

Devon hedges and their many uses (ecosystem services)

The idea that hedges benefit wildlife is a familiar one. However, hedges also benefit people, and in many ways. Collectively, such benefits to man are known as ecosystem services. They range from containing livestock to keeping our water clean and to assisting crop pollination. This guidance outlines the main ecosystem services delivered by Devon hedges, including their banks.

Ecosystem services can broadly be divided into three categories:

- 1. Regulating services** - those that regulate processes such as water quality, crop pollination and pest control.
- 2. Provisioning services** - those generating products such as food and energy.
- 3. Cultural services** - those that assist our recreation and well-being, provide aesthetic experiences and spiritual enrichment, or give learning opportunities.

Biodiversity underpins nearly all of the ecosystem services given below. Please see the three sections on *Wildlife* (pages 26 - 43) for information on the biodiversity associated with Devon hedges.



Crab apple blossom: the fruits are often collected from hedges for use in making jelly. ©Heather Harley



Hedges can help to reduce flooding and soil loss, and to prevent pollutants from reaching rivers and streams, by physically impeding surface water flow, by increasing water penetration into the ground, and through the direct uptake of water and nutrients by the trees and shrubs. ©Robert Wolton



Hedges can be managed and cropped to produce substantial amounts of woodfuel, cheaper than buying in oil, gas or electricity. This is also a renewable source of energy. Hedges also accumulate significant amounts of carbon in their trees, banks and underlying soil, helping to reduce the rate of climate change. These logs have been harvested from a 17 year old willow hedge near Hatherleigh.

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Urban hedges like this one in Exeter can provide an attractive screen, remove a wide range of pollutants from the air, help to keep the environment cooler during the summer and make our lives less stressful.

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Ecosystem services delivered by Devon hedges

Regulating services	
1. Water purification	Hedges and associated buffer strips improve the quality of the water in our rivers and streams by reducing the amount of polluting fertilisers, pesticides and sediment that reach them. They do this by acting as a physical barrier, by increasing infiltration into the ground, and by the trees and shrubs increasing the uptake and recycling of nutrients.
2. Flood risk reduction	Hedges, particularly those that follow contours, can reduce the rate and flow of surface water following storms, so reducing the risk of flooding of downstream farmland and properties.
3. Soil conservation	Hedges 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, and in hilly areas where loss of soil following heavy rain can be a major problem.
4. Crop water supply	Hedges regulate water supply for crops in three ways: 1. They decrease wind speed over the ground surface, so reducing water loss through evaporation and transpiration. 2. They can help to store water for later use, slowly releasing it down slope during dry periods. This effect is greatest in soils rich in clay or organic matter. 3. Because of their deep roots, hedges remove water faster from the soil than crops during periods of high rainfall, through increased evaporation and transpiration. (In the past hedge removal has often been followed by the need for land drainage.)
5. Crop pest control	Hedges, especially bank sides and margins with tussocky grasses, are important breeding places and winter refuges for predators of crop pests like aphids. These predators include ground beetles, spiders and hoverflies.
6. Crop pollination	Hedge shrubs and trees, and flowers on the banks, margins and ditch sides, provide nectar and pollen sources essential for pollinator survival when crops are not in flower, for example in the spring. They also provide shelter and flight lines for pollinators such as bumblebees (that are active in lower temperatures than other pollinators), and places for them to nest and overwinter.
7. Climate change mitigation	Hedges help to reduce the rate of climate change through carbon storage, principally in the banks and underlying soil, and through the provision of firewood, a renewable fuel. They can also help wildlife to adapt to climate change through increasing landscape connectivity and the range of micro-climatic conditions present.
8. Boundaries & livestock barriers	Hedges remain useful both to mark land ownership boundaries and especially for keeping cattle, sheep and other livestock either in or out of fields.
9. Shelter	Hedges provide shelter for crops and livestock from wind, rain and snow. They also provide summer shade, reducing heat stress. The importance of this role is likely to increase with climate change.
10. Air quality	In urban areas hedges help capture pollutants like gases and particulates (including pollen), and also help to moderate the urban heat island effect.

Ecosystem services delivered by Devon hedges

Provisioning services

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| 11. Food | Fruits from sympathetically managed Devon hedges are still widely collected to make products such as blackberry jam and sloe gin. |
| 12. Wood & timber | Hedges are a source of handles for tools, walking sticks, bean poles, pea sticks, fencing stakes, etc. Hedgerow trees can provide timber for specialist uses. |
| 13. Fuel | Hedges can be sustainably managed to provide firewood, as logs or wood-chips, the latter and occasionally the former at a lower unit price than purchasing oil or gas, for use on farm or by the local community. As such they can help address rural fuel poverty. |

Cultural services

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| 14. Cultural heritage | The Devon style of hedge laying is unique and an important part of our rural heritage. It is both a functional activity and an art form. Each part of the county has its own distinctive hedge types, especially in bank structure. Hedges often figure prominently in local folklore and customs, for example in beating the bounds. |
| 15. Historic heritage | Devon hedges, 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 canvas. |
| 16. Aesthetics & sense of place (landscape character) | Hedges are a key defining feature of the Devon landscape, their networks creating the characteristic field patterns so highly valued by both resident and visitor. They provide the grain and texture of the landscape. |
| 17. Health & wellbeing | Nature is a very effective stress reducer. Hedges improve the well being of us all by softening our environment and provide healthy possibilities for practical and active community involvement. In urban environments, hedges are a quick win in this regard. |
| 18. Education | Hedges provide learning opportunities across a wide range of subjects, including history, maths, biology and geography. They can serve as accessible outdoor classrooms. |
| 19. Screening | Hedges shield unsightly development, protect privacy and are widely used for these purposes around gardens as well as in the countryside. |
| 20. Field sports | Hedges provide cover and breeding sites for quarry species such as pheasants and partridges, and facilitate rough shooting and hunts. |
| 21. Recreation | Hedges increase enjoyment of the countryside, adding interest and enriching the experience of walks, bicycle rides and car journeys. |

Conclusion

Hedges provide a wealth of ecosystem services, probably more than any other landscape feature. They benefit not only people living and working in rural areas but also those of us living in towns and cities. They help to keep our water and air clean, to increase crop yields, and to keep us fit and healthy. They are a vital part of Devon's beauty and its rich historical heritage.



Well maintained Devon hedges keep livestock in fields and away from crops, as well being an essential part of the county's beautiful landscapes.