Decoding Climate Change Signals: Trends in Snow Bunting Migration Across Sweden

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Résumé

Rapid climate change poses a significant threat to the long-term persistence of narrow niche species by disrupting their life cycles. The Snow Bunting (Plectrophenax nivalis), an iconic migratory Arctic-breeding passerine, is a prime example of this vulnerability. We examined the trends in its spring migration phenology across Sweden, which spans over 14 degrees of latitude, from 1970 to 2021. We found that the species displays a latitudinal gradient in its phenological shifts, with southern Sweden experiencing the most pronounced changes. Our results suggest that many Snow Buntings are wintering in southern Sweden due to warmer winter conditions. Furthermore, we observed a significant advancement in their arrival timing in the country's middle latitudes. In contrast, in the northernmost areas, the arrival timing of Snow Buntings remains consistent over the study period, suggesting that spring conditions have not improved due to winter warming significantly enough to advance arrival dates during spring migration. It might be noted that this lack of change might reflect that warmer winter conditions can increase the winter snowfall, limiting early exposure to open rocky grounds required for breeding. Our research thus supports the numerous observations that rapid climate change can exert intense selective pressure, e.g., changing migratory behaviours and other phenologically linked life history events. Thus, rapid warming at high latitudes is likely problematic for specialist species that cannot shift their phenology or geographic range further north or higher elevation. Consequently, the Snow Bunting and other Arctic specialists are sentinels for detecting the signals of climate change.

Mots-Clés: Arctic breeding passerine, Climats change, Migration phenology

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