

# USACE Natural Resource Management

## Crustaceans



### Vernal Pool Tadpole Shrimp

**Vernal Pool Tadpole Shrimp (*Lepidurus packardii*):** Mature vernal pool tadpole shrimp range from 0.6-3.3 inches in length. This species has a segmented abdomen and fused eyes. This shrimp can be identified by the large, shield-like carapace that covers the anterior half of the bodies. Additionally, this shrimp has a paddle-like supra-anal plate located between its paired jointed antenna-like appendages. (USFWS)

**Status:** *Endangered*, listed 1994

**NatureServe:** *Apparently Secure*

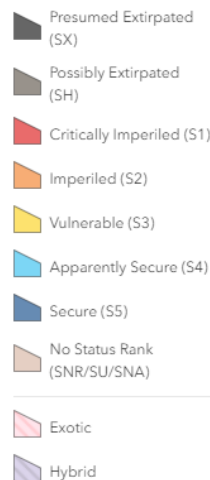
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Apparently  
Secure



Photo: Map of species' NatureServe status by state.

#### State/Provincial Conservation Status



**Order:** The order *Notostraca* is comprised of tadpole shrimp. These species have a pair of dorsal compound eyes and a broad, flat carapace which covers the head and thorax. The first pair of legs is used in swimming while other pairs are used for swimming, crawling, digging, and manipulating food. (Thorp and Covich's Freshwater Invertebrates Fourth Edition, 2015)

**Photos Left to Right:**  
Bill Stagnaro  
(University of California, Berkeley), University of California  
Merced, & Doug Wirtz  
(University of California, Berkeley)

### Management and Protection:

- The vernal pool tadpole shrimp occupies ephemeral freshwater habitats such as alkaline pools, clay flats, vernal lakes, vernal pools, vernal swales, as well as other seasonal wetlands in California. (USFWS)
- The vernal pool tadpole shrimp has a patchy distribution across the Central Valley of California, from Shasta County southward to northwestern Tulare County, with isolated occurrences in Alameda and Contra Costa Counties. (CNDDB 2007) Though this species has a relatively large geographic range, its habitat is highly fragmented. Furthermore, this species is uncommon in the habitats they occupy. (USFWS)
- Threats to this species are the same threats that impact all vernal pool species, the greatest of which is the loss and fragmentation of habitat. Habitat loss generally is a result of urbanization, agricultural conversion, and mining. Habitat loss may also be the result of habitat alteration and degradation which stems from changes to natural hydrology, invasive species, improper grazing regimes, infrastructure projects, and/or climatic or environmental changes. (USFWS)



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**USACE ROLE:** According to the Engineering Research and Development Center's Threatened and Endangered Species Team Cost Estimates, the U.S. Army Corps of Engineers has incurred over \$686,000 in costs related to the vernal pool tadpole shrimp since 2006. These costs have been incurred by multiple business lines including Environmental Stewardship, Flood Risk Management, Regulatory, and more. Expense types include Site Visits and Inspections, Research, Inventory, Survey, and Monitoring Efforts, and more.



**Vernal Pool Tadpole Shrimp = \$686,915 (2006)**

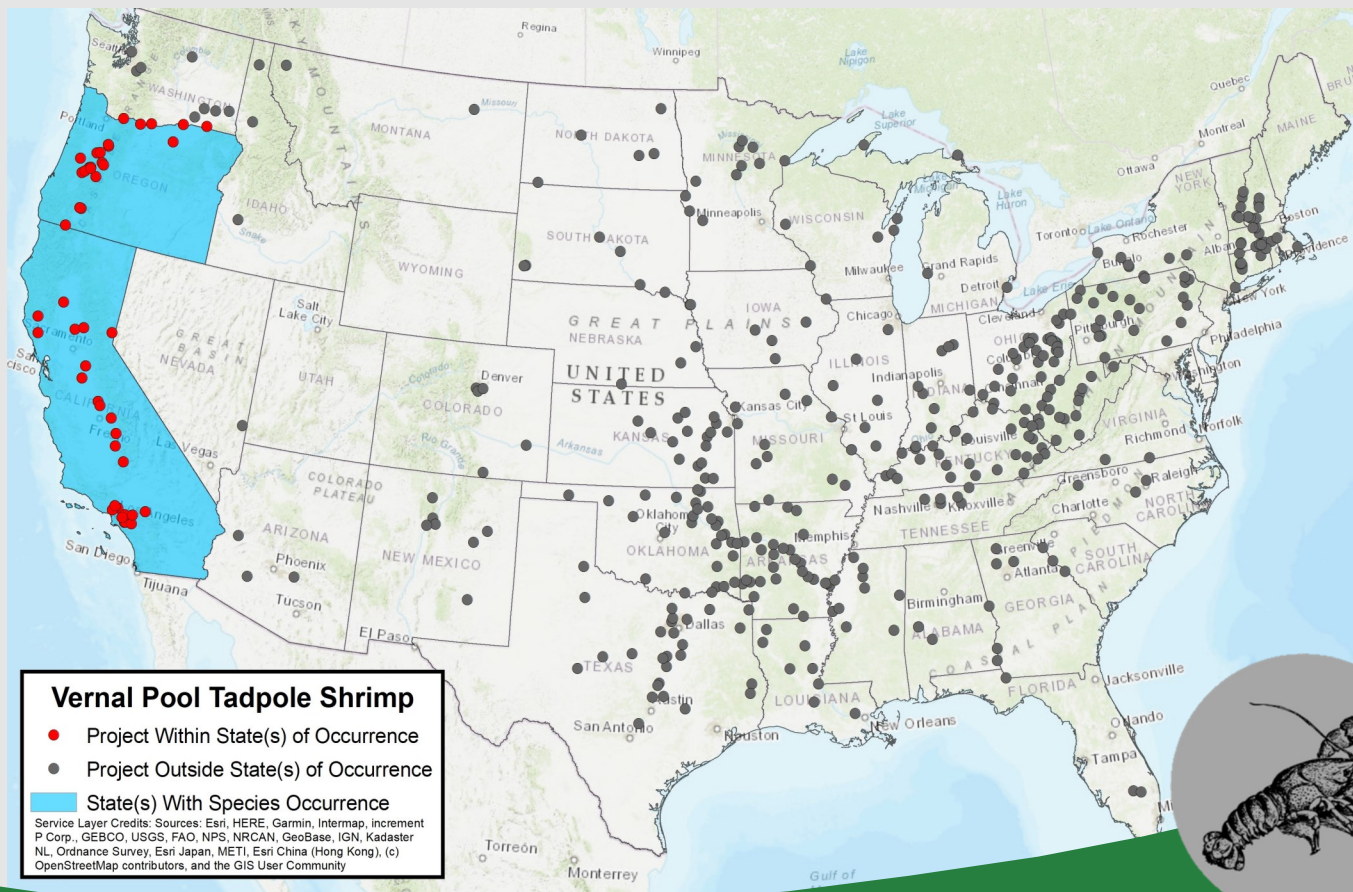
**What is USACE NRM Doing:** The vernal pool tadpole shrimp's range spans across much of central California and a small portion of southern Oregon. In the FY20 NRM Assessment it is listed by a single project. The New Melones (Stanislaus River) project of Sacramento District consists of nine beautifully developed recreation areas located along the river as it stretches from the Sierra Nevada foothills to its confluence with the San Joaquin River. This project is noted to have the potential for the vernal pool tadpole shrimp to occur in the FY20 NRM Assessment.

Here and across the nation, USACE employees strive to ensure that threatened and endangered species, like the vernal pool tadpole shrimp, are not negatively impacted during project management activities.



*Photo: Knights Ferry Bridge of the Stanislaus River Parks, near Oakdale, California, Sept. 5, 2018.*

*This fact sheet has been prepared as an unofficial publication of the U.S. Army Corps of Engineers (USACE). This online publication is produced to provide its readers information about best management practices related to special status species. Editorial views and opinions expressed are not necessarily those of the Department of the Army. Mention of specific vendors does not constitute endorsement by the Department of the Army or any element thereof.*



Source: Map provided by Ashleigh Boss, Biological Scientist, Institute for Water Resources

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