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Tropical Milkweed and Monarchs • Fairchild Conservation Team • Pigeonwings and Butterfly Peas

Tropical Milkweed: Harmful to Monarchs and Florida Ecosystems

Article and photos by Lilly Anderson-Messec

Above: Monarch butterfly. Below: Tropical milkweed (*Asclepias curassavica*) has two distinct color forms.

The International Union for Conservation of Nature recently added the iconic monarch butterfly to their Red List as Endangered, which has garnered much attention for the species, but no actual protections[1]. Unfortunately, the species is not protected under the U.S. government's Endangered Species Act – the U.S. Fish and Wildlife Service has found that adding the monarch butterfly to the list of threatened and endangered species is warranted but precluded by work on higher-priority listing actions[2]. The lack of any federal recovery plan for the monarch has made individual actions even more important, and many inspired and passionate people have taken up the cause by rearing monarchs in their own yards. However, collective aid for a species like this can be unintentionally harmful if not led by the latest science.

The reliance on non-native milkweed is proving to become just such an example. The red and yellow blooms of tropical milkweed, *Asclepias curassavica*, are ubiquitous in Florida butterfly gardens. This non-native milkweed has exploded in popularity as demand for milkweed grows to support declining monarch populations. A tropical species native to Mexico, *A. curassavica* is very easy to propagate, so growers are able to quickly produce plant material to meet public demand for milkweed. It's also very showy, blooming abundantly throughout the year and regrowing quickly after being decimated by hungry caterpillars. For these reasons, *A. curassavica* has become the only milkweed species readily available in U.S. garden centers.

Unfortunately, tropical milkweed has been spreading aggressively in Central and South Florida for many years and is now spreading in North Florida. Though not yet listed as invasive in Florida, tropical milkweed infests natural areas due to its fast growth and prolific re-seeding[3], and this unchecked growth replaces native plants and disrupts the ecosystems wildlife rely on. The invasive quality of *A. curassavica* is just one of the reasons removing tropical milkweed from your yard is recommended. Unlike Florida's native milkweed species, which naturally senesce (lose their leaves) in the fall, the lush green foliage of tropical milkweed will stay up all winter if not killed back by frost, and this has become another problem for the already imperiled monarch.

A protozoan parasite that evolved with monarch butterflies, *Ophryocystis elektroscirrha* (OE) lives on infected monarchs and is deposited on the plants they land on, especially when the butterflies lay eggs. The resulting caterpillars hatch and ingest OE as they eat the plant, and the parasite is able to replicate inside them. Those caterpillars will grow into butterflies infected with an increased load of OE that they will shed on other milkweed plants they land on, continuing the cycle[4].

Many species across the animal kingdom have evolved with parasites – humans included. These parasites are often not too harmful to their host since their own survival depends upon their host's survival. However, a sudden change in the host/parasite environment can disrupt this delicate balance, giving an advantage to one of the pair. If the parasite population accumulates beyond a certain threshold, it will disable or even kill its host. Monarchs evolved with OE and are naturally able to prosper while still carrying a small amount of the parasite. However, high OE levels in monarchs can cause them to fail to emerge from their pupal stage because they are too weak and unable to expand their wings fully.

Monarchs with slightly high OE loads can appear normal, though they are usually smaller in size. While they may survive with this burden, they don't live as long and cannot fly well, and often die on their migration to Mexico[4,5].

Florida's native milkweeds naturally senesce in the fall and stay leafless and dormant through the winter, effectively cleaning the plant of the seasonal OE parasite load. When the leaves die back, the parasite dies along with them so that when butterflies return each spring and summer, they feed on fresh, parasite-free foliage. In contrast, tropical milkweed remains evergreen throughout the winter, allowing OE levels to accumulate on the plant. The following generations of monarch caterpillars that feed on those plants are exposed to dangerous levels of OE[4,5].

As winters have become increasingly warmer in the Southeast, the invasive potential of *A. curassavica* is growing. Warmer winters also mean this species is less likely to be killed by frost and more likely to accumulate excessive OE on its leaves. Research has shown that warmer weather also increases the amount of cardiac glycosides in *A. curassavica*, which can be harmful to monarchs[6].

Tropical milkweed can also interfere with monarch migration and reproduction. In northern areas, it grows later into the season than native species do, and some studies have shown that the mere presence of tropical milkweed may confuse monarchs into breeding at a time when they should be migrating. Some evidence suggests the chemical composition of tropical milkweed may trigger this disruption of the natural migration cycle of the monarchs that interact with it[8]. This creates a trap for monarchs, as they are fooled into thinking that they have arrived in the safe wintering grounds of Mexico, when they have not – and the inevitable winter freeze kills them[6,7].

With mounting evidence of the detrimental effects of tropical milkweed, many organizations involved in monarch conservation, such as the Xerces Society and Monarch Joint Venture, have begun recommending against planting non-native milkweed – even going so far as to recommend NO milkweed if native species are not available. Many native plant nurseries have heeded the call to stop selling non-native milkweed species. Growers are still working to build adequate stock of native milkweeds to meet the ever-increasing demand. Though supplies of native species are limited, most agree that it is better to be without milkweed than to buy or sell tropical milkweed. Likewise, if you have it in your yard or notice it in natural areas, please consider removing it. While it may feed monarchs in the short term, it is harmful to the whole species in the long term.

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If you cannot find native milkweed species at your local garden center, request it! Be specific – ask for native Florida species by their scientific names, and choose ecotypes (plants adapted to the local environment). You can find a list of native plant nurseries and see what plants they carry at PlantRealFlorida.org – just click on 'Retail Nurseries', and select your county to see a map of nurseries in your area. It is best to call the nursery before you go to be sure of current availability, which may change daily. You can also search for a specific plant by clicking the 'Plants' link.

The Florida Wildflowers Growers Cooperative is an excellent resource for native Florida ecotype seeds, and they sell a few native milkweed species. Visit: http://www.floridawildflowers.com/categories/Seed-Packets/.

Which Florida native milkweed should I choose?

Florida has 21 species of native *Asclepias*, also known as milkweeds. Many of these species are slow to mature and can be challenging to grow. However, a few species are well suited for home gardeners and are becoming more available in the horticultural trade. Please be patient with local nurseries and growers as they work hard to provide an increasing variety

The Florida Invasive Species Council (FISC)
Definition of Invasive Species: *A species that (a) is nonnative to a specified geographic area, (b) was introduced by humans (intentionally or unintentionally), and (c) does or can cause environmental or economic harm or harm to humans.*

FISC collects research and compiles a list of Category I invasive plants (currently disrupting native plant communities) and Category II plants (plants with the potential to disrupt native plant communities). 166 plants are currently listed as Category I or II invasives in Florida, and the list is updated every two years. See the list here: https://floridainvasivespecies.org/plantlist.cfm

Why is *Asclepias curassavica* problematical?
Although *A. curassavica* is not currently on the FISC invasive species list, its potential to become a problem in Florida is high. For example, The Institute for Regional Conservation has documented the presence of *A. curassavica* in 50 conservation areas in the southern portion of Florida, clearly indicating the plant's ability to spread to natural ecosystems. https://regionalconservation.org/ircs/database/plants/PlantPage.asp?TXCODE=Asclcura

The UF/IFAS Assessment of Non-Native Plants in Florida's Natural Areas lists the plant's status as "caution – manage to prevent escape" for South Florida. It also requests input from land managers and scientists to complete an evaluation of the species in Central and North Florida. https://assessment.ifas.ufl.edu/assessments/asclepias-curassavica/

Pink swamp milkweed (*Asclepias incarnata*).

White swamp milkweed (*Asclepias perennis*).

Butterflyweed (*Asclepias tuberosa*).

of native species. It takes years to learn the best propagation methods and to accrue adequate stock to supply the enormous demand. The following native species are the easiest, fastest growing, and most likely to be available at this time. These species adapt relatively well to different growing conditions and provide adequate leaf matter for hungry caterpillars:

Pink swamp milkweed (*Asclepias incarnata*)
A robust plant with pink blooms, *A. incarnata* grows 4-6 feet tall. Of all the native milkweeds, it provides the largest amount of foliage for caterpillars. These plants regenerate leaf matter quickly during the growing season and have a short bloom season in late summer. They grow best in full sun with moist to wet soils that are rich in organic matter. This species is adaptable in my Tallahassee yard, doing well in part sun with average moisture and clay soil amended with compost. Sandy soils can also be amended with organic matter to improve moisture retention.

White swamp milkweed (*Asclepias perennis*)
This floriferous native milkweed usually only grows 12-24 inches tall, continually sending up stalks topped with white blooms that sometimes have a pink blush. *A. perennis* thrives in full sun and moist to wet soils, and can often be found growing directly in water. This species is also adaptable to quite a bit of shade, average moisture, and clay soils. Sandy soils can be amended with organic matter to improve moisture retention. The leaves provide substantial larval food for butterflies, and the constant flowers attract adult butterflies and many other pollinators.

Butterflyweed (*Asclepias tuberosa*)
One of the most common and noticeable native milkweed species, butterflyweed's clusters of electric orange blooms are seen on roadsides from Florida to Canada. When buying plants with such a large native range, it is essential to find material grown from local seed sources in your region – called an "ecotype." This species grows best in full to part sun and average to dry soils, and can be very drought tolerant once established. I've found these plants to be tough, low-maintenance, and adaptable to sandy or light clay soils. However, they are not as quick to rebound with fresh growth after caterpillars have munched them, and are often not the first choice for monarchs since they are low in the toxic alkaloids that protect monarchs from predation. Butterflyweed typically blooms in spring and will often rebloom later in the summer.

BUYER BEWARE

When purchasing any native plant at a nursery, it's helpful to know what you are looking for and how to identify the plant before you buy – nurseries and growers make mistakes. Non-native, and even invasive species are sometimes erroneously labeled "native". Be especially careful when purchasing *Asclepias tuberosa* at large box stores that have been known to sell mislabeled tropical milkweed, *A. curassavica*, labeled as native butterflyweed, *A. tuberosa*. You can easily differentiate the two by looking at the leaves and stems (see comparison

Tropical milkweed (*Asclepias curassavica*) can easily be differentiated from Florida's native butterflyweed (*Asclepias tuberosa*).

photos above). Also, native *A. tuberosa* does not produce a noticeable amount of white, sticky latex sap when a leaf is broken, while *A. curassavica* will.

Few-flower milkweed, *Asclepias lanceolata* is another native species that can often be confused with tropical milkweed. It is not commonly available in the horticulture trade, but if you think you have found tropical milkweed in a natural area, make sure to confirm it is not actually *A. lanceolata* before you remove it. *A. lanceolata* flowers look very similar to *A. curassavica* flowers, but the leaves of *A. lanceolata* are much longer and more narrow, and the plants are generally more lanky and tall – see the photos above for a comparison of these species.

Florida native few-flower milkweed (*Asclepias lanceolata*) is sometimes confused with tropical milkweed (*Asclepias curassavica*).

References

1. IUCN. (2022, July 21). *Migratory Monarch Now Endangered – IUCN Red List*. https://www.iucn.org/press-release/202207/migratory-monarch-butterfly-now-endangered-iucn-red-list.

2. U.S. Fish and Wildlife Service. (2020, Dec. 15). *Endangered Species Act Listing for Monarch Butterfly Warranted but Precluded*. https://www.fws.gov/press-release/2020-12/endangered-species-act-listing-monarch-butterfly-warranted-precluded.

3. Institute for Regional Conservation, 2022 Floristic Inventory of South Florida. "*Asclepias curassavica* Naturalized in 50 Conservation Areas". https://regionalconservation.org/ircs/database/plants/PlantPage.asp?TXCODE=Asclcura.

4. Wheeler, Justin. (2018, April 19). Xerces Society. *Tropical Milkweed – a No-Grow.* https://xerces.org/blog/tropical-milkweed-a-no-grow.

5. University of Georgia, Project Monarch Health. (2019). *What is OE?* https://www.monarchparasites.org/oe.

6. Faldyn, M.J., Hunter, M.D. and Elderd, B.D. (2018). Climate change and an invasive, tropical milkweed: an ecological trap for monarch butterflies. *Ecology, 99,* 1031-1038. https://doi.org/10.1002/ecy.2198.

7. Satterfield, D.A., Maerz, J.C. and Altizer, S. (2015). Loss of migratory behaviour increases infection risk for a butterfly host. *Proc. R. Soc. B., 282.* https://doi.org/10.1098/rspb.2014.1734.

8. Majewska, A.A., & Altizer, S. (2019). Exposure to non-native tropical milkweed promotes reproductive development in migratory monarch butterflies. *Insects, 10*(8), 253. https://doi.org/10.3390/insects10080253.

Further Reading

Rearing Monarchs Responsibly. https://monarchjointventure.org/images/uploads/documents/Monarch_Rearing_Instructions.pdf

Share this fact sheet with local growers, farmers and nurseries to encourage them to grow native milkweed. *Why Grow and Sell Native Milkweed?* https://monarchjointventure.org/images/uploads/documents/Grow_and_Sell_Milkweed_Fact_Sheet_Final.pdf

About the Author

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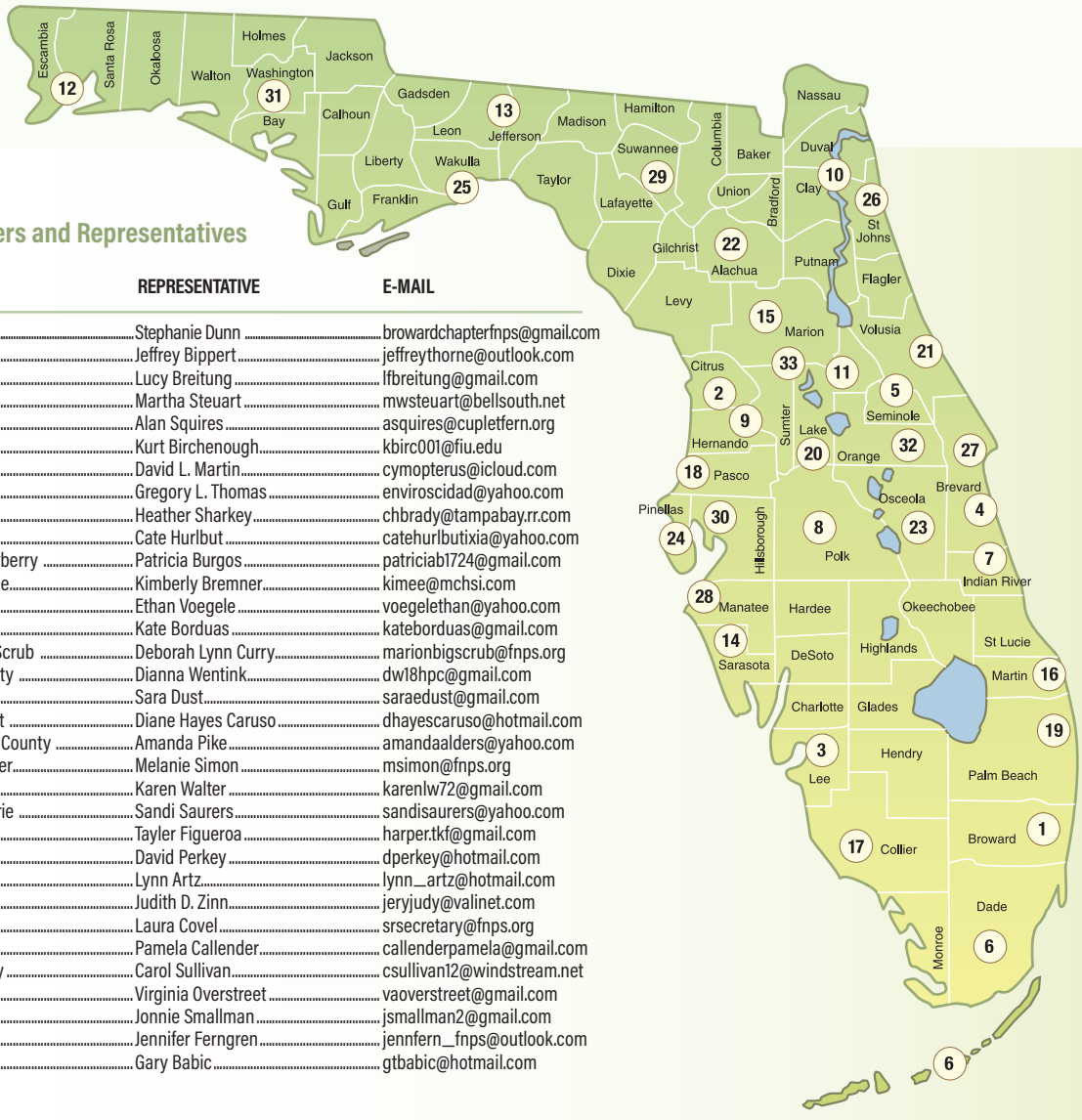

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