



DELICATE AVIATORS' AMAZING ODYSSEY

September's Monarchs Embark on Nature's Most Incredible Migration

STORY AND PHOTOS BY LOWELL WASHBURN

As the days grow shorter and fall approaches, newly emerged monarch butterflies become restless. Although the bright orange- and black-winged insects currently visiting backyard flowerbeds may appear identical to those seen earlier in the summer, they are biologically different from all others. The group of adults currently flitting about are so unusual that scientists give them a special name—this year's final crop of young are the annual super generation.

Unlike their predecessors, whose entire life cycle could be measured in mere weeks, super generation monarchs complete a three-thousand-mile-long migration marathon, acquire the remarkable ability to halt aging and then stay alive for more than eight months—the rough equivalent of a human living six centuries.

The annual cycle begins high in the remote volcanic mountains of central Mexico. With the arrival of spring, monarchs that hatched the previous summer in Canada and then migrated to Mexico last autumn, suddenly respond to the irresistible call to move north. But their second migration will be brief and adults will never see their Canadian homeland again. Arriving on the plains of Texas, the ancient insects pause to mate, lay eggs and die.

Caterpillars emerge, grow, form chrysalises, and become

adults. Second-generation butterflies continue the flight north. Soon they, too, will stop to mate, lay eggs and die. The cycle continues until, four or five generations later, in a few months, monarch butterflies began appearing in Iowa. The airborne relay race continues until, sometime in August, the species reaches its final destination on the Canadian prairies.

Arriving at the relay's northernmost finish line, these adults are the great-great-great-grandchildren of the monarchs that left Mexico just four to five months earlier. It is their offspring that become super monarchs, that unique generation that embarks on one of the animal kingdom's most incredible journeys.

Unlike previous generations, super monarchs do not mate or lay eggs right away. Instead, they devote all their energy to feeding. Their only interest is to drink nectar and build fat reserves for the grueling task ahead.

But the seasonal clock ticks with little time to waste. Within days of emerging as adults, the super generation begins to move southward. Not just in a general southerly direction, mind you, but rather on a specific and well-defined course that leads to the exact same winter roost trees used by their great-great-great-grandparents the winter before.

Taking advantage of favorable breezes, monarchs travel



Bull thistle, *Cirsium vulgare*

Traveling up to 3,000 miles to migrate from Canada to central Mexico, no other species of butterfly in the world completes such a stunning migration like the monarchs of North America.



LEFT: Five-year old Dani Mergem of Minnetonka, Minn at the annual Monarch Butterfly Festival in Okoboji. When late summer and early fall monarchs emerge they are biologically and behaviorally different from those emerging earlier in the summer. The shorter days and cooler air of late summer trigger changes. Even though these butterflies look like summer adults, they won't mate or lay eggs until the following spring. Instead, their small bodies prepare for a strenuous flight to their overwintering roost in Mexico. **BELOW:** Lisa Pleggenkuhle Grummer of Hancock County puts the sneak on a group of migrating monarchs. She has marked more than 5,000 butterflies since 1994, reporting the data to Monarch Watch, a non-profit research group based at the University of Kansas (monarchwatch.org). **OPPOSITE BOTTOM:** Tagged and ready to go, data is collected by Pleggenkuhle Grummer before she releases the monarch to continue its arduous journey to central Mexico.



50 to 60 miles per day, taking time to replenish spent fuel reserves as they continue to gain weight during migration. The flight is not without casualties. Losses from storms, unexpected frosts and highway traffic exact a deadly toll.

UNLIKELY OASIS PROVIDES MONARCH SANCTUARY

To a casual passerby the spot would likely appear insignificant, if it would even be noticed at all. Just a scraggly cluster of 20 ash trees, with most reaching less than 20 feet in height. Located in the heart of the 2,200-acre prairie wetland complex of the Union Hills Waterfowl Production Area in Iowa's Cerro Gordo County, the volunteer trees are the last reminder of a long abandoned homestead.

But first impressions can be deceiving. During fall migration this apparently inconsequential grouping of 'weed trees' serves as a butterfly oasis. Overnight, this seemingly unlikely spot becomes temporary host to one of the region's greatest natural wonders as a monarch roosting area.

The transformation begins as the annual super generation of migrating monarch butterflies arrives from Canada. Attracted by more than 2,000-acres of nectar-producing goldenrod, blazing star, and other late blooming prairie plants, the Monarch hordes pause to take on fuel before continuing the rigorous journey to central Mexico's Sierra Madre mountains.

Following a full and exhausting day of migration and

feeding, the colorful insects assemble at the roost during late afternoon and then spend the night in deep, torpor-like sleep. The migration begins with just a handful of butterflies checking in for the night. But soon dozens become hundreds, hundreds become thousands.

Numbers may fluctuate dramatically. It's early September, and this year's flight is approaching its peak. Yesterday the roost contained just shy of 4,000 migrating monarchs. This morning, there are more than 5,000.

Resting wingtip to wingtip, there are so many butterflies here you can almost feel them breathe. But the silence is deafening. The sun is just coming up and it is so still—so incredibly quiet. For those used to photographing birdlife, and surrounded by their songs, it is utterly amazing to be surrounded by so much life and yet so much silence at the same time.

Photographing the experience is humbling. It doesn't take long to realize the task is impossible. Although photography is a great communications tool, this is one of those moments when no photo can do the scene justice. In this case, there is simply no substitute for being here.

MIGRATING TO MEXICO

The sun has cleared the horizon now and, influenced by its warming rays, the waking monarchs begin to slowly flex their wings. A half-hour later, the first individuals break from the orange clusters and take to the air. Unlike

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FOR THIS NET-WIELDING BUTTERFLY ENTHUSIAST, SEPTEMBER IS ALL ABOUT MONARCHS

Hancock County's Lisa Pleggenkuhle Grummer is a monarch tagging machine. As a volunteer with Monarch Watch International, she has single-handedly captured, marked and released more than 5,000 monarchs since 1994. Her labor of love is paying scientific dividends. Researchers have recovered more than 50 of her tags—nearly all from butterflies wintering in remote volcanic mountains near El Rosario in central Mexico. The returned tags represent more than 2 percent of the total Monarch Watch database for the entire state of Iowa.

But that's only the beginning. Her fascination with monarchs extends far beyond catching and tagging migrating adults. To increase backyard butterfly survival, she collects monarch eggs, cultures the caterpillars they become, provides mesh incubators as caterpillars become chrysalises, and liberates newly emerged crops of adults.

She raises up to 500 monarchs per season. Late summer is the busiest, raising young as well as collecting and tagging

migrating adults.

In early August, she's hunting for eggs daily, but doesn't start tagging until Aug. 20, to wait for the super generation of migrating butterflies to arrive. "I don't want to put a tag on anything that isn't going to go south," she says.

By early September, she might easily catch more than 100 butterflies daily and net more than 30 at one once. "When that happens you know you're really having fun," she says.

"The fall migration is fascinating, and conditions have to be spot-on perfect," she says. "Triggered by shorter days and north winds, their instincts just take over. Monarchs can travel 50 miles per day. With the right winds, they'll make 100 miles."

But migrating monarchs can't just flap their wings all day. That would be too costly. To save energy, they take advantage of wind currents and soar like eagles. "It's amazing to think of a monarch traveling all the way from Canada to the mountains of Mexico," she says.

LEFT: Map showing fall migration pattern of monarch butterflies ranging from Canada to mountains of central Mexico.



A roost of resting monarchs in Cerro Gordo County. The butterflies depend upon nearby nectar-producing prairie flowers for fuel to continue their migration to Mexico.



MONARCH LIFE CYCLE



STEP 1: Mating



STEP 2: Egg



STEP 3: Caterpillar (Larvae)



STEP 4: Ready to morph



STEP 5: Chrysalis



STEP 6: Ready to emerge



STEP 7: Monarch emerges

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birds, there is no organized flocking. Instead, each butterfly randomly flits in the direction of the yellow and purple flowers that dot the prairie landscape. The numbers increase until the sky fills with monarchs. For this year's super generation of monarchs, a new day of migration has begun.

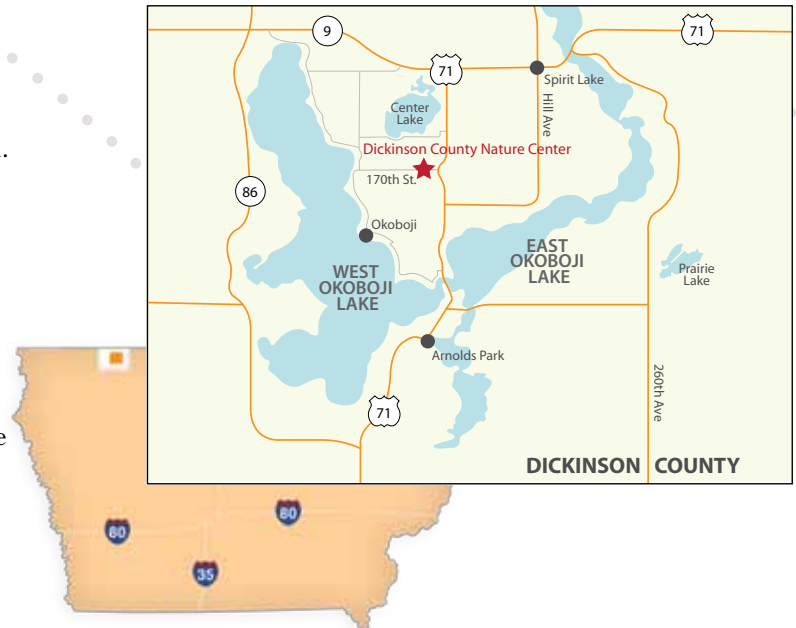
As the migration moves southward, the pathway narrows. Survivors concentrate and merge into huge butterfly clouds that fill the skies like orange glitter. Finally, following more than two months of rigorous travel, the super generation arrives in Mexico. With frayed wing edges and missing scales, many appear tattered and worn, while others appear largely unscathed.

But the monarch's epic journey is not yet complete. One final and seemingly impossible hurdle must be conquered before the insects can finally rest. That challenge is to reach the perfect winter climate found solely among the high elevation, mountainside firs that stand more than 10,000 feet above sea level.

The task is daunting but crucial. Winter is fast approaching and no monarch eggs, caterpillars or adults remain to the north. For weary migrants, the only chance of survival lies in successfully reaching the perfect environment of the volcanic forest.

The future of the species hangs in the balance. Everything is now staked on the worn, four-inch wings of those who have made it this far. The butterflies begin

their ascent and within days begin filtering into the two-mile-high winter roosting sites of their ancestors. Home at last to a place they've never been, the super monarchs slumber until lengthening spring days rekindle the age-old urgency to move north and lay eggs on the leaves of milkweed plants, giving birth to another generation. 🦋



LEFT: Callan Hinn, 11, of Spirit Lake goes nose-to-nose with a butterfly during the annual Monarch Butterfly Festival in Okoboji. **ABOVE:** Dickinson County naturalist Barbara Tagami explains the monarch life cycle to festival participants who catch, tag and release monarchs to aid research about the amazing migration. **OPPOSITE, FAR RIGHT:** Hailie Welding, 10, of Spirit Lake holds a certificate for festival tagging.

Habitat destruction affects monarchs, whose caterpillars feed on milkweed plants, which along with adult nectaring plants, are vulnerable to herbicides and pesticides used by landscapers, farmers, gardeners and others. To offset the loss of milkweeds and nectar sources you can create "Monarch Waystations" (monarch habitats) in home gardens, schools, businesses, parks, nature centers, roadsides and other areas. Without a major effort to restore milkweeds, monarch populations are certain to decline to extremely low levels. Order a kit at http://monarchwatch.org/waystations/seed_kit.html



**August 29
FOURTH ANNUAL MONARCH
BUTTERFLY FESTIVAL**

Enjoy butterfly gardens and activities at Dee and Kate's Butterfly House. Learn about life cycles, their incredible journey, make a craft and tag butterflies as part of the Monarch Watch program. Free event through the *Dickinson County Conservation Board* (712-338-4786) Held 10 a.m.-3 p.m. at *Dickinson County Nature Center, 2279 170th Street, Okoboji.*



DICKINSON COUNTY BUTTERFLY FESTIVAL CONNECTS KIDS WITH NATURE

The ear-to-ear grin said it all. Hailie Welding was having the time of her life.

Welding had just selected, captured and then successfully tagged a migrating monarch butterfly.

"This is so cool," exclaimed the Spirit Lake 10-year-old. "Just a few days ago my monarch was still a caterpillar. Today it's a beautiful butterfly and ready to fly to Mexico. Mexico is a long, long ways from here," she adds.

Ready for release, the newly tagged, brilliantly colored monarch stood poised on Welding's fingertip. Facing the breeze, the insect slowly flexed its wings and then buoyantly lofted into the warming autumn air. As the butterfly soared higher, Welding squealed with delight as an exuberant crowd of onlookers cheered.

During the next several hours, similar scenes were repeated as dozens of youngsters tagged and released butterflies. The event took place last September as part of the annual Monarch Butterfly Festival. According to Dickinson County Naturalist, Barbara Tagami, the festival takes monarch mania to unprecedented levels.

"The monarch festival is becoming one of our most popular events and around 200 people have shown up so far this morning," says Tagami. "The monarch butterfly is such an incredible creature and there are so many lessons—so many important links that can be connected—when we use this insect as an educational tool.

"Although everyone is welcome, a lot of our activities focus on young people," says Tagami. "Kids are just fascinated by insects, and we use that as a tool of discovery. I like to think

that children are just little people who are still free to discover nature. Learning about the amazing life cycle and migration of monarch butterflies is an excellent way to help kids connect with nature."

Much of Dickinson County's monarch festival involves hands-on activities. During the "Bugology Hike," for example, participants are encouraged to spread across the landscape and collect any insects they come across. Upon returning to the festival's Butterfly House headquarters, budding scientists use their detective skills to conduct thorough "insectigations" of their specimens. Other hikes include searching for caterpillars among the milkweed leaves of an official Monarch Watch Way Station, or attempting the capture of migrating adult monarchs stopping to visit the nectar-rich flowers of the butterfly garden.

For kids who don't manage to catch adult monarchs, there are sure-fire, second-chance opportunities for success. All that's necessary is to step inside one of the festival's butterfly-filled screen tents where youngsters pick and choose the monarchs they will tag. Once their monarch is recorded and released, each participating youngster receives a personal certificate to commemorate the event.

"I think people are beginning to understand that kids have become so techy these days that they are losing touch with the natural world," says Tagami. "We absolutely have to change that. It is so important for young people to connect with nature and the outdoors. Understanding the wonders and needs of something like the monarch butterfly is one way to make that happen."