



Foothills

Nature Notes

PLANTS THAT BLOOM IN THE SUMMER HEAT

While most flowering plants bloom in the Spring, some grow and bloom during the hot, dry summer months. These summer plants are adapted to growing in certain environmental situations. Soil moisture, temperature, and fertility, and light intensity and duration are among many factors that determine where and when plants will grow and blossom within Foothills Park, summer plants like Scarlet Monkey Flower, Sneezeweed, Figwort, and Mugwort are found growing in cool, shaded areas, especially along Buckeye Creek. Others like Cudweed and Skunkweed grow at the opposite end of the ecological spectrum in hot, rocky chaparral areas. During the late summer, aromatic Hayfield and bristly Turkey Mullein grow along Park roads in grasslands and disturbed areas. How do summer flowering plants survive the drought and intense heat? Why do certain plants bloom only during the summer months?

Summer blooming plants exhibit several adaptations that enable them to survive the rigors of the dry months. One of the most important adaptations concerns water. Many plants have fast-growing, deep-penetrating root systems that can absorb moisture held over from Spring rains. Other root systems can store water for long periods until needed. While plants take in water through roots, they lose some through tiny pores in the leaves called stomata. This is known as transpiration. Plants minimize water loss through transpiration by partially closing the stomata, especially during the dry periods. With plants that grow in full sunlight, stomata are found in grooves or cavities lined with hairs, which further minimizes water loss by raising the humidity of the leaf surfaces. Farewell-to-Spring and Naked-stemmed Eriogonum exhibit another adaptation for conserving water. By reducing the number of leaves that are exposed to the drying effects of wind and sun, less water is lost through transpiration. The leaves of Farewell-to-Spring 'are few in number~ and reduced in size: Naked-stemmed Eriogonum, as the name implies, is almost devoid of leaves with the exception of those found at the base.

The leaves and stems of some plants have thick epidermal or surface tissue, while others' are covered with dense coats of hair. Both of these features play a role in insulating the inner cells from excessive heat. The whitish covering of hairs on Yellow Star Thistle and Yellow Yarrow serves this purpose by deflecting the sun's rays. Hayfield Tarweed and Bush Monkey Flower and others secrete or release glandular substances through hairs and pores in the epidermis. These plants are very sticky and sometimes odorous. While the exact role of these viscid materials is not known, there are some possibilities to consider. 'Glandular secretions, as seen in the Bush Monkey Flower, may serve to inhibit water loss by coating the' leaves. These glandular materials may also attract or repel certain insects, both beneficial and harmful. The odor and taste of these secretions may discourage gazing animals.

Unfortunately, it is not possible to find one single factor that accounts for the time of the year in which plants produce their blossoms. A combination of environmental factors plus the genetic makeup of the plant determines when the plant will bloom. An example is some of the summer flowering plants which require many hours of continuous light before flowers are produced. When the right amount of light is available each day, a hormone is produced that initiates flowering. Much research needs to be done before we can fully understand the complexities of plant ecology

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List of summer plants revised and updated by Ted Chandik, Naturalist (4/96)

SEE REVERSE SIDE FOR A LIST OF SUMMER PLANTS IN FOOTHILL PARK

City of Palo Alto Department of Community Services

COMMON SUMMER FLOWERING PLANTS IN FOOTHILL PARK

Habitat Abbreviations:

Ch & Chap: Chaparral Gr: Grassland Str: Stream Wd: Woodland

Flower color	Habitats	Flowering Months: From - To		Flower size in inches	Plant size in feet	Herb unless noted	Common Name	Family Name	Perennial unless noted
Blue	Lake	May	Sept	1/4	2		<i>Western Verbena</i>	<i>Verbena</i>	Annual
	Chaparral	June	Oct	1/2	2		<i>Skunkweed</i>	<i>Phlox</i>	
Green-gray	Grassland	June	Oct	1/8	1		<i>Turkey Mullein</i>	<i>Spurge</i>	
Pink	Gr- & Stream	May	July	1/4	5	Shrub	<i>Common Snowberry</i>	<i>Honeysuckle</i>	Biennial
	Stream	Mar	Oct	1/2	6		<i>Fuller's Teasel</i>	<i>Teasel</i>	
	Grassland	April	Aug	1	3		<i>Farewell-to-Spring</i>	<i>Eve. Primrose</i>	Annual
	Gr-Str-Wd	April	Oct	1	5	Shrub	<i>Wild Rose</i>	<i>Rose</i>	
Purple	Chaparral	May	Sept	1/2	2		<i>Pennyroyal</i>	<i>Mint</i>	
	Grassland	May	Nov	3/4	3		<i>Purple Star Thistle</i>	<i>Sunflower</i>	
	Grassland	May	July	1	7	Shrub	<i>Chaparral Pea</i>	<i>Pea</i>	
Red	Lake-Str-Gr	Feb	July	3/8	4		<i>California Bee Plant</i>	<i>Figwort</i>	
	Chaparral	Mar	Aug	1	2		<i>Wooly Paint Brush</i>	<i>Figwort</i>	
	Ch-Gr-Wd	April	July	1-1/4	1		<i>Indian Pink</i>	<i>Pink</i>	
	Chap-Wd	Mar	Sept	1-1/2	2		<i>Franciscan Paint Brush</i>	<i>Figwort</i>	
	Stream	June	July	2	4		<i>Scarlet Monkey Flower</i>	<i>Figwort</i>	
White	Chaparral	May	July	1/16	10	Shrub	<i>Chamise</i>	<i>Rose</i>	
	Chap & Wd	April	July	1/8	10	Shrub	<i>Creambush</i>	<i>Rose</i>	
	Grassland	April	Aug	1/8	6		<i>Poison Hemlock</i>	<i>Carrot</i>	Biennial
	Chaparral	June	Aug	1/8	2		<i>Naked-Stem Eriogonum</i>	<i>Buckwheat</i>	
-yellow	Gr & Wd	April	June	1/4	15	Shrub	<i>Blue Elderberry</i>	<i>Honeysuckle</i>	
	Chap & Wd	April	July	1/4	3		<i>Common Yarrow</i>	<i>Sunflower</i>	
-green	Chap & Wd	June	July	1/4	15	Shrub	<i>Toyon</i>	<i>Apple</i>	
	Gr & Stream	July	Sept	1/4	3		<i>Milkweed</i>		
	Ch-Gr-Wd	May	Aug	3/8	2 in		<i>Yerba Buena</i>		
	Chap & Gr	May	Aug	3/8	2		<i>California Cudweed</i>	<i>Sunflower</i>	Biennial
	Chap & Wd	Aug	Oct	3/8	10	Shrub	<i>Coyote Brush</i>	<i>Sunflower</i>	
-yellow	Grassland	Jan	Dec	1/2	2		<i>Mayweed</i>	<i>Sunflower</i>	Annual
	Ch-Gr-Wd	May	June	3/4	3		<i>Soap Plant</i>	<i>Lily</i>	
	Grassland	May	Aug	3/4	2		<i>Hayfield Tarweed</i>	<i>Sunflower</i>	Annual
	Grassland	May	July	3	3		<i>Indian Tobacco</i>	<i>Nightshade</i>	
Woodland	June	July	4	7		<i>Matilija Poppy</i>	<i>Poppy</i>		
Yellow	Gr-Str-Wd	June	Nov	1/8	4		<i>California Mugwort</i>	<i>Sunflower</i>	
-gray	Chaparral	July	Aug	1/8	2		<i>Vigate Eriogonum</i>	<i>Buckwheat</i>	Annual
	Chap & Wd	Mar	Nov	1/4	2	Shrub	<i>Yellow Yarrow</i>	<i>Sunflower</i>	
-red	Chaparral	May	Oct	3/8	2	Shrub	<i>Deerweed</i>	<i>Pea</i>	
	Lake & Str	April	Nov	1/2	4		<i>Sneezeweed</i>	<i>Sunflower</i>	Biennial
	Chap & Gr	June	Dec	3/4	2		<i>Yellow Star Thistle</i>	<i>Sunflower</i>	
	Chaparral-Lake	April	July	1	7	Shrub	<i>Bush Poppy</i>	<i>Poppy</i>	Annual
	Ch-Gr-Wd	Jan	Oct	1-1/2	3		<i>Common Monkey Flower</i>	<i>Figwort</i>	
-orange	Ch-Gr-Wd	Mar	July	2	3	Shrub	<i>Bush Monkey Flower</i>	<i>Figwort</i>	

