

Cosnard's Net-winged Beetle *Erotides cosnardi*

Surveys and site assessment in the old Arundel Forest area of West Sussex during 2022

A contract survey commissioned by the Species Recovery Trust



High quality saproxylic habitat in Houghton Forest

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SUMMARY

This document reports on survey work during the 2022 flight period for Cosnard's net-winged beetle *Erotides cosnardi* within the area of the former Arundel Forest in West Sussex:

- All of the West Sussex sites where the species has been reliably reported in the past were visited and the habitat availability explored and assessed.
- No new records for *Erotides cosnardi* were achieved but site quality appears high at some sites at least and nationally rare saproxylic beetles were noted including the darkling beetle *Prionychus melanarius* (Tenebrionidae) in Arundel Park and the shiny fungus beetle *Tritoma bipustulata* (Erotylidae) at Selhurst Park. The rare Cheese Snail *Helicodonta obvoluta* was also noted at Duncton Hanger.
- Some preliminary exploration was also made of additional areas known to have concentrations of veteran beech trees and Bignortail Wood has been identified as potentially another key area for *Erotides cosnardi*.
- The most promising site appears to be Houghton Forest which has some of the largest girth veteran beech in the county and this site merits a tree survey to identify the key areas for long-term conservation; a follow-up investigation of associated saproxylic beetles would also be desirable here. Arundel Park also merits a tree survey.
- Tree survey is also needed across the whole old Arundel Forest treescape – in liaison with the Woodland Trust's Ancient Tree Inventory project - and preferably extending westwards and northwards along the Weald Edge Hangers SSSI to Noar Hill SSSI where a mating pair of *Erotides cosnardi* was reported in 2018.
- The only report of a live specimen anywhere in Britain during the 2022 flight period came from just over the border into Hampshire, at South Holt, where it was associated with a veteran beech tree of 3.87m girth, with advanced white-rotten heartwood, and standing within a very open wood pasture situation.

Recommendations:

- The 2022 surveys have made a good start on understanding *cosnardi* in the area. Continued exploration of potential habitat is recommended.
- Conservation planning for the old growth beech habitat in Houghton Forest is a key priority.
- Follow-up saproxylic invertebrate assessments are needed in Houghton Forest, Bignortail Wood and elsewhere.

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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*. Essentially, this beetle is known to have just two current populations in Britain, one centred on the Wye Gorge, the other in the old Arundel Forest area of West Sussex. Its British status has been assessed as Endangered (Alexander, 2014).

It is an extremely elusive species but recent studies in the Wye Gorge have managed to advance knowledge considerably. It is associated with extensive systems of beech old growth and – although the larvae are undescribed – is believed to develop within white-rotten decay of the heartwood of veteran beech trees. There is a strong association with ancient wood pasture conditions. The adult stage is short, records covering the period from early May into mid-June – the five-to-six-week activity period may vary from year to year, according to local weather patterns, and may be shorter in any one season.

Observations made in the Wye Gorge have suggested that the male beetles tend to gather at particular (unshaded, warm, sunny) deadwood features and wait for flying females to come to them for mating – a lek type of behaviour that is virtually unknown amongst Coleoptera. Male flight is weak and low but no observations are available on female flight – females are much larger than males.

The South Downs population is known from a small number of single records only. No site has had the species found on more than one occasion. Interestingly, this closely mirrors the situation in the Wye Gorge prior to the Species Recovery Trust's programme of research and survey.

The South Downs records for *cosnardi* all lie within a large area of former medieval hunting chase known as Arundel Forest and which extended west from the River Arun at Arundel Castle as far as the Hampshire border (McInnes, 2016).

1.2 Objectives

Alexander (2014) 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 2022 contract to:

- Carry out survey and assessment of site quality of potentially suitable habitat in the old Arundel Forest area during the adult flight period.

2 METHODOLOGY

2.1 Site visit arrangements

The ownership of two of the known sites for *cosnardi* in West Sussex, and where a good site exploration was needed, was already known. Species Recovery Trust accordingly contacted the owners and agreed access permission for the purposes of exploring the areas concerned for *cosnardi* and assessing site quality and identifying site conservation management issues. The two areas were Houghton Forest (Forestry England) and Arundel Park (Norfolk Estates). Other areas with known records would be inspected initially via public footpaths and bridleways and, where assessed as worthy of follow-up survey, the ownership identified for future reference. It was thought likely that one or two of these localities would not be found to be suitable for *cosnardi* as breeding habitat.

2.2 2022 fieldwork programme

The spring of 2022 proved to be a notably early one in terms of the field season for many groups of organisms and so it was considered that fieldwork should take place during the first half of the typical adult beetle activity period.

Visit 1 May 15th Duncton to Bignor Escarpment SSSI

Visit 2 May 17th Arundel Park

Visit 3 May 18th Selhurst Park area, Park Hill (East Dean) and Fairmile Bottom LNR

Visit 4 May 19th Bignor Hill and Slindon estate

3 RESULTS & DISCUSSION

The areas where *Erotides cosnardi* has been found previously in West Sussex are described in date order in the following sections. Intriguingly, the date sequence is also a geographical sequence, from west to east – first the Goodwood Estate, then Duncton, Houghton, Coombe Wood and Arundel Park. Two additional areas were also explored as they are known to contain concentrations of veteran beech and might conceivably be capable of supporting *cosnardi*: Fairmile Bottom SSSI and that part of the Slindon Estate which lies southwards from the escarpment woodlands of Bignor Hill.

3.1 Goodwood Estate

Permission had not been sought to explore this area as current knowledge indicated that the area was under conifer plantation and lacking in suitable habitat. Observations have accordingly been made from the public rights of way network but have shown the area to have considerable potential.

‘Red Copse’

On 25 May 1969 Jon Cooter (1973) had found a single specimen of *cosnardi* in an area which he referred to as ‘Red Copse’. This was the first time that the species had been seen in Britain since it had been added to the British List in 1944, from Reddings Inclosure in the Wye Gorge area. The 1969 specimen had been found by sweep netting field layer vegetation beside a huge section of prostrate beech trunk which had evidently been dragged to the side of the woodland (Cooter, 2018). The site was revisited by JC in 1970 and found to have been clear-felled, sprayed, and replanted with conifers (Cooter, 1973). The actual grid ref was SU9174.1170 (JC, pers. comm. 9.i.2018). None were seen here during a private visit by JC in 2021 (JC, pers. comm.).

The precise spot identified by the OS grid reference supplied by Jon Cooter actually lies to the north of the area shown as ‘Red Copse’ by the Ordnance Survey 1: 25 000 mapping and is divided from it by an old bank and ditch, with a public bridleway on the north side of the bank and within the edge of the area described by Jon Cooter. As noted by Cooter (1973) the area is now conifer plantation. The ancient boundary bank has the ditch on the far side from Red Copse and the general aspect of the area suggests that Red Copse was once an ancient woodland and separated from an area of old common to the north, the ditch being designed to keep grazing animals out of the copse. The modern road typically cuts through the former common land rather than enclosed woodland.

The first notable feature identified during the 2022 visit is a line of mature and veteran beech trees along the public bridleway between Red Copse and the area where *cosnardi* was found in 1969. The areas either side of the bridleway are both currently dominated by mature conifer plantations. The line of beech trees extends eastwards, beyond Red Copse, into neighbouring Selhurst Park. There is a standing dead beech hulk at the western end.

The largest of the beech trees have a girth of 4.29m (SU92125.11531) and 3.81m (SU92119.11513). A large bough had recently split from the tree and was on the ground below; a good range of saproxylic beetles were found beneath the loose bark: *Diplocoelus fagi*, *Rhizophagus nitidulus*, *Pediacus dermestoides*, *Uleiota planata* and *Pycnomerus fuliginosus*. A fallen beech at SU922115 had been partly sawn up but searching beneath loose bark revealed a specimen of the Nationally Scarce beetle *Tritoma bipustulata*, a species which is very rare in Sussex, with just two records known to the author, including one from Arundel Park. This area is clearly rich in saproxylic beetles and this is consistent with the presence of *cosnardi*.

Selhurst Park

The proximity to the historic Selhurst Park is another notable feature. Although the parkland has largely been destroyed, a small remnant of former wood pasture remains a little to the east of the old beech trees and includes veteran oaks and a particularly large girth ash tree, of 5.84m gbh. Other veteran trees survive elsewhere within the historic boundary of the former parkland, now within agriculturally intensive pasture and arable crops. There is little doubt that Selhurst was emparked between 1302 and 1326 when Edmund FitzAlan was the 9th Earl of Arundel (McInnes, 2016). In 1302 Selhurst was referred to as one of the ‘six woods with deer in the free chase’ of the Earl

of Arundel (www.british-history.ac.uk). Continuity of old wood pasture trees has clearly been good here in the past and although no longer managed as parkland there are significant remnants capable of supporting a rich and interesting saproxylic beetle fauna.

The ‘Red Copse’ site is also close to **East Dean Park Wood SSSI**, a site designated for its old growth lichens.

Park Hill, East Dean

The author had picked out an area of ancient beech trees on the west side of East Dean Park Wood at Park Hill in 1989, registering it with the old Nature Conservancy Council’s Invertebrate Site Register at the time. It was then described as an “excellent area for deadwood habitats derived from concentrations of ancient beech pollards within matrix of secondary scrub woodland and plantation”. It was clearly an old common wood pasture site. The public bridleway within its eastern edge was accordingly walked in 2022 with the aim of seeing if it merited contacting the Goodwood Estate for permission to explore.

The area currently appears to be dominated by hazel and dying ash trees but with two notable ancient beech pollards close to the path and a collapsed old beech nearby. The two standing beech have girths of 3.85m (SU89633.12062) and 3.71m (SU89627.12054). The larger tree has lost a bough from one side exposing rot-holes in the trunk. A stack of recent sawn ash stems was inspected for saproxylics and the Nationally Scarce fungus weevil *Platyrhinus resinosus* was found. The lower slope on the north side remains grazed wood pasture and includes a few mature beech trees in the region of 2-3m girth and one large pollard ash of 3.74m girth (SU89719.12192).

Wider historic landscape

The historic landscape here is difficult to discern due to the impacts of modern forestry and intensive agriculture but the impression gained is of a mosaic of former wood pasture common land and ancient woodland on the outer edge of the neighbouring civil parishes of East Dean, Earthham and Upwaltham. Jon Cooter’s ‘Red Copse’ locality sits about midway between the medieval Selhurst Park (Eartham civil parish) and East Dean Park Wood SSSI (East Dean civil parish). The outermost regions of a civil parish are typically the location of the ancient woodlands and wood pastures as these land-uses were the less intensive aspects of a medieval manor and needed much less attention.

3.2 Duncton to Bignor Escarpment SSSI

The second discovery of *Erotides cosnardi* in West Sussex was made in **Duncton Chalk Pit Nature Reserve, Duncton Hanger** by David Porter (1985 & 1987). He had found a specimen close to a decaying beech tree on 16th June 1984 – the site forms part of the **Duncton to Bignor Escarpment SSSI**. Porter (loc. cit.) noted that the day had been particularly hot and that the specimen was taken by sweep-netting the herb layer at about 17.00 GMT. The actual grid ref was SU9552.1603 (J. Cooter, pers. comm. 9.i.2018). The specimen is now held by the Booth Museum, Brighton (PJ Hodge, pers.

comm. 2022). Jon Cooter (pers. comm.) visited the site in 2021 but could not detect the beetle.

According to the site citation, Duncton to Bignor Escarpment SSSI has been designated for its mature beech woodland. An exploration of the whole site was therefore warranted, not just Duncton Hanger, and so much of one day (15th May) was spent walking the tracks and footpaths which cross-cross the steep wooded slopes at the Duncton end of the SSSI. Another visit to the SSSI was made a few days later (19th May), this time concentrating on the opposite end, around Bignor Hill.

Permission to carry out detailed invertebrate survey had not been sought from the respective landowners as a visual assessment was needed to inform the decision on whether survey was actually warranted. The exploration therefore confined itself to the network of public rights of way.

Duncton, Barlavington and Sutton escarpments

Sunday 15th May 2022 was a very wet day. The Five Day Forecast a few days before had predicted fine sunny weather but the Saturday evening forecast was for overnight thunderstorms - which never appeared - and a period of light showers from about 10am until 2 pm. In reality, heavy showers continued for much of the day. Weather forecasting has increasingly become inaccurate due to the impacts of climate change, making planning of site visits in good weather conditions problematic.

The Duncton Hanger (Duncton civil parish) area identified by David Porter still contains a small concentration of mature beech trees along the steep slopes between the track which enters the wood opposite Duncton Viewpoint Car Park (121m above sea level) and the main road below. Further east the beech becomes old coppice. The woodland above the track is predominantly dense pole ash and areas recently cleared of conifer plantations. The beech stand is therefore relatively small and relatively isolated, although – as it turned out – appears to be one of the largest concentrations of beech in this part of the SSSI.

A wide track separates Duncton Hanger from Barlavington Hanger (Barlavington CP). This boundary track is significant as the boundary wall to Barlavington Hanger is lined with mature beech trees in the upper section and a large old and decaying beech snag is present on the Duncton Hanger side of the track at about SU963160. This large volume of decaying beech trunk potentially offers good larval habitat for *Erotides cosnardi*. A full-grown example of the rare Cheese Snail *Helicodonta obvoluta* was active over the soft white-rotten beech wood which had fallen to the ground alongside the standing snag.

Barlavington Hanger was found to contain a few large beech standards along the main recently bulldozed track through, including a large standing dead snag. The area below the track is enclosed pheasant pens and the wood appears to be mainly used by an organised shoot with gamekeeper. Much of the wood is dominated by ash.

Northcomb Wood (Sutton CP) has more of a species-rich ash, field maple, wych elm, and hazel composition with a richer ground flora, but there is a concentration of mature and veteran beech trees in the lower section where the path from Northcomb Barn enters

the wood. An ancient, layered beech hedge also forms the boundary to the wood where an old trackway runs alongside the southern upper edge. This trackway leads to a triangle of woodland above the Hanger which contains a few large old beech trees. Two are notably large and of pollard form, with girths estimated at about 4.5 and 5m gbh. A standing dead beech snag was also noted. This appears to be a small area of former wood pasture. The old decaying snag provides potential larval habitat for *Erotides cosnardi*.



Fig. 1. Old growth beech habitat in Duncton Hanger

Fence Wood (Sutton CP) is another predominantly ash woodland with relatively species-rich ground flora. An interesting feature is a group of large old beech standards at the southern end, where the central track turns upwards and downwards towards two areas of open grassland. The trees appear to be growing along a brow in the slope, presumably an old upper wood boundary – the trees are currently with a patch of secondary ash development above the old wood bank. The largest is estimated to have a girth of about 6m, the other nearer 5m. Two standing dead beech snags stand alongside the 5m beech. These appear to be the largest girth beech trees seen on this exploration of the woods. The old decaying snags provides potential larval habitat for *Erotides cosnardi*.

Overall, beech appears highly localised within these woodlands, but forms distinct pockets scattered through. It appears associated with old wood banks, old trackways and a few groups on the upper and lower edges. These are probably also the areas with better-drained soils, and perhaps away from the more ‘productive’ woodlands – productive from the land-owners perspective. The woodlands appear to have been managed as ash-hazel dominated coppice crops in recent centuries but more latterly

have been used for forestry (Duncton) or pheasant rearing (Barlavington). It is also perhaps very significant that the known *Erotides cosnardi* locality is the most accessible stand of beech trees, by a car park and where people are more likely to explore the insect fauna. It seems reasonable to suppose that the other pockets of mature beech identified have the potential to be used by the beetle but where there is a much lower probability of detection.

Bignor

This southern section of the SSSI is owned by the National Trust and dedicated as open access land. Permission had not been sought from the NT to survey invertebrates as the area was not known to have produced any records of *cosnardi* and was not known to contain suitable habitat. The plan was to assess habitat availability and to seek permission if the area proved to be suitable. Although the NT has carried out a veteran tree survey on the rest of the estate to the south – the Slindon Estate – they appear to have omitted the escarpment woodlands.



Fig.2. Old growth beech habitat in Bignortail Wood

The main escarpment section is occupied by **Left Hanger** and has been devastated by ash dieback disease (*Chalara*). Although designated for its beech woodland, Left Hanger actually contains very little beech. The widespread death of the predominant ash trees has left a scatter of field maple, yew, hazel and the very occasional beech. The loss of the ash framework has left the individual surviving trees very prone to wind blow. A beech snag and well-decayed lying hulk at SU97119.13294 was probably in excess of 3m in girth before it collapsed. One section of lower slope opposite Coldharbour Farm had relatively frequent beech including one broken trunk in excess

of 4m girth with collapsed top in situ alongside. At SU97599.13401 there is a massive spreading multi-stemmed beech about 6m in girth. Overall, Left Hanger contains a few ancient beech and plenty of next generation beech trees in the girth range of 2-3m.

The final section of the SSSI is called **Bignortail Wood** and this is of exceptional interest for its ancient beech pollards. Surprisingly the Ancient Tree Inventory (ATI) currently has only a single beech documented here. There are probably in excess of 50. Two of the largest beech trees noted were measured at 5.02m and 5.11m, both of pollard form, the latter with a hollow trunk. Some at least of the trees have numbered tags and so have been surveyed to some extent in the recent past. This needs to be clarified with the local National Trust team. The 5.11m girth tree was tag numbered 288. The tree survey data needs to be made available to the ATI. Bignortail Wood is clearly of great significance for its ancient beech pollards and is a high priority for saproxylic beetle survey – it has high potential for *cosnardi*.

3.3 Houghton Forest

Three individuals of *cosnardi* had been seen on ride-side grass stems in the Houghton Forest (SU991114), 11 May 2008 – along the central valley bottom ride, west side (D. Bangs, pers. comm.). The precise spot was reported to have little by way of remaining old native beech trees, just a very thin remnant – one veteran beech just under ½ mile east along the valley bottom, and a cluster of three veteran beech 2/3 mile east along that valley and up-slope; Dave Bangs thought there may be more veteran beech, stumps, fallen boles & hulks along that valley. He noted that Houghton Forest was formerly a wood pasture common within Arundel Forest - until afforested as long ago as the 19th Century? In the 1960s and 1970s it had many mature and overmature beech trees, especially in the area that is now an extended car park and café area adjacent to the Whiteways Roundabout (Cooter, 2018).

The observation of three individuals is the only example of more than a single specimen being found in the West Sussex area. This observation may suggest a gathering of individuals for mating, as has been found to occur in the Wye Valley. Typically the species is found as single individuals. A group of three must be significant.

Houghton Forest is owned and managed by Forestry England through their South England Forest District offices in Lyndhurst. and permission had been given to the Species Recovery Trust for survey work targeted at *Erotides cosnardi*. This ‘forest’ was formerly part of an extensive wood pasture common within the outer reaches of Houghton civil parish. Patches of former ancient wood pasture beeches survive here within a matrix of mixed plantation forestry, especially around the margins.

The site was found still to retain many pockets of old beech in 2022 and especially adjacent to the Whiteways car park and picnic area. Indeed, many more old beech were found across the Forest than shown on the Ancient Tree Inventory at the time – only six were shown but more than 50 were noted during a brief site exploration. Many more might be expected should the site receive a formal veteran tree survey.

The site exploration began along the western boundary, beginning close to where the public lane crosses the southern part. Old beech pollards were almost immediately found within the boundary edge, between an old ditch and the modern fenced edge to

the forest. The southern-most beech pollard has a girth of 3.5m (SU99321.10511). The next tree of interest is a hollow beech standard about 2m in girth; a beech pollard of 2.59m girth; a beech standard of 3.54m girth with large snapped hollow boughs; an approx. 4m girth beech with top partially collapsed; a 2.95m beech close by to the north; a lying decayed beech hulk. A total of six standing veteran beech and one lying hulk. There are also plenty of younger beech through this boundary strip. Farther northwards there are also plentiful mature beech trees but no more ancient pollards.



Fig. 3. Historic beech pollard on western boundary of Houghton Forest

Two large old beech documented for the ATI to the east of the main forest ride named The Denture on the OS mapping were also briefly visited. The ATI record shows these as being of 5m and 5.8m girths. One is a twin-stemmed beech with the top of one stem snapped off. Decay fungi visible were *Ganoderma australe* and *Ustulina deusta*. The other tree is multi-stemmed. A long dead, decaying beech hulk was noted nearby.

The largest patch of old beech begins on the east side of the main timber extraction access point off the southern lane and extends northwards and eastwards across the back of the Whiteways Roundabout picnic area. This is an exceptional area of very high quality old growth beech habitat. A few of the trees were documented as examples – these have not been added to the ATI as the whole area needs to be surveyed properly:

GPS grid reference:	Girth (m):	Other comments:
SU99761.10563	4.65	Double stem beech, possibly old pollard
	3.43	Veteran beech
SU99884.10664	4.15	Standing dead beech; large hollow on side

SU99848.10748	3	Mature beech
SU99945.10752	3.88	Twin stem beech
SU99935.10754	4.06	Beech pollard with large cavity in base
TQ00034.10777	4.48	Beech pollard with <i>Ganoderma australe</i>
TQ00106.10908	4.2	Beech with old ivystems

At this point heavy rain put an end to the documentation of this remarkable grouping of old growth beech.



Fig.4. Old growth beech habitat in Whiteways Car Park area of Houghton Forest

The final area explored lies along the northern boundary of the forest which has some of the largest ancient beeches seen in the South Downs area this trip. Travelling westwards from the eastern edge there are good numbers of mature beech trees lining the boundary, mostly 1-2m in girth, but then larger old trees begin to appear and with aluminium numbered tags:

GPS grid reference	Girth (m)	Tag number	Other comments
SU99726.12085	3.1	789	Ash standard
SU99597.12737	3.67		Veteran beech
No grid ref	Similar size		Beech with dense epicormic growth
SU99580	6.08 at 0.5m	794	Beech with low branching, etc
SU99560.12226	7.35	795	

No grid ref	Similar size	Beech with top collapsed out; massive <i>Ganoderma australe</i> bracket fungi
SU99407.12265	6.83	Massive low beech

Three of these trees feature in the ATI credited to the Tree Register of the British Isles. This suggests that these trees are recognised as outstanding examples - champion trees. The presence of aluminium tree tags also implies that a tree survey has previously been carried out here.



Fig.5. Old growth beech habitat along northern boundary of Houghton Forest

Houghton Forest is clearly a major surviving site for beech old growth in the South Downs and merits considerable more survey effort, covering the trees as well as the saproxylic beetle fauna.

3.4 Coombe Wood, Houghton

One *cosnardi* was photographed at flower-heads of ramsons in a wood at TQ0112, 12 May 2016, Mike Davis (pers. comm.). The grid reference is for Coombe Wood, Houghton. Very little has been found out about this wood. The South Downs Way passes along a track on the south side and so the interior is readily viewable through gaps in the boundary hedge. The core of the woodland was noted in 2022 as very dense pole former coppice. The stems are ivy covered and the interior very dark. The tree species appear to be mainly beech, ash, sycamore, hawthorn and hazel. Ground cover in the upper areas is ivy dominated although a few patches of dog's mercury were apparent. Lower down the slope ramsons can be seen inside in abundance, over old

earthworks, and light levels are better. A pheasant pen could be seen inside where a trackway enters.

Overall this seems like a very unlikely place for a resident population of *cosnardi*. No large old beech trees could be seen, just a few young to mature beech. It seems most likely that the single beetle seen here was a stray, perhaps blown downwind from Houghton Forest which is barely a half kilometre away to the west.

3.5 Arundel Park

The present Arundel Park has long been known to be of special interest for saproxylic beetles, with records going back to the Victorian period (Fowler, 1890). It is known in particular for two key rarities: the darkling beetle *Prionychus melanarius* (Tenebrionidae), first noted here in 1923 by E.C. Bedwell and *Laemophloeus monilis* (Laemophloeidae), discovered here in 1943 by GH Ashe. The Arundel Forest area is one of just four locations in Britain known to support the darkling beetle and one of six for the laemophloeid. The site continues to generate important finds, notably the fly *Iteaphila arundela* (Empididae) found here on a number of occasions from 1988 onwards by Peter Hodge (pers. comm.) but only recently described as a species new to Science and named for this site. Two areas of the present parkland have been designated as an SSSI since 1954, primarily for the saproxylic interest, and covering the Swanbourne Lake area in the south and the area by Whiteways Lodge in the north. Both areas were badly affected from severe windstorms in the late 1980s as well as the subsequent clear-up of the fallen and damaged timber by the Estate.

A '*Platycis*' is said to have been seen one May in Arundel Park, probably during the 1990s, although the full details are not available (P.J. Hodge, pers. comm.). The – at least occasional – presence of *cosnardi* was confirmed very recently when one was taken by sweep-netting an area of tall grass and nettle adjacent to a trackside pile of ash trunks felled in the previous year and stacked inside the northern section of the park SSSI, near Whiteways Lodge (TQ00466.10515), 7.vi.2021, MJ Collier (pers. comm. & via J Cooter). It is perhaps instructive that despite being a favoured hunting ground for coleopterists - and especially AA Allen - he appears never to have encountered *cosnardi*.

The 2022 visit focused on the northern block of the parkland where *cosnardi* had been seen the previous year. The stack of ash trunks was still present. A small number of veteran beech survive here but the impression is of an area largely cleared of large old trees and now dominated by scrub and young growth. The Ancient Tree Inventory contained records for just eight trees across Arundel Park prior to the visit – four of them beech - but this is clearly unrepresentative. A guesstimate suggests about 20 veteran beech in the northern part of the SSSI. The trees examined in some detail are as follows:

- A 4.93m girth beech pollard above the main drive to Whiteways Lodge, TQ 00430.10598; there are also two younger mature beech to the south, either side of the drive, about 1.5m girth, and a standing dead beech of similar size.
- A 3m approx. dead and decayed beech snag in the northernmost valley, in an area recently opened up from secondary sycamore woodland, the largest stump being about 1m in diameter; powdery wood mold in this snag contained

fragments of rhinoceros beetle *Sinodendron cylindricum* and larvae of the rare darkling beetle *Prionychus melanarius* (confirmed by rearing).

- A 3.90m beech fenced into woodland edge at TQ00645.10818; top dead and partly fallen; rot hole in branch stub with *Prionychus* type larvae in wood mold within; larva of uncommon click beetle *Stenagostus villosus* beneath loose bark.
- A 2.93m gbh hollow beech with side fully open, TQ00482.10800; a beech to the west has a vertical decay column up the trunk.



Fig.6. Decaying beech snag in Arundel Park; larvae of rare beetle *Prionychus melanarius* amongst wood mold

Ash and sycamore in South Wood were being actively cleared from around the few remaining beech standards and hawthorns.

A brief walkabout through the southern parkland found the area to be largely devoid of veteran tree interest, being dominated by large blocks of young plantations amongst heavily sheep-grazed grassland. A few mature holm oaks provide the main parkland trees. The steep wooded banks of Park Rough have a more mixed age structure and may include a few mature and older beech. The slopes above the south side of Swanbourne Lake include two large old beech snags and possibly a few live veteran beech.

The history of parkland at Arundel is very complex. The original 11th century Great Park was not adjacent to the castle as the parkland is today but occupied less fertile land in the west part of the parish (Victoria County History, VCH). This explains the names of 'Park Bottom' to the west of the A284 with 'Park Farm' beyond and Rewell Wood occupying the land beyond as far as the boundary to Arundel civil parish, ie

incorporating Rewell Wood. In 1275 the north and south boundaries of the Great Park seem to have been roughly those of the ancient parish; on the east side the pale ran above Park bottom to the east, and on the west side west of the modern Park Farmhouse. The park was said to contain 450a. in 1589. In 1570 the pale was said to be three miles round but by the earlier 17th century its eastern side seems to have been removed. The park was apparently enlarged before 1636, when its total area was given as 845a. (342 ha), including 216a. called the new ground; a distinction was then made between the 494a. south-west of Park bottom and the 117a. north-east of it. In 1661 the park was said to have 823a. and in the 18th century between 823a. and 960a. Much of the pale was destroyed during or after the siege of the town in 1643–4. Repairs were carried out in and after 1657 though in 1675 only the south side and the southern parts of the east and west sides seem still to have existed. Traces of the bank survived on the south side in 1996 near the beginning of the track leading from the road to Slindon (VCH). By 1813 the new park extended beyond the parish boundary into Houghton.

Historic England's website comments that although two medieval deer parks existed in Arundel parish, of which the Home Park became the Little or Castle Park, the present New Park was created in the late C18, from former arable and warren land, as a setting for the Castle as rebuilt by the eleventh Duke. Considerable land adjacent to the Little Park was already imparked by 1789; the area was greatly increased, to something near its present size, in 1793 and was enclosed by a wall by the 1810s, the warren being destroyed and an extensive programme of planting, notably of beech, begun (VCH). The present pattern of planting is shown established on the 1st edition OS.

From this it becomes clear that the northern block of the SSSI was outside of the enclosed parkland until 1813. It remains within Houghton civil parish and it is tempting to suppose that it was formerly attached to the common wood pasture of what is now Houghton Forest. The occasional sighting of *cosnardi* within this Houghton part of Arundel Park may merely represent strays from the main population in Houghton Forest. There appears to be insufficient veteran beech within today's Arundel Park to maintain a viable population of *cosnardi*.

3.6 Fairmile Bottom

Fairmile Bottom is a Local Nature Reserve managed by West Sussex County Council and occupies the outer fringes of Madehurst civil parish, sharing the parish boundary with Rewell Wood, Arundel, and adjacent to Houghton Forest. The ATI includes a large number of veteran beech and yew trees along the steep upper slopes.

A brief exploration on foot suggests that these upper slopes are former wood pasture and the beech-yew mix is very reminiscent of the old growth areas of the lower Wye Gorge, in Wyndcliff and Piercefield Woods, where *cosnardi* has been found. The area shows extensive signs of windblow in the recent past, with collapsed and decaying large old beeches as well as decaying snags and stumps. Nonetheless the LNR retains more old growth beech than does Arundel Park and perhaps even Houghton Forest. The best concentration of old beech appears to be at the north-east end, towards Houghton Forest.



Fig.7. Old growth beech habitat in Fairmile Bottom

3.7 Slindon Estate

The ATI includes records for concentrations of large old beech trees scattered across the National Trust's Slindon Estate, presumably derived from the NT's own veteran tree survey. A preliminary walkabout was carried out to assess the potential here for *cosnardi* before approaching the NT for permission to carry out some survey work.

The block of woodland shown on the OS 1: 25000 mapping extending southwards from Gumber Corner straddles the parish boundary between Slindon and Madehurst and is the classic situation for finding remnants of old wood pasture. A series of large old beech were observed to occur along the boundary itself, including old, decayed stumps. These are now all engulfed within dense beech plantation about 20-30 years old. The lower parts of the trees are in deep shade, creating poor conditions for saproxylic beetles.

More old beeches are shown on the ATI along the steep slopes on the north-east side of Nore Wood. This area was not visited on this occasion.



Fig. 8. Ancient beech pollard on parish boundary within Slindon Estate

3.8 General habitat discussion

Management history

The South Downs escarpment is not ancient woodland but was used as rough grazing by the various medieval manors and it is only in recent centuries that the steepest slopes have been fenced out from pasture and transitioned into the semi-natural woodlands we see today (Tony Whitbread, pers. comm.). Effectively the escarpment was managed as wood pasture and the species composition would have reflected the impacts of grazing animals, with the more palatable plant species reduced over time leaving the less palatable plant species to dominate. The trees would have been exploited for timber products though pollarding as the timber of the trunk will have been owned by the Lord of the Manor and the population only permitted to cut branches from the trees for use as leaf fodder, firewood and building materials.

Saproxylic fauna

The old Arundel Forest area is not known just for *cosnardi* as saproxylic beetle interest. It is also one of just four known areas in Britain for the rare darkling beetle *Prionychus melanarius* and Arundel Park has been a famous site amongst entomologists for decades, with the saproxylic beetle *Laemophloeus mollis* a particular focus at its main known British stronghold. In many ways however this part of West Sussex is notably poorly studied for saproxylic beetles.

3.9 Hampshire records

Erotides cosnardi has only very recently been found to be present across the border on the downs within Hampshire, extending the known area to be occupied by the beetle along the South Downs and into the Weald Edge Hangers.

A mating pair were found on ground vegetation at **Noar Hill Hangar, Noar Hill SSSI**, SU742314, 5 May 2018 (J.A. Norton & D.R. Allan, via iRecord). This record raises the potential for its presence in the **Weald Edge Hangers SSSI** to the south.

One was shaken from a large chunk of pulpy beech wood lying on the ground between a standing living pollard-form beech tree 3.87m gbh and a fallen limb at **South Holt, Finchdean**, SU7414 1301, 2.vi.2022, Graeme Lyons (pers. comm.). This was a large open-grown beech that had lost a limb and has extensive heartwood decay but is still alive. The decayed heartwood was riddled with the galleries of Lesser Stag Beetle *Dorcus*. The beech stands on chalk downland and is therefore an open wood pasture record.

The date of the only observation of *cosnardi* in 2022 was therefore 2nd June and so it is feasible that the fieldwork reported here may have been carried out a little too early in the year, despite the early field season for other species.

Two other aspects of these Hampshire records are:

- A mating pair at Noar Hill shows not just a stray male wandering widely afield, but suggests a local population.
- The South Holt record is the first to associate the beetle with potential larval habitat and a tree girth; 3.87m girth sets an important benchmark for appreciating potential habitat.

4 RECOMMENDATIONS

4.1 Further exploration of old growth beech sites

While the known sites for *cosnardi* in West Sussex were all visited in May 2022 only a start was made on exploring other potential sites across the downs west of the river Arun. Permission will be needed from the Goodwood Estate and the National Trust's Slindon Estate; also from the Graffham Down Trust, as their website has stated that *cosnardi* has been seen along this down in the recent past. Other areas meriting exploratory survey work are Bury Hill and West Burton, Woolavington Down (East Lavington), Heyshott Down, and westwards linking through to the two Hampshire *cosnardi* sites.

4.2 Conservation planning in Houghton Forest

Houghton Forest has now been identified as potentially the key site for *cosnardi* in West Sussex. Liaison is needed with Forestry England over their conservation plans for the

remnant old growth beech across the Forest: i) protection of the veteran beech trees, ii) management around next generation trees – mature beeches – to provide more space for crown development, and iii) identification of additional areas where young growth beech will be actively managed to promote the development of future veteran trees.

The priority is to develop adequate mapping of the locations of all surviving veteran trees. One group of three ancient beeches at Houghton were found to have numbered aluminum tags and it would be useful to find out who holds the data.

4.3 Saproxylic invertebrate surveys

The highest priority for follow-up saproxylic invertebrate survey – ideally once a tree survey is available and has highlighted the most important areas – is Houghton Forest. The beech old growth here has produced the largest count of *cosnardi* anywhere in the South Downs area. Other promising areas include Bignortail Wood on the Slindon Estate.

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