

**Ontario Species at Risk Evaluation Report**  
**for**  
**Grasshopper Sparrow (*Ammodramus savannarum*)**

**Committee on the Status of Species at Risk in Ontario (COSSARO)**

**Assessed by COSSARO as SPECIAL CONCERN**

**December 2014**

**Final**

## **Bruant sauterelle (*Ammodramus savannarum*)**

Le bruant sauterelle est un petit oiseau chanteur à la livrée terne qui vit en régions herbagères et dans les prés de fauche. Il préfère les champs à végétation clairsemée, comme les sols pauvres, les alvars et les zones sablonneuses. En Ontario, sa présence est observée principalement au sud du Bouclier canadien. Une très petite population habite dans la zone du lac des Bois, au nord-ouest de l'Ontario. Cette espèce migratrice arrive dans son aire de reproduction en mai, pour pondre une ou deux couvées par année. Le bruant sauterelle se nourrit principalement de graines et d'insectes, surtout des sauterelles.

Les données du Relevé des oiseaux nicheurs ont révélé un déclin annuel continu de l'ordre de 1,5 % depuis les années 1970, soit une baisse de 46 % sur 40 ans, et une chute non significative de 13 % en 10 ans, entre 2002 et 2012. Les populations de la portion carolinienne de l'Ontario sont celles qui ont le plus souffert, avec un déclin de 48 % entre les 2 publications de l'Atlas des oiseaux nicheurs de l'Ontario entre les années 1980 et les années 2000. La plus grande menace semble être une perte d'habitat due à l'intensification des pratiques d'utilisation des terres agricoles et au régime de coupe de foin qui aura probablement entraîné une forte mortalité des couvées chez les oiseaux qui se reproduisent dans les prés de fauche.

L'évaluation faite par le CDSEPO du bruant sauterelle le classe dans les espèces préoccupantes en raison de son déclin persistant sur une longue durée et de la tendance en matière d'utilisation de terres qui continue de réduire la quantité d'habitats convenables pour l'espèce. Celle-ci connaît d'ailleurs un déclin annuel encore plus marqué dans les provinces et les États voisins.

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## EXECUTIVE SUMMARY

The Grasshopper Sparrow (*Ammodramus savannarum*) is a small dull-coloured song bird of grassland habitats and hayfields. It prefers fields with low sparse vegetation such as on poor soils, alvars and sandy areas. Within Ontario it occurs mainly south of the Canadian Shield. A very small population occurs in the Lake of the Woods area of northwestern Ontario. It is a migratory species that arrives on breeding ground in May and has one or two broods per year. Grasshopper Sparrow feeds largely on seeds and insects, especially grasshoppers.

Breeding Bird Survey data showed a continual annual decline of 1.5% since the 1970s or a 46% decline over 40 years and a non-significant decline of 13% in the 10 year period of 2002 to 2012. The populations in the Carolinian portion of Ontario have suffered most with a 48% decline between the two Ontario Breeding Bird Atlases between the 1980s and 2000s. The chief threats appear to be habitat loss through intensification of agricultural land use practices and the hay cutting regime which presumably results in elevated nesting mortality for those that breed in hayfields.

The Grasshopper Sparrow has been assessed by COSSARO as a Special Concern species because of a continual long-term decline and a land use trend that continues to reduce the amount of suitable habitat for the species. The species is experiencing even greater annual declines in adjacent provinces and states.

## **1. BACKGROUND INFORMATION**

### **1.1 CURRENT DESIGNATIONS**

**GRANK: G5** Last reviewed December 4, 1996 (NatureServe 2014)

**NRANK Canada: N4B.** Last reviewed February 14, 2012 (NatureServe 2014)

**COSEWIC: Special Concern** (April 2013; COSEWIC 2013)

**SARA: No Schedule, No Status.** (Schedule X) (Environment Canada, 2013)

**ESA 2007: Not Assessed.** Not listed on the provincial SARO list (Ontario Ministry of Natural Resources, 2013)

**SRANK: S4B** (NatureServe, 2014)

### **1.2 DISTRIBUTION IN ONTARIO**

The Grasshopper Sparrow occurs through most of southern Ontario south of the Canadian Shield including Manitoulin Island. It occurs very sporadically where suitable habitat is present on the southern most portion of the Canadian Shield. A very small population of the Western subspecies (*Ammodramus savannarum perpallidus*) occurs in the Lake of the Woods area of northwestern Ontario.

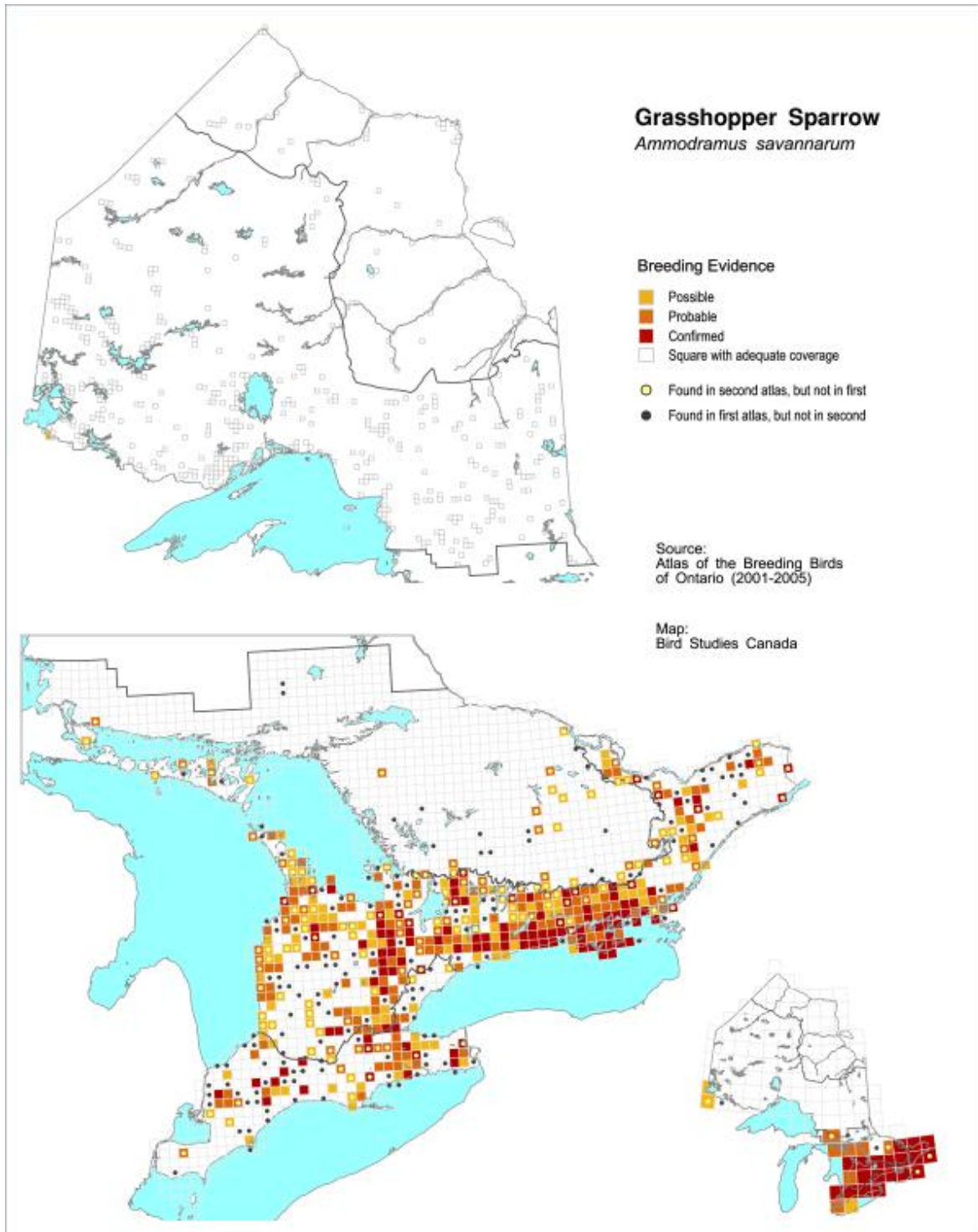


Figure 1 – Distribution of Grasshopper Sparrow in Ontario following Ontario Breeding Bird Atlas from Cadman et al. (2007)

### 1.3 DISTRIBUTION AND STATUS OUTSIDE ONTARIO

The Grasshopper Sparrow ranges through much of the central part of North America

particularly in the eastern two-thirds of the United States extending into the southern part of Canada from southern British Columbia to southwestern Quebec. The range in the western U.S. is discontinuous with breeding populations in California and the Great Basin. Grasshopper Sparrow winters from the southern U.S. through Mexico to Central America. There are disjunct isolated subspecies populations in northern Central America, the West Indies and Florida. There are 12 recognized subspecies of Grasshopper Sparrow, two of which occur in Canada (Vickery 1996).

#### **1.4 ONTARIO CONSERVATION RESPONSIBILITY**

Ontario makes up less than 5% of the range and 1% of the global population of Grasshopper Sparrow. Ontario makes up approximately 10% of the breeding range of the Eastern subspecies (*Ammodramus savannorum pratensis*).

#### **1.5 DIRECT THREATS**

The chief threat to the species is related to land use: conversion of pasture, hayfield and grassland to intensive cropland. The 2011 Census of Agriculture shows that significant expansion of row crops and decline of hay and pasture has occurred in Ontario in the past 10 years (Ontario Ministry of Agriculture and Food 2013). This conversion trend has been accelerating which implies that the decline of the species is likely to continue. Also the hay cutting regime which typically occurs midway through the breeding season likely results in a high rate of nest mortality for birds nesting in hayfields.

The area of pastureland (both seeded and natural) in southern Ontario declined from 73,292 ha to 48,636 ha over the ten years from 2001 to 2011, which is a decline of 34% (Statistics Canada 2006, Statistics Canada 2011). The area of land in summer fallow declined by 31% in the same period, while the overall area of cropland increased (Statistics Canada 2006, Statistics Canada 2011). This clearly shows the trend in habitat loss since Grasshopper Sparrow (as well as other grassland species) depends to a large extent on rough pasture, hayfields and fallow fields for nesting.

#### **1.6 SPECIALIZED LIFE HISTORY OR HABITAT USE CHARACTERISTICS**

Grasshopper Sparrow is specialized to open relatively short grassland habitat. It prefers grasslands with relatively sparse cover such as those in areas of poor soils, including alvars, moraines and sand plains and generally does not favour tall grass moist meadows. It also frequently breeds in human created hayfields and occasionally in cereals (e.g. Rye [*Secale cereale*]).

## **2. ELIGIBILITY FOR ONTARIO STATUS ASSESSMENT**

### **2.1 ELIGIBILITY CONDITIONS**

**Taxonomic Distinctness: Yes** Grasshopper Sparrow is clearly a distinct species that has long been widely recognized and was first classified in 1810. Twelve subspecies

have been described throughout their range of which two occur in Ontario. The Eastern *pratensis* subspecies which occurs in southern Ontario differs from the Western *perpallidus* subspecies which occurs in extreme northwestern Ontario by darker colouration and less rust (Rising and Beadle 1996). The differences between these two subspecies are very subtle, and the species' genetics have not been examined.

**Designatable Units: No.** In Ontario two subspecies of Grasshopper Sparrow are present and separated by approximately 900 km, although on the U.S. side south of the Great Lakes, the two subspecies overlap with the one intergrading into the other. The Eastern Grasshopper Sparrow occurs throughout southern Ontario and into adjacent portion of northeastern Ontario. The Western Grasshopper Sparrow is assumed to occur in a very small in the vicinity of Lake of the Woods (COSEWIC 2013) but there has not been genetic testing of those birds. Grasshopper Sparrow as a species could qualify as two designatable units since it consists of two widely separated subspecies, but only the eastern subspecies was assessed by COSEWIC (2013) and therefore that report only provides insight into the status of that subspecies. The Western subspecies is very rare and restricted, and represents only the edge of the more extensive range in adjacent Manitoba and Minnesota. Furthermore, the genetic distinction between the two subspecies is slight and perhaps should be considered a cline rather than subspecies level distinction (Donald Sutherland, pers. comm.) The Grasshopper Sparrow in Ontario does not warrant more than one DU. This report does not consider the Grasshopper Sparrow subspecies, and evaluates the Grasshopper Sparrow at the species level.

**Native Status: Yes.** Grasshopper Sparrow is known to occur in Ontario since at least the 1800s. While it is believed to have expanded its range northward following clearing of the forests by Europeans, it is believed to have been present in restricted areas such as alvars and savannahs before this time (COSEWIC 2013).

**Occurrence: Extant.** The Grasshopper Sparrow is extant in Ontario. It has been recorded in 442 atlas squares during the 2001 to 2005 Ontario Breeding Bird Atlas, and breeding was confirmed in 115 squares (Cadman et al. 2007, Appendix 2).

## 2.2 ELIGIBILITY RESULTS

Grasshopper Sparrow (*Ammodramus savannarum*) is eligible for status assessment in Ontario.

# 3. ONTARIO STATUS ASSESSMENT

## 3.1 APPLICATION OF ENDANGERED/THREATENED STATUS IN ONTARIO

### Criterion A – Decline in Total Number of Mature Individuals

#### Does not apply

Breeding Bird Survey data showed a non-significant decline of 13% in the 10-year period of 2002 to 2012 (Environment Canada 2014). Ontario Breeding Bird Atlas data

show a decline of 17% across Ontario between the first Atlas (1981-1985) and the second Atlas (2001-2005) periods (Cadman et al. 2007, Appendix 3). These observed declines do not meet the threshold for this criterion.

Grasshopper Sparrow is showing significant declines throughout much of its range outside of Ontario. It is declining at a greater rate than Ontario in all border states ranging from 2.6 to 9.2% declines per year with the most significant declines in New York and Minnesota (Sauer *et al.* 2014).

#### **Criterion B – Small Distribution Range and Decline or Fluctuation**

##### **Does not apply**

The Extent of Occurrence is approximately 270,500 km<sup>2</sup> in Canada (COSEWIC 2013) and the majority of this (roughly 250,000 km<sup>2</sup>) occurs in Ontario. The Index Area of Occupancy was not calculated for the COSEWIC status report, since the location of all nesting sites is not known, but with the species reported in 442 Atlas squares across Ontario between 2001-2005, it is likely above the 2000 km<sup>2</sup> (COSEWIC 2013) and therefore it does not meet the criterion.

#### **Criterion C – Small and Declining Number of Mature Individuals**

##### **Does not apply**

The population of Grasshopper Sparrow in Ontario was estimated at 50,000 birds in 2005 (Blancher and Couturier 2007), which is well above the threshold of 10,000 and therefore does not meet this criterion.

#### **Criterion D – Very Small or Restricted Total Population**

##### **Does not apply**

The 2001-2005 Ontario Breeding Bird Atlas (OBBA) data indicate that Grasshopper Sparrow is a probable or confirmed breeder in 442 atlas squares (Cadman et al. 2007). The total population and probable Index Area of Occupancy exceed the thresholds under this criterion.

#### **Criterion E – Quantitative Analysis**

##### **Insufficient Information**

A Population Viability Analysis has not been conducted for the species in Ontario and therefore the probability of extirpation has not been determined.

### **3.2 APPLICATION OF SPECIAL CONCERN IN ONTARIO**

The Grasshopper Sparrow does not meet the thresholds of any of the above Criteria A to E that would put it into a Threatened or Endangered category. However the species is part of the grassland breeding bird guild that has been showing a constant decline, including the Bobolink and Eastern Meadowlark (which are both Threatened in Ontario). Although the population of Grasshopper Sparrow is declining at a more gradual rate, it is inherently far less common and subjected to the same causes of decline as those other grassland specialists. It has been undergoing a continual decline over the past 40 years of 1.5% per year or 46% over a 40-year period. Within the Carolinian portion of the province, the rate of change has been more dramatic, declining by 48% in a 20-year



period between the 1980s and 2000s (Earley 2007). With current agricultural land use trends, further declines could be expected. The area in summer fallow, and pasture have shown a decline of 31 to 34% over the ten year period from 2001 to 2011 which indicates the speed with which potentially suitable habitat is being converted through agricultural intensification (Statistics Canada 2006, Statistics Canada 2011). This land use trend is not slowing, and as a result the Grasshopper Sparrow's decline in Ontario is likely to continue.

### **3.3 STATUS CATEGORY MODIFIERS**

#### **Ontario's Conservation Responsibility**

**Not applicable.** The Global Rank for the Grasshopper Sparrow (i.e., at the species level) is G5. Ontario makes up less than 5% of the global breeding range of the Grasshopper Sparrow.

#### **Rescue Effect**

If extirpation of local populations of Grasshopper Sparrow occurred in Ontario, it is possible that immigration of individuals from adjacent US states could recolonize. Individuals would probably be adapted to survive in Ontario, and it is likely that suitable habitat exists. However, significant declines are occurring in all adjacent jurisdictions ranging from -2.6% to -9.2% per year (Sauer *et al.* 2014), which reduces the likelihood that population rescue would occur. Therefore rescue effect does not apply.

### **3.4 OTHER STATUS CATEGORIES**

#### **DATA DEFICIENT**

Not applicable.

#### **EXTINCT OR EXTIRPATED**

Not applicable.

#### **NOT AT RISK**

Not applicable

## **4. SUMMARY OF ONTARIO STATUS**

The Grasshopper Sparrow (*Ammodramus savannarum*) is classified as **Special Concern** in Ontario. It has shown a continual annual decline of 1.5% for over 40 years and current land use practices are likely continuing to decrease available suitable habitat in Ontario. Rates of declines are considerably higher in all surrounding states and provinces, indicating that the declining trend is widespread.

## **5. INFORMATION SOURCES**

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Vickery, P. 1996. Grasshopper Sparrow (*Ammodramus savannorum*) in A. Poole and F. Gill (eds). The Birds of North America, No. 239. The Academy of Natural Sciences, Philadelphia, Pa.

## APPENDIX 1: TECHNICAL SUMMARY FOR ONTARIO

### Species: Grasshopper Sparrow

<b>Demographic Information</b>	
Generation time. Based on average age of breeding adult: age at first breeding = X year; average life span = Y years.	Approximately 1.5 years
Is there an observed, inferred, or projected continuing decline in number of mature individuals?	Yes
Estimated percent of continuing decline in total number of mature individuals within 5 years or 2 generations.	Unknown
Observed, estimated, inferred, or suspected percent reduction or increase in total number of mature individuals over the last 10 years or 3 generations.	13% decline for Ontario (BBS) 17% decline between 1981-85 and 2001-05 (OBBA)
Projected or suspected percent reduction or increase in total number of mature individuals over the next 10 years or 3 generations.	Unknown
Observed, estimated, inferred, or suspected percent reduction or increase in total number of mature individuals over any 10 years, or 3 generations, over a time period including both the past and the future.	Unknown
Are the causes of the decline a. clearly reversible and b. understood and c. ceased?	The causes are well known, but have not ceased. Could be reversible if land managed.
Are there extreme fluctuations in number of mature individuals?	No

<b>Extent and Occupancy Information in Ontario</b>	
Estimated extent of occurrence.	250,000 km <sup>2</sup> based on COSEWIC (2013) value of 270,500 km <sup>2</sup> , that included Quebec which encompasses only about 10% of its Canadian breeding range
Index of area of occupancy (IAO).	Unknown, but >2000 km <sup>2</sup>
Is the total population severely fragmented? (i.e. is >50% of its total area of occupancy is in habitat patches that are (a) smaller than would be required to support a viable population, and (b) separated from other habitat patches by a distance larger than the species can be expected to disperse?)	No
Number of locations ( <i>as defined by COSEWIC</i> ).	Unknown, but >10
Number of NHIC Element Occurrences	Unknown – EOs not assessed by NHIC for this species
Is there an observed, inferred, or projected continuing decline in extent of occurrence?	No, possible increase due to a few new locations in OBBA north of known range (Earley 2007)
Is there an observed, inferred, or projected continuing decline in index of area of occupancy?	Unknown
Is there an observed, inferred, or projected continuing decline in number of populations?	N/A

Is there an observed, inferred, or projected continuing decline in number of locations?	Unknown
Is there an observed, inferred, or projected continuing decline in [area, extent and/or quality] of habitat?	Yes due to agricultural intensification
Are there extreme fluctuations in number of populations?	No
Are there extreme fluctuations in number of locations?	No
Are there extreme fluctuations in extent of occurrence?	No
Are there extreme fluctuations in index of area of occupancy?	No

<b>Number of Mature Individuals In Each Sub-Population or Total Population (if known)</b>	
Sub-Population (or Total Population)	N of Mature Individuals
Total Ontario population	50,000 (estimate)

<b>Quantitative Analysis (population viability analysis conducted)</b>
Not conducted.

<b>Rescue Effect</b>	
Is immigration of individuals and/or propagules between Ontario and outside populations known or possible?	Possible, although considered unlikely due to declining populations within and outside Ontario
Would immigrants be adapted to survive in Ontario?	Yes
Is there sufficient suitable habitat for immigrants in Ontario?	Possibly, but declining
Is the species of conservation concern in bordering jurisdictions?	Yes in Quebec and Manitoba
Is rescue from outside populations reliant upon continued intensive recovery efforts?	Probably not

## APPENDIX 2: ADJOINING JURISDICTION STATUS RANK AND DECLINE

Jurisdiction	Subnational Rank	Sources	Population Trend	Source
Ontario	S4B	NatureServe, 2014 <sup>1</sup>	-1.48% per year for 2002-2012	Sauer <i>et al.</i> 2014
Manitoba (subspecies <i>perpallidus</i> )	S2B	NatureServe, 2014	-4.59% per year for 2002-2012	Sauer <i>et al.</i> 2014
Michigan	S3S4	NatureServe, 2014	-2.59% per year for 2002-2012	Sauer <i>et al.</i> 2014
Minnesota (subspecies <i>perpallidus</i> )	SNRB	NatureServe, 2014	-9.21% per year for 2002-2012	Sauer <i>et al.</i> 2014
Nunavut	Not present	NatureServe, 2014		
New York	S3B	NatureServe, 2014	-9.01% per year for 2002-2012	Sauer <i>et al.</i> 2014
Ohio	S5	NatureServe, 2014	-5.36% per year for 2002-2012	Sauer <i>et al.</i> 2014
Pennsylvania	S4B	NatureServe, 2014	-5.89% per year for 2002-2012	Sauer <i>et al.</i> 2014
Quebec	S2	NatureServe, 2014		

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<sup>1</sup> Note that all subnational statuses identified here are for Grasshopper Sparrow (*A. savannarum*) at the species level; sub-national statuses have not been identified to the subspecies level (i.e. there are no S-ranks assigned at the state and province levels for *A.s. pratensis*).