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TEXAS PARKS AND WILDLIFE

# The Texas Monarch Watch

Dedicated to the preservation of the Monarch migration in North America

Volume 5, Number 1



Government Publications  
Texas State Documents  
Spring 1999

MAY 26 1999

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## The Texas Monarch Watch

Why does Texas merit a special newsletter about the migration of the Monarch butterfly? Texas is a very special place in the life history of the Monarch. Virtually all Monarchs of the eastern population traverse our state from breeding grounds to overwintering grounds and visa versa, during both the spring and fall migrations. The spring migration through Texas is perhaps the best in the country. We are the only state with a spring tagging program. Although not nearly so conspicuous as the fall migration, the numbers of spring migrants are often of great enough magnitude that a reasonable number are tagged. We have been tagging and keeping calendars for spring Monarchs for the last four years and now have accumulated enough information to have a basic, but incomplete, understanding of the pattern of movement through Texas. Not surprisingly, Monarchs mainly follow the prairies northward. This is where most of the milkweeds are located. Spring egg and larval densities on the prairies are much greater than those in the other natural regions. See section entitled "The 1997 Spring Migration".

We also give in these pages an account of the 1998 fall migration. This one was very unusual - perhaps the most unusual that we have witnessed in the six years that we have been running the "watch". Basically the rhythmic, pulse-like cold fronts that usually characterize our fall weather failed to develop until the end of the first week of October, and then only weakly. This had a profound effect of the passage of Monarchs through our state. See the section within entitled "The 1998 Fall Migration".

A little information about us. The Texas Monarch Watch is a non-profit venture coordinated by William Calvert, with help from Melanie Pavlas. We are sponsored by the Wildlife Diversity Program of the Texas Parks and Wildlife Department and are supported by the Margaret Cullinan Wray Charitable Lead Annuity Trust, revenues obtained from the sale of tagging kits to volunteers, and donations from volunteers. We work closely with the National Monarch Watch coordinated by Chip Taylor at the University of Kansas, but operate independently from them. We run two "watches" per year - one in the spring, and one in the fall. We supply tags, tagging instructions, and information about last season's results in biannual newsletters. In return, we ask you to send us specific information about Monarchs in your area. We ask a modest sum for tags, calendars and instructional materials. For \$12.00 we will send you 24 tags, instructions about tagging Monarchs, a calendar to keep records of the passage of Monarchs through your area, a record sheet to record tagging data and two newsletters per year. For an additional \$5.00 we will send 96 more tags. New glueless tags are used. This new tag has revolutionized tagging. Volunteers may now expect the tags to go onto the wings, rather than gluing the butterfly to their fingers!

## Summary of what we have learned during previous "watches"

During the 1993-98 fall seasons, we discovered and confirmed that Monarchs used two separate flyways in their southward migration through Texas. One, the central flyway, appears to be much larger than the flyway located along the coast. The central flyway is amazingly predictable, varying little from year to year. Monarchs are usually thick in a 300 mile wide zone centered on a swat of terrain from Wichita Falls through Abilene and San Angelo to Del Rio and Eagle Pass.

The coastal flyway is much less predictable than the central flyway. In 1993 there was a strong migration through it. In 1996 many Monarchs were sighted, but only in parts of the flyway leading us to ask serious questions about where the butterflies originated. Prior to 1996 we assumed that the central flyway is serviced by the mid-western states and that the coastal flyway was serviced by the eastern states. Tagging records have confirmed that butterflies using the central flyway do originate in the mid-west, but so far, we have little evidence that butterflies using the coastal flyway originate in the eastern states. Their appearance last year at specific locations along the coast and their absence at other locations suggest that at least part of the coastal migration also originates in mid-western states.

## 1998 Fall Migration

Ample August rains assured a plentiful crop of milkweeds throughout most of Texas. Exceptions were the northern part of the state from Waco northward. About mid-August, the first Monarch reports of the season came in from the Texas panhandle, Oklahoma and very surprisingly from as far south as Uvalde. Not so surprisingly, they were also observed along the Texas Coast. During August and September, small numbers of Monarch adults, eggs and larvae have been reported through the years from numerous locations in coastal, central and northeast Texas, but rarely from extreme west and occasionally from east Texas. Over 20 adults were seen at Colorado Bend State park on 20 September, 1998. Other reports of adult Monarchs flying came from the Rio Grande Valley, the Austin area, Harper, Ft Worth, Abilene, New Braunfels, Kyle and Bandera. We

(continued on page 2)



## Fall 1998 continued...

presume that these early Monarchs are part of a breeding population that infiltrates our state from the north. These do not appear to be true migrants in that they do not roost in clusters and are not extremely directional in their flight. Most important, they are reproductive. Eggs and larvae are seen along with the adults and occasionally adults are seen ovipositing. We do not know how important this late summer breeding population is in the life history scheme of the Monarch butterfly. We need your help to find out!

The main body of migrants are not reproductive and roost in clusters at night. This migration, which usually hits North Texas with a bang during the closing days of September, fizzled completely in the fall of 1998. Only the panhandle seemed to have registered more Monarchs than usual. In early October, Stafford was hit with many and on October 9th, thousands were seen in Dumas. A weak cold front pushed into the state around the 5-6th of October. Abilene and Menard reported hundreds coming into roost, while less than a hundred were seen in the Fort Worth and Dallas areas. They were almost a week later than in past years. In the rest of Texas few were reported before the 8th of October. On 8 October, hundreds were seen in many places in central Texas and as far south as Del Rio. Reports of thousands came from Ciudad Acua on 20 October.

Another surprise during the fall of 1998 was the persistence of eggs and larvae well into October. In Central Texas Monarch larvae were plentiful on Mexican milkweeds (*Asclepias curassavica*) until the first hard freeze on 21 December. The presence of larvae had not been observed so late during previous falls.

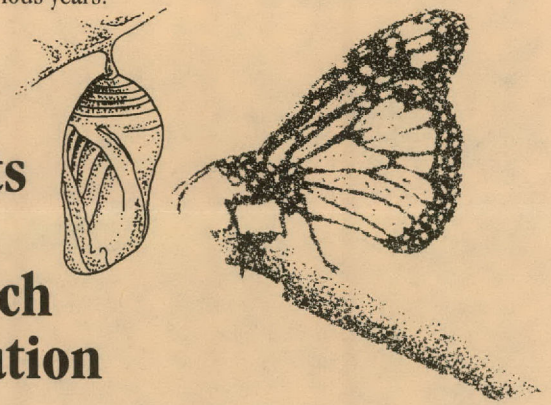
The persistence of Monarch larva in Central Texas and along the coast is most certainly an artifact of the popularity of the Mexican milkweed. This showy plant is a favorite of Texas gardeners and has in a few cases escaped into the wild along the coast. It has naturalized along stream courses in Mexico and serves as an important Monarch host there. The only native milkweeds that persist into November and December in Texas are milkweed vines. Monarch larvae use several species of these vines in the spring, but none have been found on them during the fall. If you have any observations concerning Monarch use of milkweed vines, we would appreciate hearing from you!

The first reports of the status of Monarchs at the Mexican overwintering grounds in Michoacan and the State of Mexico have come in! The cumulative size for all sites (12 in all) is about 6 hectares or about 15 acres of butterflies. The vast majority of these are concentrated in two sites: Chincua located north of the mining town of Angangueo and Rosario (also called Campanario) located south of Angangueo. The cumulative total for these two sites is about 4 hectares or 10 acres. Although 10 acres of almost pure butterflies is a sight to behold, this figure is considered very low in comparison with last year when there were 54 acres of butterfly colonies. The two principal sites, Chincua and Rosario, composed 20 of the 54 acres.

The report of low numbers from Mexico matches well with reports of the migration through Texas. The large aggregations of tens of thousands commonly reported last year and some previous years simply were not observed during the fall of 1998. It is tempting and natural to lament a decline of butterflies as indicated by these low

numbers. However, low numbers may only represent natural population fluctuations. Low population sizes in past years have been easily made up during good breeding years in the past.

The fall of 1998 was probably most unique for the lack of early cold fronts. It was our first opportunity to observe the flight behavior of Monarchs without the influence of strong fronts. Judging by what did not happen in 1998, it would seem that cold fronts have the effect of concentrating the Monarchs into discreet pulses. This is the most probable scenario. When winds are from the north, Monarchs are traveling in very directed flight and probably cover much ground. When the winds shift back to the south, they stop their very directed migration; but, they don't stop moving entirely. During this period they appear to seek out favorable riparian (stream side) habitats. The effect is that they accumulate sometimes into enormous concentrations. If strong south winds persist as they did during the fall of 1997, the Monarchs front become stationary and those of you fortunate enough to witness their presence are dazzled by their beauty. Once the wind swings back to the north, the Monarchs rise from their roosts en masse and sometimes darken the skies with their numbers. Last fall none of the conditions for accumulation were present. The numbers reported were small, both because the population size was down and because people didn't notice them as they had in previous years.



## Threats to the Monarch population

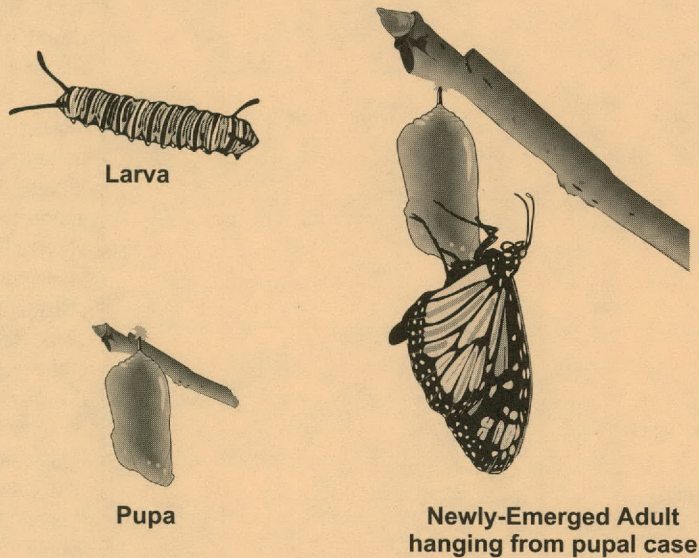
Having the growing data base available to us (supplied by you, the Texas Monarch Watch volunteers), allows us to better understand the effect of certain hazards to the Monarch population. One such hazard, the mowing down of milkweeds, has turned out not to be the threat that it was once thought to be. Mowing discreetly at times of the year that promotes the growth of wildflowers, may be an advantage to milkweed growth. Milkweeds are successional plants that do not relish competition from other plants. They seem to thrive under certain mowing regimes that allow full seed maturity and which are not too frequent.

There is another hazard, while not fully evaluated, that may become of serious importance to the Monarch. This is the growing use of "BT corn" in the midwestern states. BT corn is laced with *Bacillus thuringiensis*, a bacteria, one strain of which interferes with the digestion of Lepidoptera (butterflies and moths) and kills them. BT producing genes are genetically "spliced" into the corn plants so that all of their tissues produce them. Monarchs, of course, do not eat corn, but they do eat nearby milkweeds onto which BT laced pollen has been blown. A recent study using the predictable distribution of heavy isotopes of hydrogen has shown that most Monarchs come from a belt to the mid-western United States that stretches from Iowa to New York. This is where most of the corn crop is produced.

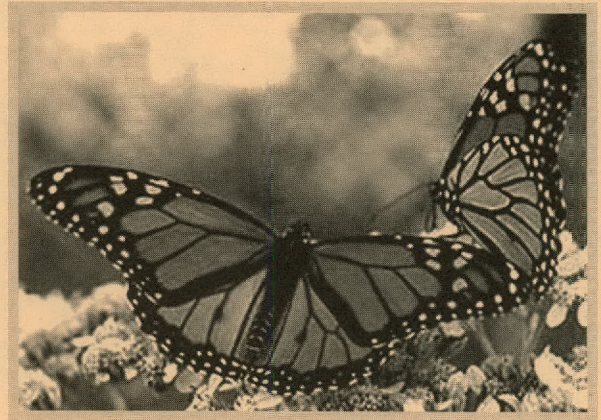


# The Lifecycle Of The Monarch

In general, Monarchs spend about three days as an egg, fifteen days as a larva, and about twelve days as a pupa. The rate of the development of Monarchs in all life stages, however, depends on temperature. As the temperature increases, the rate of development increases in a linear relationship. The minimum temperature for development ranges from about 50-57°F, at temperatures above 91°F, development is retarded.



*Male and female Monarchs can be distinguished easily. Males have a black spot on a vein on each hind wing that is not present on the female.*



**Adult Male Monarch**



**Female Adult Monarch**

## How To Handle Monarchs

For tagging purposes there are two good ways to capture monarchs: 1) Off flowers while they are taking nectar and 2) From roosts at night or in the early morning when it is cool. During all but the coldest weather, butterflies taken from roosts must be cooled immediately either over ice in an ice chest or in a refrigerator to prevent them from damaging their wings. Do not allow them to flap around in the net or to become immersed in water in a cooler. If an ice chest or refrigerator is not immediately available, **carefully** wrap them in the net which you used to capture them and then cool them as soon as possible. Cooling them and then taking them out of a cooled chamber one at a time to be tagged will ensure that they do not damage their wings trying to escape.

Catching monarchs off flowers requires a different strategy. Their flying agility and speed is directly related to the temperature, so the cooler the butterfly the more likely you are to catch it. On cold or cool days you may have better luck. Catching them during the hottest part of the day requires great skill and much energy.

You will have to handle monarchs to tag them. Most species of butterflies have loose scales that slip off when they are grabbed by a potential predator. You do them a disservice by removing these scales prematurely. Monarchs have scales that are not so easily removed. Nonetheless you should be extremely careful in handling all butterflies. They should always be held by both forewings, preferably near the forward margin. Here the scales are attached the most firmly. Another method is to hold them from below by their thorax. This way you may spread and examine their wings.

**Y**ou will find a calendar on the two center pages of this Texas Monarch Watch Newsletter insert. **We cannot emphasize how important the calendars are.** You, the volunteers, extend our observational capabilities to the entire state. By comparing your calendar with others and with weather records, we can determine how long the butterflies remained in your area, when they moved and how fast, and when and where they stopped again to rest and feed while the winds were not favorable. We wish to encourage you to daily post your observations to these calendars (including zeros if no Monarchs are observed) during the spring of 1999.

***Thank you for supporting the  
Texas Monarch Watch!***



# 1999 SPRING CALENDAR

Activity Date	Number of Monarchs doing the following				Approx. wind direction & speed	Approximate time spent observing
	Roosting in trees	Nectaring from flowers	Flying	Total Observed		
March 10						
March 11						
March 12						
March 13						
March 14						
March 15						
March 16						
March 17						
March 18						
March 19						
March 20						
March 21						
March 22						
March 23						
March 24						
March 25						
March 26						
March 27						
March 28						
March 29						
March 30						
March 31						
April 1						
April 2						
April 3						
April 4						
April 5						
April 6						
April 7						
April 8						
April 9						
April 10						
April 11						
April 12						
April 13						
April 14						

Location:

Name:



**Remember:**

If you see Monarchs at locations outside of your county, please use a separate calendar for each location, or make appropriate notes on this calendar. Please estimate the number of Monarchs observed in the appropriate columns. Try to count the butterflies. Descriptions such as many or lots are hard to interpret. If you see large numbers of Monarchs passing overhead, try to count the number per minute and record approximately how long you observed them passing. If no Monarchs are observed in an activity, please record zero. "Total Butterflies" is the sum of the four columns to the left. If you are unable to observe on some dates, please note so. Upon completion return to: Wm. Calvert, Wildlife Diversity Program, TPW, 4200 Smith School Road, Austin, TX 78744. Thank you for participating in our program.



Activity Date	Number of Monarchs doing the following				Approx. wind direction & speed	Approximate time spent observing
	Roosting in trees	Nectaring from flowers	Flying	Total Observed		
April 15						
April 16						
April 17						
April 18						
April 19						
April 20						
April 21						
April 22						
April 23						
April 24						
April 25						
April 26						
April 27						
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May 14						
May 15						
May 16						
May 17						
May 18						
May 19						
May 20						

Location:

Name:



# 1999 SPRING CALENDAR



# Texas Milkweed Flora

Monarchs are of course intimately tied to their foodplants and an understanding of the Monarch migration must include an understanding of the milkweed flora. Texas has a very diverse milkweed flora - 36 species - according to the great work on Texas flora, Correll and Johnston's *Manual of the Vascular Plants of Texas*.

But most of these species are not abundant and, therefore, are not of great importance to Monarch reproduction.

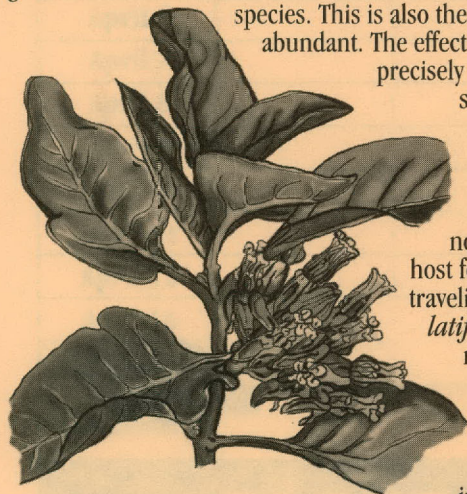
One of the sub-goals of the Texas Monarch Watch has been to determine the distribution of milkweeds important to Monarchs. Here's what we have learned so far.



*Asclepias viridis*

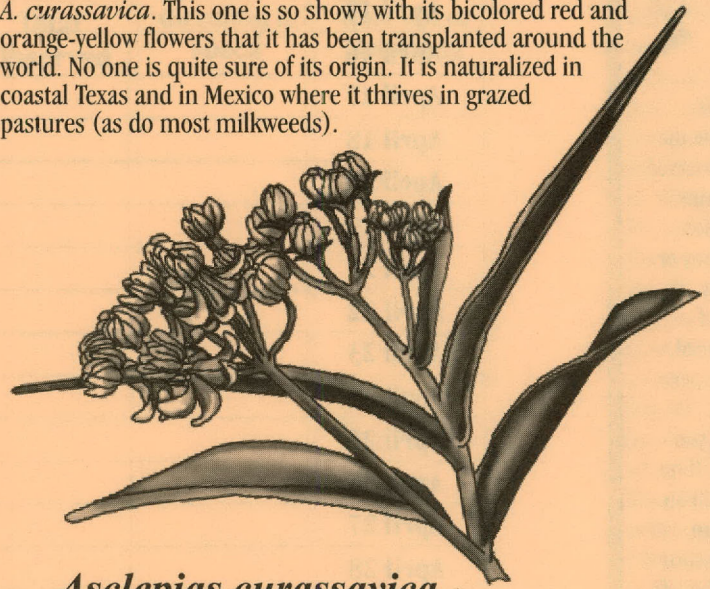
(Scientific names are used here because of the confusion arising from duplication of common names. At the end of this section we list the most reliable of the common names).

The wooded sections of east Texas have small scattered populations of *Asclepias viridis* and *A. tuberosa* located mainly along roadsides. *A. tuberosa* emerges too late for the first passage of Monarchs returning from Mexico, but may be important for subsequent spring generations in Texas. East-central and south Texas, mainly east and south of I 35, have an enormous population of *A. viridis*. This is likely the most important host plant for Monarchs in the state. The greatest number of Texas Monarchs are raised on this species. This is also the area where fire ants are most abundant. The effect of fire ants on Monarchs has yet to be determined, but preliminary evidence suggests that it is devastating. The west central Texas areas of the Hill Country and Rolling Plains have mainly *A. asperula*, but also some *A. oenotheroides*, and even less *A. viridis*. Traveling westward beginning around Junction, *A. latifolia* begins to appear. This plant does not come up early enough in the spring to be an important host for Monarchs, but it may be important for Monarchs traveling south in the fall. Not much is known about the *A. latifolia* population. *A. oenotheroides* is the sleeper, meaning the full importance of it as a host is not yet known, but it has the potential of being important. Although it is clearly densest on the prairies, its range includes all of Texas except for the western deserts and eastern forests. It certainly rivals *A. viridis* in importance to Texas Monarchs.



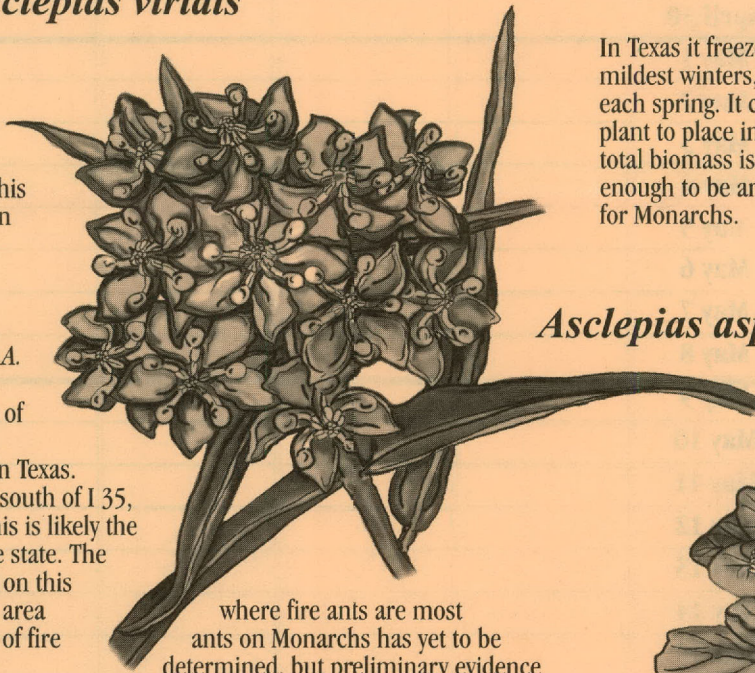
*Asclepias oenotheroides*

Finally, we mention the non-native, very popular garden milkweed, *A. curassavica*. This one is so showy with its bicolored red and orange-yellow flowers that it has been transplanted around the world. No one is quite sure of its origin. It is naturalized in coastal Texas and in Mexico where it thrives in grazed pastures (as do most milkweeds).



*Asclepias curassavica*

In Texas it freezes back during all but the mildest winters, but usually comes back each spring. It continues as a popular plant to place in butterfly gardens, but its total biomass is probably not significant enough to be an important source of food for Monarchs.



*Asclepias asperula*

where fire ants are most abundant. The effect of fire ants on Monarchs has yet to be determined, but preliminary evidence suggests that it is devastating. The west central Texas areas of the Hill Country and Rolling Plains have mainly *A. asperula*, but also some *A. oenotheroides*, and even less *A. viridis*. Traveling westward beginning around Junction, *A. latifolia* begins to appear. This plant does not come up early enough in the spring to be an important host for Monarchs, but it may be important for Monarchs traveling south in the fall. Not much is known about the *A. latifolia* population. *A. oenotheroides* is the sleeper, meaning the full importance of it as a host is not yet known, but it has the potential of being important. Although it is clearly densest on the prairies, its range includes all of Texas except for the western deserts and eastern forests. It certainly rivals *A. viridis* in importance to Texas Monarchs.

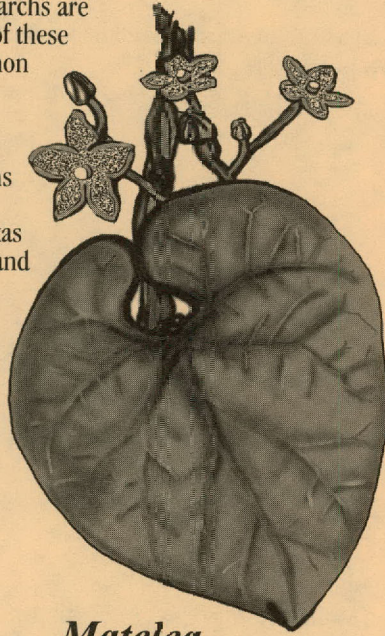


*Asclepias latifolia*



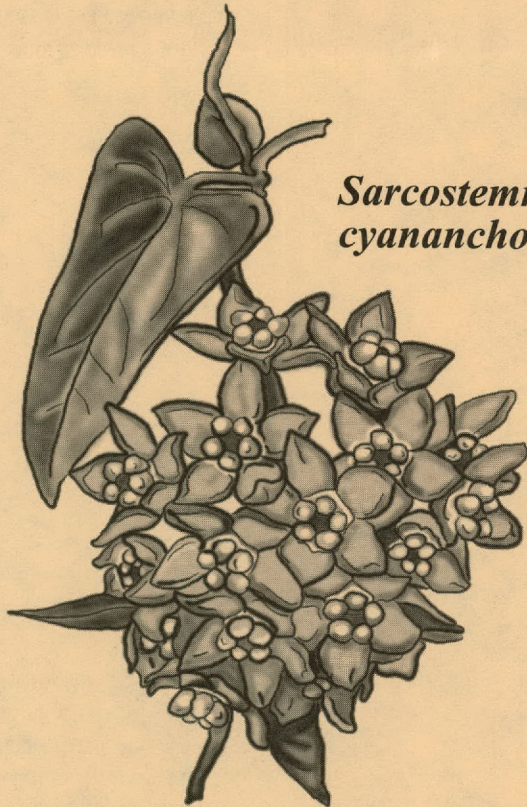
## Texas Milkweed Flora (continued)

Another possible food source for Monarchs are the vine milkweeds. The importance of these is almost totally unknown. One common vine milkweed is the pearl milkvine, *Matelea reticulata*. This is an important food plant for the Queen butterfly (*Danaus gilippus*). Monarchs apparently do not use it. Hardly anything is known about the other Texas milkvines in the genera *Cynanchum* and *Sarcostema*. With your help, we will continue to gather information about these hostplants. Many of you have become superb botanists and can distinguish these species. We would like to encourage others to learn them, to monitor Monarchs on them, and to transplant them into school and home gardens.



*Matelea  
reticulata*

For more information about butterfly gardening and gardening for wildlife, please contact the Texas Wildscapes Coordinator at 512-389-4974, at [kelly.bender@tpwd.state.tx.us](mailto:kelly.bender@tpwd.state.tx.us), or at the TPW Headquarters address and phone number on the back of the newsletter.



*Sarcostemma  
cyananchooides*

*Cynanchum  
barbigerum*



## Texas Milkweeds important to Monarchs

*A. asperula*, Antelope horn milkweed: Mostly found in the Hill Country and to the west.

*A. curassavica*, Mexican milkweed: Sometimes called butterfly weed. A bicolored, showy plant, very popular in gardens.

*A. latifolia*, Broadleaf milkweed: A most peculiar looking milkweed

*A. oenotheroides*, Hierba de Zizotes: Pale yellow flowers with long hoods.

*A. tuberosa*, Butterfly weed: A showy pure orange flowered milkweed that is sometimes confused with the Mexican milkweed.

*A. viridis*, Green or green-flowered milkweed: Abundant on grazed prairies.

Previous versions of the newsletter have featured common Texas milkweeds whose distribution is within the central part of the state. In this issue we cover a common, but unusual looking West Texas milkweed, *Asclepias latifolia*. Also featured are several milkweed vines, *Matelea reticulata*, *Sarcostemma cynanchioides*, and *Sarcostemma crispum*, which may or may not be important as Monarch hosts. We would like you to tell us if Monarchs use these species in your area.

What we would like you to do:

- 1) Identify milkweeds in your area and look for eggs and larvae on them. Report their presence as accurately as possible.
- 2) Look for milkweed vines. See if Monarchs or Queens use them as host plants.
- 3) Keep a calendar of the presence and abundance of Monarchs in your area.

Monarch Web Tracking at  
<http://monarch.bio.ukans.edu>



# Participate in the Spring Program

We now have two hotline numbers, one to request information or tags and the other to report monarch sightings. You may request information, order tags and/or a calendar for the 1998 fall program in two ways:

call the TPW information line **(800) 792-1112**, press **0** and ask for extension 4464

(in Austin, please use the local number **512-389-4464**)

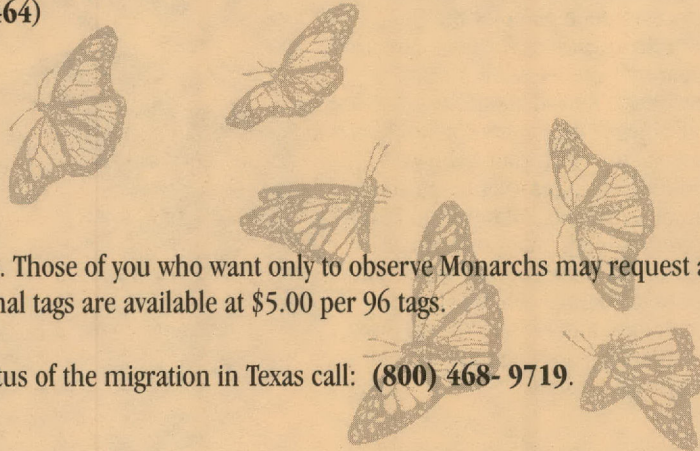
or write: Texas Monarch Watch

Wildlife Diversity Program

Texas Parks and Wildlife

4200 Smith School Road

Austin, Texas 78744



The Hot Line is faster. We will send a calendar with each order for tags. Those of you who want only to observe Monarchs may request a calendar only. A complete tagging kit with 24 tags cost \$12.00. Additional tags are available at \$5.00 per 96 tags.

To report Monarch sightings and/or listen to a recording about the status of the migration in Texas call: **(800) 468- 9719**.

In Austin, please use the local number: **(512) 326-2231**.

**The Texas Monarch Watch** is dedicated to the preservation of the Monarch migration in North America.

*Sponsored by:* Wildlife Diversity Program of Texas Parks and Wildlife  
The Margaret Cullinan Wray Charitable Lead Annuity Trust

PWD BRW7000-256 (3/99)

Texas Monarch Watch  
Wildlife Diversity Program  
Texas Parks and Wildlife  
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Austin, TX 78744

