

Primary, secondary and  
invasive species  
proposed for  
management at  
Pohakuloa Training Area

# Ambrosia artemisiifolia

- ▶ A.k.a: Common Ragweed
- ▶ Non-native: naturalized
- ▶ Family: Asteraceae
- ▶ This plant is a summer annual up to 3' tall that branches frequently. The hairy stems are green to light pinkish red. The leaves are up to 6" long and 4" across, and are opposite or alternate along the stems. They are deeply pinnatifid, broadly lanceolate (in outline), and usually much wider at the base than the tip. Mature leaves are relatively hairless, but small emergent leaves often have hairs on their undersides. Many of the upper stems terminate in one or more cylindrical spikes of flowers about 1-4" long. Near the base of the central flowering spike, one or two small spikes may develop that are only half as long. The small flowers are initially green, but later turn yellowish green or brown as they mature and develop into achenes. Each flower is about 1/8" long, the males producing a fine yellow pollen that is easily carried by the wind. Numerous seeds are produced, which can remain viable for 5 years or more. The extensive root system is fibrous



Help. I don't know what that means.

Achene: a small, dry, one-seeded fruit that does not open to release the seed



WRA Score and designation: N/A  
 \* More information about this system on final slide of this presentation



# Centaurea melitensis

Appendix 3-14

- ▶ A.k.a: Napa thistle, yellow star thistle, Malta Star thistle
- ▶ Non-native: naturalized
- ▶ Family: Asteraceae
- ▶ This is a winter annual with a yellow-flowered, spiny head that can reach a height of 3.3 ft (1m). Leaves are alternate, linear or narrowly oblong with smooth, toothed margins. Leaf bases are decurrent and give the stems a winged appearance. Flowers are yellow, 0.5in (1.3cm) across and surrounded by sharp, tan, spiny cobwebbed bracts. The fruit are 0.08-0.12 in (2-3 mm) in length, grayish to tan in color with deeply notched bases and tan bristles that are 0.04-0.12in (1-3mm) long. This plant is native to Europe and North America and prefers disturbed areas such as grasslands, open woodlands, roadsides, fields and pastures.



WRA Score and designation: 18, High Risk, H(HPWRA)



# Cirsium vulgare

Appendix 3-14

- ▶ A.k.a: pua kala, bull thistle, spear thistle
- ▶ Non-native: naturalized
- ▶ Family: Asteraceae
- ▶ Herbaceous plant that invades disturbed areas. The spiny, spreading, winged stems are up to 7ft (2.1m) tall. Leaves are 3-12 in (7.6-30.5 cm) long, lance-shaped and very hairy. Flowers develop, at the apex of the plant. The purple/pink to rose colored flower heads are 1.5-2 (3.8-5.1cm) in diameter with narrow, spine-tipped bracts. Fruits have several bristles on the tip and are up to 0.2in (5mm) long. Native to Europe, western Asia and northern Africa. Can invade almost any type of disturbed area, such as forest clear cuts, riparian areas and pastures. Plants can form dense thickets, displacing other vegetation.



WRA Score and designation: 18.5, High Risk, H(HPWRA)



# Datura stramonium

Appendix 3-14

- ▶ A.k.a: jimson weed, Devil's snare, thorn apple
- ▶ Non-native: naturalized
- ▶ Family: Solanaceae
- ▶ Annual herb which grows up to 5 feet tall. It has a pale green stem with spreading branches. Leaves are ovate with green or purplish coloration, coarsely serrated along edges and 3-8 inches long. Flowers are white or purple with a 5-pointed corolla up to four inches long and set on short stalks in the axils of branches. Seeds are contained in a hard, spiny capsule,, about 2 inches in diameter, which splits lengthwise into four parts when ripe.
- ▶ All parts of this plant are poisonous to humans and animals. Do not eat.



WRA Score and designation: N/A



# Appendix 3-14 *Delairea odorata* also called *Senecio mikanioides*

- ▶ A.k.a: Cape ivy, german ivy
- ▶ Non-native: naturalized
- ▶ Family: Asteraceae
- ▶ Non-woody vine with thin but slightly fleshy, glossy leaves with angular lobes. The flowers are yellow and daisy-like, but lacking conspicuous petals, sweet-scented and are produced in winter or early spring. Seed is small, with a 'parachute' of fine hairs to assist its dispersal. The plant climbs into the lower branches of trees, smothers smaller plants such as shrubs and can carpet the ground so thoroughly as to exclude all other plants. Typically on forest edges, around towns/old farms, often along rivers and roadsides.
- ▶ Can reproduce vegetatively from stem segments dumped or transported by floods. Hand-pull young plants or cut through stems and leave upper parts to die off in place. Spray regrowth, adding a surfactant to improve penetration of the waxy leaves.



WRA Score and designation: 14, High Risk, H(Hawai'i)



# Emex spinosa

Appendix 3-14

- ▶ A.k.a: Spiny emex, devil's thorn, prickly doc
- ▶ Non-native: naturalized
- ▶ Family: Polygonaceae (Buckwheat family)
- ▶ Glabrous, monoecious annual, plants decumbent to ascending, the stems 3-8 diameter long; leaves alternate, oblong-ovate to somewhat triangular, with scarious sheathing stipules, 5-12 cm long; flowers small, in axillary, staminate flowers sessile and with 5-6 parted calyx and narrow segments. Fruiting calyx hard, 3 or 6 angled, bur-like, the outer segments spine tipped 5-6 mm long.



Help. I don't know what that means.

Scarious: thin, dry and membranous in texture

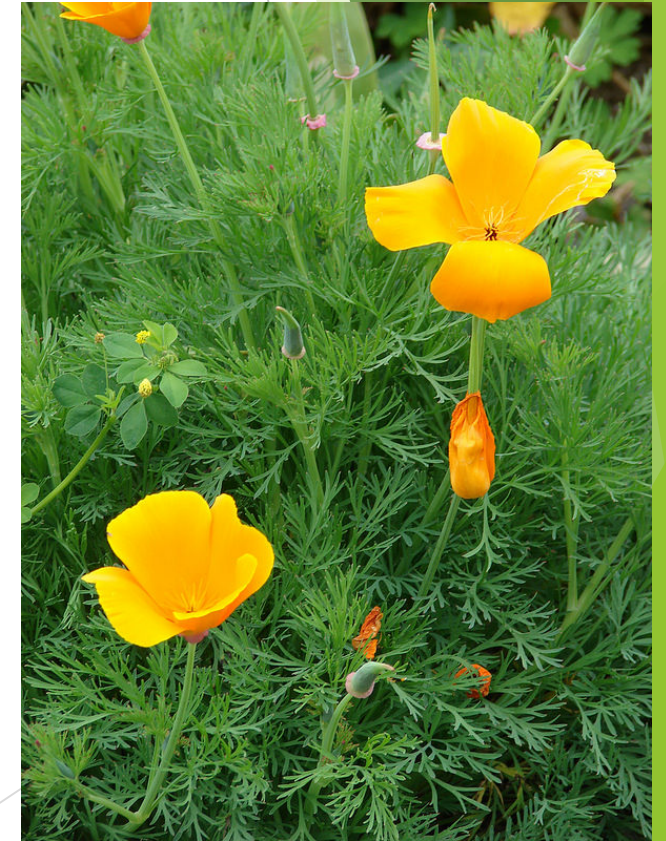


WRA Score and designation: N/A



# Eschscholzia californica

- ▶ A.k.a: California poppy
- ▶ Non-native: naturalized
- ▶ Family: Papaveraceae
- ▶ Feathery, highly-dissected, blue-green leaves clasp the 1-2ft stems of this popular, perennial wildflower. Showy, 1-3 in. wide, four-petaled flowers are open only on sunny days. The flowers are solitary and long-stalked and vary in color from orange to yellow. Each of the satiny petals has a deep-orange spot at its base. Easy to grow, drought tolerant and reseeds readily.





# Foeniculum vulgare

- ▶ A.k.a: Fennel
- ▶ Non-native: naturalized
- ▶ Family: Apiaceae
- ▶ Upright, branching perennial that is typically grown in vegetable and herb gardens for its anise-flavored foliage and seeds. Grows 3-5 feet tall and has feathery, compound, aromatic yellow-green leaves with needle-like segments and tiny yellow flowers in large, flattened, compound umbels



WRA Score and designation: 19, High Risk, H(HPWRA)



# Heteromeles arbutifolia

Appendix 3-14

- ▶ A.k.a: Toyon
- ▶ Non-native: naturalized
- ▶ Family: Rosaceae
- ▶ A California native evergreen shrub that typically grows into a dense plant to 10 feet tall and 8 feet wide. Grey bark, either smooth or fissured. Leaves are leathery, 2-4 inches long, oblong and are serrated along the margins. Small white mildly fragrant flowers in terminal clusters produce bright red pea sized berries. Hollywood was named for this plant.



WRA Score and designation: 9,  
High Risk, H (HWPR)



# Kalanchoe tubiflora

- ▶ A.k.a: Bryophyllum tubiflora, Kalanchoe delagoensis, Chandelier plant
- ▶ Non-native: naturalized
- ▶ Family: Rosaceae
- ▶ Erect, pinkish stems thickly hung with pendant cylindrical dark leaves spotted reddish brown and emerald and tipped with notches nurturing bangles of plantlets; showy clusters of pale red bellflowers. Native of Madagascar.

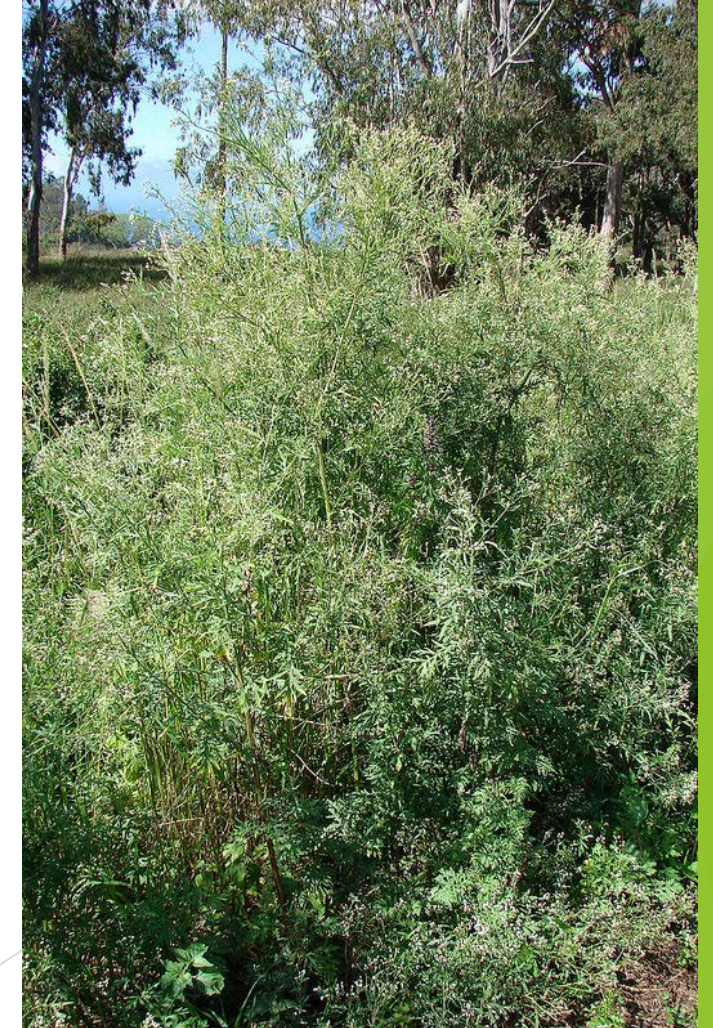




# Parthenium hysterophorus

Appendix 3-14

- ▶ A.k.a: False ragweed, Santa Maria
- ▶ Non-native: naturalized
- ▶ Family: Asteraceae
- ▶ Much branched, short-lived (annual), upright herbaceous plant that forms a basal rosette of leaves during the early stage of growth. Grows 0.5-1m tall. Mature stems are greenish and longitudinally grooved, covered in small stiff hairs (hirsute) and become much branched at maturity. The alternately arranged leaves are simple with petioles up to 2cm long and form a basal rosette during the early stages of growth. Lower leaves are relatively large (3-30cm) while leaves on upper branches decrease in size and are less divided than the lower leaves. Numerous small white or cream colored flower-heads are arranged in clusters at the tips of branches. They are surrounded by two rows of small green bracts whose colour changes to light brown when seeds are mature and about to shed.



WRA Score and designation: N/A



# Passiflora tarminiana

Appendix 3-14

- ▶ A.k.a: Banana poka, banana passionfruit, bananadilla, banana passion flower
- ▶ Non-native: naturalized
- ▶ Family: Passifloraceae
- ▶ A climbing vine possessing trilobed, serrated leaves with soft, downy undersides, always hairless on top. Flower pendent, sepals and petals light pink to bright pink, floral tube light green, bracts ovate, fruit fusiform, growing larger at high elevations to 150g. Pericarp soft and yellow to yellow-orange; pulp orange; numerous black seeds. Newly described species, formerly included with the species *P. mollissima*



WRA Score and designation: 24, High Risk, H(Hawai'i)



# Piptatherum miliaceum

Appendix 3-14

- ▶ A.k.a: Smilo grass, rice millet, Oryzopsis
- ▶ Non-native: naturalized
- ▶ Family: Poaceae
- ▶ A clumping perennial grass producing sturdy, erect stems that can reach 1.5m tall. The inflorescence is a panicle of several whorls of branches that divide into secondary branches bearing clusters of spikelets.



WRA Score and designation: 7, High risk, H (HPWRA)



# Portulaca pilosa

Appendix 3-14

- ▶ A.k.a: Pink purslane, kiss-me-quick, Chisme, hairy pigweed
- ▶ Non-native: naturalized
- ▶ Family: Portulacaceae
- ▶ Succulent, sprawling, woolly stems reach 20cm in length and branch to form low irregular mounds or mats. The small purplish to reddish flowers are surrounded by long hairs and are followed by shiny capsule with many black shining seeds. Plants that grow in a moister environment tend to have less hairs than plants that grow in an arid environment. Leaves terete (cylindrical) and alternate, although uppermost leaves are whorled. Flowers are deep rose-red to purple, 4 or 5-petalled.



WRA Score and designation: N/A



# Rhamnus californica

Appendix 3-14

- ▶ A.k.a: Coffeeberry, California buckthorn
- ▶ Non-native: naturalized
- ▶ Family: Rhamnaceae
- ▶ 2-6 feet tall, compact evergreen shrub with red-purple stems. Likes sun to part shade and has low water requirements. Leaves simple, generally alternate. Often clustered on short-shoots. Clusters of berries, beginning green ripening to orange/red and finally black. Bark is bright gray or brown, twigs glabrous to finely hairy. Leaves are light green when young, maturing to dark green often with red tips, smooth, leathery, 2-4 inches long. Edges curl under during dry periods. Flowers are white, star-shaped sepals only.



WRA Score and designation: N/A



# Rubus niveus

Appendix 3-14

- ▶ A.k.a: Mysore raspberry, hill raspberry, Ceylon raspberry
- ▶ Non-native: naturalized \*Known to have two forms. F. a with mostly white stems and f. b with mostly red stems
- ▶ Family: Rosaceae
- ▶ A large perennial shrub growing up to 4.5 m in height that may form dense thickets of intertwining stems. The flexible, arching stems may be downy when young but become glabrous and glaucous at maturity. They are covered with sharp, hooked thorns 3-7mm long. Leaves are pinnately compound into 5-9 serrated, elliptic-ovate leaflets. The leaves are dark green and glaucous above and white tomentose below. The inflorescences are short, axillary or terminal panicles of 24 or more flowers which are pink to rose purple. The fruit is 1-2cm in diameter with a purple-black colour. It is juicy and sweet with small seeds and may be produced throughout the year.



Help. I don't know what that means.

Glaucous: of a dull grayish-green or blue color

Tomentose: covered with densely matted wooly hairs



WRA Score and designation:  
19, High Risk, H(HPWRA)



# Appendix 3-14 *Salsola tragus*

- ▶ A.k.a: Tumbleweed, Russian thistle, Windwitch
- ▶ Non-native: naturalized
- ▶ Family: Chenopodiaceae
- ▶ A noxious bushy summer annual that grows to approximately 1m in height and width and after flowering and drying out, the plant breaks at the soil line and becomes a 'tumbleweed' and is blown about, thereby dispersing the upward of 250k seeds in the mature plant. The mature plant has stiff, needle-like upper stem leaves that alternate.

*Salsola kali*



WRA Score and designation: N/A



# Sambucus mexicana

- ▶ A.k.a: Mexican elderberry, blue elderberry
- ▶ Non-native: naturalized
- ▶ Family: Adoxaceae (formerly Caprifoliaceae)
- ▶ A deciduous shrub that grows 15 to 30 ft. The leaves are opposite, pinnately compound, 6 to 10 inches long, 5 to 9 leaflets, narrowly ovate or lanceolate, unequal at base, coarsely serrate, bright green. Umbellated clusters of small white flowers in late spring followed by clusters of dark blue to purple fruit which are edible.

Help. I don't know what that means.

Umbellate: an inflorescence in which a number of flower stalks or pedicels, nearly equal in length, spread from a common center.



WRA Score and designation: 9, High Risk, H(HPWRA)



# Schinus molle

Appendix 3-14

- ▶ A.k.a: California pepper tree, peruvian pepper tree
- ▶ Non-native: naturalized
- ▶ Family: Anacardiaceae
- ▶ Evergreen tree, open spreading canopy with young branches strongly pendulous. Foliage is aromatic, odd pinnately compound. Yellow green flowers in terminal panicles, fruit rose colored, small and rounded in clustered, elongated panicles, strongly aromatic. Dried fruit is called 'pink peppercorn' because of the peppery flavor.



WRA Score and designation: 10, High risk, H(HPWRA)



# Senecio madagascariensis

- ▶ A.k.a: Fireweed
- ▶ Non-native: naturalized
- ▶ Family: Anacardiaceae
- ▶ Daisy-like herb that grows up to 2' high. The stem is upright and slender with bright green leaves. The leaves are smooth, very narrow (only ¼" wide), have serrated edges and they reach about 5" long. The small yellow flowers have 13 petals and are about the size of a nickel. The mature flowers turn into white thistle-like downy seed balls.





# Tribulus terrestris

- ▶ A.k.a: Puncture vine, goathead
- ▶ Non-native: naturalized
- ▶ Family: Zygophyllaceae
- ▶ Plants grow prostrate over open ground, but when shaded or competing with other plants can grow nearly erect. Stems occasionally grow over 3 feet (1m long), have many branches, are green to reddish brown and spread radially from the crown. Stems and leaves are covered with hairs. Flowers are bright yellow and are produced singly where the stem and leaf stalk meet. The fruit, a woody five-lobed bur, is gray to yellowish tan, hairy. Fruits separate at maturity into five (sometimes four) wedge-shaped nutlets, each with two stout spines and several short prickles. Each nutlet usually encloses three to five seeds.





# Other plants

- ▶ *Acacia mearmsii*
- ▶ *Asclepias physocarpa*
- ▶ *Cenchrus setaceus*
- ▶ *Cupressus species*
- ▶ *Festuca arundinaceae*
- ▶ *Grevillea robusta*
- ▶ *Lantana camara*
- ▶ *Leucaena leucocephala*
- ▶ *Lophospermum erubescens*
- ▶ *Melinis munutiflora*
- ▶ *Nicotiana glauca*
- ▶ *Nicotiana tabacum*
- ▶ *Olea europea*
- ▶ *Pluchea carolinensis*
- ▶ *Prosopis pallida*
- ▶ *Psidium guajava*
- ▶ *Ricinus communis*
- ▶ *Rubus rosifolius*



# Weed Risk Assessments for Hawaii and Pacific Islands

- ▶ Hawaii-Pacific Weed Risk Assessment (HP-WRA) helps identify plants that pose a high weed risk. The score does not measure actual invasiveness or economic or ecological harm in the field. It is a prediction of whether a species will become invasive. This only considers published information on invasiveness in Hawaii or elsewhere and does not include an actual 'in-the-field' evaluation.



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## WRA designation and meaning

- ▶ L - Not currently recognized as invasive in Hawaii and not likely to have major ecological or economic impacts on other Pacific Islands
- ▶ L(Hawai'i) - Not currently recognized as invasive in Hawaii based on a track record of not becoming naturalized despite being widely planted in Hawaii for at least 40 years
- ▶ H (HPWRA) - Likely to be invasive in Hawaii and on other Pacific Islands as determined by the HP-WRA screening process which is based on published sources describing species biology and behavior in Hawaii and/or other parts of the world
- ▶ H (Hawai'i) - Documented to cause significant ecological or economic harm in Hawaii, as determined from published information on the species' current impacts in Hawaii
- ▶ Evaluate - The species has been assessed using the HP-WRA system; however, no assessment of risk can be provided at this time because 1) important information is missing from the assessment or 2) the species possesses a combination of traits and characteristics that make its likely behavior difficult to assess using the WRA system.