

## Rare Plants of the Watershed

What determines when a plant species is to be considered rare? In part, it depends on the scale: The Sausal Creek Watershed has only one species ranked as rare at the global and federal level—the pallid manzanita, *Arctostaphylos pallida*. It's gotten the lion's share of FOSC's rare-plants attention, with numerous work days devoted to the areas in which it grows.

The California Department of Fish and Game and the statewide California Native Plant Society (CNPS) work together to manage the pool of experts who analyze and determine rare plant rankings. In addition to the pallid manzanita, these plants have statewide rare plant rankings:

- *Calochortus umbellatus*, Oakland star-tulip, a tiny white and lavender flowered bulb that grows only on serpentine. In our watershed, the largest population was grazed until FOSC intervened.
- *Eriogonum luteolum* var. *caninum*, Tiburon buckwheat, a tiny, late-blooming annual that grows only on serpentine. When abundant, the tiny flower heads on thready stems make a pink mist against the blue-gray serpentine. One population is at risk from vegetation management and the other from off-trail cyclists.
- *Dirca occidentalis*, western leatherwood, a shrub with rubbery, bendable stems and very early bright yellow flowers. The largest watershed population is growing very weakly due to shading from encroaching bay trees.



Pallid manzanita, © 2004 David Graber



Tiburon buckwheat, © 2009 Vernon Smith

Drop down another level, to the CNPS chapter level, and the list gets longer. The East Bay CNPS chapter includes all of Alameda and Contra Costa counties with over 1,500 native species reported on Calflora.org (after eliminating parent species).

Our own watershed encompasses both large parks and heavily impacted urban areas, dry hillsides and lush riparian areas, and a variety of soils, geology, and microclimates. We've found about 260 species of natives in the Sausal Creek Watershed plus the portion of Joaquin Miller Park that's in the Peralta Creek Watershed.

Most of the information we have about the rarity of these 260 species has been garnered on FOSC's seed collection hikes. The recent explorations by Jeff Greenhouse added about 25 species to the list but with little comprehensive information about their distribution and rarity so far. Just as the FOSC species list continues to evolve with new finds and new information, the rare plant data needs ongoing revision. The latest revision—with many data gaps, especially for recently discovered species, is now online at:

[http://www.sausalcreek.org/pdf/sausal\\_rare\\_plants\\_081512\\_final.pdf](http://www.sausalcreek.org/pdf/sausal_rare_plants_081512_final.pdf).

### Legal Protection for Rare and Unusual Plants

The California Environmental Quality Act covers not only those plant species that are listed as threatened or endangered at the federal or state level. As the East Bay CNPS website explains:

*When several locally rare species occur on a property, even if there are no statewide rare plants there, it should be considered a significant impact under guidelines in the California Environmental Quality Act (CEQA) that refer to locally rare populations in sections 15380 and 15125a, which address species of local concern and place special emphasis on environmental resources that are rare or unique to a region.*

CNPS has also notified the cities and agencies of Alameda and Contra Costa Counties about the rare and unusual plants known to occur in each of their areas. A list of CEQA-protected species for their area has been provided to every city and agency along with a letter explaining the importance of these species, their legal protection, and the need to consider these species in any land use activities or changes in their area.

### Rareness and Risk

At all levels, from global to watershed, the same basic criteria are applied to assess rarity: How many plants are there? At how many sites? In some cases, assessment goes farther to assess risk: Are the plants at risk? Are the populations declining, stable, or growing? Here is a description of how the East Bay CNPS chapter performs its rare plant ranking:

*The two counties were analyzed according to vegetation, geology, habitats, soil types, and other factors and were divided into 40 botanical regions. Rank is based on how many regions a species occurs in and then how many locations within that region. In most cases, plants occurring in five or fewer regions (A-ranked plants) also have very few locations within those regions. In a few cases, however, plants occurring in only a few regions have several locations within some of those regions and thus can be given a lower rank.*

FOSC's own efforts at assessing the rarity of our local species haven't been as scientific. But we have recorded, over time, which plants are found in which watershed parks. For those plants we don't see often, we have kept some field notes and GPS locations so we know how many populations we have and have some tracking of population size.

### Risks to Rare Plants

It's important to understand the difference between extinction and extirpation to clearly understand the risks to rare plants. Extinction means the death of a species throughout its range. Since this is often hard to prove conclusively, the phrases "probably extinct" or "presumed extinct" are used for species that have not been seen for many years. The Mount Diablo buckwheat (*Eriogonum truncatum*) was presumed extinct, since it had not been seen since 1936, but it was rediscovered in 2005 by a UC Berkeley graduate student doing a botanical study on Mt. Diablo.

Extirpation is the loss of a local or regional population with the species continuing to survive elsewhere. So it's possible for a species of plant to be extirpated from one of Sausal Creek's parks, or from the watershed as a whole, or even Oakland as a whole, while it continues to survive elsewhere. For example, the coast iris, *Iris longipetala*, used to grow in Dimond Park according to an 1899 specimen record for the plant; it's now presumed extirpated from that area.

When a species occurs in a very small population at a site, the risk of extirpation from the site is high. A single event can cause the loss of the species at the site. Our lovely creek-side scarlet monkeyflower was known from only a single location next to the creek downstream from Joaquin Miller Court in 2003. That plant is no longer there due to encroaching annual grasses or bank failure. The nursery still has saved seed, but all plants currently known in the watershed's parks are planted and not natural occurrences.

When a species occurs at very few sites and risk is high at those sites, the risk to the species as a whole is great. The total extinction of a species is often a series of local extirpations.



scarlet monkeyflower, © 2001 Steve Schoenig

Some of the risks to plant populations include:

- Development: Replacing open space, even somewhat degraded or invaded open space, with buildings and pavement has been the major impact on plant populations. Even where potential habitat remains, development often results in erosion, landslides, bank failures, and high creek flows.

- **Competition:** Invasive plants compete with natives for sunlight, space, and water. The nature of the competing invaders varies with the type of habitat. In our mixed evergreen and redwood forest, the invaders tend to be Algerian ivy, Cape ivy, and Himalayan blackberry, and in some cases veldt grass. In grasslands, annual grasses, thistles, and broom are the more common invaders. Broom also invades coastal scrub areas.
- **Vegetation management:** In our watershed, the annual assault of goats and weed-whackers on fuel load imperils many native plants. At least four pallid manzanitas have been lost to fuel clearance efforts in the past eight years. The annual grazing that takes place in Joaquin Miller Park and Shepherd Canyon is timed for reducing the current year's fuel but is very poorly timed for the native plants at the site that have not completed their annual growth or set seed. When human contractors do the work, the results can be equally dire. Anything shorter than six feet tall is generally cut to an inch or two, often with patches of bare ground exposed. This high level of disturbance favors opportunistic invaders such as annual grasses and thistles, leading to greater loss of native diversity.

Since the 1991 Tunnel Fire, fuel clearance has been performed on an "emergency" basis with no environmental review. However, controversy over a fuel clearance project on UC Berkeley land in the north hills has forced the Fire Department to participate in the development of environmental documents that will assess the cumulative impact of vegetation management in the East Bay, stretching from Point Pinole to Castro Valley. The study is funded by FEMA, and the biological assessment is being performed by URS. The study is to be completed by December, and there will be a public comment period. FOSC needs to participate in this review in order to ensure that rare watershed species are protected.

- **Overuse of natural areas:** The Sausal Creek watershed is over 25 percent parkland, but it is very heavily used parkland. While most hikers, equestrians, and cyclists tend to stay on trails most of the time, those who don't often create new trails that lead others to follow them. Very few dogs are leashed, and in some areas dog shortcuts down to creeks denude steep hillsides. Other park uses include summer camps, orienteering, geocaching, and mushroom-hunting, all, by definition, involving off-trail use and thereby imperiling park vegetation by their cumulative effects.
- **Erosion and high creek flows:** The high peak flows due to urbanization take a toll on riparian species due to channel erosion, bank failures, and deposition. Many riparian plants need to be located low on the banks due to their need for year-round moisture, but as high flows scour and inundate the banks, they're at risk. Many riparian trees are able to withstand high flows; our alders, willows, and dogwoods help stabilize creek banks and slow water flow. But other trees, like the cottonwoods of Beaconsfield Canyon, are at risk from peak flows; several of the cottonwoods have fallen in recent years. *Veronica americana*, a small plant of seeps, springs, and slow creeks, has not been found in several years in Sausal Creek.



*Veronica americana*, ©2003 Dianne Fristrom

- **Historical impacts:** The "Fruit Vale" of the lower watershed was intensively settled early in Oakland history, with little information about the native vegetation that was replaced by homes and orchards. The redwood logging in Redwood Park, Joaquin Miller Park, and Dimond Canyon was brutal: Huge trees crashed to the forest floor, and then oxen dragged the giant logs across the understory to the sawmills. With huge redwood stumps accessible and close to the burgeoning urban markets of San Francisco and Oakland, the loggers were followed by shingle-cutters and firewood harvesters, who even dug out the large roots of the trees. In an article in *Bay Nature*, Steve Edwards, director of the Tilden Regional Parks Botanic Garden, called our local redwood forest "floristically depauperate," lacking in the diversity of species typical of other redwood forests.

## What Is FOSC Doing to Protect Our Rare Plants?

As much as we can...and never enough. Our major focus, of course, has been on the pallid manzanitas in the watershed (see following article).

Other efforts include:

- propagating and outplanting natives to additional sites
- working with park personnel and the goat-grazing contractor to reduce impacts on rare species in grazed areas
- clearing invasives from areas with rare plants
- educating seed hikers and nursery volunteers who help collect rare plants or work with them
- creating barriers in areas where off-trail hikers or cyclists affect rare plants
- taping and flagging rare plants in areas that are cut by city contractors
- ensuring that trail reroutes avoid rare plant populations
- monitoring rare plant populations for the East Bay CNPS survey of rare and unusual plants and continuing our own observations

All of the above efforts rely on the involvement of FOSC volunteers, without whose work over the past 15 years we would surely have fewer of these plants than we have today.



Volunteer flagging California matchweed (*Gutierrezia californica*)

## Rare Plant Resources

Information about rare plants and ranking criteria can be found at these sites:

- Information about the *Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties* publication: <http://ebcnps.org/index.php/plant-science/unusual-plants/>
- The statewide CNPS Inventory of Rare, Threatened, and Endangered Plants of California provides detailed information on the rare species it includes: <http://www.rareplants.cnps.org/>
- The California Department of Fish and Game oversees the ranking of rare plants in California: <http://www.dfg.ca.gov/habcon/plant/>

Calflora provides a database of basic plant information and photographs. After searching for a plant, you can click on the map or the county name to display a list of occurrences and maps. [www.calflora.org](http://www.calflora.org)

The Jepson Herbarium provides data online. In addition to the keys and descriptions for all the species included in The Jepson Manual, it provides information about plant specimens at various herbaria. <http://ucjeps.berkeley.edu/interchange/>

The *Bay Nature* article describing the impacts of logging on the redwood understory can be found at: <http://baynature.org/articles/jul-sep-2004/in-the-shadow-of-giants>

Preview the pallid manzanita vignette from the Oakland Museum of California's renovated Gallery of California Natural Sciences (opening in spring 2013) at: [www.sausalcreek.org/photos/videos.html](http://www.sausalcreek.org/photos/videos.html)

--Karen Paulsell