Community Science Panel

Karen Oberhauser, *UW-Madison/MLMP*

Chip Taylor, *Monarch Watch*

Jerónimo Chávez, *Profauna*

Jacob Swanson, *Journey North*

ROW HWG

MONARCH JOINT VENTURE

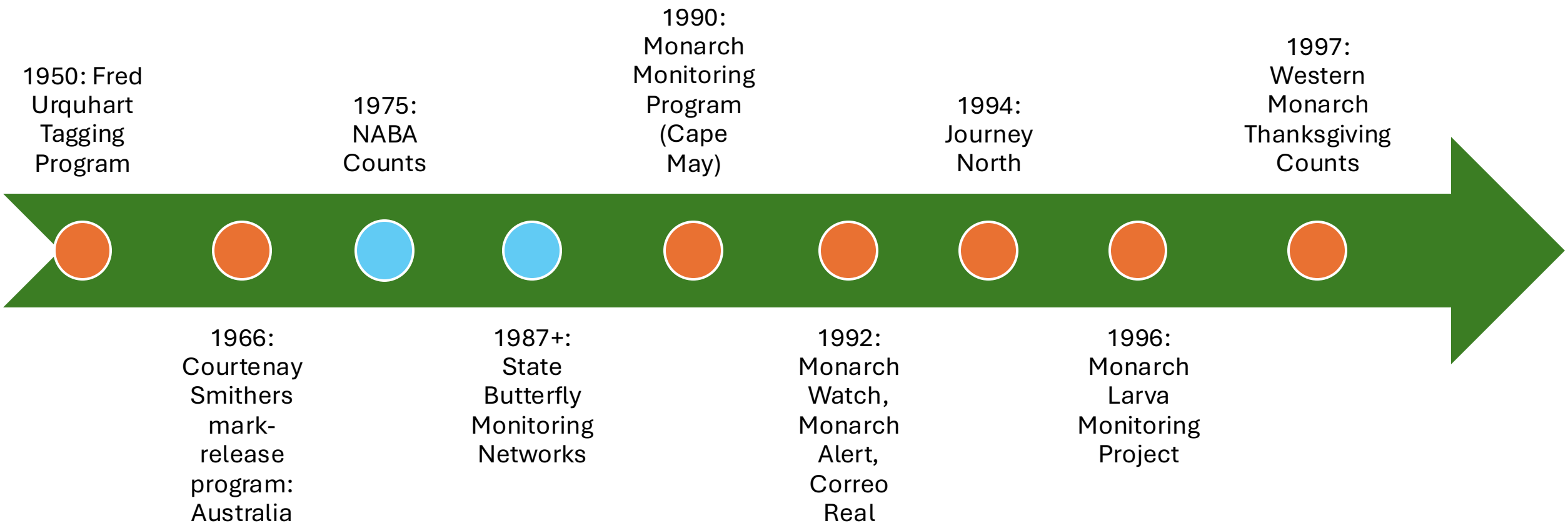



Monarchs and Citizen/Community/Participatory Science

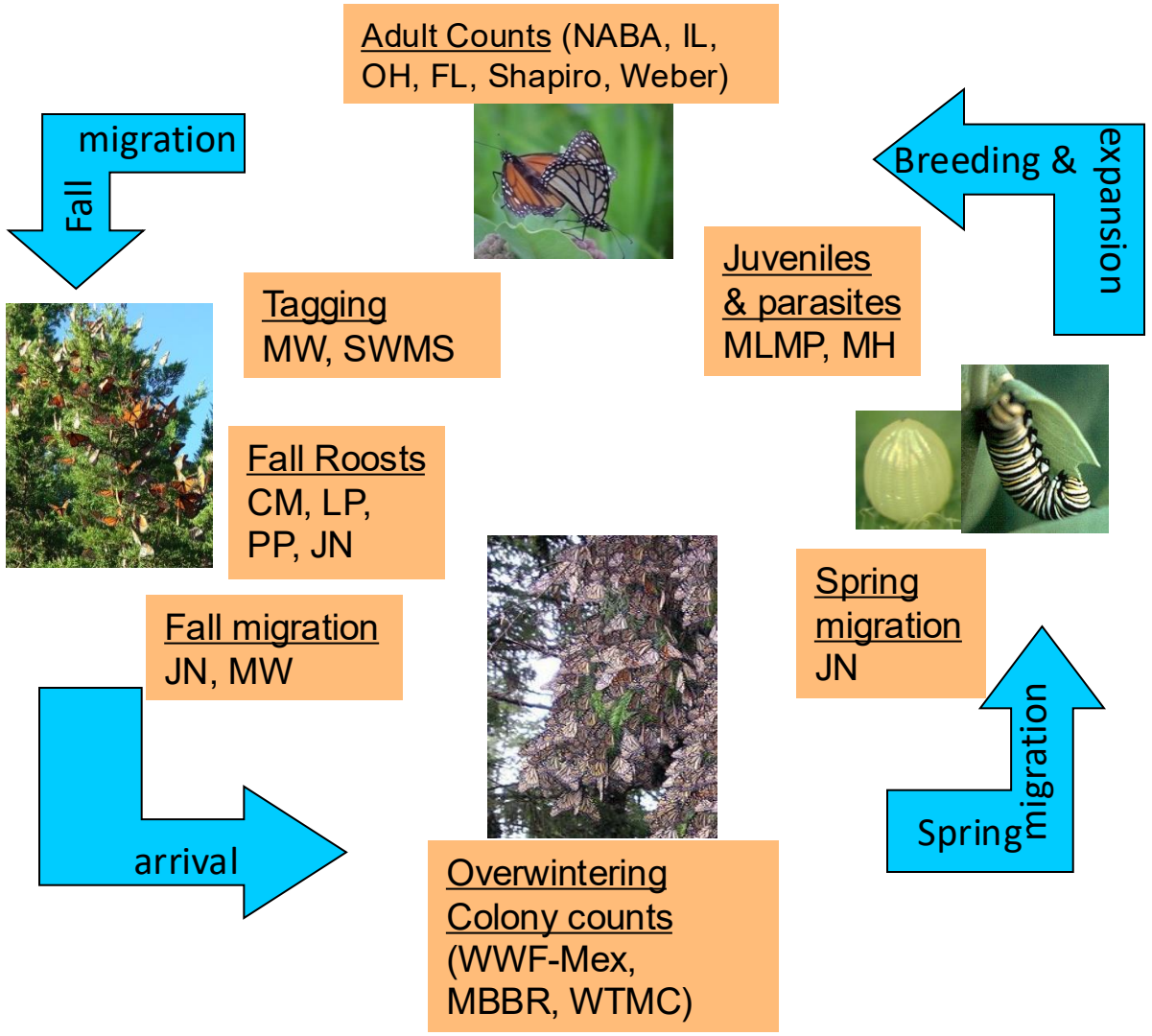
2025 North American Monarch Summit

Panel Discussion: Chip Taylor, Jacob Swanson, Jerónimo Chávez, Karen Oberhauser

A long history: projects that started in last century (even more now)



We know so much because monarchs are intensively monitored



MONITORING PROGRAMS

- NABA: North American Butterfly Association count program
- eButterfly
- IL: Illinois monitoring network
- OH: Ohio monitoring network
- Shapiro: No. CA monitoring program
- Weber: MN monitoring site
- MLMP: Monarch Larva Monitoring Project
- MH: Monarch Health
- JN: Journey North
- WWF-Mex: World Wildlife Fund and MBBR in Mexico
- WTMC: Thanksgiving Monarch Counts
- MW: MonarchWatch
- SWMS: Southwest Monarch Study
- CM: Cape May roost monitoring
- LP: Long Point roost monitoring
- PP: Peninsula Point roost monitoring

2024 MONARCH **RESEARCH REVIEW**

Prepared by
Monarch Joint Venture
www.monarchjointventure.org

Nearly a quarter of the ~90 documents reviewed used data from participatory science programs

Researchers transformed public contributions into meaningful scientific tools and conservation guidance.

These efforts underscore the power that participatory science has to shape conservation plans and action.

Panel: projects from the last century

- Chip Taylor, Monarch Watch (U of Kansas)
- Jacob Swanson, Journey North (Monarch Joint Venture)
- Jerónimo Chávez, Mexico Monarch Monitoring (Profauna)
- Karen Oberhauser, Monarch Larva Monitoring Project (U of Wisconsin, Monarch Joint Venture)

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Journey North
Tracking migrations and seasons

PROFAUNA
MÉXICO

Monarch Larva Monitoring Project


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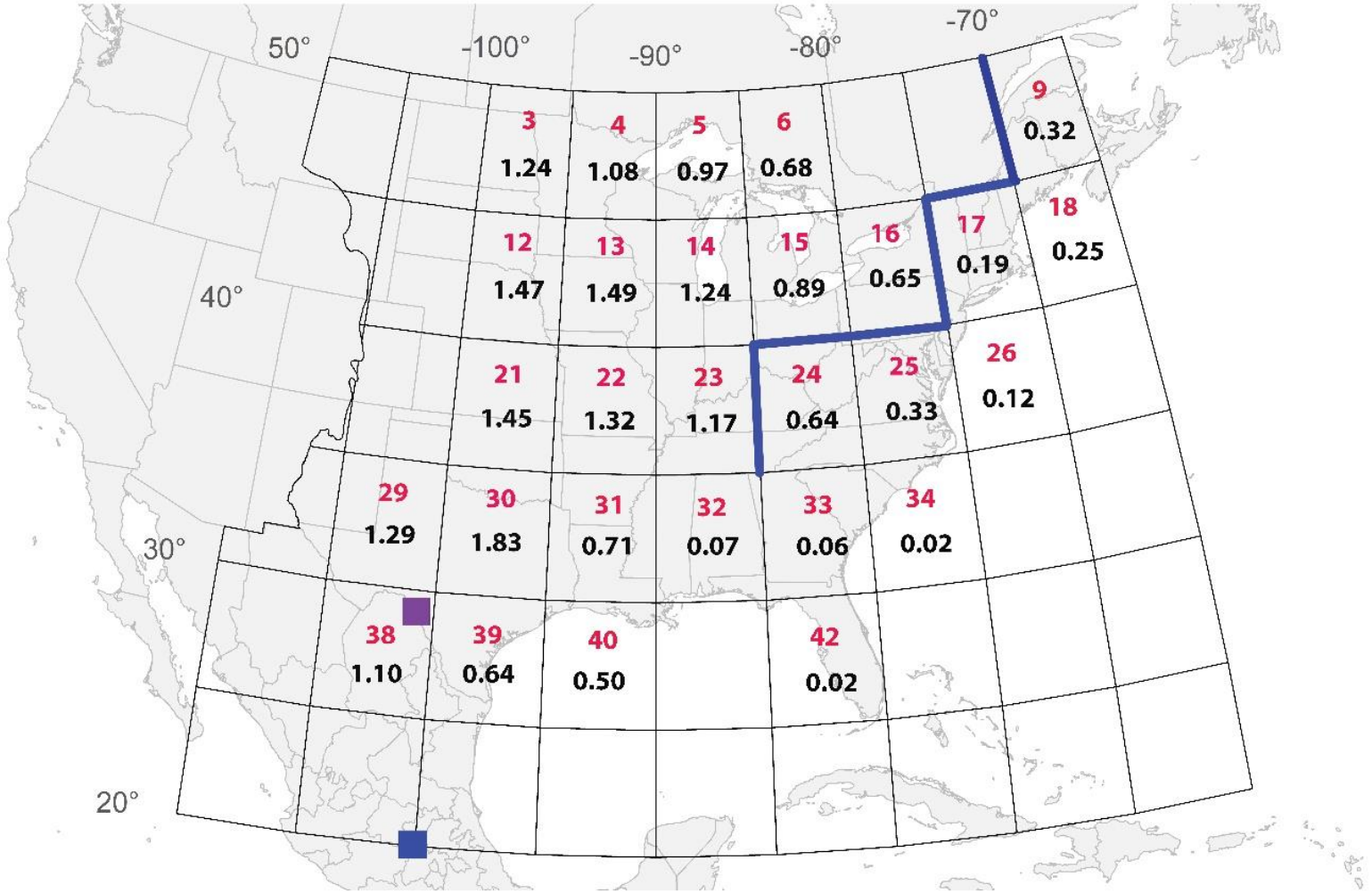
MONARCH WATCH
1-888-TAGGING
PNB 613

Recovery rate for all sectors with more than 500 tagged.



Recovery rates

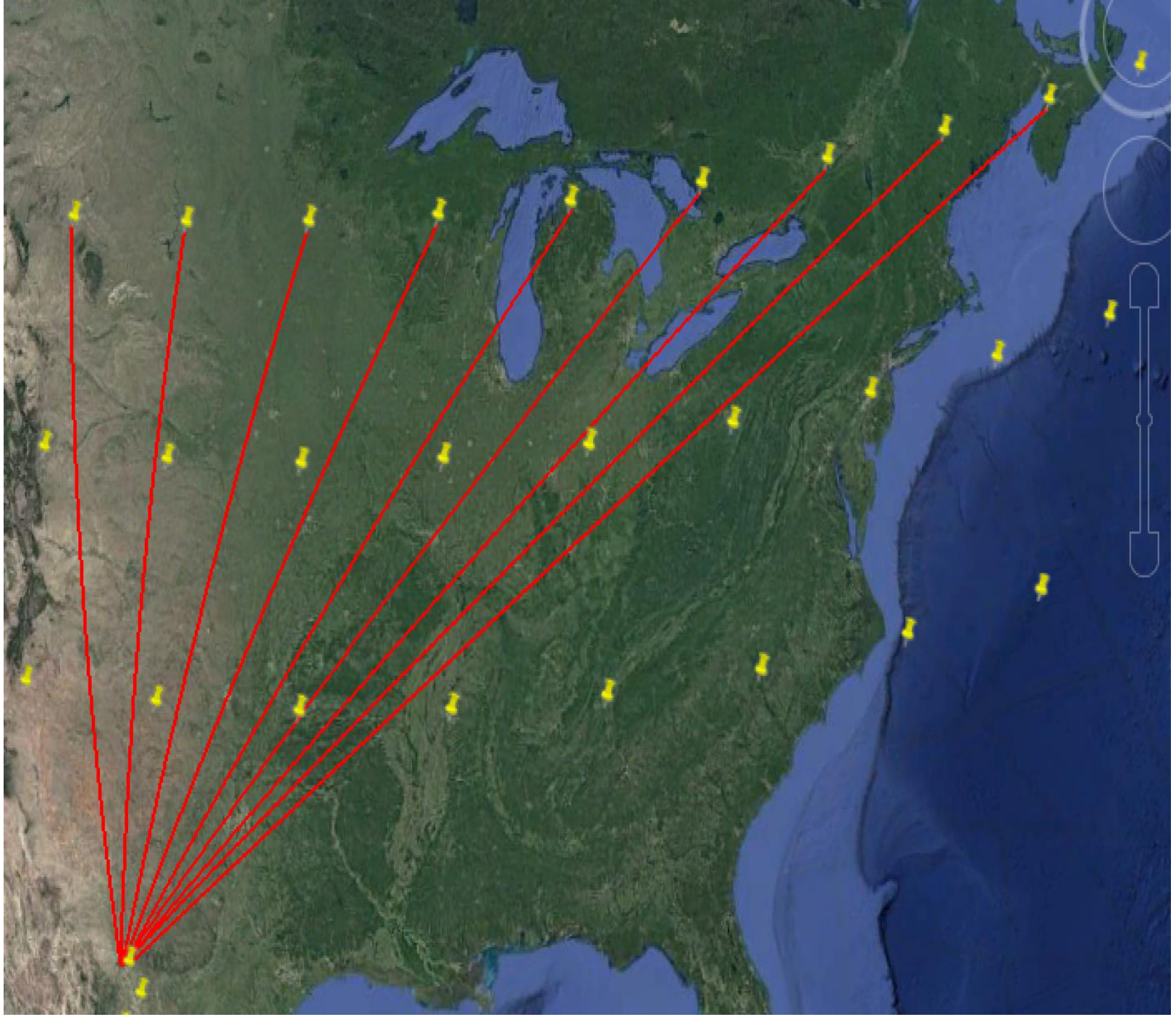
1) For latitudinal swaths, recovery rate decreases from west to east.
   Recovery rate decreases with distance.
2) Lateness of migrations increases from west to east.
   As lateness increases, recovery rate decreases.
3) Lower recovery rates east of 80W are due to distance, lateness and pathways.
4) From 80W-65W recoveries decline sharply from north to south with few recoveries south of 40 N, especially the SE.
5) From 80W-100W south of 40N recoveries both increase and decrease slightly depending on sectors.
6) About 80% of recovered tags originated north of 40N.

Distance from northern sites to Del Rio, TX

45N

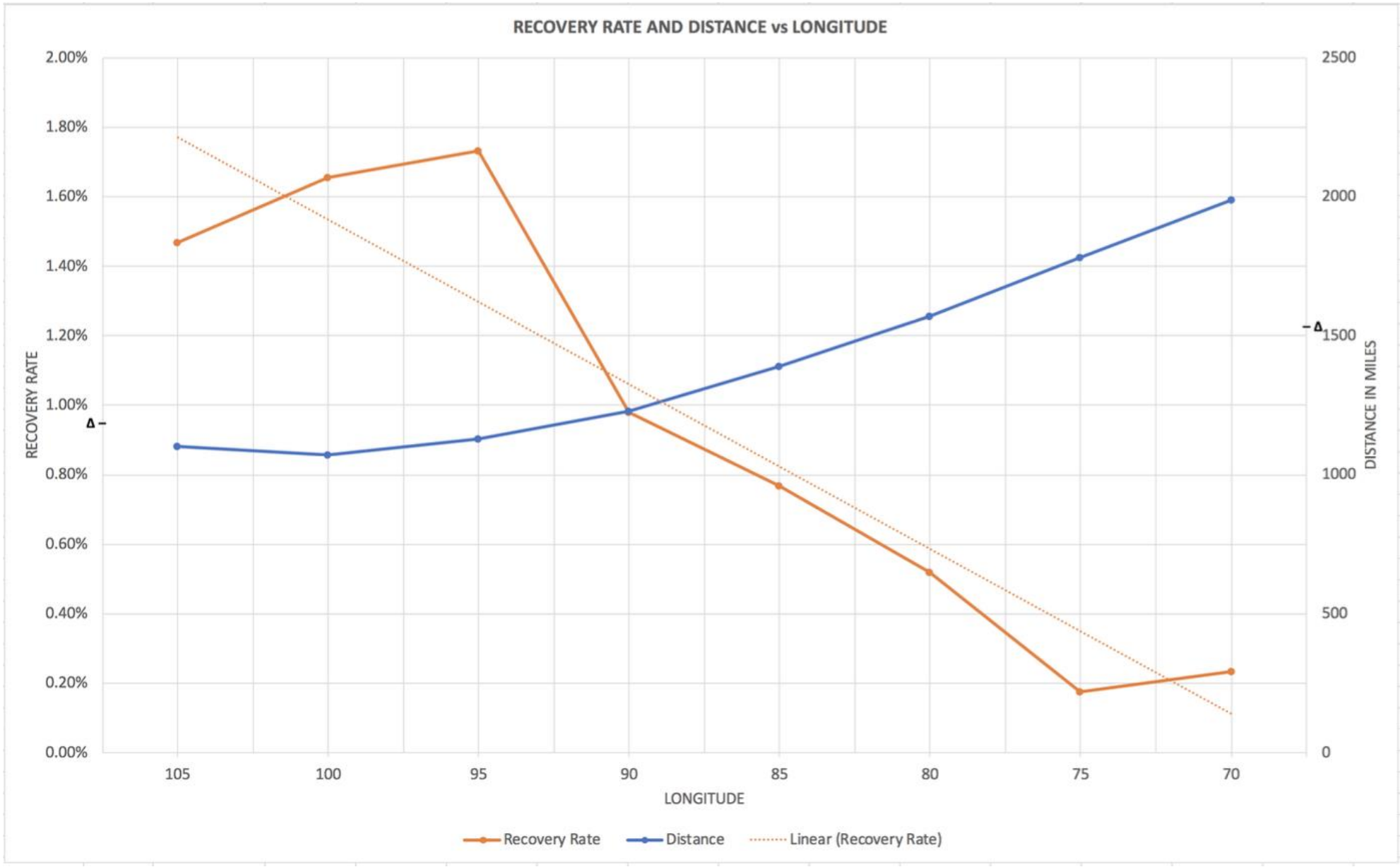
40N

35N



Days required to reach Del Rio, TX from the designated latitude and longitude locations based on a departure date of 25 August and an average advance of 27 mile per day.

L/L	Distance	Days
45-105	1100	40.7
45-100	1070	39.6
45-95	1130	41.8
45-90	1230	45.6
45-85	1390	51.5
45-80	1570	58.1
45-75	1780	69.9
45-70	1990	73.7
45-65	2230	82.6



Recoveries for the latitudes 45-40N across all longitudes (7720 recovered/772,035 tagged = 1%).

The migration window = solar angle at solar noon of 57-47 degrees

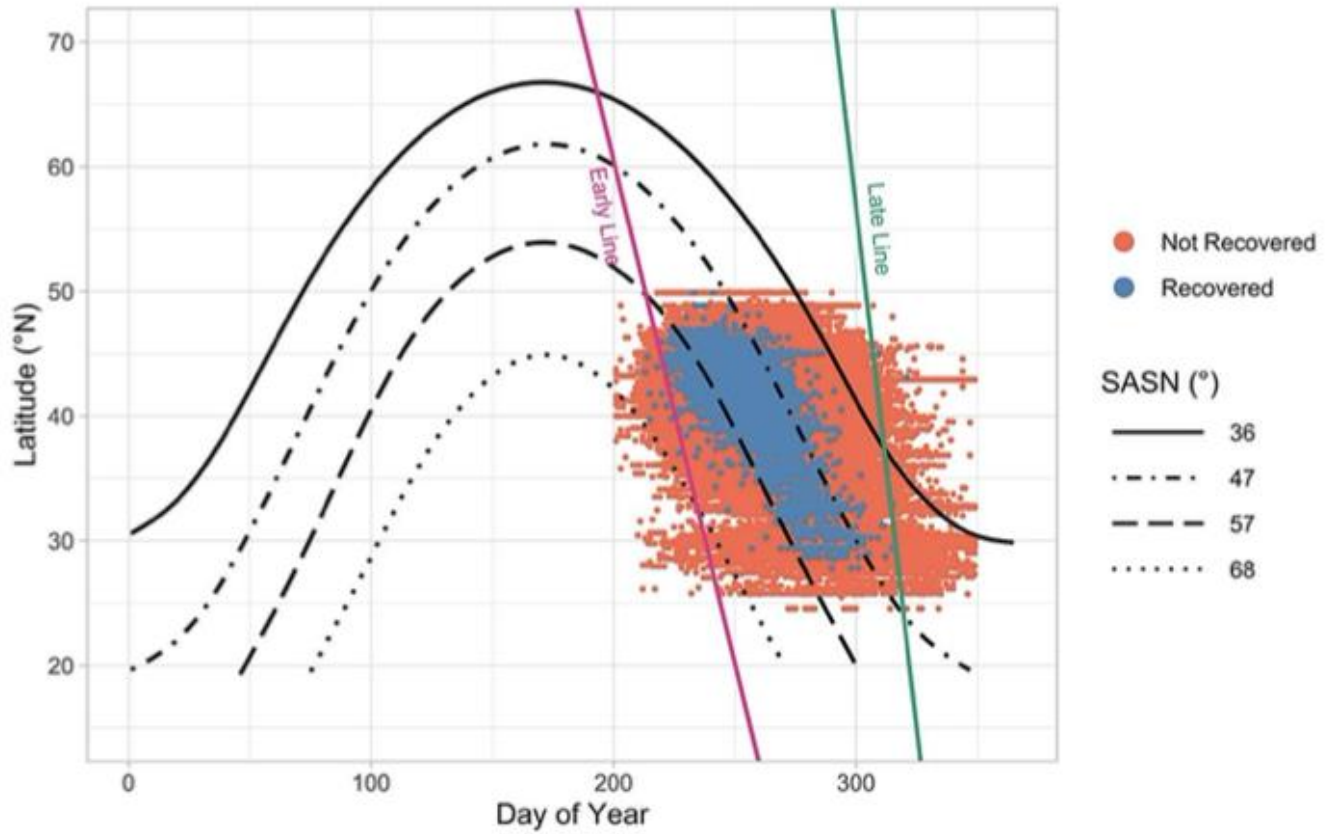


FIGURE 6 | Distribution of tagging locations of monarchs, which extends beyond Monarch Watch's official tagging timeframe, by latitude and day-of-year (DOY 200–350, 19 July to 16 December, $n = 1{,}411{,}214$). Isoclines illustrate approximate limit of monarchs recovered (blue dots) (57°–47°) and not-recovered (red dots) (68°–36°) in the MBBR. Pink and green lines represent authors' estimates of the demarcation dates and locations separating monarchs that are migrating to Mexico from those that are of the previous breeding generation (left of the pink line), and butterflies with little chance of reaching the MBBR (right of the green line). Pink (early) line stretches from 1 August at 50°N latitude to 1 September at 25°N. Green (late) line stretches from 31 October at 50°N to 15 November at 25°N. Note the handful of recovered butterflies tagged left of the pink line-they may represent recently emerged monarchs tagged while "staging" before the start of the migration. Also note two recoveries to the right of the green line and the 36° SASN isocline-both may be the result of tag code or other errors, since each was tagged in November > 30 days after the last recovery for their respective latitudes. Analyses were limited to the area between the pink and green lines ($n = 1{,}385{,}518$).

Table 1. Number of monarchs tagged and recovered in Mexico by longitudes for 1998 through 2015. The longitudinal values are to be read vertically across years while the within values are read horizontally. The percent of those tagged for each year and longitude is a representation of migratory success.

Two time periods are represented – pre herbicide crop lines (1998-2005) and post herbicide crop adoption (>2005)

	Longitude			Longitude			Longitude			Longitude*		
	110-100			100-90			90-80			80-60		
Year	Tagged	% recovered	rec/longitude	Tagged	% recovered	rec/longitude	Tagged	% recovered	rec/longitude	Tagged	% recovered	rec/longitude
1998	1338	0.006	0.02	40019	0.008	0.87	5383	0.004	0.07	12958	0.001	0.03
1999	1651	0.01	0.03	39610	0.01	0.74	12721	0.006	0.13	25847	0.002	0.1
2000	1882	0.002	0.03	44182	0.003	0.88	12833	0.0007	0.06	12971	0.0004	0.03
2001	2420	0.08	0.06	53478	0.05	0.77	20161	0.02	0.12	27968	0.006	0.05
2002	1363	0.006	0.02	36877	0.007	0.76	18415	0.002	0.16	29205	0.0006	0.05
2003	2320	0.09	0.07	41668	0.05	0.68	24167	0.02	0.16	27721	0.01	0.09
2004	767	0.009	0.02	21891	0.01	0.75	9924	0.006	0.21	9570	0.0003	0.01
2005	553	0.007	0.01	39601	0.006	0.59	27012	0.004	0.28	27761	0.002	0.12
2006	192	0.02	0.005	31035	0.01	0.67	22716	0.007	0.26	30802	0.001	0.07
2007	315	0.01	0.005	26998	0.01	0.54	23583	0.005	0.22	34301	0.004	0.23
2008	380	0.01	0.004	27522	0.02	0.61	16958	0.01	0.2	31275	0.006	0.18
2009	441	0.02	0.03	23799	0.006	0.66	20183	0.003	0.26	24968	0.0005	0.06
2010	508	0.01	0.01	26787	0.01	0.72	25301	0.004	0.22	35765	0.0006	0.04
2011	549	0.005	0.02	28049	0.004	0.64	24260	0.002	0.26	34133	0.0004	0.08
2012	349	0.01	0.01	12328	0.01	0.39	14908	0.003	0.19	36022	0.002	0.25
2013	132	0.02	0.01	14353	0.01	0.76	9012	0.004	0.18	13604	0.0007	0.05
2014	298	0.003	0.005	25839	0.005	0.67	21703	0.002	0.22	23722	0.0009	0.1
2015	475	0.02	0.005	32917	0.03	0.49	37661	0.02	0.37	26953	0.009	0.13

Migratory success -1

Declined in years with

Droughts – 2000, 2011

Extreme high summer temperature and droughts in the Midwest - 2012

Extreme low summer temperatures - 2004, 2009

Delayed migrations due to high September and October temperatures

Late recolonization and low fall numbers -2013, 2014

Multiple negative factors – 2002, 2004, 2013

Unknown – 2002, 2010

Was highest during years in which there were large populations and weather conditions were close to the long-term means.

In the NE (80-60W), here were 8years with recoveries of less than 0.001, of these, 6 were associated with weather events or overall population size

Migratory success -2

Other factors

- Pathway length
- Coastal routes
- Reared vs wild

Migratory success -3

Timing – migration window
Location – latitude/longitude
Sex and size
Reared or wild
Weather – delayed migrations
Drought – OK, TX, MX
Floral resources
Disease – O.e.

Estimating migratory success

Assumptions

hectare counts are accurate

there are 20 - 21.1 million monarchs per hectare

numbers of tags found and estimates of not found are accurate

Outcomes

Under favorable conditions 15% arrive at overwintering sites

When unfavorable, as few as 5% may succeed

Note

If 21.1M/hectare estimate is too high, success percentage is higher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Effects of loss of habitat on tag recoveries

There are two intervals: first a period during which common milkweed was widespread in row crops (1998-2005) followed by a period after 2005 during which milkweed all but disappeared in crops due to the adoption of herbicide tolerant crop lines. The numbers tagged each year in the latter period declined sharply in the Upper Midwest from 110-90W, the area with the largest acreage of row crops.

In the NE (80-60W), there were 5 years in which the percentage recovered per longitude in Mexico was 0.12 or higher - 2005, 2007, 2008, 2012 and 2015. This increase is associated with the decline of milkweeds following the adoption of herbicide crop lines in the Upper Midwest (100-90W).

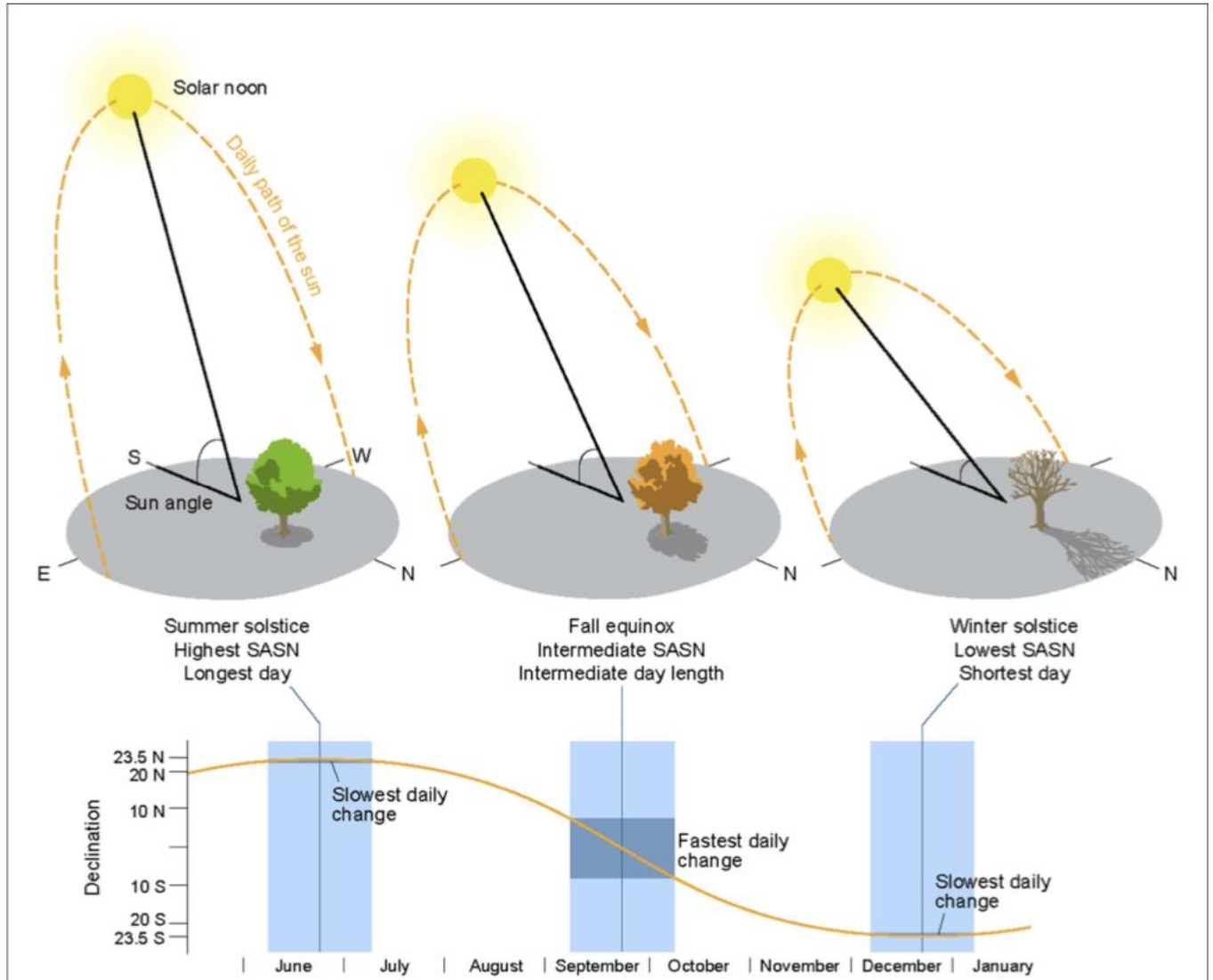
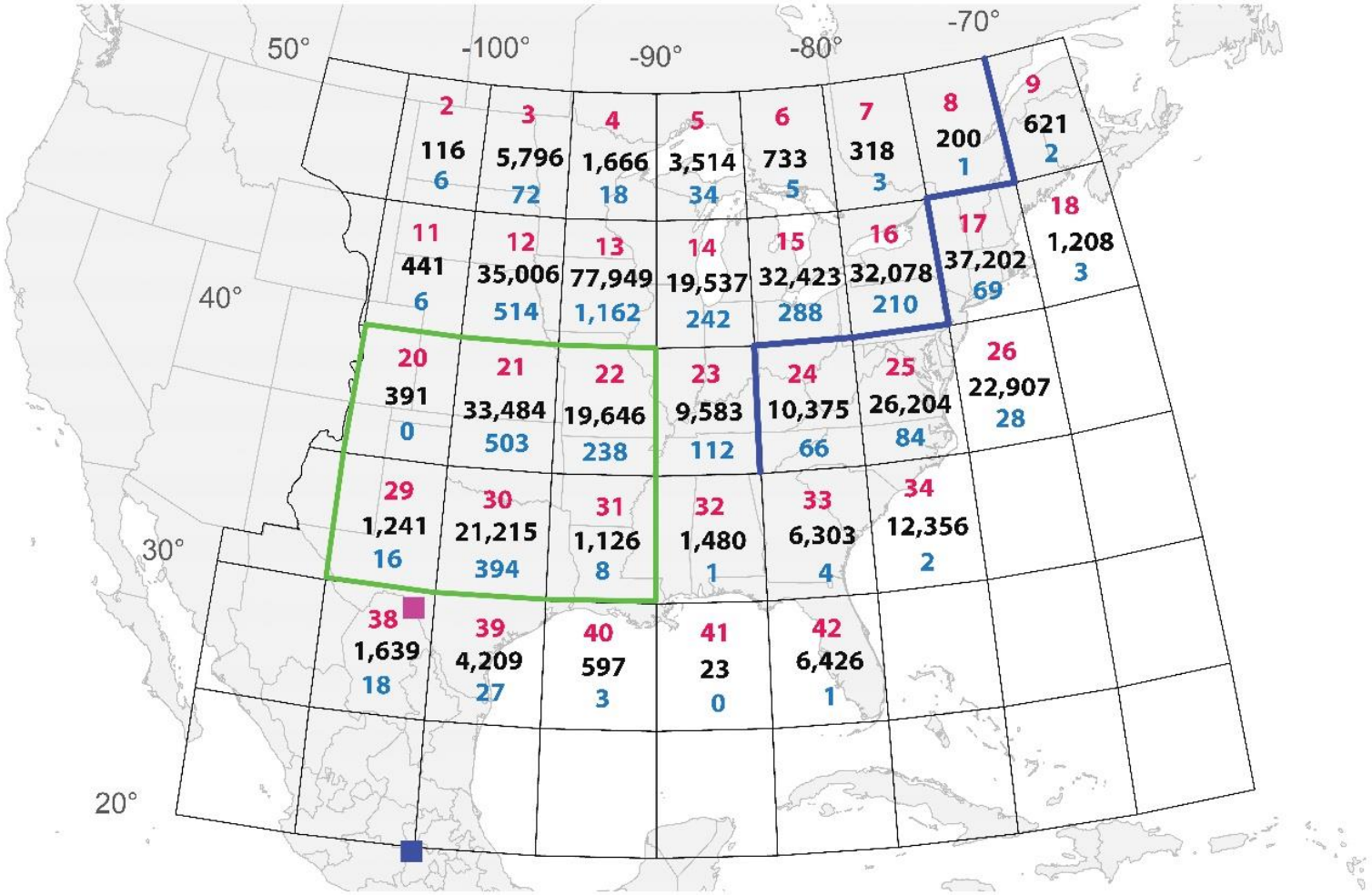


FIGURE 1 | Sun angle at solar noon (SASN). SASN is the vertical angle of the sun above the horizon at the daily midpoint between sunrise and sunset (solar noon) as the sun traverses the sky from east to west. SASN is affected by the earth's tilt toward the sun (declination) and the latitude of observation. The graphs illustrate how declination changes during the fall migration—a slow, then fast, then slow rate of day-to-day change.

Numbers tagged (N=420,617) and recovered (3815) per sector 2004-2015.

Sectors
6-10 + 18, 19

3080 tagged
14 recovered
= 0.45%



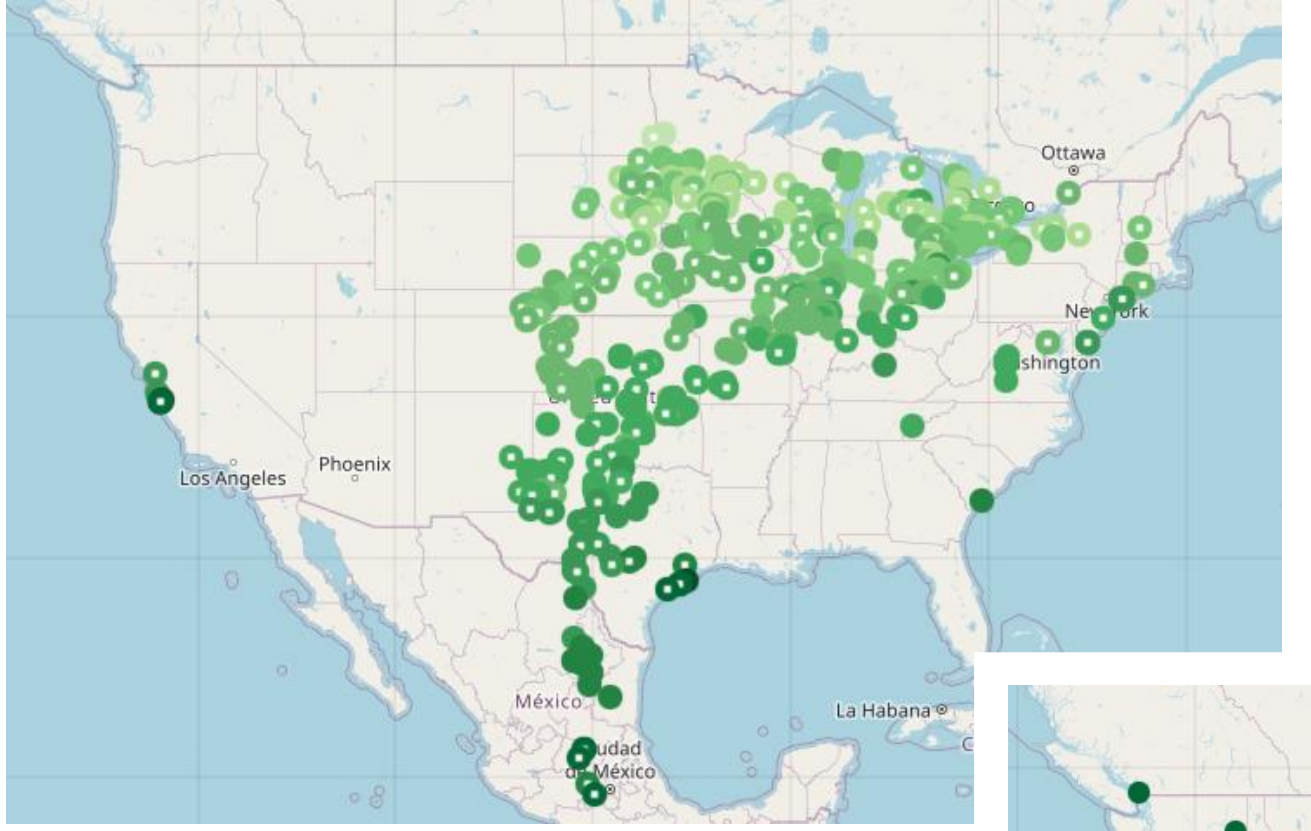
Journey North

Tracking migrations and seasons

- Since 1994, Journey North has tracked the migration of monarch butterflies and several migratory bird species using observations from citizen scientists across Canada, Mexico, and the United States.

- The program moved to the UW-Madison Arboretum in 2019 after years of funding through the Annenberg Learner Foundation. In 2025, it is moving to the Monarch Joint Venture.

- In 2024, we received over 32,000 reports from 9,647 different volunteers.



Fall

Report adults, eggs, larvae, and roosts

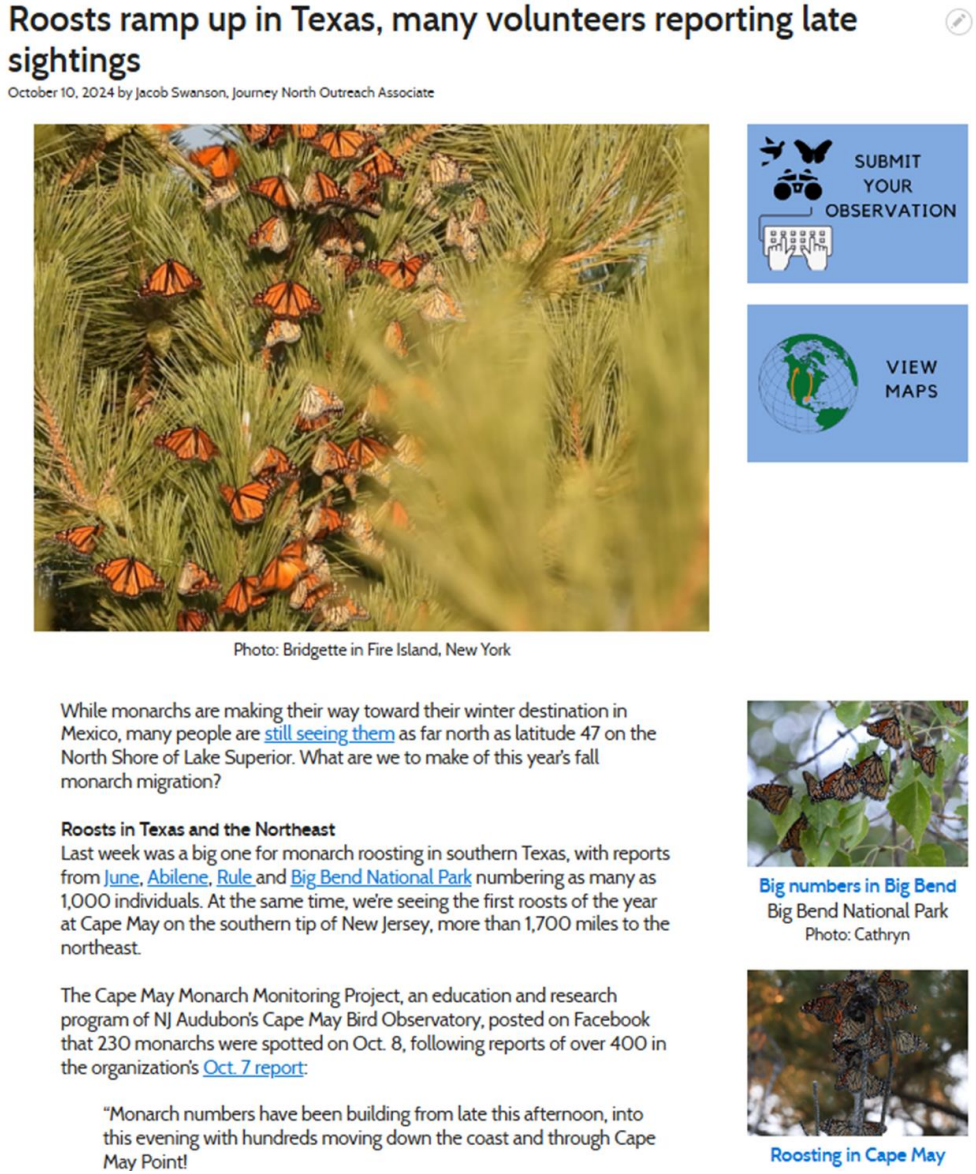
Reports include a date, number observed, and optional photos and comments.

Spring

Report eggs, larvae, and adults, with an emphasis on observers' first sightings of the season.

Communicating with volunteers

- Weekly news updates featuring user observations sent to more than 40,000 email subscribers.
- Year-round reports are written by Journey North staff and guest writers to follow monarchs and birds from their winter habitat to summer breeding grounds across North America, and back again in the fall.
- Frequent social media posts to reach new audiences, encourage reporting and communicate with volunteers about migratory movements.



Roosts ramp up in Texas, many volunteers reporting late sightings

October 10, 2024 by Jacob Swanson, Journey North Outreach Associate

Photo: Bridgette in Fire Island, New York

While monarchs are making their way toward their winter destination in Mexico, many people are still seeing them as far north as latitude 47 on the North Shore of Lake Superior. What are we to make of this year's fall monarch migration?

Roosts in Texas and the Northeast

Last week was a big one for monarch roosting in southern Texas, with reports from June, Abilene, Rule and Big Bend National Park numbering as many as 1,000 individuals. At the same time, we're seeing the first roosts of the year at Cape May on the southern tip of New Jersey, more than 1,700 miles to the northeast.

The Cape May Monarch Monitoring Project, an education and research program of NJ Audubon's Cape May Bird Observatory, posted on Facebook that 230 monarchs were spotted on Oct. 8, following reports of over 400 in the organization's Oct. 7 report:

> "Monarch numbers have been building from late this afternoon, into this evening with hundreds moving down the coast and through Cape May Point!

Big numbers in Big Bend
Big Bend National Park
Photo: Cathryn

Roosting in Cape May

Correo Real Program:

Citizen Science and Environmental Education for Monarch Conservation in Mexico

My name is Jeronimo.

Programa Correo Real

Educación Ambiental

- Crisálida: Learning Community — 2-4-5
- School with wings — 2-4-5

Citizen science

- Citizen science — 2-3-5

Habitat

- Pollinator gardens — 2-5-8

Especial projects

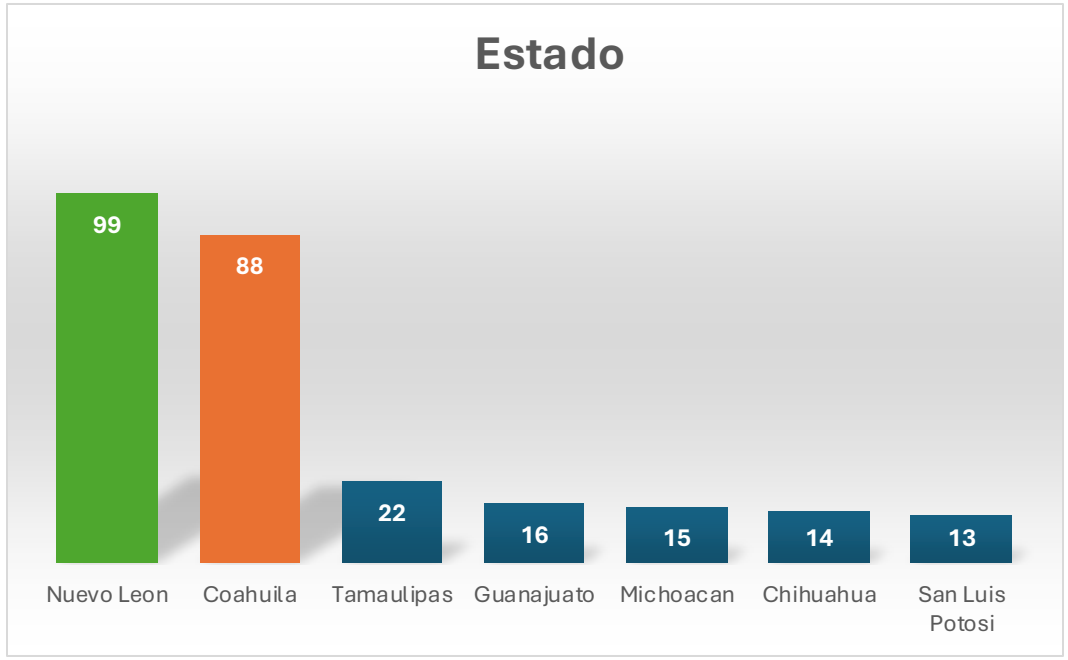
- Monarch Route — 2-8
- Monarch Women Ambassadors — 4-5

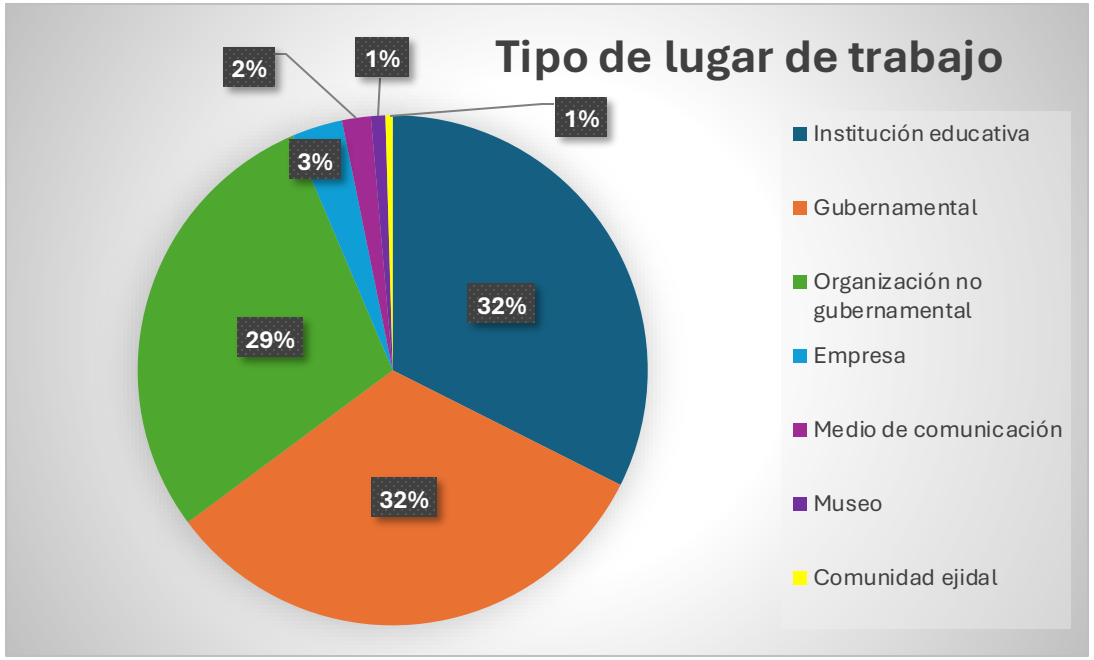
7 Comunication and social media

1 Funding

Family, friendship, joy and hope…

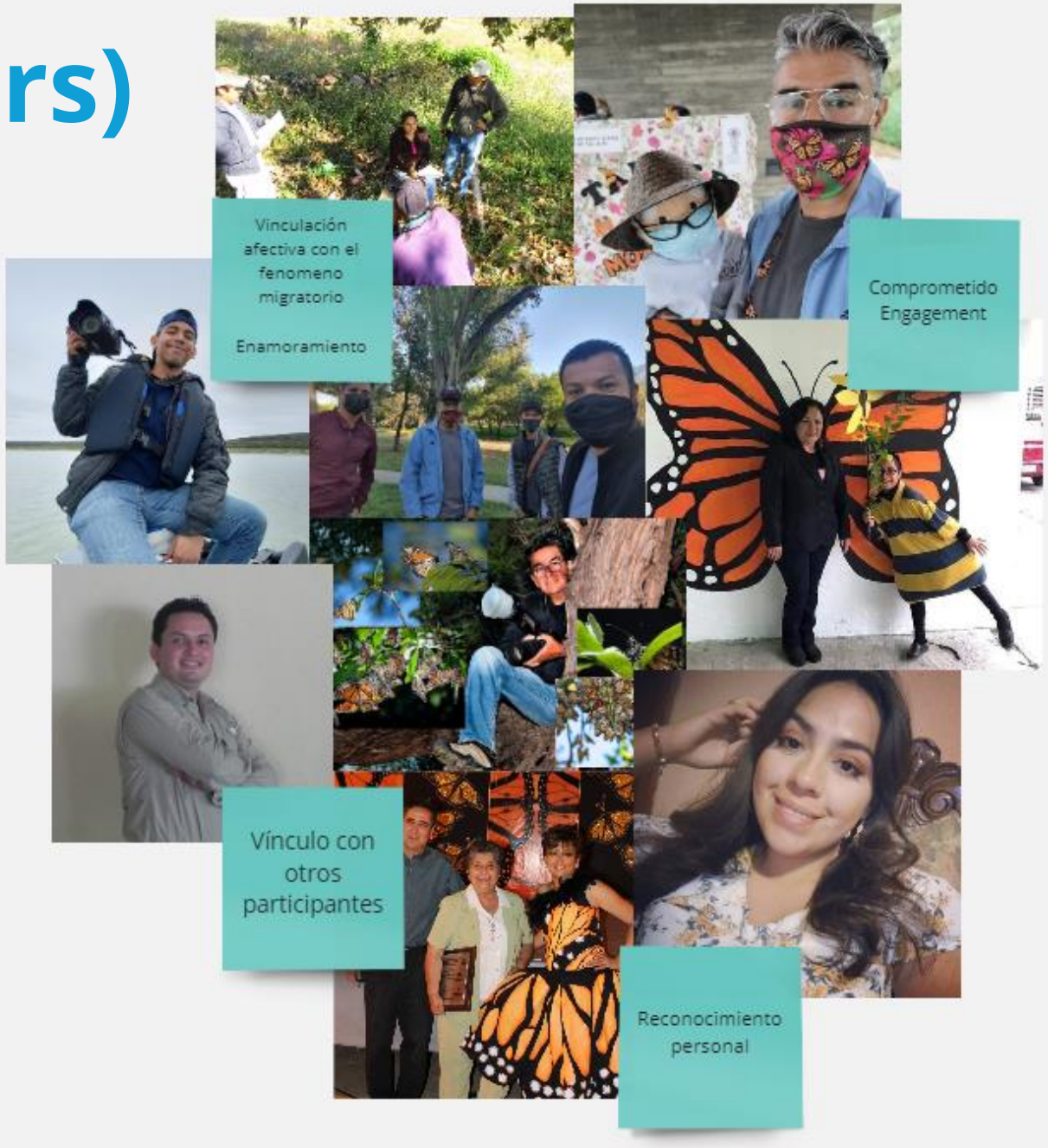
Our family (volunteers)





Our family (volunteers)

1. They submit reports of monarch butterfly sightings.
2. They document the migration with written documents, audio recordings, photographs, and videos.
3. They organize events such as festivals, fairs, meetings, etc.
4. They protect and care for important spaces for the monarch butterfly, even seeking its protection through legal decrees.
5. They share experiences, events, and educational resources.
6. They hold workshops to train others.
7. They give educational talks.
8. They encourage others to participate.
9. They establish pollinator gardens.
10. They get involved in research projects and even accompany researchers in their fieldwork.



How it works the citizen science network of Correo Real

1

Participatory documentation of the monarch migration and reporting via social media and email.

2

We share a newsletter to inform about the monarch migration progress

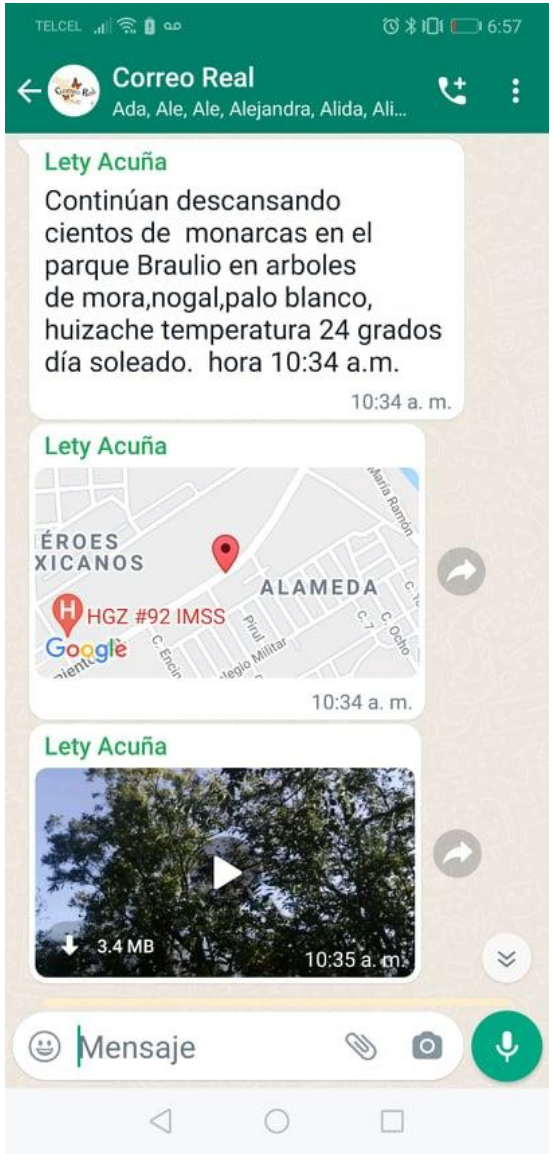
3

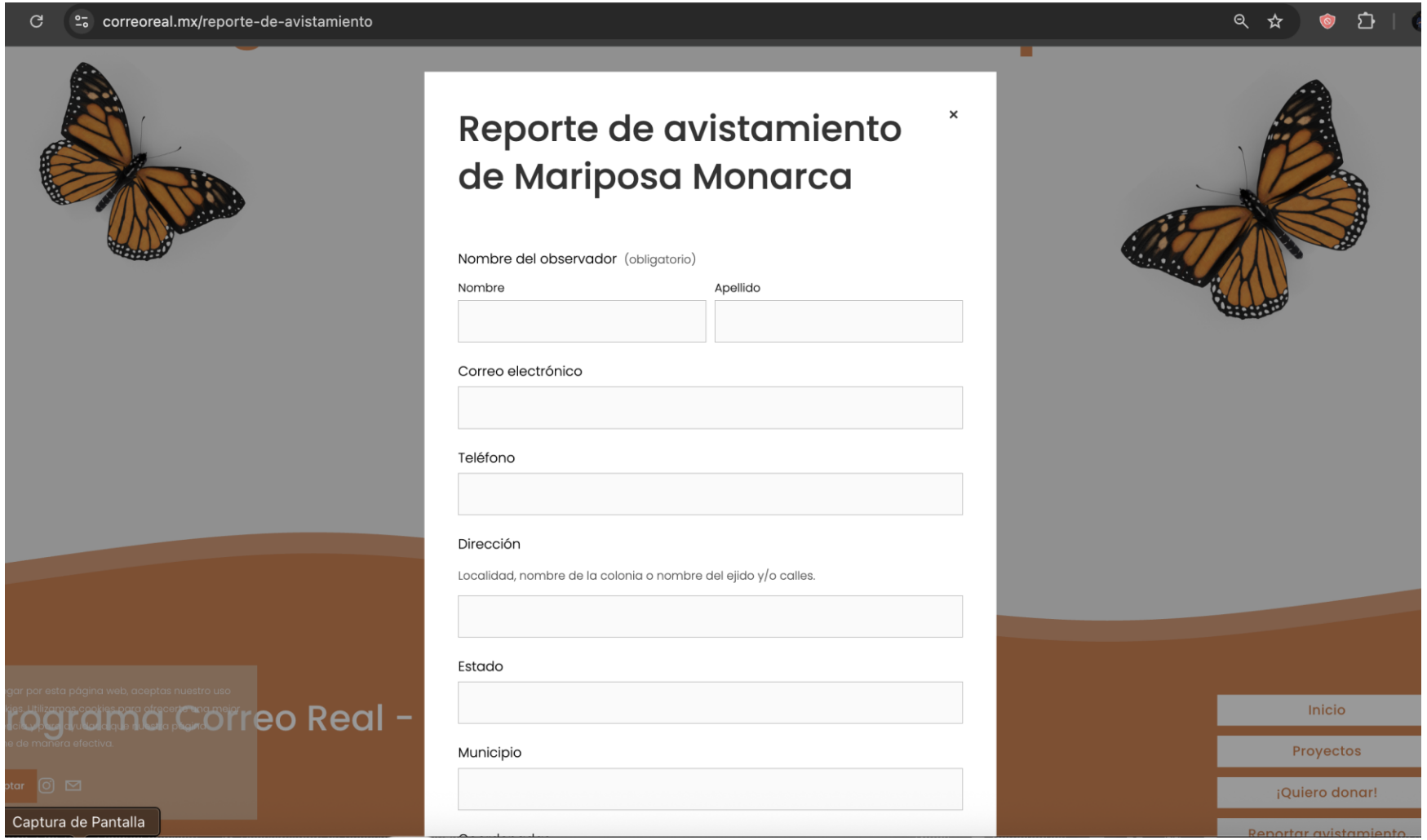
Generation of databases with all the information about the monarchs that citizens collect in fall and spring migration

4

We share an annual report with the result and insights of the monarch migrations

- Citizens send information via WhatsApp, E-mail, and on our webpage





Some schools and rural communities use this format

¡Reporta tu avistamiento de mariposas monarca a Correo Real!

Nombre de quien observa:

Fecha: Hora:

¿En dónde las observaste?

Estado: Municipio:

Localidad (*Nombre de la colonia, entre calles, ejido, parque, área natural, cañada, arroyo, etc.*)

Anota las coordenadas si te es posible:

Actividad de las mariposas (*Selecciona una opción*):

○ **Vuelo direccional**

○ **Perchadas**
¿En qué plantas?

○ **Alimentándose**
¿En qué plantas?

○ **Amenazadas**
(atropelladas, afectadas por fumigación)

○ **Depredadas**
(aves, insectos, otros)

¿Cuántas mariposas monarca observaste? (*Anota el número*):

Temperatura (y/o) Estado del tiempo (*selecciona una opción*):

○ **Soleado**

○ **Nublado**

○ **Lluvioso**

○ **Viento**

Cuéntanos una breve historia sobre tu avistamiento.

¡Muchas gracias por tu reporte!

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Nombre de quien observa:

Fecha: Hora:

¿En dónde las observaste?

Estado: Municipio:

Localidad (*Nombre de la colonia, entre calles, ejido, parque, área natural, cañada, arroyo, etc.*)

Anota las coordenadas si te es posible:

Form

Actividad de las mariposas (*Selecciona una opción*):

○ **Vuelo direccional**

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¿En qué plantas?

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Temperatura (y/o) Estado del tiempo (*selecciona una opción*):

○ **Soleado**

○ **Nublado**

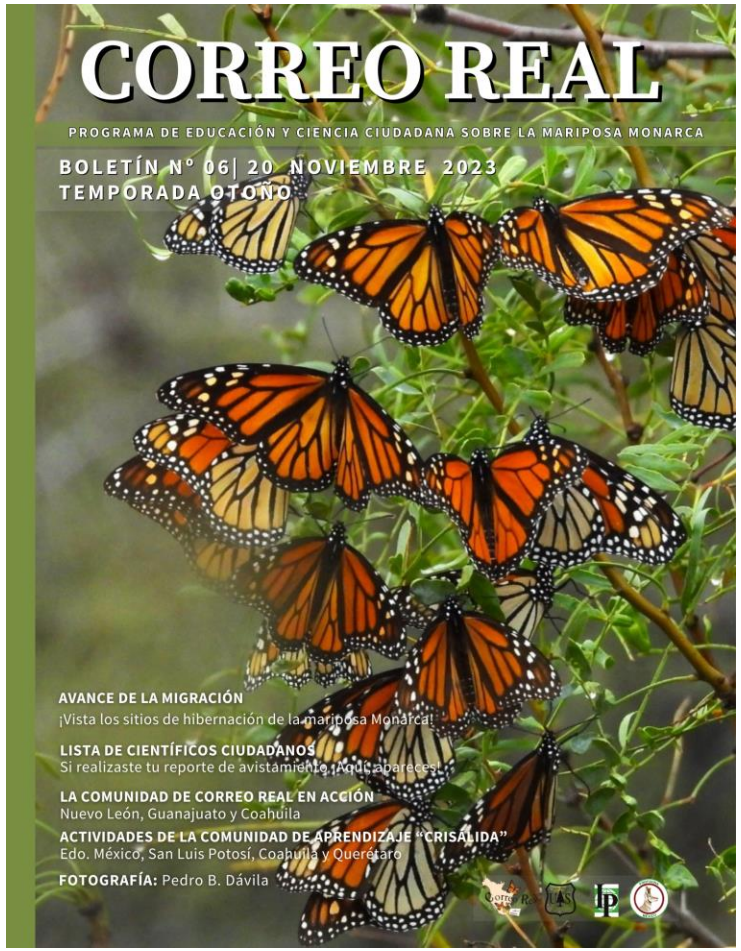
○ **Lluvioso**

○ **Viento**

Cuéntanos una breve historia sobre tu avistamiento.

¡Muchas gracias por tu reporte!

Programa Correo Real Newsletter

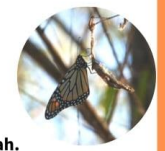


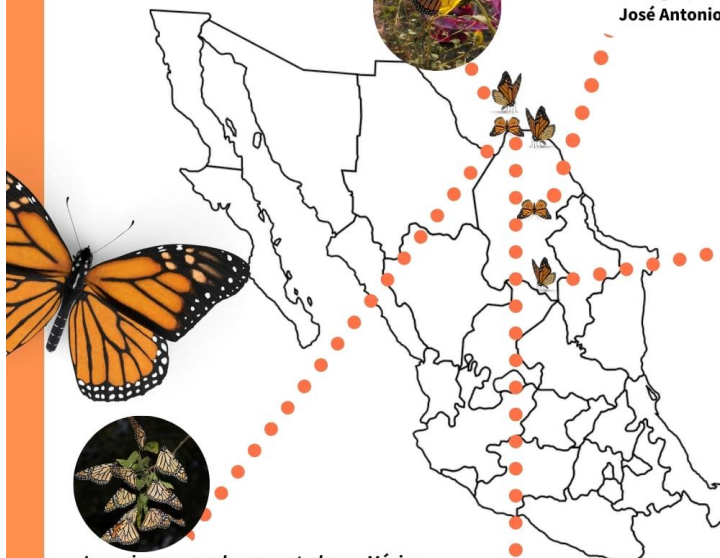
MAPA DE REPORTES A Correo Real

Durante la semana del 1 al 6 de octubre, disminuyó el paso de Monarcas por Cd. Acuña y se reportaron avistamientos de 1 solo individuo en Agujita, Cuatro Ciénegas, Muzquiz y Saltillo Coahuila y, en Monterrey y Pesquería Nuevo León.
Gracias por los reportes de los científicos ciudadanos: *Lety Avendaño, Roberto Armendáriz, Nereyda Barrios, Jorge López, Carlos Sifuentes, Rosario Bonilla, Jero Chávez, Arturo Cruz, Lety Jiménez, Ale y Lina de Coahuila y Martha Franco, Elsa Hernández, Homero de Jesús Treviño y René Flores de Nuevo León. De Guanajuato reportó de los municipios de Acámbaro y San Francisco del Rincón, Oscar Alejandro Morales.*

8 de Octubre, Cd. Acuña Coah.
Esta mañana salimos en busca de las monarcas y en el ejido Las Cuevas, municipio de Acuña, en un campo de girasoles como de una hectárea con una fila de nogales al lado junto al canal de agua, durante 1 hora vimos 60 monarcas alimentándose en estas flores (girasoles).Mañana soleada 19°C.
Lety Avendaño/Roberto Armendáriz

6 de Octubre, Sabinas Coahuila
Compañeros guarda parques del APRN Distrito de Riego 004 Don Martín reportaron avistamiento de 7 mariposas Monarca en buena condición y apariencia, ayer 5 de octubre a las 11:13 a.m. en terreno del ejido Guadalupe Victoria, municipio de Sabinas, Coah., las mariposas estaban en vuelo, buscando aparentemente percha o sitios con agua, cielo despejado, 27°C viento leve del Este.
José Antonio Dávila Paulín





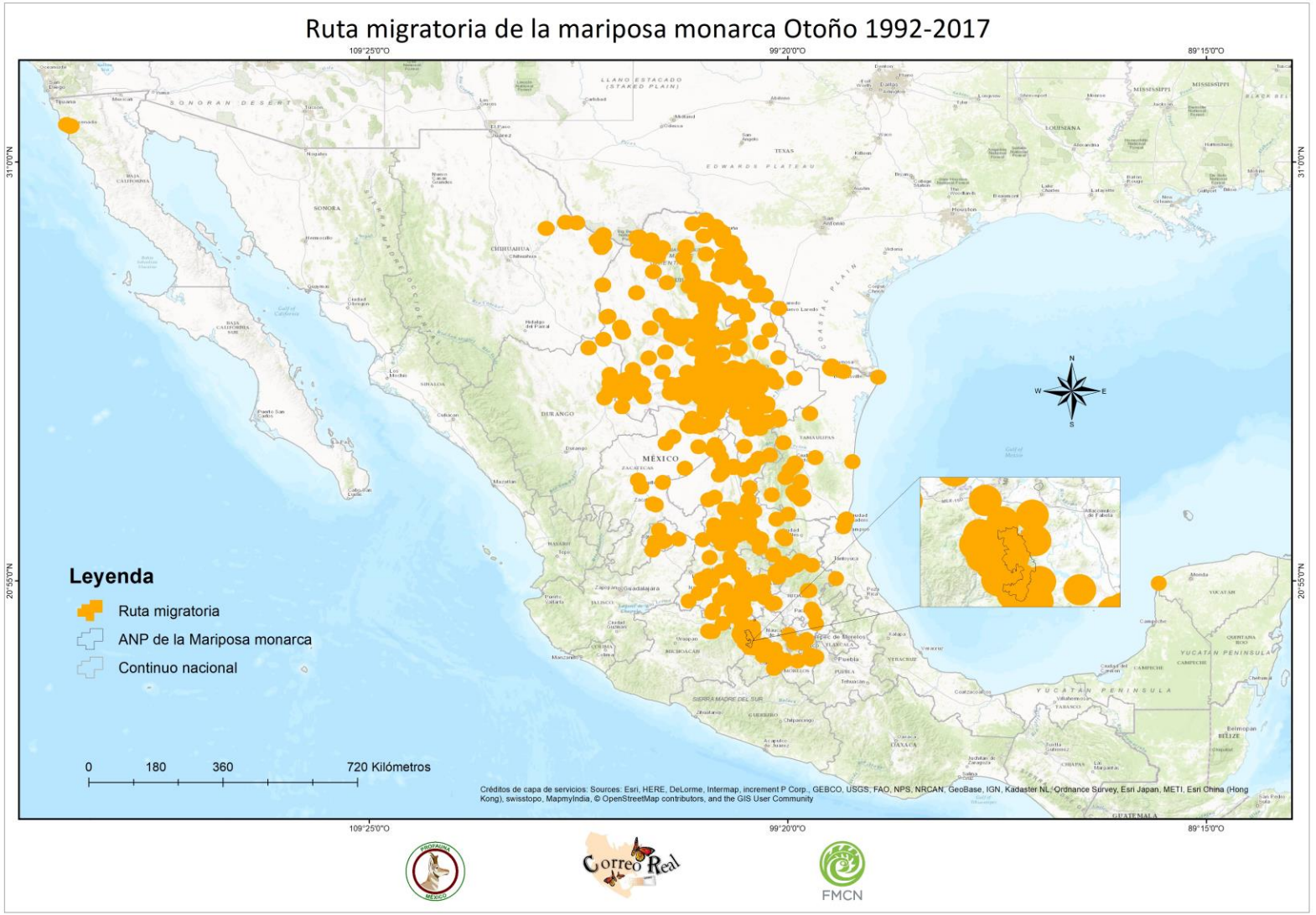
9 de Octubre, Saltillo Coah.
Tengo varios días yendo a la Presa Palo Blanco en el municipio de Ramos Arizpe y he visto como se ha incrementado el número de Monarcas en este sitio, de tres que vi el día 7 hoy ya conté a 24 mariposas Monarca de 6 a 7:30 de la tarde ya empezaban a posarse en algunos árboles. Tarde tibia.
Juan Manuel García

Las primeras perchas reportadas en México
9 de octubre, Cd. Acuña Coah.
Hora de observación: 6-8pm
Clima temperatura - 22°C, poco viento sin nubes para atardecer
Durante la visita de esta tarde al parque Braulio Fernández Aguirre, pude observar perchas en nogales y encinos. Las perchas apenas se estaban formando y pude contar hasta 12 mariposas posándose en las ramas de los nogales. Es un gran espectáculo ver a la mariposa monarca lista para pernoctar en nuestros parques.
Nereyda Barrios Durán

Observadas en ambos lados de la frontera
9 de Octubre, Acuña Coahuila
Estimados Compañeros, el día de hoy observé decenas, quizás centenas de mariposa Monarca, en el área de la hidroeléctrica de la presa La Amistad.
Se observaron descansando en los pinos Alepensis y piñoneros, algunas revoloteando. A las dos de la tarde.
El clima era favorable de 30°C, soleado y viento suave del sureste.
Roberto Enríquez de la Garza

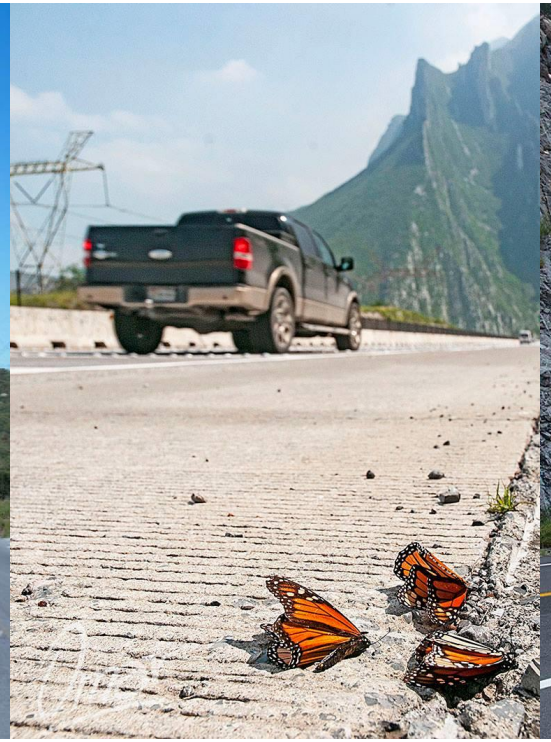
Programa Correo Real

- Documentation every year of the monarch migration



Threats in the migratory route:

Roadkill monarchs



Threats in the migratory route:

Roadkill monarchs

frontiers in Ecology and Evolution

ORIGINAL RESEARCH
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Mortality of Monarch Butterflies (*Danaus plexippus*) at Two Highway Crossing "Hotspots" During Autumn Migration in Northeast Mexico

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The contribution to annual mortality of migrating monarch butterflies (*Danaus plexippus*) due to collisions with vehicles is poorly understood but likely significant. Recent estimates based on a study in Texas suggests that mortality during autumn migration may be of the order of 2 million per year or about 3% of the population. However, MaxEnt models used in that study are not well suited to quantifying mortality at hotspots where monarchs are concentrated by topography such as canyons when crossing highways. Potentially catastrophic mortality could occur at such sites if timing of migration and weather conditions conspire to force a large proportion of the migrating population across highways at low altitude. We investigated monarch mortality 15 October to 11 November, 2018 at two highway crossings in northeastern Mexico known for their frequent and extensive collisions (La Muralla and Santa Catarina). During a 15–19 day period of

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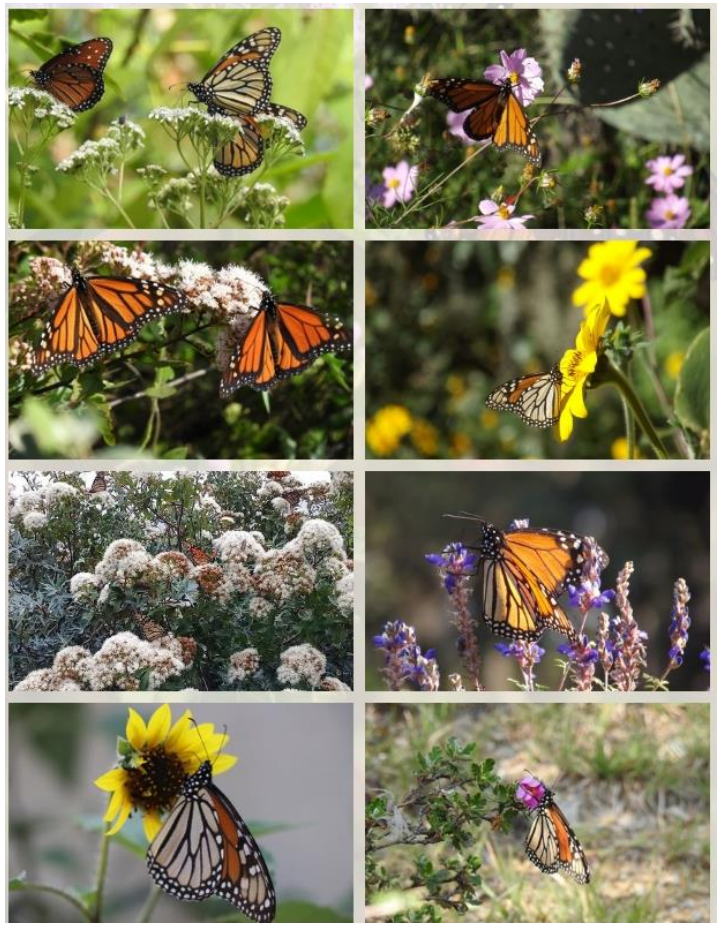
Estimación de 196,560 muertas durante la migración de otoño en estos sitios.

Estudio realizado en Texas estima un impacto en la mortalidad del 3% de la población migratoria (Kantola, et al. 2019)

Programa Correo Real

- Important plants for monarchs for feeding



Plantas de néctar

Las plantas que ofrecen néctar a la mariposa Monarca en su migración por México son muy importantes. Presentamos aquí una lista de plantas donde se observó a la Monarca alimentándose:

Plantas de néctar	No. de observaciones
Algodoncillo tropical (*Asclepias curassavica*)	33
Polocote (*Tithonia tubaeformis*)	23
Bugambilia (*Bougainvillea* sp.)	14
Anacahuita (*Cordia boissieri*)	12
Coralillo (*Duranta erecta*)	10
Girasol (*Helianthus annuus*)	10
Cordón de San Francisco (*Salvia leucantha*)	10
Cartulina (*Zinnia* sp.)	9
Lantana (*Lantana* spp.)	9
Compuestas (familia Asteraceae)	8
Flores silvestres (genérico, varias)	8
Níspero (*Eriobotrya japonica*)	7
Cenizo (*Leucophyllum frutescens*)	5
Moringa (*Moringa* sp.)	5
Chamiso (*Viguiera* sp.)	4
Salvia (*Salvia* sp.)	4
Verbena (*Verbena* sp.)	4
Azucena o Lirio (*Lilium* sp.)	3
Algodoncillo (*Asclepias* sp.)	2
Cempasúchil (*Tagetes erecta*)	2
Cítricos (*Citrus* sp.)	2
Guajillo o Espino (*Acacia berlandieri*)	2
Rosa Laurel (*Nerium oleander*)	2
Raíces de serpiente (*Ageratina* sp.)	2
Rosa silvestre (*Purshia plicata*)	2
Tenaza (*Havardia* sp.)	2
Árbol de Galeana (*Spathodea campanulata*)	1
Cempoal gigante (*Tagetes* sp.)	1
Cielitos (*Ageratum corymbosum*)	1
Corona de cristo (*Euphorbia* sp.)	1

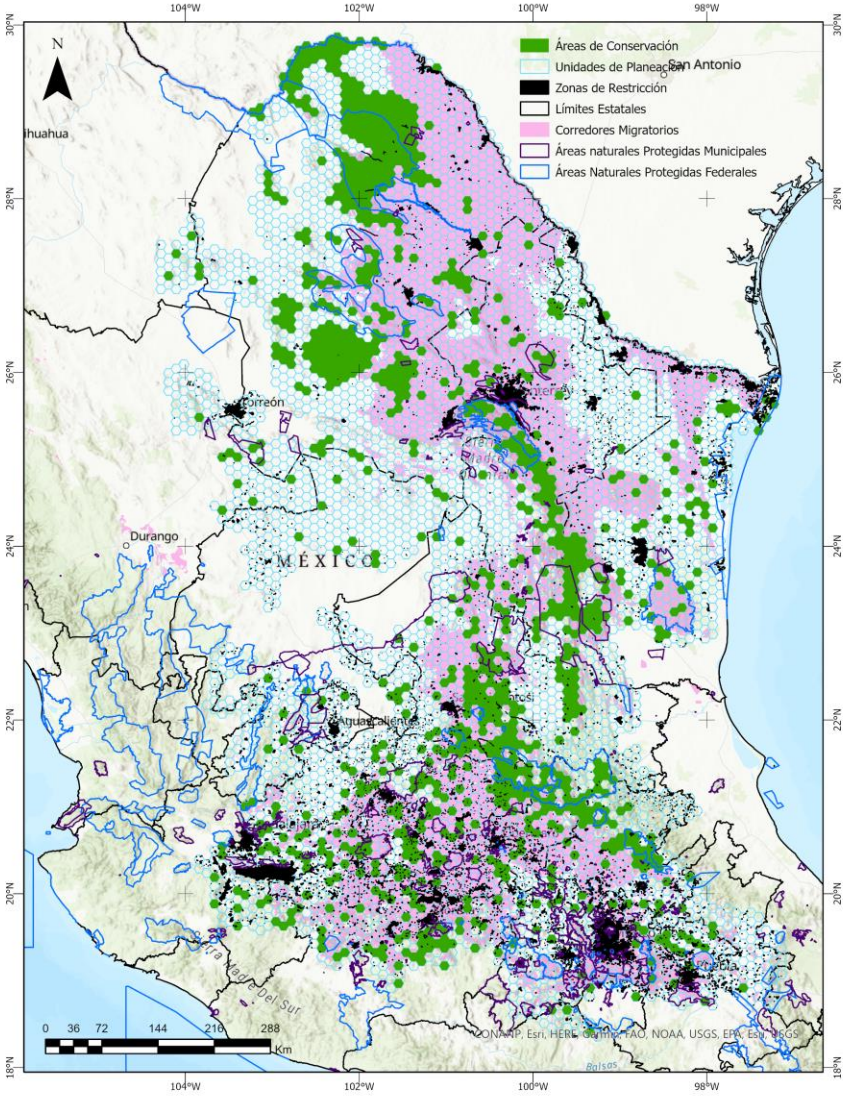
Programa Correo Real

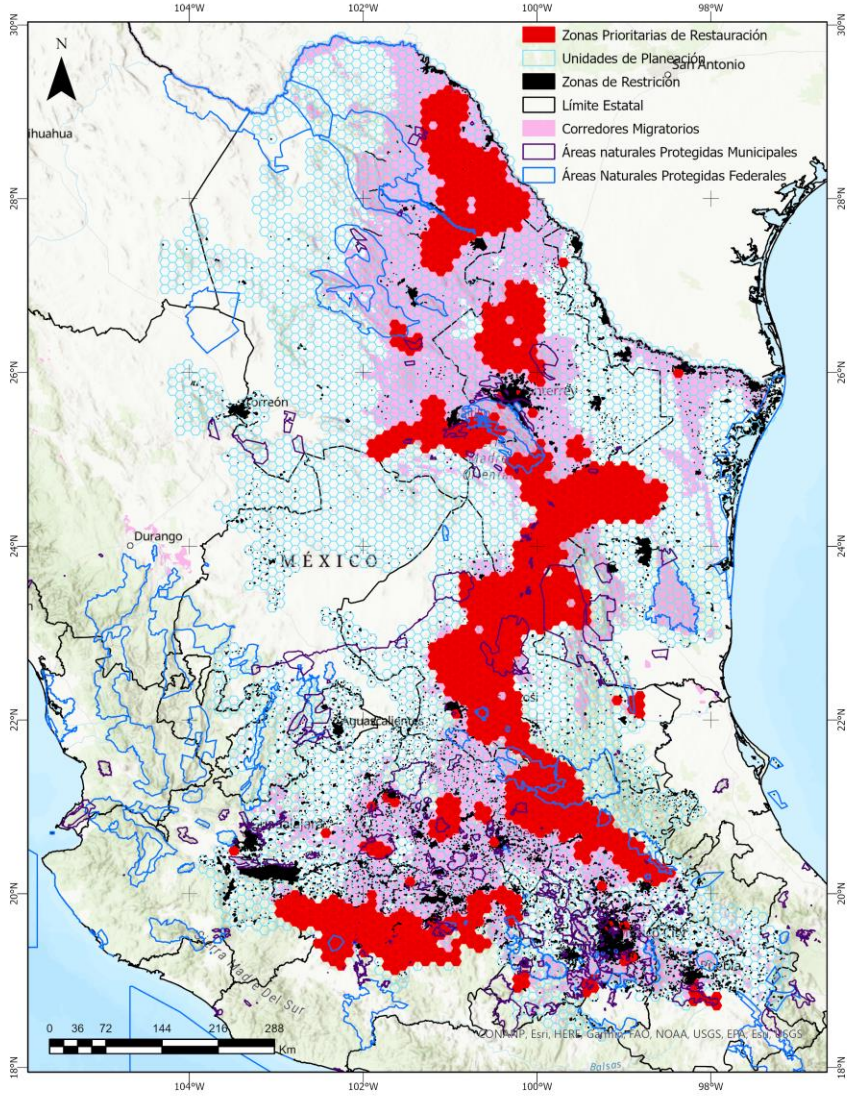
- Important plants for roosting

Plantas en las que se observaron perchas

Plantas de percha	No. de observaciones
Huizache (*Vachellia farnesiana*)	24
Ébano (*Ebenopsis ebano*)	15
Mezquite (*Prosopis* spp.)	9
Leucaena (*Leucaena* sp.)	8
Pino (*Pinus* sp.)	8
Retama (*Parkinsonia aculeata*)	7
Palo blanco (*Celtis laevigata*)	5
Pirul (*Schinus molle*)	5
Encino (*Quercus* spp.)	4
Fresno (*Fraxinus* sp.)	4
Nogal (varias especies)	4
Chapote Negro (*Diospyros texana*)	3
Eucalipto (*Eucalyptus* sp.)	3
Pino de Alepo (*Pinus halepensis*)	3
Trueno (*Ligustrum* sp.)	3
Álamo (*Populus* sp.)	2
Álamo negro (*Populus nigra*)	2
Palo de Pajarito (*Lindleya mespiloides*)	2
Pinabete	2
Pino piñonero (*Pinus cembroides*)	2
Acacia sp.	1
Álamo plateado (*Populus alba*)	1
Barreta china (*Fraxinus greggii*)	1
Cedro	1
Ceiba (*Ceiba* sp.)	1
Coyol	1
Durazno (*Prunus* sp.)	1
Enebro triste (*Juniperus flaccida*)	1
Granjeno (*Celtis pallida*)	1
Naranjo (*Citrus* sp.)	1
Nogal encarcelado (*Juglans mollis*)	1
Palma	1
Palo dulce (*Eysenhardtya polystachya*)	1

The data of Correo Real and other citizen science projects is used to generate models to identify important sites and regions for monarch conservation and restoration.



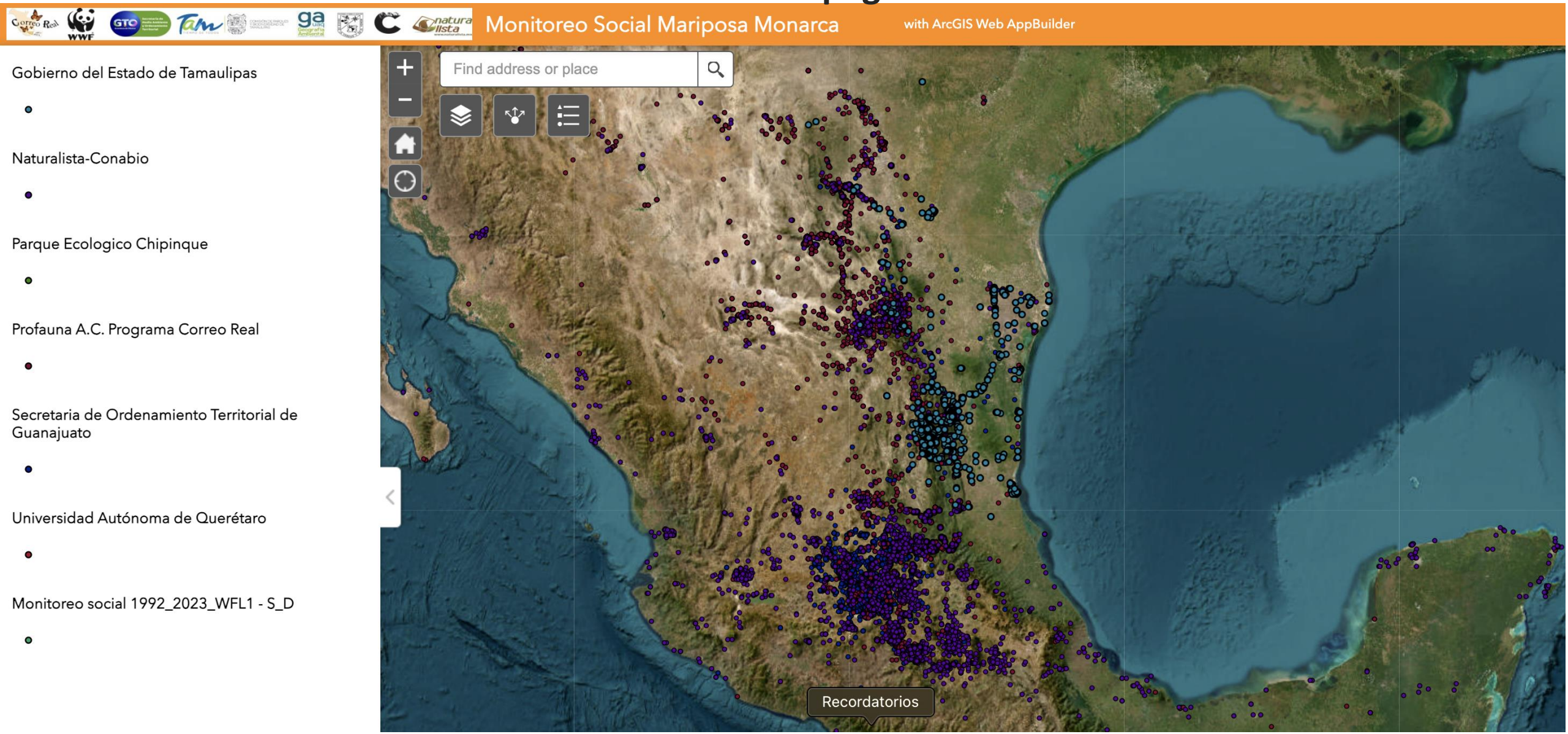


Thanks to:

WWF

ESPECIES, SOCIEDAD Y HABITAT AC

And the data is available to visualize in our web page:



https://www.correoreal.mx/mapa-del-monitoreo-social

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Correo Real

Espacios transformados

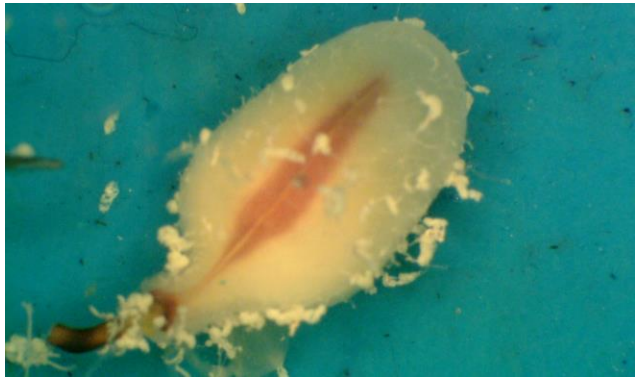
Prim. Amado Saldívar Chapa

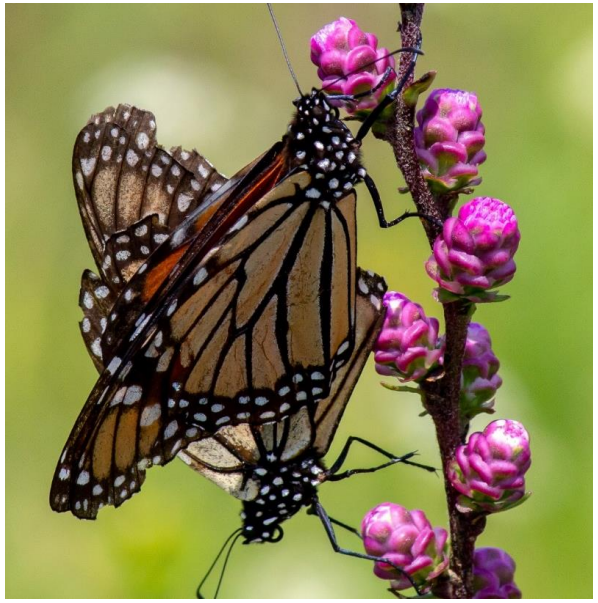
Voces de Correo Real

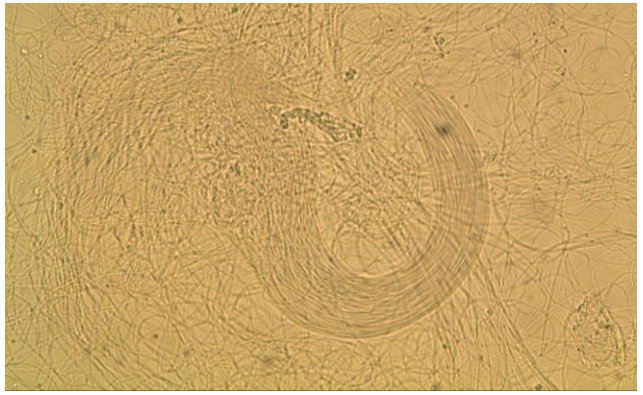
"El involucrarme en el tema de Monarca me ha hecho conocer a muchas personas que son mis amigos de toda la vida. La Monarca tuvo algo que ver con mi trayectoria de vida para que yo llegará a Cuatrociénegas, en el haber conocido a mi esposa, el ser lo que soy, la Monarca tuvo mucho que ver."

"Lo de Crisálida me pareció muy bien, de fomentar a nuevas personas o nuevos grupos a compartir sus experiencias e interactuar, hacer este tipo de conversaciones entre las personas que colaboramos."

Pepe Paulín







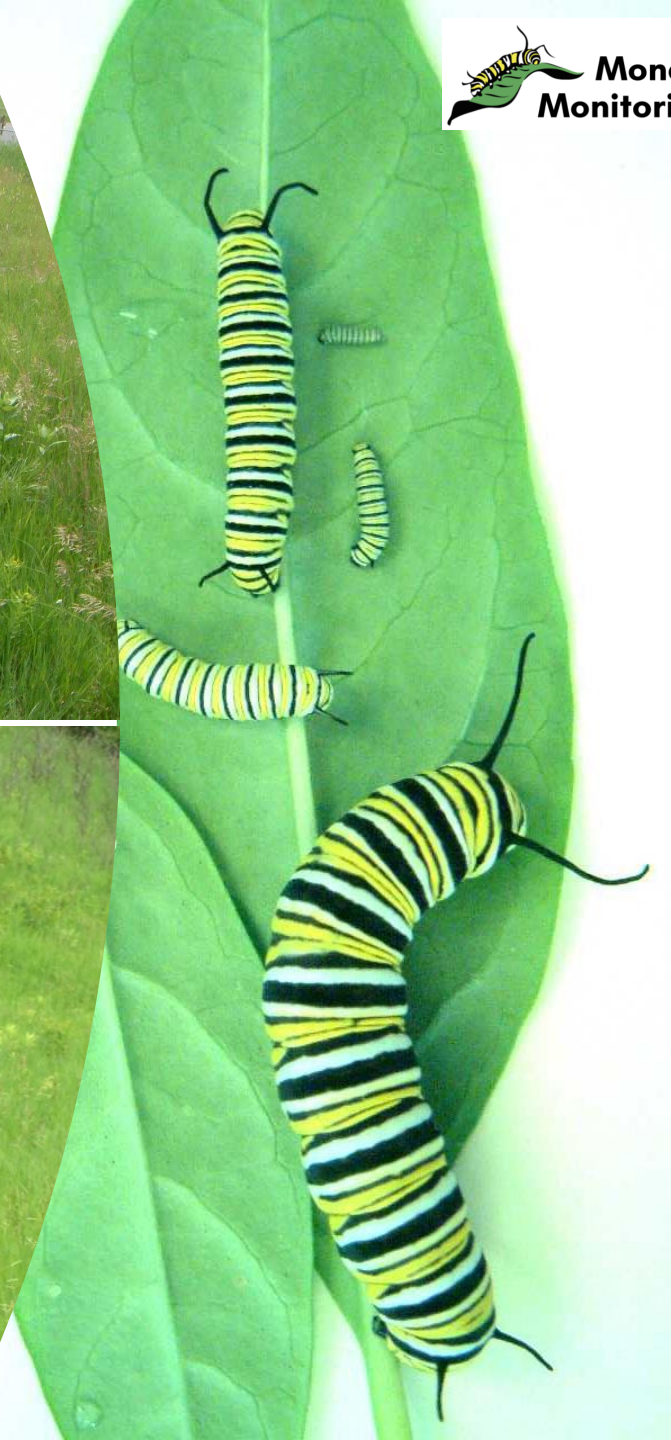
Monarch Larva Monitoring Project

UM Monarch Lab

- Questions were organism-driven (Bt corn, climate, diapause induction, disease, larval nutrition, larval pigmentation, mosquito spray, sperm competition)
- My own kids' involvement led to Monarchs in the Classroom, and focus on pulling children into research

Monarch Larva Monitoring Project: mlmp.org

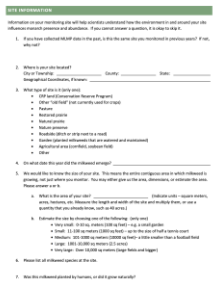
- In 1996, lab bonding activity led to the MLMP, a continent-wide citizen science project
- MS Project for Michelle Prysby
- Recruited other volunteers beginning in 1997 with 25 sites, 6 of which are still being monitored
- Early funding and emphasis was kids
- Currently a joint project of the MJV and UW-Madison Arboretum



Monarch Larva Monitoring Project

Sites

- Gardens, parks, roadsides, prairies (need milkweed)

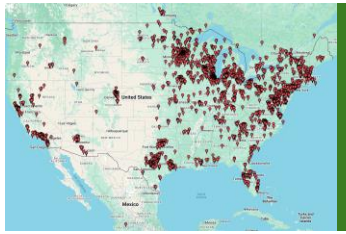


Site Description (once a year)

- Location, size, type
- Milkweed species and density

Weekly Monitoring (~1 hour)

- Estimate monarch densities
- Estimate parasitism rates



Over 1000 sites monitored

LIVE Monarch Larva Monitoring Project: Southern (Fe...
Monarch Joint Venture & University of WI Madison Ar...

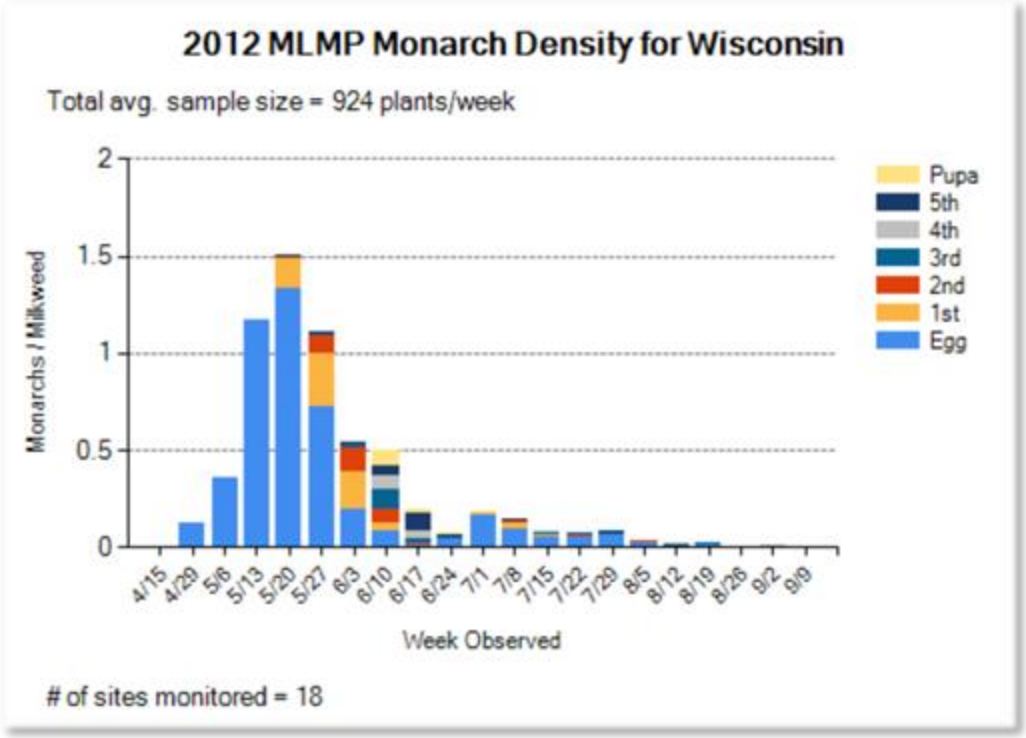
Training

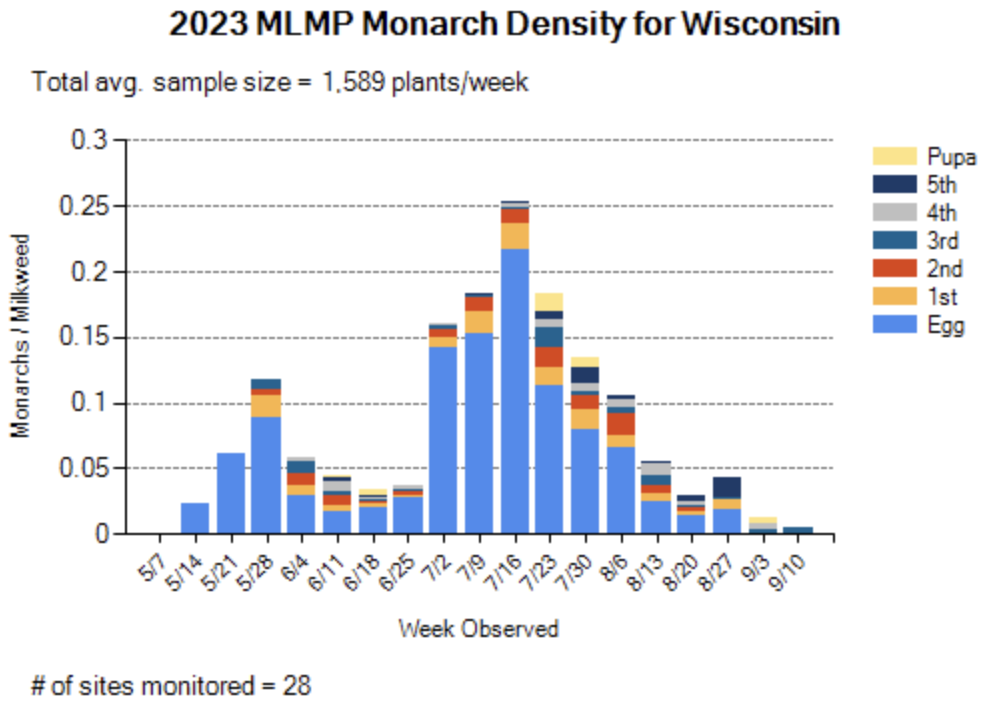
- Online and in person real time workshops
- MJV Monarch Nectar Hub Courses

Monarch Larva Monitoring Project

Monarch Larva Monitoring Project

Monarch Density Data Immediately Visualized



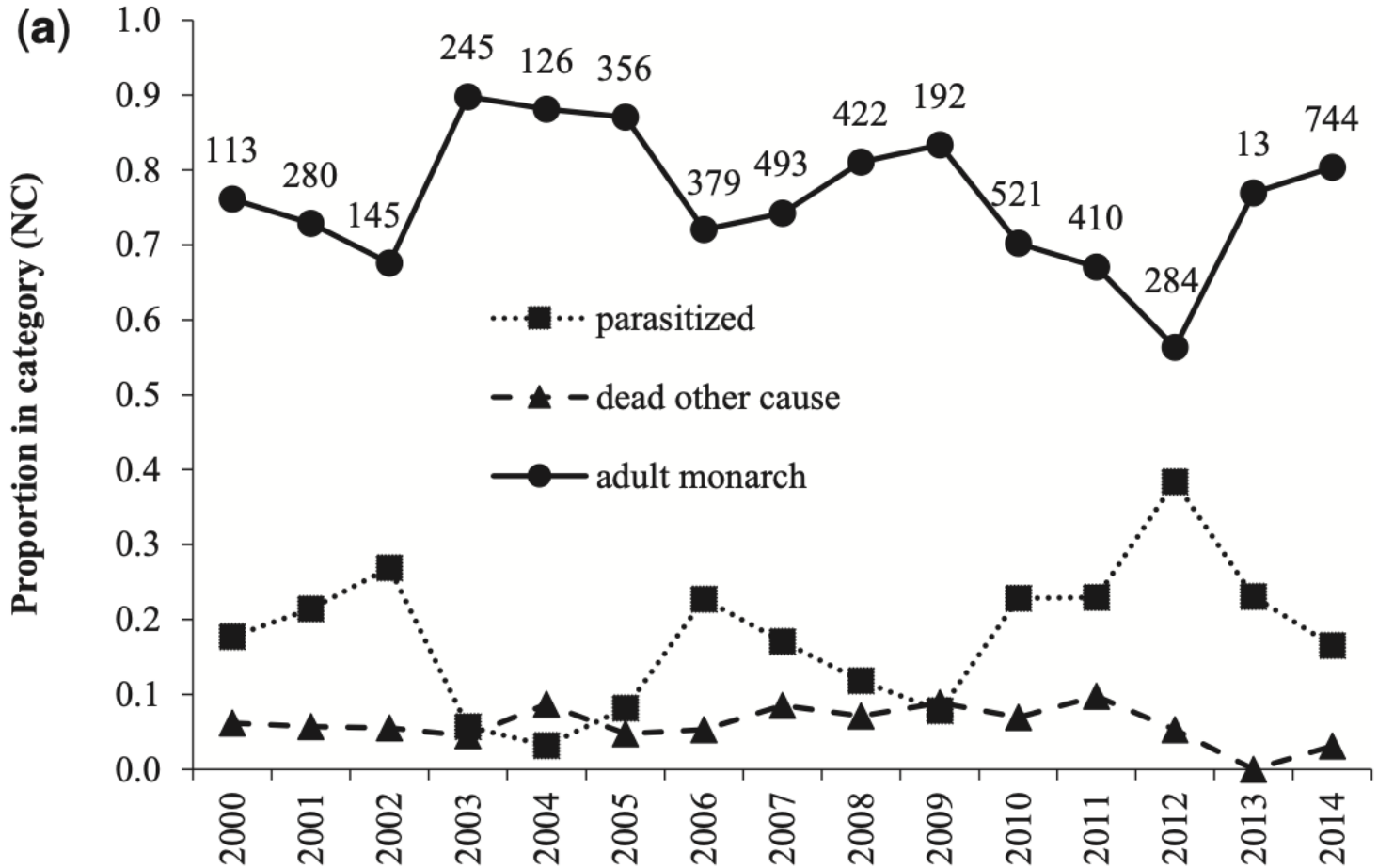


Tachinid Fly Parasitoids

Photos: I. Gebhard and J. de Roode

Monarch Larva Monitoring Project

Parasitism rates across years



What has the MLMP meant to me?

- Embodied conservation, basic research, and education that were the heart of our lab group
- Provided opportunities for undergrad and graduate student research and outreach
- Facilitated connections with amazing people throughout the monarch breeding range

Your turn: Questions for Panel

- Chip Taylor, Monarch Watch (U of Kansas)
- Jacob Swanson, Journey North (Monarch Joint Venture)
- Jerónimo Chávez, Mexico Monarch Monitoring (Profauna)
- Karen Oberhauser, Monarch Larva Monitoring Project (U of Wisconsin, Monarch Joint Venture)

MONARCHWATCH.ORG
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Journey North
Tracking migrations and seasons

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Monarch Larva Monitoring Project