



Why Native Plant Nurseries in South and Central Florida May Not Need to Promote Native Milkweeds for Monarch Butterflies

Steve Woodmansee

www.pronative.com

Originally drafted on April 8, 2014, revised and completed on July 25, 2023

Being a native plant seller and advocate I get a lot (and I mean a lot) of inquiries about why native milkweeds (*Asclepias* spp.) aren't being grown and sold, especially in south Florida. Why is native milkweed so high in demand? Because there is desire to replace the non-native Mexican milkweed (*Asclepias currasavica*) with a Florida native milkweed in order to have host plants for Monarch butterfly (*Danaus plexippus*) larvae. But should we?

I propose the theory that Monarchs were historically never common in Central and South Florida, however, Queen butterflies (*Danaus gilippus*) are common. The set of published data which supports this argument lies with studies conducted on another butterfly species, the Viceroy (*Limenitis archippus*). The viceroy is a species that mimics other poisonous butterflies (specifically Queen and Monarchs) in order to discourage predators from eating it. When a bird eats a monarch or queen butterfly it spits it out, as it tastes bad (as most poisonous things tend to do). Monarchs and queens have distinct warning colors on their wings to indicate to the predators that "hey, don't eat me, I taste bad, remember?" The viceroy however is thought to be tasty species to birds, and to have co-evolved with queen and monarch species by copying similar color patterns in order to fake out would be predators. This type of mimicry is known as Batesian mimicry, named after English naturalist Henry Walter Bates. This hypothesis is disputed here however: <https://uwm.edu/field-station/viceroy-butterfly-revisited/> Even so, the type of mimicry does not matter because if viceroys, queens, and monarchs are all toxic, then the mimicry is known as Mullerian mimicry (named for Fritz Muller), where two or more toxic or poisonous species have evolved to have similar patterns in essence becoming more efficient at discouraging predators.

For those of you who know your butterflies, you will notice that queens and monarchs do not resemble each other exactly, so how does the viceroy mimic both of them? Well, viceroys evolved a different color pattern depending upon where they live. Check out this paper entitled *MIMICRY-RELATED VARIATION IN WING COLOR OF VICEROY BUTTERFLIES (LIMENITIS ARCHIPPUS): A Test of the Model-Switching Hypothesis (LEPIDOPTERA: NYMPHALIDAE)* by David Ritland and Lincoln Brower: <http://www.troplep.org/Ritland-Brower-variation-mimicry-viceroy.pdf>

In areas where queens are more abundant, viceroys mimic queens, vice versa with monarchs. Viceroys in central and south Florida more greatly resemble queens. This would suggest that queens greatly outnumber monarchs in this region, making monarchs historically less common, and Ritland and Brower's data support this. Again, why would viceroys change their pattern to resemble Queens if Monarchs were also common? It should be noted that Queens' will lay their eggs on some milkweed



species (I have seen larvae on the native Green antelopehorn (*Asclepias viridis*)), however in South Florida they more commonly use Whitevine (*Funastrum (Sarcostemma) clausum*), which is listed as an *occasional* host plant for Monarch butterfly larvae by Minno et al. (2005), however I have never observed Monarch larvae feeding on Whitevine.

So as butterfly and native plant enthusiasts, what does that mean for us? Well, one of the zeitgeists of native plant gardening is to promote species that are historically native to our region. The above data may suggest that we would be better served promoting queen butterflies and their host plant (s) rather than monarchs. However, there are plenty of native milkweed species in south and central Florida, why can't we grow them? Well, we may and should try, but will they support monarch larvae?

The fact of the matter is, for now, native milkweed germplasm is difficult to cultivate for most milkweed species. Even if you get seed germination, plants are difficult to establish in the landscape. I have tried many times in my yard for three native species: Butterflyweed (*Asclepias tuberosa*), Whorled milkweed (*A. verticillata*), and Green antelopehorn. I have also tried the native Swamp milkweed (*Asclepias incarnata*) in my freshwater pond. Milkweed plants persist for a couple of years, but eventually disappear (or the former three species, even after fire is introduced).

Those few nurseries which do sell native milkweeds likely have a genotype that is not from down here. For example *Asclepias tuberosa* has a broad range throughout parts of the southeastern U.S. It is a well known host plant for monarchs in colder climes, however individuals of *A. tuberosa* native to central and south Florida are smaller than their northern cousins, and do not have enough leaves to support several monarch caterpillars. In addition, in South Florida, *A. tuberosa* does not form dense stands in nature, as do some other milkweed species, so it likely would be difficult to form dense stands of the species in one's own yard. Recently though, Fairchild Tropical Botanic Garden has been testing native milkweed species in the landscape since 2020.

Finally, I've spent the better part of my 52 years outside in nature, and have made 100's of observations of several milkweed species in south Florida. I have almost never observed monarch larvae on any of them. When you think about it, when in remote natural places of central and south Florida, how often do you see monarchs?

I realize that the monarch butterfly is doing poorly these days, and it is essentially the poster butterfly for raising caterpillars, and the host plants that use them. I used to think that it would be better for South Florida home owners to focus on supporting other species of butterflies more typical of our area, however given Monarch's precarious status, it might be better to continue to provide plants and habitat for them here. I also realize that people will likely continue to want milkweed (even the Mexican native *Asclepias curassavica*), especially now that monarch butterflies are becoming so imperiled.

There are data showing that the non native *A. curassavica* is problematic for monarch butterflies. There is a link to a protozoan parasite found on the plants which is thought to weaken the adult butterflies making it difficult for them to migrate over long distances. This may be the case, however there are



other scientists who differ in opinions on this matter. One agricultural entomologist David James believes that the monarch butterfly migration is more dependent upon day length, and not whether the milkweed is present or not (i.e. monarchs migrate when days become shorter). In addition, evolutionary biologist Jaap de Roode who postulates that monarch butterflies may be attracted to the non native milkweed *A. curassavica* over native milkweeds because it is higher in naturally occurring toxic chemicals (cardenolides) which help mitigate the parasites in the adults. This is discussed by Florida garden expert "David The Good" <https://www.thesurvivalgardener.com/tropical-milkweed-harmful-monarch-butterflies/>

In addition, it is thought that monarch butterflies are residential in South Florida, that is they are here year 'round and either do not migrate, or only a few migrate. On a personal note (non scientific), I have observed monarchs using the non Florida native *Asclepias curassavica* for 45 years, and I believe this non native milkweed is the main reason why monarch butterflies are so common in suburban areas of South Florida.

Is it bad to grow the non native milkweeds in order to attract monarch butterflies? If they are the only plants keeping monarchs common in the suburban landscape, and monarch butterfly populations are plummeting across the country, I am not so certain it is a bad thing to grow and sell it. I personally do not grow *Asclepias curassavica* in my yard. I am still trying some native milkweeds in my landscape, but mostly in containers, and they still do not support many caterpillars. I do see monarchs in my yard on occasion. I do offer *A. curassavica* for sale, and I also offer the African native *Calotropis procera* (Giant Milkweed) which is also used by Monarch butterflies, but I inform all my customers on the issue.

Minno, Marc C., Jerry F. Butler, and Donald W. Hall. 2005. Florida Butterfly Caterpillars And Their Host Plants. University Press of Florida, Gainesville, FL.

Ritland, D.B. and L.P Brower. 2002. MIMICRY-RELATED VARIATION IN WING COLOR OF VICEROY BUTTERFLIES (*LIMENITIS ARCHIPPUS*): A Test of the Model-Switching Hypothesis (LEPIDOPTERA: NYMPHALIDAE). *HOLARCTIC LEPIDOPTERA*, 7(1): 5-11 (2002)