
TARGETED SURVEY AND HABITAT ASSESSMENT FOR THE BEAULIEU DUNG BEETLE (*Liothorax niger*) AT SELECTED WETLAND SITES IN THE NEW FOREST.



Scotty G. Dodd MSc MCIEEM MRES

11 Knowles Meadow, Hill Brow, Hants, GU33 7QW
Email: jaapieela@yahoo.co.uk

Dr. Jonty Denton Bsc (Hons) FRES FLS CEcol MCIEEM

31 Thorn lane, Four Marks, Hants, GU34 5BX
Email: JontyDenton@aol.com

October 2023

**Survey commissioned by: Surrey Wildlife Trust Ecology Services on behalf of Forestry
England**



EXECUTIVE SUMMARY

A targeted search and habitat assessment for the Nationally Rare Beaulieu Dung Beetle *Liothorax niger* was undertaken in June 2023 at twelve wetland sites in the New Forest, South Hampshire (Vice County 11) selected by Natural England, with further sites added based upon recommendations in the 2022 survey report. In addition to these sites the target species was found at Burley Rocks and Sway marl pits.

The project brief was as follows:

- Description of methods.
- Description of habitat suitability, vegetation cover and structure within each survey site.
- Record of where each species was present and absent during the field survey.
- The location and extent of each identified site and/or meta-population mapped and presented in ARC GIS shapefile and pdf maps at the 1:10000 scale.
- Identify other suitable habitat nearby.
- Notes on competing species if present.
- Estimation of size of each meta-population.
- Assessment of the current status of the population of each species within the New Forest.
- A discussion of the threats and risks to the populations of each species around the New Forest is to be provided in the write-up.

The selected sites were visited on the 12th, 13th, 14th & 23rd June 2023 by two experienced invertebrate ecologists, Scotty Dodd MSc MCIEEM MRES and Dr. Jonty Denton Bsc (Hons) FRES FLS CEcol MCIEEM. Dr Denton is also the County Recorder for Coleoptera (beetles) for Hampshire (VC11 & VC12).

The Beaulieu Dung Beetle *Liothorax niger* was recorded at three of the selected sites visited in 2023: Balmer Lawn, Long Pond and Windmill Hill Pond. Additionally the target species was also detected at Sway marl pits and Burley Rocks. As in 2022 some sites were dry by the time of survey. It is recommended that the drier sites are re-visited in April and May 2024, when the features are highly likely to be wet and accumulated debris and litter more likely post winter flooding etc.

This report should be cited as: Dodd, S.G. & Denton, J.S. (2023). *Targeted Survey and Habitat Assessment for the Beaulieu Dung Beetle (*Liothorax niger*) at Selected Wetland Sites in the New Forest.* Forestry England Beaulieu Dung Beetle Project (New Forest) Report. Project No. 4060-A.

Contents

EXECUTIVE SUMMARY	2
INTRODUCTION	4
BACKGROUND	4
PROJECT AIMS	5
SAMPLING COMPARTMENTS	5
METHODOLOGY	18
SAMPLING WITHIN THE COMPARTMENTS	18
SITE VISITS	18
CONSTRAINTS	18
RESULTS	18
Long Pond	18
Vinney Ridge	20
Dame's Slough (Blackwater Bridge)	21
Markway Inclosure (Duckhole Bog)	21
Mogshade Hill	23
Balmer Lawn	24
Standing Hat	25
Butts Lawn	26
Whitemoor Pond	27
Millyford car park	28
Three Beech Ponds	29
Windmill Hill Pond	30
Burley Rocks	32
Sway marl pits	34
ECOLOGICAL ASSESSMENT	36
THREATS	36
FURTHER WORK	36
REFERENCES & BIBLIOGRAPHY	37
Appendix 1. Status categories for rare and Notable species	38
Summary of the IUCN categories and criteria	39
Other species status terminology	40

INTRODUCTION

BACKGROUND

A targeted search and habitat assessment for the Nationally Rare Beaulieu Dung Beetle *Liothorax niger* at twelve wetland sites in the New Forest, South Hampshire (Vice County 11), was commissioned by Forestry England via Surrey Wildlife Trust Ecology Services.

The Beaulieu Dung Beetle *Liothorax niger* (Illiger, 1798) [synonyms: *Aphodius niger* (Panzer, 1797)], (Coleoptera: Scarabaeidae: Aphodiinae), is globally a very widespread Palaearctic species occurring throughout Europe (except for the north of Fennoscandia and southern areas of the Iberian and Balkan Peninsulas). It is present on most of the Mediterranean islands, but not in North Africa, and extends east through Asia Minor and Russia to the far east of Asia and China. In northern Europe, where it is considered to be very localised and rare, there has been a perceived decline through the C20th with few modern records, e.g. in Poland. In the UK it is locally common across South Hampshire (VC11), especially in the New Forest which is considered to be a historical stronghold for the species, although there are accepted historic records from Dorset (VC9). The species was also recently found in Berkshire (VC22) in 2010 (Mann & Garvey, 2014) and it seems plausible that there is the potential for further records from central southern England.

Within the New Forest Balmer Lawn, near Brockenhurst, was considered to be the historic stronghold, or at least the location that collectors descended upon to obtain a specimen. However, Mann & Garvey (2014) in their review of records for the New Forest considered the species to be widespread across the area, with confirmed post-2000 data for six hectads.

In Britain the species was regarded as Endangered (Red Data Book 1) by Shirt (1987) [Note: As *Aphodius (Nialus) niger*] who gave the locality of Brockenhurst area of New Forest and the banks of a pond at Brockenhurst in 1909, but also cites historic records from Balmer Lawn by A.M. Masee in 1931 and 1938. The subsequent review by Hyman & Parsons (1992) retains the RDB1 (Endangered) status applied by Shirt (1987), adding “*currently known from only one pond in the New Forest*”. Lane & Mann (2016) in their IUCN review of the group consider the species to be of Least Concern (LC) in the broader Global context, but apply a revised status of Nationally Rare (NR) in the British context, reflecting the more widespread distribution within and without the New Forest shown by Mann & Garvey (2014).

In terms of species ecology, Shirt (1987) makes the most simplistic observation that the species is to be found in mud at the sides of ponds frequented by cattle and horses. Hyman & Parsons (1992) add pond and ditch margins, feeding on decaying matter in damp soils and mud at the sides of ponds that have been frequented by cattle and horses. They also cite records from grass tussocks under or adjacent to dung on wet mud and under sods on the bed of the pond when it had dried out.

Mann & Garvey (2014) describe *Liothorax niger* as not an obligate dung-associated species, rather it is a stenotopic, saprophagous species found almost exclusively in open areas around temporary or permanent pools and ditch margins. However, they do note that the species does likely benefit from the humus-rich soils contributed to by dunging and might therefore be adversely impacted by the use of endectocides applied to livestock. They describe the habitats

as in soil, under flood debris, in leaf litter and under algal mats near water. In terms of phenology the species has been recorded from January to November, with most records between April and June (with the exception of a data bias from July 1999 when the New Forest Life Project occurred).

PROJECT AIMS

The project brief was as follows:

- Description of methods.
- Description of habitat suitability, vegetation cover and structure within each survey site.
- Record of where each species was present and absent during the field survey.
- The location and extent of each identified site and/or meta-population mapped and presented in ARC GIS shapefile and pdf maps at the 1:10000 scale.
- Identify other suitable habitat nearby.
- Notes on competing species if present.
- Estimation of size of each meta-population.
- Assessment of the current status of the population of each species within the New Forest.
- A discussion of the threats and risks to the populations of each species around the New Forest is to be provided in the write-up.

SAMPLING COMPARTMENTS

12th June 2023

- Long Pond – SU 1993 0216
- *Burley Rocks – SU 2274 0342

13th June 2023

- Balmer Lawn – SU 3060 0350
- Butts Lawn – SU 3006 0298
- Standing Hat – SU 3133 0365
- Vinney Ridge – SU 2606 0578
- Dame's Slough – SU 2537 0483
- Markway Inclosure (Duckhole Bog) – SU 2449 0227
- Whitemoor Pond – SU 2778 0245

14th June 2023

- Three Beech Ponds – SZ 2932 9998
- Millyford car park – SU 2678 0788
- Mogshade Hill – SU 2374 0973
- *Sway marl pits – SZ 2850 9971 & SZ 2855 9970

23rd June 2023

- Windmill Hill Pond – SU 1823 1285

* Additional sites initially selected for New Forest Mud Beetle *Helophorus laticollis* where *Liothorax niger* was found to be present.

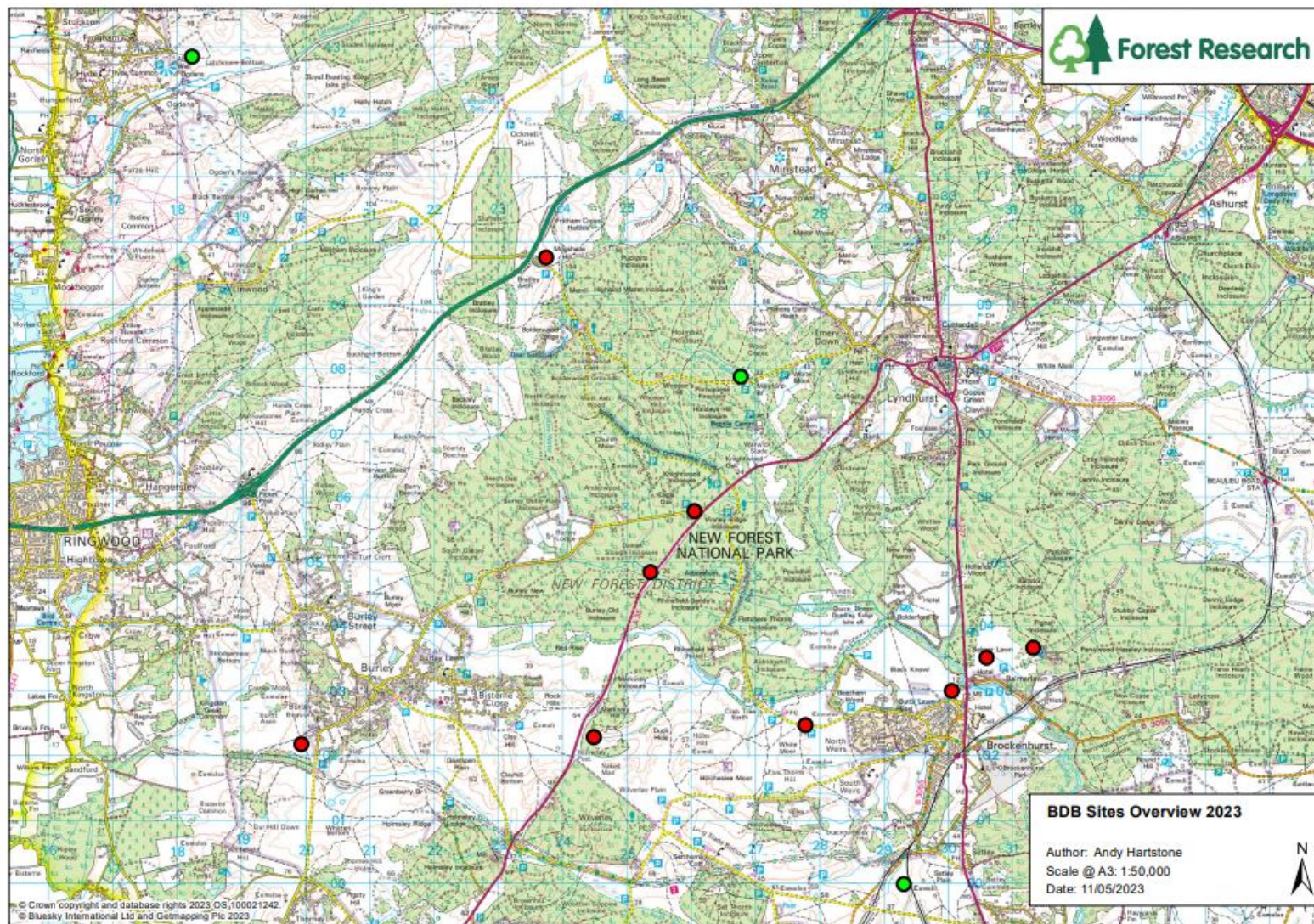


Figure 1. New Forest sampling compartments for Beaulieu Dung Beetle in 2023 –Sites Overview

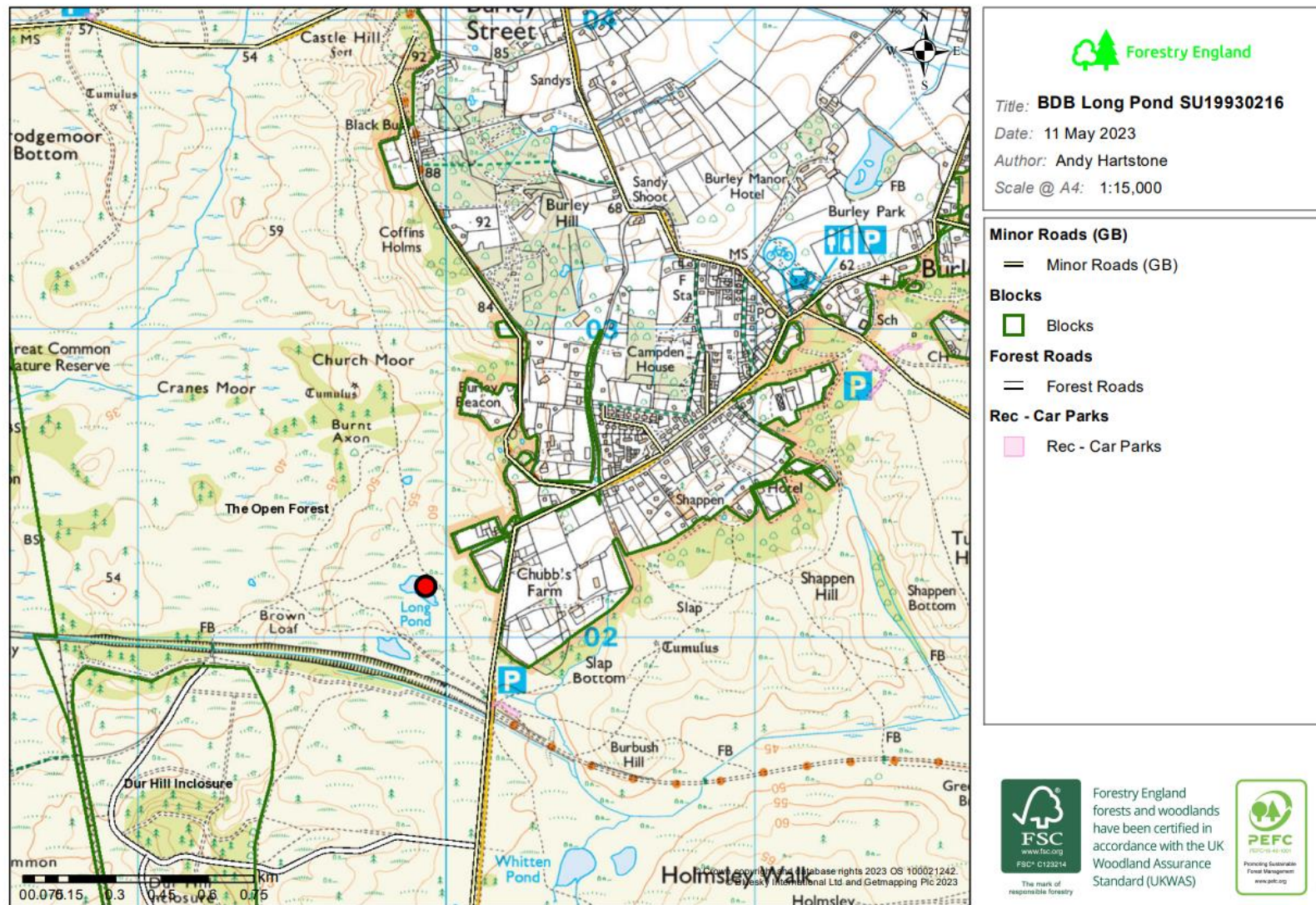


Figure 2. New Forest sampling compartments for Beaulieu Dung Beetle in 2023 – Long Pond, Burley

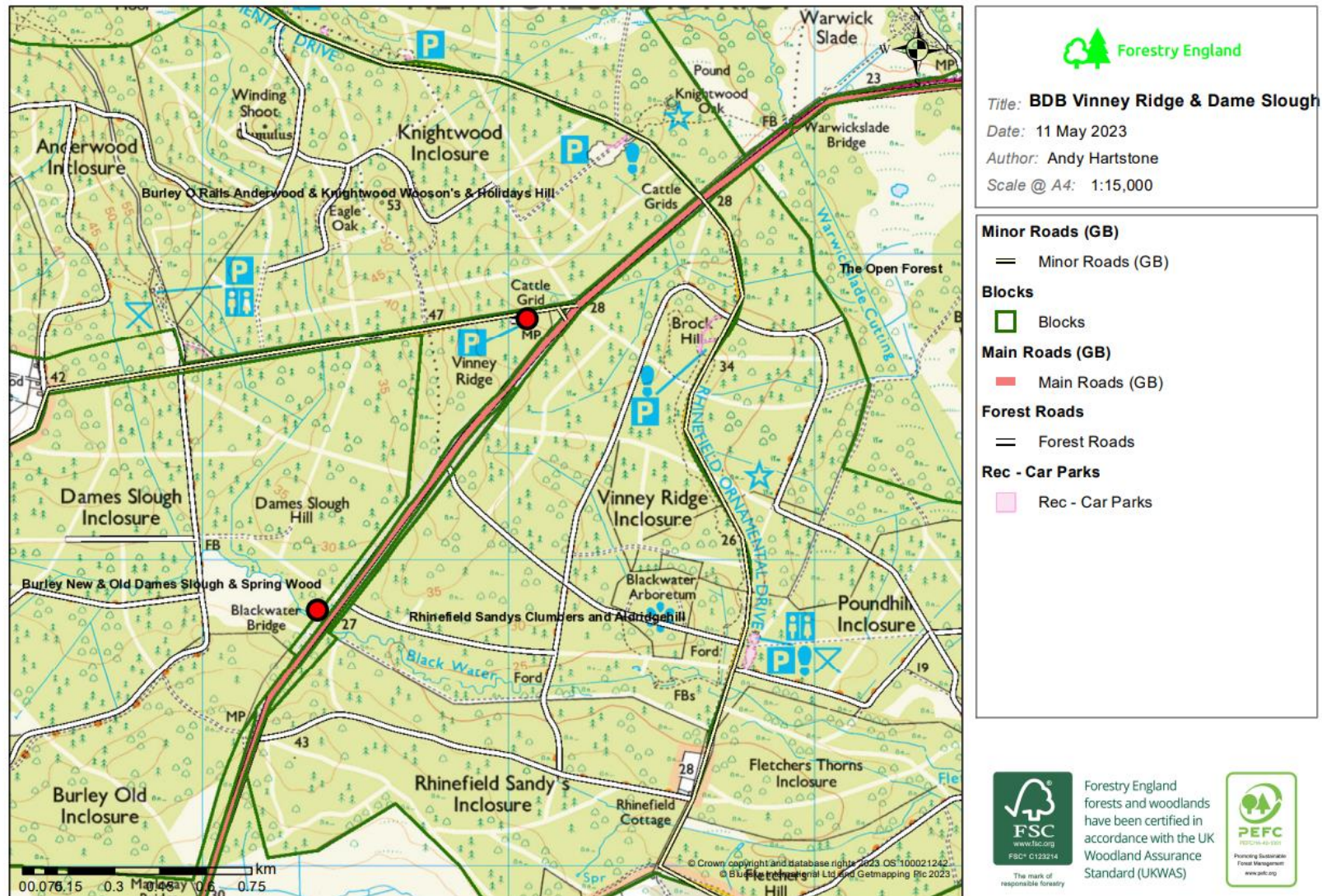


Figure 3. New Forest sampling compartments for Beaulieu Dung Beetle in 2023 – Vinney Ridge & Dames Slough



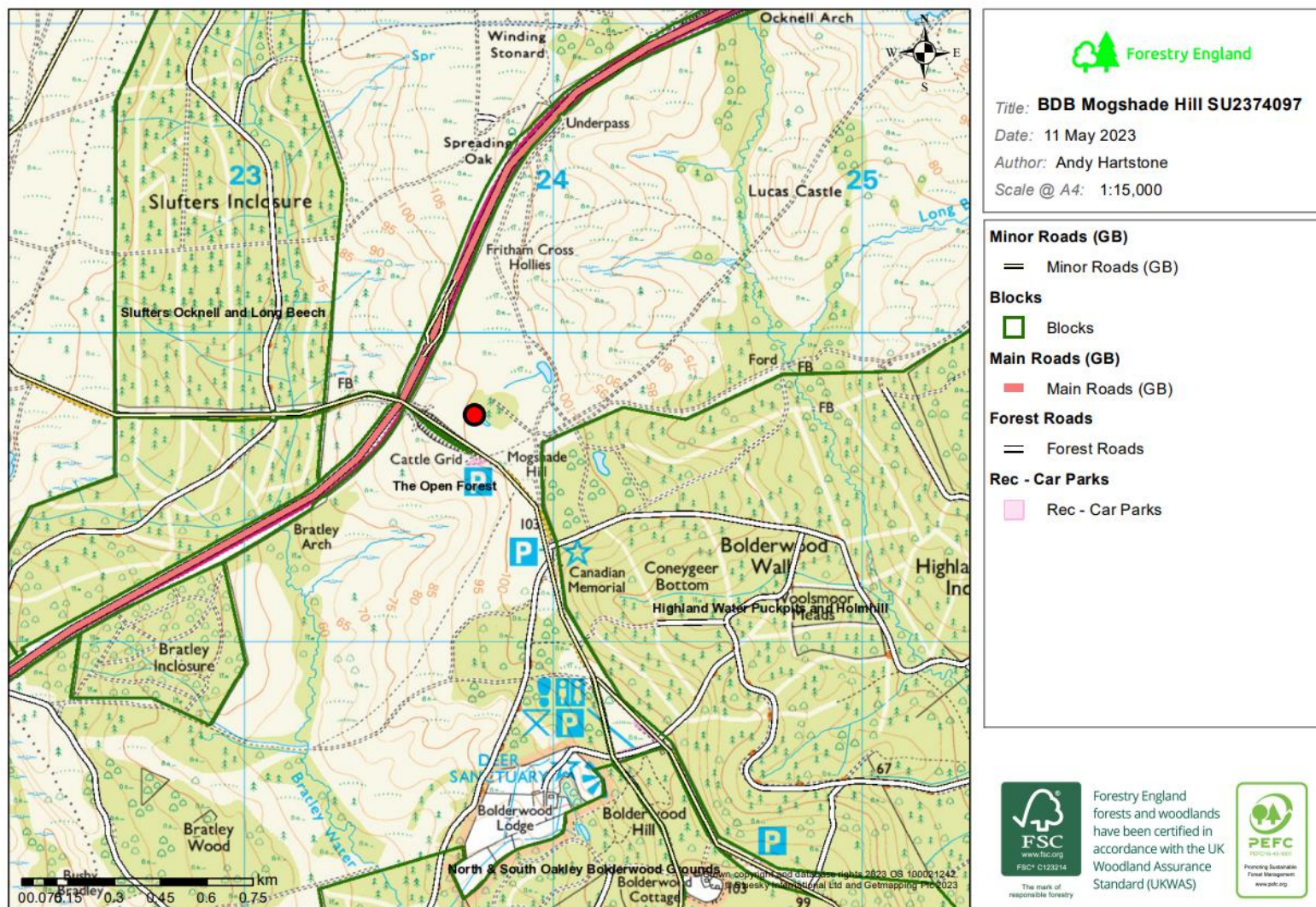
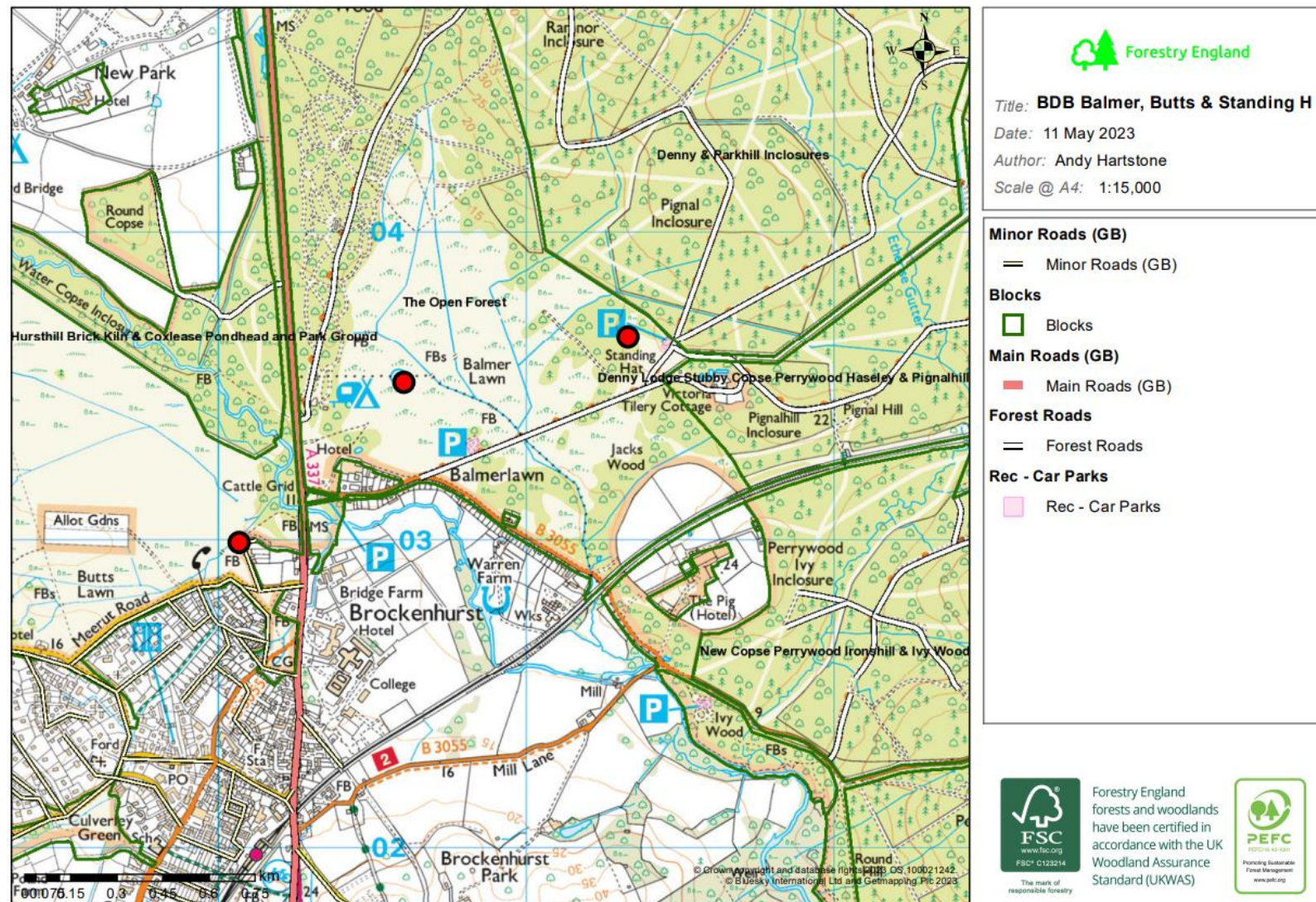


Figure 5. New Forest sampling compartments for Beaulieu Dung Beetle in 2023 – Mogshade Hill



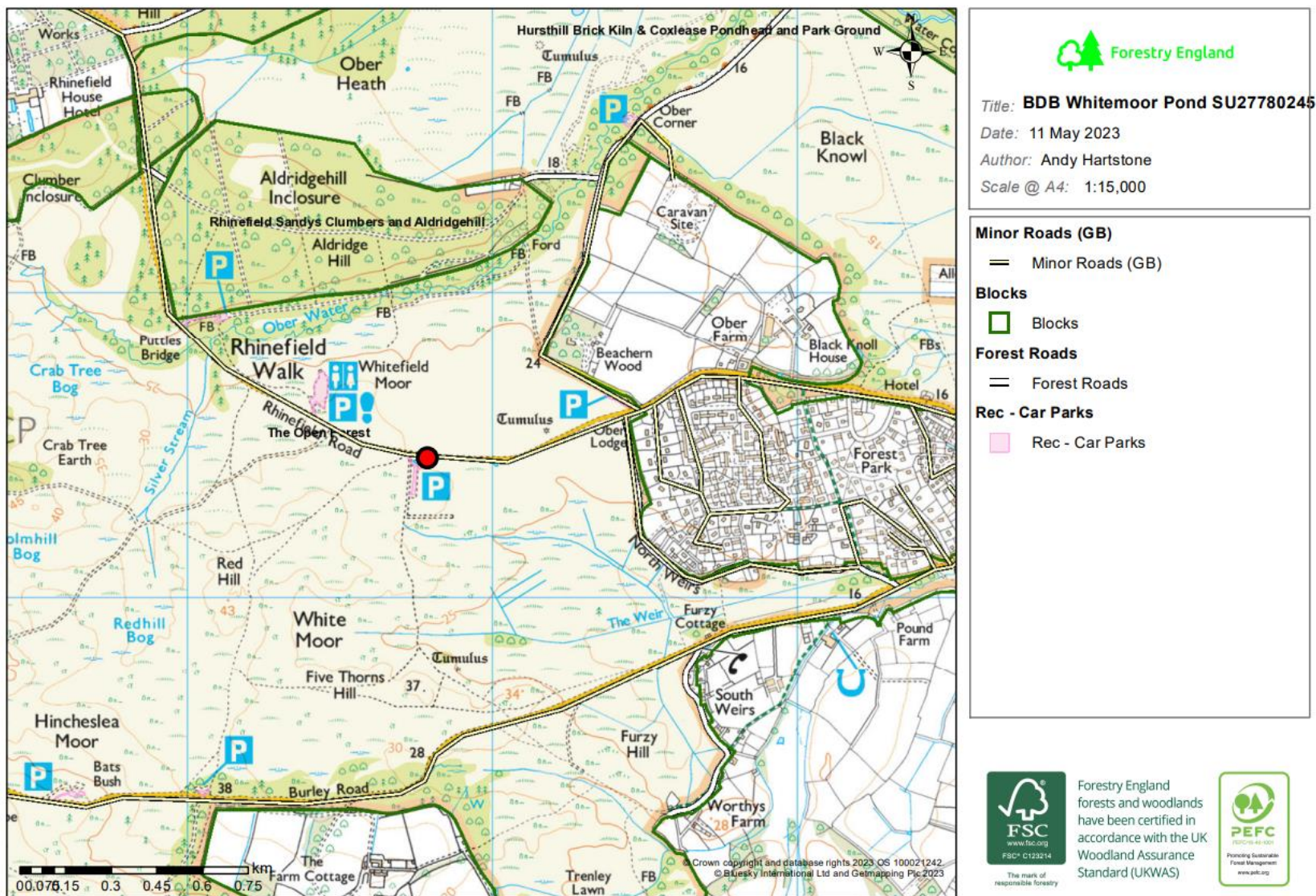


Figure 7. New Forest sampling compartments for Beaulieu Dung Beetle in 2023 – Whitemoor Pond

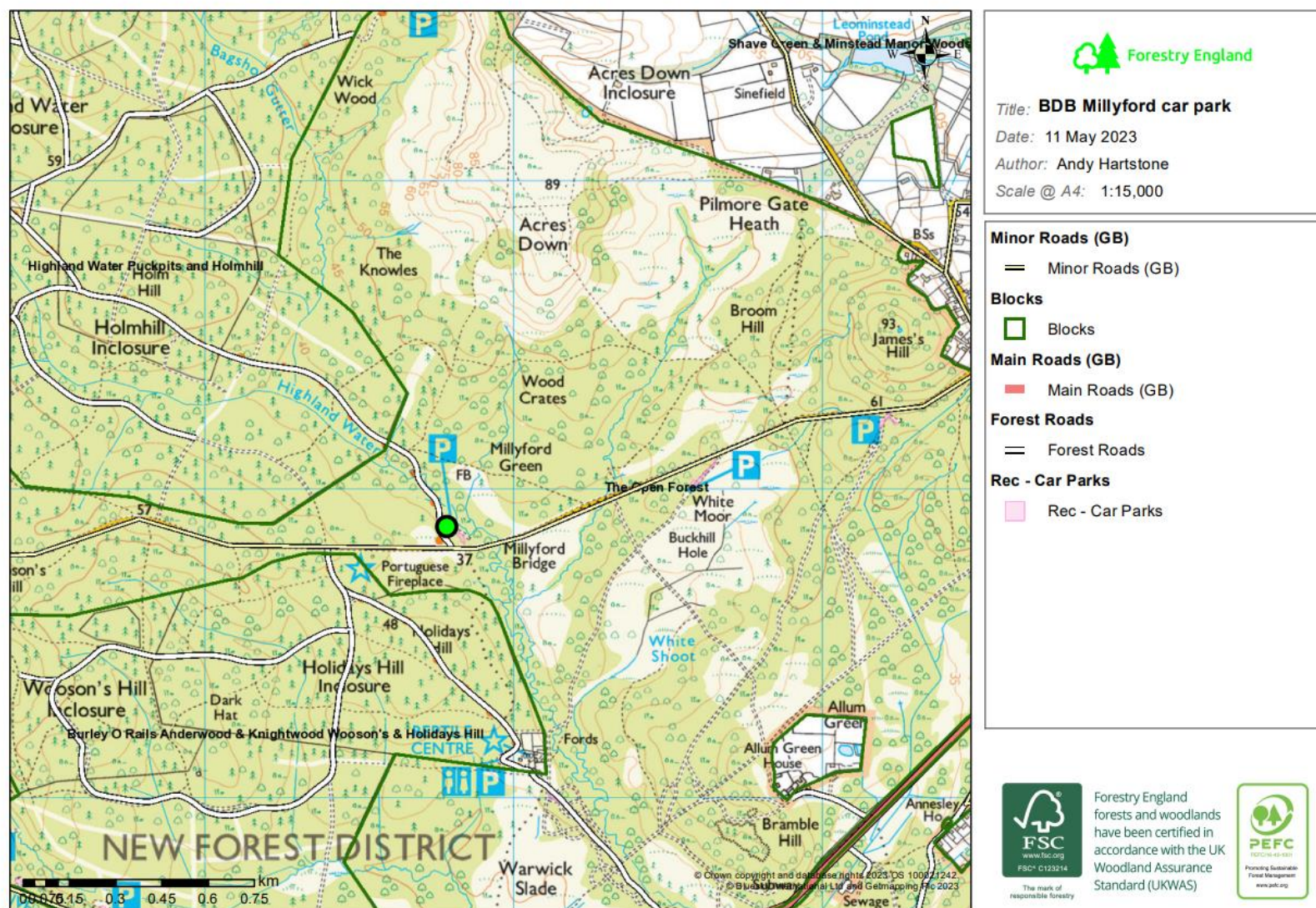


Figure 8. New Forest sampling compartments for Beaulieu Dung Beetle in 2023 – Millyford car park

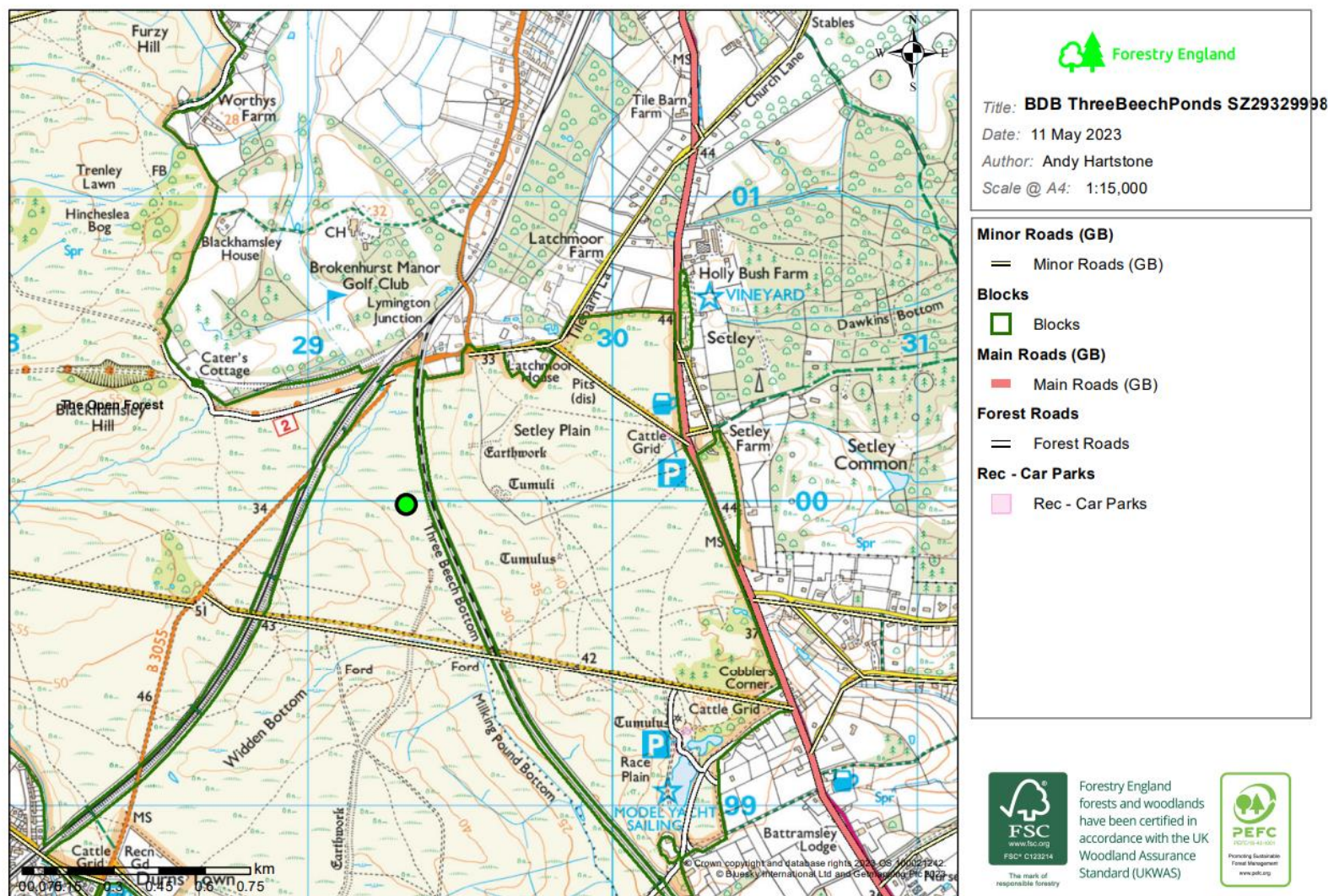


Figure 9. New Forest sampling compartments for Beaulieu Dung Beetle in 2023 – Three Beech Ponds

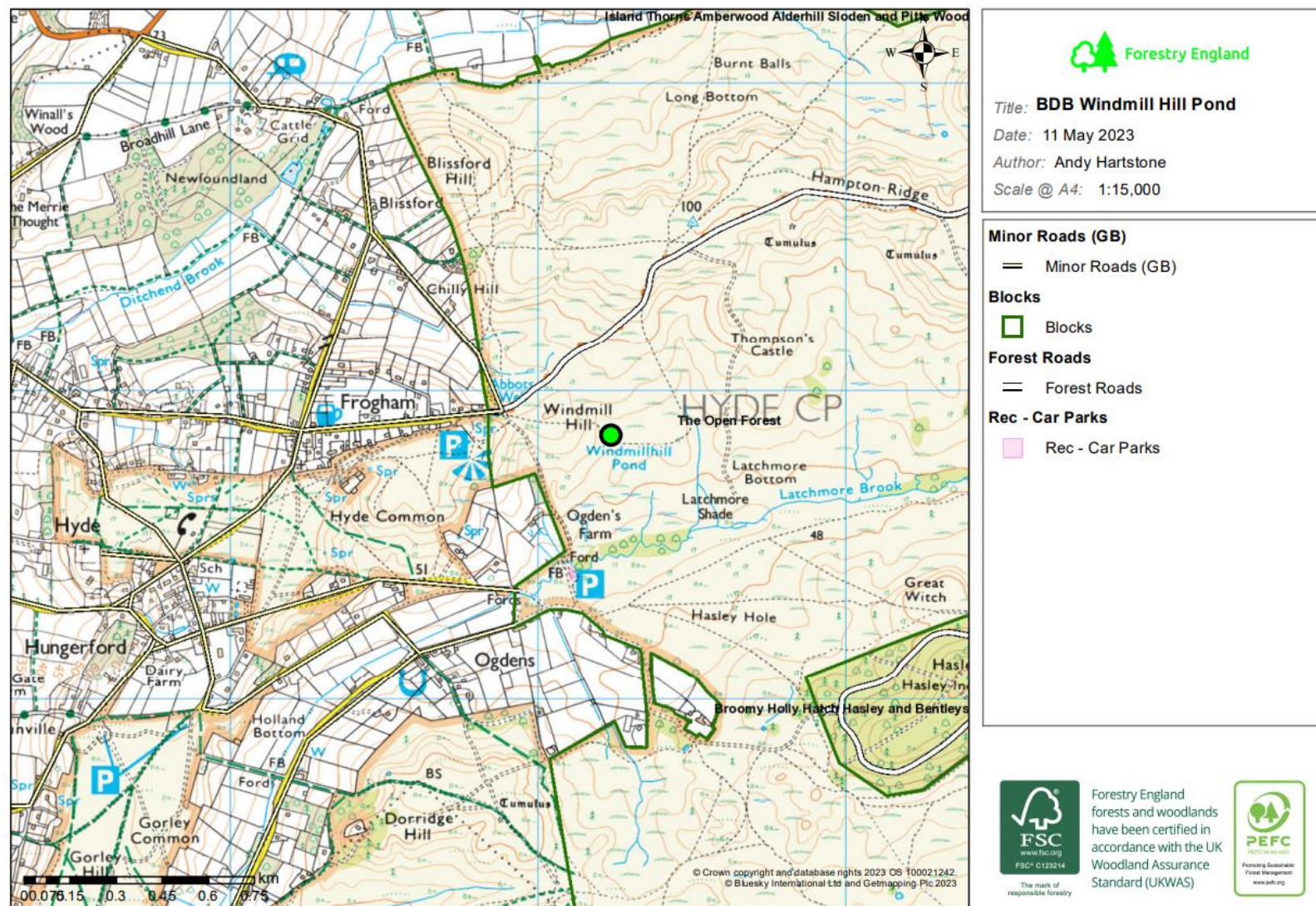


Figure 10. New Forest sampling compartments for Beaulieu Dung Beetle in 2023 – Windmill Hill Pond

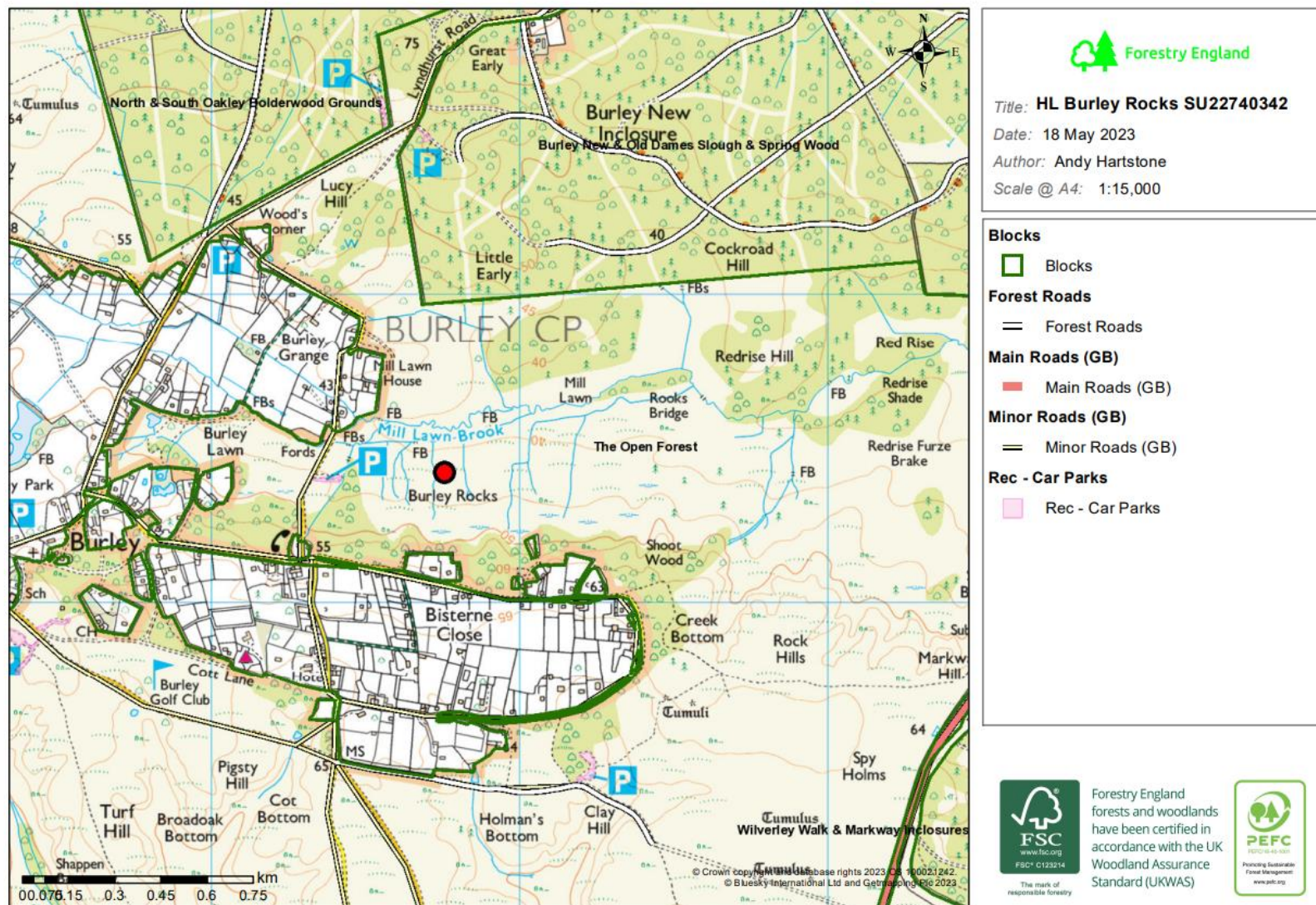
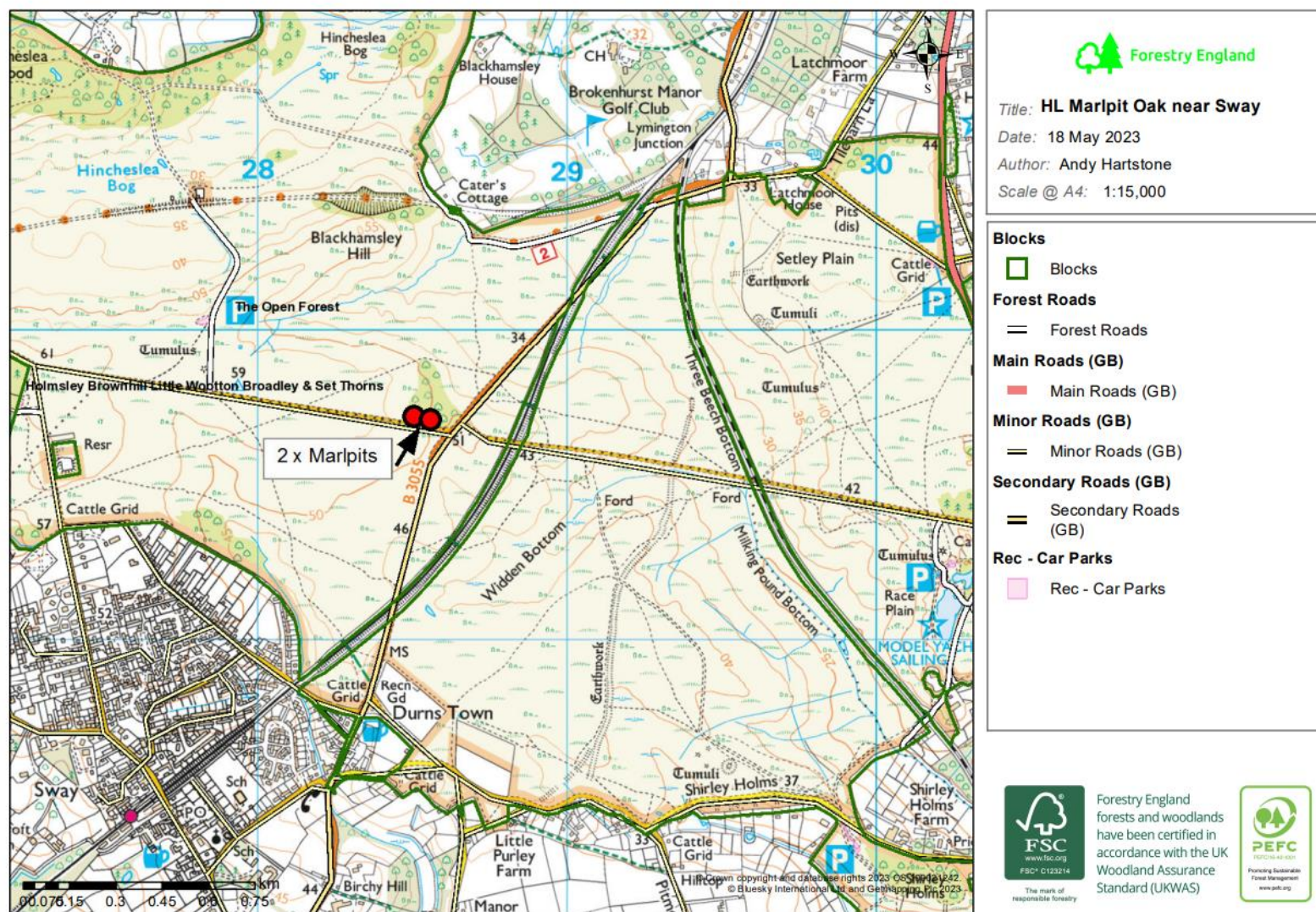


Figure 11. New Forest sampling compartments for Beaulieu Dung Beetle in 2023 – Burley Rocks



METHODOLOGY

SAMPLING WITHIN THE COMPARTMENTS

The following search methods were implemented:

- Hand searching in and under dung using nitrile gloves.
- Hand searching in and under litter and debris.
- Bank splashing where water present.
- Floating out dung where water present.
- Puddling moss and litter where water present.

SITE VISITS

The selected sites were visited on the 12th, 13th, 14th & 23rd June 2023 by two experienced invertebrate ecologists, Scotty Dodd MSc MCIEEM MRES and Dr. Jonty Denton Bsc (Hons) FRES FLS CEcol MCIEEM.

CONSTRAINTS

Due to site conditions some of the sites had dried out prior to the surveys being undertaken.

RESULTS

Long Pond

A single *Liothorax niger* was found at the eastern end of the northern shore by bank splashing, i.e. localised flooding of bare mud / dung at pond edges to float out any beetles present.

The north shore is predominantly bare mud with signs of dunging and poaching. The south shore is less poached and largely vegetated, predominantly with Marsh St. John's-wort *Hypericum elodes*, Lesser Spearwort *Ranunculus flammula*, Shoreweed *Littorella uniflora* and invasive New Zealand Pigmyweed *Crassula helmsii*. Note that where Shoreweed dominates it tends to outcompete the invasive *Crassula*. Other plants noted include Pillwort *Pilularia globulifera*, Water-purslane *Lythrum portula*, Water-plantain *Alisma plantago-aquatica*, Lesser Water-plantain *Baldellia ranunculoides*, White Water-lily *Nymphaea alba*, Bog Pimpernel *Anagallis tenella* and Common Spike-rush *Eleocharis palustris*. The surrounding habitat is typical wet / humid heath transitioning to drier Ling *Calluna vulgaris* dominated heath.

Methods: Bank splashing, floating out, puddling, direct searching of dung.

Other invertebrates noted:

Order	Family	Taxon	Vernacular	Status
Coleoptera	Dytiscidae	<i>Hydroglyphus geminus</i>	a water beetle	
Coleoptera	Dytiscidae	<i>Hydroporus pubescens</i>	a water beetle	

Order	Family	Taxon	Vernacular	Status
Coleoptera	Dytiscidae	<i>Hygrotus impressopunctatus</i>	a water beetle	
Coleoptera	Dytiscidae	<i>Ilybius montanus</i>	a water beetle	
Coleoptera	Histeridae	<i>Hister unicolor</i>	a water beetle	
Coleoptera	Hydrophilidae	<i>Cercyon unipunctatus</i>	a water beetle	
Coleoptera	Hydrophilidae	<i>Helochares punctatus</i>	a water beetle	NS
Coleoptera	Noteridae	<i>Noterus clavicornis</i>	a water beetle	
Coleoptera	Scarabaeidae	<i>Calamosternus granarius</i>	a dung beetle	
Coleoptera	Scarabaeidae	<i>Otophorus haemorrhoidalis</i>	a dung beetle	
Coleoptera	Scarabaeidae	<i>Liothorax niger</i>	Beaulieu Dung Beetle	NR
Coleoptera	Scarabaeidae	<i>Teuchestes fossor</i>	a dung beetle	
Coleoptera	Staphylinidae	<i>Ontholestes murinus</i>	a rove beetle	
Diptera	Hippoboscidae	<i>Hippobosca equina</i>	New Forest Fly	[RDBK]
Hymenoptera	Tenthredinidae	<i>Selandria serva</i>	a sawfly	



Photograph 1. Long Pond north shore with bare mud and trampled dung. *Liothorax niger* was bank splashed from this habitat at eastern end.



Photograph 2. Long Pond south shore, vegetated with signs of occasional poaching and dunging.

Vinney Ridge

No *Liothorax niger* found. Suitable habitat is limited to a *Sphagnum* flush in a humid to wet heath area along a woodland edge, including a flush running parallel and adjacent to the road. As in 2022 at the time of survey the flush was very dry with little fresh dung present. Botanically the area was typical wet / humid heath comprising Purple Moor-grass *Molinia caerulea*. Cross-leaved Heath *Erica tetralix* and Ling *Calluna vulgaris*. The flush itself comprised *Sphagnum* sp., Bog Pimpernel *Anagallis tenella* and Tormentil *Potentilla erecta*.

Methods: Direct searching of dung.

Other invertebrates noted: None.



Photograph 3. Humid heathland at Vinney Ridge.



Photograph 4. *Sphagnum* flush and wet heath at Vinney Ridge.

Dame's Slough (Blackwater Bridge)

No *Liothorax niger* found. Dame's Slough is a stream edge with semi-shaded marshy ground transitioning into wet woodland. The woodland flush and stream edges supported Water Mint *Mentha aquatica*, Gipsywort *Lycopus europaeus*, Marsh Bedstraw *Galium palustre*, Self-heal *Prunella vulgaris*, Lesser Spearwort *Ranunculus flammula* Yellow Pimpernel *Lysimachia nemorum*, Trailing St. John's-wort *Hypericum humifusum* and a small number of Lesser Water-plantain *Baldellia ranunculoides*. Graminoids were present but were not identified to species. Signs of livestock passing through were minimal with very little poaching or fresh dunging. As in 2022 the woodland flush was largely dry.

Methods: Bank splashing, floating out, puddling, direct searching of dung.

Other invertebrates noted:

Order	Family	Taxon	Vernacular	National Status
Coleoptera	Carabidae	<i>Bembidion dentellum</i>	A ground beetle	
Coleoptera	Carabidae	<i>Paranchus albipes</i>	A ground beetle	
Coleoptera	Dryopidae	<i>Dryops luridus</i>	A water beetle	
Heteroptera	Veliidae	<i>Velia caprai</i>	Water-cricket	
Hymenoptera	Formicidae	<i>Myrmica ruginodis</i>	an ant	
Isopoda	Porcellionidae	<i>Porcellio scaber</i>	Common Rough Woodlouse	
Odonata	Calopterygidae	<i>Calopteryx virgo</i>	Beautiful Demoiselle	
Orthoptera	Tetrigidae	<i>Tetrix subulata</i>	Slender Ground Hopper	Local



Photograph 5. Stream edge and woodland flush at Dame's Slough, Blackwater Bridge.

Markway Inclosure (Duckhole Bog)

No *Liothorax niger* found but habitat optimal with ponds still holding water and evidence of regular access by ponies and cattle.

The two ponds present had areas of bare mud with signs of dunging and poaching. Surrounding vegetation was predominantly Marsh St. John's-wort *Hypericum elodes*, Bog

Pondweed *Potamogeton polygonifolius*, Soft Rush *Juncus effusus*, Tormentil *Potentilla erecta*, Round-leaved Sundew *Drosera rotundifolia*, *Sphagnum* sp., Bog Myrtle *Myrica gale*, Bog Asphodel *Narthecium ossifragum*, Cross-leaved Heath *Erica tetralix* and a cotton-grass *Eriophorum* sp.

Methods: Bank splashing, floating out, puddling, direct searching of dung.

Other invertebrates noted:

Order	Family	Taxon	Vernacular	Status
Araneae	Araneidae	<i>Neoscona adianta</i>	a spider	
Araneae	Theridiidae	<i>Lasaeola tristis</i>	a spider	NS
Auchenorrhyncha	Cixiidae	<i>Pentastiridius leporinus</i>	a lacehopper	[Nb]
Coleoptera	Carabidae	<i>Stenolophus teutonus</i>	a ground beetle	NS
Coleoptera	Chrysomelidae	<i>Cryptocephalus labiatus</i>	a pot beetle	
Coleoptera	Curculionidae	<i>Micrelus ericae</i>	Small Heather Weevil	
Hymenoptera	Formicidae	<i>Formica picea</i>	Black Bog ant	S41; RDB1
Odonata	Coenagriidae	<i>Ceriagrion tenellum</i>	Small Red Damselfly	



Photograph 6. Duckhole Bog and ponds at Markway Inclosure.



Photograph 7. Pond at Duckhole Bog, Markway Inclosure with poached edges.

Mogshade Hill

No *Liothorax niger* found and as in 2022 pond completely dry, no fresh dung present. The dry pond is situated in an area of typical dry heathland. The pond bottom supported locally abundant patches of Shoreweed *Littorella uniflora*.

Methods: Direct searching of dung.

Other invertebrates noted:

Order	Family	Taxon	Vernacular	Status
Lepidoptera	Erebidae	<i>Diacrisia sannio</i>	Clouded Buff	



Photograph 8. Dry pond at Mogshade Hill with abundant Shoreweed.

Balmer Lawn

Two *Liothorax niger* found along the ditch-line at SU 3090 0341. The ditch was mainly dry but holding small amounts of water near the crossing points. The pond area was heavily poached by livestock but still holding some water.

Plants noted include Lesser Spearwort *Ranunculus flammula*, Hampshire-purslane *Ludwigia palustris*, Marsh St. John's-wort *Hypericum elodes*, Pillwort *Pilularia globulifera*, Petty Whin *Genista anglica* and New Zealand Pigmyweed *Crassula helmsii*.

Methods: Direct searching of dung, puddling, bank splashing.

Other invertebrates noted:

Order	Family	Taxon	Vernacular	Status
Coleoptera	Carabidae	<i>Agonum marginatum</i>	a ground beetle	
Coleoptera	Carabidae	<i>Stenolophus teutonius</i>	a ground beetle	NS
Coleoptera	Dytiscidae	<i>Agabus bipustulatus</i>	a water beetle	
Coleoptera	Dytiscidae	<i>Graptodytes flavipes</i>	a water beetle	VU
Coleoptera	Dytiscidae	<i>Hygrotus impressopunctatus</i>	a water beetle	
Coleoptera	Dytiscidae	<i>Ilybius montanus</i>	a water beetle	
Coleoptera	Hydrochidae	<i>Hydrochus angustatus</i>	a water beetle	NS
Coleoptera	Hydrophilidae	<i>Anacaena lutescens</i>	a water beetle	
Coleoptera	Hydrophilidae	<i>Cercyon unipunctatus</i>	a water beetle	
Coleoptera	Hydrophilidae	<i>Helochares punctatus</i>	a water beetle	NS
Coleoptera	Scarabaeidae	<i>Liothorax niger</i>	Beaulieu Dung Beetle	S41; NR
Heteroptera	Corixidae	<i>Hesperocorixa sahlbergi</i>	an aquatic bug	



Photograph 9. The pond at Balmer Lawn in June still holding some water. Note extensive livestock trampling.



Photograph 10. The ditch at Balmer Lawn with crossing points still holding small amounts of water.

Standing Hat

No *Liothorax niger* found but habitat is optimal. The pond was drying but still holding water centrally, as in 2022, with a layer of *Sphagnum* spp. moss, Bogbean *Menyanthes trifoliata*, Bog Pondweed *Potamogeton polygonifolius*, Bog Pimpernel *Anagallis tenella* and a central stand of willow *Salix* scrub. The rare and globally Near Threatened Medicinal Leech *Hirudo medicinalis* is still present in good numbers. The pond once again supported an exceptional assemblage of rare and notable invertebrates, including the S41 / VU Mud Pond Snail *Omphiscola glabra*.

Methods: Bank splashing, floating out, puddling, direct searching of dung.

Other invertebrates noted:

Order	Family	Taxon	Vernacular	Status
Araneae	Hahniidae	<i>Antistea elegans</i>	a spider	
Araneae	Lycosidae	<i>Piratula uliginosa</i>	a spider	
Araneae	Pisauridae	<i>Dolomedes fimbriatus</i>	Raft Spider	NS
Coleoptera	Carabidae	<i>Stenolophus mixtus</i>	a ground beetle	
Coleoptera	Dryopidae	<i>Dryops striatellus</i>	a water beetle	NS
Coleoptera	Dytiscidae	<i>Ilybius montanus</i>	a water beetle	
Coleoptera	Dytiscidae	<i>Liopterus haemorrhoidalis</i>	a water beetle	
Coleoptera	Haliplidae	<i>Halipus variegatus</i>	a water beetle	VU
Coleoptera	Helophoridae	<i>Helophorus flavipes</i>	a water beetle	
Coleoptera	Hydrophilidae	<i>Anacaena limbata</i>	a water beetle	
Coleoptera	Hydrophilidae	<i>Coelostoma orbiculare</i>	a water beetle	
Coleoptera	Hydrophilidae	<i>Helochaeres lividus</i>	a water beetle	
Coleoptera	Hydrophilidae	<i>Laccobius bipunctatus</i>	a water beetle	
Coleoptera	Hydrophilidae	<i>Paracymus scutellaris</i>	a water beetle	NS
Coleoptera	Scirtidae	<i>Cyphon hiliaris</i>	a marsh beetle	
Coleoptera	Staphylinidae	<i>Myllaena brevicornis</i>	a rove beetle	
Coleoptera	Staphylinidae	<i>Paederus caligatus</i>	a rove beetle	[RDB3]

Order	Family	Taxon	Vernacular	Status
Coleoptera	Staphylinidae	<i>Stenus fornicatus</i>	a rove beetle	[Nb]
Heteroptera	Corixidae	<i>Corixa panzeri</i>	an aquatic bug	
Heteroptera	Hebridae	<i>Hebrus pusillus</i>	an aquatic bug	[Nb]
Heteroptera	Hebridae	<i>Hebrus ruficeps</i>	an aquatic bug	
Pulmonata	Lymnaeidae	<i>Omphiscola glabra</i>	Mud Pond Snail	S41; VU
Pulmonata	Planorbidae	<i>Planorbarius corneus</i>	Great Ram's-horn	



Photograph 11. Pond at standing Hat.



Photograph 12. The Vulnerable Mud Pond Snail *Omphiscola glabra*, another rarity at Standing Hat.

Butts Lawn

No *Liothorax niger* found but some potential habitat present at stream edges. The lawn itself was very dry. The stony bottomed stream supported exposed sediment and a small area of marshy grassland with frequent Lesser Spearwort *Ranunculus flammula*. Mid-stream was a

large raft of Water-crowfoot *Ranunculus* subgenus *Batrachium*. A poached ford with small amounts of relatively fresh dung was noted.

Methods: Bank splashing, floating out, puddling, direct searching of dung.

Other invertebrates noted:

Order	Family	Taxon	Vernacular	National Status
Coleoptera	Staphylinidae	<i>Paederus caligatus</i>	A rove beetle	[RDB3]
Diptera	Dolichopodidae	<i>Poecilobothrus nobilitatus</i>	A fly	
Heteroptera	Veliidae	<i>Velia caprai</i>	Water-cricket	
Odonata	Calopterygidae	<i>Calopteryx virgo</i>	Beautiful Demoiselle	
Odonata	Cordulegasteridae	<i>Cordulegaster boltonii</i>	Golden-ringed Dragonfly	



Photograph 13. Stream at Butts Lawn.

Whitemoor Pond

No *Liothorax niger* found, habitat has some potential but is quite shaded by overhanging trees and shrubs. The pond still holding some water but drawing down. A reasonable amount of dung was trampled into the muddy drawdown zone and cattle were present resting in the shade adjacent to the pond. No marginal or emergent vegetation was present.

Methods: Bank splashing, floating out, puddling, direct searching of dung.

Other invertebrates noted:

Order	Family	Taxon	Vernacular	National Status
Diptera	Dolichopodidae	<i>Poecilobothrus nobilitatus</i>	A fly	
Heteroptera	Corixidae	<i>Hesperocorixa sahlbergi</i>	An aquatic bug	



Photograph 14. Poached muddy edges of receding pond with scattered dung.

Millyford car park

No *Liothorax niger* found. There were no wet pools in the grassland areas near the car park. The shaded stream had areas of exposed sediment and abundant winter spate flood debris which was searched. The exposed sediment was unvegetated and showed some evidence of livestock poaching and occasional dunging.

Methods: Bank splashing, floating out, puddling, direct searching of dung.

Other invertebrates noted:

Order	Family	Taxon	Vernacular	Status
Coleoptera	Carabidae	<i>Bembidion dentellum</i>	a ground beetle	
Coleoptera	Carabidae	<i>Paranchus albipes</i>	a ground beetle	
Coleoptera	Scirtidae	<i>Cyphon palustris</i>	a marsh beetle	
Coleoptera	Staphylinidae	<i>Myllaena elongata</i>	a rove beetle	[N]
Heteroptera	Gerridae	<i>Aquarius najas</i>	River Skater	
Heteroptera	Hydrometridae	<i>Hydrometra stagnorum</i>	Water Measurer	



Photograph 15. Showing exposed sediment and flood debris.

Three Beech Ponds

No *Liothorax niger* found. The partially shaded heathland pool was holding water at the time of survey but being fairly isolated there was little evidence of recent poaching or dunging.

The ponds are situated in a typical wet heathland / acid mire mosaic with localised areas of short grassland turf. Bog Myrtle *Myrica gale* was locally abundant all around the ponds, along with Bog Pondweed *Potamogeton polygonifolius* in the open water and frequent Marsh St. John's-wort *Hypericum elodes* and Lesser Spearwort *Ranunculus flammula* around the drawdown edges.

Methods: Bank splashing, floating out, puddling, direct searching of dung.

Other invertebrates noted:

Order	Family	Taxon	Vernacular	Status
Coleoptera	Dryopidae	<i>Dryops striatellus</i>	a water beetle	NS
Coleoptera	Dytiscidae	<i>Agabus bipustulatus</i>	a water beetle	
Coleoptera	Dytiscidae	<i>Agabus guttatus</i>	a water beetle	
Coleoptera	Dytiscidae	<i>Hydroporus pubescens</i>	a water beetle	
Coleoptera	Helophoridae	<i>Helophorus flavipes</i>	a water beetle	
Coleoptera	Hydrophilidae	<i>Anacaena lutescens</i>	a water beetle	
Coleoptera	Hydrophilidae	<i>Helochares punctatus</i>	a water beetle	NS
Coleoptera	Staphylinidae	<i>Paederus caligatus</i>	A rove beetle	[RDB3]
Heteroptera	Veliidae	<i>Velia caprai</i>	Water Cricket	
Odonata	Coenagrionidae	<i>Ceriagrion tenellum</i>	Small Red Damselfly	



Photograph 16. Three Beech Ponds

Windmill Hill Pond

A single *Liethorax niger* was flushed out of well-dunged drawdown mud on the northern bank by bank splashing. The pond edges were well poached and dunged with very little vegetation present.

Occasional New Zealand Pigmyweed *Crassula helmsii* was apparently being checked by the more frequently occurring Shoreweed *Littorella uniflora*. Peripheral Water-purslane *Lythrum portula* supported the RDB3 weevil *Pelenomus olssoni*.

Methods: Bank splashing, floating out, puddling, direct searching of dung.

Other invertebrates noted:

Order	Family	Taxon	Vernacular	Status
Coleoptera	Carabidae	<i>Agonum marginatum</i>	a ground beetle	
Coleoptera	Carabidae	<i>Bembidion articulatum</i>	a ground beetle	
Coleoptera	Carabidae	<i>Bembidion quadripustulatum</i>	a ground beetle	NS
Coleoptera	Curculionidae	<i>Pelenomus olssoni</i>	a weevil	[RDB3]
Coleoptera	Dytiscidae	<i>Ilybius montanus</i>	a water beetle	
Coleoptera	Helophoridae	<i>Helophorus brevipalpis</i>	a water beetle	
Coleoptera	Helophoridae	<i>Helophorus flavipes</i>	a water beetle	
Coleoptera	Hydrophilidae	<i>Coelostoma orbiculare</i>	a water beetle	
Coleoptera	Scarabaeidae	<i>Liethorax niger</i>	Beaulieu Dung Beetle	NR

Order	Family	Taxon	Vernacular	Status
Coleoptera	Staphylinidae	<i>Gnypeta rubrior</i>	a rove beetle	
Coleoptera	Staphylinidae	<i>Paederus caligatus</i>	a rove beetle	[RDB3]
Coleoptera	Staphylinidae	<i>Philonthus quisquiliarius</i>	a rove beetle	
Heteroptera	Gerridae	<i>Gerris gibbifer</i>	a pond skater	



Photograph 17. The poached and dunged edges of Windmill Hill Pond where *Liothorax niger* was found.



Photograph 18. Close up of spot where *Liothorax niger* was found.



Photograph 19. *Liothorax niger* in situ at Windmill Hill Pond.

Burley Rocks

Two *Liothorax niger* were located at Burley Rocks. The first was flushed from dunged and poached exposed sediment at the stream edge at SU22590357, the second was puddled from the pool edge at SU22710351.

Burley Rocks is a typical short turf New Forest lawn with the Mill Lawn Brook running through it with associated wet flushes, ditches and pools. Much of the pools is submerged grasses and mosses, including areas of *Sphagnum*, whilst botanically richer areas supported Bog Pondweed *Potamogeton polygonifolius* in the open water and frequent Marsh St. John's-wort *Hypericum elodes* and Lesser Spearwort *Ranunculus flammula* around the poached drawdown edges.

Methods: Bank splashing, floating out, puddling, direct searching of dung.

Other invertebrates noted:

Order	Family	Taxon	Vernacular	Status
Coleoptera	Coccinellidae	<i>Tytthaspis sedecimpunctata</i>	16-spot Ladybird	
Coleoptera	Dryopidae	<i>Dryops similaris</i>	a water beetle	NS
Coleoptera	Dytiscidae	<i>Agabus bipustulatus</i>	a water beetle	
Coleoptera	Helophoridae	<i>Helophorus brevipalpis</i>	a water beetle	
Coleoptera	Helophoridae	<i>Helophorus flavipes</i>	a water beetle	
Coleoptera	Helophoridae	<i>Helophorus minutus</i>	a water beetle	
Coleoptera	Hydrophilidae	<i>Cercyon melanocephalus</i>	a water beetle	
Coleoptera	Hydrophilidae	<i>Helochaeres punctatus</i>	a water beetle	NS

Order	Family	Taxon	Vernacular	Status
Coleoptera	Scarabaeidae	<i>Aphodius haemorrhoidalis</i>	a dung beetle	
Coleoptera	Scarabaeidae	<i>Liothorax niger</i>	Beaulieu Dung Beetle	S41; NR
Coleoptera	Staphylinidae	<i>Ontholestes murinus</i>	a rove beetle	
Coleoptera	Staphylinidae	<i>Paederus caligatus</i>	a rove beetle	[RDB3]
Coleoptera	Staphylinidae	<i>Philonthus intermedius</i>	a rove beetle	
Diptera	Scathophagidae	<i>Scathophaga stercoraria</i>	Yellow Dung Fly	
Heteroptera	Gerridae	<i>Aquarius najas</i>	River Skater	
Heteroptera	Nepidae	<i>Nepa cinerea</i>	Water Scorpion	
Heteroptera	Veliidae	<i>Velia caprai</i>	Water Cricket	



Photograph 20. Grassland pool at Burley Rocks.



Photograph 21. Exposed, partially shaded, sediment at stream edge.

Sway marl pits

Several *Liothorax niger* were flushed and puddled from the poached and dunged vegetated pool edges of the unshaded pool.

Sway marl pits is comprised of two adjacent pools, one shaded the other largely unshaded. The unshaded pool supported a richer flora with Water Milfoil *Myriophyllum spicatum*, a floating sweet-grass *Glyceria* sp. in the open water and Marsh St. John's-wort *Hypericum elodes*, Lesser Spearwort *Ranunculus flammula* and Toad Rush *Juncus bufonius* around the poached drawn-down edges. The Water Milfoil supported an abundant population of the nationally scarce weevil *Pelenomus canaliculatus*.

Methods: Bank splashing, floating out, puddling, direct searching of dung.

Other invertebrates noted:

Order	Family	Taxon	Vernacular	Status
Araneae	Lycosidae	<i>Pirata tenuitarsis</i>	a wolf spider	NS
Coleoptera	Carabidae	<i>Paranchus albipes</i>	a ground beetle	
Coleoptera	Carabidae	<i>Pterostichus minor</i>	a ground beetle	
Coleoptera	Curculionidae	<i>Pelenomus canaliculatus</i>	a weevil	[Nb]
Coleoptera	Dryopidae	<i>Dryops luridus</i>	a water beetle	
Coleoptera	Dryopidae	<i>Dryops striatellus</i>	a water beetle	NS
Coleoptera	Dytiscidae	<i>Agabus bipustulatus</i>	a water beetle	
Coleoptera	Dytiscidae	<i>Dytiscus marginalis</i>	Great Diving Beetle	
Coleoptera	Dytiscidae	<i>Hydroporus erythrocephalus</i>	a water beetle	
Coleoptera	Dytiscidae	<i>Hydroporus gyllenhalii</i>	a water beetle	
Coleoptera	Dytiscidae	<i>Hydroporus memnonius</i>	a water beetle	
Coleoptera	Dytiscidae	<i>Hydroporus nigrita</i>	a water beetle	
Coleoptera	Dytiscidae	<i>Hydroporus planus</i>	a water beetle	
Coleoptera	Dytiscidae	<i>Ilybius montanus</i>	a water beetle	
Coleoptera	Gyrinidae	<i>Gyrinus substriatus</i>	Common Whirlygig Beetle	
Coleoptera	Helophoridae	<i>Helophorus flavipes</i>	a water beetle	
Coleoptera	Helophoridae	<i>Helophorus granularis</i>	a water beetle	
Coleoptera	Helophoridae	<i>Helophorus minutus</i>	a water beetle	
Coleoptera	Helophoridae	<i>Helophorus strigifrons</i>	a water beetle	NS

Order	Family	Taxon	Vernacular	Status
Coleoptera	Hydrochidae	<i>Hydrochus angustatus</i>	a water beetle	NS
Coleoptera	Hydrophilidae	<i>Anacaena lutescens</i>	a water beetle	
Coleoptera	Hydrophilidae	<i>Helochaeres punctatus</i>	a water beetle	NS
Coleoptera	Hydrophilidae	<i>Paracymus scutellaris</i>	a water beetle	NS
Coleoptera	Scarabaeidae	<i>Liothorax niger</i>	Beaulieu Dung Beetle	NR / S41
Coleoptera	Staphylinidae	<i>Paederus caligatus</i>	a rove beetle	[RDB3]
Heteroptera	Saldidae	<i>Chartoscirta cocksii</i>	a shore bug	



Photograph 22. Open marl pit at Sway with dunged and poached edges.



Photograph 23. *Liothorax niger* at Sway marl pits.

ECOLOGICAL ASSESSMENT

The Beaulieu Dung Beetle *Liothorax niger* was recorded at three of the selected sites visited in 2023: Balmer Lawn, Long Pond and Windmill Hill Pond. Additionally, the target species was also detected at Sway marl pits and Burley Rocks in 2023. As in 2022 some sites were dry at the time of survey. All sites surveyed would have at least some potential to support the species in optimal conditions. Optimal conditions are when sites are wet and grazed and in the New Forest there is an abundance of wet sites and good connectivity of wet habitat and continuous grazing. This species is therefore likely to continue to be widespread across the New Forest where it is considered to be the national stronghold, where conditions are suitable. Although the Beaulieu Dung Beetle is not believed to be dung specific, like many other species in the family, there does seem to be a requirement for poached and dunged drawdown areas around ponds, poached edges of grassland pools and other wet habitat such as exposed sediments in streams. Outside of the New Forest there are plenty of similar wet habitat, but not all are grazed, or only periodically and may not provide optimal conditions.

THREATS

Mann & Garvey (2014) speculate that the use of endectocides in livestock might be detrimental.

Hyman & Parsons (1992) list threats such as drainage of pools and ditches, infilling, excavating and pollution. They also mention restricting the access of livestock to ponds etc to be potentially damaging.

Extreme hot weather and drought events in successive years may also prove to be problematic in the future.

FURTHER WORK

The results suggest that the target species is likely to be present when conditions are optimal across the New Forest. Clearly some sites are only wet earlier in the year. Therefore, it is recommended that these sites could be re-visited in April and May 2024, when the features are likely to be wet and accumulated debris and litter more likely post winter flooding. Mann & Garvey (2014) suggest April to June as the most optimal survey window. These sites include:

- Mogshade Hill
- Millyford Car Park
- Vinney Ridge
- Dame's Slough

However, given that the recent survey has shown that the target species is likely to be present when conditions are optimal other key species could be surveyed such as the Petty Whin Weevil *Exapion genistae*, the rove beetle *Stenus longitarsus* or the darkling beetle *Lagria atripes*, which was recently re-discovered in Kent and was formerly known from the New Forest.

REFERENCES & BIBLIOGRAPHY

- Brooks, S.J. (1993). *Joint Committee for the Conservation of British Invertebrates: Guidelines for Invertebrate Surveys*. British Wildlife 4(5) 283-287.
- Daguet, C.A., French, G.C. & Taylor, P. (2008). *The Odonata Red Data List for Great Britain. Species Status 11; 1-34*. Joint Nature Conservation Committee, Peterborough.
- Dodd, S.G. & Denton, J.S. (2022). *Targeted Survey and Habitat Assessment for the Beaulieu Dung Beetle (*Liothorax niger*) at Selected Wetland Sites in the New Forest*. Forestry England Beaulieu Dung Beetle Project (New Forest) Report. Project No. 4060-2.
- Drake, C.M., Lott, D.A., Alexander, K.N.A. & Webb, J. (2007). *Surveying terrestrial and freshwater invertebrates for conservation evaluation. Natural England Research Report NERR005*, Natural England, Sheffield.
- Hyman, P.S & Parsons, M.S. (1992). *A review of the scarce and threatened Coleoptera of Great Britain*. Part 1. JNCC, Peterborough.
- Harvey, P., Davidson M., Dawson, I., Fowles, A., Hitchcock, G., Lee, P., Merrett, P., Russell-Smith, A. and Smith, H. (2017). *A review of the scarce and threatened spiders (Araneae) of Great Britain: Species Status No.22. Natural Resources Wales Evidence Report No. 11*.
- Lane, S.A. & Mann, D.J. (2016). *A review of the status of the beetles of Great Britain: The stag beetles, dor beetles, dung beetles, chafers and their allies – Lucanidae, Geotrupidae, Trogidae and Scarabaeidae: Species Status No.31*. Natural England Commissioned Reports, Number 224.
- Mann, D.J. & Garvey, L. (2014). *Aphodius (Liothorax) niger* (Illiger) (Scarabaeidae: Aphodiinae) inside and outside the New Forest. *The Coleopterist* **23**(3): 138–142.
- Rose, F. & O'Reilly, C. (2006). *The Wild Flower Key*. Penguin Group (Frederick Warne).
- Shirt, D.B. (ed.) (1987). *British Red Data Books: 2. Insects*. Peterborough: Nature Conservancy Council.

Appendix 1. Status categories for rare and Notable species

Red Data Book Category 1 (RDB 1) – Endangered

Definition.

Taxa in danger of extinction *in Great Britain* and whose survival is unlikely if the causal factors continue operating.

Included are those taxa whose numbers have been reduced to a critical level or whose habitats have been so dramatically reduced that they are deemed to be in immediate danger of extinction. Also included are *some* taxa that are *possibly* extinct.

Criteria.

Species which are known *or believed to occur* as only a single population within one 10 km square of the National Grid.

Species which only occur in habitats known to be especially vulnerable.

Species which have shown a rapid or continuous decline over the last twenty years and are now *estimated* to exist in five or fewer 10 km squares.

Species which are *possibly* extinct *but have been recorded this century* and if rediscovered would need protection.

Red Data Book Category 2 (RDB 2) - Vulnerable

Definition.

Taxa *believed* likely to move into the endangered category in the near future if the causal factors continue operating.

Included are taxa of which most or all of the populations are decreasing because of *over-exploitation*, extensive destruction of habitat or other environmental disturbance; taxa with populations that have been seriously depleted and whose ultimate security is not yet assured; and taxa with populations that are still abundant but are under threat from serious adverse factors throughout their range.

Criteria.

Species declining throughout their range.

Species in vulnerable habitats.

Red Data Book Category 3 (RDB 3) – Rare

Definition.

Taxa with small populations *in Great Britain* that are not at present endangered or vulnerable, but are at risk.

These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range.

Criterion.

Species which are estimated to exist in only fifteen or fewer 10 km squares. *This criterion may be relaxed where populations are likely to exist in over fifteen 10 km squares but occupy small areas of especially vulnerable habitat*

Nationally Scarce Category A - Notable A (Na)

Definition.

Taxa which do not fall within **RDB** categories but which are none-the-less uncommon in Great Britain and are thought to occur in 30 or fewer 10 km squares of the National Grid or, for less well recorded groups, within seven or fewer vice-counties.

Nationally Scarce Category B - Notable B (Nb)

Definition.

Taxa which do not fall within **RDB** categories but which are none-the-less uncommon in Great Britain and are thought to occur in between 31 and 100 10 km squares of the National Grid or, for less well recorded groups, within eight and twenty vice-counties.

Nationally Scarce - Notable (N)

Definition.

Taxa which do not fall within **RDB** categories but which are none-the-less uncommon in Great Britain and are thought to occur in between 16 to 100 10 km squares of the National Grid. Species within this category are often too poorly known for their status to be more precisely estimated.

Summary of the IUCN categories and criteria.

- **REGIONALLY EXTINCT (RE)**
A taxon is Extinct when there is no reasonable doubt that the last individual has died. In this review the last date for a record is set at fifty years before publication.
- **CRITICALLY ENDANGERED (CR)**
A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered.
- **ENDANGERED (EN)**
A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered.
- **VULNERABLE (VU)**
A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable.
- **NEAR THREATENED (NT)**

A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

- **LEAST CONCERN (LC)**

A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

- **DATA DEFICIENT (DD)**

A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate.

- **NOT EVALUATED (NE)**

A taxon is Not Evaluated when it has not yet been evaluated against the criteria.

GB Rarity Status categories and criteria

- **Nationally Rare (NR)**

Native species which have not been recorded from more than 15 British hectads since 31st December 1979 and where there is reasonable confidence that exhaustive recording would not find them in more than 15 hectads. This category includes species which are probably extinct.

- **Nationally Scarce (NS)**

Native species which are not regarded as Nationally Rare AND which have not been recorded from more than 100 British hectads since 31st December 1979 and where there is reasonable confidence that exhaustive recording would not find them in more than 100 hectads.

Other species status terminology.

- **Local.** Species that are restricted in distribution either geographically or by habitat. Also used for species that are widespread but infrequently encountered, e.g. encountered in no more than 300 10km squares of the national Ordnance Survey grid since 1970. Or those species listed as such, based upon modern geographical data, by ISIS (2010) and/or relevant recording schemes.
- **Widely Scattered.** Generally distributed but at low densities.
- **Southern.** Mainly or completely confined to southern England and/or its westerly or easterly regions – as indicated.
- **Common.** Generally widespread throughout the UK.
- **Unknown.** Usually indicates a lack of available data for difficult taxa but may also imply recent taxonomic confusion.