

Invasive non-native plant Early Detection and Rapid Response (EDRR) targets in western San Diego County

Report new sightings of these plants to coordinator Jason Giessow, jgiessow@cox.net or
iNaturalist.org or **Calflora.org** Version 2019-6-3

Scientific name	Common name	Growth form	CDFA	Habitat	Status	Populations (eradicated)	ID Sheet
<i>Aegilops triuncialis</i>	Barbed goat grass	Annual grass	B	Grassland	Active EDRR target	1 (1)	Yes
<i>Ageratina adenophora</i>	Eupatory	Perennial forb	Q	Riparian	Active EDRR target	4	Yes
<i>Carrichtera annua</i>	Ward's weed	Annual forb	A	Uplands (shrub & grass)	Active EDRR target	5	Yes
<i>Centaurea solstitialis</i>	Yellow star thistle	Annual forb	C	Grassland	Active EDRR target	11 (11)	Yes
<i>Centaurea stoebe</i>	Spotted knapweed	Annual forb	A	Uplands	Active EDRR target	3 (3)	Yes
<i>Cytisus scoparius</i>	Scotch broom	Perennial shrub	C	Uplands (shrub & grass)	Eradicated: monitoring	(1)	
<i>Elymus caput-medusae</i>	Medusahead	Annual grass	C	Grassland	Active EDRR target	7	Yes
<i>Enchylaena tomentosa</i>	Ruby saltbush	Perennial sub-shrub	A	Uplands (shrub & grass)	Assessing	1 (1)	Yes
<i>Euphorbia terracina</i>	Carnation spurge	Annual forb	B	Uplands	Eradicated: monitoring	8 (1)	Yes
<i>Euphorbia virgata</i>	Leafy spurge	Annual forb	A	Uplands	Active EDRR target	1 (1)	Yes (See ET)
<i>Genista monosperma</i>	Bridal broom	Perennial shrub	B	Uplands (shrub & grass)	Active EDRR target	4	Yes
<i>Genista monspessulana</i>	French broom	Perennial shrub	C	Riparian or uplands	Active EDRR target	5	Yes
<i>Hypericum canariense</i>	Canary Island St. John's wort	Perennial shrub	B	Shrublands	Active EDRR target	12	Yes
<i>Iris pseudacorus</i>	Yellow flag iris	Perennial monocot	B	Wetlands (fresh)	Assessing	9+	Yes
<i>Limonium duriusculum</i>	European sea lavender	Perennial forb	-	Wetlands (salt & fresh) & uplands	Active EDRR target	8 (1)	Yes
<i>Limonium ramosissimum</i>	Algerian sea lavender	Perennial forb	-	Wetlands (salt & fresh) & uplands	Active EDRR target	13 (1)	Yes
<i>Lythrum salicaria</i>	Purple loosestrife	Perennial forb	B	Wetlands (fresh)	Active EDRR target	2	Yes
<i>Myoporum acuminatum</i>	Waterbush	Perennial shrub	-	Riparian or uplands	Assessing	2	Yes
<i>Sesbania punicea</i>	Rattlebox	Perennial shrub	B	Wetlands (fresh)	Active EDRR target	1	Yes
<i>Volutaria tubuliflora</i>	Volutaria knapweed	Annual forb	A	Uplands (shrub & grass)	Active EDRR target	1 (1) + Borrego	Yes

Invasive Non-Native:
Barbed goat grass
(*Aegilops triuncialis*)

Description: annual grass, 17-45cm ht, leaf blade 1.5-7cm, 2-3mm wide; inflorescence 2-5.5cm, spike like; fertile spikelet 2-3 awned, distal spikelet 3-awned or 1-awned with 2 lateral teeth.

Ecology: rangelands, grasslands, and oak woodlands. Cattle/rangelands are areas of greatest risk for introduction/invasion.

Similar to (see back): Three-awned goat grass *Aegilops neglecta* (non-native)



Joe DiTomaso



Joe DiTomaso



Joe DiTomaso



Barbed goat grass:
Aegilops triuncialis
Report!



Medusa head:
Elymus caput-medusae
Report!



Plants **SIMILAR TO:**
Barbed goat grass (*Aegilops triuncialis*)

Three-awned goat grass *Aegilops neglecta* (non-native)
Stems 25-35 cm, inflorescence 3-6cm
Distal spikelets 2-5mm (vs. >7mm), fertile lemmas with 2-3 awns to 40mm (vs. fertile lemmas 2-3 toothed with one occ extended as awn to 10mm)

Medusa head *Elymus caput-medusae* (non-native – see other ID sheet: PLEASE MAP).

Slender annual grass; 1-3" awns straight and compressed when green, but twist and spread when dry.



Three-awned goat grass



Joanna Clines

Invasive Non-Native:
Medusa head
(Elymus caput-medusae)

Description: Annual grass, stems up to 70cm, inflorescence spike-like, dense; patches of green plants with inflorescences are ‘shiny’ looking, long awns, seedheads do *not* disarticulate (break apart).

Ecology: Invades disturbed sites, grasslands, openings in chaparral and oak woodlands. Persists as a dense litter layer that prevents germination and survival of native species, ties up nutrients, and contributes to fire danger.

Similar to: (see back)



← Long awns on seeds

Seedhead remains intact after seeds with long awns disperse

CDFA



Joanna Clines



CDFA



Medusa head



Squirrel tail grass

Matt Below

Keir Morse

Plants **SIMILAR TO:**
Medusa head (*Elymus caput-medusae*)

Bobtail barley (*Hordeum intercedens*) **non-native**

Foxtail barley (*Hordeum jubatum*) **non-native**

Squirrel tail grass (*Elymus elymoides*) **native, perennial**



Foxtail barley

Jean Pawek

Louis Landry



Bobtail barley

Neil Kramer

Gary Monroe



Invasive Non-Native:
Crofton Weed, Eupatory
(Ageratina adenophora)

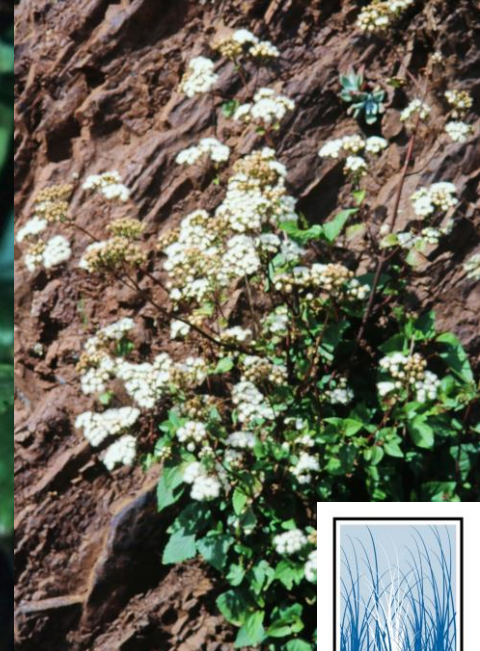
Description: perennial herb or subshrub, woody base, 2-5 ft (.6-1.5m) tall. Opposite leaves 1-4" (3-10cm). Stems: purple, glandular hairy. Flowers: composite, flower head all discoid flowers (no ray flowers) ¼" (6mm) across, clustered in groups, individual flowers 1/16-1/8" (<5mm) across, white or pink tinged.

Ecology: disturbed areas, wetland/riparian edges, canyons, hillsides.

Similar to: no common natives or non-natives. Mule-fat has discoid ray flowers, but thinner leaves.



Photos © Joe DiTomaso



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Invasive Non-Native:
Ward's weed
(*Carrichtera annua*)

Description: Plant size varies from small to multi-branched 0.5m ht; Stems branched basally and distally; form similar to a small tumbleweed; Basal leaves: petiole 1–4.5 cm; blade 3-6 lobes each side, 1.5-4 cm, terminal lobe linear to oblong, margins entire. Flowers white or creamy yellow petals 6.5-8 x 1-2 mm ; Fruits short reflexed pods.

Ecology: Plant size varies greatly depending on environmental conditions; prefers disturbed areas, but readily invades between and under shrubs; coastal sage, maritime chaparral, grasslands



Invasive Non-Native:

Yellow starthistle (*Centaurea solstitialis*)

Description: Generally an annual. One to many solitary, very spiny, yellow flower-heads. The main phyllaries (flowerhead bracts) are spined with a single stout, toothpick like apical spine (0.4-1") and a few smaller, lateral spines. Young plants grow as prostrate to ascending taprooted rosettes until bolting occurs in late spring or early summer. Stem leaves extend downward, giving a winged appearance. Flowering plants range from ankle to waist/chest height and change color from green to bluish green in summer. Flowers from June through September.

Ecology: Generally found in exposed areas on fertile, drier soils, including disturbed sites, grasslands, rangeland, hay fields, pastures, roadsides, and recreational areas. Distributed from coast to Mountains.

Similar to (see back): tocalote (*Centaurea mellitensis*)



Montana Weed Control Association



Steve Dewey, Utah State University



Montana Weed Control Association



Yellow star thistle

Tocalote

Plants **SIMILAR TO:**
Yellow star thistle (*Centaurea solstitialis*)

Tocalote *Centaurea mellitensis* (non-native)

Annual 1-10dm, \pm gray hairy, leaves entire to lobed, lobes perpendicular to leaf axis, 'winged' stems, yellow flowers, phyllaries tipped with stiff spines that are much shorter than yellow star thistle. **Spines are flat and do not look like toothpicks.**



Tocalote



Invasive Non-Native:
Spotted knapweed
(*Centaurea stoebe* ssp. *micranthos*)

Description: Biennial/perennial, stems not winged, short –stiff hairy leaves resin-dotted, pink or purple flower, generally many in open, panicle-like clusters, phyllaries NOT spine tipped

Ecology: Disturbed areas, grasslands, open sites, overgrazed rangelands, roadsides, logged areas. Crowds out native species and forage for livestock, can invade undisturbed native bunchgrass stands.

Similar to: When in flower not much else to confuse with, when dry may be similar to other *Centaurea* species, though this one has no spines.



Jean Pawek



Zoya Aculova



Jean Pawek



Richard Spellenberg



Invasive Non-Native:
Ruby saltbush
(*Encchylaena tomentosa*)



Description: Sub-shrub with procumbent or ascending pubescent, trailing branches which may grow to 1m long. Up to 1m height. Evergreen leaves are cylindrical, semi-succulent, up to 2 cm long, and covered with fine white hairs - giving an overall grey appearance. Flowers green and insignificant. Showy, small (5mm diameter) fruits are red when ripe.

Ecology: Disturbed areas

Similar to: Possibly some *Atriplex* species, but succulent-like leaves with fruits are quite distinctive



Invasive Non-Native:
Carnation spurge
(*Euphorbia terracina*)



Description: annual or short lived perennial; upright stems several to numerous from base, up to 120cm ht, often reddish; sessile leaves 2.5-6cm, linear to narrowly lanceolate blades, leaf tip acute; at top of stem broader and yellowish green; inflorescence open, inconspicuous greenish or yellowish flowers at tips with ovary forming deeply lobed 3 sided capsule (3-5 mm long and 4-5 mm wide); milky sap (eye and skin irritant)

Ecology: disturbed areas, coastal sage scrub, grasslands, chaparral edges, salt marsh, riparian, oak woodlands; shade or sun; massive germination after fire; toxic sap

Similar to (see back): Other weedy spurge species



All photos Jason Giessow

Leafy spurge



EDRR target- PLEASE MAP!



Images by Jason Giessow

Plants **SIMILAR TO:** Carnation spurge (*Euphorbia terracina*)

Leafy spurge (*Euphorbia virgata*): (**non-native** - see other ID sheet: **PLEASE MAP**). Erect perennial, several stems from base 3-8dm, sessile leaves 2-6cm (thinner and strap-like), fruit lobed, but not as deeply as *E. terracina*.

Caper spurge (*Euphorbia lathyris*): (**non-native**) usually has one main stem (vs. multiple), the lower parts the stem have relatively large (50-160 mm long) and narrow (i.e. linear or oblong) leaves that are oppositely arranged (vs. alternate in *E. terracina*)

Wartweed (*E. helioscopia*): (**non-native**) a relatively small and short-lived (i.e. annual) herb (up to 50 cm tall) with one or occasionally more main stems. The lower parts of these stems have relatively small (10-40 mm long) and egg-shaped (i.e. ovate) or spoon-shaped (i.e. spatulate) leaves that are alternately arranged.

Petty spurge (*E. peplus*): (**non-native**) small and annual herb (up to 40 cm tall) that usually has a single main stem. The lower parts of this stem have small (5-25 mm long) and egg-shaped (i.e. ovate) leaves that are alternately arranged.



Caper spurge



Images by Neal Kramer

Wartweed



Petty spurge

Image by Rasbak



Invasive Non-Native:
Bridal broom
(*Genista monosperma*)

Description: perennial shrub to 4m, stems green and silky-hairy in youth, pendent branches, leaves small, simple and ephemeral (mostly appears leafless), white flowers, 1-2 black seeds from indehiscent pod.

Ecology: Disturbed areas, grasslands, coastal sage scrub.

Similar to: yellow flowering broom species (Scotch, French) when not blooming – bridal broom is taller, more upright and with a ‘cleaner’ wispy look. Also Mexican palo verde (blooms yellow).



seedlings



All photos Jason Giessow

Invasive Non-Native:
French Broom
(*Genista monspessulana*)

Description: large, evergreen, woody shrub up to 9 feet (3m) tall.
Leaves: small < ½" (1cm), compound leaflets in groups of three.
Flower: small, < ¼" (6mm), yellow, 1-2 per axil.

Ecology: occurs in a variety of habitats from disturbed to undisturbed areas, coastal scrub, oak woodlands, riparian corridors and open forests.

Similar to (see back): Spanish broom (non-native) large shrub with deciduous leaves and 1" (3cm) yellow flowers. Scotch broom (non-native) large shrub with deciduous leaves and 1" (3cm) yellow flowers. Deerweed (native) short-lived perennial < 2 ft (.6m) tall with smaller yellow-orange-red flowers.



All Photos © Joe DiTomaso



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Foliage bright green



Foliage going dormant



Invasive Non-Native:
Canary Island St. John's Wort
(Hypericum canariense)

Description: multi-stemmed perennial rhizomatous shrub up to 3m ht; leaves opposite, waxy, lanceolate and bright green; terminal clusters of yellow flowers; leaves yellow early in season and generally drop in summer; capsule fruits dry and dehisce tiny seeds.

Ecology: disturbed areas, coastal sage scrub and grassland habitats. Can form dense stands that exclude native species.



All photos Jason Giessow

Invasive Non-Native: Yellowflag Iris (*Iris pseudacorus*)

Description: perennial, 2-5 ft (.5-1.5m) tall with flat sword-like leaves $\frac{1}{2}$ -1" (1-3cm) wide. Leaves are flat in cross-section with prominent mid-vein. Flower: up to 2" (5cm) across, yellow to cream colored.

Ecology: thrives in wet soils near pond margins, irrigation ditches, and wetland/riparian areas.

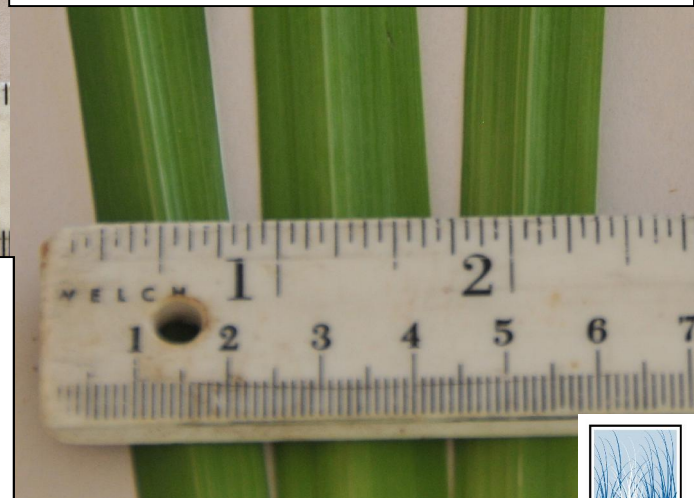
Similar to (see back): during blooming period (spring/summer), plant is distinct and stands out because of its large showy yellow flowers. During dormant period (fall/winter), often confused with cattails (native *Typha* species) or bulrushes (native *Scirpus/Schoenoplectus* species). **Cattails:** leaves $< \frac{3}{4}$ " (2cm) wide and distinctly "C" shaped in cross-section. **Bulrushes:** dark green leaves $< \frac{1}{2}$ " (1cm) wide and triangular shaped in cross-section.

Photos © Joe DiTomaso

**Note prominent
mid-vein in leaf**



**Leaf cross-
section
showing
prominent
mid-vein**



**Seed
pods
2-4
inches
long**



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Plants **SIMILAR TO:**
Yellowflag Iris (*Iris pseudacorus*)

Cattails (*Typha* spp.): (native) in flower plant has distinct ‘corn dog’ like flower, when dormant (no flower) plants are similar to yellowflag iris but cattail leaves are generally narrower < $\frac{3}{4}$ ” (2cm) and distinctly “C” shaped in cross-section.

Bulrushes (*Scirpus* or *Schoenoplectus* spp.): (native) has similar appearance when dormant (no flower), leaves are < $\frac{1}{2}$ ” (1cm) wide, triangular in cross-section, and color is dark green.

Bulrushes

Cattails



**Left to right: Cattails,
Yellowflag Iris, and
Bulrushes**

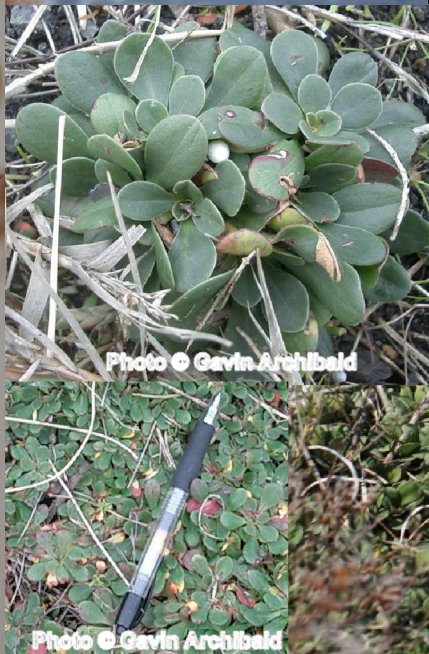
**Left to right (cross sections):
Cattails, Yellowflag Iris, and
Bulrushes**

Invasive Non-Native:
European Sea Lavender
(*Limonium duriusculum*)

Description: perennial herb 6-12" (20-30 cm) tall in flower, lower leaves in dense rosettes ½ - 1 ½" (1-4 cm) long, 1/8 - ¼" (5-9 mm) wide, rounded. Flower: evenly distributed at branch tip, small < ¼" (7mm), pale pink.

Ecology: salt tolerant, coastal salt marsh as well as riparian habitat (even grassland & disturbed areas).

Similar to (see back): Algerian sea lavender (non-native) has narrower leaves and flowers are closer together. Perez's sea lavender (common non-native used in landscaping) is a larger species with wider, longer, bright green leaves. California sea lavender (native) has longer leaves and stouter taproot.



Native
Limonium



Cal-IPC

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SCWRP

Algerian sea lavender



Plants **SIMILAR TO:**
European Sea Lavender (*Limonium duriusculum*)

Algerian sea lavender (*L. ramosissimum*): (**non-native**) has spoon shaped leaves and flowers are tightly clustered along inflorescence tip (see other ID sheet: PLEASE MAP).

Perez' s sea lavender or statice (*L. perezii*): (common **non-native** used in landscaping) large plants with longer, wider, & bright green leaves 1½–6" (4–15 cm) long, 1–3" (2.5–7 cm) wide, large showy flower clusters.

California sea lavender (*L. californicum*): (native) overall about twice the size of Algerian SL, has larger longer leaves, blade 2–6" (5–15 cm) long, ½–2" (1.5–6 cm) wide, and very spatulate (narrow then abruptly wider). Flowers small and delicate like Algerian sea lavender, but corolla blue.



Perez' s sea lavender or statice



California sea lavender (native)





Invasive Non-Native:
Algerian Sea Lavender
(Limonium ramosissimum)

Description: perennial herb 6-12" (20-50 cm) tall in flower, lower leaves in dense rosettes 1-4" (3-10 cm) long, $\frac{1}{4}$ – $\frac{3}{4}$ " (7-20 mm) wide, spoon shaped, tip acute to rounded. Flower: delicate multi-branched, tight clusters. Flower: calyx (outer flower part) white < $\frac{1}{4}$ " (4-6mm), corolla (inner flower part) pale pink to purple < $\frac{1}{4}$ " (5-7 mm).

Ecology: salt-tolerant, coastal salt marsh as well as riparian habitat (even grassland & disturbed areas).

Similar to (see back): European sea lavender (non-native) has rounded leaves and flowers are evenly spaced. Perez's sea lavender (common non-native used in landscaping) is a larger species with wider, longer, bright green leaves. California sea lavender (native) has longer leaves and stouter taproot.



Photo • Gavin Archibald



European sea lavender



Plants **SIMILAR TO:**
Algerian Sea Lavender (*Limonium ramosissimum*)

European sea lavender (*L. duriusculum*): (**non-native**) has smaller more rounded leaves and flowers are evenly spaced along branch (see other ID sheet: PLEASE MAP).

Perez's sea lavender or statice (*L. perezii*): (common **non-native** used in landscaping) large plants with longer, wider, & bright green leaves 1½–6" (4–15 cm) long, 1–3" (2.5–7 cm) wide, large showy flower clusters.

California sea lavender (*L. californicum*): (native) overall about twice the size of Algerian sea lavender, has larger longer leaves, blade 2–6" (5–15 cm) long, ½–2" (1.5–6 cm) wide, and very spatulate (narrow then abruptly wider). Flowers small and delicate like Algerian sea lavender, but corolla blue.



Perez's sea lavender or statice



California sea lavender (native)



Invasive Non-Native:
Purple Loosestrife
(*Lythrum salicaria*)

Description: perennial herb 2-5 ft (.6-1.5m) tall. Leaf 1-5" (2.5-5cm) long, truncate at base, lanceolate to ovate. Flower: dense flower spikes, red-pink-purple each flower about ½" (1cm).

Ecology: marshes, ponds, wetlands, riparian areas.

Similar to: no similar species are commonly encountered.



Photos © Joe DiTomaso



Anne Jones

Invasive Non-Native:
Waterbush, boobialla
(Myoporum acuminatum)

Description: Shrub or small tree, 3-4m ht, 2-3m spread; coarsely fissured bark; Leaves alternate, 3 to 14 cm long with a fine point; Flowers with five white petals and some purple dots, in clusters from the leaf axils; Fruit is a roughened, wrinkled globular drupe, around 5 mm in diameter, blue or purple in color.

Ecology: Riparian and upland habitat

Similar: Ngaio tree (*Myoporum laeum*), See back.



Ramona Robison



Yonatan Matalon



Consulta Planta



Neil Kramer

Myoporum laetum, Ngaio tree



Plants **SIMILAR TO:**
Strichnine bush (*Myoporum acuminatum*)

Ngaio tree (*Myoporum laetum*) (non-native) shrub/small tree 3-10m, leaves <10cm, bright green; very similar in flower and fruit but leaves are wider and not as finely pointed



James Bailey



Invasive Non-Native:
Red Sesbania, Rattlebox
(Sesbania punicea)

Description: shrub to small tree that can grow up to 10 ft (3 m) tall. Leaflets: 20-34 per branch (always an even number), elliptic to elliptic-oblong. Flower: **Orange-red pea-like flowers**, 5-15 per group. Fruits: 1-3" (2.5-7 cm) long.

Ecology: wetlands/riparian areas, other moist sites, roadsides, cultivated as an ornamental plant.

Similar: looks a bit like: black locust (*Robinia pseudoacacia*), an uncommon non-native tree with white flowers and obvious spines on the stem and *Cassia occidentalis*, yellow flowered, 8 leaflets.



All Photos © Joe DiTomaso

False indigo (native)



Will Cook

Plants **SIMILAR TO:**

Red Sesbania, rattlebox (*Sesbania punicea*)

False indigo (*Amorpha fruticosa*) (native) shrub, strong smelling foliage, dark purple flowers, deciduous

Cassia/senna (*Cassia & Senna* spp.): (non-native) yellow flowered trees and shrub, generally with long seed pods

Black locust (*Robinia pseudoacacia*): (non-native) tree with white flowers and obvious spines on stem



Cassia/Senna

Black locust



Invasive Non-Native:
Volutaria knapweed
(*Volutaria tubuliflora*)

Description: **Stem:** < 15 dm. **Leaf:** 1-2 pinnately lobed or divided, lobes +/- dentate, lobes angled forward. **Inflorescence:** heads solitary or in small clusters; phyllaries with wide flat flexible spine tips 1.5--2 mm, inner with membranous, spineless tips. **Flower:** corolla of sterile flower +/- 10 mm; corolla of fertile flower 5.5--6 mm, +/- white. **Fruit:** 3--3.5 mm, pale gray-brown, ascending-hairy, faces not pitted.

Ecology: Disturbed areas, non-native grassland, into coastal sage scrub

Similar to (see back): *Centaurea mellitensis* (tocalote), *Centaurea maculosa* (spotted knapweed)



Photo by Ron Vanderhoff



Photos by Tom Chester



Photo by Jason Giessow



Photo by Jason Giessow



Photos by Ron Vanderhoff



Tocalote



Photo J. Zylstra

Plants **SIMILAR TO:**
Volutaria knapweed (*Volutaria tubuliflora*)

Tocalote *Centaurea melitensis* (non-native)

Annual 1-10dm, \pm gray hairy, leaves entire to lobed, lobes perpendicular to leaf axis (not angled forward), 'winged' stems, yellow flowers, phyllaries tipped with stiff spines.

Spotted knapweed *Centaurea maculosa* (non-native)

Biennial 3-10dm, \pm gray tomentose; leaves deeply 1-2 lobed, pink-purple flowers, **NOXIOUS WEED – PLEASE REPORT**



Spotted knapweed