

MONARCH WATCH PREMIGRATION NEWSLETTER - JULY 2011

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Monarch Watch turns 20! Thank you for participating in the 20th fall season of monarch tagging sponsored by Monarch Watch. Your tagging efforts, and the subsequent recoveries of tagged butterflies, contribute to our overall understanding of the dynamics of the monarch population. In order to assure the perpetuation of the monarch migration in eastern North America, we need to monitor the monarch population and educate the public (and policy makers) about all factors that affect the monarch population. By participating in this program and educating others about monarchs and the conservation issues associated with this species, you will help in the efforts to maintain the monarch migration.

Monarch Population Status

A lot has happened since 1992. We've seen the overwintering population in Mexico increase each year from 1994 to 1996, only to crash inexplicably in 1997. We have seen ups and downs in overwintering numbers - but mostly downs since 2003. In fact, the population has been below the long-term average for the last seven years. The downward trend is now statistically significant (Brower, et al 2011) and it is clear that we have entered a new era of monarch numbers.

The great migrations of the 90s are a thing of the past. In the future, we can expect overwintering populations in Mexico of 2-6 hectares. The main reason for the decline is loss of habitat. Monarch habitat has been reduced by at least 140 million acres in the last 10 years - about a fifth of the total breeding area available to monarchs has been lost. At least 100 million acres of habitat has been lost due to the adoption of herbicide resistant corn and soybeans.

So, where does this leave us and what does this mean for tagging?

We can expect a low year for monarchs, perhaps not as low as 2009 (1.92 hectares) or 2004 (2.19 hectares) but close to these numbers. The migration should be particularly low in the New England area and the numbers at Cape May will be low as well. The central region (Ontario, MI, OH, IN, IL) will see a modest migration and could produce more monarchs than the area defined by the eastern Dakotas, MN, WI, and IA. Even though the population will be down from historical highs, there will still be plenty of monarchs to tag.

Please visit our website for a more detailed account of the current monarch population and updates as the season progresses.

For estimated peak monarch migration dates in your area please visit:

www.MonarchWatch.org/tagmig

Recording Tagging Data

- **It is very important that participants record their complete name and contact information on each and every sheet.** If you anticipate tagging more than 25 monarchs, fill in your name and address on the datasheet first and then make photocopies. To make the tracking process easier, the person to whom the tags were issued by Monarch Watch should be listed in the top right corner.

- **When you record your data, use the complete six-symbol tag code.** Without the complete code, tracking is virtually impossible. **DO NOT USE the page number tags;** these are only on the sheet as a printing reference. Page numbers are repeated each year and are meaningless.

- Use the datasheet example as a guide for the information to include on your tagging records. Be sure to record the tag code, date, and location (city, state, zip) for each tag you use.

- If you happen to recover a monarch while you are out tagging, please

send that recovery information to us separately. We receive thousands of datasheets each season, so sending these reports separately will insure that the recoveries are not overlooked.

Returning Your Datasheets

Please, please, return your datasheets as soon as you are finished tagging for the season. Believe it or not, many people receive tags, tag monarchs, record data and then never return their datasheets. Every year the Monarch Watch staff spends countless hours (and a lot of money) contacting people who have recoveries but did not return their data. The data for a recovery is useless if we are unable to verify when, where, and by whom the butterfly was tagged.

Monarch Tag Recoveries

Most of the tagged monarchs recovered within the United States and Canada are found dead by people who know nothing about Monarch Watch or our tagging program. Usually these people either return the dead specimen with the tag, the tag itself, or just the tag code. Most of the recoveries arrive with information on the location, date and circumstance of the recovery. If this information does not arrive with the tag, we do our best to collect it. Once we have the tag code for a recovery, we search the tag database for that particular tag. If a record has not been returned, we must contact the person who received the tag. When we locate the datasheet for the recovered monarch, we record the participant's name, along with the tagging location, date, monarch gender, etc., in the recovery database. We calculate distance according to latitude and longitude to obtain information for the straight-line course (a minimal estimate for the distance the monarch traveled). The recovery is available as soon as it is entered and both the tagger and the person who recovered the tag can view the record online and print a certificate.

The majority of the recovered tags are obtained in Mexico. Early each year we visit the overwintering sites, particularly El Rosario and Sierra Chincua, where we purchase tags from the guides and ejido members. The ratio of untagged to tagged monarchs is quite high and it takes most residents several hours to find each tag among the butterflies visiting sites along streams or dead butterflies on the trails and under the monarch covered trees. We pay 50 pesos (about \$5US) for each tag - reasonable compensation for the time and energy spent locating each tag. Part of the cost of the tagging kits covers these recoveries. However, in years in which there is high mortality at the overwintering sites the number of recoveries is high and exceeds the funds available to purchase tags. The Monarch Watch Tag Recovery Fund has been established to address the costs associated with tag recovery incurred by us each year. Contributions to this fund and to Monarch Watch in general are always welcome and appreciated:

www.MonarchWatch.org/donate

What do we do with the data?

The recovery data is posted on our website and is analyzed to test hypotheses concerning monarch orientation and navigation. The data are also used to determine mortality during the migration and estimate the number of monarchs in the overwintering population. These analyses will be summarized on our website after the publication of articles.

When Does Tagging Begin?

As the length of daylight shortens in mid-August, 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 early to mid August north of 45N (Minneapolis) and late August at other locations north of 35N (Oklahoma City, Fort Smith, Memphis, Charlotte) and in September and early October in areas south of this latitude. An explana-

tion of when to begin tagging in your area can be found in the "Tagging & Migration" section of our website.

Capturing a Monarch

When in flight, monarchs are 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 in roosts late in the day or early in the morning. With a butterfly net in hand, 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 bag. 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 the net). Next, with the thumb and forefinger of your other hand, reach into the net and firmly grasp the thorax. Remove the butterfly for tagging.

Butterfly Nets

You can purchase a good butterfly net directly from the Monarch Watch Shop (item# 120003; 1-800-780-9986 or ShopMonarchWatch.org) or make one. The opening of the net should be 12" or more in diameter and the net bag should be at least 24" deep, allowing you to trap the butterflies in the end of the net without harming them. Net bags can be made from a variety of materials but it is advisable to choose see-through materials that won't rip easily as the net is swept over vegetation. The mesh should also be small enough that the monarchs aren't able to wiggle free. Landing nets used by fisherman (available at most discount stores) can usually be converted to butterfly nets.

Storing Live Monarchs

If you collect more monarchs than you can tag immediately, you can store them in paper triangles or glass-

ine (#3 stamp) envelopes overnight or for a few days (no more than three). Simply place the envelopes in a plastic box or zip-lock bag in a refrigerator. A moist paper towel should be included to keep the butterflies from becoming dehydrated.

Sexing Monarchs

Once you become familiar with monarch adults, sexing is relatively easy. Males have an enlarged pouch midway along a vein that is directly below the discal cell on the hindwing (see below). In species closely related to the monarch, this is a source of pheromones used in courtship. The pouches do not appear to be functional in the monarch. Females lack these pouches and appear to have thicker veins than males - this is actually only a difference in pigmentation. Upon close examination, you will also notice that males and females differ significantly in the anatomy at the tip of their abdomen.



It's pretty easy to tell a male monarch (above) from a female monarch (below) when you know what to look for.



Monarch Watch is a cooperative network of students, teachers, volunteers and researchers dedicated to the study of the monarch butterfly. Our goals are to further science education, particularly in primary and secondary school systems; to promote the conservation of monarchs and their habitat; and to involve thousands of students and adults in a cooperative study of the monarchs' fall migration.

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