THE ASTERACEAE. PART 2

THE REMAINING IMPORTANT TRIBES AND THEIR CHARACTERISTICS

Another tribe that is usually easy to recognize is the *Senecioneae* or senecio tribe, important world wide.

- The senecio tribe usually displays the following combination of traits:
- One very even row of non-overlapping phyllaries
- Sometimes additional tiny phyllaries at the base, which are often black tipped, and…
- A hairy pappus
- Most native members of the tribe are herbaceous annuals and perennials, living in a wide variety of habitats

The type genus, *Senecio, (*no universally applied common name) has been broadened to include over 1,000 species but is currently split into several different genera

- The senecio group is typified by alternate leaves
- The true senecios feature toothed leaves and a substantial rhizome, whereas…
- The split away genus, *Packera*, has slender rhizomes or other kinds of roots and entire to lobed leaves

Let’s begin with what remains in *Senecio*. *S. integerrimus* (ncn) is a diverse, summer-blooming perennial in dry woodlands and forests .

By contrast, the uncommon water butterwort, *S. hydrophilus*, true to its name is a tall perennial restricted to the Delta. Here you see it growing among the tules.

The water butterwort is one of the species lacking ray flowers.

The meadow butterwort, *S. triangularis*, grows tall in wet mountain meadows and features…

…rayed flower heads and triangular leaves

A few senecios grow as small shrubs such as this late-blooming *S. flaccidus douglasii* does. It lives in dry mountains and high deserts

An example of a *Packera* is *P. cana,* the woolly butterwort, a mountain species with mats of wool-covered leaves. Note the lack of teeth on the leaves.

In the case of *Packera multilobata*, the leaves are deeply lobed but not toothed

NPS Photo

P. laynae is a rare species with lobed leaves found on Pine Hill east of Sacramento, a hotspot for other rare plants such as *Fremontodendron decumbens*.

The rounded blue-tinted leaves on a slender rootstock and the bright orange flowers mark *P. greenei*, a serpentine endemic.

P. greenei with flower detail. This unique species occurs in the inner north Coast Ranges.

Another segregate from *Senecio* is the invasive cape ivy, formerly *S. mikanioides*, now *Delairea odorata* native to South Africa but twining around coastal vegetation in California.

The arnicas resemble senecios but are distinguished by their pairs of opposite leaves. The European *A. montana* Is widely reputed for its medicinal properties and many of ours doubtless have the same qualities. This one is heart-leafed arnica, *A. cordifolia*

A. dealbata, formerly *Whitneya dealbata*, is a gray-leafed creeping ground cover with yellow flowers

Many other mountain species of arnica occur, often forming large colonies, as is the case of *A. longifolia*.

The rayless arnica, *A. discoidea*, forms large patches on rocky shaded slopes at lower elevations in the mountains and is also found within the boundaries of the Bay Area.

Luina hypoleuca, a sprawling shrub from rocky slopes in the northwestern corner of the state, features handsome, bicolored leaves that are silvery underneath

Here you see the remnants of the single row of phyllaries around the achenes topped with a hairy pappus for *Luina*

Turtleback or desert velvet, *Psathyrotes ramosissima*, forms a silvery mat on rocky desert slopes with small, rayless flower heads

The western coltsfoot, *Petasites frigidus palmatus*, is an unusual member of the tribe with rhizomes bearing huge, palmately lobed leaves and living along stream banks in redwood forests

The white to pale pink flower heads are carried on 2-foot stalks before the new leaves emerge in late winter.

The last tribe, Heliantheae, is in most ways the most problematic, because it includes great diversity and is subdivided into subtribes

- Besides the main *Helianthiiae*, there are now the following subdivisions
- *Madiinae* or tarweed subtribe
- *Ambrosiinae* or ragweed subtribe, and
- *Helenieae* or sneezeweed subtribe, which used to be its own separate tribe

Helianthiinae or sunflower tribe and subtribe are generally easy to recognize by the following features

- Usually more than one row of phyllaries,
- Presence of a scaly pappus (but the pappus is sometimes missing),
- Internal *chaffy bracts*, that is brownish or papery scales, between the disc flowers, and
- The flower heads generally have yellow rays flowers (sometimes missing) around many disc flowers

Here you see the seed head of *Helianthella* with dried disc flowers and brown scalelike bracts

Helianthus or sunflower is the type genus. Most are stout plants with large heads of flowers. This species, *H. annuus*, is a roadside plant in California and the same species from which the huge sunflowers used for seed and oil were developed

The California sunflower, *H. californicus*, is a tall summer-blooming perennial found along stream courses

Here you see the details of California sunflower's disc flowers. Notice the two curled styles on each disc flower.

The graceful sunflower, *H. gracilentus*, is a bushy perennial abundant after fire in chaparral

Helianthella californica is similar to *Helianthus* except the plants form low-growing clumps and feature long phyllaries around the flower heads. It is widespread in woodlands

Another sunflowerlike genus is *Wyethia* or mule's ears, named for the broad, floppy leaves. Most wyethias grow low to the ground on elongated rhizomes. This one is *W. helenioides* with woolly leaves

Another foothill mule's ears is *W. glabra*, whose leaves lack obvious hairs.

A third foothill mule's ear is *W. angustifolia*, or narrow-leaf mule's ear with narrow undulate leaves

Wyethia elata from the southern Sierra shows a perfect spiral arrangement of the flowers in bud. You can see the protruding bracts between the flowers.

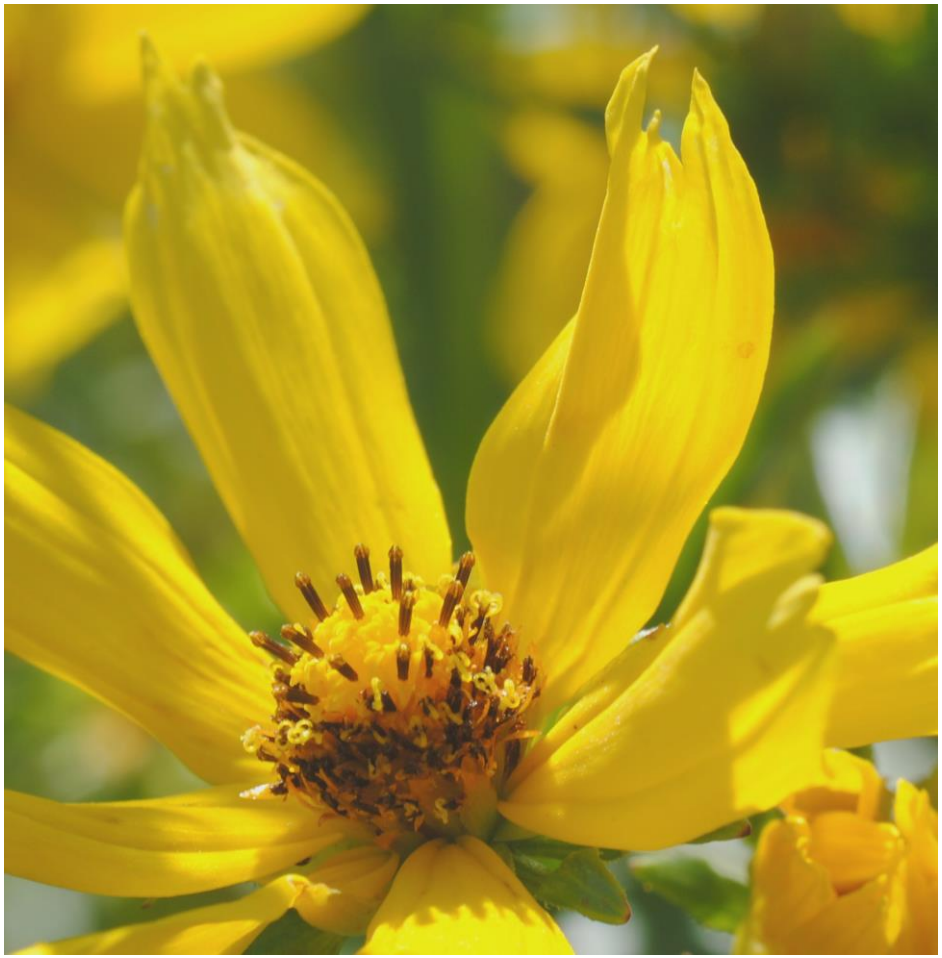
The mountain mule's ears, *W. mollis*, grows by the thousands in sandy soils in forest openings.

Balsamroots are closely related to mule's ears, but the flowers lack a pappus and the leaves are often triangular. This one is known as *B. deltoides* for the shape of the leaves.

A similar balsamroot, *B. sagittata*, occurs on dry slopes in the mountains.

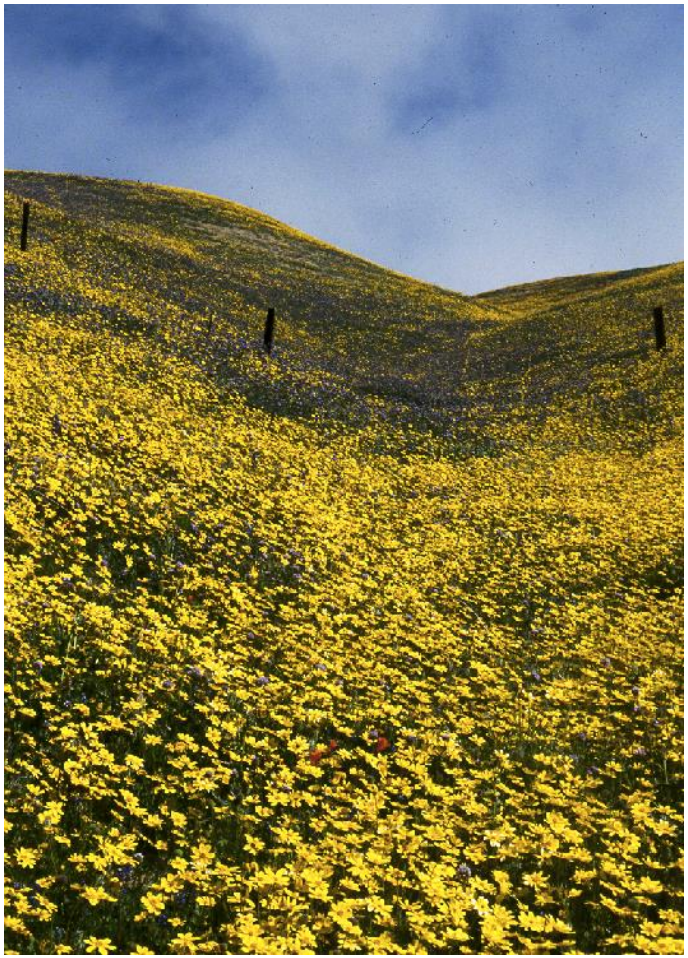
The beggar ticks or *Bidens* are wet growers such as this *B. laevis,* which is a common component in the Delta, here growing among tules

B. laevis blooms in summer with typical sunflower-like flower heads but in seed…



…the achenes are provided with pronged pappus scales that hitch a ride to a new home

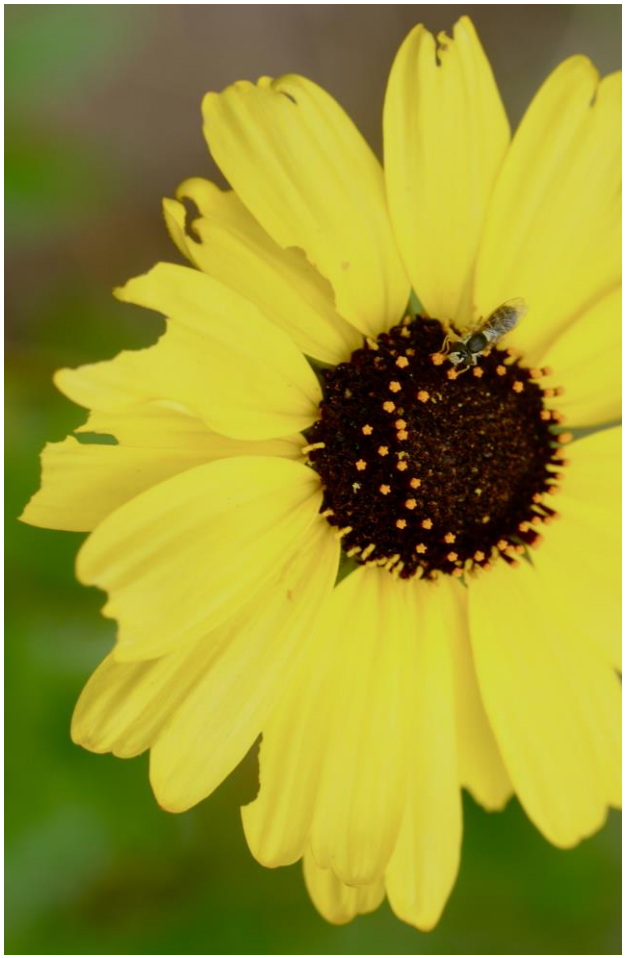
The coreopsises are closely related to *Bidens*. The genus has now been changed to *Leptosyne*. *L. bigelovii* is a beautiful spring-flowering annual providing masses of color in a good year



The most unusual species, the tree coreopsis, *L. gigantea*, grows on cliffs along the south coast, easily identified by its trunk, which goes leafless in summer.

The brittle bushes or inciensos, such as *Encelia farinosa*, are dry-growing shrubs that burst into bloom in spring. This species is found only in desert scrub.

Encelia californica is a coastal species from the coastal sage scrub along the coast in Southern California. It has green leaves and dark purple disc flowers



The magnificent *Enceliopsis covillei* or Panamint daisy produces spectacular dinner plate-sized blooms and lives on limestone scree in Death Valley National Park

The most distinctive genus of the sunflower tribe is the cone flower, *Rudbeckia californica*, which lives in mountain meadows

Here is a close view of the cone-shaped receptacle that bears a spirally arranged series of disc flowers

The tarweed subtribe, *Madiinae*, displays certain important differences from the sunflower subtribe, as follows…

- Tarweeds generally feature sticky, often stalked glands on stems, leaves, and phyllaries
- Tarweeds have a single row of phyllaries around the flower head
- Tarweed phyllaries wrap part way or entirely around the achenes of the ray flowers,
- Tarweeds have a row of chaffy scales *only* between the ray flowers and the first row of disc flowers

The type genus *Madia* nicely illustrates the presence of sticky glands on the phyllaries. This species, *M. sativa*, is a weedy annual with small flowers

The showiest of the madias is elegant tarweed, *M. elegans*. Here you see the summer version of the plant

Another variety of elegant tarweed blooms in the spring.

The woodland tarweed, a short-lived perennial found in dry woods, has been tranferred to *Anisocarpus* as *A. madioides*

The spiny tarweeds are in the genus *Centromadia*. Most of these behave as dryland weeds, blooming in summer heat.

Spiny tarweeds often have spiny phyllaries as well as spiny leaves

The highly fragrant rosinweeds, *Calycadenia*, bloom on dry soil in summer heat. Many like this *C. multiglandulosa* have white to pinkish flowers

The ray flowers of rosinweeds have petals deeply three lobed and fanlike in arrangement, while the disc flowers look like other tarweeds

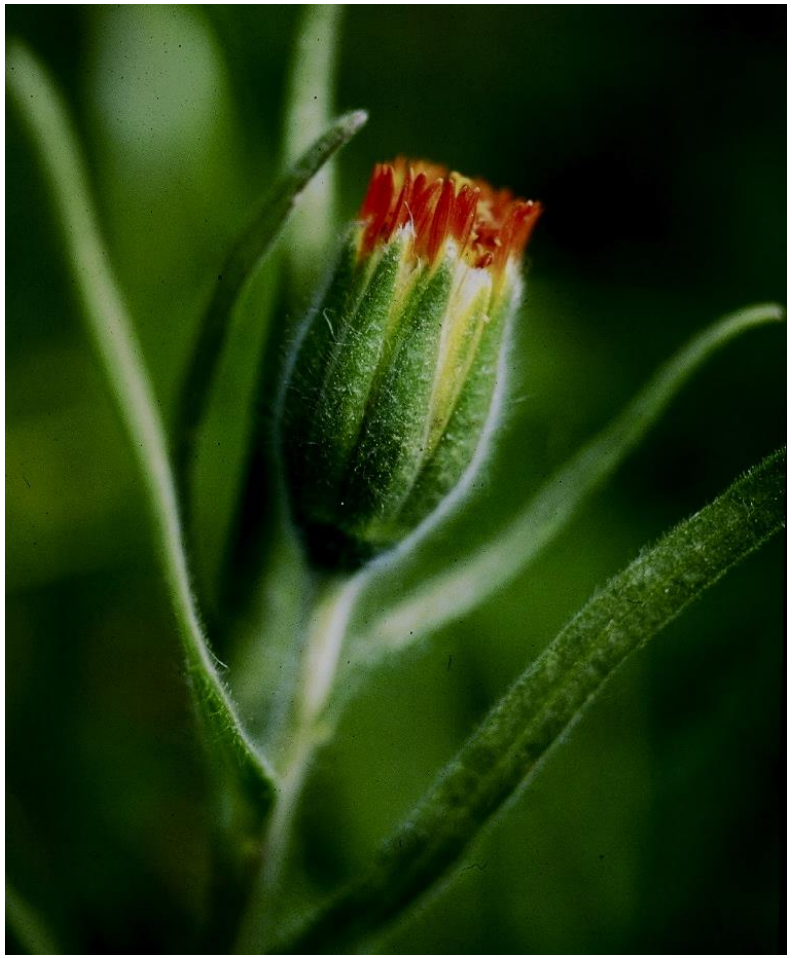
Although most tarweeds bloom in summer, two genera typically flower in spring. Here you see *Layia platyglossa* or tidy tips with its signature yellow rays tipped white

By contrast, many layias have ray flowers of a single color like this dry growing *L. heterotricha* from Southern California.

Here you see the rare *L. carnosa*, restricted to coastal sand dunes on the north coast. The whole plant is diminutive and may fail to grow in years of sparse rains

A close view of *L. carnosa* flowers shows the sticky black glands on the phyllaries

The other spring-blooming tarweed is blow wives, *Achyrachaena mollis*, an annuall common in grasslands. The flower heads are relatively inconspicuous because of the long phyllaries.



But blow wives becomes conspicuous in its seed stage because of the two rows of pearly white pappus scales, that suggest a flower

The ragweed subtribe, *Ambrosiinae*, really stands apart from the rest of the sunflower tribe because…

- It has only disc flowers, which are always unisexual and
- Wind pollinated. In fact members of this group are often the cause of serious hay fever allergies
- The fruits are often spine covered as a way of hitchhiking on clothing and animal fur to a new home

The most prominent genus is *Ambrosia*, often known as ragweed, blooming late and spewing pollen on the wind. Here is the common, weedy *A. psilotstachya*, found on the edge of temporary wetlands

A. chamissons or dune bursage, forms woody mounds on coastal dunes. Here you see the form with deeply pinnately lobed leaves.

The same species also has a simple-leafed form, often growing next to the first form. Here you see the spikes of tiny flowers, the males conspicuous because of the yellow pollen

The spine-covered female flowers of dune bursage occur at the base of the spike of male flowers

A. dumosa or burro bush is a common desert subshrub, often growing in the spaces between the much taller creosote bush, *Larrea tridentata*.

Another desert shrub, cheesebush, was once in a separate genus known as *Hymenoclea*. It has now been transferred to *Ambrosia*. This one is *A. salsola*

Cheesebush is noted for its strong, cheeselike odor and its unique female flowers, which are surrounded by white phyllaries that catch the wind.

Another distinctive genus is *Xathium* or cocklebur, dryland weeds that proliferate in temporarily moist soils, then produce large female flowers covered with hooked spines

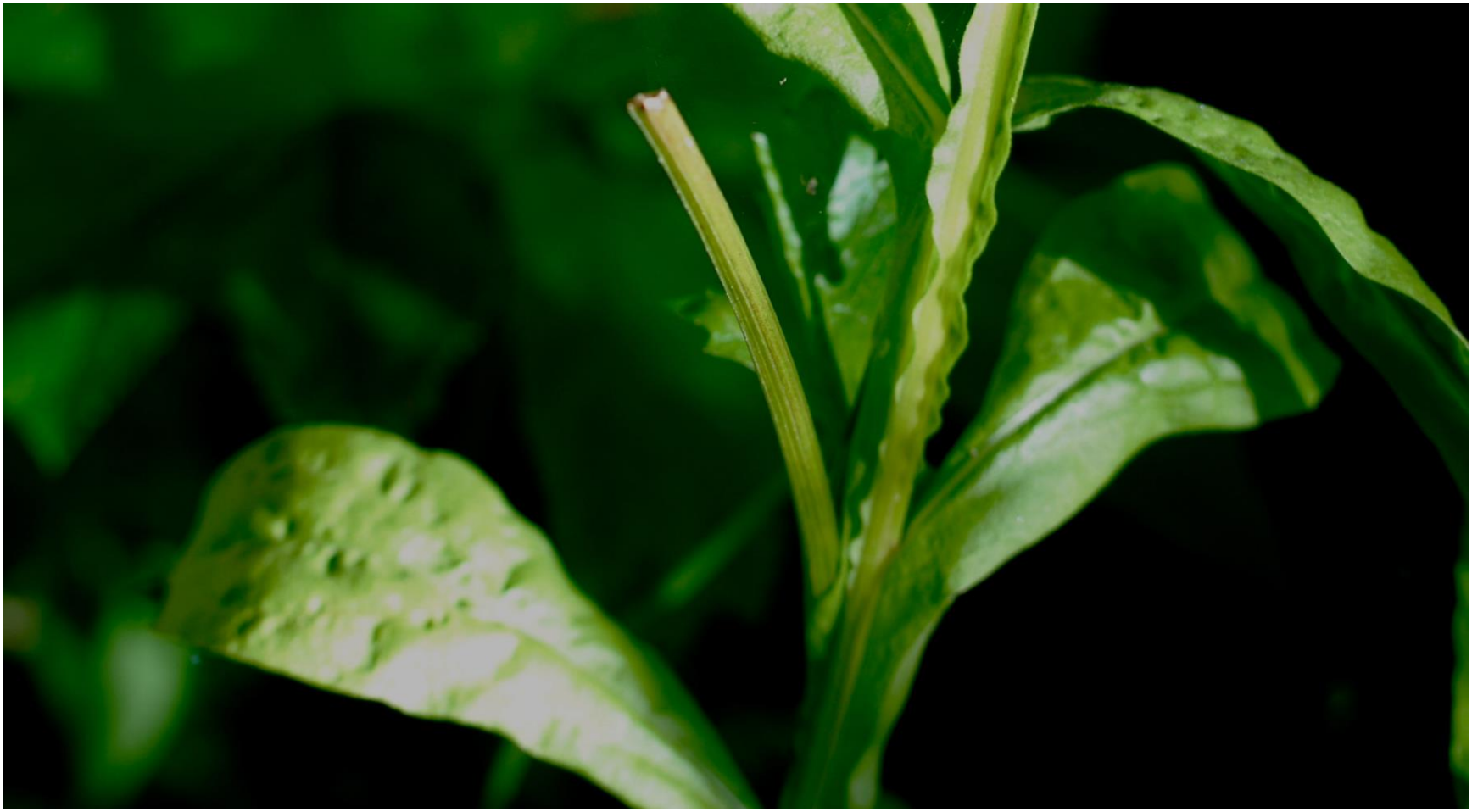
Here you see the ripe fruits of *X. stramonium*.

Our last subtribe of the sunflower tribe is *Helenieae* or sneezeweed tribe.

- This subtribe is fairly diverse and often its flowers look like the main sunflower subtribe, but there are a few important differences, especially
- The lack of internal chaffy bracts between the disc flowers
- The phyllaries in this subtribe differ, sometimes being in a single row, sometimes in more than one layer or row, and
- The pappus is usually of scales but may sometimes be missing
- Generally the flower heads are smaller than those of the sunflower subtribe, and the colors of the flowers are more variable

The type genus, *Helenium* or sneezeweed, consists of perennials with dome-shaped receptacles. Here you see *H. puberulum*, a seep plant known as rosilla with very short ray flowers

Sneezeweeds are also characterized by having *decurrent* leaves, that is the leaf blade extends down the stem below the node



Bigelow’s sneezeweed, *H. bigelovii*, features showier rays and lives in wet meadows

Two grassland annual genera are glueseed, *Blennosperma nanum*, blooming very early. Here you see the pale yellow flowers and…

…here the white pollen and red-purple backside of the ray flowers

The other common grassland annual is *Lasthenia* or goldfields, literally coloring grassy fields gold in midspring.

Lasthenia californica is the most abundant species. Note that its flower heads are a richer golden yellow and there is no white pollen as with *Blennosperma*

The genus *Eriophyllum* (literally, woolly leaves) is a prominent, mostly perennial genus. Here you see the so-called golden yarrow, *E. confertiflorum*, a common shrublet in dryland communities throughout the foothills

By contrast, the mounded woody perennial, *E. stachaedifolium* or lizard tail, is prominent on coastal bluffs and dunes, featuring…

…deeply lobed leaves covered with white, woolly hairs

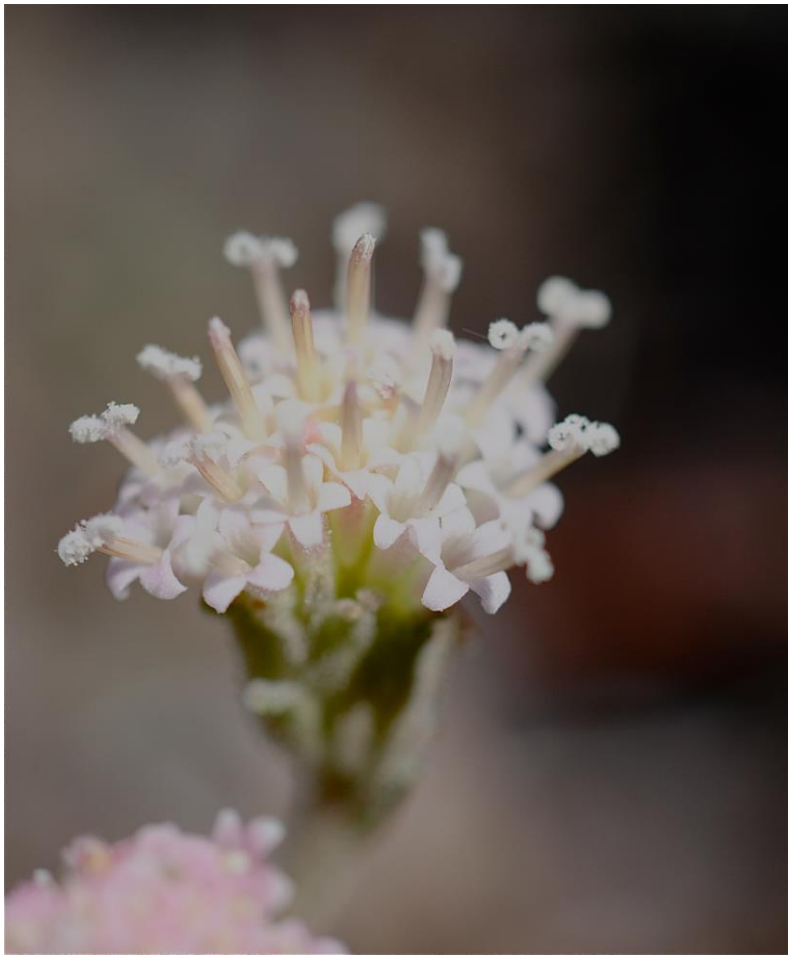
Oregon sunshine or woolly daisy, *E. lanatum*, is a small perennial with single large flower heads on each stalk. It is highly variable, since it lives from sea level to timberline. This is the coastal form.

The inland foothill form of *E. lanatum* is much taller and is lanky. The alpine form is different yet with a inches-high stature.

A few eriophyllums like *E. wallacei* are miniature annual belly plants found in the deserts

Catalina lace, a shrub with gorgeous snowflakelike gray leaves, was once in the genus *Eriophyllum* as well, but has now been separated and known as *Constancea nevinii*.

Several members of the *Helenieae* live in the deserts or dry mountains. One of the most distinctive is *Chaenactis* or pincushion flower. This one is the annual *C. fremontii*



Most chaenactises feature white or pinkish flowers with only discs, although the disc flowers are uncommonly large. Here you see the mat-forming perennial *C. nevadensis* that favors rocky slopes in the high mountains

Desert sunflower or desert gold, *Geraea canescens*, is a tall annual that grows by the thousands after generous winter rains. Here you see native bees pollinating the flowers

Speaking of high mountains, alpine gold or *Hulsea algida* is a perennial living on rock scree at or above timberline. It is characterized by sticky leaves and numerous ray flowers

The diminutive perennial, *H. vestita*, features woolly leaves and lives on porous rock outcrops on the east side of the Sierra

Returning to the coast, canyon sunflower, *Venegasia carpesioides*, is a tall perennial with heart-shaped leaves, living in protected coastal canyons in Southern California

Canyon sunflower’s flowers are large and borne from midspring into summer, especially when conditions are cool.

The last tribe is *Anthemideae*, the mayweed tribe

- The tribe is best characterized by…
- No or minimal pappus on the achenes,
- Leaves usually deeply lobed to dissected,
- And usually a strong, medicinal fragrance of the foliage
- Other features vary considerably, such as…
- Presence or absence of ray flowers and
- Whether the flowers are insect- or wind-pollinated as in the genus *Artemisia*

The type genus, *Anthemis*, is European. Here you see the mayweed, *A. cotula*

Mayweed, as its name suggests, blooms in May and is common in temporarily moist disturbed sites. It has an strong, unpleasant odor

Another strongly fragrant plant is the common yarrow, *Achillea millefolium*, a species found across the northern hemisphere and adapted to a wide variety of habitats in California

People often mistake yarrow as belonging to the parsley family Apiaceae because of the flower arrangement, but close inspection reveals tiny heads of flowers with both rays and discs

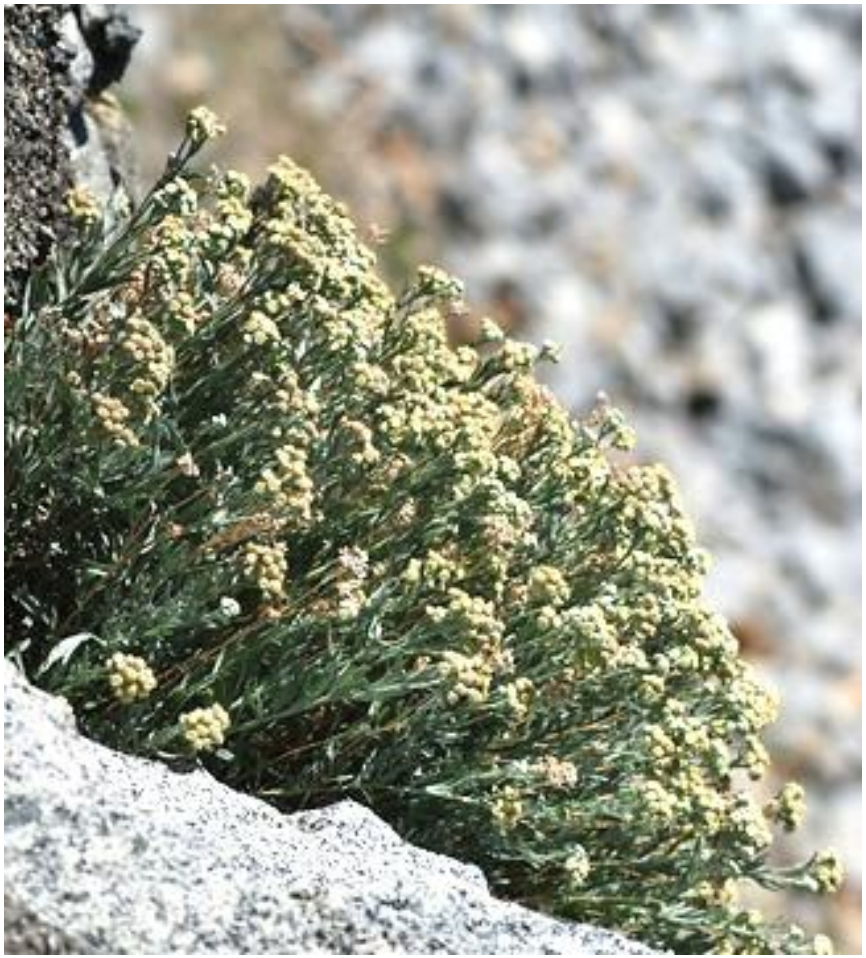
Common yarrow is usually white flowered, but pink versions also occur

Yarrow leaves are highly dissected and strongly fragrant, and used medicinally.

Dune tansy, *Tanacetum camphoratum*, has foliage similar to yarrow and also highly fragrant. This rhizomatous plant is found only on coastal dunes

Tansy flowers have minute rays around a buttonlike head of mostly disc flowers

Once a tansy, *Sphaeromeria cana* (ncn) is a shrublet growing on steep rocky slopes in the high dry mountains. It features woolly fragrant leaves and buttonlike heads of creamy disc flowers



A common introduced weed along the north coast is *Leucanthemum vulgare* or ox-eye daisy with showy white, rayed flowers. It was once part of the large, varied Old World genus *Chrysanthemum*.

Another nonnative weed, pineapple weed, *Matricaria discoidea*, lives in hard-beaten soil and features fernlike leaves and discoid flower heads, which may be steeped in hot water as a substitute to the closely related chamomille.

The most diverse genus in California is *Artemisia*, a genus of shrubs and herbs with sagelike fragrance and tiny, wind-pollinated disc flowers. Here you see the big sagebrush, *A. tridentata* from the high desert

Several other woody artmemisias occur in high dry mountains, particularly in the high desert. Here you see the alpine sagebrush, *A. arbuscula*, which looks like a scaled down big sagebrush

Another shrubby desert species is the silver sagebrush, *A. cana*, which features simple narrow leaves without teeth.

A local shrubby sagebrush is *A. californica*, common in coastal scrub and other local communities

California sagebrush features silvery leaves divided into linear segments

Dune sagewort, *A. pycnocephala*, is a subshrub common on coastal sand dunes, where it forms low cushions of silvery, woolly foliage

Dune sagewort, like most artemisias, blooms in summer or early fall. Here is a close view of the tiny flower heads

Several native artemisias, like *A. douglasiana* or mugwort, are herbaceous perennials with running roots. Mugwort features deeply lobed, bicolored leaves

The silver mugwort, *A. ludoviciana*, has less lobed leaves and the leaves are silvery-gray on both sides

Palmer's sagewort, *A. palmeri*, is a rare colonizing perennial from far Southern California

Few people realize that we have a native version of tarragon, *A. dracunculus*, which lives in dry washes. Despite being the same species as the herb of that name, our form does not have the same aroma is the form used in cooking.

Perhaps the most unusual artemisia is *A. norvegica*, which grows in wet mountain meadows and features bright yellow green leaves

A. norvegica blooms in summer with large (for an artemisia) flower heads