Fig. S1: EcoFOCI (source of empirical data) survey locations where a) *Calanus* spp. and b) *Neocalanus* spp. were detected, grouped by temperature stanza and season.
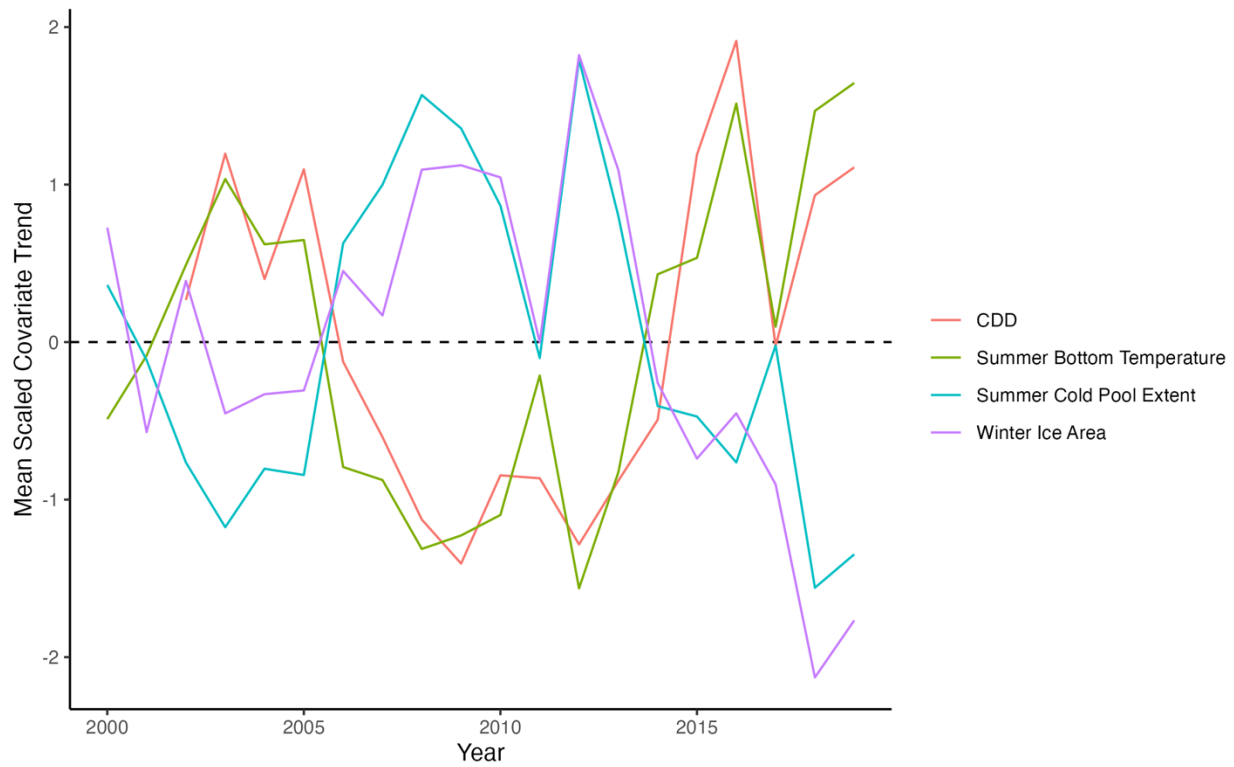
Fig. S2: Relationship between the cumulative degree day (CDD) covariate used in our study and other commonly used covariates for the Bering Sea, all covariates were mean-scaled for plotting. We conducted a correlation analysis between each covariate and CDD and found that they were highly colinear (Summer bottom temp: 90.5%, Winter Ice Area: 76%, Summer cold pool: -85%).
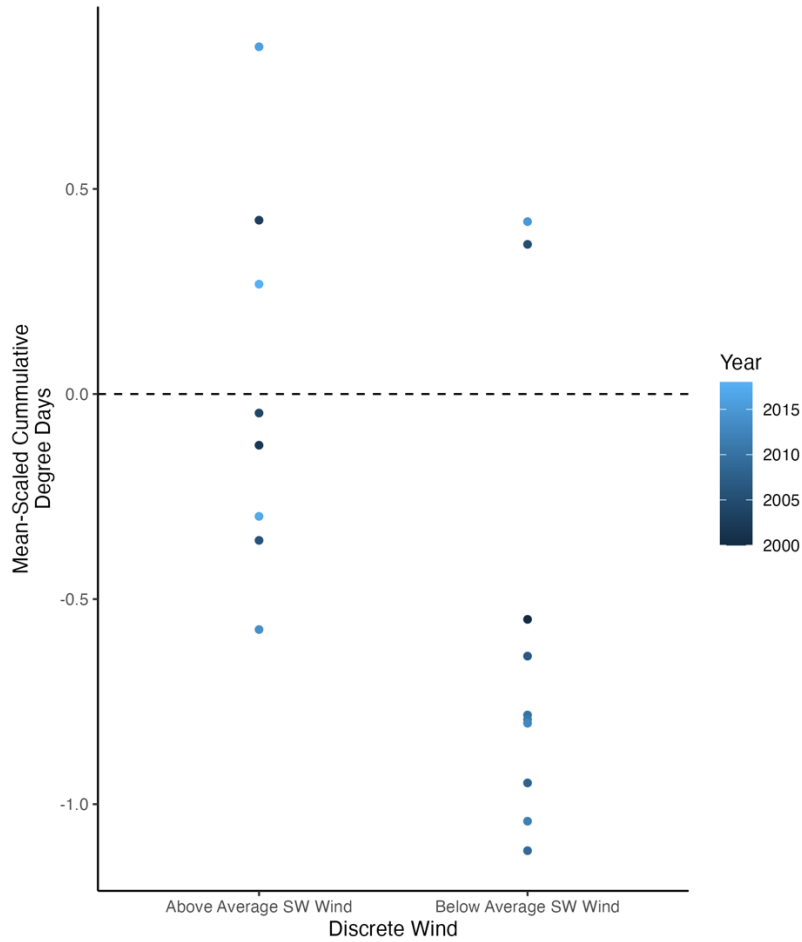
Fig. S3: Mean scaled cumulative degree days, where each point represents a year from 2000-2018, among discrete wind categories for covariates used in Eq. 3.
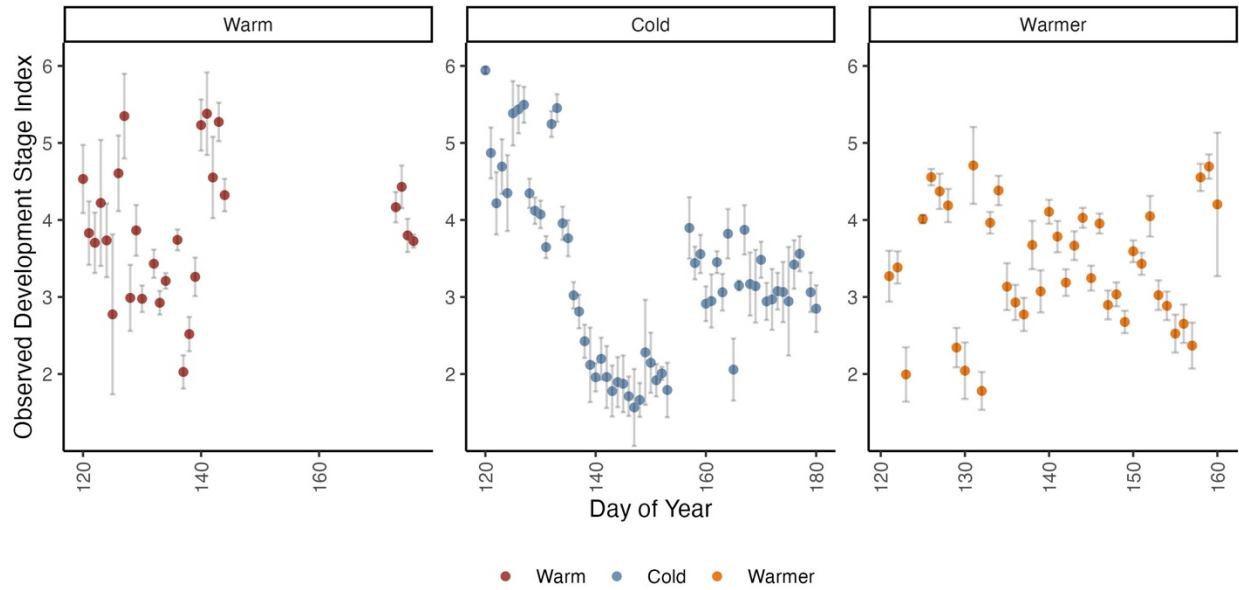
Fig. S4: Sample-based mean *Calanus* spp. DSI among climate stanzas and survey location in spring (associated with predicted DSI in Figure 6) with standard errors.