



Be ImagiNATIVE!

Create a Butterfly Garden in the Monterey Bay with California Native Plants

Introduction

Butterflies are one of the showiest and most beautiful insects that visit our gardens. However, they are more than just a pretty “face.” They are also important plant pollinators and indicators of environmental health.

Insect pollinators are necessary to the healthy reproduction of over 80% of the world’s flowering plant species (Edward S. Ross). However, pesticide use, the loss and fragmentation of habitat and the degradation of remaining habitat have caused dramatic declines in many insect populations worldwide. In the San Francisco Bay area alone, four endemic butterfly species are already extinct and seven others are endangered (The Alameda Butterfly Habitat, 2004).

Pollinators are keystone species. This means they are species on which the existence of a large number of other species depends. Pollinators are essential to the reproductive cycles of most flowering plants and thus to the ecosystem itself, supporting plant populations that other animals and birds rely on for food and shelter. As the butterflies and other insects on which many native plants depend for adequate pollination disappear, the effect on the health and viability of these native plant populations can be disastrous.

What can we do to slow, or even prevent, the further decline in pollinator and butterfly populations?

Slowing the relentless destruction of habitat and reducing the use of pesticides are important goals in conserving pollinator populations. However, there are also easier and much more readily achievable steps we can take immediately in our own lives and back yards:

- Include plants in our yards that provide food and habitat for wildlife.
- Stop using pesticides in our yards.
- Combat fragmentation of habitat by encouraging neighbors to adopt wildlife-friendly gardening and planting practices, thus providing “corridors” of habitat.
- Buy organic food and household products whenever possible.



Providing Habitat for Butterflies

Butterflies' needs are relatively simple:

A warm, sunny location sheltered from strong winds.

Sites for perching, resting and sunning so that they can warm their wings for flight. A large rock or log in a sunny spot is perfect.

A large number of appropriate, sweet-scented, nectar-producing, colorful flowers that provide a progression of blooms from spring through late fall.

Appropriate host plants on which the butterflies can lay their eggs.

A supply of water.

An environment free of pesticides and herbicides.

Safe places in which to form a chrysalis.

A butterfly garden should contain plants that attract the butterfly species most common in your area. Unless you live very close to a natural area that contains the appropriate host plants, you should grow the plants that provide food and habitat for *all* stages of the life cycle of your local butterflies i.e. egg, larva (caterpillar), pupa and adult. In this way, your garden should attract and support complete butterfly populations.

If you care about butterflies and other beneficial insects and want to attract them to your garden, remember to avoid using insecticides, including organic products such as Bt (*Bacillus thuringiensis*) which kills caterpillars. A chemical-free environment will also benefit birds and other wildlife by providing more insects for them to eat.

In addition to nectar, adult butterflies also need a source of water and salts. Unlike birds, butterflies will not drink from open water, preferring to drink from a patch of wet mud, although some like tree sap or overripe fruit.

Remember to prune shrubs and perennials carefully so that you can keep an eye out for hidden chrysalides.

Nectar Plants

Adult butterflies rely on nectar for their daily fuel that they “drink” from nectar-producing flowers. When planning your butterfly garden plant list, consider the flowering time of each nectar-providing plant and aim to provide a continuous succession of blooming from spring through fall. A list of recommended nectar plants that do well in the Monterey Bay is given in Table 1.

Different butterfly species have different flower color and shape preferences. Pink, red, orange, and purple are considered the most attractive adult nectar source colors, but they also use yellow, blue and white flowers.



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The anatomy of many butterfly species' feeding structures is effective only on specific flowers, so make sure you are planting plants that attract the type of butterflies you want in your garden. The shape of a flower determines which butterfly species can gather its nectar. The length of the butterfly's tongue and the flower tube must be similar for the butterfly to reach the nectar at the base of the tube.

Most butterflies prefer nectar plants whose "flowers" are actually compact heads made up of tiny individual florets, giving the butterfly multiple rewards for each stop. This butterfly-attracting strategy is used by many kinds of plants, including all members of the aster (Asteraceae), carrot (Apiaceae), knotweed (Polygonaceae) and verbena (Verbenaceae) families plus many others.

Table 1: Nectar plants for local butterflies in the Monterey Bay

Botanical name	Common name	Family	Flowering period	Native to Santa Cruz County?	Native to Monterey County?
<i>Achillea millefolium</i>	Yarrow	Asteraceae	Apr-Jul	Yes	Yes
<i>Aesculus californica</i>	California buckeye	Hippocastanaceae	May	Yes	Yes
<i>Arctostaphylos</i> species	Manzanita	Ericaceae	Dec-Feb	Some	Some
<i>Asclepias fascicularis</i>	California milkweed	Asclepiadaceae	Jun-Sep	Yes	Yes
<i>Asclepias californica</i> ssp <i>greenei</i>		Asclepiadaceae	Apr-Jun	No	Yes
<i>Asclepias vestita</i>	Woolly milkweed	Asclepiadaceae	May-Jun	No	Yes
<i>Asclepias eriocarpa</i>	Indian milkweed	Asclepiadaceae	Jun-Sep	No	Yes
<i>Aster chilensis</i>		Asteraceae	Jul-Oct	Yes	Yes
<i>Baccharis pilularis</i> var. <i>consanguineum</i>	Upright coyote brush	Asteraceae	Sep-Nov	Yes	Yes
<i>Baccharis pilularis</i> var. <i>pilularis</i>	Dwarf coyote brush	Asteraceae	Sep-Nov	Yes	Yes
<i>Baccharis douglasii</i>	Douglas' baccharis	Asteraceae	Jun-Oct	Yes	Yes
<i>Baccharis salicifolia</i>	Mule fat	Asteraceae	Jun-Oct	Yes	Yes
<i>Calochortus luteus</i>	Yellow Mariposa lily	Liliaceae	Apr-Jun	Yes	Yes
<i>Ceanothus cuneatus</i> var. <i>rigidus</i>	Monterey ceanothus	Rhamnaceae	Mar-Apr	No	Yes
<i>Ceanothus thyrsiflorus</i>	Blue blossom	Rhamnaceae	Mar-Apr	Yes	Yes
<i>Chorizanthe species</i>	Spineflower	Polygonaceae	Spring	Some	Some
<i>Grindelia stricta</i>	Gumplant	Asteraceae	Aug-Oct	Yes	Yes
<i>Heterotheca villosa</i> (syn. <i>H. sessiliflora</i>)	Hairy golden aster	Asteraceae	Jun-Sep	Yes	Yes
<i>Lessingia filaginifolia</i>	Common beach aster	Asteraceae	May-Jun	No	Yes
<i>Eremocarpus setigerus</i>	Turkey mullein	Euphorbiaceae	Jun-Oct	Yes	Yes
<i>Eriogonum latifolium</i>	Coast buckwheat	Polygonaceae	May-Jul	Yes	Yes

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Botanical name	Common name	Family	Flowering period	Native to Santa Cruz County?	Native to Monterey County?
<i>Eriogonum parvifolium</i>	Dune buckwheat	Polygonaceae	May-Jul	Yes	Yes
<i>Eriogonum fasciculatum</i>	California buckwheat	Polygonaceae	May-Jul	Yes	Yes
<i>Eriogonum umbellatum</i>	Sulphur flower	Polygonaceae	May-Jul	No	Yes
<i>Ericameria ericoides</i>	Mock heather	Asteraceae	Sep-Oct	Yes	Yes
<i>Eriodictyon californicum</i>	Yerba santa	Hydrophyllaceae	Apr-Jul	Yes	Yes
<i>Eriophyllum staechadifolium</i>	Lizardtail	Asteraceae	Jun-Jul	Yes	Yes
<i>Eriophyllum confertiflorum</i>	Golden yarrow	Asteraceae	May-Jul	Yes	Yes
<i>Eriophyllum lanatum</i>	Wooly sunflower	Asteraceae	May-Jul	Yes	Yes
<i>Eriophyllum lanatum</i> var. <i>arachnoideum</i>	Dwarf wooly sunflower	Asteraceae	May-Jul	Yes	Yes
<i>Erysimum capitatum</i>	Douglas' wallflower	Brassicaceae	Apr-Jun	Yes	Yes
<i>Erysimum franciscanum</i> var. <i>crassifolium</i>	Coarse-leaved wallflower	Brassicaceae	Mar-May	Yes	No
<i>Erysimum menziesii</i>	Menzies' wallflower	Brassicaceae	Mar-Apr	No	Yes
<i>Heliotropium curassavicum</i>	Chinese pulsey	Boraginaceae	Mar-Oct	Yes	Yes
<i>Heteromeles arbutifolia</i>	Toyon	Rosaceae	Jul-Aug	Yes	Yes
<i>Monardella villosa</i>	Coyote mint	Lamiaceae	Apr-Jul	Yes	Yes
<i>Penstemon heterophyllus</i>	Chaparral penstemon	Scrophulariaceae	Apr-Jul	Yes	Yes
<i>Penstemon centranthifolius</i>	Scarlet bugler	Scrophulariaceae	Apr-Aug	No	Yes
<i>Salvia mellifera</i>	Black sage	Lamiaceae	Apr-Jun	Yes	Yes
<i>Salvia apiana</i>	White or Bee sage	Lamiaceae	Apr-Jun	No	No
<i>Salvia sonomensis</i>	Sonoma sage	Lamiaceae	Apr-Jun	No	Yes
<i>Salvia leucophylla</i>	Purple or Gray sage	Lamiaceae	Apr-Jun	No	Yes
<i>Salvia spathacea</i>	Hummingbird sage	Lamiaceae	Apr-Jun	Yes	Yes
<i>Salvia brandegei</i>	Brandegee's sage	Lamiaceae	Apr-Jun	No	No
<i>Salvia clevelandii</i>	Cleveland sage	Lamiaceae	Apr-Jun	No	No
<i>Sedum spathulifolium</i>	Stonecrop	Crassulaceae	May-Jun	Yes	Yes
<i>Solidago californica</i>	California goldenrod	Asteraceae	Aug-Oct	Yes	Yes
<i>Trichostema lanatum</i>	Wooly blue curls	Lamiaceae	May-Sep	No	Yes
<i>Verbena lilacina</i> 'de la Mina'	de la Mina verbena	Verbenaceae	Mar-Nov	No	No
<i>Wyethia helenoides</i>	Gray Mule's ears	Asteraceae	Apr-May	Yes	Yes

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Larval Host Plants

The larvae (caterpillars) can be much more selective than the adults when choosing host plants for their food and shelter, feeding only on certain plants to which their species is adapted. Most butterfly species are limited to a single plant family and, sometimes, to a single genus.

Many of the larval host plants are not what we would normally consider gardenworthy or ornamental. Indeed, many people would consider them weeds and, consequently, they are not often planted. As a result, many gardens attract only the larger, wide-ranging butterfly species.

If you want to attract some of the smaller, stay-at-home species of butterfly, you might try growing their favorite larval hosts as well as nectar plants. Or, if your garden is close to a wild area with plants that support the larval stage, you could plant just the nectar plants in order to attract adult butterflies to your garden.

The larval plants preferred by butterflies in the Monterey Bay area are listed in Table 2.

Butterflies in the Monterey Bay Area

There are about ninety species of butterflies in the Monterey Bay area. However, many of these are locally rare or only occur in mountain, forest or chaparral environments. The fifty species that are most likely to occur, or become established, in the Monterey Bay area are listed in Table 2 together with their preferred larval food plants. Of these fifty, only twenty are likely to be seen with any regularity.

Members of 45 plant families have been documented as larval foods for the 90 local butterfly species. However, only 22 of these plant families are essential or of major importance to one or more butterfly species. The other 23 families are alternate foods of minor importance.

The plant families on which the largest number of local butterfly species depend for larval food are the Poaceae (13 species), Fabaceae (12 species), Malvaceae (7 species), Brassicaceae (6 species), Rhamnaceae (6 species), Asteraceae (5 species), Salicaceae (5 species), and Fagaceae (5 species).

In the following list, the 20 butterfly species that are in bold, italicized type are those most likely to be present in the Elkhorn Slough area. Plant names in bold type are the most worthwhile growing in this area to enhance larval supply.



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Table 2: The 50 most common butterflies in the Elkhorn Slough area and their preferred larval plants

Butterfly type and name	Plants worth growing to enhance butterfly larval supply
A) Skippers	
Properthus Duskywing	<i>Quercus agrifolia</i> and probably other oaks.
Mournful Duskywing	<i>Quercus agrifolia</i> , <i>Quercus lobata</i> , <i>Quercus douglasii</i>
Rural Skipper	<i>Horkelia</i> species, <i>Sidalcea</i>
Common Checkered Skipper*	Species of the Malvaceae family, especially <i>Malva</i> and <i>Sidalcea</i> .
Fiery Skipper	Grasses (<i>Poa</i> , <i>Cynodon</i> , <i>Stenotaphrum</i> , others)
Dodge's Skipper	<i>Festuca rubra</i> , other grasses?
Sandhill Skipper	<i>Cynodon</i> , <i>Distichlis</i> and other grasses
Sachem	Grasses
Woodland Skipper	Grasses
Farmer	Grasses
Umber Skipper*	<i>Cynodon</i> and other grasses
B) Swallowtails	
<i>Anise Swallowtail</i>	<i>Foeniculum</i> , <i>Perideridia</i> , and other species of the Apiaceae (carrot) family
<i>Western Tiger Swallowtail</i>	<i>Populus</i> , <i>Salix</i> , <i>Alnus</i> , <i>Platanus</i> etc.
<i>Pale Swallowtail</i>	<i>Ceanothus</i> species, <i>Rhamnus</i> , etc.
C) Whites & Sulphers	
Checkered White	Species of the Brassicaceae and Capparidaceae families including <i>Isomeris</i>
Large Marble	<i>Brassica</i> , <i>Arabis</i> , <i>Barbarea</i> , <i>Erysimum</i> , etc.
<i>Common Sulpher</i>	Alfalfa, <i>Vicia</i> , <i>Lupinus</i> , <i>Lotus</i> , <i>Trifolium</i> , <i>Astragalus</i>
D) Gossamer-winged Butterflies	
Purplish Copper	<i>Polygonum</i> , <i>Rumex</i>
Lorquin's Hairstreak	<i>Quercus</i> species and <i>Lithocarpus densiflora</i> (tan oak)
Hedgerow Hairstreak	<i>Ceanothus</i> species, especially <i>Ceanothus cuneatus</i>
Bramble Hairstreak	<i>Eriogonum</i> species including <i>E. nudum</i> and <i>E. fasciculatum</i> , <i>Lotus scoparius</i>
Western Brown Elfin	<i>Ceanothus</i> species, <i>Vaccinium</i> , <i>Arctostaphylos</i> , <i>Arbutus</i> , <i>Gaultheria</i> (feeds on developing fruits)
<i>Common Hairstreak</i>	Legumes (including Lupine), <i>Malva</i> , <i>Polygonum</i> , <i>Eriogonum</i> , etc. (buds, flower, and fruits)
Pygmy Blue	<i>Atriplex</i> species, <i>Chenopodium</i> , <i>Salicornia</i>
Western Tailed Blue	<i>Lathyrus</i> , <i>Astragalus</i> , esp. <i>Vicia gigantean</i>
Echo Blue, Spring Azure	<i>Ceanothus</i> , <i>Cornus</i> , <i>Aesculus</i> , <i>Quercus</i> , <i>Spiraea</i> , <i>Adenostema</i> , <i>Arctostaphylos</i> , <i>Vaccinium</i> , <i>Lotus scoparius</i> (buds and flowers)
Silvery Blue	<i>Lotus scoparius</i> , <i>Lathyrus</i> , <i>Lupinus</i> , <i>Vicia</i> , <i>Astragalus</i> , <i>Thermops</i>
<i>Acmon Blue</i>	<i>Eriogonum</i> species, <i>Vicia</i> , <i>Lupinus</i> , <i>Medicago</i> , <i>Trifolium</i> , <i>Astragalus</i> , <i>Lotus</i> , other legumes

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Butterfly type and name	Plants worth growing to enhance butterfly larval supply
E) Brushfooted Butterflies	
Satyr Anglewing	<i>Urtica</i>
California Tortoiseshell	<i>Ceanothus</i>
Mourning Cloak	<i>Salix, Populus, Rosa</i>
American Painted Lady	<i>Gnaphalium, Anaphalis</i>
Painted Lady	<i>Cirsium</i> and other thistles. Also <i>Urtica, Malva</i> .
West Coast Lady	Members of the Malvaceae family including <i>Malva, Sidalcea, Lavatera, Althaea, Sphaeralcea</i> plus <i>Urtica</i> (stinging nettle)
Red Admiral	<i>Urtica</i> (stinging nettle) and relatives
Western Meadow Fritillary	<i>Viola</i> species
Crown Fritillary	<i>Viola</i> species
Callippe Silverspot	<i>Viola pedunculata</i>
Northern Checkerspot	<i>Solidago</i> (goldenrod), <i>Aster chilensis</i>
Field Crescent	<i>Aster chilensis</i>
Myliitta Crescent	<i>Cirsium, Carduus, Silybum</i>
Chalcedon Checkerspot	Members of the Scrophulariaceae family including <i>Castilleja, Diplacus</i> (herbaceous monkey flowers), <i>Penstemon, Mimulus</i> (bush monkey flower)
California Sister	<i>Quercus chrysolepis, Quercus agrifolia</i> (coast live oak)
Lorguin's Admiral	<i>Salix</i> species (willow), <i>Populus</i> (poplar), <i>Prunus</i> (cherry)
Buckeye	<i>Plantago</i> (plantain), <i>Mimulus</i> (monkey flower), <i>Antirrhinum, Verbena</i>
F) Satyrs & Wood Nymphs	
California Ringlet	Grasses including <i>Nassella pulchra</i> (purple needle grass) and <i>Melica</i> species (melics).
Oxeye Satyr	Grasses
G) Milkweed Butterflies	
Monarch*	<i>Asclepias</i> species (milkweed)

References and Further Reading

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Alameda Butterfly Habitat: www.bayfarm.ca.campusgrid.net

Children's Butterfly Site:

www.mesc.nbs.gov/resources/education/butterfly/bfly_start.asp

National Wildlife Federation: www.nwf.org

Xerces Society: A nonprofit dedicated to preserving the diversity of life through the conservation of invertebrates. www.xerces.org –