

HABITAT MANAGEMENT NEWS

Compiled by Conservation Management Advice, RSPB

Rejuvenation management to improve hedgerow habitats for wildlife

The role played by hedgerows is well known and documented. They make a significant contribution to the historic, cultural and landscape value of the countryside and provide habitat for a wide range of flora and fauna, several groups of which have been shown to have positive associations with hedges of dense woody structure and few gaps, a good width and many layers of vegetation.

In some European countries, hedges are protected by legislation and designated a priority habitat under the EU Biodiversity Strategy. Several European countries provide financial incentive for appropriate management under agri-environment schemes, while in the UK the 1997 Hedgerow Regulations limit their removal.

Despite the profile, however, in the UK there has been a decline in the length and structural condition of hedgerows over the ten years since the introduction of the Regulations. This has been attributed largely to a lack of rejuvenation management, neglect and over-frequent trimming with mechanised flails. A similar pattern of deterioration is being experienced across much of north-west Europe.

Rejuvenation management to promote vigorous basal growth is necessary in order for a hedge to maintain its dense structure and to prevent it from becoming leggy

and gappy. Hedge-laying has for many centuries been the traditional form of management used in several European countries. Another traditional method is coppicing and the removal of most of the above-ground part of the hedge.

In the UK, the proportion of hedge-laying fell from around 50% in the mid-20th century to about 2% by 2007. Over a 40-year rotation this equates to 16–27% of hedges being rejuvenated. Similar reductions have been experienced elsewhere in Europe.

Research over the past 20 years has revealed how the method of rejuvenation can have an effect on the hedge's rates of regrowth and structure and subsequent habitat value for wildlife. Layed hedges have tended to show the greatest diversity and abundance of species ranging from plants and invertebrates to birds and mammals.

As a result of the continued deterioration in the structure and condition of hedgerows, it has been realised that there is a need to develop cost-effective methods of rejuvenation which are comparable to the rates of woody regrowth and dense basal structure achieved by traditional methods.

A recent paper published in *Biological Conservation* reports on testing conducted on the effects of three modern alternative methods of rejuvenation on hedge structure and provision of berries for wildlife, and compares them to traditional hedge-laying, coppicing and an unmanaged control, using a large-scale

manipulative field experiment. The methods tested included two newly developed, faster alternatives to hedge-laying (conservation hedging and wildlife hedging), also reshaping with a circular saw, and coppicing to ground level.

The paper hypothesises that:

1. modern alternatives to traditional hedge-laying are cheaper to apply to typical hedgerows in intensively managed landscapes;
2. these alternative methods would have a similar beneficial effect on hedge regrowth and structure; and
3. provision of berries by hedgerows for overwintering wildlife would initially be most reduced by coppicing compared with other forms of rejuvenation, but any reduction would be relatively short-term.

While the results are directly relevant to agri-environment schemes in England, the study's conclusions have broader Europe-wide significance for countries implementing similar schemes or other forms of hedgerow-management regulation.

Five sites were chosen, four of which were dominated by mature Hawthorn *Crataegus monogyna*: at Monks Wood and Wimpole Hall, both in Cambridgeshire, Newbottle Estate, in Northamptonshire, and Utcoate Grange, in Buckinghamshire. The fifth site was at Crowmarsh Battle, in Oxfordshire. The hedge there was a younger mixed-species hedge, dominated by Hawthorn, with smaller amounts of Blackthorn *Prunus spinosa*, Field Maple *Acer campestre*, Spindle *Euonymus*

europaeus, Buckthorn *Rhamnus cathartica* and Wayfaring Tree *Viburnum lantana*.

As Hawthorn was the dominant species across all five trial sites and is the dominant hedgerow species across England, it was the focus of assessments for regrowth and berry provision following rejuvenation in the trials.

In November 2010, the hedgerow-rejuvenation treatments were applied at five sites to 24m-long contiguous hedgerow plots in a randomised-block experiment:

Traditional hedge-laying The Midlands-style hedge-laying involves the cutting and removal of about half of the hedge's woody volume. Main stems were partially severed at the base, leaving a small section of living cambium intact, laid over at approximately 35°, and woven into a dense, woody, linear feature. Remaining branches were then laid to one side of the hedge, leaving the other side bare with no branches. Frequent stakes and top binders were used to secure the stems and branches in place.

Conservation hedging This is a quicker alternative to traditional hedge-laying. Stems were cut at the base (as above) and laid over. Remaining stems and branches were laid along the line of the hedge, rather than to one side. Fewer branches were removed, stakes were used sparingly, and binders omitted.

Wildlife hedging A chainsaw was used to make rough basal cuts on every stem, and the hedge was pushed over along its length with a 360 digger bucket. No brash (woody stems and branches) was removed, and some stems were entirely severed when the hedge was pushed over.

Circular saw A tractor-mounted circular saw was used to cut the sides and top of the hedge, thereby reshaping it into a tall, box-like structure. Future management would consist of similar periodic reshaping every 8–10 years.

Coppicing Hedge stems were cut close to ground level with a chainsaw. Almost the entire volume of the hedge was removed.

Control No rejuvenation applied. Each rejuvenation method was

replicated two or three times at each of five sites (a total of 12 replicates). Contractors who specialised in each form of rejuvenation were employed to apply the treatments, to ensure that they realistically resemble hedgerow rejuvenation in the wider countryside. Wildlife hedging and circular-saw reshaping could not be applied at Crowmarsh Battle, as the hedge was not mature enough.

A total of seven variables was measured across the five plots. These were:

1. Contract cost for each rejuvenation method used.
2. Rates of regrowth following rejuvenation.
3. Regrowth from basal cut stools.
4. Regrowth in the hedgerow canopy.
5. Dead-foliage cover.
6. Hedgerow structure.
7. Berry provision for overwintering wildlife.

The methodology and results for each of the above assessments are discussed in relation to the impacts on wildlife and are illustrated in detail in the paper.

This study is the first quantitative test of new approaches to hedge-rejuvenation management. The use of a large-scale manipulative field experiment over three years provides robust evidence for the relative cost of five rejuvenation methods and their effects on the value of hedgerows for wildlife in terms of hedge structure, regrowth and berry provision. This evidence for the benefits of new, cost-effective methods of hedgerow rejuvenation is urgently needed if we are to halt the decline in hedgerow condition.

Three 'laying' methods and coppicing were effective at improving hedgerow condition by stimulating basal regrowth, increasing the density of woody material at the base and reducing gap size. When cost is not a driving factor, traditional hedge-laying has a recognised aesthetic and cultural appeal and a key role to play in hedgerow rejuvenation. The study demonstrated, however, that cheaper alternative methods of rejuvenation can increase the habitat value of hedgerows for a range of wildlife to a similar extent to that of traditional hedge-laying, through successfully

stimulating regrowth to increase the density of woody material in the hedge base and reduce the size of gaps.

The paper recommends the widespread use of conservation hedging as an alternative to, or to complement, traditional hedge-laying. The lower cost of conservation hedging could result in double the length of hedgerow being rejuvenated. The use of coppicing should be restricted to areas with a low chance of deer browsing, and should be carried out on small lengths of hedgerow at any one time in order to minimise short-term impacts on wildlife such as small mammals. This new management approach realises a potential to double the length of hedgerow currently rejuvenated under agri-environment schemes.

Contact: Joanna Staley. E-mail: jnasta@ceh.ac.uk. Tel: 01491 692701.

Reference

Staley, J. T., Amy, S. R., Adams, N. P., Chapman, R. E., Peyton, J. M., & Pywell, R. F. 2015. Re-structuring hedges: Rejuvenation management can improve the long term quality of hedgerow habitats for wildlife in the UK. *Biological Conservation* 186: 187–196. See also: www.hedgeline.org.uk

Managing for Scotland's mountain plants

Some of Scotland's most iconic habitats are found in the mountains. Caught between the warm and wet weather from the Atlantic and the cold, dry weather from Europe, these mountains are home to a unique community of plants – the arctic-alpines – with species characteristic of European alpine mountains growing alongside others from arctic Scandinavia. A significant number of these species, however, are in decline, faced with challenges such as climate change and unsuitable land management. On International Mountain Day (11th December 2015), Plantlife Scotland published some new management advice, aimed at ensuring that future generations can enjoy these special mountain plants.

From the upland mires and springs



Blaeberry and Crowberry heath with *Racomitrium* lichen, taken at Brown Cow Hill, Aberdeenshire. Deborah Long

where such plants as Starry Saxifrage *Saxifraga stellaris* grow to the alpine plateaux of the Cairngorms where mosses and liverworts carpet the ground, these arctic-alpine communities have adapted to survive the harshest of living conditions. These plant communities have existed here for thousands of years, and owe their existence to the combined natural effects of climate, aspect and soil chemistry with minimal land management.

Many of the species living here, such as *Sibbaldia*, Moss Campion *Silene acaulis* and Mountain Azalea *Rhododendron canescens*, are rare, fragile and slow-growing. They are adapted to survive the harsh conditions of the mountain tops that quicker-growing plants from low altitudes cannot tolerate. But these slow-growing species are at risk from a number of factors related to climate and management.

Key threats facing Scottish arctic-alpine plant communities include:

Burning Muirburn is the traditional practice of burning off old growth on a heather moor to encourage new growth for grazing and Red Grouse *Lagopus lagopus*. At high altitudes, the severe climate restricts the growth of shrubs and fire

destroys these plant communities. They should never be burnt.

Grazing These plant communities are adapted to grazing. The right level of grazing keeps down competition from shrubs and grasses and creates micro open habitats for mosses and lichens to colonise. Heavy grazing, however, creates too much bare ground, which these slow-growing species cannot fill. This leads to erosion, which at high altitudes can be severe and exacerbated by low temperatures and high rainfall.

Changing weather conditions As the climate changes and becomes less predictable, with drier spells and warmer winters, these plants have nowhere left to grow, as they are already at the tops of our mountains.

Atmospheric pollution Perhaps surprisingly, pollution can still reach our mountain tops. Nitrogen from car fumes drifts high above the glens and is a particular problem in spring, when the snow melts and allows an influx of nitrogen into mountain soils and water systems.

'These high-altitude Scottish specialist plants are part of our mountain heritage,' says Deborah Long, Head of Plantlife Scotland. 'With climate change, they need, more than ever, the sort of land

management that creates and maintains a habitat where they can survive and thrive. What they actually need most is a kind of benign neglect, where there is no burning and a bit of grazing.

'The Scottish public can also help: we require more data on how these plant communities are doing. You can help by taking part in the National Plant Monitoring Survey this year and by visiting a mountain area every year to keep track of how mountain species like Blaeberry, Ling Cowberry and Mossy Saxifrage are doing.'

Contact: Katie Cameron. Email: katie.cameron@plantlife.org.uk. Tel: 01722 342759. Download Plantlife Scotland's management leaflet from http://www.plantlife.org.uk/publications/managing_for_scotlands_mountain_plants.

Anyone with information on the success or failure of any management technique is invited to contact John Day, Land Management Adviser, RSPB Conservation Management Advice, The Lodge, Sandy, Beds SG19 2DL; tel: 01767 680551; fax: 01767 683640; e-mail: john.day.lodge@rspb.org.uk.