

Back from the Brink – Species summary

Duke of Burgundy

BftB project: IPO4 Limestone's Living Legacies

Project lead organisation: Butterfly Conservation

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Species name – common & scientific	<p>Duke of Burgundy <i>Hamearis lucina</i></p>
<p>Photograph</p>	 <p>© Iain H Leach – Back from the Brink</p>
Taxon group	Lepidoptera (Butterflies)
Conservation status	<p>Section 41 species of principal importance under the NERC Act in England UK BAP status: Priority Species Butterfly Conservation Priority: High European status: Threatened Protected under Schedule 5 of the 1981 Wildlife and Countryside Act (for sale only)</p>
UK distribution	<p>The Duke of Burgundy is found in scattered colonies across southern England, with more isolated colonies in the southern Lake District and the North York Moors. It has declined by over 50% in recent decades and many of the colonies now have very small populations.</p>
Habitat associations	<p>Two principal habitats: 1. Chalk or limestone grassland, with either extensive areas of scrub or topographical shelter; 2. Clearings on ancient woodland sites, either regenerating coppice, young plantations, sizeable glades, or wide rides. In both habitats it requires foodplants growing among tussocky vegetation and on downland it prefers north or west-facing slopes, possibly because the humid conditions encourage lush growth of the foodplant. Can also be found in secondary woodland.</p>

BftB work carried out:	
Survey & Monitoring	<p>Building on the work of the Gloucestershire Branch of Butterfly Conservation and Habitat Designs Ltd, BftB in conjunction with the BC Gloucestershire Branch coordinated adult Duke of Burgundy surveys at 43 sites in 2018 and 27 in 2019. The results are presented in figures 1 through 5 below. In addition, larval feeding damage surveys were also undertaken at several sites.</p>
Sites habitat management works	<p>From Simcox et. al 2014* the butterfly needs “extensive winter grazing with cattle and regular scrub management to create a mosaic of different aged, but predominantly young, scrub”. This was based on their detailed bank of work which identified the butterfly’s ecological requirements on the Cotswold limestone grasslands.</p> <p>A programme of scrub management across nine sites (see listed below) was instigated to bring sites where the butterfly was present or had the potential for re-colonisation, back into condition. At two sites (Rodborough Common and Painswick Beacon) BftB followed up scrub removal work by introducing a suitable winter grazing regime, including investment in water troughs (at Painswick Beacon) and temporary electric fencing to create grazing paddocks. Advice was given to graziers/land managers on how to judge when the sward is the right height for moving cattle on to avoid over-grazing. This is not intuitive, as the butterfly occupies a transitional zone between grassland and scrub.</p> <p>List of sites where Duke of Burgundy habitat management has been delivered:</p> <p>Rodborough Common SAC: targeted paddock grazing through BftB and scrub clearance by the National Trust has supported one of the largest colonies of the Duke of Burgundy in the UK. Supporting the understanding and delivery of nuanced, targeted grazing regarding aspect and topography has enabled Duke of Burgundy habitat to over-lap with the much shorter turf of the Large Blue.</p> <p>Specialist consultants Habitat Designs Ltd advised that targeted grazing should occur every 2-3 years between August and December on areas of the slopes to maintain a varied age of Cowslips and stop the sward from becoming closed in. This needs annual review of the condition of the sward due to annual variability in grass growth and cattle available. It should be noted that the BftB project has occurred in drought years.</p> <p>Painswick Beacon: targeted paddock grazing through BftB and scrub clearance by Painswick Beacon Conservation Group that has also supported other key species with similar habitat requirements such as Fly Orchid.</p> <p>Huddinknoll Hill: scrub clearance and route cleared for electric fencing. (Electric fence installation and sheep grazing coordinated by Natural England.)</p> <p>Edge Common: scrub clearance</p> <p>Bull’s Cross: scrub clearance</p>

	<p>Juniper Hill: scrub clearance and route cleared for electric fencing. (Electric fence installation and sheep grazing coordinated by Natural England.)</p> <p>Rough Bank: scrub clearance</p> <p>Cirencester Golf Course: scrub clearance</p> <p>Ravensgate: Scrub clearance by contractors</p>
Technical advice provision	<p>Site advice visits to discuss habitat management for Duke of Burgundy were carried out to the following sites:</p> <p>Edge Common Huddinknoll Hill Bull's Cross Juniper Hill Painswick Beacon Cirencester Golf Club Ravensgate Common Rough Bank Kites Hill Reserve Charlton Kings Common Plus five other privately owned sites</p> <p>In addition, several visits were made to Rodborough Common and Painswick Beacon to monitor progress of paddock grazing.</p>
Links made with other taxa / conservation work?	<ul style="list-style-type: none"> • Scrub removal work at Edge Common also aimed to benefit Rugged Oil Beetles. • Scrub removal work at Juniper Hill also aimed to benefit Rugged Oil Beetles, Juniper, Fly Orchid and Dingy Skipper. • The need for a mosaic of longer vegetation and young scrub also links the Duke of Burgundy's habitat requirements to the Adder.
Wider engagement & advocacy activities?	<ul style="list-style-type: none"> • The Duke of Burgundy has been adopted as a nature recovery plan priority species by the Cotswold National Landscape. • Four Duke of Burgundy Identification and Survey workshops for both the adult butterfly (x2) and the larvae (x2) were led by Butterfly Conservation and Habitat Designs Ltd with a total of 51 people attending. • Three 'Managing Your Grassland for Wildlife' workshops included talks on how to manage grasslands for butterflies and included mention specifically of Duke of Burgundy habitat requirements. These were attended by a total of 52 people.
BftB results obtained:	
Recorded Distribution (in BftB focal areas)	<p>See figures 1 through 4 below and supporting text. Larval feeding damage surveys proved inconclusive due to the difficulty of identifying Duke of Burgundy feeding damage confidently.</p>
Recorded Abundance of species populations	<p>See figures 1 through 4 below and supporting text.</p>
Other results documented?	<p>A review of recording effort and landscape networks (see additional information, below)</p>
Species Recovery Curve progress made	<p>Species recovery curve score moved from 6 to 7: Recovery solutions have been employed at several extant and extinct Duke of Burgundy sites using targeted paddock grazing and scrub removal.</p>

	Management specifically for this species has been incorporated into the plans for management of several extant sites. Further surveys needed to confirm species recovery.
Recommendations for future work:-	Continued targeted paddock grazing and scrub removal where necessary to get conditions right for Duke of Burgundy on known and potential sites. Continued monitoring of Duke of Burgundy populations on known and potential sites to track impacts of habitat management and restoration work.

Additional Information

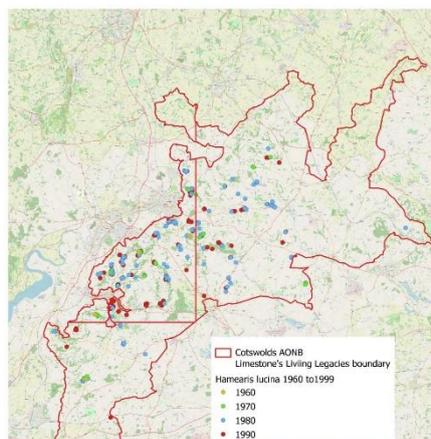


Figure 1 Recorded distribution of the Duke of Burgundy in the Cotswolds Limestone's living Legacies Back from the Brink project area pre-2000.

Analysing records from County Records centres (figure 1), casual recording though the 1970's moved to atlas work through the 1980's and 1990's led by local Butterfly Conservation members.

The atlas work showed that up until the 1990's the Duke of Burgundy had a widespread distribution across the Cotswolds, but 73% of the records pre 2000 were of single individuals.

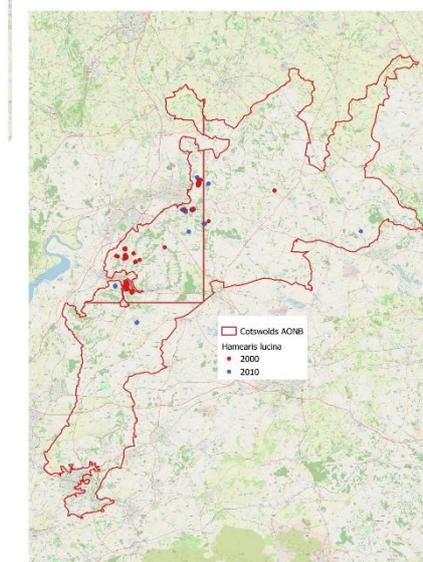


Figure 2. The distribution of the Duke of Burgundy 2000 to 2014

Post 2000, the distribution of the Duke of Burgundy in Gloucestershire collapsed by -72% (above a national trend of -46%).

In 2012 Natural England commissioned Butterfly Conservation to produce a report on the status of the butterfly across England (*Status and Conservation of the Duke of Burgundy Hamearis lucina butterfly in England Butterfly Conservation Report No. S13-19 Rachel Jones, Sam Ellis, Dan Hoare, Dave Wainwright and Amber Rosenthal. 2013*)

In 2014 Natural England commissioned Habitat Designs Ltd to undertake a detailed survey of the butterfly to identify its distribution and abundance, greatly helped by the local BC branch, and to establish the size and vulnerability of the Cotswold Duke of Burgundy population, identifying key colonies for conservation. Recorder effort increased, becoming focussed on population and transect monitoring of key sites where the species was still present. Numbers of individuals counted per record increased, with a shift to repeat counts of key colonies for conservation. The species was no longer being encountered across its 1990 range.

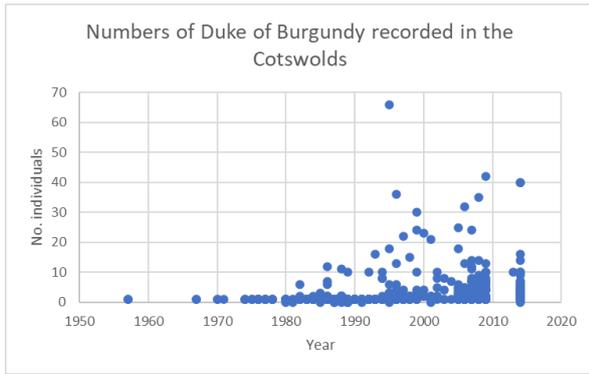


Figure 3. Maximum number of individuals per record increased from the late 1990's onward, reflecting focus on monitoring a smaller number of key sites more intensively.

The outlying record of 66 individuals was made in 1999.

A key recommendation of the 2014 Simcox report was to take a landscape-scale view of the extant colonies. Eight landscape networks had been broadly defined by Jones et al on a visual clustering of biological records by geography: Cockleford, Southam & Whittington, Withington, Painswick valley, Nailsworth, Coberley, Windrush Valley and Barnsley. The same landscapes were adopted in the Simcox report.

Testing the networks by placing a 1km buffer around the most recent Back from the Brink records of Duke of Burgundy upholds the networks broadly identified by Jones et al 2013 (Figure 4, stippled rounded shapes) and shows the relationship with the Back from the Brink project sites (in green). Where the buffers join to create a single shape, the butterfly records were closest together, with the greatest potential to already be moving towards a more secure local landscape metapopulation.

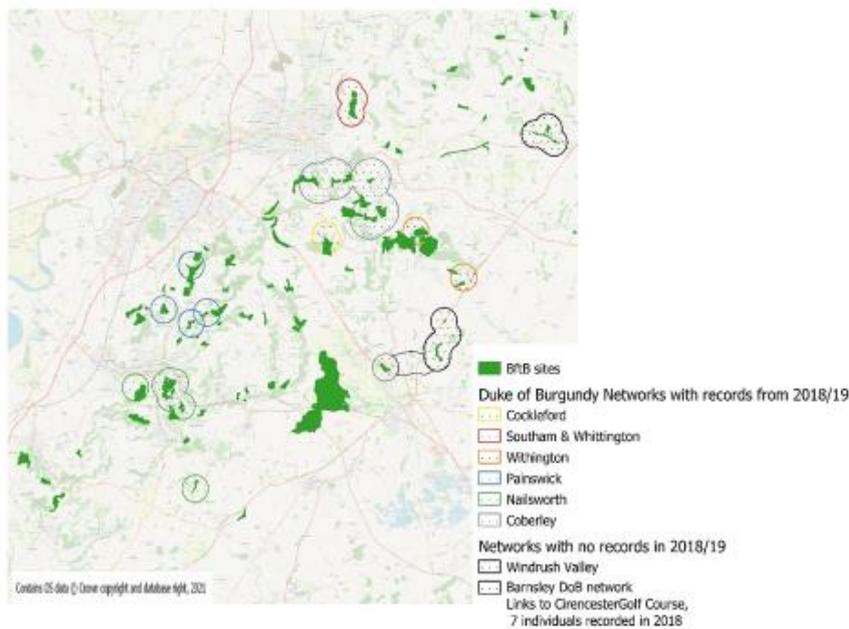


Figure 4. Back from the Brink worked on 67 Cotswolds sites (green), many falling within Duke of Burgundy landscapes in the Cotswolds identified by Butterfly Conservation in 2012. Based on 2018 & 2019 butterfly records extant networks are shown in different colours, networks with no 2018/19 Duke of Burgundy records in black.