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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 2021

by Chip Taylor,  
Director, Monarch Watch

### Greetings, taggers!

Welcome to Monarch Watch's 30th tagging 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.

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).

Despite these successes, there is more to learn and a long-term record is crucial to understand the dynamics of such complex natural phenomena. The climate is changing and monarch 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](https://monarchwatch.org/tagging)

### Status of the Population

As you may recall, I was concerned about the conditions monarchs would encounter as they returned from Mexico in March due to the devastating impact of the 11-day freeze in Texas in mid-February. That led to a project to determine 1) how the vegetation recovered from the freezing conditions, 2) the plants the monarchs used for nectar and 3) the phenology of the emergence of milkweeds. Those investigations were summarized in two entries posted to our blog in May and June of this year (see "**Nectar plants used by monarchs during March in Texas**" and "**Monarchs and the freeze in Texas**")

Overall, monarchs seemed to find enough nectar and milkweeds to get the breeding season underway. The next question was where were most of the eggs laid by returning females and would that egg laying lead to the production of a small, medium or large number of first-generation offspring. Although some of the returning monarch moved north before the appearance of milkweeds, my sense, based on numerous reports from mid to north Texas, was that the majority of eggs were laid in these regions. While

the distribution of eggs looked favorable, the larvae still have to reach the adult stage and those first-generation offspring then have to recolonize the breeding areas to the north.

To assess the size of the first generation and success of the recolonization, I rely on the first sightings posted to Journey North. The number of first sightings grows from year to year as more people post their sightings. Nevertheless, I can still get a sense of the year-to-year differences based on the timing of the sightings and their number. To assess what has happened this year from late April to early June, I examined the Journey North first sightings maps from 2010-2021. Tentatively, it looks like the recolonization of the summer breeding range this year is the best ever. I say "tentatively" because I have to look at the data more closely. But it does look like this will be a good year for monarchs. As of late June, it looked like the recolonization could produce an overwintering population ranging from 2-6 hectares with a real potential to be on the high end of that range. To be at the high end, temperature and rainfall have to be within +/-1.5 degrees and +/-2 inches of the long-term means from now through September. While this prediction holds for most of the range, it is particularly important for the conditions to be close to the long-term average for the Upper Midwest, since it is this region that contributes the greatest number of monarchs to the overwintering population.

For more on the influence of environmental conditions on the development of the populations each year, see the "**Monarch population crash in 2013**" posting to our blog in June.

## Reared vs. Wild Monarchs

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](http://monarchwatch.org/tagging)

Quality butterfly nets are available from the Monarch Watch Shop (item# 120003; [shop.monarchwatch.org](http://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 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](http://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 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](http://monarchwatch.org/donate)

Thank you for your support!