The Sperm Plug Is a Reliable Indicator of Mating Success in Female Dungeness Crabs, *Cancer magister*

by

Shauna J. Oh

A Thesis
Presented to
The Faculty of Humboldt State University

In Partial Fulfillment
Of the Requirements for the Degree
Master of Sciences
In Natural Resources: Fisheries

May, 2000

ABSTRACT

Exploitation rates for legal-sized (> 159 mm carapace width) male Dungeness crabs, *Cancer magister*, often reach 90% in the northern California fishery, thus making large male crabs scarce and possibly reducing mating success among large (> 140 mm carapace width) female crabs. Relying on known laboratory molting and presumed mating, we characterized temporal changes in proximal sperm plugs of female *C. magister* from 4 d through 323 d following molting and mating. Although sperm plug surface area decreased steadily with increased days following mating, we found that complete sperm plugs and/or sperm plug remnants were present through approximately 180 d post mating, a period exceeding the approximately four month duration of the mating season for Dungeness crabs in northern California. Based on dissection and identification of sperm plug presence, we assessed mating success of female Dungeness crabs at two locations in northern California during June and July of 1997, following the February-May mating season. Among 589 females crabs (87-167 mm carapace width) classified as having definitely molted on the basis of shell condition observations, we found that 93% had complete sperm plugs or remnants of sperm plugs in vaginal tracts. Among the 335 large (>140 mm) definitely molted female crabs, sperm plug presence was 98.5%. Thus, despite the intense fishery on large male Dungeness crabs, sperm plug data provide evidence of essentially 100% mating success among large female crabs during 1997.

ACKNOWLEDGEMENTS

This project was funded by a grant from the National Sea Grant College Program, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, under grant number NA66RG0477 project number R/F-18PD through the California Sea Grant College Program.