### Physical variability

Frank et al. (2016) question why the increase in SST in the late 1990s occurred 5 years after the capelin collapse and is not temporally associated with it. However, they fail to acknowledge that this patterning well reflects a regime shift in which the biological consequences continue in an altered state well after physical conditions have returned to pre-perturbation levels (Hare & Mantua 2000). Missing this point, Frank et al. (2016) mistakenly conclude – “The evidence is weak, therefore, that changes in the physical environment were responsible for the rported 1991 collapse of capelin.

On page 1999, Frank et al. (2016) not - “we would expect that if a large fraction of the post-1990 capelin population became coastal residents of the major embayments of eastern NL (i.e. from White Bay in the north to Placentia Bay in the south), noticeable reductions in condition, growth, maturation timing and eventually population size would be expected.”

Frank KT, Petrie B, Boyce D, Leggett WC (2016) Anomalous ecosystem dynamics following the apparent collapse of a keystone forage species. Marine Ecology Progress Series 553:185-202

Hare SR, Mantua NJ (2000) Empirical evidence for North Pacific regime shifts in 1977 and 1989. Progress in Oceanography 47:103-145