

**Associations of Cave Swallows with Cliff and Barn Swallows.**—Selander and Baker (Condor, 59, 1957:345–363) found no instances of Cave Swallows (*Petrochelidon fulva*) and Cliff Swallows (*Petrochelidon pyrrhonota*) associating in Texas and suggested that where the two species are sympatric, as in Texas and New Mexico, nesting of *fulva* is restricted to caves by competition with *pyrrhonota*. Later, Whitaker (Condor, 61, 1959:369–370) recorded Cave Swallows in mixed flocks with Cliff Swallows and Barn Swallows (*Hirundo rustica*), foraging about buildings near Cuatro Ciénegas, Coahuila, México. The Cave and Barn swallows nested together in an old mill and this occurrence is the only reported instance on the mainland of North America of Cave Swallows nesting with another species of swallow. Wetmore and Swales (U.S. Nat. Mus. Bull. 155, 1931:320) reported that in the Dominican Republic Cave Swallows “nested at times in company with the martin.”

It seems worthwhile to mention other instances when Cave, Cliff, and Barn swallows have foraged and/or nested together. The most notable occurrence was in the village of Sierra Vieja, Zacatecas, México, about 63 miles northeast of the city of Zacatecas. In April, 1961, I found all three species nesting throughout the village but only in one house did I find the three nesting together. One Cave Swallow nest and one Cliff Swallow nest were side by side on a wooden beam across the ceiling and three feet away on the same beam was a Barn Swallow nest. One other Barn Swallow nest and two other Cave Swallow nests were in the same room and all the nests were occupied at the time. Remnants and mud scars showed the former positions of other nests.

Most of the Cliff Swallows nested in a barn while the Cave and Barn swallows, and a few other Cliff Swallows, occupied other buildings. The birds foraged in mixed flocks and there appeared to be no conflict between them.

Because of the aridity around Sierra Vieja, the only mud available for nest construction was at a watering area for stock. At certain hours of the day water is drawn from a well and poured into a trough. The water that spills over onto the ground forms mud and it is only a relatively short period of time each day that the mud is of the right consistency for nest construction.

Throughout the arid region of north-central México from Zacatecas and San Luis Potosí northward through eastern Durango and Chihuahua, western Tamaulipas and Nuevo León, and throughout Coahuila, Cave and Barn swallows can be found in almost any village. The Cave Swallow is less frequently observed but where both species occur in the same village they often utilize the same adobe structures. The birds are easy to spot since they forage low over the villages and can be seen flying in and out of buildings.

In the United States the three swallows have been observed to forage together in Texas and New Mexico. In August, 1959, I observed a single Cliff Swallow fly in a flock of about 60 Cave Swallows around the entrance to Vandalized Cave in Carlsbad Caverns National Park, New Mexico. In October, 1960, I found Cliff Swallows flying with flocks of Cave Swallows around the Devil's Sinkhole and Dunbar Cave, Edwards County, Texas. These caves are nesting sites for Cave Swallows and the Cliff Swallows were not observed to enter. On April 8, 1961, two Cliff Swallows and one Cave Swallow were observed foraging over fields seven miles east of Fort Stockton, Pecos County, Texas. For a long period of time the birds sat side by side on a telephone wire with no conflict between them. On May 8, 1961, a large, mixed flock of Cave, Cliff, and Barn swallows foraged over highway 180 near the Texas-New Mexico border. In this area Cave Swallows commonly nest in the nearby Guadalupe Mountains, the Cliff Swallows in highway culverts, and the Barn Swallows around dwellings along the nearby Black River. On May 31, 1961, one Cave Swallow was observed flying with about 20 Cliff Swallows around a culvert 12 miles east of Sanderson, Terrell County, Texas. The latter nested inside the culvert and on subsequent trips to this locality I did not see the Cave Swallow again.

The association of Cave Swallows with Barn Swallows is a common occurrence, especially in the hot, arid regions of México where they of necessity nest together in villages where some water and mud is available. The association of Cave Swallows with Cliff Swallows is a far lesser occurrence, due primarily to the latter's desire for environments other than hot, arid, regions. But because there are occasional associations without conflict there does not seem to be the competition suggested by Selander and Baker (*op. cit.*) between these closely related species.

These data were obtained in the course of studies on Cave Swallows supported by a grant from the National Science Foundation and the National Park Service, United States Department of the Interior.—JAMES K. BAKER, *Carlsbad Caverns National Park, New Mexico, January 8, 1962.*