



Is the commercial harvest of burrowing shrimp affecting the annual stop-over feeding by gray whales?



Gray whales feed on benthic invertebrates in the Whidbey Basin.



Burrowing shrimp are commercially harvested on state owned aquatic lands and are also consumed by the Gray Whale.



Sediment cores were taken to count density of burrowing shrimp.

DNR is challenged with determining if the commercial harvest of burrowing shrimp (*Neotrypaea californiensis*) is affecting the yearly feeding on these shrimp by the spring resident population of Gray Whale (*Eschrichtius robustus*) in Puget Sound's Whidbey Basin.

Every spring, during an annual migration from warm birthing waters in the Gulf of California to feeding waters in the North Pacific, a subset of the gray whale population (annual average ~ 10 individuals) stopover in Whidbey Basin to suction feed on benthic invertebrates. Burrowing shrimp are thought to be a main food source for the whales during this stopover. An investigation was conducted to estimate a standing stock of burrowing shrimp (in number and biomass), as well as estimate the quantity of burrowing shrimp fed on by gray whales in Whidbey Basin.

Whale feeding pit size was measured and 0.10 meter diameter sediment cores were taken to 0.7 meter depth to count density of ghost shrimp present inside and outside of those pits. Total feeding pit numbers were counted from May 2015 (corresponding to whale feeding season) with low tide aerial imaging. Shrimp densities per square meter were assessed at twelve different sites, classified into one of three categories: (1) whale feeding, (2) commercial harvest, and (3) no whale-no harvest sites. Estimated stocks were compared to commercial harvest data from the past five years.

Results indicate that neither shrimp density nor biomass were significantly different across the three site types. Annual whale feeding and harvest combined account for only a small portion of the total shrimp stock available. Commercial harvest of burrowing shrimp is not affecting the yearly feeding of these shrimp by the gray whale.