

# *Opuntia fragilis* in Minnesota

**L**and of 10,000 lakes, Minnesota is definitely not the endless cornfields of Iowa and Illinois. It's also not the mostly forested states of Michigan and Wisconsin. As in most things, Minnesota is unique. Ecologically, the state is two large triangles of land with a tapering rectangle separating them. The southwestern part of the state was prairie; black fertile soil, now turned into cornfields like most of Iowa, occasionally broken with bumps of pink quartzite shoving to the surface. The southern part of the state is slashed by the Minnesota River. The northeastern part of the state is northern mixed hardwood, transitioning into boreal forest. These forests caress a lifetime of lakes waiting to be explored in a canoe or kayak. Between these two triangles is a long wedge of deciduous forest, tapering to a narrow band in the north and opening out into a broad biome in the south.

I've always liked Minnesota. I was born in southwestern Minnesota, and when I left graduate school I lived in Saint Cloud for four happy years. Minnesotans know how to deal with snow, whether driving, shoveling, or playing, and can walk on water for at least four months each year. Compared to the other Midwestern states, Minnesota has *Opuntia fragilis* in abundance. It's still an uncommon species, but there are at least fifty places in Minnesota where if you are not careful you will sit on a clump of the spiny pads.

I have been hunting populations of this little prickly pear in the Midwest. Michigan, Iowa, and Illinois required endless driving before we eventually found a very few small populations that were often troubled. Wisconsin has over 30 populations, but many are in decline, struggling to compete with the encroaching trees. Minnesota, in contrast, is a happy state for *Opuntia fragilis*. In Minnesota we skipped from place to place, and at times it must have seemed to my crew that the entire state was covered with spines. Most sites are protected by state or county ownership, and most sites have healthy populations.

Minnesota is a difficult state to describe, because of the many people who helped me hunt for cacti, and the abundance of sites. Veronica Flores, my nephew Lars, and I began searching for Minnesota cacti in 2008; Brandon Caley and Camila Sharkey helped me

finish the hunt in 2009. On the way we met many great people. Tom, Steve, Dennis, David, and many others got down on their hands and knees to stare at *Opuntia* pads gleaming from the ground, but Minnesota especially is the home of Henry Fieldseth, who has become an enthusiastic cactus hunter and a tireless investigator. I've argued with Henry, stayed at his house, shared many meals, and discovered a large handful of his many idiosyncrasies.

Henry and I first met via the internet. He manages a large plant sale for a school in the Twin Cities and was interested in some aspects of *Opuntia fragilis*. He even grows them on the roof of his school. Henry used some of my directions to try to find some populations in Stearns County. Later we met Henry in May 2008, at a parking lot near the Louisville Swamp, southwest of the Twin Cities.

Henry is ... Henry. A friendly face framed with shaggy hair and a long beard; feet that apparently have never worn anything but sandals. Put a trilby hat on him, stir in a mix of Minnesota liberalism and ardent vegetarianism, and you have approximated Henry. But your imagination is pale when compared to the real thing. In many ways Henry and I are similar. We both love plants, wear sandals, have beards, and have been known to eat ants. In other ways, Henry and I are very different people. I have spent most of my life in and around classrooms, including nine years in graduate school. As far as I know, Henry is not encumbered with letters attached to his name. And one of the things I dearly love about Henry is that he is not in the least intimidated by my education. He will disagree, challenge, or flat out tell me that I'm wrong. Henry has substantially sharpened my ideas about *Opuntia fragilis*, and for that alone he deserves co-authorship. In addition, he has hunted cactus with me throughout the state, and has probably seen more populations of *Opuntia fragilis* in Minnesota than anyone except me. So, as you read this, imagine me panting down a trail, hot and sweaty. Ahead is Henry, amiably strolling along, deep in conversation with one or another of the people who helped us.

I divide the state's populations of *Opuntia fragilis* into five types of habitats, each with its own characteristics. However, most of these sites are rock outcrops. On rock outcrops, *Opuntia fragilis* typically occupies narrow bands of habitat, usually only a few inches wide.





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**1.** Veronica and Lars at Blue Mound, searching for prickly pear. **2.** Jeffers Petroglyph: the quartzite rock is exposed here, and is covered with ancient petroglyphs. The prickly pears grow along the edges of these outcrops. **3.** Big Stone County: the rolling outcrops along the Minnesota River have prickly pears nestled into the mossy crevices. **4.** Veronica and Steve in Stearns County. **5.** Taylors Falls: *Opuntia fragilis* spilling over the rocks, (inset) Henry and Dave searching. **6.** (opposite) Carver County: note plants growing in grass on gravel.



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It prefers mossy beds where enough soil and water can accumulate to support the mosses, but not enough to permit other vascular plants to grow. These populations can vary enormously in size, but are often fairly small.

1. **Southwestern rock outcrops** (Fig. 1). Of these five habitats, these populations most strongly resemble populations further west into the Dakotas, where *Opuntia fragilis* becomes more common. Pipestone National Monument and the Jeffers Petroglyphs (Fig. 2) are good Minnesota examples. Igneous rocks broach the surface, splitting the fertile prairie soils. *Opuntia fragilis* bristles along the edges of the rocks, surviving in a narrow band between rock and grasses.
2. **Minnesota River bluffs and outcrops.** The Minnesota River slashes southeast from the western border, then abruptly angles north to the Twin Cities. Up and down the river there are numerous rock outcrops, many of which have *Opuntia fragilis*. This is undoubtedly the habitat where most of Minnesota's fragile prickly pear is found. Sites range from the rolling rock outcrops of Big Stone County (Fig. 3) to isolated rock outcrops in Nicollet County. Fortunately, many of these rock outcrops are state scientific or natural areas, places we can be reasonably certain that the cactus will continue to thrive. Climb any bluff or ridge along the Minnesota River in the western half of the state, and you may well find cacti.
3. **Stearns County granite outcrops.** Granite swells to the surface between St. Cloud and Cold Spring, and at least 10 of these outcrops, often former quarries, have prickly pears clinging to the rocks.

Several sites are protected, but many are on private property. One site is a bathtub-sized patch sprawling over a rock outcrop edging the driveway in someone's front yard. This is the region where I first became interested in *Opuntia fragilis*.

4. **Boreal and mixed forest rock outcrops.** Rainy Lake on the Canadian border has at least one population, and there are a number of sites north of Minnesota in Ontario. These populations typically are found on south-facing rock outcrops, near bodies of water (Fig. 4). There are also several populations of *Opuntia fragilis* in Chisago County on the St. Croix River. Here moisture is easier to obtain, and sunlight more difficult: in some places the plants escape the narrow transition between rock and grass to sprawl in large cacti blankets over the exposed rock (Fig. 5).
5. **The unusual plant community sites.** Minnesota has a small collection of sites that don't fit into any of these categories, sites where *Opuntia fragilis* grows with other vascular plants. There are fragile prickly pears growing with prairie grasses on the sandy soils of the Sherburne National Wildlife Refuge, filling openings and growing underneath large red pines in a nearby plantation, and creeping down a steep grassy hill in Carver County. The Carver County site is on the edge of the Minnesota River, but unusual for its substrate of gravel (Fig. 6). However, in all of these sites *Opuntia fragilis* is growing with other vascular plants; on the rock outcrops, typically *fragilis* disappears when the soil becomes deep enough to support plants other than mosses.







Interestingly, while Minnesota has the largest number of populations of any of these five Midwestern states, it does not have the biggest individual populations. The Illinois site covers over 100 acres. There are places in Wisconsin where *Opuntia fragilis* sprawls across at least 25 acres, places where it is challenging to walk through the site without stepping on a cactus plant. But the Minnesota populations tend to be smaller. The biggest populations are probably the Louisville Swamp site in Scott County, or the large scattered population in Big Stone County.

One site in Iowa had many dead pads. Illinois pads tend to be spotted with areas of dead tissue. Wisconsin populations sometimes look reddened and etiolated. But Minnesota prickly pears tend to look good. There is considerable variation, ranging from the tiny pads of Rainy Lake to large pads densely bristling with spines near Morton (Fig. 7), but everywhere the plants tend to eagerly rebound from their winter dormancy, quickly resuming a bright green, turgid, and covered with new buds.

In 2009 we searched for evidence of flower buds. Many of the Minnesota populations are producing

7. *Opuntia fragilis* in Morton County has longer spines than normally encountered.

8. *Opuntia macrorhiza* at Blue Mound.

9. *Opuntia fragilis*, blooming in Scott County. Photo by Barry Jones.

flowers. Henry found plants in bloom in Scott County on July 5, and wrote that they were an interesting mix of colors, ranging from peach to a pale creamy yellow. Flowering appears to be optional, but large plants in healthy locations will try to bloom. However, I have never found *fragilis* fruit with viable seeds in Minnesota.

Where can you see *Opuntia fragilis* in Minnesota? The good news is that if you live in Minnesota, you are probably within 100 miles of a population. The bad news is that many populations are quite small and are hanging out on rock outcrops, so you will probably have to do some climbing. It is much easier to find *Opuntia fragilis* from Redwood west along the Minnesota River, or on the few rock outcrops sprinkled across the southwestern corner of the state. Climb the bluff at Blue Mounds. Wander through Jeffers Petroglyphs Monument. Explore the rolling rock outcrops of Big Stone County.

Many of these sites will have two species of *Opuntia*. *Opuntia fragilis* has small pads, less than 3 inches long. The other species of *Opuntia* in Minnesota has much bigger pads, about the size of the palm of your hand. More work needs to be done on the *Opuntias* of Minnesota. It is my opinion that most of these large prickly pears are *Opuntia macrorhiza* (Fig. 8), but other workers have classified many of them as *Opuntia humifusa*. Whatever the species, enjoy these unique plants, appreciate the flowers (Fig. 9), beware the spines, and let the plants continue to bake in the sun, soak up rain, and grace the rocks with splashes of green. And if you think you've found a new location, drop me an email or a note! I'm sure there are populations I don't know about yet.