

California Pest Rating Profile

***Pomacea canaliculata* (Lamarck): Channeled apple snail**

Gastropoda: Ampullariidae

Pest Rating: B

Comment Period: 08/14/2025-09/28/2025

Initiating Event:

Although it is currently A-rated, this snail is now present in at least nine California counties. Therefore, a pest rating proposal is needed.

History & Status:

Background:

Pomacea canaliculata is a large (growing to over three inches in length), amphibious freshwater snail. It feeds on living and dead plant material. It has a gill and lung, allowing it to obtain oxygen in and out of water, and an operculum provides protection from desiccation. It lays large (up to 600 eggs) masses of bright pink eggs on objects, including vegetation, near water (Bernatis et al., 2016; California Department of Fish and Wildlife). In Japan, there appears to be one generation per year, with reproduction occurring in the summer (Yoshida et al., 2009).

This snail has broad environmental tolerances. In its native range, it may be able to survive occasional frosts (Rawlings et al., 2007), although data collected in Japan by Yoshida et al. (2009) suggest that colder winters are an important factor in pre-reproduction survival and abundance of this snail. Jacobsen (2022) suggested that cold temperatures are a limiting factor of the distribution of this snail in California, where it is established, and that increasing temperatures could expand its distribution

in the state. One caveat to this study is that this species has likely not realized its full potential (based on current climate and other factors) distribution in California and this would influence the results.

Pomacea canaliculata was introduced to Asia as a source of food, but it does not appear to have developed into a significant industry. This snail did, however, become a rice pest. It feeds on young rice plants in deep water. When rice paddies are drained, the snail buries itself in the soil or moves to deeper water (Wada et al., 1999). The impacts attributed to this snail in southeast Asia must be considered with the caveat that they could be to some extent confused with those caused by *P. insularum*, which is often confused with *P. canaliculatum* (Rawlings et al., 2007).

Pomacea canaliculata is considered to pose a risk to wetlands and agriculture (Rawlings et al., 2007). Chaichana and Sumpun (2014) found in laboratory experiments that this snail could outcompete a native snail in Thailand (it was better at competing for food). In Thailand, the nitrogen and phosphorus contents of water were higher and species richness of plants was lower when this snail was more abundant, which probably caused the algal blooms that were also observed when snails were abundant (Carlsson et al., 2004).

Pomacea canaliculata is considered an important vector of rat lungworm to humans in China (Yang et al., 2013).

Control of this snail is difficult and has involved pesticides, biological controls (vertebrate predators), and cultural controls, including altering water depth and alternating rice with a terrestrial crop (Djeddour et al., 2021; Wada, 2004). In Texas, *P. canaliculata* complex (thus possibly a species other than *P. canaliculata*) snails have entered rice fields but they do not appear to have caused significant impacts. Potential reasons include alternating rice with a terrestrial crop and flooding practices (i.e., waiting until plants are five weeks old to flood the fields) (Howells et al., 2006).

Worldwide Distribution: *Pomacea canaliculata* is native to South America, including Argentina and Uruguay. It has been introduced to and is reported from: **Africa:** Kenya; **Asia:** Widely distributed in

southeast Asia, including China, Japan, and Thailand; **North America:** United States (Arizona and California); **Oceania:** Hawaii; **South America:** Ecuador (California Department of Fish and Wildlife; Carlsson et al., 2004; Djeddour et al., 2021; Seuffert and Martín, 2025; Wada et al., 1999; Yang et al., 2013).

Official Control: *Pomacea canaliculata* is considered reportable by the United States Department of Agriculture (USDA regulated plant pest table).

California Distribution: Based on official samples, *Pomacea canaliculata* has been detected in the following counties in California: Alameda, Contra Costa, Fresno, Imperial, Los Angeles, Madera, Orange, Riverside, and San Joaquin. There are citizen scientist reports from four additional counties (Kern, San Diego, Santa Barbara, and Yolo), but there is some uncertainty about their identity (iNaturalist).

California Interceptions: *Pomacea canaliculata* was found in aquatic plant nurseries in California in 2014.

The risk *Pomacea canaliculata* poses to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** *Pomacea canaliculata* is a generalist feeder. It has broad environmental tolerances. There are likely suitable waterbodies over much of California. Therefore, it 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:** *Pomacea canaliculata* is a generalist and feeds on living and dead plant material. Therefore, it receives a **High (3)** 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:** *Pomacea canaliculata* is sometimes associated with nursery plants and it could be dispersed this way. 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.** *Pomacea canaliculata* is reported to be a rice pest. It could reduce yield and increase crop production costs in California rice. Methods of control used elsewhere include cultural ones. It is a USDA-reportable pest. It is a vector of rat lungworm. Therefore, it receives a **High (3)** in this category.

Economic Impact: A, B, C, D, E

- 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.** *Pomacea canaliculata* is reported to cause changes in water chemistry and algae concentrations. It could trigger treatments in rice. Therefore, this snail 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: 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 *Pomacea canaliculata*: High (14)

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: Based on official samples, *Pomacea canaliculata* is widely distributed in California, from the San Francisco Bay area south to Imperial County. It receives a **Medium (-2)** 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 (12)

Uncertainty:

This snail could be more widely distributed in California than is reflected by the official records. It is possible that existing rice cultivation practices in California may limit the potential impacts from this snail.

Conclusion and Rating Justification:

Pomacea canaliculata is a potential pest of rice in California, and it could have environmental impacts in the state as well. However, its present distribution is not consistent with an “A” rating. For these reasons, a “B” rating is justified.

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Responsible Party:

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***Comment Period: 08/14/2025-09/28/2025**

***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.

Pest Rating: B