

Monarch Migration Report 2025

By Audrey Anderson, Monarch Biologist and Assistant Hawkwatcher



One of Monarch Butterflies equipped with Cellular Tracking Technology's BlüMorpho transmitters as part of Project Monarch.

Monarch Migration Project Overview

The Coastal Virginia Wildlife Observatory's Monarch Migration Project completed its 28th year of monitoring and collecting Monarch Migration Data at the tip of the Delmarva Peninsula on Virginia's Eastern Shore. CVWO's mission is to actively contribute to Monarch migration data, enabling researchers, butterfly enthusiasts and the general public to better understand the global trends of this incredible and unique migratory species. Since 1997, CVWO has been recording and reporting Monarch migration data annually, collected from the beginning of September to the end of October, and then updated through November. CVWO's annual Monarch Migration Project data is distributed to major international organizations seeking to understand Monarch migration and population trends, including Monarch Watch and Project Monarch. The project's efforts consist of observational data collection through point counts and physical data collection in the form of Monarch tagging and, as of 2025, the application of Cellular Tracking Technology's BlüMorpho transmitters. The project focuses on data collection and public outreach, an essential part of promoting citizen science and environmental practices, growing awareness of Monarch migration and the importance of stopover habitat. Outreach is achieved through providing educational programs at the hawkwatch, tagging demonstrations and conducting various presentations to school groups, private organizations, and the general public.

The Monarch Migration Project is located at the tip of the Delmarva Peninsula along Virginia's Eastern Shore. The Delmarva Peninsula is a south-facing peninsula that acts as a funnel for migratory species along the Coastal Atlantic Flyway, as they move from northern breeding grounds to southern wintering grounds. The geography acts to consolidate these migratory species at the southern tip before crossing the Chesapeake Bay; migratory species include raptors, songbirds, dragonflies and Monarchs. These species are monitored from various sites at the tip of the Eastern Shore, including Kiptopeke State Park, the Eastern Shore National Wildlife Refuge and Fisherman's Island National Wildlife Refuge.

Widescale Monarch Population Trends

The Central Mexican overwintering population of Monarchs, which aligns with the generation/population that travels through Virginia's Eastern Shore every fall, has been on an 80% decline since the 1990s. Recent reports have shown that within the last year, there has been a 60% drop in the overall population of Monarchs in the Americas. Major migration challenges for Monarchs include increasing urbanization and drought, affecting major nectar resources along essential migratory routes. Many organizations are taking action to try to secure the future of Monarchs, aiding in their migration through research and the encouragement of citizen involvement. The encouragement of the preservation of natural habitats and the planting of native plants in urban environments provides essential stopover habitat as the Monarchs make their way to their southerly wintering grounds. Coastal Virginia Wildlife Observatory is an active member in the collection of essential migratory Monarch data on the Eastern Shore, helping better understand these changing trends.

2025 Project Monarch Transmitters

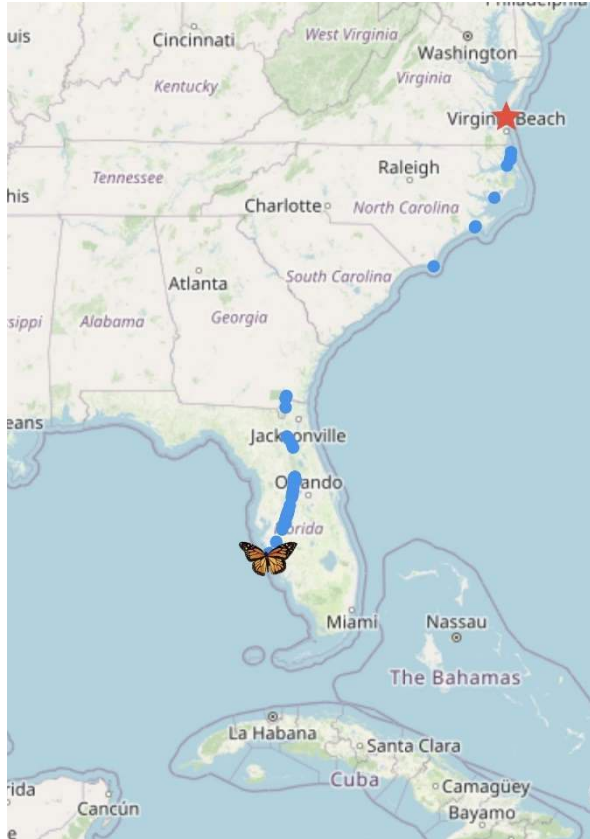
This marks the first season Coastal Virginia Wildlife Observatory has participated in the nationwide Monarch migration monitoring effort, Project Monarch. It is a pioneering project created by Cellular Tracking Technologies™ in partnership with Cape May Bird Observatory in an effort to create a unique and innovative method to monitor Monarch migration. Cellular Tracking Technologies™ created a solar-powered Bluetooth transmitting device called BlūMorpho that can be attached to the upper abdomen of a Monarch. When exposed to sunlight, his device allows transmissions to be detected whenever an individual Monarch comes within a radius of a Bluetooth-enabled device, such as a standard smartphone. These detections create detailed migratory maps, showcasing individual movements, mileage, along with detection time and frequency. 2025 is the first year of this project; organizations across the country came together, deploying transmitters on Monarchs as far north as Ontario, Canada. Mark Garland, who

founded CVWO's Monarch Migration Project in 1997, has been an incredible influence on Project Monarch and played a large role in the project becoming a reality. Mark Garland, with



Audrey Anderson with a Monarch and its newly equipped transmitter before deployment!

the help of Cape May Bird Observatory, sponsored two transmitters to be released by CVWO at the tip of the Delmarva Peninsula. “Nancy-CVWO001” and “Brian-CVWO002” were captured and released with cellular transmitters in Kiptopeke State Park on October 20, 2025.



Nancy-CVWO001's flight path to the gulf coast.

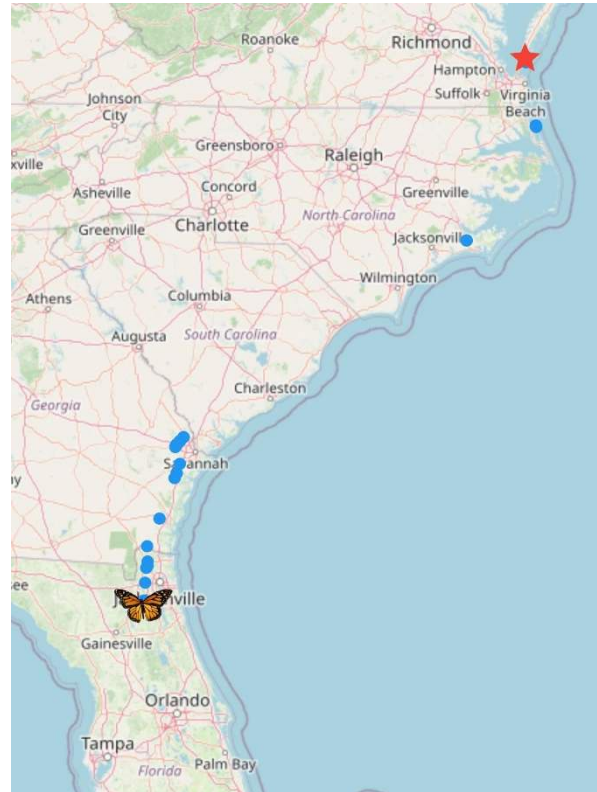
Nancy-CVWO001 was a female Monarch who was one of two Monarchs captured and deployed from the Kiptopeke Hawkwatch on October 20, 2025. After its initial release, Nancy-CVWO001, remained within Kiptopeke State Park for 4 days; its transmissions were detected daily from behind the Hawkwatch Platform, where it presumably was foraging on Mist Flower and roosting within the Loblolly Pines. Nancy-CVWO001's last transmission from the Delmarva Peninsula was just north of Lankford Highway and Latimer Siding Road on October 24, 2025. Approximately 24 hours later, Nancy-CVWO001 was detected in the middle of the Currituck Sound, 60 miles from its release site, in North Carolina. By the end of the day, it was just south of Mattamuskeet National Wildlife Refuge, 123 miles from Kiptopeke State Park. By sunset on October 26, two days after leaving the Eastern Shore, it appeared 255 miles from the release site on Bald Head Island. The next transmission occurred on October 28, 553 miles from the release site along the border of Georgia and Florida. On October 29, 607 miles, on October 30, 613 miles and on October 31,

617 miles away. Nancy-CVWO001 proceeded to work south through Central Florida, transmitting almost daily. On November 3, it was 660 miles from Kiptopeke State Park, and it traveled 84 miles that day, cutting across to the western coast of Florida. On November 4, Nancy-CVWO001 transmitted 766 miles from its release, traveling 30 miles to the coast of Nokomis Beach, Florida. This was its last transmission, 790 miles, 677 detections and 15 days from the Kiptopeke Hawkwatch.

Brian-CVWO002 was the second female Monarch that was captured and deployed on October 20, 2025, from the Kiptopeke Hawkwatch. Similar to Nancy-CVWO001, Brian-CVWO002 remained on the Eastern Shore until October 24, residing mainly within the Kiptopeke State Park Campground areas. On October 24, Brian-CVWO002 was documented attempting to cross the Chesapeake Bay from the Kiptopeke State Park Pier, before coming back inland at Sunset Beach, cutting down the Peninsula and transmitting off of Fisherman's Island National Wildlife Refuge. On October 25, Brian-CVWO002 transmitted 60 miles from the release site near the Currituck Sound on the Outer Banks, North Carolina, extremely similar to Nancy-CVWO001's first transmission point after leaving Virginia's Eastern Shore. On October 26, Brian-CVWO002 transmitted near Morehead City, North Carolina, 167 miles from Kiptopeke State Park, still following a similar trajectory to Nancy-CVWO001. There was

a 4-day gap in transmissions from October 26 to October 30. On October 30, Brian-CVWO002 was detected just north of Savannah, Georgia, at 452 miles. Working down the east coast from October 30 through September 3, reaching just south of Jacksonville, Florida, 596 miles from Kiptopeke State Park. From November 3 to 13, Brian-CVWO002 remained off of Sesame Street in Clay County, Florida. This is where its last transmission was detected on November 13, 596 miles, 497 detections, and 24 days from the Kiptopeke State Park release site.

Project Monarch has revolutionized data collection methods in understanding individual Monarch migration movement and timing. Resculpting the way Monarch migration patterns are documented and viewed on a larger, more detailed scale. The understanding of the mileage per day a Monarch can travel, how they overcome water crossings, and what routes they take in certain conditions are all questions that are closer to being understood. As for Nancy-CVWO001 and Brian-CVWO002's final destinations, lack of transmissions can be due to numerous factors, such as the transmission device falling off, an individual being in a remote setting away from detection devices, and/or the Monarch perishing due to a myriad of factors. Though the two Monarchs from Kiptopeke didn't distinctly make it to the known wintering grounds in Central Mexico or Florida, many of the transmitting Monarchs from multiple organizations across North America did complete their migratory journeys. This project also showcases the need for education and citizen science practices, as many of the locations, the stopover habitats, that Nancy-CVWO001 and Brian-CVWO002, among the other Monarchs, utilized in their migrations were wildlife areas and urban gardens. Promoting Butterfly Gardens and Waystations is proving to be an essential part of the successful migration of this species. As this project grows over the next few years, Monarch migration in North America and on the Eastern Shore of Virginia will become more apparent, increasing the knowledge of these extraordinary creatures, growing awareness of Monarch migration, stopover habitat, and revealing better conservation practices.

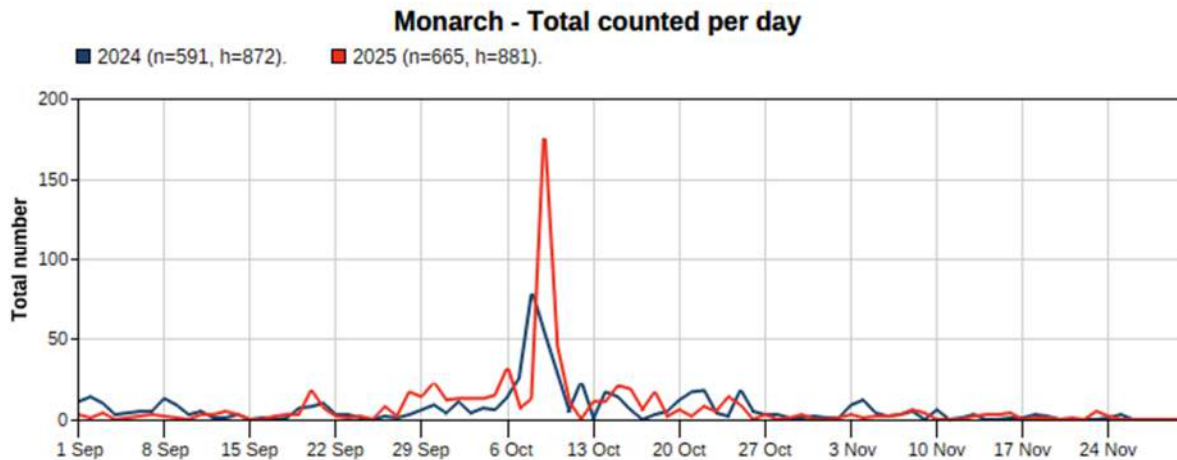


Brian-CVWO002's flight path to the gulf coast.

2025 Monarch Point Counts

Daily point count data for the CVWO Monarch Migration Project were collected from the Hawkwatch Platform at Kiptopeke State Park from August 22 to November 30. In the last week of August, the start of Monarch migration on Virginia's Eastern Shore, a total of 64 individuals were observed. This coincides with the number of Monarchs recorded in August 2024, which totaled 49 individuals. September had a total of 133 individuals compared to 142 monarchs in 2024, again consistent in terms of volume and timing. In most fall migration seasons, peak Monarch migratory movements are recorded around mid-October. October

had the highest total number of recorded individuals, with 488; 2024 had a slightly lower peak with 394 individuals. Peak migration was recorded in early October, and the highest number of Monarchs recorded was on October 9 with 175 individuals. Comparatively, the 2024 season's peak was October 8 with 78 individuals. Migration began to slow in November, with a total of 44 monarchs being observed, only slightly fewer than in 2024. Over the past few years, Monarch migration has consistently lasted until late November. The last two Monarchs recorded for the season were on November 26, and the last Monarch recorded in



the 2024 season was on November 25. A total of 729 Monarchs were recorded from the Hawkwatch for the 2025 season. This is compared to 643 in the fall of 2024. All data on the Monarch point count observations were recorded and uploaded to Trektellen.

2025 Monarch Tagging

Monarch Tagging from the 2025 migration season took place at various sites at the southern tip of the Delmarva Peninsula on Virginia's Eastern Shore. Monarchs were tagged at Kiptopeke State Park, the Eastern Shore National Wildlife Refuge and Fisherman's Island National Wildlife Refuge. The first Monarch of the 2025 migration season tagged was a female on August 26 at the Hawkwatch Field in Kiptopeke State Park, tag number ALEY900. The last Monarch tagged was a male on October 28 at the Hawkwatch Field, tag number AJEU840. A total of 201 Monarchs were tagged this season. The highest number of Monarchs was tagged from October 10 through 11. 103 Monarchs were tagged on October 10 and 32 individuals on October 11. 103 Monarchs were the most tagged in a day this season. During tagging, the sex of the individual, the length of the forewing, and the length of the hindwing were recorded. The Monarch tags, provided by Monarch Watch, are attached to the hindwing of an individual.

Tagging Sites

Hawkwatch Field in Kiptopeke State Park: Located east of the Hawkwatch platform, this site provided a plethora of Goldenrod from late September into October. This is also the site of the Kiptopeke Butterfly Garden, which offers plants such as Mist Flower and Mountain Mint, both highly utilized by Monarchs throughout the season. A total of 64 Monarchs were tagged at this site.

Kiptopeke Beach: A total of 100 Monarchs were tagged at this site. This tagging site was a



personal favorite as the Seaside Goldenrod was thick with Monarchs during peak migration days in October. Monarchs could be seen in groups of up to 6 individuals per plant nectaring along the beach. There were no roost sites found this season, but the most monarchs seen feeding at a time were at this site. In the evenings, the monarchs could be seen leaving the beach and moving into the pines to roost; no mass roost movements were observed.

*Audrey Anderson on a tagging and monitoring mission at Kiptopeke.
Photo by Steve Thornhill.*

Eastern Shore National Wildlife Refuge: This site, in previous years, has been known to be extremely productive due to its plethora of Goldenrod. A total of three Monarchs were tagged at this site in late August.

Fisherman's Island National Wildlife Refuge: Fisherman's Island has historically been an excellent tagging site due to its geographical positioning and abundance of Seaside Goldenrod. Due to restrictions on the island, only one day of tagging occurred during the 2025 season. A total of eight Monarchs were tagged on Fisherman's Island this season.

Tagging Data

Measurements: Wing measurements are taken for each Monarch captured for the Monarch Watch Program. Standard measurements are taken of the hindwing and forewing and recorded in millimeters. There is a lot of variability when it comes to Monarch size. This data is collected to establish which size is potentially more advantageous for successful migration. The forewing measurement extends from where the Monarch's wing connects to its upper abdomen out to one of the wing tips of the forewing. The average forewing of females was 51 mm, and the average for males was 51 mm. The smallest forewing measurement was a female at 44 mm, and the largest was a male at 56 mm. The hindwing measurements are taken from the central edge along the Monarch's abdomen to the central outer edge of one of the hindwings. The average hindwing of females was 33 mm, and the average for males was 33 mm. The smallest hindwing measurement was a female at 27 mm, and the largest individual, female, was 38 mm.

Sex Ratios: Out of the 201 Monarchs tagged, 77 of the individuals captured were females, and 124 were males. Of the 2025 data set, 38% were female, and 62% were male. This trend is not unusual in this region. In 2024, 65% of the individuals were male, and 35% of the individuals were female. Data collected in 2023 reflects a similar trend, with 70% of the captures being male and 30% being female.

Recapture Data: A total of seven Monarchs were recaptured this season between the two sites, Hawkwatch Field and Kiptopeke Beach. All individuals were recaptured in the same location where they were tagged, except one individual. Monarch AJEU756 was tagged on the Kiptopeke Beach and recaptured the next day in the Hawkwatch Field.

2024 Educational Outreach and Interpretive Presentations

A key part of the Monarch Migration Project is public outreach and education. This season, there were multiple different organizations that came out to witness Monarch migration and tagging in action, from middle school classes, locals, curious park visitors and many more. Through Monarch tagging demonstrations and presentations, staff raise awareness of Monarch migration and showcase the imperative role each individual plays in the preservation and recovery of this declining species. To help people actively connect with Monarchs and experience them in a scientific light is a truly wonderful and rewarding aspect of Coastal Virginia Wildlife Observatory's Monarch Migration Project.

A Personal Note

The Coastal Virginia Wildlife Observatory is a wonderful organization, and I can not express my gratitude for being a part of this incredible migration monitoring team for a second season. Virginia's Eastern Shore is a spectacular and unique place, from the nature to the people, the impact it has had on my life is inexplicable. The Kiptopeke community is a home away from home. Thank you to all those who make it feel that way. A huge thank you to Brian Taber and Nancy Barnheart, along with the rest of Coastal Virginia Wildlife Observatory, for their dedication to this organization and these migratory projects. Thank you to my co-hawkwatcher, Sage Church, and to Baxter Beamer for his work at Sunset Beach; it was truly special to work with such an incredible counting crew.

Thank you to Kiptopeke State Park and Sean Dixon for being excellent hosts. A special thank you to Bob Ake, Paul Anderson, Harry and Liz Armistead, Mario Balitbit, Rudy Cashwell, Ocean Church, Lynn Davidson, Kai Dickson, Chris and Betsy Foster, Deborah Humphries, Daniel Irons, Jonathan Irons, Aylett Lipford, Andrew Rapp, Steve Thornhill, Wayne Valentine and Hal Wierenga.