

NMFS Eastern Bering Sea Trawl Survey Bristol Bay Resampling Protocol

For Crab Plan Team Review, May 2022

In colder years, a portion of the female Bristol Bay red king crab population has not yet completed the molt-mate cycle when Bristol Bay is surveyed during the NMFS eastern Bering Sea bottom trawl survey. Under these conditions, a subset of the Bristol Bay stations must be resampled later in the summer to improve the accuracy of the size composition data for post-molt female Bristol Bay red king crab. Secondary goals are to assess the reproductive status and abundance of these females after the molt-mate cycle is complete. Female Bristol Bay red king crab abundance and biomass estimates are calculated by replacing data collected on the original sampling date with data collected during resampling (for resampled stations only). In contrast, only the original survey data are used in calculating biomass and abundance estimates for male Bristol Bay red king crab.

Bristol Bay resampling is prompted if **25% or more** of the mature females in the Bristol Bay District have not yet completed the molt-mate cycle. Females are considered to have an incomplete molt-mate cycle if they have any of the following clutch characteristics: 1) eyed eggs [x-2-x], 2) hatching eggs [0-5-x], 3) empty egg cases [0-4-1], or 4) barren; mature with no eggs [0-0-1]. Females that have completed the molt-mate cycle have uneyed eggs.

If resampling is prompted, it will occur at **20 stations** within the Bristol Bay District. Resample stations are selected based on the density of mature females during the initial sampling event. The resampling area will aim to include stations containing 80% of mature females with an incomplete molt-mate cycle sampled during the original survey, with consideration of the total mature female distribution. Priority is given to a contiguous block of resample stations, so long as the above criteria can be met.