

Heading northwards? Past, present and future of an Arctic kelp species

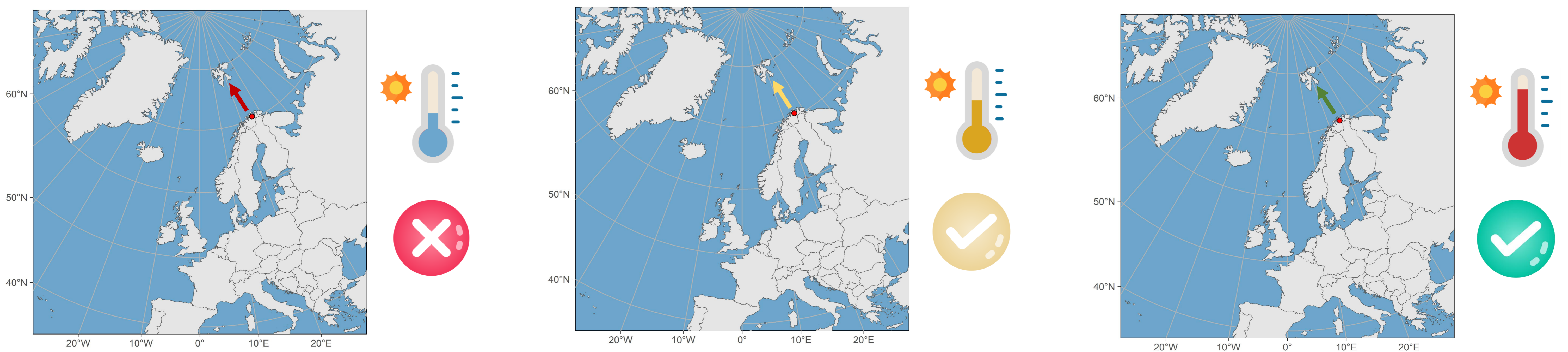
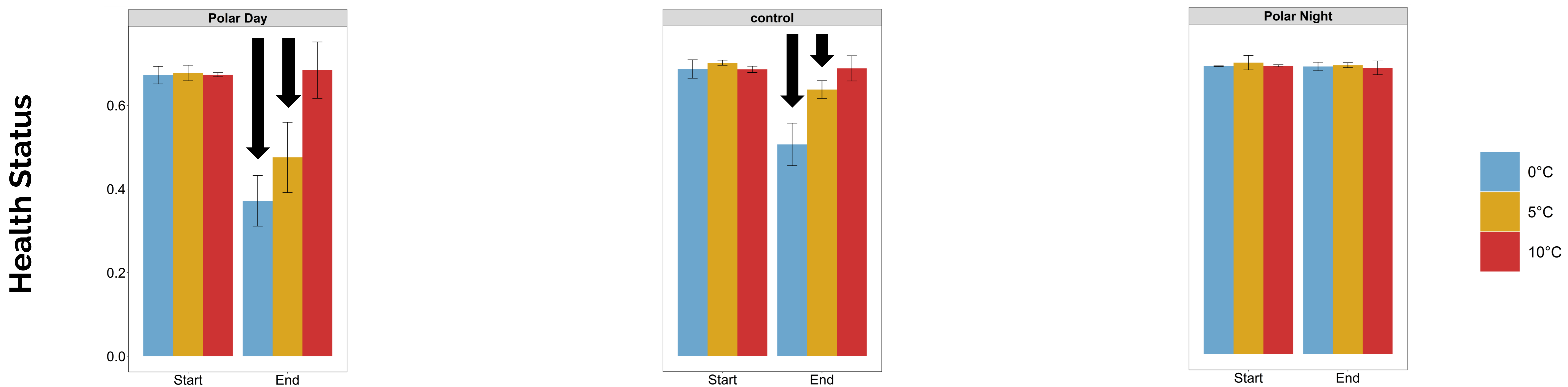
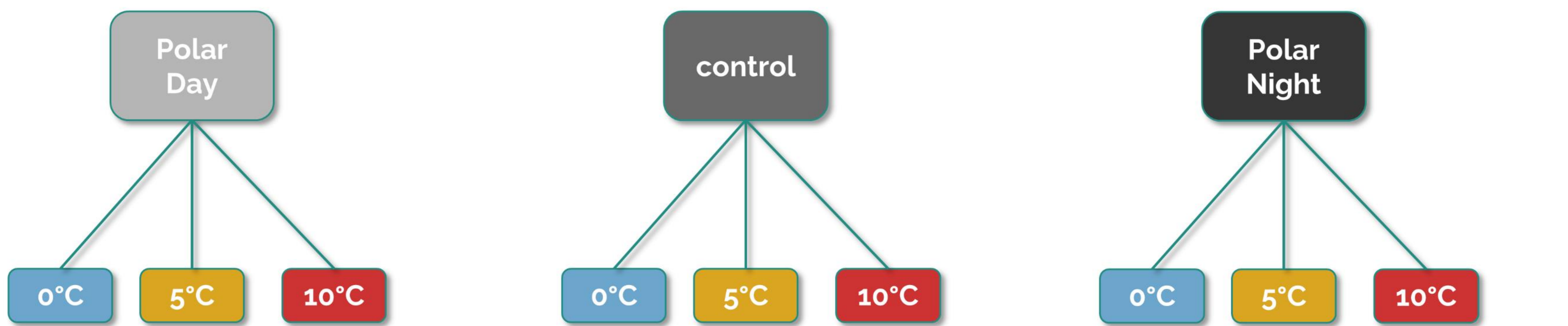
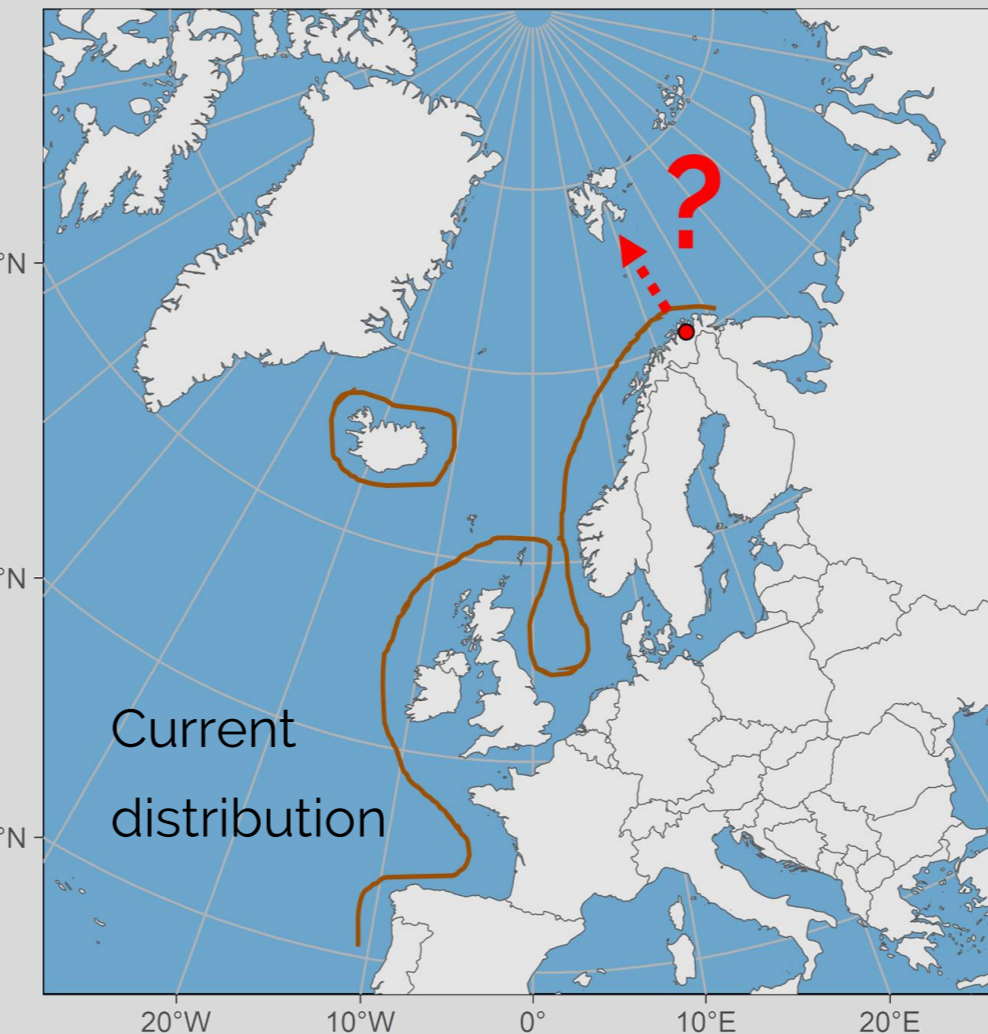
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Recent studies predict an expansion of seaweeds to higher latitudes. The wide spread tangle kelp *Laminaria hyperborea* forms very important marine underwater ecosystems. Exposed solely to very cold temperatures or darkness, the species has been shown to survive for months, however, it did not spread throughout the high Arctic yet. We, thus, evaluated two questions: 1) How does *L. hyperborea* survive Arctic environmental conditions? 2) Will it invade the high Arctic with ongoing climate change?



We collected samples of the tangle kelp *Laminaria hyperborea* at Porsångguvuotna/Porsangerfjord, Finnmark, Norway (red dot) and exposed them to three different temperatures (0, 5 & 10°C under three different light conditions (Polar Day, Polar Night and long day control conditions) for three months.

Cold temperatures in combination with light stressed *L. hyperborea*, while long polar night conditions did not harm it at any temperature. The physiological results strongly indicate that *L. hyperborea* is restricted by the long cold light periods in the Arctic and will benefit from increasing temperatures in summer. The warmer the Arctic becomes, the better *L. hyperborea* will cope with polar day. Therefore, it will likely spread into the Arctic if global warming continues.