

Addendum for the 2024 SAFE for the eastern Bering Sea snow crab

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The CPT selected model 24.1b for use in management at the September 2024 meeting, which is different from the model recommended by the assessment author and would result in a federally closed directed fishery. An OFL value for model 24.1b of 50 tons was presented at the CPT meeting, and this value represents the projected bycatch given estimated selectivity and the average fishing mortality from 2011-2021. Given the small OFL for the recommended model, bycatch considerations become more important than under the author-recommended Tier 4 OFL. The CPT requested a model run in which the fishing mortality was set to the maximum estimate over the last 10 years, which resulted in an OFL of 910 t. Using the CPT-recommended buffer of 20% produces an ABC of 728 t.

It should be stressed that the OFL and ABC for model 24.1b in this addendum differ from the values presented at the CPT meeting in part due to a data input clarification that was discovered after the meeting. In the process of exploring the impact of selecting different reference periods for bycatch when calculating the OFL, it was discovered that snow crab bycatch in the Tanner crab fishery for 2014 and 2015 had not been included in the model. These were two years of large Tanner crab TACs that had large associated bycatches of snow crab (Figure 1). Historically, new catch data have been added a year at a time to the data files used for the snow crab assessment. Recently, ADFG has produced retrospective files for catches of snow crab from 2005-present using a standardized calculation that employs the “subtraction method” to estimate discards (total catch minus retained catch) for the full rationalized time series as opposed to what was used historically (i.e., an expansion of “legal, not-retained” observer classification). Because the “legal, not-retained” classification was subjective, the observer program stopped recording these data in 2018, thus the subtraction method has been used for discard estimation starting in 2018. Recomputed historical discard estimates using the subtraction method differ from those that were provided using the “legal, not-retained” expansion, though a full comparison to what has been used in the assessment has not been completed. While the intent is to incorporate the full standardized catch timeseries, we have waited to update the assessment files until they can be double-checked. Here, model 24.1b was re-run with the preliminary catch and bycatch information from ADFG, which differs from the data in the assessment (Figure 1). Using the corrected data with 2011-2021 as the reference years for the non-directed fishery when calculating the OFL (the period that was originally used in the SAFE) resulted in an OFL of 171 t, rather than the 50 t originally reported in the SAFE. Bycatch mortality in the last decade ranged from 35 to 1,587 t, based on the model that incorporated the updated ADFG catches.

Two other considerations may be important for setting an ABC for what would be a bycatch-only fishery for snow crab. Using a fishing mortality rate and estimated selectivity for the projection of bycatch in the OFL calculations incorporates information about the size of the available population of snow crab to be ‘bycaught’. However, the assessment model underestimated the number of large males in the population relative to the survey observations. This would result in lower projected bycatches than if the model estimates of large males matched the survey. The second consideration is that, when the Tanner crab fishery is open, it can be the largest source of discard mortality for snow crab (Figure 2). The TACs in 2014 and 2015 were some of the largest in recent history for Tanner crab. The Tanner crab fishery is likely to be open in the coming crab year, and, although the TAC is not likely to be as large as those in

2014 and 2015, the size of the opening might be a reasonable consideration during the specification of the ABC.

Table 1. Summary of the OFLs and ABCs calculated using different reference periods for bycatch F, and different time series of bycatch data, using model 24.1b.

| Value of bycatch F used in OFL projection | Bycatch data | OFL | ABC |
|---|---------------------------------|-------|-------|
| Avg bycatch F (2011 to 2021) | Original data in assessment | 50 t | 40 t |
| Max bycatch F over last 10 years (2015 value) | Original data in the assessment | 114 t | 91 t |
| Avg bycatch F (2011 to 2021) | Updated prelim ADFG catch data | 171 t | 137 t |
| Max bycatch F over last 10 years (2015 value) | Updated prelim ADFG catch data | 910 t | 728 t |

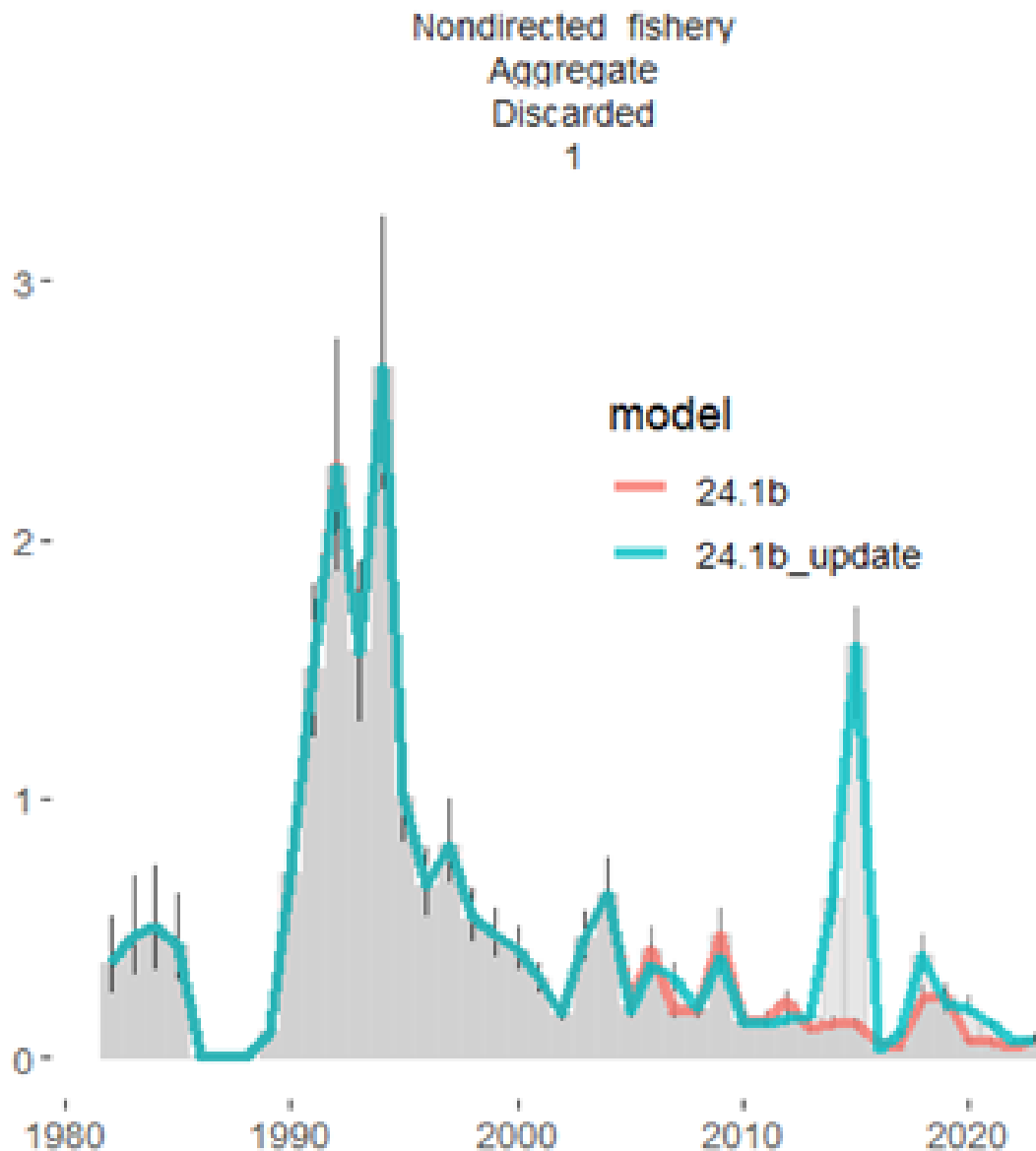


Figure 1. Model fits to non-directed fishery catches from model 24.1b with data in the SAFE (red) and preliminary data from ADFG for revised catch data (blue). Y-axis is in 1,000 t.

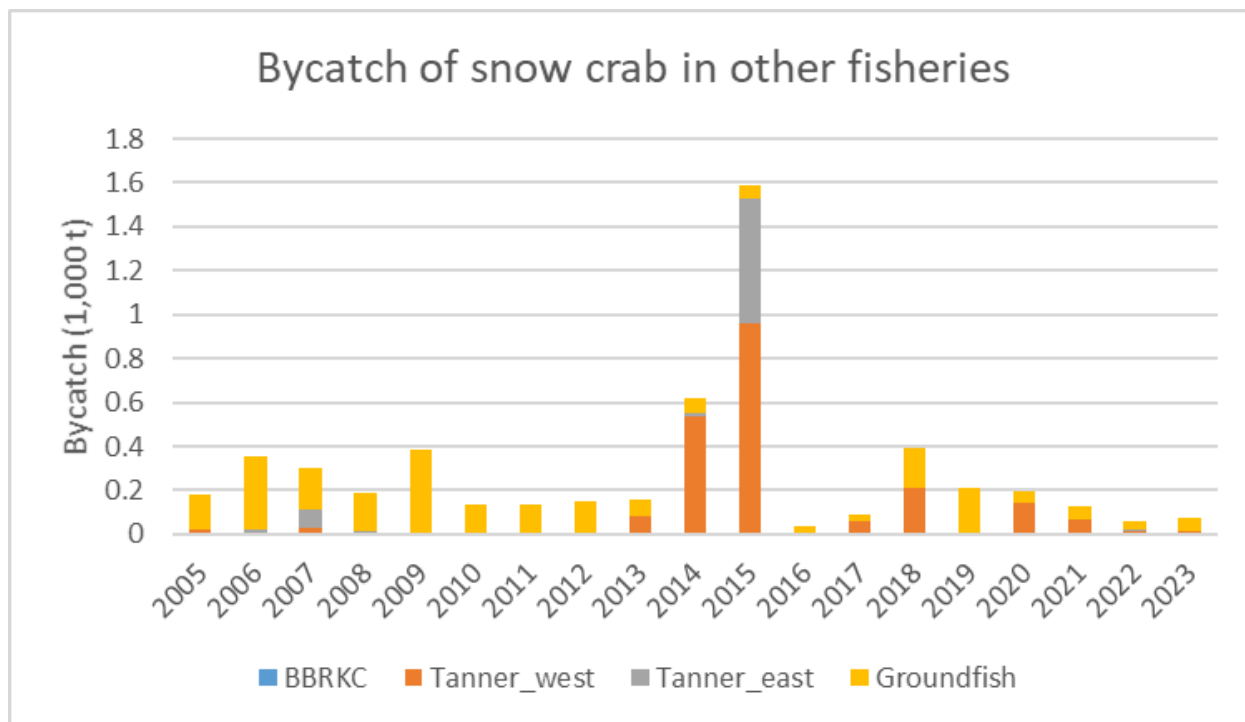


Figure 2. Relative size of bycatch of snow crab in non-directed fisheries. Assumed discard mortalities are applied (30% in pots and 80% in groundfish trawls).