

Monitoring Monarchs

Every year, tens of thousands of Monarch butterflies visit Fire Island on their migratory journey from Canada to Mexico. Unfortunately, the number of these beautiful island visitors has fallen sharply in recent years. This is not a phenomenon that is unique to Fire Island. In fact, recent studies show a drastic decrease in the overall Monarch population, with some estimates finding a 90 percent decline in the population in the past two decades. Experts state that increased herbicide use has destroyed milkweed plants, which are the only plants Monarch caterpillars feed on. In addition, global climate change, logging, and other human activities have also been cited as possible causes of the severe population decline. The Monarchs' situation is dire enough that the U.S. Fish and Wildlife Service is currently assessing whether to extend federal protections to the butterflies under the Endangered Species Act.

Ellen Federico has been monitoring Monarch populations on Fire Island for many years. She spoke with the *Fire Island Tide Newspaper* about the butterflies, the many benefits they bring to humans and the environment, and her on-going efforts to tag and count the many Monarchs that visit Fire Island every year.

FIT: What is your personal connection to Fire Island?

Federico: My Father, Captain Bob Federico, worked for Fire Island Ferries in the 1960s before starting a sight-seeing and private party boat business located at Captree State Park. He was well known on the island and also piloted freight barges and water taxis up and down the barrier reef. My siblings and I ran barefoot on the beach from April through November. Our home in Lonelyville was purchased on eastern Long Island, barged over the Great South Bay, then rolled into place on pilings to Robbins Walk, where it stands today.

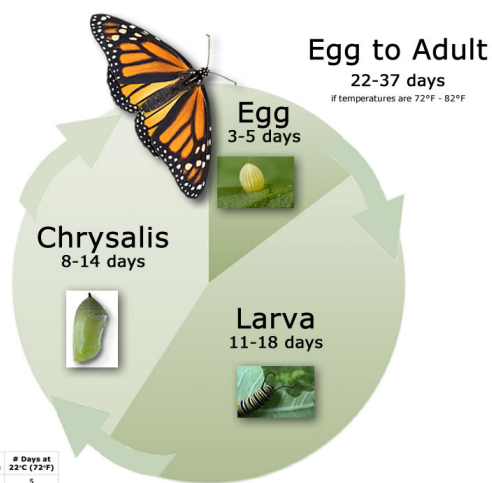
FIT: When did you first develop an interest in Monarch butterflies?

Federico: The Captain taught all of his eight children about wildlife on Fire Island, and how to judge the weather by reading changing signs in the sky, tides, and animal behavior. My mother taught us how to plant nectar flowers to attract butterflies. The Monarchs would migrate over us every autumn



Federico House and Monarch Habitat

Monarch Butterfly Life Cycle



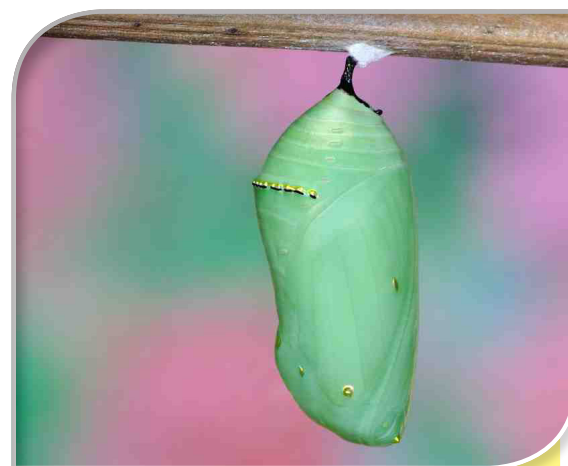
Stage	# Days at 26°C (80°F)	# Days at 22°C (72°F)
Egg	3	5
Larva	11	18
Chrysalis	8	14
Total	22	37

Development rates are temperature dependent. Monarchs develop more quickly in warm temperatures and more slowly in cool temperatures.

Adapted from Zolucki, M. P. 1982. Temperature and rate of development in two species of *Danaus*, *D. plexippus* and *D. chryippus*. *J. Aust. Entomol. Soc.* 21:241-46.



Monarch Caterpillar



Monarch Chrysalis



Male Monarch

on their way to Mexico. When I was a kid there were thousands flying over Fire Island from September to mid-October. The Monarchs still come, only far less in number.

FIT: Can you tell us a little bit about Monarch butterflies?

Federico: The Monarch is a milkweed butterfly. They belong to the order Lepidoptera, their science name is (*Danaus plexippus*). Female Monarchs only lay eggs on milkweed; in four days tiny caterpillars hatch and begin eating the milkweed, their only food source, because milkweed contains toxic glycosides and protein that help protect them from predators. The caterpillars eat like crazy to match their body weight in a day. They must shed their skins five times to allow their bodies to expand. After 12 days, the caterpillars will climb to a safe place and spit a foam-like glue, attaching their heads, so they can hang in a "J" shape. In 24 hours they form a beautiful jade green chrysalis from the bottom up. During this "pupa" cocoon stage, metamorphosis takes place, changing from caterpillar to adult butterfly. In nine to 14 days they will emerge from the chrysalis and cling to it until their wings are dry and stiff. The Monarch takes flight, looking for flower nectar to sip through a straw-like tongue called a proboscis.

All butterflies live about four to six weeks, mate, lay eggs, then die. All, except the fourth generation migrating Monarchs that live up to nine months and fly 3,000 miles every autumn to Mexico, where they rest over winter. The babies born of this fourth generation will live four to six weeks, then take flight from Mexico heading back north. It will take three more six-week life cycles to reach Canada and the Northern states by summer. So, the third generation are the parents of the fourth generation migrating Monarchs. And the epic journey begins all over again.

FIT: Why is Fire Island important to the Monarch population?

Federico: Fire Island is strategically located on their flight path to Mexico from Canada and up-state New York. Fire Island is also a natural habitat for Monarchs with native milkweed and nectar

flowers. Monarchs also need a bit of salt, which is plentiful from the sea and spray. In addition, the sand dunes and houses on the island reflect the sun's warmth, releasing up thermal currents that butterflies and birds like to glide on to conserve energy. The facts are, no milkweed, no Monarchs. The caterpillars born in the wild, not on butterfly farms, will only eat milkweed.

FIT: Why are Monarch butterflies important to Fire Island and the larger global ecosystem?

Federico: They are pollinators along with the bees, both currently at risk of becoming endangered. Scientists are studying Monarchs for cancer research regarding why they can ingest milkweed toxins, but if a bat or bird eats the

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Monarch they will become sick or possibly die from the toxins. Monarch migrations are good indicators for climate change by monitoring what time of year and which flight paths they take. Monarchs should arrive in Mexico by early November. I spotted my last Monarch in Lonelyville on November 12, 2017.

***FIT:* Can you discuss your current efforts to track the butterflies on Fire Island?**

Federico: I am a member of Monarch Watch with a certified habitat. I order tracking tags, a small sticker the size of a pea with number code, from their website the first week of September. Our Lonelyville community joins in helping, especially the children, by wrangling Monarchs (gentle netting), then we tag the outer wing, and log the date, sex, and location on data sheets. I input the data on the monarchwatch.org site, and their volunteers in the Monarch sanctuaries in Mexico search the mountain forests for tagged Monarchs and log their numbers on the site. I monitor the site, looking for any Fire Island tagged numbers. In eight years we had ten of our tagged Monarchs found. That's pretty good considering there are millions of Monarchs in the winter resting sanctuaries.

***FIT:* Why is this effort important?**

Federico: The tagging program is important because it shows how far, how long, and how many migrating Monarchs are surviving the journey. Hurricane season and severe temperatures (too hot or too cold) can kill Monarchs. However, the biggest threat to Monarchs is humans, who kill milkweed and nectar flowers with poison pesticides, overdevelopment, and illegal tree logging in Mexico.

***FIT:* Have you seen any shifts in the butterfly population or its behaviors?**

Federico: Yes. Since my childhood the migrating Monarchs' flutters are less than half of what they were back then. Hurricane Sandy washed through my habitat, destroying most of it. The local children and I replanted the following year, but it took two more years for the new flutters to find their way back to Lonelyville. The past few years we have had very good Monarch populations arrive because the milkweed and nectar habitat is flourishing. Monarchs will return to the same locations as their relatives did, even though they have never been to Fire Island before. Somehow, they know they can feed, mate in our pine trees, and lay their eggs.

***FIT:* What can people do to help your efforts?**

Federico: Plant milkweed and nectar flowers. Folks can stop by my house at 31 Robbins Walk corner at Central for Fire Island milkweed seeds. They can also order seeds online. Tropical milkweed or nectar plants purchased at local nurseries or Home Depot must be rinsed well to remove pesticides. The nectar plants Monarchs like are asters, zinnias, cone flowers, salvias, buddleia bushes, and their favorite bright orange Mexican sunflowers called tithonia. If you plant a little habitat, they will come.

***FIT:* Is there anything else you'd like people to know?**

Federico: Migrating Monarch butterflies are beautiful, brave, and extraordinary creatures. Folks ask me why they migrate every year. I went to the Michoacán Mountains in Mexico to see where they have been flying for centuries. It was the best day of my life! And now I understand... they fly for us, the humans. To remind us to cherish and care for this planet: its renewal is our only hope. ■