Larva Lore: Articles on Raising Butterflies

Charles Cameron

The Variegated Fritillary (VF) is a dull orange brown butterfly about the size and general appearance, including the darting flight, of an American Lady. In my opinion it does not have a particularly striking appearance as an adult. However, both the caterpillar and the chrysalis are very striking and seem to make up for the drabness of the adult butterfly. I would describe the caterpillar as barn red with black and white markings and black spines along its body. The chrysalis is a pale green/white with black splotches and iridescent coppery looking highlights which looks like a polished chip of Italian marble. Pictures of both the caterpillar and the chrysalis can be seen in <u>The Butterflies of West Virginia and Their Caterpillars</u>, 1997, by Thomas J. Allen. (Note: In a future column I plan to list books that I have found to be good references for photos of caterpillars and chrysalises. However, I mention Allen's book now since I consider it a good reference due to its extensive listing of butterflies also found in the Carolina's. I would therefore recommend it as a first reference for caterpillars and chrysalises of butterflies that are known to be found locally.)

In late May I observed a VF ovipositing on the old flower heads of pansies. The resulting caterpillars were observed feeding on flower petals, some leaves and quite frequently the still green seedpods. This leads me to the following consideration. While it is often recommended (and practiced) to deadhead the old blooms of many flowers, the butterfly gardener that does so with pansies is probably eliminating a preferred ovipositing location and may also be removing some already deposited eggs. Next year one might plan to maintain some pansies as late spring host plants (without deadheading) for the VF's in your neighborhood.

In late August I observed a VF ovipositing on small (1-2") violet plants that were emerging through a wood chip ground cover. This time the smallest, immature leaf on each plant was selected as the preferred site. Also, Jim Nottke reported to me that he has seen VF caterpillars feeding on Passion Flower vine.

VF butterflies tend to spend a shorter time in the chrysalis than do Monarch's or Swallowtail's. The ones I observed in July emerged after only 5 days while the ones in September required 8 days before emerging. An interesting characteristic of the VF chrysalis is that it is sensitive to touching or other disturbances and usually starts twitching fairly rapidly when touched or disturbed.

Unfortunately, I am unable to locate the source but I seem to recall reading a statement or speculation that the VF overwinters as an egg or 1st instar caterpillar on the ground in the location where violets will emerge in the spring. (Comments or clarification of this point are encouraged and welcome.)

Larva Lore #3: Pipevine Swallowtails (Battus Philenor)

The Pipevine Swallowtail (PvS) is one of several very dark (nearly black) swallowtail butterflies. Some people remark that at a distance it looks like a plain black butterfly with no other distinguishing marks apparent. Up close, the upper side of the hind wing appears iridescent blue or blue green with a row of whitish spots. In the female this row of whitish spots extends onto the fore wing. The under side of the hind wings have the orange markings typical of most other swallowtail butterflies.

As enthusiasts gain experience studying butterflies they come to realize the critical role that the host plant plays in the life cycle of butterflies. The host plant for PvS (Aristolochia) seems to be cloaked in mystery and can create considerable discussion as evidenced by the postings on the carolinaleps list server last Fall. For this reason I felt that PvS's might be a timely topic for a column based on the experiences of others since I cannot yet claim any personal experience raising Pipevine Swallowtails.

Two species of Aristolochia are considered native to North Carolina. A. serpentaria (Virginia Snakeroot) is a ground hugging vine that is scattered throughout the state and is probably the only native Aristolochia in the piedmont area. Its usual habitat is mixed deciduous forests, woodland margins
and stream banks. It may be overlooked since usually only the leaves and part of the stems show above the leaf litter. A. macrophylla (Dutchman's Pipe) is native to the mountains, and should be found in rich woods, coves and stream banks. This is a climbing vine that is often trained up trellises in garden plantings and mature plants can develop woody stems. A. macrophylla has been referred to as A. durior but A. macrophylla is considered the correct name. A. tomentosa is native to the southern states and probably occurs in South Carolina (and possibly North Carolina) Other species are native to California, Texas and New Mexico respectively while several tropical species have been introduced into Florida.

The orange eggs are generally deposited on the stems or the underside of the leaves of the host plant. They may be deposited singly but more often in clusters of 4 or 5 and sometimes up to 20 eggs per cluster. The young caterpillars feed together (termed gregarious behavior) and then at some
point each heads off alone to seek its fortune. Some observers say they split up after the first instar while others say they stay together through the second or third instar. Paul Calvalconte reported that the caterpillars are inclined to drop to the ground when disturbed. They usually hang on in the wind but drop to the ground from most other disturbances. This large concentration of hungry caterpillars on one plant is what usually attracts attention (and then concern). This is often the case in gardens where there may be only one or two plants or the plants have not yet had time to develop significant size. Before long the plant has been stripped of all leaves and
there is no other acceptable food in sight. The vines are fairly robust and
will re-grow new leaves, but generally not fast enough to satisfy the waiting
caterpillars. While both A. serpentaria and A. macrophylla seem to be equally desirable ovipositing sites, the A. macrophylla ("large leaves") will generally provide more forage for the caterpillars. The last instar caterpillars are described as black or sometimes a purplish dark chocolate with rows of fleshy tubercles with red bases along the body. The pair at the head are longer and probably are used as feelers.

There has been some debate about the suitability of A. elegans (Calico Flower) as a host plant for PvS. The conclusion seems to be that while the female PvS will oviposit on A. elegans the caterpillars do not thrive and quite often die. This past summer Jim Nottke had an interesting observation while trying to raise some " foster" PvS caterpillars that had eaten themselves out of their original home at Patrick Coin's. Jim's supply of A. serpentaria was soon consumed so he was forced to try some alternatives. The caterpillars indeed refused A. elegans but would nibble on a hybrid A. elegans x A. macrophylla and grew slowly. However, as the A. serpentaria regenerated those leaves were definitely favored and quickly consumed.

Two and possibly three broods are considered normal for North Carolina. Patrick Coin has noticed a two year cycle in PvS numbers. In alternating years there are enough caterpillars to completely defoliate the A. serpentaria in his yard and neighborhood. (2000 was such a year so this year may be a year of lower numbers.) The chrysalises may be a green or brown color. Like other swallowtails they are held erect with a silken sling or girdle although they have a rougher appearance with more projections and bumps. Chrysalises from earlier broods have been found attached to the host vine but more often the caterpillars move off to another location to pupate.

Sparrel Wood has found PvS chrysalises over sixty feet away from the presumed host plant. The chrysalis is the over wintering form for PvS's and Don and Sheryl Dorton of Charlotte had captive raised PvS butterflies emerge in early April. A photo of the caterpillar and the chrysalis can be seen in Florida Butterfly Gardening by Marc C. Minno and Maria Minno. However, I suspect the photo of the chrysalis was inverted by the publisher.

I would like to thank those credited above plus Will Cook, Elizabeth Hunter, Tom Krakauer, and Smitty Mallard who all shared information that was used in the creation of this column.

Larva Lore #5: Sleepy Orange (Eurema nicippe)
The location and survival of butterfly larva depends on the host plant appropriate to the species of butterfly. Since this tale of butterfly larva really involves tales of the host plant, I thought I would start this column with the host plant.

Sicklepod is a weed that occurs in disturbed sites. It is commonly found growing in agricultural crops such as soybean, cotton or corn. It has yellow flowers, large compound leaves of 6 oval leaflets and a long thin curved (sickle shaped) seedpods. The plant is often about two feet tall before it is noticed and it is reported to get up to five tall. Senna obtusifolia is recognized as a common host plant for both Sleepy Oranges and Cloudless Sulphurs.

While on the Raven Rock Annual Count earlier this year Will Cook and I saw numerous Sleepy Oranges. At some point Will pointed out that the plant in the roadside ditch was Sicklepod, the host for Sleepy Oranges. My thought was "yeah, well OK, nice to know but aren't there some more exciting butterflies and host plants we could find. Maybe even something with a caterpillar or two".

On a later butterfly count Jim Nottke noticed an orange butterfly ovipositing on some Sicklepod in the cut portion of a corn field. We each collected some leaves with the eggs and then some less-crushed plant for the anticipated caterpillars. Upon arriving home I

discovered that I had several more eggs than I thought I had. After a couple of days the original host plant was a little the worse for having been run over by the harvester and the trip home. Since I hadn't yet located any Sicklepod close to home and I had to be in Chapel Hill for the day, I contacted Will and he suggested I check some Soybean fields near Carborro. Yes, there was Sicklepod and I was able to replenish my supply. When I got home I discovered that I had even more eggs and some caterpillars LARGER than the ones I was trying to raise. Two more trips to fields closer to home yielded more Sicklepod including more eggs and caterpillars! This was getting to be a bit much. A couple of days later I was biking along the RR tracks near home (in the city) when I noticed some Sicklepod (only about 18" tall). Plus, along came a Sleepy Orange to oviposit. I figured I had it made. I didn't have to drive halfway across the county, I could just ride my bike up to the RR tracks and get more Sicklepod when I needed it. As I continued on home I thought about the fact that there certainly were eggs on the plant and did I really need any more caterpillars to raise. When I got home I found I already had 15 chrysalises and about 20 caterpillars at various stages. So what did I do? The next day I took all of the remaining caterpillars up to the RR tracks and put them on the Sicklepod there.

Whew!

So what did I observe while raising this "unexciting little orange butterfly"? The eggs were slightly greenish white, shaped a lot like little bowling pins. Eggs were found on both the tops and the bottoms of the leaves, quite often with two eggs per leaflet. When the caterpillars hatched they were clear colored. Then as they started eating I could see the green plant material in their gut. Later instar caterpillars were a velvety green, darker on the bottom than the top with a cream colored band along the body between the dark and light green areas.

When raising them on cut plants in a container the caterpillars usually sought a fairly horizontal surface on the plant for pupation. However, so far I have not found any chrysalises on the plants where I released the surplus caterpillars. Did they wander off to pupate or were they snatched by a predator? They suspended themselves in a "U" shape with a sling or girdle of silk. The green chrysalis is pointed on both ends with a large hump on the top. See Florida Butterfly Gardening by Marc C. Minno and Maria Minno, page 68 for pictures of caterpillar, chrysalis and Sicklepod.

Since I ended up mixing eggs and larva I don't know how long the larva stage was or how long it took for the eggs to hatch. Generally the chrysalis stage was one week. As the butterfly develops in the chrysalis, the center of the hump starts to change to an orange color. Later a black border can be seen around the orange area. This coloring proved to be the upper surface of the forewing. Most butterflies have their wings compressed along the body in essentially the normal position. However, the Sleepy Orange has its wings (and antenna) folded down over its legs, showing the top surface of the wing through the chrysalis. Once it had emerged from the chrysalis and its wings expanded they were quite willing to just hang around for a lot longer than many of the other butterflies I have raised. They do keep their wings closed when perching which makes it hard to study the upper wing patterns.

Since I ended up mixing eggs and larva I don't know how long the larva stage was or how long it took for the eggs to hatch. Generally the chrysalis stage was one week. As the butterfly develops in the chrysalis, the center of the hump starts to change to an orange color. Later a black border can be seen around the orange area. This coloring proved to be the upper surface of the forewing. Most butterflies have their wings compressed along the body in essentially the normal position. However, the Sleepy Orange has its wings (and antenna) folded down over its legs, showing the top surface of the wing through the chrysalis. Once it had emerged from the chrysalis and its wings expanded they were quite willing to just hang around for a lot longer than many of the other butterflies I have raised. They do keep their wings closed when perching which makes it hard to study the upper wing patterns.

The butterfly probably overwinters as an adult in this area. Some people have seen them around on mild days in January. This Fall/Winter form has darker coloring on the underside of the wings (from tan to light brown rather than pale yellow).