Supplementary Material Figure 1 Presence points used for habitat suitability predictions (ensemble models). Grey area is the Arctic regions as delimited according to the Arctic Monitoring and Assessment Programme (AMAP). (A) *Agarum clathratum*. Source of information: Schoenrick et al. (2018), Filbee-Dexter et al. (2019), Ronowicz et al. (2020), CANA, ArcticKelp Project, Saunders (pers. comm. 2020), OBIS, GBIF. (B) *Alaria esculenta*. Source of information: Hop et al. (2016), Schoenrick et al. (2018), Filbee-Dexter et al. (2019), CANA, ArcticKelp Project, Saunders (pers. comm. 2020), OBIS, GBIF. (C) *Laminaria solidungula*. Source of information: Hop et al. (2016), Filbee-Dexter et al. (2019), CANA, ArcticKelp Project, Saunders (pers. comm. 2020), OBIS, GBIF. (D) *Saccharina latissima*. Source of information: Borum et al. (2012), Hop et al. (2016), Schoenrock et al. (2018), Filbee-Dexter et al. (2019), CANA, ArcticKelp Project, Saunders (pers. comm. 2020), OBIS, GBIF.

Number of occurrence points used in the final ensemble models' calculation (distributed exclusively in the AMAP region where duplicates have been removed and points were rarefied to avoid spatial autocorrelation): *A. clathratum* = 149, *A. esculenta* = 175, *L. solidungula* = 81, *S. latissima* = 279. (Complete raw data is available in Supplementary Material Table 2).

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