# *ADFA* - Chamise
# *Adenostoma fasciculari*s

Pepperwood
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### *Young leaves*

Young leaves need to fit the criteria of: (1) smaller, (2) light green, AND (3) SOFT or PLIABLE. This is critical. **These leaves can "stall" at small, light green and hard which are no longer considered young.**

Note: Because there is no petiole (leaf stalk) on ADFA leaves, look for new flushes of needle-like growth.

*Similar to other species in Mediterranean and desert ecosystems, Chamise may respond to precipitation events with a flush of new leaf production. If water becomes unavailable after growth is initiated, however, then leaf expansion may be arrested, resulting in many small leaves on the plant. These responses to water availability (initiation of growth followed by arrested growth when the resources give out) can be confusing for observers. If you are unsure of what you are seeing, do not hesitate to circle* ***?*** *on the datasheets. With more experience, you may be able to distinguish between newly produced, small young leaves, and small old leaves.* ***Use the color, size and texture criteria!***

### *Flowers or flower buds*

For abundance estimates, **count each inflorescence (or "spike") as a single flowering structure.**

### *Open flowers*

The proportion of **open flowers should be recorded at the scale of individual flowers,** not inflorescences or "spikes".

### *Fruits*

The fruit is tiny and capsule-like that may have withered brown flowers, but remains green at base where fruit connects to stem.

**For abundance, count individual numbers of fruits,** not inflorescences or "spikes".

Base still green = not ripe

### *Ripe fruits*

The fruit is considered ripe when it is fully dry and rusty-brown or brown (no longer green at base where they connect to stem).

**For abundance, count individual numbers of fruits,** not inflorescences or "spikes".

# *BAPI* - Coyote brush
# *Baccharis pilularis*

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### *Young leaves*

Young leaves need to fit the criteria of color, size and texture: generally lighter in color, smaller in size, AND SOFT or PLIABLE.
Sometimes small and diseased leaves can be lighter in color so **it is important to feel them.**

### *Flowers or flower buds*

For abundance estimates count the number of inflorescences as a single flowering structure.

Note: Do not mistake insect galls for flower buds.

### *Open flowers*

Flowers are considered "open" when the reproductive parts (male stamens or female pistils) are visible. BAPI has separate male and female plants!

### *Male flowers*

Male flowers will appear like flower "knobs" with stamens that stick out. The flowers are open when you see yellow pollen on the anthers.
Do not count dry, brown flowers.

### *Female flowers*

Female flowers will stay closed but will have feathery stigmas poking out. They are considered in flower when the pale white and shiny stigmas are NOT dry and brown. The fluffy hair-like pappus may start expanding, but it is

**considered in flower if the stigmas are still fresh.**

Do not count flowers with dry, brown stigmas or if the pappus has expanded and you see no stigmas.

****Flower abundance estimates are for individual flowers, not inflorescences. Please see table at bottom left for abundance categories.**

### *Fruits*

Only female plants produce fruits. If the stigmas are brown and dry, it is in fruit – even if the pappus has not spread open. Similarly, if the pappus is sticking out then it has gone to fruit.

**Estimate individual fruits using the guide below.**

***BAPI FLOWER & FRUIT ABUNDANCE CATEGORIES***

1-2 inflorescences = 11-100 fruits
3-20 inflorescences = 101-1,000 fruits
21-200 inflorescences = 1,001-10,000 fruits
>200 inflorescences = >10,000 fruits

*Phenophase not pictured:* ***Pollen release***

### *Ripe fruits*

Once the fruits are spread open and dispersing, they are considered ripe.

**Estimate individual fruits using the guide to the left.**

If there are no more fruits left (no pappus) do not count them anymore.

# *HEAR* - Toyon
# *Heteromeles arbutifolia*

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### *Young leaves*

Young, unfolded leaves where its entire length has emerged from the breaking bud so that the leaf stalk is visible at its point of attachment to the stem. Fit the criteria of color, size and texture.

### *Flowers or flower buds*

Fresh open or unopened flowers or flower buds. For abundance, **count each inflorescence (or "spike") as a single flowering structure** (single inflorescence pictured left) . Do not include wilted or dry flowers.

### *Open flowers*

Fully open fresh flowers. **For abundance, count individual numbers of flowers, not inflorescences or "spikes".** Do not include wilted or dry flowers.

### *Fruits*

As soon as the flowers wilt or turn brown they are in fruit. **For abundance, count individual numbers of fruits, not inflorescences or "spikes".**

### *Ripe fruits*

The fruit is considered ripe when it has turned orange-red to bright red in color (see below for color chart). **For abundance, count individual numbers of fruits, not inflorescences or "spikes".**

FRUIT COLORATION

**UNRIPE** = green, yellow, yellow-orange fruit

**RIPE** = orange-red to red fruit and includes THIS season's brown or black fruit

Do not count fruit that is ripening or the previous season's fruit as "Ripe fruits". For example, if black dried "ripe fruits" are left hanging on the plant from the previous season AND the plant is currently entering the "Flowers or flower buds" reproductive phenophase with new buds, please discontinue documenting ripe black fruits. The plant is entering a new reproductive cycle.

# *MIAU* - Sticky monkeyflower
# *Mimulus (Diplacus) aurantiacus*

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### *Young leaves*

A leaf is considered "young" and "unfolded" if its entire length has emerged so that the leaf base is visible at its point of attachment to the stem, **but before the leaf has reached full size and turned the darker green color and tougher texture of mature leaves on the plant.**

Small leaves at the apex or nodes of MIAU will often stay small even though they are not "young leaves". Only document new growth that fits the criteria of color, size and texture. They must be SOFT or pliable.

### *Leaves*

Mature leaves that do not fit the young leaves criteria of color, size and texture. **Abundance is estimated as the percent canopy that is present out of the relative full potential canopy each individual plant has. It does NOT represent the aerial percent cover of leaves.** Do not include fully dried, brown or dead leaves.

*Note: This phenophase can be tricky if you don't have prior knowledge of the full potential of each plant. A plant with very few leaves might be at it's full potential of 100% leaf canopy.*

### *Flowers or flower buds*

Fresh open or unopened flowers or flower buds are visible on the plant. Include flower buds that are still developing, but do not include wilted or dried flowers.

### *Open flowers*

Flowers are "open" when the reproductive parts (male stamens or female pistils) are visible between or within unfolded or flower parts (petals, floral tubes or sepals). **For abundance, what percentage of all fresh flowers on the plant are open?** Do not include wilted or dried flowers.

### *Fruits*

The fruit is a capsule that changes from green to tan or brown and splits open to expose the seeds.

Do not include empty capsules that have already dropped all of their seeds. (pictured in the "Ripe Fruit' section, bottom photo)

### *Ripe fruits*

A fruit is considered ripe when it has turned tan or brown and has begun to split open and expose the seeds. Do not include wide open and/or empty capsules that have already dropped most/all of their seeds. (bottom photo)

No longer "fruits" or "ripe fruits" because capsules are empty.

# *QUAG* - Coast live oak
# *Quercus agrifolia*

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### *Breaking leaf buds*

A leaf bud is considered "breaking" once a leaf tip is visible at the end of the bud, but before the first leaf from the bud has unfolded to expose the leaf stalk or base.

### *Young leaves*

Young, unfolded leaves where its entire length has emerged from the breaking bud so that the leaf stalk is visible at its point of attachment to the stem. Fits the criteria of color, size and soft texture.

### *Flowers or flower buds*

The **male inflorescence** is a catkin, which is initially compact and stiff, but eventually unfolds, lengthens, and hangs loosely from the branch. **Female flowers** are very small and petal-less, emerging from the growing stem at the point where a new leaf is attached.

**For abundance, count each inflorescence or "spike" as a single flowering structure.**
Do not include wilted or dry flowers.

### *Open flowers*

**Male flowers** will open once the compact catkin has unfolded and is hanging loosely. **Female flowers** are open when the pistils are visible, but will be very difficult to see where they are out of reach. **For abundance, count individual numbers of flowers, not inflorescences or "spikes".**

**For big trees, estimate proportions of open flowers for a few branches and extrapolate for the rest of the tree.**
Do not include wilted or dry flowers.

### *Fruits*

Fruits are acorns that change from green to light brown. They may be difficult to see at first so look very closely.

### *Ripe fruits*

The fruit is considered ripe when it has turned light brown and drops from the plant. Do not document this phenophase.

*Phenophase not pictured:* ***Pollen release***

# *UMCA* - California bay laurel
## *Umbellularia californica*

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### *Breaking leaf buds*

A leaf bud is considered "breaking" once a green leaf tip is visible at the end of the bud, but before the first leaf from the bud has unfolded to expose the leaf stalk (petiole) or leaf base.

### *Young leaves*

A leaf is considered "young" and "unfolded" if its entire length has emerged from the breaking bud so that the leaf stalk (petiole) at its point of attachment to the stem, but before the leaf has reached full size and turned the darker green color and tougher texture of mature leaves on the plant.

### *Flowers or flower buds*

Include flower buds that are still developing, but do not include wilted or dried flowers.

**For abundance, buds and flowers are mostly individual but can be clustered in small flower heads (inflorescences). Simply estimate the number of inflorescences and not the number of individual flowers.**

### *Open flowers*

Flowers are considered "open" when the reproductive parts (male stamens or female pistils) are visible between or within unfolded or open flower parts (petals, floral tubes or sepals). Do not include wilted or dried flowers.

**For abundance, estimate the proportion of flowers that are open at the individual level, not as inflorescences. One bud has many flowers in it (inflorescence).**

### *Fruits*

The fruit is small, fleshy and "olive"-like and changes from green to dark purple or deep brown-purple as it ripens.

### *Ripe fruits*

A fruit is considered ripe when it has become **wrinkled from top to bottom.** Most fruits turn from green to dark purple or yellow as they ripen.

# *ARMA* - Common manzanita
## *Arctostaphylos manzanita*

Pepperwood
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### *Young leaves*
Color is light green, size is small, leaf stalk (petiole) is visible, texture is pliable, bendable or soft.

### *Flowers or flower buds*
Buds are green to red in color. Infloresences are large clusters or "spikes" that droop below leaves.

**For abundance, count number of inflorescences, not individuals.**

### *Open flowers*
Flowers bell-shaped, white or pink in color.

**For abundance, count individual flowers, not number of inflorescences.**

Do not count dry or wilted flowers.

### *Fruits*
Look like little apples, spherical. Green color when not ripe.

**For abundance, count individual fruits, not clusters.**

### *Ripe fruits*
Fruits ripen to reddish color. Persist on plant.

**For abundance, count individual fruits, not clusters.**

# *QUDU* - Leather oak
# *Quercus durata*

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### *Breaking leaf buds*

A leaf bud is considered "breaking" once a leaf tip is visible at the end of the bud, but before the first leaf from the bud has unfolded to expose the leaf stalk or base.

### *Young leaves*

Young, unfolded leaves where its entire length has emerged from the breaking bud so that the leaf stalk is visible at its point of attachment to the stem. Fits the criteria of color, size and soft texture.

### *Flowers or flower buds*

The **male inflorescence** is a catkin, which is initially compact and stiff, but eventually unfolds, lengthens, and hangs loosely from the branch. **Female flowers** are very small and petal-less, emerging from the growing stem at the point where a new leaf is attached.

**For abundance, count each inflorescence or "spike" as a single flowering structure.**
Do not include wilted or dry flowers.

### *Open flowers*

**Male flowers** will open once the compact catkin has unfolded and is hanging loosely. **Female flowers** are open when the pistils are visible, but will be very difficult to see where they are out of reach. **For abundance, count individual numbers of flowers, not inflorescences or "spikes".**

Do not include wilted or dry flowers.

### *Fruits*

Fruits are acorns that change from green to light brown, typically growing in pairs. They may be difficult to see at first so look very closely. When mature, only about 0.6"-1" in length.

*Phenophase not pictured:* ***Pollen release***

# *QULO* - Valley oak
# *Quercus lobata*

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### *Breaking leaf buds*

A leaf bud is considered "breaking" once a leaf tip is visible at the end of the bud, but before the first leaf from the bud has unfolded to expose the leaf stalk or base.

### *Leaves*

Leaves are green and fully emerged from bud. **Abundance is estimated as the percent canopy that is present out of the relative full potential canopy each tree has. It does NOT represent the aerial percent cover of leaves.**

Do not include fully dried, brown or dead leaves.

### *Expanding leaves*

This phenophase is capturing leaf maturation. Mature leaves are 2"-4" long. **For abundance, estimate the dominant leaf size as a percentage of the full leaf size.**

### *Colored leaves*

Capturing the leaf drop phenophase and includes leaves that may be yellowing but there is still photosynthetic function. Do not count dead/fully brown leaves.

### *Flowers or flower buds*

The **male inflorescence** is a catkin, which unfolds, lengthens, and hangs loosely from the branch. **Female flowers** are very small and have no petals, emerging from the growing stem at the point where a new leaf is attached.

**For abundance, count each inflorescence or "spike" as a single flowering structure.**

Do not include wilted or dry flowers.

### *Open flowers*

**Male flowers** will open once the compact catkin has unfolded and is hanging loosely. **Female flowers** are open when the pistils are visible, but will be very difficult to see where they are out of reach. **For abundance, count individual numbers of flowers, not inflorescences or "spikes".**

Do not include wilted or dry flowers.

### *Fruits*

Fruits are acorns, that change from green to light brown. They may be difficult to see at first, look very closely.

*Phenophase not pictured:* ***Pollen release***