

INTRODUCTION



This book is an attempt to present to general readers not trained in taxonomic botany, but interested in nature and their surroundings, some of the wildflowers of the California mountains in such a way that they can be identified without technical knowledge. Naturally, these are mostly summer wildflowers, together with a few of the more striking species that bloom in spring and fall. They are roughly those from the yellow pine belt upward through the red fir and subalpine forests to the peaks above timberline. Obviously, the 286 plants presented cannot begin to cover all that occur in so great an altitudinal range, especially when the geographical limits of the pine belt are considered.

Mention of the pine belt in California mountains will naturally cause you to think of the Sierra Nevada, but of course this belt also extends into the southern Cascade Range (Mount Shasta and Lassen Peak in California) and the Siskiyou Mountains in the northwestern part of the state. As you move southward in the North Coast Ranges through the Yolla Bolly Mountains to Snow Mountain and its environs in Lake County, you may follow the pine belt even into the Santa Lucia Range of the South Coast Ranges. But it extends even farther south, following the Sierra Nevada into the Tehachapi Mountains, Pine Mountain, or Mount Pinos, and the San Gabriel, San Bernardino, and San Jacinto Mountains, all of which have an extensive area, in terms of both altitude and territory, in the pine belt. Even the mountains of San Diego County, such as Palomar Mountain, Cuyamaca Peak, and the Laguna Mountains, have many wildflowers and trees that are common in the Sierra Nevada. Perhaps 100 species in the Sierran pine belt reach San Diego County, another 100 find their southern limit in the San Jacinto and Santa Rosa Mountains of western Riverside County, and 125 more reach the San Bernardino Mountains. In this book I have also included some plants found only in these southern ranges, as well as some confined to the Coast Ranges. I have made no attempt to represent species from the higher desert mountains, such as the White Mountains and

Panamint Range, because for the most part the wildflower seeker does not travel in the desert in summer.

The California Mountains

In general, the mountains of California consist of two great series of ranges: an outer, the Coast Ranges; and an inner, the Sierra Nevada and the southern end of the Cascade Range, including Lassen Peak and Mount Shasta. The Sierra Nevada, an immense granitic block 400 miles long and 50 to 80 miles wide, extends from Plumas County to Kern County. It is notable for its display of cirques, moraines, lakes, and glacial valleys and has its highest point at Mount Whitney at 14,495 feet above sea level. The Cascade Range, on the other hand, is volcanic, with many extinct volcanoes, the highest in California being Mount Shasta at 14,161 feet. The California Coast Ranges are bounded on the north by the Klamath Mountains, of which the Siskiyou Mountains are the best known. The Coast Ranges—several more or less parallel series of outer and inner ranges with intervening valleys—are divided into those north and south of the San Francisco Bay Area, the North Coast Ranges and the South Coast Ranges, respectively. To the south are the Transverse Ranges, where a pine belt extends primarily into the San Gabriel and San Bernardino Mountains, the latter with the highest point in southern California, namely, San Geronio Mountain (also called Grayback Mountain) at 11,485 feet. Then, oriented in a more north-south direction, are the Peninsular Ranges (including Santa Ana Peak, San Jacinto Peak, Santa Rosa Mountain, Palomar Mountain, Cuyamaca Peak, and Laguna Peak), with San Jacinto Peak the highest at 10,800 feet.

For the most part, the pine belt receives considerable precipitation, usually more than 25 inches per year, and a large proportion of it is in the form of snow. In the Sierra Nevada, the snowfall may be tremendous—as much as 450 inches per

year. Thus, freezing temperatures are common for several months of the year, but summers may be quite warm during the day with dry air and intense sun. Although the California mountains have some summer rain, they do not get nearly as much as do the Rocky Mountains, for instance. It is not surprising then that in many ways the Sierran flora is not as rich as that of some other great mountain ranges of the same latitude and that, although the Sierra Nevada has sufficient elevation and winter for circumpolar plants, the number of species is not nearly so large as in the Rocky Mountains. Much of the montane flora of the California higher mountains has evolved from local sources and local groups of plants adapted to low-moisture conditions instead of being related to plants of more northern localities. There are, of course, some circumpolar or far northern species, such as toad rush (*Juncus bufonius*), quaking aspen (*Populus tremuloides*), mountain-sorrel (*Oxyria digyna*), long-stalked starwort (*Stellaria longipes*), saxifrage (*Saxifraga mertensiana*), seep-spring monkeyflower (*Mimulus guttatus*), and others. But many montane species are quite local, some even confined to a single mountain range or even part of that range, as are high mountain larkspur (*Delphinium polycladon*) and creeping sidalcea (*Sidalcea reptans*) of the Sierra Nevada; bird-footed checker-bloom (*Sidalcea pedata*), Parish's rock cress (*Arabis parishii*), and ash-gray Indian paintbrush (*Castilleja cinerea*) of the San Bernardino Mountains; wing-seed draba (*Draba pterosperma*) of the Marble Mountains in Siskiyou County; Trinity Mountains rock cress (*Arabis rigidissima*) of the Trinity Mountains in Trinity and Humboldt Counties; and San Jacinto prickly phlox (*Leptodactylon jaegeri*) of the San Jacinto Mountains in Riverside County.

One of the interesting features of our mountains is that the dry summer makes possible a great differentiation of habitats. We have moist, often grassy streambanks; wet meadows and swampy places; ponds with sandy or muddy shores; dryish flats either exposed or shaded by trees; dry, rocky slopes and

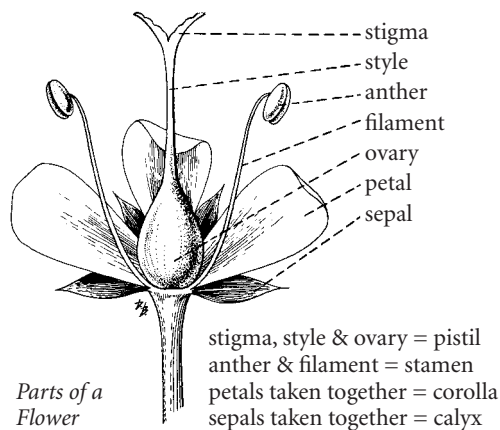
points; talus slopes of loose masses of small stones; and even sheer walls of rock with mere crevices for plant growth. All these habitats can and do have different plants even when at the same elevation. Then, too, changes in altitude alone make for very different climates and lengths of growing seasons, with marked effects on the species to be found.

For the most part, this book considers the vegetation of the yellow pine forest and higher areas. This forest begins, mostly, at an elevation of 2,000 to 3,000 feet in the northern parts of the state and runs up to 6,000 or 7,000 feet, whereas in the southern counties it ranges from about 5,000 to 8,000 feet. It is characterized by yellow pine (*Pinus ponderosa*), sugar pine (*P. lambertiana*), Douglas-fir (*Pseudotsuga menziesii*), incense-cedar (*Calocedrus decurrens*), white fir (*Abies concolor*), and California black oak (*Quercus kelloggii*) and has a growing season of four to seven months. Above it is found red fir (*Abies grandis*) forest, at 5,500 to 7,500 or 9,000 feet in northern California, and 8,000 to 9,500 feet in the south. Its growing season is three to four-and-a-half months, and its characteristic trees are red fir, Jeffrey pine (*P. jeffreyi*), western white pine (*P. monticola*), chinquapin (*Chrysolepis chrysophylla*), and quaking aspen. Next higher comes the lodgepole forest, from about 8,300 to 9,500 feet and found largely north of the central Sierra Nevada. The growing season is nine to 14 weeks, and the dominant trees are lodgepole pine (*P. contorta* subsp. *murrayana*) and mountain hemlock (*Tsuga mertensiana*). Above 9,500 feet and poorly represented in southern California, and above 8,000 or 9,000 feet in the more northern parts of the state, is the subalpine forest, our most boreal forest in character. The growing season is only about seven to nine weeks, and killing frost is possible in every month. Characteristic trees are the limber pine (*P. flexilis*), foxtail pine (*P. balfouriana*), whitebark pine (*P. albicaulis*), lodgepole pine, and mountain hemlock. Next come the alpine fell-fields, or the area above timberline, which is above 11,500 feet in the Sierra Nevada and above 9,500 feet in the North Coast

Ranges. Here is found little except perennial herbs, some of them rather woody, scattered or growing among rocks and often forming cushions of low turf.

How to Identify a Wildflower

It is impossible to discuss plants and their flowers without using the names of some of their parts. Some of these terms are defined here. Consult the glossary for other terms that are unfamiliar to you. In the typical flower, we begin at the outside with the sepals, which are usually green, although they may be colored. The sepals together constitute the calyx. Next comes the corolla, which is made up of separate petals or petals grown together to form a tubular, bell-shaped, or wheel-shaped corolla. Usually, the corolla is the conspicuous part of the flower, but it may be reduced or lacking altogether (as in grasses and sedges), and its function of attraction of in-



A representative flower

sects and other pollinators may be assumed by the calyx. The calyx and corolla together are sometimes called the perianth, particularly where they are more or less alike. Next, as we proceed inward into the flower, we usually find the stamens, each consisting of an elongate filament and a terminal anther where pollen is formed. At the center of the flower is one or more pistils, each with a basal ovary containing the ovules, or immature seeds; a more or less elongate style; and a terminal stigma with a rough, sticky surface for catching pollen. In some species, stamens and pistils are borne in separate flowers or even on separate plants. In the long evolutionary process by which plants have developed into the many diverse types of the present day and have adapted to different pollinating agents, their flowers have undergone very great modifications, and so now we find more variation in the flower than in any other plant part. Hence, plant classification is largely dependent on the flower.

To help you identify a wildflower, either a photograph or a drawing is given for every species discussed in detail, and the flowers are grouped by color. In attempting to arrange plants by flower color, however, it is difficult to place a given species to the satisfaction of everyone. The range of color may vary so completely from deep red to purple, from white to whitish to pinkish, or from blue to lavender that it is impossible to satisfy the writer himself as to whether one color group or another should be used, let alone the readers. I have done my best to recognize the general impression given with regard to color and to categorize the plant accordingly, especially when the flowers are minute and the general color effect may be caused by parts other than the petals. My hope is that by comparing a given wildflower with the illustration it resembles within the color section you think is most correct and then checking the facts given in the text, you may, in most cases, succeed in identifying the plant.

Which Wildflowers Are in This Book

One of the big problems that I faced in writing this book was which species to include. Of course, the title suggests a given limitation: plants of the pine belt and above. In my book *California Spring Wildflowers*, I included many plants from the redwood forests and other coastal areas and from below the pine belt, most of them spring bloomers. *California Desert Wildflowers* includes plants from below the pine belt and on the desert slopes. So, in this book we have the truly montane species, which are primarily summer bloomers. But here I can present only 286 species out of the 1,000 or so that grow in the area. If all were illustrated, the volume would be unwieldy and expensive. I have tried therefore to select plants that are representative of their groups and, in many cases, to mention others in the text. I have presented not only species that are showy and naturally get attention, such as the lilies, but others that are unusual in one way or another and may arouse your curiosity.

I have tried not to be too local in selection of species so the book may be of use in various parts of the state rather than in just the Sierra Nevada, although naturally this area is the most representative of the California mountains and the most widely visited.

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