**Methods**

**Ptarmigan inventories**

Ptarmigan abundance was estimated using the Wildlife Triangle Scheme (Lindén *et al.* 1996, Hellström *et al.* 2014) in two separate surveys, conducted in late April to early May and in late June to early July 2018. Visual observations of ptarmigan, calls, droppings and snowtracks were counted on 12 km triangle shaped transects around 10 arctic fox dens in Helags. The triangles were placed with the den in the centre for as far as the terrain allowed. The species was determined for each observation. If species could not be determined genus was recorded. GPS -coordinates were recorded with each observation.

**GIS - data collection**

All GIS computations were calculated in QGIS 3.0 Girona and RStudio. Elevation was calculated using 2 metre elevation raster (GSD-Höjddata, grid 2+, source: Lantmäteriet, downloaded 2018 – 05 - 31). Since many dens are located near the Swedish - Norwegian border topographical features of interest were added for both sides of the border. Distances from dens to streams and lakes and total water cover in triangles were calculated using Fastighetskartan Hydrografi Vektor, source: Lantmäteriet, downloaded 2018 – 06 – 07 for the Swedish side and N50 Kartdata, Source: Kartverket, downloaded 2018 – 06 – 08 for the Norwegian side. Total area of bogs within triangles was calculated using Fastighetskartan Markdata Vektor source: Lantmäteriet, downloaded 2018 – 08 – 07 for the Swedish side and N50 Kartdata, Source: Kartverket, downloaded 2018 – 06 – 08 for the Norwegian side.

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Distances from dens to treeline were calculated using Vegetation Fjällkedjan Vektor, source: Lantmäteriet, downloaded 2018 – 06 – 08 for the Swedish side and N50 Kartdata, Source: Kartverket, downloaded 2018 – 06 – 08 for the Norwegian side.