



North Carolina Chapter The Wildlife Society

12 March 2025

The Department of Interior
U.S. Fish and Wildlife Service
Monarch Butterfly Listing Team

RE: Monarch Butterfly Listing Proposal as Threatened under the ESA, 4(d) rule.

Dear U.S. Fish and Wildlife Service, Monarch Team,

The North Carolina Chapter of the Wildlife Society (NCTWS) would like to express its support for the proposed listing of the monarch butterfly (*Danaus plexippus*) as a threatened species and designate critical habitat under the ESA 4(d) rule.

Causes of Monarch Decline

The proposed listing for the monarch butterfly fulfills the criteria under the 4(d) rule. All butterfly species are on the decline throughout all regions in the U.S. (Edwards et al. 2025). Monarch butterflies are migratory, habitat-specialists whose populations have precipitously declined (Pelton et al. 2019; Monarch Watch 2022; Boxler et al. 2024) with anthropogenic factors to blame for much of the monarch butterfly's recent decline. Their largest population overwinters in Mexico, then disperses across eastern North America during March to August, with a portion of the population roosting along the Atlantic coastal plain and Appalachian Mountain ridges (Boxler et al. 2024), including in North Carolina.

Monarchs face threats to breeding, migration, and roosting due to logging and development, pesticide use, and climate change (Xerces Society 2024). Pollinator species such as the monarch butterfly require a variety of suitable habitats, distributed and connected over a great extent of their migratory range through all life stages (Gurarie et al. 2017) as well as suitable stopover habitats for resting and refueling during migration (Schaub et al. 2008). Summer breeding grounds, migratory flyways, and winter roosting grounds have undergone major habitat degradation due to extensive residential, commercial, and infrastructure development and agricultural and logging activities (Olaya-Arenas and Kaplan 2019; Cibotti et al. 2025).

Several studies have attributed the use of agricultural and landscaping chemicals such as neonicotinoids, glyphosate, and fungicides to direct adverse physiological effects on pollinators (Motta et al. 2018). These indirect effects include altered milkweed ecology (Cibotti et al. 2025; Krishnan et al. 2020) and reduced milkweed abundance (Pleasants et al. 2017), resulting in monarch declines throughout summer breeding areas. Herbicides and fungicides, when used together, are known to cause synergistic and additive toxicity to insects and impact milkweed abundance (Johnson et al. 2013; Cibotti et al. 2025). Furthermore, climate change brings warmer, unpredictable temperatures further north, impacting monarchs at all life cycle stages (Kesler, 2023).

Therefore, monarch butterflies warrant listing under the ESA. Above all, efficient and effective action through federal listing is necessary to provide an adequate regulatory framework and the mechanisms needed to ensure the long-term availability of monarch butterfly habitat to support recovery and expansion.

Proposal to Stabilize Monarch Butterfly Populations

A species as widely distributed as the monarch butterfly, and as heavily dependent on large-scale quality habitat, requires collaboration across multiple countries for the protection of the species and habitat conservation (Harris et al. 2025). However, not all countries that experience monarch migration have the same legal protection and conservation guidelines (Xerces 2024). The recent precipitous decline in monarchs has prompted Mexico, Canada, and the U.S. to take the necessary actions to restore the monarch butterfly migration corridor and save the butterfly from extinction. Regional coordination to evaluate population dynamics and streamline conservation guidelines will protect and enhance the monarch butterfly breeding and wintering habitats throughout their range.

In the U.S., although the proposed listing would designate critical habitat in southern California for western populations, the eastern populations will continue to decline due to habitat loss and fragmentation. The decline of the larval host plant milkweed will continue in migration corridors as well as the overuse of pesticides in residential and commercial developments. Conservation organizations have been hard at work to revive butterfly populations, primarily through captive breeding and small-scale milkweed habitat conservation in parks and nature preserves. While captive breeding and establishing local milkweed habitats have some degree of success in enhancing overwintering population numbers, the focus must shift towards regulation of agricultural and landscaping chemicals and landscape-scale habitat conservation to save monarch butterflies from further decline.

There are three important aspects of habitat management needed to expand the restoration of the monarch butterfly breeding areas in the eastern migration corridors. First, there must be strict regulation on the unnecessary use of pesticides (glyphosates, neonicotinoids and fungicides) in agricultural and landscaping activities. These pesticides are known to severely decrease wildflower biodiversity, including milkweed plant species essential for adult and larval monarch survival. In addition, chemical accumulation is known to occur in non-target plant species, further jeopardizing the quality of shrinking milkweed habitats.

Secondly, it is critical to provide milkweed habitat conservation funding to engage grassroots communities and incentivize native plant gardening practices in residential and commercial spaces currently heavily occupied by turf grasses. Expansion of such programs will greatly

improve monarch breeding areas and migration corridors for both eastern and western populations. Community engagement built around species people encounter will have lasting effects that foster lifelong awareness, concern, and actions for conserving monarch butterflies (Preston, 2021).

Third, unused spaces alongside developments, highways, and utility corridors must be restored into native plant habitats instead of monocultural turf grass. Programs to restore monarch wildflower communities along highways are already underway with success. Restoring native plant communities, especially along the roadways, will not be without challenges; however, challenges can be overcome by revising the existing maintenance plans and repurposing available expertise and funding. This provides the highway administration and conservation organizations an opportunity to collaborate and implement strategies to increase native plant diversity throughout the monarch butterfly range.

Monarch butterflies signify the overall health of the natural ecosystems, making them an excellent bioindicator species. Utilizing all available scientific tools and collaborations among agencies, academia, and conservation organizations will help monarch populations rebound. We appreciate the U.S. Fish and Wildlife Service taking an important step in proposing listing the monarch butterfly under the ESA, which may also benefit countless other arthropod pollinators (Edwards et al. 2025).

Sincerely,
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