MLMP Updates
An e-Newsletter of the Monarch Larva Monitoring Project

Fall 2014

Project Updates

Current MLMP Analyses

MLMP researchers are beginning a large analysis of all of the project data to date. This analysis will include data from the 2014 monitoring season, so if you still have MLMP data sheets piled up on your desk, get them entered as soon as possible! Then send us the hard copies for our files.

In this upcoming analysis, we will be looking into two major questions. First, we will look at patterns in monarch survival and abundance, both within and between years. Second, we will look at patterns in tachinid fly parasitism—from year to year and based on monitoring site characteristics. Stay tuned for the reports on these analyses.

2014 MLMP Reports

In 2014, 195 unique sites have been monitored throughout the U.S., and 5 sites in Canada. Next year, we hope to do better! Will you help us double the number of MLMP monitoring sites for the 2015 monitoring season? Check out the number of sites in your state, and resolve to increase it!

Start by sharing our MLMP online training videos with friends and neighbors. View them on YouTube or find them directly on our website, www.mlmp.org. Walk a new volunteer through a typical monitoring day in your site to help them feel more comfortable starting to monitor their own milkweed patch. Share milkweed seeds harvested from your site with friends or neighbors who don’t have a patch of milkweed already. You might want to do this now, to give them a head start for monitoring next spring!

The table above shows that, while some states are well-represented, others have few or no MLMP monitoring sites. We are strategically working to fill these data gaps, collaborating with the Monarch Joint Venture to identify and prioritize important locations where more monarch monitoring data are needed.

The MLMP is part of a large suite of citizen science projects that are providing data that will aid in monarch conservation. MLMP volunteers increase our understanding of monarch breeding dynamics. Overwintering populations are measured in California by volunteers working with the Xerces Society and Monarch Alert. Journey North and Monarch Watch volunteers, along with individuals working on several local migration projects, are key to helping us understand the monarch migration. Project Monarch Health volunteers track OE infection rates.

We have a lot of ground (and milkweed) to cover, and we need your help!

Volunteer Carol Young captured an image of a brutal attack on a monarch 5th instar caterpillar in late August 2014 in the Ken Reid Conservation Area, just north of Lindsay, Ontario. These spined soldier bugs are in the insect order Hemiptera.

Interested in learning about other things lurking in the milkweed patch? The Milkweed, Monarchs and More field guide is available from the University of Minnesota Monarch Lab Store.

Tallest Milkweed Contest: Jan S. in Minnesota wins the 2014 (and first) Tallest Milkweed Contest with her common milkweed (Asclepias syriaca) that is 7 feet, 2 inches. Have your cameras ready for next year’s contest!

store.monarchlab.org
**Population Updates**

*Season Egg, Larval, and Parasitism Reports*

MLMP volunteer Gayle Steffy reported on her busy 2014 monitoring season, which turned out to be a productive year for monarchs in Pennsylvania. The season started off slow, with very few eggs and larvae being reported through early July. Gayle observed occasional adults visiting the milkweed patch, but found very few eggs early on in the season. By mid-July, monarch numbers began to drastically increase. In fact, Gayle collected 400 4th and 5th instar caterpillars over a 2 week period in August. At one large site which she knew was scheduled to be mowed, she collected 222 caterpillars from 8/14-8/22 to prevent them from being victims of the mower. She will report observations on these caterpillars to the MLMP parasitism study (Activity 3), although her rough estimate is that only about 5% of those that she collected this year were infected with tachinid flies. This is much lower than what she usually sees. Similar monarch abundance trends were seen in other eastern states, like New Jersey.

The upper Midwest showed strong numbers throughout the season as well, with peak egg abundance occurring near June 1 and then again mid-July in Minnesota, Wisconsin, and Michigan. These egg peaks illustrate subsequent generations of breeding monarchs.

**2014 Migration**

As the MLMP monitoring season winds down each year, volunteers at Peninsula Point start transitioning to tagging and migration counts. Peninsula Point is in the Hiawatha National Forest (HNF) of Michigan’s Upper Peninsula. Janet Kudell-Ekstrum, a Wildlife Biologist in the HNF, shared reports from project volunteers about the numbers they have seen this year. Volunteers reported congregations of monarchs on August 14th (1,000 monarchs), September 4th (1000+ monarchs), and September 5th (2000+ monarchs). Janet reports “one volunteer who has been conducting migration census and tagging for the past 17 years said she has never seen as many monarchs at Peninsula Point as she did on September 5th.”

Journey North reporters are keeping us informed as the migration front moves southward. Reports of overnight roosts from the upper Midwest dotted the map beginning in mid-late August. From mid to late September the migration front continued through the central latitudes, with an abundance of reports hugging the shores lake Michigan. Currently, reports of great numbers are pouring in from Texas. Reports to the TX-Butterfly listserv are encouraging, as some observers are reporting more monarchs than they have ever seen. Monika Maeckle also reports “hundreds, perhaps thousands of monarch butterflies clustered along the Llano River this weekend (Oct 11)” in her Texas Butterfly Ranch blog.

Lastly, an unusual migration report came from John Clayton in central Iowa. He reported monarchs roosting overnight on maximilian sunflowers (photos to right, courtesy of John Clayton, Broadview Seed) in late September. This interesting sighting had researchers questioning typical migratory behaviors. Clearly, monarchs don’t always roost in trees!
In the Milkweed Patch: Milkweed Yellows Phytoplasma by Wendy Caldwell

When it comes to milkweed, we still have a lot to learn, or at least I do! You may think that the only reason milkweed exists is to be a food source for monarch caterpillars. Well, I can tell you that there is a lot more going on in the milkweed patch than caterpillars munching away at your leaves; there are many interactions taking place. The field guide Milkweed, Monarchs and More, by Ba Rea, Karen Oberhauser, and Mike Quinn, is a great resource for identifying organisms you may encounter while searching your milkweeds. If you don’t have a copy, they’re available for sale at the Monarch Lab Store—store.monarchlab.org. While this field guide sheds light on numerous milkweed invertebrates, it doesn’t get into too much detail about things such as plant disease. Recent inquiries about “funny looking milkweeds” inspired me to do some research into milkweed plant diseases; the one in particular that I explored is called milkweed yellows phytoplasma.

Phytoplasmas are bacteria; they do not have a cell wall and are enclosed by a single membrane. They cause diseases in plants and are spread by insect vectors (primarily leafhoppers). Leafhoppers aren’t the only insect that can spread phytoplasma, but most of the known vectors are in the insect order Hemiptera. Their piercing/sucking mouthparts allow them to feed on the phloem of plants, where phytoplasmas live. These phloem-feeding insect vectors can transfer diseases such as milkweed yellows phytoplasma by feeding on an infected plant, allowing an incubation period during which the phytoplasma cells replicate and eventually reach the insect’s salivary glands, and then moving to a healthy plant and injecting phytoplasma cells into it during feeding.

How do you know if your milkweed has a phytoplasma disease? There are a few symptoms to look for, according the Phytoplasma Resource Center found on the USDA Agricultural Research Service website:

- Phyllody—development of leaf-like growths in place of normal flower parts
- Viresses—development of green color in place of normal flower color
- Witches Broom—abnormal, excessive proliferation of axillary shoots resulting in a broom-like growth
- Yellowing—leaves lose normal green color, becoming yellow
- Little leaf—development of abnormally small leaves
- Proliferation—abnormal growth of numerous stems
- Necrosis—death of cells and/or tissues
- Dieback—death of branches
- Stunting—overall reduction of plant height
- Bunch top—shortening of internodes at and near the tip of a branch, resulting in bunched growth at the end of the branch

What should you do if you suspect phytoplasma in your milkweed patch? Since the disease is spread by insect vectors, one way to get phytoplasma under control is to quickly and effectively eliminate any milkweeds suspected of phytoplasma, at the first sign of disease. By digging out an infected plant, you reduce the chances of other insects feeding on that plant and becoming vectors of the disease.

For more information on phytoplasma, visit the Phytoplasma Resource Center: http://plantpathology.ba.ars.usda.gov/phytoplasma.html

For more information on milkweed diseases and control, look to the Xerces Society’s handbook (Milkweed: A conservation practitioner’s guide): http://www.xerces.org/milkweeds-a-conservation-practitioners-guide/

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