

Cosnard's Net-winged Beetle *Erotides cosnardi*

Surveys and site assessment in the Wye Gorge area during 2018

**A contract survey commissioned by the Species Recovery Trust
& joint-funded by the
Gloucestershire Naturalist's Society, Buglife, and Natural Resources
Wales**



Cosnard's net-winged beetle at Little Doward in 2018

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SUMMARY

This document reports on survey work during the 2018 flight period for Cosnard's net-winged beetle *Erotides cosnardi* in the Wye Gorge, following up on work carried out during 2017:

- Field trials of using freshly cut tree stumps to attract male beetles, as per observations made at a goat willow stump on the edge of Highbury Wood NNR, Gloucestershire, in 2017, all proved negative; no *cosnardi* were found on freshly cut tree stumps;
- Male beetles were however observed on an older but undecayed cut slice of a beech trunk at Little Doward, Herefordshire, but were apparently only present for one day, suggesting a sub-optimal situation for aggregation;
- A male beetle was taken by one of a series of flight interception traps being operated by Natural Resources Wales in woodlands at the Chepstow end of the wooded gorge; this is the first time that the species has been found at this other end of the Wye Gorge;
- Continued exploration of the woodlands in the upper gorge has provided insights into the habitat availability at the local landscape scale, with Little Doward and the adjoining Seven Sisters Rocks area as the outstanding area for old growth woodland conditions, but with potential breeding trees scattered more thinly throughout the system.

Recommendation 1 – flight interception trapping

The continued elusiveness of the adult beetles suggests that it may now be time to begin some targeted flight interception trapping to try and identify trees which contain developing larvae and from which adults are emerging in the late spring period. Very little is known about the larval habitat but targeted flight trapping has captured small numbers of adult *E. cosnardi* beetles during French studies of another rare saproxylic beetle species, and the survey work by Natural Resources Wales has also demonstrated the effectiveness of the technique.

The recommended sites for flight interception trapping are:

- Little Doward, Herefordshire and Cadora Woods, Gloucestershire (Woodland Trust),
- Highbury Wood NNR, Gloucestershire (Natural England), and
- Rodge Wood, Gloucestershire and Reddings Inclosure, Monmouthshire (Forestry Commission).

This would cover all three counties as well as the key organisations involved in the conservation of this Endangered beetle in the upper gorge.

Recommendation 2 – continuing studies of cut stumps

The cut trunk study could also be continued in parallel, with the Highbury Wood NNR stump re-cut as well as a mature sycamore with white-rot identified alongside a cutover wayleave. Both the Highbury Wood goat willow and the Little Doward beech trunk section are situated in relatively large open, sheltered and sunny situations. In contrast the 2018 trial cuts – with hindsight - created rather limited options for sun

penetration. It may be that suitable assembling stumps need to be in sunny glade situations.

Recommendation 3 – enhancing conservation management in the local Woodland Trust sites

The Woodland Trust have been very active in their woodland management work in the gorge and their tree felling could be much better targeted at conservation management for *cosnardi*. The beetle is listed under Section 41 of the 2006 Natural Environment & Rural Communities (NERC) Act as a Species of Principal Importance for the conservation of biodiversity. This provision makes it a statutory duty on planning authorities and other decision makers to consider these species when carrying out their duty to further the conservation of biodiversity. It would be relatively easy to coach the local Woodland Trust team in how to favour *cosnardi* while carrying out their scheduled felling programmes.

ACKNOWLEDGEMENTS

Charlotte Carne (Species Recovery Trust) set up and managed the Gloucestershire contract; Rob Bacon (Natural Resources Wales) enabled his Wye Valley Woodlands SAC project to fund some work in the Monmouth area; and Sarah Henshall (Buglife) made funds available from Buglife's Back from the Brink HLF-funded project to promote a wider-landscape approach to the *cosnardi* study area. Tamsin Sagar and Dave Sykes (Forestry Commission) helped over the provision of cut stumps; Jo Hackman (Natural England Field Unit Entomologist) helped with field survey work; Jonathan Cooter assisted with fieldwork and provided information on the original locality gained from Airy Shaw in the 1970s. Benoit Dodelin drew my attention to the recent publication of a review of the French Lycidae fauna. My wife, Janet Lister, accompanied me on part of the wider exploration of the local woods and provided some ecological support with regard to the local vegetation and geomorphology.

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1 INTRODUCTION

1.1 Background

Alexander (2017) provides an up-to-date review of what was then known about Cosnard's net-winged beetle *Erotides cosnardi* in the Wye Gorge.

New information has subsequently been revealed about the location of the original discovery of *cosnardi* in the Wye Gorge area. Cooter (2018) reports that in correspondence with H.K. Airy Shaw in 1970, he stated that the Staunton Road property, where he found the first British specimens in 1944, backed onto Reddings Inclosure. This fits with the York Cottage location identified as one of two potential localities in Alexander (2017). Reddings Inclosure forms the western block of Highmeadow Woods which straddles the Wales/England border, with York Cottage firmly within Monmouthshire.

1.2 Objectives

Alexander (2014a) identified an urgent need for: i) targeted survey of remaining old beech stands in the Wye Valley & the old Arundel Forest area of the South Downs; ii) assessment of the extent and condition of old beech stands in these areas; iii) identification of the key conservation management requirements; and iv) establishment of monitoring protocols for old beech trees, to identify population trends in known sites.

The Species Recovery Trust set up the 2017 contract to:

- Carry out further survey of potentially suitable habitat in the Wye Gorge in the adult flight period, focusing primarily on Gloucestershire; and
- Discuss habitat management options with the local Forestry Commission team in the autumn.

Following the discovery of *cosnardi* beetles being continuously present on a recently cut goat willow stump on the edge of Highbury Wood NNR during the 2017 flight period for the beetle, the Species Recovery Trust arranged for the Forestry Commission to provide a series of freshly cut beech stumps through the Gloucestershire section of Highmeadow Woods (Marian's Inclosure and Rodge Wood) – close to where the beetle had originally been found 'new to Britain' in 1944. These were cut during the late winter period in order to provide comparable conditions to those observed in Highbury Wood in 2017. The Gloucestershire Naturalist's Society accordingly provided funding for:

- the regular monitoring of these cut stumps for *cosnardi* activity during the 2018 flight period, and for
- continued exploration of *cosnardi* habitat in the Gloucestershire section of the upper Wye Gorge.

Additional funding has been made available in 2018 from Buglife and Natural Resources Wales (NRW) to extend the research programme into neighbouring areas of the Wye Gorge in Herefordshire and Monmouthshire, respectively. Buglife had just started work on a major project funded by the Heritage Lottery Fund which includes

conservation work on ancient trees and key saproxylic invertebrate species. NRW have been commissioning survey and assessment work on the saproxylic invertebrates of the Welsh side of the Wye Valley Woodlands SAC

2 METHODOLOGY

2.1 2018 fieldwork programme

The spring of 2018 proved to be a notably late one in terms of the field season. The Jet Stream had been swinging very wildly, resulting in periods of warm air drawn up from the continent and very warm sunshine for three days in mid April, but followed by periods of bitterly cold weather with NW, N, NE and E winds drawing very cold air from the Arctic regions and with periods of heavy snow.

Visit 1 May 5th to 7th – warm sunshine throughout the three days, around 20 degrees C, and with little or no wind. Ideal conditions for searching for *cosnardi* although it may not yet have been active – the dates were chosen to cover the earliest known date the beetle had been reported in the past:

- Marian's Inclosure, Gloucestershire (FC) to check stumps cut as field trial;
- Rodge Wood, Gloucestershire (FC) ditto;
- Highbury Wood NNR, Gloucestershire (NE) to check the goat willow stump and to further explore the old beeches along the Offa's Dyke Path ridge;
- Seven Sisters Rocks and Lord's Wood (FC), to explore new areas for potential sites;
- Little Doward, Herefordshire (WT), ditto;
- Cadora Woods, Herefordshire (WT) ditto.

Visit 2 May 26th – Gloucestershire Invertebrate Group (GIG) field meeting arranged by David Scott-Langley as a reward to the Gloucestershire Naturalists' Society for their financial support. Warm but with vegetation wet from earlier rainfall, with brighter periods and some sunshine in the afternoon.

- Highbury Wood NNR, Gloucestershire, to show GIG members the goat willow stump where *cosnardi* had been observed during 2017, and to carry out field survey along the main ridge of the wood where old growth beech is concentrated;
- Cadora Woods, Gloucestershire (WT), to show GIG members the locations where Kirby (2002) had observed *cosnardi* and to survey the large clearings above the A466 Chepstow to Monmouth road that had recently been cut by the Woodland Trust.

Visit 3 May 29th

- Little Doward (WT), with Sarah Henshall of Buglife, to more fully explore the area of old beeches. The day was mostly overcast and relatively cool, 16 degrees C at 10am, although brightened and warmed briefly during early afternoon.

Visit 4 June 3rd

- Marian's Inclosure and Rodge Wood, to check cut stumps;

- Woodland along south side of A466 which forms part of the Monmouthshire part of Highmeadow Woods (FC) and on into Beaulieu Wood (WT) and The Kymin (National Trust), to explore new areas for potential sites;
- Little Doward, further exploration of this extensive area of old growth beech.

Visit 5 June 16th to 18th

- Harper's Grove & Lords Grove SSSI, Monmouthshire, to explore new areas for potential sites;
- English Newton Common, Goldsmith's Wood and Morgan's Grove, Herefordshire/Monmouthshire border;
- Far Harkening Rock area of Highmeadow Woods.

2.2 Literature search

Continued monitoring and exploration of existing data from other European countries within the natural range of *cosnardi* was also carried out in order to elucidate what more may be known about its ecology.

3 RESULTS

3.1 Cut stumps

3.1.1 Highbury Wood NNR (Natural England)

The 2017 *cosnardi* stump was visited on a series of occasions across the flight period to see if it had remained attractive to *cosnardi* for a second year.

On May 5th it was noted that ivy and moss were encroaching across the cut surface and the exposed wood had become blackened, presumably through fungal and/or bacterial action. The ivy was cleared by hand. The mosses appeared to be mostly *Eurhynchium ? praelongum* and a *Brachythecium* sp. No *cosnardi* could be seen.

A second stump of another *Salix caprea*, also felled in 2017 but not noticed and therefore not investigated during the 2017 flight period, is present higher up the track. The cut surface has also blackened. No *cosnardi* could be found.

A return visit on May 26th with the Gloucestershire Invertebrate Group also drew a blank on both old stumps. The stump was also checked on June 12th, with negative result.

Given that no evidence could be found of *cosnardi* during 2018, consideration could be given to cutting these stumps lower, to reveal unstained heartwood, in the hope of attracting *cosnardi* again.

Interestingly, it was noted on June 12th that a wayleave had been cut over across the lower section of the NNR, close by the goat willow stump. Coppice stools of hazel had been cut notably low across the strip beneath the overhead cables using a

chainsaw – remarkably poor quality and insensitive work for a NNR. These were all inspected for signs of *cosnardi*, but all proved negative. It was also noted that a mature sycamore on the edge of the cut swathe has a white-rotten base – this tree would have been a good option for cutting last winter as part of the project, had its presence been known.

3.1.2 Forestry Commission

A series of relatively young beech trees had been identified for felling in two areas of Forestry Commission plantations - Marian's Inclosure (SO5512) and Rodge Wood (SO5412) – as part of the 2017 Species Recovery Trust project. The aim was to investigate whether *cosnardi* adults could be attracted to freshly cut stumps in the same way that they appear to have been at Highbury Wood NNR in the previous flight period. The beech trees had been felled during winter 2017/18. A group of six trees, scattered through a stand dominated by mature beech, were felled in Marian's Inclosure and two more in the western edge of Rodge Wood, also in a stand of mature beech. These trees were mostly undecayed or have some white-rot at the margins, where squirrel damage had caused localised death of the bark and the wood below had been colonised by white-rot causing fungi. These mainly provided potential arena areas as white-rot was poorly developed overall and marginal rather than heartwood.

The stumps were first re-visited on May 5th. No *cosnardi* could be found at either site. The only insects present were the saproxylic flatbug *Aradus depressus*, one individual at each site. Sweep-netting of the ground vegetation – dense ramsons in Marian's and sparse bluebell in Rodge - revealed very little. No *cosnardi* could be seen during inspections on 3rd and 12th June.

Olfactory detection of the fresh stumps by *cosnardi* at Marian's Inclosure could conceivably have been masked by the strong smell of the ramsons, but there are no ramsons at Rodge Wood. It is possible that both sites are too shady or too closed in by dense woodland generally to be attractive to *cosnardi* in their present condition.

3.1.3 Woodland Trust

Although not engaged with the SRS project, ongoing woodland management works carried out for the Woodland Trust were found to be providing additional cut stumps within parts of Cadora Woods. An exploratory excursion on 7th May located a single recently felled lime tree and a series of lower roadside glades formed by the clear-felling of a large number of maturing sycamores – this felling may have been for Health & Safety reasons, above the Chepstow to Monmouth road.

The sycamore stumps exhibited mostly undecayed heartwood although a small number had some white-rotten heartwood and/or hollows.

Walking along Coxbury Lane on 5th May the stump of a freshly cut large mature lime tree was noted by new gateway works on the upper side of Highbury Fields and Cadora Woods (SO537088). The tree appeared to have been cut within the previous six months. The core of the stump is solid but there is an area of white-rot development; the diameter of this cut area is about 0.5m. It potentially offers an arena area between Highbury Wood and the places in Cadora Woods where individual

cosnardi adults have been found in the past. No insects were present on this occasion. Follow-up inspections were made on June 12th, when it was noted that there had been other trees felled alongside Coxbury Lane. No *cosnardi* could be seen.

Felled sycamores above the Chepstow-Monmouth road

These sycamore glades were first noted on May 7th, when no associated invertebrates could be found.

The situation was very different when visited with the Gloucestershire Invertebrate Group on May 26th. The glades were providing a series of sheltered hot-spots for flying insects on this occasion and the cut stumps were very productive. Although no *cosnardi* could be found, one particular stump had attracted a wide range of saproxylic beetles, although presumably attracted by the sappy exudations rather than as a potential arena. Species present included the beetles *Pediacus dermestoides*, *Rhizophagus perforatus*, *Cerylon ferrugineum* as well as the sap-beetle *Glischrochilus hortensis*. The saproxylic bugs *Aradus depressus* and *Aneurus* sp were also present on a number of the other stumps. The hoverfly *Criorhina* sp was also a feature of one glade – this develops in decaying roots. A single specimen of the Nationally Scarce darkling beetle *Gonodera luperus* was also found – this is assumed to be saproxylic although the larval requirements are not known. This is only the second time that this beetle has been reported from the Wye Valley Woodlands in Gloucestershire (Alexander, 2018). A subsequent visit on June 12th noted another rare hoverfly *Brachyopa pilosa* attracted to these sappy stumps – the first record of this species from Gloucestershire (D. Iliff, pers. comm.). The stumps were already beginning to be masked by the vigorous growth of bramble and cleavers. Later in the year the stumps had disappeared behind a ring of young sycamore growth emerging from the bark below the cut.

3.1.4 Conclusions

No *cosnardi* beetles were found at freshly cut stumps during the 2018 flight period, neither at those trees cut specially to attract them, nor at trees which had been cut for other reasons. The implications of this result are difficult to understand – what had been so attractive about the Highbury Wood goat willow stump in 2017 that made it so unique? How important are cut stumps for male *cosnardi* as gathering places? If such gatherings are an important part of *cosnardi*'s behaviour, what other situations might they be using as alternatives? Cut stumps are not produced through natural processes, only through human action. It is very unlikely that the availability of cut stumps is stimulating behaviour that is not normal for the species – it seems more likely that they are offering something better than natural situations.

3.2 General habitat exploration

3.3 Gloucestershire

3.3.1.1 Cadora Woods (SO5307) (Woodland Trust)

A walk through on May 7th aimed to re-assess site quality following the revised understanding of *cosnardi* ecology resulting from the 2017 work. A series of lower roadside clearings had recently been cut for the Woodland Trust, presumably as part of H&S works (see 3.2.3 above). The potential of these stumps for *cosnardi* arenas was noted, although no invertebrates were associated on this occasion.

The plantation areas were noted as containing a thin scatter of mature oak, beech, etc, and that these have mostly not been subject to halo-release work – at least not within the past 10-20 years - to the detriment of their value as veteran trees. Many veterans were suffering from crown competition from dense pole beech or larch, as well as other conifer species. One small area did however appear to have had some halo-release work, above the main forestry ride past Church Grove.

Much of the woodland appears unsuitable for *cosnardi*, being dense, even-aged and closed-canopy – no heartwood decay progressing, no sunny stumps, no structural diversity, and precious little decaying wood at all. However, it may be that the mere presence of a low density of veteran trees within the mix – as opposed to a frequency - is sufficient to maintain a small population of *cosnardi*? One particular beech, immediately above a track, appears to be a potential host tree for *cosnardi*:

- Latschbacher tag no. 3803 and an oval aluminium tag numbered 6902, and therefore part of the Woodland Trust's veteran tree survey;
- Girth is about 3m;
- There is a basal cavity and an area of white-rotten heartwood visible within.

Another large beech tree, Latschbacher tag no. 7955, has a tight fork at about 1.5m up the trunk and so might also have some decay within. The Woodland Trust's tree survey data may provide a valuable opening into assessing the whereabouts of suitable host trees within this large extent of otherwise unsuitable woodland.

A small stack of felled tree trunks in a stacking bay close to one of the original 1902 *cosnardi* sites was investigated for saproxylics but only the sap beetle *Glischrochilus hortensis* and the flat bug *Aradus depressus* could be found. The longhorn beetle *Rhagium mordax* was seen in flight close by.

3.3.1.2 Highbury Wood NNR (SO5408) (Natural England)

The zigzag access track and the route of Offa's Dyke path along the high ridge were walked on a number of occasions during the 2018 flight period.

May 5th – hand search and sweeping revealed no *cosnardi*; very little by way of invertebrates at all.

May 26th – members of the Gloucestershire Invertebrate Group explored alongside the access ride and Offa's Dyke path, but very little of significance could be found. The

invertebrate fauna was notably sparse and nondescript in character on this occasion. Blossom of both hawthorn and holly was attracting very little.

3.3.1.3 *Rodge Wood (SO5412) (Forestry Commission)*

The lower roadside strip of Ridge Wood was traversed on May 5th to see if any trees potentially suitable as *cosnardi* larval habitat or as potential arenas (if cutting could be arranged). At least two mature beech were found with extensive development of white-rot. These appear to be much more suitable for trial-felling than any felled so far.

3.4 Herefordshire

3.4.1.1 *Little Doward (SO5315) (Woodland Trust)*

The first visit (May 6th) aimed to investigate the old beech areas in the western part of the site and to improve the surveyor's understanding of the site layout. Access was made from the tarmac entrance area by Ganarew Cross. The south-west and south-facing steep slopes were traversed, and evidence sought for saproxylic beetles in general. Conditions were warm and sunny (car thermometer at 24-25 degrees C). Despite the frequency of large old beeches and much fallen deadwood, very few saproxylic invertebrates could be found: *Mycetophagus atomarius*, *Pediacus dermestoides* and *Scaphidium quadrimaculatum*.

The second visit (May 29th) aimed to provide Sarah Henshall of Buglife with an overview of the main areas of old beech trees while at the same time surveying for saproxylics and especially *cosnardi*. The day started at the western end of the old beech areas, cutting across to the deer fence which cuts perpendicular to the slope, then continued eastwards outside of the deer-fenced area, as far as the old deer park stone wall boundary. Saproxylic invertebrates proved to be hard to come by, but the Nationally Scarce fungus weevil *Platyrhinus resinusus* was unusually frequent. The list of species identifiable under field conditions also included *Mycetophagus atomarius* and *Pediacus dermestoides* – both low-grade indicators of ecological continuity – as well as Rhinoceros beetle *Sinodendron cylindricum* and lesser stag beetle *Dorcus parallelepipedus*, both present in good numbers. A feather-horned cranefly observed was thought to be the uncommon *Ctenophora pectinicornis*. Larvae of the click beetles *Stenagostus rhombeus*, *Melanotus sp* and *Denticollis linearis* were found beneath bark on deadwood, as well as of the longhorn beetle *Rhagium mordax*. Molluscs were found to be species-rich and to include two old growth indicator species lapidary snail *Helicigona lapicida* and ash-black slug *Limax cinereoniger*.

The surveyors eventually came across a large fallen beech which had been sawn up to restore access along a track along the upper edge of the slope, and where a track cuts diagonally upslope to meet it, at gps location SO 54036 15836 (using a handheld Garmin reader). One sawn section of the main trunk had been left relatively face upwards but tilting somewhat, southwards towards the sun. Two *cosnardi* beetles were observed stationary on the cut surface, and a third appeared after one of the original two had flown a short distance into the surrounding tall nettle and bramble vegetation – flight appeared weak. The beetles were observed and photographed for about 40 minutes, in which time they slowly moved around the cut disc surface, with

their antennae typically held up into the air above. They tended to move towards the edges of the cut face, which may have been in reaction to the presence of the observers. The cut trunk section was 81 by 61cm across and there was 54cm of trunk beneath; it presumably had been cut from the large beech illustrated as Fig 6 in Telfer (2016) and therefore cut between then (late spring 2015) and May 2018 – the dry condition of the cut surface suggests cutting took place in 2015 or 2016 at the latest. The trunk slice did not have a central core of decayed heartwood but there were small cavities with white-rotten heartwood, marginally around the slice. The situation is best described as a well-sheltered large glade, with southerly aspect, and with mature beeches on all sides except above, where there was a limestone crag. The rest of the fallen old beech included vertical sawn trunk faces as well as lying decorticated trunk sections. *Erotides cosnardi* could not be found in any situation other than the lying trunk slice. The only other saproxylic beetles observed nearby were red-headed cardinal beetle *Pyrochroa serraticornis* and the longhorn beetle *Rhagium bifasciatum*.

A short distance to the east, another large beech standing above a track had been felled and the top rolled down the slope below the trunk. The cut surface was fairly fresh and still sappy, with a large lateral area of white-rot – clearly cut early spring 2018. No invertebrates were associated, but this felling was noted as a missed opportunity to leave some cut sections on the ground to attract *cosnardi*.

An old fallen bracket of *Inonotus hispidus* was found to be full of the distinctive larvae of the Nationally Scarce false darkling beetle *Orchesia micans*. A number of fallen beech stems showed emergence holes of a scolytid beetle, approx. 1mm in diameter, and are thought to be of a *Xyloborus* group species. Emergence holes of what appeared to be *Dorcatoma* beetles were also noted in *Ganoderma australe* and *Inonotus dryadeus*. Samples have been taken away for rearing as they are most likely to belong to the two Nationally Scarce *D. dresdensis* (develops in hard perennial brackets of *Ganoderma australe*, etc) and *D. substriata* (in annual brackets of *Inonotus* spp etc).

A return visit on June 13th targeted the beech snag where Telfer (2016) had found an adult male beetle by sweeping. The OS grid reference (using a Garmin handheld machine) is SO5396615865; the girth was measured at 3.75m gbh. The snag stands in full sunshine amongst bracken and nettles, at the upper edge to a slope with other veteran beech trees. The old top lies alongside beneath bracken, nettles and bramble growth. Access to the hollow interior and basal debris of the snag is possible through a small basal gap between root buttresses. Debris pulled out contained a very young larva of an alleculine darkling beetle but nothing else – Jo Hackman (NE) reports seeing an adult *Pseudocistela ceramboides* beetle here earlier in the month and so the larva is likely to be from this Nationally Scarce species. It is striking how close this snag is to the sawn beech trunk where the three male beetles were observed and also to the location where Pete Kirby found a beetle in 2004.

General searching for saproxylic invertebrates revealed a variety of the more common and widespread species: the beetles *Pediacus dermestoides* (Cucujidae), *Stenagostus rhombeus* (Elateridae), *Cerylon ferrugineum* (Cerylonidae), *Dorcus parallelepipedus* and *Sinodendron cylindricum* (Lucanidae) and *Hylesinus crenatus* (Scolytinae), as well as the dipteran *Xylophagus ater*. The distinctive larval burrows of the beetle

Hylecoetus dermestoides (Lymexylidae) were found in a lying beech trunk just outside of the deer park, towards Seven Sisters Rocks.

The overall assessment of the saproxylic habitat available is “huge potential”, with the beginnings of a rich and varied fauna increasingly becoming revealed. Ideally this site should be subject to a more detailed investigation using flight interception traps targeted at areas of wood decay such as the many rot-holes observed. Such a study has the potential to identify host trees for *cosnardi* larval development.

3.4.1.2 Seven Sisters Rocks (SO5415) (Forestry Commission)

The deer park of Little Doward was enclosed out of a larger area of common pasture and the land immediately to the east contains very similar old growth beech woodland. This was briefly explored on 6th May and the slopes below Seven Sister Rocks – a continuation of the crag line within Little Doward - were found to contain mature beech and oak high forest. The larger oaks have a girth of about 4.5m and beech trees exceed this, reaching about 5m girth at 1.3m height. There are also a few large old ash trees. Habitat quality appears very comparable with Little Doward with the exception only that large items of fallen deadwood were much scarcer at the time of the visit. The only saproxylic beetle noted was the Nationally Scarce fungus weevil *Platyrhinus resinosus*.

The slopes beyond Seven Sisters Rocks – to the east - rapidly become dominated by dense young woodland.

3.4.1.3 Lord's Wood (SO5515) (Forestry Commission)

Apart from the slopes at Seven Sisters Rocks, most of Lord's Wood comprises forestry plantations on the plateau and young woodland along the slopes above the river. The talus slopes below the high rocky crags comprise young, dense-pole woodland, except for small sections with stabler rocky ground where a few mature beeches were noted. At the north-east end of the craggy slopes, towards New Weir and Symonds Yat West, and where a public path cuts up through the crags, there are a few more large old beech including one specimen of about 4.5 m girth. Exploring the more accessible crag areas, a few patches of old beech coppice were encountered, and these eastern upper slopes include areas of semi-natural woodland including beech. However, the bulk of the core of the woodland is under plantation forestry. Mature beech again become prominent towards the western edge of the wood, close to Seven Sisters Rocks. The plateau area immediately above Seven Sisters Rocks has even-aged beech high forest, apparently being managed as continuous cover forestry, with periodic thinning – no old trees, no heartwood decay – and is almost certainly singed beech coppice. A section east of the large disused quarry has recently been thinned of larger girth beech and oak – none showing signs of heartwood decay - and with any rotten trees felled and left.

3.5 Monmouthshire

3.5.1.1 *Beaulieu Wood (Woodland Trust) & The Kymin (SO5212)(National Trust)*

Beaulieu Wood combines gentle lower slopes rising to a boulder-strewn craggy upper slope with a plateau beyond. The lower slopes are dominated by forestry plantations but the rocky upper slope has old beech coppice including large old coppice stools, some with rot-holes visible. These rot-holes may provide suitable larval habitat for *cosnardi*. Conditions are generally dark and shady. The plateau woodland is more mixed. A Woodland Trust information panel notes that by 1811 much of the wood was being cut for charcoal production.

There is additionally another strip of old beech coppice on the steeper slopes which swing round southwards towards Beaulieu Farm. This area appears equally promising as *cosnardi* habitat but was not entered as the land is privately owned and permission had not been sought for entry.

The National Trust land ownership at The Kymin includes areas of mature open-grown oaks and open lawns. One large beech tree had recently been felled and the trunk left on the ground, although with lop-and-top removed. The cut stump was checked on a number of occasions but no *cosnardi* were observed.

3.5.1.2 *Harper's Grove – Lord's Grove SSSI (SO5211) (private woodlands)*

This is one of the constituent SSSIs of the Wye Valley Woodlands SAC, designated as a large area of predominantly relict mixed coppice and mixed coppice with standards woodland along the slopes of the River Wye gorge. This particular site is considered notable for the stand of hornbeam at the upper end.

The precise boundaries of the SSSI do not accurately define the extent of semi-natural woodland and the present text relates to the geographical site rather than the designated site. Lord's Wood has been subject to clear-felling of some central blocks and replanting with conifers. It has two parallel disused railway tracks through its length and which currently provide valuable access to the otherwise notably steep slopes.

The wood was explored from the two tracks on the afternoon of June 16th and the morning of June 18th. Overall the wood was assessed as mostly unsuitable for *cosnardi* due to the small pole size of much of the timber currently available as well as the dense closed canopy, but there is also a thin scatter of veteran beech and lime, including old pollards, as well as massive out-grown coppice stools. In this respect it is similar to Cadora Wood around the time of acquisition by the Woodland Trust and before the conifer blocks began to be harvested, and the latter has of course generated two sightings of *cosnardi* in 2002 (Kirby, 2002). Harpers Grove itself holds a massive lime pollard, about 7m in girth. The larger trees present potentially contain white-rotten heartwood and hollowing, potentially suitable for *cosnardi* larvae.

3.5.1.3 English Newton Common area (SO5215) (private woodlands)

The woodland of Little Doward is more or less continuous with a large expanse of woodland to the west, on steep slopes around English Newton Common – a ridge of high ground between the River Wye and the small tributary valley of the Mally Brook. The area was explored using the public footpath network on June 17th. The woodlands of Goldsmith's Wood and Morgan's Grove (both within the civil parish of Ganarew, Herefordshire), Hayes Coppice, Joint Wood and Hazel Wood (all within Monmouthshire) are all under private forestry management, with blocks of conifer plantations or areas of active sweet chestnut coppice predominating. However, the narrow ridge plateau of the former common has a section with a concentration of large old beech trees (SO523154). These include small rot-holes and some will undoubtedly be hollowing, and so may be considered as potential habitat for larval *cosnardi*.

3.5.1.4 Reddings Inclosure, Highmeadow Woods (SO5313) (Forestry Commission)

Reddings Inclosure is a very large section of Highmeadow Woods, forming the main western block of this Forestry Commission land. Although rather dominated by conifer plantations today and accessed along the forest rides, the overall mosaic includes remnant sections of old beech coppice on steeper rockier terrain as well as patches of more mixed semi-natural woodland of coppice-with-standards type. These are more apparent when using the public footpath network rather than the forestry extraction rides. The area has not yet been explored in detail for the *cosnardi* project but has been subject to a number of exploratory forays. The 2018 visits include a further exploration of the woodland adjoining York Cottage but focused more on sections fringing the Monmouth to Staunton Road (A4136) and the slopes around Far Harkening Rock and across to the edge of Lady Park Wood NNR.

The location of the original 1944 discovery of *cosnardi* as a previously overlooked British species has recently been revealed as Reddings Inclosure. Cooter (2018) reports that he had spoken with the discover, HK Airy Shaw (1902-1985), after his own discovery of the beetle on the South Downs, and that Airy Shaw had revealed to him that the original locality was on the edge of Reddings Inclosure. This fits with the investigation of the original locality using genealogical techniques, as reported last year (Alexander, 2017) – the York Cottage locality is now presumably confirmed.

The woodland adjoining York Cottage was explored again on June 3rd. This is a potentially interesting section of mature beech and oak high forest, but closed canopy at present and heavily shaded by the beech trees. The main ride through its length provides a narrow strip of better-lit ground. It is well-used by horse-riders from the adjoining stables but there has been no cutting of trees recently and so there are no cut stumps or trunk sections to potentially attract *cosnardi* beetles. Many of the older beech trees show visible signs of wood-decay through rot-holes and some are almost certainly hollowing. Larval habitat does seem very likely

On June 12th an exploration of the woodland along the other side of the A4136 was carried out. Mature beech and oak high forest dominate much of this area, both alongside the road and into the interior, as along the flanks of a small valley and also on Headless Hill. The larger beech trees achieve girths of between 1.5 and 3.5m,

while larger girth oaks are also present, the largest noted being measured at 3.58m. One notably large hollow oak stump at Headless Hill was measured at 3.07m but was larger before the top collapsed. The stump contains extensive white-rotten heartwood, presumably caused by the bracket fungus *Ganoderma australe*. This emphasises the point that if *cosnardi* requires large white-rotten hollow tree trunks, then oak should not be ignored as a potential host. This area of woodland does seem to have strong potential to support the beetle.

3.6 The Natural Resources Wales project on documenting the saproxylic invertebrate interests of the Wye Valley Woodlands SAC

NRW initiated a programme of survey work in the Wye Valley Woodlands SAC in 2017 with the objective of identifying significant interests other than vegetation ecology within the SAC. One such survey programme has been targeted at saproxylic invertebrates (Alexander, 2018). The work programme for 2018 involved continued field survey supplemented by the operation of nine flight interception traps situated in the Blackcliff/Wyndcliff SSSI (three traps) and the Pierce, Alcove & Piercefield Woods SSSI (six traps). A single male *cosnardi* was taken in one of the six traps operated in the latter SSSI. This is the first record of the beetle from this end of the Wye Gorge and the first Welsh record since 1944.

The trap concerned was located on the hillfort of Pierce Wood (ST536959) at the point that the stem of a relict coppiced small-leaved lime has fallen into a single standard of another lime – see image below. Several ripped limbs show signs of regeneration and the collapsed lime came fully into leaf during the 2018 season suggesting the presence of very little damaged or decayed wood. The catch was made between 17th May and 26th June.



This discovery raises a number of questions. An aggregation of larval Lycidae had been found beneath loose bark on a fallen stem of small-leaved lime close by during the autumn of 2017. These had been assumed to be *Platycis minutus* as that was the only lycid known from the site at the time. The larvae of neither *P. minutus* nor *E. cosnardi* have been formally described and so reliable identification was not possible. An attempt at rearing resulted in the death of the larvae retained. The subcortical situation of these larvae is very atypical for either species, so far as we understand their ecology at all. The aggregation of larvae is also something that was unexpected, although mass emergences of *P. minutus* have been reported in the past. But, given that the situation appears to be atypical for both species on present understanding, and that the 2018 Pierce Wood male beetle was taken from a recently collapsed small-leaved stem, one conclusion might be that the larvae are more probably of *cosnardi*.

This discovery adds to the current difficulty of understanding the ecology of *cosnardi* in the Wye Valley Woodlands by adding another layer of complexity.

3.7 Continental literature

A key recent publication has been a review of the French Lycidae fauna (Calmont et al, 2017). *Erotides cosnardi* has been recorded from a large concentration of Départements across the eastern half of the country. In the Massif-Central the beetle is described as having been found as single individuals on stumps and decay cavities of fir trees and beeches. The text goes on to say that they most probably also develop in the wood of other broad-leaved trees. Beetles have been taken during flight interception trapping studies from basal cavities of beech in April and May 2008 (N. Gouix) and from a high cavity on ash, 21st May 2005 (H. Brustel).

The presence of adult beetles on a particular tree species does not necessarily imply development in the tree species of course. Records from fir stumps may just be beetles alighting casually, while exploring the area. But the flight trap records do imply emergence of adults from larval habitat – the traps were being used to sample saproxylic beetles developing in tree cavities as part of studies of another Endangered beetle species, the violet click beetle *Limoniscus violaceus*. Calmont et al (2017) therefore provides evidence for *cosnardi* developing in basal cavities and rot-holes in both ash and beech trees.

4 DISCUSSION

4.1 The arena type behaviour

It is possible that *cosnardi* has particular requirements which most of the time are not well-expressed by the area, but occasionally the beetle does well and becomes more detectable. The cutting of the goat willow tree at Highbury Wood in 2017 produced a favourable gathering situation, but no such situation was encountered during 2018. The Little Doward beech trunk slice had attracted a minimum of three male beetles for at least one day but was not apparently sufficiently favourable to maintain their presence. In recent years only single beetles have been reported from the Wye Gorge area, and only very rarely. The 2016 Little Doward specimen was a male (MG Telfer, pers. comm.) but close to potential larval habitat in the form of a large dead beech snag in a sheltered and sunny glade. Pete Kirby (pers. comm.) had found both male and female beetles during his earlier surveys but only as single individuals.

It remains unclear whether the observed ‘arena’ behaviour of male *cosnardi* is typical for the species or exceptional. One long-term arena has been observed in Highbury Wood NNR in 2017 and one temporary one on Little Doward Hill in 2018, suggesting that this behaviour may indeed be typical, but more observations are needed. The proximity of beetle observations in one small area of Little Doward Hill, within a very extensive system of old growth beech, might be interpreted as supporting evidence, that the arenas concentrate matings, and hence oviposition, to some extent. But this is just speculation based on very little data.

4.2 Landscape scale habitat analysis

Is it just the presence of suitable larval trees that is key rather than the frequency? The Cadora Woods and Highbury Woods sites certainly seem to suggest this. They are very different in character to Little Doward. In the following table, an attempt is made to assess habitat quality for *cosnardi* larvae and adults, based on field experience and current assumptions about their requirements.

Area name	Larval habitat	Adult habitat
<i>Gloucestershire</i>		
Cadora Woods	Some potential	Poor at present
Highbury Woods	Some potential	Poor at present
Rodge Wood	Good potential	Poor at present
<i>Herefordshire</i>		
Little Doward	Excellent potential	Good potential
Seven Sisters Rocks	Good potential	Poor at present
Lord's Wood	Some potential	Poor at present
<i>Monmouthshire</i>		
Beaulieu Wood	Some potential	Poor at present
English Newton Common area	Some potential	Poor at present
Harper's Grove & Lord's Grove	Some potential	Poor at present
Reddings Inclosure – York Cottage strip	Good potential	Poor at present
Reddings Inclosure – north side of A4136	Good potential	Poor at present
Reddings Inclosure – Far Harkening Rock area	Good potential	Poor at present

This does highlight Little Doward Hill as the key site for *cosnardi* in the upper Wye Gorge. Rodge Wood and areas of Reddings Inclosure are also picked out for their potential. These are the areas where continued observation are most likely to result in further advancement of our knowledge of this elusive and fascinating beetle species.

5 RECOMMENDATIONS

The general feeling is that the artificial provision of potential gathering sites for the adult beetles has not been successful, although the discovery of beetles using a cut trunk section on Little Doward indicates that an expansion of this approach might eventually produce dividends. However, knowledge of the larval habitat in the area remains largely unknown – the beech snag found by Mark Telfer at Little Doward may be occupied by larvae but this has not yet been demonstrated. Although flight interception trapping might be a hazardous approach for this extremely rare species, it is still thought worth trying in order to target potential host trees and to try and demonstrate occupation. A range of different tree forms and girth classes could be trialled. This would increase knowledge of the size and condition of trees required for larval development.

The four-bottle style of flight interception trap described by Alexander et al (2016) is small enough to be used very precisely, to capture a sample of insects entering or leaving rot-hole cavities – see Fig 1 below. It is a reasonable assumption that the sample will be dominated by species developing within the decay inside of the cavity. Traps placed in a variety of situations, e.g. within shade or well-lit situations, north- or south-facing tree cavities, large or small cavities, etc, would potentially provide information which can then be used to inform site management, guide managers in the types of trees which need to be retained and how to manage their vicinity, how to manage for future generations of host trees, etc. If the favoured cavities are accessible enough then it might be possible to search for larvae in situ and find out more about them.



Fig.1. Illustration of four-bottle flight interception trap placed to sample activity around rot-cavity

Recommendation 1 is that a small series of flight interception traps is operated at several sites in the flight period next season. The recommended sites are:

- Highbury Wood NNR (Natural England) – along the ridge beeches by Offa’s Dyke Path
- Little Doward (Woodland Trust) – in the vicinity of the core of *cosnardi* records
- Cadora Wood (Woodland Trust) – targeting the few mature beeches with basal decay
- Rodge Wood (Forestry Commission) – the roadside strip
- Reddings Inclosure (Forestry Commission) – preferably a minimum of three locations here

The cut trunk study could also be continued in parallel, with the Highbury Wood NNR stump re-cut and also the sycamore with white rot identified alongside the wayleave. Both the Highbury Wood goat willow and the Little Doward beech trunk section are situated in relatively large open, sheltered and sunny situations. In contrast the 2018 trial cuts – with hindsight - created rather limited options for sun penetration. It may be that suitable assembling stumps need to be in sunny glade situations.

Recommendation 2 is therefore to liaise with Natural England to see if re-cutting the goat willow stump and felling the sycamore by the wayleave might be possible this spring.

Recommendation 3 is to liaise with the Woodland Trust over their planned tree felling works to see if it might be possible to leave the arisings in a way to favour *cosnardi* activity, i.e. cut trunk sections could be left on the ground with a cut face upwards, towards the sun. A training day with the people carrying out the work might be the easiest way forwards, initially at least.

They have been very active in their woodland management work in the gorge and their tree felling could be much better targeted at conservation management for *cosnardi*. The beetle is listed under Section 41 of the 2006 Natural Environment & Rural Communities (NERC) Act as a Species of Principal Importance for the conservation of biodiversity. This provision makes it a statutory duty on planning authorities and other decision makers to consider these species when carrying out their duty to further the conservation of biodiversity. It would be relatively easy to coach their local team in how to favour *cosnardi* while carrying out felling programmes.

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