



CENTRE FOR EVIDENCE-BASED CONSERVATION

POLICY BRIEF

Effectiveness of hedgerow corridors for conserving woodland fauna during climate change

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Background

Biological systems are currently undergoing change in response to climate warming. It is commonly acknowledged that species distributions are moving towards the poles and to higher elevations as they track climatically suitable habitat.

Modification of the terrestrial landscape, through land use conversion and agricultural intensification, has fragmented many important habitats in Europe. The remnant patches of habitat are frequently too small to sustain viable populations of species in the long-term. The impact of climate change will increase the risk of extinction for species that are constrained by habitat fragmentation and are unable to move through the landscape.

To mitigate the effect of habitat fragmentation on species populations, policy makers commonly advocate interventions that link together patches of remaining habitat, with the aim of facilitating species movements through the landscape. The effectiveness of such corridors has been an area of considerable debate within the scientific community for the past two decades.

Research Approach

The CEBC conducted a systematic review (Box 1) to examine whether habitat corridors represent effective conservation interventions. English Nature (the UK government's conservation agency for England) proposed the question for review and chose hedgerows linking together patches of woodland habitat as a suitable case study system. The purpose of the systematic review was not to examine the importance of hedgerows as habitats as it is widely acknowledged that hedgerows are an integral part of the landscape and valuable habitats in their own right.

Box 1. What is a systematic review?

Systematic review is a technique used to accumulate, appraise and précis the results of primary research studies answering a particular question. It may include "meta-analysis", a statistical synthesis of the data from comparable studies, used to generate a quantitative summary of the pooled result.

A systematic review is a more rigorous and objective alternative to a traditional narrative review as the methods are explicit and open to scrutiny. It seeks to find all the available published and unpublished evidence on a subject, whether the results of studies are positive or negative.

The purpose of a systematic review is to provide policy-makers and practitioners with the best available evidence on a subject, in order to support subsequent decision-making. Systematic reviews can also be used to highlight knowledge gaps and to promote further original research.

Key Findings

Evidence currently available on hedgerows as corridors is insufficient to definitively evaluate their effectiveness in sustaining or increasing the population viability of woodland fauna. Although direct, high quality evidence is lacking, there are a number of studies that provide anecdotal evidence supporting the functional importance of hedgerow corridors. They report local and mechanistic effects within the system, such as the movement of individuals between patches of woodland. The research suggests that hedgerows with greater diversity of vegetation and structural complexity are favourable for movement over hedgerows of a more basic composition. However, this limited evidence cannot be regarded as substantive. Please refer to the systematic review report for a detailed breakdown of the 26 studies accepted into the final review at www.cebc.bham.ac.uk/completedreviews.htm.

Implications and Recommendations

It has become an ecological paradigm that habitat corridors connecting isolated patches of habitat will increase the abundance and diversity of species. This has influenced policy recommendations aimed at conserving biodiversity, on both a national and international scale.

This systematic review demonstrates that the effectiveness of hedgerow corridors in relation to increasing woodland habitat connectivity is not yet established, and that the potential role of these corridors in mitigating the effects of climate change is even less well understood. Given the lack of a firm evidence-base, the value of hedgerows as corridors for woodland fauna cannot currently be resolved.

Given the equivocal nature of the available evidence, there is no support for change in current resources directed at conservation of potential hedgerow corridors already present within the landscape. Evidence might be less equivocal if long-term effectiveness of hedgerow corridors as a conservation tool is properly monitored. Agri-environment scheme management prescriptions frequently promote hedgerow planting. However, the evidence is not sufficient to support conservation management strategies focused on the provision of hedgerow corridors at the expense of other potentially suitable solutions, such as increasing the area of remnant woodland habitat or the restoration of 'stepping stone' patches of woodland habitat within the landscape.

In the absence of conclusive evidence of the conservation value of hedgerow corridors, the cost of their establishment and maintenance needs to be critically compared against the expense and potential benefits of alternative approaches. Further research must be supported in order to assemble the high quality evidence-base necessary to enable policy makers, and practitioners, to make informed decisions when considering corridor preservation and creation.

The CEBC is the first Research and Dissemination Unit to undertake systematic reviews in the conservation and environmental management sectors. Based at the University of Birmingham, it forms the centre of a growing collaboration acting as a reliable source of evidence for improving environmental stewardship.

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To obtain the full systematic review report please visit: www.cebc.bham.ac.uk