

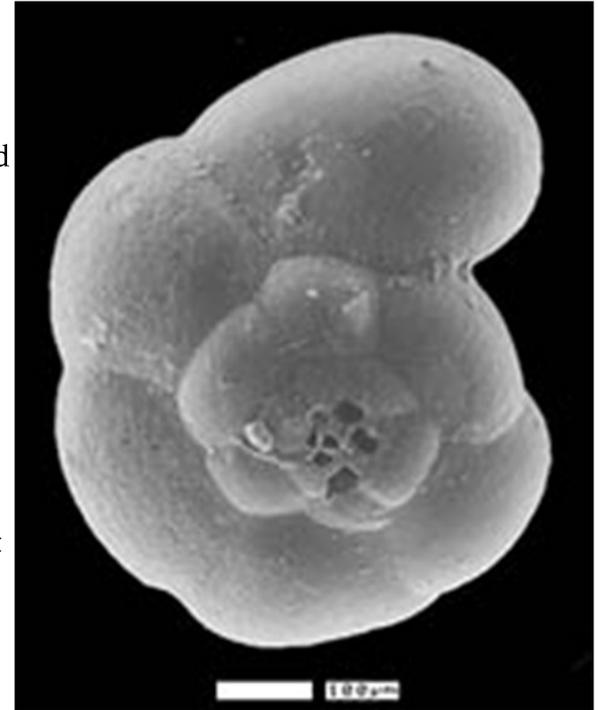


Trochammina hadai

Foraminiferan

Threat scores

1. Ecological impact
 - Although it is still too early to fully quantify the impact of this foraminiferan on estuary ecosystems, a study conducted in San Francisco Bay revealed that it dominated nearly one-third of the Foraminiferan assemblages, indicating that this type of Foraminiferan may be capable of replacing native Foraminiferans (Molnar 2008).
2. Invasive potential
 - If spread on water currents, there is a high potential for continued distributions in Pacific ocean.
3. Geographic extent
 - Locally patchy
4. Management difficulty
 - There are no known control measures for foraminiferans once they are established. The best control measure is ballast water management and treatment.
 - Controlling organic discharges into the marine environment can also help control populations.



Geography and Habitat

1. Origin: It is likely that this foraminiferan's native distribution is the Northwest Pacific, including Japan. Although this foraminiferan's exact origin is certain, and could include the west coast of North America (Molnar 2008).
2. First introduction: 1971
3. The earliest records in Puget Sound of Trochammina hadai Uchio, a benthic foraminifer common in Japanese estuaries, is from surface sediment collected in 1971 from Cornet Bay, March Point, Drayton Harbor, and Padilla Bay (Molnar 2008).
4. Marine, estuaries/bays, brackish water
5. It is more abundant on muddy rather than sandy substrates, and thrives in estuaries year-round with saturated oxygen conditions.

Invasion Pathways

1. Dredge Spoil Material
 - Accidental
 - Cause- shipping
 - Anchor mud
2. Ballast Water and Sediments
 - Accidental
 - Cause- shipping
 - Ballast water - found in eleven of thirty samples from tanker ballast in Prince William Sound

3. Ballast Water and Sediments
 - Accidental possible
 - Cause- shipping
 - Solid ballast - found in eleven of thirty samples from tanker ballast in Prince William Sound
4. Natural Spread
 - Cause- water currents
 - Dispersal in water currents

Non native locations

1. 54- Gulf of Alaska
2. 56- Puget Trough/Georgia Basin
3. 58- Northern California

Sources

1. Molnar, Jennifer, et al. 2008. "Assessing the global threat of invasive species to marine biodiversity." *Frontiers in Ecology and the Environment*. 6 (9), pp. 485-492.
2. <http://conserveonline.org/workspaces/global.invasive.assessment>
3. <http://sciencematters.berkeley.edu/archives/volume4/issue25/images/story2-2.jpg>