

Diet performance on Dungeness crab (*Metacarcinus magister*) survival and growth in captivity

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Dungeness crab (*Metacarcinus magister*) is the second most valuable species in California due to its abundant fishery and market demand. As climate change affects the California Current ecosystems, scientists are working to understand how those changes will impact Dungeness crab populations. In order to identify an optimal diet for Dungeness crabs subjected to manipulative experiments, we conducted a feeding study in the laboratory. We collected fifty-five juvenile Dungeness crabs from Tomales Bay, CA in July and August 2020. We randomly placed the crabs into 4 experimental groups with different food sources; California mussels (*Mytilus californianus*), ghost shrimp, anchovy (*Engraulis mordax*), and a combination of those three species. We also starved a control group. We fed the crabs on a 48 hour interval from the previous feeding, with the feeding duration being 24 hours, after which we removed and weighed the remains. The duration of the feeding trial was six weeks. We measured buoyant weight, wet weight, length and width of carapace, and took pictures at the start and end of the feeding trial for comparison. Anchovy fed crabs had the lowest survival rate with only two surviving the length of the trial, this could be attributed to the remains of the anchovy decomposing in the containers poisoning the crabs. Five of the mussel fed crabs survived, and seven of both the shrimp and mixture fed crabs survived, while all of the starved crabs survived. The survivability of the starved crabs may be a result of the absence of rotting food, and possibly reduced respiration from not having to digest food. The difference in the number of crabs that molted in each group was not significant. These findings can be used to select the best food source and feeding regime when studying other pressures on *M. magister*.



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