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| **Figure X**: Annual proportion of legal-sized males having no recorded chela height in snow crab surveys (grey bars). Also shows are the proportions of males with naturally-occurring missing chelae on both right and sides (red lines). |

* Identification of commercial crab from sampled catches, for the purpose of estimating biomass, requires both a measurement of the carapace as well as the chela height measurement, which is used to identify maturity.
* However, a small portion of commercially-sized crab (i.e. >= 95mm) have both chelae either missing of partially regenerated, where these are required to identify the maturity and consequently whether such a crab is, or not, a commercial male.
* Such missing measurements are most often due to naturally-occurring missing chelae on both left and right sides (red line), but may also be due to cheliped loss during regular trawling operations.
* The issue is that the proportion of such males varies through time. Figure X shows the percentage of legal-sized males having no adequate chela height measurement.
* Annual proportions of missing chelipeds have fluctuated through 1.5 cycles, with lows of 0.4% in 1997 and 0.8% in 2010 and high levels of 2.1% in 2004 and a global high of 2.4% in 2017.
* Thus there is more than a threefold difference between periods of low and high occurrence (2004 and 2017).
* Since these fluctuations are unaccounted for, they contribute to a varying negative bias in the corresponding commercial biomass estimates, on the order of the proportions shown in Figure X.
* While their maturity status is unknown, good predictive estimates of the probability of being mature as a function of crab size are available from empirical observations, with about 50% being mature at 95mm-100mm and most being mature by 110mm.
* Such maturity curves show little variation for commercial sizes, but can easily be estimated for year-specific inferences.
* While it is a trivial matter to correct for this source of bias in our analyses, such crab presently are not included in commercial biomass estimates.
* We recommend that this be done for future analyses and this would provide an easy correction for a known bias in the observations.