

FOUR JUMPING SPIDERS NEW TO MANITOBA

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As of 2010, nearly 40 species of jumping spider (Salticidae) were known to occur in Manitoba.¹ Another recent checklist on the prairie provinces' spider fauna identified several additional species as hypothetically occurring in Manitoba;² two of these, the western *Habronattus amicus* and *H. cuspidatus* are reported here. The eastern *H. calcaratus maddisoni* and *Marpissa formosa* are also documented. Common names for these spiders are indicated below.³

Salticids have successfully colonized all continents excepting Antarctica, and can be found in habitats as diverse as tropical, temperate and boreal forests, grasslands, deserts, semi-aquatic habitats, intertidal zones and agricultural crops, as well as urban environments. These largely diurnal hunters can be found in tree canopies or on tree trunks, in understory vegetation, or can be primarily ground-dwelling. As implied by the epithet “jumping spider”, locomotion is often achieved by leaping. Arthropod prey is visually located and stalked, then pounced on (salticids do not usually spin webs). A “drag line” is employed as a safety measure as they move about.^{4,5} Silken structures under rocks or at the tops of plants, etc., are used for shelter, or as nurseries and brood nests for the eggs and newly-hatched young.

The project goals were to document distributional and phenological data for each salticid species herein, as well as noting habitat preferences, behaviour, and presence of (or interactions with) other salticids, if any. Expeditions were often directed but some data were gathered opportunistically while looking for other taxa; for this reason, hourly surveillance totals expressed herein may be understated. To simplify dates of observation, the calendar month was

broken into three 10-day blocks, from here on referred to as “early”, “mid” and “late”. Search efforts collectively number in the several hundreds.

The determination of *Habronattus* species included herein was achieved by a combination of physical characteristics of mature males as outlined in the literature, including the presence or absence of modifications to the first and/or third legs (spines, specialized scales and/or modifications to the patella), useful in identifying superficially similar species.⁶ Ornamentation of the first and third legs (sometimes used in conjunction with vibratory signals) are used by many *Habronattus* males in complex courtship “dances”.⁷⁻¹⁰ Since these spiders are primarily ground-dwelling, special attention was focused on the substrate and low vegetation in open areas and edge habitats in grasslands and forests, along roads and trails, clearcuts, sand dunes and sand, gravel or rock quarries.

As the *Habronattus* species of concern here overwinter in late-stage instars and mature in early spring, field surveys (2014 to 2023) began in late April to mid-May (depending on conditions), to early July. Repeat visits were made to many sites from July to October (2018-2023) to improve knowledge of the general salticid fauna and to better acquaint myself with immature and subadult stages of local *Habronattus*.

Provincial forests and parks and wildlife management areas (PF, PP, WMA), which are all designated as multi-use areas (recreation, resource extraction, research and education), benefit from varying levels of protection from development, and timber or aggregate extraction; as such, they provided ideal locations for this research project. Other locations that received attention but were outside of these protected areas still retain a minimum of natural habitat.

Data were collected from locations at or south of the 51st parallel within three ecozones (Prairies, Boreal Plains and Boreal Shield).¹¹ The ecoregions within these zones boast a diverse arthropod fauna and several arachnids reach their western or eastern range limits in Manitoba.¹²

***Habronattus amicus* (Fine-fringed Ornamented Jumping Spider)**

Open sand, such as that found on beaches and coastal and inland sand dunes, is the preferred habitat of *H. amicus*. The spider is extant in southern Alberta and Saskatchewan, and southward to New Mexico. In Manitoba, *H. amicus* has only been documented on the active sands of Spruce Woods Provincial Park (SWPP), known locally as the “Spirit Sands”. Nestled in the southwest of the province, the park lies within the Aspen Parkland Ecoregion of the Prairies Ecozone.

A specific search for *H. amicus* in SWPP in late April 2015 led to the first known local record. Two additional trips were undertaken in mid- and late May 2019 and 2021, respectively, and again concentrated on the “Spirit Sands” population. These three visits represent a total of nine hours of field surveillance.

Adult *H. amicus* are active by the end of April when conditions are favourable. Both sexes demonstrate a preference for the flat, open, sparsely vegetated interdunal areas; here, adult male *H. amicus* proved to be very active but none were observed hunting, and were presumably focused on locating receptive females. The somewhat inactive females were occasionally observed stalking large tachinid flies. Larger than males, immobile females can still be difficult to locate because of their cryptic colour and pattern. Courtship sequences in the field have not yet been observed. As individual spiders are sparsely distributed over a relatively large



FIGURE 1. Adult male *Habronattus amicus* from Spruce Woods Provincial Park. Photo credit: Deanna Dodgson.



FIGURE 2. An attractively marked female *Habronattus amicus*, almost invisible against the substrate. Photo credit: Deanna Dodgson.

area, only a few *H. amicus* were seen per visit and no other salticids were found on the dunes (though others were identified in other areas of the park). Data are currently insufficient to determine the average main activity period at SWPP.

Several large roadside blowouts within the park and in the general area have been inspected for this species' presence with negative results. Exploration of less substantial sand hills to the east (Portage Sand Hills WMA) have also proven unsuccessful.

Additional sand hill complexes in the southwest (e.g. Oak Lake, Lauder) should be sampled to more adequately map the distribution of *H. amicus* in the region.

***Habronattus cuspidatus* (Prairie Ornamented Jumping Spider)**

A common denizen of western grasslands, *H. cuspidatus* is extant in Saskatchewan and Alberta and southward to Minnesota and Texas. Despite the presence of appropriate habitat in Manitoba, the species

remained undocumented (two recent studies of the spider assemblages on parcels of mixed grassland near Brandon and tallgrass prairie near Winnipeg did not include the species in their inventories)^{13,14} Since spring 2021, *H. cuspidatus* has been recorded from locations within all three ecozones. This species is common in the west of the province, and many dozens may be found in a single location.

The habitats in which *H. cuspidatus* occurs ranges from oak/aspen savannah



FIGURE 3. Adult male *Habronattus cuspidatus* from Lake of the Woods Ecoregion. Photo credit: Deanna Dodgson.



FIGURE 4. A fairly typical female *Habronattus cuspidatus* from east of Lake Winnipeg; those from the prairies are often more lightly marked. Photo credit: Deanna Dodgson.

(Portage Sand Hills WMA), relict grassland areas (Winnipeg, Birds Hill PP), transitional grassland/boreal habitats (Rembrandt and Sleeve Lake), and boreal environments (North-west Angle Provincial Forest, Agassiz Provincial Forest, Pine Falls area). Open, grassy areas are favoured by *H. cuspidatus* at the Portage Sand Hills WMA (south of Portage la Prairie) and in the Interlake ecoregion, such as at the edges of roadside blowouts, in grassy verges, or the edges of gravel pits (active and disused). *H. cuspidatus* in Agassiz Provincial Forest were found in a disused, moderately vegetated, open gravel pit. *H. cuspidatus* occurs on the ground in rock/gravel quarries east of Lake Winnipeg, at the edges of sparse to moderate vegetation, or among rocks. Seemingly not confined to natural grass areas, *H. cuspidatus* has also been recorded in the author's suburban yard in Winnipeg.

Adults of both sexes were detected by the second week of May at most localities (up to a week or more later with inclement weather and/or latitude). Adult males are highly mobile, approaching conspecifics whenever opportunities arise. Females are generally less active. Paired *H. cuspidatus* occur until mid-June (west of Lake Winnipeg). There is a marked decrease in the number of mature males by mid-June, with some adult females still occasionally

detectable. Despite the presence of numerous individuals of both sexes in some locations, no courtship sequences have yet been observed. Adult males appear generally uninterested in feeding (one male was seen to successfully catch and consume a very small fly).

Immatures with similar abdominal markings to adult *H. cuspidatus* were observed by early August (several locations), and subadult males are present in mid-September (Interlake, North-west Angle PF). Time spent in observation of *H. cuspidatus* is approximately 35 hours.

East of Lake Winnipeg, where *H. cuspidatus* is apparently uncommon, the species occurs with *Evarcha*, *Pelegrina* and *Pellenes* species, as well as *Phidippus borealis*/*P. purpuratus*. Co-occurring *Habronattus* include *H. c. maddisoni* and *H. captiosus* in gravel and rock quarries. In areas surveyed west of Lake Winnipeg, *H. cuspidatus* is found with *H. altanus*; also an unknown *Phidippus* and a *Pellenes* species.

***Habronattus calcaratus maddisoni* (Maddison's Jumping Spider)**

H. c. maddisoni is one of three geographically distinct subspecies and to date the only one reported for Manitoba (*H. c. agricola* has been recorded from South Dakota to Texas while the nominate subspecies is found only in southern Florida). The known range of

H. c. maddisoni stretches from Minnesota (where it is listed as a species of special concern) to northwestern Ontario, Quebec and New Brunswick, southward to Maine and along the Atlantic coast to the Cumberland Plateau in the Appalachian Mountains.^{15,16} All records for *H. c. maddisoni* were obtained from the Boreal Plains and Boreal Shield ecozones, in open areas within deciduous, mixed and coniferous forests.

First documented in August 2013, *H. c. maddisoni* has been detected in open areas such as gravel quarries, borrow pits and along trails in mixed forest, in clearings and along roadsides within Jack Pine (*Pinus banksiana*) forest, grassy edges of bur oak (*Quercus macrocarpa*) forests, in clearcuts (both recent and regenerating) in mixed forest, and on rock outcrops. *H. c. maddisoni* is mainly ground-dwelling and appears strongly forest-oriented, as all sightings to date occurred within or at the edge of woodland. This species is moderately common when found, and appears to be local in occurrence. Data represents more than 60 hours of field observation.

Mature males appear not to feed, as none were observed doing so. Abbreviated courtship sequences were observed in the field on only two occasions, and only one pair was found in copula. The rather plain adult females are somewhat secretive and thus less visible.



FIGURE 5. A mature male *Habronattus calcaratus maddisoni* from Lac Seul Ecoregion. Photo credit: Deanna Dodgson.



FIGURE 6. A pair of *H. C. maddisoni* in courtship. Photo credit: Deanna Dodgson.

Mature males have been recorded from mid-May to early July, with the greatest numbers seen in late May or early June (approximately one week later at higher latitudes, or in inclement weather). Penultimate males have been recorded from early to mid-September, and in spring as early as mid-April.

In addition to its co-utilization of gravel pits with *H. cuspidatus* and *H. cognatus*, *H. c. maddisoni* has been found with *H. americanus* and *H. cognatus* in clearings within mixed forest, with *H. captiosus* in rock quarries, and with *H. decorus* on rock outcrops. Other salticids observed in proximity to *H. c. maddisoni* include *Attulus floricola*, *Evarcha* sp, *Marpissa formosa*, *Pellenes* sp, *Phidippus borealis* and/or *P. purpuratus*, *P. whitmani*, *Talavera* sp and *Tutelina* sp.

Nearly all records of this species were acquired from the Lake of the Woods ecoregion; however, *H. c. maddisoni* was recently confirmed at one location in the Lac Seul Ecoregion (north of Pine Falls), where ante-penultimate males and immatures were previously recorded (while reasonably confident of identification of penultimate-instar males of this species, the presence of mature males was desired to confirm identity). After two previous visits to the area, adult and penultimate male *H. c. maddisoni* were also discovered approximately 56 km northward in the

Hollow Water area in mid-May 2023, thus extending the species' northward range in southeastern Manitoba (previous visits likely occurred outside of the main activity period, or the spiders were simply missed). Regular monitoring of the Hollow Water population and investigation of potential new sites within the ecoregion will be challenging due to its remoteness.

***Marpissa formosa* (Short-bellied Slender Jumping Spider)**

Unlike the previous three species, the distinctive and sexually dimorphic *M. formosa* is associated with humid to wet habitats.¹⁷ *M. formosa* is widely distributed in eastern North America and has been recorded mainly from wet meadows, marshes and bogs. A single female was located in mid-September in Lake of the Woods ecoregion, Boreal Shield Ecozone, at the edge of a vegetated roadside in mixed forest, surrounded by peatland and open marshes. The female remained in view for 13 minutes, alternately resting/ basking on the road and presumably searching for prey along the verge. The day was unseasonably hot (28°C) at mid-afternoon when the jumping spider was found. No other *M. formosa* were seen in the vicinity, nor were any seen on a subsequent visit to the site one week later when maximum temperatures were

much lower (10°C). Two non-exhaustive searches of the same site in July 2022, and again in early September 2023, were unsuccessful.

The additional record of two male *M. formosa* found approximately 40 km south of the initial location in mid-June 2023 lends credence to a natural existence (i.e. not accidentally introduced) in southeast Manitoba. The first male was seen hunting along the margin of a large, permanent gravel pit pond edged with willows, the second was on algae at the base of a small group of cattails in a marshy gravel depression approximately 0.5 km away. None were seen at this pond complex over the next two weeks, or at several similar ponds in the vicinity.

With limited search effort to date and a scant hour of direct observation, *M. formosa* in Manitoba warrants further study. The preferred habitat of this species is common in the southeast, and *M. formosa* likely occurs elsewhere within the Lake of the Woods ecoregion. Collection of distributional data for this species will require special effort, however. The nearest known occurrences of *M. formosa* are from Shoal Lake, Ontario, a distance of approximately 64 km, and from northeastern Minnesota, more than 250 km to the southeast.^{18,19,20}

Naturalists of all levels of expertise can contribute much to the knowledge



FIGURE 7. *Marpissa formosa* female — a first record for Manitoba. Photo credit: Deanna Dodgson.



FIGURE 8. Male *Marpissa formosa* enjoying a pond-side snack. Photo credit: Deanna Dodgson.

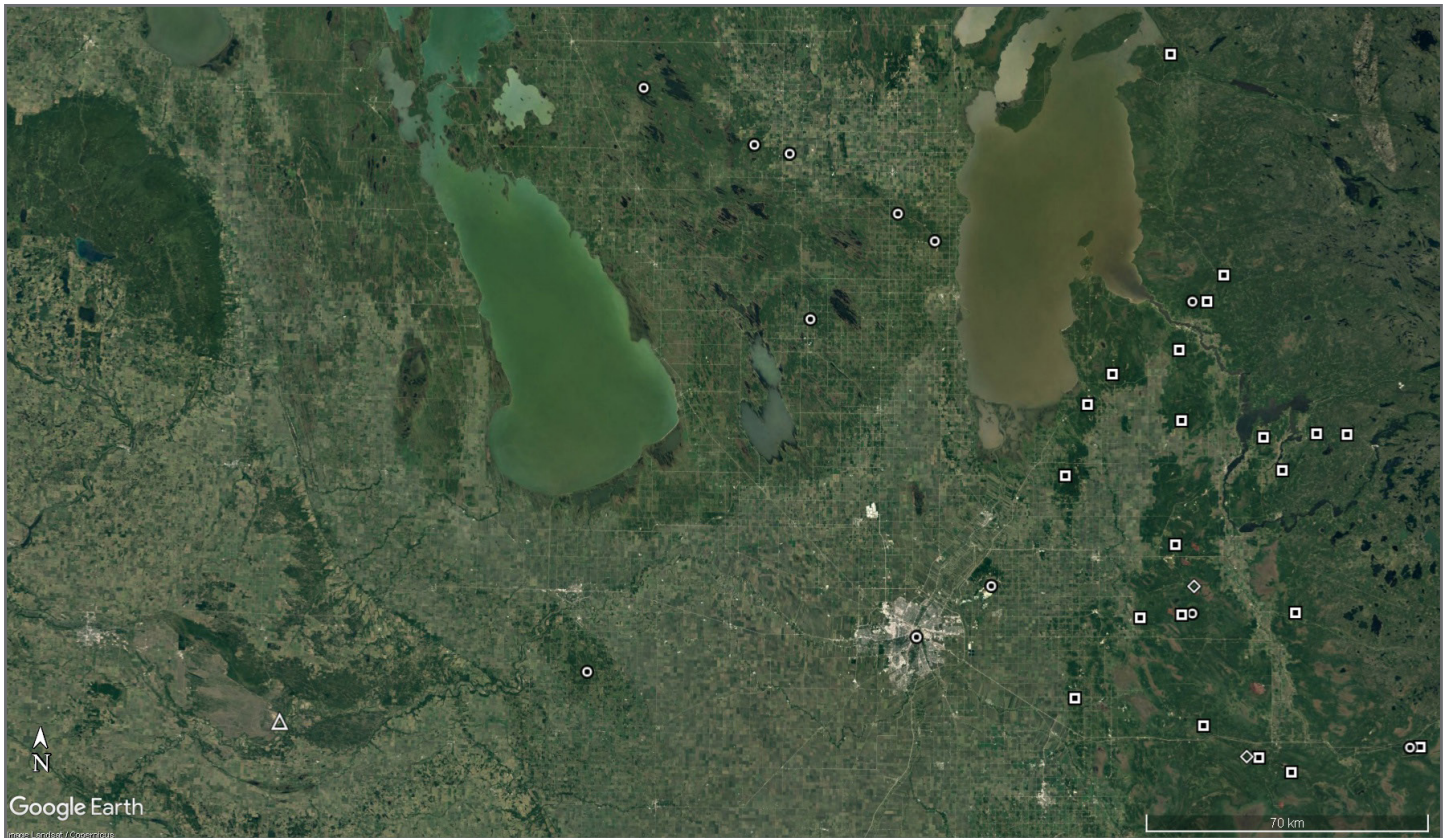


FIGURE 9. Map of locations successfully surveyed for the jumping spider species treated in this article. square: *Habronattus calcaratus maddisoni*, circle: *Habronattus cuspidatus*, triangle: *Habronattus amicus*, diamond: *Marpissa formosa*.

of the flora and fauna of our planet. It is my hope, that in some small way, this article and the information it contains will be useful, and promote the further enjoyment and study of these amazing creatures.

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