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Survey for the Blue Ground Beetle *Carabus intricatus* at Coed Maesmelin and other woodlands in the Neath Valley, Glamorgan

D.C. Boyce & J.M. Walters

NRW Evidence Report No. 184



Blue Ground Beetle, Coed Maesmelin 22 January 2015

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Contents

1. Crynodeb Gweithredol	1
2. Executive Summary	1
3. Introduction.....	2
4. Methods.....	3
5. Results	3
6. Discussion	14
7. Recommendations.....	14
8. References	14
9. Acknowledgements.....	15

Figures

Figure 1: Boundary of Coed Maesmelin WT reserve, Neath, with locations of 2015 and 2016 <i>Carabus intricatus</i> records.....	5
Figure 2: Darren Wen, Briton Ferry, showing area surveyed for <i>Carabus intricatus</i>	6
Figure 3: Clun Gwyn and Pontneddfechan, showing areas surveyed for <i>Carabus intricatus</i>	7
Figure 4: Craig Gwladys Country Park, Dyffryn Woods and River Clydach showing areas surveyed for <i>Carabus intricatus</i>	8
Figure 5: Clyne Wood, Swansea showing area surveyed for <i>Carabus intricatus</i>	9
Figure 6: Margam Country Park showing area surveyed for <i>Carabus intricatus</i>	10
Figure 7: Blue Ground Beetle <i>Carabus intricatus</i> over-wintering site in old birch stump at the eastern end of Coed Maesmelin, 22 nd January 2015.	11
Figure 8: Blue Ground Beetle <i>Carabus intricatus</i> over-wintering site in old oak stump at the western end of Coed Maesmelin, 4 th February 2016.....	11
Figure 9: Blue Ground Beetle <i>Carabus intricatus</i> habitat at the western edge of the reserve, 22 January 2015 showing areas of ground still relatively free of bramble encroachment.....	12
Figure 10: Coed Maesmelin, 22 nd January 2015 showing bramble encroachment.....	13
Figure 11: Coed Maesmelin, 4 th February 2106 showing bramble encroachment.....	13

Table

Table 1. Summarised information on 2016 survey sites.....	4
-----------------------------------------------------------	---

Appendix 1: Photographs of 2016 survey sites (Figures 12-30).....	15
--------------------------------------------------------------------------	----

Appendix 2: Other invertebrate records.....	25
----------------------------------------------------	----

Appendix 3: Data archive appendix.....	26
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1. Crynodeb Gweithredol

Arweiniodd darganfyddiad sawl oedolyn Chwilen Ddaear Las *Carabus intricatus* yn ddamweiniol mewn gardd yng nghyffiniau Castell-nedd yn 2012 a 2013 at ddarganfod poblogaeth yng ngwarchodfa Coed Cadw Maesmelin, ym mis Ionawr 2015, yn ystod arolwg oedd yn cael ei ariannu gan Cyfoeth Naturiol Cymru. Fe gofnodwyd tri oedolyn, ac fe wnaed argymhellion i wella ansawdd cynefin y coetir ar gyfer y chwilen, drwy ail-gyflwyno pori a thorri mieri i ddarparu amodau mwy agored.

Fe ganolbwyntiodd gwaith arolwg a wnaed ym mis Chwefror 2016 ar ddod o hyd i boblogaeth ychwanegol o chwilog yng nghoetiroedd gerllaw Coed Maesmelin. Ymwelwyd ag wyth safle yn ystod yr ail gam o'r gwaith arolwg ond ni welwyd unrhyw chwilog, er bod rhannau o ddyffrynnoedd Nedd a phen uchaf Mellte a Pharc Gwledig Craig Gwladys yn ymddangos i fod yn gynefinoedd addas iawn. Fe ail ymwelwyd â Choed Maesmelin, gyda dim ond un oedolyn yn cael ei ddarganfod yma ar y 4ydd Chwefror 2016. Roedd fwy o fieri i'w weld nag yn y flwyddyn flaenorol, ac o ystyried absenoldeb cofnodion eraill o ardal Castell-nedd, mae angen gweithredu rhaglen rheoli adferol sy'n anelu at wella ansawdd y cynefin, ar frys.

2. Executive Summary

The chance finding of several adult Blue Ground Beetles *Carabus intricatus* in a garden on the edge of Neath in 2012 and 2013 led to the discovery of a population in the nearby Coed Maesmelin Woodland Trust reserve in January 2015 during a NRW-funded survey. Three adults were recorded, and recommendations were made to improve the quality of the woodland habitat for the beetle by re-introducing grazing and cutting back bramble to provide more open conditions.

Survey work in February 2016 focussed on finding additional populations of the beetle in woodlands within close proximity to Coed Maesmelin. A total of eight sites were visited during this second phase of survey work but no beetles were found, although some areas in the upper Mellte and Nedd valleys and at Craig Gwladys Country Park appeared to have highly suitable habitat. Coed Maesmelin was also re-visited, with just a single adult being found here on 4th February 2016. Bramble growth appeared to be even stronger than in the previous year and given the absence of other records from the Neath area, implementation of a programme of remedial management that aims to improve the habitat quality here is required urgently.

3. Introduction

The Blue Ground Beetle *Carabus intricatus* was first discovered in south Wales on 28th April 2012 by Neath resident Lee Beynon, who found one amongst a wood pile in his garage. He recorded two more individuals in his garden during May and August of that year, and a further three adults in his garden in 2013 (Walters, 2013). Searches in the nearby woodland of Coed Maesmelin, a Woodland Trust reserve, in 2012 failed to locate the beetle but three adults were found in January 2015 during a NRW-funded survey (Boyce & Walters, 2015). It is an ancient semi-natural woodland dominated by sessile oak *Quercus petraea*, which lies just to the north of the Neath conurbation.

Though it is superficially similar to the common violet ground beetles, *C. problematicus* and *C. violaceus*, the Blue Ground Beetle can be distinguished by its more elongate ‘spidery’ form and the generally brighter blue colouration of the whole body. The general appearance of the beetle can be seen on the frontispiece of this report. *Carabus intricatus* is a rare insect which has its main British stronghold in river valleys on the southern edge of Dartmoor, Devon where there are extensive stands of ancient upland oak woodland, with a few further colonies in wooded sites on the fringes of Bodmin Moor, Cornwall (Boyce & Walters, 2001). Reflecting its very limited British range (eight post-1980 hectads), the loss of a number of historical sites, and the apparent stability of the remaining colonies, the Blue Ground Beetle is classified as Near Threatened and Nationally Rare (Telfer, 2016). It was included as a Priority Species in the UK Biodiversity Action Plan (BAP). In its Dartmoor and Bodmin localities, the Blue Ground Beetle is an inhabitant of ancient oak and beech *Fagus sylvatica* woodland and wood-pasture where it generally favours sites with well-insolated southerly aspects (Boyce & Walters, 2001).

Adult beetles are mainly active from late-March to early-July and are long-lived, perhaps surviving for two to three years or longer. At night they climb tree trunks in search of food and potential mates. Slime trails are followed in search of their favoured prey, the tree slug *Lehmanna marginata*. The beetle grips on to the slug with its pincer-like jaws and then injects digestive juices into its victim. This quickly kills and dissolves the slug’s body into a ‘soup’ which can be sucked up. In the course of half an hour an adult can devour a slug larger than itself. Caterpillars are also consumed in a similar manner. Like many other ground beetles, *C. intricatus* is a spring breeder, with eggs laid during the spring and larvae, which also feed on slugs, developing rapidly over the summer months. The new adult generation emerges in August and September and overwinters in cells that are usually sited beneath bark and moss on dead trunks, stumps and branches of a range of deciduous trees (Boyce & Walters, 2001). Studies have shown that *C. intricatus* is most easily located by searching on tree trunks at night between April and July, with the beetles being particularly active on mild, damp nights. The other productive survey technique is to search for the adults in their over-wintering sites, in the dead wood of a range of broadleaves, usually occurring under moss and bark or in moist heart-rot. The three adults recorded at Coed Maesmelin in January 2015 were found in typical situations in association with dead, mossy oak and birch stumps and branches.

The discovery of *C. intricatus* in Wales in 2012 represents a very significant extension of its British range. All of its stronger English populations are found in woods where there is little vegetation in the shrub and field layers, with such conditions usually being maintained by grazing. The woodland at Coed Maesmelin was formerly open to stock, but has been ungrazed for a number of years and has consequently developed a dense field layer of bramble in many places. Re-introduction of grazing and cutting back of bramble and other scrub is highly desirable in order to improve the quality of the habitat for the beetle.

The current survey in February 2016 focussed on finding additional populations of the beetle in woodlands within close proximity of Coed Maesmelin in order to place the known population in a wider context.

4. Methods

Woodlands within close proximity of Coed Mesmelin (central GR SS724981) were visited on the 4th, 25th and 26th of February 2016 to assess the suitability of the habitat for Blue Ground Beetle. Searches for adult beetle were conducted where apparently suitable habitat was present. The existing site at Coed Maesmelin was also re-surveyed for adults on both the 4th and 26th of February.

5. Results

The search at Coed Maesmelin on 4th February 2016 located a single adult at the western end of the wood, at SS72259809, in a rotten oak stump (see Figure 8) close to where adults were recorded in January 2015. The location of all recorded sites within the wood is shown in Figure 1 and typical over-wintering sites are shown in Figures 7 and 8.

Eight woodlands (see Figures 2 to 6) were visited in February 2016 and assessed for their suitability for Blue Ground Beetle (see Table 1). Photographs of the sites are given in the Appendix. No beetles were found although some areas appeared to support habitat that is at least of a similar quality to that at Coed Maesmelin. In particular, the ancient sessile oak woodlands north of Pontneddfechan in the Nedd and Mellte river valleys appear to have high potential for the beetle, with suitable areas of this very large complex at Clun Gwyn and Pontneddfechan. Parts of these sites lie within the Dyffrynnoedd Nedd a Mellte a Moel Penderyn Site of Special Scientific Interest (SSSI) and also comprise an element of the Coedydd Nedd a Mellte Special Area of Conservation (SAC). There is considerable scope for further surveys in this area. Though most of the Craig Gwladys Country Park had beech plantations of moderate potential, the area of oak wood-pasture at the northern end of this site supports high quality habitat for Blue Ground Beetle. However, the aspect of this part of the site is east to north-east, which reduces its likelihood of being suitable for the beetle. Other sites (Daren Wen, Clyne Wood, Dyffryn Woods, Margam Country Park and the River Clydach near Bryn-coch) have low to moderate quality habitat.

Table 1. Summarised information on 2016 survey sites

Site	Grid Ref	Notes/potential to have BGB population
Daren Wen	SS745939	Mixed deciduous woodland with some mature beech. Moderate potential.
Clun Gwyn (Coedydd Nedd a Mellte SAC)	SN923102	Sessile oak woodland with areas of wood-pasture. High potential.
Clyne Wood, Swansea	SS613908	Oak-beech woodland, recently cleared rhododendrons. Moderate potential.
Craig Gwladys Country Park	SS760992	Beech plantation with some mature beech and one stand of oak wood-pasture. Moderate-High potential.
Dyffryn Woods, Bryn-coch (Woodland Trust Reserve)	SS7299 & SN737001	Beech plantation and secondary mixed woodland. Moderate potential.
Margam Country Park	SS805864	Mixed plantation woodland and open parkland. Low potential.
Pontneddfechan (Coedydd Nedd a Mellte SAC)	SN898092	Sessile oak woodland with areas of ash along flush lines. Moderate potential.
River Clydach, Bryn-coch	SS736985 & SS741999	Mixed woodland along river valley. Moderate potential.

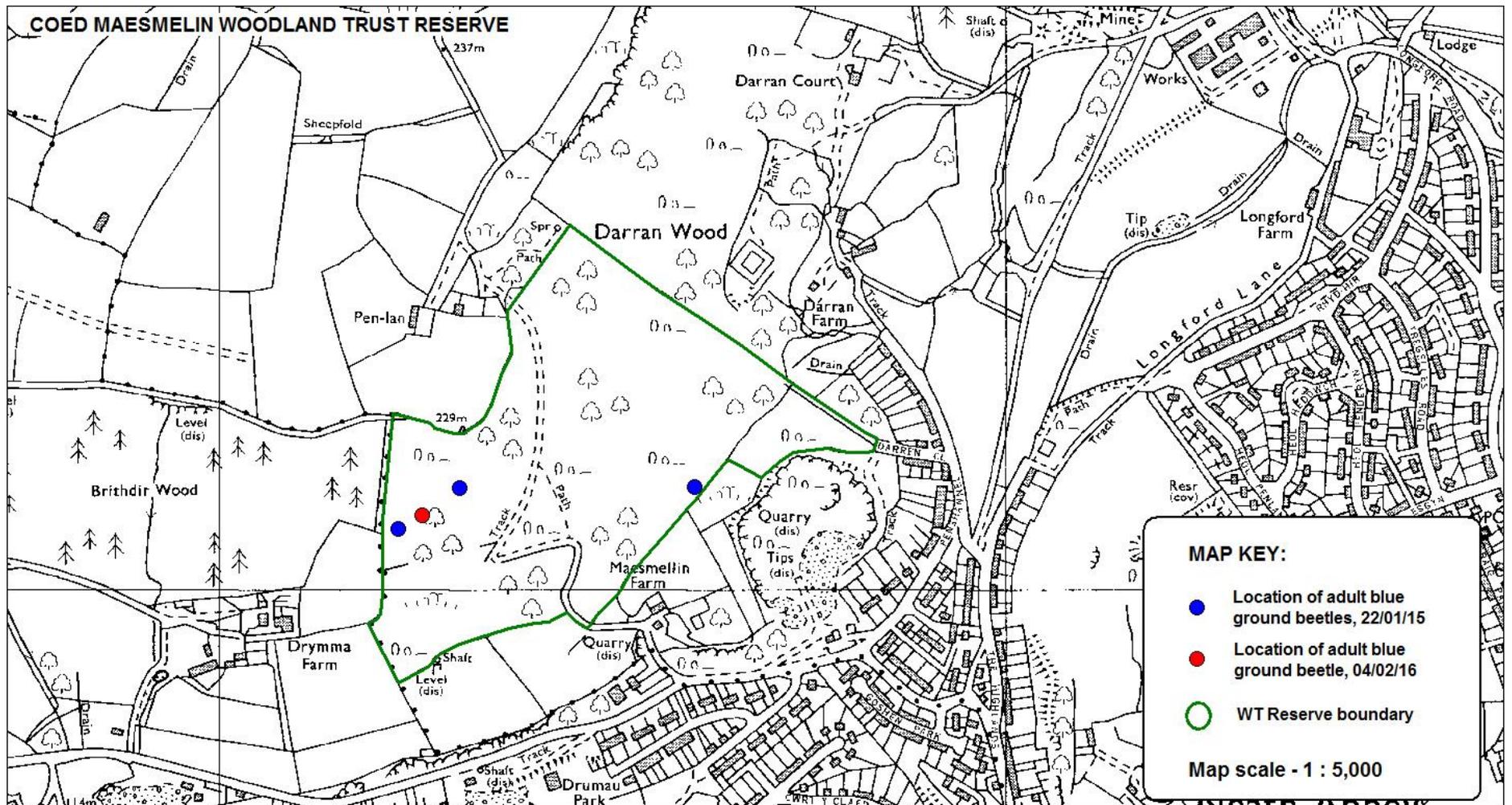


Figure 1: Boundary of Coed Maesmelin WT reserve, Neath, with locations of 2015 and 2016 *Carabus intricatus* records.

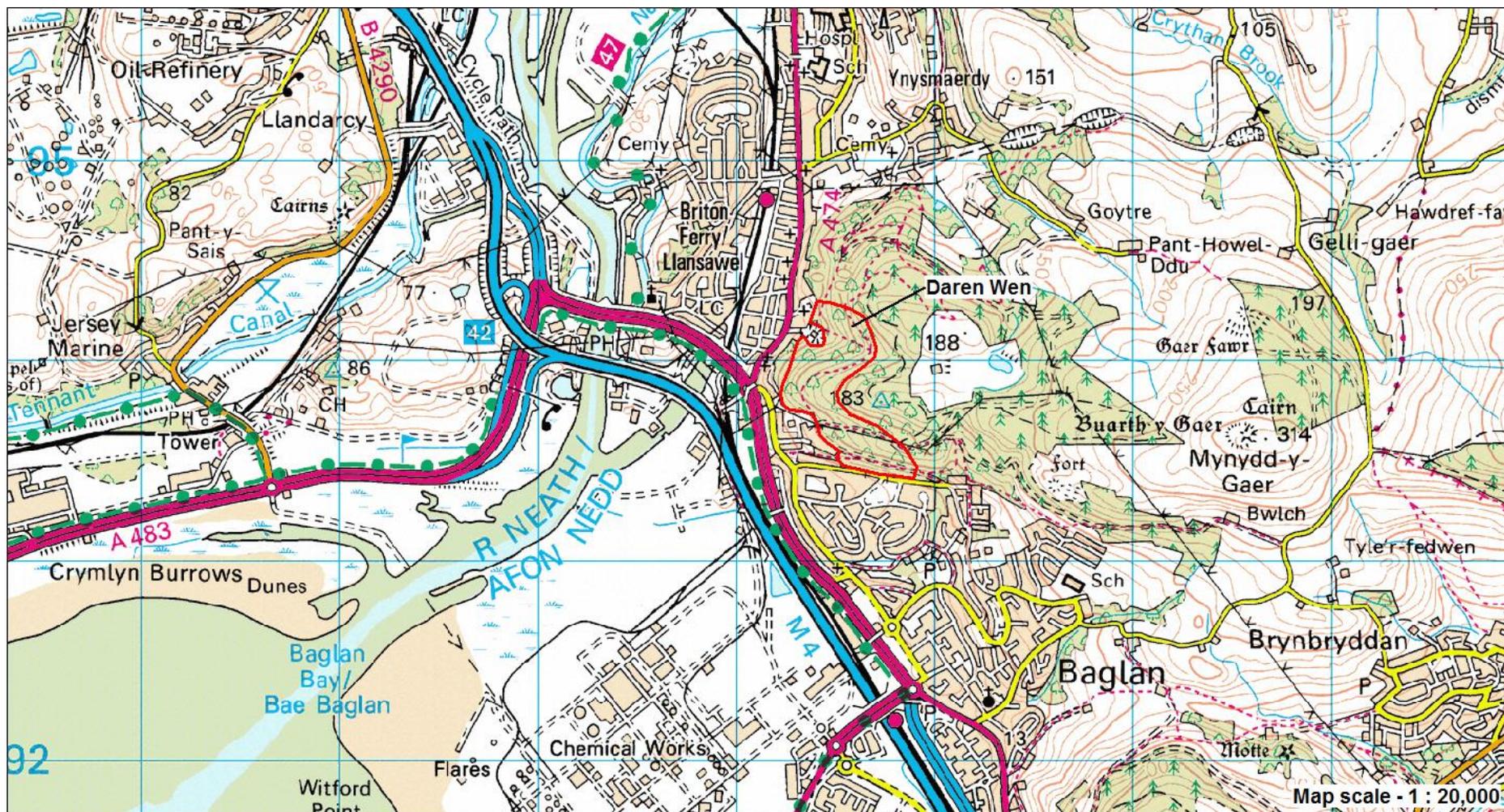


Figure 2: Daren Wen, Briton Ferry, showing area surveyed for *Carabus intricatus*.

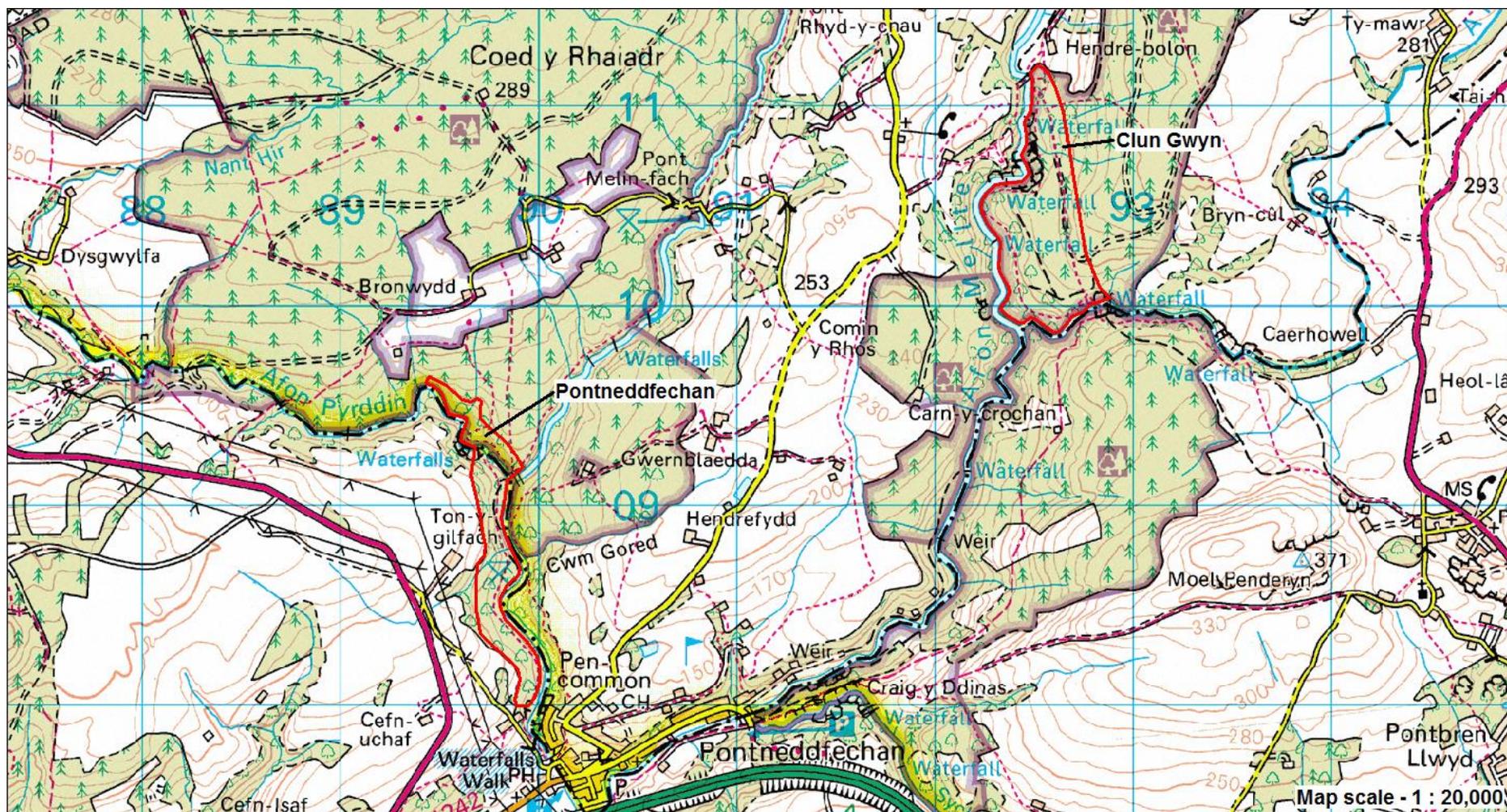


Figure 3: Clun Gwyn and Pontneddfechan, showing areas surveyed for *Carabus intricatus*.

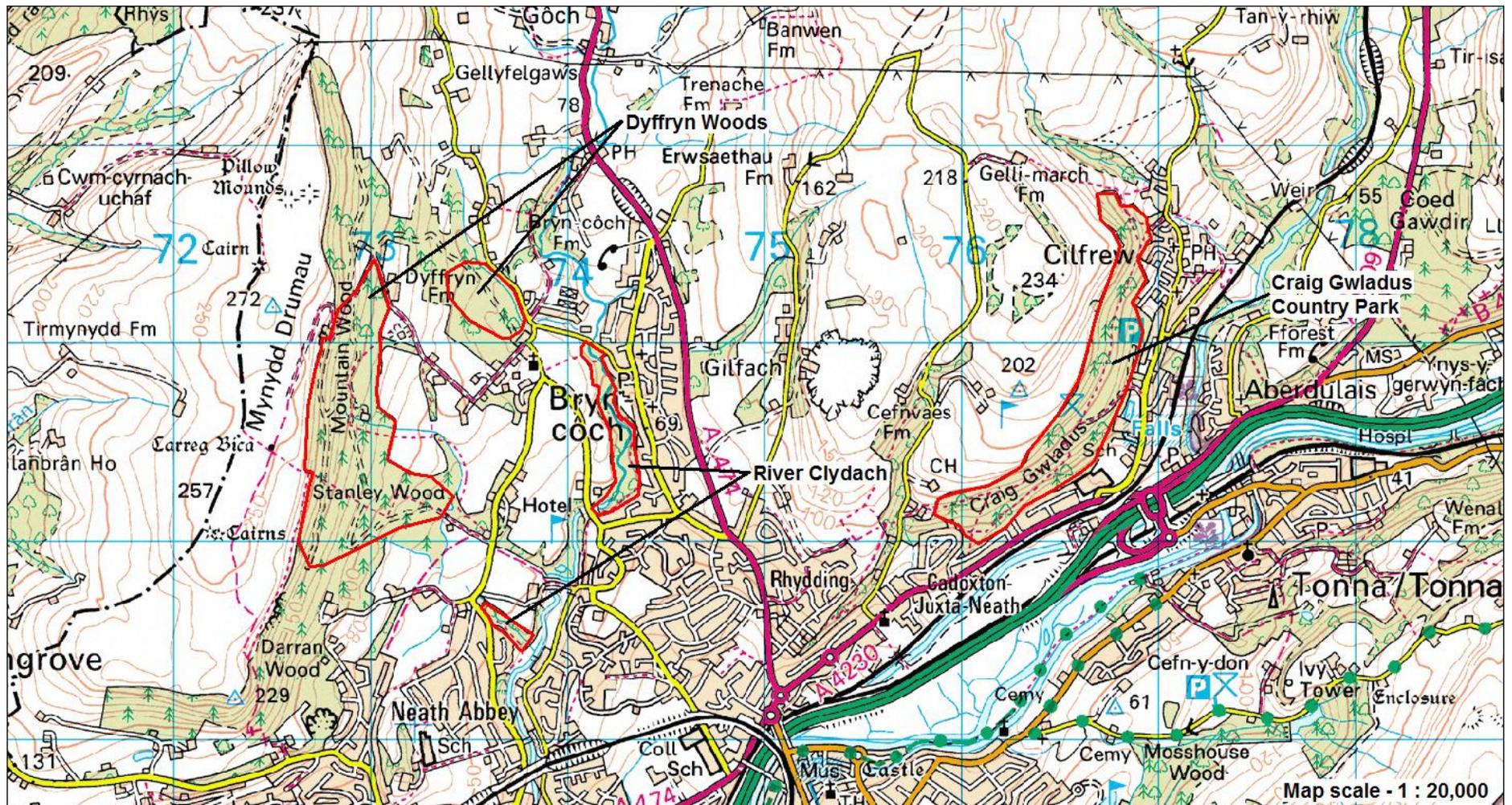


Figure 4: Craig Gwladys Country Park, Dyffryn Woods and River Clydach showing areas surveyed for *Carabus intricatus*.

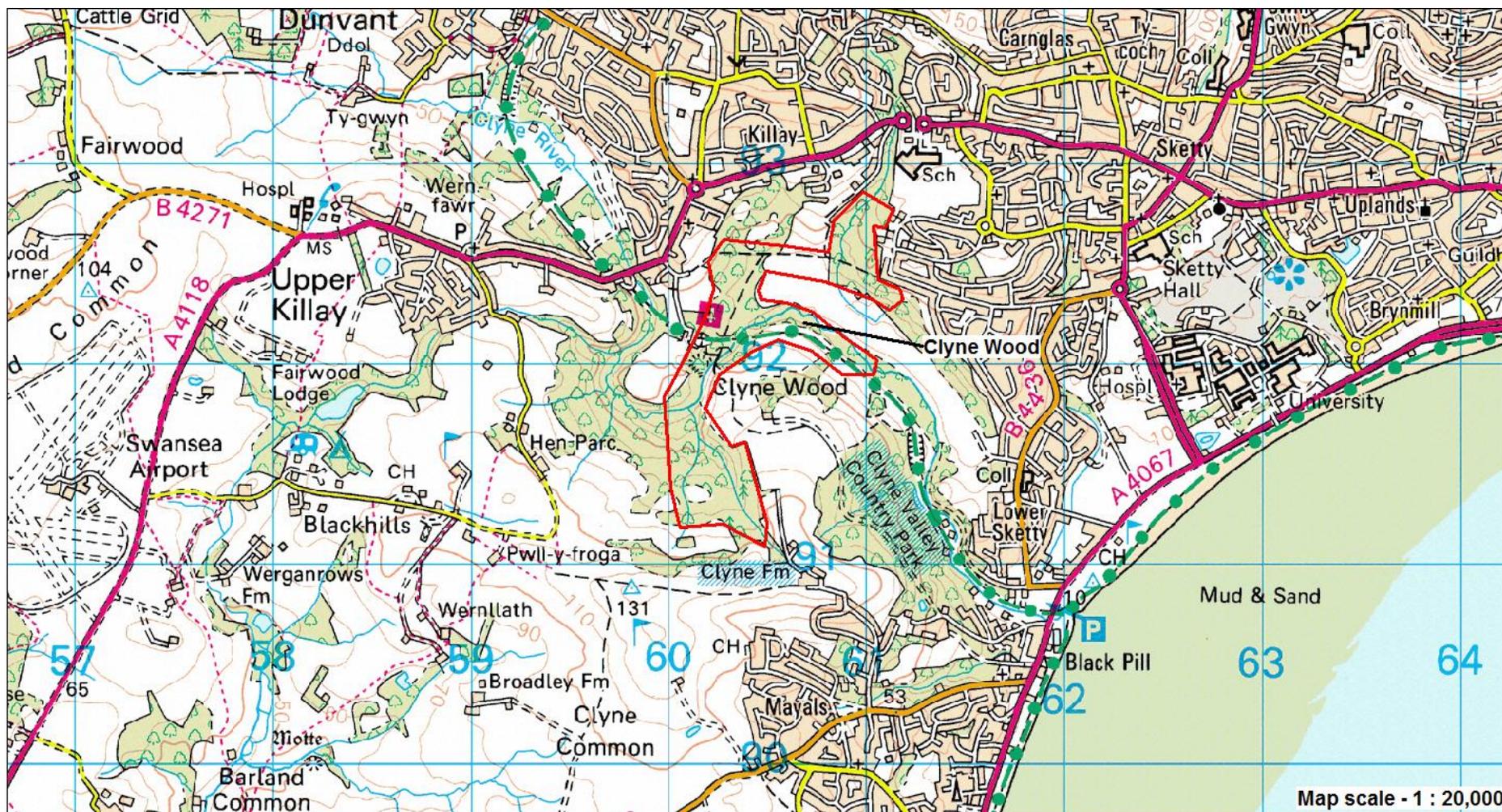


Figure 5: Clyne Wood, Swansea showing area surveyed for *Carabus intricatus*.

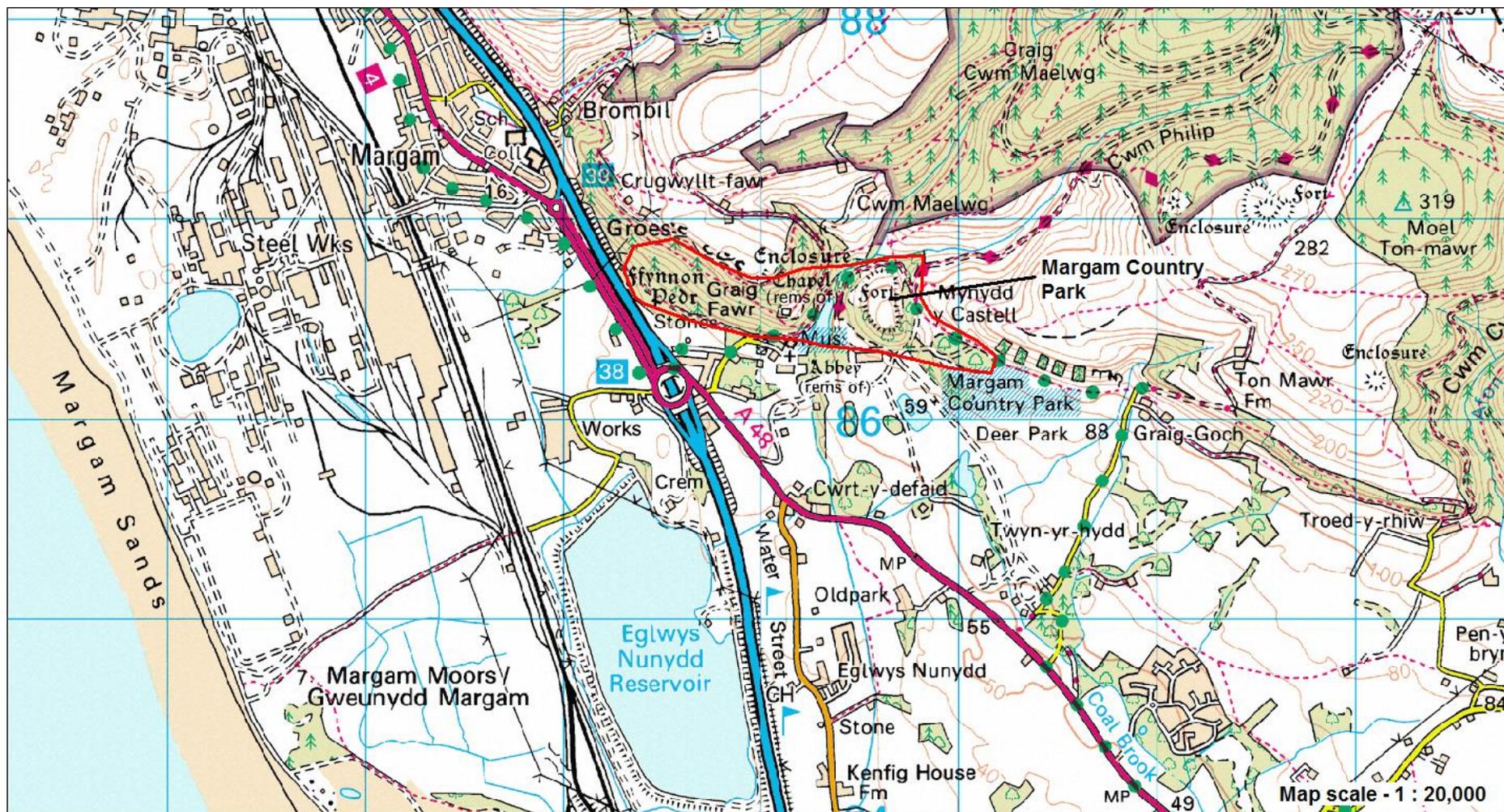


Figure 6: Margam Country Park showing area surveyed for *Carabus intricatus*.



Figure 7: Blue Ground Beetle *Carabus intricatus* over-wintering site in old birch stump at the eastern end of Coed Maesmelin, 22nd January 2015.



Figure 8: Blue Ground Beetle *Carabus intricatus* over-wintering site in old oak stump at the western end of Coed Maesmelin, 4th February 2016.

6. Discussion

Coed Maesmelin remains the only known Welsh locality for Blue Ground Beetle. As such, it is critical that the woodland is returned to more open conditions as the beetle is known to favour sites with a very sparse shrub and field layer. Since the fencing of the woodland in the late 1990s to exclude grazing, dense bramble *Rubus fruticosus* has grown up in the field layer across much of the site and a subjective visual assessment during the 2016 visit suggested that bramble growth is now even denser than it had been in the previous year (see Figures 9 to 11). It seems likely that the site is now in sub-optimal condition for the beetle and the clearance of the bramble, by cutting and follow-up grazing, is considered to be essential in order to ensure the protection of this very important population. It is worth noting that the 2015 and 2016 records of Blue Ground Beetle all came from parts of the site where the field layer is still relatively sparse (see Figure 9). In the case of the most westerly of these records, bramble growth was being suppressed by the heavy shade cast by the adjacent conifer plantation.

The absence of the beetle from the other woodlands is disappointing, particularly as suitable habitat does occur at sites such as Clun Gwyn and Craig Gwladys Country Park. However, wider searches should continue as it is unlikely that Coed Maesmelin is the only Welsh woodland to support the beetle.



Figure 9: Blue Ground Beetle *Carabus intricatus* habitat at the western edge of the reserve, 22 January 2015 showing areas of ground still relatively free of bramble encroachment.



Figure 10: Coed Maesmelin, 22nd January 2015 showing bramble encroachment.



Figure 11: Coed Maesmelin, 4th February 2016 showing bramble encroachment.

7. Recommendations

As the Woodland Trust is planning to begin management work at Coed Maesmelin to control dense growth of bramble and other scrub in the shrub and field layer, it would be valuable to continue periodic monitoring of the population of Blue Ground Beetle to assess the effectiveness of this work.

Despite the lack of any additional Welsh populations of Blue Ground Beetle, it is considered very unlikely that the Coed Maesmelin population is the only one existing in south Wales. There are still many other blocks of woodland in this part of south Wales that may also have the potential to support colonies of the beetle. Further surveys of those ancient sites where there is broadleaved woodland, in which oak and beech are the main canopy species, is highly desirable. This will help develop our understanding of the species in Wales and to assess the importance of Welsh populations in a UK context.

Whilst Coed Maesmelin remains the only known Welsh locality for Blue Ground Beetle, consideration should be given to notify the woodland as a Site of Special Scientific Interest (SSSI). It may also be appropriate to add the species to Section 7 of the Environment (Wales) Act 2016 if it meets the criteria.

8. References

Boyce, D.C. & Walters, J.M. 2001. The conservation of the Blue Ground Beetle in south-west England. *British Wildlife* **13**: (2), 101-108.

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Walters, J.M. 2013. Blue Ground Beetle *Carabus intricatus* Linnaeus (Carabidae) new to Glamorgan and Wales. *The Coleopterist* **22**: (2), 74.

9. Acknowledgements

Thanks are due to Mike Howe (NRW) for setting up the contract, and to Chris Matts (Woodland Trust) for much help during this survey.

Appendix 1: Photographs of 2016 survey sites



Figure 12: Daren Wen, near Baglan/Briton Ferry, surveyed 26/02/2016.



Figure 13: Clun Gwyn wood-pasture, surveyed 25/02/2016.



Figure 14: Clun Gwyn south-facing slope, surveyed 25/02/2016.



Figure 15: Clun Gwyn south-facing slope, surveyed 25/02/2016.



Figure 16: Clyne Wood, surveyed 26/02/2016.



Figure 17: Coed Maesmelin, surveyed 04 & 26/02/2016.



Figure 18: Coed Maesmelin, surveyed 04 & 26/02/2016.



Figure 19: Coed Maesmelin, surveyed 04 & 26/02/2016.



Figure 20: Craig Gwladys Country Park, surveyed 04/02/2016.



Figure 21: Craig Gwladys Country Park, surveyed 04/02/2016.



Figure 22: Craig Gwladys Country Park, surveyed 04/02/2016.



Figure 23: Dyffryn Wood, surveyed 04/02/2016.



Figure 24: Dyffryn Wood, surveyed 04/02/2016.



Figure 25: Dyffryn Wood, surveyed 04/02/2016.



Figure 26: Margam Country Park, surveyed 26/02/2016.



Figure 27: Pontneddfechan, mine workings, surveyed 25/02/2016.



Figure 28: Pontneddfechan, steep south-facing slope surveyed 25/02/2016.



Figure 29: River Clydach, surveyed 04/02/2016.



Figure 30: River Clydach, surveyed 25/02/2016.

Appendix 2: Other invertebrate records

A few other invertebrates were recorded during the blue ground beetle survey work. These are listed below.

04/02/2016 – Coed Maesmelin (SS72259809)

Carabus intricatus 1

25/02/2016 – Pontneddfechan (SN8909)

Carabus granulatus
Carabus problematicus
Carabus violaceus
Abax parallelepipedus
Platynus assimilis
Atrecus affinis
Quedius umbrinus
Anoplotrupes stercorosus
Denticollis linearis larva
Cerylon ferrugineum
Melanotus villosus agg. larva
Xylophagus ater larva

25/02/2016 – Clun Gwyn (SN9210)

Pterostichus niger
Platynus assimilis

26/02/2016 – Coed Maesmelin (SS7298)

Carabus violaceus
Pterostichus niger
Mocyta fungi agg.
Bolitochara obliqua
Denticollis linearis larva
Rhizophagus dispar
Rhagium mordax

Appendix 3: Data Archive Appendix

The data archive contains:

[A] The final report in Microsoft Word and Adobe PDF formats.

[B] Species records, which are held on the NRW Recorder 6 database.

Metadata for this project is publicly accessible through Natural Resources Wales' Library Catalogue <http://libcat.naturalresources.wales> or <http://catllyfr.cyfoethnaturiol.cymru> by searching 'Dataset Titles'. The metadata is held as record no 117691.



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