

# BEAVER CREEK, MILKWEEDS AND MONARCH BUTTERFLIES, AND THE URQUHARTS

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In September 2020, I was walking on the south side of the Discovery Trail in the Beaver Creek Conservation Area, 17 km southwest of Saskatoon, and came upon a milkweed plant nearing the end of its growing season. A clump of rust-coloured oval seeds, each still attached to the seed pod by long white silky strands, hung from a dried plant stem. Large, stiff, tan brown leaves remained firmly anchored to the resilient stalk. This was an exciting discovery! I looked around the immediate area to see if there were other milkweed plants nearby. And yes, there were three others. I excitedly snapped photos as proof of this unexpected find (Figure 1). My excitement came from knowing that this plant was definitely not part of the Beaver Creek flora in 1978, a time when I managed the Beaver Creek interpretive program.

It was one year later, in 1979, and 305 km further south and west, while working at the Prairie Wildlife Centre

near Webb, Saskatchewan that I encountered, for the first time, a milkweed plant in the province. Of the five species of milkweeds growing in Saskatchewan, it was showy milkweed (*Asclepias speciosa*) that found its way into my field notebook that summer. This impressive plant was easy to find in clumps along the shoulder of gravel roads with its large, fragrant, pink flowers held up by tall, thick, robust stems (Figure 2). However, the newly discovered plants at Beaver Creek were not showy milkweed but, instead, the less glamorous green milkweed (*Asclepias viridiflora*) with its creamy flowers (Figure 3).

Any conversation about milkweeds has to include the dwindling Monarch (*Danaus plexippus*) population in North America. One of the factors contributing to the decline of this butterfly is the negative effect that human disturbance, such as illegal logging, is having on its overwintering grounds. In July of 2022, the Monarch was placed on IUCN's Red List. The migratory monarch has been categorized as "endangered" and now is only two steps away from extinction.<sup>1</sup> Local stakeholders, fighting to protect

the butterfly's winter sanctuary, have encountered an opposition willing to use deadly force. The manager of the sanctuary, who was an outspoken conservationist and a strong advocate for ecotourism, was murdered in 2020. A week later, a local tour guide for the sanctuary was attacked and killed by an unknown assailant or assailants.<sup>2</sup>

The location of the Monarch's wintering grounds near Rosario, Mexico had remained a mystery until 1975. Up until that time, Fred and Norah Urquhart — Canadian scientists living in Scarborough, Ontario — had spent 30 years trying to prove that Ontario's Monarchs, having just emerged from their chrysalises in August or September, were leaving Ontario for a mild winter hideaway somewhere in the deep south (Figure 4).<sup>3</sup> The Urquharts enlisted the services of another married couple, Ken and Cathy Brugger, to track the Monarch's migratory flight in Mexico. Two years went by and then, in January of 1975, Fred received a phone call from their assistants in Mexico. They had found them — millions upon millions of Monarchs clinging tenaciously to trees in



**FIGURE 1.** Green milkweed pod at Beaver Creek. Photo credit: Doug Adams.



**FIGURE 2.** Showy milkweed flowers. Photo credit: Doug Adams.



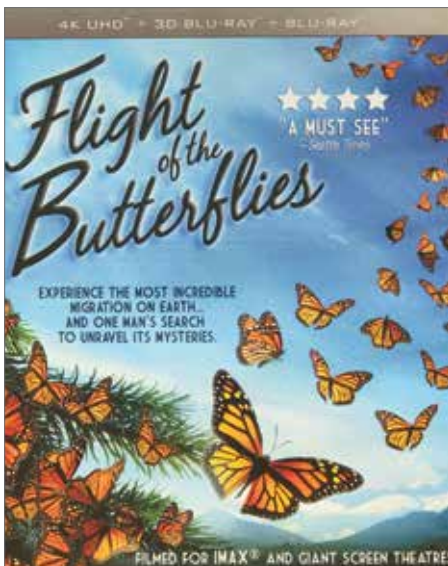
**FIGURE 3.** Green milkweed. Photo used with permission of Glen Lee of Regina, SK.

a secluded, moist and cool mountainous location in central Mexico. It took the world yet another 32 years to realize the importance of this Mexican butterfly retreat when it was finally designated a UNESCO World Heritage site in 2008.

One big question still remained, however. Of the millions of butterflies showing up in Mexico, were any of them from central Canada, or northcentral United States? It seems fitting that it was Fred himself who was able to partially answer the question. While visiting the wintering grounds for the first time in 1976, he spotted an individual butterfly, amongst the throngs of butterflies, that bore one of his identification tags from Minnesota. In 1986, history was made when the very first tagged butterfly from Ontario was found at its wintering roost at Sierra Chincua, Mexico. It had been tagged by Don Davis from Brighton, Ontario on



**FIGURE 4.** Fred and Nora Urquhart. Photo used with permission of Robin Urquhart.



**FIGURE 5.** Photo used with permission of Poster Design by Key Art+ Design Inc.

4 September 1985 and was found on 18 February 1986, some 3,520 km away.

During their three decades of searching for an answer, the Urquharts enlisted thousands of citizen-scientists throughout Canada and the United States to help them on what they called the “Great Butterfly Hunt”. These volunteers were trained to apply identification tags that were glued to the butterfly’s wing. The idea that insects could be tagged like this was a world first.

The story of the Urquhart’s 30-year search for the “greatest natural history find for their times” was brought to the IMAX movie screen in the documentary film *Flight of the Butterflies*. The casting

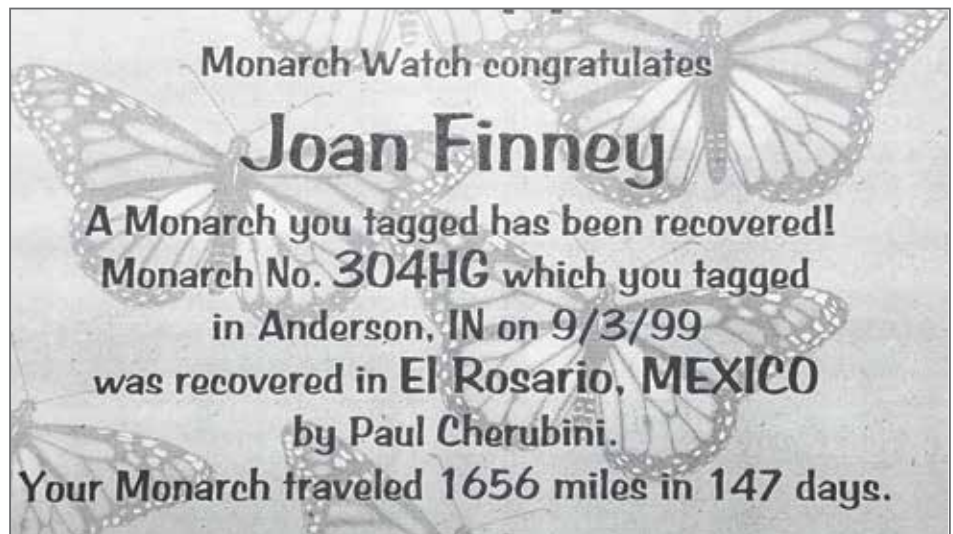


**FIGURE 6.** The author’s Aunt Joan. Photo provided by James Adams.

agent for the production managed to find a famous Canadian actor, Gordon Pinsent, to play the role of the famous Canadian scientist Dr. Fred Urquhart (Figure 5). The notes made by the Urquharts during their three decades of butterfly hunting served as one of the key sources of information used in the writing of the script. The same notes have been made accessible to the public on the Monarch Watch website.<sup>4</sup> Monarch Watch is a not-for-profit education, conservation, and research program based at the University of Kansas that focuses on the Monarch, its habitat, and its spectacular spring and fall migrations.

According to the Monarch Watch website, the search for more information about the amazing journey of this magnificent butterfly continues to this day. My aunt Joan was a citizen-scientist before her passing in 2011 (Figure 6). She lived in Anderson, Indiana where she tagged 408 adult Monarchs in 1999 and 2000. Of those 408, five were recovered at El Rosario, one of the wintering locations in central Mexico. She received a certificate, issued by the Monarch Watch organization, detailing the date and location where one of her tagged butterflies was found, along with the name of the person who found it and the distance it had migrated (Figure 7).

There is interesting research on the interrelationship of the Monarch to milkweed plants right here in Saskatchewan. Christina Borring-Olsen, in her 2017 master thesis, *Assessing the*



**FIGURE 7.** A certificate, issued by the Monarch Watch organization, detailing the date and location where one of Aunt Joan’s tagged butterflies was found. Photo credit: Doug Adams.

*Distribution and Ecology of Showy Milkweed to Support Restoration and Conservation of Monarch Habitat in Saskatchewan*, found that the northern range of the Showy Milkweed had reached the Dundurn area, only 25 km south and east of Beaver Creek.<sup>5</sup> Based on plant specimens in the University of Saskatchewan's W.P. Fraser Herbarium, showy milkweed plants have been seen in the Dundurn area on three previous occasions: 1932, 1933, and then not again until 1961.

On 5 July 2019, just two years after Ms. Borring-Olsen's findings, Anna Leighton, naturalist and author, stumbled across a patch of individuals in full bloom at the Cranberry Flats Conservation Area, 5.3 km north of Beaver Creek (Figure 8). However, the title of "most northern location" for this species in Saskatchewan goes to the village of Kinley where, in 1948, a plant was collected from saline soil by R. C. Russell. According to Google Maps, Kinley is just 4.47 km further north than Cranberry Flats, but also 55 km further west. The question now is whether the showy milkweed will become a widespread resident in the Cranberry Flats part of the South Saskatchewan River valley. Let the "showy milkweed watch" begin.



**FIGURE 8.** Showy milkweed display at Cranberry Flats. Photo credit: Anne Leighton.

Dr. Anurag Agrawal of Cornell University has recently published some fascinating information on the behaviour of Monarch caterpillars feeding on their milkweed plant hosts. Running alongside, but completely separate from the conducting tissue in the milkweed plant, is a system of canals, called laticifers, which transport the milky sap containing the dissolved chemical toxins. When a canal is breached, as it would be by a feeding herbivore, a large volume of sap suddenly pours out of the damaged vessel. The initial flow of sap may be enough to wash a small intruder away, like a tiny Monarch caterpillar. According to Dr. Agrawal, the hungry caterpillar avoids the outpouring of the milky sap by severing veins in a leaf allowing the sap to spurt out. The caterpillar then moves downstream from the now empty vein, and begins feeding on surrounding leaf tissue unhindered by any milky sap.

This larval behavior is true for all Monarch caterpillars feeding on any one of the five species of milkweeds in Saskatchewan, including the green milkweed of Beaver Creek.

Who will be the first in the province to witness this remarkable act of food procurement?

## Acknowledgements

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1. Monarch butterflies added to international list of threatened species. <https://www.cbc.ca/news/science/monarch-endangered-international-red-list-1.6527309>

2. Mexican community in mourning after 2 beloved butterfly conservationists killed.

<https://www.cbc.ca/radio/asithappens/as-it-happens-monday-edition-1.5449985/mexican-community-in-mourning-after-2-beloved-butterfly-conservationists-killed-1.5451465>

3. Frederick Urquhart – A Short Biography. <https://urquhartbutterfly.com/about/frederick-urquhart-a-short-biography/>

4. Insect Migration Studies Newsletter - Fred & Norah Urquhart. <https://www.monarchwatch.org/read/articles/index.htm>

5. Christina Borring-Olsen, master thesis, "Assessing the Distribution and Ecology of Showy Milkweed to Support Restoration and Conservation of Monarch Habitat in Saskatchewan", 2017 School of Environment and Sustainability, University of Saskatchewan. 🐦