



Fairview Park Vernal Pools  
City of Costa Mesa  
Public Services Department



## **FAIRVIEW PARK VERNAL POOLS**

Vernal pools are quite rare in southern California due to 1) the unique geologic conditions that must be present to form them, and 2) intensive human development of coastal areas. In Orange County, Fairview Park's vernal pools represent one of few known extant examples of this ecosystem. Due to these factors, many plants and animals that occur exclusively or largely in vernal pools are considered biologically "sensitive" by state and federal resource agencies. Vernal pools are shallow depressions that pond water following winter and spring rains due to an impervious hardpan that inhibits percolation to lower soil strata. In coastal southern California, vernal pools often form on coastal bluffs on heavy clay soils with the clay providing the impervious hardpan. Due to the relatively unique conditions that must be present to form natural pools, and intensive human development of coastal areas, vernal pools are disappearing in our region.

Over time, the alternating periods of wet and dry in vernal pools promote establishment of unique assemblages of plants and animals adapted to these particular ecological conditions. In order to persist in vernal pool systems, plants and many invertebrates (e.g., fairy shrimp) must be able to tolerate extended periods of wet and dry conditions; vertebrate animals must be able to move between the pools and other areas, making use of the pools during the months when they contain water, plants and prey species. The characteristic survival strategy for vernal pool plants and invertebrates is to grow and mature when water is present, then release seeds (plants) or dry eggs (invertebrates) that remain in the pools until sufficient water again becomes available to complete the cycle again. Toads and frogs employ a similar strategy, breeding and laying eggs that hatch and grow from larvae to metamorphs during the wet period, after which the adults retreat to adjacent upland habitats until the next heavy rains again permit breeding. From fall to spring, mammals and a wide variety of migratory birds exploit the water and food resources in vernal pools, moving to other areas when the pools dry up.

The largest of the vernal pools is vernal pool #1 which covers approximately 2.9 acres. Vernal pool #1 supports a population of *San Diego Fairy Shrimp* (*Branchinecta sandiegoensis*) and represents one of the only pools outside San Diego County to support this federally listed endangered species. The shrimp thrive during the winter rainy season and seem to disappear in the dry seasons. Their eggs (actually cysts) survive and hatch as soon as the enough water returns to create ponding. Until recently, San Diego Fairy Shrimp was found only in vernal pools in San Diego County; they have recently been discovered at Fairview Park and at least one other Orange County vernal pool system. Several species of fairy shrimp are listed as endangered by the federal government, and a federal permit is required to collect specimens for identification. The species are very similar and cannot be reliably identified except by a specialist.

**For more information or to organize a tour please contact us at:  
City of Costa Mesa, Public Services Department  
714.754.5303  
Or visit us online at [www.ci.costa-mesa.ca.us](http://www.ci.costa-mesa.ca.us)**

In 1998 the Costa Mesa City Council approved the Fairview Park Master Plan for the preservation and restoration of Fairview Park. Protected areas of the park include seven vernal pools and one vernal marsh located in the upper mesa. The seven vernal pool basins and vernal marsh cover a total of 3.75 acres. Studies conducted on the vernal pools at Fairview Park have concluded that the area of vernal pool habitat at the park represents the largest area of documented vernal pool habitat between San Diego County (including northern Riverside County) and the Central Valley.

With funding assistance from C.J. Segerstrom and Sons, the City began restoration of Vernal Pool 1 in 1996 with the goal of returning the basin to its original contour and dimensions. Prior to beginning the restoration project, the basin covered approximately 2.07 acres with a total of 0.81 acre restored in the initial phase of the restoration bringing the basin to 2.9 acres of vernal pool habitat.

In 2009 the City received a \$250,000 grant from the California Department of Parks and Recreation to protect the vernal pool and improve the public's understanding of the park's flora and fauna. A delineator fence, educational signage, trails, and an observation deck were installed around the vernal pool. In 2010 vernal pool #1 was restored further with a grant from the Earth Island Institute and support from the Southern California Wetlands Project. Funding was used to restore the native habitat and eliminate a user defined path that had developed through the middle of the pool and install three additional educational signs.

### **Vernal Pool Plants**

#### **Prostrate Navarretia**

Is an uncommon species of flowering plant in the phlox family known by the common name prostrate pincushionplant. It is endemic to California, where it has a scattered distribution from the Bay Area to the southern border. It is an occasional member of the flora in vernal pools and similar habitat. It is a petite annual herb sitting prostrate on the ground with a central stem and flower head and radiating stem branches bearing more heads. The hairless leaves are divided into many threadlike lobes. The inflorescence is a cluster of flowers surrounded by leaflike bracts. The flowers are just under a centimeter in length, their blue or white corollas divided into narrow lobes.

#### **Vernal Barley**

Vernal barley (*Hordeum intercedens*) is a rare native grass. This annual grass typically occurs in saline flats and depressions in grasslands or with vernal pool basins.

#### **Douglas Microseris**

*Microseris douglasii* is a species of flowering plant in the aster family known by the common name Douglas' silverpuffs. It is native to western North America from Oregon to Baja California. It is, a close relative of the dandelion and is often found along the edges of vernal pools.