Natural History Notes

Monarch (*Danaus plexippus*)

Monarch butterflies belong to the insect order Lepidoptera (butterflies and moths). These beautiful black and orange butterflies, like most of their relatives, are adapted to feeding on flower nectar through long proboscises that uncoil and act like straws. They evolved about 65 million years ago during the time when dinosaurs were dying out and mammals and flowering plants were rapidly increasing in number.

Adult monarchs obtain nectar from a variety of flowering plants, but are particularly attracted to the sugar-rich nectars of aster and goldenrod blossoms. However, these well-known butterflies lay their eggs on only one kind of plant—the milkweed (*Asciepias* spp.), which the emerging larvae depend on for food. The tender young leaves of this widely distributed host plant are eaten by the larvae as they grow and develop into the large black, white, and yellow caterpillars familiar to many backyard gardeners (the larvae of butterflies and moths are commonly called caterpillars). Because of their affinity for this plant, monarchs can be successfully attracted to flower gardens and yards by planting and cultivating it (milkweed seeds are currently available from at least one online source—the Milkweed Farm).

By feeding exclusively on milkweed leaves, monarch caterpillars gain an important advantage over many of their relatives. As they digest this plant, they pick up chemicals that make their flesh taste bad to most birds and mammals.

As the caterpillars grow, they shed their skin five times and go through several instar stages (the 2-7 day-long periods of time between molts). About three weeks after hatching, the caterpillars crawl to the ground, expel body wastes, and seek out sheltered spots, such as the undersides of fence rails. There, they spin small buttons of silk, hang upside down from them, molt for the last time, and turn into pupae or chrysalises, the final, hard mummy-like stage from which they metamorphose into beautiful, brightly colored flying adults in about one week's time.

Monarch butterflies are found throughout southern Canada and all of the contiguous 48 states. Most North American monarchs are migratory, but some non-migratory populations inhabit parts of the Caribbean, southern Mexico, and central and South America. Monarch migrations are among some of the most amazing known to man. During early August – late October, butterflies that have emerged in southern Canada and the northern United States begin heading south. They only travel during daylight hours and take shelter before the onset of poor weather conditions, which they somehow seem to be able to predict. Finding shelter from storms is important to their survival, because high winds and rain can easily damage their delicate wings.

Monarchs migrating from regions west of the Rocky Mountains spend their winters roosting in stands of large trees along the California coast, including trees in the cities of Pacific Grove, Santa Cruz, and Monterey Bay (excellent places to view them). Individuals migrating from southern Canada and the rest of the United States winter in stands of large relict fir trees that grow at higher elevations on volcanic mountain slopes in southern Mexico. At these and other traditional west coast wintering locations, thousands of butterflies typically roost in a single tree—a spectacular sight to behold.

By mid-March, monarchs wintering in Mexico begin flying north toward the United States. They feed along the way, find mates, and finally lay their eggs on milkweed plants in the southern United States. The next generation hatching from these eggs continues the long journey north into southern Canada and the northern United States.

Many California communities have protected monarch roosting sites for many years (e.g., Pacific Grove by city ordinance since 1938). More recently in 1986, Mexico set aside about 62 square miles (160 square kilometers) of critical mountain roosting habitat for these wintering butterflies. Although logging still poses a danger, smoke from fires, other forms of air pollution, pesticides, chemical sprays, and destruction of traditional breeding areas appear to be the greatest threats to these amazing and beautiful migratory insects.

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