



Monarch Conservation Database

Questions and Answers

1. What is the Monarch Conservation Database?

The U.S. Fish and Wildlife Service is developing a database to capture new (since 2014), ongoing and planned conservation efforts for the monarch butterfly. Conservation efforts are on-the-ground actions designed to create or enhance habitat or otherwise improve conditions for monarch butterflies. This will simplify data analysis, which is a difficult task when analyzing data collected from all of the lower 48 states, and will help the Service and monarch conservation partners map conservation efforts across the United States.

While there are a number of existing and planned monarch databases run by other organizations, none matches the scope and function of this database. We are developing this database with the aim of being compatible with other databases and data collection efforts by coordinating and collaborating early on with partners to ensure that we align major fields and metrics.

2. Why is the Service developing a Monarch Conservation Database?

The purpose of the database is to help document monarch butterfly conservation efforts and help us model future habitat conditions. This information will help the Service and monarch conservation partners document conservation efforts as we continue working to improve conditions for monarchs.

We intend to display information from the database on a web-based Monarch Conservation Mapper that will be accessible to the public. The mapper will show where conservation is taking place and will allow users to click on features to view basic data. Currently, we expect to aggregate information at the county level for the mapper.

Additionally, the Service has been petitioned to list the monarch butterfly under the Endangered Species Act. As a result, we must conduct a thorough assessment of the monarch butterfly's status now and into the future. Biologists on the Monarch Status Assessment team will use information collected in the database to model future conditions for monarchs as part of the monarch species status assessment.

3. What is the difference between a conservation plan and a conservation effort?

Conservation plans are generally overarching guidance documents that include on-the-ground actions. Conservation efforts, on the other hand, are specific on-the-ground activities that are implemented with the intent of protecting, enhancing, or creating monarch habitat. Conservation plans and efforts can be related in that conservation plans may be used to guide how

conservation efforts are implemented. We would like the database to capture information on both.

4. Will actions that improve or create monarch habitat but are conducted within the context of other management plans be included in the MCD? For example, actions that are taken as part of a lesser prairie chicken management plan.

Yes. Management to improve monarch habitat is compatible with management for most other grassland animals. We encourage everyone to add their conservation efforts to the database if it results in the creation or improvement of monarch habitat, regardless of the primary purpose of the overarching management plan.

5. What conservation efforts will be added to the database?

The Service would like to include as many monarch conservation efforts as possible that have been recently completed (i.e. since 2014), are currently ongoing, or are in the planning and development stages, regardless of size or other parameters. The database will have fields to capture information about conservation efforts that are conducted under the umbrella of a formal plan, but a formal plan is not a requirement for including an effort in the database.

6. What is the scale of conservation efforts that will be included in the database?

We do not have a size limit for efforts that can be entered in the database. We encourage everyone to enter their monarch conservation efforts regardless of size, from small to large.

7. Who will be entering information into the database?

Anyone involved in developing a monarch conservation plan or implementing monarch conservation efforts may request access to enter the information and will be able to perform data queries. Efforts may be entered a single effort at a time through a web-based user interface or may be uploaded in batch by users with many efforts.

An interactive, online mapper will also be developed that shows generalized locations of efforts and provides basic information for efforts; this application will be made available to the public. Efforts viewable via the mapper will be limited to those for which the data provider has given permission to share the information.

8. What information will be collected in the database?

At the end of this document, in Table 1, is a preliminary list of categories and fields from the database. These may change as we receive additional input and test these fields over the next 6 months.

9. How will the Service use the database for the listing decision?

We will use information entered into the database to estimate future habitat scenarios and compare those conditions to our current baseline to calculate a percent change in habitat. Currently, our primary habitat metric is the number of milkweed stems on the landscape because we have a good understanding of milkweed density in terms of its relationship to monarch production and we have a national baseline (discussed in the answer to the next question). In essence, milkweed density will serve as our initial habitat surrogate. However, we will also be collecting information about other habitat metrics such as milkweed diversity, blooming nectar plant frequency or density, and richness (i.e., number of different nectar plant species). These fields may be incorporated into the habitat metrics in the future depending on the availability of data and the needs and goals of conservation partners. The percent change in habitat will be the database output that serves as an input for the Species Status Assessment modeling, the results of which will be evaluated, in addition to other information, by decision makers who then make the decision whether or not the monarch butterfly warrants listing.

Depending on the timing and status of the conservation effort, information from the database may be further filtered through the Policy for Evaluating Conservation Efforts (or PECE Policy) before being factored into the Species Status Assessment. The PECE Policy evaluates future or new efforts for certainty of implementation and certainty of effectiveness. Efforts that will be evaluated under the PECE Policy are those that have only recently been implemented or are currently in the planning and development stage. We do not need to evaluate conservation efforts under the PECE Policy if they have been completed or have been ongoing. The Policy for Evaluating Conservation Efforts is available at www.fws.gov/endangered/esa-library/pdf/PECE-final.pdf

10. How is the Service measuring or assessing existing monarch habitat and how will additional habitat or habitat improvement be measured or assessed?

Our current assessment of existing habitat is based on a recent United States Geological Survey publication that used expert elicitation and review of literature to estimate the density of milkweed for each land use sector (e.g. developed land, forest, grassland, wetland, etc.) in the Upper Midwest (Thogmartin et al., 2017). Since we know approximately how many acres each land use sector occupies, we can multiply the estimated milkweed density by the acreage of each land use type to get a baseline estimated of milkweed stems. Because we currently have a better understanding of milkweed density in terms of its relationship to monarch production as well as a national baseline, our initial focal habitat metric will be milkweed stems. In essence, milkweed density will serve as our initial habitat surrogate. However, we will also be collecting information about milkweed diversity, blooming nectar plant frequency and density, and richness. These fields may be incorporated into the habitat metrics in the future depending on the availability of data and the needs and goals of conservation partners.

Accordingly, improvements to habitat will be based on the acreage of an effort and the improved density of milkweed. If a database user can provide information such as the size of their effort and the measured or predicted milkweed stem density after implementation of the effort, we can compare that to the baseline to calculate improvement. If data regarding improved milkweed density are not available from the user, there are assumptions we can make regarding the potential improved milkweed density based on the underlying land use of the effort using the same information we use to calculate the baseline (Thogmartin et al., 2017).

11. Why would I want to include my monarch conservation efforts in this database?

Monarch numbers have declined substantially over the past 20 years, and the American public has responded with energy to expand and improve habitat for this butterfly. From backyards to large natural areas, focused planning and management efforts are putting monarch habitat on the ground. Despite this, we need continued expansion and improvement of available habitat to ensure healthy monarch populations into the future. By including your own work in the database, you help provide a more accurate assessment of habitat on the ground, where additional habitat is needed and what we can expect in the future. Also, the Service must make a decision on whether to list the monarch under the Endangered Species Act. Accurate information on future conservation efforts will help the Service make an informed decision. Most importantly, if we want to save the monarch migration in the lower 48 states, we need continued expansion of monarch habitat and adding your conservation efforts into the database will help direct monarch conservation in the coming years.

12. How do I enter my information into the Monarch Conservation Efforts Database?

We anticipate the database will be ready for data entry by June 2018. At that time we will have step-by-step instructions for entering data. The fields that we expect to include are provided in Table 1 (below). Because we will be testing these fields over the next year, there may be some changes. Updates will be provided online at www.fws.gov/savethemonarch/MCD.html.

13. Who is helping the Service test the database? How can I be involved in review of the database as it's being developed?

We invite anyone who is interested to help us review the database as we develop it. We expect to hold webinars every two months to provide updates and allow for feedback and review; the schedule is provided online at www.fws.gov/savethemonarch/MCD.html. We set up an email address as a mechanism for asking questions and providing feedback on database development. You may also use this email address to request an invitation to future webinars. FW3_monarchconservation@fws.gov.

14. Where can I find more information about the Monarch Conservation Database?

More information about the database and its development is available on our website at <https://www.fws.gov/savethemonarch/MCD.html> You may also email your questions or feedback to FW3_monarchconservation@fws.gov

Table 1. Preliminary list of fields for the Monarch Conservation Database.

- Entering a Plan

- Provide plan logistics
- Upload plan documents

- Key fields for Conservation Efforts

- Zone
- County
- Associated Plan
- Acres
- Threats
- Activities
- Milkweed Density
- Blooming Forb Density
- Objectives
- Status

Literature Cited

Thogmartin, W. E., López-Hoffman, L., Rohweder, J., Diffendorfer, J., Drum, R., Semmens, D., ... Wiederholt, R.I (2017). Restoring monarch butterfly habitat in the Midwestern US: 'All hands on deck'. *Environmental Research Letters*, 12(7), [074005]. DOI: [10.1088/1748-9326/aa7637](https://doi.org/10.1088/1748-9326/aa7637)