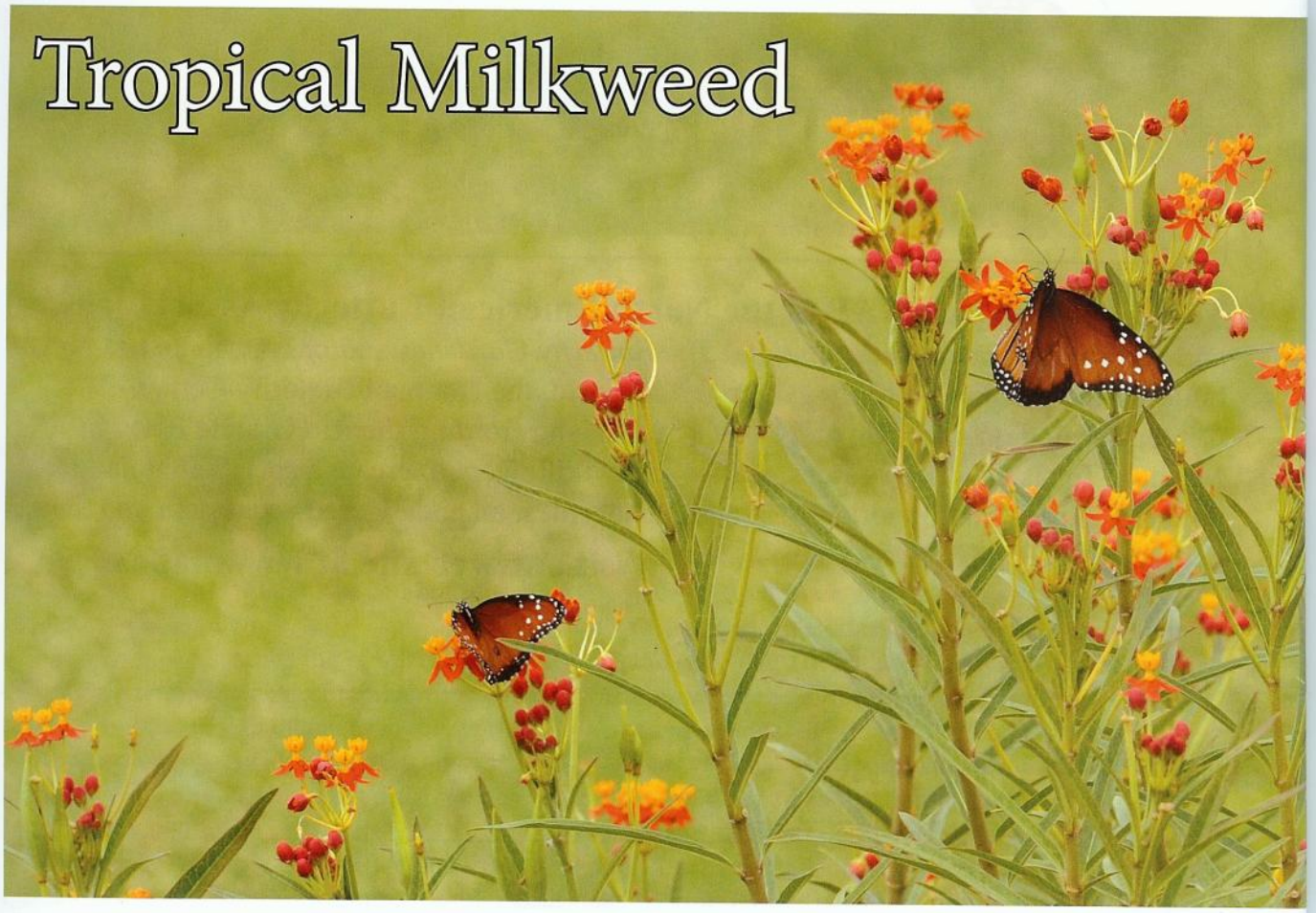
Tropical Milkweed



Let's ask a question:
"Can well-meaning people sometimes make things worse?"

(see page 10 for the answer)

Tropical Milkweeds are a preferred nectar source and caterpillar foodplant for Queens.

Sept. 12, 2013. National Butterfly Center, Hidalgo Co., TX.

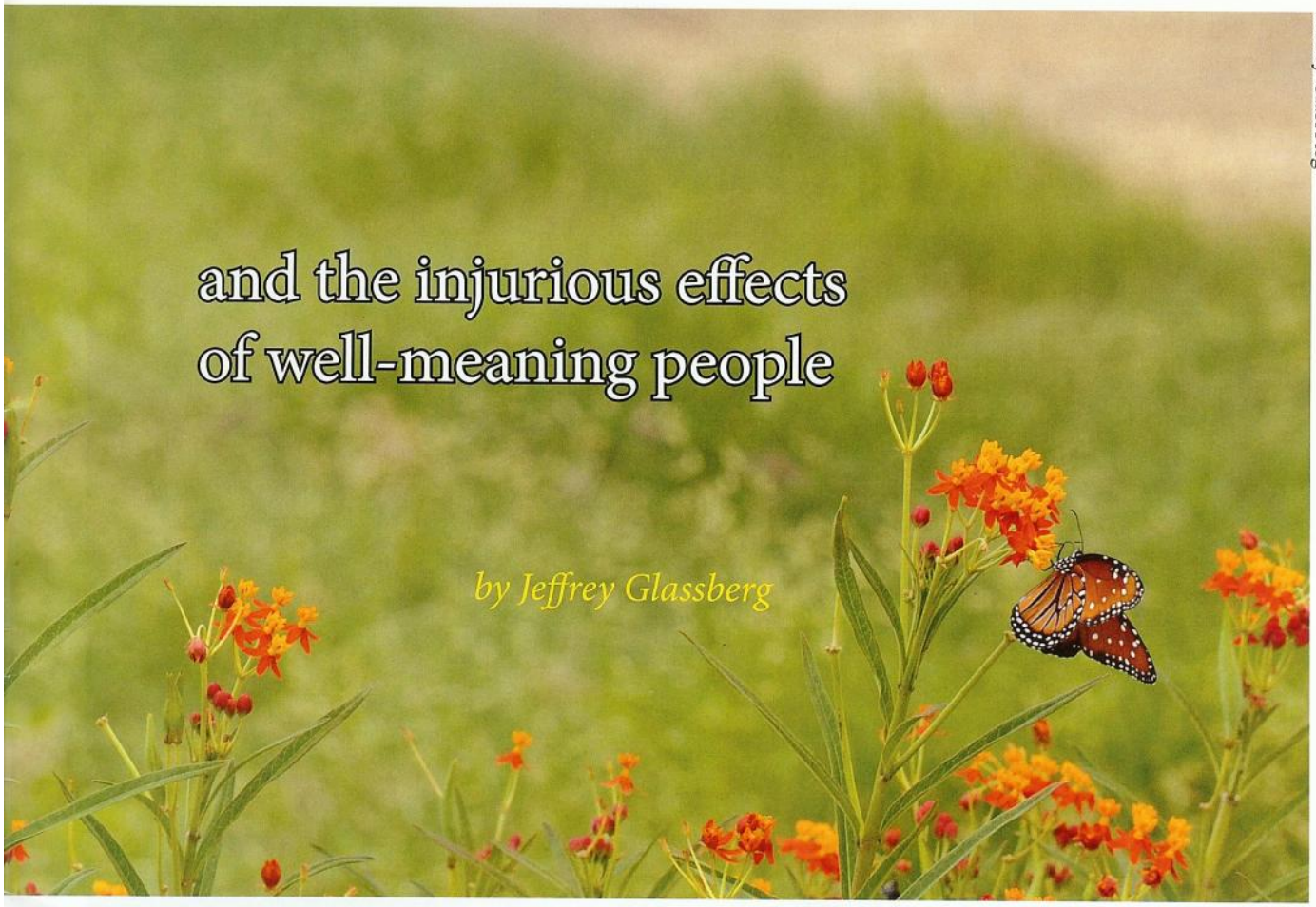
Recently, a number of people involved with Monarch research and conservation published opinion pieces in which they claimed that people who were planting Tropical Milkweeds might be harming Monarchs. Predictably, many media outlets picked up on this story.

Here's one congratulatory headline from the Jan. 30, 2015 Louisville, Kentucky Courier-Journal.

Do-gooder gardeners may harm monarch butterflies

Here's another, along with part of the story, from the Science Magazine website

Plan to save monarch butterflies backfires
By Lizzie Wade 13 January 2015 7:15 pm
It started with the best of intentions. When evidence emerged that monarch butterflies were losing the milkweed they



Jeffrey Glassberg

depend on due to the spread of herbicide-resistant crops in the United States, people across the country took action, planting milkweed in their own gardens. But a new paper shows that well-meaning gardeners might actually be endangering the butterflies' iconic migration to Mexico. That's because people have been planting the wrong species of milkweed, thereby increasing the odds of monarchs becoming infected with a crippling parasite… ***Tropical milkweed is "trapping the butterflies" in these new winter breeding sites*** [emphasis added, Ed.], says Lincoln Brower, a monarch biologist at Sweet Briar College in Virginia….***The work proves "absolutely definitively" that tropical milkweed is threatening the monarchs and their migration*** [emphasis added, Ed.], Brower says.

If people believe these headlines and the statements of Lincoln Brower and others, that planting Tropical Milkweeds anywhere in the U.S. is actually *absolutely definitively* threatening the Monarchs, people will, of course, stop planting Tropical Milkweeds.

As a result, the vast majority of people who are not die-hard butterfly aficionados may just walk away from the whole idea of planting milkweeds.

This would be a shame, because there is little evidence to support the idea that planting Tropical Milkweeds will weaken Monarch populations and NO evidence to support the idea that Tropical Milkweeds are "trapping" Monarchs and stopping them from migrating to Mexico.

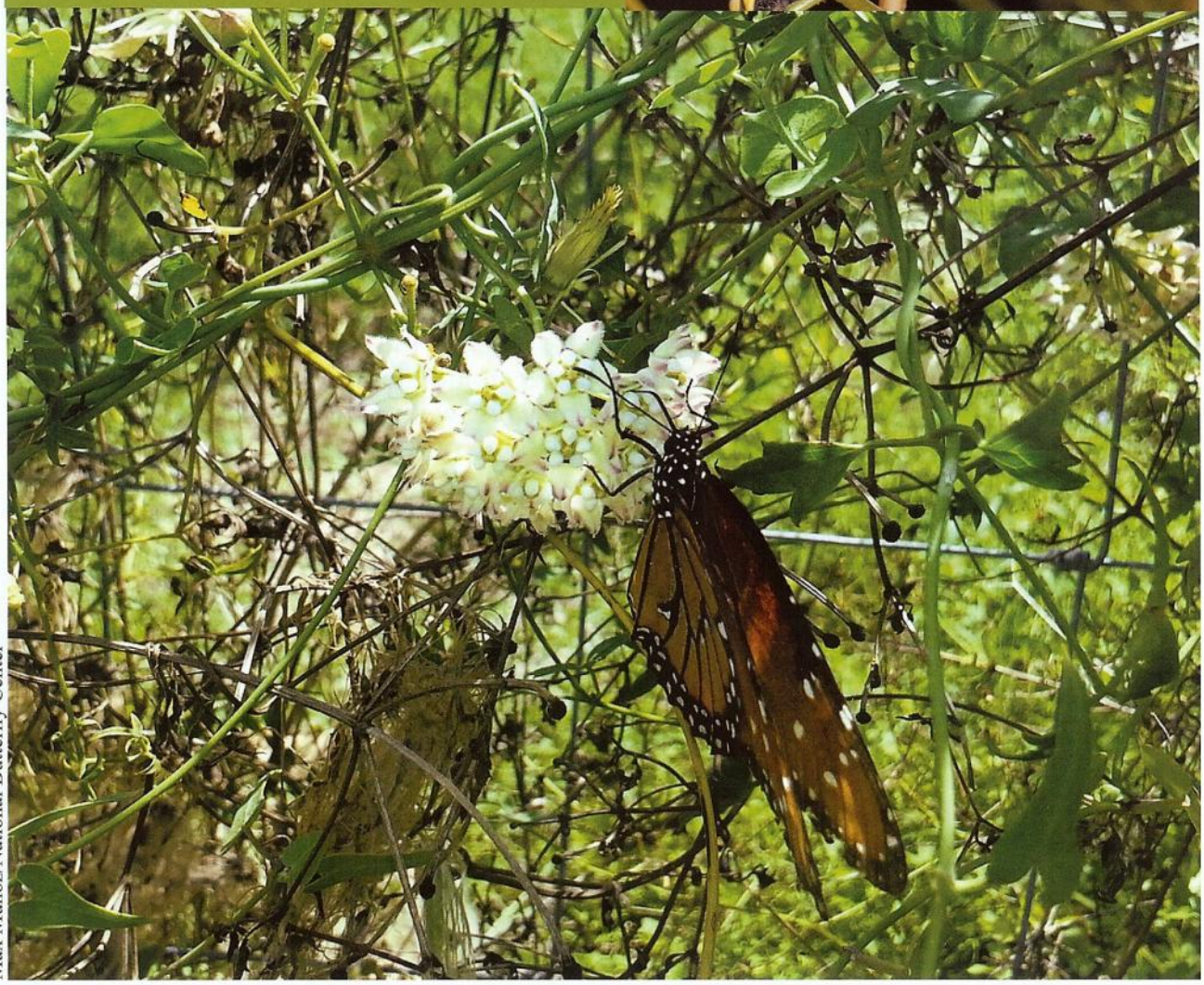
In addition, there is good reason to think that Tropical Milkweeds might increase the number of Monarchs and may become critical life-buoys, protecting migratory Monarchs from the projected loss of their overwintering grounds in Mexico.

In some areas of the United States, some species of native milkweeds are evergreen.

Right: A Monarch caterpillar chows down on Pineneedle Milkweed. Feb. 28, 2015. Tucson, Pima Co., AZ

Below: A Queen nectars at Fringed Twinevine, a Monarch and Queen host plant, growing wild at the National Butterfly Center on Jan. 22, 2015.

John Gilkey



Max Muñoz/National Butterfly Center

OE and Tropical Milkweed

Let's consider the claim that planting Tropical Milkweeds increases OE in Monarchs.

Ophryocystis elektroscirrha (OE) is a protozoan parasite infecting Monarchs and their relatives. Caterpillars ingest the parasite when eating milkweed leaves and when the caterpillar becomes an adult butterfly, the adult is also infected. When infected, and especially when heavily infected, adult Monarchs' health is impaired, as is their ability to undertake the arduous migration from the northern United States to their overwintering sites in central Mexico (Bradley and Altizer, 2005).

Recently, Satterfield *et al.* (2015) reported finding higher levels of OE infection in Monarchs during in the winter in the southern United States (52%) than they did in Monarchs during in late summer in the north (14%) or in winter at the Mexican overwintering sites (9%).

From these data they concluded that populations of Monarchs that are non-migratory are not able to cleanse themselves of OE. They also stated that "reports of monarchs breeding during the winter — rather than migrating or overwintering — have become common in the southern US. These behaviours are almost exclusively restricted to sites where tropical milkweed is present [citing Howard *et al.* 2010]."

The only mention of Tropical Milkweed in Howard *et al.* is "an observer reports that on January 8, 2009, monarch caterpillars were found on *A. curassavica* in its yard, and that no other milkweed species were present." More importantly, the conclusion that Monarchs breeding in the winter are almost exclusively associated with Tropical Milkweed is not true, because Monarchs are known to breed on native milkweeds in Arizona (Morris, 2015) and in Texas (Wahl, 2015) during the winter (see photos, opposite page).

Going further, based upon the reported higher infection rates in the southern United States during the winter, they, Satterfield and others, warn that planting Tropical Milkweeds will harm Monarchs.

However, many unanswered questions create uncertainty about these warnings.

For example, OE levels in Monarchs breeding in winter in southeastern Arizona are reported to be very low (4.5%)(Morris, 2015). Similarly, OE infection rates among non-migratory Hawaiian Monarchs reportedly ranges from 4.5% to 85%, a range that is not known to be correlated with host plant species and appears to be affected by local environmental conditions, possibly including temperature (Pierce *et al.* 2014).

In addition, about 60% of Monarchs overwintering on the California coast, an area without milkweeds, were found to be infected with OE (Leong *et al.*, 1992.).

These three examples strongly suggest that the level of OE infection might not be as highly correlated with non-migratory behavior and that the presence of an evergreen supply of milkweeds doesn't necessarily mean that OE levels will be high. as Satterfield *et al.* conclude.

Perhaps the higher levels of infection that Satterfield *et al.* found to be associated with Tropical Milkweeds were due to temperature effects or other factors not intrinsic to Tropical Milkweed (see below).

Let's, for argument's sake, say that we accept the conclusion of Satterfield *et al.*, that planting Tropical Milkweeds might increase OE infection in Monarchs. Even if this was true (but see prior discussion), there would be simple ways for butterfly gardeners to effectively remove any risk.

For example, treating Tropical Milkweeds as annuals in the northern states and uprooting them in Sept. would not increase OE levels and would create more habitat for Monarchs.

In peninsula Florida, planting Tropical Milkweed does not appear to threaten migratory populations at all, since Monarchs don't migrate through peninsula Florida to Mexico. Tropical Milkweed has been present in extreme southern Florida for at least 100 years and, as Dr. William Grant posted to NABA-Chat "In Dr. Fred A. Urquhart's book The Monarch Butterfly: International Traveler page 98, he states that in 1951 he traveled to the peninsula of Florida and found Monarchs there in winter, he also found them in California and Mexico and concluded 'that not all monarch butterflies migrated.'"

On the other hand, removal of Tropical Milkweed from Florida would probably wipe out, the non-migratory Monarchs present, along with Queens and Soldiers.

Thus, we are left with the Gulf Coast, southern Texas and southern Arizona as the only areas where there MIGHT be an issue. Tropical Milkweed is, according to the US Dept. of Agriculture-Agricultural Research Service, native to Nuevo Leon and Tamaulipas, the two Mexican states bordering southern Texas, and I have encountered Tropical Milkweed growing in these areas. Lincoln Brower has stated that "*curassavica* likely would not normally have entered Texas from Mexico in the past or future even with global warming. It does not tolerate desert conditions in its natural geographic distribution." (Maeckle, 2015) however, Nuevo Leon and Tamaulipas are not deserts, nor is southern Texas.

In addition, some native milkweed family plants that serve as Monarch caterpillar foodplants, including Fringed Twinevine, are evergreen in southern Texas. On page 7 you can see a photo of a Queen nectaring at a Fringed Twinevine flowerhead growing wild at the National Butterfly Center, on Jan. 22, 2015. In southern Arizona, a number of different native milkweeds are evergreen.

So, are all of these native milkweeds in southern Arizona and southern Texas (and northern Mexico) a direct threat to Monarchs? Should we remove them? I don't think so.

Are Tropical Milkweeds "trapping" Monarchs and preventing them from migrating to Mexico?

As mentioned earlier, it has been said that

Tropical milkweed is "trapping the butterflies" and "absolutely definitively" that tropical milkweed is threatening the monarchs and their migration

These statements are unsupported by data.

Journey North, a fine organization, has, for quite a few years, asked people to report Monarchs that they see in December, January and February. Elizabeth Howard, of Journey North, kindly sent me their data related to winter sightings of Monarchs. In 2002, the first year of data availability, people at 18 locations outside of peninsula Florida reported seeing Monarchs. In 2014, the year with the most recent data, people at 13 locations outside of peninsula Florida reported seeing Monarchs. Not exactly an exponentially increasing epidemic. And, of those who reported seeing Monarchs, 94% of the 294 reports over 13 years, were of fewer than 10 Monarchs. So, something like 400 Monarchs, or about 30/ year, were reported during the winter. Keep in mind that even with the greatly reduced number of Monarchs, it is estimated that more than 50 million Monarchs make it the Mexican overwintering sites each year (Monarch Joint Venture, 2015).

Are we to believe that the very small number of Monarchs that are seen at a few locations in winter are telling us that Tropical Milkweeds are threatening the successful migration of 50 million Monarchs? In most years tens of thousands of Monarchs migrate through the National Butterfly Center (NBC),

Locations from which Monarchs were reported in Jan. or Feb. (data courtesy of Journey North) for the first and most recent year data is available.

2002: 18 locations (north and west of Peninsula Florida)

2014: 13 locations (north and west of Peninsula Florida)

which is located in the Lower Rio Grande Valley of Texas but is somewhat to the east of the main migratory flight corridor. The NBC has Tropical Milkweed patches that support large populations of Queens and Soldiers. I can report that when the Monarchs move through the NBC, essentially all of them continue to fly south. In most years, none stay at the NBC during the winter. This year, which was abnormally warm in the Lower Rio Grande Valley of Texas, one or two did. The Tropical Milkweeds are not "trapping" Monarchs.

The reason that some Monarchs are now found in winter along the Gulf Coast and in southern Texas is that increased temperatures due to global warming now allow Monarchs to often survive in more northerly locations than was possible years ago.

The summer 2012 issue of *American Butterflies* was devoted to Monarchs. In it, Mexican researchers Cuauhtémoc Sáenz-Romero and Roberto Lindiz-Cisneros explained how computer models predict that the oyamel forests that currently support the Mexican overwintering Monarchs will succumb to global warming, leaving Monarchs with no overwintering grounds.

If, and when, this happens, wouldn't it be a good thing for there to be extensive areas in the southern United States that might serve as reservoirs for Monarchs that would then be able to repopulate more northern areas, much as Painted Ladies and American Ladies do now?

Most people know that many of the Monarchs born in the American West overwinter on the California coast. But was this always so? The overwhelming number of overwintering sites are in groves of non-native blue eucalyptus (from Australia) and the earliest record of Monarchs overwintering in California is from 1864. If the current crop of tropical milkweed doom-sayers were present when Monarchs shifted to overwintering on the California coast on non-native trees, one can imagine them springing into action to protect the purity of the Monarch migration. Would the Monarchs (not to mention the Californians) now be better off?

NABA has always encouraged the use of native plants. For example, an article by Ann Swengel, in the very first volume of American Butterflies (Summer, 1993) detailed all of the native milkweeds of the Midwest and how to propagate them. And, the National Butterfly Center in Mission, Texas, a major project of NABA, is now the largest botanical garden in the United States that focuses on the use of native plants in a garden setting.

However, despite NABA's overwhelming preference for, and love of, native plants, there are instances where non-native plants fill a butterfly need and that demonizing non-native plants is a misguided strategy that antagonizes many people who would be natural allies in our mission to conserve butterflies. Encouraging people to use plants native to their region is a good idea; calling people bad names because they have planted the usual, commercially available, garden plants is counterproductive.

In conclusion. The answer to the question "Can well-meaning people sometimes make things worse?" is yes,

and that those who have claimed, as a fact, that planting Tropical Milkweeds harms Monarchs, may have themselves harmed Monarchs by discouraging people from becoming involved and from creating more habitat for Monarchs.

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