

# **Milkweed and Monarch Butterflies - Beauty and mystery in our own backyard**

**By: Doris Ames**

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The Monarch Butterfly (*Danaus plexippus*) is familiar to most Manitobans. Children especially, tend to notice the large orange and black butterfly with slow-flapping wings. Most of us like them but know very little about them.

When the monarchs come back from Mexico, in late May and June, milkweed is on their mind. The females look for young plants on which to lay their eggs. They land on the leaves and taste them with their knobby front feet to be sure they are milkweed. The eggs, about the size of the head of a pin, are laid singly on the underside of the leaf.

Three to ten days later, a tiny off-white caterpillar, with yellow and black stripes and long black filaments on both ends, hatches out. It eats the old egg case, and then starts to cut some of the veins in the leaf. The caterpillar begins to eat large amounts of milkweed very quickly. The thick and sticky milkweed juice is bitter and poisonous. It protects the monarch from predators at every stage of development. If a bird eats a caterpillar or takes a bite of a butterfly, it vomits and never tries it again. Predators quickly learn to recognize the bright colors of the monarch and avoid it. It is believed that the caterpillar cuts some veins right in the beginning so that it doesn't get too much of the toxic juice itself. The caterpillar grows larger as it eats and sheds its skin four times to allow for this growth. The growth rate is huge. At the final stage, the larva is 5cm long. If a human baby could grow that fast it would be bigger than a schoolbus in that amount of time!

After two to three weeks of non-stop eating, it goes looking for a place to pupate. It crawls under a ledge or branch and spins a pad of silk. Attaching itself to the pad with silken threads, it hangs down in a "J". Inside of a day or two, the skin splits and the caterpillar changes into a beautiful green chrysalis with gold spots.

One to three weeks later, the chrysalis becomes transparent and you can see the butterfly's wings through it. Soon the case thins right out and the monarch comes out at the bottom. They usually emerge in early morning. The butterfly looks strange at first, with a fat abdomen and crumpled wings. It hangs on to the remnants of the old chrysalis, and pumps liquid from the body into the wings. The wings unfold and harden up so it can fly well. Monarchs, because they migrate, have very strong wings. You can tell what sex they are, because the males have a black spot in the third vein of each hind wing. This is a scent spot that can produce perfume to attract a female.

The adult butterflies drink the nectar from milkweed, daisies and asters, blazing star, sunflower and goldenrod, among other plants. The caterpillars will only eat Milkweed (*Asclepias* spp.) and apparently, in some cases, Dogbane (*Apocynum* spp.) There are usually two generations of monarchs in Manitoba. The last batch migrates.

In September, when the seedpods of the milkweed are beginning to ripen, the monarchs leave for their winter home in the mountains of central Mexico, more than 3000 km away. When they arrive they settle on the fir trees to hibernate. In March, they mate and start flying back to us. Three or four generations are hatched along the way and their descendants arrive back here in late May and June.

Unfortunately monarch butterfly populations are dwindling. It is now listed as vulnerable on COSEWIC's (Committee of the Status of Endangered Wildlife in Canada) Species at Risk list. This is primarily a result of agricultural practices in North America and forestry practices in Mexico. Some Canadian provinces, including Manitoba, have some or all species of milkweed on their noxious weed list. In Manitoba, Common Milkweed (*Asclepias syriaca*) and Showy Milkweed (*Asclepias speciosa*), are on this list. This means that they can be destroyed wherever they are found, under provisions in the Weed Protection Act. Since these two varieties are the primary food source of our monarch caterpillars, and are a preferred food source of the adults as well, this kind of legislation has had an impact on butterfly populations over the years. A recent revision to the Act that allows for eradication on a "complaint basis only" is welcome news. Many milkweeds in Canada, including the beautiful Showy Milkweed, are no longer common.

Other farming and forestry practices, such as the indiscriminate use of herbicides and pesticides, are very harmful. They often kill far more than just the targeted plants and insects. These poisons contaminate the monarch's food and water, even if they do not kill them outright.

I guess the jury is still out on the use of transgenic crops whose genes manufacture a toxic protein that kills caterpillars, including Monarch Butterfly caterpillars. This Bt gene is used in corn, potatoes, tomatoes and tree crops to kill insects that eat these crops. It is even used on ornamental trees to kill cankerworms etc. Unfortunately when wind-blown pollen from these crops and trees lands on milkweed or other forage plants of the Monarch Butterfly, it kills them as well. Just how many monarchs and other non-targeted insects it kills has not been established, because few unbiased studies have been done. We need more study and more public education before more of these transgenic crops are developed and used in this country. Scientists, alone, cannot be expected to make all the ethical decisions regarding the use of this kind of product. Fully informed citizens should be the ones making the decisions because they are the ones that will have to live with the results. Our need for cheap food has to be balanced

against our need to maintain a healthy environment for future generations. Not to mention our "need" to grow ornamental and often non-indigenous plants.

In Mexico, the monarch's winter home, the fir trees are being logged off for lumber and the cleared land used to raise cattle. Without the thick trees to shelter them, the butterflies can freeze to death in the cold winds during storms. Also a great number are killed by cars during migration.

Monarch butterflies have lived on earth for many millions of years. Humans have only been here for a fraction of that time. I think it's in our own best interest to modify our practices so we can live in harmony with them. Highly specialized species like the Monarch Butterfly are often the first species to disappear. They serve as a warning to us that we need to pay more attention to the health of the environment, before our own survival is threatened.

The exact nature of the relationship between the monarch butterfly and the milkweed is still unclear. It seems to be a type of mutualism. We know that the monarch derives both food and protection from the milkweed. However, the caterpillars can eat Dogbane instead of Milkweed and get the same protection, because of the poisonous cardiac glycosides found in that common plant. Why the monarch does not do so more often, is unknown to me. This leads me to wonder what the milkweed gets out of the relationship. You might think it is pollination, but I have seen this plant being visited by bugs, bees and wasps as well as monarchs. In years when there are very few monarchs, the milkweed has no problem forming seedpods after being pollinated by other insects. Perhaps the milkweed plants benefit from being pruned regularly by the monarch caterpillars. Then again, it could be something else entirely. Relationships between plants and animals are often far more complex than they appear to us at first glance. This is one of the main reasons for trying to maintain biodiversity among our native plants and animals.

As for the Common Milkweed, it never was much of a threat to agriculture in Manitoba, and it is a very handsome plant. During WWII, use of its juice as a latex substitute, and its seeds as a kapok substitute, was seriously considered.

A number of things are being done to address the failure of both the monarch butterfly and the milkweed, and there are also things we can do as individuals.

Programs have been developed in Mexico to help people find other sources of income besides logging. Plans are being made to buy or lease some of the most important overwintering sites. Reforestation programs are being set up in areas where the fir trees have been logged off. Our own Manitoba Model Forest is helping the Mexicans to set up sustainable development programs such as eco-tourism as an alternate source of income.

Here in Canada, we can help, as individuals, by planting allowed milkweed species in our gardens. They are attractive plants with pink, red or white flowers. Several varieties available from local nurseries make excellent garden plants. Varieties such as Swamp Milkweed (*Asclepias incarnata*), Whorled Milkweed (*Asclepias verticillata*) and Dwarf Milkweed (*Asclepias ovalifolia*) are not on the noxious weed list and are good alternate food sources for the caterpillars. These flowers will attract monarch caterpillars and butterflies as well as many other species of butterflies.

Plant a butterfly garden this summer using milkweed and other native plant species. It will provide you with hours of enjoyment and at the same time you will be helping to restore the natural world. Sit in your garden and read up on factors that are affecting the environment. You will be better able to choose the kind of products you want to use. If you are fortunate enough to see groups of Monarch butterflies near the roadside during their fall migration, slow down and enjoy the wonderful sight. It's still a beautiful world. Let's enjoy it while we can!

Milkweed and other native Manitoba wildflowers are available from the following sources:

**Prairie Originals**

27 Bunns Rd.  
Box 25, Grp. 310, RR 3  
Selkirk, Manitoba  
R1A 2A8  
Phone: 204-785-9799 or 1-866-296-0928

**Living Prairie Museum**

2795 Ness Avenue  
Winnipeg, Manitoba R3J 3S4  
Phone 204-832-0167

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