

# Loretta Shigo: Trailing the monarchs IV

## The pupa dance

What is a pupa? How does it dance?

In the June 25 article I wrote, “*Danaus plexippus* – getting to know you,” the final molt of the monarch caterpillar as it hangs upside down in the “J” position was briefly described.

This phase of the complete metamorphosis deserves its own story. Upon seeing for the first time some 10 years ago a caterpillar do the pupa dance, this citizen scientist was late for work and unknowingly beginning her own monarch journey.

Currently, there are five “J” cats in the butterfly tent, tentacles limp and hanging, about to pupate or as those afflicted by monarch madness like to say – do the “pupa dance.”

Upon first glance, it seems like nothing is happening. However, part of it already has happened, inside the larva’s body that is. The caterpillar’s internal parts have rearranged themselves befitting a butterfly-to-be replete with a proboscis to sip nectar with instead of chewing mouth parts, long legs for grasping flower petals and wings for flight.

Outside, the skin will split behind the head and slowly widen exposing a bright jade green patch. This is the beginning of the



third stage in the life cycle of the monarch, in which the caterpillar or larva becomes a pupa, the in-between place of caterpillar and adult butterfly. Pupa is Latin for doll.

The head of the caterpillar stops its nodding motion; its feet are still and pointy. There is an air of expectancy, a feeling of waiting for something. Then, the caterpillar straightens out.

Pumping its segments together, expanding and contracting them, it looks very much like an old squeezebox huffing away. The skin is expanding and contracting also, loosening up and starting to



slide up the body. The emerging pupa writhes - the look of it is akin to someone wriggling out of tight panty hose using no hands. Not an easy task!

The skin travels upward reaching the cremaster, a stalk with tiny hooks, which attaches to the silk button above. Then this little green bit of life starts to gyrate and swing its bottom around and about in an attempt to dislodge the crumbled skin stuck to its top. If one looks closely at the pupa the wing buds, head, proboscis, and antenna of the soon-to-be butterfly can be discerned. Seeing this, one is struck by the alien



look of the features.

Imagination takes over. All those science fiction classics come to mind begging the question, “Did the creators first gaze upon the features of a dancing pupa when they imagined their creatures for the big screen.” Indeed, I can happily name a few fine flicks whose creatures have scared the bejesus out of me. Where better to look than to na-

ture, especially the insect world, for the bizarre and alien that is so unlike our own human form.

If music were set to this final act it would be a combination of the Twist, Conga and Hokey-pokey as the pupa seems to be dancing. This last burst of energy has to succeed in dislodging the skin, for should it be caught in the soft damp folds of the pupa as it dries and shrinks, it could later cause problems for the emerging butterfly.

With a quick flip the skin drops off and the pupa gyrates to a few more Conga beats. Heeding an internal signal it quiets and stills, slowly shrinking in size, the skin smoothing and hardening providing protection from the elements and some but not all predators.

The mysterious and beautiful gold dots appear, embellishing the chrysalis, giving it a jewel-like appearance. The function of these dots is unclear; perhaps they are light sensors that give the developing butterfly information about the outside weather.

Though very unscientific, it has been suggested once or twice, by a child during a program that perhaps, just perhaps, the fairies painted them on. HmMMM.

Who wants to argue with the imagination of a child?