

# Grasshopper Sparrow abundance on the Imperatrice property: Results from 2016 surveys

Jaime L. Stephens  
Klamath Bird Observatory  
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## Introduction

Klamath Bird Observatory, in partnership with Southern Oregon Land Conservancy and Rogue Valley Audubon Society, completed Grasshopper Sparrow (*Ammodramus savannarum*) surveys in 2016 on the Imperatrice property owned and managed by the City of Ashland (Fig. 1). Surveys were completed on 218 ha, which included the entire grassland portion of the property that is not currently grazed by cattle.

The Grasshopper Sparrow occurs throughout North America from southern Canadian prairies south to Ecuador. It winters primarily in Mexico, Central America, and the southeast United States (Vickery 1996). Its range is widespread, however within the range it is often locally distributed and even uncommon to rare in many areas. As such, in Oregon it is a widespread but local breeder restricted to grasslands where it occurs in groups or 'colonies.' The comprehensive *Birds of Oregon*, published in 2003, states that "one small colony has persisted since 1987 in the Rogue Valley (up to six singing males), and since 1998 the species has been observed at several additional sites" Other previous reports of Grasshopper Sparrows in Oregon revealed very limited abundance and distribution, largely concentrated in Willamette Valley grasslands (Altman 1997, Oregon Department of Fish and Wildlife 2010, Altman 2011a). Some surveys have only detected a few individuals (e.g., only 20-25 individuals were detected in 1996-1997) (reviewed in Altman 2011b). Current estimates suggest fewer than 40 breeding pairs in the Willamette Valley (reviewed in Altman 2000). Very small and infrequently detected populations have been reported in the Rogue and Umpqua Valleys since their discovery in 1963 (reviewed in Altman 2000, Altman 2011b).

The Grasshopper Sparrow is identified as a Species of Greatest Conservation Need in the *Oregon Conservation Strategy* (ODFW 2006) and as a 'common bird in steep decline' throughout its range in *The State of the Birds*, indicating it has lost more than 50% of its population over the last 40 years (NABCI 2014). Breeding Bird Survey data show a -2.82 (-3.42, -2.33; 95% confidence interval) annual decline throughout North America for the period 1966-2013 and -2.13 (-3.36, -0.90) annual decline from 2003-2013 with trends varying regionally (Sauer et al. 2014). Populations in Oregon had a -1.15 (-5.22, 2.94) annual decline for the period 1966-2013 and -0.73 (-9.93, 10.78) annual decline from 2003-2013 (Sauer et al. 2014). Note, the Oregon results should be considered cautiously, they have a regional credibility measure that reflects a deficiency in data based on overall low abundance or small sample size (Sauer et al. 2014).

## Study Design and Field Methods

Grasshopper Sparrows are not easily detected because of their quiet insect-like song and their reclusive habits, thus, single species surveys are most appropriate. Males sing from elevated perches, such as flower stalks, and then drop back into the grasses where they both hop and run. The males sing two songs, used in mate attraction and territory defense. The primary song is a 'tsick, tsurrrrr' typically delivered from an elevated perch. The secondary song is longer lasting 5-15 seconds usually sung from a perch but occasionally in flight. A third song that is limited to mated birds is a short trill sung by both the male and female to maintain the pair bond and announce presence near the nest (Vickery 1996).

Survey transects were established along 10,748 meters covering the entire study area spaced 200 m apart; close enough together such that all singing birds should be detectable, but far enough apart to avoid double counting based on experience with Grasshopper Sparrows in similar habitat (F. Lospalluto and B. Altman, pers com). In order to complete a survey in a single morning the study area was split in half and two survey transects were delineated.

Each survey transect was completed once during the peak of the breeding season (Fig. 1). Surveys were completed within the four hours following sunrise on 31 May and 1 June 2016. A surveyor walked along the designated transect and all Grasshopper Sparrows detected by sight or sound were recorded along with type of detection (primary song, secondary song, trill, visual) and the estimated perpendicular distance to the survey transect. Locations of individuals were marked on a field map. Additionally, all species detected during the survey were noted on a comprehensive checklist.

## Results and Discussion

Thirty-seven species were detected during surveys (Table 1). Thirty-two Grasshopper Sparrow singing males were recorded on the two survey transects (Fig. 2, 3). This formal survey effort detected greater numbers than an informal census completed in 2014 which documented 20 Grasshopper Sparrows of unknown sex (Fig. 2, 3). Both the 2014 and 2016 results are substantially greater than previously documented 'colonies' in the Rogue Valley (Janes 2003, Altman 2000, Altman 2011b). In 2016, relative abundance was 3.0 males/km. This aligns with published densities in Oregon which have been estimated between 2.8 – 8.2 individuals/km (Janes 2003). Because the transect spacing was designed to detect all singing birds in the area results can be extrapolated as a rough density measure of 0.15 males/ha. However, in 2016 all detections occurred in the western portion of the study area, thus density within the 'colony' is greater than that reported for the study area as a whole.

Six of the males were detected with a female, either by visual observation or the female trill in conjunction with the male song. Six of the 32 singing males were detected using the secondary song type. Of the six males detected with a female, four were detected by sound and all four consisted of males singing the secondary song type and females singing the trill. In addition to the 32 singing males and six associated females there was one visual detection of unknown gender.

Further study focused on habitat selection and nest success at the Imperatrice property would be of interest. The grass and forbs are dominated by native bunch grasses, pasture grasses, and fiddleneck which was commonly used by male Grasshopper Sparrows for perching (F. Lospalluto, pers com). Although birds were clustered on the west side of the property much of the habitat is similar throughout, with wet areas containing dog rose and blackberry covering a relatively small area in the northeast (F. Lospalluto, pers com). Determining how vegetation composition and structure is related to territory selection and nest success could inform potential management and restoration of this property as well as other sites west of the Cascades.

## Acknowledgements

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Table 1. Bird species detected on the Imperatrice property, Ashland, Oregon during two Grasshopper Sparrow transect surveys in 2016.

<b>Common Name</b>	<b>Scientific Name</b>
Acorn Woodpecker	<i>Melanerpes formicivorus</i>
American Crow	<i>Corvus brachyrhynchos</i>
American Goldfinch	<i>Spinus tristis</i>
American Kestrel	<i>Falco sparverius</i>
American Robin	<i>Turdus migratorius</i>
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>
Barn Swallow	<i>Hirundo rustica</i>
Bewick's Wren	<i>Thryomanes bewickii</i>
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Bullock's Oriole	<i>Icterus bullockii</i>
California Quail	<i>Callipepla californica</i>
California Towhee	<i>Melospiza crissalis</i>
Chipping Sparrow	<i>Spizella passerina</i>
Common Raven	<i>Corvus corax</i>
European Starling	<i>Sturnus vulgaris</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
House Finch	<i>Carpodacus mexicanus</i>
Lark Sparrow	<i>Chondestes grammacus</i>
Lazuli Bunting	<i>Passerina amoena</i>
Lesser Goldfinch	<i>Spinus psaltria</i>
Mallard	<i>Anas platyrhynchos</i>
Mourning Dove	<i>Zenaida macroura</i>
Northern Flicker	<i>Colaptes auratus</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Ring-necked Pheasant	<i>Phasianus colchicus</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Song Sparrow	<i>Melospiza melodia</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Tricolored Blackbird	<i>Agelaius tricolor</i>
Turkey Vulture	<i>Cathartes aura</i>
Western Bluebird	<i>Sialia mexicana</i>
Western Kingbird	<i>Tyrannus verticalis</i>
Western Meadowlark	<i>Sturnella neglecta</i>
Wilson's Snipe	<i>Gallinago delicata</i>
Yellow Warbler	<i>Setophaga petechia</i>
Yellow-breasted Chat	<i>Icteria virens</i>

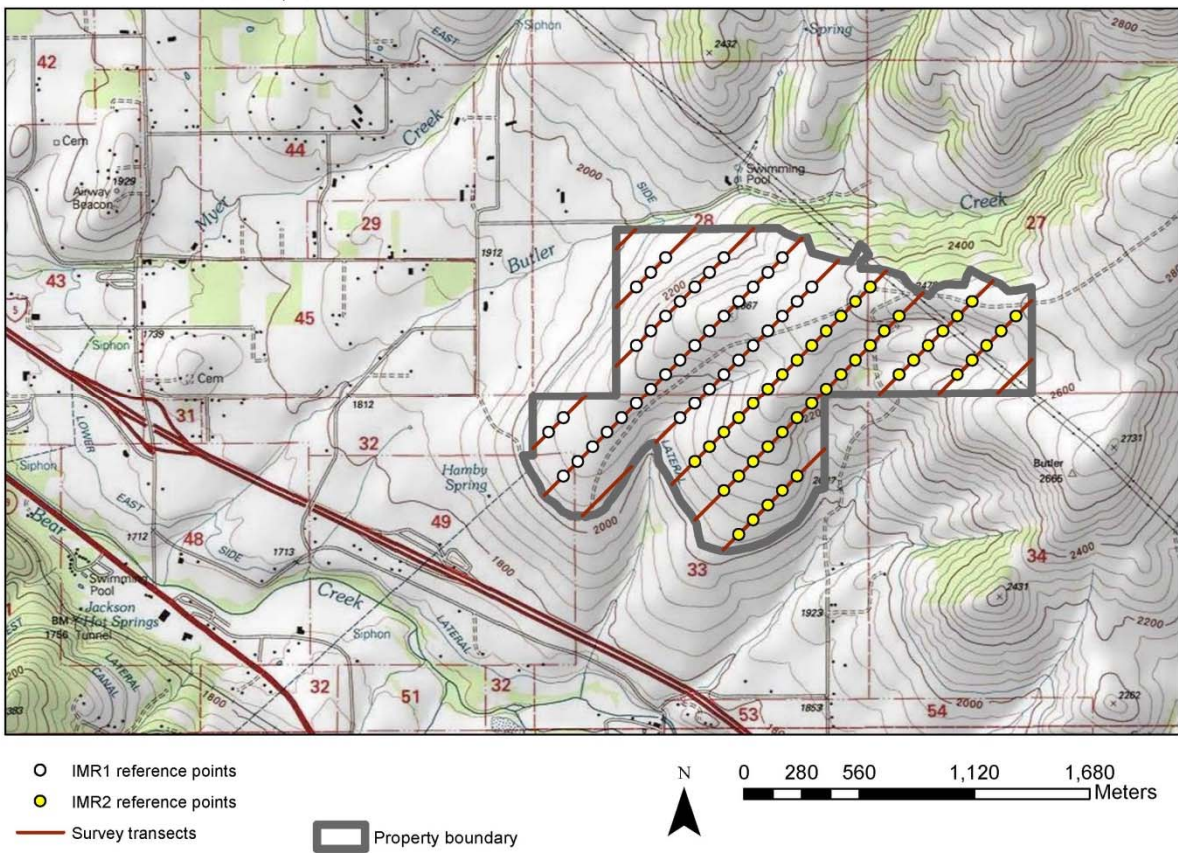


Figure 1. Two Grasshopper Sparrow survey transects were established on the Imperatrice property in Ashland, Oregon; each transect was surveyed once on a single morning in 2016. Points along each transect were used as a location reference when birds were detected.

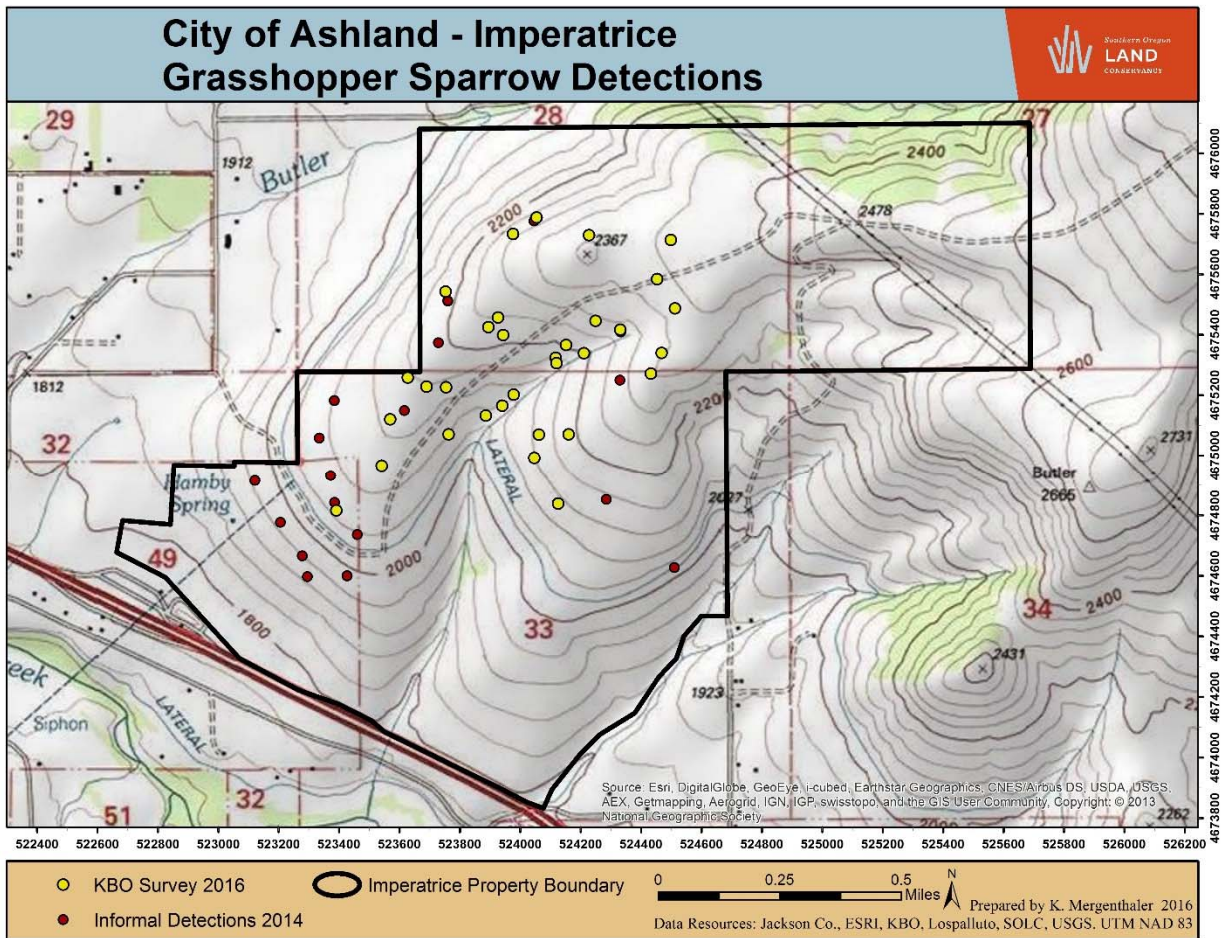


Figure 2. Thirty-two singing male Grasshopper Sparrows were detected during 2016 transect surveys at the Imperatrice property in Ashland, Oregon, shown here with topography. Previous informal surveys found 20 individuals (unknown sex) in 2014.

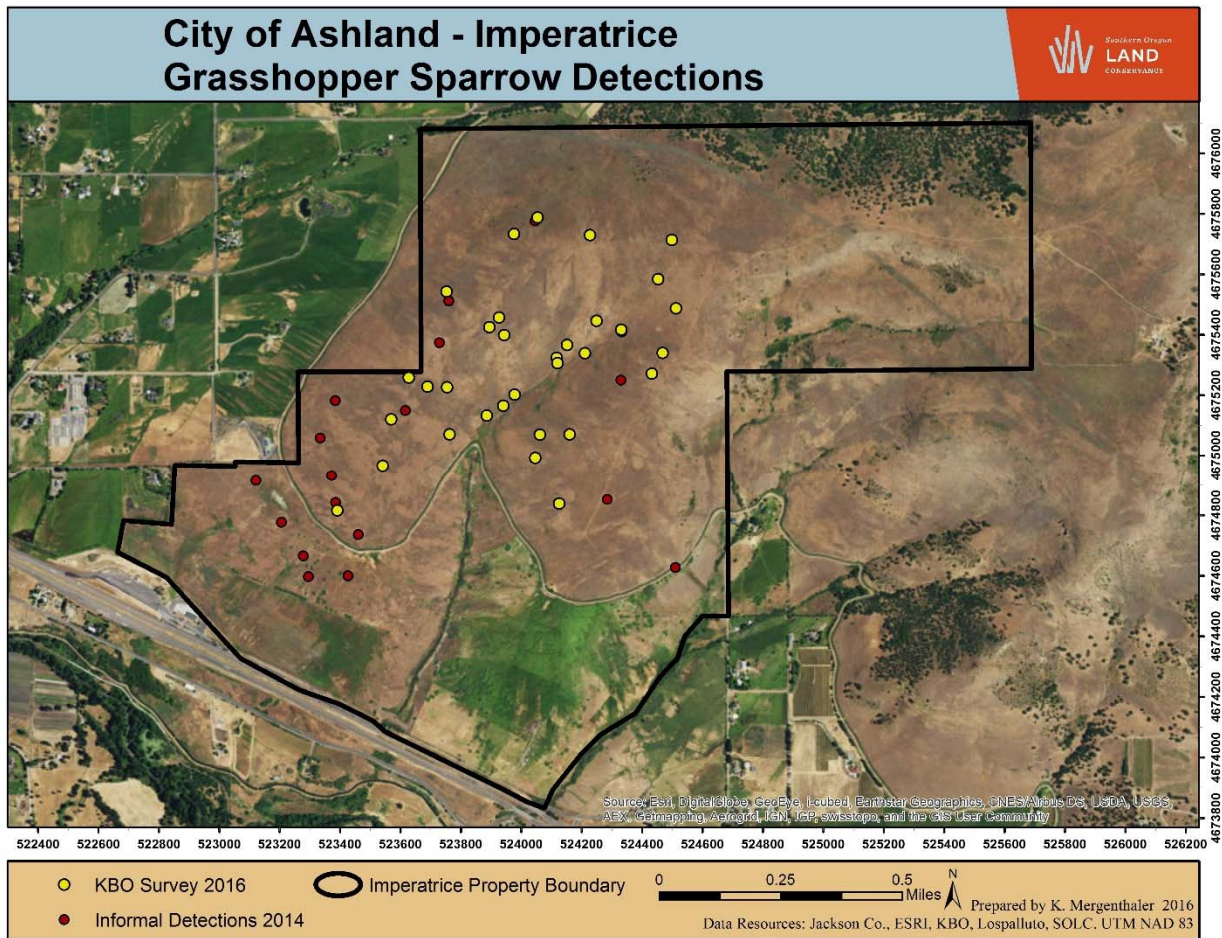


Figure 3. Thirty-two singing male Grasshopper Sparrows were detected during 2016 transect surveys at the Imperatrice property in Ashland, Oregon, shown here with an aerial photo. Previous informal surveys found 20 individuals (unknown sex) in 2014.