

24 *Butterflies*
A Haven for the Monarch

by Stacy Fisher

Energetically, they swarm. The sky fills with fluttering enthusiasm. People point, staring in awe at the multitude of orange and rust brown wings that converge in glorious clusters upon the eucalyptus. The monarch butterfly has arrived in full force, making their winter pilgrimage to the trees and milkweed of Natural Bridges' Monarch Natural Preserve.

Every year, between October and March, literally tens of thousands of these regal insects descend, gliding on gentle winds to delight eager spectators with their great beauty and abundance.

For decades, scientists have speculated about how these creatures return to the same overwintering grounds. "The same generation of monarchs never come back," explained Interpretive Park Aid, Nan Beltran. "Only the generation born at the end of August and at the beginning of September migrate. They head for warmer weather south and west, living six to nine months."

The Earth's magnetic field and the position of the sun may help to guide the monarchs flight, but no one really knows for sure. Some travel from as far away as Montana and Canada on their annual migration to California. Those that survive the winter may average 2000 miles during their lifetime. "They travel a 100 miles a day," Beltran said, "but never at night. They rest, finding safety in trees and bushes."

Monarch butterflies also inhabit areas that include Hawaii, Tasmania, New Zealand, the Canary Islands and Australia.

Early settlers in North America were so impressed by the monarch that they named it after the Prince of Orange, stateholder of Holland and later the King of England.



Monarch Butterflies gather in the eucalyptus trees during their annual migration.

In 1938, Pacific Grove passed an ordinance protecting the beautiful butterfly. The law made it "unlawful for any person to molest or interfere with the peaceful occupancy of the Monarch Butterfly... it is the duty of every citizen of said City to protect in every way possible the butterflies from harm."

As the monarchs migrate, they feed on flower nectar as well as a variety of plants that include willow, field mustard, marguerites and eucalyptus to build up fat reserves for the coming winter.

Monarchs cannot survive extended periods of cold. They have difficulty flying at

temperatures below 55 degrees and will often fall out of trees onto the ground in freezing weather, exposing them to predators. They are also unable to fly in winds above 5 miles per hour, preferring instead to gather into clusters in calmer areas.

At dusk, they sleep with their wings closed through the chilly night until sunrise warms their wings enough to take flight. Monarchs east of the Rocky Mountains retreat to the mountains in southern Mexico to spend their winter, while those west of the Rockies fly southwest to the warmer climate of the California coast.

Arriving in Santa Cruz

County by late September, the monarchs unite, establishing clusters of flapping colonies throughout the relatively small 16 acre park; the largest overwintering site on the West Coast. The Monarch grove was declared a Natural Preserve for *Danaus plexippus* (the monarch's biological name), in 1984, thus protecting the habitat from human encroachment. It is the only State Monarch Preserve in California. The grove contains eucalyptus trees located in a canyon which shelters the butterfly from strong winds. The trees also provide a convenient food source for the graceful insect.

Nearby, the park main-

tains a demonstration milkweed patch where visitors may view Monarch eggs, caterpillars and chrysalids.

Other locations in which the Monarch gathers in overwintering clusters include Moran Lake and near El Salto Resort in Capitola.

Sporting wingspans up to four inches, the monarch's dramatic coloration, with its orange wings marked by black veins and two rows of spots, warn would-be predators of the insect's bitter taste, acquired while dieting as a larva on the leaves of the milkweed plant. Toxins from the plant build up in the larva and are passed on into the adult butterfly, producing an unappetizing meal to all but a handful of natural enemies that include yellowjacket wasps, the chestnut-backed chickadee, starlings from Europe and field mice. Most vertebrate predators become sick after eating a monarch and quickly learn to avoid them.

During the increasing daylight hours of late January and early February, the reproductive instincts of the monarchs take over.

"The male seeks out the female, often capturing her in mid-flight," said John Dayton, UCSC Life Sciences graduate student. Small scent glands on

the males hind wings, called Alar scent pockets, are apparently no longer chemically active in the monarch species.

Like falling leaves, courting pairs of lovesick Arthropoda drift down to the ground where the male monarch attempts to charm the female with his eversible hair pencils, located at the tip of the abdomen.

"The male attempts to maneuver the female," Dayton continued. "When he applies his claspers, the female becomes passive and he then inserts his aedeagus into the female's bursa copulatrix and attempts to fly back to the trees. Once positioned, they remain coupled for several hours, often overnight."

Snug in their treehouse paradise, the male passes sperm and a nutrient-rich spermatophore into the female's body. The female uses the spermatophore to help power her flight on her return trip in the spring, when she will use the stored sperm to fertilize the eggs that will give rise to the first generation of "spring" Monarchs.

Four or five generations of monarchs will be born between this year's Natural Bridges migration and next

year's arrival. Summer monarch butterflies only live about a month or two, serving as links between each migration cycle.

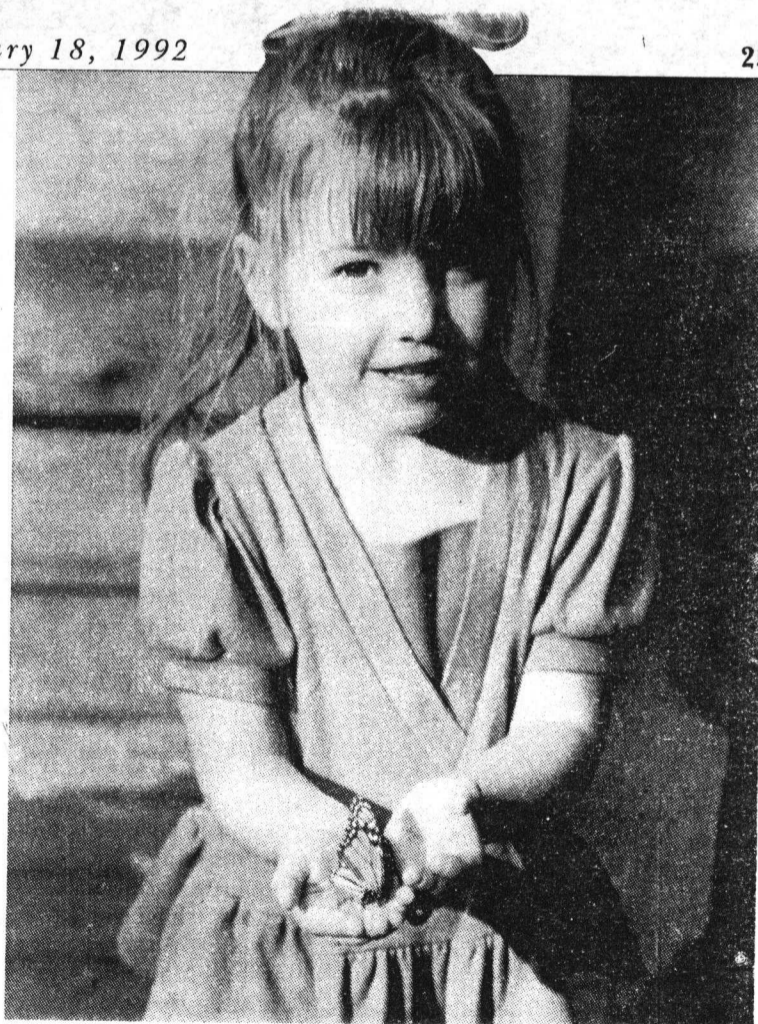
The female can lay up to one hundred pinhead-sized eggs which are deposited only on milkweed leaves, as these are the sole plant where the larva can survive. Depending on the temperature, the creamy-yellow eggs take three to six days to hatch. The newly hatched larva is barely 1/16 of an inch long.

The caterpillar is a ravenous eater, consuming the abundant leaves and flowers of the milkweed plant. Their habitat is very fragile and people viewing them should take care not to disturb the delicate creatures.

For the next three weeks the caterpillar may grow up to 3,000 times its original weight, shedding its yellow, white and black striped skin four times.

Reaching its final length of 2 inches, the caterpillar seeks a safe, sturdy place such as window sill or tree limb in which to dangle upside down as it undergoes metamorphosis, shedding its caterpillar body in 20 hours to reveal a bright green chrysalis underneath.

During the next 10 to 15 days, the tissues of the cater-



Monarchs delight a young visitor to Natural Bridges.

pillar transmutes within the chrysalis and the butterfly's body forms. The adult monarch finally emerges, clinging to its old shiny skin.

Body fluid is pumped into its small crumpled wings, expanding them to full size.

In a few short hours, the warm sun dries and hardens the velvety wings and, after a few tentative flights around the milkweed and eucalyptus trees, the monarch is ready to begin once again the endless cycle of butterflies at play. □