Project Title: Milkweed Seed Collection and Monarch Waystations

April, 2021
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Project Description

In order to improve the quantity and quality of Monarch butterfly habitat in the Coastal Bend area, it is proposed that the Mid-Coast Chapter of the Texas Master Naturalist (MCTMN) implement, in a more expansive and coordinated manner, a currently approved project, *Monarch Watch: TPWD Nature Tracker*. The Monarch Watch program has 3 primary goals:

- Report Monarch sightings
- Create butterfly habitats
- Identify and propagate Texas milkweeds

The motivation for the proposed MCTMN project is due to increased concerns about and threats to the Monarch butterfly population, and because the 8 county MCTMN region is an important migratory and reproductive corridor for the species. As further support for taking action, the United States Fish and Wildlife Service stated in December, 2020, "adding the monarch butterfly to the list of threatened and endangered species is warranted…" under the federal Endangered Species Act.
The highest priorities of the project would be to create butterfly habitats, to include host and nectar plants, and to register the habitats under the Monarch Watch *Monarch Waystation* program. Registering the sites would provide information for the larger Monarch research and conservation community, and provide public outreach and education opportunities for MCTMN members. It is proposed that each of the 8 counties in the MCTMN region have at least one publicly-accessible and/or school-sponsored Monarch Waystation.

Primary action items:

1. Request MCTMN members to collect and store native milkweed seeds, in order to provide seeds for new and existing Monarch Waystations in the 8 county MCTMN region.*
2. Request MCTMN members to identify existing and potential new Monarch Waystation sites, and determine their implementation feasibility (e.g., site characteristics, permission/cooperation of site ownership and/or managers, MCTMN site steward).
3. Prioritize Monarch Waystation sites where seeding and/or planting will be conducted.
4. Request MCTMN members to participate in the planting of milkweed and/or nectar seeds and/or plants at the Monarch Waystation sites.
5. Request MCTMN site stewards or members to conduct annual monitoring of Monarch Waystations, to ensure that they continue to meet Monarch Watch recommendations and requirements (in particular, presence of host and nectar plants – see separate waystation attachment; recommended plant lists can also be provided).
6. Request MCTMN members to conduct monitoring of larval and adult Monarchs at the Monarch Waystations and elsewhere in the 8 county region.

* If desired, some seeds can be propagated by MCTMN members or cooperating growers, for the purpose of planting in the waystations identified in item 2. If the number of seeds collected exceeds the needs of the waystations, the MCTMN chapter can elect to use the seeds for sale or propagation of milkweed plants for fundraising, such as at the fall plant sale during the HummerBird Celebration and other events in the 8 county region.
Given the scope and magnitude of the project, full implementation may take several years, with recurring annual events or activities. Reporting codes could include one or more of the following: RM,

FR, NPA, CB, PO, AT. A budget for the project can be developed after additional information is available. Revenue sources could include the MCTMN treasury, MCTMN member donations, and possibly the Recovering America's Wildlife Act, should it be enacted.

Action Item 1. Discussion: Seed Collection and Storage

Initiation of action item 1 can proceed immediately, specifically requesting MCTMN members to identify sites where collection of native milkweed seeds can be conducted. Seed collection by MCTMN members can commence once milkweed pods have opened (generally April-June time period). Three widespread, spring-emerging milkweed species are proposed for collection, all which are known to serve as host plants for Monarch butterflies:

- Zizotes (Asclepias oenotheroides)
- Green Antelopehorn aka Green Milkweed (A. viridis)
- Antelopehorn (A. asperula)

Other native milkweeds are also acceptable, but must be identified.
Guidance for species identification, seed collection and storage is provided below in Appendix A.
MCTMN members would be requested to store seeds over the summer, for sowing in the fall. In order to keep track of the seed numbers and species, a centralized tracking system is recommended. Patrick Hartigan will volunteer to manage the tracking system. Mapping of collection sites is not proposed, as it is assumed that institutional memory of MCTMN members is adequate, but information on general location where collected (county, city) and species will be requested.

Action Item 2. Discussion: Identify Existing and Potential New Monarch Waystation Sites

Existing Monarch Waystations

A download of the Monarch Waystation Registry identified 20 existing waystations in the MCTMN region, located in 5 of the 8 counties, with 5 of the waystations being publicly-accessible (the remaining 15 appear to be on private property). Site visits of the 4 publicly-accessible waystations in Rockport, all which are Aransas Pathways sites, indicated that none actually meet the Monarch Watch waystation recommendations, in particular, the number of milkweed plants was less than 10 at each waystation.
It is recommended that these sites be rated a high priority for milkweed seeding and/or planting, in order to meet or exceed the Monarch Waystation recommendations and requirements (e.g., minimum 100 square feet, at least 10 milkweed plants, etc - see separate attachment). Several of the sites appear to have sufficient space to expand milkweed seeding/planting areas (Castro, Connie Hagar).

Potential New Monarch Waystations

It is proposed that MCTMN members identify potential new waystation sites in the 8 county region. Of highest interest are sites that would be publicly-accessible or on school properties (school science/biology projects).
Undoubtedly, there are or were existing Monarch-milkweed landscapes that have not been registered with the Monarch Watch program, such as the butterfly and pollinator gardens at Goose Island State Park and Aransas National Wildlife Refuge. The status of these should be determined, with the dual goals of (1) ensuring the sites meet waystation recommendations and requirements (see separate attachment), and (2) adding the sites to the Monarch Waystation Registry.
New sites which are not currently designed for Monarch-milkweed production/conservation are also a high priority, especially ones that would be publicly-accessible or on school properties. Existing parkland can be repurposed as a Monarch Waystation. Little used or remote parkland or other public lands are prime areas for investigation. Wildlife sanctuaries, including privately owned ones that allow public access, should also be investigated.

In general, potential sites should:

- be at least 100 square feet in size (no maximum size), which can be split into discrete plots
- be located in open, sunny areas which are not thickly vegetated with tall grasses or shrubs
- not be located next to roadways
- be protected from human disturbances such as foot traffic, pesticide applications, pets, and mowing/maintenance activities.

Preventing disturbance before and during migration and reproduction periods is crucial; northbound Monarchs typically arrive in the March-April period, taking 3-5 weeks from once an egg is laid to emerge as an adult. Thus, it is recommended that disturbance be limited or prevented from at least early March to the end of May (or March 1 – May 31). Waystations can also become sites for seed collection, and milkweed pods/seeds may not be harvestable until the summer, thus it is proposed that seed collection sites be left undisturbed until June 30 or later.

Waystations in publicly visible locations should be clearly delineated with signage and/or barriers, and landscape maintenance personnel trained appropriately.

Compilation of Waystation Information

Compilation of existing and potential new Monarch Waystations will be necessary. Patrick Hartigan will volunteer to create and maintain a tracking database, to include mapping of sites. MCTMN members should forward their information to him. An example database is provided as a separate document (Excel spreadsheet).

Once sites are registered in the Monarch Waystation Registry, their descriptions and locations will be stored by Monarch Watch, and will be viewable by the general public and researchers.

Action Item 3. Discussion: Prioritize Monarch Waystation Sites

Prioritization of existing and potential new Monarch Waystation sites will be necessary primarily because of several unknowns:

1. the number and species of collected milkweed seeds/plants that will be available
2. the number, size, and planting needs of existing and potential new sites
3. the availability of MCTMN members to serve as waystation stewards or participants

Answers to these may not be forthcoming until the summer or fall of this year. Once this information is available, a decision-making process will be required in order to establish priorities. As a hypothetical example, if 15 Monarch Waystation sites are identified, with 4,500 seeds needed (1,500 of each of the 3 Asclepias species), but only 3000 seeds are available, then sites must be eliminated, downsized, or otherwise reassessed in order for supply and demand to match. Making such decisions will necessitate involvement by MCTMN directors or members. The creation of a MCTMN Monarch Watch committee may be warranted.

Action Items 4 – 6 Discussion

As these are dependent upon the outcomes of action items 1 -3, they will not be elaborated upon at this time except, briefly, Action Item 4, planting of seeds and/or plants at Monarch Waystations:

Various sources recommend a seeding rate for native milkweeds of 1-2 seeds per square foot. However, this is believed to apply to bare soil or sites with little vegetation present, thus may not be strictly applicable to the MCTMN sites under consideration. For initial planning purposes, a seeding rate of 1 seed per square foot will be assumed. Seeds would be sown in the fall of 2021, though some seeds could be held over the winter, cold stratified, and sown in the spring of 2022. Plants, to the extent available, could also be planted in the fall of 2021 (these could include unsold plants from the HummerBird Celebration).

Appendix A. Seed Collection and Storage

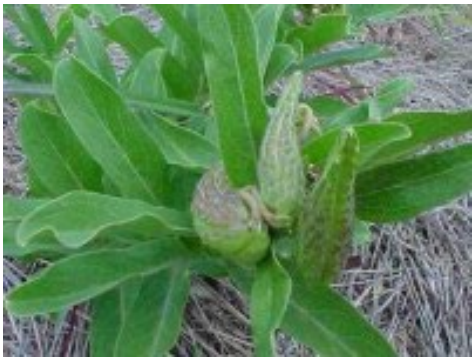
Before beginning seed collection, make sure you can identify the plant as a milkweed, and its species. The manual *Identification of Milkweeds in Texas* is available at the following link: https://tpwd.texas.gov/publications/pwdpubs/media/pwd_rp_w7000_1803.pdf.
The more common spring-summer species in the Mid-Coast Chapter eight county region are:

- Zizotes (*Asclepias oenotheroides*) – widespread but more likely than other species to be found along coast growing in sandy soil
- Antelopehorn (*A. asperula*) - typically grows inland on sandy loam to clay soils
- Green Antelopehorn aka Green Milkweed (*A. viridis*) – typically grows inland on sandy loam to clay soils

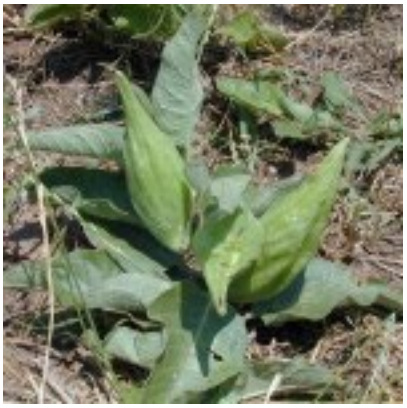
Collection and Storage Guidance

(compiled from NPSOT, SaveOurMonarchs.org, and Monarch Watch sources)
Collecting and distributing milkweed seeds responsibly insures a healthy milkweed habitat population. There are also the additional benefits of opportunity for education and developing relationships with private landowners and communities.
Collect only your native or regional seedpods. Leave some pods in the area you are collecting to insure the plants continue to propagate and thrive in that area. A good rule of thumb is to take 1/3 and leave 2/3.
Positively identify the plant before collecting the pods. Milkweed seeds look alike in most species and are very difficult to identify by the seed alone. Mark the collecting container with your name, the date, species common name, species botanical name, and the location of the collection. For instance: “Cathy Downs, 5/24/14, Antelope Horn (*Asclepias asperula*), Kendall County, Texas.”
Collecting is usually done on private lands, public right of ways and roadsides. When collecting milkweed seeds on public right of ways and roadsides remember safety first! Park in an area where there is no chance of disrupting traffic or putting yourself in harm’s way. Do not collect in areas near or around development or private gate entrances without permission. Curious onlookers and officials may stop to discuss or inquire about this roadside activity. Take the opportunity and the time to explain politely what you are doing and why. You may even be joined by these curious folks in your efforts or directed to additional areas where they have spotted some of these treasures.
Private property collection always requires permission. As milkweed ambassadors we cannot afford to alienate the private stewards of these habitats with any property infringement or trespassing issues on our part. A private permission form is available upon request.

Antelope Horns
(A. asperula)



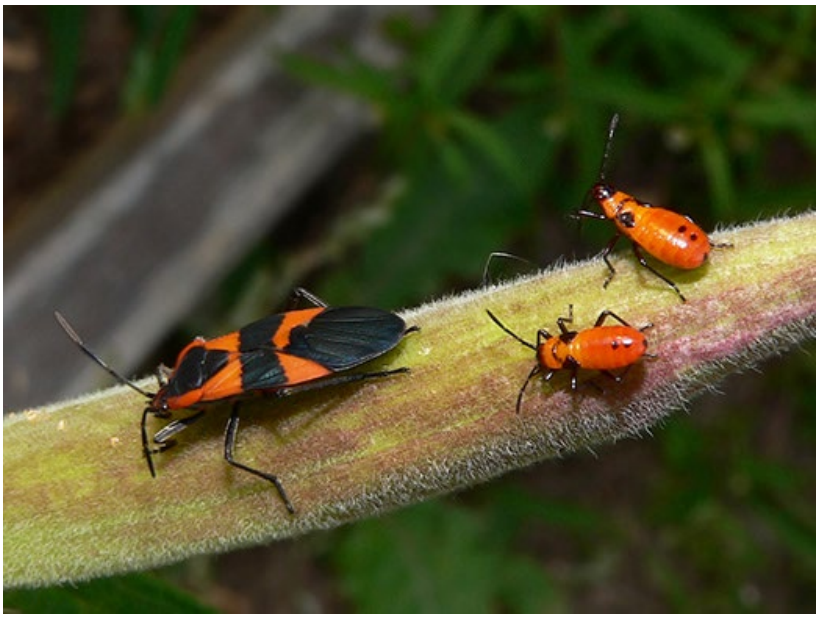
Green Milkweed
(A. viridis)



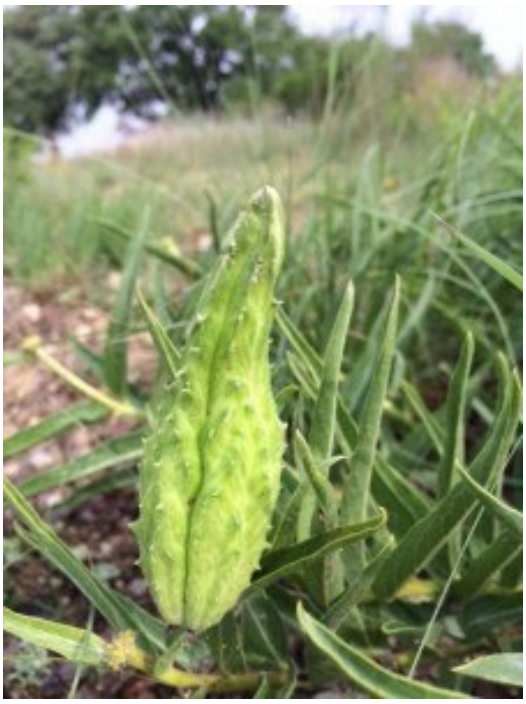
Hierba de Zizotes
(A. oenetheroides)

All milkweeds will put out a pod of some sort. The shape and surface texture may vary but the pods will all look similar.
When collecting pods be sure and have a dry cardboard box or paper bag to put the pods in. The milky sap is very sticky and fresh milkweed pods can mold very quickly. You can line the box with newspaper.

Line boxes with newspaper
Do not pick a pod before it's time. The seeds will not ripen in the pod when taken from the stem of the plant too soon. The seeds should be dark in color. Green or pale seeds are not ripe and will not propagate. You can remove the pod with a scissor or snips. Be very careful not to get any of the milky sap in your eyes or on your skin. Wash your hands thoroughly and often when handling milkweed.
Never harvest a pod until you see the seam of the pod straining or beginning to split. Be sure the pod is free of all flies, milkweed beetles and other seed eating pests. The pod will usually darken with maturity turning to a dark bark or mahogany color. Watch the seam on the milkweed pod which will start out thin and difficult to see eventually widening and turning pale. On maturity the pod will begin to split.

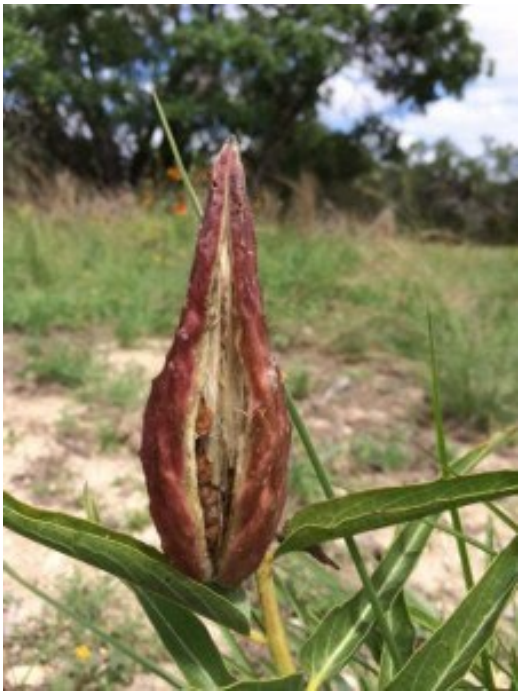


Large milkweed bug (Oncopeltus fasciatus) adult and two juveniles. Photo by Greg Hume. These bugs are seed feeders and destroy milkweed seeds. Avoid collecting and storing these insects with seeds or seed pods.



Not Ready

Not Ready



Perfect Picking

Easy Picking

After you remove the seeds, you'll want to let them dry out for 3 days to a week. Let them dry on cardboard in a well-ventilated area. A porch, mudroom, barn, or shed works well for this. If you are harvesting in the Spring, you can most likely skip this part unless it is after a rain.

Store dried seeds in a cool, dry place protected from mice and insects - a plastic bag (reclosable) or other container in the refrigerator works well. Label the bag with your name, the date, species common name, species botanical name, and the location of the collection. For instance: "Cathy Downs, 5/24/14, Antelope Horn (*Asclepias asperula*), Kendall County, Texas.