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

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Surrey Wildlife Trust Ecology Services

Forestry England

EXECUTIVE SUMMARY

A targeted search and habitat assessment for the globally endangered and S41 Priority Species the Six-spotted Cranefly *Idocera sexguttata* was undertaken at an appropriate time of year (June) at four wet transition mire sites in the New Forest, South Hampshire (Vice County 11). The sites surveyed were selected by Natural England based upon the one historically recorded site within the New Forest (Stony Moors) and survey and habitat assessment data provided by Lovegrove *et al.* (2018) and Knul *et al.* (2018). This included a re-survey of Stony Moors where this species was historically recorded in 2000 and was found to be present in low numbers in 2018 by Knul *et al.* (2018). Other sites selected included: Wilverley Bog, Widden Bottom and Fort Bog at Matley Heath.

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 four selected sites were visited on the 6th June 2022 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 Cranefly *Idiocera sexguttata* was only recorded at Stony Moors where it was found to be locally frequent in areas of base-rich calcareous flush characterised by Black Bog-rush *Schoenus nigricans* and Lesser Bladderwort *Utricularia minor*, being the commonest cranefly species present in this habitat. These habitat conditions and indicator species were not found to be present at the other wet transition mires surveyed. Hence, the presence of these indicator species is thought to be a good starting point for future site selection.

Hampshire Botanical Society was approached for a data search of locations for Black Bog-rush within the New Forest. Nine locations with high connectivity to Stony Moors have been identified with recent records for Black Bog-rush. These sites should be targeted for surveys for the Six-spotted Cranefly in late-May and early-June 2023.

New species for the New Forest list

Eubria palustris (Coleoptera: Psephenidae). Near threatened (NT) & Nationally Scarce (NS).

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Contents

INTRODUCTION

BACKGROUND

A targeted search and habitat assessment for the globally endangered and S41 Priority Species the Six-spotted Cranefly *Idocera sexguttata* was commissioned by Forestry England via Surrey Wildlife Trust Ecology Services. Maps and contract were received and reviewed on the 1st June 2022.

The Six-spotted Cranefly *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 / Llynn Peninsula region) in 2016 & 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 cranefly 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 & 2018 Stony Moors surveys.

Four wet transition mire sites in the New Forest, South Hampshire (Vice County 11) were selected by Natural England based upon the one historically recorded site within the New Forest (Stony Moors) and survey and habitat assessment data provided by Lovegrove *et al.* (2018) and Knul *et al.* (2018). This included a re-survey of Stony Moors where this species was historically recorded in 2000 and was found to be present in low numbers in 2018 by Knul *et al.* (2018). Other sites selected included: Wilverley Bog, Widden Bottom and Fort Bog at Matley Heath on the basis that they were wet transition mires, seepages and / or close to woodland.

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

Stony Moors, Wilverley Bog, Widden Bottom and Fort Bog at Matley Heath.

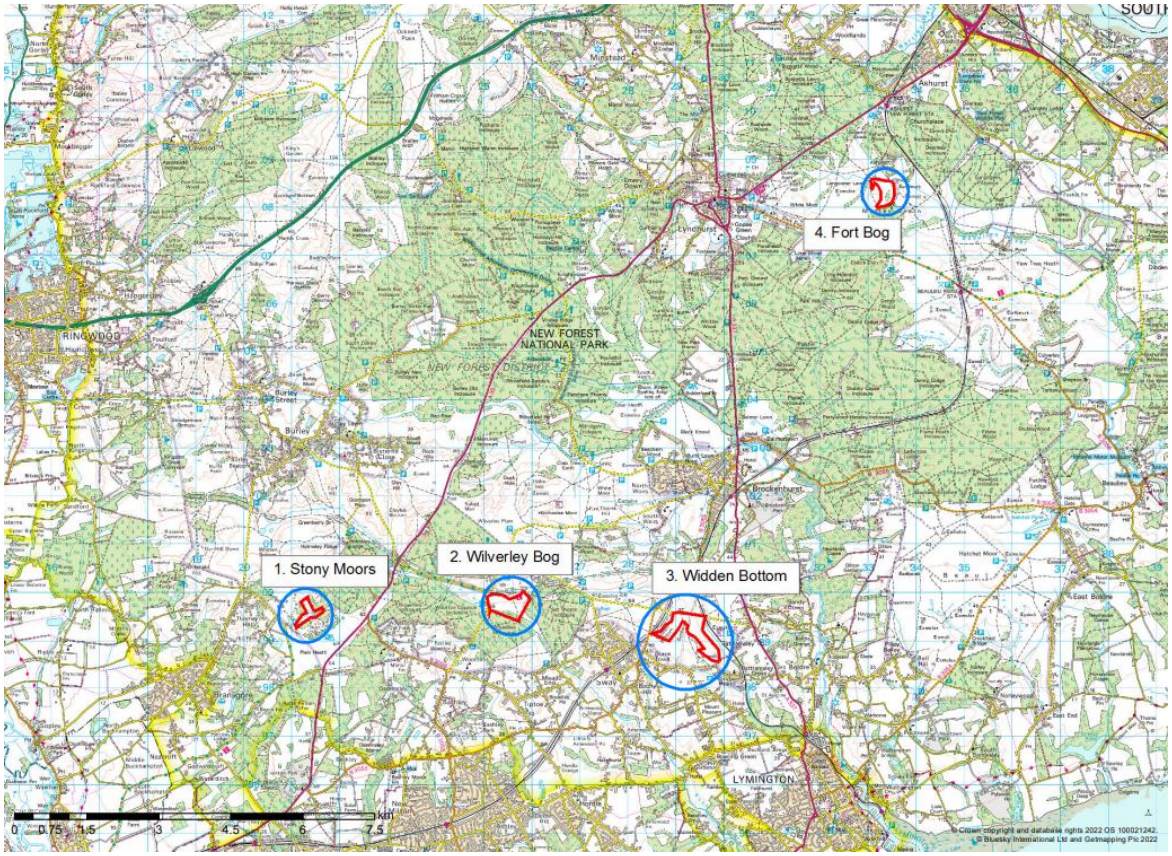


Figure 1. New Forest sampling compartments for Six-spotted Cranefly in 2022. Sites selected for Six-spotted Cranefly survey ringed in blue with labels, actual site outlines in red.

METHODOLOGY

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 recorded.

SITE VISITS

The four selected sites were visited on the 6th June 2022 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.

CONSTRAINTS

Due to time constraints a single day in the field was used to cover all four sites.

Only Stony Moors supported calcareous flushes. Widden Bottom supported no suitable habitat just small hillside flushes (non- calcareous) and the main gravel stream (largely dry on visit).

RESULTS

Stony Moors

The Six-spotted Cranefly *Idiocera sexguttata* was only recorded at Stony Moors where it was found to be locally abundant, if not the commonest cranefly species present, in areas of base-rich calcareous seepage characterised by the presence of Black Bog-rush *Schoenus nigricans* with Lesser Bladderwort *Utricularia minor* also present. Botanically and structurally the habitat patch was similar to that described in detail by Stubbs & Wolton (2018) in North Wales, with patches of still to slow flowing surface water and disturbed, bare mud from occasional livestock movements. Other more typical wet heath and mire plant species, including a number of those reported by Stubbs & Wolton (2018), were also present, e.g. Cross-leaved Heath *Erica tetralix*, Common Cotton-grass *Eriophorum angustifolium*, Bog Pondweed *Potamogeton polygonifolius*, Bog Pimpernel *Anagallis tenella*, Bogbean *Menyanthes trifoliata*, sundews *Drosera* spp., Pale Butterwort *Pinguicula lusitanica*, sedges *Carex* spp., Common Reed *Phragmites australis* and Bog Myrtle *Myrica gale*.

See Figure 2 (page 16) showing 2022 sampling points with quantities of Six-spotted Cranefly *Idiocera sexguttata* recorded at each station. Note how the highest concentrations of this species were sampled in and around the orange *Schoenus* bog areas and brown *Phragmites* areas. In total 23 adult Six-spotted Cranefly were recorded, with only three individuals being found outside of the core area. The main area of abundance is between SZ2135399608 and SZ2126399742. The few outliers were swept at SZ21329955 in an area dominated by Bog Myrtle *Myrica gale* (which also supported the Nationally Scarce weevil *Orchestes jota*).

Blue marks on Figure 2 show where the rare beetle *Eubria palustris* was recorded in the same habitat. This species is new to the New Forest and is also associated with calcareous seepages in which the aquatic larvae develop. Adults are short lived and free flying with a peak in June. The only other Hampshire records come from coastal seepage at Milford-on-Sea in 1923 (J.R.Black) and from the Meon Valley at Warnford in 2005 (Environment Agency). Both the beetle and the cranefly would appear to share habitat preferences and phenology.

The base-rich calcareous seepage habitat conditions and indicator species such as Black Bog-rush and Lesser Bladderwort were not found to be present at the other wet transition mires surveyed. Hence, the presence of these indicator species is thought to be a good starting point for future site selection.

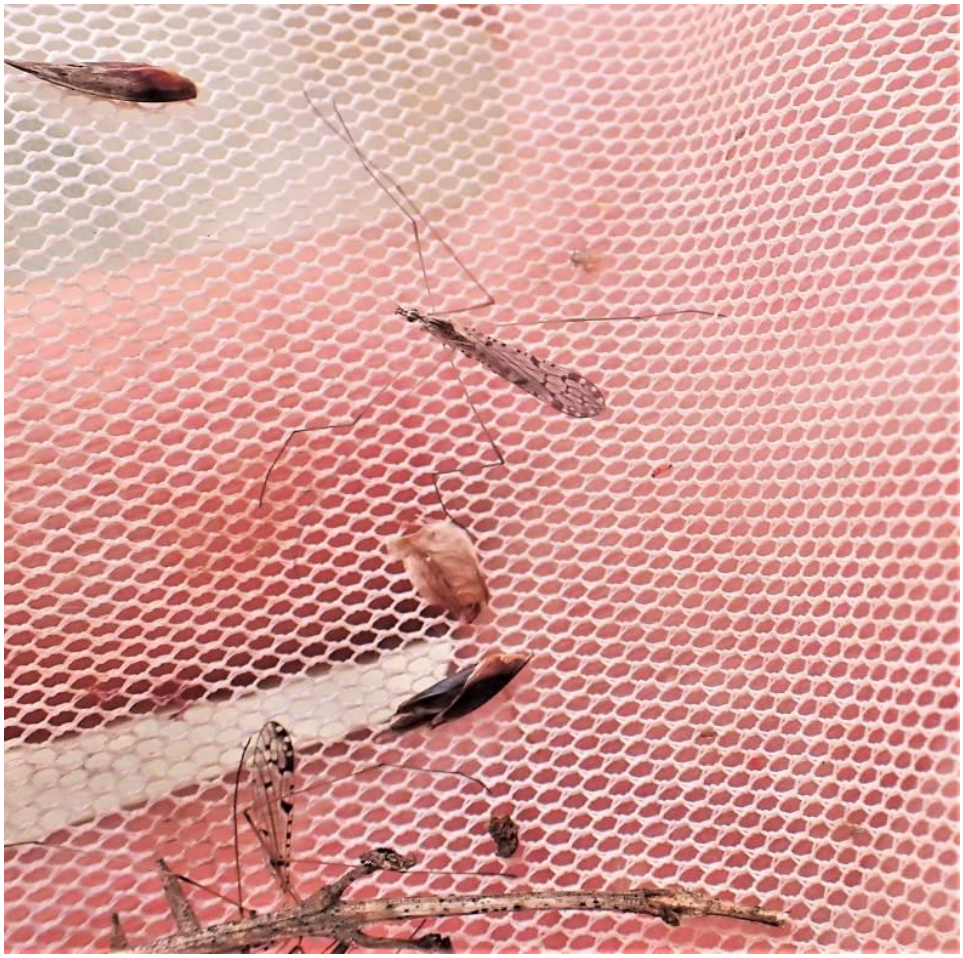
Invertebrate species recorded at Stony Moors:

Order	Family	Taxon	Vernacular	National Status
Araneae	Araneidae	*Mangora acalypha*	A spider	
Araneae	Pisauridae	*Dolomedes fimbriatus*	Raft Spider	NS
Araneae	Salticidae	*Evarcha arcuata*	Gorilla Jumping Spider	NS
Araneae	Tetragnathidae	*Tetragnatha extensa*	A spider	
Araneae	Thomisidae	*Misumena vatia*	A spider	
Auchenorrhyncha	Aphrophoridae	*Neophilaenus lineatus*	a froghopper	
Auchenorrhyncha	Cixiidae	*Pentastiridius leporinus*	a lacehopper	[Nb]
Coleoptera	Chrysomelidae	*Cryptocephalus bipunctatus*	a pot beetle	NS

Order	Family	Taxon	Vernacular	National Status
Coleoptera	Chrysomelidae	*Luperus longicornis*	A leaf beetle	Local
Coleoptera	Chrysomelidae	*Plateumaris discolor*	A reed beetle	Local
Coleoptera	Coccinellidae	*Propylea quattuordecimpunctata*	14-spot Ladybird	
Coleoptera	Curculionidae	*Orchestes jota*	Bog Myrtle Jumping Weevil	[Nb]
Coleoptera	Dytiscidae	*Agabus bipustulatus*	A water beetle	
Coleoptera	Dytiscidae	*Agabus guttatus*	A water beetle	
Coleoptera	Elateridae	*Actenicerus sjaelandicus*	Marsh Click Beetle	Local
Coleoptera	Hydraenidae	*Limnebius truncatellus*	A water beetle	
Coleoptera	Hydrophilidae	*Anacaena globulus*	A water beetle	
Coleoptera	Psephenidae	*Eubria palustris*	A beetle	NT / NS
Coleoptera	Scirtidae	*Contacyphon padi*	A marsh beetle	Local
Coleoptera	Staphylinidae	*Paederus caligatus*	A rove beetle	[RDB3]
Diptera	Dolichopodidae	*Dolichopus atratus*	A fly	
Diptera	Dolichopodidae	*Poecilobothrus nobilitatus*	A fly	
Diptera	Hippoboscidae	*Hippobosca equina*	New Forest Pony Fly	pNT / pNS
Diptera	Limoniidae	*Idiocera sexguttata*	Six-spotted Cranefly	[RDB1] / S41
Diptera	Rhagionidae	*Chrysopilus cristatus*	A snipe fly	Common
Diptera	Ulidiidae	*Herina frondescentiae*	a picture-winged fly	Local
Heteroptera	Gerridae	*Gerris gibbifer*	A pondskater	Local
Hymenoptera	Formicidae	*Myrmica ruginodis*	an ant	
Hymenoptera	Formicidae	*Myrmica sulcinodis*	an ant	Local
Hymenoptera	Tenthredinidae	*Selandria serva*	a sawfly	
Lepidoptera	Crambidae	*Crambus uliginosellus*	a moth	[Nb]
Lepidoptera	Glyphipterigidae	*Glyphipterix schoenicolella*	Black Bog-rush Micro Moth	[Na]
Orthoptera	Tetrigidae	*Tetrix undulata*	Common Ground Hopper	

Photograph 1. Black Bog-rush Schoenus nigricans at Stony Moors. This plant is an indicator of base-rich calcareous seepages in otherwise acidic mire habitats.

Photograph 2. Optimal area of bog for Six-spotted Cranefly *Idiocera sexguttata* with varying vegetation structure and exposed bare mud from occasional livestock movements.



Photograph 3. Several Six-spotted Cranefly *Idiocera sexguttata* in a sweep-net sample.

Photograph 4. Sub-optimal area of mire dominated by Bog Myrtle *Myrica gale*.

Wilverley Bog (Wootton Bridge)

Transitional mire with typical flora but no calcareous flushes present.

Invertebrate species recorded:

Order	Family	Taxon	Vernacular	National Status
Araneae	Araneidae	*Mangora acalypha*	A spider	
Araneae	Pisauridae	*Dolomedes fimbriatus*	Raft Spider	NS
Araneae	Salticidae	*Evarcha arcuata*	Gorilla Jumping Spider	NS
Araneae	Tetragnathidae	*Tetragnatha extensa*	A spider	
Araneae	Theridiidae	*Simitidion simile*	A spider	Local
Araneae	Theridiosomatidae	*Theridiosoma gemmosum*	A spider	NS
Auchenorrhyncha	Aphrophoridae	*Neophilaenus lineatus*	a froghopper	
Auchenorrhyncha	Cixiidae	*Pentastiridius leporinus*	a lacehopper	[Nb]
Coleoptera	Chrysomelidae	*Luperus longicornis*	A leaf beetle	Local
Coleoptera	Chrysomelidae	*Plateumaris discolor*	A reed beetle	Local
Coleoptera	Scirtidae	*Contacyphon padi*	A marsh beetle	Local
Coleoptera	Staphylinidae	*Paederus caligatus*	A rove beetle	[RDB3]
Diptera	Rhagionidae	*Chrysopilus cristatus*	A snipe fly	
Lepidoptera	Geometridae	*Ematurga atomaria*	Common Heath	
Odonata	Coenagriidae	*Ceriagrion tenellum*	Small Red Damselfly	Local

Widden Bottom

No suitable habitat present, mainly just small hillside flushes (non- calcareous) and the main gravel stream (largely dry on visit).

Invertebrate species recorded:

Order	Family	Taxon	Vernacular	National Status
Araneae	Tetragnathidae	Tetragnatha extensa	A spider	
Auchenorrhyncha	Aphrophoridae	Neophilaenus lineatus	a froghopper	
Auchenorrhyncha	Cixiidae	Pentastiridius leporinus	a lacehopper	[Nb]
Coleoptera	Chrysomelidae	Cryptocephalus bipunctatus	a pot beetle	NS
Coleoptera	Chrysomelidae	Plateumaris discolor	A reed beetle	Local
Coleoptera	Coccinellidae	Propylea quattuordecimpunctata	14-spot Ladybird	
Coleoptera	Dryopidae	Dryops luridus	A beetle	
Coleoptera	Dytiscidae	Agabus guttatus	A water beetle	
Coleoptera	Elateridae	Sericus brunneus	A click beetle	
Coleoptera	Hydrophilidae	Helochares punctatus	A water beetle	Local
Coleoptera	Hydrophilidae	Laccobius ytenensis	A water beetle	Local
Coleoptera	Scirtidae	Contacyphon padi	A marsh beetle	Local
Heteroptera	Saldidae	Chartoscirta cocksii	A shore bug	NS
Heteroptera	Saldidae	Saldula saltatoria	A shore bug	
Hymenoptera	Formicidae	Myrmica sulcinodis	an ant	Local
Odonata	Coenagriidae	Ceriagrion tenellum	Small Red Damselfly	Local

Fort Bog at Matley Heath

Transitional mire with typical flora but no calcareous flushes present.

Invertebrate species recorded:

Order	Family	Taxon	Vernacular	National Status
Araneae	Araneidae	*Hypsosinga pygmaea*	A spider	Local
Araneae	Araneidae	*Hypsosinga sanguinea*	A spider	NS
Araneae	Araneidae	*Mangora acalypha*	A spider	
Araneae	Philodromidae	*Tibellus oblongus*	A spider	
Araneae	Pisauridae	*Dolomedes fimbriatus*	Raft Spider	NS
Araneae	Salticidae	*Calositticus caricis*	A jumping spider	NR / S41
Araneae	Salticidae	*Evarcha arcuata*	Gorilla Jumping spider	NS
Araneae	Tetragnathidae	*Tetragnatha extensa*	A spider	
Araneae	Theridiidae	*Simitidion simile*	A spider	Local
Araneae	Thomisidae	*Misumena vatia*	A spider	
Auchenorrhyncha	Aphrophoridae	*Neophilaenus lineatus*	a froghopper	
Auchenorrhyncha	Cixiidae	*Pentastiridius leporinus*	a lacehopper	[Nb]
Coleoptera	Chrysomelidae	*Agelastica alni*	Alder Leaf Beetle	
Coleoptera	Chrysomelidae	*Altica longicollis*	Heather Flea Beetle	NS
Coleoptera	Chrysomelidae	*Cryptocephalus bipunctatus*	a pot beetle	NS
Coleoptera	Chrysomelidae	*Cryptocephalus labiatus*	a pot beetle	
Coleoptera	Chrysomelidae	*Luperus longicornis*	A leaf beetle	Local
Coleoptera	Chrysomelidae	*Plateumaris discolor*	A reed beetle	Local
Coleoptera	Coccinellidae	*Propylea quattuordecimpunctata*	14-spot Ladybird	
Coleoptera	Elateridae	*Actenicerus sjaelandicus*	Marsh Click Beetle	Local
Coleoptera	Elateridae	*Sericus brunneus*	A click beetle	
Coleoptera	Scirtidae	*Contacyphon padi*	A marsh beetle	Local
Coleoptera	Staphylinidae	*Paederus caligatus*	A rove beetle	[RDB3]
Diptera	Syrphidae	*Microdon myrmicae*	a hoverfly	Local
Diptera	Tabanidae	*Chrysops viduatus*	A deer fly	
Heteroptera	Scutelleridae	*Eurygaster testudinaria*	Tortoise Shieldbug	Local
Hymenoptera	Formicidae	*Myrmica ruginodis*	an ant	
Odonata	Coenagriidae	*Ceriagrion tenellum*	Small Red Damselfly	Local

ECOLOGICAL ASSESSMENT

The Six-spotted Cranefly *Idiocera sexguttata* was only recorded at Stony Moors where it was found to be locally abundant. The preferred habitat was areas of base-rich calcareous seepage characterised by the presence of Black Bog-rush *Schoenus nigricans* and Lesser Bladderwort *Utricularia minor* with still to slow flowing surface water and disturbed, bare mud from occasional livestock movements.

The calcareous flush habitat conditions and indicator species were not found to be present at the other wet transition mires surveyed. Hence, the presence of these indicator species is thought to be a good starting point for future site selection.

A number of other rare and scarce invertebrates were noted during the surveys, including the jumping spider *Calositticus caricis*, which is Nationally Rare and an S41 Priority Species, at Fort Bog at Matley Heath. Also of note at Stony Moors is the Nationally Scarce micro moth *Glyphipterix schoenicolella*, the larvae of which feed exclusively on the developing seeds of Black Bog-rush *Schoenus nigricans*.

THREATS

Knul *et al*. (2018) summarise what is known on the impacts and potential threats of grazing on craneflies, 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 present survey found 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 Cranefly.

FURTHER WORK

Hampshire Botanical Society was approached for a data search of locations for Black Bog-rush within the New Forest. Nine locations with high connectivity to Stony Moors have been identified with recent records for Black Bog-rush. Black Bog-rush was selected as the most promising indicator species as it is distinctive and often visible at a distance. These sites should be targeted for surveys for the Six-spotted Cranefly in late-May and early-June 2023. This should also include the area of *Schoenus* bog to the south of Stoney Moors that was overlooked during the survey as it was screened by carr woodland.

The closest locations for Black Bog-rush to the south-west of Stony Moors are Jopps Common (behind scout hut) (SZ19109894), last recorded in 2016, and Poors Common (SZ198983), last recorded in 2007. However these two sites are not located on land managed by Forestry England and therefore cannot be funded by Forest England or the New Forest HLS.

To the north-east are locations at Holmsley Bog (SU212007 & SU221015), last recorded 2020. Further afield to the north-west is a cluster of sites to the west of Burley, including Common Moor (SU20600465) in 2007, Vales Moor (SU19410397) in 2018, Strodgemoor Bottom (SU18850352) in 2019, Kingston Great Common (SU19070273) in 2019, and Cranes Moor (SU19480299) in 2020.

There are also Black Bog-rush records from Crockford Bottom (SZ34439960) and Dibden Moor (SU393065 & SU389064) but these locations are some distance from Stony Moors and isolated.

Locations in relation to Stony Moor are given in Figures 3-6 below.

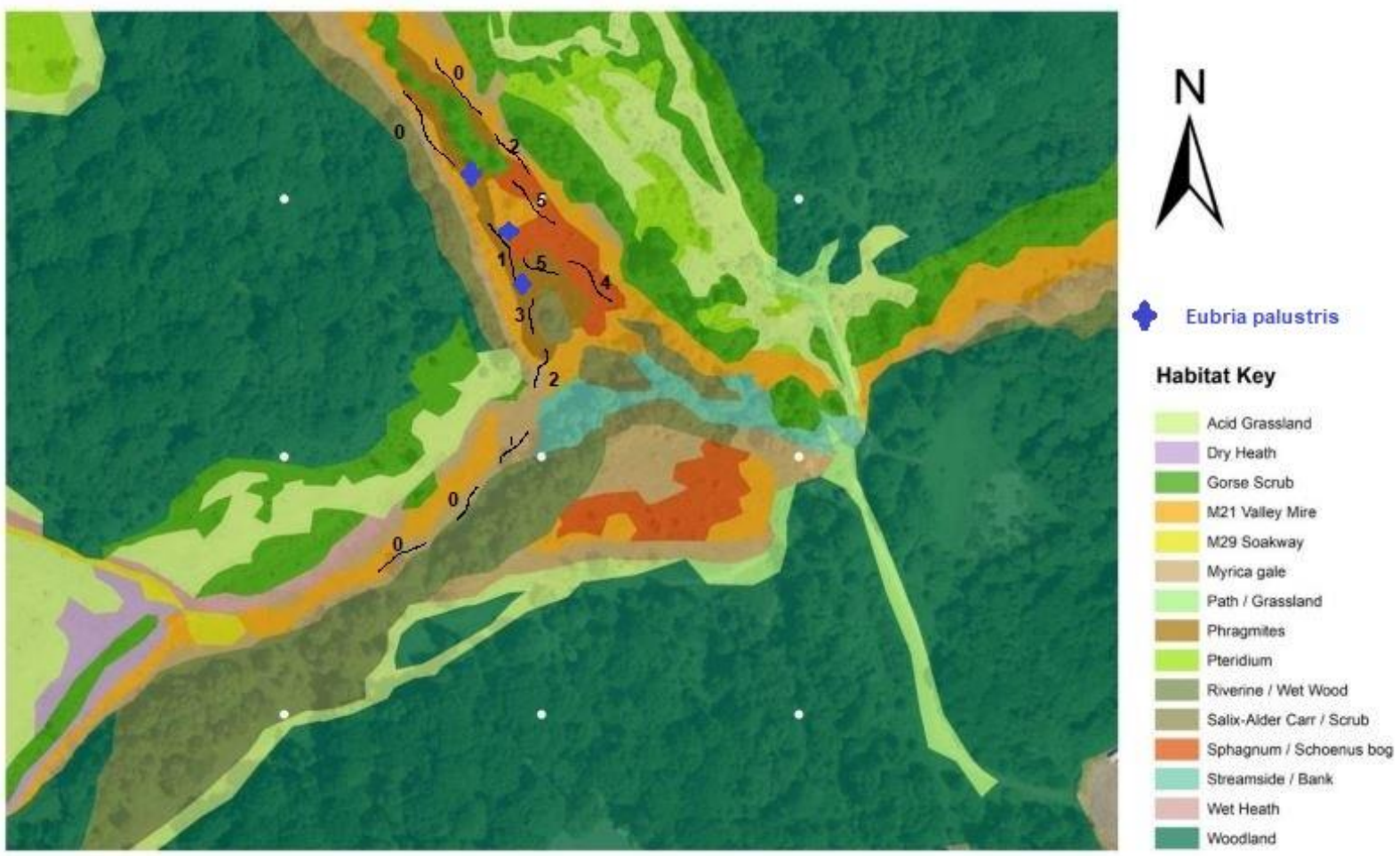


Figure 2. Stony Moors, after Knul *et al*. (2018), showing 2022 sampling transects with quantities of Six-spotted Cranefly *Idiocera sexguttata* recorded at each station. Note how the highest concentrations of this species were sampled in and around the orange *Schoenus* bog areas and brown *Phragmites* areas. Blue marks show where the rare beetle *Eubria palustris* was recorded in the same habitat. An area of *Schoenus* bog to the south was overlooked during the survey as it was screened by carr woodland.

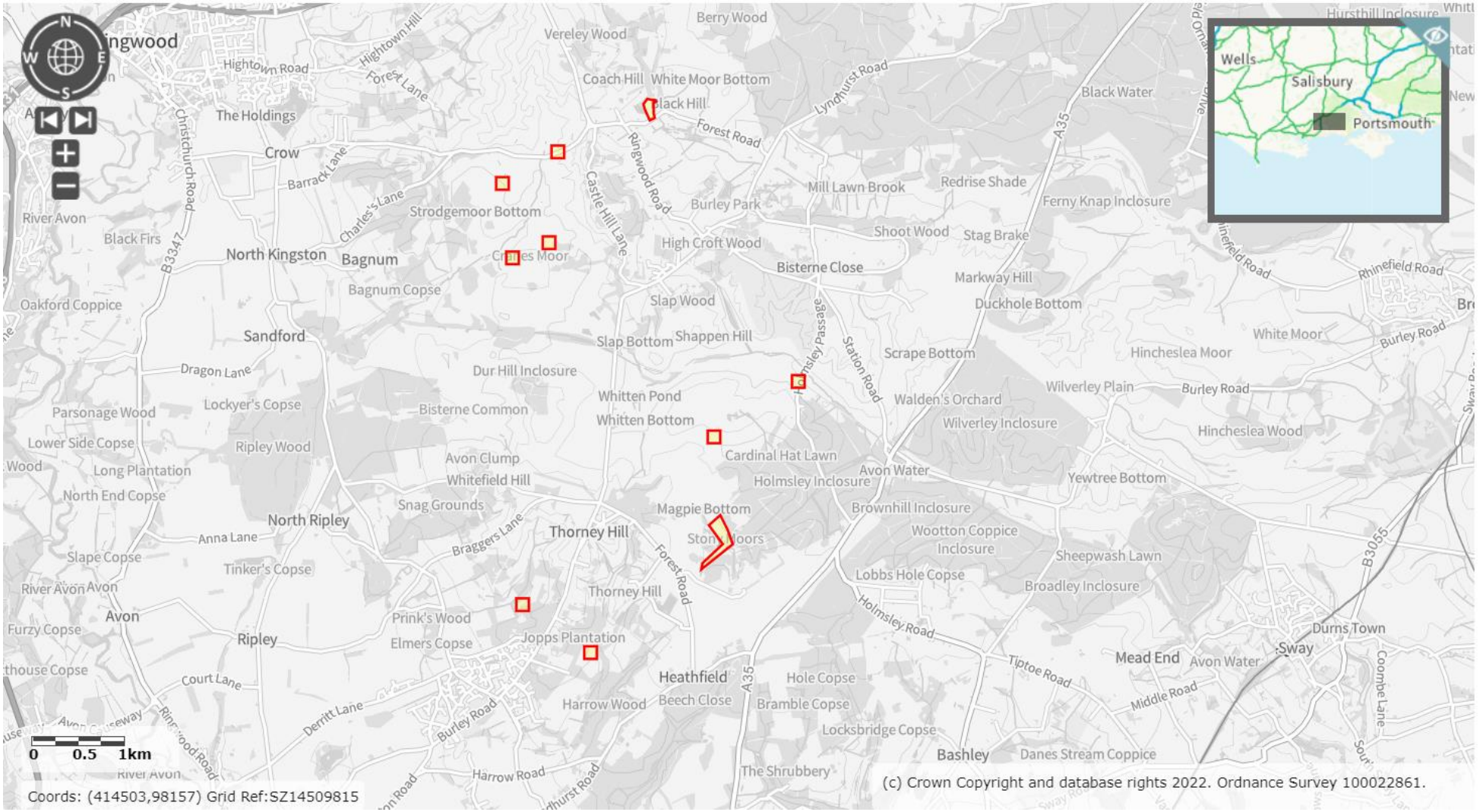


Figure 3. Locations of Black Bog-rush in the vicinity of Stony Moors.

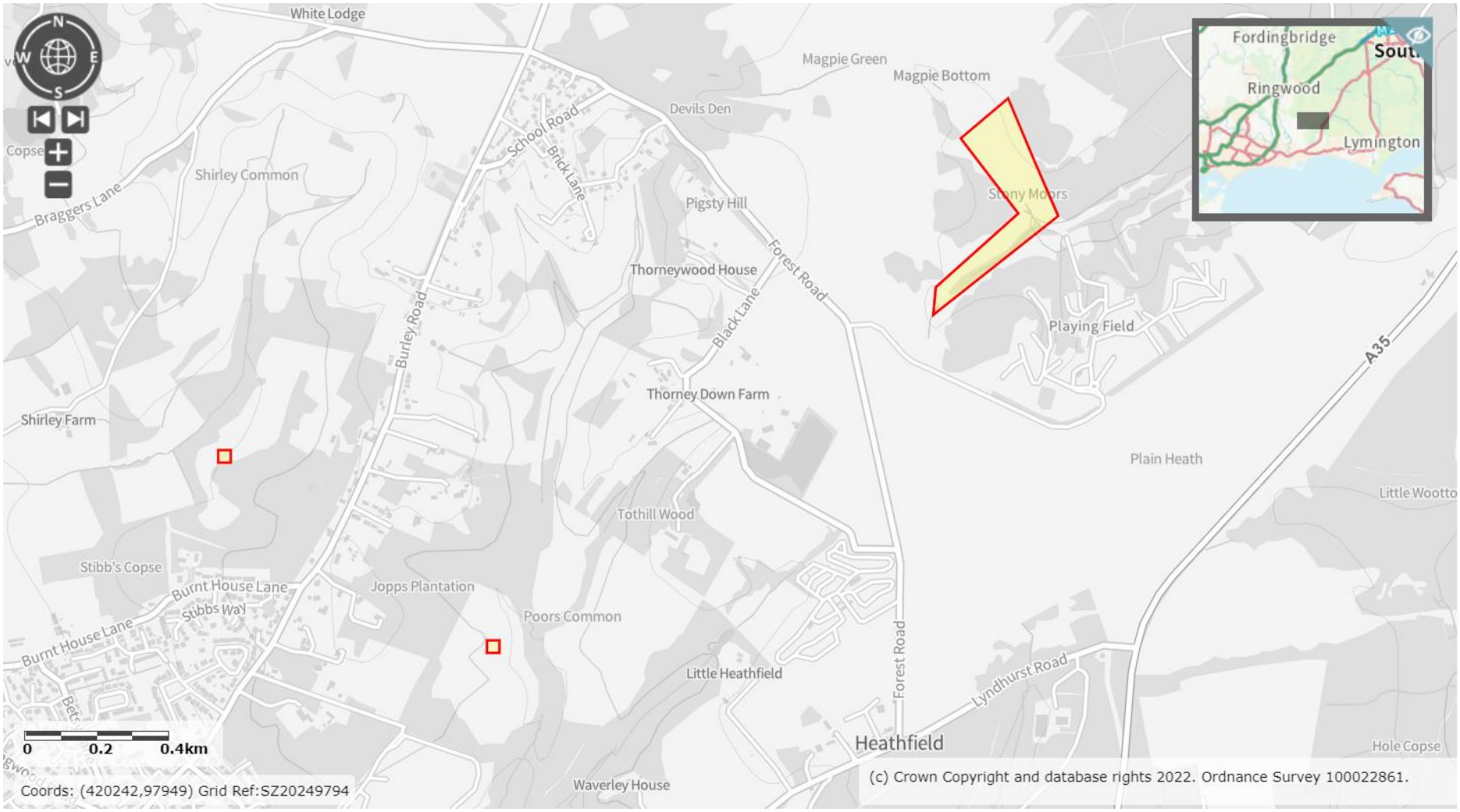


Figure 4. Locations of Black Bog-rush to the south-west of Stony Moors.

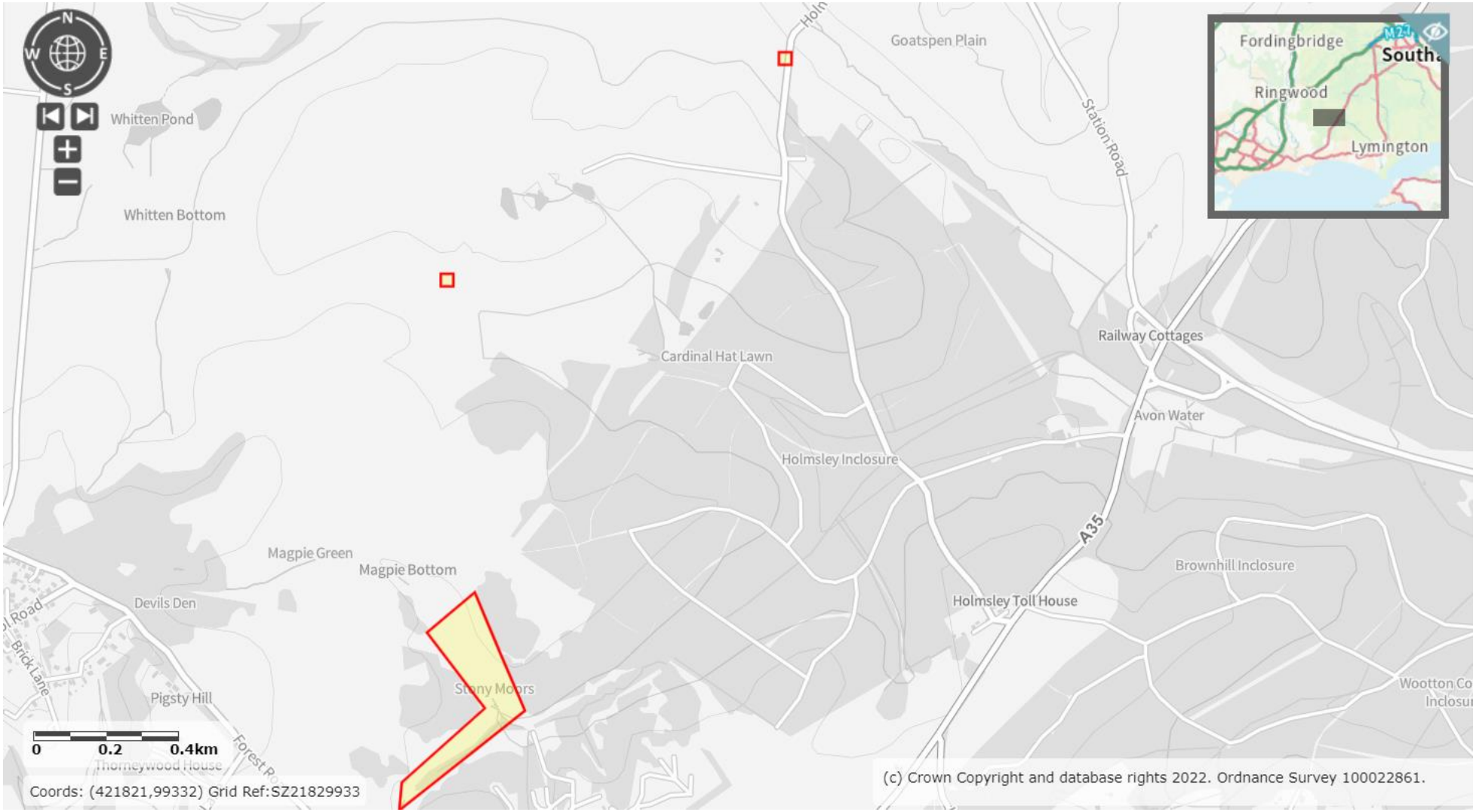


Figure 5. Locations of Black Bog-rush to the north-east of Stony Moors.

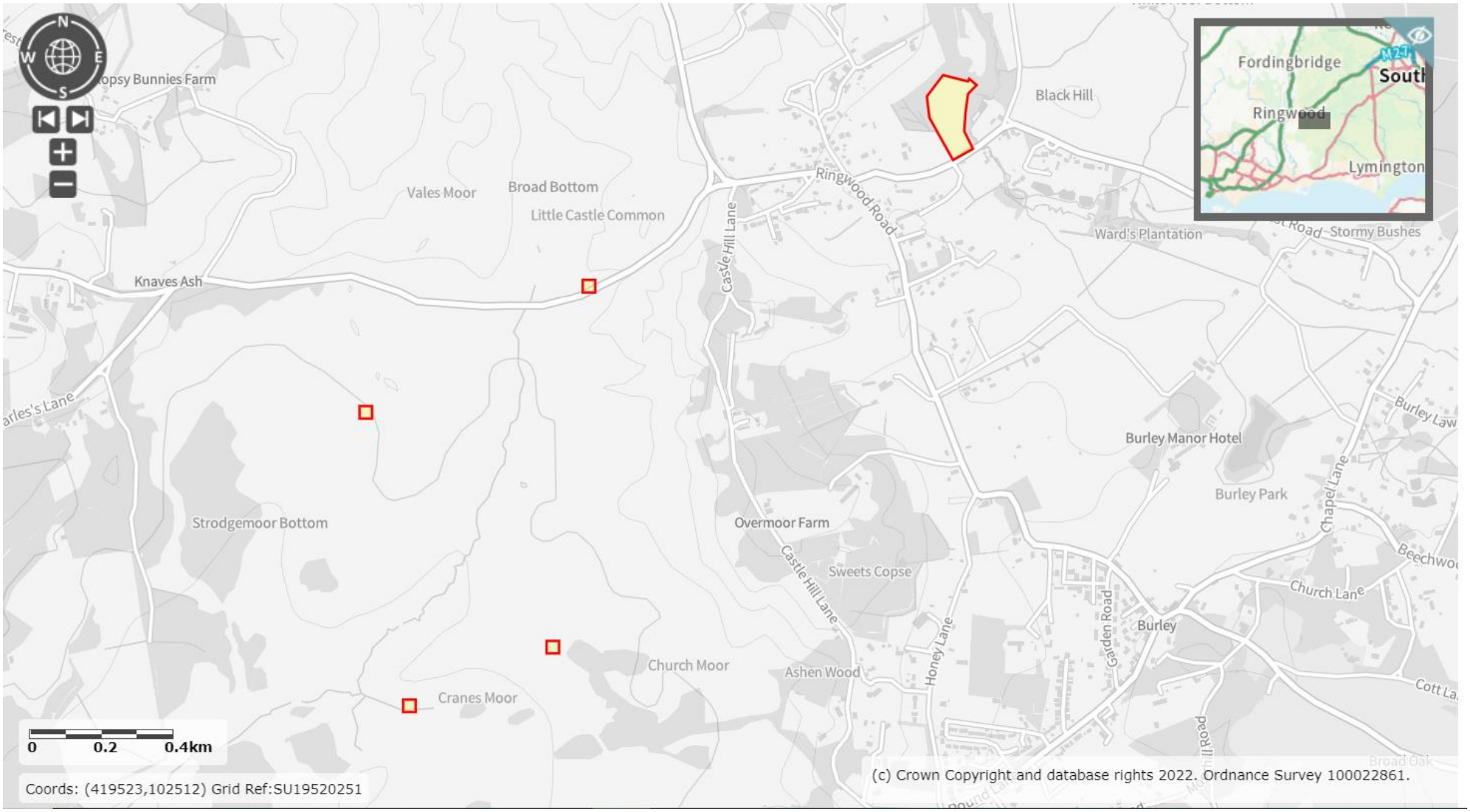


Figure 6. Locations of Black Bog-rush to the north-west of Stony Moors near Burley.

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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 is 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.