

Lady Bountiful

--Jean Mason

*There's a painted lady at the Nature Center. Not Lady Gaga, or make-up maven Tammy Faye Baker, or the guttersnipe Eliza Doolittle transformed into a perfectly turned-out socialite in "My Fair Lady." This is a different kind of lady cosmopolite: *Vanessa cynthia cardui**, the thistle, or painted lady butterfly.*

The morning sun warms up all living things on a summer day in Mariposaville, the Nature Center's pollinator garden just east of the entrance road. Stopping by for a sip of bee plant nectar and perhaps a spot of sex is a male painted lady, just seven days out of his cocoon. Complex ears on his wings, especially sensitive to low-pitched sounds from predatory birds, pick up a flutter of native bees buzzing in and out of the garden's multi-unit Bee Hotel. He ignores them, along with the sight of other males of his species nearby. No guarding a territory and chasing off invaders for him; he settles atop a tall fence post, a male butterfly's mini-hilltop. Surveying Mariposaville in all directions, he patrols for females. The male's amazing compound eyes, sensitive to both ultra-violet and visible light, contain some 30,000 faceted lenses, each one connected to the optic nerve. He, and all painted ladies, can search in many directions at once while his brain unifies all he sees.

This butterfly on the hunt for a mate hardly needs to power up all his prodigious visual resources; he is part of a painted lady migration, mostly annual flights of huge, three-to-four successive butterfly generations that begin with departure in early spring from their winter desert homelands in northern Mexico. Flying 100 miles a day at 30 miles an hour, with temporary stopovers for mating, nectaring, and egg-laying along the way, clouds of painted ladies color the sky, moving through the Southwest and into the mountains, with separate crowds spinning off *en route* for multi-generational trips that carry them throughout the country. Some migrants continue north, reaching their environmental limit in the southern regions of the Arctic.



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Gourmet to Gourmand

The Mariposaville male has spotted several likely partners, all tasting plants with their feet and smelling them with their clubbed antennae. Radar-sharp chemical receivers will trigger paired drinking straw proboscis tubes, spring-loaded to unfurl and sip-feed. Mariposaville offers chocolate flowers, penstemons, bee plants, milkweeds, and even aphid honeydew for all butterflies. In other habitats around the world, in deserts or marshland, fields or meadows, swamps, forests, mountains or chaparral, suburbs or cropland, painted lady butterflies nectar happily, pollinating a wide variety of legumes, thistles, composites, mallows, and even grasses – up to 300 different plant species.

Mariposaville may, in fact, be providing an unnecessarily fine buffet for painted ladies; elsewhere, they prefer plants in disturbed, weedy, sunny areas – plants that grow fast, flower early, and produce lots of seeds diffused everywhere. The caterpillars that eat them are indiscriminating, just like them: They eat lots of different plants, grow fast, and turn into active butterflies that breed continuously, and fly in large groups. This matchup of plant and insect lifestyle along with unique adaptability makes *c. cardui* the most wide-ranging butterfly in temperate and tropical regions of the world from sea level to nearly 18,000 feet. Painted ladies are at home on many islands and on all continents except Antarctica, South America (but now in Venezuela), and Australia (although a close relative ranges through half the down under continent).

Coloratura Fliers

Male and females are painted for friend and foe alike – for advertisement, camouflage, and mimicry (they're monarch butterfly semi-lookalikes). Topside, their 2.75-inch forewings blend orange to salmon pink with patches and margins tipped in

*Formerly known as *Vanessa cardui*, the species was recently placed in the *Vanessa* subgenus, *cynthia*.

black, set against white markings. Like other members of the Nymphalid butterfly family, some of the overlapping, all-body scales have pigments of black or brown, while others without pigment display iridescent blues, reds, greens, and more, captured through light on facets that scatters and changes the structures and motions of photons. Painted ladies also can alter their wing patches and patterns since each wing develops separately: If one group of cells in a pupating butterfly fails to develop or mutates on a wing, a black patch or dot may not appear – or may duplicate itself.

Hindwings on top are also orange-to-pink with black patches and black dots. With wings folded and the nectaring butterfly exposed to predatory birds, bats, wasps, and spiders, a painted lady displays her undersides, brown and grey patterns along with four blue eyespots ringed in yellow, meant to startle and confuse an enemy. Aiming for a vital organ, the bird bites an “eye,” gets a bit of wing, and watches the victim fly free. (To make the point further, a nectaring lady may swing an orange-bright forewing down, then up again, like the snap of a fan.)

The Mariposaville male watches female painted ladies waft by his garden post. Time to strike.

Twirling his antennae and ever eager, he expands his wings and fans them out, sending nectar-scented pheromones drifting on the breeze. Some females respond to him, while others, heavy with some 500 eggs perhaps already fertilized by him, wing off.

Scratching and testing, they’ll choose plants with the most nectar to receive the most eggs – but not necessarily plants that will provide future larvae the most protection from predators, nor the healthiest or leafiest of plants. Continued migration of the adult butterfly for favored food plants is the force behind perpetual reproduction in all seasons for painted ladies. A female will suspend flight temporarily when ready to lay, but continued migration is her spur, all in the hunt for good nectar. High egg mortality is often the result. That’s history; fueling up for migration for yet more fuel is the future.

For his part, the male, too, thinks big. He’s a super-fertilizer of all the ready females he can find, thus pushing along reproduction, migration, and the search for favored plants.

Laying green eggs, ribbed and shaped like barrels, as tiny as a sugar crystal, females position them on the tops of leaves; they’ll hatch in three-to-five days if temperatures hover around 90° (two months at 65°). The emerging larvae, black and grey like flecks of stone with a yellow back stripe, are eating machines that become spiky through their three growth stages. Caterpillar life ends in a chrysalis: He or she spins a

surrounding soft silk pouch and attaches it to the chrysalis backside. Hardening over seven to 11 days, the chrysalis pupates, finally breaking open to the new life, the adult butterfly.

Life span after pupation: Less than a month. Ready to mate in one week. Get on with it: Breed, feed, and fly away.

Longer, Faster, Higher

Everyone admires the monarch butterfly for its annual multi-generational migration pattern from North America to oyamel forests in central Mexico in the fall and back north again in the spring. Many observers believed monarchs were the only butterfly to accomplish such a feat. No more.

Long known for their migratory flights from southern Europe to the northern British Isles and Scandinavia, painted ladies then seemed to disappear, come fall. Did they all die off?

In 2009, scientists published results gained from multiple sightings and radar images tracking the mystery insect. Now known: Painted ladies not only fly south in the fall on their annual migration, they do it at high altitude – at 15,000 feet, far beyond human view, and flying most likely day and night. The researchers also discovered that the multi-generational round trip

is an astonishing one, from tropical Africa to the Arctic Circle, a distance of 9,000 miles. That’s some 3,000 miles further than the monarch’s round trip. Painted ladies will use a solar compass to set course direction and choose favorable winds at high altitudes, correcting for cross-wind drift. Flying downwind on these faster winds at higher altitudes, they maximize territory covered.

Painted lady butterflies may be common and

easy to spot, but they hide remarkable abilities under their wings.



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Sources; animaldiversity.org/accounts/Vanessa_cardui; doi.org/10.11016/j.anbehav.2009.07.039Get_rights_and_content; eol.org/data_objects/32458750; Jean-Luc Carton et al. *A Field Guide to the Plants and Animals of the Middle Rio Grande Bosque*. 2008; learnaboutbutterflies.com/Britain%20-%20Vanessa%20cardui; National Audubon Society. *Field Guide to Butterflies*. 1981; National Audubon Society. *Field Guide to North American Insects and Spiders*. 1980; Russell, Sharman Apt. *An Obsession with Butterflies: Our Long Love Affair with a Singular Insect*. 2003; Sciencedaily.com; Wikipedia: [Vanessa cardui](http://Vanessa_cardui); 22/10/12:BirdGuides.ltd



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