**Table X** : Summary table of hypotheses to explain why legal-sized crab have not shown the 2019-2020 increase of 30-40%, ascribed to survey catchability issues, observed in sub-legal crab.

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| **Process** | **Hypothesis** | **Sub-legal size crab** | **Legal-size crab** | **Likelihood** | **Explanation** |
| **1. Migration** | **1.1 External migration** | The scale of the increase in females and sub-legal males would have required massive immigration from the Eastern Nova Scotia and Quebec stocks, both of which are dwarfed by sGSL snow crab. | Negligible influx | Extremely low | Increases among sub-legals are not adjacent to adjoining crab populations, being concentrated hundreds of kilometers inside the sGSL. Moreover, the scale of the increases dwarf these stocks in size. Tagging results indicate that commercial males travel an average of 16.7 km over a year (Biron et al. 2008). |
|  | **1.2 Internal migration** | Massive movement of crab during the survey from regions that have already been surveyed into unsurveyed regions. | Negligible movement during the survey | Very low | The scale of movement would need to be massive and coincide with survey operations. There is no explanation he supposed large difference between the movement of sub-legal and legal sized crab. |
| **2. Catchability** | **2.1 Local effects** | Sub-legal crab were located in regions where survey catchability increased | Legal-sized crab were not located in regions where survey catchability increased or were located where survey catchability decreased | Low | Legal and sub-legal sized crab had broadly comparable spatial distributions. Known increases in passive swept area, though they may vary from tow to tow, are expected to scale sub-legal and legal-sized crab to similar degrees. |
|  | **2.2 Size effects** | Large catchability increased, driven by increase in net selectivity, optimization of trawl configuration, or significant increase footrope contact. | No increase in catchability | Low | Some degree of size-selective changes may have accompanied the survey vessel change of 2019. What is at odds with trawl driven selectivity is the sharp delineation between the scales of the sub-legal and legal sized crab, a change which occurs over a narrow size range from 90 to 100mm CW. This echoes known selectivity of fishing traps, that by design target crab at or around the 95mm CW size. |
| **3. Mortality** | **3.1 Low mortality event** | Large decrease in natural mortality | No change in natural mortality | Very low | Even assuming negligible mortality among sub-legals cannot account in the large year-over-year increase that was observed. |
|  | **3.2 Discard mortality** | Not applicable | Massive increase in natural mortality | Moderate | Large-scale redistribution of fishing effort due to NARW area closures and inefficient or absent monitoring of soft -crab by-catch may have resulted in a large increase in by-catch mortality in 2019 and 2020. |
| **4. Recruitment** | **4. Large recruitment event** | Large increase in survey population recruitment among sub-legals from 35-95mm | No increase in population recruitment (excluding fishing recruitment, which is quantified) | Extremely low | Population recruitment occurs at small sizes < 35 mm CW. Crab take many years to grow to legal size and the rate of growth is well characterized at about an annual increase of 10mm or so per year. Cohorts are visible in size-frequency plots, following known growth rates. |