

## California Pest Rating Proposal for

***Drymaria cordata* (L.) Willd. ex Schult; whitesnow; tropical chickweed; drymary**

**Family: Caryophyllaceae**

**Pest Rating: C**

**Synonyms:**

*Drymaria cordata* subsp. *diandra* (Blume) J. A. Duke, *Drymaria diandra* Blume, *Holosteum cordatum* L.

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**Comment Period: CLOSED**

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### Initiating Event:

*Drymaria cordata* is included on the list of noxious weeds (Title 3, California Code of Regulations, Section 4500) and it has not been reviewed under the current pest rating system.

### History & Status:

**Background:** *Drymaria cordata* is an annual or perennial herb that is native to North (Mexico), Central, and South America, and that now occurs worldwide throughout the tropics and subtropics (USDA/GRIN, 2019). It is shade tolerant and thrives in moist, disturbed environments such as agricultural and pastoral land, tropical plantations, gardens, lawns, ditches, roadsides, and riverbanks (Holm, Doll, Holm, Pancho, and Herberger, 1997; Rojas-Sandoval and Acevedo-Rodríguez, 2019).

*Drymaria cordata* has a shallow, fibrous root system. Stems are slender, are highly branched, and spread in a prostrate or erect manner. Stems readily form adventitious roots at the nodes. Stems can be 30-60 cm (approximately 1-2 feet) in length with circular, oval, or heart-shaped leaves that grow in opposite pairs, with short or nearly absent petioles. Small white flowers are produced in terminal or axillary cymes. Sepals and flower stems are pubescent, allowing them to stick to and be transported by clothing, hair, or other objects (Villarreal and Estrada, 2008; Moody, Lubigan, Munroe and Paller, 1984).

*Drymaria cordata* is described as an agricultural, environmental, naturalized, and noxious weed in the Global Compendium of Weeds (HEAR/GCW, 2019). Fast-growing stems will form a dense, central mass, which then spreads extensively, laterally or vertically, enabling the plant to outcompete neighboring

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vegetation for sunlight and other resources. Sources also indicate that *Drymaria cordata* raises the humidity around the base of crop plants and interferes with crop management (Rojas-Sandoval and Acevedo-Rodríguez, 2019).

**Worldwide Distribution:** *Drymaria cordata* is reported as native to Central America, South America, and Mexico in North America. It has become widespread in tropical regions worldwide. Reports of introduction and/or naturalization of this species are from Africa (Southern, Eastern, Western, and Central) and Asia (including China, Japan, the Indian subcontinent, Southeast Asia, Indonesia, and the Philippines). This species is reported to be introduced to and invasive in Australia, Melanesia (including Fiji and Papua New Guinea), and the Caribbean (including the Bahamas, the Dominican Republic, and the U.S. Virgin Islands). This species is known to occur in the United States in Alabama, Florida, Georgia, Louisiana, Mississippi, and Hawaii) (USDA/ARS/GRIN, accessed 2019).

**Official Control:** *Drymaria cordata* does not appear on the United States Department of Agriculture, Federal Noxious Weed list, nor is it listed as a regulated or noxious weed in any U.S. state except California.

**California Distribution:** There are no reports of this species' occurrence in California (CDFA PDR database, 2019, CalFlora, 2019).

**California Interceptions:** Specimens of *Drymaria cordata* were intercepted four times in 2007 in plant cuttings from Hawaii and submitted to the CDFA Plant Pest Diagnostics Laboratory by San Mateo County agricultural inspectors (Pest and Damage Records: 1459919, 1464042, 1464301 (2 entries)) (CDFA PDR database, 2019).

## Consequences of Introduction

### 1) **Climate/Host Interaction:** Score is **Low (1)**

*Drymaria cordata* is considered a tropical and subtropical species (Holm et al., 1997). However, one source describes *Drymaria cordata* as a habitat generalist that is highly adaptable to different environments. (Rojas-Sandoval and Acevedo-Rodríguez, 2019). Although *Drymaria cordata* prefers moist, tropical environments below 2000 meters (approx. 6,500 feet) above sea level, it can tolerate dry summers and cold temperatures above freezing (Rojas-Sandoval and Acevedo-Rodríguez, 2019). However, it has not proven invasive in such situations.

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

- **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:** Score is **High (3)**

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*Drymaria cordata* can occur wherever conditions exist that are conducive to its survival.

**Score: 1**

- 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:** Score is **Medium (2)**.

*Drymaria cordata* reproduces both by seed and vegetative spread. The flower pedicles and calyx have pubescent hairs, which causes them to stick and to be transported by clothing, hair, or other objects (Ansong et al., 2015). Seeds can be dispersed as contaminants of hay, fodder, forage, soil, and grass and crop seeds. Livestock with seeds attached to their hair can move seeds from one area to another. Equipment and vehicles driven through infested areas can also disperse seeds and plant (CABI, 2019). *Drymaria cordata* is a pioneer species in disturbed areas (Rojas-Sandoval and Acevedo-Rodríguez, 2019).

*Drymaria cordata* produces many small, terminal or branched inflorescences that produce an average of 4.4 seeds per flower, resulting in over 600 seeds per plant (Rojas-Sandoval and Acevedo-Rodríguez, 2019).

Evaluate the natural and artificial dispersal potential of the pest.

- 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:** Score is **Medium (2)**. *Drymaria cordata* is reported as a weed pest in tropical agricultural settings, including in coffee, tea, corn, potatoes, sugar cane, rice, vegetable crops, cassava, coconut, papaya, banana plantations, and irrigated pastures throughout Central and South America, Australia, Hawaii, and Indonesia. In Florida, it is a common weed of turf (Wunderlin, Hansen, Franck, and Essig, 2019; Holm et al., 1997). In urban settings, it is known to be a contaminant of turf. In California, its area of potential spread is likely to be much smaller, being confined to nurseries (including turf nurseries) and sunny, freshwater wetlands. Any potential negative impacts would be significantly lesser than in areas of abundantly available moisture.

In tropical Africa and Asia, *Drymaria cordata* is reported to be cultivated for edible and medicinal purposes. Several studies have reported that biologically active compounds derived from *Drymaria cordata* have medicinal applications, such as analgesic, anti-inflammatory, and antibacterial activities (Nono, Nzowa, Barboni, and Tapondjou, 2014).

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In tea plantations of Sri Lanka, *Drymaria cordata* has been reportedly used as an effective weed suppressant due to its ability to outcompete unwanted species and to prevent soil erosion (Krishnarajah, 1985). In Costa Rica, studies using living ground covers of *Drymaria cordata* in tomato fields confirmed the effectiveness of this plant in reducing the impact of white-fly transmitted tomato yellow mottle virus (Hilje and Stansly, 2008).

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

- 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:**

- 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:** Score is **High (3)**. *Drymaria cordata* widespread in tropical, agricultural and natural settings throughout the southern hemisphere. *Drymaria cordata* tolerates a wide range of temperatures, elevations, and moisture levels. It competes with native plant seedlings for sunlight and nutrients. Stems can spread horizontally and laterally and can cover and suffocate native and cultivated plants.

**Environmental Impact:**

- 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:**

- 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 *Drymaria cordata*: 11 (Medium)**

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Low = 5-8 points

**Medium = 9-12 points**

High = 13-15 points

**6) Post Entry Distribution and Survey Information: Score is 0**

**-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) Final Score: 11 (Medium) (11-0)**

**Uncertainty:**

The uncertainty of the ability of *Drymaria cordata* to establish and become a pest in California is significant. This species has been intercepted in shipments of plant cuttings for consumption by California inspectors. It is also known to occur in ornamental plants and turf in several southern U.S. states. Propagative material of *Drymaria cordata* may continue to be transported to California via these pathways. However, *Drymaria cordata* is primarily a tropical and sub-tropical species. Although it may be able to adapt to and survive in different environments, it is unlikely to be able to thrive in California's drier climate.

**Conclusion and Rating Justification:**

Because *Drymaria cordata* is unlikely to be invasive in California, except under very limited conditions, a C rating is justified.

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### Responsible Party:

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**\*Comment Period: CLOSED**

**\*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 [plant.health\[@\]cdfa.ca.gov](mailto:plant.health[@]cdfa.ca.gov).

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### 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.
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**Pest Rating: C**

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