The importance of hedgerows and the services they provide to society. Key messages (September 2009)

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Environmental services

1. Hedgerows and their associated trees, banks, ditches and margins provide a wide range of valuable services which benefit people. They include not only biodiversity services, but also regulating services such as pest control and flood control, cultural services such as landscape aesthetics and historical heritage, and provisioning services such as the firewood and food.

2. A review of the services provided by Environmental Stewardship in England has revealed that hedgerow options provide a greater number of services, 21 in all, that any other group of options. For comparison, other high ranking option groups include woodland and moorland ones (19 services each), and species-rich grassland (16 services) [1].

Biodiversity services

3. Hedgerows are the most widespread semi-natural habitat in England, Wales and Northern Ireland. Over large parts of the lowlands they are the main surviving semi-natural habitat, and are critical to the existence of numerous plants and animals. They are particularly important within areas of intensive farming, and for the survival of widespread yet declining species which are dependent on woodland edge, scrub or rough grassland habitats [2].

4. Hedgerows facilitate movement through the landscape for a wide range of organisms. They are particularly important for flying insects like butterflies which need warm sheltered conditions to be able to gain, and retain, the heat necessary to fly. Green lanes, typically two hedgerows in parallel separated by a vegetated track, provide particularly favourable conditions [3].

5. Overall, the length of hedgerow in GB has remained stable over the last decade. However during this period there has been a 7% decline in the number of classic shrubby hedgerows and a 9% increase in the number of hedgerows that have developed into lines of trees or relict features. This is having a significant impact on the landscape and reflects lack of appropriate management [4].

6. Most of the UK's hedgerows are in poor condition, reducing their ability to deliver environmental services and putting their dependent wildlife at risk. Local hedgerow surveys suggest that only 41% of hedges are in favourable condition even without taking nutrient enrichment into account, and the true figure is likely to be lower than this. Nutrient enrichment is the single most important reason for poor condition, 38% failing on this criterion. The other main reasons for poor condition are excessive gaps and hedgerows being too low or too thin [5].

7. Over 125 priority BAP species are closely associated with hedgerows, 11% of all such species [6]. Although very few are wholly dependent on hedgerows, the loss of hedgerows or a decline in their quality will have a significant adverse impact on their populations.

8. A high proportion (70%, n=88) of these BAP species are widespread within the UK but have been recognised as priorities for conservation action because their populations have declined rapidly in recent decades. For example, 51 out of the 71 widespread and common moths listed as priority BAP species because they have declined hugely in recent decades feed as caterpillars in hedgerows and their associated herbaceous margins. This confirms the importance of hedgerows for wildlife as a whole, not just for rare species [6].

9. Hedgerows are of particular importance for the conservation of farmland and woodland birds, and for mammals. As many as 16 out of the 19 birds included in the Farmland Bird Index, as used by Government to assess the state of farmland wildlife, are associated with hedgerows, with 10 using them as a primary habitat. All 35 woodland indicator species frequently occur in hedgerows or their trees. In addition, 10 out of 18 terrestrial mammals listed as priority species in the UK BAP make significant use of hedgerows, for food or to enable them to move through the landscape [6].

10. Rare or threatened species closely associated with hedgerows include several European Protected Species, notably dormouse, most species of bat including the greater horseshoe bat, and great-crested newt. These species require well connected networks of hedgerows, rather than individual hedgerows, emphasising the importance of hedgerows at a landscape scale for biodiversity [6].

11. A wide range of other threatened species are dependent on hedgerows, including a few that are very rare and specially-protected such as round-leaved feather-moss, starved wood-sedge, Plymouth pear and barberry carpet moth. Other species of particular conservation concern closely associated with hedgerows include five species of uncommon and rapidly declining bumble bee, two scarce butterflies, the brown and white letter hairstreaks, the rare cirl bunting and the declining turtle dove [6].

12. Much of the biodiversity of hedgerows is associated with hedgerow trees, in particular with veteran individuals. Over half (55%) of the priority BAP species associated with hedgerows are dependent on, or partially dependent on, hedgerow trees [6]. The presence of hedgerow trees in areas targeted by agri-environment schemes increased the numbers of larger moth present by 60% and the diversity of such moths by 38% [7].

13. The scarcity of young hedgerow trees to replace mature ones when they die is a major cause of concern: across Great Britain, the number of isolated hedgerow trees fell by as much as 3.9% just between 1997 and 2007 [4]. A further 15,000 -20,000 new hedgerow trees need to be recruited to the population each year just to keep the population stable [8].

Regulatory services

14. Hedgerows prevent loss of soil from fields, either through reducing wind erosion or through acting as a barrier to water-borne run-off. This is particularly so in arable areas, both where the land is flat and prone to wind-blow as in the Fens of East Anglia, and in hilly areas where loss of soil following heavy rain can be a major problem [1,9].

15. Hedgerows reduce the amount of polluting fertilisers, pesticides and sediment that reach watercourses through acting as a physical barrier, through increasing infiltration into the ground, and through nutrients being recycled by the trees, shrubs and other plants [1,9].

16. Hedgerows regulate water supply for crops in three ways. Firstly, they decrease wind speed over the ground surface, so reducing water loss through evaporation in areas prone to drought. Secondly, hedgerows can help to store water for later use - a 50m hedgerow at the bottom of a 1ha field can store between 150 and 375 cubic metres of water during rainy periods for slow release down slope during dry periods. This effect is greatest in soils rich in clay or organic matter. Thirdly, because of their deep roots, hedgerows remove water faster from the soil than crops during periods of excessive rainfall, through increased evapotranspiration [1,9].

17. Hedgerows regulate the rate of flow of water within catchments, reducing peak flows and increasing minimum flows. They are thus are effective at reducing the risk of flooding and are increasingly planted for this purpose [9].

18. Hedgerows may play a significant role in reducing the rate of climate change, through carbon storage, and through the provision of firewood, a renewable fuel. A new hedgerow may store 600 - 800 kg of CO_2 equivalent per year per km, for up to 20 years [10].

19. In urban areas hedgerows contribute to services such as climate regulation, sustainable urban drainage, reducing airborne particulates and atmospheric pollution, and providing wildlife habitat. They also improve the aesthetic appearance of the built environment [3].

Cultural services

20. Hedgerows are a defining feature of the landscape, creating the characteristic structure and pattern of the landscape. In Northern Ireland they form 60% of the broadleaved cover (David Gillespie, DARDNI). There are many local variations, with distinctive ecological and cultural associations. Aesthetically, hedgerows provide pattern, local grain and texture in the landscape [11].

21. Nearly all mature trees in rural areas outside woods and gardens have their origins in hedgerows, including in-field trees. It has been estimated that there are between 20 and 50 million hedgerow and field trees in England, covering very roughly 2.5% of the land area. Consequently, they have a profound impact on the landscape. The loss of mature elms graphically illustrated this [12].

22. Hedgerows can shield unsightly development and protect privacy.

23. Two thirds of England has had a continuously hedged landscape for a thousand years or more. Some hedgerow systems date back to prehistoric times, and most were well established by the Anglo-Saxon period. It is only in the Midlands and part of the North-East that the majority of these early hedgerows were removed in Medieval times to create open field systems, and new hedgerows subsequently planted under the Enclosure Acts between 1750 and 1850 [12].

24. Consequently, many of England's hedgerows (and probably those in Wales and Northern Ireland) are a thousand or more years old, and most predate the Enclosure Acts. They are thus older than many of the historic buildings, like parish churches, that society values highly.

25. Hedgerows, through their rich and often intricate patterns, tell the story of the countryside and farming traditions over many centuries. Their loss removes much of the cultural and historical patina from the landscape, leaving it a blank canvass [11].

Provisioning services

26. Hedgerows have traditionally been the source of some iconic British foods and drinks, such as blackberry jam and sloe gin.

27. Hedgerows are being increasingly valued as a source of wood fuel, primarily for domestic heating.

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Key references

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