
TARGETED SURVEY AND HABITAT ASSESSMENT FOR THE SIX- SPOTTED CRANEFLY (*Idiocera sexguttata*) AT SELECTED WET TRANSITION MIRES WITH A CALCAREOUS INFLUENCE IN THE NEW FOREST.



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England



EXECUTIVE SUMMARY

A targeted search and habitat assessment for the globally endangered and S41 Priority Species the Six-spotted Crane fly *Idocera sexguttata* was proposed at eleven wet transition mire sites with a calcareous influence in the New Forest, South Hampshire (Vice County 11) in 2023. The sites to be surveyed were recommended by the surveyors based upon similarity to the one historically recorded site within the New Forest (Stony Moors) and records of Black Bog-rush *Schoenus nigricans* kindly provided by Hampshire Botanical Society; the 2022 surveys having concluded that areas of base-rich calcareous flush characterised by Black Bog-rush and Lesser Bladderwort *Utricularia minor*, should be targeted. The survey was undertaken on 12th June 2023. Although this is believed to be towards the end of the target species' flight period, it was decided that the likely levels of drawdown, water levels and other conditions would still be within optimal conditions.

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.

Four of the eleven selected sites were visited on the 12th June 2023 in optimal conditions for survey by two experienced invertebrate ecologists, Scotty Dodd MSc MCIEEM MRES and Dr. Jonty Denton Bsc (Hons) FRES FLS CEcol MCIEEM.

The Six-spotted Crane fly *Idiocera sexguttata* was only recorded at Stony Moors where it was once again found in the same area as previously recorded as locally frequent in early June 2022, albeit with only a single individual this year. The target species was not detected at the other two sites surveyed (Holmsley Bog & Vales Moor). However, extensive flushes with Black Bog-rush were present at both sites and the overall structure appeared optimal. As only a single individual crane fly was detected at Stony Moors in 2023 it was concluded that the species was likely to be at the end of its flight period. Other contributing factors at Stony Moor might include harder grazing and poaching in the specific area inhabited by the crane fly. Therefore, the target species not being present at Holmsley Bog (two separate sites) and Vales Moor despite optimal habitat conditions is viewed as a false negative and these sites should be revisited in 2024. Given the low number recorded, the remaining sites were not visited in 2023. If they are resurveyed this should be undertaken in late May / early June depending on site conditions.

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INTRODUCTION

BACKGROUND

A targeted search and habitat assessment for the globally endangered and S41 Priority Species the Six-spotted Crane fly *Idiocera sexguttata* was commissioned by Forestry England via Surrey Wildlife Trust Ecology Services.

The Six-spotted Crane fly *Idiocera sexguttata* (Dale, 1842) [synonyms: *Gonomyia sexguttata* (Dale, 1842) and *Limnobia sexguttata* Dale, 1842], (Diptera: Nematocera: Limoniidae: Chioneinae), was listed as Globally Endangered by the IUCN prior to 1994 and has not been reviewed since. According to Stubbs (2021) the species is only known from Britain and Denmark, being replaced by the closely related *I. pulchripennis* in continental Europe (Stubbs, 2021). Knull *et al.* (2018) also cite records from malaise traps in the Czech Republic (Starý 2007).

In Britain the species was regarded as Endangered (Red Data Book 1) by Shirt (1987) [Note: As *Gonomyia sexguttata*] and has not been reviewed since. However, it is listed under Section 41 (S41) and Section 42 (S42) of the 2006 Natural Environment and Rural Communities (NERC) Act as a Species of Principle Importance (SPI) and of global concern. At the time of Shirt (1987) the species was only known from the type locality in Dorset and a site in Cornwall. Nothing was understood with regards to the species' ecological requirements. Stubbs (2001) reports that the species is rare and possibly endemic [Note: The Denmark records were presumably unknown to Stubbs at this point] and gives the locations Cornwall (voucher not seen), Dorset, Hampshire, Glamorgan (Gower), and a record for Holden Clough in Lancashire that required verification [Note: Does not appear to have been accepted on NBN Gateway]. The NBN Gateway shows accepted modern records at several sites in North Wales (Snowdonia / Llyn Peninsula region) in 2016 and 2017, South Wales in 2006, Dorset in 2005 and Hampshire, at Stony Moors, in 2000 (NBN Gateway, 2022). There are no modern records for Cornwall (Stubbs, 2021). In June 2016 Mike Howe discovered populations at Cors Geirch National Nature Reserve near Pwllheli on the Llŷn peninsula, north-west Wales (Howe, 2016).

In terms of species ecology, Stubbs (2021) makes the observation that for all sites, with the possible exception of the historic Cornwall site (exact location not documented), there is clearly a strong affinity with weakly vegetated calcareous seepages. He also comments that the most recently discovered sites in North Wales are base-rich seepages characterised by sparse tussocks of Black Bog-rush *Schoenus nigricans* or Common Reed *Phragmites australis* based upon the work of Howe (2016) who discovered the site. Stubbs & Wolton (2018) further characterise the North Wales site at Cors Geirch NNR “we swept across large areas in the southern part of the NNR with short fen vegetation, focussing on those with much Black bog-rush in a largely closed sward, but without success. Eventually we chanced upon a very small more open habitat patch, covering no more than 50m² where we quickly swept about ten individuals before desisting. Later we visited the northern part of the NNR and found another small habitat patch, of about the same size, which a few sweeps revealed to also have the crane fly in good numbers”. They also note that the small habitat patches had a few centimetres of surface water with scattered patches of disturbed, bare mud. Bladderwort, probably Lesser Bladderwort *Utricularia minor*, was noted beneath the surface water at both sites and it is suggested that this plant might be an indicator of suitable habitat in the absence

of Black Bog-rush. This base-rich / calcareous seepage correlation does not appear to have been picked-up upon in the 2017 and 2018 Stony Moors surveys (Lovegrove *et al.*, 2018 and Knul *et al.*, 2018).

A targeted search and habitat assessment was proposed at eleven wet transition mire sites with a calcareous influence in the New Forest, South Hampshire (Vice County 11) in 2023. The sites to be surveyed were recommended by the surveyors based upon similarity to the one historically recorded site within the New Forest (Stony Moors) and records of Black Bog-rush *Schoenus nigricans* kindly provided by Hampshire Botanical Society; the 2022 surveys having concluded that areas of base-rich calcareous flush characterised by Black Bog-rush *Schoenus nigricans* and Lesser Bladderwort *Utricularia minor*, should be targeted.

PROJECT AIMS

The project brief was as follows:

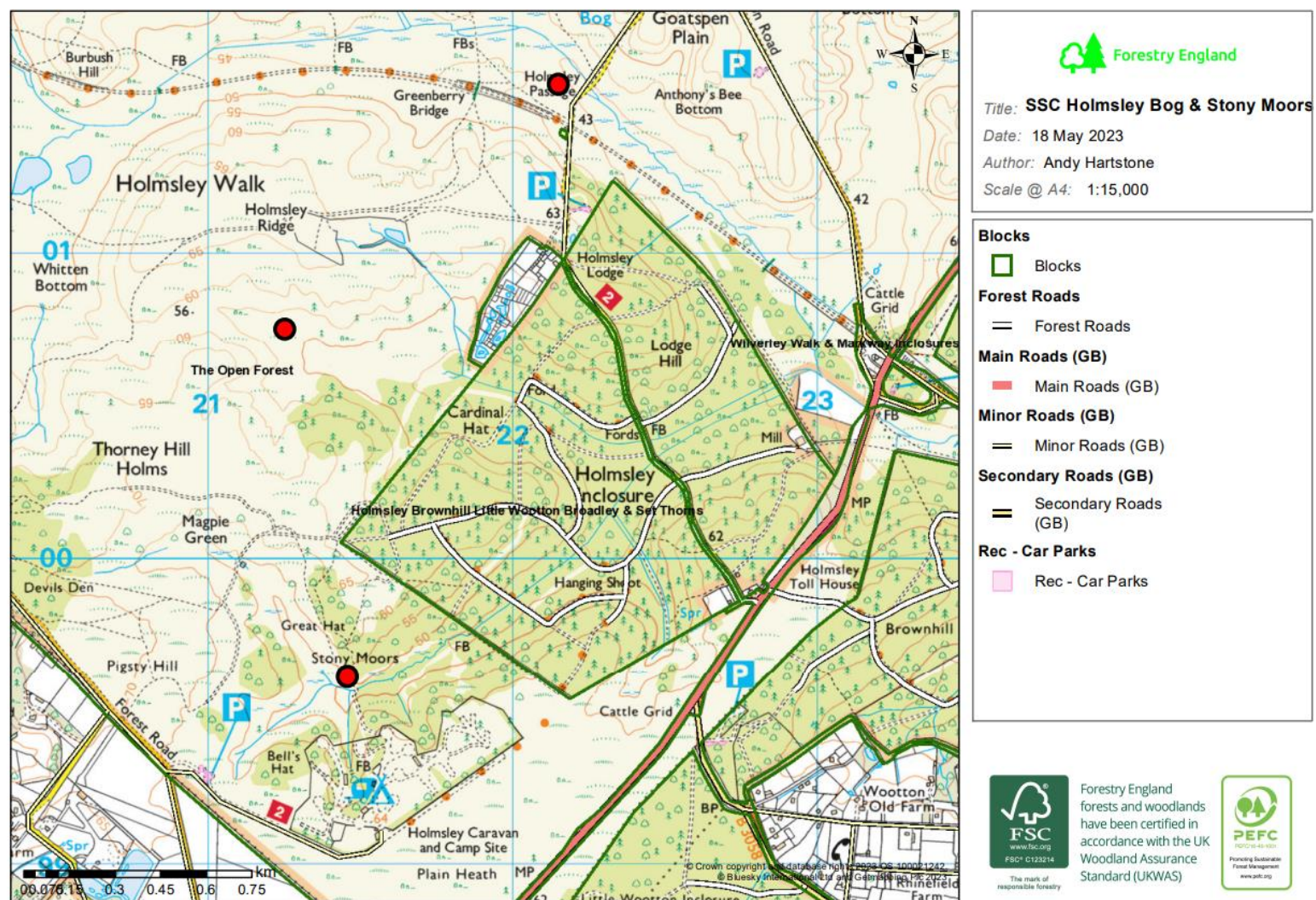
- Description of methods.
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SAMPLING COMPARTMENTS

- Crockford Bottom (SZ34439960)
- Dibden Moor (SU393065 & SU389064)
- Vales Moor (SU19410397)
- Common Moor (SU20600465)
- Stodgemoor Bottom (SU18850352)
- Cranes Moor (SU19480299)
- Kingston Great Common (SU19070273)
- Holmsley Bog (SU212007 & SU221015)
- Stony Moors (SZ21459962)



Figure 1. New Forest sampling compartments for Six-spotted Cranefly in 2023
 Sampling compartments are red dots. Yellow dot is Stony Moors where the species has been previously recorded.



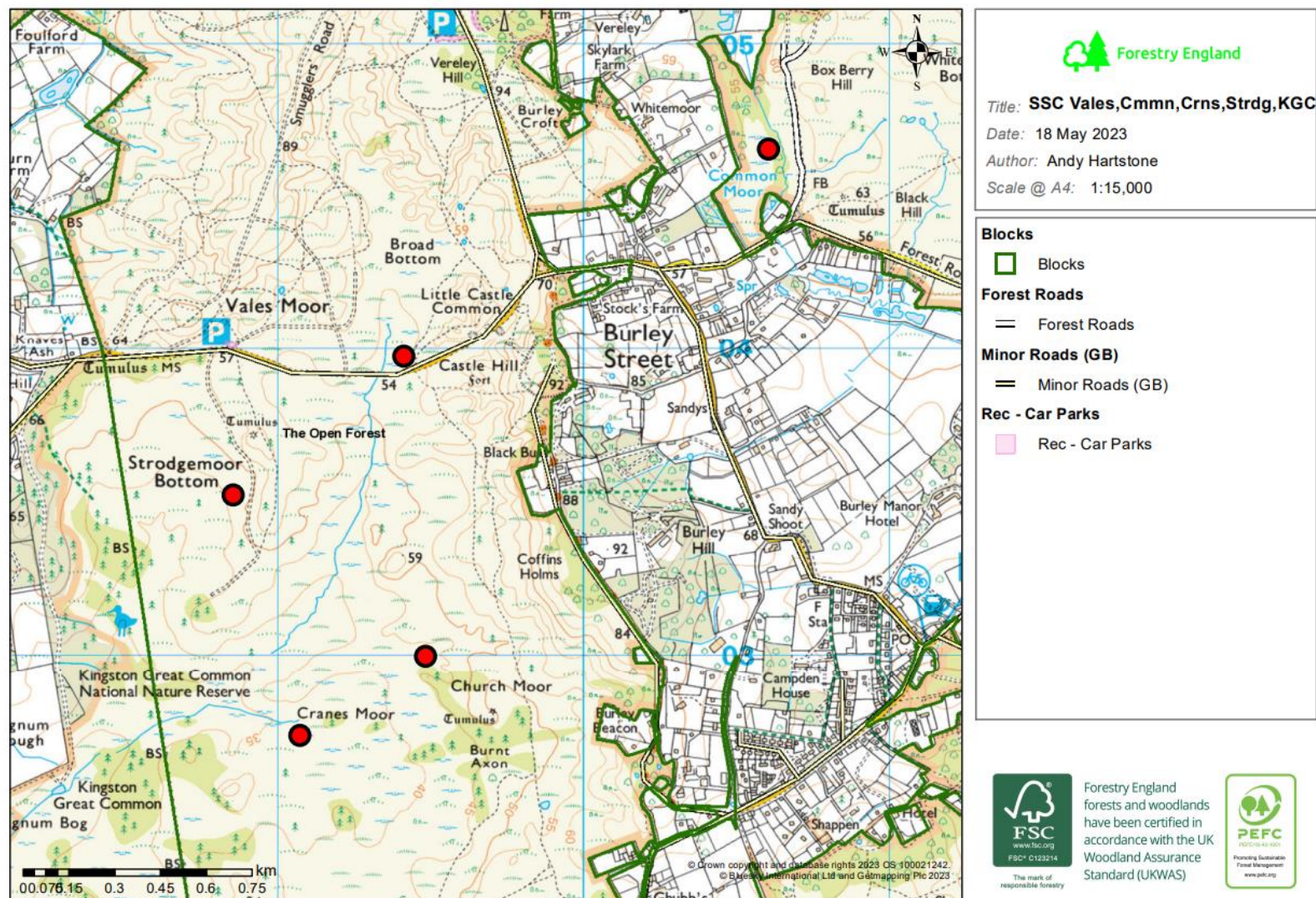


Figure 3. Sites around Burley – Cranes Moor, Kingston Great Common, Strodgemoor Bottom, Vales Moor, Common Moor.

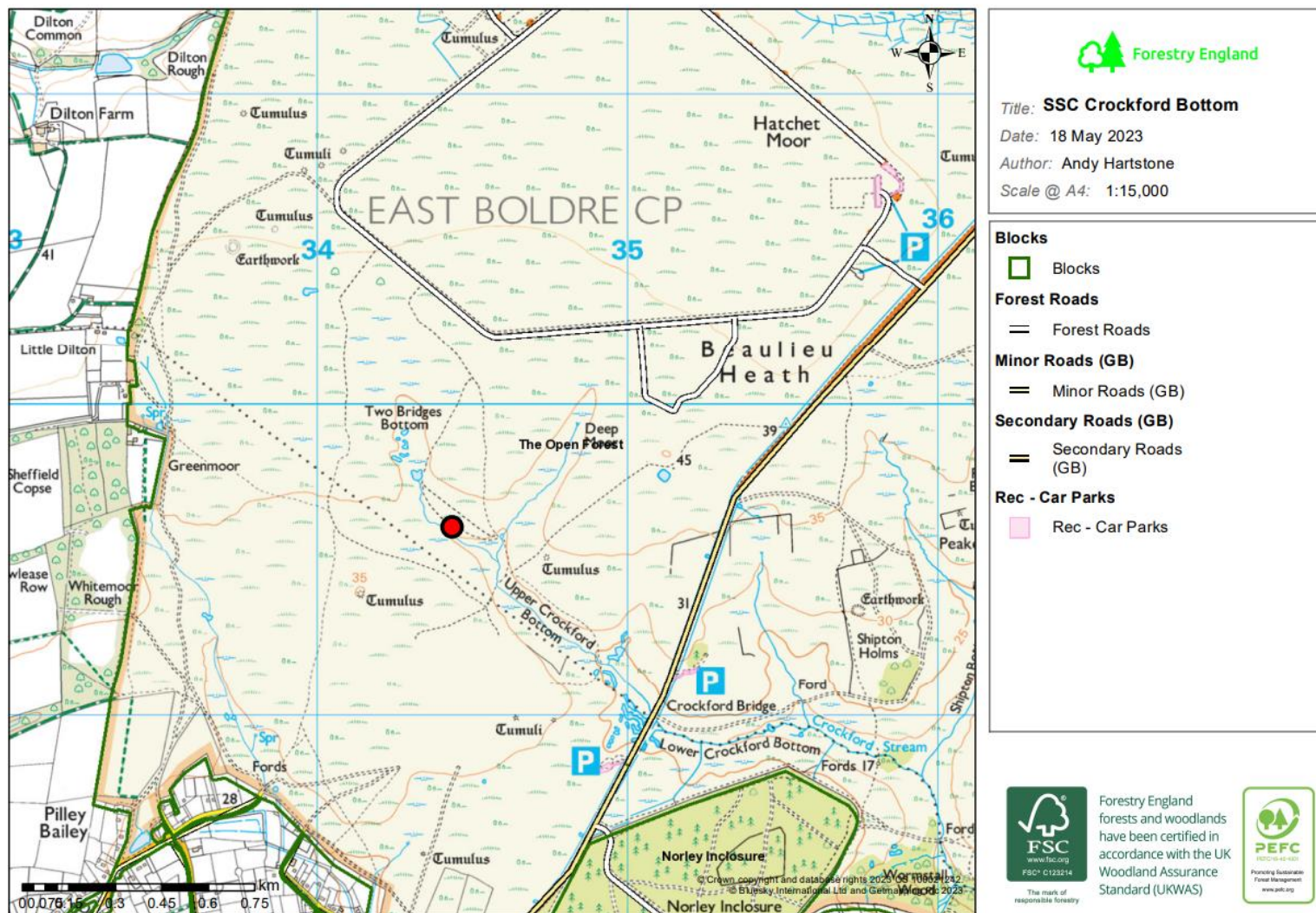
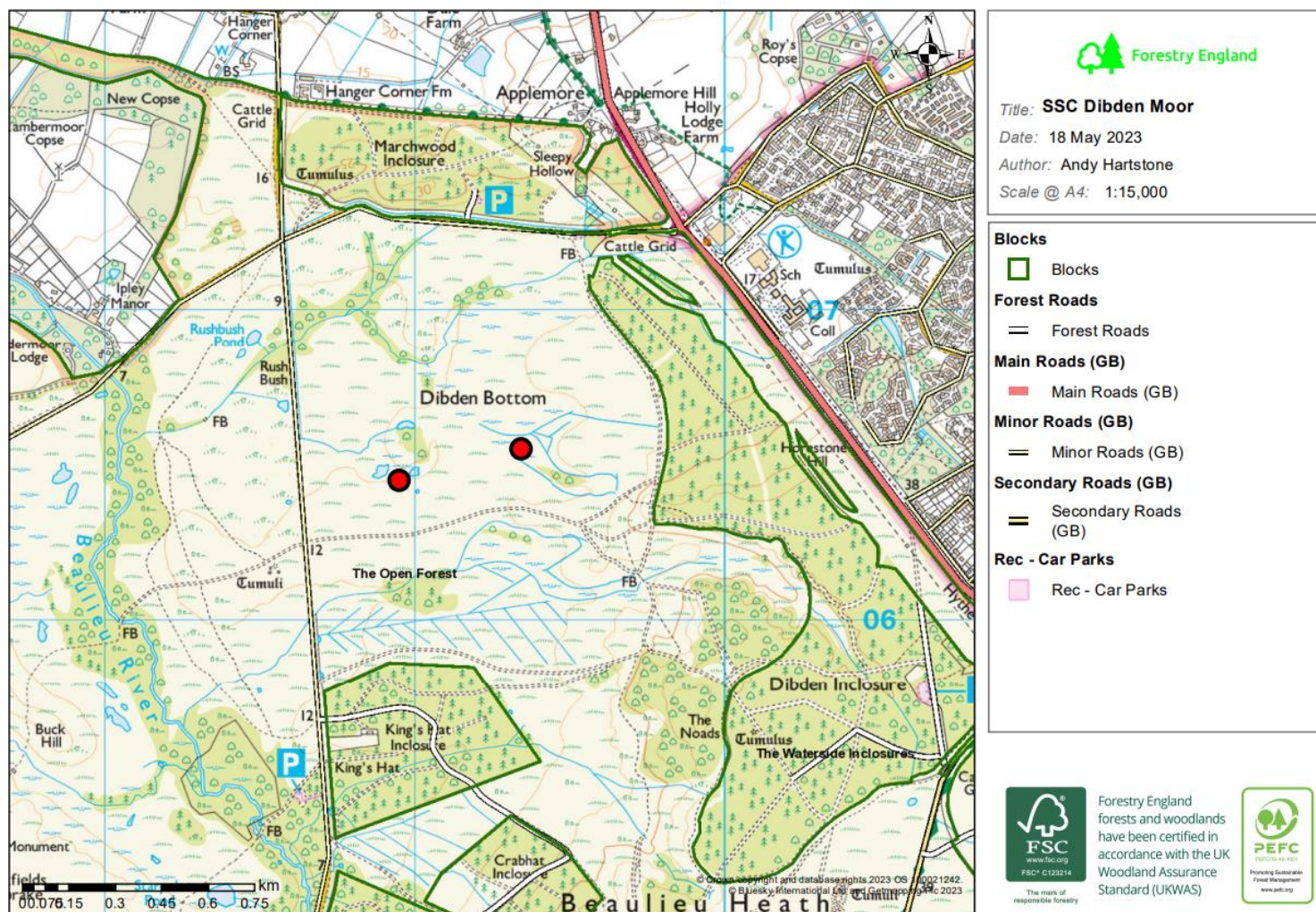


Figure 4. Crockford Bottom.



METHODOLOGY

SITE VISITS

Four of the eleven selected sites were visited on the 12th June 2023 in optimal conditions for survey by two experienced invertebrate ecologists, Scotty Dodd MSc MCIEEM MRES and Dr. Jonty Denton Bsc (Hons) FRES FLS CEcol MCIEEM.

SAMPLING WITHIN THE COMPARTMENTS

In each compartment the vegetation was swept with a fine mesh sweep net with the two surveyors walking a linear route, side by side and separated by 3-4 metres. After each sweep sample of about 20 sweeps nets were checked and the number of individual Six-spotted Craneflies *Idiocera sexguttata* recorded.

CONSTRAINTS

The survey was undertaken on 12th June 2023. Although this is believed to be towards the end of the target species' flight period, it was decided that the likely levels of drawdown, water levels and other conditions would still be within optimal conditions.

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RESULTS

The Six-spotted Crane fly *Idiocera sexguttata* was only recorded at Stony Moors where it was once again found in the same area as previously recorded as locally frequent in early June 2022, albeit with only a single individual this year. The target species was not detected at the other two sites surveyed (Holmsley Bog surveyed at two separate sites and Vales Moor). However, extensive flushes with Black Bog-rush were present at both sites and the overall structure appeared optimal. As only a single individual crane fly was detected at Stony Moors in 2023 it was concluded that the species was likely to be at the end of its flight period. Other contributing factors at Stony Moor might include harder grazing and poaching in the specific area inhabited by the crane fly. Therefore, the target species not being present at Holmsley Bog (two separate sites) and Vales Moor despite optimal habitat conditions is viewed as a false negative. Given the low number recorded, the remaining sites were not visited in 2023. If they are to be surveyed then the optimal times would be late May / early June, depending on conditions.

Figure 6 shows the 2023 sampling route. A single Six-spotted Crane fly *Idiocera sexguttata* was recorded close to the woodland edge in the orange *Schoenus* bog area (blue star). The area of *Schoenus* bog to the south-east that was overlooked in 2022 was sampled in 2023.

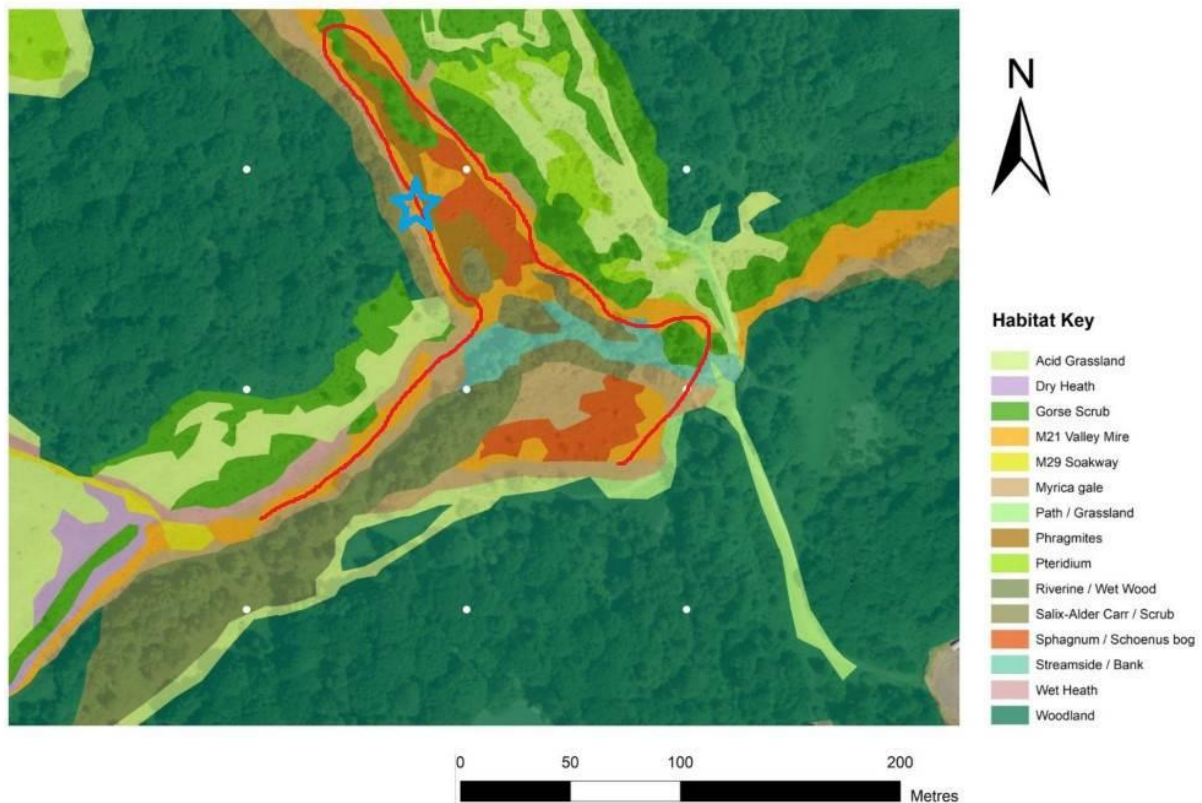


Figure 6. Stony Moors, after Knul *et al.* (2018), showing 2023 sampling route (red line).



Photograph 1. Stony Moors Six-spotted Cranefly *Idiocera sexguttata* area in 2023, showing higher grazing pressure, especially poaching than in 2022.



Photograph 2. Stony Moors optimal area of calcareous flush in 2022 showing less heavily grazed and poached vegetation.



Photograph 3. Holmsley Bog linear calcareous flush with dense tussocks of Black Bog-rush.



Photograph 4. Vales Moor calcareous flush with Black Bog-rush tussocks and overall good vegetative structure.

ADDITONAL SPECIES

A number of other rare and scarce invertebrates were noted during the surveys (see Table 1), including the Black Bog Ant *Formica picea*, which is Red Data Book 1 (Endangered) and an S41 Priority Species, at Vales Moor.

Table 1. Other invertebrates noted:

Order	Family	Species	Common Name	Site	Status
Arachnida	Araneidae	<i>Argiope</i>	Wasp Spider	Holmsley Bog	

Order	Family	Species	Common Name	Site	Status
		<i>bruennichi</i>			
Arachnida	Araneidae	<i>Hypsosinga pygmaea</i>	a spider	Holmsley Bog	
Arachnida	Araneidae	<i>Neoscona adianta</i>	a spider	Holmsley Bog	
Arachnida	Pisauridae	<i>Dolomedes fimbriatus</i>	Raft Spider	Holmsley Bog	NS
Arachnida	Salticidae	<i>Evarcha arcuata</i>	a jumping spider	Holmsley Bog	NS
Coleoptera	Carabidae	<i>Cicindela campestris</i>	Green Tiger Beetle	Holmsley Bog	
Coleoptera	Chrysomelidae	<i>Chaetocnema subcoerulea</i>	a flea beetle	Holmsley Bog	NS
Coleoptera	Chrysomelidae	<i>Cryptocephalus labiatus</i>	a pot beetle	Holmsley Bog	
Coleoptera	Coccenelidae	<i>Tytthaspis sedecimpunctata</i>	16-spot Ladybird	Holmsley Bog	
Coleoptera	Curculionidae	<i>Orchestes iota</i>	Bog Myrtle Weevil	Holmsley Bog	Nb
Coleoptera	Dryopidae	<i>Dryops similis</i>	a beetle	Holmsley Bog	RDB3
Coleoptera	Phalacridae	<i>Stilbus oblongus</i>	a beetle	Holmsley Bog	
Coleoptera	Scarabaeidae	<i>Hoplia philanthus</i>	Welsh Chafer	Holmsley Bog	
Coleoptera	Scirtidae	<i>Cyphon padi</i>	a marsh beetle	Holmsley Bog	
Coleoptera	Staphylinidae	<i>Paederus caligatus</i>	a rove beetle	Holmsley Bog	RDB3
Hemiptera	Cixidae	<i>Pentastiridius leporinus</i>	a leafhopper	Holmsley Bog	Nb
Hymenoptera	Tenthredinidae	<i>Selandria serva</i>	a sawfly	Holmsley Bog	
Lepidoptera	Erebidae	<i>Diacrisia sannio</i>	Clouded Buff	Holmsley Bog	
Odonata	Coenagriidae	<i>Ceragrion tenellum</i>	Small Red Damselfly	Holmsley Bog	
Arachnida	Dictynidae	<i>Nigma puella</i>	a spider	Stony Moors	NS
Arachnida	Salticidae	<i>Evarcha arcuata</i>	a jumping spider	Stony Moors	NS
Arachnida	Theridiidae	<i>Simitidion simile</i>	a spider	Stony Moors	
Coleoptera	Coccenelidae	<i>Coccidula rufa</i>	a ladybird	Stony Moors	
Coleoptera	Coccenelidae	<i>Tytthaspis sedecimpunctata</i>	16-spot Ladybird	Stony Moors	
Coleoptera	Scarabaeidae	<i>Hoplia philanthus</i>	Welsh Chafer	Stony Moors	
Coleoptera	Scirtidae	<i>Scirtes hemisphaericus</i>	a marsh beetle	Stony Moors	
Coleoptera	Staphylinidae	<i>Paederus caligatus</i>	a rove beetle	Stony Moors	RDB3
Diptera	Limoniidae	<i>Idiocera sexguttata</i>	Six-spotted Crane-fly	Stony Moors	S41; RDB1
Diptera	Rhagionidae	<i>Chrysopilus cristatus</i>	a fly	Stony Moors	
Diptera	Stratiomyidae	<i>Nemotelus nigrinus</i>	a soldierfly	Stony Moors	
Diptera	Tipulidae	<i>Pedicia rivosa</i>	a crane-fly	Stony Moors	
Hemiptera	Gerridae	<i>Aquarius najas</i>	a pondskater	Stony Moors	
Hemiptera	Membracidae	<i>Centrotus cornutus</i>	a leafhopper	Stony Moors	
Hemiptera	Veliidae	<i>Velai caprai</i>	Water Cricket	Stony Moors	
Odonata	Coenagriidae	<i>Ceragrion</i>	Small Red	Stony Moors	

Order	Family	Species	Common Name	Site	Status
		<i>tenellum</i>	Damselfly		
Odonata	Libellulidae	<i>Orthetrum coerulescens</i>	Keeled Skimmer	Stony Moors	
Arachnida	Aranaeidae	<i>Argiope bruennichi</i>	Wasp Spider	Vales Moor	
Arachnida	Pisauridae	<i>Dolomedes fimbriatus</i>	Raft Spider	Vales Moor	NS
Arachnida	Salticidae	<i>Evarcha arcuata</i>	a jumping spider	Vales Moor	NS
Coleoptera	Staphylinidae	<i>Paederus caligatus</i>	a rove beetle	Vales Moor	RDB3
Hymenoptera	Formicidae	<i>Formica picea</i>	Black Bog Ant	Vales Moor	S41; RDB1

THREATS

Knul *et al.* (2018) summarise what is known on the impacts and potential threats of grazing on crane flies, in particular impacts from soil compaction and localised loss of vegetation cover. Other threats are drying out and drainage issues. Longer term the effects of climate change may also impact on the supporting habitat with predicted drier summers and wetter winters.

The 2022 survey observed that localised poaching from occasional heavy-footed livestock movements through the mire habitat may be beneficial as disturbed, bare mud and lighter sward density from passing grazing and browsing may be important factors in maintaining favourable habitat conditions for the Six-spotted Crane fly *Idiocera sexguttata*. However, in 2023 the grazing pressure and level of poaching was much greater than previously observed and may have had a negative impact on the population this year.

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APPENDIX

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.