CRITERIA FOR COASTWIDE CRAB CONDITION SAMPLING

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INTRODUCTION

At the June 3, 1975 meeting of the Dungeness Crab Subcouncil, it was pointed out that a bill pending action in the California Legislature would provide emergency authority for the California Department of Fish and Game to delay the opening date of the crab season up to one month if the crabs were in poor condition. If this change in California's regulations occurred and season adjustments had to be made, the states of Washington, Oregon and California would need to sample crab for shell condition or some other indicator of meat yield. Any coastwide sampling program would have to be conducted uniformly so that data generated in the three states would be comparable. Consequently, the Dungeness Crab Subcouncil directed the Scientific Committee to develop criteria for determining crab condition that would be applicable in all three states. This report was developed by the Scientific Committee Subcommittee to comply with that directive.

METHODS FOR DETERMINING CRAB CONDITION

Two methods for determining crab condition are considered acceptable at this time. The first method consists of the physical application of pressure to a crab's exoskeleton to determine how recently the animal had molted. The theory is that a crab with a soft or flexible shell is a crab that has not completely filled out with meat since shedding. The second method for evaluating condition consists of determining the percent pick-out or meat yield. Following are recommended procedures for each of the above methods:

Shell Condition

(1) Sample a minimum of 100 legal-sized male crab per sampling area. Sample sublegal males when available.
(2) Classify crabs as condition I, II, or III. These conditions will be determined by squeezing the carapace between thumb and forefinger at the base of the tenth antero-lateral spine (lateral horn). Criteria for the three classes of condition are:

- **Condition I.** Shell hard, little or no flexibility in the carapace.
- **Condition II.** Shell hardening, intermediate (flexible) between I and III.
- **Condition III.** Recently molted softshells, flexible and easily cracked by finger pressure.

(3) Make observations on width frequencies, mating marks and shell color. The latter two items could indicate to what extent molting may be imminent.

It is recognized that at times exceptions to the above classification may have to be made. Crabs with old, discolored and barnacled shells can be relatively flexible prior to molting, but are to be considered condition I. Crabs in some areas near the Columbia River never get as firm as those from other areas (rubber legs) and when recognized should be classified as condition I.

**Pick-out (Meat Yield)**

1. Sample a minimum of 100 legal-sized male crabs per sampling area.
2. Hold crabs in seawater until just prior to processing.
3. Process crabs within 24 hours of capture.
4. Drain crabs approximately five minutes immediately after removal from water and then place in plastic tubs.
5. Record green weight of crabs to the nearest pound, including any additional drained water or blood loss.
7. Cook sections in freshwater and recover all legs and body parts.
8. Cool prior to picking.
9. Pick-out all meat except that in leg tips within 24 hours using conventional shake-out procedures.
(10) Weigh picked meat (wet meat yield).
(11) Brine picked meat by standard brining procedures.
(12) Drain brined meat 15 minutes and weigh.
(13) Calculate yields - wet weight and brined weight.

RECOMMENDED PROCEDURES FOR PRESEASON SAMPLING

We recognize that the pick-out or meat recovery method would provide the best measure of crab condition. However, pick-out percentages acceptable to the different processors vary and procedures are not standardized. This is due in part to the fact that some processors sort out the better crabs for sale as wholeshells and pick-out the "junk" crabs, some processors may pick-out all the crabs, and other processors may sell all or nearly all crabs as wholeshells. Studies done in Washington indicate that pick-out percentages determined as outlined in this report would consistently provide higher meat yield estimates than those determined by industry.

In view of the foregoing we recommend that the shell condition method be adopted as the basic method to be used for determining crab condition prior to the season opening, and whenever possible pick-out data should also be obtained to substantiate the shell condition data.

Following are recommended procedures for preseason sampling:

(1) Use pot run samples only.
(2) Sample a minimum of 100 legal-sized male crabs per sampling area and a minimum of 500 crabs per state per sample period.
(3) Sample within 40 days prior to the scheduled season opening. The need for further sampling would depend upon results of the initial samples.
(4) Classify crabs as shell condition I, II, or III as described earlier and calculate the percentage by grade. For descriptive purposes softshells are condition II and III crabs, and hardshells are condition I crabs.
(5) Examine condition I crabs for mating marks, barnacles, etc. to determine percentage that are prospective molters.

RECOMMENDED CONDITION CRITERIA FOR SEASON OPENING

If preseason sampling indicates that less than 80 percent of the crabs would be hardshell at the season opening, consideration should be given to delaying the season opening. A hardshell percentage of 80 percent would minimize discard handling mortality and would provide reasonably high quality crabs that would yield approximately 25 percent wet meat recovery as determined by the methods outlined in this report.

Prepared for the State/Federal Dungeness Crab Management Program
August 1975