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RANGE EXPANSION OF THE BUFF-BREASTED FLYCATCHER (*EMPIDONAX FULVIFRONS*) INTO THE RINCON MOUNTAINS, ARIZONA

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ABSTRACT—We detected buff-breasted flycatchers (*Empidonax fulvifrons*) while conducting surveys in the Rincon Mountains, Arizona, in 2000 (n = 2), 2004 (n = 4), and 2005 (n = 5). Our detections represent the first records of buff-breasted flycatchers in the Rincon Mountains since 1911, suggesting that this rare species has recolonized a portion of its historical breeding range.

RESUMEN—Detectamos mosqueros pecho leonado (*Empidonax fulvifrons*) cuando condujimos muestreos en las Montañas Rincón, Arizona, en el 2000 (n = 2), 2004 (n = 4), y 2005 (n = 5). Nuestras detecciones representan los primeros registros de mosqueros pecho leonado en las Montañas Rincón desde 1911, sugiriendo que esta rara especie ha re-colonizado una porción de su área histórica de reproducción.

The breeding range of the buff-breasted flycatcher (*Empidonax fulvifrons*) within the southwestern USA has been reduced by >90% during the last century (Conway and Kirkpatrick, 2007). Breeding populations of buff-breasted flycatchers are now restricted to only 3 "sky island" mountain ranges (Chiricahua, Huachuca, and Santa Rita) located <100 km from

the USA-Mexico border in southeastern Arizona. Moreover, breeding populations within the USA have declined in recent years, and a range-wide survey in 2000 estimated the population at only 74 birds (Conway and Kirkpatrick, 2007). The buff-breasted flycatcher is considered a species of conservation concern in Arizona (Arizona Game and Fish Department, 1996; Latta et al., 1999) and in the southwestern region of the USA (U. S. Fish and Wildlife Service, 2002). Buff-breasted flycatchers face possible extirpation from the USA unless the breeding population increases or the species recolonizes parts of its historical breeding range. We report findings from recent surveys showing what seems to be a northward range expansion (approximately 70 km) of the buff-breasted flycatcher into its former breeding range in the Rincon Mountains, Arizona.

We surveyed buff-breasted flycatchers in montane forests of the Rincon Mountains in 2000, 2004, and 2005 as part of a larger study to inventory the breeding population of the species throughout southeastern Arizona (Conway and Kirkpatrick, 2007). The Rincon Mountains (2,641 m elevation) are located within Saguaro National Park, Pima County, Arizona and are part of the "sky islands": a group of approximately 40 high-elevation mountain ranges scattered throughout the southwestern USA and northern Mexico that are separated from one another by low-elevation desert basins (Warshall, 1994). The Rincon Mountains are situated approximately 70 km north of the Huachuca and Santa Rita mountains, the closest mountain ranges with known breeding populations of buff-breasted flycatchers. Within their breeding range in southeastern Arizona, buff-breasted flycatchers inhabit primarily Mexican oak-pine (*Quercus-Pinus*) woodland, but also ponderosa pine (*P. ponderosa*) and mixed-conifer forests between 1,600 and 2,600 m elevation (Conway and Kirkpatrick, 2001).

We established 13 survey routes that varied in length from 1.2 to 5.8 km in pine forest, mixed-conifer forest, and Mexican oak-pine woodland in the Rincon Mountains (Conway and Kirkpatrick, 2001). Using a handheld Global Positioning System receiver, we established survey points at 200-m intervals along trails, ridges, and canyon bottoms. We recorded the dominant forest type (sensu Brown, 1994) within 100 m of each survey point. Each year, from 30 May to 3 June, we conducted a single, morning survey (between 15 min after sunrise and 4 h after sunrise) along each of the 13 survey routes. We surveyed only 8 of the 13 routes in 2004 due to logistical constraints. We conducted a 3-minute passive auditory survey followed by a 3-minute call-broadcast survey at each survey point (Conway and Kirkpatrick, 2001). The call-broadcast survey period consisted of a 30-second broadcast of buff-breasted flycatcher vocalizations (*chee-lick, chee-lick-chou,* and *pit*; Bowers and Dunning, 1994) followed by 30 s of silence, with this pattern repeated 3 times. We assumed singing birds were territorial males and non-singing birds closely associated with territorial males were females. We also recorded incidental buff-breasted flycatchers that we detected while conducting other activities (i.e., not doing surveys).

During the 3 y of our surveys, we detected buff-breasted flycatchers at 7 survey points along 4 of the 13 survey routes. In addition, we detected a male buff-breasted flycatcher incidentally at our campsite at Manning Camp in 2004. Overall, we detected a total of 2 males in 2000, 5 males in 2004 (including the incidental male), and 4 males and 1 female in 2005 (Table 1). Of the 10 singing males that we detected during surveys, 60% were first detected aurally during the 3-minute passive survey period and 40% were first detected aurally during the 3-minute call-broadcast survey period. Most (62%) buff-breasted flycatchers were located along established biking trails, and all of the birds were detected above 2,250 m within a 6-km^2 area located roughly 1.5 km southwest of Mica Mountain, the highest point in the Rincon Mountains. Most (67%) of the territorial male buff-breasted flycatchers that we detected were located in areas that were isolated (i.e., 1 to 2 km) from one another, except for 3 males that we detected within 600 m of one another along the West Manning Camp survey route in 2005. The 7 survey points where we detected buff-breasted flycatchers were all located in pine forest (as was the campground at Manning Camp, where we detected the incidental male).

Our observations of buff-breasted flycatchers in the Rincon Mountains represent the first documented records of this species in this mountain range since 18 August 1911, when a juvenile buff-breasted flycatcher was collected by H. Brown at Manning Camp (Marshall, 1956). Because access to the Rincon Mountains is limited by a lack of roads (unlike nearby mountain ranges), buff-breasted flycatchers might have been present in

TABLE 1—Male and female buff-breasted flycatchers (*Empidonax fulvifrons*) detected during surveys along 4 of 13 survey routes in the Rincon Mountains, Arizona, between 31 May and 3 June in 2000, 2004, and 2005. An additional male buff-breasted flycatcher was detected incidentally at Manning Camp in 2004.

	2000		2004		2005	
Route[a]	Male	Female	Male	Female	Male	Female
Cowhead Saddle Trail	1	0	1	0	1	1
Manning Camp Trail	0	0	1	0	0	0
Mica Meadow Trail	0	0	1	0	0	0
West Manning Camp	1[b]	0	1	0	3	0
Total	2	0	4	0	4	1

[a] See Conway and Kirkpatrick (2001) for specific locations of survey routes.
[b] Detected incidentally along survey route (i.e., not during official survey).

the Rincon Mountains during the last 89 y but remained undetected. However, ornithologists have collected and surveyed birds within this mountain range on several occasions since 1911 without detecting a single buff-breasted flycatcher. For example, bird collections were made in the general vicinity of Mica Mountain in June 1932, May-June 1954, and late April 1955 (Marshall, 1956), and a buff-breasted flycatcher survey was conducted along one of the 13 buff-breasted flycatcher routes in early July 1996 (Martin, 1997). Furthermore, no incidental records of buff-breasted flycatchers exist from the Rincon Mountains during the last century (D. Swann, Saguaro National Park, pers. comm.).

Male buff-breasted flycatchers sing throughout the day (Bowers and Dunning, 1994) and have high detection probability during passive auditory surveys (72%; Conway and Kirkpatrick, 2001). During the current study, we detected singing buff-breasted flycatchers more frequently during our passive auditory survey period (i.e., before we broadcast calls to elicit responses) and detected most buff-breasted flycatchers adjacent to established hiking trails. Given the ease with which we detected buff-breasted flycatchers in the Rincon Mountains, we would have expected at least some detections by ornithologists, park biologists, or recreational bird watchers during the last 89 y if buff-breasted flycatchers had been present in this mountain range, especially in their current numbers. Indeed, the first incidental detections of singing male buff-breasted flycatchers in the Rincon Mountains in >90 y were reported by a park researcher in May 2002 (B. Powell, pers. comm.) and by a local bird watcher in April 2003 (D. Stejskal, pers. comm.) along the Cowhead Saddle Trail (possibly the same male that we detected in this location in 2000, 2004, and 2005).

Several male buff-breasted flycatchers have been reported incidentally in the nearby Santa Catalina Mountains (approximately 30 km northwest of the Rincon Mountains) during the 1990s (Benesh, 1997; Martin, 1997). However, unlike the sporadic records from the Santa Catalina Mountains (the last record was from May 1997; Benesh, 1997), buff-breasted flycatchers have established a seemingly persistent presence in the Rincon Mountains over the past 5 y, as evidenced by our detections in 2000, 2004, and 2005 and the incidental detections from 2002 and 2003. Buff-breasted flycatchers often breed in loose colonies (Bowers and Dunning, 1994), and our discovery of 3 territorial males within 600 m of one another during a survey in 2005 suggests that a small colony has formed in the Rincon Mountains. More importantly, we detected a pair of buff-breasted flycatchers during a survey in 2005, suggesting that buff-breasted flycatchers are probably breeding again within this mountain range.

The presence of buff-breasted flycatchers in the Rincon Mountains over the past 5 y likely represents the first northward range expansion of the buff-breasted flycatcher within the southwestern USA since the contraction of the breeding range of this species during the early 1900s. The Rincon Mountains have experienced more fires in recent years compared to the other sky island mountain ranges in southeastern Arizona (Kirkpatrick et al., 2006), and buff-breasted flycatchers are known to be associated with recently burned forests (Conway and Kirkpatrick, 2007). Fires are thought to improve

quality of buff-breasted flycatcher habitat by reducing dense understory vegetation that might limit effective foraging by buff-breasted flycatchers (Bowers and Dunning, 1994; Martin, 1997; Conway and Kirkpatrick, 2007). The numerous wildfires that burned in the southwestern USA from 2002 to 2006 might serve to improve habitat quality for buff-breasted flycatchers and facilitate recolonization of the species into other parts of its historical range. Continued monitoring of buff-breasted flycatchers in the Rincon Mountains (and elsewhere in Arizona and New Mexico) is warranted given the status of this rare species in the USA.

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