

Conservation areas help birdlife adapt to climate change

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The Siberian jay is an indicator species of boreal forests, threatened by both climate change and the diminishing scope of old-growth forests. Particularly in the southern boundary of its distribution area, the logging of old forests has caused the Siberian jay to disappear from the region. Credit: Petteri Lehikoinen

As the climate warms up, the belts of current climate conditions move further north, forcing species to follow the climate suited to them. At the same time, environmental transformation by humans is causing problems. Species are experiencing great difficulties in adapting simultaneously to a decrease in the quality of their habitat and the pressure brought on by climate change.

The study investigated changes in the abundance of [bird species](#) inside and outside conservation areas over five decades. According to observations made by the researchers, conservation areas are excellent habitats for many species. These areas help northern bird species maintain their abundances on the southern boundary of their current area of distribution, while helping certain southern bird species spread to new territories on the northern boundary of their distribution area.

"Finnish conservation areas are mainly comprised of old-growth forest and peatlands, which prevent the retreat of northern species. It is the impact of [climate change](#) on northern species that is causing particular concern. These species are also threatened by deteriorating habitats, such as through forestry and the drying-up of peatlands," explains Petteri Lehikoinen, a researcher at Luomus, the Finnish Museum of Natural History, University of Helsinki.

Northern bird species live under the strain of a [warming climate](#) and dispersion barriers, since their spread is restricted by the Arctic Ocean and the Scandinavian Mountains. When species are unable to head further north, their risk of extinction grows. Protected areas are safe havens for such northern birds, accommodating species whose abundance remains high compared to regions outside the conservation areas.

Steps towards a shifting distribution of southern

species



The Lapland bunting lives in northern Lapland. Its opportunities for spreading further north are extremely limited, and the survival of the species depends on conservation areas. Credit: Petteri Lehikoinen

Conservation areas also helped certain southern species move up north. The abundance of southern species dependent on conservation areas in their core regions, such as the red-breasted flycatcher and the lesser spotted woodpecker, increased significantly more inside than outside conservation areas while spreading northwards. For these species, conservation areas are kinds of stepping stones by which to spread, as

the [climate](#) changes, to regions previously unpopulated by them.

"This observation emphasises the importance of a geographically unbroken and comprehensive network of conservation areas, while at the same time posing a challenge for the planning of conservation. When establishing conservation areas in the future, attention should also be paid to the needs of those [species](#) currently only beginning to spread to the area from the south," says Petteri Lehtikoinen.

Protected areas mitigate the effects of climate change

Climate change and the deterioration of habitats are the top causes of diminishing biodiversity. The results of the study indicate that protected areas curb the loss of biodiversity as the climate changes.

"By slowing down the harm caused by climate change, [conservation](#) areas provide us with a grace period for tackling the causes and consequences of climate change. The findings encourage us to increase the number of [conservation areas](#), which is also what the international goal of protecting 17 percent of all land area does," emphasises Aleksi Lehtikoinen, an Academy research fellow at Luomus.

Conservation areas can mitigate climate change itself, since old forests and peatlands in their natural state serve as carbon sinks.

More information: Petteri Lehtikoinen et al. Protected areas act as a buffer against detrimental effects of climate change-Evidence from large-scale, long-term abundance data, *Global Change Biology* (2018). [DOI: 10.1111/gcb.14461](https://doi.org/10.1111/gcb.14461)

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