Cave Swallow range continues to expand

Cliff and Barn swallows may be displaced from their former nesting sites by the continued expansion of the Cave Swallow

Paul C. Palmer

SINCE THE EARLY 1970S, R.F. MARtin and many others have documented a phenomenal expansion of the range of the Cave Swallow (*Hirundo fulva*) in Texas. That range expansion has been accompanied by a pronounced breakdown of the former segregation of the species from others of its genus; most of the new nesting colonies have included Barn Swallows (*Hirundo rustica*) and many have included Cliff Swallows (*Hirundo pyrrhonota*) (Oberholser 1974; Martin 1974; Martin and Martin 1978; Kutac 1982). The new nesting sites have been concrete highway bridges and culverts. It has been shown clearly that hybridization has occurred at some of those sites (Martin 1980).

By 1978 the range expansion of the Cave Swallow had extended southward and eastward to include Atascosa and Duval counties, probably Live Oak County, and possibly Jim Hogg and Bexar counties (Martin and Martin 1978). This expansion was speedier than the printers of Texas A and M University Press. By the time Rappole and Blacklock's excellent *Birds of the Texas Coastal Bend* (1985) appeared, showing the Cave Swallow as hypothetical for the nine counties covered, the species had already been fully documented in some of those counties.

The presence of colonies of Cave Swallows was noted in *American Birds* in 1984 not only in Jim Hogg, Brooks, and Duval counties, but in Kleberg, one of the counties of the Texas Coastal Bend. Steve Labuda of Santa Ana National Wildlife Refuge discovered and Thomas Pincelli reported a nesting colony, including all three species, under a concrete bridge on SH 285 at Salado Creek, west of Riviera in southern Kleberg County (Lasley and Sexton 1984; Pincelli *pers. comm.*). Cave Swallows returned to that site in 1985 and 1986, despite destruction of the original bridge. By summer 1985, Richard Albert, Charles Clark, and others had reported nesting colonies in two other Texas Coastal Bend counties, San Patricio and Jim Wells (Lasley and Sexton 1985).

On April 27, 1986, my wife, Nancy, and I found Cave Swallows at nests under a concrete bridge on SH 141 at Santa Gertrudis Creek eight kilometers west of Kingsville, Kleberg County. While talking about the discovery with John Rappole of the Caesar Kleberg Wildlife Research Institute and Mark Kopeny, a graduate student from North Dakota in south Texas studying the breeding ecology of White-tailed Hawks, I ventured the not-entirely-idle speculation that the Cave Swallows might very well have reached US 77. On May 12, 1986, Nancy and I set out in the afternoon to test that hypothesis. Within two hours we found mixed breeding colonies of Barn and Cave swallows at five locations along US 77 in Kleberg and Kenedy counties.

US 77 is the only north-south highway through those counties. The swallow colonies were located under concrete bridges along the highway and in concrete culverts under it. One of the sites was at Ebanito Creek, 3.5 kilometers south of Ricardo. Another was 8.75 kilometers south of Ricardo. The smallest was at the largest bridge, crossing Los Olmos Creek, the Kleberg-Kenedy county line. The fourth site was 4.2 kilometers south of Los Olmos Creek at culverts which serve for moving livestock between pastures east and west of the divided highway. The fifth was under a bridge over another cattle run 2.8 kilometers south of Sarita, the county seat of Kenedy County.

On May 16, 1986, we discovered a small mixed colony including at least one pair of adult Cave Swallows on the nest within the Kingsville city limits, where US Bus 77 crosses Escondido Creek. By May 18, a second pair of Cave Swallows was present at that site.

May 19, 1986, I found two colonies including Cave Swallows in Nueces County: under a concrete bridge on US

77 1 5 kilometers north of Driscoll, and in Bishop where US Bus 77 crosses Carreta Creek. Reports of a Cave Swallow colony on US Bus 77 in Sinton, San Patricio County, proved to be mistaken; that site was occupied exclusively by Cliff Swallows.

It can be rather difficult to distinguish Cave Swallows from Cliff Swallows unless viewing conditions are excellent. Sorting out their nests is less of a problem. A Cliff Swallow nest is almost always a recognizable gourd or bottle shape, bulbous with a narrow entrance. These nests are placed at odd angles and are often attached to one another. In culverts and under bridges they are usually built at the intersection of wall and ceiling (or vertical and cross-member) and are attached to both. Cave Swallow nests are shaped like half a cup, attached to a wall.

Separating the Cave Swallow and Barn Swallow nests can be a bit more difficult, since both are half-cup-shaped. There are useful but not absolute rules of thumb to follow. Generally the Cave Swallows build very close to the ceiling and use almost nothing but mud in their nest structure, although they do line the nest with fiber. Barn Swallows are likely to build lower, leaving space to fly in and out of the nests easily. They also use much more plant and/or animal fiber in building their nests, sometimes making them seem positively shaggy. Cave Swallows tend to prefer a flared rim or lip on their nests and often build complete or partial sides which rise a few centimeters above the rim of the cup, sometimes to the ceiling (Martin and Martin 1978; *pers. obs.*). Barn and Cave swallows also attach their nests together condominium-fashion at times and don't always follow the "rules" concerning nest shape and placement.

When one becomes fairly adept at sorting out the nest forms, it is occasionally possible to determine exactly where one species began to remodel or build onto a nest originally constructed by another species. This can be very useful in trying to determine the sequence of habitation at a given site and was often helpful for this study.

Efforts were made to estimate the numbers of birds of each species at the sites we found. The largest colony was the one south of Sarita; it contained 112 nests, all but 20 under the east span. A few (four to six) were Cliff Swallow nests, but we identified no Cliff Swallows at the site. The nests may have been from previous breeding seasons. Of the roughly 200 birds present, 110–120 appeared to be Cave Swallows, with the rest being Barn Swallows.

There were approximately 80 nests at the site 4.2 kilometers south of Los Olmos Creek. Because of the cattle fences it was not possible for us to examine them closely. About 60 percent of the more than 100 birds we observed were Cave Swallows. The others were Barn Swallows. We found no Cliff Swallows or nests of that species at the site.

We were able to locate only five nests at the Los Olmos Creek site. None were of the Cliff Swallow type. One pair of Cave Swallows was flying about at the south end of the bridge. All the remaining birds we identified were Barn Swallows.

At the Ebanito Creek site there were 19 nests; all were either Cave Swallow or Barn Swallow types. Over 30 birds were observed; about one-half were Cave Swallows and one-half Barn Swallows.

At the site 8.75 kilometers south of Ricardo there were 14 nests, none of the Cliff Swallow type. We identified six Cave Swallows and 18 Barn Swallows. There were no Cliff Swallows present.

Not possessing a boat or raft, we could not get a reliable count of nests at the Escondido Creek site in Kingsville, despite the best efforts of our friend, Sharon Bartels. There were no Cliff Swallow nests among those we saw. At least one adult Cliff Swallow was present, however. Most of the birds were Barn Swallows; we counted four adult Cave Swallows.

At the site 1.5 kilometers north of Driscoll I found 13 nests, all of the forms characteristic of Cave and Barn swallows. Of the 24–30 birds we saw there at least two were Cave Swallows; about 10 were Barn Swallows. Light conditions and distance made it impossible for us to be certain of the others.

We were not able to make any reliable count of nests or birds at the Bishop site. At least one pair of Cave Swallows was present along with several Barn Swallows.

We examined two nests at the site west of Kingsville on May 3, 1986. One was empty; the other contained five eggs. On May 10, both Cave and Barn swallows were incubating at that colony.

On May 12, we examined four nests at the site south of Sarita. One was empty; two contained four eggs each; and one contained two nestlings. The nestlings were probable hybrids, having chestnut foreheads, forked tails with white spots, and cinnamon rumps. Martin's (1980) research has shown that those young that look like hybrids probably are hybrids. I was not able to discover which adults were associated with the nest containing the apparent hybrids. On May 18, numerous nests at that site had nestlings, others eggs, and the nest which contained the apparent hybrids six days earlier was empty Many young were present in the colony May 28.

We tried to find Cave Swallows in nesting colonies at several places east of US 77 in Kleberg County. We found none, although Barn Swallows were seen at most suitable sites and a mixed group of Cliff and Barn swallows was present at one site. We could not explore Kenedy County east of US 77 due to lack of access, but knew of no likely nesting sites to examine in any case. It appears that US 77 marks the eastern edge of the Cave Swallow breeding range as of summer 1986, almost certainly in Kleberg County, and probably in Kenedy and Nueces counties as well.

Thirty years ago, R.K. Selander and J.K. Baker (1957) speculated that the then severely limited range of the Cave Swallow in Texas might have resulted from failure in competition with Cliff Swallows for nesting niches. Four years of irregular observations of the recent rapid expansion of that range have created in this observer the strong impression that the Cliff Swallow is now losing ground to the Cave Swallow. Possibly the Barn Swallow is also being evicted from some of the nesting sites it once dominated. Gene Blacklock, Coordinator of Environmental Education for the Welder Wildlife Foundation, shares that impression (Blacklock *pers. comm*). Fragmentary data gathered from breeding bird surveys and additional personal observations made in June and July 1986 provide some evidence to support the hypothesis.

Breeding Bird Survey reports by Andrew O'Neil for the Randado route, which begins in Jim Hogg and ends in Duval County, show Cave Swallows present at three stops in May 1986. At Stop number 12 30 Cliff Swallows and eight Cave Swallows had replaced the Barn Swallows which exclusively occupied the site in 1984 and 1985. At Stop number 46, where four Cliff Swallows had been counted in 1984, there were

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We found no Cave Swallow nesting colonies east of US 77 in 1987, but in April 1988 Nancy and I found three such sites, and Sharon Bartels found a fourth. Nancy and I found another in June. All were in Kleberg County. All three species were present at two of the locations, with Cliff Swallows by far the least numerous. Barn Swallows appeared to be the most numerous at all five sites. The largest of the sites is also the farthest east and nearest salt water; it is at a new bridge over Radicha Creek on FM 772, approximately 10 km east-southeast of Ricardo.

Various additional pieces of evidence support the hypothesis that Cave Swallows are taking over niches formerly utilized by Barn and Cliff Swallows. 19 June 1987 we photographed nests being used by Cave Swallows at a McMullen County site; all save one of 43 nests being used by them showed clear signs of having been built originally by Barn Swallows. 13 March 1988 in Zavala County Nancy and I found and photographed a former Cliff Swallow nesting site which had been converted into a Cave Swallow site. 14 May 1988, while conducting the Randado route breeding bird survery, Andrew O'Neil found 175 Cave Swallows at 13 stops and only one Cliff Swallow. On his McMullen County Breeding Bird Survey in June 1988 Blacklock found 107 Cave Swallows, 6 Barn Swallows and no Cliff Swallows.

As of 28 May 1988 the swallow nesting site under the US Bus 77 bridge in Sinton, San Patricio County, was still exclusively occupied by Cliff Swallows.

no Cliff Swallows and 26 Cave Swallows. No swallows of any species were counted at the stop in 1985. At Stop number 50 in 1984 there were 30 Cliff Swallows and 28 Cave Swallows; in 1985 there were six Cliff Swallows and 30 Cave Swallows; in 1986 there were no Cliff Swallows and 45 Cave Swallows. Only at Stop number 26 was the pattern reversed. Two Cliff, ten Barn and six Cave swallows were counted there in 1985; there were 12 Cliff, six Barn and no Cave swallows recorded in 1986 (O'Neil 1986).

Information from breeding bird surveys conducted by Richard Albert on the Catarina route in Dimmit County indicates that one site formerly occupied by Cliff Swallows has been completely taken over by Cave Swallows (Albert *pers. comm.*).

On June 17, 1986, I accompanied Gene Blacklock, Sharon Bartels (a Welder Foundation volunteer), and Nita Hazle (Blacklock's assistant, a summer intern and Texas A and M University biology student), as Blacklock conducted an unofficial Breeding Bird Survey along SH 624 in McMullen County. We examined several swallow nesting colonies. In each of them Cave Swallows were either in exclusive possession or clearly predominant. In culverts containing Cliff Swallow nests, apparently from previous seasons, we saw no Cliff Swallows. Many of the other nests, judging from the amount of plant material used in their construction and their location on the culvert walls, were originally built by Barn Swallows but had been remodeled by Cave Swallows. According to Blacklock (*pers. comm.*) those sites contained only Barn Swallows and Cliff Swallows until recent years. Not only have Cave Swallows displaced the other species at the sites, but their numbers have increased markedly.

A similar development seems to have occurred in Brooks County. On July 3, 1986, Andrew O'Neil, Nancy and I observed two sizable nesting colonies near Falfurrias, the county seat. According to O'Neil the sites had been utilized only by Barn and Cliff swallows prior to 1984 (O'Neil *pers. comm.*). Now they are predominantly, if not exclusively, occupied by Cave Swallows.

While these scattered bits of information are inadequate as a basis for any firm conclusion, they do suggest that the Cliff and Barn swallows are yielding nesting niches in the face of the continued aggressive range expansion by the Cave Swallow. If such a pattern does exist, it should be clearly discernible from a more thorough examination of recent breeding bird surveys throughout the nesting range of the Cave Swallow.

It will be interesting to watch what happens in the next few years at Cliff Swallow nesting sites such as the one in Sinton and to note how both Cliff and Barn swallow populations fare at those nesting sites they share with the Cave Swallow elsewhere.

ACKNOWLEDGMENTS

Thanks to Richard O. Albert, Gene W. Blacklock, Andrew W. O'Neil, and Thomas Pincelli for generously sharing their data and ideas. John S. Westmoreland and Craig S. Bartels assisted with transportation. Special thanks are due Nancy B. Palmer and Sharon G. Bartels. Both provided transportation and helped with observations. Nancy lent her professional skills to improve my writing. Sharon put the draft through her word processor and kept me humble by beating me at *Trivial Pursuit*

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——*Department of History, Texas A & I University, Kingsville, TX 78363*