INTERANNUAL VARIATION IN GROWTH AND FECUNDITY OF FEMALE DUNGENESS CRAB (*CANCER MAGISTER)* IN NORTHERN CALIFORNIA

by

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ABSTRACT

Interannual variation in growth (size-specific molt increments and annual molting probabilities) and fecundities were examined in female Dungeness crabs collected in northern California during 1981 - 1983 and 1992 - 1993. Size-specific fecundities ranged from less than 100,000 to more than 1,500,000 eggs over carapace widths ranging from 116.4 mm to 165.8 mm during 1992 and 1993 (n = 166). Fecundities were positively correlated with carapace widths in all years, but fecundities of non-molted crabs were generally less than those of recently molted crabs. Reductions in fecundity averaged about 46 percent for definitely non-molted crabs as compared to other categories in 1992, and averaged 20 percent for probably non-molted crabs as compared to other categories in 1993. A total of 261 molting records were generated from laboratory moltings of female Dungeness crabs collected from premating embraces in Spring 1992 and 1993. No significant differences were found between these laboratory data (laboratory molting) and field data (tag-recovery) collected in 1981 and 1982. Statistically significant differences in size-specific molt increments existed across sampling years 1981, 1982, 1992 and 1993, but had only a minor effect on estimating molting probabilities. Shell condition observations were made for 10,361 female Dungeness crabs sampled on two occasions (June and July) at two geographically separated locations in 1992 and 1993. Size-specific annual molting probabilities estimated from 1993 shell condition data were similar to those previously reported based on 1983 data and showed that molting probabilities declined steeply from near one for carapace widths less than 135 mm to near zero among crabs exceeding 155 mm. In contrast, annual molting probabilities estimated from 1992

shell condition data were extremely high among large females (those exceeding 140 mm carapace width). These data suggest that interannual variation in size-specific fecundities and molt increments is relatively small, whereas interannual variation in molting success may be large and must contribute to substantial interannual variation in egg production within a population.

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