

THE ERIOGONUMS OR WILD BUCKWHEATS, AN EXPLORATION

The eriogonums belong to the worldwide family known as Polygonaceae (buckwheat family)

The Polygonaceae consists mostly of herbaceous plants with simple, alternate leaves featuring pairs of papery stipules known as ochrea and

- Small flowers arranged in dense clusters, including heads, umbels, panicles, and spikes
- Flowers consist of 4 to 6 tepals (no distinction between petals and sepals), several stamens, and a superior three-sided, one-chambered ovary that develops into a
- Three-sided, indehiscent achene in fruit

Typical members of the family featuring these characteristics include

- *Polygonum* (knotweeds) with flowers of 4 to 5 tepals,
- *Rumex* (docks) with greenish flowers of 6 tepals,
- *Oxyria digyna* (mountain dock) with 4 to 5 tepals,
and
- *Fagopyrum esculentum* (the edible buckwheat of commerce) with small whitish flowers

The polygonums range from tiny annuals to 8-foot-tall herbaceous perennials and occur in many habitats. Here you see the marsh-loving *P. hydropiperoides* with the ochrea at the base of the leaves



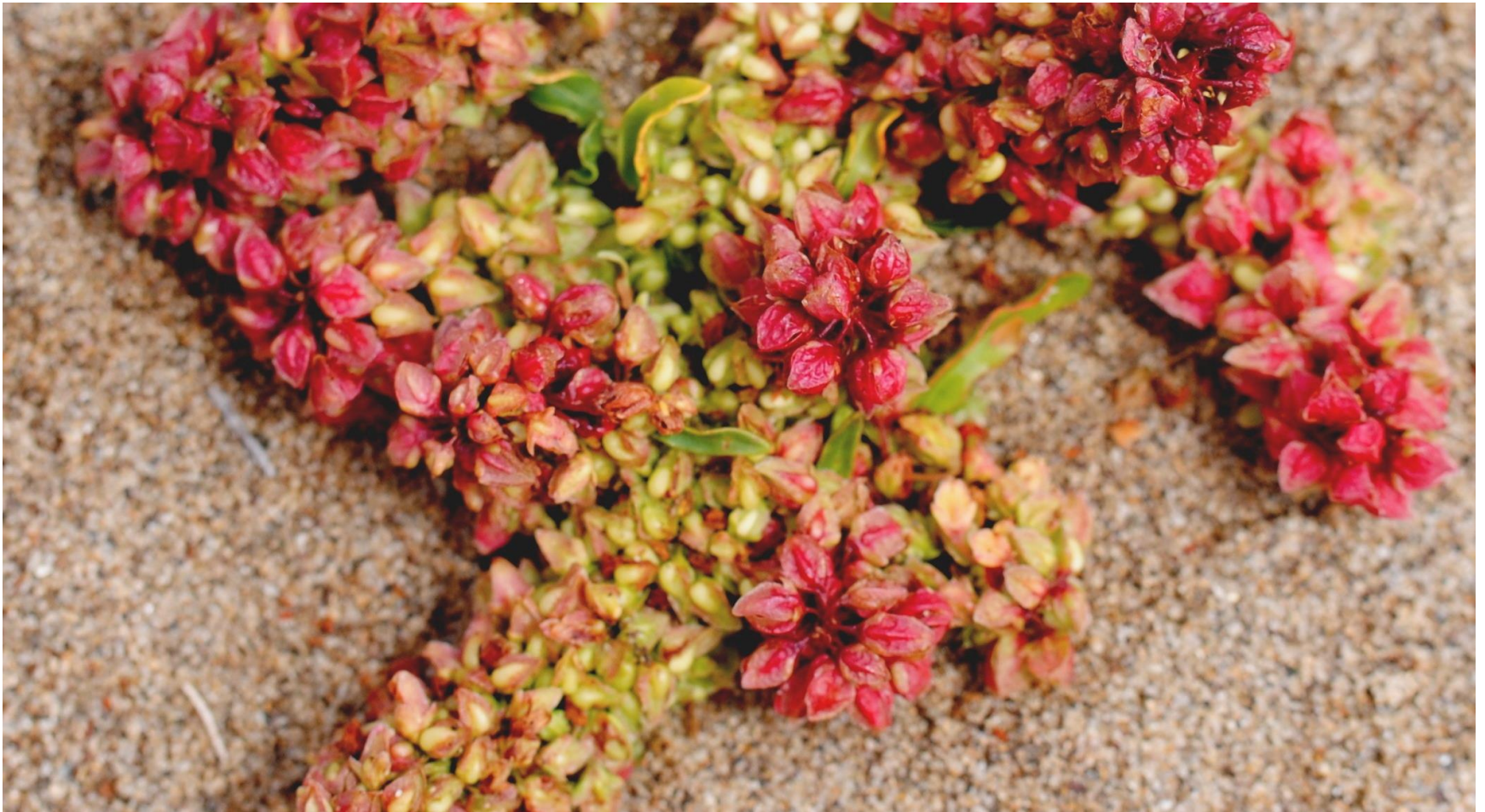
Here is the pond-dwelling *Polygonum amphibium* with pink flowers. Most species have white to greenish flowers



The rumexes are often taprooted and weedy, although this *R. occidentalis* is a native wetlands species. Note the winged tepals around the fruits.



Another native dock is *R. salicifolius* found on dunes and coastal wetlands. Note the colorful fruits.



The mountain sorrel, *Oxyria digyna*, is similar to the rumexes but has two-sided fruits. It lives in rocky pockets in the high mountains.



The true buckwheat, *Fagopyrum esculentum*, is a perennial from Eurasia and looks little like our so-called native buckwheats.



The bulk of the Polygonaceae belongs to the subfamily Polygonoideae but perhaps 85% of our native species are in a special subfamily called Eriogonoideae

- This subfamily differs from the rest by *lacking* the ochrea or papery stipules and by often having clusters of basal leaves
- By far the largest genus in this subfamily is *Eriogonum* (wild buckwheat), the subject of our workshop
- Other genera include the spineflowers (*Chorizanthe* and relatives) as well as several rather small, poorly known genera

Chorizanthes are annuals with spine-tipped bracts around the tiny white, green, or pink flowers. Here you see *C. cuspidata* from Pt. Reyes. Note the tepals are spineless but the surrounding bracts have sharp spines



Chorizanthe rigida from the deserts features large spines and green flowers. Note, however, the spoon-shaped leaves that resemble many eriogonums



The genus *Eriogonum* contains over 100 species in California. The genus is found from seashore to timberline and out onto the deserts

- Eriogonums are identified by the tiny yellow, white, pink, or red flowers being clustered inside *involucre*s, bracts that are fused into a cup or vase shape
- Eriogonum foliage is often spatula shaped but there are several exceptions
- Eriogonums range from tiny annuals to matted and upright perennials as well as small shrubs

Eriogonums make excellent plants for the native garden and can be used as fillers, rock garden plants, container plants, and plants for dry borders

- Eriogonums are usually propagated from seed collected in summer and fall, although a few also develop roots from cuttings
- Eriogonums prefer full sun, well drained soils (essential), and little summer water when established
- Many species are available from native nurseries, the majority perennials and shrubs
- The annuals and matted perennials are difficult to find

For identification purposes, the *Jepson Manual* divides the genus into four basic groups

- Annuals with involucre showing ribs or angles, the involucre attached directly (sessile) to the flowering stalk
- Annuals with unangled, smooth involucre, usually borne on tiny stalks (peduncles)
- Perennials with a distinct stalk (*stipe*) at the base of each flower
- Perennials with no distinct stipe

We'll now sample members of these four groups, starting with annuals with ribbed, sessile involucre. The majority of these are desert annuals. A good hand lens or microscope is necessary

- Some of the lead features to look for in this group include
- Whether the flowers are hairy or glabrous
- Whether the outer tepals are fan or arrowhead shaped or not
- The shape of the leaf blades

E. caninum is a typical member of this group, a late-blooming tiny annual found mostly on serpentine soils in the North Bay.



Often, *E. caninum* is considered a variety of the more widespread, yellow-flowered *E. luteolum*, the specific epithet meaning yellowish



Many of the other group 1 species are uncommon. Group 2, annuals with a smooth involucre, has several common examples including *E. parishii*



Parish's buckwheat, from the foothills of the southern Sierra, features rosettes of spoon-shaped leaves,

- Tiny white flowers arranged in highly branched, treelike inflorescences,
- Which, when dry turn to a brilliant red making the skeleton of the plant showier than the living plant

E. rixfordii, the pagoda buckwheat is so named because of its pagodalike tiers of branches in the inflorescence



The humble buckwheat, *E. pusillum*, has tiny yellow flowers that make a show only due to their sheer numbers. These were photographed in Joshua Tree National Park growing with chia



E. reniforme, the kidney-leaved buckwheat also features a highly branched, treelike inflorescence and distinctive kidney-shaped leaves



The common desert trumpet, *E. inflatum*, leaves behind a skeleton with inflated stems. Contrary to what seems likely, these stems are hollow but don't hold water



Desert trumpet flowers are tiny, yellow, and starlike in shape



The spurrey buckwheat, *E. spergulinum*, is a common ephemeral annual on rocky slopes in the mountains



These were a few examples of groups 1 and 2, species that are seldom grown in gardens but prominent in dry habitats

- Group 3 features a wide range of perennial species with that special stipelike base to the flower. This can be seen under magnification as a joint separating the perianth tube from the stipe below it.
- This group is also noted for having flowers in large, umbel-like clusters
- Perhaps the most widespread and highly variable species of the group is the colorful sulfur buckwheat, *E. umbellatum*

This close-up of *E. siskiyouense* flowers clearly shows the greenish stipe below the pale yellow flower tube, the feature that distinguishes this group



E. umbellatum grows in rocky scree and slopes from as low as 3,000 feet on Mt. Diablo to above timberline. Here you see a population at Cook and Green Pass in the Siskiyou Mountains



Many buckwheat flowers turn shades of bronze and red in fruit but perhaps none are more striking than *E. umbellatum*. This form occurs on the top of Mt. Diablo



E. umbellatum sometimes forms matted clumps as seen here, often with woolly, gray leaves



Or it may form more upright stems with less gray foliage as seen in this form from the foothills of the White Mountains



Often confused with *E. umbellatum* is *E. marifolium*, a species often found in the same habitats. It can be told by the less intensely yellow, unisexual flowers



The Bear Valley buckwheat, *E. ursinum*, also resembles *E. umbellatum* in habit and habitat but has whitish to pink-tinted flowers instead



E. ursinum is also distinguished by having leaves that turn deep red in the winter, when conditions have turned cold



E. compositum (arrow-leaf buckwheat) is a bigger, bolder plant with stems up to 3 feet tall and large clusters of white to pale yellow flowers



Like other buckwheats, *E. compositum* flowers lure a wide array of pollinators such as this beetle. Arrow-leaf buckwheat lives in the northern mountains.



The Shasta buckwheat (*E. pyrolifolium*) features bright green leaves that are shaped like some pyrolas (wild wintergreens) and



And short stems with white flowers. Note the dark red anthers. This species is seldom cultivated.



One of the rare species from this group is the alpine buckwheat, *E. alpinum*, found on serpentine scree on Mt. Eddy west of Mt. Shasta



Group 4, the perennials without a stipe at the base of the flower, comprise the largest group of buckwheats grown in California gardens

- This group consists of 4 distinctive sections
- The first has two unusual species that don't fit completely into either group 3 or 4. The main garden species here is the Conejo buckwheat, *E. crocatum*
- The second group contains mat- or cushion-forming plants, often with the flowers in ball-like heads
- The third group consists of truly shrubby species
- The fourth group has flowers in arrangements other than umbels or heads

The Conejo or saffron buckwheat, *E. crocatum*, is a narrow endemic near Conejo Pass on Hwy 101 going into L.A.



Long blooming and with silvery leaves, Conejo buckwheat offers one of the best contrasts between leaves and flowers



E. saxatile, the rock buckwheat, true to its name, grows in exposed rocky places in central and southern California. Its flowers are white to cream colored



Our second section of group 4 features some alpines with very tight mats of woolly leaves and flowers raised on short stalks. Most of these are difficult to grow in Bay Area gardens

- The two most characteristic of these is the alpine buckwheat, *E. ovalifolium*, that comes in several color forms and varieties and
- *E. gracilipes*, the ruby buckwheat from the White Mountains in bristlecone pine country

The following are images of different forms of *E. ovalifolium*. Here is a plain white form. Notice how dense the leaf mats are.



Some, like this *E. ovalifolium* feature flowers that change color as they age



Still other forms of *E. ovalifolium* have soft yellow flowers



E. gracilipes from the White Mountains looks similar but has flowers whose tepals are all alike, while in *E. ovalifolium* they have different shapes. Colors of the species range from pale, as seen here, to



A deep ruby red. Unfortunately, this species appears difficult to grow.



Another cluster of buckwheats from group 4 includes species with spoon-shaped leaves in rosettes or along stems and globe-shaped heads of flowers carried on long, usually branched stalks

- Many of these are widely available and easy to grow in gardens. The main species here look similar
- *E. grande rubescens* (rose buckwheat) is an island endemic with pale to deep rose-red flowers and favors coastal bluffs and sand dunes
- *E. latifolium* (coast buckwheat) is a highly branched, low-growing plant with near-white to deep rose flowers, and
- *E. nudum* (naked stem buckwheat) is a highly variable species found throughout the dry hills and mountains with white, yellow, or pink flowers.

Here is an old sprawling clump of rose buckwheat in its sand dune habitat on Santa Cruz Island



Rose buckwheat can make a spectacular container plant as seen here



Coast buckwheat on a sand dune at Abbott's Lagoon,
Pt. Reyes. This form has rather pale, washed out
flowers



By contrast, deep rose forms of coast buckwheat grow along Humboldt Bay near Eureka



Both forms of coast buckwheat fade to a beautiful rust color



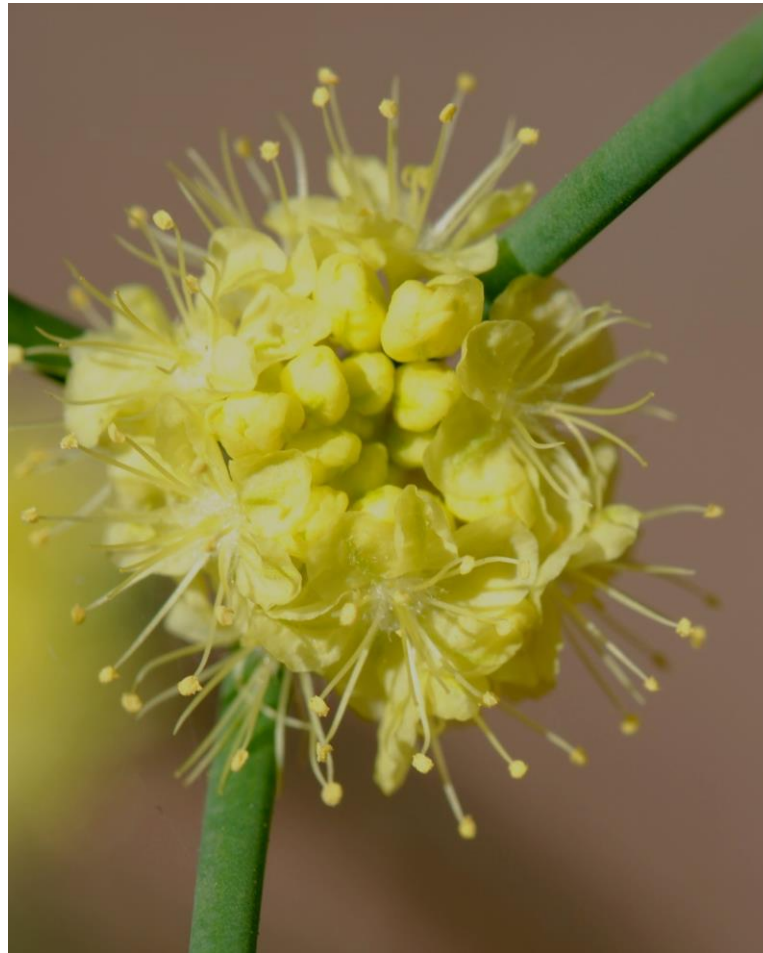
Typical local forms of naked buckwheat are white and not showy unless massed.



However, scattered individuals display pink-tinted flowers and



And forms from the Sierra and northern corner of the state bear lovely yellow flowers



Still another cluster of species from group 4 features flowers spread out along stems rather than in a headlike arrangement

- Prominent species here include *E. elongatum* (wand buckwheat)
- *E. heermanii* (Heerman's buckwheat)
- *E. wrightii* (Wright's buckwheat),
- *E. microthecum* (no common name), and
- *E. plumatella* (feather or plumed buckwheat)
- Some these are cultivated but they're not usually available

Heerman's buckwheat forms low rounded mounds several feet across in age, growing in rocky places in the White Mountains and covered in white flowers



Special to Heerman's buckwheat are the widely diverging, often dichotomous branches seen here



The plumed buckwheat, *E. plumatella*, has dramatic, narrow branched plumes of flowers



E. microthecum from the dry slopes of the eastern Sierra, splays flat-topped cymes above the branched stems. Some forms have snowy white flowers while



Others feature golden yellow flowers



Wright's buckwheat resembles the mat formers shown earlier. The dense silvery mats form large crowns on steep slopes, mostly in the high mountains, but the ones pictured here grow along the Mines Road.



Wright's buckwheat is not very showy in flower because the flowers are borne in narrow spikes and are often white or very pale pink.



Our last section of group 4 features shrubs with decidedly woody branches. Among these we have

- The California buckwheat (*E. fasciculatum*)
- The little-leaf buckwheat (*E. parvifolium*)
- Santa Cruz Island buckwheat (*E. arborescens*) and
- St. Catherine's lace (*E. giganteum*)
- All four of these make splendid and dramatic garden plants, sometimes blooming for several months at a time

California or flat-top buckwheat features numerous branches with clusters of narrow, almost needlelike leaves and open cymes of white or pale pink flowers



California buckwheat is widely distributed in dry areas of the foothills and desert mountains. Here you see the flowers rising above competing shrubs in my garden



California buckwheat is another species with beautiful rust-colored dried flowers so that even in winter it adds drama to a garden



Little-leaf buckwheat from the central coast forms billowy mounds with pale pink flowers and small leaves borne all along the stems



Here is a closer view of the leaves and flowers of little-leaf buckwheat



Endemic to Santa Cruz Island, *E. arborescens* forms a mounded shrub to 3 or 4 feet tall with broad clusters of white flowers that fade russet. Note the narrow leaves



Here are two color forms of Santa Cruz Island buckwheat, the norm being white.



In flower or fruit, St. Catherine's lace (*E. giganteum*) is dramatic, growing up to 8 feet tall and with a broad spread



Here is a close view of the flowers of St Catherine's lace and



Here are the beautiful, broad, gray leaves



Although this ends our slide show, there are many other beautiful and garden-worthy buckwheats awaiting trial

- Some are doubtless difficult to grow, particularly the mat formers from high mountains,
- While others such as the annuals need to be reseeded each year and feature tiny flowers
- Hopefully, as you continue with this awesome group, you'll discover other species that deserve a place in your garden.