

California Pest Rating Proposal for
***Nymphaea mexicana* Zucc.: banana waterlily, Family**
Nymphaeaceae
Pest Rating: C

Comment Period: CLOSED

Initiating Event:

This species is included on the CCR 4500 noxious weed list and is undergoing a periodic reevaluation of its status through the pest rating proposal process.

History & Status:

Background: The banana waterlily, *Nymphaea mexicana*, is a rhizomatous and stoloniferous aquatic perennial. The tips of the stolons produce clusters of small underground fleshy storage roots resembling small bananas, which are an important food for canvasback ducks (Wiersema, 1997; DiTomaso and Healy, 2003). The floating leaves are greenish on the upper surface and purplish on the underside, ovate to elliptic to suborbicular in shape, approximately 7 to 27 cm long and 7 to 18 cm wide, and basally cleft into two lobes. The flowers are radially symmetrical and approximately 6-12 cm in diameter, with the outer yellowish-green sepals in a distinct whorl of four and 12 to 30 yellow petals in a spiral arrangement. The submerged fruits are berrylike and green, bursting open at maturity to release 4 to 60 buoyant globose seeds approximately 5 mm in diameter (Wiersema, 1997; DiTomaso and Healy, 2003). It has been suggested by Wiersema (2012) that some of the plants in California that have been referred to *N. mexicana* could represent hybrids between this species and the widespread white-petaled North American species *N. odorata* (fragrant waterlily), which occurs disjunctly in northern and southern California. The hybrid, *N. x thiona* D. B. Ward, is reported to be completely seed-sterile (Wiersema, 1997).

Worldwide Distribution: Banana waterlily is native to central Mexico and is also considered to be native to the Coastal Plain of the southeastern United States (Wiersema, 1997; USDA NPGS GRIN database). It is considered to be introduced in the Central Valley of California (Calflora database) and in southern Arizona and southern Oklahoma. Similar plants are also naturalized in parts of South Africa, India, Australia, New Zealand and Spain, but these are quite possibly of hybrid origin (USDA

NPGS GRIN database). In addition to its natural or naturalized distribution, the species is also grown as an ornamental plant in ponds and water gardens.

Official Control: The species has been placed on the CCR 4500 List of noxious weeds by California, where it is a B-rated weed and restricted noxious weed seed.

California Distribution: Banana waterlily has been reported from a limited number of freshwater aquatic localities in Merced and Madera counties in the San Joaquin Valley and in Santa Barbara, Los Angeles, and San Diego counties in southern California (Consortium of California Herbaria; USDA PLANTS database).

California Interceptions: Banana waterlily was intercepted in a 2017 shipment of aquatic plants from Florida to California (CDFFA PDR database).

The risk banana waterlily would pose to California is evaluated below.

Consequences of Introduction:

- 1) Climate/Host Interaction:** 1) Climate/Host Interaction: Most of the geographic range occupied by banana waterlily is subtropical to warm temperate in climate with significant summer rainfall. The species is not common in the United States outside of Florida (Wiersema, 1997). Therefore, banana waterlily receives a **Medium (2)** in this category.

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

Score: 2

- 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:** Risk is **High (3)** as banana waterlily does not require any one host, but grows wherever ecological conditions are favorable.

Evaluate the host range of the pest.

Score: 3

- 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:** Seeds of banana waterlily are dispersed locally by water movement, but seeds are reported to be unable to survive drying (DiTomaso and Healy, 2003). Vegetative portions of
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the plant including rhizomes, stolons, and rootlets facilitate local spread within bodies of water, but there is little evidence of spread between bodies of water in California given the reported geographic distribution. Longer distance dispersal and introduction appears most likely to occur by vehicular movement or shipment of plant specimens for ornamental use. a **Low (1)** in this category.

Evaluate the natural and artificial dispersal potential of the pest.

Score: 1

- **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:** Banana waterlily has economic benefits as an ornamental plant in water gardens and as a food source for migratory waterfowl in California. It has the ability to block canals and other small waterways due to its vegetative spread by stolons and rhizomes, but its documented spread within California has been quite limited. Banana waterlily receives a **Low (1)** in this category.

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

Economic Impact: G

- 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: 1

- **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:** Banana waterlily can be invasive in small bodies of water such as lakes and canals, but has spread to only a very limited portion of its potential habitat. Therefore, it receives a **Medium (2)** in this category.

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.**
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- 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 banana waterlily: Medium (9)

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:** This plant has a localized distribution in limited parts of two contiguous suitable climate/regions in California. It receives a score of **Medium (-2)** in this category.

Score: -2

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

Final Score: *Score of Consequences of Introduction – Score of Post Entry Distribution and Survey Information = Low (7)*

Uncertainty:

It is unclear whether some of the populations attributed to banana waterlily in California could represent hybrids of this species and *Nymphaea odorata*.

Conclusion and Rating Justification:

Banana waterlily has benefits to California as an ornamental plant under controlled plantings and as a valuable food resource for waterfowl. It has the potential to block canals and other small waterways because of its stoloniferous growth habit, but the actual spread of the species from cultivation in California has been quite limited given that the climatic conditions in the state are much less appropriate to the species than those in southeastern states such as Florida. Thus a rating of “C” is justified.

References:

California Department of Food and Agriculture. Pest and Damage Record database (PDR). Accessed September 30, 2019:

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DiTomaso, J. M., and E. A. Healy. 2003. Aquatic and Riparian Weeds of the West. University of California Agriculture and Natural Resources Publication 3421.

USDA Agricultural Research Service. National Plant Germplasm System. Germplasm Resources Information Network (GRIN). Accessed September 30, 2019. <https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomysimple.aspx>

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Wiersema, J. H. 2012. *Nymphaea*. p. 152 in B. Baldwin et al. (eds.), The Jepson Manual, 2nd ed. University of California Press, Berkeley, CA.

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).

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.
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❖ 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: C
