

California Pest Rating

Zachrysia provisoria (Pfeiffer): Cuban Brown Snail

Gastropoda: Pleurodontidae

Pest Rating: A

Initiating Event:

Zachrysia provisoria is frequently intercepted by CDFA and is presently assigned a temporary rating of “Q”. A pest rating proposal is required to assign a permanent pest rating.

History & Status:

Background: *Zachrysia provisoria* is an air-breathing terrestrial snail that is considered to be a voracious pest of citrus, tropical fruits, vegetables, and most ornamental plants^{1,2}. It can be transported long distances when infested potted plants are moved.

Worldwide Distribution: *Zachrysia provisoria* is native to the Caribbean region. It was deliberately introduced to Florida in the early 1900’s and spread throughout much of the state¹. It is also found in Costa Rica¹.

Official Control: *Zachrysia provisoria* is not known to be listed as a quarantine pest by any other states or nations³. However, Australia, Chile, and Nauru list the entire class Gastropoda as harmful organisms³.

California Distribution: *Zachrysia provisoria* has never been found in the environment of California.

California Interceptions: *Zachrysia provisoria* was intercepted by CDFA’s high risk programs and border stations 192 times between January 1, 2000 and December 31, 2014 primarily on shipments of nursery stock from Florida. The snail has also been intercepted several times at nurseries within California.

The risk *Zachrysia provisoria* would pose to California is evaluated below.

Consequences of Introduction:

1) Climate/Host Interaction: Since the snail was introduced to Florida in the early 1900's it has spread as far north as Tampa¹. This corresponds to USDA plant hardiness zones 9b and above. This corresponds with most of coastal California, the central valley, and southern California. *Zachrysia provisoria* is likely able to establish throughout these regions and therefore receives a **High (3)** in this category.

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

- **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: *Zachrysia provisoria* is considered a voracious, polyphagous snail that feeds on citrus, tropical fruits, vegetables, and most ornamental plants. It receives a **High (3)** in this category.

Evaluate the host range of the pest. Score:

- **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: *Zachrysia provisoria*, like other snails, can be considered to have high reproductive potential. It is frequently transported long distances when infested plants are moved. This snail receives a **High (3)** in this category.

Evaluate the natural and artificial dispersal potential of the pest. Score:

- **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: *Zachrysia provisoria* is likely to reduce yields within California's nursery industry, gardens, and possibly farms by consuming crop and ornamental plants. The snail is likely to lower the value of nursery stock by disfiguring plants and contaminating them with its presence. All snails are considered quarantine pests by several of California's trading partners. If *Zachrysia provisoria* were to enter California it has the potential to disrupt a wide variety of exports. *Zachrysia provisoria* receives a **High (3)** in this category.

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

- 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.

- **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: If *Zachrysia provisoria* were to enter California it is likely that the snail will trigger chemical treatments in the nursery industry, farms and orchards, and by residents. The snail is also considered a voracious pest of most ornamental plants would be expected to significantly impact cultural practices, home/urban gardens, and ornamental plantings. *Zachrysia provisoria* receives a **High (3)** in this category.

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

- 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.

Score the pest for 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 *Zachrysia provisoria* (Cuban Brown Snail): High (15)

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: *Zachrysia provisoria* has not been found in the environment of California and receives a **Not established (0)** in this category.

Evaluate the known distribution in California. Only official records identified by a taxonomic expert and supported by voucher specimens deposited in natural history collections should be considered. Pest incursions that have been eradicated, are under eradication, or have been delimited with no further detections should not be included.

- **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:

The final score is the consequences of introduction score minus the post entry distribution and survey information score: **High (15)**

Uncertainty:

There have not been any recent surveys for *Zachrysia provisoria* in California. Due to the large number of interceptions it is possible that some snails may have escaped detection and entered the state. *Zachrysia provisoria* may be present in some places in California.

Conclusion and Rating Justification:

Zachrysia provisoria has never been found in the environment of California and is likely to have significant economic and environmental impacts if it were to enter the state. An “A”-rating is justified.

References:

¹ Capinera, John L. and Jodi White. 2011. Terrestrial Snails Affecting Plants in Florida. University of Florida Cooperative Extension Service. http://www.egovlink.com/public_documents300/winterhaven/published_documents/Winter%20Haven/Lakes/Backyard%20Wildlife/Animal%20Information/Snails%20and%20Slugs/Terrestrial%20Snails%20Affecting%20Plants%20in%20Florida%20IN89300.pdf

² Auggenberg, K. and L.A. Stange. 1993. The Camaenidae (Mollusca: Pulmonata) of Florida. Entomology Circular 356:

2. <http://www.cabdirect.org/abstracts/19941100836.html;jsessionid=73E26DBC3CD17A5EB1DA62566A564331>

³ USDA Phytosanitary Certificate Issuance & Tracking System (PCIT) Phytosanitary Export Database (PEXD). <https://pcit.aphis.usda.gov/pcit/>

Responsible Party:

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Comment Period:

The 45-day comment period was opened on Monday, March 16, 2015 and closed on Thursday, April 30, 2015.