

**Cosnard's Net-winged Beetle**  
*Erotides cosnardi*  
**(Coleoptera: Lycidae)**

**Flight interception trapping surveys  
in the Wye Gorge area during 2021**

**A contract survey commissioned by Buglife  
& funded by  
Back from the Brink (Heritage Lottery Fund)**



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

Keith N. A. Alexander BSc, PhD, FRES, MCIEEM  
Ecological Consultant  
57 Treffry Road, TRURO, TR1 1WL  
keith.alexander@waitrose.com

## SUMMARY

Cosnard's net-winged beetle *Erotides cosnardi* has recently been assessed as Endangered in Great Britain. It is only currently known from two areas: the Wye Gorge (Monmouthshire, Gloucestershire & Herefordshire) and the South Downs (West Sussex & Hampshire)

A project to establish improved understanding of its ecology and conservation management requirements has been initiated by the Species Recovery Trust (SRT) in the Wye Gorge and has received additional funding from Buglife as part of the 'Back from the Brink' Heritage Lottery Fund project.

Until recently the species was known from just a very few casual observations of individual beetles at rest amongst ground vegetation. The SRT project has now shown that males gather at lekking arenas to attract females for mating. Two such arenas have been observed. The first was a freshly sawn stump of goat willow on the edge of woodland and was observed over a period of three weeks. The second was an older sawn section of a large beech trunk in a glade but was only in use for a single day.

This document reports on survey work in the Wye Gorge during the 2021 flight period. The Woodland Trust property at Little Doward (Herefordshire) is the only site where the beetle has been observed over a period of years. It was therefore selected as the main focus for a study with two key aims: (i) learning more about the saproxylic (wood-decay) habitat being used by the beetle larvae, and (ii) trying to find a reliable means of monitoring population levels.

A transect of ten flight interception traps was operated across the old beech areas of Little Doward for the duration of the beetle's flight period and including the area where the beetle has been observed on three occasions in recent years. Two traps each were also operated at four other locations: Cadora Woods (Woodland Trust), Rodge Wood (Forestry England) and Highbury Wood NNR (Natural England) in Gloucestershire and Reddings Inclosure (FE) in Monmouthshire.

Only a single *Erotides cosnardi* was observed during the course of the 2021 study. It was observed close to a large dead beech trunk in a glade in an area of Little Doward where the species has not previously been found. The trunk had a flight interception trap in place but the beetle was observed on beech leaf litter close by. This observation demonstrates that the beetle was active in the study area but that 10 flight interception traps were insufficient to detect that activity.

The failure to catch any *cosnardi* in the traps was unexpected – it has previously been found by flight interception trapping in Piercefield Woods, Monmouthshire, and also at two sites in France. It may be that a larger scale trapping exercise is necessary to guarantee catches and a trapping scale of the order of 50 -100 traps is suggested. This would be a substantial undertaking.

The trapping exercise has however found a remarkably rich and varied saproxylic fauna associated with the old growth beech including many British Red List and Nationally Scarce species – for this reason they will continue to be operated in order

to get a full season of data. Little Doward in particular is clearly of at least national significance for saproxylic beetles in general.

Options for the future include: i) expanding the trapping project, if sufficient funding can be achieved, and ii) returning to a focus on the lek arena sites. The project has been approached by Bristol Zoo who are interested in developing a captive breeding programme for this endangered beetle. This would have the potential to improve our understanding of the larval habitat ecology in particular. The lekking behaviour appears to be the most promising way forwards, enabling the taking of mated females into captivity. It has been suggested that volunteers could be recruited to monitor potential lekking sites across the Wye Gorge area and to transfer any mated females found into the zoo collections.

## **ACKNOWLEDGEMENTS**

Thanks to Alice Parfitt (Buglife) and Paul Rutter (Plantlife) for their contributions to this study and to the Heritage Lottery Fund for funding through the Back from the Brink project. Thanks also to Nicola Cooke (Bristol Zoo) for her interest in developing a captive breeding project; also to Richard Brown (Woodland Trust), Kate Wollen (Forestry England) and Kate Gamez (Natural England) for permissions to operate flight traps on their land. Charlotte Carne (Species Recovery Trust) has been involved throughout. My wife, Janet Lister, accompanied me on the site visits to provide Health & Safety support.

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# 1 INTRODUCTION

## 1.1 Distribution of *Erotides cosnardi*

Cosnard's net-winged beetle *Erotides cosnardi* (syn *Platycis cosnardi*) is currently known in Britain from just two areas: the Wye Gorge and the South Downs (Alexander, 2003). Its' conservation status has been assessed as Endangered in Britain (Alexander, 2014a). The focus of its global range is Central Europe, and it appears to be rare or at least very localised throughout this range and confined to areas of ancient forest. It has not yet been assessed for the European Red List of Saproxylic Beetles.

Alexander (2017) provides an up-to-date review of what was then know 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 was told that the Staunton Road property, where HKAS had found the first British specimens in 1944 (Airy Shaw, 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 within the Monmouthshire section.

## 1.2 Habitat and ecology

“Confined to old forests where it is found in trunk cavities of ancient *Fagus*” (Speight, 1990); it is almost certainly a native species of old growth beech in Britain (Alexander, 2014a). Koch (1989) says it has a montane distribution within its central European range and this is also suggested by its British strongholds being in the deep gorge of the river Wye and the high ground of the South Downs, and its absence from the more typical lowland old growth beech of the New Forest and Windsor Forest.

The larvae are said to develop in the white-rotten heartwood within trunk cavities of old beech hulks (Speight, 1990); Koch (1989) says ‘especially beech’. No information is available on tree size or girth class. The larvae are either carnivorous or omnivorous - food is digested externally by means of enzymes secreted via the mouthparts and they only ingest liquid food (Crowson, 1981). Lycidae larvae apparently feed on decomposing plant material and associated fungi, yeasts and slime moulds (Marshall, 2018). In France the beetle has been reported from:

- Obtenue de cavités basses de hêtre (beech) en Forêt de Compiègne en avril et mai 2008 (N. Gouix)
- De cavité haute de frêne (ash) en Aubrac le 21 mai 2005 (H. Brustel).

This suggests that larvae develop in tree cavities, both basal and in rot-holes high up the trunk. Ash forms similar white-rotten heartwood to beech and so an ash record is not inconsistent with beech old growth.

The adults are short-lived and have been reported in the Wye Gorge active from 9<sup>th</sup> May to 14<sup>th</sup> June, possibly as late as 25<sup>th</sup> June. Lycidae are not known to feed during their short adult lives, although some seem to graze on fungal spores and a few species with elongated mouthparts are regular flower visitors adapted to imbibing

nectar (Marshall, 2018). *Erotides cosnardi* have very rarely been reported from blossom in Britain – e.g., one photographed at a flowerhead of ramsons *Allium ursinum* in Sussex but without documentation of actual feeding being observed.

The apparent five- to six-week activity period may vary from year to year, according to local weather conditions, and may be shorter in any one season. It seems likely that males emerge first, enabling some population mixing to take place prior to the emergence of the females. They are reported to fly in hot sunshine, especially in late afternoon, and have also been taken at rest amongst the field layer in shady woodland – mosaics of sun and shade may be important.

Observations made in the Wye Gorge during 2017 and 2018 have suggested that the male beetles tend to accumulate at particular deadwood features and wait for flying females to come to them for mating – a lek type of behaviour not previously described for Coleoptera other than the Timberman longhorn *Acanthocinus aedilis*. The males are presumably releasing pheromones into the air to attract the females. One freshly cut goat willow stump on the edge of Highbury Wood NNR was used by between 2 and 7 male beetles for an extended period in 2017 and mating was observed in late afternoon/early evening. In contrast, three males were found on a cut beech trunk section at Little Doward on one occasion only in 2018. Provision of new cut stumps and inspection of freshly cut stumps arising from H & S works (WT) as well as forestry operations (FC) across a number of sites in the Wye Gorge area in 2018 appeared not to attract any males.

Observations at Little Doward suggest that flight is weak and low. One male was seen to fly from a short-term lek stump into nearby nettles. It seemed poorly directed, poorly powered and low. However, one of the French flight trap records came from a high rot-hole and so females at least may fly at a few metres' height.

It is assumed to be essentially a wood pasture species, although only one of the sites where it has been found is currently open to grazing other than by wild deer and wild boar (Little Doward) - possibly a key reason for its current rarity - the few surviving populations suppressed by conversion to high forest land management structures – trees die relatively young, even shade-tolerant species, as natural retrenchment with age effectively becomes suicide under closed canopy conditions. The Wyastone Leys Deer Park site (Little Doward) is very obviously former wood pasture and the Woodland Trust have established grazing by White Park Cattle onto the main hill-fort area and part of the main old growth beech slopes. Cadora Woods are also notable for their ancient pollard trees (although scattered amongst coppice) and Church Grove in particular has open-grown oaks suggestive of formerly open conditions; the historical development of this area remains unclear, but the Woodland Trust appear to be promoting high forest style management here -which is not conducive to creating the suspected habitat requirements of rot-holes formed by loss of large lateral limbs.

It may be that sites such as Cadora Woods and Highbury Wood NNR provide very sparse habitat, with just a few suitable trees with heartwood-decay amongst large areas of unsuitably young and dense woodland. The beetles would need to be able to assemble somehow for mating, hence their attraction to recently cut stumps as arenas. But Little Doward potentially provides more suitable habitat conditions, with large old beeches relatively frequent across the steep slopes.

### 1.3 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 current Species Recovery Trust led project has been tackling these topics (Alexander, 2017). The HLS funded 'Back from the Brink' project organised by Plantlife and Buglife has provided additional funding and the 2021 work in the Wye Gorge has focused on the use of flight interception trapping to identify potential host trees and their important saproxylic features while at the same time field trialling of trapping as a potential monitoring methodology.

## 2 METHODOLOGY

The aim of the 2021 survey work was to target potential larval habitat by placing a series of flight interception traps on trees which appeared to offer potentially suitable larval habitat in order to capture a sample of the emerging adult beetles. If sufficient adults were captured, then the methodology might prove useful for long-term monitoring of adult abundance.

The flight interception traps used are of a standardised construction:

- four 2l plastic drinks bottles, with windows cut in sides, and bases bolted onto a plastic base, the windows facing outwards.
- the base is then hung either within hollow tree trunks or by trunk cavities and/or decay using baler twine, with bottles hanging upside down beneath.
- The upside-down bottle tops are filled with preservative solution (propylene glycol 50/50 with tap-water, plus a little washing up liquid to reduce surface tension) which can then be drained through the plastic cap for sample collection.

The traps were placed on trees showing a range of different saproxylic situations:

- Standing dead beech hulks in sunny glades.
- Standing dead beech in shade.
- Rot holes formed where lateral branches had been lost.
- Recent tear from loss of lateral branch exposing hollow cavity.
- Basal rot arising from physical damage to trunk bases.
- Top rot where the high canopy or major boughs had been lost and decay was progressing in the top of the trunk.
- Hollow standing trunks or stumps.

The height at which the traps were placed to target the rot features was also noted. The recorded measurement was the distance between the ground surface below and the bottle cap.

Five sites were selected for trapping. The emphasis of the work was targeted on Little Doward (SO5315; 10 traps) as this is the only British site where *E. cosnardi* has been found on more than one occasion (2004, 2015 and 2019). Samples were also taken from the following sites (two traps each):

- Cadora Woods (SO5307), where single specimens have been found in two separate locations in 2002 (Kirby, 2002)
- Highbury Wood NNR (SO5408), where the long-term lek of male beetles was found in 2016 (Alexander, 2016)
- Reddings Inclosure (SO5313), where the original discovery of *E. cosnardi* was made in 1944 (Airy Shaw, 1944)
- Rodge Wood (SO5412), which is a beech site close to the original Reddings Inclosure locality.

The traps were placed in April (19, 20 & 21) and checked and emptied in May (26 & 27), June (16, 17 & 18) and July (6 & 7), thereby ensuring that each run during the flight period was of 3 weeks only. The relatively short duration was primarily to ensure that should large numbers of beetles be caught in any one trap that trap could be closed down to avoid excessive mortality of such a rare beetle.

The catches were rough sorted under a microscope to check for *E. cosnardi* and some preliminary identification made of the more obvious amongst the other species present. The bulk of the samples will be identified in due course, during the autumn and winter months.

## **3 RESULTS**

### **3.1 Weather impacts**

Although most field seasons have features which are judged exceptional, unusual or difficult by field entomologists, 2021 was certainly outstanding in this respect. A cold dry April was followed by a cold wet and stormy May. The May storms caused some loss of samples, especially from traps 7-10 on Little Doward but also at Cadora and possibly elsewhere through flooding of the samples. May was unseasonably cool and wet and will have resulted in depressed catches irrespective. Windstorms have been unusual during the summer months in the past but are becoming increasingly a feature and increasingly strong and wet due to climate change. One impact has been the increasing need to develop stronger ways of attaching and stabilising flight interception traps. Despite the difficult conditions, a single *E. cosnardi* was observed during the first sample gathering visit on May 26<sup>th</sup> which is within the normal flight period of the species in the Wye Gorge.

### **3.2 *Erotides cosnardi* recording**

No *Erotides cosnardi* were taken by any of the 18 traps across the five study sites but a single specimen was observed on beech leaf litter close to Trap 3 at Little Doward, a standing dead beech hulk in a sunny glade. Trap 3 is in a very different area of Little Doward, well away from the area where the three previous observations have been made.

### **3.3 Other saproxylic invertebrates trapped**

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

Preliminary examination of the catches has identified the following species of interest:

- *Dorcatoma dresdensis* (Ptinidae) Nationally Scarce (NS)
- *Ischnomera cyanea* (Oedemeridae) recently downgraded from NS
- *Malthodes pumilus* (Cantharidae) NS
- *Megatoma undata* (Dermestidae) NS
- *Oedemera femoralis* (Oedemeridae) NS
- *Pediacus dermestoides* (Cucujidae) European Red List
- *Platyrhinus resinosus* (Anthribidae) NS
- *Prionocyphon serricornis* (Scirtidae) NS
- *Pseudocistela ceramboides* (Tenebrionidae) NS
- *Tillus elongatus* (Cleridae) NS

#### **Cadora Woods (SO5307) (Woodland Trust)**

Preliminary examination of the catches has identified the following species of interest:

- *Oedemera femoralis* (Oedemeridae) NS

#### **Highbury Wood NNR (SO5408) (Natural England)**

Preliminary examination of the catches has identified the following species of interest:

- *Ischnomera sanguinicollis* (Oedemeridae) NS

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

Preliminary examination of the catches has identified the following species of interest:

- *Ischnomera cyanea* (Oedemeridae) recently downgraded from NS
- *Pediacus dermestoides* (Cucujidae) European Red List
- *Prionocyphon serricornis* (Scirtidae) NS

#### **Reddings Inclosure, Highmeadow Woods (SO5313) (Forestry Commission)**

Preliminary examination of the catches has identified the following species of interest:

- *Oedemera femoralis* (Oedemeridae) NS

## **4 DISCUSSION AND CONCLUSIONS**

### **4.1 *Erotides cosnardi***

Although it is very disappointing that the trapping failed to yield any *E. cosnardi* beetles on this occasion, the discovery of a beetle in a new area is encouraging. Both areas where it has now been found are glades within the beech stands, where good sun penetration is possible and where the surrounding trees shelter the areas from wind and rain. The area between the two sites is extensive dense and shady beech woodland. This does suggest that warmth and shelter may be key features required for beetle activity.

### **4.2 Saproxylic Coleoptera more generally**

The preliminary examination of the trapping samples has identified a remarkable range of Nationally Scarce saproxylic beetles (9 species so far), and it is anticipated that once the final identifications of the full seasonal run of the flight interception traps has been completed Little Doward will have been shown to be of at least national significance for saproxylic beetles overall. Little Doward has only previously had limited saproxylic survey work and so the ‘Back from the Brink’ project will have made a significant contribution to knowledge of the full saproxylic invertebrate fauna present. The other sites appear to be supporting a subset of the same assemblage, with only Highbury Wood NNR producing one additional species.

## **5 RECOMMENDATIONS**

### **5.1 Expansion of the flight trapping exercise**

Although flight interception trapping has failed to provide the information sought on this occasion, it remains a key technique for the study of saproxylic invertebrate assemblages. *Erotides cosnardi* has been taken in flight interception traps elsewhere in the Wye Gorge and at two old forest sites in France. It would be instructive to collate the full data from those and other studies to generate some guidance on the number of traps required to provide statistically useful data. It seems likely that trapping on a scale of 50-100 traps per site may be required. The current project was costed at around £8000 and so scaling upwards would potentially require approximately £80 000.

A key result from the 2021 project has been the demonstration on the overall species-richness of the saproxylic invertebrate fauna at Little Doward, something only suspected previously. Continued flight interception trapping would help to build up the understanding of site quality and the habitat management issues.

### **5.2 Exploration of a captive breeding programme**

The project has been approached by Nicola Cook, Invertebrate Keeper at Bristol Zoo, about exploring the potential for a captive breeding programme for *Erotides cosnardi*. The current site of Bristol Zoo will be shutting and moving up to their South

Gloucestershire site so they are currently reviewing their collection plan. Nicola is hoping that with the expanded space available at the new location they will be able to get involved with more native species conservation projects. She was able to join Paul Rutter and Keith Alexander on the July trap-emptying run at Little Doward where discussed current knowledge of the beetle and debated the best options for achieving a captive breeding population.

The beetle continues to be difficult to work with but the lek arena observations of previous years may provide the best opportunities for capturing live mated females. Larvae are still unknown in the wild and the 2021 studies have failed to clarify the type of decaying wood being exploited by the beetle.

Previous surveys have found males congregating on a freshly sawn stump of goat willow *Salix caprea* on the edge of Highbury Wood NNR over a period of about three weeks, and also temporarily on a sawn trunk section of beech at Little Doward. The implications are that the beetles may be preferentially attracted to the clear and flat, horizontal arenas provided by large items of sawn wood, especially where located in sheltered and sunny situations. Field trials to replicate these conditions have so far failed – trees were selectively felled by FE teams at one site, but recent cutting elsewhere as part of normal site management was also explored at Little Doward and elsewhere in the Wye Gorge. An expansion of these observations might improve their success potential. In particular it had been hoped that re-cutting of the goat willow stump at Highbury Wood NNR to remove the regrowth might once again provide an attractive site for the beetles. Unfortunately, this proved impossible due to changes in staff and resources within Natural England but is being actively pursued for the coming winter period.

A further meeting is being arranged between SRT and Bristol Zoo this autumn to formalise an action plan.

## REFERENCES

- AIRY SHAW, H.K. 1944. *Dictyopterus (Platycis) cosnardi* Chevr. (Col., Cantharidae, Lycinae) new to Britain. *Entomologist's Monthly Magazine* **80**: 204-5.
- ALEXANDER, K.N.A. 2003. *Provisional atlas of the Cantharoidea and Buprestoidea (Coleoptera) of Britain and Ireland*. Huntingdon: Biological Records Centre.
- ALEXANDER, K.N.A. 2014a. A review of the scarce and threatened beetles of Great Britain. Buprestidae, Cantharidae, Cleridae, Dasytidae, Drilidae, Lampyridae, Lycidae, Lymexylidae, Malachiidae, Phloiophilidae and Trogossitidae. Species Status No. 16. *Natural England Commissioned Report NECR134*: 1-80.
- ALEXANDER, K.N.A. 2014b. *Erotides cosnardi* (Chevrolat) (Lycidae) re-discovered in the Wye Gorge, in both West Gloucestershire (VC 34) and Herefordshire (VC 36). *The Coleopterist* **23**: 34-35.
- ALEXANDER, K.N.A. 2017. *Cosnard's net-winged beetle Erotides cosnardi – Surveys and site assessment in Gloucestershire and adjoining areas of the Wye Gorge*. Unpublished report to Species Recovery Trust.
- ALEXANDER, K.N.A. 2018. Saproxylic Invertebrate Survey of Wye Valley Woodlands Special Area of Conservation (SAC) in 2017. *NRW Evidence Report* No: **245**, 30pp, Natural Resources Wales, Bangor.
- CALMONT, B., VALLADARES, L., & BRUSTEL, H. 2017. Les Lycidae d'Europe Etat des connaissances pour la France. *Revue de l'Association Rousillonaise d'Entomologie* 26 (1): 1-13.
- COOTER, J. 2018. A further note on *Erotides cosnardi* (Chevrolat) (Lycidae). *The Coleopterist* **27**: 101-102.
- CROWSON, R.A. 1981. *The Biology of the Coleoptera*. London: Academic Press.
- KIRBY, P. 2002. *Cadora Woods, Bigsweir Woods, Causeway Grove & Highbury Fields Invertebrate Survey 2002*. Unpublished contract report for The Woodland Trust.
- KIRBY, P. 2004. *Little Doward Invertebrate Survey 2004*. Unpublished contract report for The Woodland Trust.
- KOCH, K. (1989). *Die Käfer Mitteleuropas, Ökologie* 2. Goecke & Evers, Krefeld.
- MARSHALL, S.A. (2018) *Beetles. The Natural History and Diversity of Coleoptera*. Firefly Books, New York & Ontario.
- SPEIGHT, M.C.D. 1990. *Pyropterus nigroruber* (Degeer) in Ireland (Coleoptera: Lycidae), with a key to distinguish this beetle from related European species. *Bulletin of the Irish Biogeographical Society* No. **13**: 166-172.

TELFER, M.G. 2016. *Cosnard's Net-winged Beetle Erotides cosnardi*. Unpublished report for Species Recovery Trust.