



Above- Wright's buckwheat, *Eriogonum wrightii*. Host plant for several species of blues and metalmarks.

numerous species including hairstreaks, blues, and metalmarks.

Apart from butterflies, many other native pollinators such as moths, tarantula hawks, bees, native flies, and hummingbirds have all been found using the garden's native plants.

Human impacts from pollution, pesticide use, development, and climate change have harmed habitats critical to butterfly survival. Many species, including the monarch butterfly, are threatened. Well-planned native plant gardens create improved habitat that will help stabilize butterfly populations while native habitats are identified, protected, and restored. For more information on creating native plant gardens for butterflies and other pollinators, see:

National Pollinator Garden Network: <http://million-pollinatorgardens.org>

North American Butterfly Association: <http://naba-butterfly.com>

The Xerces Society: <https://xerces.org>

California Native Plant Society: <https://www.cnps.org>



Big Morongo Canyon Preserve

The desert oasis at Big Morongo Canyon, part of Sand to Snow National Monument, is one of the 10 largest cottonwood and willow riparian habitats in California. The 31,000 acre preserve spans two deserts: the Colorado and the Mojave and supports the second largest density of breeding birds in the United States with an estimated 1,400 nests per square kilometer.

The Friends of Big Morongo Canyon Preserve assist with the preserve's daily operations by providing funds and staff to present educational programs, access for wildlife viewing, site maintenance, and recreational opportunities for the enjoyment of its visitors.

Tax deductible gifts are needed and welcome: <https://www.bigmorongo.org>.

Photo Captions and Credits:

Front Cover: (top) painted lady, *Vanessa cardui*; (middle) Dammer's dotted- blue, *Euphilotes enoptes dammersi*; (bottom) Lorquin's admiral, *Limenitis lorquini*.

Back Cover: (top) funereal duskywing, *Erynnis funeralis*; (bottom) arrowweed, *Pluchea sericea*.

All photos by Joe Zarki, except apricot mallow, Wright's buckwheat, and arrowweed by Larry Rosen. Text and design by Joe Zarki.



BIG MORONGO CANYON Butterfly & Pollinator Garden



A Garden for Butterflies

More than 60 species of butterflies have been recorded along the trails of Big Morongo Canyon Preserve. Perhaps as many as 100 species occur throughout the preserve's more than 31,000 acres. Butterflies have close relationships with native plants on which they depend for food, protection, and the ability to successfully raise their young. Native Mojave and Colorado Desert plants found at Big Morongo Canyon support the lives of butterflies, hummingbirds, and many other organisms— large and small— on which the plants rely for pollination of their flowers.

To help Big Morongo's visitors see pollinators and native plants and better understand the importance of their relationships, a butterfly garden has been created where these interactions are accessible and more easily observed.

More than 30 species of native desert plants have been grown from seed collected by volunteers at the preserve. From these seeds, over 300 plants were propagated by nursery staff at The Living Desert in Palm Desert, California. The Big Morongo Canyon Butterfly Garden has two components: an open, sunny section designed for plants adapted to more arid conditions, and a shaded area with a water feature for plants more suited to riparian settings. Plants in the garden were chosen to attract a wide range of butterfly species from many different families including those who fly primarily in spring, in fall, or throughout the year. With a life cycle that covers four stages— egg, larva (caterpillar), pupa, and adult, butterflies need appropriate plants that will support them at each stage of their development. Host plants serve as food and provide protection for developing eggs and caterpillars. Nectar plants provide food for the adult butterflies.

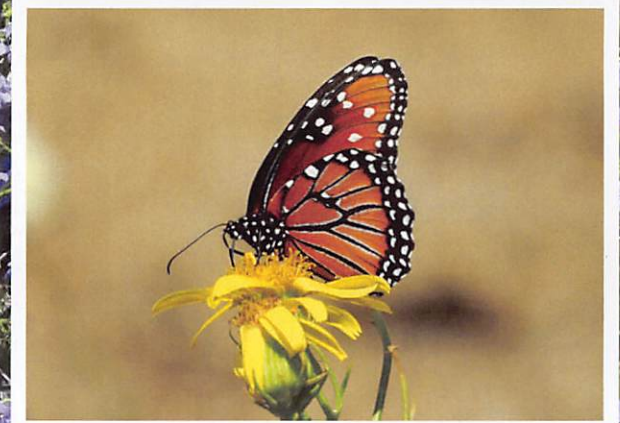
Some butterflies such as the painted lady are adapted to use many different host and nectar plants. Marine and Ceraunus blues use host plants in the pea family such as mesquite and acacia, whereas monarch and queen butterflies use only milkweeds for host plants. The Sara orangetip is a spring flyer using mustards and crucifers, however, the Damer's dotted-blue is a fall flyer that is dependent on elongated and Wright's buckwheat. Certain desert plants such as deerweed (*Acmispon* sp.) are used by



Above- Wright's metalmark, *Calephelis wrighti* on its larval host plant— sweetbush, *Bebbia juncea*.



Above- Apricot mallow, *Sphaeralcea ambigua*— host plant for several skippers. Below- great purple hairstreak, *Atlides halesus*, on California buckwheat, *Eriogonum fasciculatum*.



Above- Queen, *Danaus gilippus* on bush groundsel, *Senecio flaccidus*. This butterfly was the first one observed in the new garden.



Above- First plantings in the new garden, May, 2018. Below- Becker's white, *Pontia beckerii* on bladerpod, *Peritoma arborea*. Inset photos, Becker's white eggs and larvae.

