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Tagging Newsletter

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by Chip Taylor, Director,
Monarch Watch

A message to all taggers

Hear ye! Hear ye! Taggers take note! What you have contributed to monarch science over the years has been incredible! Collectively, you have tagged well over 1.5 million monarchs in the last 26 years, from the front range in Colorado to the Maritime Provinces in Canada. Further, you have tagged from the beginning of the migration in the vicinity of Winnipeg in early August until the last monarchs cross the border into Mexico in November. It is an amazing record that continues to provide new insights about the dynamics of the monarch migration. **Congratulations and thank you.**

We are often asked why we keep tagging. We know where monarchs come from that reach Mexico, right? The answer is yes, we do, but tagging and recovery of tagged monarchs is about more than origins. It's about patterns that tell us what areas of the country contribute most to the overwintering numbers. It's about the flow of the migrations, that is, how the migration progresses from its start in Canada to its end at the overwintering sites in Mexico. It's about the influence of weather on migrations and the impact of habitat loss. It's about the sex ratios and mortality during the migration and it's even about events that happened 7-8 months before the migration. We are in the process of analyzing over 1.3 million tagging records and more than 13,000 recoveries and, I can tell you, the tagging results have things to say about all these points and more. The amount of monarch habitat is changing along with the climate and it turns out that tagging is

one way of monitoring these changes. So please keep tagging from the start to the end of each migration. Your data are of great value.

Some things are worth repeating

My pre-migration message this year leans heavily on the text from last year.

When it comes to estimating the size of the migration, each year is a series of experiments, with numerous hypotheses, during which I try to match what I know about monarchs with the progression of the seasonal conditions that influence both monarch behavior and plant growth. To make projections for each fall migration and overwintering population, I start with the numbers of monarchs measured at the overwintering sites in Mexico. Next, I focus on overwintering mortality, followed by the spring conditions as monarchs move northward from the overwintering sites to the milkweed areas in south and central Texas, and then the conditions in the South Region (TX, OK, LA, AR, KS) during the growth of the first generation in March and April. That is followed by attention to the conditions during the period from 1 May-9 June that allow, or don't allow, first generation monarchs to reach the northern breeding grounds. Summer temperatures along with the seasonal distribution and amounts of rainfall are also in focus when estimating the fall and winter numbers. These stage and time specific assessments provide the context for a number of hypotheses or projections concerning the coming migration and the opportunities to tag monarchs each season. Sometimes I'm on the mark and sometimes I'm wrong. The point is to not only give those interested an idea of what to expect but to learn from

my mistakes and few successes. Last year, I predicted a large population in the Northeast in general and for Cape May in particular. I was right on the money. However, I underestimated the impact of the drought that ranged from the eastern Dakotas through western Minnesota down through western Iowa. I also overestimated the production of monarchs in the rest of the Upper Midwest with the overall result that the overwintering population of 2.48 hectares was lower than the near 4 hectares I was expecting. These differences were reflected in the number of overnight roosts reported to Journey North through the migration and the relative success of taggers in the East and Midwest. Still, it was a great tagging season.

So, let's see if I can do better this year. With respect to the Northeast, this should be another good season, although not as good as last year. In Canada, eastern Quebec will be down, but most of Ontario is on track to produce a substantial number of fall monarchs. The counts of monarchs per hour at Cape May will be lower this year, but will still be well above the long-term average. On the positive side, in the Upper Midwest, unless I've misjudged the situation once again, the migration should be the strongest since 2008 (a 5-hectare year) with the real possibility that the overwintering population could hit 5 hectares once again. Let's see if I'm correct.

Good luck with your tagging and thanks to all of you for participating in our program. Please visit our website for updates as the season progresses:

monarchwatch.org/blog

When Does Tagging Begin?

Tagging should begin in early to mid August north of 45N latitude (Minneapolis), late August at other locations north of 35N (Oklahoma City, Fort Smith, Memphis, Charlotte) and in September and early October in areas south of 35N latitude.

For estimated peak migration dates in your area please visit:

monarchwatch.org/tagging

Butterfly Nets

Quality butterfly nets are available from the Monarch Watch Shop (item# 120003; shop.monarchwatch.org or 1-800-780-9986). The opening of any net should be 12" or more in diameter and the net bag should be at least 24" deep to allow trapping 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.

Capturing a Monarch

When in flight, monarchs are difficult to catch. It's best to locate monarchs feeding on flowers or in roosts late in the day or early in the morning to maximize your effort. With a butterfly net in hand, approach slowly (from behind if possible), as sudden movement will startle butterflies into flight. 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.

Sexing Monarchs

Male monarchs have an enlarged pouch midway along a vein that is directly below the discal cell on the

hindwing. In species related to the monarch, this is a source of pheromones used in courtship but they 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 scale pigmentation. Males and females also differ significantly in the anatomy at the tip of the abdomen.

Recording Tagging Data

- It is very important that participants record their **COMPLETE NAME AND CONTACT INFORMATION ON EACH AND EVERY SHEET.**
- When you record your data, be sure to **USE THE COMPLETE SIX-SYMBOL 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 TAG CODE, DATE, AND LOCATION (CITY, STATE, ZIP) FOR EACH TAG YOU USE.**

Submitting Your Data

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

Every year Monarch Watch spends time and money contacting people that 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.

To submit your data, you may still mail it to the address on the datasheet; however, please consider downloading a Monarch Watch Tagging Datasheet in spreadsheet format to submit via a simple online form instead. This 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

Please submit your data in one format only (preferably online). That is, if you submit your data online, please do not mail in your sheet(s) as well.

Monarch Tag Recoveries

Tagged monarchs observed or recovered in the United States and Canada ("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 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 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!

Monarch Watch is a nonprofit education, conservation, and research program based at the University of Kansas that focuses on the monarch butterfly, its habitat, and its spectacular fall migration.

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