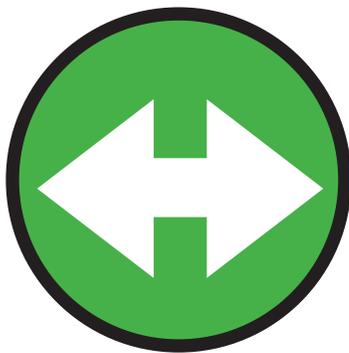


# WESTERN POND TURTLE

*Actinemys marmorata*



**Condition: Good**  
**Trend: No Change**  
**Confidence: High**



## WHY IS THIS RESOURCE INCLUDED?

Western pond turtles are good indicators of freshwater aquatic conditions and, to some extent, terrestrial grassland conditions. In their aquatic habitat, they are vulnerable to predation and competition with invasive species. On land, breeding adults, nests, and hatchlings are vulnerable to habitat degradation and predation by overly abundant ravens, crows, skunks, and raccoons.

The western pond turtle is a California Department of Fish and Wildlife (CDFW) species of special concern and is considered vulnerable to climate change. The Marin Municipal Water District (MMWD) has been monitoring this species since 2004, and has implemented restoration and other protection measures for it in the One Tam area of focus. The National Park Service (NPS) also has western pond turtle inventory data from the One Tam area of focus from 1996 and 2014–2015.

## OVERALL CONDITION

Western pond turtle populations have declined dramatically throughout the State of California in recent decades. Historic population records and museum specimen collections have not been systematically reviewed for the One Tam area of focus, with the exception of Museum of Vertebrate Zoology (MVZ) and records compiled by Barbara Stein and also by Mark Jennings covering NPS lands.

Anecdotal accounts from long-time residents report turtles from a large backdune pond at Stinson Beach that has since been filled and converted to a parking lot. The small numbers of western pond turtles at Muir Beach observed by consultants and researchers in the early 1990s have disappeared. A 2003 survey conducted by Garcia and Associates on behalf of MMWD was not comprehensive. However, combined with several years of turtle trapping and five years of volunteer observations, there is some information for this species on MMWD lands.

Volunteer and biologists' observations between 2003—2016 were consistently low, regardless of the level of effort. The majority of western pond turtles observed were mature adults. Non-native turtles were observed far more frequently and these observations include more hatchlings and juveniles.

## DESIRED CONDITIONS

The western pond turtle population in the One Tam area of focus should be stable or increasing with an age distribution that indicates successful reproduction and recruitment.

## STRESSORS

**Non-native and Unnaturally Abundant Predators:** Non-native American bullfrogs (*Lithobates catesbeianus*) and bass (*Micropterus spp.*) prey on western pond turtles. Certain native predators such as skunks (*Spilogale spp.*), raccoons (*Procyon lotor*), ravens (*Corvus corax*), and crows (*Corvus brachyrhynchos*) thrive near human development and can reach higher than normal numbers in places like Marin County and the One Tam area of focus.

**Competition:** Red-eared sliders (*Trachemys scripta elegans*) and other non-native turtles in Mt. Tam's ponds and reservoirs may compete with western pond turtles for basking habitat or food. Large numbers of non-native turtle nests may also attract predators to western pond turtle nesting areas.

**Habitat Modification:** Western pond turtles can be killed when crossing roads as they travel between aquatic habitats or when migrating to nesting sites.

**Climate Change:** Temperature increases and/or changes in precipitation patterns as a result of climate change could affect the streams and small ponds that this species depends upon.

## METRICS AND GOALS

Metric	Condition Goal	Status
<p><b>Metric 1</b> Habitat occupancy (lakes, ponds, streams, freshwater marshes) in current versus historically occupied water bodies</p>	Proportion of sites occupied by western pond turtles is similar or higher than historic conditions	
<p><b>Metric 2</b> Abundance</p>	Population numbers increasing or stable against the baseline	
<p><b>Metric 3</b> Age structure</p>	<ul style="list-style-type: none"> <li>Conduct research into the reproductive success and early life stage survival of western pond turtles in MMWD reservoirs</li> <li>Determine whether management action is needed to increase the rate of recruitment</li> </ul>	

## INFORMATION GAPS

**Population Drivers:** We do not know enough about factors such as egg and hatchling predation rates that affect western pond turtle abundance, survival, and recruitment. The root cause of the decline and loss of western pond turtles from Muir Beach area is also not known. Additional research on the influence of local coastal climatic conditions on breeding ecology is also needed.

**Demographics:** Data are lacking on age and size structure composition of sustainable western pond turtle populations in coastal California.

**Surveys:** Some presence/absence surveys of historic populations were not covered by the 2003 MMWD surveys.