

Key issues to consider in the re-establishment of features include: land use and management; topography; hydrology and drainage; soils; what wildlife is native to the area and the site; climate and microclimate; existing and planned buildings and structures; crop production areas; non-cropped areas; views; the efficient management of the farm; utilities; historical and archaeological resources; legal regulations; off-site factors; and neighbours. In some cases it may be relevant to consult local communities and the general public.

Policy relevance

The development of ecological networks and corridors in agricultural areas is recognized as an effective policy instrument for promoting nature conservation both at the European and global levels. The following policy instruments acknowledge the importance of enhancing connectivity at Pan-European level:

- The Pan-European Biological and Landscape Diversity Strategy (PEBLDS, 1995) calls for the conservation of biodiversity in Europe by promoting the establishment and the maintenance of a Pan-European Ecological Network (PEEN).
- The EU Habitats Directive (1992) and the Birds Directive (1979) (which together provide the framework for designating the sites that make up the Natura 2000 Network) acknowledge the importance of habitat connectivity. Accordingly, farming and the protection of Natura 2000 sites have much to gain from coexisting on the same land:
 - The sites are farmed in a way that is better suited to the land and there is a continuous human presence which is often less costly than management by an external body;
 - Farmers are remunerated for the environmental services they provide in a transparent way which their fellow citizens can understand;
 - Regions of the EU with the greatest biodiversity are generally farmed the least intensively. They therefore receive preferential Community support;
 - Related activities become more attractive, e.g. the direct sale of meats, cheeses or wines labelled as coming from Natura 2000 sites, the promotion of rural tourism linked to the discovery of nature, etc.
- EU Biodiversity Action Plan for Agriculture (2001) identifies concrete priorities within the existing common agricultural policies for biodiversity conservation and sustainable use. That includes sustainable management of natural resources such as linear features (hedges, wildlife corridors).



This brochure was produced as part of the SEENET programme. For more information please contact us at seenet@seenet.info or visit www.seenet.info

ECNC © 2007 Written and compiled by: Dzintra Ailte, Lawrence Jones-Walters, Ana Nieto, Agnes Bruszik and Hanneke Wijnja.

Photographs: Lawrence Jones-Walters, ECNC; English Nature; Saxifraga Foundation

References

- Van der Sluis, T., Bloemmen, M., Bouwma I. M. (2004) *European Corridors: Strategies for Corridor Development for Target Species*. ECNC, Tilburg, The Netherlands & Alterra
- Bennett A. F. (2003) *Linkages in The Landscape: The Role of Corridors and Connectivity in Wildlife Conservation*. IUCN, Gland, Switzerland
- Hoffmann, L. B. (ed.) (2001) *Agricultural functions and biodiversity - A European stakeholder approach to the CBD agricultural biodiversity work programme*. ECNC, Tilburg, the Netherlands
- Bonnin, M., Bruszik, A., Delbaere, B., Lethier, H., Richard, D., Rientjes, S., van Uden, G. & Terry, A. (2007). *The Pan-European Ecological Network: taking stock*. Council of Europe, Strasbourg, France

www.caff.org

http://ec.europa.eu/agriculture/envir/report/en/n2000_en/report_en.htm

<http://www.eeb.org/activities/agriculture/03.pdf>

ECOLOGICAL NETWORKS in AGRICULTURE

Working together
for a sustainable
future



dam
road
link wa-
ter sea
nature fish
agriculture
walking path
forest bridge
river water bog
biodiversity buffer
zone tourism tree
ecological corridor
feeding ponds region
ecology policy dams sus-
tainable development resto-
ration area flower bat
ecosystems core area bird
transport law butterfly plants
connectivity highway urban frog-
tunnel spatial planning earth future

www.seenet.info



Why is agricultural land important for biodiversity?

Natural areas provide vital goods and services for people and make a significant contribution to human well-being. Much of the area of Europe's traditionally managed agricultural land hosts rich biodiversity. In total, agricultural land covers about 50% of the total land surface of Europe. Farming has contributed over the centuries to creating and maintaining a variety of valuable semi-natural habitats. Today these shape the majority of the Europe's landscapes and are home to much of Europe's richest wildlife - more than 40% of threatened species in Europe are dependent on extensively managed agricultural landscape systems.

The links between the richness of the natural environment and farming practices are complex. Certain agricultural habitats are of value for particular specialised species, especially habitat managed by extensive agricultural systems, but also some intensively managed areas to which certain species have adapted (e.g. wet grasslands, wet areas with rice cultivation).



Inappropriate agricultural practices and land use can lead to loss of wildlife

There is considerable scientific proof that for grassland and arable land, the introduction of more intensive land management creates a decrease in species richness and abundance. Small features such as hedgerows, field margins, verges, or remnants of semi-natural habitats, receive negative effects from herbicides, pesticides or manure through leaching and transport by soil water or airbourne deposition from adjacent fields. An increase in nutrient levels in soil and water, as well as the effects of pesticides lead to dramatic changes in species composition and a decline in species numbers. At the landscape level, even more significant is the removal of linear features. These linear features are important habitats for many species in agricultural landscapes. Studies show that land-use intensification is the major threat to landscape complexity and diversity. At the other end of the scale, some extensive farming systems are under pressure and, as a result, they are threatened by land abandonment and a consequent loss of traditional management.



What do ecological networks mean in agricultural areas?

Ecological networks can greatly contribute to the maintenance or the protection of biodiversity of agricultural areas.

Ecological networks connect areas of habitat and allow animals and plants to move through the countryside. This movement may be an important factor in assisting the survival of many species in relation to changes in land use patterns and climate. As well as being vital for the functioning of ecosystems, ecological networks and corridors, greenways and landscape linkages can also have aesthetic value, contribute to an attractive living and working environment, have important recreational and touristic value and can provide further economic benefit by protecting property and businesses from environmental impacts or as a source of food, fuel and building materials.



In agricultural land ecological connectivity can be increased in a number of ways. These usually take the form of strips of vegetation that have been deliberately planted for a variety of purposes including: shelter, to reduce soil erosion, as sources of timber, as wildlife habitat or for aesthetic qualities. They display great variation in origin, floristic

composition and structure, but there are several common features:

- they are linear (but not always straight) and usually form grid-like networks of habitat;
- they frequently provide links between remaining natural and semi-natural habitats;
- they are closely associated with agricultural land and their composition and structure are strongly influenced by past and present agricultural land management.

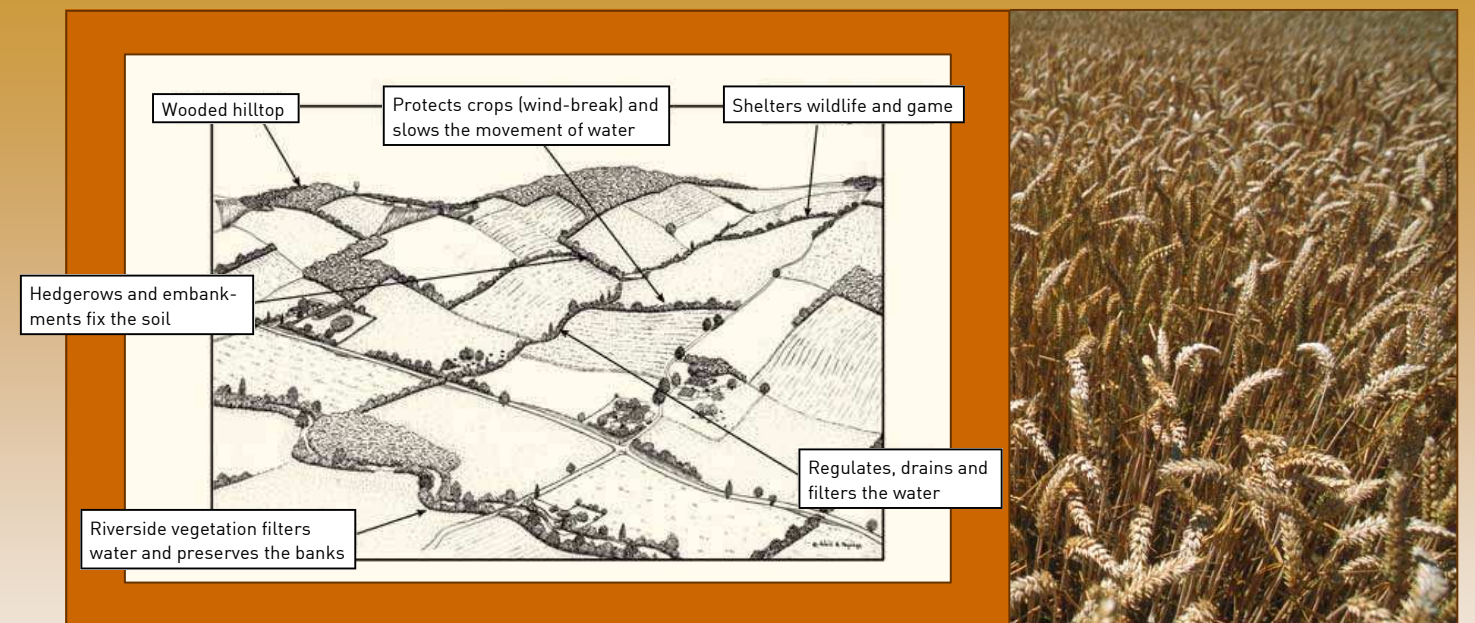


They take forms such as:

- Hedgerows: are linear strips of shrubs, small and sometimes large trees that have been planted along the boundaries of fields, roadways, fences and other non-cropped areas.
- Stone walls: which replace hedges, particularly in upland and arid areas, where shrubs do not grow so well.
- Fencerows: are narrow strips of rough land that have developed by the natural regeneration of plants in neglected strips of land between fields, by roads and water bodies. Their vegetation ranges from that dominated by grasses and herbs, to narrow lines of shrubs, to broad strips with mature woodland trees.
- Wind-breaks: are barriers usually consisting of trees or shrubs that are used to reduce and redirect wind.
- Filter strips: are areas planted with vegetation to control soil erosion; they slow down water runoff and capture and prevent sediments and nutrients from entering waterways.

They are used:

- as nesting, roosting and feeding habitat, and cover by forest-edge, farmland and game birds and significantly increase their number and diversity;
- by mammals, amphibians and reptiles as breeding areas, shelter, temporary refuge, or foraging habitat (species include badger and fox, small mammals such as field mice and bank voles, and amphibians like Great Crested Newts);
- by insects to gain nectar and pollen, prey and shelter (bugs, hover flies, ladybird beetles, green and brown lacewings, parasitic and predatory wasps and spiders – many of them beneficial to agriculture as natural pest control agents).



Features that create connectivity in farmed landscapes

The above illustration (adapted from Bonnin *et al.*, 2007) depicts a farmed landscape in which connectivity is high. It contains many features that are desirable for wildlife, but which can also make a contribution to farming practice and game management. All of these features need to be managed with sensitivity. Where they are absent these features can be created; in many areas of Europe financial subsidy and advice, either written or in the form of farm conservation advisers who are able to visit farms and even create wildlife management plans, is available to farmers and land managers. This can be targeted on both the ongoing management of habitats and features that provide connectivity, and the creation of new areas for wildlife.