Het News

Newsletter of the UK Heteroptera Recording Schemes

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2nd Series

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Editors:

Our apologies for the belated publication of this year's issues, we hope that the record 30 pages in this combined issue are some compensation!

Sheila Brooke: 18 Park Hill Toddington Dunstable Beds LU5 6AW — *brooke.aquahet@btopenworld.com*

Bernard Nau: 15 Park Hill Toddington Dunstable Beds LU5 6AW — *nauhet@btinternet.com*

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*** pp4-5 updated in v1.1**

RECENT PUBLICATIONS

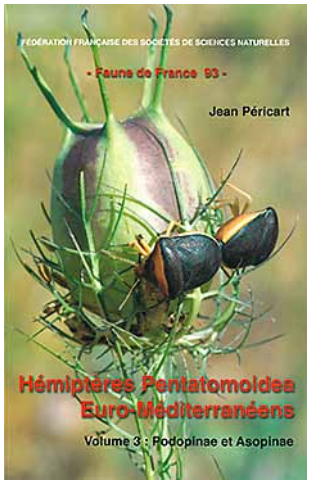
Book Review: Hémiptères Pentatomoidea Euro-Mediterranéens, Volume 3: Podopinae et Asopinae, Faune de France 93, by Jean Péricart

Fédération Française des Sociétés de Sciences Naturelles, Paris, 2010, ISBN 978-2-903052-31-7, 290pp, 24 colour plates, soft cover, ca. £70.

This is Volume 3 of three volumes covering the Pentatomidae of Europe, North Africa and the Near East - with the first already published (reviewed in *Het News* **6**, Spring 2006) and Volume 2 still in preparation.

The present volume - Volume 3 - deals with two subfamilies of the Pentatomidae, the predatory Asopinae and the rather more diverse Podopinae. Unfortunately there are few representatives of these subfamilies in Britain - the Asopinae include only *Picromerus bidens*, *Rhacognathus punctatus*, *Troilus luridus*, *Zicrona caerulea* and (long extinct in Britain) *Jalla dumosa* of the 15 treated species and only *Podops inunctus* of the 70 species included in the Podopinae.

Volume 2, still in preparation, will deal with the remaining tribes of the family Pentatomidae, including the Carpocorini and Pentatomini. The planned series will also include volumes on the Scutelleridae, Cydnidae and Acanthosomatidae.



The present volume is an essential introduction to some of the more 'difficult' Pentatomid species. These often cannot be identified solely from photographs, particularly those seen on Mediterranean holidays! The numerous habitus drawings throughout and the illustrations of key features and genitalia should make reliable identification of this group far more straightforward and is a major leap forward from the previous identification guide to this group, the now outdated Stichel (1961). Many of the Podopinae species are cryptically coloured although the boldly patterned species of Graphosoma are an exception.

The format follows the previous volume with details of types and synonyms followed by a description of life stages and ecology and

list of localities; rarer species known from only a few or type specimens are given briefer treatment. As with Volume 1 the references to the UK fauna are somewhat dated, with recent records of *Rhacognathus punctatus* from Ireland not included, and the use of dated distributional references mean that many recent distributional changes are not recorded for many species throughout the book.

Distribution maps are given for many (but not all) species and there are 24 plates of both preserved and living specimens of the groups concerned-particularly useful for genera such as *Tarisa* whose vibrant green colours in life can fade to yellow in preserved specimens. Photographs of some nymphs are also included. The plates are a considerable improvement on those in volume 1 as the darkening of plates appears to have been resolved.

As the majority of Podopinae covered have a predominantly Mediterranean distribution it is unlikely that they will occur in Britain. The sole exception is *Graphosoma lineatum italicum*, (until recently known as *G. italicum*) which has recently colonised Finland but these recent Finnish records are also not included. *G. l. italicum* has previously been confused with *G. lineatum lineatum* and it is unclear whether one or both subspecies have expanded their range.

The western European Asopinae fauna has been remarkably static but the majority of these species are rare in Western Europe and unlikely to colonise Britain or Ireland.

One additional species, the marmorated stink bug *Halyomorpha halys*, was recorded in Europe too late to be included in Volume 1 and is included in Volume 3 as an appendix. This species appears to expanding globally from its eastern Asian native range and has the potential to turn up in Britain as an import.

The overall impression is that there is a surprising amount to discover about this group even in a well recorded world region, and the number of species known in the region from only a handful of records is quite enlightening, suggesting that there many more exciting discoveries to be made on this group in the euro-mediterranean region.

There are occasional typos (e.g. *Ancyrosoma* given as heading for *Picromerus* on p217) but these are few and do not detract from the value of this work to defining the euro-mediterranean fauna. Keys to species such as *Podops* alone are extremely valuable - the nine species which occur in the euro-mediterranean zone put our single British species into perspective.

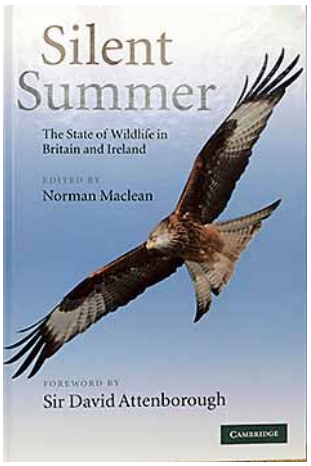
This book is an essential purchase for those with an interest in the Pentatomidae of the Western Palaearctic and North Africa. Volume 2 is eagerly awaited.

Alex Ramsay

Book Review: Silent summer: the state of wildlife in Britain and Ireland.

N. Maclean (ed)

Cambridge University Press, Cambridge, 2010ISBN 978-0-521-51966-3, 765pp, 16pp of colour plates, hard cover, ca. £28.



The hand of a marketting department is apparent in this otherwise interesting and well-produced 1.5kg tome - remarkable value at less than 4p/page! Thus the sub-title is more informative than the 'headline title'.

This multi-author, well-edited book provides a very readable overview of the conservation and status of wildlife in what I would call the British Isles - i.e Britain+Ireland+associated islands from the Channel Isles to the Shetland Isles - there is also a slightly odd chapter which is an excursion to UK Overseas Territories, which apart from British Antarctic Territory, are mostly oceanic islands.

The book's text style is formal rather than 'popular' - the mean word-length is quite long! However there is a 4½ page glossary to decrypt some overly obscure terms. The colour plates range for informative (micrographs of fish cell deformities), to pointless (12 dragonfly portraits labelled with species name). Literature references in the text are few and far between, and mainly limited to general works. This is not the place to track down records of individual species.

The main text is 35 chapters in three Parts:

I - Factors driving changes in wildlife (10 ch.)

II -Conservation in action (3 ch.)

III - The case histories (22 ch.)

Part III is the meat of the book with 7 chapters on various vertebrate groups, 9 on insect groups, 2 on other invertebrates, 1 on plants, 2 on marine habitats (seashore & offshore respectively), and a final overview chapter. The entomological chapters are listed in Text Box 1.

Our readers will be particularly interested in the 19pp of Ch.28. *Hemiptera*, by Alan Stewart & Peter Kirby. In keeping with the book in general this is very much an overview. Nevertheless it makes interesting reading, not least the table of '*Additions to the British Hemiptera list. 1990 onwards*' - new arrivals being 28 spp of Heteroptera & 9 Auchenorrhyncha. However, it would have been good to have had a pre-1990 equivalent, as a basis for comparison. Topics discussed in this chapter are listed in Text Box 2.

BSN

Text Box 1 - Entomological chapters

Riverflies
Bumblebees
Butterflies
Moths
Dragonflies
Flies, beetles and bees, wasps & ants
Hemiptera
Grasshoppers, crickets & allied insects
Aerial insects

Text Box 2 - Hemiptera topics

Species with very low population densities
Better methods & more effort
Gains & expansions of range
Adoption of new hosts or habitats
New arrivals
Coastal species spreading inland
Losses & range contractions
Species under threat

Water Bug Recording Scheme

Sheila Brooke

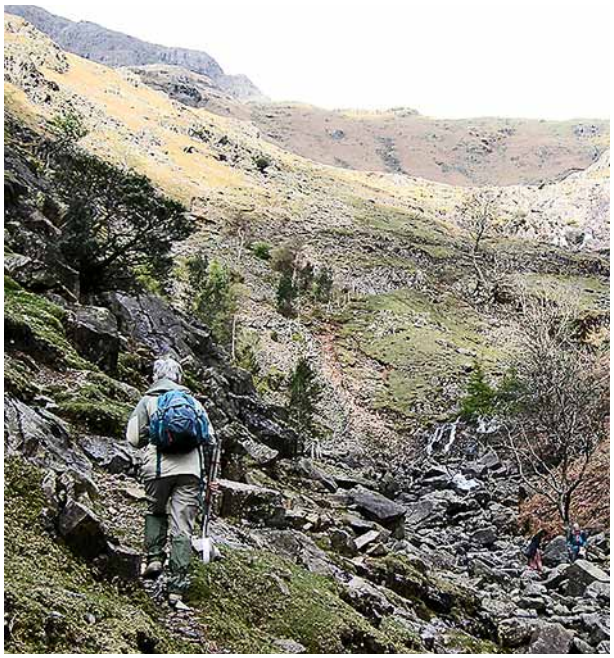
Nearly 10 years ago I was persuaded to take over the Water Bug Recording Scheme from Thomas Huxley, who was putting the finishing touches to his retirement project, the Provisional atlas of British aquatic bugs (Hemiptera, Heteroptera). This was a mammoth task and the publication has been an incredibly useful tool. As Tom was moving on to other things I inherited a large number of very useful references and relieved him of a large number of recording cards, now held by BRC, making room for his next project! Since that time I have added about 35,000 records to the national database and all, except the most recent , can be seen on the NBN Gateway. The latest batch has been sent and they will appear in due course. In the last 10 years 5 new species have been added to the British list and many species have been seen to spread. It has been great watching *Ranatra* march up and gain a solid foothold in Yorkshire. There are several other species showing the same traits and it will be interesting to see which wins the race to cross the border.

1

For various reasons I now find the time is right to hand over the reins of the Recording Scheme to a very willing and able successor, Tony Cook (*tony.cook20@btinternet.com*). The handover is ongoing but any new records should go to Tony, who will process them when his system is up and running and I will forward any records that come to me. I hand over with some regrets as, over the years, I have made many friends and acquaintances and have enjoyed meeting up at various events. It was always pleasant, at these events, to meet someone face to face with whom I had been communicating by email over the years. I thank all of you who have helped me in so many ways, who have sent me records, whether 2 or 2,000, often exciting ones, and who have put up with my numerous queries about grid refs, site names, dates etc. I have had lots of interesting and entertaining email correspondence over the years. I hope Tony enjoys this too!

I think most people are now pretty good at sending i n the required data fields, but for those new to the game here are a few tips. The preferred format is spreadsheet. E-mails and word documents are fine for a few species but, when there are large numbers, import into Recorder by spreadsheet is the only reasonable way. Every bit of data cannot always imported and so some details may have to be input manually – a fairly time-consuming task. So, to make Tony's life as easy as possible, please include the following essential fields: species name, date, site name (if it is something like 'Hill Farm' it is helpful to add the nearest town or village, or the parish), grid ref, collector, if not you, and determiner, if not you. It is also good to have details such as abundance, sex & stage, if known, and very useful to have the VC number. Also any interesting facts etc can go into a comments field.

It was discussed and agreed among the organisers of the



2

Het Recording Schemes about a year ago to add the Dipsocoromorpha and Leptopodomorpha to the Water Bug Checklist, as all except *Saldula orthochila* live in wet or damp habitats. This also keeps us in line with the European heteropterists. I have, therefore, extended the checklist and sent it to the Natural History Museum Species Dictionary. From there it will be passed to the NBN and will, in due course, be incorporated into the ***Recorder*** software.

Finally I would like to wish Tony a happy, interesting and

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rewarding time in this post. Please keep sending your records in! It must be time for another species to sneak into Britain from mainland Europe – or maybe further afield. Thank you for your support, which I am sure you will now extend to Tony.

Photos: Sheila at work!

1: Water bug identification session during Beds,Cambs & Northants Wildlife Trust workshop.

2: In search of *Callicorixa wollastoni* on the Langdale Pikes.

3: A Freshwater Biological Association waterbug workshop at Windermere.

SPECIES NEW TO BRITAIN

Tritomegas sexmaculatus (Cydnidae) arrives in Britain

Tristan Bantock

In the previous edition of *Het News*, the cydnid *Tritomegas sexmaculatus* (Rambur, 1839) was proposed as a possible candidate for arrival in Britain, following recent range expansion in Germany (Werner, 2010). This species seems to be responding strongly to climate change and reappeared in Poland in 2008, following an absence of almost 50 years (Lis, 2009). It was first recorded from Holland in 2002 (Aukema, 2003) and reached Belgium five years later (Aukema et. al, 2007).

It is very similar in appearance to our native Pied Shieldbug *T. bicolor* (Linnaeus, 1758) and is best distinguished by the following characters (see also Fig. 1a-b):

- White streak along side of pronotum is long & uniformly tapered in *T. sexmaculatus*; short in *T. bicolor*, with narrow black streak separating it from pronotum edge posteriorly.
- White mark at base of forewing tapers uniformly towards pronotum in *T. sexmaculatus*, in *T. bicolor* it is inwardly 'barbed' at the base.
- Wing membrane black in *T. sexmaculatus*, brownish in *T. bicolor*. (Not mentioned in keys but seems consistent.)

Having checked all *T. bicolor* I found in the London area during 2011 without success, I was intrigued when Ashley Wood suggested that a photo taken in Kent & posted on the *Flickr* website (*www.flickr.com*) in August might show a nymph of *T. sexmaculatus*. The final instar nymphs are more easily distinguished than the adults, since the forebody is significantly darker than that of *T. bicolor* (Fig. 1c-d).

The photos of *T. sexmaculatus* were taken at the headquarters of the Kent Wildlife Trust at Tyland Barn, Maidstone (VC15 ,TQ754593), by Jason Elmore, a local wildlife enthusiast. On checking his images more closely, Ashley also found a photo of an adult taken at the same location in April 2011. All life stages were associated with large stands of Black Horehound (*Ballota nigra*), the preferred foodplant of *T. sexmaculatus* on the continent (Wachmann et. al, 2008). Jason observed new generation adults by late August, and sent me a number of final instar nymphs, which moulted at around the same time. A nymph was also found on Black Horehound at another site in VC 15, near Benenden (TQ806331), suggesting that the species may already be well established in parts of Kent.

On the continent *T. sexmaculatus* apparently prefers drier habitats than *T. bicolor*, favouring stands of Black Horehound in open, warm situations (Wachmann, et. al 2008). It is relatively infrequent there on White Dead-nettle (*Lamium album*), the main foodplant of *T. bicolor* in Britain. Given these requirements, it seems well-suited to colonise a variety of ruderal habitats in southern England, such as road verges, old industrial land & other brownfield situations.

'Rambur's Pied Shieldbug' is the proposed English vernacular name for *T. sexmaculatus*, Rambur being the French entomologist who described the species from Spanish specimens in 1839.

/continued at foot of facing page

Fig.1 *T. bicolor* **adult**

Fig.2 *T. bicolor* **5th instar nymph**

Fig.3 *T. sexmaculatus* **adult**

Fig.4 *T. sexmaculatus* **5th instar nymph**

Rhaphigaster nebulosa (Pentatomidae: Pentatomini) arrives in Britain

T. M. Bantock[1], D. Notton[2] & M. V. L. Barclay[2]

1)101 Crouch Hill, London, N8 9RD, 2) The Natural History Museum, London

The pentatomid *Rhaphigaster nebulosa* (Poda, 1761) has a recent history of range expansion in continental Europe, a probable consequence of gradual climatic change. In Germany, the species has moved several hundred kilometres north and west during the last 20 years and is particularly abundant during hot summers, when it flies readily (Wachmann et al., 2008). The bug was first recorded in Holland in 2002 (Aukema, 2004) and quickly became well established. By 2009 it was noted as expanding its range (Aukema, 2009) and was also reported for the first time in the Channel Islands (Tim Ransom, pers. comm.).

Following discovery of a specimen at Rainham Marshes (S Essex, VC 18) in September 2010, multiples were recorded at two S London sites in 2011, indicative of established populations. In September 2011 DN found adults in his Lewisham garden (E Kent, VC15, TQ376762) on the following dates: ♂, 18th (specimen figured on iSpot (*www.ispot.org.uk/node/217561*); ♀♀, 19th; ♂, 25th, on *Ceanothus* sp.; ♀, 1st Oct., on loquat *Eriobotrya japonica*. Since feeding was not observed, these plant associations may be incidental as it seems likely that the bugs were aggregating in a warm south-facing location prior to hibernation. All specimens were passed on to MVLB and deposited in the collection of the Natural History Museum, London.

Several kilometres west, in Peckham Rye (Surrey, VC 17), Penny Frith recorded early instar nymphs of *R. nebulosa* on Common Lilac *Syringa vulgaris* in mid-July at Warwick Gardens (TQ337762), a very small urban park containing a range of deciduous trees in improved grassland (Fig. 3). Final instar nymphs were present by mid-August (Fig. 4) & the first adults in September, peaking with a count of ca.30 mid-month. TMB visited the site on 22nd Sep. and found three adults, all on a lilac growing against a sheltered south-facing wall. A number of other interesting heteroptera species were also present, including the lygaeids *Arocatus longiceps* & *Rhyparochromus vulgaris*, & the shieldbug *Nezara viridula;* all recent arrivals in Britain, largely confined to the London area.

R. nebulosa is a large shieldbug (14-16mm) recognised by the mottled black markings on the wing membrane, a feature not shared by any other British species (Fig. 1). Although variable, these markings are always present so a vernacular name of 'Mottled Shieldbug' seems appropriate. Unusually amongst European Pentatomidae, it has a distinctive long spine on the ventral surface, a structure usually found only in Acanthosomatidae. It arises from the 2nd abdominal sternite & projects forwards between the mid & hind coxae (Fig. 2).

R. nebulosa superficially resembles *Halyomorpha halys* (Stål), an invasive Asian species introduced into the USA about a decade ago. Populations have since been found in Switzerland and the species has recently been intercepted in Britain, several specimens being found in passenger luggage (Malumphy & Eyre, 2011).

R. nebulosa is reportedly polyphagous, feeding on deciduous trees of the Fagaceae, Rosaceae & Betulaceae families. It has also been reported feeding on larvae of chrysomelid beetles (Wachmann et al., 2008). Despite these catholic feeding habits, the presence of nymphs on Common Lilac (Oleaceae) at Warwick Gardens is unusual and seems unlikely to be a real foodplant association.

It will be interesting to track the fortunes of *R. nebulosa* in Britain. In the short term, it is most likely to remain confined to the London area, where future records may also result from its tendency to hibernate indoors, a frequent phenomenon in German cities (Wachmann et al., 2008).

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Fig. 1 ***Rhaphigaster nebulosa***

Fig. 2 ***R. nebulosa*** **underside**

Fig. 3 ***R. nebulosa*** **5th instar nymph**

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ARTICLES

Grain chinch bugs *Macchiademus diplopterus* (Distant) (Blissidae) on imported peaches.

Chris Malumphy

Macchiademus diplopterus (Distant) (Hemiptera: Blissidae) is native to South Africa where it is a serious pest of wheat (*Triticum* spp.) and other small grain crops (Sweet, 2000). It is commonly known as the 'grain chinch bug', 'grain stink bug', 'South African grain bug' or 'stinkbesies'. During the dry summer months in South Africa adults migrate from their breeding sites (grassland or cereal crops) to seek shelter and this behaviour occasionally results in the bugs inadvertently being included with fruit, seed or packaging destined for export.

The adults are small, slender, flattish, shining, black and white, and 3.6-4.6 mm long (Fig. 2). They might be confused with the British blissid *Ischnodema sabuleti*.

On the 7th February 2011, large numbers of live adult *M. diplopterus* were detected at Tilbury Docks, England, by the Plant Health and Seeds Inspectorate (PHSI), in a shipping container of fresh peach (*Prunus persica*) fruit imported from South Africa. A sample of infested fruit (Fig. 1) was submitted to The Food & Environment Research Agency laboratory at Sand Hutton where the bugs were identified as *M. diplopterus* (Distant). It was estimated that the consignment would have contained hundreds (possibly thousands) of live bugs. The consignment was destroyed under statutory notice to prevent the introduction of a potential pest of wheat into Britain. This is the first time that a consignment has been destroyed due to the presence of this species. Interceptions of *M. diplopterus* with fresh South African produce imported into England were discussed briefly by Malumphy & Reid (2007) and full collection details are provided by Malumphy (in press).

Suspected *M. diplopterus* should be reported to a local PHSI office or PHSI HQ at York (Tel.: 01904 465625).

Acknowledgements: The author wish to acknowledge W. E. China, M.S.K. Ghauri, M. Webb and M.R. Wilson for identifying samples of *M. diplopterus* previously intercepted in England.

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Address

Chris Malumphy
Food & Environment Research Agency, Sand Hutton, York YO41 1LZ
chris.malumphy@fera.gsi.gov.uk
www.defra.gov.uk/fera

Figure 1. *Macchiademus diplopterus*, adults sheltering around the calyx of a peach fruit. Photo: © Fera 2011

Figure 2. *Macchiademus diplopterus*, adult. Photo: © Fera 2011

Lookout for the Pondweed Leafhopper

***Erotettix* (=*Macrosteles*) *cyane* (Auchenorrhyncha)**

Waterbug people are asked to look out for this rare species of Auchenorrhyncha, currently known from just three ponds in SE England. They feed on the floating leaves of Broad-leaved Pondweed, *Potamogeton natans*. Sites where it is found have a diverse invertebrate fauna & are fed from rainfall or are spring fed from a chalk aquifer. Habitat includes both long established & newly created ponds. It is known from Scandinavia to Romania, and France to Estonia but sites are sparse & the bug usually in low numbers. In Germany & Austria it is 'rare' in the national Red Data Books.

To support suitable pond creation, *The Million Ponds Project* has published a factsheet with advice on creating ponds. *The Pond Creation Toolkit*, including a Pondweed Leafhopper species dossier, is free to download from:

www.pondconservation.org.uk/millionponds

Identification

Length 5mm; covered with a startling bright blue powder, which rubs off when the leafhopper is caught or disturbed to reveal a dark blue colour beneath.

Key identification aids are :

The Leafhoppers and Planthoppers of Germany
Robert Biedermann & Rolf Niedringhaus
(English version available)

and the British Bugs website:

www.britishbugs.org.uk

A very early season for spring mirids at Fancott Meadows NR, Bedfordshire.

Bernard Nau

In the SE of England in spring 2011, we had a remarkably long period of mild, sunny, very dry weather; extending through March, April, & May. By contrast, in the preceding winter we had two periods of exceptionally cold snowy weather. With such conflicting weather factors one wonders what to expect at the onset of the 2011 Heteroptera season. Would the cold have dominated & taken a toll of the local bugs, or would the effects of the fine spring dominate?

The answer became clear one sunny day in late May when I visited a local grassland nature reserve to check out the mirids. Fancott Meadows is a small Wildlife Trust reserve of 13 Ha, it has two lightly grazed meadows and a peripheral belt of deciduous woodland. It is also a Site of Special Scientific Interest designated for its rich, grassland flora.

On 29th May 2011 I spent a couple of hours in the morning sunshine, sweeping the flower-rich grassland & beating the well-advanced foliage of shrubs & trees. It was evident that spring mirids were numerous and some were weeks earlier than usual. Table 1 shows the 21 mirid species found, asterisked species overwinter as adults the others as eggs. The bugs were identified in the field, noting age & sex; counts are not given, having little significance in isolation. Non mirids were only seen in small numbers as most were between generations, they are listed in Table 2.

Table 1 - Mirid species recorded, 29th May 2011, showing Larval instars & adult stages recorded on 29th May 2011.

(hosts: g=grasses, h=herbaceous, w=woody.; **t=teneral,** •=ads. overwinter.)

Tribe	Mirids [* ad overwinters]	1st	2nd	3rd	4th	5th	ad.	Host
Dicyphini	*Dicyphus epilobii*			√				h
..	*D. stachydis**						♀	h
Deraecorini	*Deraeocoris flavilinea*			√	√		-	w
..	*D. lutescens**						√	w
..	*D. olivaceus*				√		-	w
Mirini	*Closterotomus norwegicus*				(√)		-	h
..	*Capsus ater*						√	g
..	*Lygocoris pabulinus*						√	h
..	*L. viridis*					√	-	w
..	*Miris striatus*						√	w
Stenodemini	*Leptopterna dolabrata*			√	√	√	-	g
..	*Pithanus maerkelii*						√	g
Orthotylini	*Cyllecoris histrionius*						t	w
..	*Orthotylus tenellus*						√	w
Phylini	*Amblytylus nasutus*				√		-	g
..	*Atractotomus mali*			(√)			-	w
..	*Plagiognathus arbustorum*				√		-	h
..	*Psallus ambiguus*					√	√	w
..	*Ps. perrisi*						√	w
..	*Ps. assimilois*						√	w
..	*Ps. varians*						√	w

Table 2 - Non-mirid bugs recorded 29th May 2011.

NON-MIRID SPECIES RECORDED, 29th May 2011

(for nymphs the instar is noted)

NABIDAE

Himacerus apterus (2nd)

Nabis sp. (2nd)

ANTHOCORIDAE

Anthocoris confusus (ad.)

A. nemorum (5th)

Orius vicinus (ad.)

COREIDAE

Coreus marginatus (ad.)

PENTATOMIDAE

Palomena prasina (ad.)

Eysarcoris venustissimus (ad.)

Pentatoma rufipes (3rd)

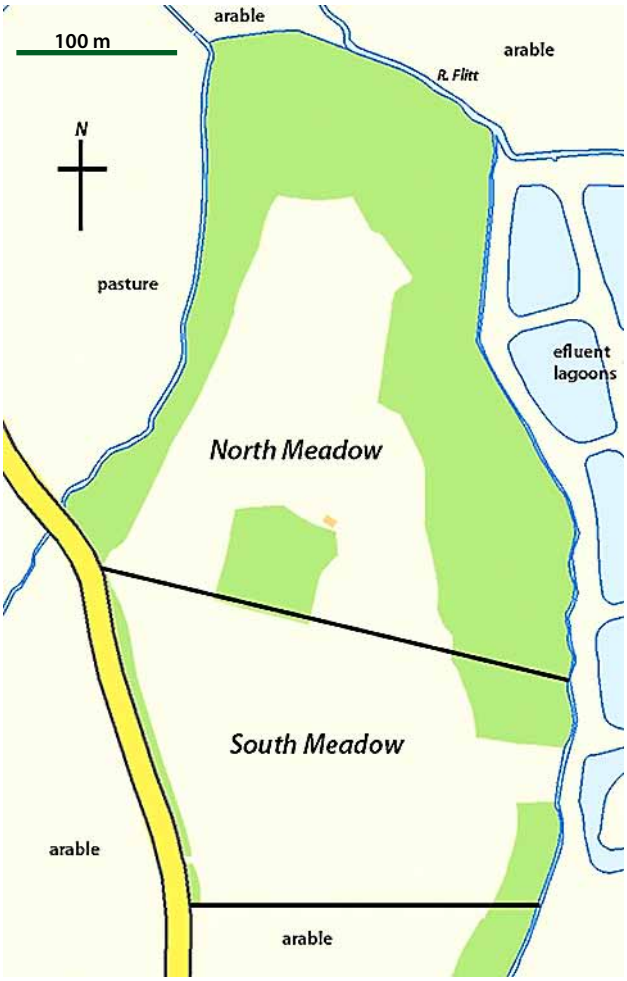

Figure 1: Fancott Meadows Nature Reserve, vc 30, Beds. , TL025275.
a) Site map (based on original from *www.streetmap.co.uk*) b) Photo of North Meadow from N end, 29th May 2011.

Red Data Book & Notable species of bugs & beetles from the Calcareous Grass-heaths of the Midvale Ridge in Wilts, Berks, Oxon & Bucks

John M. Campbell

Natural Area Profile

During the 1990s English Nature published *Natural Area Profiles*, in which England was divided into areas based on geological and ecological factors. The Midvale Ridge Natural Area Profile was published in 1997. The area runs roughly south-west to north-east and spans three administrative counties: Wiltshire, Oxfordshire & Buckinghamshire (Fig.1). In Oxfordshire the Midvale Ridge occurs in both vice-county 22 (the part of Berkshire which became part of Oxfordshire in 1974) and vice-county 23 ('old' Oxfordshire).

Thirty-three species of beetle and ten species of bug of Red Data Book or Notable status associated with Calcareous Grass-heath have been recorded since 1985, Table 1. Details of all records are held by the Thames Valley Environmental Records Centre.

Table 1

Status (Kirby 1992)	Coleoptera	Heteroptera
RDB1	1	**1**
RDB2	1	0
RDB3	1	**1**
RDBK	1	**1**
Na	3	**1**
Nb	26	**6**
Total	33	**10**

Nortation:

RDB1 : Red Data Book, endangered

RDB2 : Red Data Book, vulnerable

RDB3 : Red Data Book, rare

RDBK : Potential Red Data Book

Na : Nationally Scarce (<30 10 km squares)

Nb : Nationally Notable (31-100 10 km squares)

Geology & habitats

The Midvale Ridge is mainly composed of Corallian rocks, mostly limestones and sands laid down some 155 million years ago in the warm seas of the Jurassic period. In addition there are some small patches of sands of Lower Greensand, Wealden and Portlandian ages. The sands give rise to the Calcareous Grass-heath habitat, characterised by being warm and free-draining, and home to a number of rare animals and plants which are nationally scarce. The Brecklands of East Anglia have a similar fauna and flora. Breckland is not a habitat but the result of an agricultural practice of cultivating the land when crop prices were high and leaving it fallow when prices were low. Arkell in 1947, when writing about the Midvale sands says: "*the leached sands of the Lower Calcareous Grit produce a soil so light and hungry as to be hardly worth cultivating.*" The sands are mainly calcareous, but in places have been leached to a neutral or even an acidic pH.

The Calcareous Grass-heath lands have been known to entomologists since the early 1890s when J.J. Walker and others collected beetles, especially from Tubney, where the sands were dug by hand, before so much of the land was afforested with conifers. Recently, there has been a considerable amount of recording of beetles which has proved that many of the rare species of beetle have survived despite changes in land use of the Midvale Ridge. A full review of old and recent records of the rare beetles from the Midvale Ridge is given by Denton & Campbell, in press.

The Heteroptera, were not recorded as often or in such quantities as the beetles, but in recent years have proved to be of great interest. This group of insects appears to have been undergoing many changes in distribution and some species are undoubtedly recent colonists of the Oxfordshire Calcareous Grass-heaths. Only those species of beetles and bugs associated with the ground and herb layers are included here. The 10km squares and number of sites are given in Table 1.

Heteroptera (true bugs)

Amongst the bugs there are examples of considerable change in distribution. *Gonocerus acuteangulatus* was previously known only from Box Hill in Surrey but has recently started to spread. It is associated with Box as indeed it was at its Oxfordshire site. *Stictopleurus abutilon* was considered to be extinct, but has recently been found in many southern counties. Some species recorded in the past have not been recorded at all in recent years.

Table 2 - Some Heteroptera of the Midvale Ridge

Species	Status (Kirby 1992)	10km sq.	Sites
Legnotus picipes	Nb	SU39	**1**
Gonocerus acuteangulatus	RDB1	SU49	**1**
Spathocera dahlmanni	Na	SU49	1
Rhopalus rufus	RDB3	SU29, SU49	**6**
Stictopleurus abutilons	'Extinct'	SU49	**5**
Graptopeltus lynceus	Nb	SU29 SU49	**7**
Megalonotus antennatus	Nb	SU49	1
Megalonotus dilatus	Nb	SU49	**1**
Megalonotus praetextatus	Nb 8	SU39 SU49	**8**
Catoplatus fabricii	Nb	SU49	2
Placochilus seladonicus	RDBK	SU49	**1**

Table 3 - SomeColeoptera of the Midvale Ridge

Species	Status	10km sq.	Sites
Amara consularis	Nb	SU49	3
Amara equestris	Nb	SU49	1
Amara fulva	Nb	SU39	2
Harpalus azureus	Nb	SU39	1
Harpalus schaubergianus	Nb	SU39	1
Harpalus smargadinus	Nb	SU39 SU49 SP50	119
Panagaeus bipustulatus	Nb	SU39 SU49 SU50	7
Conthophilus punctatis	RDBK	SU49	3
Medon castaneus	RDB1	SU49	1
Ocypus fortunatarum	Nb	SU49 SP50	4
Ocypus fuscatus	Nb	SU49	3
Ocypus opthalmicus	Nb	SU49	4
Aleochara nificornis	Nb	SP40	1
Aphodius distinctus	Nb	SU49 SP40	3
Hippodamia variegata	Nb	SU39 SU49 SP50	9
Orthocerus clavicornis	Nb	SU49	1

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Address: J. M. Campbell, 17 Shilton Road, Burford, Oxfordshire, OX18 4PA

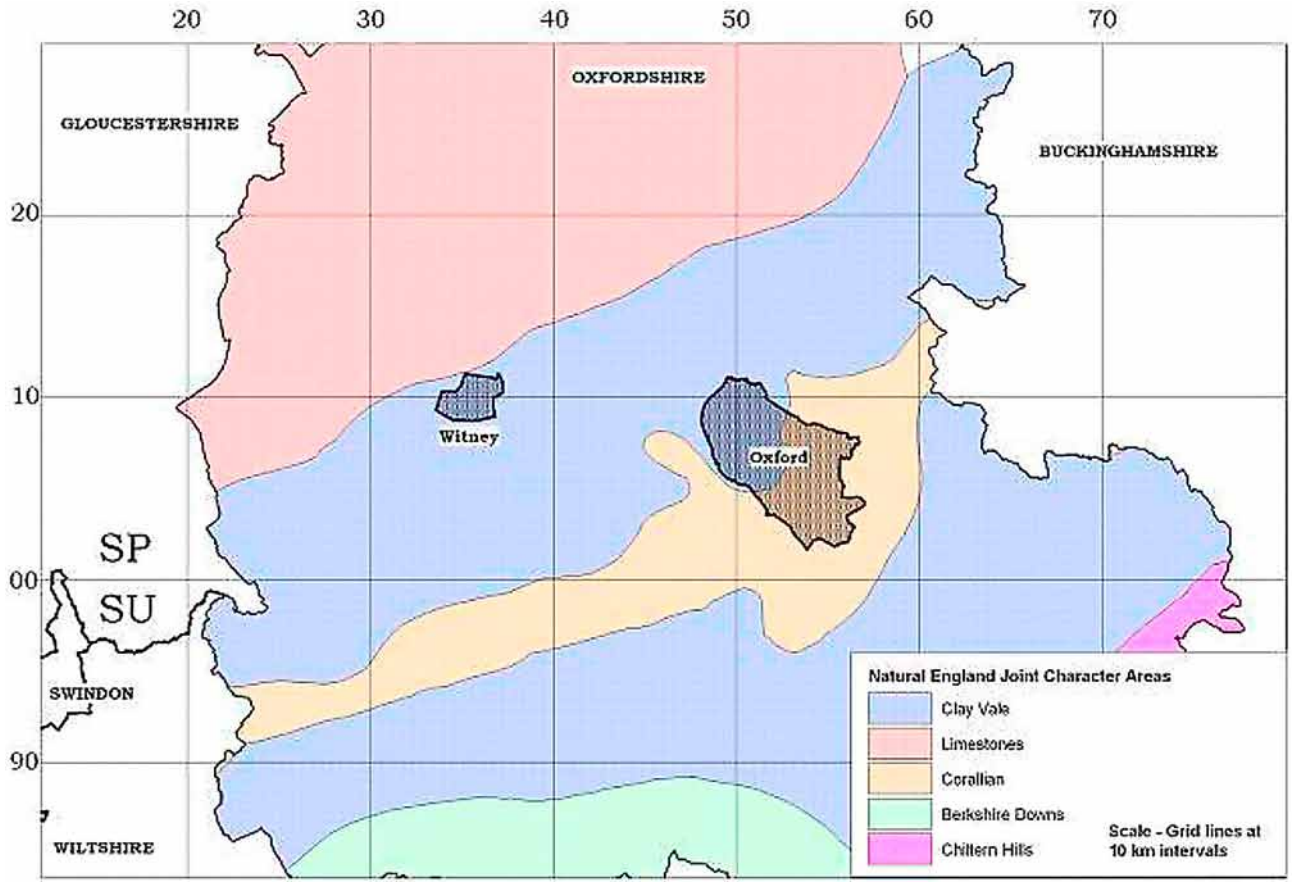

Figure 1: Midvale Ridge Geology (Mapping by Thames Valley Environmental Records Centre)

Entomophagy - is it for you?

Sheila Brooke

A recent article in *The Independent* newspaper caught my eye. It featured a London restaurant, the *Archipelago*, which specialises in 'bugs' dished up in tasty sauces and on attractive salads. We all know that insects form a large part of the diet in some parts of the world but here we prefer to get our protein from other sources. Insects, however, are reckoned to have a higher proportion of protein and fat than beef and fish.

Apparently one should start cautiously with nice crunchy crickets and locusts and move on to the shieldbugs, giant water bugs, marinated silk worms, butterfly larvae and baked tarantulas. If you have a yen to try some of these gastronomic delights pop along to the *Archipeligo*, where the favourite dish is 'Love Bug Salad' along with 'Chocolate-covered Scorpion' (minus the venom, I believe). A subsequent gastronomic revue would be welcome for the next Het News!

With the world struggling to feed itself we may have to consider these energy-efficient choices and I have two recipes that you may like to try at home. They come from: *Creepy Crawly Cuisine* by Julieta Ramos-Elorduy.

Deep-fried grasshoppers in batter

A classic Thai street food dish
3/4 cup flour
3/4 cup milk
1 tsp baking powder
1 tsp salt (??)
1 egg beaten
1 cup grasshoppers or locusts
Dried chilli flakes

Combine flour baking powder & salt. Add milk & beat till smooth. Beat egg into mixture & add chilli to taste. You can remove wings, legs & head but the insect can be eaten whole. Dip in batter & deep fry. Serve with Sweet Thai Chilli Dip.

Despite the name, stink bugs are the most delectable of insects:

Stink bug paté

1-3 pounded roasted stink bugs
10 chicken livers
4 cloves garlic
1 small onion
1/8 tsp salt
Black pepper to taste
Oregano to taste
Marjoram to taste
Powdered bouillon to taste
Olive oil to taste

Place livers in saucepan with onion, garlic, salt & enough water to cover. Bring to boil & simmer for 10 minutes. Remove chicken livers & place in blender, add stink bugs & about 1/4 of the broth & puree, reserving the remaining broth. Add broth until mixture is of a spreadable consistency. Add other ingredients to taste, place in a wooden bowl & serve with crusty French bread.

Enjoy! It can only be a matter of time before Tesco has a 'bug' section in its stores – if not already!

Life-history responses to simulated climate warming of *Nezara viridula*

Dmitry L. Musolin

Introduction

Rapid climate change implies simultaneous and complex changes of many environmental variables – primarily air temperature (IPCC 2007). There is now considerable attention directed at how the global biota are and will be responding to global warming (Bale et al. 2002; Parmesan 2006; Deutsch et al. 2008).

The southern green stink bug, *Nezara viridula* (**Figs 1 & 2**), is a major agricultural pest with an ever-widening range throughout tropical & subtropical regions. As readers of *Het News* already know, this species is apparently responding rapidly to climate warming in Europe & many other parts of the world (Musolin 2005, 2007, 2010; Yukawa et al. 2007; Tougou et al. 2009; Musolin et al. 2010).

Figure 1 - Adult *Nezara viridula*.

In the early 1960s, a wide-scale field survey was conducted in central Japan at the northern margin of *N. viridula*'s Asian range and the northern limit of the range was mapped (Kiritani et al. 1963; see also Tougou at al. 2009 & Musolin 2010). The survey showed that the northern limit of the species' distribution in central Japan occurred in Wakayama Prefecture (approximately 34.1ºN). The range limit was shown to lie on the +5 ºC isotherm for mean temperature of the coldest month (usually January), therefore January temperature was proposed as the principal factor determining the northern limit of its distribution (Kiritani et al. 1963).

A recent repeat survey demonstrated that the northern limit had shifted northwards by 85 km from the early 1960s to 2006–2007, 19 km/decade (Tougou at al. 2009; Musolin 2010). Analysis of climatic data showed that the mean Jan–Feb temperature was 1.0–1.9 ºC higher in 1998–2007 than in 1960–1969. The number of days with mean temperature <5 ºC also significantly decreased, while the annual minimum significantly increased. It was concluded that the mean January temperature and number of cold days are the most important factors controlling the northern limit of distribution of *N. viridula*. Over the last 45 years, at many locations in central Japan conditions have become more favourable for overwintering of *N. viridula* and this has probbly promoted the northward spread of the species (Tougou at al. 2009; Musolin et al. 2010).

Warming of approximately 0.2 ºC per decade is projected for the next two decades (IPCC 2007) so it is important to understand how insects will respond to this. We therefore studied the effect of simulated global warming on the life-history & phenology of *N. viridula,* by exposing two groups to different conditions: one group at outdoor conditions for 15 months; the other group at warmer conditions simulating a moderate temperature rise (2.5 ºC), within the range predicted for the end of the XXI century, 1.1–6.4 ºC (IPCC 2007). The most important results are presented & discussed here (full results in Musolin et al. 2010),

Material & Methods

Adult *N. viridula* were collected in Kochi (33.6ºN, 133.6ºE) & transferred to Kyoto (35.0ºN, 135.8ºE) where the experiment was conducted. On ten dates in 2006–2007 (1st June, 1st July, etc.), egg masses were transferred to plastic containers and placed under two experimental conditions: quasi-natural (i.e. outdoor) & simulated warming.

Under quasi-natural conditions, insects were reared in plastic containers on metal shelves open from all sides (**Fig. 2a)**. Under simulated warming, insects were reared in a modified incubator next to the open shelves (**Fig. 2b**). The transparent walls ensured that the insects experienced the same photoperiods as their outside siblings. A sensor measured outdoor temperature on the shelves of the quasi-natural conditions,

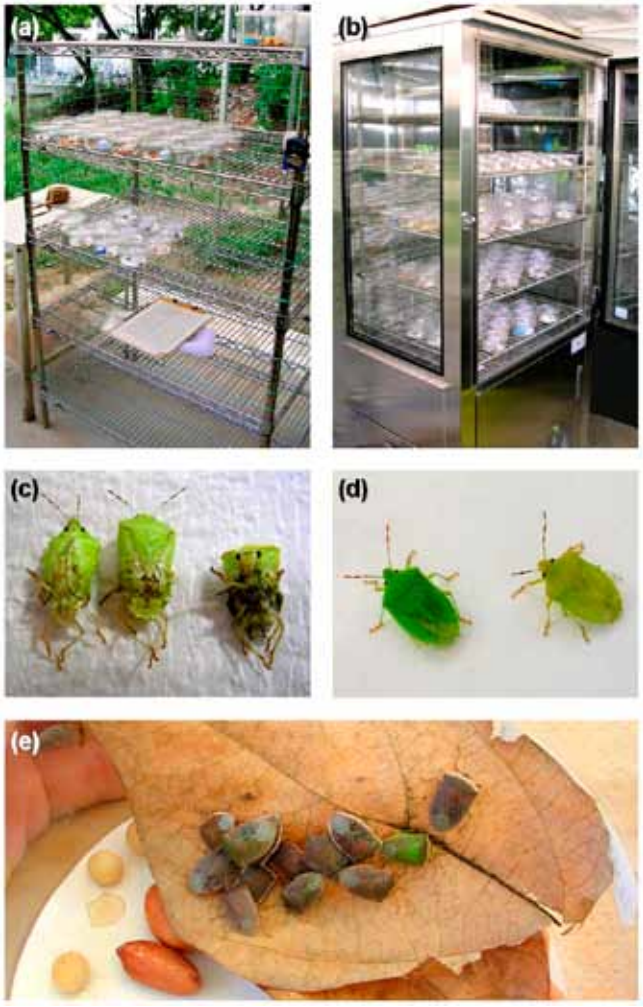

Figure 2 - Experimental setup.

a) Quasi-natural conditions: open metal shelves.

b) Simulated warming: incubator with transparent walls.

c) 1st Aug. series: difficulties moulting to adult, simulated warming.

d)Adults, quasi-natural conditions (lt), simulated warming (rt).

e) 1st Sept. series: numbered dark-coloured adults in diapause at start of overwintering, in group container. (Musolin et al. 2010)

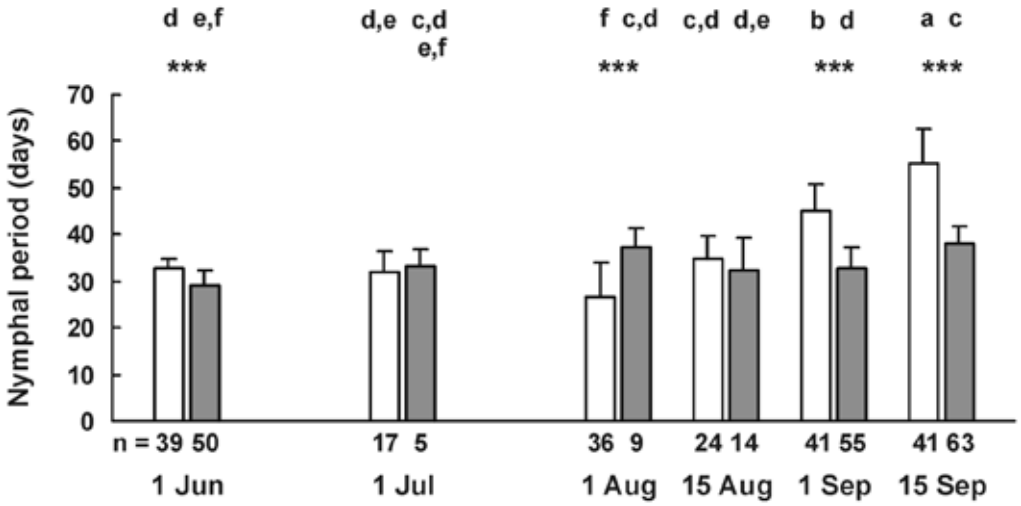

Figure 3 - Mean duration (+SD) of nymphal period in *Nezara viridula* ♀.

Bar:

white = quasi-natural conditions;

grey = simulated warming.

★: pair-wise comparison between treatments in same series, t-test; ***, P < 0.001.

a…f : multiple comparisons (all series & treatments), Tukey–Kramer HSD test; same letter not significantly different (P > 0.05) (Musolin et al. 2010).

while the incubator simulated warming conditions inside by adding 2.5 ºC to the outside temperature. In each series and treatment, important events such as hatching, moulting, copulation, oviposition, adult colour change & death were recorded daily. Life-history & phenology were compared between the two conditions, & all series, to examine whether & how warming affected performance & fitness.

Results

Nymphal development. The duration of the nymphal period showed a predictable seasonal trend under the quasi-natural conditions: higher outdoor temperatures in August resulted in a shorter nymphal period in the 1st August series compared to the 1st June & 1st July series and as the season progressed the nymphal period became significantly longer (**Fig. 3**). The effect of the artificial warming was unexpected. While warming significantly accelerated nymphal development in the 1st June, 1st & 15th September series, it retarded development to varying levels in the 1st July & 1st August series. Thus, while under the quasi-natural conditions the nymphal development tended to be faster in the 1st August series than in the June and July series, under warming conditions it tended to be slower.

Simulated warming also affected survival of nymphs. In summer it led to increased nymphal mortality, some adults in these series had apparent difficulties while moulting to the adult stage and many of them died during moult (**Fig. 2c**).

Size & physical condition of adults. The body length of females tended to be smaller in the 1st and 15th August series than in most of other series (F**ig. 4**). The simulated warming strongly enhanced this tendency. When compared pairwise with the quasi-natural conditions on the same dates, warming significantly reduced the size of adults in August, but increased it in September. In addition to having a smaller size in the warmest season, some adults were apparently in a weaker physical condition under the warming treatment: they had a softer cuticle and a lighter yellowish body colour instead of intensive green (**Fig. 2d**).

Adult size & winter survival. Under both conditions, the series with larger mean body length tended to have higher winter survival than those with smaller means (**Fig. 5a**), although not significant, probably because of the very low survival rate in some series under quasi-natural conditions. However, when analysed on an individual basis, both the ♀♀ size & simulated warming strongly affected overwintering success. Larger ♀♀ had significantly higher winter survival rates under each of the two experimental conditions (**Fig. 5b**). Moreover, ♀♀ from each size group had higher winter survival rates under the simulated warming conditions than under the quasi-natural conditions (**Fig. 5b**). Finally, simulated warming allowed smaller ♀♀ to reach the same winter survival rate as larger ♀♀ had under quasi-natural conditions.

Adult body colour & winter survival. Induction of winter diapause is associated with adult body colour change from green (**Fig. 1**) to russet (brown; **Fig. 2e**). The experiment showed that winter survival of ♀♀ was strongly correlated with body colour.

When winter survival was analysed separately for each colour grade in the non-reproductive ♀♀, it differed significantly between green & russet ♀♀, but not between these & intermediates (**Fig. 6a**).

Warming strongly influenced the relationship between body colour and winter survival. Under quasi-natural conditions dark ♀♀ had a significantly higher survival rate than the green, whereas under warming survival rates were higher in both colour groups and did not differ significantly (**Fig. 6b**). Comparison of winter survival within colour grade, showed that green ♀♀ had a significantly higher survival rate under warming. Survival of dark-coloured ♀♀ was also slightly higher under warming, but the difference was not significant (**Fig. 6b**).

Timing of reproduction. Before overwintering, ♀♀ tended to start both copulation & oviposition earlier under simulated warming than quasi-natural conditions, although this was not significant likely due to the small number of reproducing ♀♀ under warming conditions. In the hottest mid-summer season, the start of reproduction tended to be delayed. After overwintering, the trend to advance reproduction was more pronounced: in all series, copulation & oviposition started earlier under simulated warming than under quasi-natural conditions, in most cases the difference was significant.

Fecundity. In early summer, simulated warming significantly increased egg production, whereas later in the season fecundity tended to be lower under simulated warming than under quasi-natural conditions, although not significantly. After overwintering, no common patterns were detected & only in the 15th September series did warming significantly increase post-diapause egg production.

Longevity. Simulated warming significantly reduced ♀♀ longevity in the summer series. In the autumn series, most ♀♀ survived until the next spring & early summer & the simulated warming increased longevity, probably by optimizing thermal overwintering conditions.

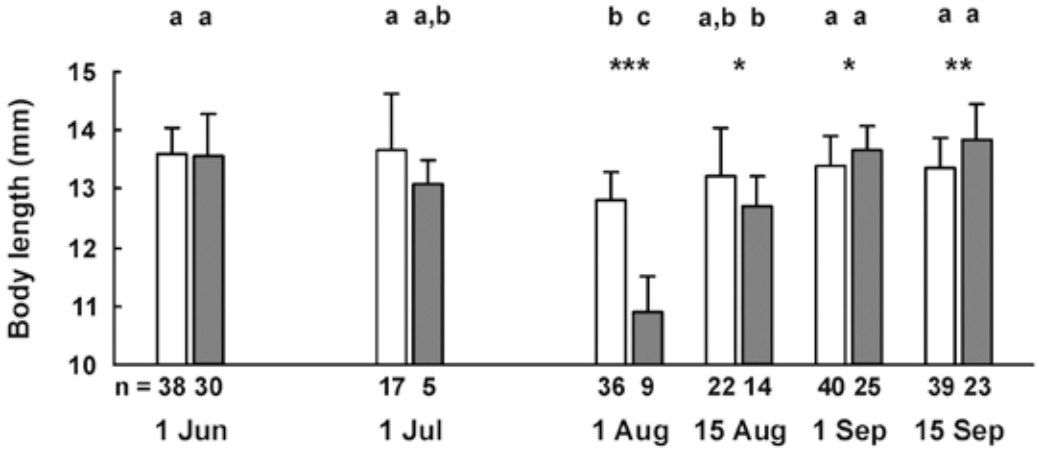

Figure 4 - Body length of *Nezara viridula* ♀, mean (+SD)

Bar: white, quasi-natural conditions; grey, simulated warming conditions.

★: pair-wise comparison between treatments in same series, t-test; *, P < 0.05; **, P < 0.01; ***, P < 0.001.

a…c: multiple comparison, Tukey–Kramer HSD test; same letter not significantly different (P > 0.05) (Musolin et al. 2010).

Discussion

As in many species (e.g., Bale et al. 2002; Parmesan 2006), temperature elevation is expected to affect numerous phenological events in *N. viridula*. For example, in this experiment, simulated warming advanced the start of spring colour change & reproduction. A further temperature increase is likely to stimulate earlier start of reproduction in *N. viridula* and perhaps other insects, if they can find enough food.

Simulated warming strongly affected timing of nymphal development. Growth was significantly accelerated by warming in early summer & autumn series, but retarded in late summer series (**Fig. 3**). Late summer is the warmest period in central Japan: in August 2006, daily maximum temperature reached +40 ºC under quasi-natural conditions &, thus, +42.5 ºC under simulated warming. As a result, nymphs developed slower, suffered higher mortality, & had difficulties during the final moulting (**Fig. 2c**).

Simulated warming also affected many life-history traits. In general, under quasi-natural conditions, *N. viridula* ♀♀ had smaller body size in the 1st August series than earlier in summer or later in autumn **(Fig. 4**), a seasonal tendency reported in some other insect species. Simulated warming strongly enhanced this tendency: ♀♀ emerging in the 1st & 15th August series were not only the smallest in the entire experiment, but on each of these dates were significantly smaller under warming conditions than under quasi-natural conditions. These findings show that the response to further warming is not the same throughout the year and differs by season. In turn, difference in size is likely to affect other life-history traits such as survival or reproductive performance.

Winter is a critical season for insects in the temperate zone. This proved true for *N. viridula* too (Kiritani et al. 1963; Tougou et al. 2009; Kiritani 2011). Under both experimental conditions, larger ♀♀ had significantly higher winter survival rates (**Fig. 5**). More importantly, an additional 2.5 ºC of simulated warming in winter strongly increased the likelihood of winter survival in both size classes & allowed smaller ♀♀ to reach the same winter survival rate as larger ♀♀ had under the quasi-natural conditions. Thus, if warming continues in the future, not only larger but also smaller ♀♀ of *N. viridula* will survive winters more successfully than they do now and this will likely provide a basis for faster population growth.

Simulated warming strongly affected the functional relationship between colour change in autumn and overwintering success. Under warming, green ♀♀ survived winter even better than dark-coloured ♀♀ did under quasi-natural conditions (**Fig. 6**). This implies that further climate warming will increase chances of successful winter survival even in individuals that fail to change body colour and, thus, properly prepare for diapause before winter.

Whereas it is believed that many species of insects in the temperate zone will benefit from the temperature rise in one or another way (e.g., Deutsch et al. 2008), the present experiment shows that the situation is more complicated. The strong retardation of nymphal development, smaller size, softer cuticle and lighter yellowish body colour of *N. viridula* adults as well as their dramatically reduced life span in the 1st August series suggest that the elevated temperature experienced by nymphs and young adults exceeded their thermal optima. The mechanism underlying the abnormality of the cuticle colour and structure is so far unknown, although it might be related not only to thermal stress experienced by the bugs but also to the malfunction of their gut symbiotic bacterial fauna caused by the daily high temperature extremes (T. Fukatsu et al., unpubl. data). The design and the results of our experiment suggest that the warming-mediated suppression of performance might be a direct effect of temperature rather than an indirect one (via altered precipitation or condition of host plants). On the other hand, in contrast to plants, active life stages of insects can possibly minimize the deleterious effect of elevated temperature, for example, by active selection of microhabitats. This might be especially useful in coping with daily temperature extremes. Some insect species will probably be able to mitigate the negative hot season effects of warming by evolving a summer diapause.

The data accumulated so far suggest that the effect of the rapid climate change is likely to be complex and differ among species and regions. The current study demonstrates that, even within the same species or population, responses will be different for different life-history traits and seasons. Thus, for instance, warming might negatively affect nymphal development during the hot season, stimulate development in autumn and/or strongly enhance survival of adults in winter. All this together, in a complex way, will affect species' population dynamics, voltinism, relationships with other members of the community & likely pest status (Musolin et al. 2010).

Acknowledgements

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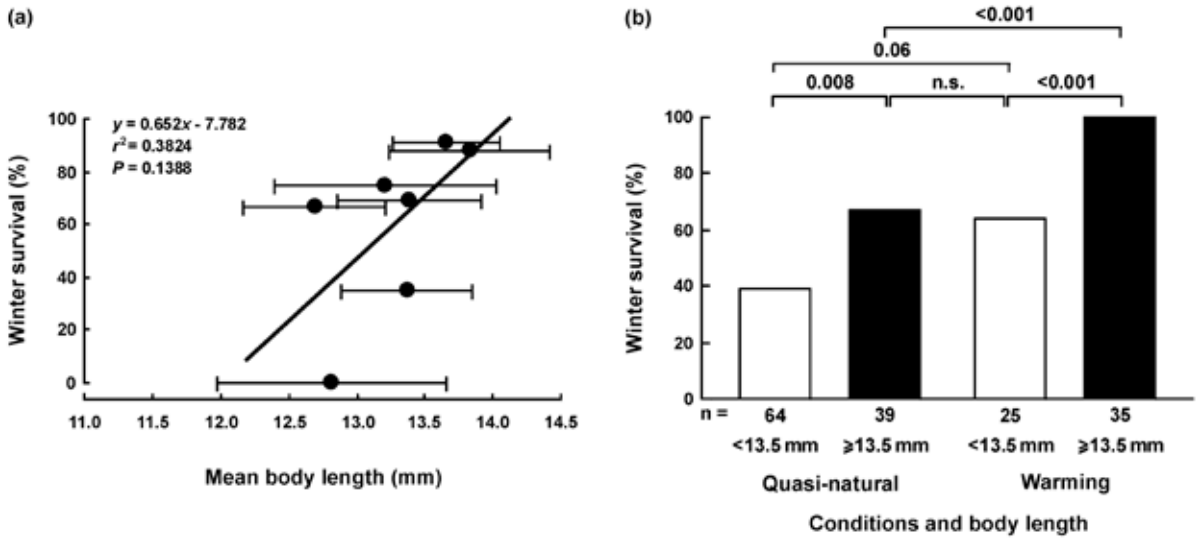

Figure 5 - Winter survival -v- body length of *Nezara viridula* ♀♀.

(a) Bugs surviving to at least 1st December , linear regression line & mean (±SD) after arcsine transformation.

(b) Winter survival of body length groups, for different treatments of non-reproductive bugs (all series combined; P of Fisher exact test after Bonferroni adjustment is shown (from Musolin et al. 2010).

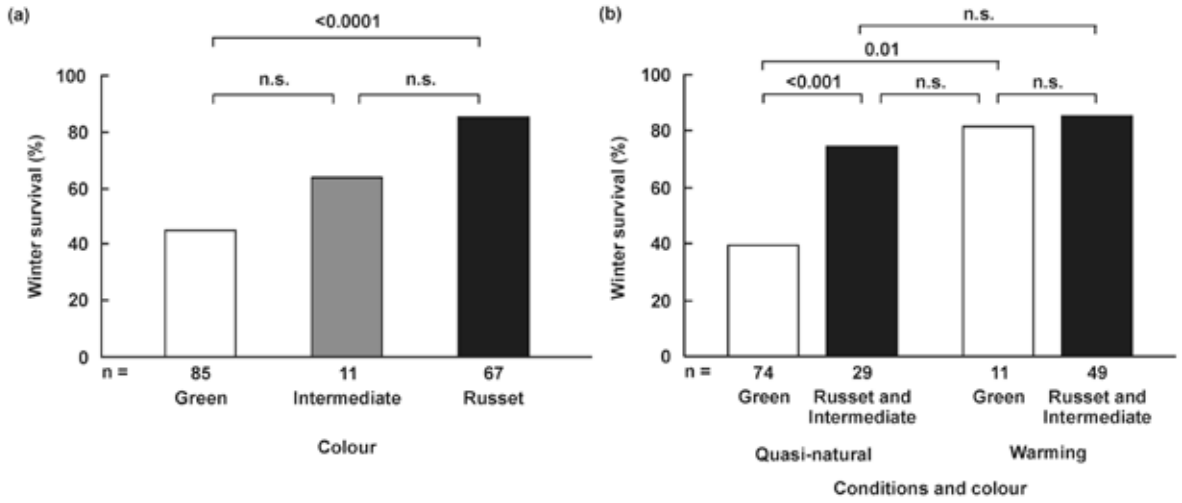

Figure 6 - Winter survival -v- colour: non-reproductive *Nezara viridula* ♀♀.

(a) Response of colour groups (all series & treatments combined; P of χ^2 test shown).

(b) Effects of colour & warming (all series combined; P of Fisher exact test shown) (Musolin et al. 2010).

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Address:

Dr. Dmitry L. Musolin

St Petersburg State Univ., & St Petersburg State Forest Technical Academy, Saint Petersburg, RUSSIA.

email: musolin@gmail.com

Recent captures of Pentatomoidea in Mallorca

Alex Ramsay

The largest of the Balearic islands has a wide range of habitats including pine forest, upland limestone, farmland, coastal dunes, cliffs & wetlands. Despite its popularity as a tourist destination large tracts of semi-natural habitats survivde throughout the island. Ribes (1965) summarised the Heteroptera recorded from Mallorca including all records up to that time, the number of species in the three shieldbug families represented was:

Scutelleridae	7spp
Pentatomidae	27spp
Cydnidae	8spp

Gravestein (1969) added a further Pentatomid species, *Holcogaster weberi*, and two additional species of Pentatomidae (Gravestein 1978), however *Holcogaster exilis* recorded in Ribes (1965) and *H. weberi* have now been synonymised with *H. fibulata* (Ribes & Gapon, 2008) and so a total of 28 Pentatomidae have been recorded to date.

A brief visit to NW Mallorca & Palma in mid-September 2011 yielded 9 species of Pentatomidae and 1 species of Cydnidae, which although all previously recorded from Mallorca, many have not previously been recorded from the northwest of the island and there appear to have been no surveys subsequent to Gravestein (1978).

CYDNIDAE

Cydnus aterrimus: 1♀ at base of spurge (Euphorbia spp.), coastal dunes, S'Albuferata 15th September. Previously recorded from Pollenca in the north of the same bay.

PENTATOMIDAE

***Acrosternum heegeri*:** ♂ beaten from a 4m-high, Prickly Juniper (*Juniperus oxycedrus*) growing at the margin of the beach, s'Oberta, Badia d'Alcúdia 16th Sept.The most widespread of the four mediterranean species of *Acrosternum*, which is common on Juniper & related trees, although can be difficult to separate from other species in genus. A useful field character for this small group of species when beating Juniper is the predominantly green colouration combined with the 'buzzing' of restless adults in the sweep net or beating tray, the adults fly extremely readily.

***Ancyrosoma melanogrammes*:** two ♂♂ adults & one nymph of this distinctive species (**Fig. 1**) were swept from ripe umbels of Carrot (*Daucus carota*), waste ground between Alcúdia and Port D'Alcúdia, 20th Sept. A late record for this species which is more usually recorded in spring, when it is most abundant, however the occurrence of the nymph suggests the emergence of adults prior to overwintering, as this species has only one generation annually (Pericart, 2010).

***Carpocoris fuscispinus*:** ♂ swept from coastal vegetation, near El Barcares, Badia di Pollença, 15th Sept. Formerly referrerable to *C. mediterraneus atlanticus*, with which it has been recently synonymised together with *C. m. mediterraneus* (Ribes et al., 2007).

***Eurydema ornatum* (var.):** ♀ by sweeping of coastal dune vegetation, S'Albuferata dunes, 15th Sept. A distinctive black variety, widespread in a range of habitats.

***Eysarcoris ventralis*:** ♀ beaten from a 4m high Prickly Juniper (*Juniperus oxycedrus*) growing at the margin of the beach, s'Oberta, Badia d'Alcúdia 16th Sept. Recorded from

Figure 1 - *Ancyrosoma melanogrammes*

a wide variety of plants including various species of grasses and crucifers, (Derjanschi & Pericart, 2005), suggesting that this specimen is likely to have derived from tall grasses & other plants growing at the base of the Juniper.

***Graphosoma lineatum italicum*:** Adult ♂♂ & ♀♀ (**Fig. 2**) numerous on Fennel (*Foeniculum vulgare*), margin of sandy coastal track, s'Oberta, Badia d'Alcúdia 16th Sept. Previously recorded from several parts of the island (Ribes, 1965) as a variety of *G. lineatum*, which has now been accorded subspecific rank (Pericart, 2010). The distribution of the two subspecies (*G. l. lineatum* & *G. l. italicum*) is poorly known in Europe (Pericart, 2010), and are easily distinguished by leg colour-in *G. l. lineatum* the legs are predominantly red, whilst in *G. l. italicum* the legs are predominantly black. In the eastern Mediterranean islands it is replaced on the same hostplant by *G. semipunctatum*.

***Holcogaster fibulata*:** ♀ on a cultivar of Juniper (Juniperus spp.), in gardens of Joan Miro foundation, Cala Major, Palma, 21st Sept. Previous records from Mallorca of this species have been recorded as *H. exilis* & *H. weberi* prior to synonymy with *H. fibulata* (Ribes & Gapon, 2008). The entire

Figure 2 - *Graphosoma lineatum italicum*

underside of the bug is covered by strong bristles.

***Nezara viridula*:** Nymph swept from coastal grassland, 15th Sept; ♂ (nominate form), at window of hotel, Alcúdia town centre 19th ; two nymphs on roadside ruderal vegetation, S'Albuferata, 20.ix.11. Very common & widespread polyphagous species.

***Sciocoris helferi*:** ♀ swept from riverside meadow fromumbels of Carrot (*Daucus carota*), 15th Sept. ♀ swept from margin of sandy coastal track, s'Oberta, Badia d'Alcúdia, 16th Sept.

A wide range of typical Mediterranean species were recorded from a variety of habitats, with the majority of species recorded from dune habitats, trackside vegetation and on Juniper-it is notable that four species alone were recorded from just two Juniper plants. Unfortunately there is very little previous information on habitats of recorded species on Mallorca to allow more targeted searching, and the majority of species were recorded by specific searching of known hostplants, with few additional species located by general sweeping.

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alexramsay6@yahoo.com

-1921-22 23-24 25-29Plant health bodies in Europe have been monitoring the rapid range expansion of the lygaeid *Oxycarenus lavaterae*. Until recently only known from the Mediterranean Basin & Africa, it has now spread to Northern & Central Europe: Austria (2001), Bosnia & Herzegovina, Bulgaria (1998), Croatia, Czech Republic (2004), France (1970s), Germany (2004), Hungary, Italy, Montenegro, Portugal, Serbia, Slovakia (1999), Slovenia, Spain, Switzerland (2004). It is not known from the British Isles but aggregations of overwintering bugs were found in a nursery in The Netherlands in 2007, on Small-leaved Lime (*Tilia cordata)* imported from Italy.

The bug feeds on Malvaceae, such as *Althea*, *Hibiscus*, *Lavatera*, & *Malva sylvestris* but do not cause particular damage. There are usually two annual generations. Large adult colonies overwinter on trees, mainly on lime trees (*Tilia americana, T. cordata, T. parviflora, T. platyphyllos*), less frequently on other trees (*Populus, Platanus, Aesculus hippocastanum*). Adults do not cause damage but may be a nuisance in urban environments.

Notify Chris Malumphy (FERA,York) if you find it in the UK:

Chris.Malumphy@fera.gsi.gov.uk

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For the next issue of Het News, please send contributions by 30th April 2012

SOME LITERATURE ABSTRACTS

On the teneral forms of water-boatmen (Corixidae).

Based on the introductory section of:

"*Teneral development in British Corixidae.*" E.C.Young,1965, *Proc. R. Ent. Soc.*(Lond.) (A), **40** (10-12), pp.159-168

Teneral corixids often puzzle the unwary, so it seemed worth paraphrasing the introduction of E. C. Young's 1965 paper on the subject:

Most species of corixid water-boatmen have several adult forms which differ in the degree of development of wings and/or flight muscles. In a few species both vary but in most it is only the flight muscles that vary. It is these species that were discussed by Young. His study was undertaken to establish the significance of normal and flightless forms in species with polymorphic flight muscles, also to provide data on the duration of the ·teneral stage.

In most such species four forms are recognisable. Two are lightly pigmented and develop in early summer, these are the first new generation of the year and can be termed early normal and early flightless. Adults emerging in late summer or autumn develop into fully pigmented forms and can be termed main normal and main flightless.

For aphids, the teneral stage has been considered to be the period between adult emergence and their ability to fly, it is used in this sense here too. If actual flight is not observed, maturity is recognised by the fully enlarged flight muscles and full pigmentation. Flightless forms pass through a corresponding period during which the cuticle hardens and partially darkens.

In Corixidae, development of pigmentation on the pronotum disc, and the forewings, is completed within a few hours of emergence. This was studied by Popham (1943} who found that pigmentation of the remainder of the body occurs more slowly and is influenced by external factors. The teneral stage also corresponds approximately to the period required to attain full pigmentation, not just pigmention of pronotum disc and wings alone.

BSN

Assassin bug uses aggressive mimicry to lure spider prey (Abstract)

Anne E. Wignall & Phillip W. Taylor

http://rspb.royalsocietypublishing.org/content/early/2010/10/26/rspb.2010.2060.full

Assassin bugs (*Stenolemus bituberus*) hunt web-building spiders by invading the web and plucking the silk to generate vibrations that lure the resident spider into striking range. To test whether vibrations generated by bugs aggressively mimic the vibrations generated by insect prey, we compared the responses of spiders to bugs with how they responded to prey, courting male spiders and leaves falling into the web. We also analysed the associated vibrations.

Similar spider orientation & approach behaviours were observed in response to vibrations from bugs & prey, whereas different behaviours were observed in response to vibrations from male spiders and leaves. Peak frequency & duration of vibrations generated by bugs were similar to those generated by prey and courting males. Further, vibrations from bugs had a temporal structure & amplitude that were similar to vibrations generated by leg & body movements of prey and distinctly different to vibrations from courting males or leaves, or prey beating their wings.

To be an effective predator, bugs do not need to mimic the full range of prey vibrations. Instead bugs are general mimics of a subset of prey vibrations that fall within the range of vibrations classified by spiders as 'prey'.

Karyotaxonomy of some European *Macrolophus* species (Abstract)

Snejana Grozeva, Nikolay Simov & Michail Josifov

Mainzer naturwiss. Archiv , **31**, pp81-87, (2007)

The karyotypes & meiosis of ♂ *Macrolophus geranii* JOSIFOV, 1961 stat. nov. & *M. pygmaeus* (RAMBUR, 1839) are studied using routine C-banding, Ag-NOR-banding & DNA sequence specific fluorochrome staining.

The chromosome formula of *M. geranii* is 2n=26(24+XY), but the chromosome formula of ♀♀ is 2n=28(26+XY). The ♂ meiotic prophase is characterized by a prominent condensation stage. At this stage, two sex chromosomes, X & Y are positively heteropycnotic and always appeared together, while in autosomal bivalents homologous chromosomes are aligned side by side along their entire length, meiosis is achiasmatic. Both the autosomes & sex chromosomes segregate reductionally in the first anaphase, & separate equationally in the second anaphase (pre-reduction). Data on the C-heterochromatin distribution & its composition in the chromosomes of these species are discussed.

Tropidosteptes pacificus (Van Duzee, 1921), another Nearctic mirid in Europe (Abstract)

Berend Aukema, Michael D. Schwartz & Kees Den Bieman

Zootaxa 2135: pp65–68 (2009)

The establishment of European Miridae in North America is a frequent occurrence. Wheeler & Henry (1992) listed 55 European mirids adventive to North America, in their synthesis of Holarctic Miridae. The most likely pathway for these introductions is importation of nursery stock from Europe.

Establishment of Nearctic mirids in Europe is very rare, hitherto limited to *Tupiocoris rhododendri* (Dolling), described from England & also established in The Netherlands, Belgium, & Germany. In this paper, *Tropidosteptes pacificus* is reported from The Netherlands, a 2nd example.

The genus *Tropidosteptes* Uhler, 1878 includes 52 species and is restricted to the Nearctic & Neotropical Regions (Schuh, 1995). There is no comprehensive key to the genus. Here we redescribe *T. pacificus*, provide a dorsal habitus photograph, illustrate the male genitalia, & give information on its distribution & biology

Giant water bug devouring baby turtle

Ella Davies (Reporter, BBC Nature)

Adapted from: *www.bbc.co.uk/nature/13500857*, 26 May 2011

Large bugs of the Lethocerinae are known to prey on small vertebrates including fish & frogs, but recently one particular species has been seen eating snakes, & a turtle! Dr Shin-ya Ohba recorded this behaviour while night sampling in western Hyogo, central Japan. In *Entomological Science*, Dr Ohba photographed *Kirkaldyia deyrolli* eating a Reeve's pond turtle in a ditch next to a rice field. Using its front legs the giant water bug gripped the turtle and inserted its rostrum into the prey's neck to feed. Giant water bugs only attack moving prey, so it is likely that the 58mm insect captured & killed the young turtle before feeding on it. Dr Ohba has also photographed giant water bugs eating snakes (see the above website).

K. deyrolli is native to Japan, living in rice fields, feeding primarily on small fish & frogs. It is listed as endangered by the Japanese Environment Agency following serious declines over the last forty years, reportedly due to habitat loss & water pollution.

The bug is known as the "giant fish killer" while their attraction to artificial light has earned them the name "electric-light bugs"; Americans refer to them as "toe-biters" because they have been known to bite unsuspecting swimmers.

CORRECTION (HN16, p7)

The reference to Dietrich Werner's original German paper on *Tritomegas sexmaculatus* was inadvertantly omitted, it is:

Entomologie heute **22**, pp55-84, 2010

REQUEST FOR INFORMATION

First incursion into Britain of *Aloea australis* (Miridae)

Chris Malumphy

On 13th July 2011 I received a sample of an aloe plant exhibiting severe chlorosis and covered in frass (photo lower rt.), due to a large infestation of the mirid *Aloea australis* Schuh (photo upper rt.). Not surprisingly the infested aloes had been imported, from South Africa. As far as I can tell (and mirids are not my group), this is the first incursion of this South African mirid in Europe. In fact, I can find very little information on it. Have any of you come across this attractive mirid before, or do you know if it has spread with trade in ornamental aloes? We have had one previous interception of the genus, two adults of *A. nigritula* Linnavuori on an Aloe imported from Tanzania in 1990 (determined by Gary Stonedahl).

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Chris Malumphy, Senior Entomologist & Collections Manager

The Food & Environment Research Agency

Sand Hutton, York YO41 1LZ, UK

Web: *www.defra.gov.uk/fera*

Tel: +44 (0) 1904 462216

chris.malumphy@fera.gsi.gov.uk

SPECIES NOTES

NEPIDAE

Ranatra linearis - another from northern England

Jim Jobe

I am Insect Recorder for the Harrogate & District Naturalists' Society and have been sent this record, which seems to be a new VC64 Record. The recorder was Dan McAndrew, Wildlife Officer with Harrogate Council. He writes:

'I came across a water stick insect *Ranatra linearis* on 17th May 2011, whilst torching for newts at the old Ripon College, SE305720. Books say 'local but can be common in southern England'. I was geared up for newt counting in the dark and didn't have a net but I don't think that there is anything else that it could be mistaken for. Maybe like several dragonflies it is moving northwards in response to climate change.'

jimjobe1@yahoo.co.uk

(Eds: Good to get another northern record of Ranatra and I am sure there is no doubt about Dan's ID. It has, however, already been found in VC 64 by Martin Hammond but great to have a few more sites.]

CORIXIDAE

Corixa affinis - a new locality in NW Norfolk

Andrew Constable

I have a record of a male *Corixa affinis*, taken from the Babingley River at the A149 Old Road Bridge, Castle Rising (TF 67400 25600, vc 28, West Norfolk) on 18/10/10. According to NBN Gateway it would appear to be a new 10km square for the species. The site also hosted a population of ***Sigara venusta*** again.

[Eds. It does indeed appear to be a new record for that 10km square]

andrew.constable@environment-agency.gov.uk

NOTONECTIDAE

Notonecta glauca

Don Stenhouse

In the previous issue of Het News under *Notonecta* spp - feeding on wasp BSN adds the comment 'You obviously haven't been stabbed by one!' and I immediately thought of an experience I had. In 2005, I investigated a number of ponds, with the help of Andy Harmer, and got quite blasé about the handling of material. Rooting through a net full of stuff after one dip, with my right hand, I was casually holding a *Notonecta glauca* between thumb and forefinger of the left, when I suddenly got a stabbing pain in my left thumb, hurriedly dropped the bug and was surprised to see blood oozing from a hole! The pain developed into a dull ache that persisted for an hour or so. It is worse than a sting from the much maligned Wasp *Vespula vulgaris* and marginally less painful than the Scorpion Buthus occitanus, which I had the pleasure of experiencing in Portugal several years ago. On looking at the mouthparts of Notonecta under a microscope I realised why it can inflict such a painful bite. Not only is the rostrum stout and pointed, but the maxillary stylets are long and thin and presumably able to penetrate deeply.

Collections Access Officer (Natural History)
Bolton Library & Museums Services, Le Mans Crescent, Bolton BL1 1SE

Don.Stenhouse@bolton.gov.uk

MIRIDAE

Remarks on *Macrolophus spp* in Yorkshire

Jim Flanagan

The only *Macrolophus* I have encountered in this part of the country is *M. rubi,* and that on very few occasions. I have tried to collect *M. pygmaeus* but so far without success. There aren't a great number of records for the two species in this region. Yorkshire Naturalists' Union data has 10 records for *M. pygmaeus* and 12 records for *M. rubi* these mostly in S. Yorkshire. *M. rubi* appears to be the later of the two (12th July to 22nd August). Dates for records of *M. pygmaeus* range from 10th June to 1st August with most records in June - so I guess only one generation occuring in these latitudes for both species.

jimflanagan@btinternet.com

Further sites & hostplants for *Conostethus venustus*

Jim Flanagan (JF) & Bill Dolling (WRD)

There are still no records of this recent colonist from outside a lowland region comprising south-east Yorkshire and adjacent counties. However in 2011 JF & WRD added to our knowledge of the species there. Host plants noted in Britain now comprise the following 'mayweeds' in approximate order of preference:

Tripleurospermum inodorum.....Scentless Mayweed
Matricaria discoidea.....Pineappleweed
M. recutita.....Scented Mayweed
Tripleurospermum maritimum....Sea Mayweed
Chamaemelum nobile.....Chamomile
Anthemis cotula.....Stinking Chamomile

JF found *C. venustus* in mid July at Arnold Carr near Beverley in the East Riding of Yorkshire. A not insignificant northerly extension to its range in the UK, and possibly in Europe. Adults & nymphs were under *recutita* in corners & margins of oil-seed rape fields - he had previously assumed this was not a host plant (although in the continental literature as such). The bug was also on ***discoidea*** on a farm track where *M. recucita* was very scarce, or absent.

Earlier in July JF had found a second site in southwest Nottinghamshire, again in a rape field where the margins had abundant ***inodorum*** & some *recutita,* some of the latter also holding the bug. Some plants here supported numerous adults & nymphs which hid in cracks in the dry soil when disturbed. JF also recently found the bug at Chapeltown (Sheffield), on a brownfield site next to an industrial/ business estate. There was a scattering of ***inodorum*** on recently disturbed areas, the bugs seeming to favour procumbent

Figure 1 Typical habitat of *Conostethus venustus***. (JF)**

plants with plenty of leaf - although most were running around on the ground (adults & nymphs).

On 19th August on a coastal site at Sand-le-mere in Tunstall parish (TA317312 , VC61) WRD found a thriving colony of these little bugs. Three examined with a lens were gravid females. They were on the ground, which was coarse sand within maybe 10m of the sea, though high enough to avoid inundation. The ground had no grass or litter but was rather thinly vegetated with ***T. maritimum***, *Spergularia marina* & *Plantago coronopus*. Associated fauna were holidaymakers & their dogs, so the site is subject to some trampling. It has never been seeded (I have been familiar with it for 20 years) and the vegetation is about as natural as could be expected. No other mayweeds were present. Interesting features therefore are: (1) natural vegetation, (2) hostplant *Tripleurospermum maritimum*, (3) habitat effectively the marine splash-zone, as indicated by the flora, (4) substantially bare ground, (5) sandy substrate. This is about as much significant information as I can squeeze out of a single observation.

JF comments that this is the first British coastal record of *C. venustus* and expands the list of apparent host plants here. The bare ground factor seemed significant. At a new site in the SW Nottingham coalfield area ground conditions were strikingly similar to those described by WRD, as well as for other observations by JF. JF had found adult ♂ & ♀ *C. venustus* locally frequent under ***inodorum*** almost always on largely bare ground, with a preference for dry friable, cracked or slightly loose substrates, conditions created by periodic disturbance - as in arable fields by ploughing or in former colliery sites, by spoil removal & deposition by heavy machinery. Interestingly, the little black mirid *Chlamydatus pullus* was nearly always present where he found *C. venustus*, favouring the same ground conditions.

jimflanagan@btinternet.com

LYGAEIDAE

Foodplant of black & orange seed-bug *Aphanus rolandri*

Bernard Nau

British & continental literature is vague about the foodplant of this bug (Fig.1). Most observations of adults are in & around litter, in warm sites such as arable field margins, or in what are clearly hibernation sites. unrelated to food.

Until the last few years records were confined to southern counties of England but the range is now spreading. For instance, recently Nigel Cuming found numbers in the Suffolk coastal Sandlings area and Tristan Bantock found adults hibernating under bark in North Norfolk.

NC commented to me that the Suffolk bugs were associated with Climbing Corydalis.(*Ceratocapnos claviculata*). Here in Bedfordshire this is a very local plant found only on the sandy soils of the Lower Greensand, so I wondered if the bug would be able to find the plant.

The first Bedfordshire record was, unhelpfully, on a fence post where it was found by Ian Dawson in July 2010; near Sandy, on the Lower Greensand in east Beds. However, in spring 2011 Mark Gurney told me of a dozen or so he had seen at the edge of a wheat field near Potton, on 18th April 2011; again on the Lower Greensand and only a mile or so from ID's site.

Wishing to see the habitat at Potton I visited the site next day, stopping en route at a site where I knew Climbing Corydalis was well established, on the Lower Greensand at Maulden Wood, in mid-Beds about 10 miles from Potton. After searching for a few minutes I found a specimen of *A. rolandri* beside some Climbing Corydalis on a steep sandy bank. This seemed to confirm the Suffolk observations.

Continuing to the Potton site I soon found *A. rolandri* where

Figure 2 Fumitory & other arable weeds at margin of wheat field, Potton, Beds.

Figure 1 *Aphanus rolandri*

Figure 3 *Aphanus rolandri* **habitat, weedy strip at margin of wheat field., Potton, Beds**

MG had described, numbers were actively running about on a 300mm wide strip of bare sandy soil on which there were scattered low arable weeds (Fig.2). The strip was bordered on one side by a tall crop of wheat & on the other by a strip of mown grassland (Fig.3). This habitat could hardly be more different from that at Maulden Wood or in Suffolk site. This was puzzling!

Returning home I looked-up the family of Climbing Corydalis, it is Fumariaceae (fumitories) and Common Fumitory (*Fumaria officinalis*) was one of the more numerous weeds on the 'bare' strip beside the cereal field at Potton!

The conclusion is that the food of *A. rolandri* is probably seeds of Fumariaceae. As *Fumaria officialis* is a widespread & common arable weed of disturbed ground in lowland Britain, there is apparently plenty of scope for *Aphanus rolandri* to become quite widely established here .

I would be interested to hear of other observations of possible foodplant associations of this bug.

nauhet@btinter net.com

Aphanus rolandri status in Hants

Dave Hubble

Regarding my short piece on *Aphanus rolandri* in Hampshire in *HetNews* **16**, I have since found some previous records from Hampshire, tucked away in '*Shieldbugs of Southampton*' by the Southampton Natural History Society (2007) which states that there are "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." It goes on to give

three individual records (date & site-name, no other details):

Magdalen Hill Down, east of Winchester (22nd May1998),

Upper Wootton, nr Basingstoke (28th July 2006),

Nightingale Wood (7th August 2006).

Previously I asked whether this bug was new to Hampshire, I have answered my own question; at the time, HBIC didn't have any records, nor was there anything for Hants on.

dshubble@yahoo.com

REDUVIIDAE

***Reduvius personatus* - dusty nymphs**

Richard Dickson

Trevor Codlin, an ecological consultant, was representing the interests of the bat community during the re-roofing of an historic building in Salisbury in April, when he found, over the course of some days, several dust-covered bugs in the roof-void. There were also a lot of cluster flies (*Pollenia* sp.), but no other insects directly attributable to bats or their deposits. Together we worked out that these were the nymphs of *Reduvius personatus*. There was absolutely no chance the food-source was bed-bugs!

dickson994@btinternet.com

ACANTHOSOMATIDAE

Historic records of *Elasmucha ferrugata* in Yorkshire.

W.R. Dolling & J. Flanagan.

This small shieldbug was regarded as extinct by Kirby (1992: 31-32). It is associated with soft fruits including currant, rasperry and bilberry. The few British reports of its occurrence have all been from uplands. Kirby's summary of the British records comprises one swept from a wooded valley in Caernarvonshire in 1899, one from cultivated raspberries on the outskirts of Derby in 1903 and a third from the kitchen of a house in Glossop, Derbyshire in 1950, adding that a 'Yorkshire record, from near Bradford in 1899, may not be valid.'

Fordham (1921: 334) gives two Yorks records. His entry for this species, in full, is:

According to Fordham's own notes, J. W. C. and W. D. R. refer to J.W. Carter and W. Denison Roebuck respectively. Fordham's reference to the *E.M.M.*, the *Entomologist's Monthly Magazine*, is unfortunately incorrect. By searching the indexes of that journal from 1889 onward, WRD found that the true volume and page are vol. 55 (1919), p. 17, referring to a note by the eminent authority on Hemiptera, Mr E.A. Butler.

Butler (1919: 17) states: "Among some Hemiptera recently sent me for naming by Mr. J. W. Carter, F.E.S., I was very glad to see a specimen of *Elasmothethus ferrugatus* Fabr., which was taken by Mr. Carter near Bradford, Yorks, in 1889. This is the third recorded British specimen of this species, and is really the earliest in order of time, as the other two were taken, respectively, near Bangor in 1899 by Mr. Sopp, and at Derby in 1903 by Mr. G. Pullen." The rest of Butler's note concerns Homoptera from the southern counties. Note that the date of the Bradford record was cited as 1889 by both Butler and Fordham but as 1899 by Kirby.

Knowing that J.W. Carter's Lepidoptera collection is kept at Cliffe Castle Museum, JF visited the museum by arrangement with Dr Gerry McGowan who kindly made the Hemiptera collection available for inspection. Two specimens of *E. ferrugata* were present and their data labels showed that one was that reported from Leeds Market and the other, apparently labelled in Carter's own handwriting, was the Bradford specimen.

References

Butler, E.A., 1919. New localities for some interesting British Hemiptera. *Ent. Mon. Mag.*, **55**: 197.

Fordham, W.J., 1921. Preliminary list of Yorkshire Hemiptera-Heteroptera. *Naturalist*, 1921: 333-336, 413-417.

Kirby, P., 1992. *A review of the scarce and threatened Hemiptera of Great Britain UK Nature Conservation* 2: 1-267, JNCC Peterborough.

Figure 1 - The Bradford bilberry shieldbug in Cliffe Castle Museum, Keighley, collected by J W Carter in July 1889. Location & date ("B'f'd 7/89") on reverse of card mount. Yellow paper used by Roy Crossley in April 1977 to indicate specimens of national importance (underneath this is Crossley's identification slip).

[Thanks to John Dallas for access & help with photography.]

EVENTS for HETEROPTERISTS

Events	Date	Venue	Organisation	Contact	Format
Hemipterists' Day	March 3rd 2012 1030-1600	Dinton Pastures Country Park, grid ref SU784718, post-code RG10 0GH	British Entomological & Nat. Hist.Soc.	Dr Ian McLean: *ianmclean@waitrose.com*	Various presenters. Talks & discussions, identification clinics. Fine library & collections, many microscopes. Pemberley Books may attend.
Identification of Water Bugs	May 19th 2012 1000-1600	Felmersham, Beds	Beds Cambs & Northants Wildlife Trust	Juliette Butler: Phone: 01604 774031 or *trainingworkshops@wildlifebcnp.org*	Sheila Brooke Introductory presentation, fieldwork, identification sessions.
(Programme of talks)	(Oct-May: 3rd Wed of month, 4pm)	Room 304, Crew Bdg, King's Buildings, University of Edinburgh	Edinburgh Entomological Club	*www.edinentclub.org.uk*	Talks for all interested in Entomology, non-members & guests welcome
(Programme of talks)	(Tuesdays 3.30-5 pm)	Macaulay Land Use Res. Inst., Craigiebuckler, Aberdeen, AB15 8QH	Aberdeen Entomology Club	Jenni Stockan: *j.stockan@macaulay.ac.uk* phone 01224 395239	Free entomological meetings

AROUND THE BRITISH ISLES

Cornwall ..... VC 1 & 2

Keith Alexander

Further additions to *The Land & Freshwater Bugs (Hemiptera) of Cornwall & the Isles of Scilly* (CISFBR & ERCCIS Occasional Publication No. 2, 2008) can now be reported. ***Leptoglossus ocidentalis*** has begun to dominate records received – I won't go into details! Three other additions are a recent arrival & two probably overlooked. ***Tupiocoris rhododendri,*** another North American species, was actually described from British material, in the early 1970s. It has now been found in Cornwall, near Mylor by Paul Gainey in August 2010 (VC1, SW83). A mistletoe bug, ***Anthocoris visci,*** was found in the traditional apple orchard at Cotehele by Andy Foster in September 2009 (VC2, SY46). This orchard was surveyed for insects on previous occasions so either *A. visci* was less evident or has arrived recently. I found nymphs of a saldid shore bug not previously known from the county at Carkeet Farm on the edge of Bodmin Moor, during a Cornwall Invertebrate Group field meeting on 28th May 2010 (VC2, SX27). These are clearly either ***Salda morio*** or ***S. muelleri*** but adults are difficult enough to separate & immatures impossible! Both are peatland species occurring sporadically across upland Britain, with *S. muelleri* also known from fen peat in East Anglia. The Carkeet species is most probably *Salda muelleri*.

Two other species worthy of mention were thought to have become extinct in the county: the lace bugs ***Agramma laetum*** & ***Dictyla convergens*** have both been rediscovered by Paul Gainey. *A. laetum* feeds on sedges & related plants, it was found on Penhale Dunes in August 2008 (VC1, SW75) – it was last reported in the county in 1930. *D. convergens* feeds on water forget-me-not (*Myostis scorpioides*) and was found along the Camel Valley in May 2007 (VC1, SX06?) – it was last reported in the county in 1919.

keith.alexander@waitrose.com

Hertfordshire .....VC 20

John Widgery

Although I am no longer resident in the county, I am still looking after Hertfordshire records for the True Bugs and, for the time being, records should continue to be sent to me at johnwidgery@waitrose.com or my postal address,12 Bushcombe Close, Woodmancote, Cheltenham, Glos. GL52 9HX.

Despite the number of records received being very small, it turned out to be a remarkable year as three of the species reported were new to the county and another was a first for Vice County 20. A summary of the most interesting finds is given below:-

Rhopalidae

Corizus hyoscyami — Colin Everett got a second county record for this very attractive, bright scarlet bug at Garston on 5th October when he found it in his garden whilst deadheading Buddleia. It is likely that further records will follow over the next few years as it becomes increasingly established in Hertfordshire.

Coreidae

***Arenocoris fallenii* —** It was quite surprising to receive notification from Tristan Bantock that he had got the first county record for this species ,which is strongly associated with sandy coastal dune or Breckland habitats, at not just one but two sites in the county. Its presence was first detected at Frogmore Gravel Pits (TL1403) when searching under Stork's-bill (*Erodium* Sp.) rosettes on 12th May & it was found again on the same day in similar habitat at Waterford Gravel Pits(TL3115) also under Stork's-bill. The habitat at both sites is disused gravel workings with predominately sandy substratum that has developed a sparse flora including Stork's-bill which is the foodplant for this species. These finds along with other species of choice Heteroptera recently found at the same gravel pits by Tritsan in 2009 (See my 2009 report – Herts Nat. 42(1):14), make these two locations prime sites for the True Bugs in the county and there is a possibility that other scarce, specialist sandy habitat species, which are present on the Bedfordshire Greensands, could also turn up here.

***Leptoglossus occidentalis* —** Andy Holtham sent me an Email photo of an impressive-looking bug that he had found in his bathroom at his house in Stevenage (TL2625) on 1st November which proved to be this species and a first for Hertfordshire. It was accidentally introduced into Europe (Italy) in 1999 and since then has spread rapidly. It was first found in Britain as recently as 2007. The species is e a strong flier often attracted to light, hence many occurrences are in buildings.

Gonocerus acuteangulatus — Both adults & nymphs of this species were found at Rye Meads (TL3810) on Hawthorn, *Crataegus monogyna*, by Bernard Nau on 28th August. This is the second record for Hertfordshire, following the nearby Lea Valley record at Cheshunt Marsh in 2008 (*Herts. Nat.*,**41**(2);162). I would guess that it is now fairly well established in the county and would be found if specially looked for on mature, uncut,Box, *Buxus sempervirens* (often in churchyards) or Hawthorn, *Crataegus* sp.

Miridae

Psallus montanus — Bernard Nau proved the presence of this species in Hertfordshire when he found it on Birch, *Betula pendula*, at Rye Meads(TL3810) on 12th June. Whilst, strictly speaking, this is a newly recorded species for the county, it has almost certainly been present for many years but misidentified as the very similar *Psallus betuli*. *P.montanus* has only recently been recognised in the UK and many previous records for *P.betuli* probably refer to this species.

***Tuponia brevirostris* —** Whilst this tiny (c.3mm) insect has been recorded in administrative Hertfordshire once before, at Potters Bar (TL2500) in 2003, this was in VC21 (*Herts. Nat.*,**36**(1);33). A new VC 20 record was obtained by Bernard Nau when he found two on Tamarisk, *Tamarix gallica*, its foodplant,at Rye Meads (TL3910) on 28th August. It will probably found elsewhere in the county if searched for.

Gloucestershire ..... VC 33 & 34

John Widgery

The first ***Corizus hyoscyami*** this year was on 8th April when a ♂ was found at Woodmancote (SO9628). There were two significant early season finds of 'county rare' species not been recorded for over 55 years, the first on 18th April when ***Acompus rufipes*** was swept from low herbage near Bourton-on-the-Water (SP1718) & the second on 21st April when I found the barkbug ***Aneurus avenius*** under the bark of a Willow*(Salix* sp.) log at Woodmancote. On 1st May I came across a piece of wasteland near Great Barrington (SP2014) which contained very large stands of Garlic Mustard*, Alliaria petiolata,* on sweeping this several specimens of both the red and white forms of ***Eurydema oleracea*** were found.

Finally, an example of the very early spring this year was when an adult male ***Harpocera thoracica*** turned up in my garden at Woodmancote on 29th April. This could also demonstrate the changing climate when one takes account of the date of maturity in S&L1959, which was given as the third or fourth week in May!

johnwidgery@waitrose.com

Cheshire .....VC 58

Andy Harmer

With funding from Pond Conservation/Biffa last July, for the million ponds project, six new ponds were created at Chadkirk Chapel Estate (VC 58); a Local Nature Reserve owned & managed by Stockport Council in an area just S of Manchester. I sampled these every month to see the rate & extent of macro-invertebrate colonisation. Bugs found included *Gerris lacustris, G. thoracicus, Corixa punctata, Sigara lateralis, S. nigrolineata, S. distincta, Callicorixa praeusta, Notonecta glauca* and *N. obliqua*.

Two unfamiliar species turned up in April & proved to be *Arcticorisa germari*. It is probable that most of the new ponds at this site will become unfavourable for this very localised corixid within a few years but the largest pool has the attentions of cattle every day (Fig. 1) so maybe the constant regeneration of the margins by cattle will help retain a favourable habitat here

andyharmer@andyharmer.com

SE Yorkshire .....VC 61

Bill Dolling

In a letter to the editor published in the *Entomologist's Weekly Intelligencer* for 21 April 1860, page 23, Jas. Young of Hull offered specimens of various Heteroptera for use by the compilers of the proposed work on British Hemiptera (presumably Douglas and Scott). He did not indicate the provenance of his material but W.J. Fordham, writing in the *Naturalist* 1921: 334 recorded *Corizus hyoscyami* from 'near Hull' on the strength of Young's letter, adding the comment 'requiring confirmation.' The bug can now be definitely recorded for vice-county 61 as I found a single male on *Matricaria recutita* at the edge of a cereal field south of Burton Pidsea village in the East Riding (grid ref. TA244299 on 24th July 2011.

In July 2011 I have also had *Deraeocoris flavilinea* (2 ♀♀) on *Corylus maxima* in my garden at Elstronwick and *Lygocoris populi* (also 2 ♀♀) on Grey Poplar at Thorngumbald, both in the East Riding (v.c. 61). I have yet to find *Conostethus venustus*, though that is the reason I was looking at the Matricarila.

wdolling945@btinternet.com

Figure 1 - New cattle pond, Chadkirk Chapel Estate

SW Yorkshire .....VC 63

Jim Flanagan

On 14th August 2011 on a brownfield site adjacent to a business park & railway line, in Parkgate, Rotherham, I found my first local record of ***Pilophorus perplexus***, last recorded in South Yorkshire in 1996 by Stuart Foster in the Doncaster area.

jimflanagan@btinternet.com

Dumfriesshire .....VC 72

Mark Pollitt & Lisa Ferguson

Aquarius najas — In June 2011 a report of pond skaters on a section of the Big Water of Fleet (VC72) was passed to DGERC, the local records centre in Dumfries and Galloway. Suspecting the species *A. najas*, a good photograph of the habitat and insects was obtained from the recorder (N. Coombey) and passed to the national recording scheme organiser (SEB) and the identification confirmed. The species is known from a small number of rivers in Galloway but not previously from the Fleet basin. The species is listed as a priority species in the Local Biodiversity Action Plan.

MP

Cyphostethus tristriatus — A photograph taken by Ms Winifred Wilson of Dumfries was confirmed as first record for Dumfriesshire (VC72, NX9875). The photo was shown to staff from the Dumfries & Galloway Environmental Resources Centre at a local event promoting its Bugs in Gardens project and confirmed by Tristan Bantock. The Juniper Shieldbug was discovered as a neighbour's cypress hedging was being removed on the 28th July 2008.

LF

Mark Pollitt, Manager, DGERC

Lisa Ferguson, Bugs in Gardens Project Officer DGERC

lferguson@dgerc.org.uk

RECORDING

Vice County #	Vice County name	Scope	Contact	Contact address
VC 1 & 2	Cornwall, W & E	inc. Scilly Is	Keith Alexander	keith.alexander@waitrose.com
VC 3 & 4	Devon, S & N		Keith Alexander	keith.alexander@waitrose.com
VC 9	Dorset		Ian Cross	I.Cross@dorsetcc.gov.uk
VC 10	Isle of Wight		David Biggs	*Plum Tree Cottage, 76 Albert Rd, Gurnard, Cowes, Isle of Wight, PO31 8JU*
VC 11 & 12	Hampshire, S & N		Jonty Denton	JontyDenton@aol.com
VC 13 & 14	W & E Sussex		Peter Hodge	peter.j.hodge@tesco.net
VC 15 & 16	Kent, E & W		Eric Philp	eric.philp2@virgin.net
VCs 16-21,24pt	London Nat Hist Soc area	20ml radius from St Paul's	Tristan Bantock	tristanba@googlemail.com
VC 17	Surrey		Jonty Denton	JontyDenton@aol.com
VC 18 & 19	Essex, S & N		Peter Kirby	peter.kirby7@ntlworld.com
VC 20	Hertfordshire		John Widgery	johnwidgery@waitrose.com
VC 23 (& 22pt)	Oxfordshire	Oxfordshire admin	John Campbell	campbell397@btinternet.com
VC 25 & 26	Suffolk, E & W	water bugs	Adrian Chalkley	adrian@boxvalley.co.uk
,,	Suffolk, E & W	land bugs	Nigel Cuming	nigelcuming330@btopenworld.com
VC 30	Bedfordshire	VC & admin	Bernard Nau	nauhet@btinternet.com
VC 32	Northamptonshire		Tony Cook	tony.cook20@btinternet.com
VC 33 & 34	Gloucestershire, E & W		John Widgery	johnwidgery@waitrose.com
VC 37	Worcestershire	VC & admin	John Partridge	records@wbrc.org.uk
VC 53 & 54	Lincolnshire, S & N	VCs & admin, shield bugs & allies	Annette Binding	allan.binding@ntlworld.com
..	..	VC & admin, other land bugs	Colin Smith	Csmith@countrywidefarmers.co.uk
..	..	VCs & admin, water bugs	Richard Chadd	richard.chadd@environment-agency.gov.uk
VC 55	Leics & Rutland		David Budworth	dbud01@aol.com
VC 56	Nottinghamshire		David Budworth	dbud01@aol.com
VC 57	Derbyshire		David Budworth	dbud01@aol.com
VC 58	Cheshire		Steve Judd	Steve.Judd@liverpoolmuseums.org.uk
VC 59 & 60	Lancashire, S & W		Steve Judd	Steve.Judd@liverpoolmuseums.org.uk
VC 61 & 62	Yorkshire, SE & NE		Stuart Foster	stuart@blackdan6.plus.com
VC 63	Yorkshire, SW		Jim Flanagan	jimflanagan@btopenworld.com
VS 64	MYorkshire, mid-W		Stuart Foster	stuart@blackdan6.plus.com
VC 65	Yorkshire, NW		Steve Hewitt	SteveH@carlisle-city.gov.uk
VC 69 & 70	Cumberland, Westmorland, N Lancs	VCs & admin(Cumbria)	Steve Hewitt	SteveH@carlisle-city.gov.uk
VC 69	Westmorland		Steve Hewitt	SteveH@carlisle-city.gov.uk
VC 70	Cumberland		Steve Hewitt	SteveH@carlisle-city.gov.uk
(—)	Ireland (all)		Brian Nelson	brian.nelson@magni.org.uk

Recorders listed are either the designated County Recorder, or an acting recorder who accepts records for the county.

Organisers of UK Heteroptera Recording Schemes :

Waterbugs & allies : Tony Cook… tony.cook20@btinternet.com

Plantbugs & allies : Jim Flanagan … jimflanagan@btinternet.com

Shieldbugs & allies : Tristan Bantock … tristanba@googlemail.com

GUIDELINES FOR SUBMITTING RECORDS

Preferred format - spreadsheet (e.g. Excel): one record per row, essential columns:

1-species name| 2-date (dd/mm/yyyy)| 3-site name|
4-grid ref(XX######)| 5-VC| 6-recorder| 7-determiner|

extra columns (optional):

admin region | abundance | age | sex | habitat | …etc.

Alternative format - word processor file (e.g. Word): columns as above & tabs separating columns - never use 'spaces' or punctuation marks for this. Save as rtf or a tab-delimited-text file.

Organisers have to check for errors & omissions, & to ensure that formatting meets BRC/NBN requirements - this can be quite time-consuming, so please try to keep to the guidelines.

TOTALS FOR RECENTLY RECEIVED RECORDS OF '*PLANT BUGS & ALLIES*'

Jim Flanagan

Source of records	Received	Records	Period covered	Geographical coverage	Vice counties
Marion Bryce	25-02-2010	**80**	2009	Leics., Notts., Derbys., Staffs.	55, 56, 57, 39
Bill Ely	30-08-11	**136**	2010	Yorkshire	61-65
Bill Ely	12-11-11	**690**	2011	Yorkshire & sites in Greater Manchester (within VC63)	61-65
Jim Flanagan (some from Eric Smith, Rob Foster & Bill Ely)	10-03-2011	**385**	2010	S Yorks, some Derbs. & Northumb.	57, 63, 67/68
Andy Godfrey (via Stuart Foster)	27-11-2010	**57**	2010	Thorne & Hatfield Moors, S Yorks	63
Martin Drake	17-01-2011	**173**	2010	Mostly South Devon & East Kent	3, 15, et al
Alan Hadley (via Derek Whiteley)	14-01-2011	**10**	2010	Sheffield area	63
Alvin Helden	12-01-2011	**65**	2010	Herts, Cambs	20, 29
Isle of Wight Nat. Hist. & Archaeol.Soc. (Jackie Hart)	26-08-2010	**1469**	1899-2009	Isle of Wight	10
David Biggs (& Ian Boyd) of Isle of Wight Nat. Hist. & Archaeol. Soc.(via Jackie Hart)	06-03-2011	**92**	2010, also a few very old	Isle of Wight	10
Bernard Nau	24-02-2011	**63**	2010	Wales (3 sites incl. Aberystwyth & Tregaron)	46
NE Scotland Biological Records Centre	14-10-11	**67**	Old records for 1990 (some older & newer)	Mid & East Perthshire	88 & 89
(via Nick Littlewood)	14-10-11	**67**	Old records for 1990 (some older & newer)	Mid & East Perthshire	88 & 89
John Widgery	22-02-2011	**56**	2010	E Gloucs.., W Gloucs.	33, 34
Martin Harvey	08-05-11	**239**	1998-2011	Mainly southern half of England (Northants., Oxon., Berks., Bucks., S. & N. Hants. and Isle of Wight) with others from as far north as Scotland	10,11, 22-24, 32 et al.
TOTAL		**3,637**			

My thanks to these contributors, also to others who submitted smaller numbers, but for whom space prevents me listing in full.

So far I have generated & received more than 3,600 records since becoming (in early 2010) National Scheme Organiser for the *Plantbugs & allies*, which is a very encouraging start to my stewardship of this part of the UK Terrestrial Heteroptera Recording Scheme. My grateful thanks to all the people mentioned above and many others, which space prevents me including here but who have provided me with the specimens & records. I have responsibility for the national recording of ten families of Heteroptera, which equate to the coverage of pages 78-319 in *Land and Water Bugs of the British Isles* by T. R. E. Southwood & D. Leston. These families are shown in the list below as a reminder to all, as to which kinds of records I should receive.

Lygaeidae (groundbugs)	Nabidae (damsel bugs)
Berytinidae (stiltbugs)	Anthocoridae (flower bugs)
Piesmatidae (beetbugs)	Cimiciae (bed bugs)
Tingidae (lacebugs)	Microphysidae (minute bugs)
Reduviidae (assassin bugs)	Miridae (grassbugs/plantbugs)

I hope to continue to report on developments in recording effort for these families in future editions of *Het News*. Also, I am currently looking at using *Recorder 6* database software to store the records received so far, and future records so that at the earliest opportunity I can begin feeding records to the NBN Gateway. I know a lot of het recording occurs on a wide scale so can I urge all of you who record species for any of the above groups, but have yet to collate them, to please send them to me in any normally acceptable format (but preferably in spreadsheet format). Your records may be particularly significant in respect of species that are currently extending their range. Thanks in advance to all for your help.

Jim Flanagan
UK Terrestrial Heteroptera Recording Scheme (plantbugs & allies)
jimflanagan@btinternet.com

Checklist of Heteroptera recorded from Cheshire & Lancashire (VCs 59-60) up to 2011

Steve Judd

The following checklist for two counties in NW England is based on that in:

Judd, S., (in press), First Lancashire & Cheshire records of true bugs (Hem.: Het.) & a revised county checklist.
J. Lancs. & Cheshire Ent.Soc., **vols 133** & **134**, pp3-13.

The previous published checklist for this region is:

Judd, S., 1986, A checklist of the Lancashire & Cheshire Heteroptera.
Ann. Rep. & Proc. of Lancs & Cheshire Ent. Soc., **110**: pp60-65

Contact address:
Dr. Stephen Judd,
National Museums Liverpool, William Brown St., Liverpool, L3 8EN
steve.judd@liverpoolmuseums.org.uk

Notation

C ..... Cheshire, post-1970, VC 58; [C] = pre-1970
L ..... Lancashire, post-1970, VC59 & VC60; [L] = pre-1970
59 ..... S Lancaster post-1970, VC59; [59] = pre-1970
(Lancashire S of R. Ribble)
60 .... W Lancaster post-1970, VC60; [60] = pre-1970
(Lancashire N of R. Ribble)
Red .... addition to one or more counties since Judd (1986).

CERATOCOMBIDAE
Ceratocombus coleoptratus (Zett.) C [L] [59]

DIPSOCORIDAE
Cryptostemma alienum H.-S. [C] L 60

NEPIDAE
Nepa cinerea L. C L 59 60
Ranatra linearis (L.) C L 59

CORIXIDAE
Micronecta scholtzi (Fb.) C
Micronecta poweri (D. & S.) L 59
Cymatia bonsdorffii (Sahlb.) C L 59
Cymatia coleoptrata (Fab.) C
Glaenocorisa propinqua (Fb.) C L 59
Arctocorisa germari (Fb.) C L 59 60
Callicorixa praeusta (Fb.) C L 59 60
Callicorixa wollastoni (D. & S.) C L 59
Corixa dentipes (Thom.) C L 59
Corixa panzeri (Fb.) C L 59 60
Corixa punctata (Ill.) C L 59 60
Hesperocorixa castanea (Thom.) C [L]
Hesperocorixa linnaei (Fb.) C L 59 60
Hesperocorixa moesta (Fb.) C L 59
Hesperocorixa sahlbergi (Fb.) C L 59 60
Paracorixa concinna (Fb.) C L 59 60
Sigara selecta (Fb.) . [L]
Sigara stagnalis (Leach) C L 59 60
Sigara nigrolineata (Fb.) C L 59 60
Sigara limitata (Fb.) C L 59
Sigara semistriata (Fb.) C L 59 60
Sigara venusta (D. & S.) C L [59]60
Sigara dorsalis (Leach) C L 59 60
Sigara distincta (Fb.) C L 59 60
Sigara falleni (Fb.) C L 59 60
Sigara fossarum (Leach) C L [59]60
Sigara scotti (D. & S.) C [L] [59]
Sigara lateralis (Leach) C L 59 60

NAUCORIDAE
Ilyocoris cimicoides (L.) C L 59 60

APHELOCHEIRIDAE
Aphelocheirus aestivalis (Fab.) C

NOTONECTIDAE
Notonecta glauca L. C L 59 60
Notonecta maculata Fab. C L 59
Notonecta obliqua Thunb. C L 59
Notonecta viridis Delcourt C L 59 60

PLEIDAE
Plea minutissima (Füssly) C L 59 60

HEBRIDAE
Hebrus ruficeps (Thom.) C [L]

HYDROMETRIDAE
Hydrometra stagnorum (L.) C L 59 60

VELIIDAE
Microvelia pygmaea (Duf.) [C]
Microvelia reticulata (Burm.) C L 59
Velia caprai Tam. C L 59 60

GERRIDAE
Gerris argentatus Schum. C [L]
Gerris costae (H.-S.) C L 59
Gerris gibbifer Schum. C L 59
Gerris lacustris (L.) C L 59 60
Gerris odontogaster (Zett.) C L 59 60
Gerris thoracicus Schum. C L 59 60
Gerris lateralis Schum. C [L] [59]

AEPOPHILIDAE
Aepophilus bonnairei Sig [L]

SALDIDAE
Chiloxanthus pilosus (Fall.) [C] [L] [60]
Chartoscirta cincta (H.-S.) C L 59 60
Chartoscirta cocksii (Curtis) C [L]
Chartoscirta elegantula (Fall.) [C] L 60
Halosalda lateralis (Fall.) C L 60
Macrosaldula scotica (Curt.) [C] L 60
Saldula c-album (Fb.) [C] L 60
Saldula orthochila (Fb.) C L 59
Saldula pallipes (Fab.) C [L]
Saldula palustris (Doug.) C L. 60
Saldula pilosella (Thom.) . [L]
Saldula saltatoria (L.) C L 59 60
Salda littoralis (L.) C L 59 60
Salda morio Zett [L]
Salda muelleri (Gm.) L 60

TINGIDAE
Acalypta nigrina (Fall.) . L. 60
Acalypta parvula (Fall.) [C] L 59
Agramma laetum (Fall.) . L 59 60
Derephysia foliacea (Fall.) C L 60
Dictyla convergens (H.-S.) C L 60
Dictyonota strichnocera Fb. C L 59
Physatocheila dumetorum (H.-S.) C L 60
Stephanitis rhododrendri Horv. [C]
Tingis ampliata (H.-S.) C L 60
Tingis cardui (L.) C L 59 60

MICROPHYSIDAE
Loricula elegantula (Bärens.) [C] L 59 60
Loricula pselaphiformis Curtis C [L]
Myrmedobia exilis (Fall) [C]

MIRIDAE
Bryocorinae
Bryocoris pteridis (Fall.) C L [59] 60
Monalocoris filicis (L.) C L 59 60
Campyloneura virgula (H.-S.) C L 59 60
Dicyphus annulatus (Wolff) . L 59 60
Dicyphus globulifer (Fall.) [C] [L] [59]
Dicyphus constrictus (Boh.) [C] [L]
Dicyphus epilobii Reuter C L 59 60
Dicyphus errans (Wolff) C L [59] 60
Dicyphus stachydis Sahl. C L 60
Dicyphus pallicornis (Fb.) C L [59] 60
Macrolophus pygmaeus (Ram.) C L.
Deraeocorinae
Alloeotomus gothicus (Fall.) C L 60
Deraeocoris flavilinea (A. Costa) C L 59
Deraeocoris lutescens (Schill.) C L 59 60
Deraeocoris ruber (L.) C L 59 60
Mirinae
Adelphocoris lineolatus (Goeze) C L 59 60
Apolygus lucorum (Meyer-Dür) C L 59 60
Apolygus spinolae (Meyer-Dür) C L 59
Calocoris alpestris (Meyer-Dür) C L 59 60
Calocoris roseomaculatus (De Geer) . [L] [59]
Camptozygum aequale (Vill.) [C] L 59
Capsodes sulcatus (Fb.) [C]
Capsus ater (L.) C L 59 60
Charagochilus gyllenhalii (Fall.) [C]
Closterotomus fulvomaculatus (De Geer) [C] [L]
Closterotomus norvegicus (Gm.) C L 59
Dichrooscytus rufipennis (Fall.) [C] [L]
Grypocoris stysi (Wag.) C L 59 60
Liocoris tripustulatus (Fab.) C L 59 60
Lygocoris pabulinus (L.) C L 59 60
Lygocoris rugicollis (Fall.) C L 59
Lygocoris viridis (Fall.) C L 59 60
Lygus maritimus Wagner L 59
Lygus rugulipennis Popp. C L 59 60
Megacoelum infusum (H.-S.) C L 60
Miris striatus (L.) C L . 60
Neolyguscontaminatus (Fall.) C L 59 60
Neolygus populi Leston C
Orthops campestris (L.) C L 59 60
Orthops kalmii (L.) [C]
Pantilius tunicatus (Fab.) C L 59 60
Phytocoris ulmi (L.) C L 59 60
Phytocoris varipes Boh. C L 59 60
Phytocoris dimidiatus Kirsch. C L 59
Phytocoris longipennis Flor. C L 59 60
Phytocoris pini Kirsch. [C] L 60
Phytocoris populi (L.) C L 59 60
Phytocoris reuteri Saunders C L 59
Phytocoris tiliae (Fab.) C L 59 60
Pinalitus cervinus (H.-S.) C L 59 60
Pinalitus rubricatus (Fall.) [C]
Rhabdomiris striatellus (Fab.) C L 59 60
Polymerus palustris (Reut.) C L [59]60
Polymerus unifasciatus (Fab.) [L]
Polymerus nigrita (Fall.) C L 59 60
Stenotus binotatus (Fab.) C L 59
Mirinae : Stenodemini
Leptopterna dolabrata (L.) C L 59 60
Leptopterna ferrugata (Fall.) C L 59
Megaloceraea recticornis (Geoff.) C
Notostira elongata (Geoff.) C L 59
Pithanus maerkelii (H.-S.) C L 59 60
Stenodema calcarata (Fall.) C L 59 60
Stenodema holsata (Fab.) C L 59
Stenodema laevigata (L.) C L 59 60
Teratocoris antennatus (Boh.) [C]
Teratocoris saundersi D.& S. [C] [L]
Teratocoris viridis D.& S. [C] [L]

Trigonotylus psammaecolor Reut. C L 59
Trigonotylus ruficornis (Geoff.) C L 59 60

Orthotylinae : Halticini

Halticus saltator (Geoff.) [C] [L]
Orthocephalus coriaceus (Fab.) [C] [L]
Orthocephalus saltator (Hahn) C [L]

Orthotylinae : Orthotylini

Blepharidopterus angulatus (Fall.) C L 59
Blepharidopterus diaphanus (Kirsch.) [C] [L]
Cyllecoris histrionius (L.) C L 59 60
Cyrtorhinus caricis (Fall.) C [L] [59]
Dryophilicoris flavoquadrimac.(De Geer) C L 59 60
Globiceps fulvicollis Jak.[C] L 59 60
Heterocordylus genistae (Scop.) [C] L 60
Heterocordylus tibialis (Hahn) C L 59
Heterotoma planicornis (Pall.) C L 59 60
Malacocoris chlorizans (Panz.) [C] [L]
Mecomma dispar (Boh.) C [L]
Mecomma ambulans, (Fall.) C L 59 60
Orthotylus ericetorum (Fall.) C L 59
Orthotylus flavosparsus (Sahl.) [C] [L] [59]
Orthotylus flavinervis (Kirsch.) C [L] [59]
Orthotylus marginalis Reut. C L 59
Orthotylus nassatus (Fab.) [C]
Orthotylus ochrotrichus Fb. C
Orthotylus tenellus (Fall.) C [L]
Orthotylus viridinervis (Kirsch.) [C]
Orthotlyus adenocarpi (Perris) C
Orthotylus virescens (D. & S.) C [L] [59]
Orthotylus bilineatus (Fall.) [C]
Platycranus bicolor (D. & S.) . L [59]
Pseudoloxops coccineus (M.-D.) L 60

Phylinae : Pilophorini

Pilophorus cinnamopterus (Kirsch.) L 60
Pilophorus clavatus (L.) [C] [L] [59]
Pilophorus perplexus D. & S. C [L]

Phylinae: Hallodapini

Systellonotus triguttatus (L.) . L 59
Miridae : Phylinae : Phylini
Amblytylus brevicollis Fb [L]
Asciodema obsoleta (Fb.) C L .
Atractotomus magnicornis (Fall.) C
Atractotomus mali (M.-D.) C
Chlamydatus pulicarius (Fall.) [C]
Chlamydatus pullus (Reut.) [C] [L]
Chlamydatus evanescens (Boh.) [C]
Compsidolon salicellum (H.-S.) [C] [L]
Conostethus griseus D. & S.C [L]
Conostethus roseus (Fall.) . [L]
Europiella artemisiae (Becker) C [L]
Harpocera thoracica (Fall.) C L 59 60
Lopus decolor (Fall.) C L 59
Macrotylus paykullii (Fall.) [C] L 59 60
Megalocoleus molliculus (Fall.) C
Monosynamma sabulicola (Wagn.) [C] L 59 60
Oncotylus viridiflavus (Goeze) C
Phoenicocoris obscurellus (Fall.)C [L] [59]
Phylus coryli (L.) C L 60
Phylus melanocephalus (L.) C
Phylus palliceps Fb. C L 60
Plagiognathus arbustorum (Fab.) C L 59 60
Plagiognathus chrysanthemi (Wolff) C L 59
Plesiodema pinetella (Zett.) C [L] [59]
Psallus betuleti (Fall.) C L [59] 60
Psallus perrisi (M & R.) C
Psallus variabilis (Fall.) [C]
Psallus wagneri Oss. C
Psallus ambiguus (Fall.) C L 59 60
Psallus quercus (Kirsch.) [C]
Psallus confusus Rieg. [C] [L]
Psallus falleni Reut. C L 59
Psallus flavellus Stichel C
Psallus haematodes (Gmelin) C L 59 60
Psallus lepidus (Fb.) [C]
Psallus mollis (M. & R.) C
Psallus salicis (Kirsch.) C [L]
Psallus varians (H.-S.) C L [59] 60
Salicarus roseri (H.-S.) . [L]
Sthenarus rotermundi (Scholtz) . [L] [59]
Tinicephalus hortulanus (M.-D.) . [L]
Tytthus pubescens (Knight) [C]
Tytthus pygmaeus (Zett.) C L 59

NABIDAE

Prostemma guttula (Fab.) . [L]
Himacerus major (Costa) C L 59 60
Himaceris mirmicoides (Costa) [C]
Himacerus apterus (Fab.) L 60
Nabis [= Dolichonabis] limbatus Dahl. C L 59 60
Nabis flavomarginatus Scholtz C L 59 60
Nabis lineatus Dahl C
Nabis ericetorum Scholtz C L 59 60
Nabis ferus (L.) C L 59 60
Nabis rugosus (L.) C L 59 60

ANTHOCORIDAE

Acompocoris alpinus Reuter C L 60
Acompocoris pygmaeus (Fall.) C [L] [59]
Anthocoris confusus Reut. C L 59 60
Anthocoris gallarumulmi (De Geer) [C] [L]
Anthocoris nemoralis (Fab.) C L 59 60
Anthocoris nemorum (L.) C L 59 60
Anthocoris sarothamni D. & S. [C]
Elatophilus nigricornis L 60
Temnostethus gracilis Horv L 60
Temnostethus pusillus (H.-S.) [C]
Tetraphleps bicuspis (H.-S.) C
Orius majusculus (Reut.) C [L] [59]
Orius vicinus(L.) [C]
Orius niger (Wolff) [C]
Dufouriellus ater (Dufour) C
Lyctocoris campestris (Fab.) [C] L 59
Xylocoris galactinus (Fb.) [C] L 59
Xylocoris cursitans (Fall.) [C] [L]
Buchananiella continua (F.B. White) C

CIMICIDAE

Cimex lectularius L. [C] [L]

REDUVIIDAE

Empicoris culiciformis (De Geer) C [L]
Empicoris vagabundus (L.) C L 60
Reduvius personatus (L.) C [L] [59]
Coranus subapterus (De Geer) C L 59

ARADIDAE

Aradus depressus (Fab.) [C] L 59

LYGAEIDAE

Orsillinae

Nysius ericae (Sch.) C
Nysius thymi (Wolff) [C] L [59] 60

Ischnorhynchinae

Kleidocerys ericae (Horv.) C L 59 60
Kleidocerys resedae (Panz.) C L 59 60

Cyminae

Cymus claviculus (Fall.) C L 59
Cymus glandicolor Hahn C L 59 60
Cymus melanocephalus Fb. C

Blissinae

Ischnodemus sabuleti (Fall.) C L 59 60

Artheneinae

Chilacis typhae (Perr.) C L 59 60

Heterogastrinae

Heterogaster urticae (Fab.) C L 59 60

Rhyparochrominae

Drymus brunneus (Sahl.) C L 59 60
Drymus ryeii D. & S L 60
Drymus sylvaticus (Fab.) C L 59 60
Gastrodes grossipes (De Geer) C L 59 60
Lamproplax picea (Flor) C L 60
Scolopostethus affinis (Schill.) C L 59 60
Scolopostethus decoratus (Hahn) C L 59 60
Scolopostethus grandis Horv. C
Scolopostethus thomsoni Reut. C L 59 60
Taphropeltus contractus (H.-S.) [C] [L]
Macrodema microptera (Curt.) C L 60
Trapezonotus arenarius (L.) C L 59 60
Trapezonotus desertus Seid. C L 59 60
Megalonotus chiragra (Fab.) C L 59 60
Megalonotus dilatatus (H.-S.) [C]
Pachybrachius fracticollis (Schill.) C
Plinthisus brevipennis (Lat.) [C] L 59 60
Graptopeltus lynceus (Fab.) . L 59 60
Peritrechus geniculatus (Hahn) C L 59
Peritrechus lundii (Gm.) [C] L [59] 60
Acompus pallipes (H.-S.) . [L]
Stygnocoris fuligineus (Geoff.) C L 59 60
Stygnocoris rusticus (Fall.) C L 59
Stygnocoris sabulosus (Schill.) C L 59 60

PIESMATIDAE

Piesma maculatum (Lap.) C
Parapiesma quadratum (Fb.) C L 60

BERYTIDAE

Neides tipularius (L.) . L 59 60
Berytinus minor (H.-S.) C L 59 60
Berytinus montivagus (M.-D.) L 60
Berytinus crassipes (H.-S.) . [L] [59]
Gampsocoris punctipes (Germ.) C L 59 60

STENOCEPHALIDAE

Dicranocephalus agilis (Scop.) . [L] [59]

RHOPALIDAE

Corizus hyoscyami (L.) [C] L 59
Liorhyssus hyalinus (Fab.) C
Rhopalus maculatus (Fb.) [C]
Rhopalus subrufus (Gm.) L 60
Chorosoma schillingi (Schum.) C L 59 60
Myrmus miriformis (Fall.) C L 59 60

ALYDIDAE

Alydus calcaratus (L.) C

COREIDAE

Coriomeris denticulatus (Scop.) C L 60
Leptoglossus occidentalis (Heid.) C L 60

CYDNIDAE

Sehirus luctuosus (M. & R.) . [L] [59]
Tritomegas bicolor (L.) C

THYREOCORIDAE

Thyreocoris scarabaeoides (L.) . [L] [59]

ACANTHOSOMATIDAE

Acanthosoma haemorrhoidale (L.) C L 59 60
Cyphostethus tristriatus (Fab.) C L 59 60
Elasmostethus interstinctus (L.) C L 59 60
Elasmucha grisea (L.) C L 59 60

SCUTELLERIDAE

Odontoscelis fuliginosa (L.) [C]

PENTATOMIDAE

Picromerus bidens (L.) C L 59 60
Rhacognathus punctatus (L.) C L 59 60
Troilus luridus (Fab.) C L 59 60
Zicrona caerulea (L.) C L 59 60
Aelia acuminata (L.) C L 59 60
Chlorochroa juniperina (L.) [L] [59]
Dolycoris baccarum (L.) C L 60
Palomena prasina (L.) C L 59 60
Eysarcoris venustissimus (Schrank)] C
Pentatoma rufipes (L.) C L 59 60
Piezodorus lituratus (Fab.) C L 59 60

LITERATURE RELATING TO BRITISH HETEROPTERA

Continued from *Het News* **12**, Autumn 2008

B.S.Nau

INTERNATIONAL

Aglamzyanov, R.S., 2006
Revision der paläarktischen Arten der Gattung *Lygus* Hahn (Miridae)
Thesis, Johannes-Gutenberg-Universität Mainz, Fachbereich Biologie (2006), 70pp, 224 figs.

Aukema, B., Hermes, D.J., 2006
Verspreidingsatlas Nederlandse wantsen (Hem.: Het.). Deel 2: Cimicomorpha I (Tingid., Microphys.., Nabid., Anthocor.., Cimicid. & Reduv.)
Book publ. by EIS-Nederland, Leiden, 136pp, ISBN 90-76261-04-0
[In Dutch. distribution atlas; each species has text, maps & season chart]

Aukema, B., 2008
Psallus (Apocremnus) montanus Josifov, 1973 in The Netherlands
in: *Advances in Heteroptera research*, ed. Grozeva & Simov, Pensoft Publishers, Sofia (2008), pp49-54
[*Ps. montanus & Ps. betuleti* both in NL, *montanus* the more common. Distn map of each sp.,. season bar charts .]

Bryja, J. , Kment, P., 2007
True bugs (Heteroptera) 0f the Bukovskevrchy Hills (Poloniny National Park, Slovakia)
Acta Musei Moravia, Scientiae biologicae (Brno), 92, 1-51, (2007)
[Details of records of 193 spp.]

Damgaard, J., 2008
Phylogeny of the semiaquatic bugs (Hem.-Het≥, Gerromorpha)
Insect Systematics & Evolution, **29**, 4, pp231-460

Damgaard, J., 2008b
Evolution of the semi-aquatic bugs (Hemiptera: Heteroptera: Gerromorpha) with a reinterpretation of the fossil record.
Acta Entomologica Musei Nationalis Pragae, **48**(2), 251-268

Dusoulier, F., Aberlenc, H.-P., Lupoli, R., Streito, J.-C., 2007
L'invasion orientale de *Leptoglossus occidentalis* en France: bilan de son extension biogéographique en 2007 (Hemiptera Coreidae)
L'Entomologiste, **63**, 6, 303-308, (2007) [English transln *Het News* **12**,]
[1st record Sept 2005 + 19 in 2006 + 72 in 2007 - in 20 departments.]

Dusoulier, F., Mouquet, C., 2007a
Clé de détermination des Acanthosomatidae Signoret, 1864 du Massif armoricain (Hemiptera, Heteroptera)
Invertébrés Armoricains, 1, 7-13, (2007) [In French]
[GB spp plus: *Elasmostethus minor, Elasmucha ferugata, E. fieberi*]

Garrouste, R., Nel, A., 1910
First semi-aquatic bugs Mesoveliidae and Hebridae (Hemiptera: Heteroptera: Gerromorpha) in Miocene Dominican amber.
Insect Systematics & Evolution, **41**, pp93-102

Gesse, F., Ribes, J., Goula, M., 2009
Belonochilus numenius, the sycamore seed bug. new record for the Iberian fauna.
Bulletin of Insectology , **62**(1), pp121-123, (2009)
[Lygaeidae; key & photo]

Grozeva, S., & Simov, N.,(eds) 2008
Advances in Heteroptera research. Festschrift in Honor of 80th Anniversary of Michail Josifov
Pensoft Publishers, Sofia (2008), 417pp. ISBN 978-954-642-3211-5
[32 papers by various authors]

Günther, H., 2008
Zur Wanzenfauna (Heteroptera) von Hessen und Rheinland-Pfalz.
Mainzer naturwiss. Archiv, **46**, 187-193, (2008)
[*Aradus krueperi* (new to Germany); *Cymatia bonsdorffii, Psallus aethiops*, & *Microplax interrupta* (new to region).]

Hoffmann, H-J, 1978
Zur Ausbreitung der Platanen-Gitterwanze *Corythucha cliata* (Say) inn Südeuropa (Heteroptera: Tingidae)
Entomologische Zeitschrift, **88**, no18, 206-211, (1978)
[Map of distribution, France - Hungary]

Hoffmann, H-J, 2006
Insekten in Köln - in Kunst, Kultur und Kommerz
Decheniana - Beihefte (Bonn), **35**, 511-526
[Use of insects & products therefrom, in urban Cologne & its museums.]

Hoffmann, H-J, 1997
Die Platanen-Gitterwanze *Corythucha ciliata* (Say) weiter auf dem Vormarsch
Entomologische Zeitschrift, 122-126
[Spread in NW Germany, Portugal & France. Dwg of leaf damage & adult]

Hoffmann, H-J, 1997a
Rote Liste der Wanzen (Heteroptera)
Rote Liste gefährdeter Tiere Deutschlands, Bundesamt für Naturschutz, Bonn-Bad Godesberg (1998), Schriftenreihe für Landschaftspflege und *Naturschutz Heft* **55**., 235-242

Hoffmann, H-J, 2003
Die Wanze aus dem Meer: Vorkommen und Lebensweise von *Aepophilus bonnairei* Sign. an der europaischen Atlangikküste
Verhandlungen der Westdeutscher Entomologentag, 171-178, (1993)
[4 SEM photos, distribution map for Brit. Is., France, Iberia & Morocco.]

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Die Platanengitterwanze *Corythucha ciliata* (Say, 1872) erreicht den Niederrhein (Heteroptera)
Entomologische Nachrichhten und Berichte, **47**, 67-70 (& end cover colour plates)
[Maps of spread in Europe, & range in N America; 2 fine colour plates of adults. Mentions *Scolopostethus pictus* & *Arocatus roeselii*.]

Hoffmann, H-J, 2004
Insekten als Neozoen in der Stadt
Insecta, **9**, 9-20, (2004)
[*Conostethus venustus,Orsillus depressus, Corythucha ciliata, Stephanitis takeya* + non-Het spp. Fine colour photos of *Stephanitis* adults & leaf damage on *Pieris japonica*.]

Hradil, LK, Kment, P., Rohacova, M., 2007
New records of of *Liorhyssus hyalinus* (Heteroptera: Rhopalidae) in the Czech Republic, with a review of its worldwide distribution.
Acta Musei Moravia, Scientiae biologicae (Brno), **92**, 53-107, (2007) [In English]
[Much detailed ecological & biological information.]

Ju, Ruiting, et al., 1910
Spread of and damage by an exotic lacebug, *Corythuca ciliata* (Say, 1832) (Hemiptera: Tingidae), in China.
Entomological News (USA), **120**, 4, p 409, (2009)
[Has spread rapidly through southern China.]

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Journal of Zoology,London, **227**, pp453-464
[Relationship of size between nymphal instars, for 9 spp of gerrid]

Kment, P., 2006a
Revised occurrence of *Heterotoma* species (Heteroptera: Miridae) in the Czech Republic and Slovakia with remarks on nomenclature, diagnostic characters and ecology.
Acta Musei Moravia, Scientiae Biologicae (Brno), **91**, 7-52, (2006) (In English)
[Neotypes designated for *H. merioptera* & *H. planicornis*. Confusion of these is detailed. Parameres daignostic; also antenna ratio A3/A2 (*H.mer.* ♂: 0.215, ♀0.202;. *Het.plan.* ♂ 0.240, ♀ 0.244]

Kment, P., Banar, P., 2008
Additional records of the invasive Nearctic bug *Leptoglossus occidentalis* (Heteroptera: Coreidae) in Croatia
Natura Croatia, **17**, 2, 141-147, (2008) [In English]
[2nd-4th records, Croatia coastal islands.]

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Faunistic records from the Czech Republic - 244 Heteroptera: Coreidae
Klapalekiana (ISSN 1210-6100), 44, 57-60, (2008) [In English]
[*Leptoglossus occidentalis*, details of 20+ records]

Matocq, A., 2008
A new species of *Megalocoleus* (Hemiptera: Heteroptera: Miridae: Phylinae) from Morocco
Acta Entomologica Musei Nationalis Pragae, **48**(2), 419-422

Moulet, P., 2008
Alary polymorphism & new localities in Palaearctic *Oncocephalus* Klug, 1830 (Heteroptera, Reduviidae, Stenopodainae)
in: *Advances in Heteroptera research*, ed. Grozeva & Simov, Pensoft Publishers, Sofia (2008), 235-240
[Brachypter, sub-macropter & macropter dwgs & descriptions.]

Odegaard, F., Endrestol, A., 2007
Establishment & range expansion of some new Heteroptera in Norway
Norwegian Journal of Entomology, pp1-8, 3 December 2007 [In English]
[New to Norway: *Deraeocoris lutescens, Chilacis typhae, Heterogaster urticae*.[see: www.entomologi.no/eng_index.html]

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Hémiptères Pentatomoidea volume 3 : Podopinae et Asopinae.
Faune de France , **93**, book publ. by Fédération Française des Sociétés de Sciences, Paris
[In French; illustrated keys; keys also in English; price ca.£68.]

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Faune de France , **92**, Fédération Française des Sociétés de Sciences, Paris
[In French; illustrated keys; keys also in English; price ca.£92.]

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Alien true bugs of Europe (Insecta: Hemiptera: Heteroptera)
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The times they are a-changin' : driving forces of recent additions to the Heteroptera fauna of Austria.
in *Advances in Heteroptera research*, Pensoft Publishers, Sofia (2008), pp309-326
[84 spp added to Austria list in 25 years.Detailed species tables.]

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Die Rotbeinige Baumwanze *Pentatoma rufipes* L., 1758 in 10 Jahren Lichtfallenfang in München. (The Forest Bug *Pentatoma rufipes* in 10 years of light trap captures in Munich.)
Entomofauna Zeitschrift für Entomologie, **30**, 3, pp45-52
[Histograms show annual variations of seasonal occurrence]

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Book publ. by Tibiale, Helsinki; 352pp, hard.; ISBN 978-952-92-7512-0
[In Finnish, updated ed.; 500+ spp of Finnish hets, for each a photo, map, text description, range & biology; price ca.£56.]

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[Incl. bibliography of Stÿs's publications1999-2008]

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Revision of the Stenodemini with a review of the included genera (Hem.-Het.: Miridae: Mirinae).
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[Many SEM photos & dwgs of details, cladograms; includes British spp]

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[BENHS Annual Exhibition 2007, exhibit]
*Br. J. Ent. Nat. Hist.***, 21,3, p184**
[*Physatocheila smreczynskii* (vc3); W Cornwall: *Glob. fulv.cruciatus* (vc1), *Strongylocoris luridus* (vc1)]

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The wood-decay invertebrates of the Lanhydrock Estate, East Cornwall: a site of high nature conservation value but with no legal protection.
*Br. J. Ent. Nat. Hist.***, 22**, 61-70, (2009)
[p69: *Xylocoris cursitans, Aradus depressus*]

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Field Meetings: Stodmarsh National Nature Reserve, Kent, 12 July 2009
*Br. J. Ent. Nat. Hist.***, 23**,1, pp 59-61, (2010)
[L. Clemons: *Stenodema trispinosa, Deraeocoris flavilinea*]

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[BENHS Annual Exhibition2008, exhibit]
*Br. J. Ent. Nat. Hist.***, 22, p184**
[*Hypseloecus visci* at White Waltham, Berks (SU8577) 8 Jul 2008]

Bowdrey, J.P., 2008
[BENHS Annual Exhibition 2007, exhibit]
*Br. J. Ent. Nat. Hist.***, 21**,3, p184
[vc 19: *Aphanus rolandri, Mag.prae.*]

Brooke, S.E., 2008
[BENHS Annual Exhibition 2007, exhibit]
*Br. J. Ent. Nat. Hist.***, 21,**3, p184
[4 waterbug species spreading N]

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A new plant bug species [in Notts & Derbs]
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[*Der. flavilinea*: 2007, 1st Notts; 2008, 1st Derbs. Also S Yorks 2008.]

Clancy, S., 2009
[BENHS Annual Exhibition2008, exhibit]
*Br. J. Ent. Nat. Hist.***, 22, p184**
[*Leptoglossus occidentalis* at Dungeness, 30 Aug 2008]

Deans, M.I., 2010
[BENHS Annual Exhibition 2009, exhibit]
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[*Lept. occidentalis* at mv light, Bawdsey (vc25, E Suffolk, 19th Sep2009]

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Recent records of some scarce invertebrates from the Isle of Wight.
*Br. J. Ent. Nat. Hist.***, 23, p51, (2010)**
[*Capsus wagneri,* 24thJun 2009, Brading Marshes (vc10, SZ6389) - upper saltmarsh.]

Denton, J. S., 2010a
Gonocerus acuteangulatus (Goeze) (Hem., Coreidae) in East Kent (VC15).
*Br. J. Ent. Nat. Hist.***, 23**, p276, (2010).

Dickson, R., 2009
[BENHS Annual Exhibition2008, exhibit]
*Br. J. Ent. Nat. Hist.***, 22, p184**
[*Leptoglossus occidentalis***, Southsea, S Hants, SU6700, 5 Oct 2008]**

Dickson, R., 2010
[BENHS Annual Exhibition 2009, exhibit]
*Br. J. Ent. Nat. Hist.***, 23**, 3, p204
[8th June 2009: *Dicranocephalus medius* Bulford Field(vc8, S Wilts, SU1845. 1st June 2009: *Anthocoris sarothamni* Browndown (vc11, S Hants, SZ5799). 16th Apr 2009: *Rhacognathus punctatus* Mare Hill Cmn, Milford (vc17, Surrey, SU9340)]

Halstead, A.J., 2008
[BENHS Annual Exhibition 2007, exhibit]
*Br. J. Ent. Nat. Hist.***, 21,3,p184 (2007)**
[vc17: *Alydus cal., Coranus sub.*]

Hawkins, R.D., 2009
[BENHS Annual Exhibition2008, exhibit]
*Br. J. Ent. Nat. Hist.***, 22, p184**
[*Syromastus rhombeus*, nymph reared, Chessington, SurreyAug 2008]

Hodge, P. J., 2009
[BENHS Annual Exhibition 2008, exhibit]
*Br. J. Ent. Nat. Hist.***, 22, p184**
[*Aphanus rolandri*, E Sussex; *Arocatus roeseli*, Surrey; *Macrotylus horvathi,* W Kent; *Orthotylus caprai*, Surrey]

Iley, R.G., 2011
Southwood's Heteroptera collection.
*Br. J. Ent. Nat. Hist.***, 24, pp33--37, (2010)**
[c.f. *Het News* **16**, pp3-4]

Judd, S., 2009
Oxycarenus lavaterae (Fab.) (Heteroptera: Lygaeidae) a non-native seed bug established in a Liverpool glasshouse.
Jnl. of Lancs & Cheshire Ent. Soc., **131** &**132**, p43 (2007 & 2008) [Photo]

Judd, S., 2010
Sphragisticus Stål (Heteroptera: Lygaeidae) - a recently established British seed bug genus.
*Br. J. Ent. Nat. Hist.***, 23,2, pp73-76**
[4 sites in W Suffolk (vc26) & W Norfolk (vc28) , 1st 2000 Lakenheath Fen]

Knill-Jones, S.A., 2009
[BENHS Annual Exhibition 2009, exhibit]
*Br. J. Ent. Nat. Hist.***, 23, 3, p 204**
[*Leptoglossus occid.*: at mv light, Oct 2009,Totland (vc10, IoW)]

Littlewood, N.A., 2009
Juniper Shieldbug *Elasmostethus tristriatus* (Fabr.) (Het.:Acanthosomatidae) in north-east Scotland.
Entomologist's Record & Jnl of Variation, **121**, pp5-6,(2009)
[2008: Glen Gairn, vc92; Clashindarroch Forest, vc93]

Nau, B.S., 2008
[BENHS Annual Exhibition 2007, exhibit]
Br. J. Ent. Nat. Hist., 21,3, 184-185,(2008)
[4 red & black spp spreading in Britain: Cor hyo, Aro roe, Pyr apt. Eur orn]

Newton, J., 2009
The lace bug *Acalypta nigrina* (Fall.) (Het.: Tingidae) new to England.
Jnl. of Lancs. & Cheshire Ent.Soc., **131** &**132**, p20 (2007 & 2008)
[Botton Head Fell, Forest of Bowland, July 2007]

Notton, D.G., 2008
Insects of Mortimer Forest on the Shropshire/Herefordshire border.
Br. J. Ent. Nat. Hist., **21**,3, pp187-192
[vc36: Ela gri, Pal pra, Zic cae]

Ryan, R.P., 2010
Dicyphus pallidus (Herrich-Schaeffer) (Hem., Miridae) new to Britain.
Ent. mon. Mag., **146**, pp 169-171, (2010)
[Photos (2) b&w of macr, & brach.]

Salmon, M.A., 2009
The Coleoptera & Hemiptera of Brownsea Island, Poole Harbour, Dorset
Entomologist's Gazette, **60**,37-71, (2009)
[Inc.: *Geotomus, Adelpho. tic., Glob. cruc.,Aphanus rol., Corizus hyo.*.]

Spalding, A., Collins, G.A., Haes, E. C. M. , 2008
Factors affecting the presence of insects on a small un-vegetated bank at an abandoned mining site in west Cornwall.
British Journal of Entomology & Natural History, **21**, 205-214, Appendix I

[11 species]

Stewart, A.J.A., Bantock, Tristan, 2011
Wildlife Reports: true bugs, leafhoppers and allies
British Wildlife, **22**, 4, pp-286-288, (2011)

Whitehead, P. F., 2008
Observations on the ecology of *Corizus hyoscyami* (L., 1758) (Hem., Rhopalidae) and the British influx of 2006.
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[Maps of spread, season chart, hosts, record details.]

Whitehead, P. F., 2010
Anthocoris nemorum (L., 1761) (Hem., Anthocoridae) as a predator of *Acrolepiopsis assectella* (Zeller, 1839) (Lep.,Yponomeutida)
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Dicyphus Fieber, 1858 (Hemiptera, Miridae) on cultivated plants and *D. escalerae* Lindberg, 1934 new to Wales.
Ent. mon. Mag., **146**, pp17--19, (2010)
[2006, Caerns 2006); Worcs 2004, E Gloucs 2009.]

Whitehead, P. F., 2010b
The impact of severe winter weather during January 2010 on some invertebrates in Worcestershire (VC37).
Ent. mon. Mag., **146**, p62, (2010)
[*Kleidocerys resedae, Pentatoma rufipes*.]

SOME EARLIER LITERATURE

Bloomfield, E.N., 1880
Bothynotus pilosus, Boh. (Minki), near Hastings
Ent. mon. Mag., **17, p167, (1880)**
[Sandpit by wood]

China, W.E., 1938a
Notes on the nomenclature of British Corixidae
Ent. mon. Mag., **vol 74**, pp34-39
[*Corixa* & *Sigara*]

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Berytinus hirticornis Brullé, a species new to Britain (Het., Berytidae).
Ent. mon. Mag., **79**, 152-154, (1943)
[Dwgs of foreparts & paramere, Table of differences from *B. clavipes*.]

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Notes on the nomenclature of the Pyrrhocoridae (Hemi. Het.).
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Collett, H.R.P, 1880
Bothynotus pilosus at St Leonards.
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Douglas, J.W., 1879
Aepophilus bonnairei, a remarkable new hemipterous insect.
Ent. mon. Mag., **15, 68-69, (1879)**
[Discovery in France (Ile de Rey); description. Named for carabid *Aëpus robini*, which lives below high-tide line, & Baron Bonnaire who found it.]

Douglas, J.W., 1880
Charagochilus gyllenhali macropterous.
Ent. mon. Mag., **17**, p164, (1880)
[*Ch. weberi*! Wing forms of '*Blissus*' (*Ischnodemus*), & *Plinth. brev.*]

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A further note upon the gender of *Eurydema* Laporte (Hemipt., Pentatomidae) and upon the binomen *E. dominulus* Scop.
Ent. mon. Mag., **90**, p192, (1954)
[Continuation of debate on ending of a latinised Greek genus name.]

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Male genitalia as taxonomic characters in the Miridae (Hemiptera)
The Canadian Entomologist, **XCI**, supplement11, 72pp, 146figs (1959)
[Fine dwgs of genitalia of 144 spp of mirid, includes many British spp.]

Le Quesne, W.J., 1954a
Another macropterous *Nabis boops* Schiödte (Nabidae) from Bucks.
Ent. mon. Mag., **90**, p301, (1952)
[Coombe Hill, Wendover, Aug1954, among grass roots on chalky slope.]

Le Quesne, W.J., 1954b
Dichrooscytus Fieb. (Hem., Miridae) in Buckinghamshire.
Ent. mon. Mag., **87**, p286, (1954)
[1st Bucks, ca12 on *Juniperus*, Longdown Hill, Princes Risborough, Jul1954.]

Leston, D., 1952d
Unilateral brachypterism in *Drymus brunneus* Sahlb. (Hem., Lygaeidae)
Ent. mon. Mag., **88**, p206, (1952)

Leston, D., 1952e
A further locality for *Hydrometra gracilenta* Horvath (Hydrometridae)
Ent. mon. Mag., **88**, p206, (1952)
[Sutton Broad: 4♂♂, open water ca 0.3m dia. in dense *Carex* & *Juncus*]

Leston, D., 1954e
Aradus cinnamomeus Panz. (Hem., Aradidae) in Surrey.
Ent. mon. Mag., **87**, p286, (1954)
[1951: Oxshott ,Ash; beating young Scots Pine, exuviae under scales.]

Leston, D., 1955g
Colour forms of *Nezara viridula* (L.) (Hem., Pentatomidae)
Ent. mon. Mag., **91**,p91, (1955)
[Pre-hibernation: dark colour phase (see Lansbury, *EMM* **90**,p168, 1954)]

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The British species of *Carpocoris* Kolenati (Hem., Pentatomidae).
Ent. mon. Mag., **91**, p91, (1955)
[Goidanich(1943) bred *Carpocoris*: summer ad. pronotal angles sharp & black; winter ad. angles 'scarcely acute, not black'. Summer form f. *fuscispina*, winter form f. *pudicus*, both *C. pudicus* (Poda, 1761)]

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Pachycoleus rufescens Sahlberg (Hem., Dipsocoridae) in Surrey
Ent. mon. Mag., **94**, p240, (1958)
[1♂,4♀ in *Hypnum* moss amongst *Caltha*, Godalming, Surrey]

Massee, A.M., 1940
Reoccurrence of *Eurydema dominulus* in its old locality in mid-Kent.
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The invertebrates of an area of Pennine moorland within the Moor House Nature Reserve in northern England.
Trans.Soc.Brit Ent., **19**, p183 et al, (1971)
[1963-1967: *Chlam. wilk., Salda morio, Saldula scot., Telo. pel, Calli.woll.*]

Norman, G., 1880
List of Hemiptera-Heteroptera occurring at Pitlochry, in Perthshire.
Ent. mon. Mag., **16**, p175,(1880)
[34 spp inc.: *Gerris rufoscutellatus, Adomerus biguttatus, Derephysia foliacea, Eremocoris plebejus*]

Reuter, O.M., 1877a
Remarks on some British Hemiptera-Heteroptera.(published in 9 parts).
Entomologist's Monthly Mag. **14**(1877): pp 11-14, 32-34, 60-62,127-131, 242-245l. **15**(1878):¨pp 66-67. **16** (1879):pp12-15, 172-175. **17**(1880): 10-15
[Revises many names used in D&S's *A catalogue of British Hemiptera* & Saunder's *Synopsis of British Hemiptera-Heteroptera*.]

Reuter, O.M., 1878
Captures of Hemiptera-Heteroptera in Scotland.
Ent. mon. Mag., 14, 186-187, (1878)
[Forres (Moray), Perth, Aberdeen, Edinburgh, Orkney Is]

Saunders, E., 1880
Capture of British Hemiptera-Heteroptera.
Ent. mon. Mag., *17*, 165-166, (1880)
[*Lygus limbatus*(Wimbledon Cmn), *Atracto. magnicornis, Dicyph. stach.*]

Saunders, E., 1878
Note on the British species of *Pilophorus*.
Ent. mon. Mag., **14**,p277, (1978)
[Acknowledges *P. perplexus* as British in light of remarks by Reuter]

Saunders, E., 1903
Myrmecoris gracilis, Sahlb., an addtion to the British Hemiptera.
Ent. mon. Mag., **14** (2nd series), (39 1st series), 269-271
[Found by Butler nr Fleet, Hants. Colour plate EMM **20** ,1909, p193]

Southgate, B.J., 1954
Notes on the feeding habits of *Scolopostethus affinis* (Schill.) (Hem., Lygaeidae).
Ent. mon. Mag., **90**, p192, (1954)
[Nymphs feeding on strawberries, no damage observed]

Southwood, T.R.E., 1954b
The production of fertile eggs by *Cimex pipistrella* Jenyns (Hem., Cimicidae) on human blood.
Ent. mon. Mag., **90**, p35,(1954)

Thomas, D. C., 1938
An annotated list of species of Hemiptera-Heteroptera not hitherto recorded in Middlesex.
The Entomologist, **71**, 148-153
[88 additional spp, making county total 242]

Woodroffe, G.E., 1970b
Capsodes sulcatus (Fieb.) (Hem., Miridae) in Dorset)
Ent. mon. Mag., **105**, p171,(1970)
[Kimmeridge Bay, 28Jun1969, on *Matricaria* et al., no nymphs]

PLANT PEST FACTSHEET

Brown Marmorated Stink Bug
Halyomorpha halys

Figure 1. Adult brown marmorated stink bug
© D. Lance, USDA, APHIS, PPQ

Background

In April 2010, two live adult brown maromarated stinkbugs *Halyomorpha halys* (Stål) (Hemiptera: Pentatomidae) were found in England in passenger luggage flown in from the USA. *H. halys* is a highly polyphagous pest of Asian origin which was recently spread widely in the USA (first identified in 2001) and has been introduced to Switzerland (first identified in 2007). It was added to the European and Mediterranean Plant Protection Organisation Alert List in 2008.

Geographical Distribution

Halyomorpha halys is native to Asia.
EPPO region: Switzerland.
Asia: China, Japan, Korean Republic, Taiwan.
North America: USA.

Host Plants

H. halys is a highly polyphagous pest attacking more than 100 plant species, primarily fruit trees and woody ornamentals, but also field crops. Fruit crops: *Citrus* spp., *Diospyros* spp., *Malus domestica* (apple), *Morus* spp., *Prunus armeniaca* (apricot), *P. avium* (sweet cherry), *P. domestica* (plum), *P. persica* (peach), *Pyrus communis* (pear), *Rubus idaeus* (raspberry) and *Vitis vinifera* (grapevine). Field crops: *Asparagus* spp., *Glycine max* (soybean), *Phaseolus vulgaris* (common bean) and *Zea mays* (maize). Forest and ornamental trees/shrubs: *Abelia, Acer, Aralia elata, Buddleia davidii, Cryptomeria, Cupressus, Decaisnea fargesii, Hibiscus, Lonicera, Paulownia tomentosa, Rosa rugosa, Salix, Stewartia pseudocamellia* and *Tropaeolum majus*. In Asia, *H. halys* has also been found on weeds (e.g. *Actrium* spp.).

An extended 4-page version of this factsheet is available from Chris Malumphy at:
Chris.Malumphy@fera.gsi.gov.uk

Sand Hutton, York
YO41 1LZ, UK
Tel +44 (0)1904 462 000
Fax +44 (0)1904 462 111
E-mail info@fera.gsi.gov.uk
www.defra.gov.uk/fera

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The Food and Environment Research Agency