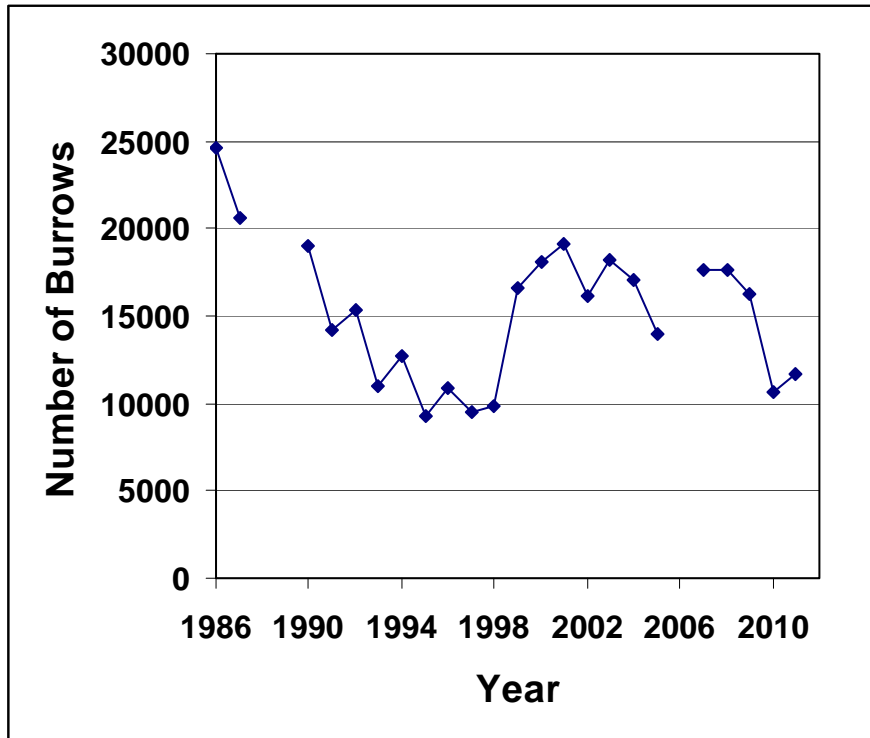


Figure 2. Long-term monitoring of Bank Swallow – time series of burrow counts for Red Bluff to Colusa monitoring section. Only years with complete data are included. The recent decline (2010 and 2011) raises concern about a possible return to the 1993-1998 years of substantially lower population levels. As a rough rule of thumb, approximately half of burrows counted support a breeding pair.

Lower Feather River (contributed by Ryan Martin, DWR)

The lower Feather River supports fewer Bank Swallows than the middle Sacramento River and was not surveyed regularly prior to 2008.

Monitoring results from the Feather River also showed a 2010-2011 drop in overall population estimate for Bank Swallows. The June 2010 survey counted 1832 burrows in 14 colonies which was an overall decrease in burrows of 35 percent from 2009. Results from the June 2011 Feather River survey were 2517 burrows in 23 colonies. Although this was an increase over the 2010 count and compares to the 2009 count of 2810 burrows, it is below 2008 and 2003 estimates of 3780 and 3600 burrows, respectively, and is less than half of a 1988 Feather River count of about 6600 burrows (Table 1).

There may be a trend of decreasing colony size, with an average colony size in 2011 of 109 burrows, 2010 average of 131 burrows, versus an average of 140 burrows per colony in 2009.

Table 1. Feather River Summary

Survey Year	Burrow Count
2011	2517
2010	1832
2009	2808
2008	3787
No counts 2004-2007	
2003	3594
2002	2274
No counts 1989-2001	
1988	6592
1987	7 colonies ranging in size from 140 to 2000 burrows (Humphrey and Garrison 1987)

Discussion

The monitoring results for 2010 and 2011 represent a serious decline in the number of nesting Bank Swallows along the Sacramento and Feather rivers. Since previous estimates suggest more than 70 percent of California’s Bank Swallow population nests along the Sacramento River (CDFG 1992), this reduction in numbers has serious implications for the statewide population. This recent decline on top of previous reduction in the Bank Swallow population within the state is causing significant concern among participants of the Bank Swallow Technical Advisory Committee.

Pinpointing a particular cause of the recent reduction in numbers is problematic with available data. Factors likely influencing Bank Swallow numbers include recent habitat

loss (banks armored for erosion prevention, for example using rock rip-rap, at two major colony sites from 2005-2009) and high spring flows causing bank collapse. Cumulative loss of Bank Swallow nesting habitat due to bank hardening (Figure 3) has long been associated with the long-term Bank Swallow population decline (Garrison et al. 1987, Moffatt et al. 2005, Garcia et al. 2008, Girvetz 2010). Bank collapse during nesting season destroys burrows and can kill adult swallows, eggs or chicks. Other factors such as weather effects on insect populations or effects on survival of adult or young birds during migration or on their Central and South American winter grounds have not been ruled out.

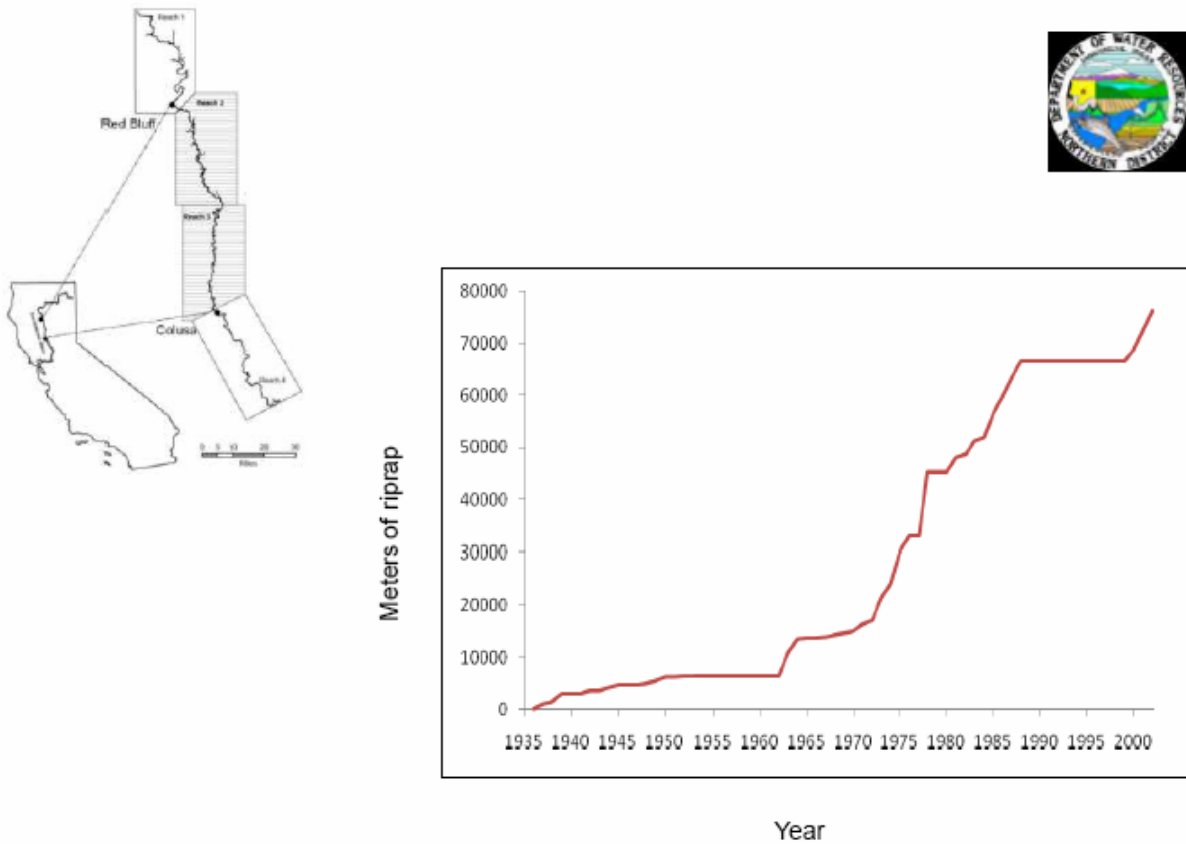


Figure 3. Expansion over time in the extent of hardened bank (riprap) on the Sacramento River, Red Bluff to Colusa. The latest available data correspond to nearly 50 miles of riprap. (Figure courtesy Department of Water Resources: A. Henderson)

Bank Swallow monitoring along the Sacramento and Feather Rivers will continue, and for 2012 is scheduled for early June. If burrow counts remain low, we believe a discussion of prompt conservation actions available should be undertaken.

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