CALIFORNIA NATURAL HISTORY GUIDES

INTRODUCTION TO SHORE WILDFLOWERS

of California, Oregon, and Washington

Revised Edition

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INTRODUCTION

Shore Climate

As explained in the first paragraph, the species represented in this book are not limited to the state of California. But as you study beach and shore species, you will immediately see that many grow far to the north, even to Alaska. The cooler, more regular, climate of the coast as compared with that of the interior and the longer-lasting effect of even small amounts of rain along the coast as compared with inland valleys make it obvious that the same plant may range, if not from southern California, at least from central California far into Oregon or Washington or even to British Columbia or Alaska. Coastal summers are relatively cool, and coastal winters are relatively warm. Hence, this book attempts to help you identify not only California shore wildflowers, but those of Oregon and Washington. In fact, some species are included from these two latter states that do not range far southward into California or only range into its extreme northern part.

What Is the Shore?

The first question that arose in my mind when I was asked to write a book on shore wildflowers was what to include. Naturally, the actual sandy beach and dunes, which together might be called the coastal strand, would come first. Next would be the coastal salt marshes, with their rather distinctive flora. Then I would include the bluffs along the coast, especially as far inland as salt spray seems to influence. Such influence is evident in southern California, particularly in the appearance of desert plants, such as bladderpod *(Isomeris arborea),* or of more or less saline conditions. But as you go north, this influence decreases, although in much of central California there is a well-marked zone of coastal scrub, which has quite different assemblages of plants than in the redwood or other forests

behind it. I assume that this coastal scrub is still due, at least in part, to the influence of salt spray. But still farther north with still greater rainfall, as in extreme northern California and in Oregon and Washington, the forests come right down to the bluffs and to the actual sand of the back beaches. I believe that with the high rainfall in this area, any possible effect of salt is almost immediately leached out and that the actual shore is invaded by plants such as pearly everlasting *(Anaphalis margaritacea)* and giant horsetail *(Equisetum telmateia),* normally of wooded places, whereas a little to the south, species such as false lily-of-the-valley *(Maianthemum dilatatum)* come out on to the actual beach only along freshwater streams. In some ways, then, the northern coast has more species that normally grow in the adjacent forests than does the southern. Then, too, with the greater rainfall in the north, sandy areas are more easily taken over by cordgrass *(Spartina foliosa)* and other perennials, and there is not the development of as rich a strand flora, for the most part, as there is in Monterey and San Luis Obispo Counties of California, although a possible exception might be cited at Gold Beach, Oregon.

Characteristics of Shore Plants

Apparently the most important single factor in the environment of shore plants that sets them apart from those farther inland is the presence of salt or salts in the soil from seawater. Dissolved salts mean physiological dryness for the plant, which then has to contain within itself a higher percentage of dissolved substances to pull in water by osmosis than it would if in pure water. This is true whether growing in arid regions such as the desert, where the dissolved salts in the soil may be appreciable and where they may even coat the surface with a layer of so-called alkali, or whether found along the sea coast.

Usually plants of these two types of environments have a reduced evaporating surface as compared with those in a mesophytic environment, which has an abundance of good water in the soil, as in the garden or in a region of high rainfall. Reduction of evaporating surface may cause the development of thickened, fleshy leaves or the replacement of functional leaves by fleshy green stems with reduced evaporative surfaces. In either case, there is a resultant succulence, which you will notice if you are acquainted with the plants of an inland environment and are at the beach. You may run into species closely related to those that are familiar, but quite different in their succulence and compactness, or you may find more succulent forms of the same species. Examples are the sand-verbenas (*Abronia* spp.) and fiddlenecks (*Amsinckia* spp.) of the coast and of the interior.

Halophytes are plants specially adapted to life in soils with high concentration of salts. Good examples are some of the species of saltbush (*Atriplex* spp.), saltgrass (*Distichlis* spp.), pickleweed (*Salicornia* spp.), sea-blite (*Suaeda* spp.), and sea-fig and Hottentot-fig (*Carpobrotus* spp.). Some of these are found on sandy strands, others are found in the coastal salt marshes. For the most part these halophytes are not beautiful, but they can be quite striking in appearance.

Which Wildflowers Are in This Book?

I have used the term "wildflower" very loosely, as mentioned previously, making it almost synonymous with the word "plant," or perhaps better, "higher plant." Two flowering plants that grow entirely submerged, especially in shallow bays, are eel-grass (*Zostera* spp.) and surf-grass (*Phyllospadix* spp.). These plants are often cast upon beaches with pieces of kelp or seaweed. I also dedicate a small section to some of the coastal ferns and horsetails, which do not produce flowers. And we do not think of shrubs and trees as wildflowers, but

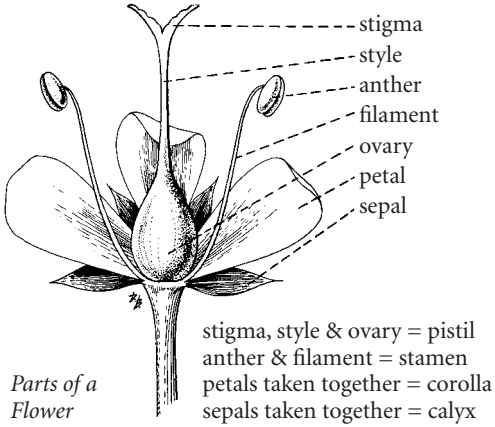
several of them are discussed. In other words, I have attempted to include the more interesting higher plants found near or on the shore, as well as the showy forms such as azaleas (*Rhododendron* spp.), California poppy *(Eschscholzia californica),* and foxglove *(Digitalis purpurea).*

Of course, the scope of a small book like this is limited and it cannot possibly contain all the plants found in the area under discussion. Often, this book will indicate that the species you identify is a *Gilia,* a *Phacelia,* or a *Castilleja,* but perhaps not the species actually illustrated. When more information is needed than is available in this book, refer to the larger, more complete volume *The Jepson Manual: Higher Plants of California,* edited by J. Hickman (University of California Press, 1993), which is available in California stores and libraries. Also very useful, although some of the plant names are now different, is *A California Flora and Supplement,* by P. Munz and D. Keck (University of California Press, 1973).

For plants found farther north, see *Flora of the Pacific Northwest,* by C.L. Hitchcock and A. Cronquist (University of Washington Press, 1973); *Illustrated Flora of the Pacific States,* by L. Abrams (Stanford University Press); or *A Manual of the Higher Plants of Oregon,* by M.E. Peck (Oregon State University Press, 1961). Be aware, however, that many of the names in the latter books will be out of date.

How to Identify a Wildflower

It is impossible to discuss plants and their flowers without using the names of their parts. But only the most necessary terms have been included, some of which 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 of other colors. The sepals together constitute the calyx. Next comes the corolla, which is made up of separate petals or petals



A representative flower

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 be lacking altogether (as in grasses and sedges), and its function of attraction of insects 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 pistil, 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 pistil 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 by which they have been adapted to various pollinating agents, their flowers have undergone very great modifications, and so now we find more variation in the

flower than in other plant parts. Hence, plant classification is largely dependent on the flower.

To help you identify a flower, 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, let alone the readers. I have done my best to recognize the general impression given with regard to color and to classify 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.

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