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Hybridization Between Clay-colored Sparrow and Field Sparrow in Northern Vermont

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ABSTRACT.—A male sparrow showing hybrid characteristics between Clay-colored (*Spizella pallida*) and Field sparrows (*Spizella pusilla*) was first observed in Grand Isle, Vermont, in 1997. In 1998, the same hybrid defended a territory and mated with a female Field Sparrow. The pair produced one fledgling. The hybrid's signature song was composed of the buzzy notes of a Clay-colored Sparrow rising to a final trill as if copying a Field Sparrow's accelerating clear whistles. *Received 18 Dec. 1998, accepted 9 May 1999.*

I have found only two previous records of Clay-colored Sparrows (*Spizella pallida*) and Field Sparrows (*Spizella pusilla*) cooperating at a nest. Finch and Smart (1974) mention, without further details, a Clay-colored Sparrow found breeding with a Field Sparrow at Rockefeller Institute, Dutchess County, New York; "young were taken for study." The one example of hybridization presented by Knapton (1994) is the account by Brooks (1980) of a trio of adults, a male Clay-colored Sparrow and a pair of Field Sparrows, at a nest near Millbrook, Dutchess County, New York; however, "the fledged young appeared identical to young Field Sparrows." Carey and coworkers (1994) refer to the same report as "possible" hybridization. Hybridization between these two species is not unexpected because of their close phylogenetic relationship (Patten and Fugate 1998). Examples exist of apparent crossbreeding between Clay-colored Sparrows and other *Spizella* species, and between Chipping Sparrow (*Spizella passerina*) and Brewer's Sparrow (*Spizella breweri*; Knapton 1994, Pyle and Howell 1996).

Clay-colored Sparrows are rarely reported in Vermont (Faccio et al. 1997, 1998). In contrast, Field Sparrows may be abundant in proper habitat such as the abandoned overgrown fields and pastures of Grand Isle, a town on Lake Champlain in northwestern Vermont. There, on 29 May 1997, I identified a Clay-colored Sparrow by its song which consisted of two long buzzes. At 09:30, 11:00, and 16:30 EST, for a total of 30 minutes, I listened to the sparrow sing from elevated perches in a grassy clearing surrounded by red cedar (*Juniperus virginiana*), staghorn sumac (*Rhus typhina*), and common barberry (*Berberis vulgaris*). This sparrow was relocated 650 m north on 2 June, and last heard on 5 June.

From 23 July through 14 August, I observed and recorded a second Clay-colored Sparrow in a similar clearing 300 m southwest of the original location. I recorded the songs on a microcassette recorder and transferred the songs to a computer using either Creative

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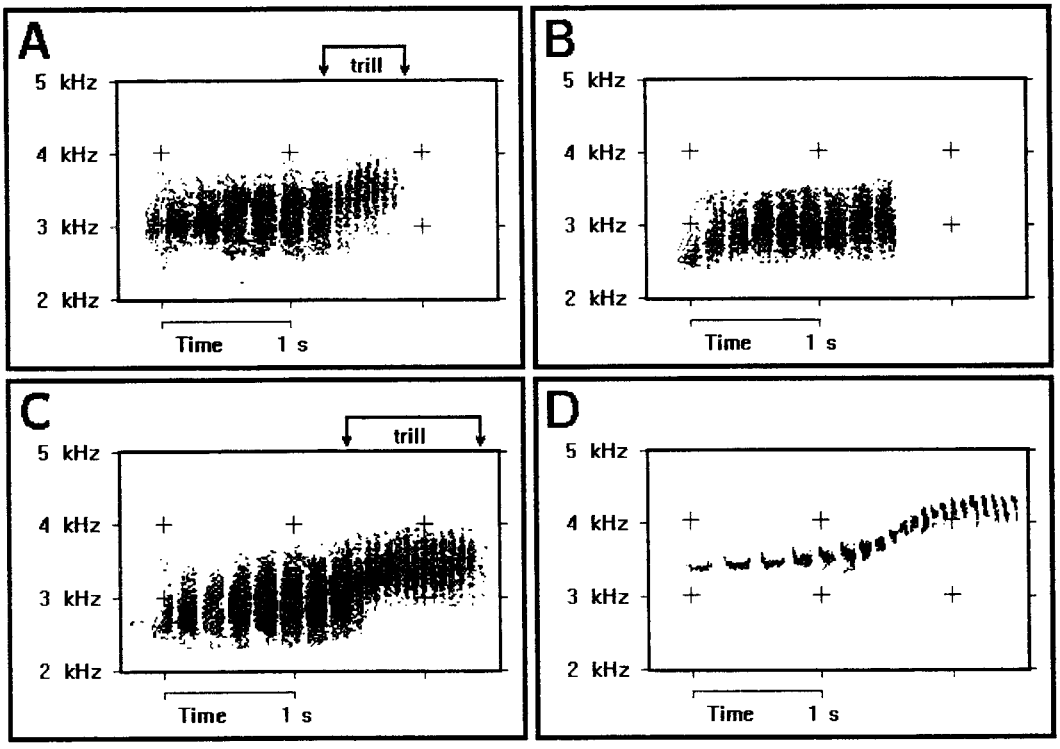

FIG. 1. Three sonograms illustrate the buzzy songs of the probable Clay-colored/Field Sparrow hybrid. A. Trilled version of the hybrid Clay-colored Sparrow's song recorded July 1997. B. Basic song of the same hybrid Clay-colored Sparrow recorded May 1998. C. Trilled version of the same hybrid sparrow's song recorded May 1998. The two trilled songs have a very similar pattern to a Field Sparrow's clear whistles as illustrated by D. D. A Field Sparrow's basic song recorded May 1998.

Technology's Sound Blaster Pro Voice Editor version 2.08, or Microsoft Windows Sound Recorder version 3.1. The sonograms were created in Windows 3.1 with Spectrogram (version 2.3; Horne 1995).

I assumed this second bird was a different Clay-colored Sparrow because its song, 5–8 short buzzes, was extraordinarily different from the first bird's song of two long buzzes. The second sparrow's song frequently ended with a buzzy trill that varied in duration (Fig. 1A). With the added trill, the song resembled a Field Sparrow's basic song (Fig. 1D). The sonograms show the similarity of the song pattern to a Field Sparrow song, and show the dissimilarity of the buzzy notes to the clear whistles of a Field Sparrow. The mimicry either was learned from Field Sparrows in the surrounding area (Knapton 1994) or perhaps was a product of hybridization.

Although the face markings of the second sparrow seemed somewhat indistinct, the plumage pattern was generally compatible with Clay-colored Sparrow. The wide central stripe and the streaking on the crown were typical of Clay-colored Sparrow. The shapes of the bill and the tail were also representative of Clay-colored Sparrow. However, the reddish tint of its plumage and the pink color of its entire bill caused me and other observers to accept it as a probable hybrid between a Clay-colored Sparrow and a Field Sparrow. Two observers thought the flank color at the bend of the wing was indicative of Field Sparrow parentage. The Vermont Bird Records Committee agreed with the hybrid designation at its November 1998 meeting (Nicholson, pers. comm.).

From 7–14 April 1998, Field Sparrows returned to the area. On 28 April, on the same territory that had been occupied by the hybrid in July and August of 1997, I found a bird

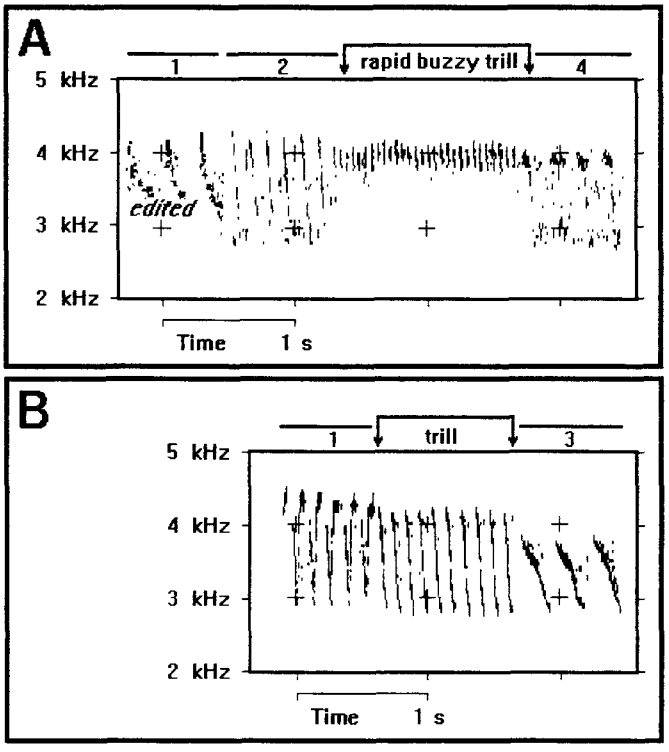

FIG. 2. A Clay-colored Sparrow's mimicry of a Field Sparrow's complex song as illustrated by two sonograms. A. The new Clay-colored Sparrow's four-part song recorded 8 July 1998. B. A Field Sparrow's three-part complex song recorded July 1998.

whose coloration matched that of the hybrid I had seen in 1997. Also, the bird's song was the same distinct vocalization of about eight buzzes (Fig. 1B) with trilled notes occasionally added (Fig. 1C), as heard and recorded in 1997 (Fig. 1A). According to Knapton (1994), Clay-colored Sparrows retain their song type from one year to the next.

On 23–24 July 1997, the hybrid sang rapid eight buzz songs interspersed with seven buzz songs having the added trill. The length of the trill varied; twice it was very short with only three notes. The repertoire from 25 July to 3 August consisted of five buzzes heard 14 times, seven buzzes heard 9 times, seven buzzes with a trill heard 17 times, eight buzzes heard over 50 times, and nine buzzes heard twice. Errors in judging sounds may have affected the true syllable count. The sonograms verify the softness of the initial buzz. In two variant seven buzz songs, the fifth syllable was abbreviated. One long song of faster buzzing was heard on 7 August. In 1998, the hybrid's songs were less variable. I heard few five buzz songs, and seven buzz songs without a trill were very scarce. Approximately 25% of the songs were seven buzzes with a trill; 75% were eight buzzes.

By 3 May 1998, the hybrid had moved about 100 m north. Singing occurred less frequently during the second half of May when the hybrid acquired a Field Sparrow as a mate. I made frequent observations throughout May and June and found no extra Field Sparrows within the territory. I did not observe any extra-pair copulations.

Nest inspections at 09:00–10:30 revealed no egg on 4 June, one egg on 5 June, two eggs on 7 June, and three eggs on 8 June, the first day that the Field Sparrow was brooding. On 19–23 June, the female sparrow sat on the nest, blocking viewing of the nest contents. Both adult sparrows carried food to the nest 21–26 June. On 28 June, the abandoned nest contained two infertile eggs. Both adults chaperoned me and chipped continuously as I at-

tempted to view the single fledgling at 07:45 and 13:35. The hybrid carried food on 2 and 5 July and continued to scold me throughout July. On 26 July, the hybrid guarded the juvenile. The two adults and the juvenile were still in close association.

The female Field Sparrow's reaction during my unsuccessful search for a second nest on 26 July indicated that a second brood existed. I saw the hybrid carrying food again on 5 August, a late date for assisting the first brood juvenile hatched approximately 40 days earlier. In December 1998 I found the second nest which was obscured by grass within a thicket of barberry centrally located in the 0.3 ha territory. This second nest contained one Field Sparrow egg. Since all 1997 Field Sparrow nests in the surrounding area were destroyed by ice accumulation during three days of freezing rain in January 1998, this undamaged nest provided additional evidence that the hybrid and its mate raised a second 1998 brood.

I did not hear the hybird singing from mid-June until 5 July, the day a new Clay-colored Sparrow began a four day encroachment upon the territory. The new Clay-colored Sparrow's song (Fig. 2A) closely resembled a Field Sparrow song (Fig. 2B). All songs of this new Clay-colored Sparrow were identical except for minor variations in length. The hybrid responded with its own songs (Fig. 1A–C) through 12 July.

The ability of some emberizid sparrows to learn other species' songs (Tasker 1955, Baptista et al. 1981), possibly useful in defense of territory, may also attract mates from closely related species. Albrecht and Oring (1995) indicated that the primary function of song for Chipping Sparrows is mate attraction rather than territorial defense. The song mimesis may result in occasional interspecific pairing of *Spizella* species. Unpublished accounts of *Spizella* mimesis include Chipping Sparrows and Clay-colored Sparrows singing each other's song (Bailey, pers. comm.) and a Field Sparrow singing a Chipping Sparrow song (unpubl. data).

The probable hybrid's unusual plumage, its atypical song, its pairing with a female Field Sparrow, and its intensive parental activity at the nest imply that crossbreeding between Clay-colored Sparrows and Field Sparrows occurs. A DNA study of these individuals might verify hybridization.

Note added in proof: The hybrid sparrow returned 5 May 1999 and eventually paired with a female Field Sparrow 9 July to 2 August. His songs in 1999 initially were identical to those in 1997 and 1998, but stopped including the trill during the last half of the breeding season.

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