**A Snow Crab by the Sum of its Parts – Protocol (Surette)**

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| **Why :** |  | **How :** |
| *We need a way to estimate crab weight which can account for missing legs, which is a common occurrence in snow crab.* |  | *Freeze then dissect crab, weighing each individual leg and the central body disc.* |

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| Details are in the caption following the image |
| **Figure :** Snow crab external anatomy. Left-hand side shows the dorsal view and the right-hand side shows the ventral view. |

**Materials:**

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| * Vernier calipers (both regular and modified ones with plates). | * Camera with ruler. * Tags and identify crab samples. |
| * Large plastic bags to freeze crab. * Mass scales. | * Stainless steel pliers / cutters for cutting frozen legs. |

**Crab sampling:**

* Only male crab larger than 75 mm carapace width are to be measured.
* Sample **intact crab only.** Do not sample crab with cracked or broken shells or legs, or crab which have lost legs during trawling or sampling. Crabs which have **lost legs** **naturally** (i.e. leg joint is covered by a black cap) or that **have regenerating legs** (i.e. have some legs that are smaller than they should be) **can and should be sampled**.
* Sample crab opportunistically. There is no sampling design. Measurement can take place **when time permits**.
* A total sample size of 50-100 crab is desired.

**Crab measurement:**

1. Record crab **sample number** on recording sheet.
2. **Weigh** whole crab.
3. Take a **dorsal** and **ventral photo** for each crab. Make sure to **include crab sample number** in photo or in photo file name. Take photo on measuring board or include ruler in photo.
4. Using a caliper, **measure** each crab for **carapace width**, **chela height**, and the **merus length** for each walking legs.

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| A diagram of a crab  Description automatically generated |
| **Figure 2** : Lateral view of the right merus of snow crab leg showing how to measure the **merus length** and merus width (not necessary). |

1. **Freeze** whole crab (e.g. freezer, dry ice, liquid nitrogen). If placing crab in freezer, place crab in plastic bag with a paper tag containing crab ID info.
2. Crab should not be left in freezer too long as they could dry out (maximum 7 days).
3. Remove frozen crab, **reweigh whole crab**.
4. For **each crab** **leg**, **cut off** at the attachment joint to the body (mimicking natural leg loss) and **weigh**. The goal is to perform a cut that mimics how legs are lost naturally (see below). Don’t let the legs thaw out : water loss would bias weight measurements.

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| Close-up of a crab  Description automatically generated | A close-up of a crab  Description automatically generated |
| **Figure 3** : Example of snow crab leg that was lost naturally (*left photo*) and legs that were cut in the lab (*right photo*). | |

**Table 1 : Summary of crab measurements**

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| **Body part** | **Size (mm)** | **Weight (g)** |
| Whole body | *----* | *before / after freezing* |
| L1 - cheliped | *claw height / merus* | *whole leg* |
| L2 - leg | *merus* | *whole leg* |
| L3 - leg | *merus* | *whole leg* |
| L4 - leg | *merus* | *whole leg* |
| L5 - leg | *merus* | *whole leg* |
| R1 - cheliped | *claw height / merus* | *whole leg* |
| R2 - leg | *merus* | *whole leg* |
| R3 - leg | *merus* | *whole leg* |
| R4 - leg | *merus* | *whole leg* |
| R5 - leg | *merus* | *whole leg* |
| Body - disc | *carapace width* | *disc only* |