CHIMNEY SWIFT (*CHAETURA PELAGICA*) USE OF BRIDGE DEBRIS DEFLECTOR COLUMNS

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Bridges and culverts provide daytime roosting habitat for a number of bat species, including some of conservation concern. While assessing the importance of bridges and culverts for bats in Mississippi, we discovered several Mississippi bridges, particularly those designed with debris deflector columns (Figure 1), contained a significant number of bats. Interestingly, some of these bridges were also occupied by Chimney Swifts (*Chaetura pelagica*), and showed evidence of Chimney Swift nesting activity.

Bridges equipped with debris deflector columns are not a common design implemented in Mississippi. Debris deflector columns are typically made of concrete, are wedge-shaped, and are hollow throughout the column's interior. The upstream side is enclosed, and the downstream side is open. Each debris deflector column has multiple square posts that run vertically up the interior walls. This provides many corners inside and constricts sections of the column interior, forming distinct "chambers". The back chambers receive very little if any light, an element important for roosting bats and Chimney Swifts.

Chimney Swifts and Chimney Swift nests were observed within two debris deflector columns of one bridge in northern Panola County, Mississippi, during July 2011 (Figure 2). Both nests were approximately head-height, and were on the walls of the

Figure 1. Typical debris deflector columns. Photo by Kathy Shelton.

Figure 2. Chimney Swift near nest inside a debris deflector column during July 2011, northern Panola County, Mississippi.

vertical posts separating the column interior into chambers. There were signs of previous nests near the intact nests. Ceiling heights within the column were ~15-20 ft, and the length of the entire column was ~40-50 ft. At the time of observation, dense shrubby vegetation surrounded the entrances to the columns resulting in very low light conditions in the column interiors. Humidity within the column interiors was notably higher than outside, and the mud floors of the columns were prone to fluctuating water levels depending on stream conditions. Though the interiors of these columns were large, it appeared that only one pair of Chimney Swifts and their offspring occupied each column. The debris deflector columns of this bridge also supported a muskrat lodge and a maternity colony of Rafinesque big-eared bats (*Corynorhinus rafinesquii*; in the dozens) in one column and Southeastern myotis (*Myotis austroriparius*; in the hundreds to over 1,000) in the other.

On 11 January 2017, a Chimney Swift nest was observed while surveying a debris deflector column of a bridge in central Jefferson County, Mississippi (Figure 3). The nest was located on the north wall ~15 ft from the entrance of the debris deflector column and ~6 ft above the floor. The debris deflector column was ~25 ft long, and the floor to ceiling distance was ~12 ft. The bridge was surrounded by a combination of mixed pine/hardwood forest, agriculture fields, and rural residential area. The substrate was made up of compacted mud which covered the floor. No Chimney Swifts were present, but two big brown bats (*Eptesicus fuscus*) and one Rafinesque's big-eared bat were observed.

We have surveyed ~140 bridges within the past six years. Of those, 11 bridges were confirmed with debris deflector columns, four were recorded as not having debris deflector columns, and 125 were not specified. Those 11 bridges had 46 debris deflector columns, and 30 of the 46 have been surveyed. Twenty-five of the 30 debris deflector columns had bats present, and at least three of them had evidence of Chimney Swifts

Figure 3. Chimney Swift nest inside a debris deflector column during January 2017, central Jefferson County, Mississippi.

cohabitating with bats. The number of debris deflector columns with Chimney Swifts could be higher because the primary objective of these surveys was to gather information on bat populations, and Chimney Swift occupancy may not have always been recorded. To the authors' knowledge, these are the only known instances of Chimney Swifts nesting and roosting within debris deflector columns, and in close proximity to maternity roosting bats (Figure 4). These bats, like Chimney Swifts, historically roosted in tree cavities, but have adapted to roosting in man-made structures post-European settlement. Debris deflector columns may be a suitable, albeit unintentional, analog to the giant cypress, tupelo, or sycamore trees that once dominated the bottomlands of Mississippi and supported a bevy of wildlife in their ancient, hollowed interiors.

Figure 4. Chimney Swifts near Southeastern myotis within a debris deflector column during July 2011, northern Panola County, Mississippi.