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Please note that the tag codes that appear on tags issued since the fall of 2019 are four (4) letters followed by three (3) numbers — be sure to record the complete code on your datasheet for each monarch you tag and release.



TAGGING NEWSLETTER – JULY 2020

by Chip Taylor,
Director, Monarch Watch

Greetings, taggers!

Welcome to the 2020 monarch tagging season. This year marks Monarch Watch's 29th season! Over the years, thousands of taggers have contributed to our tagging database. It is an enormous record and a veritable gold mine of information about how the migration functions. The record represents over 2 million tagged butterflies and lists where, when and by whom each butterfly was tagged. The sex of each butterfly and whether the butterfly was wild-caught or reared, tagged and released is also recorded. The record also includes over 19,000 recoveries at the overwintering sites.

We have spent the last several years closely examining these records and the data have been used as the basis for two publications. Two additional papers are in preparation and more are planned.

Briefly, the tagging data have revealed new information on the origins of monarchs that reach Mexico, the timing and pace of the migration, differences among regions due to recolonization and weather, the impact of drought years and many other factors. None of these insights into the dynamics of the migration and the monarch annual cycle would have been possible without the assistance of all those who have so generously donated their time and data to the Monarch Watch Tagging Database (which will ultimately be transferred to a national archive).

Yet, in spite of these successes, we are not done; there is more to learn. The climate is changing and mon-

arch habitats are continuing to decline and for these reasons it is likely that the migration will change as well. Continued tagging should enable us to track these changes, and for that, we hope you will continue to tag, to report your data and to generally support monarch conservation by creating habitats for monarchs or helping others do so.

Good luck with your tagging and thanks to all of you for participating in our program. Please visit our website for updates and to review the complete "Tagging wild and reared monarchs: Best practices" article via monarchwatch.org/tagging

Status of the Population

There are a number of ways to assess the development of the summer monarch breeding population that lend some predictability to the size of the migratory population. One can use mid-summer numbers gleaned from surveys conducted by the North American Butterfly Association or eggs per stem counts tallied by the Monarch Larval Monitoring Project, or simply follow the chatter about the numbers of adult monarchs and immatures reported on various social media sites and email lists like Dplex-L. All have merit and all have limitations. I prefer to break down the numbers of first sightings north of 40N from 1 May to 14 June as reported to Journey North. I look for two things, the timing of arrival across the longitudes as well as the numbers arriving and I look at how those numbers might have been affected by the numbers of first sightings of returning monarchs from 1 March–30 April. In addition, I ask how the weather might have affected recolonization.

To that, I add the forecasts for the mean temperatures for the months of June–August. The result is a prediction each July that is correct more often than it is wrong, but there have been some misses and those are both instructive and humbling.

So, what do these metrics suggest for the coming migration? Actually, the prospects for a reasonably robust migratory population look quite good for the area from central Michigan to 100W in the Dakotas. The numbers from Michigan to the east coast are likely to be lower than for each of the last two years. In terms of the timing of arrivals in the northeast east of Toronto in Canada, and most of northern New England, the recolonization this year was the 6th lowest in the last 21 years. That said, this region has surprised me in the past by producing more monarchs than I expected. Overall, there should be plenty of monarchs to tag this fall and there is a good likelihood that the numbers this winter in Mexico will be higher than in 2019.

Tagging in the age of Covid-19

The dangers posed by Covid-19 require a cautious approach to numerous activities that might expose us to the virus and that extends to tagging monarchs. If you tag alone or with family members that live with you, tagging should be one of those things that doesn't require wearing a mask. HOWEVER, you should have a mask with you and should wear it should you find yourself in close proximity of others who are also enjoying the outdoors. If you are attending a sponsored tagging event, please wear a mask, be cautious and practice social distancing. **Please stay safe!**

Our deep dive into the data has told us this record could be improved. For example, our analysis revealed substantial differences between wild and reared monarchs in the probability of reaching Mexico. The recovery rate is higher for wild-caught monarchs (0.9% vs 0.5%). This result means we are learning more about the migration as a natural process from wild-caught and tagged monarchs. That's not surprising. Still, the timing and origins of the thousands of reared, tagged and released monarchs that have been recovered in Mexico are of interest. We are analyzing data to determine why these recover rates are lower. Rearing conditions are surely a major factor but there are several others.

For those of you who prefer to rear, tag and release, we have a few suggestions as to how you might improve the odds that your reared monarchs will reach the overwintering sites in Mexico. One way is to rear monarchs in a way that maximizes their exposure to environmental changes (day/night temperatures, changing photoperiod, etc.) that occur in the fall. In other words, rearing outdoors in a protected area (porch, pole barn, open garage) would likely produce better results than rearing indoors.

For wild-caught monarchs, we have several goals. First, we need to increase the number of taggers from western Minnesota and Iowa westward into Nebraska and the Dakotas. This region is known to produce large numbers of monarchs and those tagged have high recovery rates. Increased tagging in this area will give us a more complete understanding of dynamics of the migration. Second, we need to increase the number of wild monarchs that are tagged since these provide the most valuable data. Third, we need to increase the number of taggers who tag from the beginning of the tagging season in early August until the migration ends. Tagging records for the entire season will help us establish the proportion of the late-season monarchs that reach the overwintering sites. Many taggers run out of tags well before the season ends and it would help us to know when this happens; the date may be reported via

the tagging data submission form.

Tagging Monarchs

Tagging should begin in early/mid August north of 45N latitude, in late August at other locations north of 35N and in September and early October in areas south of 35N. For peak migration dates in your area please visit monarchwatch.org/tagging

Quality butterfly nets are available from the Monarch Watch Shop (item# 120003; shop.monarchwatch.org or 1-800-780-9986).

Monarchs are difficult to catch in flight so it is best to locate monarchs feeding on flowers or in roosts late in the day or early in the morning. With a net in hand, approach slowly from behind. Sweep the net forward quickly and flip the end of the net bag over the handle to capture the butterfly deep in the net bag. Collapse the end of the net bag so the wings of the butterfly are closed over its back. Place thumb and forefinger over the leading edge of the wings (from outside of the net) and then reach into the net to firmly grasp the thorax and remove the butterfly for tagging.

Recording Tagging Data

- It is very important that participants record their **complete name and contact information on each and every sheet**.
- When you record the data, be sure to **use the complete tag code for every tagging record**. Without the complete code, identification can be virtually impossible.
- **Do not use the page number or "do not use" tags on your tag sheets**; these do not provide meaningful data to the tagging program.
- Use the datasheet example as a guide for the information to include for each tagging record. Be sure to **record the complete tag code, date, and complete location for each and every monarch** you tag and release.

Submitting Your Data

Please submit your data once you are finished tagging for the season!

Recovery data are useless if we are unable to verify when and where the butterflies were tagged and released.

Please consider submitting your data online via our simple form. You may also download a Monarch Watch Tagging Datasheet in spreadsheet format which allows us to compile the data in a more efficient manner. The spreadsheet may be filled out using Excel, Numbers, Google Sheets or another spreadsheet application then saved and submitted online. Datasheets and complete instructions are available online at

monarchwatch.org/tagging

Monarch Tag Recoveries

Tagged monarchs observed in the United States, Canada, and Northern Mexico ("domestic recoveries") are often found by people who are not familiar with the Monarch Watch tagging program. Using the contact info on the tag, recovery information is submitted to us and added to our database.

The majority of 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 several hours on average to find each tag among the dead butterflies on the trails and under the monarch-covered trees. We pay approximately \$5US for each tag, reasonable compensation for the time and energy spent locating them.

A portion of the cost of the tagging kits attempts to cover the recovery effort. However, when there is high mortality at the overwintering sites the number of recoveries is also high and the cost of purchasing tags exceeds these funds. Tax-deductible contributions to Monarch Watch to help offset the costs associated with running the tagging program are always welcome and very much appreciated:

monarchwatch.org/donate

Thank you for your support!