

# SASKATCHEWAN'S BLACK WIDOW SPIDER POPULATION

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## Introduction

Of the two black widow spider species in Canada only the Western Black Widow (*Latrodectus hesperus*) is found in Saskatchewan. The presence of the Western Black Widow spider in the province has been known since 1980.<sup>1</sup> However, there exists a large gap in knowledge about this invertebrate member of Saskatchewan's grassland ecosystems. For example, as far as its distribution in the province is concerned, there exist only three publications, each reporting on a single location.<sup>1,2,3</sup> The purpose of this report is to start building a database on the Western Black Widow in Saskatchewan. To do this, all of what is

currently known about Saskatchewan's black widow spiders has been summarized under five main categories: physical features; range; seasonal activity; maturation and emergence of spiderlings; and spider behaviour. The focus of this article is on the female Western Black Widow since there have been no sightings reported of the much smaller and far less conspicuous males.

Note that references are made to a black widow spider found in the Webb National Wildlife Area, which is located 28 km west of Swift Current, on 15 June 1980. The Prairie Wildlife Centre, which once stood on this site, was cited as the location for this black widow spider in a 1986 *Blue Jay* article.<sup>1</sup> However, with the building now removed from the site, the Webb National Wildlife Area is now the reference location for this spider.

## Physical features

The Western Black Widow spider is the only spider in the province with a red hourglass marking. However, immature black widow spiders may be seen with a pattern different from the red hourglass with the markings appearing on the ventral surface (Figure 1). A sexually mature spider has the hourglass shape on its dorsal surface. If the spider is in its initial stages of molting, it may be a tawny brown colour (Figure 2). Immature spiders will get blacker as they molt toward sexual maturity.

The telltale red hourglass marking on its abdomen makes the identification of this particular specimen easy. I measured the body length, not including the legs, of two spiders by holding a ruler next to them while they clung to their webs. The larger spider, measuring 13 mm, was



One of the resident Black Widow Spiders of Saskatchewan. The spider is using its hind legs to strategically place silk that came from its spinnerets. Photo credit: Ashley Mills, 2021© Ashley Mills (some rights reserved CC BY-NC 4.0 DEED).



**FIGURE 1.** Immature Black Widow Spider with markings that are different than those found on the adult. Photo credit: mendomamas © mendomama (some rights reserved CC BY-NC 4.0 DEED).



**FIGURE 2.** An immature Black Widow Spider with its hourglass marking. Photo credit: Nick Cairns © Nick Cairns, some rights reserved (CC-BY-NC).

the one discovered in 1980.<sup>1</sup> The second spider, with a body length of 4 mm, was found 40 paces away from the larger spider, one year later. The close proximity of the second spider to where the first spider had its egg cases would lead one to believe that the second spider was a survivor from the previous year's clutter of spiderlings. The second spider, with its 4 mm body, measured 12 mm when the legs were included. No leg measurements were made for the first spider.

If anyone is interested in knowing the Western Black Widow spider's size, shape and markings, the Royal Saskatchewan Museum (RSM) in Regina has a Frenchman Valley display in which the spider is clearly shown with all of its distinguishing features (Figure 3). The specimen on display is just one of 13 in the museum's invertebrate collection. Ryan Oram, Curatorial Assistant of Invertebrate Zoology at the RSM, reported that nine of these black widow spiders were found in shipments of grapes from California.

Range

The Western Black Widow's range in Canada includes Vancouver Island at the western edge and extends as far east as Saskatchewan. Google Earth was used to create a range map for the Black Widow



**FIGURE 3.** The Western Black Widow spider in the Frenchman River Valley display at the Royal Saskatchewan Museum. Photo Credit: Doug Adams.

Spider in Saskatchewan (Figure 4) based on a list of individual spider sightings in the province, along with data from iNaturalist (sightings verified by 29 September 2024), existing publications, and personal accounts.<sup>1, 2, 3</sup> The icons on the range maps do not show exact locations, but give close proximities. The actual coordinates for each of the locations, their matching dates, and the observer's user name are included in Table 1.

When looking at the range map created for Saskatchewan, the greatest

concentration of black widow spider sightings is in Grasslands National Park. This is not surprising considering the high volume of pedestrian traffic in this area. It remains to be seen if, in fact, black widow spider density is highest in this part of the province compared to other parts of the province.

The presence of black widow spiders in a more westerly location was confirmed on 23 June 2020 when Michael Burak, along with a colleague, found seven spiders on Nature Conservancy's Zen-Ridge property.<sup>3</sup> There are no

**TABLE 1.** Dates and co-ordinates for all known black widow spider sightings in Saskatchewan. Note that a day of "oo" indicates that no date was provided by the observer.

DATE	LAT/LONG	OBSERVER	LOCATIONS REFERRED TO IN ARTICLE
29-Sep-24	49.1726965426, -107.513595548	tjames	Grasslands Nat. Park
2-Jul-24	49.1817382337, -109.5231630653	julmarsh	
2-Jul-24	49.1631388333, -109.6945583333	ericaalex	
00-July-24	49.0090580085, -109.7398677879	andy-nguyen	Willow Creek
16-Jun-24	50.9211633167, -109.9874683333	cosmophasis	Empress Cemetary
7-Jun-24	49.1417719, -107.6329414	nick_ypelaar	Grasslands Nat. Park
25-May-24	49.1222583333, -109.429275	sarahgrace27	
22-May-24	50.5798052, -109.9714720997	alex_fisher	
21-May-24	49.2057133333, -107.561805	micahguenther	Grasslands Nat. Park
11-Dec-23	49.9034826886, -109.4777778013	falcosparverius07	Maple Creek
25-Sep-23	49.2010016667, -107.6622766667	nacairns	Grasslands Nat. Park
8-Sep-23	49.10318, -107.18656	emhal	Grasslands Nat. Park
12-Jul-23	49.1047138889, -107.3929944444	juliaeput	Grasslands Nat. Park
5-Jul-23	49.5767366667, -108.896605	reedlewko	
23-Jun-23	50.391527, -109.398862	G. Pidborchynski & A. Vass	Fox Valley
20-Jun-23	49.1465861111, -107.6304222222	samueld	Grasslands Nat. Park
10-Jun-23	49.1179361667, -107.305795	gardilau	Grasslands Nat. Park
10-Jun-23	49.1392574288, -107.6303838193	ctomlinson12	Grasslands Nat. Park
8-Jun-23	49.2391199569, -107.7300875634	emhal	Grasslands Nat. Park
29-May-23	49.15213, -107.634552	ellyne	Grasslands Nat. Park
00-May-23	49.1440231893, -107.687281756	ctomlinson12	Grasslands Nat. Park
7-Jul-22	49.1324066667, -107.3880916667	nacairns	Grasslands Nat. Park
27-Jun-22	49.28812, -109.27108	jesse_patts	
21-Jun-22	49.150848, -107.555866	sarasims	Grasslands Nat. Park
16-Jun-22	50.2947938389, -109.1733141616	crowladyjay	
11-Jun-22	49.1447843972, -107.4905524694	dolanbohnert	Grasslands Nat. Park
11-May-22	49.187755, -107.5953316667	nacairns	Grasslands Nat. Park
7-Sep-21	49.142505, -107.4924983333	nacairns	Grasslands Nat. Park
8-Jul-21	49.4059370952, -109.2021046321	ash-mills	
00-May-21	49.1270038319, -107.2568714817	nacairns	Grasslands Nat. Park
4-Oct-20	50.0198100364, -105.9588326208	mendomama	Old Wives Lake
23-Jun-20	49.250988, -109.761090	Michael Burak & Colleague	Zen-Ridge Property
1-May-09	49.1726965426, -107.513595548	nacairns	Grasslands Nat. Park
1-May-09	49.1354438866, -107.4918059259	nacairns	Grasslands Nat. Park
16-Jun-16	50.0198100364, -105.9588326208	mc1991	Grasslands Nat. Park
30-Jul-11	49.170032, -107.620697	kmcrae	Grasslands Nat. Park
23-Jun-83	49.291146, -109.7452236	Wayne Lynch	
18-Jul-80	50.2053241971, -108.1372027668	Doug Adams	Webb National Wildlife Area



individual GPS coordinates for the seven spiders but their general location is indicated on the map, along with the observation date (Figure 4).

Three years later to the day, on 23 June 2023, Grace Pidborchynski and Ashley Vass came upon two spiders while visiting a site southeast of Fox Valley as part of Nature Saskatchewan's summer field crew work. Due to privacy concerns for the property owners, the icon on the map shows only an approximate location of these two spiders, indicated again by observation date (Figure 4). As of the end of 2023, the Fox Valley sightings marked the most northern limit of black widows in the province.

After tabulating the 2024 iNaturalist sightings, the area of the spider's range has become much larger. The southern boundary now extends directly west of Grasslands National Park to Willow Creek on the 49th parallel. The western boundary is formed by drawing a line from Willow Creek north to the Empress cemetery (Figure 4), with the cemetery being the most northern location for the

spider in the province (15 km north of Fox Valley). The eastern boundary is marked by drawing a line from the Empress cemetery to Old Wives Lake and then south to Grasslands National Park.

One of the 2024 iNaturalist sightings also marked the first report of a black widow spider found in a building in Saskatchewan. On 11 December, a dead spider was found in the heated garage of a home in Maple Creek. A web had been constructed but no egg cases were found (pers. comm. with Maple Creek resident).

### Seasonal activity

Adult female Western Black Widow spiders have been found in Saskatchewan in spring, summer and fall, with sightings beginning 1 May and ending 4 October. The month of June has had the greatest number of spiders observed.

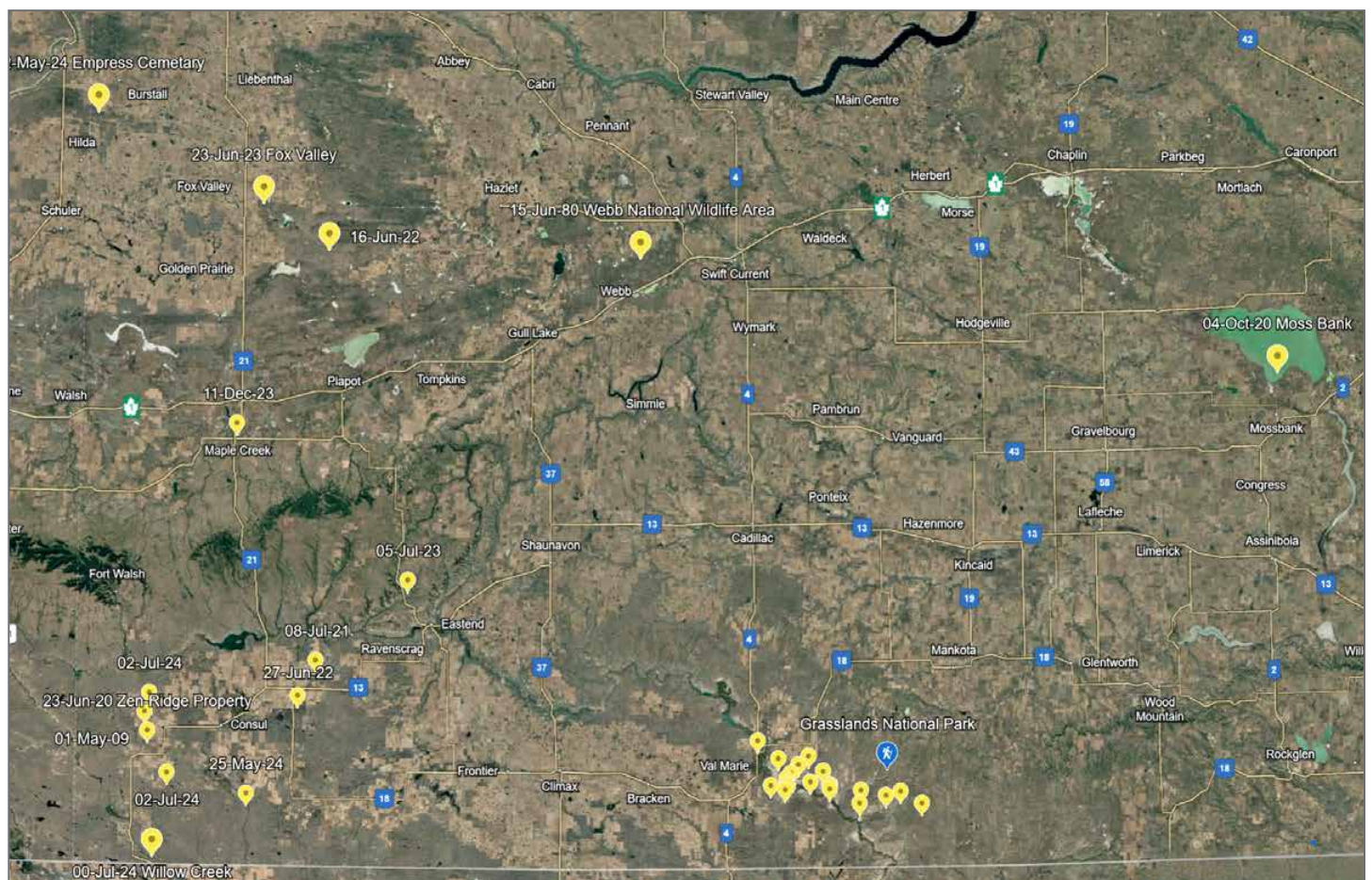
The earliest egg sacs were seen on 27 May. Size measurements for two egg sacs found in the province have been recorded. Both were removed from the same web at the same time.<sup>1</sup> The smallest was 1 cm and was protecting an

unknown number of eggs. The larger sac, measuring 1.5 cm, held more than 100 white spiderlings.

The earliest sighting of multiple egg cases occurred on 18 July when a total of four egg cases were reported.<sup>1</sup> During the same month, but not the same year, three egg cases were photographed in a different web (Figure 5).



**FIGURE 5.** Female Black Widow Spider protecting three egg cases. Notice the irregular arrangement of the silk threads that make up the spider's cobweb. Photo credit: Kevin McRae. All rights reserved. <https://www.inaturalist.org/photos/1416827?size=large>



**FIGURE 4.** Range of Western Black Widow spiders in Saskatchewan. Google Earth.



## Maturation and emergence of spiderlings

A female Western Black Widow, which was collected by Wayne Lynch on 23 June 1983 and kept in a jar, had constructed an egg case on 1 July.<sup>2</sup> On 17 August, 47 days after the egg case construction began, 49 spiderlings emerged from the egg case.

An egg case was removed from the Webb National Wildlife Area spider's web on 14 July 1980.<sup>1</sup> The egg sac, which was pulled apart by human hands four days later, contained small, white spiderlings.

Ryan Oram from the RSM provided information about an unknown observer who witnessed the emergence of spiderlings on 12 August 1990. The circumstances surrounding this observation were not provided by the observer, but the spiderlings were donated to the RSM's collection.

## Black widow spider behaviour

Two mature black widow spiders were photographed in the same web, at the same time, by Nick Cairns and submitted to iNaturalist. The spiders were not close together on the web at the time the photograph was taken, so it is not known if any sort of interaction had taken place between them. This information has been included since it is known that females don't usually tolerate the presence of other females. Some intimidating behaviour has been observed between two females, such as leg fencing, locking chelicerae, biting, silk wrapping or silk bolas swinging, but such encounters do not result in fatalities.<sup>4</sup>

The female spider found at the Webb National Wildlife Area recognized that the two egg cases returned to her web, after being taken away for identification, were the ones that had gone missing four days prior. Within a minute of the cases being dropped back onto her web, she retrieved

them and returned them to the spot where her two other egg cases were located.<sup>1</sup>

Forty paces from the location of the black widow spider mentioned in the previous paragraph, and 395 days later, a smaller black widow was observed, by the author, securing a squirming grasshopper with its silk. Even though the grasshopper's hind legs were safely secured, the spider continued to wrap more silk around the insect's hind legs.

## Finding and reporting black widow spider sightings

When in southern Saskatchewan, check holes abandoned by ground squirrels, badgers or foxes — the only natural places female black widow spiders in Saskatchewan have selected to construct their webs. These black spiders, in their dark burrows, are easy to miss but the suspended whitish egg sacs, if present, will be easy to spot. The female is often found clinging to the underside



**FIGURE 6.** The author (middle) kneeling to show visitors to the Webb National Wildlife Area the black widow spider located in a abandoned ground squirrel hole. Note the surrounding habitat where black widow spiders are most likely to be found in Saskatchewan. Photo credit: Pat Adams.

of an egg sac. Any hole with single silk strands that appear to be haphazardly strung across the entrance deserves a closer look (Figure 6). The black widow belongs to a group of spiders known as the cobweb spiders and, as the name would suggest, the web is seemingly simple compared to the intricate spiral structure of the orb weavers.

There is only the one spider in the province that might be mistaken for a black widow. False widow spiders (Genus *Steatoda*) are also dark spiders with a bulbous abdomen, but they don't have the red hourglass marking. The best way to distinguish between the two is to watch Travis McEnery's YouTube video entitled *The Spiders in Your House - The False Widows* (<https://www.youtube.com/watch?v=FLTYLYwijtI>). Looking at Saskatchewan pictures of false widow spiders on iNaturalist will provide additional information to help in distinguishing the two genera.

Anyone who finds a Western Black Widow spider in Saskatchewan is encouraged to take a photograph of it and record the date, the GPS coordinates, the number of egg cases, the presence of a mature male, or the number of spiderlings. In addition, note any behaviour demonstrated by the spider. This can include, but is not limited to, web construction, egg case construction, capturing prey, and feeding on prey. The data and image(s) can then be uploaded to iNaturalist. Once the photograph has been verified as *Latrodectus hesperus*, the information then becomes part of the "Black Widow Spiders of Saskatchewan" project.

## Acknowledgements

I would like to thank Dr. Catherine Scott for her contagious enthusiasm for anything related to spiders, especially Black Widow Spiders. I was amazed at the depth of her spider knowledge and her willingness to share that knowledge with me.

I would also like to take this opportunity to thank a former colleague of mine, Ragni Askevold, who worked at the Prairie Wildlife Centre at the same time I did. Had she not brought back two spider egg cases to the Centre that day in July of 1980, my fascination with

black widow spiders would not have continued to this day. Ragni did not know the whereabouts of the female BWS's location on the property. She had taken two mysterious spherical white cases from a web so that the contents could be studied at the Centre.

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3. Burak M (2021) A Spider Surprise. *Nature Conservancy of Canada Magazine*, Fall 2021. <https://www.natureconservancy.ca/en/who-we-are/publications/magazine/fall-2021/a-spider-surprise.html>

4. Singh N (2023) Understanding the Preliminary Stages of Social Evolution in Western Black Widow Spiders. Department of Ecology and Evolutionary Biology. University of Toronto.

## Another story of interest

There is a little-known story that started in Alabama and ended in Saskatchewan. The story involves a black widow spider and its bite victim. The victim wrote about his experience in two scientific articles that later became the source of information used by Mr. Gordon Grice in his book, *The Red Hourglass*. The details of the incident, included in this article, come from Mr. Grice's book. It was Mr. Grice who put me on the trail of the victim in Saskatchewan.

In 1933, a professor of pathology at the University of Alabama's medical school designed an experiment to determine the degree of pain a person would experience from the bite of a black widow spider. The experiment was also to include testing the body's immune response when a person is exposed to a second black widow spider bite. The thinking was that the body develops an immunity to the venom after a person is bitten once, so the symptoms of the second bite would be far less severe than the symptoms experienced after the first bite.

The professor decided that he would be the human guinea pig. The professor, who was 32 years of age, was "athletically built" and in excellent health. To begin the experiment, a black widow spider

was denied food long enough that it was starving. It was then coaxed to bite the professor on the tip of his little finger. Some of his students were responsible for monitoring his condition over the course of the experiment. Two hours after the bite, they reported that the professor was experiencing such excruciating pain that he had dropped to the floor in fetal position. His condition continued to deteriorate over the next 48 hours. At one point, the student observers were concerned that he might not survive the ordeal.

Fortunately, for those of us living in Saskatchewan — and particularly in Regina — he did survive. Years later, this person was given the nickname "The Great Healer" by Regina residents. The honour was bestowed on him in recognition for the care he provided cancer patients in this province starting from 1939, as director of Radiation Therapy in Saskatchewan, until his death in 1948. For the last four years of his life, he was the director of Saskatchewan Cancer Services and the director of the Regina Cancer Clinic. His name was Dr. Allan Blair and Regina's cancer treatment centre bears his name. (Figure 1)

The second part of the 1933 experiment, to test the immunity theory, was thrown out because the good doctor could not convince himself that any findings, no matter how important they were, were worth the pain of a second bite.



Dr. Allan Blair. Photograph courtesy of Pat Krause, University of Regina, and the Canadian Plains Research Centre. Saskatchewan Archives Board R-B11015 2007. 