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## **ROAD DECOMMISSIONING: MINIMISING THE ADVERSE ECOLOGICAL EFFECTS OF ROADS IN EUROPEAN AGRICULTURAL LANDSCAPES**

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### **Abstract**

The field of Restoration Ecology continues to provide an exciting array of new disciplines which focus on the restoration of ecological function and integrity to former habitat areas. Road Restoration Ecology (RRE) is one such discipline which is expanding the possibilities for habitat restoration beyond that which has been provided by the traditional management of roadside vegetation and landscape design.

This paper focuses on a particular aspect of RRE - that of road decommissioning. To date even though many hundreds of kilometers of forest roads have been removed in the U.S., virtually no research has addressed the impact of road removal on wildlife. Furthermore, on an international level, even less research has been committed to examining the removal of paved roads despite the fact the road development has been identified in the literature as one of the major causes of habitat fragmentation across landscapes worldwide.

In the course of new road planning and design, sections of old road pavement may be abandoned due to (1) the establishment of a new road ecosystem; (2) the realignment of an existing road; (3) the By-Pass of traffic 'hotspots'; and (4) required road closure for environmental reasons. Occasionally the extent of old road pavement is large enough to significantly extend native habitats adjacent to an old road system.

For this reason, road decommissioning can potentially: (1) restore ecological integrity, and function of semi-natural ecosystems (including soil); (2) provide compensatory habitat; (3) maintain and improve quality of existing adjacent habitat by reducing noise disturbance and human access (amongst others); (4) restore connectivity by reinforcing the ecological network of surrounding core habitat areas, and; (5) contribute to the restoration of landscape quality in the vicinity of a new road ecosystem.

It can be assumed that, where road pavement is not decommissioned and persists, it may continue to: (1) inhibit the ecological functions and services of semi-natural ecosystems, (2) pose as a barrier to the dispersal of wildlife, (3) inhibit the establishment of vegetation cover (and habitat), (4) may continue to have an adverse effect on environmental aesthetics; and (5) contribute to the release of pollutants from surface run-off. It is for one or more of these reasons that the process of road decommissioning is generally carried out.

Paved road segments on five national road schemes in Ireland were examined with a view to identifying the potential role of restored vegetation as habitat for wildlife. It has been demonstrated that native vegetation can more readily colonize former road corridors post-decommissioning, especially those roads located adjacent to existing native plant communities e.g. grasslands, hedgerows and woodlands. The resulting decommissioned sections of road generally show rapid recovery through natural recolonisation, where vegetation successional processes are shown to recapture road corridors within a few years, resulting in valuable additional habitat for wildlife, especially birds and nectar feeding invertebrates such as butterflies and bees. Various native mammal species have also been found to utilize old roads as a means of dispersal, therefore providing connectivity in an increasingly intensified agricultural landscape.