

California Pest Rating Profile for
***Oxycarenus hyalinipennis* (Costa): Cotton Seed Bug**
Hemiptera: Oxycarenidae
Pest Rating: A

Comment Period CLOSED: 6/4/2019 through 7/19/2019

Initiating Event:

Oxycarenus hyalinipennis was found on mallow plants in a residential area in Los Angeles. This bug has not been rated. A permanent pest rating proposal is required to support an official pest rating.

History & Status:

Background: *Oxycarenus hyalinipennis* is a small (~4 mm in length), brownish-black, nondescript bug that is reported to feed on at least nine genera in Malvaceae, including *Gossypium*, *Hibiscus*, *Malva*, and *Abutilon* (Kirkpatrick, 1923; Molet and Jackson, 2011). Within the Malvaceae, agricultural commodities attacked include cotton, okra, and kenaf. The seeds of these plants are fed upon by *O. hyalinipennis* adults and nymphs. Harvested, unginning cotton is also fed upon (Henry, 1983). Adult feeding, mating, and egg laying occur when seeds of host plants are available. Feeding and egg laying do not occur on unopened bolls/pods. A generation can be completed in as little as 20 days and there are typically several generations per year (Henry, 1983).

Oxycarenus hyalinipennis has also been reported to feed on other plants, including dodder (*Cuscuta campestris*) and various tree fruits, including: apricot, peaches, and grapes (Azami-Sardoei et al., 2018). Grapes and tree fruits are not reported to be reproductive hosts. This information was obtained from secondary sources, as primary sources are not accessible. According to Henry (1983), damage to these fruits appeared as greasy spots (from feeding) exuding gum and the presence of feces.

Worldwide Distribution: *Oxycarenum hyalinipennis* is widely distributed and is reported to occur in Africa, Asia, Europe, South America, and the Caribbean (European and Mediterranean Plant Protection Organization, 2018). It was found in Florida in 2010 but was declared eradicated from the state in 2014. This species is not currently known to be established in the United States (USDA-APHIS-PPQ, 2014).

Official Control: *Oxycarenum hyalinipennis* is considered Reportable by the USDA (USDA-APHIS).

California Distribution: *Oxycarenum hyalinipennis* is not known to be established in California. However, the initiating collecting event from a residential property in Los Angeles County may suggest establishment and broader distribution within the county.

California Interceptions: *Oxycarenum hyalinipennis* was intercepted on herbs from Israel in 2007 and was found on mallow (*Abutilon palmeri*) plants at a residence in Los Angeles, California in April and May 2019 (California Department of Food and Agriculture).

The risk *Oxycarenum hyalinipennis* poses to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** *Oxycarenum hyalinipennis* appears to be mostly restricted in distribution to areas with a warmer climate. Much of California with the exception of higher elevations may have a suitable climate. The preferred host plant, cotton, is somewhat restricted in distribution in California, but native and ornamental Malvaceae are widespread and may serve as hosts. Therefore, *O. hyalinipennis* receives a **High (3)** 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:** *Oxycareenus hyalinipennis* is reported to feed on plants in several families.

Therefore, it receives a **Medium (2)** 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:** *Oxycareenus hyalinipennis* can fly. Therefore, it receives a **Medium (2)** 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:** Feeding by *Oxycareenus hyalinipennis* on cotton seeds is reported to impact oil (an important cotton by-product) quality and reduce seed germination by up to 75 percent (USDA-APHIS-PPQ, 2012). This pest is reported to cause staining of cotton lint when the bugs are crushed during cotton harvesting and processing (Henry, 1983; Kirkpatrick, 1923). Up to 96% of cotton bolls can be infested and more than 30 individuals can occur in a single boll. This species tends to hide within the cotton boll, which could make chemical control difficult (Smith and Brambila, 2008). Existing IPM recommendations for cotton do not appear likely to control *O. hyalinipennis*, and research in India suggests that Bt cotton is no less susceptible than conventional cotton to this pest (Sammaiah et al., 2012; University of California Agriculture & Natural Resources, 2019). Feeding on okra seeds is reported to reduce germination (Kumar et al., 2010). The presence of this pest on cotton seed could trigger the loss of markets with other cotton-producing states. Therefore, it receives a **High (3)** in this category.

Economic Impact: A, B, C

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: High

- 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.** *Oxycarenus hyalinipennis* feeds on multiple genera of Malvaceae. California has numerous native species in this family, including some rare ones. Feeding by *O. hyalinipennis* is reported to impact seed germination, so it is possible that this seed bug could decrease reproductive output of rare Malvaceae. Infestations of this bug on cotton and okra would likely lead to treatment programs. Therefore, it receives a **High (3)** in this category.

Evaluate the environmental impact of the pest on California using the criteria below.

Environmental Impact: B, 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 *Oxycarenus hyalinipennis*: High (13)

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:** *Oxycarenus hyalinipennis* was found in one location in Los Angeles County, but it is currently presumed not to be established in California. It receives a **not established (0)** 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: High (13)

Uncertainty:

Although it was found on one native species of *Abutilon* (*A. palmeri*), it is possible that *O. hyalinipennis* would not find other native California Malvaceae (including rare species) to be suitable host plants. Therefore, there is significant uncertainty regarding the potential for this insect to impact rare, native California plants. *Oxycarenus hyalinipennis* may be controlled in cotton and vegetables by a combination of existing natural enemies and currently-used pesticides. In this case, economic impact may be less than considered in this proposal. The extent of damage done to grapes and the various fruits that *O.*

hyalinipennis has been reported to feed on is not known. Lastly, *O. hyalinipennis* may already be established in California.

Conclusion and Rating Justification:

Oxycareus hyalinipennis is a known pest of cotton; California cotton was worth approximately 475 million dollars in 2017 (CDFA, 2018). This species may also attack rare, native plants in the family Malvaceae, and it is not known to be established in California. For these reasons, an “A” rating is justified.

References:

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