Demographic inference from whole genome and RAD sequencing data suggests alternating human impacts on goose populations since the Last Ice Age.

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Abstract: We investigated how population changes and fluctuations in the pink-footed goose might have been affected by climatic and anthropogenic factors. First, genomic data confirmed the existence of two separate populations: western (Iceland) and eastern (Svalbard/Denmark). Second, demographic inference suggests that the species survived the last glacial period as a single ancestral population with a low population size (100-1,000 individuals) that split into the current populations at the end of the Last Glacial Maximum with Iceland being the most plausible glacial refuge. While population changes during the last glaciation were clearly environmental, we hypothesize that more recent demographic changes are human-related: (1) the inferred population increase in the Neolithic is due to deforestation to establish new lands for agriculture, increasing available habitat for pink-footed geese (2) the decline inferred during the Middle Ages is due to human persecution and (3) improved protection explains the increasing demographic trends during the 20th century. Our results suggest both environmental (during glacial cycles) and anthropogenic effects (more recent) can be a threat to species survival.

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