Photo credit: Kaldari, CC0, via Wikimedia Commons

California Pest Rating Profile for

Asclepias curassavica L.: Tropical milkweed; bloodflower milkweed; Mexican milkweed; false ipecac

Family: Apocynaceae

Pest Rating: B

Comment Period: 11/22/2021 through 01/06/2022

Initiating Event:

Asclepias curassavica (tropical milkweed) is not currently rated by the state of California, and has been widely cultivated as an ornamental in coastal counties of southern and central California. A pest rating proposal has been requested due to reports of naturalization of the species and potential negative effects on the migratory behavior and health of populations of monarch butterflies in the state.

History & Status:

Background: *Asclepias curassavica* is a perennial herb or subshrub up to 1 m or more in height, with stems simple or branched, pale gray to somewhat reddish, initially minutely hairy and then largely glabrous (Correll and Correll, 1972; CABI, 2021). The plant has the milky sap characteristic of the genus, and unlike most native milkweed species of the United States retains its leaves year-round in warm temperate areas. The leaves are simple, untoothed, stalked, opposite in arrangement, 5-12 cm long and 1-3 cm wide. The leaf blade is lanceolate to narrowly elliptic, with an acute apex and acute or obtuse base. The flowers are borne in compact umbellate inflorescences in the axils of the upper leaves on stalks 3-6 cm long. The flowers are showy and distinctively colored, with the reflexed, five-lobed corolla characteristically crimson-red (to reddish-orange or rarely yellow or white) with the lobes approximately 5-10 mm in length. The terminal corona of the flower is characteristically deep yellow (to orangish), with an inner horn associated with each hood segment. The follicle fruits are narrowly spindle-shaped, 6-10 (up to 15) cm long, and produce up to approximately 70 to 80 seeds. The seeds are ovate, flattened, narrowly winged around the margin, approximately 5-7 mm long, and have a coma of elongate silky hairs (approximately 2-3 cm long) at the apex that aid in wind dispersal.

Asclepias curassavica is native to warm climate areas of the Americas to the south of the United States, and has become naturalized from ornamental cultivation in portions of the far southern U.S. Unlike most native species of milkweeds in the United States, the species does not shed its leaves seasonally in warmer areas of the country, which has caused concern about unintended negative effects on populations of the monarch butterfly, an iconic migratory species in eastern and western North America (Satterfield et al., 2015). Winter availability of the tropical milkweed as a larval foodplant of the monarch can lead to buildup of the harmful protozoan parasite *Ophryocystis elektroscirrha* in the monarch butterfly populations, which have historically migrated northwards to dispersed populations of native milkweeds and thus avoided high prevalence of the parasite. Because of the iconic status of the coastal overwintering populations of the monarch butterfly in California, the continued cultivation and naturalization of *Asclepias curassavica* in southern and central California has been raised as a matter of concern (see e.g. Monarch Joint Venture, 2021).

Worldwide Distribution: *Asclepias curassavica* is native to subtropical to tropical areas of the Americas from Mexico and the Caribbean south to northern Argentina and Chile. It is reported as naturalized in portions of Africa, Australia, Papua-New Guinea, Micronesia, Polynesia, New Caledonia, Fiji, Tonga, Samoa, eastern Asia, Pakistan, Hawaii, and some areas of the southern and eastern United States (USDA/GRIN, 2021). It is widely cultivated as an ornamental in many tropical to warm temperate parts of the world and is a pantropical agricultural and environmental weed of economic significance (CABI, 2021).

In the mainland United States, the species has been reported as a naturalized plant in a number of counties of California, southern Texas, and southern to central Florida, and several parishes in

Southern Louisiana, as well as individual localities in Tennessee, Virginia, and New York (Invasive Plant Atlas, 2021; USDA PLANTS database, 2021). In Texas, the species is reported to be naturalized in areas with moist or wet soil (Correll and Correll, 1972). In Florida, it is normally found in moist disturbed habitats (Wunderlin, 1998).

Official Control: *Asclepias curassavica* is not controlled as a noxious weed in any state of the U.S.

California Distribution: *Asclepias curassavica* has been reported from a significant number of localities in coastal counties of southern California (Los Angeles, Orange, and San Diego counties) and sporadic locations in the San Francisco Bay area (Marin, San Francisco, Alameda, Contra Costa, Santa Clara, San Mateo, and Santa Cruz counties) in the Calflora database (2021). There are very few vouchered collections from non-cultivated plants in Los Angeles, Orange, and San Diego counties in the Consortium of California Herbaria database (CCH, 2021) and one collection of an apparently non-cultivated plant from a homeowner's property in San Bernardino County in the CDFA PDR database.

California Interceptions: One border interception of cultivated plants of the species was recorded in 2017 (CDFA PDR, 2021), but shipments of this species as an ornamental plant are not likely to have been reported.

The risk **tropical milkweed** would pose to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** *Asclepias curassavica* is native to subtropical to tropical areas of the Americas and widely cultivated in warm temperate to tropical areas of the world. In cultivation, the species is reported to be winter hardy in USDA Zones 9-12 (including coastal and central California), growing best in light, rich, moist, but well drained soil, and tolerating light shade (Missouri Botanical Garden, 2021). In Australia, the species is widely naturalized, and most widespread in the more subtropical to warm temperate environments of eastern Queensland and northern New South Wales, where it is a common weed of pastures, roadsides, and disturbed habitats, and also occurs in natural environments in wetlands, along waterways, and in open woodlands and grasslands (Weeds of Australia, 2021). *Asclepias curassavica* receives a **Medium (2)** in this category.

   Evaluate if the pest would have suitable hosts and climate to establish in California.

   Score: **2**

   - Low (1) Not likely to establish in California; or likely to establish in very limited areas.
   - **Medium (2) may be able to establish in a larger but limited part of California.**
   - High (3) likely to establish a widespread distribution in California.

2) **Known Pest Host Range:** Risk is **High (3)** as weeds do not require any one host, but grow wherever ecological conditions are favorable.

Evaluate the host range of the pest.

Score: 3

- Low (1) has a very limited host range.
- Medium (2) has a moderate host range.
- **High (3) has a wide host range.**

3) **Pest Dispersal Potential:** Plants produce up to 80 seeds per fruit, and thus can potentially produce over a thousand seeds per plant. The seeds are relatively light in weight and have a coma of long hairs to facilitate wind dispersal, most commonly in the local region of the parent plants (CABI, 2021). The species is reported to self-seed in warm winter climate areas (Missouri Botanical Garden, 2021). Seeds and plants of the species have long been widely offered for sale in the United States, so most spread of the plant into new regions has been due to intentional planting as an ornamental or butterfly foodplant. *Asclepias curassavica* receives a **Medium (2)** in this category.

Evaluate the natural and artificial dispersal potential of the pest.

Score: 2

- Low (1) does not have high reproductive or dispersal potential.
- **Medium (2) has either high reproductive or dispersal potential.**
- High (3) has both high reproduction and dispersal potential.

4) **Economic Impact:** *Asclepias curassavica* is widely grown as an ornamental and has been widely sold in nurseries. The species has been sold as a food plant for butterflies, although its suitability as a non-native host plant for monarch butterflies in the United States has been strongly questioned (Satterfield et al., 2015; Monarch Joint Venture, 2021). The species is toxic to livestock such as sheep and cattle due to the presence of cardenolides (cardiac glycosides) in the milky sap, but the leaves and stems are unpalatable and not normally eaten by livestock (Everist, 1974). In tropical to subtropical areas of the world the species can often be invasive in agricultural fields (CABI, 2021). *Asclepias curassavica* receives a **Medium (2)** in this category.

Evaluate the economic impact of the pest to California using the criteria below.

Economic Impact: D, F

A. The pest could lower crop yield.
B. The pest could lower crop value (includes increasing crop production costs).
C. The pest could trigger the loss of markets (includes quarantines).
D. The pest could negatively change normal cultural practices.
E. The pest can vector, or is vectored, by another pestiferous organism.
F. The organism is injurious or poisonous to agriculturally important animals.
G. The organism can interfere with the delivery or supply of water for agricultural uses.

Economic Impact Score: **2**

- Low (1) causes 0 or 1 of these impacts.
- Medium (2) causes 2 of these impacts.
- High (3) causes 3 or more of these impacts.

5) **Environmental Impact:** *Asclepias curassavica* is primarily a cultivated plant in California, but has the potential to naturalize in disturbed or relatively moist open habitats including wetlands and riparian environments based on experience in Australia, where it is now relatively widely naturalized, and is considered an environmental weed in Queensland and Western Australia (Weeds of Australia, 2021). Because the plant is leafy year-round in contrast to the native species of milkweed, it can disrupt the normal pattern of migratory behavior of the monarch butterfly and facilitate the buildup of protozoan parasites in non-migrating populations (Satterfield et al., 2015). The species receives a **High (3)** in this category.

Environmental Impact: A, D

A. The pest could have a significant environmental impact such as lowering biodiversity, disrupting natural communities, or changing ecosystem processes.
B. The pest could directly affect threatened or endangered species.
C. The pest could impact threatened or endangered species by disrupting critical habitats.
D. The pest could trigger additional official or private treatment programs.
E. The pest significantly impacts cultural practices, home/urban gardening or ornamental plantings.

Environmental Impact Score: 3
- Low (1) causes none of the above to occur.
- Medium (2) causes one of the above to occur.
- High (3) causes two or more of the above to occur.

Consequences of Introduction to California for tropical milkweed*:* Medium (12)

Add up the total score and include it here.
-Low = 5-8 points
-**Medium = 9-12 points**
-High = 13-15 points

6) **Post Entry Distribution and Survey Information**: The species has been reported from over 12 counties in California, most commonly in coastal or near coastal counties of southern California and the San Francisco Bay area (Calflora, 2021). It receives a **Medium (-2)** in this category.

Score: -2
-Not established (0) Pest never detected in California or known only from incursions.

-Low (-1) Pest has a localized distribution in California or is established in one suitable climate/host area (region).
-Medium (-2) Pest is widespread in California but not fully established in the endangered area, or pest established in two contiguous suitable climate/host areas.
-High (-3) Pest has fully established in the endangered area, or pest is reported in more than two contiguous or non-contiguous suitable climate/host areas.

7) **The final score is** the consequences of introduction score minus the post entry distribution and survey information score:

Final Score: *Score of Consequences of Introduction – Score of Post Entry Distribution and Survey Information* ***= Medium (10)***

Uncertainty:

Asclepias curassavica is relatively widely cultivated as a garden ornamental or butterfly plant and is well adapted to natural wind dispersal if the plants are allowed to set seed, but the degree to which it is invading natural areas in California is not well documented. Adverse effects on monarch butterfly populations due to buildup of protozoan parasites associated with the nonseasonal leafing behavior of *Asclepias curassavica* have been reported in the southern United States, but the factors involved in decline of overwintering or migratory populations of monarch butterflies in California could also likely involve a number of environmental issues including habitat loss and changes in temperature and rainfall regimes. Further information is needed on the impact that tropical milkweed is currently having on the monarch butterfly populations in California.

Conclusion and Rating Justification:

Asclepias curassavica appears to be naturalizing in portions of coastal California, where it could become invasive in sensitive wetland habitats. The southern and central coast counties of California also include many of the overwintering sites of the monarch butterfly. Because this non-native milkweed species has continuous leafing in contrast to the seasonal leafing of the native species of milkweed, it has been associated with disruptions of normal migratory behavior and buildup of pathogenic protozoan parasites in monarch butterfly populations in the southern U.S. In order to limit the spread and continued naturalization of *Asclepias curassavica* in California, a rating of “B” is recommended.

References:

CABI. 2021. Invasive Species Compendium for *Asclepias curassavica* (bloodflower). Accessed: September 23, 2021: https://www.cabi.org/isc/datasheet/7248

Calflora. 2021. Information on California plants for education, research and conservation, with data contributed by public and private institutions and individuals. Accessed: September 23, 2021

https://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=3555

CDFA Pest and Damage Report Database (CDFA PDR). 2021. *Asclepias curassavica*. Plant Health and Pest Prevention Services. CA Department of Food and Agriculture. Accessed: September 23, 2021

http://phpps.cdfa.ca.gov/user/frmLogon2.asp

Consortium of California Herbaria (CCH). 2021. Data provided by the participants of the CCH. Regents of the University of California 2019. Accessed: September 23, 2021.

http://ucjeps.berkeley.edu/consortium/

Correll, D.S., and Correll, H.B. 1972. Aquatic and Wetland Plants of Southwestern United States. Stanford University Press, Stanford, California.

Everist, S.L. 1981. Poisonous Plants of Australia. 2nd edition. Angus and Robertson, Publishers, Sydney, Australia.

Invasive Plant Atlas of the United States. 2021. Bloodflower milkweed, *Asclepias curassavica* L. Accessed September 23, 2021: https://www.invasiveplantatlas.org/subject.html?sub=13933

Missouri Botanical Garden. 2021. *Asclepias curassavica* – Plant Finder. Accessed September 23, 2021: https://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c376

Monarch Joint Venture. 2021. Milkweed Fact Sheet. Accessed Sept. 24, 2021: https://monarchjointventure.org/images/uploads/documents/MilkweedFactSheetFINAL.pdf

Satterfield, D.A., Maerz, J.C., and Altizer, S. 2015. Loss of migratory behavior increases infection risk for a butterfly host. Proceedings of the Royal Society, B 282: 20141734. Accessed Sept. 24, 2021: http://dx.doi.org/10.1098/rspb.2014.1734

United States Department of Agriculture (USDA), Agricultural Research Service, National Plant Germplasm System. 2021. Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm

Resources Laboratory, Beltsville, Maryland. Accessed Sept. 23, 2021: https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomydetail?id=4469

United States Department of Agriculture (USDA), Natural Resources Conservation Service, PLANTS database. 2021. Accessed Sept. 23, 2021: https://plants.usda.gov/home/plantProfile?symbol=ASCU

Weeds of Australia. 2021. *Asclepias curassavica* Fact Sheet. Accessed September 2021: https://keyserver.lucidcentral.org/weeds/data/media/Html/asclepias_curassavica.htm

Wunderlin, R.P. 1998. Guide to the Vascular Plants of Florida. University of Florida Press, Gainesville, Florida.

Responsible Party:

Robert Price, Primary State Botanist; California Department of Food & Agriculture; Seed Laboratory and Herbarium; 3294 Meadowview Road, Sacramento, CA 95832; Tel. (916) 738-6700; permits[@]cdfa.ca.gov

---

*Comment Period: 11/22/2021 through 01/06/2022

*NOTE:

You must be registered and logged in to post a comment. If you have registered and have not received the registration confirmation, please contact us at permits[@]cdfa.ca.gov.

Comment Format:

- Comments should refer to the appropriate California Pest Rating Proposal Form subsection(s) being commented on, as shown below.

  Example Comment:

  Consequences of Introduction: 1. Climate/Host Interaction: [Your comment that relates to "Climate/Host Interaction" here.]

- Posted comments will not be able to be viewed immediately.

- Comments may not be posted if they:

  Contain inappropriate language which is not germane to the pest rating proposal;

  Contains defamatory, false, inaccurate, abusive, obscene, pornographic, sexually oriented, threatening, racially offensive, discriminatory or illegal material;

  Violates agency regulations prohibiting sexual harassment or other forms of discrimination;

  Violates agency regulations prohibiting workplace violence, including threats.

- Comments may be edited prior to posting to ensure they are entirely germane.
- Posted comments shall be those which have been approved in content and posted to the website to be viewed, not just submitted.

Pest Rating: B