

# THE PROBABLE BREEDING OF CASSIN'S SPARROW IN PINAL COUNTY

DOUG JENNESS, 4375 E. ROLLINS RD., TUCSON, AZ 85739 ([DOUGJENNESS@GMAIL.COM](mailto:DOUGJENNESS@GMAIL.COM))

## INTRODUCTION

Most breeding bird surveys in Arizona are conducted in the late spring and early summer when most birds that breed in the state are expected to be nesting. However, this opens the possibility of missing species that typically breed in response to the onset of monsoon rains in July. One of these overlooked species is the Cassin's Sparrow (*Peucaea cassinii*; Fig. 1). This may have been the case in Pinal County, where there was no recent evidence of even possible nesting for Cassin's Sparrow before 2000 (Corman 2005). Following an especially wet monsoon season in 2006, Cassin's Sparrows were discovered singing and skylarking in an extensive semidesert grassland area from Oro Valley in northern Pima County to east of Oracle in Pinal County (Fig. 2). The skylarking behavior of singing males in July and August suggested the presence of females and probable nesting (Dunning et al. 1999)<sup>1</sup>. Surveys by the author that summer documented an extensive area where breeding behavior was detected (Jenness 2008).

Phillips et al. (1964) include a map that includes sites of wintering Cassin's Sparrow in the Willow Springs Road-Oracle area, but there are no documented reports during breeding season. The surveys during the Arizona Breeding Bird Atlas between 1993 and 2000 in that area didn't detect any Cassin's Sparrows, but these surveys were conducted in April and May before typical singing and other breeding behavior for this sparrow begins (Troy Corman, correspondence to the author, 12 July 2012). There have never been established North American Breeding Bird Survey routes in that area but even if there had been, these surveys would have been conducted before the summer monsoon period. As Corman (2005)



Figure 1: Singing male Cassin's Sparrow, Comanche National Grassland, Colorado. Photo by Pierre Deviche



Figure 2: Area in Pinal Co. where Cassin's Sparrows where found singing and skylarking 2006-11. Photo by Doug Jenness

<sup>1</sup> Before Cassin's Sparrows were first confirmed nesting in Arizona in 1965, they had been observed singing and skylarking in July and August. Some observers (Phillips et al. 1964) suggested that these were postbreeding wanderers from other states. "The astonishing thing about this song," they wrote, "is that it is given so fervently, often on the wing, by males in full breeding condition all through July and August in Arizona, where the species never nests!" After Bock et al. (1994) acknowledge the speculation stemming from Phillip's observations, they add, "The presence of males performing song-flights (skylarking), however, probably does indicate nesting in most cases. Schnase et al. (1991) found that unmated males rarely sing in flight, so observations of skylarking at least should be evidence of paired birds."

indicates "Many potential breeding records for this wandering, rain-dependent sparrow were likely missed due to lack of sufficient surveys in shrubby grasslands and Chihuahuan desertscrub associations in late July and August."

The presence of Cassin's Sparrow in this area posed several questions: Was the 2006 discovery a one-year phenomenon due to unusually high rainfall that summer, or more likely, is there a breeding population that may have been previously undetected? If there is an annual breeding population is it usually confined to a smaller area that expanded in 2006 due to unusually high rainfall?

## METHODS

To answer these questions surveys were conducted by the author in July and August from 2007 to 2011 in each of the sites where they had been observed in 2006 (Fig. 3). Some sites were visited only once; others more often. A few new sites in the overall area were also visited (Table 1). In general the surveys were conducted by stopping at 0.8 km intervals along roadways in the area and listening for singing males. Although some singing birds were only heard, those observed were engaged in the distinctive flight-song. Recordings were not used to generate a response. Much of the area surveyed is on Arizona State Trust Land so a permit was obtained each year of the study.

## RESULTS

In each of the five years, Cassin's Sparrows were detected in some of the sites where they had been observed in 2006, but in no years were they found as widely as in 2006, which had the sixth highest rainfall on record for the area (Jenness 2008).

For example, none were detected in Catalina State Park, Oro Valley, Catalina, or along the Mt. Lemmon Highway, east of Oracle, except in 2006. The number of skylarking males varied each year, but in every year the highest concentration was along Willow Springs Rd. northeast of Oracle Junction, with the greatest concentration in this area in 2008. Since 2006 the greatest number of sparrows observed along Willow Springs Rd. was between 1.6 and 6.4 km from Hwy 77. The exception was 2010 when several visits produced none in this stretch. A small concentration was discovered that year between 8.0 and 8.9 km from Hwy 77. The reason for this shift from one area to a nearby one is not readily apparent as there was no noticeable difference in the level of livestock grazing between the areas or the abundance of grass.

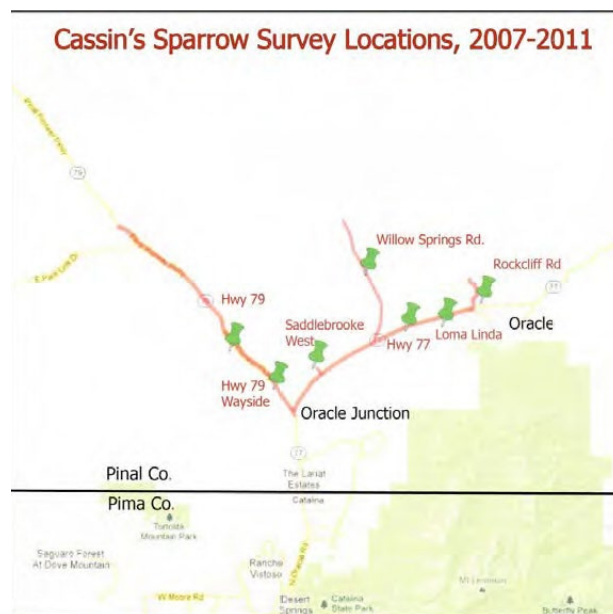


Figure 3: Survey locations. See text for details.

**Table 1. Cassin's Sparrow survey locations north of Tucson and number of singing males found by date, 2007-2011**

LOCATION	DATE	NO.
Willow Springs Rd.	24 July 2007	12
	7 Aug. 2007	10
	8 July 2008	11
	22 July 2008	35
	26 July 2009	4
	15 Aug 2010	10
	5 July 2011	1
	9 July 2011	4
	14 July 2011	21
	9 Aug. 2011	5
Saddlebrooke West	12 July 2011	3
	27 July 2011	5
	6 Aug. 2011	3
Hwy. 79 roadside	14 July 2011	2
Rock Cliff Rd., Oracle	27 July 2011	10
Hwy. 77 (Rockcliff south 12.6 km)	27 July 2011	12
Hwy. 79 (Oracle Junction north 10.0 km)	4 Aug. 2011	4
Loma Linda (Oracle)	6 Aug. 2011	1

The greatest dispersion in the five-year period was in the summer of 2011. This coincided with an unusual invasion of singing Cassin's Sparrows into other parts of the state, most notably into northern counties, including first records for Mohave and Navajo counties. Four additional areas along Hwy. 77 between Oracle Junction and Oracle were surveyed in 2011. In this banner year for Cassin's Sparrow these sites proved very productive. For example, along a 2.3-km section of Rockcliff Rd. going north from Highway 77 in Oracle, 10 singing sparrows were detected on one survey (Table 1). Only singing and skylarking males were detected during the five-year period and no nests or tangible signs of nesting were observed. Even though no nests have yet been discovered, extensive breeding behavior in this appropriate habitat suggests that nesting is likely taking place annually and this may well have been the case for many years prior to 2006.

## DISCUSSION

The habitat in the survey area includes many different species of grass (Jenness 2008), but except for one small tract is extensively grazed by livestock. The abundance of grass varies considerably depending on rainfall. Only rarely, as in 2006, could grass vegetation be described as lush; usually it is sparse. The exception is a 162-hectare tract of combined state trust land and private land, 3.2 km south of the center of Oracle, that hasn't been grazed for at least 10 years. It has a large variety and abundance of grasses, especially Arizona Cottontop (*Digitaria californica*). This area was visited in the summers of 2010 and 2011, and at least one singing Cassin's Sparrow was detected in the latter year. Interestingly, Botteri's Sparrows (*Peucaea botterii*) were reported from this area in August 2010 by Bruce Taubert and Bud Bristow and confirmed (via photo) by the author the following month. They were also reported in 2011 and 2012. The reports from this area are the only documented sightings in Pinal Co. since the 1940s (Phillips et al. 1964).

The two-month rainfall for July and August in three of the study years (2007, 2010, and 2011) ranged from 10.6 to 14.1 cm, which was considerably lower than the 2006 level of 29.1 cm. The figures for 2008 and 2009 were not available (NOAA, 2006-11). It is difficult to determine if any of the Pinal County Cassin's Sparrows are resident year-round as they are usually silent and elusive when not breeding. However in the spring of 2009, following winter rainfall a bit above normal for recent drought years, a male Cassin's Sparrow was heard singing along Willow Springs Rd. as early as 1 March and again on 15 March and 9 May. This suggests that some birds may occasionally overwinter.

There are not enough data to determine whether the population in the study area is declining or expanding. The tendency for Cassin's Sparrow in Arizona to surge in especially wet summer seasons adds to the difficulty of detecting changes in long-term population fluctuations. The study area appears to be an outlier that is not contiguous with the principal breeding region in the southeastern part of the state, where Cassin's Sparrows have been noted as fairly common and widespread (Corman 2005). Although they had earlier been reported north to the San Carlos tribal lands and beyond Globe (Monson and Phillips 1981) the breeding bird surveys for the Atlas period didn't detect any there. They have, however, been reported irregularly and locally from several locations in Yavapai County since the 1970s.


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