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CAVE SWALLOWS WINTERING ON THE COASTS OF GEORGIA AND THE CAROLINAS: A PRELUDE TO BREEDING?

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Abstract.—This study provides evidence that Cave Swallows (*Petrochelidon fulva*) belonging to the southwestern North American population (*P. f. pallida* [“*pelodoma*”; American Ornithologists’ Union 2000]) winter on the southeastern Atlantic coast of North America. Six swallows were collected or photographed during October-February in the Carolinas and Georgia and have been identified as belonging to the *P. f. pallida* group. Two juvenile swallows collected in late February on the central coast of South Carolina had heavy fat deposits and were actively molting, which together is evidence that winter food supply had been sufficient. The study provides new information that prebasic one (juvinal) molt of Cave Swallows continues after the migration period, and may last into March. I suggest that Cave Swallows wintering in the Southeast may precede the establishment of breeding populations, as has been found for Cave Swallows wintering in southwestern North America.

Since 2003, Cave Swallows in southeastern North America have lingered into winter (in the Carolinas, ≥ 13 reports from 4 January to 11 February, 2003-2005). This study presents evidence that Cave Swallows are wintering on the central coast of South Carolina, and provides information on the body condition and molt of three juveniles collected in winter. The breeding range expansion of Cave Swallows in the Southwest was accompanied by an increase in the number of wintering birds. Similarly, the appearance of wintering birds in the Southeast may be an indication that breeding has already begun, or is about to begin there.

METHODS

Following McNair and Post (2001), I obtained information on the occurrence of Cave Swallows by reviewing national (*North American Birds*) and regional periodicals (*Chat*, *Florida Field Naturalist*, *Oriole*), through spring 2007. As noted by Brinkley and Lehman (2003), Cave Swallows may frequently be over-reported, particularly during peri-

ods when they are common, such as in autumn 2002, so in summarizing occurrence reports, I used only one count (the highest) for each site each season. I did not include reports submitted by observers of unknown experience. Except for the bird captured in Georgia, subspecies identifications were confirmed by comparisons with museum skins.

RESULTS

Three winter specimens of Cave Swallows collected on the coast of South Carolina are from the *pallida* group. The first, a juvenile (first-year) male was found dead at McClellanville, Charleston County, South Carolina on 18 December 2004. It was not weighed, but it had no subcutaneous fat, and the pectoral muscles were concave. Each testis was 2.2×1.1 mm. Its wing molt was 27% complete ($42\frac{1}{2}/160$, a score based on the condition of 16 flight feathers, where each new feather is scored 10 when fully grown). Primary one (P1) was half-grown; P2: $\frac{3}{4}$ grown; P3: fully grown (new); P4-9: old; secondaries (S): 1-7: old. All rectrices were old.

Two specimens were taken near North Litchfield Beach, Georgetown County, South Carolina, on 20 February 2006. They were members of a flock of up to 50 Cave Swallows that had been in coastal Georgetown County since late November 2005. On 20 February, ≥ 25 Cave Swallows, accompanied by about 40 Tree Swallows (*Tachycineta bicolor*), foraged for small insects just above the water surface. It was rainy and cool (55°F). Between foraging bouts, the Cave Swallows roosted on beams under the roof of a small shed. Groups of 6-15 birds roosted together, 2-3 birds occasionally sitting in contact.

The first specimen from this flock was a juvenile male (left testis, 2.0×1.2 mm). It had heavy fat deposits, and weighed 19.1 g. Its wing length (chord) was 105.0 mm and tail length was 49.3 mm. The stomach and esophagus contained fragments of flies (gnats or midges). Its molt was 75% complete (P1-7: new; P8-9: old; S1-4: new; S5-6: old; S7: new). Tail molt was balanced, and nearly complete (rectrices 1-5: new; rectrix 6: old.)

The second swallow was a juvenile female (ovary slightly enlarged, 3.9×4.0 mm). It was very fat, and its weight was 21.2 g. Its wing length was 108.0 mm, and tail length was 45.9 mm. The stomach and crop were full of fly fragments. Molt was 66% complete (P1-6: new; P7: $\frac{1}{2}$ grown; P8-9: old; S1-4: new; S5-7: old). Rectrices 1-2 were new, and rectrices 3-6 were old.

DISCUSSION

Originally confined to Mexico, Cave Swallows of the southwestern group (*P. f. pallida*) were found nesting in Texas in 1914 (Thayer 1914, 1915) and in New Mexico in 1930 (Johnston 1960). Breeding range expansion began in the early 1970s in Texas (Oberholser 1974), and was

correlated with Cave Swallows' use of highway culverts and bridges for nesting (Martin 1974, Kosciuch et al. 2006). By 1986 the swallows had colonized extensive areas of western and southern Texas (West 1995). By 1996 Cave Swallows nested as far east as the Sabine River, Louisiana (Cardiff 1997).

Since 1999 Cave Swallows have been recorded regularly on the southeastern coast, the largest numbers in autumn 2002 (North Carolina: eight reports, 80 birds; South Carolina: seven reports, 18 birds). Five Cave Swallows examined in the hand belong to the southwestern population (*P. f. pallida*), rather than the Caribbean-Florida (*P. f. fulva*) group (McNair and Post 1999, Lee et al. 2001, Beaton et al. 2003, present study) The first *P. f. pallida* specimen from eastern north America, described above, was found on Folly Beach, South Carolina, 31 October 1993 (McNair and Post 1999). In North Carolina an adult male was salvaged on 2 December 1999 at Ft. Macon (Lee et al. 2001). A Cave Swallow that was banded on Wassaw Island, Georgia, 14 December 2002 was photographed and identified as *P. f. pallida* (Beaton et al. 2003).

The present study shows that the first (juvenal) prebasic molt of *P. f. pallida* continues at least into late February. This molt is complete (West 1995), as is the adult prebasic molt, and thus the juvenal molt may continue into the breeding season, as does the adult's (Pyle 1997). Previously, Cave Swallows were reported to complete first prebasic molt before autumnal migration, and before mid-October (West 1995).

The fat deposits of the two February birds indicate that they had been able to obtain sufficient food during the winter, even while replacing flight feathers and initiating recrudescence of gonads. The results support the hypothesis of McNair and Post (2001), that Cave Swallows found on the southeastern coast in autumn and winter belong to the southwestern, rather than the to the Caribbean (*P. f. fulva*) population. In contrast, most vagrant Cave Swallows that have been found in spring on the Atlantic coast are *P. f. fulva*, and probably are migrants overshooting their breeding range in southern Florida (Tufts 1986, Robertson and Woolfenden 1992).

The appearance of Cave Swallows on the southeastern Atlantic coast in autumn is an example of a "reverse" migration; that is, post-breeding dispersal in a direction opposite to that of other migrating birds (McNair and Post 2001). Most Cave Swallows (73% of 291) that have been seen in the Carolinas in 1993-2006 have occurred during November and December. The remaining 27%, which were seen in January and February, may have been individuals that simply continued post-breeding dispersal (McNair and Post 2001), perhaps facilitated by mild winter weather. During the period in which Cave Swallows expanded their breeding range in the Southwest, they began wintering in

Texas; for example, in January 1988, flocks of 300-475 swallows were seen at several Texas localities (Lasley and Sexton 1988). In the Southeast the increase in numbers of overwintering Cave Swallows may be a prelude to their breeding in that region.

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