

APPENDIX E

Lower Feather River Corridor Management Area
Bank Swallow Monitoring Summary

Subject: Lower Feather River Corridor Management Area Bank Swallow Monitoring Summary

Background

As a major tributary to the Sacramento River, the Feather River provides important region-scale nesting and foraging habitat for the Bank Swallow within the Sacramento Valley. This habitat is reliant upon dynamic river processes (flows, erosion and sediment deposition, and river migration) for its formation and maintenance. The Bank Swallow has experienced significant declines over the past 30 years, as bank protection activities have reduced the amount of suitable habitat on both the Sacramento and Feather Rivers (BANS TAC 2012).



Bank Swallow colony on Feather River at 11.4 L in 2011.

Population Surveys

Bank swallow surveys following California Department of Fish & Wildlife (CDFW) survey protocols have been performed on the Feather River system from the Thermalito Afterbay Outlet near Oroville (river mile 59) to the mouth near Verona by Department of Water Resources (DWR) staff from the Northern Region and Oroville Field Division offices. Surveys were completed in 2002 and 2003 as part of the Oroville Relicensing Studies, and were reinitiated in 2008 and have continued through the 2013 nesting season. Surveys are conducted in June in coordination with US Fish & Wildlife Service, CDFW, and DWR crews surveying the Sacramento River system from Redding to Verona.

Survey Results

Average colony estimates from the seven years of surveys within the Lower Feather River Corridor Management Plan Study Area (Yuba River confluence to the Sutter Bypass, hereafter lower Feather River planning area) are around 7 colonies per year. Most of these colonies are small (< 100 burrows), ephemeral, and colony evidence may not persist between years. Only two active colonies, one near Star Bend, and further downstream in the vicinity of the confluence of the Bear River, have been present during all surveys (with the exception of the Star Bend colony which was not present in 2002). On average the lower Feather River reach has contained 685 burrows per survey year. Annual burrow counts from this reach are summarized in Table 1.

Table 1. Feather River Bank Swallow survey totals 2002, 2003, 2008 – 2013 for the lower Feather River planning area.

Survey Year	Number of Colonies	Combined Burrow Estimate
2002	3	379
2003	7	911
no data	-	-
2008	4	865
2009	9	705
2010	8	739
2011	14	844
2012	8	626
2013	5	407

Table 2 details the most recent survey data collected from 2011 to 2013, by river segment, for the lower Feather River planning area.

Table 2. 2011-13 Feather River Bank Swallow survey results from the lower Feather River planning area.

	2011 Survey Year	2012 Survey Year	2013 Survey Year
River Segment	Burrow Average	Burrow Average	Burrow Average
Yuba to Bear River	699	270	214
Bear River to Sutter Bypass	145	356	193
Total	844	626	407

Discussion

Surveys conducted during 2011 documented an overall increase in the number of total colonies (n=14) for the lower Feather River planning area (Table 1, 2), which was attributed to high winter flows in 2010-2011 which resulted in an increase in bank erosion throughout this reach. Over the study period (2002-03; 2008-2013) the lower Feather River planning area has supported approximately 27% ($\pm 7\%$) of the watershed's population on an annual basis, demonstrating that the reach provides habitat resources to a significant proportion of the overall population.

The Feather River watershed has been impacted through historic mining activities and more recent water development and flood management projects, greatly reducing floodplain connectivity and natural riverine processes (Buer et al. 2004, R. Melcer pers. comm.). Given this context, locations where river meander, erosion, and cut banks exist are of critical importance to the Bank Swallow, and designs and alternatives that avoid impacts to these processes and habitats should be employed. Additionally, areas should be identified where revetment can be removed to restore natural banks and increase the amount of available Bank Swallow habitat within the corridor.

Survey data suggest that within the lower Feather River planning area most of the suitable habitat is used each year with very little unused habitat noted. Some general issues to note on this reach are that the areas exhibiting suitable habitat characteristics, and additionally the colonies, are generally small and therefore colony evidence (i.e. burrows) often does not persist through the winter months. This is of special concern regarding the timing of surveys as the colony may not be recognizable outside of the breeding season. In addition even though bank swallows may not be present in one year, if suitable erosion occurs within a suitable substrate then they may be present during the following breeding season, so any natural bank with suitable habitat characteristics should be considered bank swallow habitat and avoided.

References

Bank Swallow Technical Advisory Committee (BANS TAC). 2012. Draft Bank Swallow (*Riparia riparia*) Conservation Strategy for the Sacramento River Watershed, California.

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