



# Report on Bank Swallow Conservation Outreach in New Hampshire

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The Bank Swallow (*Riparia riparia*) is a common species of aerial insectivore that, like many species in this guild, is experiencing steep population declines in portions of its range. In New Hampshire, for example, data from the Breeding Bird Survey (BBS) suggest an annual decline of over 9% per year since the survey began in 1966. Reasons for these declines are not well understood, but the available evidence suggests that factors operating during the non-breeding season are probably significant. At the same time, however, there is evidence from some portions of the species' large range that changes in breeding habitat can be responsible for local extirpations. Bank stabilization is the most common issue facing breeding habitat, but there is still potential for short-term local effects resulting from recreational use if boaters or other river users people disturb banks that support nesting colonies.

The original goal of this project was to develop outreach materials on Bank Swallow conservation that could be made available to river recreationalists (e.g. kayakers) using the rivers in New Hampshire where Bank Swallows are known to occur. Such outreach would also have included landowners whose properties abutted these same rivers, particularly near significant banks and/or colonies. Landowners are an important target for education because activities at the top of river bluffs (e.g., agriculture) also have the potential to alter habitat for this species. Unfortunately, NH Audubon was unable to raise sufficient funds to fully implement the outreach component of the project, so available resources were instead used to implement a more comprehensive update on the locations of Bank Swallow colonies along New Hampshire's larger rivers. Such an effort is an important first step toward targeted outreach in the future, as envisioned in the original proposal to the Nuttall Ornithological Club.

## Methods

To better target available resources for field surveys, we initially selected a number of rivers known to support Bank Swallows and/or contain relatively extensive stretches of suitable eroded bank habitat. With the exception of the Saco River, selected stretches were all in the Merrimack River watershed in southern New Hampshire (Table 1, Figure 1). For each river we used Google Earth to identify areas that contained potential habitat by looking for sandbars and/or eroded

banks. The latter can often be difficult to detect on aerial photographs because they are vertical and sometimes partially obscured by overhanging vegetation, so most survey stretches were delineated using the presence of sand or gravel bars.

River segments with concentrations of suitable habitat were surveyed by kayak in the summer of 2017. Three segments were surveyed by NH Audubon staff and volunteers (Table 1), while a fourth, along the Saco River, was targeted by local volunteers but in the end not surveyed as fully as originally intended. During surveys, locations of vertical sandbanks were recorded using GPS units and later transferred to maps. Each bank was examined for the presence of Bank Swallow holes, and any swallow activity noted.

## **Results**

Suitable banks were common on the Baker and upper Merrimack rivers, but despite this, relatively few Bank Swallow colonies were noted (Table 1). To the best of our knowledge, this is the first such survey of the Baker River, and the lack of current swallow activity there was sobering. Despite a large number of banks, only one contained Bank Swallow holes, and this colony showed signs of disuse suggesting it had not been active in 2017. No swallows were observed on this river segment.

Historically, there have been several (5-10) colonies of variable size along the Merrimack in the towns of Boscawen, Canterbury, and Concord. Four of these colonies were still present in 2017, although only three appeared to be actively used by swallows. Total holes counted at these colonies in 2017 were, from north to south: 52, 30, 20, and 95. Note that not all these holes appeared active in the current breeding season, and the 20-hole colony showed no swallow activity. The largest colony was not visited during the peak of the nesting season, but signs of recent activity were noted at several holes, suggesting that it is by far the largest colony in the area surveyed.

Most of the Pemigewasset River segment that was surveyed was dominated by gravel and cobble rather than sand, and suitable banks were rare (Table 1) and limited to the extreme southern section. None of these banks showed signs of use by Bank Swallows. Farther downstream, aerial photos and local knowledge indicate a higher proportion of sand banks, and this section is slated for additional surveys in 2018. Recreational use of the Pemigewasset is on the rise, and we observed dozens of kayakers and tubers during the 2017 survey. However, our observations suggest that river recreationalists are relatively unlikely to disturb nesting banks, and instead focus their activity on sand and gravel bars.

Volunteers on the Saco ultimately failed to conduct as thorough a survey of available habitat as they originally intended, and as a result data for 2017 are essentially non-existent. Anecdotal observations indicate that one mid-sized colony (~25 active holes in 2016) was not occupied in 2017. In addition, there were very few records submitted to eBird along the Saco in 2017, increasing the need for a more comprehensive survey in 2018.

## Discussion

With limited dedicated survey work in 2017, it would be premature to make sweeping statements about the status of Bank Swallows along the river segments mentioned above, much less for the state as a whole. The species is known to shift colony locations as habitat conditions change, and in the absence of comprehensive surveys it can be impossible to determine if birds may have relocated. That said, the near lack of *any* evidence of the species along surveyed stretches of the Baker and Pemigewasset rivers is perhaps more disturbing, and may be indicative of the broader decline.

More reassuring is the observation, at least along the rivers in the Merrimack watershed, that recreational river use seems unlikely to pose a significant threat to Bank Swallow colonies. If recreational use is similar along other rivers, the need for outreach may be less critical, and should instead focus on abutting agricultural landowners and gravel pits.

In July 2017, several regional experts on aerial insectivores convened for a meeting in Massachusetts to discuss the current state of knowledge of declining aerial insectivores, with a focus on swifts and swallows. The general consensus was that – with a handful of exceptions – declines are more likely to be the result of factors operating during the non-breeding season. One exception certainly includes the impacts of altered river hydrology (dams, bank stabilization) on Bank Swallow nesting habitat, and more observations in impacted river reaches would be valuable. None of the river segments surveyed in 2017 are subject to significant alterations in this regard, and future work in New Hampshire should broaden its scope to include rivers such as the Connecticut, where impounding may have more effects. In addition, any survey efforts in subsequent years should continue to explore the rivers visited in 2017 and perhaps collect more detailed data on habitat variables and population size.

Table 1. Summary of initial efforts to map and ground-truth Bank Swallow habitat in New Hampshire. See Figure 1 for locations of river segments.

River	Suitable Stretch (mi)	Amount Surveyed (mi)	Number of Banks	Sites with holes	Sites with swallows
A. Saco	25	N/A	N/A	N/A	N/A
B. Pemigewasset	20	6.5	4	0	0
C. Baker	25	12.5	23	1	0
D. Upper Merrimack	16	12	13	4	3
E. Soucook	11	Not surveyed in 2017			
F. Suncook	12	Not surveyed in 2017			
G. Souhegan	15	Not surveyed in 2017			

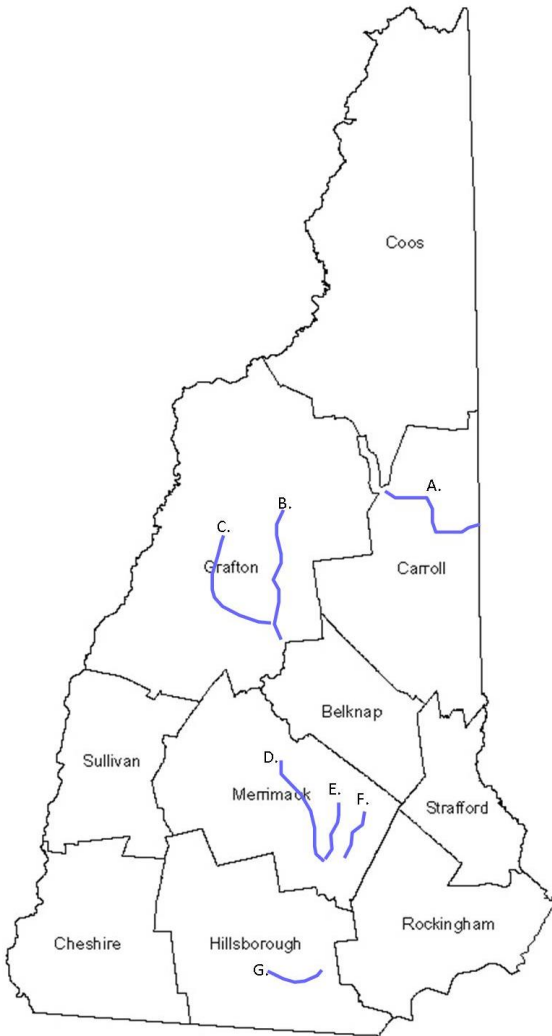


Figure 1. County map of New Hampshire showing locations of river segments initially prioritized for Bank Swallow habitat assessment. See Table 1 for river names.