



Cliff swallows gathering mud. Photo credit: Dan Loran

# WING-FLAPPING BY MUD-GATHERING CLIFF SWALLOWS: ADDITIONAL COMMENTS

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Dan Loran's photographs of cliff swallows (*Petrochelidon pyrrhonota*) in the June 2015 issue of *Blue Jay*<sup>1</sup> clearly show the birds fluttering their wings above their backs as they gather mud for their nests, in the tight flocks that are typical of this behaviour.<sup>2,3</sup> Each bird raises its tail slightly above the horizontal and flutters its wings above the back while pecking mud into a pellet that will be added to the gourd-shaped nest that usually abuts adjacent nests, in dense colonies.<sup>2,4</sup>

Why do cliff swallows flap their wings while gathering mud? An early suggestion was that wing-fluttering prevents cliff swallows from sinking and sticking in the mud and soiling their feathers.<sup>5</sup> This explanation does not extend to the solitary nesting barn swallow (*Hirundo rustica*), however, which also builds mud nests but does not similarly flap the wings when gathering the mud.

More recently, Robert Butler

proposed that wing flapping by mud-gathering cliff swallows facilitates avoidance of copulations forced on females while they are gathering mud.<sup>4</sup> This hypothesis was based on data collected for male bank swallows (*Riparia riparia*), another species of swallow that nests in dense colonies, but in burrows constructed in sand banks. Male bank swallows escorted their mates when away from the nests to guard against "promiscuous copulations". This behaviour was interpreted as "mate guarding"<sup>6</sup>, and that extra-pair copulations were attempted on the ground.<sup>7</sup> In the cliff swallow, one member of a mated pair guards the nest while the other gathers mud<sup>3</sup>, which precludes guarding the mud-gathering female.<sup>4</sup>

Butler observing that wing-fluttering by mud-gathering cliff swallows became more frequent as flock size increased and during the onset of egg laying when females were most fertile. He tested the hypothesis by recording the frequency of "copulation attempts" by males on taxidermic models of cliff swallows placed at mud-

gathering sites, some with wings extended above the back, the others with wings folded against the body.<sup>4</sup> He predicted that males would attempt to land on the backs of models with folded wings more frequently than on swallows with extended wings. Although the results were not significant, fewer attacks were recorded on models of mud-gathering females whose wings were extended versus those with folded wings.<sup>4</sup>

1. Loran, D (2015) Cliff Swallows are gathering mud. *Blue Jay* 73:87-88.
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3. Emlen JT Jr (1954) Territory, nest building, and pair formation in the Cliff Swallow. *Auk* 71:16-35.
4. Butler RW (1982) Wing fluttering by mud-gathering Cliff Swallows: avoidance of "rape" attempts? *Auk* 99:758-761.
5. Brown FA (1910) Cliff Swallows. *Bird-Lore* 12:137-138.
6. Beecher MD, Beecher IM (1979) Sociobiology of Bank Swallows: reproductive strategy of the male. *Science* 205:1282-1284.
7. Hoogland JL, Sherman PW (1976) Advantages and disadvantages of Bank Swallow (*Riparia riparia*) coloniality. *Ecological Monographs* 46:33-58.