



Burrowing Shrimp Species in Willapa Bay and Grays Harbor



Ghost Shrimp (*Neotrypaea californiensis*)



Mud Shrimp (*Upogebia pugettensis*)

Distribution and Habitat

- **West Coast native** found from southeast Alaska to Baja California
- Most abundant in the **mid to upper intertidal** zones, especially when co-occurring with mud shrimp
- Rarely present in dense eelgrass habitat

- **West Coast native** found from southeast Alaska to Baja California
- Most abundant in the **mid to low intertidal** zones
- Sometimes found in eelgrass habitat

Feeding and Behavior

- **Spend their entire lives in extensive burrows** that can extend 90 cm deep, but typically extend 50-60 cm
- **Dig complex burrows** with connected tunnels and chambers and multiple openings and mounds at the surface
- **Deposit feeders** that eject sediment from the burrow as they eat particulate organic matter

- **Spend their entire lives in extensive burrows** that can extend 90 cm deep, but typically extend 50-60 cm
- **Dig simpler Y-shaped burrows with two** openings and no mounds at the surface, and line them with 1-3 mm of mucus
- **Suspension or filter feeders** that eat particulate organic matter
- **Mucus lining in burrows** may help trap food items

Conditions

- **Well-adapted to harsh conditions** such as low-oxygen, low-salinity, and toxic sulfides
- Less tolerant of lower salinity than mud shrimp
- **Burrowing activity declines in the winter** when temperature and salinity are lower

- **Well-adapted to harsh conditions** such as low-oxygen, low-salinity, and toxic sulfides
- Slightly less tolerant of low oxygen than ghost shrimp, perhaps because filter feeding increases oxygen inside burrows
- **Burrowing activity declines in the winter** when temperature and salinity are lower

Life History

- Sexually dimorphic (i.e., males and females are different sizes)
- **Females produce 3,900 eggs in spring** that hatch in summer
- Larvae are flushed into the ocean, **passing through 5 developmental stages over 2 months** before returning
- Juveniles **settle in the estuaries from July to December**
- **Slower and more variable growth rates** than mud shrimp, with **life spans up to 13+ years**

- Sexually dimorphic (i.e., males and females are different sizes)
- **Females produce 7,100 eggs in fall** that hatch in spring
- Larvae are flushed into the ocean, **passing through 3 developmental stages over 1 month** before returning
- Juveniles **settle in the estuaries from April to July**, preferring areas with other mud shrimp present
- **Faster and more consistent growth rates and shorter life spans** compared to ghost shrimp

Threats

- **Predators:** staghorn sculpin, green and white sturgeon, cutthroat trout, starry flounder, salmon, Dungeness crab, and gray whales
- **Parasite:** native bopyrid isopod

- **Predators:** staghorn sculpin, green and white sturgeon, cutthroat trout, starry flounder, salmon, Dungeness crab, and gray whales
- **Parasite:** nonnative bopyrid isopod

Population Trends

- **Fluctuating population** in Willapa Bay, with a peak in 1995 subsequent decline until 2009, and **population growth in 2016**
- Likely influenced by large scale ocean and climate conditions

- **Fluctuating population** in Willapa Bay before **experiencing substantial decline in 2003, likely due to female sterility caused by parasitic isopods.**
- Likely influenced by large scale ocean and climate conditions



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