* The 2019 snow crab survey vessel change was accompanied by significant increases of 30-40% among male and mature female snow crab from 35mm to 95 mm CW (Figure X).
* These catch increases strongly suggest an increase in survey catchability, as natural processes (i.e. recruitment, migration or low mortality) cannot account for such increases over the observed size range.
* Investigations suggested that an increase in the duration of latent bottom trawling phase during hauling of the net, referred to as the passive trawling phase, was at least partially to blame.
* Protocol changes brought in during the 2020 survey largely failed to solve these issues, with only a modest 5-10% decrease in catches observed in the above groups.
* In contrast, commercial sized-crab remained at similar levels over the same period (2018-2020).
* The behavior of the trawl during the passive trawling phase, in contrast to regular trawling, is not well characterized.
* Moreover, the scale of the observed catch increase among sub-legals could not be solely explained by an increase in passive phase trawling, which only added 12% to the total swept area in 2019 relative to 2018.
* This suggests that some unknown mechanism, possibly related to the survey vessel change, have contributed to the increase.
* The uncertainty surrounding the mechanisms underlying the catchability among sub-legals, plus the complex dynamics of the commercial stock, mean that quantifying their impact on the commercial component was difficult to resolve.
* Two indirect methods of estimating the bias on the commercial stock were proposed. One was a classical Leslie analysis, which estimated pre-fishery biomass based upon trends in observed weekly fishery CPUEs, and the other based on the difference between the 2020 residual biomass and its predicted value based on 2020 landings and the 2019 total commercial biomass with a 30% annual mortality.
* Estimated overestimation biases for 2020 were estimated 14.X% using the Leslie analysis and X% using the residual biomass method, relative to 2018….