



Data Sharing and Visualization: MLMP and Monarch Net

Karen Oberhauser
University of Minnesota

MLMP

- Individual volunteers can see and edit their raw data
- Monarch densities and parasitism rate graphs visible by site or state
- Monarch density data downloadable by site or state

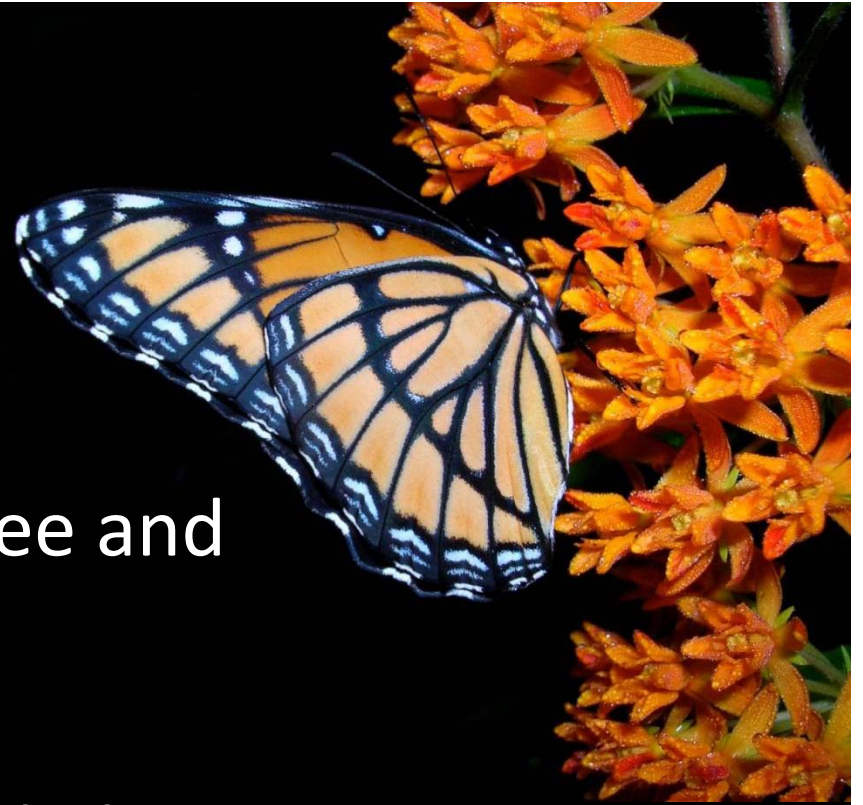


Photo by Ilse Gebhard

Individual Data Editing

Monarch Larva Monitoring Project (MLMP) - Home - Mozilla Firefox

File Edit View History Bookmarks Tools Help

University of Minnesota Mail - Inbox (4) - ... x 10 University of Minnesota - Calendar x encyclopedia of life - Google Search x Monarch Larva Monitoring Project ... x +

www.mlmp.org/default.aspx encyclopedia of life

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Monarch Larva Monitoring Project

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Log In to Enter Data
Username: amyalstad
Password: ●●●●
Log In

[New User?](#)
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The **Monarch Larva Monitoring Project (MLMP)** is a citizen science project involving volunteers from across the United States and Canada in monarch research. It was developed by researchers at the University of Minnesota to collect long-term data on larval monarch populations and milkweed habitat. **The overarching goal of the project is to better understand how and why monarch populations vary in time and space**, with a focus on monarch distribution and abundance during the breeding season in North America.

As an MLMP volunteer, **your contributions will aid in conserving monarchs and their threatened migratory phenomenon, and advance our understanding of butterfly ecology in general.**

[Sign-Up to Monitor](#) or [log in](#)



"Red and Black Bugs on Milkweed" by Joyce Pearsall
(Rotating Photo from Our [Photo Gallery](#))

News and Updates

start AN... MR... Su... fin... Wir... FIN... pre... win... C:\... win... Mo... mo... pyl... Desktop 3:05 PM Thursday 5/10/2012

MLMP Home

- Main:**
- Main Menu
 - Your Profile
 - Change Your Email Address
 - Change Your Password
 - Purchase a Monitoring Kit
 - Logout

- Site:**
- Add a Site
 - Edit Site Information
 - Add or Edit Additional Volunteers for This Site

- Monitoring Data:**
- Milkweed Density
 - Monarch Density (Activity #1)
 - Rainfall (Activity #2)
 - Parasitism (Activity #3)
 - Milkweed Characteristics (Activity #4)

- Non-Site Data:**
- Parasitism (Monarchs from Other Locations)

Home > MLMP Home > Monitoring > Online Data Entry > Main Menu

Welcome, amyalstad > [Logout](#)
 Site: "Skillman Garden"
 Year: 2011
 ■ = required field

Main Menu

You are logged in as: **amyalstad**. ([Edit your profile](#))
 You selected year: **2011**
 You selected Site Name: [Skillman Garden](#)
 You have **1** site(s) registered.

Select a Year:

Select one of your Sites:

Enter/Edit Monitoring Data for Skillman Garden

Activity	Frequency	Status
Update Site Information	Yearly	Milkweed Emergence Date: 5/19/2011
Milkweed Density	Yearly	**Not Complete**
Monarch Density (Activity #1)	Weekly	Records: 9, Last: 7/31/2011
Rainfall (Activity #2)	Weekly	Records: 0
Parasitism (Activity #3)	Weekly	Records: 18, Last: 7/31/2011
Milkweed Characteristics (Activity #4)	Weekly	Records: 0

Enter/Edit Data On Monarchs You Rear From Other Locations

Activity	Status
Parasitism (monarchs from other locations)	Records: 0



Monarch Larva Monitoring Project

MLMP Home

Main:

- Main Menu
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- Change Your Password
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- Logout

Monitoring Data:

- Milkweed Density
- Monarch Density (Activity #1)
- Rainfall (Activity #2)
- Parasitism (Activity #3)
- Milkweed Characteristics (Activity #4)

Non-Site Data:

- Parasitism (Monarchs from Other Locations)

[Home](#) > [MLMP Home](#) > [Monitoring](#) > [Online Data Entry](#) > Monarch Density

Welcome, amyastad > [Logout](#)
 Site: "Skillman Garden"
 Year: 2011
 ■ = required field

Monarch Density (Activity #1)

[Go to Milkweed Characteristics \(Activity #4\)](#) | [Return to Main Menu](#)

[Add a New Record](#)

Go to Page: 1

	Date	Shade Temp (F)	# of Mwds	Eggs	L1	L2	L3	L4	L5	Pupae	Activity 1C
View Delete	5/23/2011		4	0	0	0	0	0	0	0	Activity 1C Counts Per Plant
View Delete	5/30/2011	82	35	14	0	0	0	0	0	0	Activity 1C Counts Per Plant
View Delete	6/7/2011	94	74	0	30	10	1	0	0	0	Activity 1C Counts Per Plant
View Delete	6/13/2011	65	95	9	1	9	16	1	0	0	Activity 1C Counts Per Plant
View Delete	6/19/2011	76	101	19	5	0	0	2	2	0	Activity 1C Counts Per Plant
View Delete	6/27/2011	70	109	0	3	3	3	0	0	0	Activity 1C Counts Per Plant
View Delete	7/7/2011	76	103	25	13	0	2	0	1	0	Activity 1C Counts Per Plant
View Delete	7/17/2011	84	93	30	12	1	2	0	0	0	Activity 1C Counts Per Plant
View Delete	7/31/2011	80	91	44	10	0	2	0	0	0	Activity 1C Counts Per Plant

Go to Page: 1

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Desktop >> 3:07 PM
 Thursday
 5/10/2012

- Logout
- Monitoring Data:**
 - Milkweed Density
 - Monarch Density (Activity #1)
 - Rainfall (Activity #2)
 - Parasitism (Activity #3)
 - Milkweed Characteristics (Activity #4)
- Non-Site Data:**
 - Parasitism (Monarchs from Other Locations)

Editing Monarch Density

Date of Observation:	6/19/2011
Temperature in Shade:	76 <input checked="" type="radio"/> °F <input type="radio"/> °C
Start Time:	: : <input checked="" type="radio"/> AM <input type="radio"/> PM
Stop Time:	06 : 45 <input type="radio"/> AM <input checked="" type="radio"/> PM
# of Milkweed Plants Observed:	101

Alive

Live Eggs:	19
Live Firsts:	5
Live Seconds:	0
Live Thirds:	0
Live Fourths:	2
Live Fifths:	2
Live Pupae:	0
Live Adults - Male:	0
Live Adults - Female:	0
Live Adults - Unknown:	0

Dead

Dead Eggs:	0
Dead Firsts:	1
Dead Seconds:	0
Dead Thirds:	0
Dead Fourths:	0

Public "Viewing"

Monitoring Data & Graphs - Monarch Larva Monitoring Project (MLMP) - Mozilla Firefox

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www.mlmp.org/Results/StateList.aspx

encyclopedia of life



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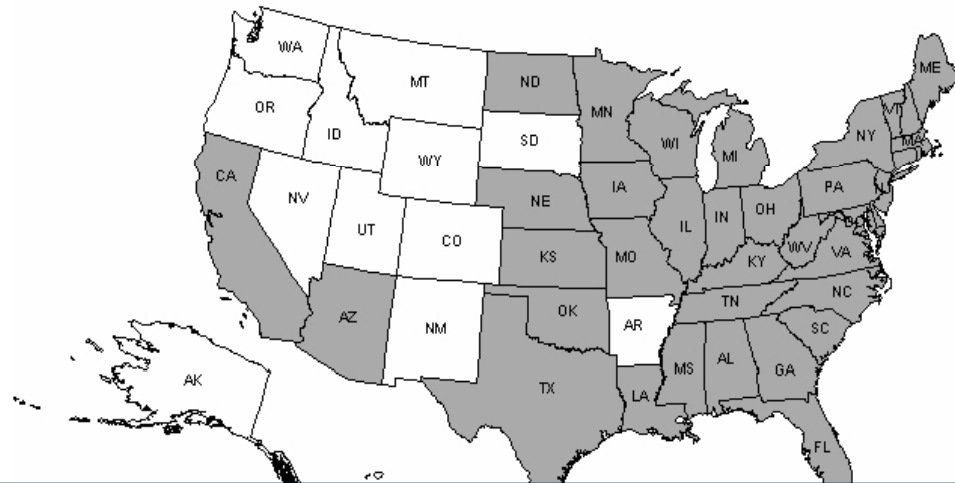


[Home](#) > [MLMP Home](#) > [Results & Findings](#) > Monitoring Data & Graphs

Monitoring Data & Graphs: Select a State/Province

[Monitoring Data & Graphs](#) | [Anecdotal Observations](#) | [Map of Monitoring Sites](#) | [Findings](#)

As of today, participants in the Monarch Larva Monitoring Project have monitored **830** sites in **37** U.S. states, the District of Columbia, **3** Canadian provinces, and **1** Mexican states. Click on one of the gray states on the map or a name from the list below to view summary results for that state.



start

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State Data

Monarch Larva Monitoring Project (MLMP) - Mozilla Firefox

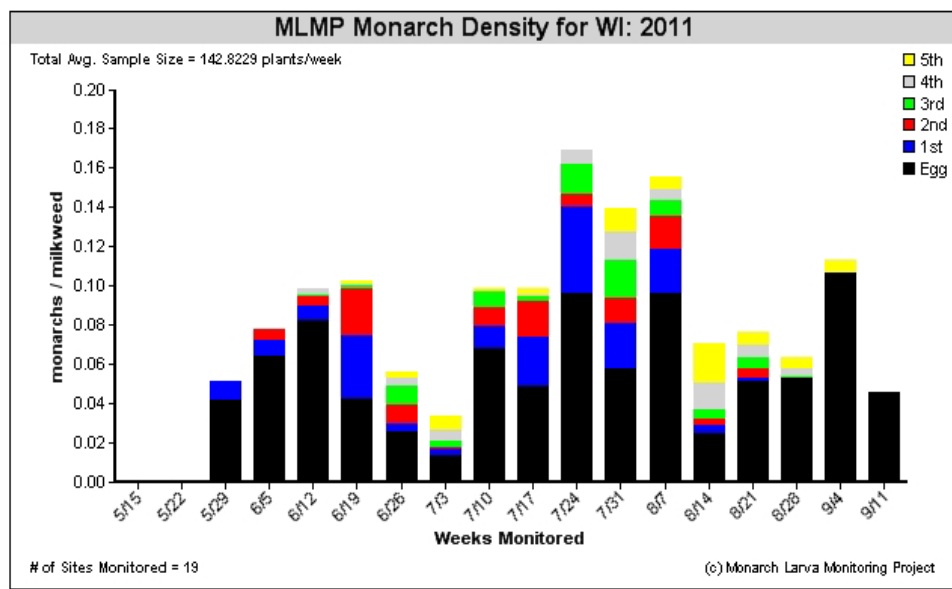
File Edit View History Bookmarks Tools Help

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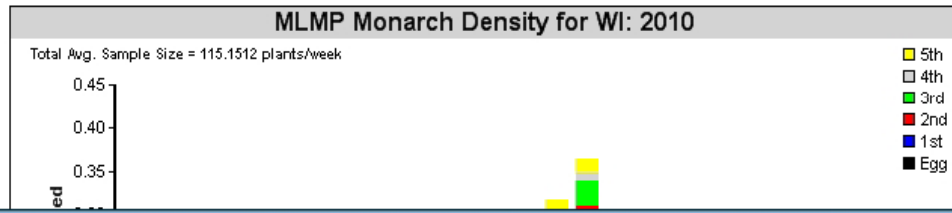
www.mlmp.org/Results/ResultsState.aspx?state=WI encyclopaedia of life

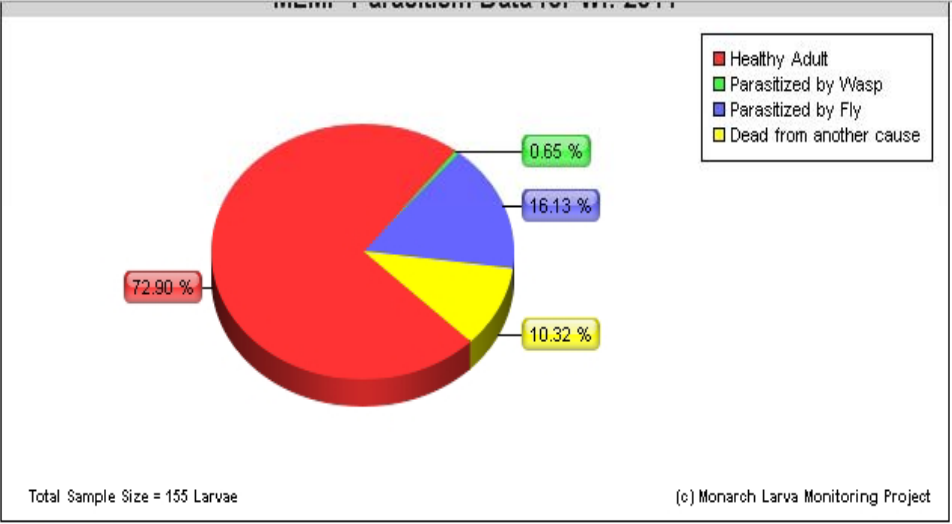
Weeks Monitored
of Sites Monitored = 3 (c) Monarch Larva Monitoring Project

[View Data](#)

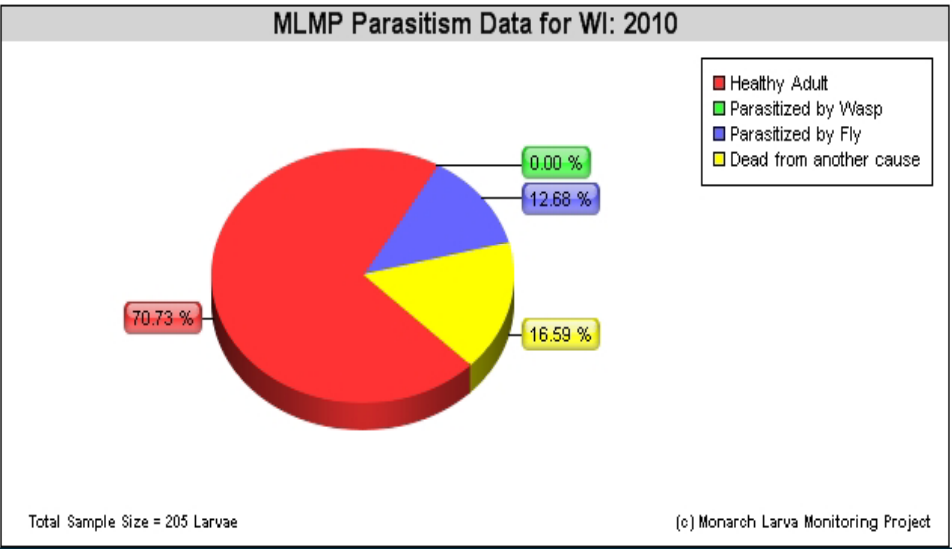


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[View Data](#)



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Week Starting	Date	No. of Milkweeds	Eggs	Firsts	Seconds	Thirds	Fourths	Fifths
5/21/2006	5/26/2006	30	55	0	0	0	0	0
5/21/2006	5/27/2006	47	4	0	0	0	0	0
5/28/2006	5/28/2006	297	339	0	0	0	0	0
5/28/2006	5/30/2006	13	0	0	0	0	0	0
5/28/2006	5/31/2006	124	54	8	0	0	0	0
5/28/2006	6/3/2006	348	173	52	0	0	0	0
6/4/2006	6/4/2006	331	135	97	36	0	0	0
6/4/2006	6/5/2006	39	3	0	0	0	0	0
6/4/2006	6/6/2006	14	5	8	0	0	0	0
6/4/2006	6/7/2006	220	60	17	23	10	0	0
6/4/2006	6/8/2006	84	16	0	1	0	0	0
6/4/2006	6/10/2006	502	94	58	22	6	8	6
6/11/2006	6/11/2006	420	70	186	23	18	14	0
6/11/2006	6/12/2006	104	2	0	2	1	0	0
6/11/2006	6/13/2006	28	7	0	3	2	0	0
6/11/2006	6/14/2006	215	33	1	19	3	5	0
6/11/2006	6/16/2006	609	71	70	23	19	18	10
6/11/2006	6/17/2006	235	5	25	4	1	2	12
6/18/2006	6/18/2006	637	7	28	10	15	16	18
6/18/2006	6/19/2006	200	12	1	4	1	10	16
6/18/2006	6/20/2006	80	27	1	0	0	0	2

6/19/2006	adult monarch	5th Instar	F
6/21/2006	adult monarch	2nd Instar	F
6/21/2006	adult monarch	4th Instar	F
6/21/2006	adult monarch	5th Instar	F
6/21/2006	adult monarch	2nd Instar	M
6/21/2006	adult monarch	5th Instar	M
6/21/2006	dead from another cause	2nd Instar	
6/21/2006	parasitized by fly	4th Instar	
6/21/2006	parasitized by fly	5th Instar	
6/24/2006	adult monarch	5th Instar	F
6/25/2006	adult monarch	2nd Instar	F
6/25/2006	adult monarch	3rd Instar	F
6/25/2006	adult monarch	Unknown	F
6/25/2006	adult monarch	3rd Instar	M
6/25/2006	adult monarch	5th Instar	M
6/25/2006	adult monarch	4th Instar	U
6/25/2006	dead from another cause	2nd Instar	
6/25/2006	dead from another cause	3rd Instar	
6/25/2006	dead from another cause	Egg	
6/25/2006	parasitized by fly	3rd Instar	
6/25/2006	parasitized by fly	5th Instar	
6/29/2006	adult monarch	3rd Instar	M
7/2/2006	adult monarch	2nd Instar	F


Individual Site Data

Monarch Larva Monitoring Project (MLMP) - Mozilla Firefox

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www.mlmp.org/Results/ResultsSite.aspx?state=MI&siteID=279



Monarch Larva Monitoring Project

Home > MLMP Home > Results & Findings > Monitoring Data & Graphs > Michigan > Site Results


Pond View (Kalamazoo, MI)

[Back to Michigan Results](#) | [Select a Different State/Province](#)

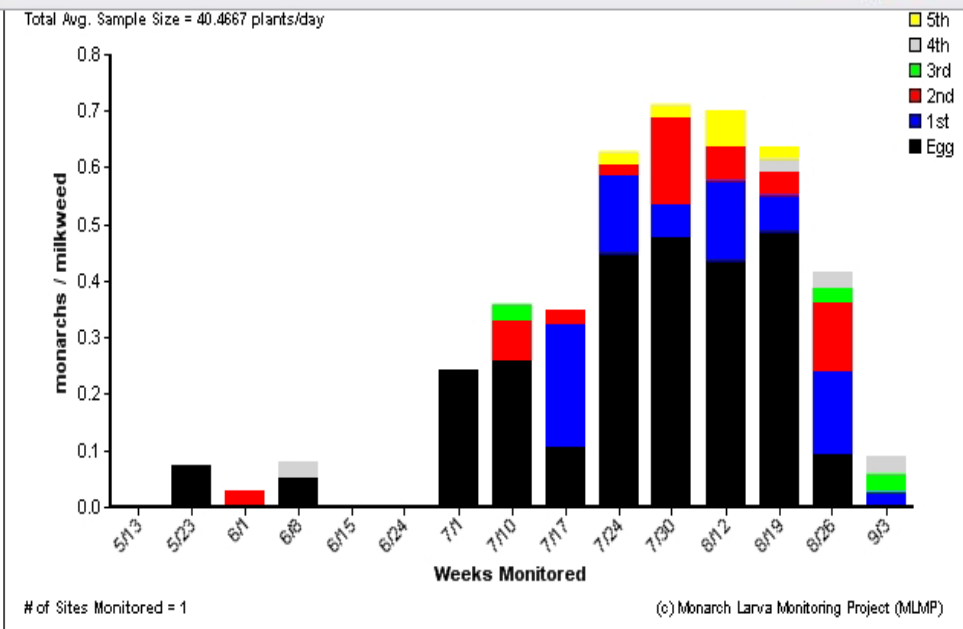
Select Year: All

Site ID: 279
Site Name: Pond View
Volunteer(s): Ilse Gebhard
Site Location: Kalamazoo, Kalamazoo County, MI
Milkweed Species: *Asclepias syriaca*, *Asclepias tuberosa*
Site Type: Garden
Years Monitored: 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

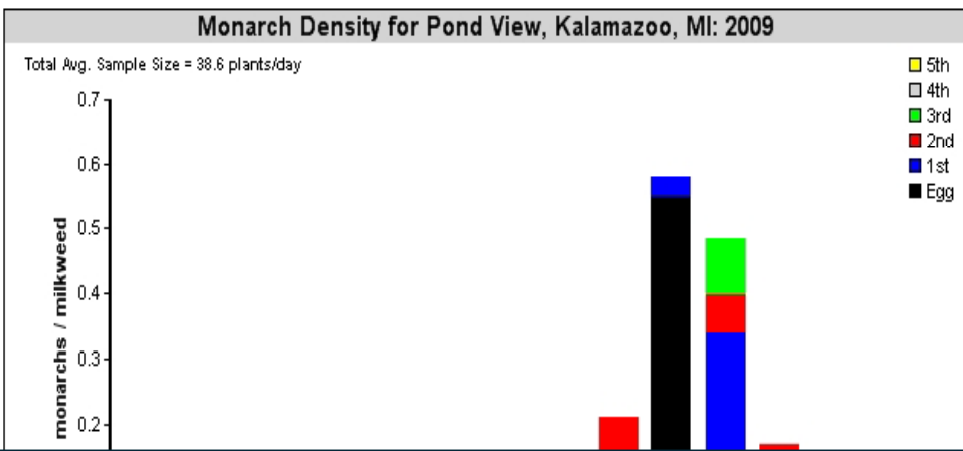
[Skip to Monarch Density Charts](#)
[Skip to Parasitism Charts](#)



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[View Data](#)

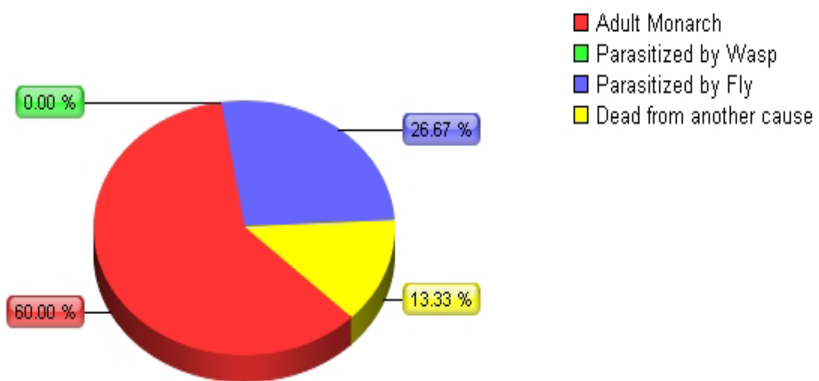


Total Sample Size = 9 Larvae

(c) Monarch Larva Monitoring Project

[View Data](#)

Parasitism Data for Pond View, Kalamazoo, MI: 2006



Total Sample Size = 15 Larvae

(c) Monarch Larva Monitoring Project

[View Data](#)

Parasitism Data for Pond View, Kalamazoo, MI: 2005



MonarchNet

- Mission: to coordinate the integration of monitoring data from monarch Citizen Science programs and to make them available for anyone who wants to know about monarch populations
- www.monarchnet.org



Photo by Ilse Gebhard

MONARCH NET

The North American network of monarch butterfly monitoring programs



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Monarch butterflies are one of the world's most famous insects, and in North America there are many citizen science programs where volunteers collect information on various aspects of its life.

The mission of monarchnet is to **coordinate the integration of monitoring data from these programs and to make it available on this website, which serves as a resource for anyone who wants to know about monarch populations, i.e. government officials, researchers, members of the general public or NGOs.** Since the partners represent the most important monitoring programs that collect data on monarchs, the collective data represent the most current and comprehensive information on the monarch biology.

We hope that by linking the data sets our efforts will foster collaboration between monitoring programs, promote the use of the data to answer scientific questions, increase participation by citizen-scientists in multiple programs and increase awareness of each monitoring program.

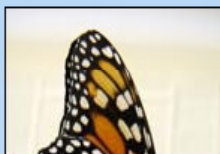
MonarchNet News:

MonarchNet is pleased to announce the launch of our [Data](#) page, where people can view charts showing trends in monarch abundance from most of our partnering programs, both in the east and west.

An article has been released from the Xerces Society ([link](#)) describing the decline in monarchs in California. See the trend also in our [Data](#) page.

Wanted: Participants in Texas - Get involved with the [Texas Monarch Monitoring Project](#)

Scientist-of-the-Month:
Eduardo Rendón Salinas - Click [here](#) to see why



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<u>Program</u>	<u>Basic Protocol</u>
<u>Journey North</u> – spring and fall migration sightings	Participants must register online to contribute observations, in the spring-- report first sightings of migrating butterflies, milkweed or eggs, in the fall--report sightings of overnight roost and migrating monarchs
<u>Monarch Larva Monitoring Project</u> – census of breeding populations	1) Estimate weekly monarch densities: monarchs/milkweed plant, 2) Track weather conditions, 3) Estimate parasitism rates, 4) Compare milkweed plants occupied and un-occupied by immature monarchs.
<u>MonarchHealth</u> – estimates prevalence of <i>Ophyrocystis elektroscirrha</i> parasite in adults	1) Volunteers catch wild adult monarchs, 2) Sample abdomen with provided stickers, 3) Samples analyzed at UGA lab, 4) Results sent to volunteers
<u>Peninsula Point Migration Monitoring Project</u> - Census of fall migrating monarchs at a stopover site in Michigan	Walking census conducted three times daily for 2 months each fall, all monarchs seen (flying, roosting or nectaring) are counted
<u>Cape May Migration Monitoring Project</u> - Census of fall migrating monarchs at a stopover site in Cape May, New Jersey	Driving census conducted three times daily around a standardized route, for 2 months each fall, all monarchs seen are counted while driving at a fixed speed
<u>Walking census of all butterflies</u>	Walking census of all butterflies (including monarchs) seen at selected

MONARCH NET

The North American network of monarch butterfly monitoring programs

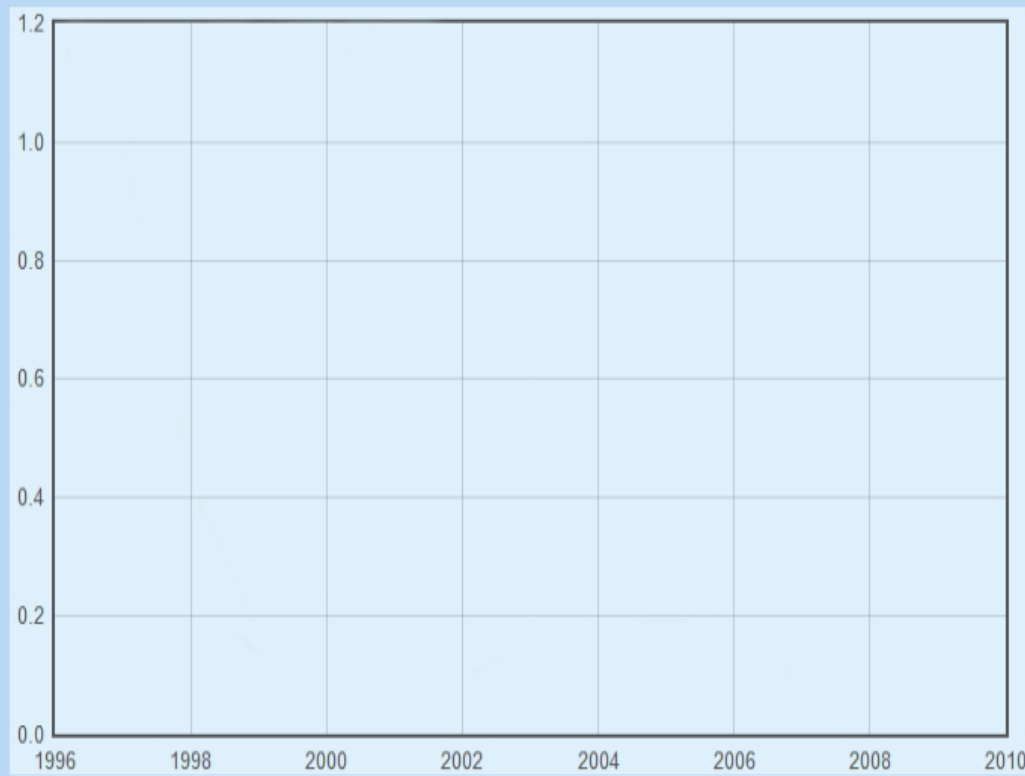


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-
- Overwintering Estimates*
- Mexico Overwintering Colony Size
 - Western Monarch Thanksgiving Count
- Spring Migration Estimates*
- Journey North ([Migration Index](#))
- Summer Breeding Estimates*
- Illinois Butterfly Monitoring Network
 - Ohio Butterfly Monitoring Program
 - NABA East Central
 - NABA California
 - NABA Mid-Central
 - NABA North Central
 - NABA North East
 - NABA South
- Fall Migration Estimates*
- Cape May
 - Peninsula Point

View output as a

graph or table.



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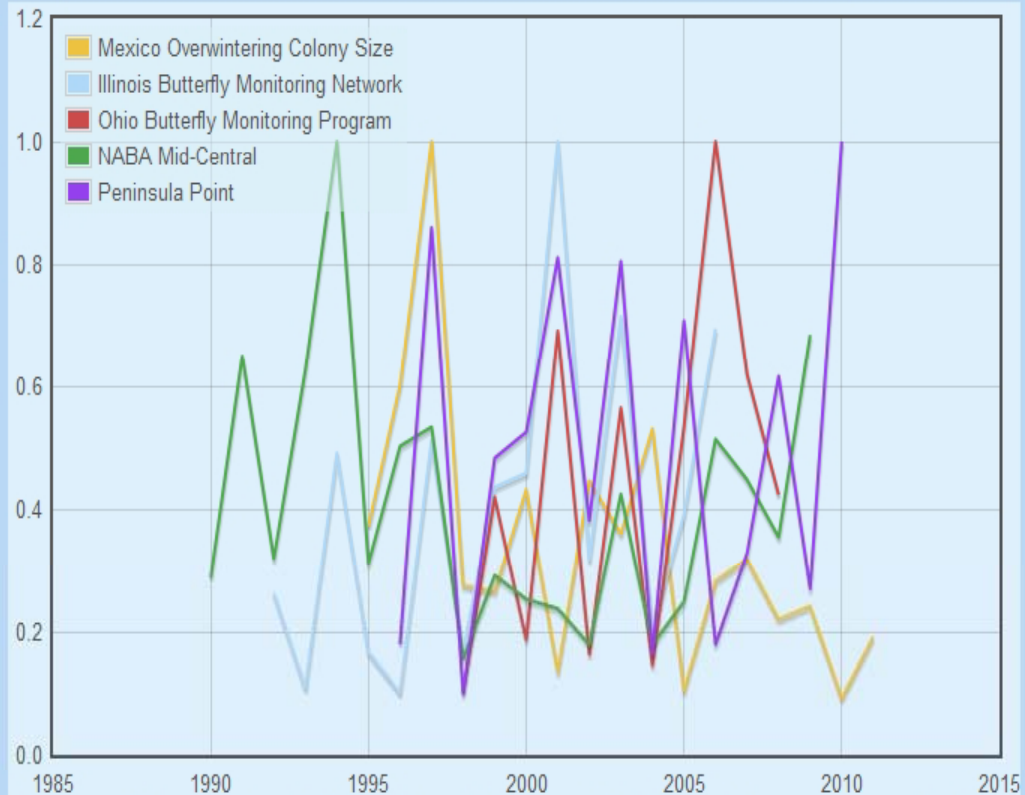


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 - NABA North East
 - NABA South
- Fall Migration Estimates**
- Cape May
 - Peninsula Point

View output as a

graph or table.



Since our sites are different sizes and use different methods to estimate monarch populations, all data have been normalized to plot on the same scale. All estimates are shown relative to the

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Scientific publications using monarch monitoring data



Thanks to the dedication of thousands of volunteers and participants, the data from monarch monitoring projects allows scientists to make exciting discoveries, advance our collective knowledge of monarch biology, and support conservation efforts by informing management decisions. Over the years, a considerable body of scientific literature on this subject has been accumulated, although there is still much to be learned! The following is a list of scientific studies that have utilized data from monarch monitoring programs. If you have contributed to one or more of these programs, know that your efforts have been worthwhile and that your data contributed to the science of monarch butterflies!

(last updated June 2011)

- Davis, A.K. 2011. Are migratory monarchs really declining in eastern North America? Examining evidence from two fall census programs. *Insect Conservation and Diversity*. Online Early - doi:10.1111/j.1752-4598.2011.00158.x.
- Brower, L.P., Taylor, O.R., Williams, E.H., Slayback, D.A., Zubieta, R.R., and M.I. Ramirez. 2011. Decline of monarch butterflies overwintering in Mexico: is the migratory phenomenon at risk? *Insect Conservation and Diversity*. Online Early - DOI: 10.1111/j.1752-4598.2011.00142.x.
- Howard, E. and A.K. Davis. In Press. A simple numerical index for assessing the spring migration of monarch butterflies using data from Journey North, a citizen-science program. *Journal of the Lepidopterists' Society*.

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data from Journey North, a citizen-science program. *Journal of the Lepidopterists' Society*.

- Bartel, R., Oberhauser, K., DeRoode, J. and Altizer, S. 2011. Monarch migration and parasite transmission in eastern North America. *Ecology* 92: 342-351.
- Howard, E., H. Aschen, and A.K. Davis. 2010. Citizen science observations of monarch butterfly overwintering in the southern United States. *Psyche* 2010. doi:10.1155/2010/689301.
- Stevens, S. R., and D. Frey. 2010. Host plant pattern and variation in climate predict the location of natal grounds for migratory monarch butterflies in western North America. *Journal of Insect Conservation* 14(6): 731-744.
- Lindsey, E., M. Mudresh, V. Dhulipala, K. Oberhauser, S. Altizer. 2009. Crowding and disease: Effects of host density on response to infection in a butterfly-parasite interaction. *Ecological Entomology* 34:551-561.
- Howard, E. and A.K. Davis. 2009. The fall migration flyways of monarch butterflies in eastern North America revealed by citizen scientists. *Journal of Insect Conservation* 13(3): 279-286.
- Kountoupes, D., and K. S. Oberhauser. 2008. Citizen science and youth audiences: Educational outcomes of the Monarch Larva Monitoring Project. *Journal of Community Engagement and Scholarship*. 1:10-20.
- Oberhauser, K. S. and M. D. Prysby. 2008. Citizen science: Creating a research army for conservation. *American Entomologist* 54:97-99.
- Batalden, R., K.S. Oberhauser, A.T. Peterson. 2007. Ecological niches in breeding generations of Eastern North American monarch butterflies. *Ecol. Entomol.* 36:1365-1373.

MLMP Data Sharing

- Anyone can access density and parasitism data by site and state (but there are inaccurate data on the web)
- Freely share downloaded excel files and our suggestions for cleaning with:
 - Scientists (with caveats)
 - Citizen scientists
 - Policy makers, other programs, etc.

