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PUTATIVE CANYON TOWHEE × SPOTTED TOWHEE: A NEW INTERGENERIC HYBRID

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At an elevation of 1800 m on the outskirts of Colorado Springs, Colorado, among iron-rich hillsides laden with mixed piñon–juniper woodland and Gambel's oak thickets where Spotted Towhees (*Pipilo maculatus*) breed densely, a small population of the Canyon Towhee (*Melospiza fusca*) also resides. Along with scattered pockets of the species elsewhere in El Paso County, this population in Red Rock Canyon Open Space represents the northernmost site for the Canyon Towhee. The Canyon Towhee has been increasing in numbers and spreading slowly northward from its historic range in southeastern Colorado (B. Maynard pers. comm). In the fall of 2019, I documented an occurrence that might be characteristic of such edges of species' ranges.

On 21 and 22 November 2019 I photographed an interesting towhee in good light and from many angles (Figures 1–3). Colored overall like the Canyon Towhees it was feeding with, this individual stood out because of its smaller size, timid behavior, and odd dark smudges throughout the plumage. From its external features and behavior, I concluded that this bird was a Canyon Towhee × Spotted Towhee (*Melospiza fusca* × *Pipilo maculatus*) and so the first known hybrid between the genera *Melospiza* and *Pipilo*.

This individual resembled a Canyon Towhee in its rufous crown and overall tannish coloration, but several plumage oddities ruled out a pure individual of that species. A charred tinge characterized the upperparts, where the mantle showed a slightly streaked pattern, while the flanks were slightly brighter and buffy. The face and breast had blackish areas lacking in a Canyon Towhee, while slight pale markings in the lores and throat broke these dark tones. On the underparts, tan tones in the breast gave way to a white belly and the contrasting rufous of the undertail coverts. All this suggested a hybrid, and a potential identification challenge.

The 50% of their genome that offspring receive from each parent represents a random combination of each parent's genes. This means phenotypes of the same hybrid combination can be extremely variable, one reason why hybrids are notoriously often challenging to identify.

To eliminate a Green-tailed Towhee × Spotted Towhee (*P. chlorurus* × *P. maculatus*), a hybrid known to exhibit a phenotype not dissimilar from this individual, I noted several key marks. Overall, the bird had a tannish plumage reminiscent of a Canyon Towhee, with a tan that wrapped farther onto the venter than in either a pure Green-tailed or a pure Spotted Towhee. The buffy tinge in the lores, malar area, and throat resembled markings of a Canyon Towhee, where a hybrid with a Green-tailed Towhee as a parent would be expected to show white markings. The breast had a mottled buffy pattern similar to Canyon Towhee's, but darker, possibly as a result of Spotted Towhee influence. One would expect a grayer color in this area if one of the parents was a Green-tailed Towhee (see Figure 4).

Perhaps the most apparent feature of Canyon Towhee parentage was seen in the color of the undertail coverts. In the Spotted Towhee, the tawny undertail coverts are paler than the rufous sides, and in the Green-tailed Towhee the pale buff undertail coverts are paler than the grayish flanks. In this bird, the vent was contrastingly deeper rufous than the rest of the underparts, implying that a Canyon Towhee was one of the parents (see Figures 2 and 3).

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FIGURE 1. Canyon \times Spotted Towhee, 21 November 2019, Colorado Springs, Colorado. A mottled buffy pattern is visible in the breast, where any Green-tailed Towhee influence would not be expected to produce such a color.

Photo by David Tønnessen



FIGURE 2. Canyon \times Spotted Towhee, 22 November 2019, Colorado Springs, Colorado. The contrasting rufous undertail coverts are a feature of the Canyon Towhee, but not the Green-tailed.

Photo by David Tønnessen

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FIGURE 3. Lateral view of Canyon \times Spotted Towhee, 22 November 2019, Colorado Springs, Colorado.

Photo by David Tønnessen



FIGURE 4. Green-tailed \times Spotted Towhee, 26 November 2005, Ash Canyon, Arizona.

Photos by Jim Burns

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FIGURE 5. Spotted \times Collared Towhee, 9 April 2019, Cerro Patambán, Michoacán, Mexico.

Photo by Ricardo Arredondo

A third hybrid combination that may be considered is a Canyon \times Green-tailed Towhee, because of extensive gray in the plumage and lack of observable spots at the tips of the rectrices that might be expected if one of the parents was a Spotted Towhee. However, the blackish coloration in the face and whitish belly strongly support a Spotted Towhee as one parent. Furthermore, the only Green-tailed Towhees breeding in El Paso County occur 300 m higher in elevation, while the Spotted Towhee is the most numerous species of breeding bird in Red Rocks Canyon Open Space, making the latter far more likely.

Of possible locations within the range of the Canyon Towhee where such a hybrid might occur, Colorado Springs should be the least surprising. In Red Rock Canyon Open Space, the population of the Canyon Towhee in late 2019 numbered no more than four birds, perhaps all part of the same immediate family, making it difficult for them to find conspecific mates. The Canyon Towhee has colonized the Colorado Springs area since field work for the second Colorado breeding bird atlas, 2007–2012, though it was in southwestern El Paso County by the time of field work for the first Colorado breeding bird atlas, 1987–1995 (Colorado Bird Atlas Partnership 1998, 2016). Hybrids between distantly related species sometimes occur at range edges, where the population of one parental species has not yet reached a self-sustaining level.

Such a pattern has been well demonstrated by jays of the genus *Cyanocitta*. In 1969, four Steller's \times Blue Jay (*C. stelleri* \times *C. cristata*) hybrids were documented in Boulder, Colorado (Williams and Wheat 1971). At that time the Blue Jay had only recently expanded into Colorado's Front Range, and its populations were quite small. Today, Blue Jay numbers in that area are considerably higher, making a Blue Jay's chances of finding a conspecific mate much greater. But reports to www.eBird.org reveal that this same hybrid has been showing up in parts of the Pacific Northwest and southwestern Canada in more recent years, where the Blue Jay is still in the process of establishing new populations.

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A study of hybridization between the Black-capped (*Poecile atricapillus*) and Mountain (*P. gambeli*) chickadees in British Columbia (Grava et al. 2012) suggested a similar pattern. That research found that while the Black-capped and Mountain chickadees are typically reproductively isolated—Mountain Chickadees preferring coniferous woods and Black-capped Chickadees preferring deciduous trees—they interact in disturbed areas where deciduous regrowth following logging allows Black-capped Chickadees to establish themselves. This might be a result of the early successional stage of such environments, including cultivated plantings of coniferous trees in lowlands and plantings of deciduous trees in conifer-dominated areas resulting in one or both species colonizing in only small numbers, then hybridizing before the newly arrived species is well established.

Canyon Towhee populations in Colorado Springs are small and disjunct from one another and represent the northern fringe of the species' range. This weak presence seems to provide appropriate conditions for hybridization, paralleling the pattern in the jays and chickadees. However, more study is likely needed to recognize this as a phenomenon.

While the Canyon Towhee and Spotted Towhee have not been known to hybridize with each other before, each species has been documented hybridizing with other congeneric species of towhee. In Arizona, hybrids between the Canyon Towhee and Abert's Towhee (*Melospiza aberti*) have been photographed on several occasions (www.eBird.org). Most of these instances were in low foothills, where both species are numerous. In the genus *Pipilo*, the Spotted Towhee has been reported to hybridize with the Green-tailed Towhee and Collared Towhee (*P. ocai*) (Sibley and Sibley 1964), both species plumaged very differently from the Spotted Towhee. See Figures 4 showing a Green-tailed × Spotted Towhee, and Figure 5 illustrating a Spotted × Collared Towhee.

This particular Canyon × Spotted Towhee inhabiting Red Rock Canyon Open Space represents the first recorded hybridization between the genera *Melospiza* and *Pipilo*, despite vast areas of the Southwest where the two come in contact. The occurrence at this site on the fringe of the range of the Canyon Towhee is significant to our understanding of hybridization between distantly related species and exemplifies an intriguing phenomenon.

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“Featured Photo” by © David Tønnessen of Colorado Springs, Colorado: Apparent hybrid of a Canyon Towhee (*Melospiza fusca*) × Spotted Towhee (*Pipilo maculatus*), the first example of this combination.

