



Monarch Watch Migration & Tagging

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Monarch Tagging Kits are available from the Monarch Watch Shop at 1-800-780-9986 or:

Shop.MonarchWatch.org

Tagging Kit materials are available here in PDF or Excel format:

[2017 Premigration Newsletter](#) (PDF)

[2017 Monarch Watch Tagging Datasheet](#) (PDF)

[2017 Monarch Watch Tagging Datasheet](#) (Excel format)

The Excel formatted datasheet ("monarch-tagging-datasheet-2017.xls") may be opened, filled out, and saved using any spreadsheet application that can open and save .xls files (Microsoft's Excel, Apple's Numbers, Apache OpenOffice's Calc, etc.). Please save this file to your computer, add your tagging data (see sample data below), save the file (again, in .xls format), rename the file in the format "data-lastname-firstname.xls" (no quotes) and then send the datasheet file as an email attachment to Monarch Watch at taq@ku.edu

Sample data in datasheet file (click to enlarge):

TagCode	TagMonth	TagDay	TagYear	M / F / S / W	TagCity	TagState	TagZip	Firstname	Lastname	Organization	Address1	Address2	City	State	Zip	Phone	Email
ABC01	9	15	2013	M	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC02	9	15	2013	F	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC03	9	16	2013	M	R	Olathe	KS	66061	Monte	Monar	456 Sylvania St		Olathe	KS	66061	913551234	monarch@ku.edu
ABC04	9	16	2013	M	R	Olathe	KS	66061	Monte	Monar	456 Sylvania St		Olathe	KS	66061	913551234	monarch@ku.edu
ABC05	9	16	2013	F	R	Olathe	KS	66061	Monte	Monar	456 Sylvania St		Olathe	KS	66061	913551234	monarch@ku.edu
ABC06	9	18	2013	F	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC07	9	18	2013	F	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC08	9	18	2013	F	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC09	9	18	2013	M	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC10	9	18	2013	M	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC11	9	18	2013	F	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC12	9	18	2013	F	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC13	9	18	2013	F	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC14	9	18	2013	F	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC15	9	18	2013	F	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC16	9	18	2013	M	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC17	9	18	2013	M	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC18	9	18	2013	M	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC19	9	18	2013	M	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC20	9	18	2013	F	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC21	9	18	2013	F	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC22	9	18	2013	M	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC23	9	18	2013	F	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu
ABC24	9	18	2013	M	W	Lawrence	KS	66047	Dana	Pfeil	123 Mikewood Ave		Lawrence	KS	66047	785551234	monarch@ku.edu

QUICK TIP: You do not need to re-key all of your tag codes - just use your spreadsheet application's "autofill" feature to automatically increment all of the tag codes you need. In Excel, simply type in the first tag code, click on the cell to select it, then use the "handle" in the bottom right hand corner of the selection (the cursor will turn into a plus sign to signify autofill) to drag it down as many rows as you need. You can also do this for data you wish to duplicate (same tag location, etc.); however, if any cells contain numbers it might be better to select the cells to be duplicated, select COPY and then select all of the cells you want the data copied into and select PASTE.

If you encounter any problems with these files please let us know!

What's involved in the tagging program?

Tag selection - The purpose of the tagging is to associate the location of capture with the point of recovery for each butterfly. The data from these recaptures are used to determine the pathways taken by migrating monarchs, the influence of weather on the migration, the survival rate of the monarchs, etc. Each tagged butterfly must have a tag code (three letters and three numbers) for this system to work. To insure that they do, we create a series of tag numbers using numbers and the alphabet. Each year receives its own unique series. After we decide on a series of tag numbers, we send them to to be printed with waterproof ink on polypropylene sheets that have special 3M " adhesive on the back. The printed tags are placed on a backing from which they can be easily removed. They are organized in groups of 25 consecutive numbers. The tags arrive at Monarch Watch on sheets of 25 tags per sheet.

Tag distribution - Tag are purchased in kits. Each kit contains a premigration newsletter, datasheet, instructions and a multiple of 25 tags, depending on how many are ordered in that kit. You have the option of ordering kits with just 25 tags up to kits with 500 tags. If you need more than 500 tags, you will need to order multiple kits. We begin distributing the tags in August. Northern states and Canada receive their tags first so that they will not miss any migrating Monarchs. As we distribute the tags, we record the tag numbers issued to each tagger; the tag numbers issued to each participant are entered into a database on a computer.

Recording tagging data - With tags and datasheets in hand, participants tag as many monarchs as they are able and record the date, location and other information onto their datasheets. It is very important that participants record their name and address on each and every sheet. If you anticipate tagging more than 25 monarchs, we recommend filling in your name and address on the datasheets first and then making copies. When data is recorded, the complete tag number should be used. Without the letter code, tracking is usually impossible. For example, last year we sent out more than 200 tags with the number series 311 but only one of these was GAA 311. The datasheets included in the kits have directions and data examples. If a tag is recovered while tagging, it is important that the information for that tag is sent in separately. We receive thousands of datasheets each year but just one hundred or so domestic (U.S. and Canada) recoveries. To find out when the peak of the migration is in your area, please visit this link: <http://www.monarchwatch.org/tagmig/peak.html>

Returning the datasheets - Believe it or not, many people receive tags, tag monarchs, and record data but never return their datasheets. Every spring the Monarch Watch staff spends countless hours contacting people who have had recoveries but did not return their datasheets. The data for a recovery is lost unless we are able to verify when, where and by whom the butterfly was tagged.

As the datasheets are returned, we go through each tagging sheet and verify who received those tag numbers. If the tag numbers are incomplete, or if there is no name on the datasheet, we have to track the tags back to who received them and contact them in order to fill in this missing information (if it is even still available.) The sheets are filed in notebooks in alpha-numerical order and the information is entered into our tag database. This makes it easier to search for the tag records for recovered tags.

Recoveries!!! - Most of the recovered tagged Monarchs within the United States and Canada are found dead by people who know nothing about monarchs or Monarch Watch. In 2004, we changed the contact information on the tags to a phone number and email address to make it easier to report recovered tags. Old tags, which should not be used, contain an address. Most of the recoveries are reported with information on the location, date and circumstance of the recovery. If this information is not included, we must contact the person who found the tag. Once we have the tag number for a recovery, we enter the tag and the recovery information into a recovery database. Then, we use the tag record database to search for the tagging data and enter that information into the recovery database, too. We then calculate the distance travelled by that particular monarch. If the tagger has not returned their datasheets, they are contacted and asked for that information. Once the data is complete, we contact the tagger and the recoverer to share that information. It is can be viewed online via our website.

What do we do with the data? All of the recoveries are viewable online. We also analyze the recovery data to test hypotheses concerning Monarch orientation and navigation. These analyses will be summarized on the web site subsequent to the publication of the articles in scientific journals.

How to order tags

Tags are available by buying a tagging kit. Each Monarch Watch Standard Tagging Kit includes a set of monarch butterfly tags (you specify quantity), a datasheet (which may be photocopied if necessary), tagging instructions, and additional monarch/migration information. Kits come with tags in multiples of 25, ranging from a tagging kit with 25 tags to a tagging kit with 500 tags. If you need more than 500 tags, you should order the appropriate kits to add up to the amount desired. For example, if you need 700 tags, you should order a 500 tag kit and a 200 tag kit.

Please note, we only ship tags to areas of North America east of the Rocky Mountains. You can order tags via the [Monarch Watch Shop](#) online, by phone at 1-800-780-9986 or by faxing your order to 1-877-687-4878 (order forms available online).

Why do we tag Monarchs?

Many questions remain unanswered about the fall migration of the monarch population east of the Rocky Mountains. How do the monarchs move across the continent, i.e. do they move in specific directions or take certain pathways? How is the migration influenced by the weather and are there differences in the migration from year to year? We need data to answer these questions and we need your help! Only through the cooperative efforts of volunteer taggers will we be able to obtain sufficient recoveries and observations of the migration to answer these questions. Because monarchs have a certain "charisma" and a fascinating biology and because its fun to have an excuse to collect butterflies, this project is also a good way to introduce students to science and have them contribute to a scientific study. Through participation in this project we also hope to further interest in the conservation of habitats critical to the survival of the monarch butterfly and its magnificent migrations.

When do you tag Monarchs?

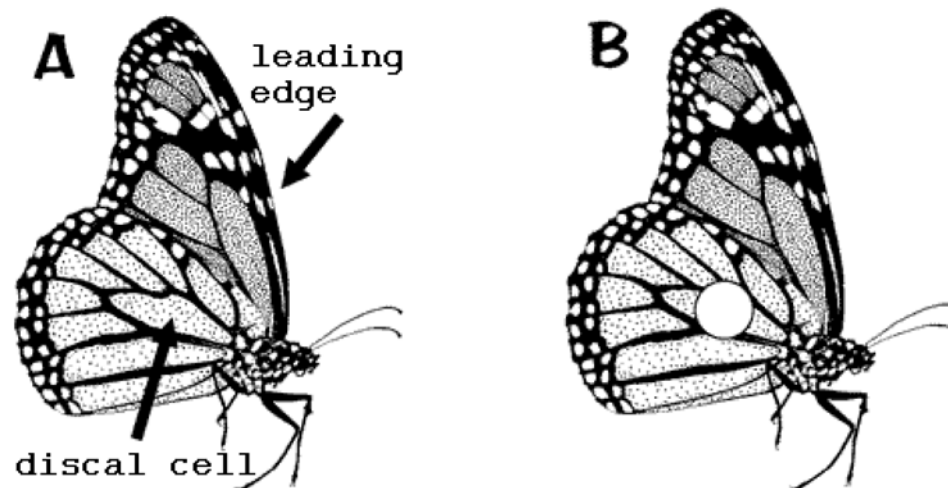
As the length of daylight shortens in mid August and September, monarchs in northern latitudes, i.e. near the Canadian border, begin to migrate. Monarchs farther south will begin their journey a few weeks later. Tagging and monitoring should begin in late August in all regions, with a concentrated effort made in September and early October. A **GOOD RULE**: when the wild asters, especially *A. novae-angliae*, goldenrod and Joe Pye weed are in bloom, the monarchs are migrating. In much of the lower midwest, migrating monarchs are attracted in large numbers to a tall late blooming thistle (*Cirsium altissimum*) several species of sunflowers and other species of Asteraceae.

Additionally, you can determine the estimated peak of the migration in your area based on latitude:

[Peak Migration Dates](#)

Our Tagging Method

We have adopted a tagging system in which the tag is placed over the large, mitten shaped cell (discal cell) on the underside of the hindwing of the monarch.



This method has proven to be very effective - the rate of tag recovery seems to be higher than for monarchs tagged on the wing margins ([an older method](#)). The discal cell position is closer to the center of lift and gravity for the butterfly and will not impede flight. More importantly, this tagging method appears to be less harmful to the butterflies.



In 1997, we developed new all-weather polypropylene tags. They are numbered specifically for the each tagging season. The new tags are round (9mm in diameter) rather than oblong or rectangular as in previous years. The tagging method is quite simple - remove a tag from the backing, place it over the discal cell and position the balls of your thumb and forefinger over the discal cells on both side of the butterfly, press firmly for two seconds and release the butterfly after recording the tag number and other information on the datasheet.

How old do you have to be to do this?

Some teachers have expressed concern regarding the participation of young children (second graders and up) in the tagging project. As it turns out, tagging can actually be easier with the aid of very small finger tips! Some adults and teachers found that if they held the butterfly, the children were actually more adept at applying the tags than they were and we've even had reports of 4 year olds helping by learning how to identify the "[boy and girl](#)" butterflies.

How do you capture a butterfly?

You can purchase a good butterfly net or make one. The net should be at least 24 inches deep, allowing you to trap the butterfly in the deep end of the net without harming it. Don't bother buying a cheap "kids" net as they generally will result in damage to butterflies.

Good quality nets (item#120003) are available from the Monarch Watch Shop at 1-800-780-9986 or online at:

Shop.MonarchWatch.org

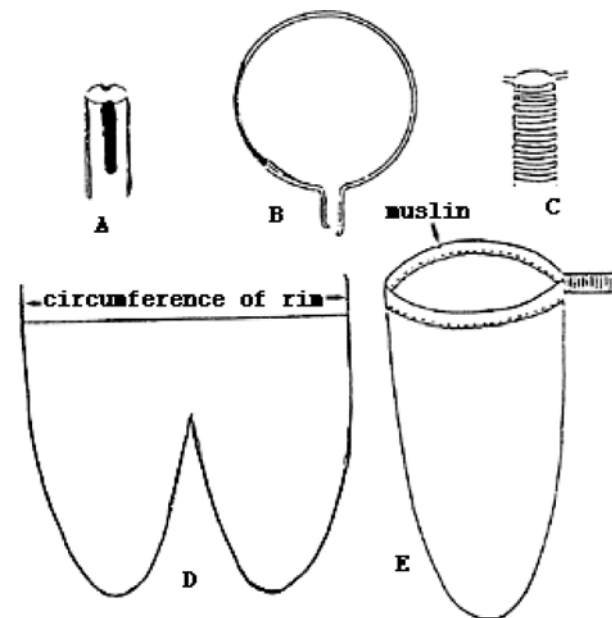
When in flight, Monarchs are very wary, elusive and difficult to catch. To maximize the number of Monarchs collected for tagging, it's best to locate Monarchs feeding on flowers or while they are on the roosts late in the day or early in the morning. Approach each butterfly slowly (from behind if possible) as sudden movement will startle it into flight. Sweep the net forward quickly and flip the end of the net bag over the net handle.

You want the butterfly in the deep end of the net. With one hand holding the handle, use the other hand to collapse the end of the net. There should be enough space at the deep end to prevent damaging the butterfly.

Flatten the net bag so the wings of the butterfly are closed over its back (thorax) and place thumb and forefinger over the leading edge of the wings (from outside of net). Next, with the thumb and forefinger of your other hand, reach in to the net and firmly grasp the thorax. Remove the butterfly for tagging.

If you want to make a net, you'll need some simple supplies:

1. a wooden handle (a large dowel cut into various kid- and adult-sized lengths works well)
2. a wood carving tool (a sharp penknife will work)
3. 8 gauge wire for the rim of the net (or a wire hanger)
4. wire or cord to fasten the rim to the handle
5. netting to make the bag (try asking for bridal veil material at a craft or fabric shop)
6. needle and thread (a sewing machine would be very useful)
7. muslin fabric
8. a drill



Cut grooves in opposite sides of the end of the wooden handle. The grooves should be approximately 2 inches long on one side and approximately 3 inches long on the other side (Figure A). Drill holes through the handle about halfway along each groove.

Cut the netting in a W-shape (Figure D), where the top of the W is the circumference of the rim. Cut a strip of muslin about three inches wide and as long as the circumference of the net. Fold it in half and sew it to the top of the W; this should create a muslin sleeve attached to the netting, which is where the wire forming the net rim will go. Sew the bag closed (Figure E).

Slide the 18 gauge wire through the muslin sleeve of the bag. Shape it into the net's rim, a loop with ends (Figure B). These ends should fit into the grooves and drilled holes of the wooden handle. Fasten the rim to the handle by wrapping around the end of the handle with thin wire or heavy cord (Figure C).

How do you store live Monarchs?

If you collect more monarchs than you can tag immediately, you can store them in a paper triangle or glassine envelope (stamp envelope). If you need to store the butterfly for more than a few hours, i.e. overnight or up to 2 days, place the envelope in a plastic box or zip lock bag in a refrigerator. They'll be fine! Be sure to keep the butterflies in envelopes out of the sun before you refrigerate them and to keep the butterfly from drying out and dying, place a damp paper towel in the container.

Is a journal helpful?

Some of our most useful information has been obtained from individuals who simply maintain a Monarch journal, diary or calendar. In these journals records are kept of the first appearance of migratory monarchs (those showing strong directional rather than local flight), and the numbers seen each day, particularly at a roost or roosts, or on flowers in a garden, etc. Many Monarch Watchers obtain very good quantitative data by counting the numbers of monarchs passing a given observation site each hour. It would also be useful to record the numbers of mating pairs seen along with the dates and circumstances of these observations.

www.MonarchWatch.org
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