



Musculista senhousia

Bag mussel, Green bagmussel, Green mussel, Senouse's mussel, Japanese mussel, Asian date mussel

Threat scores

1. Ecological impact
 - Negatively affects ecosystem.
 - Form dense mats, affect native species due to food competition. Blamed for smothering and killing bivalves, including cultivated clams, in China and Japan. Enhance growth of eelgrass in Southern California.
2. Invasive potential
 - Possible natural range expansion through the Suez Canal. Fits the classical concept of opportunist: a long planktonic dispersal stage, small, variable body size, high fecundity, short life-span.
3. Geographic extent
 - Regionally pervasive
4. Management difficulty
 - Air exposure/dessication/freezing, commercial harvesting for food and fertiliser, dredging/beamtrawling/mopping, heated water treatment (baths, spray).



Geography and Habitat

1. Origin: Asia from Siberia, the Kurile Islands, Japan, and Korea along the China coast to Singapore
2. First introduction: 1924
3. First Pacific Coast record was on planted oyster beds in Puget Sound in 1924.
4. North America: California, Oregon, Washington
5. Marine, estuaries/bays, intertidal zones, aquaculture
6. Lives on both hard and soft substrates in the intertidal and shallow subtidal zones to 20 m depth. It is reported to be tolerant of low salinity and low oxygen levels.

Invasion Pathways

1. Natural Spread
 - Known
 - Cause- Planktonic larval stage
 - Planktonic larva spread in water column
2. Ballast Water and Sediments
 - Accidental probable
 - Cause- planktonic larvae
 - Transported in ships ballast
3. Canals that connect waterways
 - Accidental probable
 - Cause- Larvae transported through canals
 - Most likely transported to Mediterranean via Suez Canal
 - Cause- oyster and clam farming

4. Stocking in Open Water

- Accidental probable
- Cause- oyster and clam farming
- "In French lagoons, populations have been probably imported with oysters for farming from Japan, around 1978. The Adriatic populations were possibly introduced with the clam *Tapes philippinarum*, imported for aquaculture in 1986." [Molnar 2008]

Non native locations

1. 56- Puget Trough/Georgia Basin
2. 57- OR, WA, Vancouver Coast and Shelf
3. 58- Northern California
4. 59- Southern California Bight

Sources

1. <http://www.issg.org/database/species/ecology.asp?si=1031&fr=1&sts>
2. <http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=105>
3. 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.
4. <http://conserveonline.org/workspaces/global.invasive.assessment>