

## Helping biodiversity adapt to climate change

Halting global warming will be a long process even if effective measures are taken globally to curb emissions. It may be necessary to prepare to cope with the long-term global impacts of climate change by striving to adapt to changing environmental conditions. In Finland's National Strategy for Adaptation to Climate Change, which was completed in 2005, outlines a wide range of measures, including measures designed to protect biodiversity. Although many of these ideas are already integrated into nature conservation policies in Finland, the strategy stresses that the need to prepare to cope with the impacts of climate change should be also given more emphasis with regard to the protection of biodiversity.

### Considering climate change in the planning of protected areas

The sizes of protected areas may have special significance for the survival of species that become endangered as climatic conditions change. Areas of suitable habitat are more likely to remain available as refuges for endangered species in protected areas that are larger in extent. Protected areas should also be interconnected where possible by ecological corridors or 'stepping stones', to form networks that allow plants and animals to spread and migrate in order to adjust their distributions according to the changing conditions. More attention should also be paid to the possible impacts of climate change when decisions are made about the locations of protected areas. It is particularly important in this context to protect areas where threatened species occur today, but can also be expected to continue to occur in the future.

Many parts of northernmost Finland lie within arctic regions that may be greatly affected by climate change, but these regions already have extensive protected areas that can help to reduce the impacts of climate change on arctic plants and animals. In southern Finland, contrastingly, there are fewer large protected areas to provide such refuges. The prospects for threatened species can be improved by restoring habitats in protected areas, but it may also be necessary to expand the network of protected areas as conditions change.

Species that live in small separate populations can only survive if enough patches of suitable habitat remain near enough to each other to enable individuals to move between them – especially if conditions change, and some of the habitat patches disappear.

In some cases the prospects for native species to adapt to changing conditions may be improved by preventing the spread of invasive species that would otherwise start to compete with them. But the capability of ecosystems and species to adapt will ultimately depend on the extent of climate change. If spruce trees are gradually replaced by broad-leaved tree species across much of southern Finland, for instance, there will inevitably be considerable changes in the occurrence of other forest species. In the most extreme climate change scenarios, the southern limit of spruce forest habitats would shift northwards as far as Oulu and eastwards to the Finnish-Russian border.

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### International co-operation

Even if effective steps are soon taken to help protect species and their habitats, it is likely that changes in climatic conditions will mean that some protected areas will lose the natural values that justified their protection in the first place. Many countries may ultimately have to accept that some species will no longer occur within their national boundaries. International co-operation is vital to ensure that a suitable network of protected areas is designated to safeguard biodiversity across international boundaries.

Finland has actively worked to harmonise the aims of the UN conventions on biodiversity and climate change, by organising suitable frameworks for the related international research and development work, for instance. The Ad hoc Technical Expert Group (AHTEG) on Biodiversity and Climate Change has already met twice in Helsinki, in January 2002 and May 2003, and the group's fourth meeting was held in Helsinki in September 2005.

## Sources

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