

## California Pest Rating Proposal

### *Aulacaspis yasumatsui* Takagi: Cycad Aulacaspis scale

Hemiptera: Diaspididae

Current Rating: A

Proposed Rating: B

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Comment Period: **05/08/2023 – 06/22/2023**

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#### Initiating Event:

*Aulacaspis yasumatsui* was found in the environment at several locations in San Diego County in 2023. A pest rating proposal is needed.

#### History & Status:

**Background:** *Aulacaspis yasumatsui* is apparently restricted to cycads (Order Cycadales). Reported hosts include: *Bowenia serrulata*, *Ceratozamia robusta*, *Cycas* species, including *C. micronesia* and *C. revoluta*, *Dioon* species, *Encephalartos* species, *Macrozamia* species, *Microcycas calocoma*, *Stangeria eriopus*, and *Zamia* species (Marler et al., 2021; Normark et al., 2017; Segarra-Carmona et al., 2008).

This scale not only infests the aboveground portions of the host plants, including foliage, but also infests the roots to a depth of 60 cm (Weissling et al., n.d.), and it can be easily overlooked on cycads (Marler et al., 2021). Development from egg to adult was reported to take approximately one and a half months in a laboratory experiment, and there are reportedly multiple generations per year in the environment (Ravuiwasa et al., 2012). This scale survived temperatures as low as -6.7° C for four hours at a site in Florida (Duke et al., 2021). First instar nymphs (“crawlers”) may be wind-dispersed (Muniappan et al., 2012).

Scales on cycads result in conspicuous white crust on leaves (Normark et al., 2017). Feeding damage appears as chlorotic spots and fronds become brown and dried. Infestations are reported to kill cycad plants (Segarra-Carmona et al., 2008). In Puerto Rico, it has impacted nurseries and homeowners. On Guam, this scale killed all of the seedling *Cycas micronesica* (a native species) within a study transect. Trees of all sizes suffered mortality; 75% of mature trees died over six years, and reproductive output of mature trees was apparently decreased as well (Marler and Lawrence, 2012).

**Worldwide Distribution:** *Aulacaspis yasumatsui* is reported to be native to southeast Asia. Its distribution includes: **Africa:** Ivory Coast, Nigeria; **Asia:** Indonesia, Taiwan; **Caribbean:** Puerto Rico; **Central America:** Guatemala; **North America:** Mexico, United States; **Oceania:** Commonwealth of the Northern Mariana Islands, Guam (California and Florida) (Dinkpa et al., 2021; Duke et al., 2021; Emshousen et al., 2004; Germain and Hodges, 2007; Muniappan et al., 2012; Normark et al., 2017; Ravuiwasa et al., 2012; Segarra-Carmona et al., 2008; Watson and Marler, 2014). García Morales et al. (2016) provide additional country records.

**Official Control:** *Aulacaspis yasumatsui* is not known to be under official control.

**California Distribution:** A heavy infestation of *A. yasumatsui* was found in a zoo in San Diego County in January 2023. Another infested site in San Diego and an infested site in Oceanside, approximately 30 miles from San Diego, were found in March 2023.

**California Interceptions:** *Aulacaspis yasumatsui* has been intercepted on incoming plant material. It has also been found in nurseries in Los Angeles, Orange, San Diego, Santa Barbara, and Ventura counties (California Department of Food and Agriculture).

The risk *Aulacaspis yasumatsui* poses to California is evaluated below.

## Consequences of Introduction:

- 1) **Climate/Host Interaction:** *Aulacaspis yasumatsui* is restricted to cycads, which are popular landscaping plants in California. Based on its known distribution, this scale may be limited to warmer climates. Therefore, *A. yasumatsui* receives a **Medium (2)** in this category.
  - 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:** *Aulacaspis yasumatsui* is only known to feed on cycads. Therefore, it receives a **Low (1)** in this category.
  - **Low (1) has a very limited host range.**
  - Medium (2) has a moderate host range.
  - High (3) has a wide host range.
- 3) **Pest Reproductive and Dispersal Potential:** *Aulacaspis yasumatsui* is reported to have multiple generations per year and can be moved on infested plant material. The “crawlers” (first instar nymphs) may be wind-dispersed. Therefore, it receives a **High (3)** in this category.
  - 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.** This scale is a serious pest of cycads. Control costs would likely be incurred and yield could decline in nurseries. Therefore, it receives a **Medium (2)** in this category.

**Economic Impact: A, B**

- 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: Medium**

- 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.** There are no native cycads, so this scale is not considered a threat to native California plants. Cycads are popular ornamentals in California and infestations by *A. yasumatsui* are unsightly, so infestations would likely trigger treatments. Therefore, *A. yasumatsui* receives a **High (3)** in this category.

**Environmental Impact: D, E**

- 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: High (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 *Aulacaspis yasumatsui*: Medium (11)**

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:** *Aulacaspis yasumatsui* is established in San Diego County. It receives a **Low (-1)** in this category.

–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.

**Final Score:**

7) The final score is the consequences of introduction score minus the post entry distribution and survey information score: Medium (10)

### **Uncertainty:**

The recent unofficial finds of *A. yasumatsui* suggest that this scale may be more widely distributed in California than is currently known. There is low uncertainty regarding the ability of this scale to establish in California and have an impact on cycads; that is already happening in San Diego County. There is uncertainty regarding this scale's potential to establish in areas of California further to the north and inland.

### **Conclusion and Rating Justification:**

*Aulacaspis yasumatsui* is clearly a serious pest of cycads. However, areas spanning at least 30 miles in San Diego county are infested and eradication is not considered practical. For these reasons, a "B" rating is justified.

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## Responsible Party:

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**\*Comment Period: 05/08/2023 – 06/22/2023**

### **\*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](mailto: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.

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### **Proposed Pest Rating: B**