SOQUEL CREEK

STREAMSIDE CARE GUIDE

The City of Capitola

420 Capitola Avenue, Capitola, California 95010

Prepared by:

THE CALIFORNIA NATIVE PLANT SOCIETY, SANTA CRUZ CHAPTER,

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Contents

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Streamside Care

INTRODUCTION

This guidebook is intended as a reference for residents living along Soquel Creek in Capitola. It describes the Creek's natural resources and offers ideas for enhancing the wildlife habitat. This waterway is a central feature of Capitola's rich natural heritage. As residents, we benefit from the Creek's beauty and, in turn, can help restore the values of the streamside corridor in our own backyards. With only a little effort, natural gardens can be designed to attract a variety of the interesting wildlife that lives along Soquel Creek.

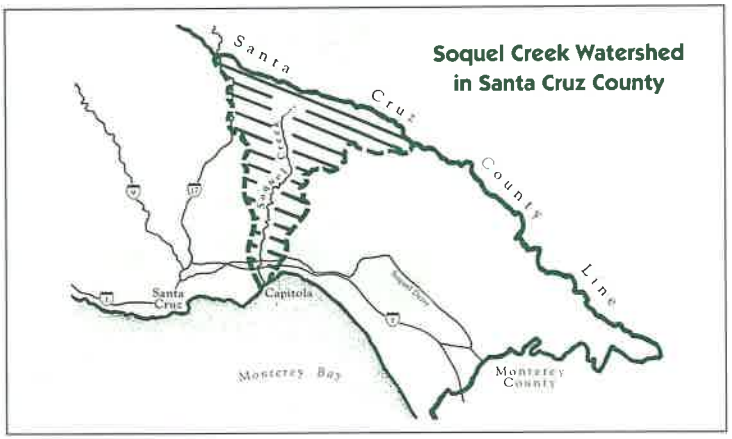
Red-shouldered Hawk

History of Soquel Creek

A WATERSHED PERSPECTIVE

Soquel Creek begins on the western slope of the Santa Cruz Mountains near Loma Prieta, and flows south for about 15 miles to Monterey Bay at Capitola. The creek's watershed of approximately 42 square miles is the third largest in Santa Cruz County after those of the Pajaro and San Lorenzo Rivers.

The upper reaches of Soquel Creek flow through deep valleys, whose slopes are covered with dense forests of conifers such as coast redwood and douglas fir, as well as broadleaf trees including tanoak, live oaks, bigleaf maple and madrone. The terrain changes to rolling hills and terraces near the ocean, and human development becomes a prominent feature of the landscape.



EARLY HUMAN IMPRINTS ON SOQUEL CREEK

Prior to settlement by Europeans, Soquel Creek probably flowed undisturbed to the sea, largely unaltered by the native people of the area. The Spanish ranching period and early settlement by Americans may have seen only minor changes along the Creek. The logging industry which thrived in the Santa Cruz Mountains in the late 1800s and early 1900s probably resulted in the first major changes to the Creek's natural conditions.

The removal of extensive areas of forest no doubt resulted in massive erosion, bank failures, and increased flooding. The increasing settlement of the area brought people to reside along the Creek, especially in the lower watershed, near the creek mouth. Early photographs from what was then "Camp Capitola" (circa 1900) show the adjacent stream habitats had already been seriously altered by settlement.

RECENT HUMAN EFFECTS ON SOQUEL CREEK

Over the last fifty years, the human population residing in the Soquel Creek watershed has grown dramatically. The lower watershed has been most obviously changed,

and extensive suburban and commercial development has led to removal of much of the natural habitat along and near the creek. Increases in urban pollution, removal of water, and introduction of invasive plants and non-native animals and pets have all reduced Soquel Creek's natural values.

However, compared to streams in more densely populated areas, such as in the San Francisco Bay Area, Soquel Creek still retains areas of natural riparian habitat, and much of its watershed has been spared development. Thus, the stream still supports a rich ecosystem of many plants and animals. In all of Capitola, Soquel Creek is the cornerstone of the City's natural values. Today, Soquel Creek in Capitola is bordered by fine riparian habitat, stands of non-native trees (such as eucalyptus), and the numerous gardens and backyard landscapes of creekside residents.

What Is Riparian Habitat?

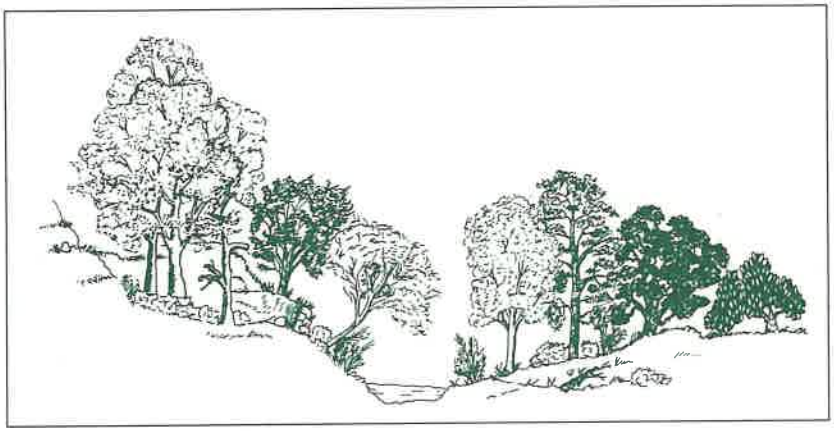
The streamside woodland of the creek, called riparian habitat, is an important natural feature of the stream. The streamside is home to many plants that only grow close to water. And more species of trees may be found there than in other woodland or forest habitat. The riparian habitat is particularly valuable for wildlife, and more species can be found there than in other terrestrial habitats. Additionally, riparian habitat helps check erosion and moderates flooding.

The Natural Resources

THE CREEK CORRIDOR

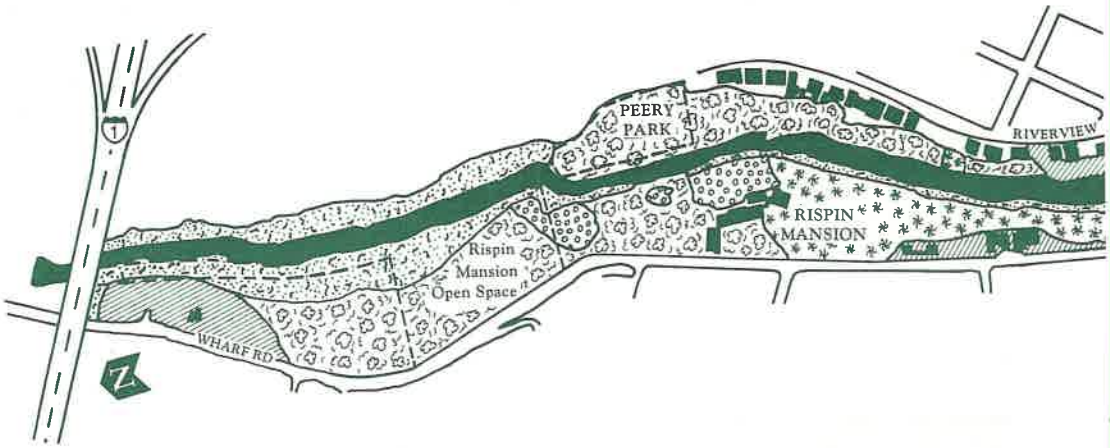
The riparian habitat of the upper reaches of Soquel Creek is a corridor of white alder, bigleaf maple, and California bay, intimately associated with the adjacent forest of redwood, firs and oaks. Further downstream the differences between the riparian corridor and adjacent forest become more distinct. Trees such as black cottonwood, willow, boxelder and western sycamore become prominent members of the streamside community, and coast live oaks and bays occur higher along the stream banks.

In the creek's lowest reach, in Capitola, the riparian habitat has a complex, multi-layered structure. Life abounds! Common native trees include black cottonwood, western sycamore, boxelder, white alder, several species of willows, coast live oak, and California buckeye. The canopies of the tallest trees, the cottonwoods,



Creek cross-section at Rispin Mansion

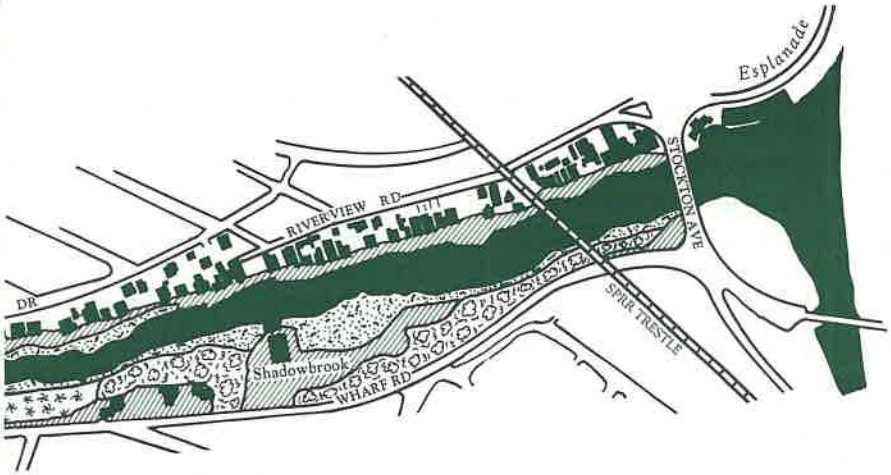
Wildlife Habitats of Soquel Creek



reach above the sycamores, box-elders, white alder and willows. This, and the presence of dense tangles of understory plants, such as blackberry, creek dogwood, and poison oak, create a habitat with a notably diverse structure. Many of the trees are deciduous, and support large populations of insects. Snags (standing dead trees) and downed wood are common. The aquatic habitat is also diverse, with pools, runs, and riffles. These are inhabited by juvenile steelhead, California roach, Sacramento sucker, threespine stickleback, prickly sculpin, coast range sculpin and an occasional juvenile coho salmon.

All of these features contribute to the unique value of riparian habitat

for wildlife. The riparian and stream habitat of the lower reach of Soquel Creek, downstream of Highway 1, is home to over 150 species of wildlife during the course of a year, as well as the several species of fish. Birds are the most diverse group of animals, and they reward casual study. Many are easily viewed, and their varied behaviors and seasonal migrations are a joy to experience. Mammals, reptiles and amphibians, while equally interesting, are less diverse, and more difficult to observe.



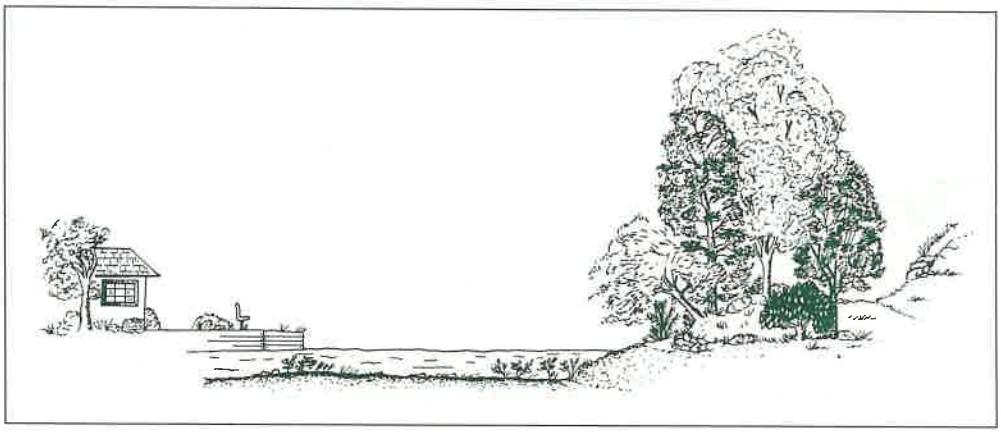
Mixed evergreen forest (redwood etc.)

Deciduous riparian woodland

Oak riparian woodland

Residential planting

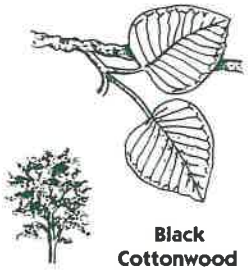
Eucalyptus grove



Soquel Lagoon near the railroad trestle

The Riparian Woodland

Here are some of the trees and shrubs which are common in the riparian habitat of Soquel Creek in Capitola. All of them may be found in the vicinity of Peery Park and just upstream.



Black Cottonwood

COMMON TREES

Black Cottonwood, *Populus trichocarpa*. These tall deciduous trees are numerous along much of Soquel Creek. Their high canopies reach skyward through the crowns of lesser trees. The new green leaves appear in spring followed by the cottony wind-borne seed, after which they are named. In the fall, the leaves turn a bright yellow.

Western Sycamore, *Platanus racemosa*. The massive spreading branches of the sycamore and its beautiful, dappled bark are unique among the trees of Soquel Creek. Their large maple-like leaves are easily identified. Few sycamores remain in Capitola, but fine specimens may be seen near Peery Park.

White Alder, *Alnus rhombifolia*. Alders border Soquel Creek along much of its length. These fast growing trees are among the first to appear along the stream-edge following floods.

Willow, *Salix* spp. At least four different native species of willows grow along Soquel Creek (arroyo, yellow, red and Coulter's). Willows are generally not as tall as other riparian trees, and often form dense thickets along the water's edge. They vary in form from rounded and shrub-like (arroyo willow) to moderately tall trees (red and yellow willow).

Boxelder, *Acer negundo*. Actually a species of maple, this medium-sized, rounded tree has light green, three-parted leaves. Clusters of winged seeds

Western Sycamore

White Alder

Willow

Boxelder

(called samaras) are conspicuous on the female trees during fall and winter.

Coast Live Oak, *Quercus agrifolia.* Unlike the preceding trees, coast live oaks are not confined to riparian habitats. Along Soquel Creek, they grow mostly on the banks and slopes away from the water's edge. There is a fine stand at Peery Park. These evergreen trees are an important component of other forest and woodland communities throughout the county.

California Buckeye, *Aesculus californica.* These small, rounded deciduous trees have the showiest flowers of any native tree along Soquel Creek. The flowers bloom in May and June and develop into huge brown seeds which persist into the winter. Leaves develop early in spring and drop in late summer before other trees.

California Blackberry

Creek Dogwood

Poison Oak

COMMON SHRUBS

California Blackberry, *Rubus ursinus.* This prickly vine forms dense tangles in the riparian understory throughout the region. Berries are produced mostly in sunny spots and ripen in summer.

Creek Dogwood, *Cornus californica.* This shrub forms thickets from underground runners. The reddish stems distinguish this species from other shrubs along Soquel Creek.

Poison Oak, *Toxicodendron diversilobum.* A versatile plant, poison oak forms trailing ground cover, climbing vines, or compact shrubs. The name *Toxicodendron* means "poison tree." Of the native plants, its three-part leaves provide the brightest show of red fall color in the area.

Elderberry, *Sambucus mexicana.* These fast growing shrubs are found more frequently on edges and in openings of the woodland. Flowers are long blooming and occur in yellow-white, large flat clusters. Birds are very fond of the dusty, bluish-black berries. The elderberry is more common inland of the coastal ranges.

Coast Live Oak

California Buckeye

Elderberry

Invasive Non-native Plants

COMPETITORS IN OUR RIPARIAN

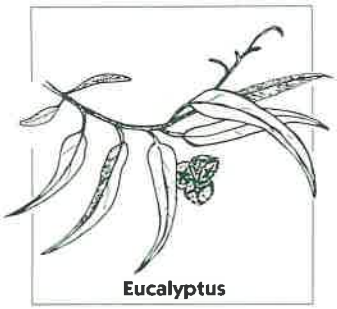
Some plants which grow along Soquel Creek and other stream corridors throughout our county are native to places other than California, and are quite harmful to our riparian systems. These plants are invasive and displace the native vegetation. The term "invasive non-native plants" refers to problem plants which are not native to a particular area. Although these plants grow well locally, their abundance indicates competition for available space with many of the native riparian plants which belong in our creeks.

Native riparian plants are needed because they provide important food sources, cover and breeding habitat for the complex web of animals and insects which are specially adapted and attracted to riparian habitat. Most non-native plants do not have these values. Where invasive non-native plants grow in place of native riparian vegetation, the habitat value for wildlife is lower than the natural condition.

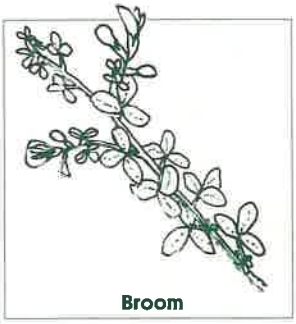
Although invasive non-native plants are not appropriate in riparian corridors, not all non-native plants are bad. Indeed, most of our beautiful garden plants are non-native.

Many people refer to invasive non-native plants as weeds. Unfortunately, this term implies that all non-native or "exotic" (from another place) plants are bad, and that they all take over and become a problem for our native flora. This is not so. In fact, most non-native or "exotic" plants suitable for garden use stay where they are planted without becoming invasive, can be beneficial for backyard wildlife, and are attractive to people too!

It is important to distinguish between the invasive non-native plants


Eucalyptus


Acacia


Broom

which should never be planted near a stream, and the harmless and even beneficial "exotics" which are appropriate for garden use. Several of the more undesirable and troublesome invasive non-native plants which grow along Soquel Creek are described below.

The plant species presented here pose the greatest potential threat to the vitality of the native riparian forest.

TREES

Bluegum Eucalyptus, *Eucalyptus globulus*. The huge evergreen trees, native to Australia, tower over native riparian species, and produce chemicals which inhibit other plants.

Acacia, *Acacia spp*. Another Australian native, the Acacia also spreads rapidly from seed, and is difficult to control once it is established. They have showy, displays of yellow flowers in late winter, but the trees are little used by wildlife.

SHRUBS

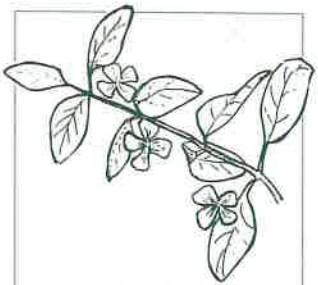
Broom, *Cytisus spp*. French and Scotch broom are familiar garden shrubs which invade many habitats, including open, sunny areas within riparian corridors. Broom should never be planted in the garden, because it is very difficult to control when it naturalizes in the wild.

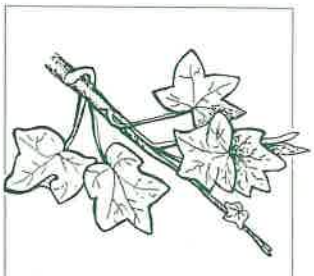
VINES

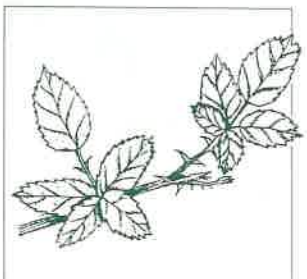
Periwinkle, *Vinca major*. This widely-planted groundcover spreads from backyards and has replaced large areas of native understory. Periwinkles generally avoided by native wildlife, but may harbor rats and garden snails.

English Ivy, *Hedera helix*. This European vine forms a dense ground cover and also climbs and smothers trees. Like periwinkle, it is not widely used by wildlife and harbors pests.

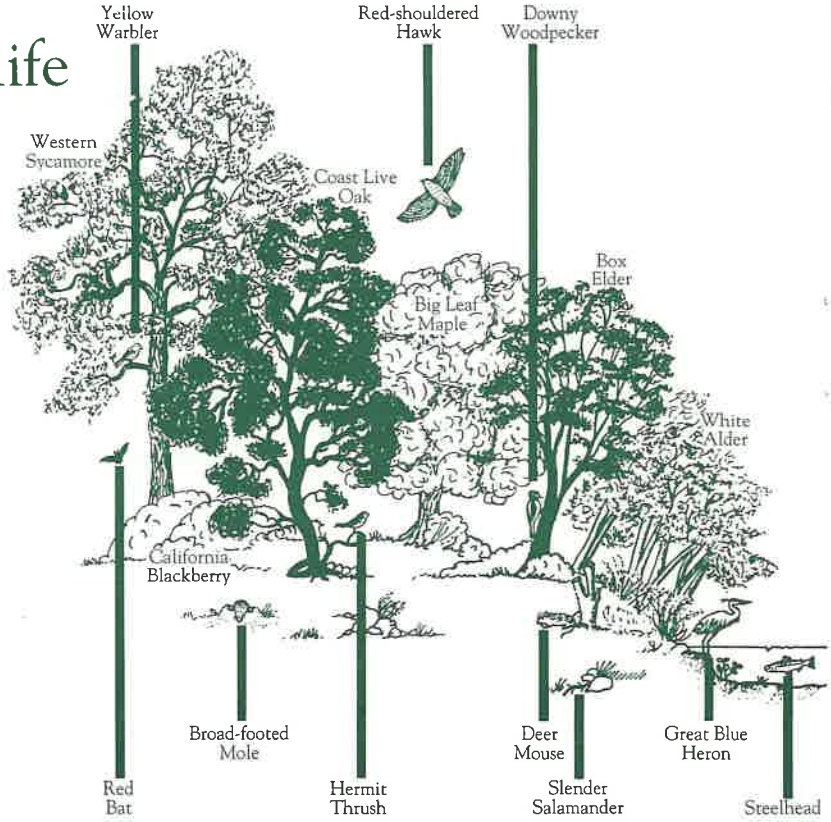
Himalaya Berry, *Rubus procerus*. This wickedly thorny vine forms dense mounding thickets which displace native vegetation.


Periwinkle


English Ivy

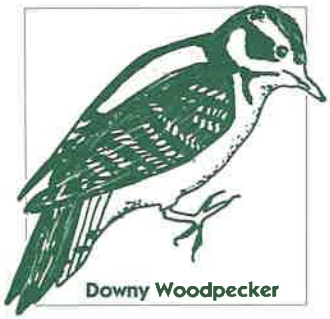

Himalaya Berry

The Wildlife

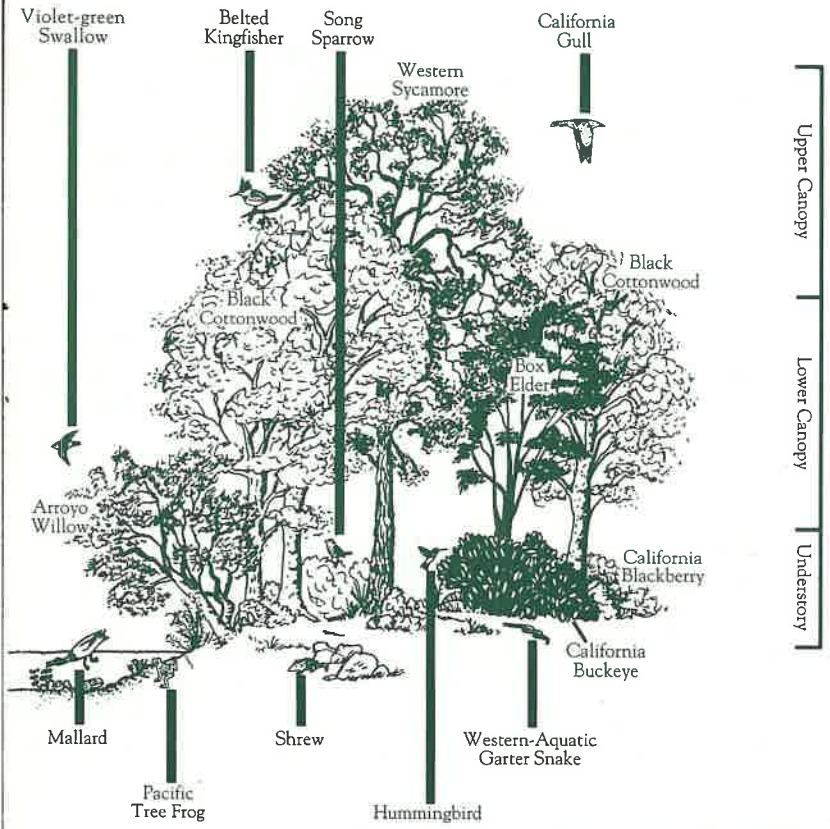


SEASONS OF THE BIRDS

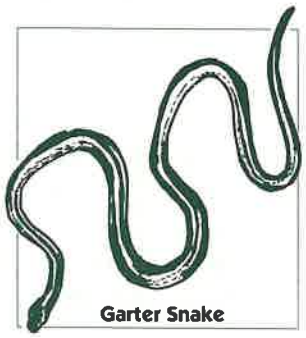
Some bird species are resident year-round. These birds are able to meet all their living requirements (cover, food, water, and living space) in this area all through the year. Many of these birds really are "resident", and do not wander far. Some may live in the same territory all their lives! Some of the resident birds of Soquel Creek are red-shouldered hawk, green-backed heron, belted kingfisher, downy woodpecker, black phoebe, scrub jay, Anna's hummingbird, American robin, chestnut-backed chickadee, bushtit, Bewick's wren, wrentit, song sparrow, California ("brown") and rufous-sided towhees, and house finch.


Downy Woodpecker

Spring along Soquel Creek is the most lively season, punctuated by the song of many birds. Resident species, begin to sing in late winter, and are working hard to raise their first brood by mid-spring, while migrant birds arrive from Central and South America during late March to May. Some migrants simply pass through to more northerly destinations, but many stay to nest. These



species include the yellow warbler, black-headed grosbeak, Swainson's thrush, Allen's hummingbird, Wilson's warbler, warbling vireo, Pacific-slope flycatcher, western wood-pewee, and violet-green swallow. The yellow warbler is special, in that it depends entirely on riparian habitat for nesting. Most of our migrant breeding birds have departed by late July and early August.



Fall migration occurs over several months, with some species departing as early as June (Allen's hummingbird). Most migrants pass south through our area from late August to mid-October, but some species continue to migrate into December. Migrant birds commonly seen in fall include hermit thrush, yellow-rumped warbler, ruby-crowned kinglet, cedar waxwing, and orange-crowned warbler. Some individuals of these species remain to winter locally.

Winter is the hardest season for

birds. The cold weather and low food stocks mean birds must conserve energy when possible, and work hard to obtain enough food to maintain body temperatures. Wintering birds along Soquel Creek include the residents mentioned above, as well as hermit thrush, ruby-crowned kinglet, fox sparrow, Lincoln's sparrow, yellow-rumped warbler, Townsend's warblers, and American goldfinch. A common winter sight is a mixed-species flock of chickadees, bushtits, kinglets, warblers and other birds coursing though the trees. Together these birds are better able to find their insect food and to watch for predators, such as sharp-shinned and Cooper's hawks.

Bewick's Wren

Song Sparrow

OTHER WILDLIFE

During the first storms of fall and early winter you may see large adult coho salmon migrating up shallow riffles to spawn. Adult steelhead follow later in winter and early spring. In late spring and early summer you may see juvenile steelhead, Sacramento suckers and California roach in deeper pools upstream of the lagoon.

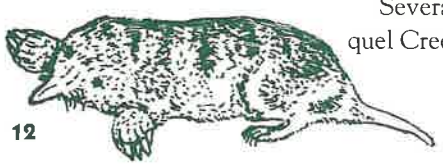
Pacific Treefrog

Several amphibians live along Soquel Creek in Capitola, especially in the vicinity of Peery Park, where riffles and pools provide a variety of aquatic habitats. Pacific treefrogs are numerous, and range in color from green to brown. Adult frogs can be found on the ground and in vegetation, and they require ponded water for egg-laying and development of the tadpoles. Several salamanders occur, all terrestrial breeders. These include California slender salamander, arboreal salamander and ensatina. If you are lucky, you may even find yellow-legged and red-legged frogs near Peery Park.

Reptiles of Soquel Creek are mostly terrestrial, but some species, such as garter snakes, also take to the water. Fence lizards are common, especially in sunny spots. You may also find western skinks, alligator lizards, and ring-necked snakes. Turtles living on Soquel Creek include the native western pond turtle and the introduced red-eared turtle.

Mammals are mostly active at night. You may see the introduced fox squirrel out during the day, but not many other species. Raccoons and opossums are among the common species which may visit your yard, but others you may not notice include deer mouse, broad-footed mole, trowbridge's shrew, and striped skunk. Bats are especially interesting to watch in the last light of evening. Several species occur, including red bat, hoary bat, and California myotis.

Broad-footed Mole



Improving Your Yard

The goal of this pamphlet is to provide Soquel Creek residents with an understanding of the natural resources of the Creek and the importance of preserving and enhancing those resources. It is also the intention of the authors to provide for creekside residents an incentive to improve their surroundings by sharing their yards with wildlife. This section describes where to start and methods you can use to ease the conversion of your yard into a creekside wildlife garden.

BEGINNING TO PLAN

Begin with the goal of improving your yard by returning some of it back to nature. Develop a plan for which plants to eliminate (e.g., invasive non-native species) and which to add. Consider the location and purpose of the plantings to help define your plan. Creekside native plants (riparian vegetation) naturally establish along the banks of creeks and rivers, where their shallow roots can easily reach the water. Therefore, when planting close to a creek, keep in mind that the plant roots will have a continual water supply, and should be well-suited to wet soils. On Soquel Creek, cottonwood, alder and willows naturally occur at the creek edge, with sycamore and oaks further up the slope, away from the water's edge. Follow nature's example when planting next to a creek. Planting willow, cottonwood and alder, or sycamore and oak in appropriate locations will provide an invaluable source of food, cover and shelter for wildlife, as well as attractive shade trees and privacy screening for your backyard landscape.

Riparian trees that are allowed to hang over and into the water will provide valuable protection against streambank erosion. Overhanging and submerged vegetation also provide good hiding places for fish such as steelhead. Submerged logs and branches provide cover that improves survival of steelhead against bird predators. This woody debris should be left unless it poses flooding problems from log jams.

Some people like to have some sun in their yard, and may not want to plant very many trees. But if you plant just a few riparian trees in appropriate locations, you will enjoy both shade and privacy screening, as well as open sunny areas. Of course, there is nothing stopping you from planting an entire riparian forest in your yard if you want to! Indeed, there can be few more beautiful sights than the dappled sunlight through

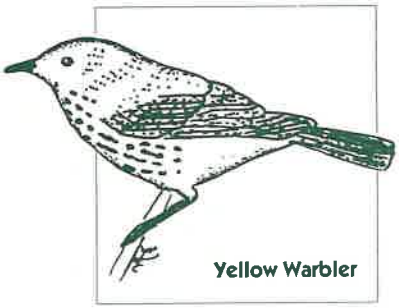
Violet-green Swallow

Pests

Riparian vegetation is naturally rich with insect life, upon which birds and other animals rely for food. Since your primary purpose in planting a wildlife garden is to attract wildlife, it makes little sense to use chemical insecticides and fungicides which may be harmful to birds and beneficial insects. Far from being common pests, most of the insects attracted to riparian vegetation are not noticed by people and do not harm ornamental plants.

backlit bright green leaves of creekside trees.

For sun lovers, several plants which do not naturally occur in riparian habitats are recommended for their value to wildlife and attractiveness to people. Species like the California fuchsia need open, sunny sites with well-drained soil for their deep roots. Other recommended plants, such as Australian Grevilleas, are not native to California, yet should not be overlooked for their value to wildlife, their non-invasive nature, and their beautiful foliage and flowers. You can place the California fuchsia or other suitable plants beside a warm, dry south or west wall of your house. Flowering drought-tolerant shrubs will brighten the sunny area around your house, while providing a variety of food sources and cover for wildlife, especially songbirds and hummingbirds. A list of recommended plants, their value for wildlife, and sources for plant stock is given on pages 20-22.


Yellow Warbler

Most of the suggested plants are available at your favorite nursery. Some of the more obscure natives can be sought at a larger nursery, or a specialist grower such as Yerba Buena Nursery. The local chapter of the California Native Plant Society (CNPS) hosts popular native plant sales each spring and fall. The Arboretum at University of California, Santa Cruz, sells many hard-to-find plants including some unique Grevilleas. The Horticulture Department at Cabrillo College also has an annual plant sale worth a trip.

Some of the recommended trees and shrubs cannot be found at nurseries or plant sales, like the wild willows and cottonwoods growing along the creek. Fortunately, they are literally in your own backyard, or very close by. You may salvage one or two willow or cottonwood seedlings from gravel bars that form in the creek bed. They are easily transplanted. You may also contact the local CNPS for information on taking and rooting cuttings of riparian trees.

CARING FOR THE GARDEN

The soil in your yard is alluvial soil, and should not need amending (or "improving") with additional soil. Alluvium is soil that is deposited by water. It is the best growing medium available, and is especially suited for the creekside native plants. Place plants which require well-drained soil at the top of a slight slope. You can either grade the slope yourself, or build a low planter bed for the drought-resistants. Your yard will be beautiful as well as functional for wildlife by clustering your plants in this manner: with lush riparian near the creek, and sun-loving drought tolerant shrubs near the house.

Installing a simple drip irrigation

system and covering everything with a dense mulch is recommended to suppress weeds and conserve water. Reliable information on designing and installing a do-it-yourself drip irrigation system is available at almost any irrigation supply store. Many nurseries also carry landscape irrigation equipment and can be of great service.

For native plants and drought tolerant plants, it is best not to fertilize, but let them establish naturally if possible. For other plants, use fertilizer at planting time, either in dry, pellet, granule, liquid or water soluble form. Apply dry fertilizers before the mulch is laid to insure contact with the root zone. Time-release fertilizers are good for the various types of plants recommended, as they tend not to overfeed plants, and slowly release nutrients into the root zone during the critical establishment period. Which ever type of fertilizer you choose, you should use something long lasting, so you will not have to feed again for a long time.

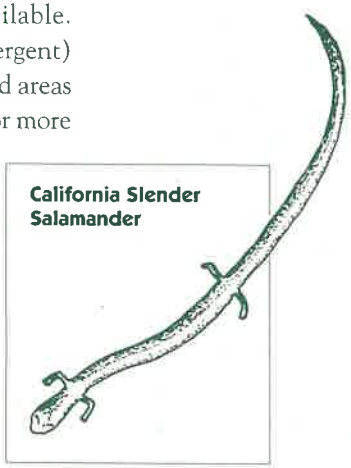
Riparian vegetation is naturally rich with insect life, upon which birds and other animals rely for food. Since your primary purpose in planting a wildlife garden is to attract wildlife, it makes little sense to use chemical insecticides and fungicides which may be harmful to birds, fish and beneficial insects. Most of the insects attracted to riparian vegetation are not noticed by people and do not harm ornamental plants. Threespine sticklebacks are abundant in the Creek and lagoon and are excellent predators on mosquito larvae. Do not wash deadly chemicals into the lagoon or Creek!

If your plants are damaged by insects or disease, it is best to treat the infestation with natural methods. Before you go running for the Isotox, remember: there are birds and butterflies out there depending on you and your yard. If outbreaks of undesirable insects do occur, examine your own gardening habits before you decide on a treatment.

Overfeeding and overwatering promote an over-abundance of new, succulent growth, which is ideal habitat for aphids. Hosing them off and crushing them is easily done and can be an effective treatment. There are several types of natural non-toxic or low-toxicity pesticides available. Spraying a mild soap (not detergent) and water solution on infected areas will also work, however two or more treatments may be necessary. Also, natural predators can be found at nurseries, such as bags of lady bugs and preying mantis eggs. Bacterial and fungal problems will be reduced if plants are not watered by a sprinkler system. Bacillus thuringensis ("B.t.") is a popular "natural" insecticide for moth larvae which should not be used, since it would kill desirable butterfly larvae as well.

Other Sources of Pollution

Less obvious sources of pollution are yard clippings and pet droppings which are either dumped or washed into the stream and lagoon. These organic substances increase bacteria in the water as they decompose. Conscientious streamside residents should properly dispose of these materials.



California Slender Salamander

Planning for Wildlife

What is a Wildlife Garden?

All wildlife requires habitat — a place to live. A good wildlife gardener should provide conditions to satisfy the four basic requirements for life of all animals: food, water, cover, living space.

You may already be a wildlife gardener. If you feed birds, keep a bird bath filled with water, and hang bird houses in your yard, you have provided three of the four requirements for some species. You may be attracting songbirds, and perhaps squirrels to your yard.

YOUR WILDLIFE PLAN

You can do a great deal to attract a larger variety of birds as well as raccoons, bees and butterflies! In nature, trees, shrubs, grasses, vines and flowers provide food, cover, and space to rear young. These also can be provided by residents of Soquel Creek. Most homeowners have an interest in landscaping their properties. When you decide to improve your yard with plantings, select plant varieties that are pleasing to you and that also have a value for wildlife.

Chesnut-backed Chickadee

The first step in designing a garden for wildlife is to draw a map of your property, and indicate plants already in place. Refer to the list of invasive non-native plants on page 8 to determine if these plants should be kept or eliminated. Define areas you intend to landscape for privacy, climate control (wind screen, shade, etc.) or aesthetic reasons. If you would like a vegetable garden, select an unshaded area. For reference to the path of the sun, indicate North on the map.

The goal is to ensure that your amenity values and the requirements for wildlife are met. If you need a windbreak, willows and cottonwoods planted along the boundary of your property will simultaneously provide cover and living space for animals. If you like attractive flowering trees, you will also fulfill the food needs of some birds and mammals.

The plans on the next page are for a lot size of about 40 by 20 feet. The height, density, and distribution of plants have been varied to attract many different types of animals. An accepted ecological principle used in wildlife management states that "the greater the variety of plants in an area, the greater the variety of wildlife." You may want to include the following features in your wildlife garden:

- A gravel plot (some birds such as mourning doves require grit for digestion)
- A bird feeder and bird house
- A trellis with a flowering vine, and a flower bed for the nectar-eating butterflies, moths, and hummingbirds.
- A bat house

Pages 20-22 list some of the plants (both native and non-native) recommended for wildlife. Not every type may be available to you or suit-

able for your location. Visit local nurseries, plant sales of the California Native Plant Society, or use a reputable mail-order catalogue to make appropriate choices for your plan. Look for plants with various texture, density, color and structure of foliage, and think about what types and colors of fruit and flowers will be produced during different times of the year. Choose a combination of plants which will provide cyclical variation, and colorful displays of flowers, fruits and foliage. Refer to the matrix on pages 20-22 for information on various seasonal and structural characteristics of recommended plants.

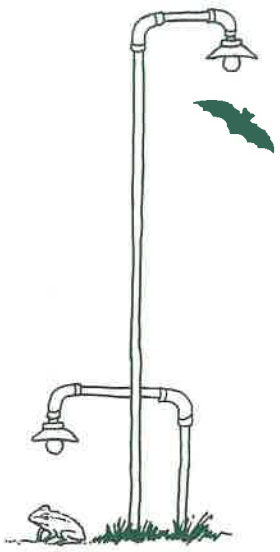
HELPFUL HINTS

- Flowers and fruits form on the outer parts of branches, and over-pruning removes wildlife food and nesting sites. Leave enough room for each plant to achieve its naturally mature size.
- To attract hummingbirds, plant tubular flowers (sage, honeysuckle, trumpet vine, fuchsia, etc.) in reds, pinks and oranges.
- Plant tall trees, or deciduous trees, toward the rear and sides of the plot, or in the middle of an "island", descending to lower plantings in the front. This will maximize the aesthetic quality of your yard, while providing screening, and allowing tall and deciduous trees to achieve their natural structure.
- Allow places for leaf litter (mulch) to remain in your garden, providing homes and feeding places for many animals while suppressing weed growth. Planting deciduous trees in remote locations in your yard will help to curtail the urge to "clean it up." You may find that naturally fallen leaf litter is actually a visually pleasing feature of your landscape. And indeed, you can even enhance the native forest "duff" by mulching.

Making Your Wildlife Garden "Official"

In the early 1970s the National Wildlife Federation launched a program to establish a nationwide network of mini-wildlife refuges in the backyards of its members. Anyone whose application shows evidence of providing good wildlife habitat may receive a Backyard Wildlife Registration Certificate. Details of the program are available by writing:

Backyard Wildlife Program
National Wildlife Federation
1412 - 16th Street NW
Washington, D.C. 20036

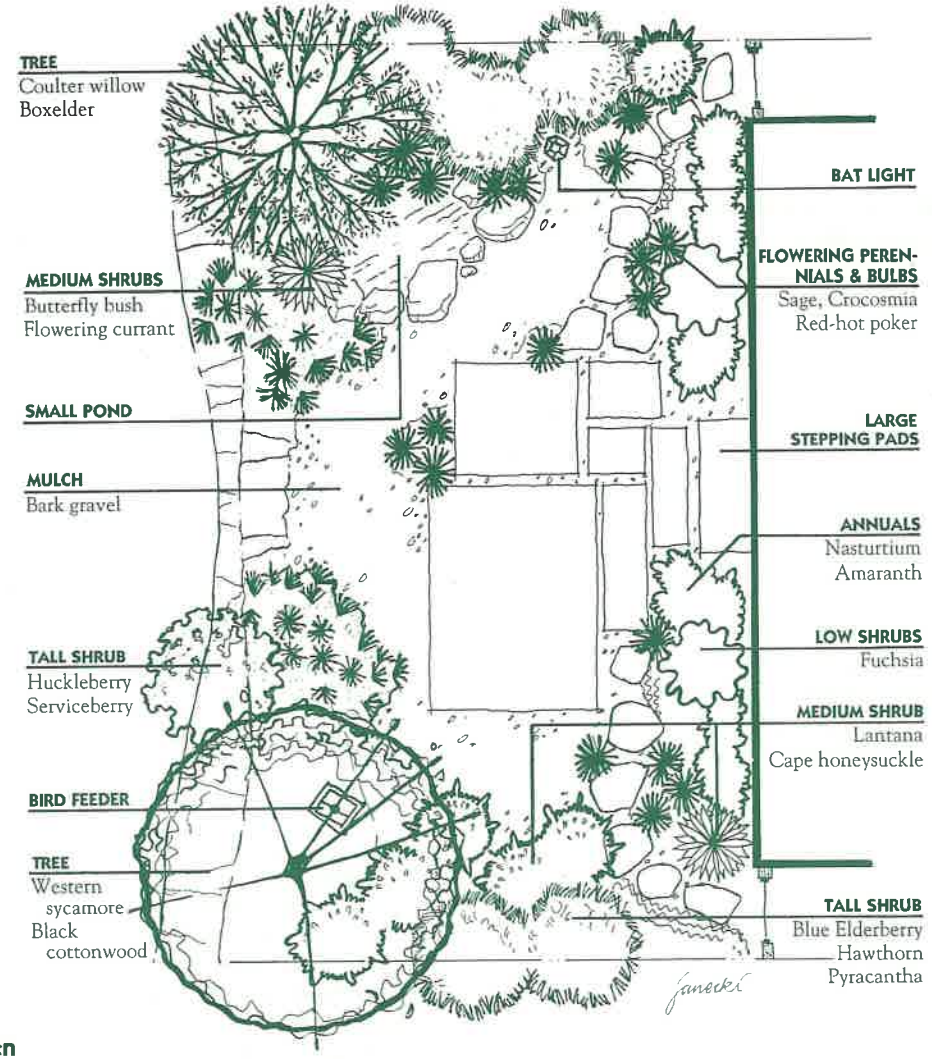


Bat lights and frog lights attract these shyer wildlife. The lamps may be constructed from your design or purchased from specialty suppliers sometimes advertising in wildlife periodicals.

The Landscape Design

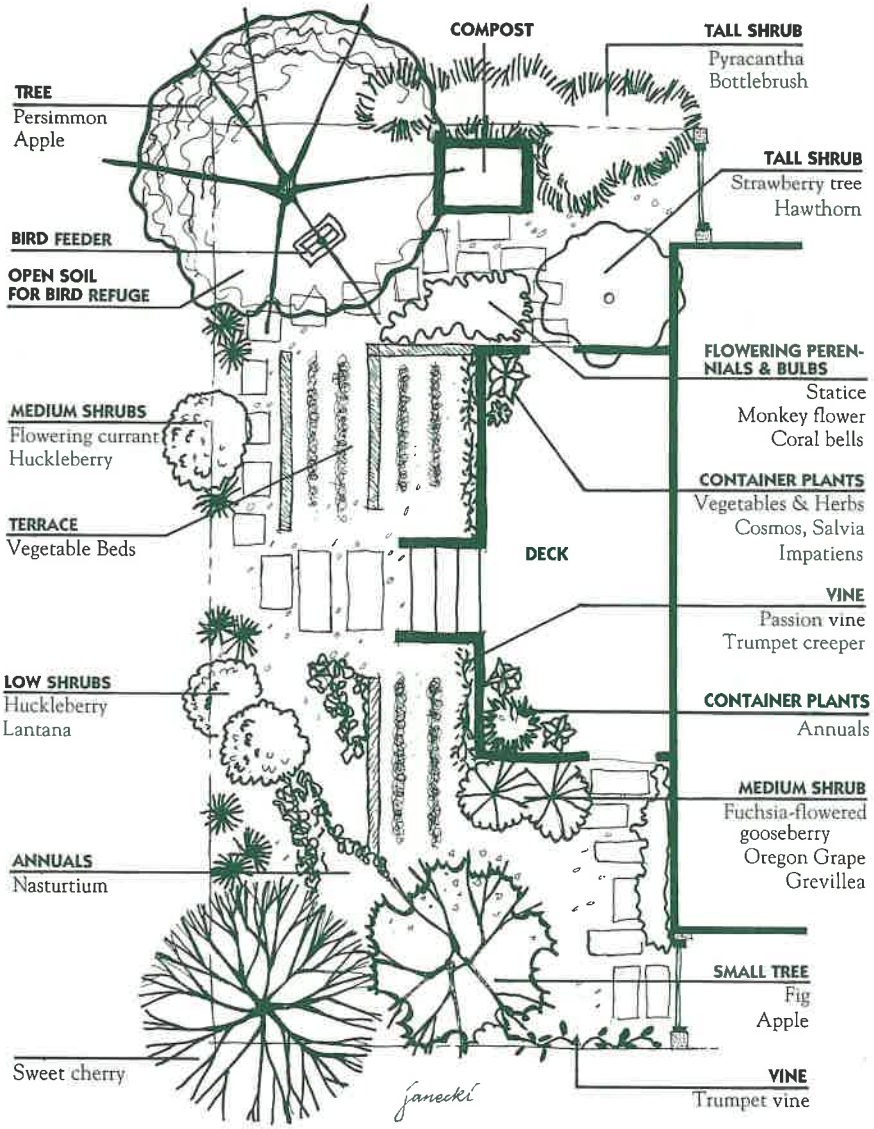
Illustrated here are two landscape plans that will enhance your garden as a wildlife resource.

The **natural garden** utilizes native and naturalized plants to create a riparian ecosystem. It is improved with the addition of bat lights, bird feeders and open mulched areas.



The Natural Garden

An **edible garden** produces plants for both human and wildlife consumption. In addition, a variety of heights, textures and flowers offer homes and hiding places for birds and other animals.



Suggested Plants for Wildlife Enhancement

Plants are listed in order of their overall value for riparian enhancement

	Deciduous /evergreen	Ultimate height in feet (approx)	Fast growing	Showy flowers	Wildlife food-fruits, berries	Wildlife food-seeds, nuts	Insects for songbirds	Nectar for hummingbirds	Nectar for butterflies	Produces wildlife food (season)	Habitat for cavity nesters	Dense cover for understory nesters	Habitat for canopy nesters	Drought tolerant when established	Shade tolerant when established
Native Riparian Trees															
Western sycamore, *Platanus racemosa*	D	80	•				•			Sp/Su	●		●	•	
Black cottonwood, *Populus trichocarpa*	D	100	●				●			Sp/Su	●		●	•	
White alder, *Alnus rhombifolia*	D	60	●			•	●			Sp/Su,F/W	●		●	•	
Boxelder, *Acer negundo*	D	40	•			•	•			Sp/Su,F/W	•		•	•	•
Red willow, *Salix laevigata*	D	50	●				●			Sp/Su	●		●	•	
Coulter willow, *Salix coulteri*	D	30	●				•			Sp/Su		•	•	•	•
Coast live oak, *Quercus agrifolia*	E	30				●	●			Sp/F	•		•	●	
Fruit Trees															
Persimmon, *Diospyros kaki*	D	30			●					Nov-Jan				●	
Almond, *Prunus amygdalus*	D	15	•	●		●	•			Aug-Nov*				●	
English walnut, *Juglans regia*	D	40				•	•			Sep-Dec	•		•	•	
Mulberry, *Morus spp.*	D	10-40*	●		●					May-Sep*				•	•
Apple, *Malus spp.*	D	10-20*		●	•		•			Jul-Jan*	•		•	•	
Fig, *Ficus carica*	D	10-30*			●					July, Oct*				•	
Sweet cherry, *Prunus avium*	D	10-30*		●	●		•			Jun				•	•

D - Deciduous **E - Evergreen** ***Depending on variety** **• Recommended** **● Highly recommended**

Plants are listed in order of their overall value for riparian enhancement

	Deciduous /evergreen	Ultimate height in feet (approx)	Fast growing	Showy flowers	Wildlife food-fruits, berries	Wildlife food-seeds, nuts	Insects for songbirds	Nectar for hummingbirds	Nectar for butterflies	Produces wildlife food (season)	Habitat for cavity nesters	Dense cover for understory nesters	Habitat for canopy nesters	Drought tolerant when established	Shade tolerant when established
Shrubs															
Strawberry tree, *Arbutus unedo*	E	10		•	•			●	●	F/W		•		●	
Pyracantha, *Pyracantha spp.*	E	10	•	•	●		•			Oct-Mar		●		●	•
Bottlebrush, *Callistemon spp.*	E	10	•	●				●		mostly Sp		●		●	
Fuchsia-flowered gooseberry, *Ribes speciosum*	D	8	•	●				●		Dec-Apr		•		●	•
Fuchsia, *Fuchsia spp.*	E	4-8*	●	●				●		Apr-Nov				•	●
Grevillea, *Grevillea spp.*	E	2-6*		•				●		Sp/Su/F/W*		●		●	
Hawthorn, *Crataegus crusgalli & spp.*	D	15		•	●		•			Oct-Jan		•		•	
Flowering currant, *Ribes glutinousum & spp.*	D	4-8	•	●	•			•		Feb-Apr		•		•	•
Lantana, *Lantana camara*	E	4	•	●					●	Sp/Su/F				•	
Butterfly bush, *Buddleia davidii*	E	8	●	•					●	Jun				●	
Serviceberry, *Amelanchier alnifolia*	D	4-6		•	●					Jun				•	•
Huckleberry, *Vaccinium ovatum*	E	4-6			•					Su/F		•		•	●
Blue elderberry, *Sambucus mexicana*	D	10	●	•	•		•			Aug-Nov				●	•
Oregon grape, *Mahonia spp.*	E	4-8*		•	•					Sp				•	•
Vines															
Japanese honeysuckle, *Lonicera japonica*	E		•					•		Sp/Su		●		•	•
Cape honeysuckle, *Tecomaria capensis*	E		•	●				●		Sp/Su/F/W		•		•	•
Passion vine, *Passiflora manicata & spp.*	E		●	●				•	•	Sp/Su/F*		•		•	•
Trumpet vine, *Distictis buccinatorius*	E		●	●				•		Sp/Su/F		•		•	•
Trumpet creeper, *Campsis radicans*	D		•	•				•		Aug-Sep		•		•	•

	Deciduous /evergreen	Ultimate height in feet (approx)	Fast growing	Showy flowers	Wildlife food-fruits, berries	Wildlife food-seeds, nuts	Insects for songbirds	Nectar for hummingbirds	Nectar for butterflies	Produces wildlife food (season)	Habitat for cavity nesters	Dense cover for understory nesters	Habitat for canopy nesters	Drought tolerant when established	Shade tolerant when established
Flowering Perennials & Bulbs															
Sage, *Salvia elegans & spp.*		1-6*	●	●				•		Sp/Su/F*				*	
California fuchsia, *Zauschneria californica*		1-2	●	●				●		Aug-Nov				●	
Crocosmia, Montbretia, *Tritonia crocosmiiflora*		2-3	●	●				●		Feb,Su				●	
Aloe, *Aloe arborescens & spp.*		1-6*		●				●		W/Sp*				●	
Red-hot poker, *Kniphofia uvaria*		2-3	•	●				•		Jan-Mar				●	
Statice (Limonium), *Limonium latifolium*		2	•	●					•	Su/F				•	
Monkey flower, *Diplacus spp.*		2-3	●	●				•		Sp/Su				●	
Coral bells, *Heuchera sanguinea*		1-2	•	●				•		Sp				•	
Annuals															
Dahlia, Zinnia, Marigold		1-4*	●	●					●	Su/F					
Amaranth, *Amaranthus spp.*		1-6*	●			●				F/W			•		
Cosmos		2-4	●	●		•			•	Sp/Su/F				•	
Impatiens, *Impatiens spp.*		1	●	●				•		Sp/Su/F					●
Scarlet sage, *Salvia splendens*		1	●	●				•		Su					
Nasturtium, *Tropaeolum majus*		n/a	●	●				•		Sp/Su/F				•	•

D - Deciduous E - Evergreen *Depending on variety • Recommended ● Highly recommended

Feeding the Birds

Feeding wild birds seed and nectar will bring wildlife into your yard, and the foods you provide will help to meet one of the basic needs of wildlife. If you have followed the guidelines in this booklet, the plants in your yard will provide some food, but you will attract many more birds if feeding stations are established. Your bird feeding program can be effective with only one feeder, or you may choose to have several, different types of feeders.

BIRD SPECIES YOU MAY ATTRACT

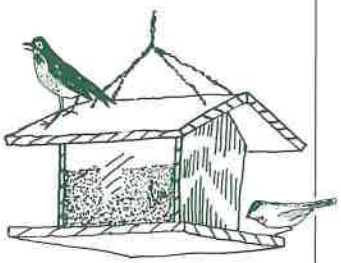
The birds you attract will depend on the types of feeders, your landscaping, and the presence of natural habitat areas. Some of the birds which commonly visit seed feeders in Capitola are: Steller's jay, mourning dove, scrub jay, chestnut-backed chickadee, plain titmouse (near oaks), black-headed grosbeak (near natural riparian habitat), rufous-sided and California ("brown") towhees, dark-eyed junco, fox, song, white-crowned and golden-crowned sparrows, house finch, lesser and American goldfinch. Nectar feeders will attract Anna's, Allen's and rufous hummingbirds, hooded and northern orioles and house finch.

Platform Feeder with Roof

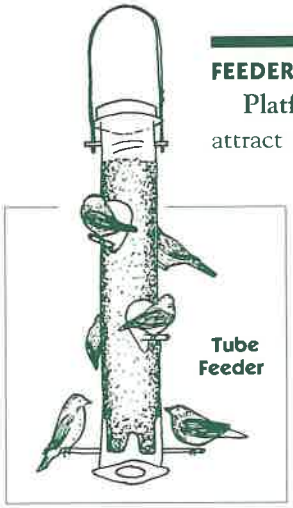
A good feeding station provides a consistent supply of food, a water source, and offers opportunities for a variety of birds to feed relatively safe from predators. You will attract more birds if you offer a variety of feeding situations. These are things you should consider: types of bird feeders; what to feed; maintaining the feeder(s); discouraging unwanted animals; and preventing predation by pets.

CHOOSING A FEEDER

You can purchase feeders or build your own. A good variety can be found at garden centers, hardware stores, and in conservation organization catalogues. You can also build your own with outdoor plywood, scrap lumber and simple tools. In choosing a feeder, consider where you want to place it, what types of birds you will attract, and how easy it will be to maintain (filling and cleaning). Some types are described and illustrated here, but you may think of many others.



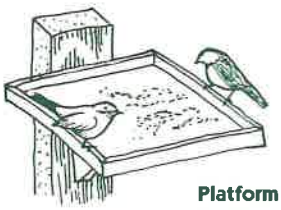
Hopper Feeder



Tube Feeder

FEEDER CONSTRUCTION

Platform feeders are easy to build, attract the greatest variety of birds, and allow excellent viewing. A roof over the platform will protect the seed from rain. **Hopper-type feeders** protect the seed from the elements, and can be mounted on a pole or hung from a tree or other support. Most have a roof and glass sides to protect seeds. Clear glass also lets you know when your feeder is empty. **Tube feeders** are attractive and easily found in stores. They accommodate small birds at perches located next to the outlet holes. Attach a small tray to the bottom to catch seed that falls out (some birds are more attracted to the tray). Some birds, like towhees and sparrows, prefer to feed on the ground. You can set aside a small open area as a ground feeding station, but choose a spot that stays fairly dry and doesn't allow cats to sneak up on the birds. Nectar feeders are usually designed to attract hummingbirds, but if you add a perch you may attract orioles and finches. Be sure to choose a feeder you can clean easily and thoroughly.



Platform Feeder

Pets are Predators

Cats are a serious threat to birds at feeders. Place your feeders in places where cats cannot approach the birds unseen. Although having some cover nearby will allow the birds to escape to safety. Owners should put loud bells on their cats, and non-owners should discourage neighboring cats and feral cats from entering their yard.

WHAT TO FEED

Quality bird seed mixtures are available at supermarkets and garden supply stores. Feed stores are an excellent source. Choose a mixture with white millet (proso millet), sunflower seeds and oil seed (small black, sunflower-like seeds). You can also buy these seeds separately and mix your own. Niger seed (mistakenly called "thistle" seed) is especially attractive to goldfinches, but is usually expensive.

For nectar feeders you should mix your own sugar-water solution. **Do not buy commercially available mixtures.** They have harmful red dyes, are more expensive than doing it yourself, and some even have unneeded vitamin enrichment. Red is attractive to hummers, but most feeders have red on them, and that is all you need. You can make your own solution by simply dissolving one part (by volume) table sugar into four parts warm water. You should not use honey.

MAINTAINING YOUR FEEDERS

Feeders should be kept clean, and adequately supplied with seed or sugar-water. Try to keep your feeders supplied at all times, especially during the winter months. For seed feeders, don't allow the seed to become wet and moldy. If it does become wet, empty and clean the feeder and replace the seed. Clean feeders periodically with water to remove mold and dirt. If you don't have too many birds visiting your feeder(s), you don't need to fill them completely. For nectar-feeders, regularly clean them by rinsing and scrubbing the inner

surface with a bottlebrush. Soap may be used, but should be thoroughly rinsed out. Replace un-used sugar-water every week, or more frequently during warm weather.

UNWANTED ANIMALS AND PETS

Sooner or later you may have starlings, house sparrows, or squirrels monopolizing a feeder. If you provide several feeders, desirable birds will have a chance to feed. By eliminating perches you will discourage use by starlings. If Rock Doves (pigeons) are a problem, don't place seed on the ground, and prevent spillage from hanging feeders from reaching the ground. Do not offer table scraps, as these will attract rats. If things get out of hand, you might discontinue your feeding program temporarily.

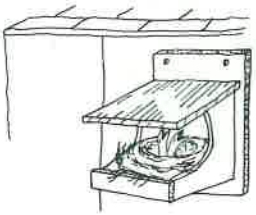
Building a Nest Box

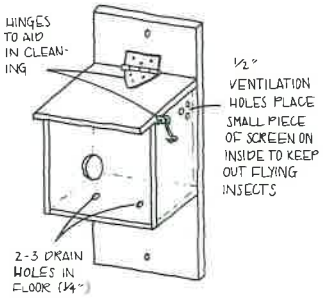
Bird nest boxes and bat houses offer another way to attract wildlife into your yard, while providing an important habitat element for use by local species. Natural tree cavities are often a limited resource, especially in urban and suburban environments.

BIRD NEST BOXES

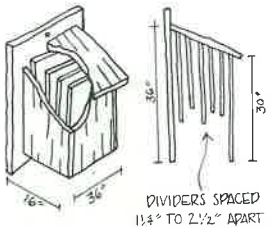
Some birds nest only in cavities, and require this feature to breed. These include woodpeckers, which excavate their own holes, and several other birds which use old woodpecker holes and other natural cavities. Cavity-nesting species along Soquel Creek include downy woodpecker, violet-green swallow, Bewick's wren, chestnut-backed chickadee and plain titmouse. These species will also use nest boxes you provide. Other species will nest on constructed nesting shelves, including black phoebe, American robin, Pacific-slope flycatcher, and house finch.

Nest boxes may be purchased at garden supply stores, or may be ordered through the mail from a variety of sources. The monthly magazine "Birdwatcher's Digest" runs many advertisements of sources for nest boxes. It's easy to build your own nest





Bird Nest Box



Bat House

box or nest shelf. Dimensions of boxes suitable for local cavity-nesting species are given here.

The most important dimension is the diameter of the entrance hole. This determines which birds can get in. Discourage use of your nest boxes by starlings and house sparrows by keeping the diameter of the entrance hole no larger than $1\frac{1}{2}$ inches. Be sure to provide drain holes in the bottom and vent holes near the top. Do not include a perch near the entrance. You should be able to open your box on the top, and you should remove old nest material in the fall, after the birds are through with the nest. This inhibits parasites. Do not paint or otherwise treat the interior, and use only latex paint on the outside, although natural wood is preferable.

Attach the box to a tree or mount it on a pole. Choose a spot that will not receive to much direct sun, and will not be readily accessible to predators or people. Nest shelves can be mounted on buildings or trees. Mount boxes and shelves in the fall or winter, so birds can find them before the nesting season starts.

BAT HOUSES

A bat house is a sheltered box, open on the bottom, which provides roosting sites for bats. Inside the box are a series of thin, vertical plates of wood, between which bats may pass the day. Bats are not only interesting to watch, but they eat many insects and can really make a dent in local mosquito populations. Place your bat house in a tree, in an out of the way place in your yard.

Attracting Hummingbirds

Allen's Hummingbird (male)

Hummingbirds can be attracted to your garden by providing food and cover. Aside from the beauty and aerial skills of these tiny birds, you will find hummingbird behavior fascinating to study.

OUR LOCAL HUMMERS

Three species of hummingbirds are likely to use your yard. The brightly-colored male hummingbirds are fairly easy to identify, but females are drab and more difficult. The **Anna's hummingbird** is a common year-round resident. The male has a ruby red crown and throat (called a "gorget"); the female is green above and whitish below. The **Allen's hummingbird** is a common nesting species along Soquel Creek during February to June, migrating to southern California and Mexico after breeding.

The male has a green crown and back, but has a rusty-colored tail and underparts, white on the breast, and a bright coppery gorget. Females are rusty and whitish below and green above. The **rufous hummingbird** may be seen during migration, especially from March to May, but you probably won't see too many of them. Rufous hummers look much like Allen's, but the males are all orange above and on the crown. Rufous hummers make remarkable migrations from Mexico and northern Central America to the Pacific Northwest, and some fly all the way north to Alaska to nest! All hummers make a humming sound with their wings while in flight, but you will notice Allen's and Rufous hummingbirds have a distinctive metallic quality in their hum.

NATURAL HISTORY

The hummingbird family, found only in the New World, is very large (over 340 species), and contains the smallest bird in the world (the bee hummingbird of Cuba). Hummingbirds are most diverse in the tropics. Six species can be easily found in California, and a few more have been found rarely. Many plants of the new world have evolved with hummingbirds, and rely on hummers for pollination. In turn, they have developed flower shapes and nectar supplies specially adapted to the hummingbirds which pollinate them.

Female hummingbirds perform all the nesting duties and usually raise their young without assistance from the male. All hummers lay only two eggs. Males defend feeding territories, and your yard will no doubt become the center of many aerial skirmishes for "possession" of your flowers and feeders.

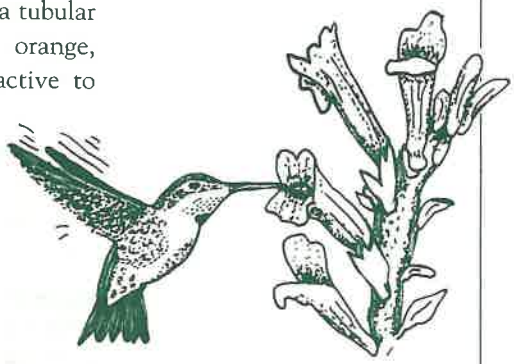
FEEDING THE HUMMINGBIRDS

You can provide food for hummingbirds by planting "hummingbird flowers" and providing nectar feeders. Hummingbirds also eat small insects for protein, which they may find around plants in your yard. Nectar feeders and their maintenance are described in the section on bird feeders in this guidebook. Hummingbird feeders are important to the survival of local Anna's Hummingbird during harsh winters, when few flowers are blooming.

Plants which attract hummingbirds are those with flowers that produce nectar. Flowers with a tubular shape, and colors of red, orange, purple are especially attractive to hummingbirds. A hummingbird garden should have a variety of suitable flowering plants, and if you select plants with long blooming periods, and plants that bloom at different times, more the better. Suggested plants are listed on pages 20-22.

Anna's Hummingbird (female)

Anna's Hummingbird (male)



The Butterfly Garden

ATTRACTING BUTTERFLIES TO YOUR GARDEN

A variety of butterflies occur along Soquel Creek, and many can be attracted to your yard. With proper food plants, butterflies are as easily attracted to the garden as birds. In designing your plantings, consider the needs of both adult butterflies and their caterpillars. Include food plants for both adults and larval stages, and provide sheltering plants for cover. "California Butterflies" by Garth and Tilden is an excellent resource for information on identification, life histories, and food plants of local species (see Further Reading, page 33).

Butterflies and their caterpillars are sensitive to pesticides and insecticides. If you want to provide a home for butterflies and other beneficial insects, avoid the use of these chemicals, especially "Bt". A gardener who values butterflies must be tolerant of a little leaf damage.

Monarch Butterfly

WHICH BUTTERFLIES LIVE ALONG SOQUEL CREEK?

Some of the common species you may see include monarch, red admiral, Lorquin's admiral, painted lady, west coast lady, tiger swallowtail, anise swallowtail, cabbage butterfly, fiery skipper, and gulf fritillary.

Butterflies are generally active only during the warm months, and are most active during the warmer hours of the day. Monarchs are an exception, and may be seen flying on mild winter days. Most butterflies in our area over-winter as larvae, while some over-winter as adults. Some species live through one generation per year, while others produce two or more generations each year.

THE MONARCH

Monarch butterflies migrate to coastal California for the winter to avoid freezing. An autumnal roosting colony (500-700 monarchs in 1990) occurs in the Eucalyptus and Monterey pine grove south of the Rispin Mansion in October. Eucalyptus to the north are unused. The monarchs need protection from wind provided by low tree limbs (15-50 feet high) and heavy understory shrubs. They fly above 55°F midday and require autumn-blooming shrubs nearby such

as English Ivy, *Salvia leucantha* and *Escalonia* for sources of nectar. Though Eucalyptus should not be planted elsewhere they provide just the right conditions for monarchs south of the Mansion in Autumn.

ATTRACTING ADULT BUTTERFLIES

Adult butterflies take only liquid food, usually nectar from flowers. Adults of species along Soquel Creek feed from many kinds of flowers, unlike the larval stages which often use only certain kinds of plants. Butterflies also feed on sap from trees or shrubs, and obtain moisture from mud or moist sand. Adults of most species prefer sunny locations protected from prevailing winds with many places for resting and sunning.

Feeding stations for adult butterflies are nectar-producing plants. You will attract the most butterflies if you choose a variety of plants that are scheduled to bloom successively from spring to autumn. Perennial plants are most effective, as they flower predictably and many require minimal care. Some plants that are attractive to local butterflies are listed on pages 20-22. Some butterflies are attracted to flowering weeds, such as dandelion, so even if you make no special efforts in your yard, you may have butterflies to watch!

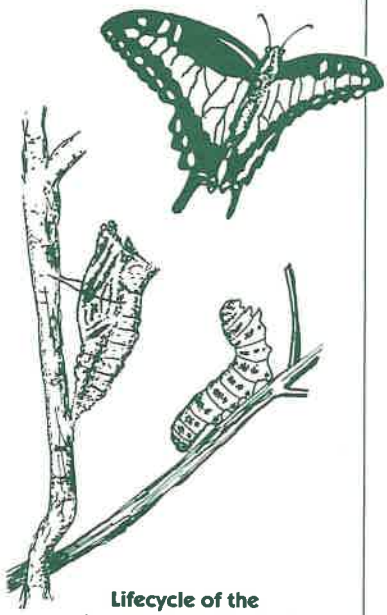
Nectar-producing plants you should give special consideration are lantana, butterfly bush, lavender, salvias and many common garden flowers, such as cosmos, zinnias, dahlias, statice, and asters.

PROVIDING FOOD PLANTS FOR CATERPILLARS

Butterflies need uncontaminated foliage of plants (particular plant species for some butterflies) on which eggs can be laid and the emerging caterpillars can feed to maturity. In choosing food plants, consider which species you may attract. Consult another reference, such "California Butterflies" for guidance.

COVER FOR BUTTERFLIES

Foliage of shrubs and trees provides shelter for adult butterflies during inclement weather and cool nights. For most species, you will not need to make any special efforts to provide a little cover. But species such as monarchs are well known for their large roosts in sheltered stands of trees and forests. A roost site is located along Soquel Creek in the eucalyptus grove near the Rispin Mansion.



Lifecycle of the Anise Swallowtail Butterfly

In Our Community

LOCAL ORGANIZATIONS YOU MAY WISH TO JOIN

California Native Plant Society

Membership: 909 12th Street, Suite 116, Sacramento, CA 95814. Santa Cruz County Chapter: P.O. Box 7094, Santa Cruz, CA 95061. Field trips, plant sales, propagation workshops, and monthly programs at the Santa Cruz City Museum of Natural History (429-3773), 7:30 p.m., 2nd Monday of alternate months (odd numbered months); members receive the quarterly journal "Fremontia", and the newsletter of the Santa Cruz County Chapter "The Cypress Cone".

Santa Cruz Bird Club

Membership: P.O. Box 1304, Santa Cruz, CA 95061. Field trips, bird studies, Christmas Bird Count, and monthly programs at the Santa Cruz City Museum of Natural History, 7:30 p.m., 4th Thursday of each month, September to May; members receive the bi-monthly newsletter "TheAlbatross".

Santa Cruz City Museum of Natural History

(408) 429-3773, 1305 E. Cliff Dr. Open Tues. thru Sat. 10-5, Sun. noon-5.

FOR INFORMATION ON NATIVE PLANT SALES:

California Native Plant Society

Sales can be obtained at (916) 447-2677. New schedules for sales are compiled around April 1 and October 1 each year.

U.C.S.C. Arboretum

(408) 427-2998

LOCAL NURSERIES WHICH SUPPLY CALIFORNIA NATIVE PLANTS

Alladin Nursery 2905 Freedom Blvd., Watsonville (408) 724-6361

Redwood Nursery 2800 El Rancho Drive, Santa Cruz (408) 438-2844

San Lorenzo Garden Center 235 River Street, Santa Cruz (408) 426-1020

Sunset Coast Nursery (by Appt.) Watsonville (408) 726-1672

The Garden Company 2218 Mission, Santa Cruz (408) 724-1787

Yerba Buena Nursery 19500 Skyline Blvd. Woodside (415) 851-1668

Further Reading

GENERAL NATURAL AND CULTURAL HISTORY

An Island Called California. Bakker, E. 1971. University of California Press. 357 pp.

Monterey Bay Area: Natural History and Cultural Imprints. Gordon, B.L. 1985. The Boxwood Press. 321 pp.

PLANTS, GARDENING AND LANDSCAPING

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Native Plants for Use in the California Landscape. Labadie, E.L. 1978. Sierra City Press. 244 pp.

Native Shrubs of the San Francisco Bay Region. Ferris, R.S. 1968. California Natural History Guides: 24. University of California Press.

Native Trees of the San Francisco Bay Region. Metcalf, W. 1959. California Natural History Guides: 4. University of California Press. 72 pp.

New Western Garden Book. Sunset Magazine. Lane Publishing Co. Menlo Park, California. 512 pp.

WILDLIFE AND ATTRACTING WILDLIFE

Attracting Backyard Wildlife. Merilees, B. 1989. Voyager Press. 159 pp.

Attracting Birds to Your Garden. Sunset Books. 1974. Sunset Books and Magazine. Lane Publishing Co. 96 pp.

Beyond the Bird Feeder. Dennis, J.V. 1981. Alfred A. Knopf, Inc. 201 pp.

The Birder's Handbook: a Field Guide to the Natural History of North American Birds. Ehrlich, P.R., Dobkin, D.S., and D. Wheye. 1988. Simon & Schuster, Inc. 785 pp.

Butterflies of the San Francisco Bay Region. Tilden, J.W. 1965. California Natural History Guide: 12. University of California Press. 88 pp.

California Butterflies. Garth, J.S. and J.W. Tilden. 1986. California Natural History Guide: 51. University of California Press. 246 pp.

California Insects. Powell, J.A. and C. L. Hogue. 1979. California Natural History Guides: 44. University of California Press. 388 pp.

California Mammals. Jameson, E.W. Jr. and H.J. Peeters. 1988. California Natural History Guide: 52. University of California. 403 pp.

Field Guide to the Birds of North America. National Geographic Society. 1983. Second edition 1987. 464 pp.

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A Field Guide to the Nests, Eggs and Nestlings of North American Birds. Harrison, C. 1978. The Stephen Greene Press. 416 pp.

A Field Guide to Western Reptiles and Amphibians. Stebbins, R.C. 1985. The Peterson Field Guide Series, No. 16. Houghton Mifflin Co. 336 pp.

A Guide to Field Identification: Birds of North America. Robbins, C.S., Bruun, B., Zim, H.S., and A. Singer. 1983. Golden Press. 360 pp.

How to Attract Birds. Ortho Books. 1983. Chevron Chemical Company.

Hummingbirds; Their Life and Behavior. Tyrrell, E.Q. and R.A. Tyrrell. 1985. Crown Publishers, Inc. 212 pp.

Inland Fishes of California. Moyle, P.B. 1976. University of California Press. 405 pp.

Mammals of the San Francisco Bay Region. Berry, W.D. and E. Berry. 1959. California Natural History Guides: 2. University of California Press. 72 pp.

Overwintering Monarch Butterfly Survey on the Rispin Mansion Site. Bell, E.A., and Dayton, J.J. 1990. Appendix J, Rispin Mansion EIR. City of Capitola. 9pp.

Reptiles and Amphibians of the San Francisco Bay Region. Stebbins, R.C. 1960. California Natural History Guides: 3. University of California Press. 72 pp.

Soquel Creek Lagoon Management & Enhancement Plan. City of Capitola. 1989

The Wildlife Gardener. Dennis, J.V. 1988. Alfred A. Knopf, Inc. 293 pp.