



Motorway verges can contribute to biodiversity

Motorway verges (strips of land running along the edge of the road) have been found to play a crucial role in maintaining the richness of biodiversity in intensive agricultural landscapes, according to recent research. A mixed area of both planted hedgerows and open grassland was found to provide the best habitat for encouraging biodiversity in both plants and spiders.

New research studied 25 sites along a 50 km stretch of motorway west of Paris in northern France. This is an area of intensive cereal agriculture, good soils and temperate climate. The motorway was built 30 years ago and enlarged in 1992. The surrounding area has a typical modern open field landscape with a complete lack of hedgerows and very few semi-natural habitats, such as remnants of natural woodland.

Study sites consisted of artificial banks created after road construction, some planted with woody plants to create hedges and some with grasses that have been intensively mown. Detailed inventories were taken in May and June 2006 of the numbers and variety of species of spontaneously colonising plants and spiders. Also analysed were the methods by which the plants and spiders dispersed, and the distance of the sites from natural woodland.

The survey found a total of 85 plant species and 123 spider species. Hedgerows – defined as at least 150 metres long – had a noticeable positive effect on the degree of plant diversity, which was almost twice as rich as the grass verges. Fourteen per cent of plants colonising hedgerows were not found in grassland.

Richness of biodiversity in spiders was similar in both hedges and grassland, but clearly increased the nearer a site was to natural woodland. The composition of spider communities differed between the two habitats according to their feeding and dispersal methods. Hunting and 'ballooning' spiders were more common in open grassland, while web-building and 'non-ballooning' spiders were more common in hedges. However in both cases, some species were found uniquely in one habitat and not in the other.

Plant community composition was determined by the method of seed dispersal of the plant and was more affected by variables such as soil and light. Spider communities were more highly sensitive to habitat structure and microclimatic conditions, such as is offered by hedgerows, which provide refuge and habitat during the winter.

How motorway verges are planted and managed can increase biodiversity, but with different effects for native flora and fauna. Following road construction, restoring previously disturbed landscapes with a mosaic of hedges and grassland can create a refuge for wildlife, conserve biodiversity and result in improved landscape connectivity.

Source: Le Viol, I., Julliard, R., Kerbiriou, C., *et al.* (2008). Plant and spider communities benefit differently from the presence of planted hedgerows in highway verges. *Biological Conservation*. 141(6): 1581-1590.

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