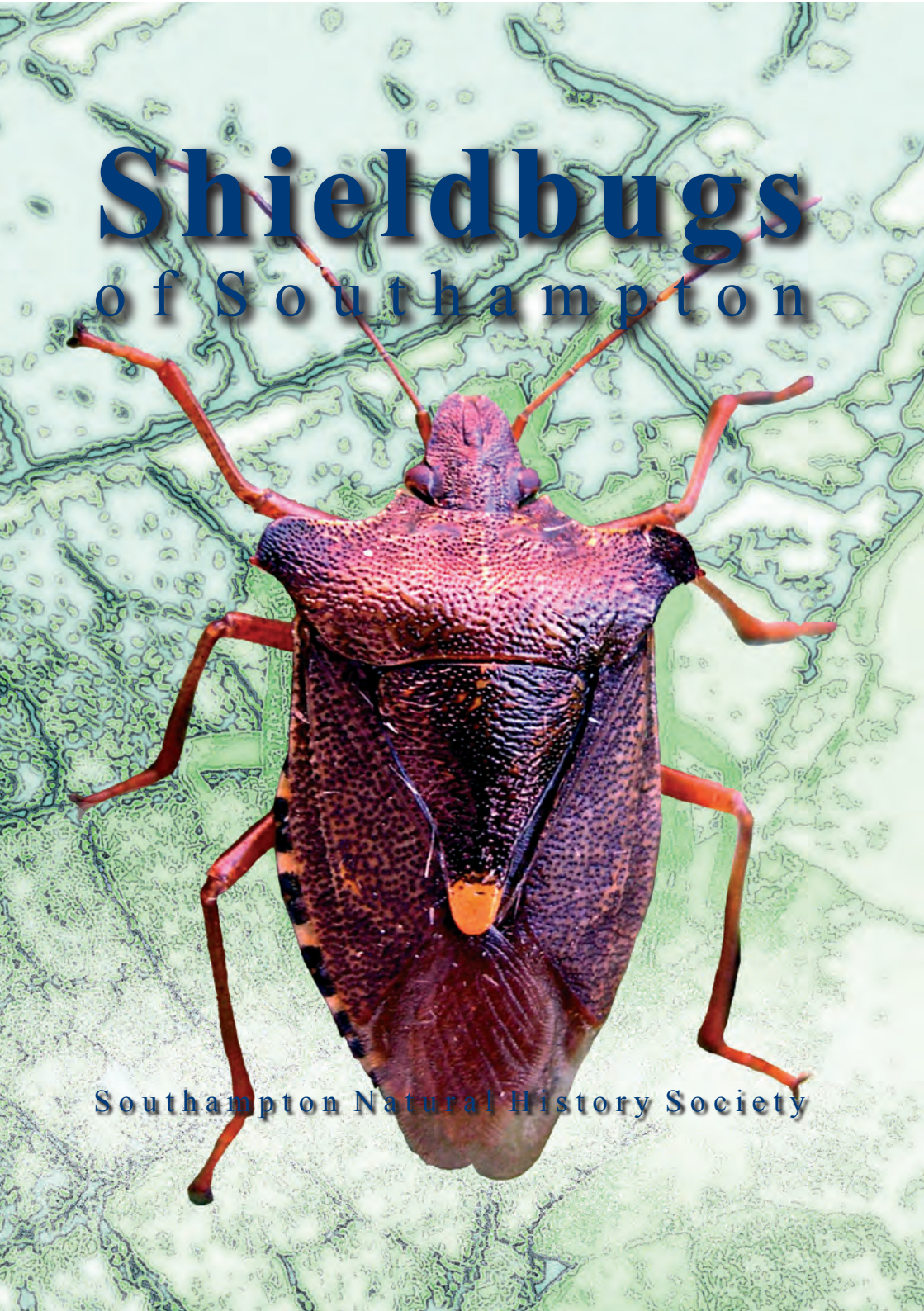
Shieldbugs of Southampton



Southampton Natural History Society

SHIELDBUGS OF SOUTHAMPTON

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In memory of
Mary Smith

2007 Southampton Natural History Society

The SNHS Shieldbug Project

SNHS Shieldbug Project is the second of several similar projects that we are intending to undertake. We are concentrating on certain under-recorded, but easily observable, groups of organisms in the Southampton area. As far as we are aware, no similar local projects on shieldbugs have been undertaken anywhere in the British Isles, although there are projects existing at County and National level. An initial analysis of shieldbug records from the SHNS Field Meetings and those of individual members over many years has already provided a wealth of information on about 25 species of shieldbug and related Hemiptera. To this we have added further data gathered from our members and from other sources.

A very important aspect of the shieldbug survey has been the targeted field surveys carried out by a few dedicated members to obtain an even more complete geographical coverage than was the case for our previous Ladybird Survey. However, records from members' gardens were also very important and we obtained some useful information from other sources, including historical records.

We have used the 'Mapmate' software to monitor the distribution of the various species of shieldbug and related Hemiptera. This has enabled us to summarise our key findings in a very efficient manner.

During the survey we have recorded details of specific host plants, habitats, habits and other information on shieldbugs. We have only included information from various referenced sources where deemed necessary for completeness and we have often updated this information in light of our own observations.

We hope that this project will stimulate further observation and study of our shieldbug fauna and encourage groups in other areas to look more closely at these fascinating and increasingly popular insects. It is also fortunate that climatic factors appear to be altering our Hemipterous fauna in very interesting ways and we appear to have caught this 'in the act'.

Acknowledgements
Southampton Natural History Society would like to express its thanks to all of the recorders who contributed to the shieldbug survey (up to the time of writing): Debbie Allan, Andy and Linda Barker, Philip Budd, Peter Burford, Andy Collins, Catherine Corney, Richard Dickson, Kathy Emmott, Graham Harrison-Watts, Anthea and Vernon Jones, John Norton, Chris Oliver, Keith Plumridge and Julie Watson
Andy Collins, Jason Claxton and Philip Budd for original work on the text.
Peter Burford and Andy Collins for the photographs.
Philip Budd for the drawings.
Peter Burford for the proof reading.
Jan Schubert and Mike Creighton for the editing, layout and cover design.

What is a Shieldbug?

Shieldbugs belong to a small group of four families of Hemiptera, including the *Acanthosomatidae* (the keeled shieldbugs), *Cynidae* (the burrowing shieldbugs), *Scutelleridae* (the tortoise shieldbugs) and the *Pentatomidae* (the typical shieldbugs). The latter family includes a sub-family called *Asopinae* (the predatory shieldbugs). In total about 34 species from these four families are thought to be resident in Britain at present and all of them are found in the southern half of England and Wales. Of these, 24 species have been found in our survey within 10 miles of Southampton Civic Centre and three further species have been found within about 16 miles, bringing the total number to 27 species found within the Southampton area. The species found in our survey vary from one ninth of an inch to just over half an inch (3.5 to 14 mm) in length and up to about 11mm in width. They vary considerably in colour but most species are generally green, brown or black.

Which other species of Hemiptera does this survey cover?

Our survey also covers species belonging to seven other families. These are the *Coreidae* (the leatherbugs or 'squash' bugs), *Alydidae* (one species—*Alydus calcaratus*), *Rhopalidae* (the glass-winged bugs or 'scentless' bugs), *Stenocephalidae* (one genus *Dicranocephalu*s with two British species but these have not been found in our survey), *Pyrrhocoridae* (one species—the Firebug *Pyrrhocoris apterus*—not found in our survey), *Lygaeidae* (the ground bugs—three species covered in our survey) and the *Reduviidae* (the assassin bugs—one species *Coranus subapterus* covered by our survey). There are ten species of the family *Coreidae* currently known to be resident in Britain and there are also ten resident British species of *Rhopalidae.* Of these, four species of *Coreidae* and nine species of *Rhopalidae* have been found within ten miles of Southampton Civic Centre. In addition, we have recorded two extra species of *Coreidae* in southern Hampshire. In total we have records for 45 species of shieldbug and related Hemiptera in the Southampton area.

The Life History and Biology of Shieldbugs and Related Hemiptera

The life of the shieldbug

Shieldbugs are relatively large insects and are quite easy to recognise as such. Some of the other species covered in this book (for example, members of the *Rhopalidae*) are less easy to recognise. After emerging from the egg shieldbugs have a series of nymph stages, but are, for the most part, still recognisable as shieldbugs. There is no pupa stage. Even though there are quite a number of very common species, their natural history has been relatively little studied and details of their favoured food sources and hibernation behaviour are often sketchy. All of the species covered in this book appear to have just one generation a year. There is

little evidence for a second generation in the UK but one is believed to occur on the continent in warmer areas. It is possible that second generations might be achieved here given further climatic amelioration (as has occurred with a number of moth species). The hibernation and over-wintering strategies of shieldbugs are described below. Those bugs, which successfully survive the winter, go on to mate in the spring. Once paired the bugs may mate for some considerable time (pairing for more than two days has been recorded). This aspect of shieldbug behaviour seems to be relatively little studied. Hawkins (2003) studied the life cycle of a Brassica Bug *Eurydema oleracea* in some detail. The bug fed for a day or two after mating and laid a batch of eleven eggs in early June. Further batches were laid every 5–9 days with the seventh and last batch on 24th July. The female died on 2nd August by which time ten of the offspring were fullygrown.

Shieldbug eggs are mostly white and are deposited underneath leaves. Eggs change colour prior to hatching and first instar nymphs usually remain close to the eggshells. There are four further instars during which there is much feeding and growth, with an increase in size at each moult. The first four instars take about one week each, whilst the final takes two weeks. Food plants for all species are described in the species accounts.

The hibernation of shieldbugs

Shieldbugs and related species show a range of strategies for over-wintering, as is found in butterflies. Most shieldbugs over winter as adults but a few species pass through winter in the egg stage. Examples of this include Spiked Shieldbug *Picromerus bidens* and the Rhopalid bug *Myrmus miriformis*. The Red-legged Shieldbug *Pentatoma rufipes* over-winters as a nymph high in forest trees.

The main requirements of the over-wintering sites for shieldbugs are that they should provide both some shelter and insulation from the elements, whilst offering concealment from predators. We have found that our records reflect these requirements.

Our survey has uncovered a rather diverse range of site selection, with this often holding true even to species level. Shieldbugs have been found to hide within the dead heads of flowers such as Wild Carrot *Daucus carota*; amongst the suspended keys of Ash *Fraxinus excelsior*; under leaf litter on the woodland floor and also amongst the tussocks or tight sward of grasses. An example of the latter is the Knobbed Shieldbug *Podops inuncta*.

However some types of wintering site have been demonstrated to be more popular with these bugs than others, because some sites offer much greater opportunities for concealment from predators and for protection from the elements. For example we have found that evergreen broadleaf shrubs or coniferous trees are particularly

productive places to find several of the commoner woodland species. Another very productive habitat in which to find over-wintering shieldbugs is the suspended dead vegetation or un-fallen leaves of, for example, Honeysuckle *Lonicera sp.,* Bramble *Rubus sp*., Oak *Quercus sp*. and Beech *Fagus sylvatica*.

Only a few species seem to particularly favour leaf litter on the woodland floor. The main example of this is the Green Shieldbug *Palomena prasina*. However, we have found that a species normally associated with herbivorous plants, the Crucifer Shieldbug *Eurydema oleracea*, will hibernate in holly *Ilex aquilifolium* leaf litter and in the in the dead suspended vegetation of trees such as Hazel *Corylus avellana.*

How to Find Shieldbugs and Related Hemiptera

Undoubtedly the simplest, although not always the most successful, method of searching for shieldbugs and their allies, is to simply look for them. On sunny days, especially in the spring, many of the common shieldbugs such as Juniper Shieldbug, Crucifer Shieldbug, *Eurydema ornatum*, Pied Shieldbug, Woundwort Shieldbug, Green Shieldbug and Gorse Shieldbug can be found sitting on the leaves of their favoured host plants. Late in the summer searches of berry-bearing shrubs such as elder, dogwood, privet, hawthorn and bramble are often very rewarding and are a good means of tracking down the likes of Hawthorn Shieldbug, Green Shieldbug, Dock Bug and Box Bug.

Often a very rewarding method of searching for shieldbugs, especially some of the smaller species, is by scanning the ground layer below vegetation or leaf litter. All the burrowing shieldbugs, except for the Pied Shieldbug, are best searched for on the ground beneath their respective host plants. The Crucifer Shieldbug and the Green Shieldbug can also often be found in woodland leaf litter in the spring whilst by the end of the summer the Small Grass Shieldbug, Woundwort Shieldbug and Denticulate Leatherbug have often descended to ground level. Species, which are often found on the ground in heathland areas, are the predatory Blue Shieldbug and Spiked Shieldbug. Another species, the Knobbed Shieldbug, has a curious affinity to debris on the ground—they are often found at certain times on the year sitting on the underside of the mats of roof felting or other materials used in reptile surveys.

Perhaps the most exciting habitat in which to search for shieldbugs by sight is bare dry ground, especially in the early summer and particularly where the soil is sandy. Possible species that can be found, given the presence of suitable host plants in the vicinity, include Blue Shieldbug, Forget-me-not Shieldbug, Bordered Shieldbug, Dahlmann's Leatherbug, Fallen's Leatherbug (not yet found in the Southampton area) *Alydus calcaratus* and some Rhopalid bugs such as *Liorhyssus hyalinus*.

Some species such as Birch Shieldbug and Red-legged Shieldbug (and less frequently, Hawthorn Shieldbug and Blue Shieldbug) are active at night and are attracted to lights. These species are thus encountered in mercury-vapour moth traps or even at lighted windows.

More methodical and efficient approaches to surveying shieldbugs, and related Hemiptera, require the use of a sweep net and a beating tray. The former is a stout canvas net on a metal pole and this can be drawn rapidly through herbaceous vegetation to sweep insects for examination. This technique is also good for other species of invertebrates including moth and butterfly larvae, harvestmen, spiders, beetles, leafhoppers and grasshoppers. Most of the species that favour tall grassland and herbaceous vegetation such as Bishop's Mitre Shieldbug, Tortoise Shieldbug, Small Grass Shieldbug, Denticulate Leatherbug and most of the *Rhopalidae* are best obtained this way.

A beating tray is a large, wooden framed rectangle of cloth, which can be folded so it may be easily carried. The tray is held under the branches of a likely tree and these branches are then sharply tapped with a strong stick. This will dislodge a wide range of insects and arachnids from the foliage. Most of the woodland shieldbugs such as the keeled shieldbug species, Bronze Shieldbug, Green Shieldbug, Red-legged Shieldbug and Box Bug are best obtained by this method. Both beating trays and sweep nets can be obtained from entomological suppliers, although they would not be too difficult to make at home. Alternatives to professional beating trays, such as upturned umbrellas, have also been used with a high degree of success.

How to Identify and Record Shieldbugs and Related Hemiptera

Recording shieldbugs

When recording shieldbugs, as for any other flora or fauna group, it is important that certain information is collected. This information is necessary to validate and trace the record and to input the information on to computer software packages. It is necessary to record the date, location, species and observer. Also the identifier/determiner needs to be recorded, if this person is different from the observer. When recording the species the proper scientific name is essential. However, most shieldbugs and leatherbugs, apart from a few rare species, also have vernacular names. There is no established vernacular named for any of the *Rhopalidae.*

It is important to record the location of the sighting as accurately as possible. In an urban situation a street name, address or a specific public building can be used to identify the site sufficiently. However in other circumstances a six-figure Ordnance Survey (OS) Grid Reference should accompany any site name. An OS Grid Reference to at least four figures is essential for the input of data onto software packages designed for this purpose. The date is straightforward although

it is not usually important to record the exact time. The only complication with regard to date occurs when a shieldbug has been recorded in a moth trap during a previous night—in this case the date of the previous day should be recorded.

For shieldbugs and related Hemiptera any associated host plant should ideally be identified and recorded. Furthermore, it is important to distinguish the records of nymphs as these can provide identification problems. Other information such as number of individuals, observation method and behaviour are less important but can still provide some useful information. The sex of a shieldbug cannot be determined other than under close scrutiny and is not important for identification of species.

Identifying shieldbugs

For a record to be valid it is of course essential that a species name be provided. This requires a correct identification. Where identification is not 100% certain the record may still be useful, provided that the recorder has stated the uncertainty. Shieldbug identification is usually straightforward in most cases but where uncertainty exists it is usual to collect a specimen or take a photograph so that the identification can be confirmed or otherwise. Nymphs pose greater identification problems but most of the commoner shieldbugs are fairly distinctive at least in the final instar. Most of the problems with the identification of adults come with the *Rhopalidae.* Typical forms of *Rhopalus subrufus* are distinctive in colour and markings but atypical specimens as well as other members of the genus *Rhopalus* need to be examined carefully with a x10 lens. The same applies to all of the other *Rhopalidae* except for *Corizus, Myrmus* and *Chorosoma*.

When identifying an unknown species of shieldbug, or related Hemipteran, it is important to record the habitat and any host plant with which the insect is associated. As regards physical features the most important points to note are:

Size: Most of the shieldbugs and related Hemiptera are consistent in size as adults. Nymphs are proportionally smaller and vary according to the instar. Species less than 8 mm in length generally do not vary by more than 0.5 mm and those greater than 8 mm usually vary by less than 1 mm in length. Therefore size is very useful for identification of adult shieldbugs.,

Pronotum shape: The pronotum is the hardened covering of the thorax and is characteristic in shape for each individual species. It is most useful in the identification of adult insects. The anterior angles and the lateral edge of the pronotum are both often characteristic in form. There are often characteristic ridges, furrows and other features on the pronotum—these are very useful in the identification of certain genera such as *Stictopleurus* (*Rhopalidae*).

Scutellum features: The scutellum is the triangular plate between the wing cases of adult shieldbugs and other Hemiptera. It is usually characteristic in colour but

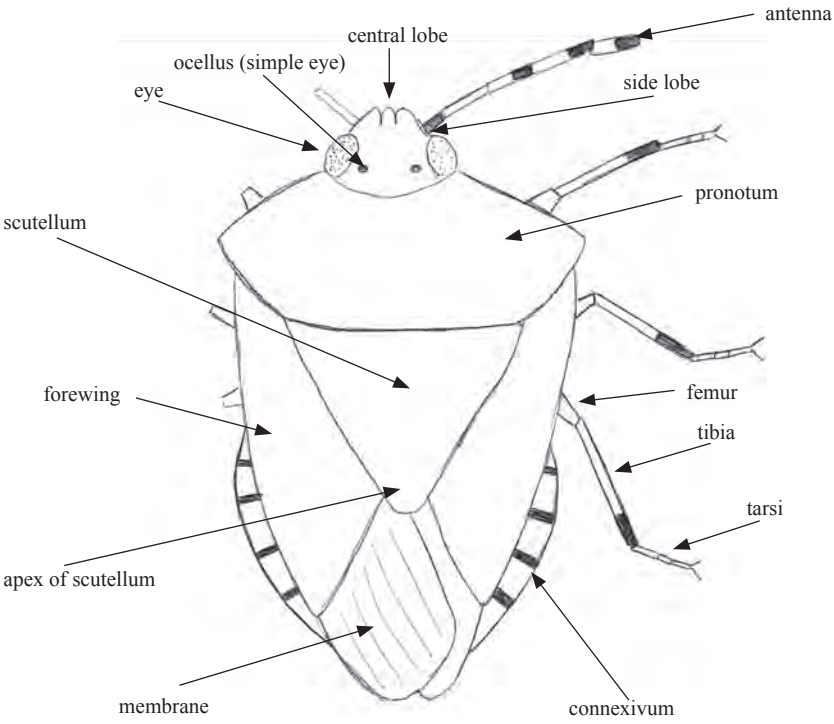
is only an important identification feature in the family *Rhopalidae*. In this family the colour and shape of the apex of the scutellum is an important feature.

Antennae colour: The colour of the various segments of the antennae does not usually vary within a species. The nymphs of several species of shieldbug, especially in the *Pentatomidae,* can be readily identified from the colour of their antennae.

Leg colour: This is also usually consistent amongst species; both nymphs and adults.

The markings and colour of connexivum: The connexivum is the skirt around the edge of the abdomen. It is usually fairly consistent in colour within species and is an important aid to the identification of most shieldbugs, leatherbugs and *Rhopalidae*. The presence of bands of darker colour on the connexivum is also a good clue to identification. The shape of the connexivum is only really important for the identification of certain leatherbugs (squash bugs).

Ventral colour: This is not usually a very important feature for identification but can be used to separate certain of the smaller brown species of shieldbug. Spotting on the ventral surface of the abdomen also assists in the identification of some of the more difficult bugs of the *Rhopalidae* family.



Key to Families of Shieldbugs and Related Species

Note: If the key does not work then the insect is either not Hemipterous or it belongs to a family of Hemiptera not covered by this book.

1. The antennae of the bug have five segments **Go to 2**
The antennae of the bug have four segments **Go to 6**

2. Tarsi (parts of legs below the 2nd joints) of the bug have two segments. Also a distinct spine on the underside of the abdomen ***Acanthosomatidae***
Tarsi of the bug have three segments. There is no distinct spine on the underside of the abdomen **Go to 3**

3. Tibiae (middle section of legs) of the bug are black with strong spines ***Cynidae***
Tibiae of the bug are any colour other than black and is hairless or finely hairy (not spiny) **Go to 4**

4. Scutellum extending 50% to 75% of the way from the rear of the pronotum to the tip of the abdomen ***Pentatomidae* (except *Podops inuncta)***
Scutellum extending all the way to the tip of the abdomen **Go to 5**

5. Bug has two projections extending from the front of the pronotum near the eyes ***Podops inuncta* (*Pentatomidae*)**
Bug has no projections to the front of the pronotum ***Scutelleridae***

6. Rostrum (the feeding tube held below the body) is distinctly curved ***Coranus subapterus***
(or other ***Reduviidae*** or ***Nabidae*** not covered by this guide)
Rostrum is pressed flat against body and is more or less straight **Go to 7**

7. Bug has ocelli (false eyes) visible from above close to the real eyes **Go to 8**
Bug has no ocelli and is red and black in colour ***Pyrrhocoris apterus***

8. Membrane (thin part at end) of forewing of bug has less than six parallel veins ***Lygaeidae***
(this also applies to ***Berytinidae*—**not covered by this book)
Membrane of forewing of bug has six (or more) parallel (or branching) veins or the bug is short-winged with a greenish abdomen **Go to 9**

9. Fourth segment of the antennae is long and distinctly curved and the head is nearly as wide as the pronotum ***Alydus calcaratus* (*Alydidae*)**
Fourth segment of antennae sometimes thicker than the others but short and never curved, width of head much less than width of pronotum **Go to 10**

10. Forewings largely membranous (translucent) or greatly reduced (if body elongate) and the openings to stink glands not visible from sides ***Rhopalidae***
Forewings entirely opaque **Go to 11**

11. Fourth segment of the antennae is thicker than the others, bug is always brown or grey with no yellow bands on legs ***Coreidae***
Fourth segment of the antennae is as thin as the others; bug is dark brown with some bright yellow on the legs, antennae and connexivum ***Dicranocephalus sp.* (*Stenocephalidae*)**

Shieldbug Habitats in Southampton

Broadleaved trees/woodland and scrub

Typical shieldbugs: Hawthorn Shieldbug, Birch Shieldbug, Parent Shieldbug, Bronze Shieldbug, Red-legged Shieldbug, Cow-wheat Shieldbug, Hairy Shieldbug, Green Shieldbug, Gorse Shieldbug. **Typical related Hemiptera:** Box Bug, Dock Bug, *Corizus hyoscyami.* Most of the woodland in and around the city is of this type. This habitat represents the remains of the prehistoric natural vegetation of the area. Old oak and holly woodland is concentrated on Southampton Common, but there are other areas of Oak woodland mixed with other trees at, for example, Home Covert (Nursling), the western side of Lord's Wood, Bassett Wood, Hardmoor Copse, Frog's Copse, West End Copse, West Wood, Prior's Hill Copse and in the Marchwood area. Smaller quantities of Beech woodland, associated with gravely soils, occur at Hollybrook Beech Wood, Kendall's Wood (Thornhill) and Mayfield Park. Sweet Chestnut plantations occur in various places in the north of the city and at Telegraph Woods, West End. Damp woodlands consisting of Sallow, Alder and Downy Birch dominate the valleys such as the Test Valley, the Itchen Valley, Shirley Valley, Monk's Brook, Marlhill Copse, the Sholing Valleys and the part of West Wood, Netley along the Tickleford Gully.

Coniferous trees/woodland

Typical shieldbugs: Juniper Shieldbug, Bronze Shieldbug. **Typical related Hemiptera:** Pinecone Bug. This is a poor habitat for shieldbugs except where there are open grassy rides and tracks. Major conifer plantations consist of species such as Douglas Fir, Western Red Cedar, Hemlock-spruce and various species of spruce, larch and pine. Good examples of this habitat occur at Lord's Wood, Rownhams Wood, Hut Wood, Luzborough Plantation, Itchen Valley Country Park and Telegraph Woods. Naturalised, or planted, stands of Scot's Pine occur on heathland soils on the edge of the New Forest, in the Chilworth area, on parts of Southampton Common and in the Thornhill and Netley Common areas.

Heathland

Typical shieldbugs: Spiked Shieldbug, Heather Shieldbug, Heath Shieldbug, Bishop's Mitre Shieldbug, Small Grass Shieldbug, Gorse Shieldbug. **Typical related Hemiptera:** *Alydus calcaratus*, Heath Assassin Bug, *Myrmus miriformis*, *Rhopalus sp.* Heathland is a very interesting habitat for Hemiptera and once dominated the eastern side of Southampton. It was also previously more common on the northern edge of the city too, but now very little remains. In the east most of the heathland is around Netley Common and Hamble Common, at the latter there is Cross-leaved Heather *Erica tetralix* only. Elsewhere there are small pockets on Southampton Common, in Hut Wood, around Chilworth, in

the Southampton Sports Centre and Hollybrook Cemetery, in the Dibden Purlieu area and on private land at Stoneham Park. Damp heathland and valley mires are even less common and mainly survive at Forest Front Reserve, Dumbleton's Copse (Thornhill), Peewit Hill and also at Emer Bog/Baddesley Common.

Dry grassland

Typical shieldbugs: Crucifer Shieldbug, Tortoise Shieldbug, Knobbed Shieldbug, Bishop's Mitre Shieldbug, Small Grass Shieldbug, Hairy Shieldbug. **Typical related Hemiptera:** Dock Bug, Slender-horned Leatherbug, Denticulate Leatherbug, *Alydus calcaratus*, *Stictopleurus sp.*, *Rhopalus subrufus*, *Myrmus miriformis*, *Corizus hyoscyami.* Much of grassland in the Southampton area is heavily mown amenity grassland and formal parkland/lawns. This provides very limited habitats for most Hemiptera unless there are also areas of bare ground together with suitable host plants. Most of the less heavily managed drier grassland in the city is associated with at least mildly acidic soil. Some of the sites on made-up ground or where there has been interference with the natural soil can be slightly alkaline and provide a different habitat. Good examples of alkaline grassland are mostly in the east of the city at Peartree Green, the Mansbridge area, Lakeside Park and at the Netley Grange Fields. Acidic grassland habitat is widespread and is present in most of the cemeteries and churchyards in Southampton as well as on Southampton Common, Weston Common, Thornhill, West End and Fair Oak areas and at Royal Victoria Country Park (Netley).

Damp grasslands, sedge beds and marsh

Typical shieldbugs: Blue Shieldbug, Tortoise Shieldbug, Pied Shieldbug, Woundwort shieldbug. **Typical related Hemiptera:** Dock Bug, *Stictopleurus sp.*, *Aeschyntelus (= Rhopalus) maculatus*, *Rhopalus subrufus.* Various types of marsh habitat, such as reed beds, sedge beds, *Typha* beds and mixed wet grassland, are concentrated in the main river valleys of the Itchen and the Test, with good examples at Testwood Lakes, Lower Test Marshes, Mans Bridge Marsh and Itchen Valley Country Park. Other examples occur along the Bartley Water Valley at Totton, the Monk's Brook Greenway, Lakeside Park (Eastleigh) and at Bursledon. Some of this grassland is only seasonally damp and lies on clay soil. This clay soil is very good for Hemiptera and there is quite a lot of it around Hythe and Marchwood as well as in the Botley, Hedge End and Bursledon areas. Salt marsh does still exist in a few places around Southampton but this does not appear to be such an important habitat for the Hemiptera covered in this survey. It is a much better habitat for Orthoptera, spiders and ladybirds.

Cultivated land and gardens

Typical shieldbugs: Hawthorn Shieldbug, Juniper Shieldbug, Crucifer Shieldbug, Forget-me-not Shieldbug, Bordered Shieldbug, Hairy Shieldbug, Red-legged Shieldbug, Green Shieldbug. **Typical related Hemiptera:** Box Bug, Dock Bug, *Corizus hyoscyam*, Pine-cone Bug, *Aphanus rolandri.* These are very widespread habitats in this area. There are 23 allotment gardens within Southampton and several in Totton, Eastleigh and Hamble, for example. Areas of market garden land are mostly further afield but some good examples of this habitat exist at Lord's Hill, near to Fair Oak and between Hamble and Bursledon. The largest resource of this habitat is the many thousands of small private gardens.

Bare ground and dry coastal habitats

Typical shieldbugs: Crucifer Shieldbug, Knobbed Shieldbug, Forget-me-not Shieldbug, Bordered shieldbug, Bishop's Mitre Shieldbug, Hairy Shieldbug. **Typical related Hemiptera:** Rhombic Leatherbug (Gosport area), Slender-horned Leatherbug, Denticulate Leatherbug, *Liorhyssus hyalinus*, *Myrmus miriformis*, *Chorosoma schillingi*, *Corizus hyoscyami*, *Aphanus rolandri.* This is a somewhat limited habitat in the Southampton area. Bare land exists sporadically around the central parts of the city and along railway lines. Examples include Redbridge Wharf Park, Rum Bridge at Totton, some of the Northam area, Peartree Green and along the Hamble Rail Trail. Coastal shingle and dry grassland is present along Dibden Bay, at Marchwood, Windy Bay, Chessel Bay, and along the shore from Weston to Hamble Common. Further away there are excellent areas of coastal grassland in the Gosport area and an extensive example of semi-bare ground at the disused workings of Casbrook Common north of Romsey.

Other shieldbug habitats

True **calcareous grassland** does not occur within 10 miles of Southampton but is very widespread on the chalk lands to the north and northeast. The Hemipterous fauna of this habitat includes most of the grassland and scrub species but typical heathland and coastal species are mostly absent. Some species such as Pied Shieldbug and Forget-me-not Shieldbug are commoner on the chalk and the **Down Shieldbug and Scarab Shieldbug** are only found in this habitat. Another interesting habitat is the **coastal sandy grassland and maritime cliffs** of the Bournemouth area about 20 to 25 miles south west of Southampton. These have not been thoroughly explored, but most of the grassland, heathland, coastal and scrub species are likely to occur. Some species, such as Crucifer Shieldbug, are very common here and it is joined by its spectacular relative ***Eurydema ornatum***.

Individual Species Accounts

Key to symbols

- • **Likely to occur in typical gardens**
- o **Possible in gardens (if suitable habitat present)**
- ⊗ **Unlikely to occur in typical gardens**
- ☽ **Active at night and known to be attracted to light.**
- **[ ] Square brackets indicate species not found within 10 miles of Southampton**

Acanthosomatidae

Hawthorn Shieldbug *Acanthosoma haemorrhoidale* •☽

National status: Common. **Local status & distribution:** Very common and widespread. Common even in built-up areas. 4th commonest species in our survey. **Habitat:** Any habitat where there are trees or shrubs, including woodland, scrub, hedgerows, parks, gardens and cemeteries. **Host plants:** Most frequent host plant is Hawthorn *Crataegus monogyna*, but also commonly found on Dogwood *Cornus sanguinea*, Hazel *Corylus,* Common Oak *Quercus robur*, Holly *Ilex* and Cherry Laurel *Prunus laurocerasus*. Less common on a wide range of other deciduous trees and shrubs. Has occasionally been found on conifers such as Cypress sp. *Chamaecyparis*, Pine *Pinus sp*., Redwood *Sequoia* and Yew *Taxus baccata*. Not usually associated with herbaceous plants, but has been found on Nettle *Urtica dioica*. **When:** Active March–November, peaking September. One January record. **Identification:** 14 mm (slightly over 1/2 inch). *Easily recognised by its large size, triangular shape and the constant dark red-purple and green colouration.* Scutellum is green with black dotting; pronotum is green at front and dark red-purple at rear (and also finely dotted); connexivum is plain green; legs are bright green and antennae dark green. Produces a particularly strong smell when handled. **Final instar nymph**: Mostly bright green with fine dotting on the green parts apart from the top of the abdominal segments, which are shiny green. Pronotum is finely edged with dark purple. Overall shape is triangular and there are three pairs of dark warts on the top of the abdomen. **131 records on our database by 10th November 2006**

Juniper Shieldbug *Elasmostethus (= Cyphostethus) tristriatus* •

National status: Local. **Local status & distribution:** Common wherever its host plants occur. Generally most abundant in parks and gardens in built-up areas and in the coniferous plantations to the north of the city. **Habitat:** Coniferous woodland and plantations, tree collections, parks, cemeteries (a particularly good habitat) and gardens. **Host plants:** Commonest on Lawson's Cypress *Chamaecyparis lawsoniana*. Also commonly recorded on Sawara Cypress

C. pisifera, Nootka Cypress *C. nootkatensis*, Western Red Cedar *Thuja plicata* and Junipers *Juniperus sp*. Also recorded on Norway Spruce *Picea abies*, Douglas Fir *Pseudotsuga menziesii*, Monterey Cypress *Cupressus macrocarpa* and Redwood *Sequoia sempervirens*. Never known to occur on pines or on broadleaved trees. **When:** Active March–October but commonest in spring and early summer (April–July). **Identification:** 9–10 mm (just under 1/2 inch). Triangular in shape, very shiny and with a constant dark red-brown and blue-green colouration. Scutellum is mostly dark blue-green but more yellow at apex; pronotum is green at front and very dark brown at rear; connexivum is plain green; the legs and antennae are yellow-green. C*an be distinguished from the very similar Birch Shieldbug by the green scutellum, the red-brown sickle shaped band on the wing cases and, usually, three thin, dark longitudinal lines underneath the abdomen. Also almost always found on conifers.* **Final instar nymph:** Shiny, ovate-triangular and blue-green throughout with three dark warts on the top of the abdomen. *Very similar to that of Birch Shieldbug except that the head is as long, or longer than, the first segment of the antennae (This feature can also be used to distinguish the adults.)* **Some individual records:** Luzborough Fields, North Baddesley (18/03/05), Marlhill Copse, Townhill Park (05/04/05), Hollybrook Cemetery (16/04/06), Chilworth Manor (30/04/06), Lord's Wood Plantation (03/05/06), West End Copse (11/05/06), Holy Cross Churchyard, Durley (26/05/06), Newtown Road, Weston Park (09/08/06), Shop Lane, Old Netley (10/09/06), Deep Dene, Bitterne Park (11/09/06) and Palmerston Park (29/10/06).

Birch Shieldbug *Elasmostethus interstinctus* •☽
Synonym: Green Birch Shieldbug
National status: Common. **Local status & distribution:** Very common and widespread. Mostly absent from the city centre to Millbrook and Redbridge. 3rd commonest species in our survey. **Habitat:** Mostly deciduous or mixed woodland. Also commonly found in gardens and suburban parks. This is by far the most frequent species at moth light traps. **Host plants:** Most commonly found on Birch *Betula sp*., Hazel *Corylus sp.*, Aspen *Populus tremula*, Common & Turkey Oaks *Quercus robur & Q. cerris* and Sallows *Salix sp*. Also common on various other broadleaved trees especially species producing berries such as Hawthorn *Crataegus monogyna*, Dogwood *Cornus sanguinea* and Holly *Ilex.* Quite often found on Spruce *Picea sp.* and occasionally other conifers such as Douglas Fir *Pseudotsuga menziesii* and Western Red Cedar *Thuja plicata*. **When:** Active late March–early November but peaking August–October. There are also mid-winter records. **Identification:** 9–10 mm (2/5 inch). Triangular in shape, very shiny and with a constant red-brown, yellow-green and dark-green colouration. Scutellum is mostly dark red-brown but more dark green at apex; pronotum is mostly dark olive-green and finely dotted; connexivum is plain yellow-green; legs and

antennae are mostly yellow-green. C*an be distinguished from the very similar Juniper Shieldbug by the dark brown scutellum, the reddish (as opposed to greenish) tips to the wing-cases and the absence of longitudinal lines underneath the abdomen. Also almost always found on broad-leaved trees.* **Final instar nymph:** Shiny, ovate-triangular and bright green throughout with three dark warts on the top of the abdomen. *Very similar to that of Juniper Shieldbug except that the head is shorter than, the first segment of the antennae. (This feature can also be used to distinguish the adults) and, sometimes red-purple colouration is present in the centre, or over much of, the top of the abdomen.* **139 records on our database by 10th November 2006.**

Parent Shieldbug *Elasmucha grisea* o
National status: Common. **Local status & distribution:** Very common and widespread. Even occurs in the inner-city areas where suitable habitat exists. 9th commonest species in our survey. **Habitat:** Deciduous, mixed or coniferous woodland. Also commonly found in large gardens, parks and cemeteries. **Host plants:** Most commonly found on Birch *Betula sp*., Hazel *Corylus sp.*, Hawthorn *Crataegus monogyna*, Holly *Ilex, Rhododendron* and Sallows *Salix sp*. Also found on various other broadleaved trees such as Hornbeam *Carpinus betulus*, Dogwood *Cornus sanguinea*, Ash *Fraxinus excelsior* and Common Oak *Quercus robur.* Quite often found on Ivy *Hedera* and certain conifers such as Larch *Larix sp*., Pines such as *Pinus nigra & P. sylvestris*, Douglas Fir *Pseudotsuga menziesii* and, especially, Yew *Taxus baccata*. **When:** Active late March–November but peaking August–October. Also there seems to be a smaller peak in spring (April). **Identification:** 8 mm (1/3 inch). Ovate-triangular in shape, rather shiny and with an orange-brown and olive-green colouration. Scutellum is mostly dark brown to black but pale green or pale brown at apex; pronotum is olive-green or olive-brown at front, darker at the rear and finely dotted; *connexivum is characteristically banded black and light greenish*; legs and antennae are mostly yellow-green to almost yellow. *Can be distinguished from the similar Juniper and Birch Shieldbugs by the banded connexivum.* **Final instar nymph:** Essentially ovate-triangular, pinkish-brown with black markings and with a green abdomen showing three pairs of black warts on top. *The longitudinal black 'hum-bug' stripes on the pinkish-brown or green-brown head, pronotum, scutellum and wing cases easily distinguish this nymph from **any** other shieldbug nymph.* **79 records on our database by 10th November 2006.**

Cydnidae
Bordered Shieldbug *Legnotus limbosus* o
National status: Common. **Local status & distribution:** Probably locally common and almost certainly under-recorded. Most records are from the Nursling,

Lord's Hill and Netley areas. **Habitat:** Difficult to define but seems to be a species associated with disturbed ground on nitrogen-rich soils. Made-up ground, waste ground, allotments and roadsides are likely areas. **Host plants:** Seems to be associated with the presence of Goose Grass or Cleavers *Galium aparine* but it has also been swept from Nettle *Urtica dioica*. **When:** Early season. All our records are from mid-April to mid-June. **Identification:** 4 mm (1/6 inch). Oval, shiny black. Everything is black in the adult except for a thin white border extending 2/3 or 3/4 of the way down outer edge of the wing cases. *Distinguished from the very similar Heath Shieldbug (when they occur in the same habitat) by the greater extent of the white edging on the wing cases, the larger size and the fact that the central lobe of the head is indented with respect to the rest of the head at the front.* **Individual records:** Hound Bunny, Netley (14/05/04), Priddy's Hard, Gosport (31/05/05), Old Bursledon Nature Haven (27/04/06), Dairy Lane, Nursling (30/05/06), Broadlands Valley (12/05/06), Redbridge Lane, Nursling (30/05/06) and Lord's Wood Greenway (31/05/06).

Heath Shieldbug *Legnotus picipes* ⊗
National status: Scarce—Notable (Nb). **Local status & distribution:** Scarce. There are two known colonies, one in Lord's Wood and the other in Southampton Old Cemetery. It has been searched for without success at Hut Wood and Chilworth but not in potentially suitable habitat on the eastern side of the city so this species could be more widespread**.** **Habitat:** Undisturbed and herb-rich acidic grassland, especially where there are large numbers of ants. **Host plants:** All our records are either on, or under, Heath Bedstraw *Galium saxatile*. These records include *Galium* plants growing on the mounds of Yellow Meadow Ant *Lasius flavus.* **When:** Early season. All our records are from mid-April to mid-June. **Identification:** 3.5 mm (1/6 inch). Small, oval, shiny black. Everything is black in the adult except for a thin white border extending about 1/3 of the way down outer edge of the wing cases but this can be difficult to see. *Distinguished from the very similar Bordered Shieldbug (when they occur in the same habitat) by the lesser extent of the white edging on the wing cases, the smaller size and the fact that the central lobe of the head is plane with respect to the rest of the head at the front.* **Individual records:** Lord's Wood Plantation (03/05/06) and Southampton Old Cemetery (28/05/06).

Pied Shieldbug *Sehirus bicolor* ⊗
National status: Common. **Local status & distribution:** Locally common but apparently absent from higher ground except further north on the chalk. In the Southampton it is common in the Lower Test Valley and also found in the Shirley Valley and at Eastleigh. Found commonly in the Itchen Valley north of Eastleigh. No records near to the coast except near to Budd's Farm south of Havant. **Habitat:**

Damp grassland and nettle beds, especially in river valleys. This species also occurs in damp grassland, riverside habitats and by roads in the chalk areas. **Host plants:** Virtually confined to White Deadnettle *Lamium album* but we have records off Red Deadnettle *Lamium purpureum*, Nettle *Urtica dioica*, Burdock *Arctium sp.* and Sea Couch Grass *Elytrigia atherica*. However, White Deadnettle is usually present in the vicinity. **When:** Early season. Recorded April–early July, with a peak in late April. **Identification:** 6 mm (1/4 inch). No other shieldbug can be mistaken for this species. It is rather small, broadly oval in shape and is mostly black and white. The white areas are two large spots at the front corners of the pronotum, a white inverted 'C' mark at the front of the wing cases, white tips to the wing-cases, the black and white banded connexivum and the white front half of the tibiae of the legs. Scutellum and antennae are both black. **Final instar nymph: A**n attractive creature. Top of the abdomen is creamy white with a series of black ovals in the middle and black dots around the edge. Both the scutellum and the two wing cases are cream but bordered with black and the pronotum is cream at the sides and may have a white central spot. **Some individual records:** Testwood Park (13/04/91), Mensland's Lane, Hambledon (30/05/05), Ports Down Hill (12/06/05), Dairy Lane, Nursling (05/04/06), Lee Plantation, Nursling (17/04/06), Avenue Park, Eastleigh (07/05/06), Shirley Valley (29/06/06) and on coast of Langstone Harbour by Budd's Farm, Havant (04/07/06).

[Down Shieldbug *Sehirus (= Canthophorus) impressus*]
National Status: Scarce—Notable (Nb). **Local status & distribution:** Not found in the Southampton area but recorded at Yew Hill, near Winchester and 10 miles north of Southampton. Also known to occur at Ports Down Hill and we have heard of a colony at St Catherine's Hill east of Winchester. **Habitat:** Ancient grazed chalk grassland (near Winchester) and in chalk grassland with bare areas in a former quarry (at Portchester). The Yew Hill sites are in the linear depressions of ancient tracks. **Food sources:** Found, often in large numbers, in or under Bastard Toadflax *Thesium humifusum.* No other known food plant in our area. **When:** We have recorded this species as adults in May and early June, then as nymphs in early July**. Identification:** 6 mm (1/4 inch). Small, oval, shiny very dark blue (or bluish-black). Everything is bluish-black in the adult except for a thin white border extending 3/4 or more of the way down outer edge of the wing cases *and the characteristically black and white banded connexivum.* This feature easily distinguishes this most attractive species from other related bugs. **Final instar nymph:** Has a bright blood-red upper surface to the abdomen. In related species the upper side of the abdomen of the nymph is mostly a dull, pale colour. **Individual records:** Yew Hill, south of Winchester (25/05/06) and Ports Down Hill north of Portchester (06/07/06).

Cow-wheat Shieldbug *Sehirus (= Adomerus) biguttatus* ⊗
National status: Scarce—Notable (Nb). **Local status & distribution:** A rarity. We have only found one colony and we consider ourselves fortunate to have found that. The colony is on the north-west edge of the city at Lord's Wood. We have failed to find this species in apparently suitable habitat at various sites in the New Forest and at St Mary's Wood, Netley. **Habitat:** At ground level in woodland with Wood Ants *Formica rufa* present, deep leaf litter and large quantities of the host plant Cow-wheat. **Food sources:** Only found in association with Cow-wheat *Melampyrum pratense*. Bilberry *Vaccinium myrtillus* also present at the only known site. **When:** Early season. Our records are April–June. **Identification:** 5.5 mm (1/5 inch). Small, oval, shiny black. Everything is black in the adult except for a clear thin white border extending along the edge of the pronotum most about 1/3 of the way down outer edge of the wing cases too. *There is cream dot, which can be very small, but is always present in the centre of the wing cases. No other similar species of shieldbug has this feature.* **Individual records:** Lord's Wood—clearing in west of wood (03/05/06 & 04/05/06) only.

Forget-me-not Shieldbug *Sehirus luctuosus* ⊗
National status: Local. **Local status & distribution:** Probably locally common and almost certainly under-recorded. The closest colonies to Southampton that we know of are at Nursling, Ampfield and Fair Oak, but suitable habitat exists elsewhere in the area. This species is more abundant on the chalk east of Winchester. **Habitat:** Areas of sparse vegetation with host plant present and also bare areas. Found either on dry, sandy or chalk soils. **Food sources:** Usually found in association with Field Forget-me-not *Myosotis arvensis* but we have also found this species on Changing Forget-me-not *Myosotis discolor*. **When:** Early season. April–June, peaking about mid-May. **Identification:** 7.5 mm (1/3 inch). Medium sized, shiny black. *Absolutely everything is black in the adult and this, together with the size, easily tells this bug from related species.* **Individual records:** Magdalen North Down, Winchester (04/05/06), Brentry Wood, Ampfield (10/05/06), Hillier's Arboretum, Ampfield (10/05/06), Station Road, Nursling (11/05/06) and Knowle Hill Reserve, Fair Oak (26/05/06).

[Scarab Shieldbug *Thyreocoris scarabaeoides*]
Synonym: Negro Bug
National status: Local. **Local status & distribution:** Not recorded in the Southampton area but found on the central Hampshire chalk within 12 miles of the city. **Habitat:** Dry areas on chalk soil especially where there is a lot of bare ground. **Food sources:** Not recorded by us. **When:** Later in the season than most *Cynidae*. Our record was in August. **Identification:** 3.5 mm (1/8 inch). Small, almost circular, shiny black or very dark brown. Everything is brownish-black in

the adult. *Can be recognised from other related species by the small size, the fact that the antennae are barely longer than the head is wide and the very large and broad scutellum that covers most of the abdomen and wings.* **Individual records:** Magdalen North Down (20/08/05).

Scutelleridae

Tortoise Shieldbug *Eurygaster testudinaria* ⊗

National status: Local. **Local status & distribution:** Very common and widespread. Mostly absent from the city centre to Millbrook and Redbridge and apparently absent from the Hamble area. 8th commonest species in our survey. **Habitat:** Herb-rich un-grazed grassland, especially in damp areas, where the soil is nitrogen rich i.e. in agricultural areas or on clay soils. **Food sources:** Seems to be strongly associated with Common Knapweed *Centaurea nigra* and also often found on Thistles *Cirsium sp*. and Stinging Nettle *Urtica dioica*. Less often found on other herbaceous plants such as Hairy Sedge *Carex hirta*, Wild Carrot *Daucus carota*, Hard Rush *Juncus inflexus*, Fleabane *Pulicaria dysenterica* and Sorrel *Rumex acetosa.* **When:** May–early October and with a strong peak in August. There are also two November records. **Identification:** 10 mm (2/5 inch). *Fairly large and distinctively shaped, with a broad, almost square, abdomen and a broadly triangular head and pronotum*. Pronotum and scutellum are some shade of brown (or the same colour as the rest of the bug) with a pale longitudinal line down the centre of both; *scutellum also has two small but clear white spots at the front corners; connexivum is unusually broad and distinctly pale and dark banded*; legs are a pale, dull colour and antennae are dark with a pale basal (first) segment. The colour and markings vary greatly. Some specimens are almost plain and usually pale or orange brown, whilst others are strongly marked or spotted. The background colour of the more well marked specimens vary from almost grey, through beige, olive-brown and dull greenish. There is also a common form, which is distinctly plum purple. **Final instar nymph:** Again very variable in colour but the continuous edge to the triangular head and pronotum, *the pale central line on pronotum and scutellum and the four pale warts on the top of the abdomen should distinguish it.* **87 records on our database by 10th November 2006.**

***Pentatomidae* (typical)**

Knobbed Shieldbug *Podops inuncta* ⊗

Synonyms: Turtle Bug

National status: Common. **Local status & distribution:** Locally common but likely to be under-recorded as it is often a difficult species to find. Apart from one good site in Chandler's Ford all records are from sites in the eastern half of the Southampton area. Also known to occur around Winchester and Gosport. **Habitat:** Near ground level or under debris, wood or reptile mats in grassland.

Food sources: Thought to be grasses such as Bent-grasses *Agrostis sp*., and Soft-grasses *Holcus sp*. **When:** Late April–late October with a sharp peak in May. **Identification:** 6 mm (1/4 inch). At first sight, dull (matt), small, oval dark grey-brown. The whole body (including the connexivum) is the same colour but there are two dull/pale spots at the top corners of the unusually broad scutellum; the legs are dull and pale and the antennae black. *At all times can be identified by three distinctive features: the broad scutellum which is 2/3 the width of the body, the prominent eyes that protrude from the sides of the head and the small curved projections from the front of the pronotum near the eyes.* **Individual Records:** Priddy's Hard, Gosport (18/04/05), Netley Grange Fields (02/05/05), Magdalen Hill Down (09/08/05), Old Bursledon Nature Haven (27/04/06), Eastleigh Cemetery (18/05/06), Knowle Hill, Fair Oak (26/05/06), Thornhill (28/05/06), Templar's Mede, Chandler's Ford (28/06/06) and Hum Hole, Bitterne (11/09/06).

Bishop's Mitre Shieldbug *Aelia acuminata* ○☽ (occasional at light)
National status: Local. **Local status & distribution:** Very common and widespread. Absent only from the very built up area between Southampton city centre and Millbrook. 6th commonest species in our survey. **Habitat:** Significant areas of grassland usually dry grassland, with fine grasses. **Food sources:** Has been obtained from Bent-grasses *Agrostis sp.*, Sweet Vernal Grass *Anthoxanthum odoratum*, Fescue *Festuca sp.* and Purple Moor Grass *Molinia caerulea*. **When:** May–September with a small peak in late May/early June and a larger peak in August/early September? **Identification:** 8.5 mm (1/3 inch). *This medium-size, straw to mid-brown, longitudinally 'hum-bug' striped triangular shaped bug is quite unmistakable. Only the Tortoise Shieldbug has quite the same broad evenly triangular head and pronotum but the abdomen of the current species is much narrower.* The head, scutellum and pronotum are brown with a pale central band and broader pale bands each side; the head and scutellum are also pale on the outer edge; the connexivum and legs are plain, pale brown and the antennae are mostly very dark. **Final instar nymph:** *Also brown with the characteristic longitudinal stripes and acutely triangular head.* **103 records on our database by 10th November 2006.**

Small Grass Shieldbug *Neottiglossa pusilla* ⊗
National status: Local. **Local status & distribution:** Uncommon and local but possibly overlooked. This species seems to be most frequent on Southampton Common. Also recorded at Hythe, Lord's Hill and Chandler's Ford, but no records east of the Itchen. **Habitat:** Significant areas of grassland usually dry grassland, with fine grasses. **Food sources:** Seems to be mainly associated with Bent-grasses *Agrostis sp*. However, has also been obtained from Fescue *Festuca sp*., Soft-grass *Holcus sp*., Hard Rush *Juncus inflexus* and Purple Moor Grass *Molinia caerulea.*

When: Most of the records are May–July and there is a peak in early June. Has also been recorded in September. **Identification:** 4.5 mm (1/6 inch). *Another small somewhat shiny grey-brown shieldbug but any possibility of confusion with other species can be ruled out at once when the bug is turned upside down as the sternum is shiny and dark pink-brown (dark copper) coloured. Also the head is broad and very short, actually tucked under at the front.* Like the Tortoise Shieldbug there is a pale central line down the middle of the pronotum and scutellum, the scutellum has two white spots at the front corners but the connexivum is plain cream in colour and there is a pale cream outer edge to the pronotum. The legs are pale and dull in colour and the antennae dark except for a pale basal (first) segment. From above the non-protruding eyes and the lack of a projections to the front of the pronotum clearly separate it from Knobbed Shieldbug. **Final instar nymph:** Not studied, but likely to show the broad, short head and unusual colour underneath the abdomen. **Individual records:** Templar's Mede, Chandler's Ford (12/05/06), Southampton Common—north of Boating Lake (04/06/06), Cromarty Pond area, Lord's Hill (05/06/06), Southampton Old Cemetery (05/06/06), Forest Front Reserve, Hythe (24/06/06) and nymphs at Hut Wood (15/08/06).

Woundwort Shieldbug *Eysarcoris fabricii* o

National status: Common. **Local status & distribution:** Locally very common. In the immediate vicinity of Southampton, mostly found in the Itchen and Test Valleys. Away from towns, seems to be commoner in damp areas where the ground is heavy clay. **Habitat:** Associated with hedgerows, woodland edges, and improved grassland and nettle beds**. Food sources:** Usually found, sometimes in large numbers on Hedge Woundwort *Stachys sylvatica* or, occasionally on White Dead-nettle *Lamium album* or Great Mullein *Verbascum thapsus*. We have one record on Broad-leaved Dock *Rumex obtusifolius*. **When:** Recorded in every month April–October, except for a gap in July. There is a strong peak in May and a smaller one in September. **Identification:** 5.5 mm (1/5 inch). *Very distinctive and unmistakable, small, square-shaped, shiny, with a constant burnished metallic dark coppery purple and silvery grey colour.* The whole bug is finely dotted black. The triangular pronotum is silvery grey but dark purplish-coppery at the front; the broad scutellum is dark purplish-coppery in the front half but silvery-grey at the rear; the connexivum is attractively black and white banded; the legs are pale grey but spotted black on the femora and the antennae are also black and white banded. **Final instar nymph:** Distinctive coppery or purplish black except for the strikingly different mustard-yellow abdomen and the fine white outer edge to the pronotum. Usually seen in large numbers. **Some individual records:** Broadlands Valley (30/04/06), Peartree Green (23/08/05), Monk's Brook Greenway (06/06/05), Hocombe Mede, Chandler's Ford (11/09/05), Silverdale Road, Southampton (04/05/06), Dairy Lane, Nursling (11/05/06), West End Copse (11/05/06), Home

Covert, Nursling (25/05/06), North of Fair Oak (08/06/06), Nightingale Wood (07/08/06) and Bartley Water Valley, Totton (05/09/06).

[New Forest Shieldbug *Eysarcoris aeneus*]
National status: Scarce. **Local status & distribution:** We have only one record from the east of the New Forest. Has been searched for, without success, in the wooded areas north of Southampton. **Habitat:** Heathland and woodland on acid soils. **Food sources:** Reported to be associated with Slender St John's-wort *Hypericum pulchrum* (Hawkins, 2003) but we have found it on Heather *Calluna vulgaris*. **When:** There is one late summer record. **Identification:** 5 mm (1/5 inch). Very similar in size, shape and markings to the Woundwort Shieldbug. It also shows fine black dotting throughout. *However, it can be distinguished from the Woundwort Shieldbug by the strongly concave edge to the pronotum, the generally duller greenish-grey colour without purplish or silvery tints and the two striking white, oval spots at the front corners of the scutellum.* **Individual records:** Matley Bog, New Forest (08/09/05) only.

Green Shieldbug *Palomena prasina* •☽
National status: Common. **Local status & distribution:** Very common and widespread with no obvious gaps in distribution. 2nd commonest species in our survey. **Habitat:** Virtually any habitat except pure swards of grass**. Food sources:** Recorded on a wide range of trees, shrubs and herbaceous plants. Found most commonly on broad-leaved trees and shrubs such as *Buddleia*, Field Maple *Acer campestre*, Hawthorn *Crataegus*, Hazel *Corylus*, Bramble *Rubus fruticosus* and Oak *Quercus robur*. Bindweed *Calystegia sp.* and Nettle *Urtica dioica* are the commonest herbaceous plants on which to find this species. **When:** Recorded in every month except December. Active March–November. **Identification:** 12–13 mm (1/2 inch). *Unmistakable, large, bright grass green.* Head and pronotum are typically triangular. Scutellum, pronotum and legs are all green; connexivum is also green but has narrow pale stripes; antennae have bright green basal segments. Third and fourth segments are dark. There is also a thin pale yellow outer edge to the pronotum. *However, in winter changes to a dark grey brown colour with reddish or brownish legs and antennae.* In this state confusion with hibernating Hairy Shieldbug is possible, but that is hairy and has a banded connexivum. Another possible confusion species is the Vernal Shieldbug (not found in our area yet), but this has a strongly banded connexivum, dark legs and a white apex to the scutellum. **Final instar nymph:** Distinctively large, oval and green all over, but can be confused with the more triangular nymph of the Hawthorn Shieldbug. Younger instars of this bug tend to have dark heads and pronota and large, dark spots on the abdomen. **227 records on our database by 10th November 2006.**

Hairy Shieldbug *Dolycoris baccarum* o
Synonym: Sloe Bug
National status: Common. **Local status & distribution:** Very common and widespread. Absent only from the very built-up areas of Southampton, such as Northam, the City Centre and Millbrook. 5th commonest species in our survey. **Habitat:** Almost any habitat with significant vegetation, even semi-bare ground. **Food sources:** Found on a vast range of plants**.** Most favoured trees and shrubs appear to be Birch *Betula sp.,* Oak *Quercus robur* and Gorse *Ulex europaeus*. However, it also often found on Hazel *Corylus*, Hawthorn *Crataegus*, Privet *Ligustrum* and Bramble *Rubus fruticosus* and on a wide range of broad-leaved herbaceous plants. Knapweed *Centaurea nigra*, Thistles *Cirsium sp*., Wild Carrot *Daucus carota*, Teasel *Dipsacus fullonum*, St John's-wort *Hypericum sp.*, White Dead-nettle *Lamium album*., Fleabane *Pulicaria dysenterica*, Nettle *Urtica dioica* and Mullein sp. *Verbascum sp*. **When:** Mostly recorded late March–mid-November with two peaks, in May and August/early September. One December record also. **Identification:** 11.5 mm (slightly under 1/2 inch). Large, attractive brownish, greenish or purplish of a characteristic shieldbug shape. *However,it is distinctly hairy, especially underneath, and this is always a useful distinguishing character if in doubt. Becomes darker and browner in winter.* Pronotum is purplish-brown but more green at the front; *scutellum is olive green but very pale at the broad tip*; connexivum is strikingly banded black and white or black and yellow; legs are beige and very hairy; *antennae are strikingly black and white banded.* **Final instar nymph:** Oval and brown with the characteristically black and white banded antennae. *However, any possibility of confusion with any other shieldbug nymphs can be quickly extirpated by the extreme hairiness all over.* **119 records on our database by 10th November 2006.**

Gorse Shieldbug *Piezodorus lituratus* ⊗
National status: Common. **Local status & distribution:** Common and widespread. Only absent from areas where there is very little food plant such as the lower Itchen Valley and around Shirley and Millbrook. 10th commonest species in our survey. **Habitat:** Heathland, scrub and commons where there is gorse or broom. **Food sources:** Has been beaten from a variety of trees and shrubs, but is mainly associated with Gorse *Ulex europaeus.* Broom *Cytisus sp*., and Western Gorse *Ulex gallii* seem to be additional food plants and it has frequently been found on Hawthorn *Crataegus*. **When:** Recorded in every month of the year and known to be active in late January. However, the main activity is March–May and again late July–early October. **Identification:** 11.5 mm (slightly under 1/2 inch). Large, fairly shiny, rather triangular, distinctive olive or yellowish green. Another bug that is finely black dotted all over. *Pronotum is olive green with a fine yellow edge extending down to the bluish margins of the wing cases*; scutellum is

also olive green and more yellow towards the tip; *connexivum is plain and bright yellow*; legs are greenish-yellow but more reddish on the tarsi; antennae are rather reddish. **Final instar nymph:** Quite distinctive and, in combination with the habitat, there should be few identification problems. *Head, pronotum, scutellum and wing cases are very dark green to black. Upper side of the abdomen is much paler (pinkish, lilac or greenish) and has three black oval warts.* There is a pale yellowish line along the edge of the pronotum, wing cases and connexivum. **70 records on our database by 10th November 2006.**

Red-legged Shieldbug *Pentatoma rufipes* •☽ (occasional at light)
Synonym: Forest Shieldbug
National status: Common. **Local status & distribution:** Very common and widespread. Rarely found in the very built-up area between Southampton city centre and Redbridge. 7th commonest species in our survey. **Habitat:** Largely woodland, woodland edge, parks, gardens and allotments. **Food sources:** Mostly found on trees or shrubs. Most commonly on Maples (including Sycamore *Acer sp*.), Birch *Betula sp*. and Oak *Quercus robur*. However, we have found it on other broadleaf trees such as Hazel *Corylus*, Hawthorn *Crataegus*, New Zealand Broadleaf *Griselinia littoralis* and Bramble *Rubus fruticosus*. Also occasionally frequents conifers such as Scot's Pine *Pinus sylvestris* and Yew *Taxus baccata* as well as herbaceous plants such as Broad-leaved Dock *Rumex obtusifolius* and Nettle *Urtica dioica.* **When:** Late season with most records from July to November with a strong peak in August. The few records between March and July are mostly of nymphs. **Identification:** 12 mm (1/2 inch). Large dark olive-brown coloured, with a somewhat shiny and finely punctured appearance. *In shape it is a 'typical' shieldbug, but has distinctly truncated protruding 'shoulders' on the pronotum.* Pronotum and scutellum are the same dark brown as most of the rest of the bug but the latter is pale at the apex. *Connexivum is very attractively banded orange and black with alternate narrow and broad bands. Legs are quite bright orange-red as are the first and second segments of the otherwise dark antennae.* F**inal instar nymph:** Unfortunately, it is dark greyish-brown throughout and very indistinct. The main recognition features are the pronotum and the abdominal markings. *The pronotum shows the same truncated shoulders as the adult and has a pale spot either side at the front. The abdomen has pale yellowish spots along the edge (connexivum).* **97 records on our database by 10th November 2006.**

Crucifer Shieldbug *Eurydema oleracea* o
Synonym: Brassica Bug
National status: Local. **Local status & distribution:** Locally common but mainly in built-up areas. Most of our records are from either between Totton and Lord's Hill or around Woolston and Weston in the south east. **Habitat:** Usually found on

nymph

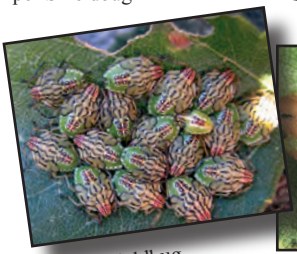
Hawthorn Shieldbug
adult

final instar

Juniper Shieldbug

Birch Shieldbug adult

nymph



Parent Shieldbug
aggregation

adult with eggs

Bordered Shieldbug

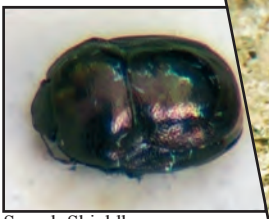
Heath Shieldbug

Pied Shieldbug
adult (l), nymphs (r)

Down Shieldbug

Cow-wheat Shieldbug

Forget-me-not Shieldbug



Scarab Shieldbug

Knobbed Shieldbug

Bishop's Mitre Shieldbug

Small Grass Shieldbug

Woundwort Shieldbug

New Forest Shieldbug

Hairy Shieldbug

Gorse Shieldbug

Red-legged Shieldbug

Crucifer Shieldbugs mating

Eurydema ornatum

Spiked Shieldbug

Bronze Shieldbug
adult (l), nymph (r)

Heather Shieldbug

Blue Shieldbug

Dock Bug
adult (l), nymph (r)

Rhombic Leatherbug

Dahlmann's Leatherbug

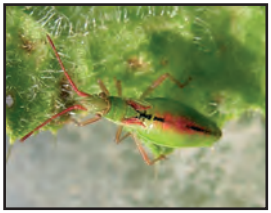
Slender-horned Leatherbug

Denticulate Leatherbug

Alydus calcaratus

Corizus hyoscyami

Chorosoma schillingi



Myrmus miriformis

Liorhyssus hyalinus

Stictopleurus abutilon

Stictopleurus punctatonervosus

Aeschyntelus maculatus

Rhopalus parumpunctatus

Rhopalus subrufus

Apahanus rolandri

Pinecone Bug nymph

Orsillus depressus

Black-shouldered Shieldbug

Fallen's Leatherbug

Nezara viridula

waste ground, roadsides, rough grassland, coastal cliffs and other dry or semi-bare habitats. Also occasionally found in woodland habitats. **Food sources:** Does live up to its name, being mainly confined to crucifers. In our area the usual food plants are Horse Radish *Armoracia rusticana*, Wild Radish *Raphanus raphanistrum* and Hedge Mustard *Sisymbrium officinale*. Also occasionally found on other crucifers such as Garlic Mustard *Alliaria petiolata* and, in the Bournemouth area Sea Radish *Raphanus raphanistrum ssp. maritimus***.** Has also been beaten from Hazel *Corylus*, swept from Water Pepper *Persicaria hydropiper* and Nettle *Urtica dioica* and also found on bare ground with no crucifers in the vicinity. The *Persicaria* contains similar peppery substances to some crucifers so this could be an alternative food plant in damp woodlands. **When:** Recorded April–November, but commonest in May and early June. **Identification:** 6.5 mm (1/4 inch). Fairly small and somewhat square-shaped, with a broad head. *Overall, an unmistakable shiny bluish-black or greenish-black with bright spots of pale yellow, bright red or orange.* The red and yellow spotted forms are equally common, but the intermediate orange spotted form is much less so. *Pronotum is black with a broad central pale or red stripe and pale or red edges; scutellum is almost entirely black except for a pale or red apex and outer edg; connexivum is banded black and red or pale.* There are also pale or red spots at the ends of the wing cases and the same colour along the outer edge of the wing cases. Legs and antennae are also banded black and pale. **Final instar nymph:** Rather small but very strikingly coloured. *Pronotum, scutellum and wing cases are black with bright yellowish to reddish outer edges; pronotum also shares the central pale stripe found in the adult*; legs and antennae are dark or black, *but the abdomen is bright yellow to orange with large black oval central warts and black spots along the margin.* **Some individual records:** Peartree Green (05/05/05), Lord's Hill & Aldermoor (30/08/05), Sea Road, Woolston (23/09/05), Boscombe Chine, Bournemouth (30/10/05), Rownhams (04/05/06), Home Covert, Nursling Street (11/05/06), Eling Church area (15/05/06), Knowle Hill, Fair Oak (26/05/06), Donkey Common, Bitterne (28/05/06), Testwood Lakes (07/06/06), Marchwood (30/7/06) and Rum Bridge, Totton (05/09/06). There were unusual records in holly litter at Sandy Balls, God's Hill (13/09/05) and beaten from hazel at Cocklydown Copse, Hounsdown (05/09/06).

[*Eurydema ornatum*]

National status: Unknown. Probably increasing. **Local status & distribution:** Uncommon on the coastal cliffs of Bournemouth, but not recorded any closer to Southampton. Also recorded in the Portland area of Dorset. Was found on wallflower in Ventnor, IoW, in 2006. **Habitat:** Coastal grassland and scrub on sea cliffs. **Food sources:** Only recorded on Sea Radish *Raphanus raphanistrum ssp. maritimus***.** **When:** Our records were mostly for May and June. **Identification:** 7–8 mm (slightly under 1/3 inch). *Even more striking than the Crucifer*

Shieldbug. Entirely very bright red (scarlet) and pitch black. Overall, the same shape as Crucifer Shieldbug but distinctly larger. Pronotum is black with scarlet margins; scutellum is also black but with scarlet edging; apex and wing cases are black with red towards the tips and a red marking in the middle. Connexivum is bright scarlet red and the legs and antennae mostly black. **Individual records:** Portman Ravine, Boscombe (07/06/05) and Boscombe Chine (23/05/06).

***Pentatomidae: Asopinae* (Carnivorous Shieldbugs)**

Spiked Shieldbug *Picromerus bidens* ⊗

National status: Common. **Local status & distribution:** Uncommon, but possibly overlooked. Mostly recorded in the woodland and heathlands of the New Forest and on the high ground on the northern and eastern boundaries of Southampton. **Habitat:** Two distinct habitats: heathland or scrubby clearings or rides in woodland. **Food sources/plant associates:** Carnivorous, usually found on or under either Bramble *Rubus fruticosus* or Common Heather *Calluna vulgaris*. Has been seen nectaring on Marsh Thistle *Cirsium palustre* so perhaps not entirely carnivorous? **When:** This species has a late season and can be found as an adult early August–early December. **Identification:** 12 mm (1/2 inch). *Large, dark brown, with reddish legs and superficially similar to Red-legged Shieldbug. but the sides of the pronotum are extended in an acute thorn-like appendage.* Pronotum is dark brown with a row of yellowish or reddish warts; scutellum is dark brown with yellowish or reddish warts in the upper corners; connexivum is brown and only faintly banded darker colour; legs and antennae are reddish-brown and there is a small spine on the femur of the forelegs. **Individual records:** Hannay Rise, Thornhill (24/08/96), Netley Common (20/08/05), Near Cromarty Pond, Lord's Hill (09/10/05 & 21/11/05), Southampton Common—north of Ornamental Lake (13/08/06), Hut Wood, Eastleigh (15/08/06), Holiday's Hill Inclosure, New Forest (19/08/06), Bartley Water Valley, Totton (05/09/06) and Lord's Wood (15/10/06).

Bronze Shieldbug *Troilus luridus* o

National status: Common. **Local status & distribution:** Locally very common in the wooded areas on the northern and eastern edges of Southampton. Also found commonly in the Marchwood and Totton areas. Apparently absent from the coastal strip either side of Southampton Water/Test estuary. 12th commonest species in our survey. **Habitat:** Very much a woodland species. Found in conifer plantations, broad-leaf woodland and other habitats with plenty of trees. **Food sources/plant associates:** Carnivorous, found on a wide variety of trees and shrubs including conifers such as Larch *Larix sp.* and Douglas Fir *Pseudotsuga.* Found most commonly on broad-leaf trees such as Hazel *Corylus*, Holly *Ilex sp.* and Oak *Quercus robur.* **When:** This species has a long season March–November, with a strong peak in early April and another in late August/early September. **Identification:**

11 mm (slightly under 1/2 inch). *Fairly large, 'typical' shape and a distinct dark purplish or coppery grey colour. Pronotum is extended on both sides and bluntly pointed, not so truncate as in Red-legged Shieldbug, but not so pointed as Spiked Shieldbug.* Pronotum is dark coppery-grey with a row of indistinct pale warts; scutellum is also dark coppery-grey with two small pale warts in the upper corners; *connexivum is strikingly banded black and cream*; legs and sternum are grey with a dense black 'peppering'; *the antennae are dark but with a striking cream third segment.* **Final instar nymph:** *Quite easy to recognise due to the bronzy appearance of the dark areas, the pale margins at the front of the pronotum and the pale third segment of the antennae.* Top of the abdomen is yellowish to reddish with dark purplish to green spots around the edge and in the middle. Pronotum, scutellum and wing cases are mostly a rather shiny purplish, coppery or greenish black. **42 records on our database by 10th November 2006.**

Heather Shieldbug *Rhacognathus punctatus* ⊗

National status: Local. **Local status & distribution:** Rare in our area, but there is a colony in Lord's Wood and it is known to occur in the eastern part of the New Forest. **Habitat:** Heathland or dry habitats with heather. **Food sources/plant associates:** Carnivorous. Mostly recorded on Bell Heather *Erica cinerea* or Common Heather *Calluna vulgaris*. **When:** This species has an early season with records May–July. **Identification:** 7.5 mm (1/3 inch). Fairly small blackish brown or very dark brown, with a rather square abdomen but *a distinctive long, triangular pronotum (almost as long as the abdomen)*. The large pronotum and the broad scutellum are very dark brown with a faint, pale central line; connexivum is dark brown with very faint banding and the antennae are black. *Legs are mostly dark brown, but there is a very distinct pale reddish band of colour in the middle section of the tibia of both the hind and middle legs.* **Individual records:** Town Common, north of Christchurch (23/06/05), Matley Bog, New Forest (13/05/06) and Lord's Wood Plantation (19/07/06).

Blue Shieldbug *Zicrona caerulea* ⊗☽

Synonym: Blue Bug

National status: Local. **Local status & distribution:** Apparently uncommon, but elusive and possibly overlooked. Most of our Southampton records are from the Totton/Lower Test Valley. Also occurs in the sandy areas of the New Forest and on the chalk near Winchester. **Habitat:** A wide range of habitat. **Food sources/plant associates:** Most often seen on the ground, but has been swept from Willowherbs *Epilobium sp*. and Nettle *Urtica dioica*. **When:** Could be active in any month of the year, but most of our records are in spring, March–May. **Identification:** 6.5 mm (1/4 inch). *Small, shiny black, of 'typical' shape, but with a striking bluish or greenish metallic sheen all over.* Every part of the body is the same colour including the legs and antennae. Connexivum is weakly banded paler

colour. *Only likely to be confused with one of the burrowing bugs (Cynidae) but has a narrow triangular head, a triangular pronotum and no bristles on the legs*. **Individual records:** Near Little Testwood Lake (18/09/05), Hatchet Pond—north side, New Forest (09/05/06), Redbridge Lane, Nursling (11/05/06) and Magdalen North Down (23/09/06), attracted to a UV moth lamp.

Coreidae

Box Bug *Gonocerus acuteangulatus* o

National status: Unknown. Increasing. **Local status & distribution:** Locally common,especially in suburban areas. There appears a concentration of records in the Bassett to Highfield area and in the wooded suburbs east of the Itchen. However, it also occurs in very built-up areas, such as Totton, Millbrook and Eastleigh. **Habitat:** Usual habitats are woodland edge, scrub, hedgerows, shrubberies and parkland with scattered trees. **Food sources:** Has a strong taste for berries and other soft fruits. Most often recorded on Hawthorn *Crataegus* and can often be found on Dogwood *Cornus sanguinea*, Japanese Privet *Ligustrum ovalifolium*, Rose (hips) *Rosa sp.*, Elder *Sambucus nigra* and Yew *Taxus baccata*. We have also found Box Bug on Cypress *Chamaecyparis sp*., Common Oak *Quercus robur*, and Evergreen Oak *Quercus ilex* and even, on one occasion, Box *Buxus sempervirens.* **When:** Seen in small numbers in the spring but the main season is late July–September. **Identification:** 11.5 mm (slightly under 1/2 inch). *Quite large, but is of a distinctive rather delicate build with a narrow 'guitar-shaped' body and with rather pointed lateral projections on the pronotum. Pronotum, scutellum and wing cases are entirely pale yellowish grey-brown with very fine dark maculation.* Pronotum tends to be a little darker and slightly redder than scutellum and wing cases. Connexivum is fairly narrow and brown with thin pale yellowish bands. *Legs are quite bright olive green to yellowish-brown and the femur of the hind leg is very long i.e. longer than the pronotum is wide.* Antennae are brown, but the base of the third and fourth segments are paler. Abdomen is pale green on the underside. **Final instar nymph:** *Very easy to recognise, with distinctive 'violin' or 'guitar' shape with narrow head, narrow triangular scutellum and elliptical abdomen*. Pronotum, scutellum and wing cases are dark olive-brown; abdomen is bright green or yellowish-green with a yellowish margin; legs are bright yellow-green. **Individual records:** Peartree Green (23/08/05), Netley Grange Fields (24/08/05), Monk's Brook Greenway (06/09/05), Near Testwood Centre (01/04/06), Thornhill (28/05/06), Daisy Dip, Bassett Green (03/08/06), Knowle Hill, Fair Oak (07/08/06), Swanmore (12/08/06), Southampton Sport's Centre (13/08/06), Freemantle Railway Footpath (25/08/06), Southampton Common—Cutthorn (10/09/06), Deep Dene, Bitterne Park (11/09/06) and near Zionshill Copse, Chandler's Ford (18/09/06).

Dock Bug *Coreus marginatus* •☽
Synonym: Blackberry Bug
National status: Common. **Local status & distribution:** Extremely common and widespread. Particularly abundant in built-up or agricultural areas. Commonest species in our survey. **Habitat:** Everywhere, but scarcest in dense woodland and commonest in roadsides, waste ground, near the coast and in ruderal habitats. **Food sources:** Found on shrubs and trees as well as herbaceous plants, but not grasses. The number of herbaceous plant associates is too long to list in this book but the commonest associate is Broad-leaved Dock *Rumex obtusifolius*. Also commonly found on Orache *Atriplex sp.* (near the coast), Knapweed *Centaurea nigra*, Rosebay Willowherb *Chamerion angustifolium*, Willowherb *Epilobium sp.* and Nettle *Urtica dioica*. Dock Bug is also associated with small trees and shrubs especially berry-producing species and including Birch *Betula sp.,* Dogwood *Cornus sp*., Hawthorn *Crataegus*, Japanese Honeysuckle *Lonicera japonica* and, very commonly, Bramble *Rubus fruticosus*. **When:** Active every month March–November, but distinct peaks in May and August. **Identification:** Very variable 9–14 mm (about 1/3 to 1/2 inch), usually about 12–13 mm. Quite distinctive, oblong, brown, with a short, broad pronotum, broad connexivum and sturdy legs. *The top of the abdomen (under the wings) is bright orange-red and this shows when the bug is in flight.* Pronotum, scutellum and wing cases vary from pale beige to mid grey-brown through to dark reddish brown and are all finely 'peppered' with darker dots. Connexivum is brown and dull orange banded, but this feature varies in brightness. *The femurs of the legs are brown, but the tibiae and tarsi are reddish-orange. The first and fourth segments of the antennae are brown, but the second and third segments are quite bright red.* **Final instar nymph:** A curious creature with a rhomboidal (diamond-shaped) abdomen, a triangular pronotum and thick, over-sized antennae. Tends to be quite dark or deep reddish or greyish brown. Often present in large aggregations. **227 records on our database by 10th November 2006.**

[Rhombic Leatherbug *Syromastus rhombeus*]
National status: Local**. Local status & distribution:** Not recorded in the Southampton area, but known to occur as close as the eastern side of Gosport. **Habitat:** Open dry grassland and field edges close to the coast. **Food sources:** Not recorded in Hampshire, but known to occur on Black Mustard *Brassica nigra* in Sussex. **When:** Appears in May and June and then, for a second time, in September. **Identification:** 10 mm (2/5 inch). Superficially similar to Dock Bug, but is smaller and more delicate in build with a wide rhomboidal connexivum. *Connexivum is actually angled in the middle and is as wide as the resting membrane of the wings. In Dock Bug the connexivum is not angled and is no more than half the width of the membranes of the wing. Pronotum, scutellum and wing cases are a rather pale oatmeal, dark sandy or grey-brown colour and finely 'peppered' darker*. Pronotum

and the upper third of the wing cases are distinctly pale-edged. Connexivum is the same pale grey brown and darker on the edge. *Legs are unusually thin and reddish-brown, but the antennae have a darker fourth segment and a brown first segment.* **Individual records:** Priddy's Hard, Gosport (08/09/04 & 31/05/05).

[Dahlmann's Leatherbug *Spathocera dahlmanni*]
National status: Scarce—Notable (NA). **Local status & distribution:** A possible record for Southampton Old Cemetery not confirmed. Extensive searches in sandy areas with *Rumex* have failed to turn up this species. The closest sites known to us are at Hayling Island and Browndown, Gosport. **Habitat:** Dry heathland or coastal sandy grassland with some bare ground. **Food sources:** Found on, under or close to Sheep's Sorrel *Rumex acetosella*. **When:** Recorded in June (West Sussex) and July (Hayling Island). **Identification:** 5.5 mm (1/5 inch). *Small brown, distinctive 'bottle' shape.* Head is narrow; pronotum is triangular; the connexivum is relatively broad. *The rather short antennae are very distinctive, with very thick first and fourth segments. but thin second and third segments. Pronotum is dark grey-brown with distinctive broad cream lateral margins.* Small, almost black scutellum has two small pale spots on either side. Connexivum is dark brown, but rather faintly banded paler. Rather short legs are dark greyish and somewhat spotted and antennae are dull greyish with a blackish fourth segment. **Final instar nymph:** We have observed the final instar nymphs at Hayling Island. These were found to be a somewhat reddish pale sandy brown with lateral bands of darker colour on the abdomen. However, nymphs showed the same distinctive overall shape and antennae features as the adults. **Individual records:** Hayling Island—western end of South Beach (06/07/06).

Slender-horned Leatherbug *Ceraleptus lividus* ⊗
National status: Local. **Local status & distribution:** Uncommon and only found east of the Itchen. There are three known colonies. Probably colonising from the east. **Habitat:** Dry, open grasslands that are not heavily mown or grazed and that contain suitable food plants. Favours large areas of grassland habitat. **Food sources:** Seems to be associated with certain tall leguminous plants, such as Bird's-foot Trefoil *Lotus corniculatus*, Slender Bird's-foot Trefoil *Lotus glaber* and Red Clover *Trifolium pratense*. **When:** Recorded in June, late August and early September. **Identification:** 9.5 mm (2/5 inch). *Medium-sized, of a rather dull dark grey overall colour and quite a narrow, oblong shape.* Rather small pronotum and scutellum are uniform dark grey. *Wing cases are dark greyish with very fine darker 'peppering' and a distinctive thin white lateral margin above the connexivum.* Connexivum is quite smartly banded dark grey, paler grey and whitish. *Rather long legs are pale greyish, but the distinctive hind femur is darker towards the end and has a series (about four) small ventral teeth.* Antennae are dark, but there is a paler

reddish second segment. **Individual records:** Peartree Green (23/08/05), West Wood, Netley (27/08/05) and East of Marlhill Copse, West End (12/06/06).

Denticulate Leatherbug *Coriomerus denticulatus* ⊗
Synonym: Toothed Bug
National status: Common. **Local status & distribution:** Locally common, but with a complex distribution. It appears that this species is commonest east of the Itchen and it appears to be absent from the western half of Southampton and has also not been found in the Hythe to Marchwood area. **Habitat:** Dry open grasslands that are not heavily mown or grazed. Usually found on large areas of grassland or sunny south-facing slopes. Occasionally found in damper grassland or scrub. **Food sources:** Not known, but it is usually swept from unidentified grasses. Has also been found on Black Medick *Medicago lupulina* (a likely food plant) and Hedge Woundwort *Stachys sylvatica*. Also once beaten from Monterey Cypress *Cupressus macrocarpa.* **When:** Suddenly appears in early May and peaks in the same month. There is then a gradual decline in numbers, but it has been recorded as late as early October. **Identification:** 8 mm (1/3 inch). Another medium-sized brownish bug, very similar in general shape to the Slender-horned Leatherbug, but with larger and longer pronotum and thicker antennae. *Apart from the thick antennae the short bristles covering much of the insect especially the antennal segments, head and pronotum are very distinctive.* Pronotum is dark slightly reddish brown with pale lateral margins. Scutellum and wing cases are a deep, and rather dark pinkish brown. Also wing cases have a pale margin above the connexivum. Connexivum is pinkish brown and faintly banded darker. *Thick antennae are hairy, dark brown and have a large fourth segment. Legs are dark brown with pale reddish tibiae and there is a series of at least six short spines on the underside of the hind femur.* **Individual records:** Netley Grange Fields (28/05/03), Near Testwood Centre (26/09/04), Peartree Green (05/05/05), Swanwick Reserve (31/07/05), Hillier's Arboretum (10/05/06), Barbe Baker Avenue, West End (11/05/06), Thornhill (28/05/06), Pickwick Close, Totton—west (07/06/06), Luzborough Fields, North Baddesley (09/06/06), Allington Wood (25/07/06), Telegraph Woods, West End (25/07/06), West Quay—in shrubberies (25/08/06) and Green Lane, Old Netley (10/09/06).

Alydidae
***Alydus calcaratus* ⊗**
National status: Local. **Local status & distribution:** Uncommon, but possibly overlooked. There is a strong colony at Peartree Green and odd records from the Hythe area and central Eastleigh. **Habitat:** Dry grassland or heathland with bare areas**. Food sources:** Carnivorous, usually found running over bare ground. The only colony that we found was under Lucerne *Medicago sativa*, but this plant is

absent from the other two sites. **When:** Our records are in June, September and early October. **Identification:** 11–12 mm (slightly under 1/2 inch). Large bug, distinctive very dark colour, with long legs and a narrow oblong body. *The four most distinctive features are the eyes that protrude from the side of the head; the unique curved fourth segment of the antennae, the red patch on top of the abdomen (visible in flight); and the very long hind legs*. The whole of the bug, apart from the dorsal surface of the abdomen, is of a very dark grey-brown to black in colour. *The very distinctive hind legs are twice as long as all the other legs and the hind femur is armed with about four short, curved teeth (spurs).* **Final instar nymph:** We have not observed the nymph, but it is illustrated in Hawkins (2003) and closely resembles a large, long-legged black ant. **Individual records:** Forest Front Reserve, Hythe (24/06/06), Peartree Green (11/09/06) and Eastleigh Cemetery (15/10/06).

Rhopalidae

Corizus hyoscyami o

National status: Local and possibly a migrant. **Local status & distribution:** Apparently not recorded in the Southampton area until 2006, but with several records from widely scattered areas and from varied habitats. **Habitat:** Usually grassland and scrub but can occur in woodland, gardens or other habitats. **Food sources:** Probably associated with a wide range of species. We have found it on Oak *Quercus robur*, Marsh Thistle *Cirsium palustre* (nectaring on this), *Gladiolus sp*., and Restharrow *Ononis repens*. Also known to occur on Restharrow *Ononis* in Dorset. **When:** Can be seen July–September. However, we have recorded this species in June in Dorset. **Identification:** 9 mm (slightly over 1/3 inch). This striking bug seems to be the only bright red and black species likely to be seen in the Southampton area at present. It is large for a Rhopalid bug, but the oblong shape with narrow connexivum, hairiness and partly membranous wing cases are 'typical' of this family. *Front of the pronotum (and part of the head) is mostly bright red with a peppering of black dots and the rear of the pronotum is black. Scutellum is black with a red triangle in the middle and also red at the apex. Wing cases are scarlet red with a peppering of black dots and two large, black ovals in the middle. Connexivum is mostly bright red, but there may be some black banding.* Legs and antennae are black. **Individual records:** Magdalen Hill Down (23/07/06), Trott's Copse, Marchwood (30/07/06), School Road, Old Bursledon (04/08/06), Near Cromarty Pond, Lord's Hill (10/08/06), Holidays Hill Inclosure, New Forest (19/08/06), Gilkicker Common, Gosport (13/09/06) and Peartree Green (16/09/06).

Chorosoma schillingi ⊗

National status: Local. **Local status & distribution:** Common in coastal grassland between Hamble and Gosport, but no records inland or strictly within Southampton. **Habitat:** Dry coastal heathland with *Molinia* or dry, tall grassland on the coast. **Food sources:** This species seems to be associated with fine grasses such as Bent grass *Agrostis sp*., Fescues *Festuca sp.* and Purple Moor Grass *Molinia caerulea*. **When:** Can be seen in late summer i.e. August and September. **Identification:** 15 mm (3/5 inch). Distinctive long, slender, with long, slender legs and antennae, pale greenish-brown in colour. *The most distinctive feature, apart from its overall shape, is the short wings, which only extend 2/3 of the way down the length of the abdomen and the fact that the hind legs are about the length of the body.* Head, pronotum, scutellum, wings, wing cases, legs and antennae are all pale greyish-green but the abdomen is pale brown above with two dark longitudinal lines either side. **Individual records:** Calshot Marsh (21/08/05), Hook Spit, Warsash (25/08/05), Browndown Ranges, Gosport (13/09/06) and Gilkicker Common, Gosport (13/09/06).

Myrmus miriformis ⊗

National status: Common. **Local status & distribution:** Locally common and widespread. Mostly absent from the dampest areas such as the Test and Itchen Valleys and also not usually found where the ground is heavy clay. In Hampshire away from Southampton seems to be commonest near the coast. **Habitat:** Dry grassland that is not heavily grazed or mown. Mostly found on somewhat acidic grassland on light soils or near to the coast. **Food sources:** Associated with fine grasses such as Bent-grass *Agrostis sp*., Fescue *Festuca sp*., and where available, Purple Moor Grass *Molinia caerulea*. **When:** Does not seem to appear until mid-June, but continues to a peak in early September then abruptly vanishes. **Identification:** 7–9 mm (about 1/3 inch). Unmistakable long, narrow, of medium size and mainly greenish. *Length is about five times width; pronotum is square shaped; abdomen narrowly oblong or elliptica; wings are usually very short (brachypterous).* Head, pronotum and small scutellum are usually green and finely peppered with black dots. Legs and antennae are pinkish-green. *Top of the abdomen is green to peach coloured with a central longitudinal black stripe and connexivum is bright green. Wings are usually very short and pale green with about three bright pink veins.* **Individual records:** Royal Victoria Country Park, Netley (07/07/00), Southampton Old Cemetery (04/08/00), Peartree Green (23/08/05), West Wood, Netley (24/08/05), Forest Front Reserve, Hythe (24/06/06), Lord's Wood Plantation (19/07/06), Casbrook Common, north of Romsey (8/08/06), Hut Wood, Eastleigh (15/08/06), Green Lane, Old Netley (10/09/06), Browndown Ranges (13/09/06) and Gilkicker Common (13/09/06).

Difficult Rhopalidae

Key to 'difficult' Rhopalidae

1. The metapleuron (figure 1a) is brown with uniform puncturing and only a slight central furrow (figure 1b) and the apex of the scutellum is broad **Go to 2**
The metapleuron is reddish with sparser and deeper punctures in front of an obvious central furrow (figure 1c) and the apex of the scutellum is acute **Go to 3**

fig 1a

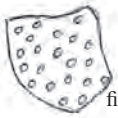


fig 1b

fig 1c

2. Each of the lateral furrows at the front of the pronotum end in a loop that encloses a tiny raised 'island' (figure 2a) ***Stictopleurus abutilon***
Each of the lateral furrows at the front of the pronotum end in a sickle-shaped curve that does not enclose a tiny raised 'island' (figure 2b) ***Stictopleurus punctatonervosus***

fig 2a

fig 2b

3. The forewings are long and exceed the rear of the abdomen by 1 mm ***Liorhyssus hyalinus***
The forewings are shorter but reach just to the tip of the abdomen **Go to 4**

4. The reddish, opaque hard part of the forewings extends over half the width of the wings so that only three cells are clearly visible (figure 3a) ***Aeschyntelus (Rhopalus) maculatus***
The reddish, opaque hard part of the forewings extends over a quarter the width of the wings so that six cells are clearly visible (figure 3b) **Go to 5**

5. Connexivum boldly banded black and white and the pale apex of the scutellum is minutely notched ***Rhopalus subrufus***
Connexivum almost uniform reddish and the scutellum red at tip and not notched **Go to 6**

6. Veins on forewing clearly spotted black ***Rhopalus parumpunctatus***
Veins on forewing not spotted black ***Rhopalus rufus*** (not recorded in our survey)

fig 3a

fig 3b

Liorhyssus hyalinus ⊗

National status: Suspected migrant, possibly colonising. **Local status & distribution:** Apparently new to the Southampton area in 2006. There appears to be a strong colony in the middle of Totton and there is one record for a site north of Romsey. **Habitat:** Seems to be associated with dry areas of 'waste ground' with bare areas and small herbaceous plants. **Food sources:** Not enough information available to establish any possible food plant. The single record was swept off a leguminous plant called Goat's Rue *Galega officinalis*. The Totton colony was found on semi-bare ground with Stork's-bill *Erodium cicutarium*, Knotweed *Polygonum aviculare* and Wild Radish *Raphanus raphanistrum.* **When:** Known to be active in August and September. **Identification:** 6–7 mm (slightly over 1/4 inch). *Can be distinguished from all other similar Rhopalidae by the fact that the wing membrane extends beyond the tip of the abdomen by one third of its length (about 1 mm)*. Pronotum and scutellum are orange-reddish with a dark central line. Pronotum has a furrow across the front which is somewhat thickened at both ends. *Scutellum is somewhat darker than pronotum and it has a distinct pale apex. The membranous part of the wing cases has conspicuous red veins* and connexivum is reddish with faint darker bands. Legs are plain and reddish. Antennae show darker colour towards the tip of the fourth segment. This insect varies a lot in the brightness of colour. **Individual records:** Casbrook Common, north of Romsey (08/08/06) and by A35 east of Rum Bridge, Totton (05/09/06).

Stictopleurus abutilon ⊗

National status: Unknown. Increasing. **Local status & distribution:** Apparently not recorded in the Southampton area prior to 2006. Appears to be locally common in various areas, mainly Lord's Wood, Marchwood area and around Sholing and Thornhill. **Habitat:** Dry or damp grassland in open areas and usually on light gravely soils. More occasionally found in areas of heavy clay soil. **Food sources:** Seems to be strongly associated with plants of the *Asteraceae* family. We have found it on Yarrow *Achillea millefolium*, Knapweed *Centaurea nigra*, Plough-man's Spikenard *Inula conyzae* (on the chalk), Fleabane *Pulicaria dysenterica* and Mayweed *Tripleurospermum inodorum*. We have also swept it from fine grasses, such as *Agrostis* and *Festuca* where the above were all apparently absent. **When:** Recorded May–October, but commonest July–early September. **Identification:** 7–8.5 mm (about 1/3 inch). *Can be distinguished from similar species by the very broad 'bulbous' apex of the scutellum combined with the shape of the groove across the front of the pronotum.* Head, pronotum and scutellum are greenish-brown and faintly striped darker with a faint pale central line. Veins on the wing membranes

are rather faintly spotted black; connexivum is strongly banded orange-brown and black; legs and antennae are dark. Smaller individuals (possibly males) tend to be darker and duller or more greyish. **Individual records:** Old Winchester Hill (26/08/05), Donkey Common, Bitterne (28/05/06), Muddy Bottom Allotment, Sholing (21/07/06), Magdalen Hill Down (23/07/06), Veal's Farm and Trott's Copse, Marchwood (30/07/06), Casbrook Common, north of Romsey (08/08/06), Gilkicker Common (13/09/06), Cullwood, New Milton (19/09/06) and Lord's Wood Plantation (15/10/06).

Stictopleurus punctatonervosus ⊗

National status: Unknown. Increasing. **Local status & distribution:** No records in the vicinity of Southampton prior to 2006, but now this species appears to be locally common in the Lower Itchen Valley and around West End. Also recorded in other areas where the ground is heavy clay such as Marchwood, east of North Baddesley and south east of Botley (Whiteley). There are also records for south-east Hampshire dating back to 2004. **Habitat:** Usually damp grassland with a lot of the suitable food plant present in areas of heavy clay soils. Most often in the corners of clay meadows, damp fields or weedy woodland rides. **Food sources:** Almost exclusively associated with patches of Creeping Thistle *Cirsium vulgare* or Fleabane *Pulicaria dysenterica*. **When:** Appears to have a late season with records July–early October. **Identification:** 7–8.5 mm (about 1/3 inch). *Can be distinguished from similar species by the broad and blunt apex of the scutellum combined with the shape of the groove across the front of the pronotum.* Head, pronotum and scutellum are medium to dark greyish-brown to almost black with no distinct features. The veins on the wing membranes are strongly spotted black. Connexivum is black with small and mostly faint orange spots and the legs and antennae are dark or black. We don't know how different the genders are, as we have not seen this species copulating. **Individual records:** Allington Wood (25/07/06), Dibden Bay (30/07/06), Great Covert, North Baddesley (18/09/06), Hordle Cliff (19/09/06), Chickenhall Lane, Bishopstoke (9/10/06) and north east of Southampton (Eastleigh) Airport (09/10/06).

Aeschyntelus (= Rhopalus) maculatus ⊗

National status: Scarce—Notable (Nb). **Local status & distribution:** Rare and only known in one locality in the east of Lord's Wood. **Habitat:** Damp grassland and marsh with *Juncus* rushes according to Hawkins (2003), but we have swept this bug from comparatively dry *molinia* grassland amongst heather. **Food sources:** Unknown, but possibly Tormentil *Potentilla erecta* (Hawkins, 2003).This plant is present within about 20 metres of the site. **When:** Appears in mid-summer and continues to October. **Identification:** 6–6.5 mm (1/4 inch). *Can be distinguished from similar species by the fact that there are three translucent cells in the*

forewings as opposed to the normal five. Furthermore there are four or five rows of black spots on the underside of the abdomen (the sternum) as opposed to less than three rows. The upper side of the abdomen is pale in the centre. Most of this bug is reddish-brown or pale brown in colour with fine black peppering. Connexivum is reddish-orange usually with thin black bands. **Individual records:** Lord's Wood—eastern firebreak (02/06/06 & 15/10/06) only.

Rhopalus parumpunctatus ⊗

National status: Local. **Local status & distribution:** Uncommon, but possibly overlooked. One strong colony near North Baddesley and also found at two sites on the eastern edge of Southampton. **Habitat:** Dry heathland and acidic grassland. This includes small areas in woodland rides and clearings. **Food sources:** Usually found on Common Heather *Calluna vulgaris*. Also swept from other plants in the vicinity of heather, including Wavy Hair Grass *Deschampsia flexuosa*, Tormentil *Potentilla erecta* and Western Gorse *Ulex gallii*. **When:** Mainly appears in August and September. There is also one April record. **Identification:** 7 mm (slightly over 1/4 inch). *The hardened part of the forewings does not extend as far as in R. maculatus, five translucent cells are visible and the top of the abdomen is black in the centre.* Whole bug is dull reddish or orange-brown with some darker areas on pronotum and scutellum. *Scutellum is the same colour throughout i.e. not pale at the tip. The veins on the wing membrane are red throughout their length. Connexivum is mostly plain and usually quite bright red.* Legs and the antennae are reddish but spotted black. **Individual records:** Netley Common (28/08/05), Old Bursledon Nature Haven (27/04/06) and Great Covert, North Baddesley (18/09/06).

Rhopalus subrufus o

National status: Local**. Local status & distribution:** Common and widespread. Scarce only in the very built-up area between Totton and Southampton city centre. 11th commonest species in our survey and the commonest Rhopalid bug. **Habitat:** Usually found in woodland rides and clearings, roadsides, scrub and dry grasslands of all kinds. **Food sources:** Usually associated with *Hypericum* species, such as Common St John's-wort *H. perforatum*, Slender St John's-wort *H. pulchrum* or labiates that grow with the latter, such as Wood Sage *Teucrium scorodonia***.** In the spring can associate with early flowering labiates, such as Ground Ivy *Glechoma hederacea* and White Dead Nettle *Lamium album*, so it might be associated with the flowers. It is also been recorded breeding on Lemon Balm *Melissa offinalis* in a Gosport garden. Occasionally swept off other plants, such as Bird's-foot Trefoil *Lotus sp.* A curious dark variant has been beaten from Cypress *Chamaecyparis sp.* and swept from Heather *Calluna vulgaris* and Tormentil *Potentilla erecta*. In the latter case this has been in association with *R. parumpunctatus*. **When:** Active from March to at least early October but there are distinct peaks in early May and again

in August and September. **Identification:** 7.5 mm (almost 1/4 inch). Scutellum is acute at the tip. *The hardened part of the forewings does not extend as far as in R. maculatus, five translucent cells are visible and the top of the abdomen is black in the centre. The usual form has a reddish-orange head, pronotum and scutellum with some darker markings and these contrasts with the silvery-grey upper half of the forewings, which have veins starting black-spotted and then red towards the end.* However, there is a dull, dark grey-brown form with dull forewings and a less striking connexivum (the dark variant). *In either form there is a pale tip to the scutellum and a banded connexivum, which is not reddish.* Legs and the antennae are reddish but spotted black. **Individual records (of dark variant only):** Chilworth Manor Gardens (30/04/06), Daisy Dip, Bassett Green (03/08/06) and Great Covert, North Baddesley (18/09/06). There are many records of typical *Rhopalus subrufus*. **54 records on our database by 10th November 2006.**

Lygaeidae

Aphanus rolandri ⊗

National status: Unknown. **Local status & distribution:** Two known sites near Southampton, Nightingale Wood and recent reports at Southampton Common. However, there is evidence that it may be very locally common in the chalky areas inland. **Habitat:** Dry grasslands or the edges or arable fields in open, sunny locations. Generally associated with sandy or chalky soils. **Food sources:** Associated food plants not recorded. **When:** Recorded May–August. **Identification:** 7 mm (slightly over 1/4 inch). Medium-sized, narrowly ovate, black, with a small head and rather long antennae. *The whole insect, including legs and antennae, is black, except for a yellow, orange or red diamond shaped spot clearly visible at the base of the wing membranes.* **Individual records:** Magdalen Hill Down, east of Winchester (22/05/98), Upper Wootton, near Basingstoke (28/07/06) and Nightingale Wood (07/08/06).

Pinecone Bug *Gastrodes grossipes* •

Probable national status: Common. **Local status & distribution:** Common in wooded areas with Pine trees particularly around Hythe, on Southampton Common and on the high ground to the north and east of the city such as Chilworth, Bassett and Thornhill. **Habitat:** Coniferous woodland and plantations, parks, gardens and cemeteries. **Food sources:** Associated with the cones of conifers, mostly Scot's Pine *Pinus sylvatica*, but also Black pine *Pinus nigra*, Monterey Pine *Pinus radiata*, Larch *Larix sp.* and Cypress *Chamaecyparis sp*. Once beaten off Small-leaved Elm *Ulmus minor* well away from any conifers. **When:** Recorded April–November, but with no definite peaks. **Identification:** 6–7 mm (about 1/4 inch). *Medium-sized, distinctly flattened smoothly oval shaped, with a triangular pronotum.* Chestnut (reddish-brown) and black. Head, scutellum and front half of pronotum are black. Wing cases and the rear half of the pronotum are chestnut

brown with a fine speckling of black dots. *Legs are dark reddish and the front femur is very distinctive, being thickened with a stout ventral tooth.* Antennae are dark, but the first segment is paler. There are two pale elongated 'eye' spots on the top of the abdomen and these are visible in the nymphs. **Note:** There is another species associated with Norway Spruce *Picea abies* (and possibly other conifers) known as the **Spruce Cone Bug *Gastrodes abietum***, which is supposed to be quite common, so we may have overlooked it. It is paler brown than *G. grossipes* with a dark lateral edge to the pronotum and the first segment of the antennae exceeds the head in length. **Some individual records:** Peewit Hill, Bursledon (02/04/05), Forest Front Reserve, Hythe (11/04/05), Dibden Bay—south end (30/08/05), Chilworth Manor (23/06/06), Lord's Wood Plantation (01/08/06), Southampton Common—Cutthorn (10/09/06), Peartree Green (11/09/06), North Baddesley (18/09/06) and Hoglands Park, Southampton (29/10/06).

Orsillus depressus o

National status: Unknown, but probably increasing. Formerly mainly found in Spain and Portugal, it is spreading north and east in Europe. First recorded in Surrey in 1990 (Hawkins, 2003) and more recently found in Bedfordshire (Nau, 2004). **Local status & distribution:** Obviously uncommon at the moment, but probably increasing. Our record was in the central Southampton parks, so it could be widespread in urban and suburban areas. **Potential habitat:** Coniferous woodland and plantations, parks, gardens and cemeteries. **Food sources:** Seed-eating, associated with conifers of the Cupressaceae family, especially Lawson's Cypress *Chamaecyparis lawsoniana* but also other *Chamaecyparis* species plus *Cupressus sp*. and *Juniperus sp.* However, we found it by beating Hornbeam *Carpinus betulus*. **When:** Recorded in our survey in late October. **Identification:** 6–7 mm (1/4 inch). Dark, dull reddish-brown, with a distinctive pale and dark banded connexivum. There is faint spotting on the opaque wings, a pale spot at the apex of the scutellum and a dark central line on the pronotum. Legs are dull in colour but the femora of the foreleg have two small, but distinct, ventral spines. The fourth segment of the antennae is thicker than the others. The overall appearance (size and shape) is like a dull *Rhopalus sp.* with opaque wings and with distinct stink gland openings visible from the sides. **Individual records:** Palmerston Park, Southampton (29/10/06).

Phil Budd has recorded at least 17 other species of the Lygaeidae within 30 miles of Southampton including: *Chilacis typhae* (Reed Mace Bug),

Drymus brunneus, *Drymus sylvaticus*, *Henestaris laticeps*, *Heterogaster urticae* (Nettle Groundbug), *Ischnocoris angustulus*, *Ischnodemus sabuleti*, (European Chinchbug), *Kleidocerys resedae*, *Kleidocerys truncatulus*, *Macrodema micropterum*, *Peritrechus lundi*, *Plinthisus brevipennis*, *Rhyparochromus pini*, *Scolopostethus decoratus*, *Scolopostethus thomsoni*, *Taphropeltus contractus* and *Trapezonotus arenarius.* Most of these species are ground-living bugs and the majority are associated with heathland, sparsely vegetated areas or coastal habitats. In particular, *Drymus sylvaticus* and *Kleidocerys resedae* are very common in woodland, in leaf litter and the foliage of certain trees, respectively. The three species featured are of particular interest as they are either colonising the Southampton area or are particularly distinctive. Of the related family **Berytinidae** we have local records for *Neides tipularius*, *Gampsocoris punctipes* and *Metatropis rufescens.* These are all slender bugs and the latter is abundant amongst Enchanter's Nightshade *Circaea lutetiana* in woodland.

Reduviidae

[Heath Assassin Bug *Coranus subapterus*]

Probable national status: Local. **Local status & distribution:** Not known from the vicinity of Southampton, but has been recorded from the Browndown area near to Gosport. **Habitat:** Dry heathland, with bare areas of sand or sandy gravel. **Food sources:** Carnivorous, always found in the vicinity of Bell Heather *Erica cinerea*, Common Heather *Calluna vulgaris* and Purple Moor Grass *Molinia caerulea*. **When:** Only recorded in September so far. **Identification:** 11 mm (slightly under 1/2 inch). Fairly large, very hairy and dark grey, predatory, always short-winged (i.e. brachypterous). *Differs from any other bug in this book in that it has a curved rostrum and also the head becomes narrower behind the rather prominent eyes.* Head, pronotum and scutellum are dark brownish-grey or dark grey. *Pronotum is longer than wide and has a crease across the middle of it.* Abdomen is ovate to elliptical and dark grey with paler margins to the segments *and a row of dark spots either side of the centre line.* Antennae are dark and slender and the very hairy legs are greyish with darker spots. Very camouflaged on sandy heathland soil and heather litter. **Individual records**: Silchester Common, north Hampshire (18/09/05) and Browndown Ranges, Gosport (13/09/06).

Ten other members of the Reduviidae and the closely related damsel bugs Nabidae have been recorded by Phil Budd in the Southampton to Christchurch area: The only other member of the *Reduviidae* is the common and distinctive 'stilt-bug' *Empicoris vagabundus.* Of the *Nabidae* most species recorded in the Southampton area are commonly encountered predatory bugs and often found by beating or sweeping. They are *Dolichonabis limbatus* (Marsh Damsel Bug), *Himacerus apterus* (Tree Damsel Bug), *Himacerus mirmicoides* (Ant Damsel

Bug), *Nabis ericetorum* (Heath Damsel Bug), *Nabis ferus* (Field Damsel Bug), *Nabis flavomarginatus* (Broad Damsel Bug), *Nabis pseudoferus*, *Nabis rugosus* (Common Damsel Bug) and *Stalia major* (Grey Damsel Bug).

Other species not yet recorded in the Southampton area

Our intensive recording effort has resulted in the discovery of almost all of the likely species of shieldbugs, and related Hemiptera, in the Southampton area. We have almost achieved full coverage for three families—*Acanthosomatidae*, *Cynidae* and *Rhopalidae.* There is always a chance of accidental imports or introductions or of rare migrants, but there are several species that are perhaps 'more likely' to occur but which we have not yet tracked down. These include members of the *Scutelleridae*, *Pentatomidae*, *Coreidae*, *Pyrrhocoridae* and *Stenocephalidae* and are listed below.

Scutellaridae

***Eurygaster maura* (a tortoise bug):** Extremely similar to *Eurygaster testudinaria* and very difficult to distinguish from it except by resorting to examining the details of the genitalia. Although it has been recorded in southern England it is probably unlikely to occur close to Southampton as it is a species associated with chalk grassland. We have not checked any of our records of *E. testudinaria* on the chalk.

***Odontoscelis lineola* (Lesser-streaked shieldbug):** A rare and mainly coastal species. However, there are three recent Surrey records in sandy areas with Stork's-bill *Erodium cicutarium* and Hare's-foot Clover *Trifolium arvense* (Hawkins, 2003). There are few very sandy areas around Southampton, but there are places with plenty of *Erodium* and *Trifolium arvense* and with bare areas, so this bug could possibly be overlooked. It is small, only 5mm in length and is greenish-brown, hairy and of an unusual oval shape.

Pentatomidae

Carpocoris purpureipennis* (Black-shouldered Shieldbug):** Andy Collins found a specimen of what turned out to be this species at Portland, Dorset in October 2005, the second British record since 1926. It could colonise from the Continent or remain as just a rare vagrant. It resembles a rather reddish and hairless Hairy Shieldbug *Dolycoris baccarum* with bluntly pointed blackish shoulders to the pronotum. ***Graphosoma italicum: This striking bug with red and black longitudinal bands, and also a red and black connexivum, is associated with Umbelliferous plants such as carrot *Daucus carota*. It is common on the continent and widespread in France. It has not been recorded in Britain, but could turn up at any time and is hardly likely to be missed, if it does appear! ***Holcostethus vernalis* (Vernal Shieldbug):** Medium-sized, resembling a small, grey-coloured Green Shieldbug *Palomena prasina*. However, it has a banded connexivum and bright red bases to

the antennae. This species is widespread on the continent and occurs in northern France. It temporarily colonised east Kent in the 1950s and was recorded in Dorset in 1991 (Hawkins, 2003). It tends to be most commonly seen in March and April and could possibly be established in small numbers somewhere. ***Nezara viridula:*** Very large, about the size of Hawthorn Shieldbug *Acanthosoma haemorrhoidale*, but is otherwise most similar to the Green Shieldbug *Palomena prasina*. However, it is much brighter green than the latter with no black punctuation. Also there is sometimes a distinctive creamy band along the edge of the head and pronotum. (See colour page 4.) This species is very common in southern Europe and is sometimes imported with pot plants. ***Sciocoris curtisans*** **(Sand-runner Shieldbug):** Small, brown (5 mm long), with a very circular abdomen and a broad head and scutellum. Associated with sandy and chalky areas in southern England. We should find it somewhere in southern Hampshire but we haven't tracked it down yet.

Coreidae

Arenocoris falleni **(Fallen's Leatherbug):** Small, greyish. When viewed closely, has a most attractive cryptic pattern. It has a broad head and pronotum but its main distinguishing feature is an inverted pale 'V' mark on the pronotum. Another species associated with Stork's-bill *Erodium cicutarium* on sandy ground and was found at Braunton Burrows sand dunes in Devon by Phil Budd in July 2006. However, we have not recorded it in the Southampton area, but it should occur on the Hampshire coast. A slightly larger and darker species *Arenocoris waltli* occurs in Norfolk and Suffolk, but is probably unlikely to turn up in our area. ***Bathysolen nubilus*** **(Cryptic Leatherbug):** Another small, greyish-brown species and is also cryptically patterned. A very nondescript bug, very similar to the Fallen's Leatherbug but has a pale edge to the pronotum instead of a pale 'V' mark and there is a small spine on the hind femorae. Has a very Continental distribution and appears to be mainly found in Kent. It lives on the ground under Black Medick *Medicago lupulina.* We have not found this species in our area, but we do have other eastern species, such as Slender-horned Leatherbug, and there is plenty of *Medicago* to choose from so maybe we haven't looked hard enough! ***Enoplops scapha*** **(Boat Bug): L**arge, dark grey, resembling Dock Bug *Coreus* in general appearance. It is smaller than Dock Bug (11 mm) with semi-circular lateral edges to the pronotum, white spots on the otherwise grey connexivum and some white edging to the front of the pronotum. Occurs in dry, sheltered locations on the south coast where there are abundant Composites, especially Mayweeds *Tripleurospermum sp*. However, we have searched for this bug amongst composites in Dorset, Hampshire and the Isle of Wight and have not encountered it as yet. (See colour page 4.)

Pyrrhocoridae

***Pyrrhocoris apterus* (Fire Bug):** Very striking, about 9 mm long, black and red. Both the pronotum and the abdomen are black with red borders and whilst the scutellum is black the wing cases are red with a large round black spot. Usually unable to fly, but migratory long-winged forms may occur. Very common in southern Europe, but there is only one permanent British colony on an islet off the Devon coast. However, there are recent records for Dorset and Surrey. Associated with Lime trees *Tilia sp.* and Mallows *Malva sp.* and could occur at any time.

Rhopalidae

***Rhopalus rufus*:** Very similar to *Rhopalus parumpunctatus*, but is smaller and redder and also differs in the lack of black spotting on the forewing veins and there are no black markings on the connexivum. A rare (Red Data Book) species associated with sandy wasteland and dry heaths, especially where there is Sand Spurrey *Spergularia rubra*. Given that several other species of Rhopalid are on the increase and also the food plant is quite common in parts of the Southampton area, it may be worth searching for this species in the future. We have recently obtained information suggestinng that it occurs in the Wickham area of sourth-east Hampshire.

Stenocephalidae

Dicranocephalus sp.* (Spurge Bugs):** Since these two bugs are very similar and their respective habitats occur in south Hampshire they are both treated together. However, we have found neither of them. Both ***Dicranocephalus agilis and ***D. medius*** are large dark chocolate-brown bugs with narrow heads and slender antennae. Antennae are banded yellow; also there are small yellow spots on the connexivum and yellow on the legs especially the upper part of the mid and hind tibiae. They are very hard to distinguish from each other but *D. agilis* is larger (13 mm) and *D. medius* (about 10 mm long). In *D. agilis* there are two yellow bands on the second antennal segment as opposed to one central yellow band in *D. medius*. Fortunately they live in different habitats. In Hampshire *D. medius* is mostly likely to be found in the woodland areas where there are clearings containing Wood Spurge *Euphorbia amygdaloides*. However, there are unlikely to be any colonies of *D. agilis* closer to Southampton than Hayling Island as this species requires sandy coastal areas with Sea Spurge *Euphorbia paralias*.

Insects that Can be Confused with Shieldbugs and Related Species

Shieldbugs and the other related Hemiptera covered in this book can be safely identified as insects on the basis of the three pairs of legs and the three body segments—head, thorax and abdomen. Hemipterans are very different in appearance from most other insects found in this country except perhaps for Dictyoptera (Cockroaches) and Coleoptera (Beetles). We have three native cockroaches in

southern England; all belonging to the genus *Ectobius* and any of these may be found when searching for shieldbugs. However, cockroaches have either no wings or totally membranous ones, reflexed antennae that are longer than the body and their pronotum covers their heads. Coleoptera (Beetles) could cause confusion with certain species. For example, the Green Shieldbug *Palomena prasina* is superficially similar to some Chrysomelid leaf beetles, especially the Tortoise Beetles *Cassida sp.* The burrowing shieldbugs of the family *Cynidae* are also rather beetle-like. Beetles often appear to have a triangular plate resembling a scutellum, but usually very small in size. There is no real excuse for confusing a beetle with a bug, however, since beetles have biting or chewing mouthparts (true jaws), no rostrum, no membranous tips to their protective forewings (known as elytrae) and the elytrae meet at a central line (suture) along most of their length.

Shieldbugs proper are easily distinguished from other Hemiptera both by their general appearance and also by their five segmented antennae. Of related families the predatory damsel and assassin bugs (*Nabidae* and *Reduviidae*, respectively) have distinctively curved rostrums. There are more problems in distinguishing the other families (*Berytinidae*, *Lygaeidae*, *Stenocephalidae*, *Coreidae* and *Rhopalidae*) from any of the other 1,700 species of Hemiptera found in Britain.

Bugs in any of the above seven families can be distinguished from other bugs by the fact that they all show every one of the following five features:

(a) The presence of ocelli (false or simple eyes) next to the true compound eyes.
(b) The 4-segmented straight rostrum.
(c) The rostrum held flat below the body.
(d) The absence of a cuneus on the tips of the forewings.
(e) They are not aquatic.

The cuneus is a triangular area separated from the rest of the forewing by a crease. Those bugs that possess this feature (e.g. plant bugs *Miridae*) can sometimes be identified by the fact that the cuneus is often strikingly different in colour from the rest of the insect. If any one of the features listed from (a) to (e) above clearly do not apply **and** if the bug is not a true shieldbug, an assassin bug or a damselbug then it is not covered by this book.

References

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Glossary of Terms

Abdomen: One of the three body segments of a shieldbug. It is the largest part and furthest towards the rear. Most of the internal body organs lie within it. From above the abdomen is covered by the scutellum, the corium and (in adults) the wings.

Antennae: The pair of sensory organs visible at the front of the head of a shieldbug. In shieldbugs the antennae each have four segments.

Brownfield sites: Sites where natural habitats (grassland, bare ground, scrub or woodland) exist on land that formerly had an industrial use or was otherwise built on. They usually exist in urban areas, often temporarily before redevelopment.

Connexivum: The flat narrow 'skirt' around the edge of the abdomen. The connexivum is often brightly coloured and is usually visible from above.

Femora: Upper (first) section of a leg—equivalent to the human thigh.

Greenways: Strips or patches of more or less semi-natural habitat within urban areas that usually contain woodland, scrub, marshland, water bodies or grassland. In Southampton many greenways follow the stream valleys such as Tanner's Brook or Monk's Brook.

Instar: One of several, usually four or five, stages through which a nymph or larva of an insect passes before it reaches either the pupa or adult stage.

Larva: Another name for the nymph. More properly applied to insects with complete metamorphosis such as butterflies, beetles and wasps.

Metapleuron: This is the plate on the sides of the thorax closest to the rear.

Nymph: The immature stages of an insect showing incomplete metamorphosis, such as shieldbugs and also dragonflies and grasshoppers. This stage emerges from the egg and passes through several other stages to reach the adult stage.

Pronotum: The hard protective covering of the thorax of a shieldbug. It hides the thorax from above. The pronotum is often distinctively coloured and marked.

Pupa: The third (resting) stage in the development of an insect showing complete metamorphosis. This stage does not occur in shieldbugs or other Hemiptera.

Scutellum: The roughly triangular, hardened covering of the upper part of the abdomen between the wings or (in the nymphs) the wing pads.

Species: The word used to describe all individuals of a living organism that share some constant anatomical or genetic features. In theory, all adult shieldbugs of the same species could successfully breed with each other, but those of different species could not. Certainly no hybrid shield bugs, or related Hemiptera, are known to occur in this country.

Sternum: The underside of the abdomen of a Hemipteran bug.

Tarsi: Lower (third) section of a leg—equivalent to the human foot.

Thorax: The second major body segment of a shieldbug. The thorax lies between the head and the abdomen. The three pairs of legs are attached to this segment.

Tibia: Middle (second) section of a leg—equivalent to the human shin.

An Alphabetical List of Sites Mentioned in this Guide

Site	OS Grid Ref
Aldermoor	SU3915
Allington Wood—south of reservoir	SU463160
Avenue Park, Eastleigh	SU438181
Baddesley Common—East	SU3921
Baddesley Common—West	SU3821
Barbe Baker Avenue, West End	SU468150
Bartley Water Valley, Totton	SU348128
Bassett Wood	SU424164
Boscombe Chine, Bournemouth	SZ108914
Brentry Wood, Ampfield	SU380234
Broadlands Valley Southampton	SU433150
Browndown Ranges, Gosport	SZ5799
Budd's Farm, Havant	SU7005
Calshot Marsh	SU4802
Casbrook Common North, Michelmersh	SU3525
Casbrook Common South, Michelmersh	SU3524
Chessel Bay, Southampton	SU4412
Chickenhall Lane, Bishopstoke	SU463187
Chickenhall—north of Eastleigh Airport	SU458178
Chilworth Common	SU413183
Chilworth Manor	SU403183
Cocklydown Copse, Hounsdown	SU352119
Cromarty Pond area, Lord's Hill	SU383162
Cullwood, New Milton	SZ248964
Dairy Lane, Nursling	SU3616
Daisy Dip, Bassett Green	SU431158
Deep Dene, Bitterne Park	SU443138
Dibden Bay—South	SU4008
Donkey Common, Bitterne	SU461124
Dumbleton's Copse, Thornhill—relic bog	SU473117
Eastleigh Cemetery	SU447194
Eling Church area	SU367124
Emer Bog, North Baddesley	SU3921
Forest Front Reserve, Dibden Purlieu	SU418055
Freemantle Railway Footpath	SU4012
Frog's Copse	SU449147
Gilkicker Common, Gosport	SZ6097
Great Covert - South	SU412196
Green Lane, Old Netley	SU475107
Hamble Common	SU4806
Hamble Rail Trail	SU474075
Hannay Rise, Thornhill	SU466120
Hardmoor Copse	SU432166
Hatchet Pond—north side	SU368017
Hayling Island—South Beach—West	SZ708990
Hillier Arboretum—East	SU3823
Hillier Arboretum	SU3723
Hocombe Mead, Chandler's Ford	SU429226
Hoglands Park, Southampton	SU423117
Holidays Hill Inclosure, New Forest	SU2607

Hollybrook Beech Wood	SU405154
Hollybrook Cemetery, Southampton	SU401151
Holy Cross Churchyard, Durley	SU505169
Home Covert, Nursling	SU3715
Hook Spit, Warsash	SU488051
Hordle Cliff	SZ2692
Hound Bunny, Netley	SU4608
Hum Hole, Bitterne	SU449131
Hut Wood, Eastleigh—Central	SU423183
Hut Wood, Eastleigh—East	SU419188
Hythe	SU4009
Itchen Valley Country Park	SU4515
Kendall's Wood, Thornhill, Southampton	SU465131
Knowle Hill Reserve, Fair Oak	SU503186
Lakeside Park, Eastleigh	SU445177
Lee Plantation, Nursling	SU3517
Little Testwood Lake	SU348154
Lord's Wood—East	SU408171
Lord's Wood—Eastern firebreak	SU407174
Lord's Wood—West	SU389168
Lord's Wood—clearing in west of wood	SU39181688
Lord's Wood Greenway—West	SU386167
Lord's Wood Plantation	SU398172
Lord's Wood Plantation—West	SU395171
Lower Test Marshes	SU365145
Luzborough Field, North Baddesley	SU381202
Luzborough Plantation, North Baddesley	SU381198
Magdalen Hill Down Extension	SU510291
Magdalen Hill Down Original Reserve	SU505291
Magdalen North Down	SU507292
Mans Bridge Marsh, Southampton	SU4415
Mans Bridge Reservoir East	SU449158
Marlhill Copse, Southampton	SU450155
Matley Bog, New Forest	SU3407
Mayfield Park, Southampton	SU447106
Mensland's Lane, Hambledon	SU631137
Monk's Brook, Swaythling Grange	SU440159
Monks Brook Greenway—North	SU4416
Muddy Bottom Allotments, Sholing	SU457122
Netley Common, Southampton	SU473118
Netley Grange Fields	SU4509
Newtown Road, Weston Park	SU454107
Nightingale Wood—North	SU379183
Nightingale Wood—West	SU375175
North Baddesley	SU3819
Nursling Substation	SU361162
Old Bursledon Nature Haven	SU487091
Old Hamble Airfield South	SU4707
Old Winchester Hill	SU6420
Palmerston Park, Southampton	SU421120
Peartree Green Southampton	SU436115
Peewit Hill, Bursledon	SU481116
Pickwick Close, West Totton	SU336129

Portman Ravine, Boscombe	SZ124912
Ports Down Hill—Central	SU6306
Ports Down Hill—West	SU6206
Priddy's Hard, Gosport	SU615010
Prior Hill Copse, Netley	SU469092
Redbridge Lane, Nursling	SU3715
Redbridge Wharf Park, Southampton	SU372134
Rownhams Wood	SU393182
Royal Victoria Country Park, Netley	SU4607
Rum Bridge, Totton	SU359128
St Mary's Wood, Netley	SU465086
Sandy Balls, God's Hill	SU166143
School Road, Old Bursledon	SU482100
Sea Road, Woolston, Southampton	SU436114
Shirley Valley, Southampton	SU3914
Shop Lane, Old Netley	SU470107
Silchester Common	SU6262
Silverdale Road, Southampton	SU412130
Southampton Common—North	SU415148
Southampton Common—North of Boating Lake	SU415145
Southampton Common—South	SU414138
Southampton Common—West of Ornamental Lake	SU412146
Southampton Common—Cutthorn	SU420149
Southampton Old Cemetery	SU4113
Southampton Sports Centre—Jacks Corner	SU409156
Southampton Sports Centre—East	SU410157
Southampton Sports Centre—North	SU413164
Station Road, Nursling	SU362160
Stoneham Park	SU430170
Swanmore	SU573164
Swanwick Reserve	SU509100
Telegraph Woods, West End	SU4713
Templar's Mede, Chandler's Ford	SU426191
Testwood Centre	SU345156
Testwood Lakes	SU345158
Testwood Park	SU3514
Thornhill	SU4612
Toot Hill	SU3818
Town Common, Christchurch	SZ1496
Trott's Copse, Marchwood	SU372110
Trott's Copse, Marchwood—East	SU375111
Trott's Copse, Marchwood—South	SU374108
Upper Wootton, west of Basingstoke	SU574538
Veal's Farm, Marchwood	SU396096
West Quay shrubberies, Southampton	SU416117
West Wood, Netley	SU4509
West End Copse	SU456145
Weston Common, Southampton	SU461117
Windy Bay, Southampton	SU429133
Yew Hill, Winchester	SU455265
Zionshill Copse, Chandler's Ford	SU419205

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STOP PRESS

Vernal Shieldbug found on 16 May 2007, just outside our study area in Kingley Vale, West Sussex. Even later stop press - another was found at Boscombe on 26 May 2007, so they're coming at us from both directions.

One to look out for in years to come!!

Registered Charity 264662

Printed by Hanley Swiffen & Co Ltd, Rotherham