

 When I came to Stone Laboratory to work during the 2012 season I was excited to learn one of my jobs was going to be tagging Monarch Butterflies, and maintaining the certified Waystation and butterfly garden. The first question that came to my mind was how in the world do you tag a butterfly, let alone one that is at risk of becoming endangered? Keeping the plants healthy in the butterfly garden was what I knew best; participating in Monarchwatch.org’s tagging program is what taught me the importance of tagging, why we need to be a part of this program, and why the Monarch Butterfly is at risk. There are some very simple things that we all can do to help improve the chances for the Monarchs. Everything I have learned makes it obvious that the survival of Monarch Butterflies is important for a number of reasons.

 In many ways it is surprising that an insect that weighs less than one fifth of an ounce and has a wingspan less than four inches is able to make the 2,000 plus mile journey from Canada to Mexico where they will spend the winter. Every Fall Monarch Butterflies hatch all over Canada and began to eat as fast as they can to store up the energy they will need on their journey to Mexico. The timing of their journey is critical because the Monarchs cannot stand freezing temperatures and cannot even fly if it gets too cold. The trip south is a dangerous one, because it is long, and there are many predators and natural barriers that make it difficult for the Monarchs to survive. In addition, the Monarchs’ bodies are not well suited to the demands of the long flight. In order to conserver their energy they rely on tailwinds, thermals, and geography. The Great Lakes are the first geographic hurdle because the butterflies cannot see across the water, and the wind is constantly shifting. For this reason Monarchs will congregate at the southern tip Pelee Island, Canada waiting for the perfect flight conditions. After they successfully make this crossing we see them as they pass through South Bass Island. This is where we participate in the Monarch Watch butterfly tagging program.

 As the butterflies continue south to Mexico they face constant threats from predators, weather conditions, and humans but without any great geographical barriers until the very end of their journey when they began to climb the Sierra Madre Mountains in Mexico to the sites where they will spend the winter. When they arrive there they have spent around two months traveling more than 2,000 miles, and are more than ready for a rest. The butterflies will congregate in a few small areas within the Mexican Sierra Madre for five months, clustered on the Oyamel fir trees to survive and keep warm through the winter. This generation of butterflies, which were born in Canada, will live for over seven months.

 In mid-March as the weather starts to get warmer the trip north to Canada begins, but with interesting differences. First, they will take four generations to complete their journey north to Canada to spend the summer. Each of these generations will live for one month. Second, the caterpillars depend only on Milkweed as habitat and food; if they are not able to find Milkweed the next generation will not survive. Unfortunately, due to the destruction of breeding habitat in the United States from the widespread use of genetically engineered crops and powerful herbicides it is becoming harder and harder for the Monarch Butterflies to find the habitat they need to survive.

 The surviving butterflies that migrated south and overwintered in Mexico begin the trip north in the spring, going as far as Texas and Oklahoma before they stop and mate. The females will lay 300-400 eggs each, only on Milkweed plants, where they will hatch in four days as larvae (caterpillars). After the female lays her eggs she will die. The caterpillars spend the next two weeks eating the Milkweed leaves, which contain a toxin that is lethal for most of their predators although not for them. This toxin makes most predators sick when they try to eat Monarch caterpillars or butterflies, and is one reason that they can survive despite their bold coloring. After two weeks the caterpillar turns into a chrysalis which hatches into the adult butterfly after another two weeks. Once they have hatched, the newly born butterflies will continue north. This generational process is repeated four times during the journey to Canada. The final generation is hatched in Canada, spends the summer there, and begins the great migration South in the early fall.

 A successful migration depends on many factors. Perhaps the most important is the proper habitat. The two habitats that are absolutely essential for the Monarchs are the fir forest in Mexico, and sufficient Milkweed in the United States for each generation to lay eggs, hatch, and have food. Both of these habitats have recently been greatly reduced. In Mexico unregulated logging has destroyed a large amount of the fir forest that the butterflies need to survive the winter. This destruction has been slowed by laws prohibiting the logging that exist and are now being enforced. However, the introduction of genetically engineered crops in the United States Midwest coupled with the widespread use of powerful herbicides has **destroyed 80 million acres of Milkweed habitats.**

 These changes in American agriculture have made the butterfly migration much more hazardous and caused a rapid decline in the number of Monarchs that survive the migration. This is measured in Mexico every winter by the area that is covered with Monarch Butterflies; the **average from 1994-2003 was 22 acres, from 2003-2012 it decreased to 12 acres. In 2013 it was only 2.9 acres, the lowest ever recorded**. If this trend continues, the survival of the Monarch Butterfly species may truly be endangered.

 The best way to help stop this decline is by preserving and creating the Milkweed habitat the Monarch Butterflies need. One way to do this would be to eliminate the herbicide use that has caused the habitat destruction in the first place. However, most of us are not farmers and cannot do this alone. One thing we can do is create small areas of Milkweed habitat wherever we are able. Milkweed can be part of a wildflower garden with other flowers that feed adult Monarchs as well as other butterflies.

 Monarchwatch.org is a nonprofit organization based at the University of Kansas that was started in 1992 for the purpose of investigating the migratory path, speed, and survival rates of Monarch Butterflies, as well as providing an educational resource for people wanting to help conserve the Monarchs. Their website provides information on a multitude of topics relating to Monarchs, including how to create a Certified Waystation, a Waystation starter kit, the Monarch Tagging Program, and a variety of up-to-date educational information on the butterflies.

 At the Ohio State University’s Stone Laboratory in Lake Erie, we began our involvement with helping the Monarch Butterflies in 2011. During that summer Nicole King created a butterfly garden which she had certified as a Waystation. This was continued in the summer of 2012 with Jackie Taylor and Katie H. maintaining the Waystation by planting more plants for the adult butterflies, as well as Milkweed for the caterpillars. We also began the first Tagging Project with Monarch Watch. This is a project that tags migratory Monarchs on their way to Mexico at the South Bass Island Light House. We tagged around250 butterflies from beginning of September to mid October and sent them on their way.

 Tagging Monarchs is less scary than it sounds. A small circular adhesive sticker with a tag number is attached to the Discal Cell of the hind wing by gently pinching both hind wings together. This process does not hurt the butterfly or affect their flight.

 I was excited to learn that so far, three of our tagged butterflies had been found in Mexico. In 2013 we have continued to educate the public about our butterflies. Because the Lake Erie Islands are a key path across Lake Erie for Monarchs from the central and eastern part of Ontario, we are perfectly located to see a large fraction of the total Monarch migration on South Bass Island. This will allow us to make a real difference in understanding the Migration routes and survival rates of the Monarchs.

 If you are interested in participating in the Monarch Watch programs that help the butterflies, it is easy to do. Starting a Monarch Waystation can be done by planting milkweeds and other flowering plants, in as much space as you have available. To certify your Waystation and make sure that you’re doing it right, go to the Monarch Watch website at monarchwatch.org/waystations/certify.html and follow the directions there. Participating in the tagging program requires a bit more work but is very rewarding. Tags can be obtained from Monarch Watch, and the process of catching, tagging, and releasing the butterflies is simple; anyone who is interested, including small children, can be a part of this. We at The Lake Erie Islands Nature & Wildlife Center are also very interested in answering any questions, and inquiries that you have about the Monarch Butterflies. We can be reached at 419.285.3137 or you can reach me directly at 419.279.3199, or you can come and see the Waystations at the LEINWC and the South Bass Island Light House for yourself.