
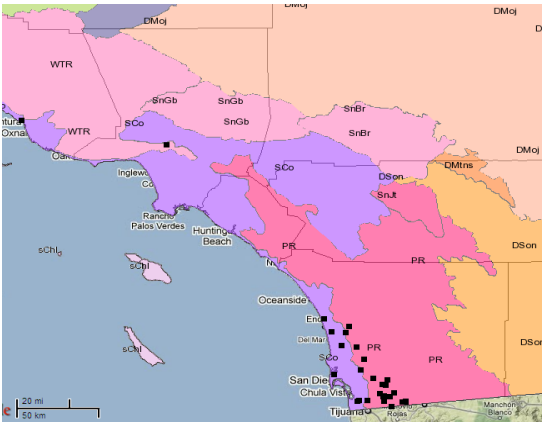


SPECIES	<i>Iva hayesiana</i> Gray	
NRCS CODE: IVHA	Subtribe: Ambrosiinae Family: Asteraceae Order: Asterales Subclass: Asteridae Class: Magnoliopsida	 <p>head inflorescence © 2010 Joseph Cahill</p> <p>© 2010 Joseph Cahill</p> <p>© 2009 Lee Ripma</p>
Subspecific taxa	None.	
Synonyms	None listed.	
Common name	San Diego marsh elder (Hickman 1993), San Diego povertyweed (NSN 2010, USDA PLANTS 2010), poverty weed (O'Brien et al. 2006). Hayes's iva; Hayes's povertyweed (Painter 2009)	
Taxonomic relationships	<i>I. haesyiana</i> is in the same phylogenetic group as <i>I. imbricata</i> Walt., <i>I. frutescens</i> L., <i>I. cheiranthifolia</i> H.B.L., and <i>I. annua</i> L. (Miao et al. 1995).	
Related taxa in region	<i>I. axillaris</i> (also called "povertyweed"), found from sea level to 6700 ft, is a widespread and weedy plant found from desert to coast (Munz 1974); its weediness is more of a problem in states other than CA (Munz 1974).	
Taxonomic issues	None.	
Other	CNPS list 2.2 (Rare, threatened or endangered in California, but more common elsewhere. Fairly threatened in California) (CNPS 2009). Very little information was found on the biology of this species.	
GENERAL		
Map	Data provided by the participants of the Consortium of California Herbaria represent 39 records with coordinate data out of 71 records retrieved; data accessed 9/19/2010. See Berkeley Mapper: http://ucjeps.berkeley.edu/consortium Note: Collections from outside the native range in Ventura and Los Angeles counties are near locations where plants are used in landscaping. The Ventura collection is in appropriate dune habitat and might be a natural population.	
Geographic range	Restricted. Rare in south coastal California, more widespread in Baja CA (Hickman 1993, CNPS 2009); found predominantly in southwest San Diego County (Munz 1974).	
Distribution in California; Ecological section and subsection	Native populations restricted to Coastal San Diego County. Ecological Unit and Subsection: http://www.fs.fed.us/r5/projects/ecoregions/ca_sections.htm : Southern California Coast, Coastal Terrace, 261Bj). Occurs elsewhere in cultivation. Southwest San Diego County from coastal playas, inland to Jamul Mountain and Otay Mesa areas (CNPS 2009).	
Life history, life form	Perennial shrub, sub-shrub, 10 cm to 1m tall (Hickman 1993, FNA 2010, JepsonOnline 2010)	
Distinguishing traits	Low-growing semi-woody perennial plant, < 10 dm tall, with multiple slender, wand like stems from base. Leaves grayish-green, somewhat thick, with three veins from base, entire, oblong to obovate with obtuse tips and almost no petiole, 4-12 mm long, and nearly glabrous to covered with sparse, appressed hairs. Flowers are in small, inconspicuous greenish nodding heads with ovate to obovate phyllaries. Unlike the widespread species, <i>I. axillaris</i> , <i>I. hayesiana</i> has flower heads with separate phyllaries (Munz & Keck 1968, DiTomaso & Healy 2007).	

Root system, rhizomes, stolons, etc.	Taproot (Clarke et al. 2007). Trailing stems can root and allow the plant to become wide and low growing (Bornstien et al. 2005).
Rooting depth	The deep root system is especially good for soil stabilization (L. Fuentes, pers. com.)
HABITAT	
Plant association groups	Riparian and floodplain-coastal sage scrub ecotone with alkali and freshwater marshes (Boczkiewicz 2005); alkaline flats, depressions, alkali marshes, sinks.
Habitat affinity and breadth of habitat	Alkaline flats, depressions, alkali marshes, sinks (Munz 1974, Hickman 1993); salt and freshwater marshes and ecotones with coastal sage scrub (Boczkiewicz 2005).
Elevation range	Below 1000 ft (Munz 1974)
Soil: texture, chemicals, depth	Plants often occur in salty or alkaline soil (Munz 1974, Hickman 1993), but they also occur on clay soil (Perry 1992).
Drought tolerance	Plants are drought tolerant. In southern California gardens, plants can be grown with no to low supplemental water (Brenzel 2001, O'Brien et al. 2006). Once established, can survive normal rainfall of coastal southern California and southwestern inland regions; during long periods of drought, it can become semi-drought deciduous and dormant (Perry 1992).
Precipitation	In coastal region of southern California, annual rainfall averages 10 to 16 in.
Flooding or high water tolerance	Tolerant of moist alkaline swales. In general, marsh elders in the genus <i>Iva</i> tend to survive only occasional flooding and are adapted to higher elevations of marsh habitat. For example, <i>I. frutescens</i> is intolerant of prolonged flooding (Bertness et al. 1992) and to flooding by salt water (Thursby & Abdelrhman 2004).
Wetland indicator status for California	Facultative wetland (USDA PLANTS 2010).
Shade tolerance	In gardens, plants can be grown in full sun or partial shade (Brenzel 2001, O'Brien et al. 2006). In Road Island, seedling survivorship of the related <i>I. frutescens</i> is high when areas are shaded (Bertness & Yeh 1994).
GROWTH AND REPRODUCTION	
Seedling emergence relevant to general ecology	
Growth pattern (phenology)	Flowers April-Sept (Munz 1974); flowers year-round (FNA 2010).
Vegetative propagation	Cuttings root fast and easily (M. Wall, Rancho Santa Ana Botanic Garden (RSABG) pers. com.) and plants likely root along trailing stems under moist conditions.
Regeneration after fire or other disturbance	
Pollination	Wind. The flowers of <i>Iva</i> and related species are greatly reduced and adapted to wind pollination.
Seed dispersal	The tiny achenes are likely dispersed by a combination of gravity, wind, and water as are related species of Asteraceae. Seedfall and dispersal is likely very localized as described for <i>Iva frutescens</i> (Bertness & Yeh 1994).
Breeding system, mating system	No information. Very likely to be outcrossing due to wind pollination mechanism.
Hybridization potential	Potential for cross pollination is high if planted near plants from other populations or other species of <i>Iva</i> if plants overlap in flowering time.
Inbreeding and outbreeding effects	No information available.
BIOLOGICAL INTERACTIONS	
Competitiveness	On the east coast, the related <i>Iva</i> of saltmarshes, <i>I. frutescens</i> , is a poor competitor in areas with <i>Juncus</i> (Bertness & Yeh 1994); however, at salt marsh edges <i>I. frutescens</i> relies on <i>Juncus</i> for soil surface shading and soil oxygenation (Levine et al. 1998). When <i>Juncus</i> is experimentally removed, <i>Iva</i> quality decreases to the point that aphids no longer feed on them (Hacker & Bertness 1996).

Herbivory, seed predation, disease	Information on other species of <i>Iva</i> : The aphid <i>Uroleucon</i> feeds on <i>Iva frutescens</i> (Levine et al. 1998); Ladybird beetles (<i>Hippodamia convergens</i> Guerin-Meneville and <i>Adalia bipunctata</i> L.) use <i>Iva</i> for habitat and prey on aphids: ladybird beetles prefer taller plants, so there is increased herbivory by aphids on smaller plants (Levine et al. 1998).
Palatability, attractiveness to animals, response to grazing	The aromatic plants contain a sesquiterpene lactone (Herz & Sudarsanam 1970). Such compounds may deter herbivores.
Mycorrhizal?	No information.
ECOLOGICAL GENETICS	
Ploidy	n=17 (Miao et al. 1995)
Plasticity	No information.
Geographic variation (morphological and physiological traits)	Data available for <i>I. frutescens</i> from the northeastern U.S. shows local scale geographic variation. At low salt marsh elevations, plants are short (35-50 cm) and are found at densities of 1-2 plants/m ² , whereas at high elevations plants grow to be 200 cm and are found at densities of 4-16 plants/m ² (Bertness et al. 1992).
Genetic variation and population structure	No information.
Phenotypic or genotypic variation in interactions with other organisms	No information.
Local adaptation	No information.
Translocation risks	Plants appear to be narrowly adapted in the wild.
SEEDS	
	For RSABG seed image: http://www.hazmac.biz/080714/080714IvaHayesiana.html
General	Seeds are small, less than 2 mm long and spindle-shaped. Seeds are sometimes available from native seed companies upon request (NSN 2010). Also see: http://www.cnplx.info/nplx/species?taxon=Iva+hayesiana
Seed longevity	Unknown.
Seed dormancy	
Seed maturation	
Seed collecting and harvesting	
Seed processing	
Seed storage	
Seed germination	Fresh seeds from a collection made in 1982 from San Ysidro Mountain, San Diego Co., had 41% germination without treatment (M. Wall, RSABG pers. com.).
Seeds/lb	909 seeds/gm based on the filled, sound seeds from a single collection (M. Wall pers. com.).
Planting	Container plants of IVHA are produced for horticulture and restoration. Some plants in the RSABG collection were started from seed, but plants are typically produced from cuttings; rooting is fast and highly successful (M. Wall pers. com.). For marsh plants of some other coastal <i>Iva</i> species (e.g., <i>I. frutescens</i>), planting at high densities increases seedling survival, due to buffering of soil and limiting of salt accumulations (Bertness & Yeh 1994).
Seed increase activities or potential	This species is rare and restricted in its distribution in California. Seed production fields are not likely to be commercially viable for seed companies. Seed increase is likely to be a financially useful option only for large restoration projects or a series of projects planned in advance for appropriate southern California and Baja California habitats.
USES	
Revegetation and erosion control	Recommended for landscaping and erosion control (Brenzel 2001). Used for revegetation of slopes (Perry 1992). Naturalizes.
Habitat restoration	Sometimes included as a component of wetland restoration plant palettes for southcoastal California. This is a sensitive species (CNPS list 2.2, CNPS 2009). Planting horticultural selections or plants with no source information should be avoided near wild populations of this species.

Horticulture or agriculture	Plants are used as a drought tolerant ground cover in gardens and are categorized as "very low to low water use" in southern California gardens (Brenzel 2001, O'Brien et al. 2006). Appearance in gardens can be improved with supplemental water. Generally used in borders and on slopes, and can be clipped in the fall for use as a ground cover (Perry 1992). January-February pruning, and even mowing with a brush mower, is recommended by O'Brien et al. (2006) to rejuvenate growth. Container plants are available from southern California native plant nurseries (e.g., Las Pilitas Nursery, Rancho Santa Ana Botanic Gardens).
Wildlife value	
Plant material releases by NRCS and cooperators	None.
Ethnobotanical	Pollen of the related <i>I. frutescens</i> has allergenic properties (Astaf'eva et al. 1981).
ACKNOWLEDGMENTS	Partial funding for production of this plant profile was provided by the U.S. Department of Agriculture, Forest Service, Pacific Southwest Region Native Plant Materials Program. Joseph Cahill and Lee Ripma kindly provided photographs for this plant profile. Michael Wall of the Rancho Santa Ana Botanic Garden Seed Program provided data on seeds and propagation.
CITATION	Montalvo, A. M., L. K. Goode, and J. L. Beyers. 2010. Plant Profile for <i>Iva hayesiana</i> . Native Plant Recommendations for Southern California Ecoregions. Riverside-Corona Resource Conservation District and U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station, Riverside, CA. Online: http://www.rcrcd.com/index.php?option=com_content&view=article&id=88&Itemid=190 .
LINKS TO REVIEWED DATABASES & PLANT PROFILES (last accessed September 2010)	
Fire Effects and Information System (FEIS)	No matches
Jepson Flora, Herbarium (JepsonOnline)	http://ucjeps.berkeley.edu/cgi-bin/get_cpn.pl?3658
Jepson Flora, Herbarium, 2nd Edition Review (JepsonOnline 2nd Ed.)	http://ucjeps.berkeley.edu/tjm2/review/treatments/compositae.html#3658
USDA PLANTS	http://plants.usda.gov/java/nameSearch?keywordquery=lva+hayesiana+&mode=sciname&submit.x=20&submit.y=12
Native Plant Network Propagation Protocol Database (NPNPP)	no matches http://nativeplants.for.uidaho.edu/network/
Native Seed Network (NSN)	http://www.nativeseednetwork.org/viewtaxon?taxon_code=IVHA&release_name=
GRIN	no matches http://www.ars-grin.gov/cgi-bin/npgs/html/taxgenform.pl
Flora of North America (FNA) online version	http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=250067020
Calflora	http://www.calflora.org/
Rancho Santa Ana Botanic Garden Seed Program, RSABG seed photos	http://www.hazmac.biz/rsabghome.html
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