

# Manitoba Grasshopper Forecast for 2023



Two-striped (left) and clearwinged (right) grasshoppers

Grasshopper surveys have been conducted in Manitoba in various degrees of detail since 1931. The current grasshopper forecast is based on counts of grasshopper populations in August (which estimates the egg-laying population), weather data (which helps estimate whether those female grasshoppers present are capable of laying their optimum level of eggs), and recent trends in grasshopper populations. In some years, natural enemy populations may significantly affect the number of grasshoppers, or the number of their eggs that survive and hatch, and such data may be pertinent to the forecast as well. Counts are generally done in or alongside crop fields in Manitoba. The goal is to estimate levels of the four species of grasshoppers that have potential to be pests of crops in Manitoba.

## Purpose of a grasshopper forecast

All stages of grasshoppers, except the egg stage, feed on plants. Some species will feed on crops, while other species do not, or rarely will. Older grasshoppers of these crop feeding species can do the most damage to crops, particularly later in the season as these grasshoppers can move greater distances. In annual cropping systems, the young stages of these species are often highly concentrated around field edges early in the season, particularly around fields that had sparse green vegetation late in the previous summer. If grasshopper populations get quite high, these younger, concentrated populations of grasshoppers are much easier to control than older and more dispersed populations later in the season.

Knowing the risk of grasshoppers being a problem alerts farmers and agronomists to the importance of monitoring field edges, vegetation surrounding the fields, and other preferred egg laying areas in late-May and June for these younger grasshoppers. This information can also help farmers choose crops and plan seeding practices for the following year.

## Interpreting the grasshopper survey map

The grasshopper survey map for Manitoba is based on counts of adult grasshoppers per m<sup>2</sup> done by crop production extension specialists, agronomists, and entomologists in August 2022. Grasshopper counts from 119 locations in Manitoba were used to produce the map. The legend on the map shows the average grasshopper counts in an area, and relates these to risk for many of our crops. Factors affecting grasshopper development, survival and behaviour will determine whether these August populations are likely to increase, decrease, or remain fairly stable for the next year and are also important factors in the overall forecast for 2023. The small circles on the map show where data was collected. White areas on the map are areas where data was not collected. Note that the averaging of counts in a region will result in a density category for a region representing the cumulative data, not the value from a specific count.

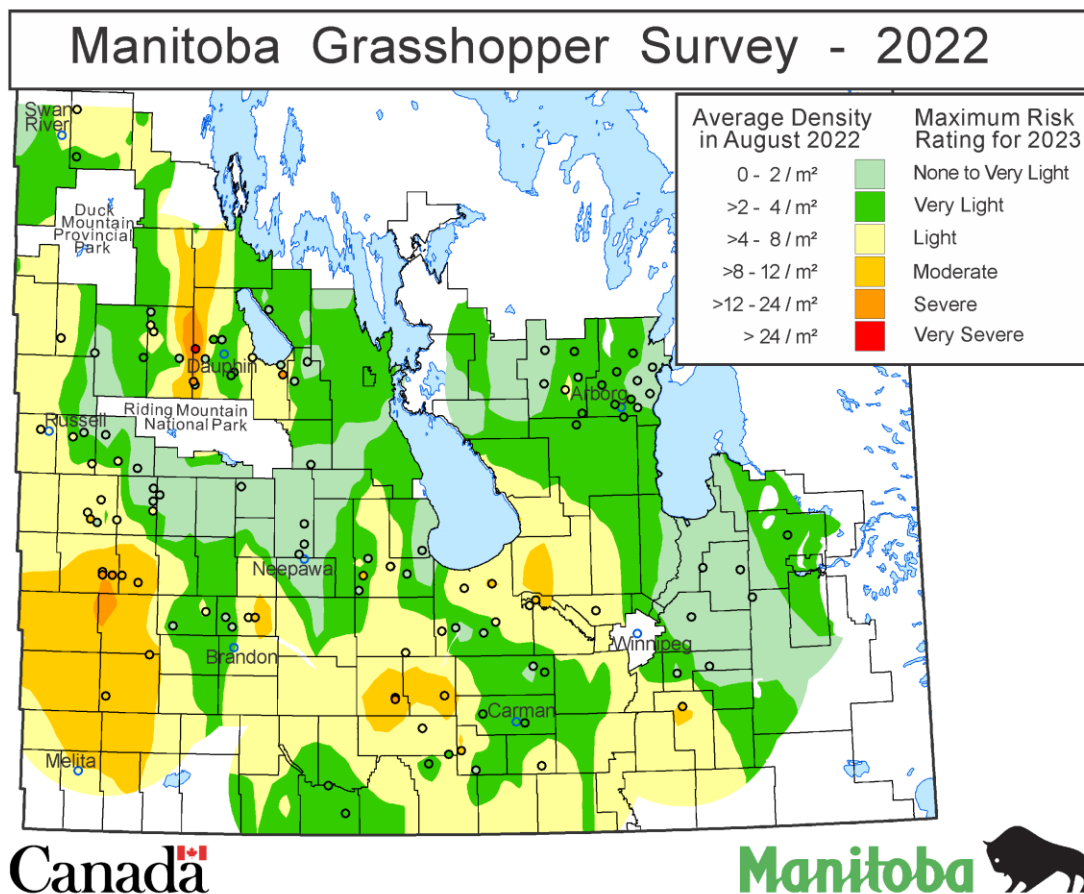


Figure 1. Average density of grasshoppers in Manitoba during August 2022.

## The Grasshopper Forecast for Manitoba for 2023

### What the grasshopper survey map shows

About 60% of the counts were in the none to very light or very light risk categories (72 out of 119 counts). Twenty-eight count were in the light risk category (>4-8/m<sup>2</sup>), 13 counts were in the moderate risk category (>8-12/m<sup>2</sup>), five counts were in the severe risk category (>12-24/m<sup>2</sup>), mainly in the western part of Manitoba. There was one count in the Northwest region, near Ashville, in the very severe risk category. Highest counts were generally in the western part of Manitoba.

**Table 1. Grasshopper counts in each risk category for each agricultural regions surveyed.**

Region	Counts	Counts in Risk Category					
		Very Severe	Severe	Moderate	Light	Very Light	None to very light
Northwest	29	1	2	1	7	5	13
Southwest	28	0	2	7	9	0	10
Central	37	0	1	4	11	7	14
Eastern	8	0	0	1	0	1	6
Interlake	17	0	0	0	1	9	7
<b>Total</b>	<b>119</b>	<b>1</b>	<b>5</b>	<b>13</b>	<b>28</b>	<b>22</b>	<b>50</b>

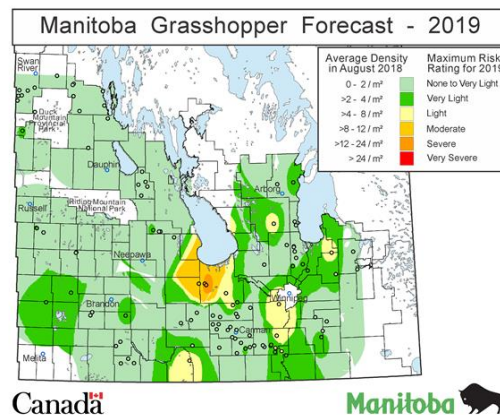
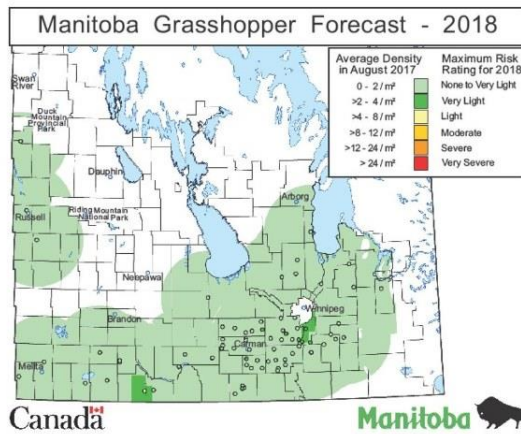
**Dominant species:** While doing grasshopper counts, dominant species of grasshopper was recorded from 32 locations. In 31 of these locations, two-striped grasshopper (*Melanoplus bivittatus*) was the most abundant species. At one location in the Central region, clearwinged grasshopper (*Camnula pellucida*) was the dominant species.

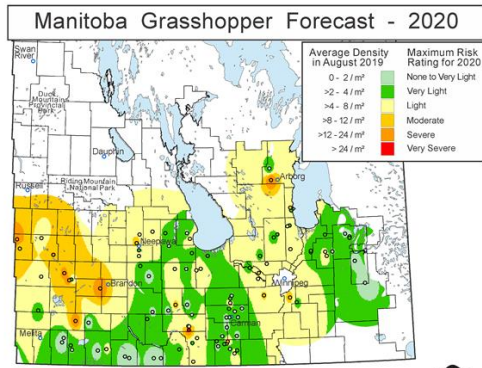
Two-striped grasshoppers feed on a variety of types of plants (both crops and non-crop). Clearwinged grasshopper is primarily a grass feeder, and seldom feeds on broad-leaved plants.

### Recent trends in grasshopper populations

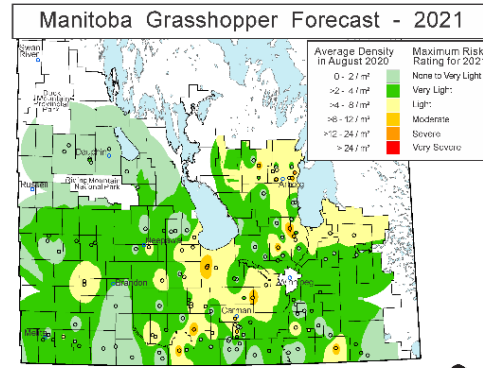
Grasshopper outbreaks usually develop after a few years of conditions that are favourable for a steady increase in numbers of those species of grasshopper that can become pests of crops. Comparing the current August grasshopper counts with those of previous years can determine if the populations tend to be rising or falling.

The following figures show the average grasshopper density in August for data collected from 2017 to 2022.

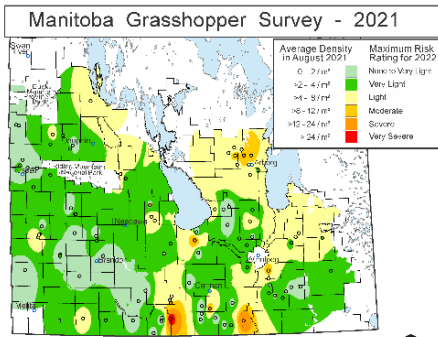




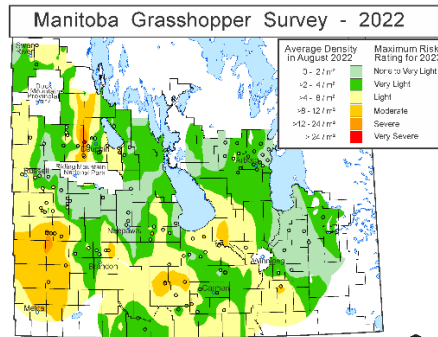
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Grasshopper counts were quite low in the survey done in 2017. The data collected in the past five grasshopper surveys (from 2018 to 2022) show an overall increased grasshopper population.

Comparing the counts from the 2021 and 2022 surveys, in 2021 the percentage of counts in the survey that were in the moderate to very severe categories was 10.3%, while the percentage of counts in these categories was 16% in the 2022 survey. Although the majority of counts are still in the none to light categories, there continues to be areas where counts in some of the higher categories are occurring.

### Weather for the 2022 Growing Season

**Precipitation:** Throughout May and June, agricultural regions of Manitoba received frequent rainfall, with many locations receiving at least 10-15 mm of rain per week. Over this same period, it was not uncommon for locations hit by heavier storms to receive 30 mm of rain or more per week, with some receiving in excess of 65 mm per week. Consequently, many locations throughout the province met or exceeded their respective accumulated precipitation normal early in the growing season, resulting in delayed seeding.

During the primary egg-laying period for grasshoppers (August and September), precipitation was generally below normal. The one exception was the Eastern region, which had average rainfall of 124% of normal in August. All other regions had below normal rainfall in August, and all agricultural regions of Manitoba had below normal rainfall in September. Most regions had 60% or less of normal rainfall in September, the exception being the Eastern region, with 93% of normal rainfall in September.

**Temperature:** Throughout May and June of 2022, there was a slight lag in the weekly accumulation of growing degree days measured relative to normal, with the lag more pronounced in the Northwest and Southwest regions. By July and August, many locations



throughout Manitoba met or exceeded their historical average heat accumulations. This trend continued into September.

Temperatures in all regions were above normal on average for the month of September. The Southwest had the highest average deviation, being 2.4 degrees above normal. By September 21, the first fall frosts had been experienced by some locations in the province.

## Summary

In spite of the abundant rainfall early in the season, grasshopper levels remained high. Control was needed in many crops, and reported from all agricultural regions. Some high levels of a fungal pathogen were noticed late in the summer. This may be a consequence of the abundant moisture earlier in the season, and may help reduce populations to some degree next year in areas where it was abundant.

Our pest species of grasshoppers all overwinter in the egg stage. Some insects, such as larvae of some species of bee flies and *Epicauta* species of blister beetles, feed mainly on grasshopper eggs. Field crickets, which feed on many things, will also feed on grasshopper eggs. All of these insects were quite noticeable in some locations of Manitoba in 2022.

Conditions for egg laying in late-summer were generally good. Precipitation was generally low and temperatures above normal, allowing the grasshoppers to be active and laying eggs into late-summer.

The risk of economical populations of grasshoppers developing in 2023 varies, depending on location. The August survey showed generally light to moderate levels in many areas, but there has been an increase in higher counts in surveys over the past few years. If weather is favourable for grasshopper survival and development there may be areas where grasshoppers are a concern to crops in 2023.

When they have the opportunity, farmers and agronomists are encouraged to monitor grasshopper populations, beginning in late-May or early-June in 2023, along roadsides, field edges, and other areas where populations tend to be concentrated or at high levels early in the season.

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For more information on the grasshopper forecast or monitoring for grasshoppers, please contact John Gavloski at (204) 750-0594.

The protocol for doing the grasshopper counts for this survey can be found at: <https://www.gov.mb.ca/agriculture/crops/insects/pubs/grasshopper-survey-protocol-2022.pdf>

A factsheet providing more information on grasshopper biology, species identification, monitoring and management is available at: <https://www.gov.mb.ca/agriculture/crops/insects/pubs/grasshoppers-factsheet-revised-november2022.pdf>