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Declines in Wintering Snow Bunting Populations as a Function of Climate Change and Agricultural Intensification in North America

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Declines in Wintering Snow Bunting Populations as a Function of
Climate Change and Agricultural Intensification in North America

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Populations of many bird species are in decline around the world, a situation which has been attributed to many factors such as habitat loss and climate change. The snow bunting (*Plectrophenax nivalis*) is no exception to this calamity, as this songbird's numbers have declined over 60% in the second half of the last century. Despite being studied extensively in Europe, the dietary habits, habitat preferences, and population dynamics of snow buntings during the winter months are poorly understood in their North American range. A grassland specialist, this species is known to inhabit farmland and feed on seeds left behind after harvest, though the extent of their reliance on cropland is unknown. Dr. Oliver Love's lab seeks to broaden our understanding of the behaviour and health of wintering snow bunting populations, and to discover relationships that exist between snow bunting numbers, climate change, and changes in agricultural practices in Canada and the United States. Here we examine extensive records of Audubon's Christmas Bird Count data, climate and weather data from the Canadian government and NOAA databases, and crop yields and farmland area reports from Statistics Canada and the USDA. We also examine possible relationships between chemical applications to farms and the decline in snow bunting numbers. The current dataset spans nearly 100 years to the present. We hypothesize that declines in snow bunting numbers are related to decreasing farmland habitat and increased crop

yield in the last century. Results for the effect of climate and chemical application on snow bunting populations are forthcoming. This study highlights the need for more thorough inquiry into the environmental impact of human activities on birds.