

**A PROVISIONAL INVERTEBRATE SURVEY
OF
LAND AT
ABBAY WAY
WILLESBOROUGH
ASHFORD
KENT**

by

**Laurence Clemons
14 St. John's Avenue
Sittingbourne
Kent ME10 4NE**

01795 430 364

laurence.clemons@ssesurf.co.uk

for

**Lloyd Bore Landscape Architecture & Ecology
33 St. George's Place
Canterbury
Kent CT1 1UT**

01227 464 340

www.lloydbore.co.uk

Provisional invertebrate survey of land at Abbey Way, Willesborough

CONTENTS

1. INTRODUCTION2
1.1 Aim2
1.2 Site map2
1.3 Photographic record of compartments investigated3
1.4 Methods.....5
1.5 Dates of survey5
1.6 Previous known records from the site5
2. RESULTS5
2.1 Number of species and records per order5
2.2 Number of species per order per compartment6
2.3 Number of species per order per date6
2.4 Cumulative number of species by date6
2.5 List of species with compartment where found7
3. NOTES ON THE RARER SPECIES12
3.1 Nationally Scarce12
3.2 Locally scarce species16
4. THE IMPORTANCE OF THE AREA FOR INVERTEBRATES.....16
5. MANAGEMENT AND CONSERVATION16
6. APPENDIX.....17
6.1 List of Diptera from Willesborough Lees TR034217

Provisional invertebrate survey of land at Abbey Way, Willesborough

1. INTRODUCTION

1.1 Aim

The aim was to provide a general assessment of the invertebrate fauna of the area prior to proposed development.

1.2 Site map

An area of rough grassland with wet seepages and bordered with mature trees and shrubs at central grid reference TR030426. The arrows show the direction of photography in 1.3 below.



Provisional invertebrate survey of land at Abbey Way, Willesborough

1.3 Photographic record of compartments investigated

1. Central area. Grid reference TR030426.
Photographed on 22 May 2013.



2. Western boundary. Grid reference TR029425.
Photographed on 22 May 2013.



3. Southern boundary. Grid reference TR02994259.
Photographed on 22 May 2013.



Provisional invertebrate survey of land at Abbey Way, Willesborough

4. Northern bounday. Grid reference TR02984265.
Photographed on 15 June 2013.



5. Marsh. Grid reference TR03084271.
Photographed on 15 June 2013.



Provisional invertebrate survey of land at Abbey Way, Willesborough

1.4 Methods

Recording was entirely active. Specimens were either collected using an entomological net and pooter or else individually tubed from flowers etc. Those that could be identified in the field were released while the remainder were killed using ethyl ethanoate vapour and subsequently pinned and examined under a binocular stereo-microscope.

1.5 Dates of survey

22 May 2013. An initial visit to view the site was made during overcast, mild and still conditions. General sampling was undertaken at central grid reference TR030426 and five discrete areas for further investigation identified.

15 June 2013. Compartments 1 - 5 were sampled during sunny, mild and windy conditions.

30 June 2013. Compartments 1 - 5 were sampled during sunny, warm and breezy conditions.

14 July 2013. Compartments 1, 2, 4 and 5 were sampled during sunny and hot conditions.

1.6 Previous known records from the site

None, but six species of Diptera from Willesborough Lees TR0342 were ascertained from the card file index at Maidstone Museum compiled by E.G. Philp before 1994 (APPENDIX 6.1).

2. RESULTS

2.1 Number of species and records per order

Order	Number of species	Number of records
Coleoptera (Beetles)	36	53
Dermaptera (Earwigs)	1	2
Diptera (True flies)	211	391
Heteroptera (True bugs)	21	38
Homoptera (Aphids, hopper bugs and plant lice)	8	16
Hymenoptera (Ants, bees, sawflies and wasps)	25	42
Lepidoptera (Butterflies and moths)	9	21
Mecoptera (Scorpion flies)	2	2
Neuroptera (Lacewings)	2	2
Odonata (Damselflies and dragonflies)	3	11
Orthoptera (Crickets and grasshoppers)	3	3
Psocoptera (Bark lice)	1	1
Trichoptera (Caddis flies)	1	1
Totals	323	583

Provisional invertebrate survey of land at Abbey Way, Willesborough

2.2 Number of species per order per compartment

Compartment number	Total Of Species	Coleoptera	Dermaptera	Diptera	Heteroptera	Homoptera	Hymenoptera	Lepidoptera	Mecoptera	Neuroptera	Odonata	Orthoptera	Psocoptera	Trichoptera
1	207	25	1	150	10	3	8	5			4			1
2	124	13		80	5	4	10	7	2	1	1	1		
3	41	4		33	1			1			1	1		
4	85	5	1	44	8	6	13	4		1	2	1		
5	126	6		84	14	3	11	4			3		1	

2.3 Number of species per order per date

Date	Total Of Species	Coleoptera	Dermaptera	Diptera	Heteroptera	Homoptera	Hymenoptera	Lepidoptera	Mecoptera	Neuroptera	Odonata	Orthoptera	Psocoptera	Trichoptera
22/05/2013	111	16	1	88	2	1	2							1
15/06/2013	108	15		73	6	3	7	1	1		1	1		
30/06/2013	127	6		80	13	3	16	4	1	1	2	1		
14/07/2013	107	8	1	58	11	5	11	8		1	2	1	1	

2.4 Cumulative number of species by date

Date	Number of species
22/05/2013	111 (baseline)
15/06/2013	82 (additions)
30/06/2013	86 (further additions)
14/07/2013	44 (further additions)

Provisional invertebrate survey of land at Abbey Way, Willesborough

2.5 List of species with compartment where found

Order	Family	Species	1	2	3	4	5
Coleoptera	Apionidae	<i>Apion frumentarium</i> (Linnaeus, 1758)	+				
Coleoptera	Apionidae	<i>Perapion hydrolapathi</i> (Marsham, 1802)	+				
Coleoptera	Attelabidae	<i>Neocoenorrhinus aequatus</i> (Linnaeus, 1767)		+			
Coleoptera	Bruchidae	<i>Bruchus rufimanus</i> Boheman, 1833	+				
Coleoptera	Byturidae	<i>Byturus tomentosus</i> (De Geer, 1774)		+			
Coleoptera	Cantharidae	<i>Cantharis decipiens</i> Baudi, 1871					+
Coleoptera	Cantharidae	<i>Cantharis nigricans</i> (Müller, O.F., 1776)		+			+
Coleoptera	Cantharidae	<i>Cantharis pellucida</i> Fabricius, 1792	+				
Coleoptera	Cantharidae	<i>Cantharis rustica</i> Fallén, 1807	+				
Coleoptera	Cantharidae	<i>Rhagonycha fulva</i> (Scopoli, 1763)	+			+	
Coleoptera	Cantharidae	<i>Rhagonycha testacea</i> (Linnaeus, 1758)	+				
Coleoptera	Cerambycidae	<i>Rutpela maculata</i> (Poda, 1761)			+		
Coleoptera	Cerambycidae	<i>Stenurella melanura</i> (Linnaeus, 1758)				+	
Coleoptera	Chrysomelidae	<i>Altica lythri</i> Aubé, 1843	+				+
Coleoptera	Chrysomelidae	<i>Aphthona euphorbiae</i> (Schrank, 1781)	+				
Coleoptera	Chrysomelidae	<i>Cassida rubiginosa</i> Müller, O.F., 1776	+	+			
Coleoptera	Chrysomelidae	<i>Lochmaea crataegi</i> (Forster, 1771)	+				
Coleoptera	Chrysomelidae	<i>Neocrepidodera transversa</i> (Marsham, 1802)				+	
Coleoptera	Coccinellidae	<i>Coccinella septempunctata</i> Linnaeus, 1758	+				+
Coleoptera	Coccinellidae	<i>Subcoccinella vigintiquatuorpunctata</i> (Linnaeus, 1758)	+				
Coleoptera	Curculionidae	<i>Cionus hortulanus</i> (Fourcroy, 1785)		+			
Coleoptera	Curculionidae	<i>Curculio glandium</i> Marsham, 1802		+			
Coleoptera	Curculionidae	<i>Grypus equiseti</i> (Fabricius, 1775)					+
Coleoptera	Curculionidae	<i>Nedyus quadrimaculatus</i> (Linnaeus, 1758)	+	+			
Coleoptera	Curculionidae	<i>Phyllobius roboretanus</i> Gredler, 1882	+	+			
Coleoptera	Curculionidae	<i>Sitona cambricus</i> Stephens, 1831	+				
Coleoptera	Curculionidae	<i>Strophosoma melanogrammum</i> (Forster, 1771)				+	
Coleoptera	Dytiscidae	<i>Hydroporus memnonius</i> Nicolai, 1822	+				
Coleoptera	Elateridae	<i>Athous haemorrhoidalis</i> (Fabricius, 1801)	+	+	+		
Coleoptera	Malachiidae	<i>Malachius bipustulatus</i> (Linnaeus, 1758)	+	+	+		
Coleoptera	Nitidulidae	<i>Meligethes aeneus</i> (Fabricius, 1775)	+	+		+	+
Coleoptera	Oedemeridae	<i>Oedemera nobilis</i> (Scopoli, 1763)	+		+		
Coleoptera	Pyrochroidae	<i>Pyrochroa serraticornis</i> (Scopoli, 1763)		+			
Coleoptera	Scraptiidae	<i>Anaspis maculata</i> Fourcroy, 1785		+			
Coleoptera	Staphylinidae	<i>Sepedophilus marshami</i> (Stephens, 1832)	+				
Coleoptera	Staphylinidae	<i>Tachyporus obtusus</i> (Linnaeus, 1767)	+				
Dermaptera	Forficulidae	<i>Forficula auricularia</i> Linnaeus, 1758	+			+	
Diptera	Agromyzidae	<i>Cerodontha capitata</i> (Zetterstedt, 1848)					+
Diptera	Agromyzidae	<i>Cerodontha denticornis</i> (Panzer, 1806)	+				
Diptera	Agromyzidae	<i>Melanagromyza dettmeri</i> Hering, 1933				+	
Diptera	Agromyzidae	<i>Phytomyza clematidis</i> Kaltenbach, 1859	+				
Diptera	Agromyzidae	<i>Phytomyza continua</i> Hendel, 1920	+				
Diptera	Agromyzidae	<i>Phytomyza ranunculi</i> (Schrank, 1803)	+		+		+
Diptera	Anisopodidae	<i>Sylvicola cinctus</i> (Fabricius, 1787)					+
Diptera	Anthomyiidae	<i>Botanophila fugax</i> (Meigen, 1826)					+
Diptera	Anthomyiidae	<i>Botanophila striolata</i> (Fallén, 1824)		+			
Diptera	Anthomyiidae	<i>Chirosia flavipennis</i> (Fallén, 1823)		+		+	
Diptera	Anthomyiidae	<i>Delia platura</i> (Meigen, 1826)	+		+		
Diptera	Anthomyiidae	<i>Delia radicum</i> (Linnaeus, 1758)	+				
Diptera	Anthomyiidae	<i>Hylemya vagans</i> (Panzer, 1798)		+			
Diptera	Anthomyiidae	<i>Lasiomma seminitidum</i> (Zetterstedt, 1845)		+			
Diptera	Anthomyiidae	<i>Leucophora obtusa</i> (Zetterstedt, 1838)	+				
Diptera	Anthomyiidae	<i>Paregle audacula</i> (Harris, 1780)		+		+	
Diptera	Anthomyiidae	<i>Pegoplata aestiva</i> (Meigen, 1826)	+			+	+
Diptera	Anthomyiidae	<i>Pegoplata annulata</i> (Pandellé, 1899)	+	+			
Diptera	Anthomyzidae	<i>Anthomyza gracilis</i> Fallén, 1823	+				
Diptera	Asilidae	<i>Dioctria baumhaueri</i> Meigen, 1820	+			+	
Diptera	Asilidae	<i>Dioctria rufipes</i> (De Geer, 1776)	+				+

Provisional invertebrate survey of land at Abbey Way, Willesborough

Diptera	Asilidae	<i>Leptogaster cylindrica</i> (De Geer, 1776)	+			+	
Diptera	Bibionidae	<i>Bibio leucopterus</i> (Meigen, 1804)	+				
Diptera	Bibionidae	<i>Dilophus febrilis</i> (Linnaeus, 1758)	+				
Diptera	Bibionidae	<i>Dilophus femoratus</i> Meigen, 1804	+				+
Diptera	Calliphoridae	<i>Bellardia viarum</i> (Robineau-Desvoidy, 1830)	+				+
Diptera	Calliphoridae	<i>Lucilia caesar</i> (Linnaeus, 1758)	+				
Diptera	Calliphoridae	<i>Melanomya nana</i> (Meigen, 1826)	+	+	+		+
Diptera	Calliphoridae	<i>Pollenia pediculata</i> Macquart, 1834				+	
Diptera	Campichoetidae	<i>Campichoeta obscuripennis</i> (Meigen, 1830)	+				+
Diptera	Ceratopogonidae	<i>Serromyia femorata</i> (Meigen, 1804)	+	+			
Diptera	Chaoboridae	<i>Chaoborus flavicans</i> (Meigen, 1830)	+	+			
Diptera	Chironomidae	<i>Chironomus plumosus</i> (Linnaeus, 1758)	+	+			
Diptera	Chironomidae	<i>Endochironomus tendens</i> (Fabricius, 1775)	+				
Diptera	Chironomidae	<i>Microtendipes pedellus</i> (De Geer, 1776)			+		
Diptera	Chironomidae	<i>Orthocladius calvus</i> Pinder, 1985	+				
Diptera	Chironomidae	<i>Paratendipes plebeius</i> (Meigen, 1818)	+				
Diptera	Chironomidae	<i>Paratrichocladius rufiventris</i> (Meigen, 1830)	+				
Diptera	Chironomidae	<i>Polypedilum nubeculosum</i> (Meigen, 1804)	+				
Diptera	Chironomidae	<i>Prodiamesa olivacea</i> (Meigen, 1818)	+				
Diptera	Chironomidae	<i>Tanytarsus mendax</i> Kieffer, 1925	+				
Diptera	Chloropidae	<i>Chlorops hypostigma</i> Meigen, 1830				+	
Diptera	Chloropidae	<i>Chlorops pumilionis</i> (Bjerkander, 1778)	+				
Diptera	Chloropidae	<i>Dicraeus scibilis</i> Collin, 1946					+
Diptera	Chloropidae	<i>Dicraeus vagans</i> (Meigen, 1838)	+		+	+	
Diptera	Chloropidae	<i>Elachiptera cornuta</i> (Fallén, 1820)					+
Diptera	Chloropidae	<i>Oscinella cariciphila</i> Collin, 1946	+				
Diptera	Chloropidae	<i>Oscinella frit</i> (Linnaeus, 1758)	+				+
Diptera	Chloropidae	<i>Oscinella nigerrima</i> (Macquart, 1835)	+				
Diptera	Chloropidae	<i>Oscinimorpha minutissima</i> (Strobl, 1900)					+
Diptera	Chloropidae	<i>Siphonella oscinina</i> (Fallén, 1820)					+
Diptera	Chloropidae	<i>Tricimba cincta</i> (Meigen, 1830)			+		
Diptera	Conopidae	<i>Myopa testacea</i> (Linnaeus, 1767)					+
Diptera	Conopidae	<i>Sicus ferrugineus</i> (Linnaeus, 1761)					+
Diptera	Diastatidae	<i>Diastata adusta</i> Meigen, 1830	+				
Diptera	Dolichopodidae	<i>Campsicnemus scambus</i> (Fallén, 1823)					+
Diptera	Dolichopodidae	<i>Chrysotus blepharosceles</i> Kowarz, 1874				+	
Diptera	Dolichopodidae	<i>Chrysotus gramineus</i> (Fallén, 1823)	+	+		+	+
Diptera	Dolichopodidae	<i>Chrysotus neglectus</i> (Wiedemann, 1817)					+
Diptera	Dolichopodidae	<i>Dolichopus trivialis</i> Haliday, 1832				+	
Diptera	Dolichopodidae	<i>Dolichopus ungulatus</i> (Linnaeus, 1758)	+	+	+		
Diptera	Dolichopodidae	<i>Dolichopus wahlbergi</i> Zetterstedt, 1843				+	
Diptera	Dolichopodidae	<i>Gymnopternus cupreus</i> (Fallén, 1823)	+	+			
Diptera	Dolichopodidae	<i>Rhaphium appendiculatum</i> Zetterstedt, 1849	+				
Diptera	Dolichopodidae	<i>Sciapus platypterus</i> (Fabricius, 1805)			+	+	+
Diptera	Dolichopodidae	<i>Sympycnus desoutteri</i> Parent, 1925	+				
Diptera	Drosophilidae	<i>Scaptomyza pallida</i> (Zetterstedt, 1847)			+		+
Diptera	Empididae	<i>Empis chioptera</i> Meigen, 1804	+				
Diptera	Empididae	<i>Empis livida</i> Linnaeus, 1758			+	+	+
Diptera	Empididae	<i>Empis nuntia</i> Meigen, 1838	+				
Diptera	Empididae	<i>Empis praevia</i> Collin, 1927	+				+
Diptera	Empididae	<i>Empis scutellata</i> Curtis, 1835	+				
Diptera	Empididae	<i>Empis stercorea</i> Linnaeus, 1761			+		
Diptera	Empididae	<i>Empis trigramma</i> Wiedemann in Meigen, 1822	+				
Diptera	Empididae	<i>Hilara cornicula</i> Loew, 1873	+				
Diptera	Empididae	<i>Hilara maura</i> (Fabricius, 1776)	+				
Diptera	Empididae	<i>Phyllodromia melanocephala</i> (Fabricius, 1794)			+	+	
Diptera	Empididae	<i>Rhamphomyia longipes</i> (Meigen, 1804)			+	+	+
Diptera	Empididae	<i>Rhamphomyia sulcata</i> (Meigen, 1804)	+				
Diptera	Empididae	<i>Rhamphomyia tarsata</i> Meigen, 1822	+	+			+
Diptera	Ephydriidae	<i>Hyadina guttata</i> (Fallén, 1813)	+				
Diptera	Ephydriidae	<i>Hydrellia maura</i> Meigen, 1838	+	+	+	+	+

Provisional invertebrate survey of land at Abbey Way, Willesborough

Diptera	Fanniidae	<i>Fannia serena</i> (Fallén, 1825)		+	+		+
Diptera	Fanniidae	<i>Fannia similis</i> (Stein, 1895)	+				
Diptera	Fanniidae	<i>Fannia sociella</i> (Zetterstedt, 1845)	+				
Diptera	Hybotidae	<i>Bicellaria vana</i> Collin, 1926	+	+		+	+
Diptera	Hybotidae	<i>Hybos culiciformis</i> (Fabricius, 1775)				+	
Diptera	Hybotidae	<i>Hybos femoratus</i> (Müller, 1776)		+			
Diptera	Hybotidae	<i>Leptopeza flavipes</i> (Meigen, 1820)		+	+		
Diptera	Hybotidae	<i>Platypalpus australominutus</i> Grootaert, 1989	+				
Diptera	Hybotidae	<i>Platypalpus incertus</i> (Collin, 1926)					+
Diptera	Hybotidae	<i>Platypalpus nigratarsis</i> (Fallén, 1816)	+				
Diptera	Hybotidae	<i>Platypalpus pallidiventris</i> (Meigen, 1822)		+			+
Diptera	Hybotidae	<i>Platypalpus verralli</i> (Collin, 1926)	+				
Diptera	Hybotidae	<i>Stilpon graminum</i> (Fallén, 1815)	+				
Diptera	Keroplastidae	<i>Orfelia nemoralis</i> (Meigen, 1818)	+				
Diptera	Keroplastidae	<i>Platyura marginata</i> Meigen, 1804	+				
Diptera	Keroplastidae	<i>Urytalpa dorsalis</i> (Staeger, 1840)	+				
Diptera	Lauxaniidae	<i>Minettia fasciata</i> (Fallén, 1826)		+		+	
Diptera	Lauxaniidae	<i>Peplomyza litura</i> (Meigen, 1826)		+			
Diptera	Lauxaniidae	<i>Sapromyza sexpunctata</i> Meigen, 1826		+			
Diptera	Lauxaniidae	<i>Tricholauxania praeusta</i> (Fallén, 1820)		+			
Diptera	Limoniidae	<i>Limonia phragmitidis</i> (Schrank, 1781)		+			
Diptera	Limoniidae	<i>Molophilus obscurus</i> (Meigen, 1818)	+				
Diptera	Limoniidae	<i>Phylidorea ferruginea</i> (Meigen, 1818)	+				
Diptera	Lonchopteridae	<i>Lonchoptera bifurcata</i> (Fallén, 1810)			+		
Diptera	Lonchopteridae	<i>Lonchoptera lutea</i> Panzer, 1809	+	+			
Diptera	Milichiidae	<i>Phyllomyza flavitarsis</i> (Meigen, 1830)	+				+
Diptera	Muscidae	<i>Coenosia infantula</i> Rondani, 1866	+				+
Diptera	Muscidae	<i>Coenosia mollicula</i> (Fallén, 1825)		+			
Diptera	Muscidae	<i>Coenosia tigrina</i> (Fabricius, 1775)	+	+	+	+	+
Diptera	Muscidae	<i>Hebecnema vespertina</i> (Fallén, 1823)	+	+			+
Diptera	Muscidae	<i>Helina depuncta</i> (Fallén, 1825)	+				
Diptera	Muscidae	<i>Helina eveccta</i> (Harris, 1780)	+	+	+		
Diptera	Muscidae	<i>Helina impuncta</i> (Fallén, 1825)		+			
Diptera	Muscidae	<i>Helina lasiophthalma</i> (Macquart, 1835)		+		+	+
Diptera	Muscidae	<i>Helina obscurata</i> (Meigen, 1826)	+				
Diptera	Muscidae	<i>Helina setiventris</i> Ringdahl, 1924				+	
Diptera	Muscidae	<i>Hydrotaea cyrtoneurina</i> (Zetterstedt, 1845)	+	+		+	
Diptera	Muscidae	<i>Mydaea nebulosa</i> (Stein, 1893)	+				
Diptera	Muscidae	<i>Phaonia halterata</i> (Stein, 1893)	+				+
Diptera	Muscidae	<i>Phaonia tuguriorum</i> (Scopoli, 1763)	+	+			+
Diptera	Muscidae	<i>Spanochaeta dorsalis</i> (von Roser, 1840)					+
Diptera	Opetiidae	<i>Opetia nigra</i> Meigen, 1830	+				
Diptera	Opomyzidae	<i>Opomyza florum</i> (Fabricius, 1794)				+	
Diptera	Opomyzidae	<i>Opomyza germinationis</i> (Linnaeus, 1758)	+				
Diptera	Opomyzidae	<i>Opomyza petrei</i> Mesnil, 1934	+				
Diptera	Pallopteridae	<i>Palloptera scutellata</i> (Macquart, 1835)	+				
Diptera	Pediciidae	<i>Tricyphona immaculata</i> (Meigen, 1804)	+				
Diptera	Phoridae	<i>Conicera tibialis</i> Schmitz, 1925	+				
Diptera	Platystomatidae	<i>Rivellia syngenesiae</i> (Fabricius, 1781)	+	+	+	+	+
Diptera	Psychodidae	<i>Boreoclytocerus ocellaris</i> (Meigen, 1804)	+				
Diptera	Psychodidae	<i>Pericoma nubila</i> (Meigen, 1818)	+				
Diptera	Psychodidae	<i>Pericoma trivialis</i> Eaton, 1893	+				
Diptera	Ptychopteridae	<i>Ptychoptera albimana</i> (Fabricius, 1787)	+				
Diptera	Rhagionidae	<i>Chrysopilus asiliformis</i> (Preyssler, 1791)					+
Diptera	Rhagionidae	<i>Chrysopilus cristatus</i> (Fabricius, 1775)	+				+
Diptera	Rhagionidae	<i>Rhagio lineola</i> Fabricius, 1794				+	+
Diptera	Rhagionidae	<i>Rhagio scolopaceus</i> (Linnaeus, 1758)	+	+		+	+
Diptera	Rhagionidae	<i>Rhagio tringarius</i> (Linnaeus, 1758)	+	+			+
Diptera	Sarcophagidae	<i>Sarcophaga dissimilis</i> Meigen, 1826				+	
Diptera	Sarcophagidae	<i>Sarcophaga incisilobata</i> Pandellé, 1896	+				
Diptera	Sarcophagidae	<i>Sarcophaga nigriventris</i> Meigen, 1826	+				

Provisional invertebrate survey of land at Abbey Way, Willesborough

Diptera	Sarcophagidae	<i>Sarcophaga subvicina</i> Rohdendorf, 1937	+				
Diptera	Scathophagidae	<i>Cordilura albipes</i> Fallén, 1819	+				
Diptera	Scathophagidae	<i>Nanna fasciata</i> (Meigen, 1826)	+				
Diptera	Scathophagidae	<i>Scathophaga furcata</i> (Say, 1823)	+				
Diptera	Scathophagidae	<i>Scathophaga stercoraria</i> (Linnaeus, 1758)	+	+	+		+
Diptera	Scatopsidae	<i>Thripomorpha coxendix</i> (Verrall, 1912)	+		+		+
Diptera	Sciaridae	<i>Schwenckfeldina carbonaria</i> (Meigen, 1830)	+				
Diptera	Sciomyzidae	<i>Coremacera marginata</i> (Fabricius, 1775)			+		
Diptera	Sciomyzidae	<i>Pherbellia cinerella</i> (Fallén, 1820)	+				
Diptera	Sciomyzidae	<i>Pherbellia griseola</i> (Fallén, 1820)	+				
Diptera	Sciomyzidae	<i>Tetanocera elata</i> (Fabricius, 1781)		+			
Diptera	Sciomyzidae	<i>Tetanocera ferruginea</i> Fallén, 1820		+			+
Diptera	Sepsidae	<i>Sepsis flavimana</i> Meigen, 1826	+				
Diptera	Sepsidae	<i>Sepsis fulgens</i> Meigen, 1826					+
Diptera	Sepsidae	<i>Sepsis punctum</i> (Fabricius, 1794)				+	
Diptera	Sphaeroceridae	<i>Lotophila atra</i> (Meigen, 1830)	+				
Diptera	Stratiomyidae	<i>Beris chalybata</i> (Forster, 1771)	+				
Diptera	Stratiomyidae	<i>Beris vallata</i> (Forster, 1771)		+	+		+
Diptera	Stratiomyidae	<i>Chloromyia formosa</i> (Scopoli, 1763)	+		+		+
Diptera	Stratiomyidae	<i>Pachygaster atra</i> (Panzer, 1798)				+	
Diptera	Syrphidae	<i>Anasimyia contracta</i> Claussen & Torp, 1980	+				
Diptera	Syrphidae	<i>Cheilosia albitarsis</i> (Meigen, 1822)	+	+			+
Diptera	Syrphidae	<i>Cheilosia bergenstammi</i> Becker, 1894	+				
Diptera	Syrphidae	<i>Cheilosia impressa</i> Loew, 1840					+
Diptera	Syrphidae	<i>Cheilosia pagana</i> (Meigen, 1822)	+				
Diptera	Syrphidae	<i>Cheilosia proxima</i> (Zetterstedt, 1843)	+				
Diptera	Syrphidae	<i>Chrysotoxum bicinctum</i> (Linnaeus, 1758)	+				
Diptera	Syrphidae	<i>Episyrphus balteatus</i> (De Geer, 1776)	+				+
Diptera	Syrphidae	<i>Eristalis intricaria</i> (Linnaeus, 1758)					+
Diptera	Syrphidae	<i>Eristalis nemorum</i> (Linnaeus, 1758)					+
Diptera	Syrphidae	<i>Eristalis pertinax</i> (Scopoli, 1763)		+			
Diptera	Syrphidae	<i>Helophilus pendulus</i> (Linnaeus, 1758)	+	+		+	+
Diptera	Syrphidae	<i>Melanogaster hirtella</i> (Loew, 1843)	+	+	+		+
Diptera	Syrphidae	<i>Merodon equestris</i> (Fabricius, 1794)	+				
Diptera	Syrphidae	<i>Neoascia meticulosa</i> (Scopoli, 1763)	+				
Diptera	Syrphidae	<i>Neoascia podagrica</i> (Fabricius, 1775)					+
Diptera	Syrphidae	<i>Neoascia tenur</i> (Harris, 1780)					+
Diptera	Syrphidae	<i>Orthonevra brevicornis</i> (Loew, 1843)				+	
Diptera	Syrphidae	<i>Pipizella viduata</i> (Linnaeus, 1758)	+		+		+
Diptera	Syrphidae	<i>Platycheirus occultus</i> Goeldlin de Tiefenau, Maibach & Speight, 1990	+				
Diptera	Syrphidae	<i>Platycheirus rosarum</i> (Fabricius, 1787)	+				+
Diptera	Syrphidae	<i>Sericomyia silentis</i> (Harris, 1776)					+
Diptera	Syrphidae	<i>Syritta pipiens</i> (Linnaeus, 1758)				+	
Diptera	Syrphidae	<i>Syrphus ribesii</i> (Linnaeus, 1758)				+	
Diptera	Syrphidae	<i>Syrphus vitripennis</i> Meigen, 1822	+	+			+
Diptera	Syrphidae	<i>Trichopsomyia flavitarsis</i> (Meigen, 1822)	+		+		
Diptera	Syrphidae	<i>Volucella bombylans</i> (Linnaeus, 1758)					+
Diptera	Syrphidae	<i>Xanthogramma pedissequum</i> (Harris, 1776)					+
Diptera	Syrphidae	<i>Xylota segnis</i> (Linnaeus, 1758)			+		+
Diptera	Tabanidae	<i>Haematopota pluvialis</i> (Linnaeus, 1758)		+			
Diptera	Tachinidae	<i>Cinochira atra</i> Zetterstedt, 1845	+				
Diptera	Tachinidae	<i>Siphona geniculata</i> (De Geer, 1776)	+				
Diptera	Tephritidae	<i>Campiglossa malaris</i> (Séguy, 1934)				+	
Diptera	Tephritidae	<i>Tephritis bardanae</i> (Schrank, 1803)	+				
Diptera	Tephritidae	<i>Terellia ruficauda</i> (Fabricius, 1794)	+				
Diptera	Tephritidae	<i>Trypeta zoe</i> Meigen, 1826		+			
Diptera	Tephritidae	<i>Urophora cardui</i> (Linnaeus, 1758)	+	+	+		
Diptera	Tephritidae	<i>Urophora jaceana</i> (Hering, 1935)	+				
Diptera	Tephritidae	<i>Urophora stylata</i> (Fabricius, 1775)					+
Diptera	Tephritidae	<i>Xyphosia miliaria</i> (Schrank, 1781)	+	+		+	+

Provisional invertebrate survey of land at Abbey Way, Willesborough

Diptera	Therevidae	<i>Thereva nobilitata</i> (Fabricius, 1775)	+			+	
Diptera	Tipulidae	<i>Nephrotoma appendiculata</i> (Pierre, 1919)	+				
Diptera	Tipulidae	<i>Nephrotoma flavescens</i> (Linnaeus, 1758)		+		+	+
Diptera	Tipulidae	<i>Nephrotoma quadrifaria</i> (Meigen, 1804)		+			
Diptera	Tipulidae	<i>Tipula lunata</i> Linnaeus, 1758		+			
Diptera	Tipulidae	<i>Tipula oleracea</i> Linnaeus, 1758	+	+			
Diptera	Tipulidae	<i>Tipula varipennis</i> Meigen, 1818	+				
Diptera	Tipulidae	<i>Tipula vernalis</i> Meigen, 1804	+				
Heteroptera	Anthocoridae	<i>Anthocoris nemorum</i> (Linnaeus, 1761)	+				+
Heteroptera	Coreidae	<i>Coreus marginatus</i> (Linnaeus, 1758)	+				
Heteroptera	Lygaeidae	<i>Cymus melanocephalus</i> Fieber, 1861	+				
Heteroptera	Lygaeidae	<i>Heterogaster urticae</i> (Fabricius, 1775)			+		
Heteroptera	Lygaeidae	<i>Ischnodemus sabuleti</i> (Fallén, 1807)	+				+
Heteroptera	Lygaeidae	<i>Kleidocerys resedae</i> (Panzer, 1797)		+			
Heteroptera	Lygaeidae	<i>Scolopostethus thomsoni</i> Reuter, 1874					+
Heteroptera	Miridae	<i>Capsus ater</i> (Linnaeus, 1758)				+	
Heteroptera	Miridae	<i>Closterotomus norwegicus</i> (Gmelin, 1788)					+
Heteroptera	Miridae	<i>Deraeocoris flavilinea</i> (A. Costa, 1862)				+	
Heteroptera	Miridae	<i>Leptopterna dolabrata</i> (Linnaeus, 1758)	+			+	+
Heteroptera	Miridae	<i>Liocoris tripustulatus</i> (Fabricius, 1781)		+			+
Heteroptera	Miridae	<i>Miris striatus</i> (Linnaeus, 1758)		+			
Heteroptera	Miridae	<i>Notostira elongata</i> (Geoffroy, 1785)	+			+	
Heteroptera	Miridae	<i>Orthops campestris</i> (Linnaeus, 1758)					+
Heteroptera	Miridae	<i>Plagiognathus arbustorum</i> (Fabricius, 1794)	+			+	+
Heteroptera	Miridae	<i>Plagiognathus chrysanthemi</i> (Wolff, 1804)				+	
Heteroptera	Miridae	<i>Psallus ambiguus</i> (Fallén, 1807)		+			
Heteroptera	Miridae	<i>Psallus varians</i> (Herrich-Schäffer, 1841)		+			
Heteroptera	Miridae	<i>Stenodema laevigata</i> (Linnaeus, 1758)	+			+	+
Heteroptera	Tingidae	<i>Tingis ampliata</i> (Herrich-Schäffer, 1838)					+
Homoptera	Aphrophoridae	<i>Aphrophora alni</i> (Fallén, 1805)				+	
Homoptera	Aphrophoridae	<i>Philaenus spumarius</i> (Linnaeus, 1758)	+	+		+	+
Homoptera	Cercopidae	<i>Cercopis vulnerata</i> Rossi, 1807	+				
Homoptera	Cicadellidae	<i>Empoasca decipiens</i> Paoli, 1930	+				
Homoptera	Cicadellidae	<i>Eupteryx aurata</i> (Linnaeus, 1758)		+			+
Homoptera	Cicadellidae	<i>Eupteryx urticae</i> (Fabricius, 1803)					+
Homoptera	Cixiidae	<i>Cixius nervosus</i> (Linnaeus, 1758)		+		+	
Homoptera	Delphacidae	<i>Ditropis pteridis</i> (Spinola, 1839)		+		+	
Hymenoptera	Apidae	<i>Andrena minutula</i> (Kirby, 1802)				+	
Hymenoptera	Apidae	<i>Apis mellifera</i> Linnaeus, 1758				+	+
Hymenoptera	Apidae	<i>Bombus hypnorum</i> (Linnaeus, 1758)		+		+	+
Hymenoptera	Apidae	<i>Bombus lapidarius</i> (Linnaeus, 1758)		+		+	+
Hymenoptera	Apidae	<i>Bombus pascuorum</i> (Scopoli, 1763)	+	+			
Hymenoptera	Apidae	<i>Bombus pratorum</i> (Linnaeus, 1761)					+
Hymenoptera	Apidae	<i>Bombus terrestris</i> (Linnaeus, 1758)				+	+
Hymenoptera	Apidae	<i>Bombus vestalis</i> (Geoffroy in Fourcroy, 1785)	+			+	
Hymenoptera	Apidae	<i>Hylaeus annularis</i> (Kirby, 1802)				+	
Hymenoptera	Apidae	<i>Osmia caerulea</i> (Linnaeus, 1758)	+				
Hymenoptera	Cephalidae	<i>Cephus pygmeus</i> (Linnaeus, 1767)				+	
Hymenoptera	Crabronidae	<i>Rhopalum coarctatum</i> (Scopoli, 1763)		+			
Hymenoptera	Eumenidae	<i>Symmorphus gracilis</i> (Brullé, 1832)		+			
Hymenoptera	Formicidae	<i>Lasius niger</i> (Linnaeus, 1758)		+		+	
Hymenoptera	Tenthredinidae	<i>Aneugmenus padi</i> (Linnaeus, 1760)		+		+	
Hymenoptera	Tenthredinidae	<i>Athalia cordata</i> Serville, 1823	+				
Hymenoptera	Tenthredinidae	<i>Dolerus cothurnatus</i> Serville, 1823	+				
Hymenoptera	Tenthredinidae	<i>Dolerus nigratus</i> (Müller, 1776)	+				+
Hymenoptera	Tenthredinidae	<i>Dolerus pratensis</i> (Linnaeus, 1758)					+
Hymenoptera	Tenthredinidae	<i>Eutomostethus luteiventris</i> (Klug, 1816)	+	+			+
Hymenoptera	Tenthredinidae	<i>Macrophya annulata</i> (Geoffroy, 1785)	+				
Hymenoptera	Tenthredinidae	<i>Macrophya duodecimpunctata</i> (Linnaeus, 1758)					+
Hymenoptera	Tenthredinidae	<i>Stethomostus fuliginosus</i> (Schrank, 1781)					+
Hymenoptera	Tenthredinidae	<i>Tenthredo mesomela</i> Linnaeus, 1758		+		+	

Provisional invertebrate survey of land at Abbey Way, Willesborough

Hymenoptera	Tenthredinidae	<i>Tenthredopsis litterata</i> (Geoffroy, 1785)						+
Lepidoptera	Arctiidae	<i>Tyria jacobaeae</i> (Linnaeus, 1758)	+				+	
Lepidoptera	Choreutidae	<i>Anthophila fabriciana</i> (Linnaeus, 1767)		+	+			+
Lepidoptera	Hesperiidae	<i>Ochlodes faunus</i> (Turati, 1905)		+				+
Lepidoptera	Hesperiidae	<i>Thymelicus lineola</i> (Ochsenheimer, 1808)	+					
Lepidoptera	Nymphalidae	<i>Aglais urticae</i> (Linnaeus, 1758)	+	+			+	
Lepidoptera	Nymphalidae	<i>Polygonia c-album</i> (Linnaeus, 1758)						+
Lepidoptera	Pieridae	<i>Colias croceus</i> (Geoffroy, 1785)	+					
Lepidoptera	Satyridae	<i>Aphantopus hyperantus</i> (Linnaeus, 1758)		+				
Lepidoptera	Satyridae	<i>Maniola jurtina</i> insularis Thompson, 1969	+	+			+	+
Mecoptera	Panorpidae	<i>Panorpa communis</i> Linnaeus, 1758		+				
Mecoptera	Panorpidae	<i>Panorpa germanica</i> Linnaeus, 1758		+				
Neuroptera	Chrysopidae	<i>Chrysopa perla</i> (Linnaeus, 1758)					+	
Neuroptera	Chrysopidae	<i>Nineta flava</i> (Scopoli, 1763)		+				
Odonata	Agriidae	<i>Calopteryx splendens</i> (Harris, 1782)		+				+
Odonata	Coenagriidae	<i>Enallagma cyathigerum</i> (Charpentier, 1840)	+		+	+	+	+
Odonata	Libellulidae	<i>Libellula depressa</i> Linnaeus, 1758	+					
Orthoptera	Phaneropteridae	<i>Leptophyes punctatissima</i> (Bosc, 1792)		+				
Orthoptera	Tettigoniidae	<i>Metrioptera roeselii</i> (Hagenbach, 1822)					+	
Orthoptera	Tettigoniidae	<i>Pholidoptera griseoptera</i> (De Geer, 1773)			+			
Psocoptera	Ectopsocidae	<i>Ectopsocus briggsi</i> McLachlan, 1899						+
Trichoptera	Limnephilidae	<i>Limnephilus sparsus</i> Curtis, 1834	+					

3. NOTES ON THE RARER SPECIES

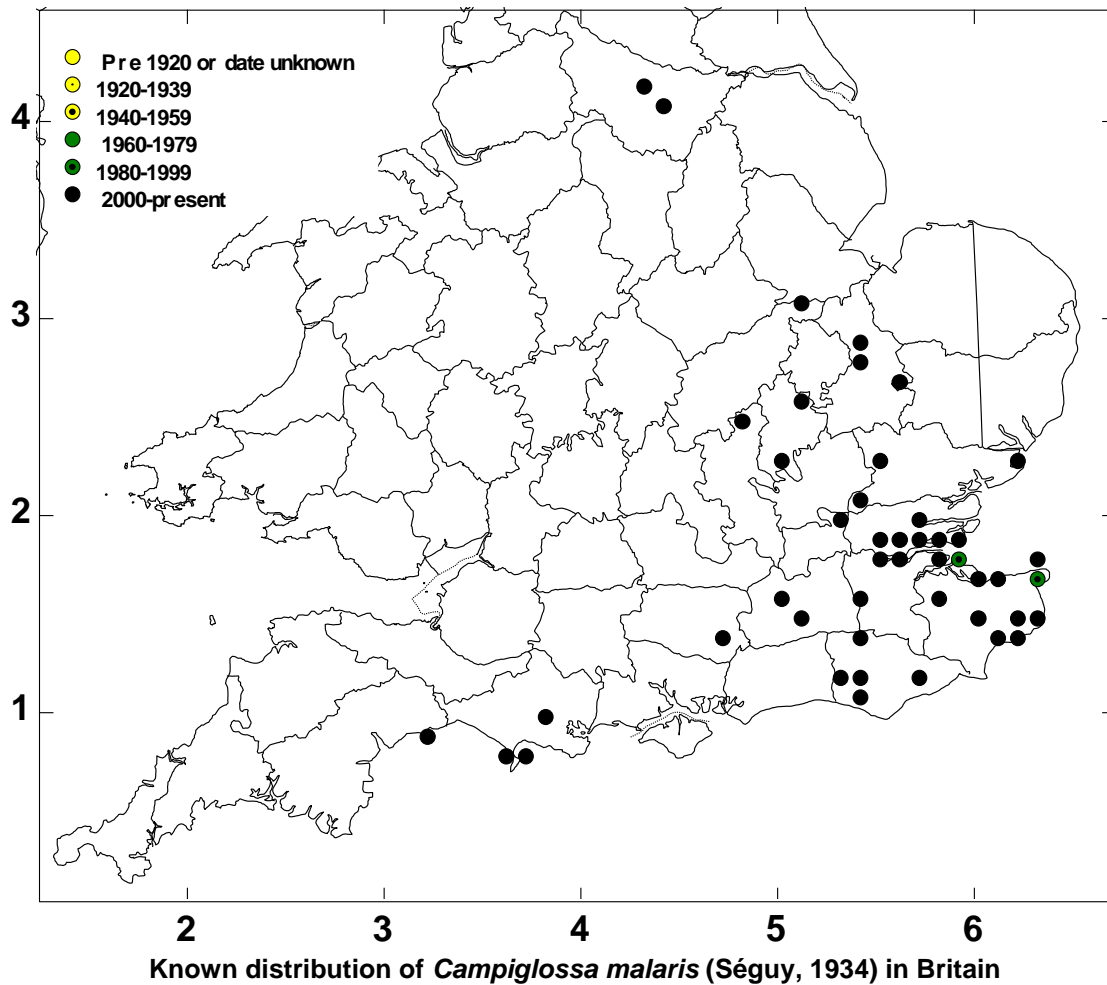
3.1 Nationally Scarce

The following are regarded as Nationally Scarce i.e. known from 100 or fewer 10km grid squares (hectads) in Britain.

Campiglossa malaris (Séguy, 1934) (Diptera, Tephritidae). One female found in compartment 4 on 14 July.

A picture-winged fly first recorded in Britain from the Sugarloaf Hill/Holy Well area of Folkestone in 1974. It was listed as RDB 1 in Falk, S.J. 1991. A review of the scarce and threatened flies of Great Britain (Part 1). *Research and Survey in nature conservation* 31, 1-192 but, from records submitted to the British Tephritidae Recording Scheme organised by Laurence Clemons, is now known from 46 hectads as shown in the map below. Most specimens have been found on Hoary Ragwort *Senecio erucifolius* but at Abbey Way the female was swept from Common Ragwort *Senecio jacobaeae*.

Provisional invertebrate survey of land at Abbey Way, Willesborough



Dicraeus scibilis Collin, 1946 (Diptera, Chloropidae). One male found in compartment 5 on 15 June.

A small dark grass-fly. The following is reproduced from an unpublished manuscript on the scarce and threatened Acalytrate Diptera by J.W. Ismay and S.J. Falk in the mid 1990s.

Dicraeus scibilis Collin

Distribution Southern England (Somerset, Isle of Wight, Kent, Essex, Oxfordshire, Suffolk, Norfolk, Cambridgeshire) and Wales (Monmouthshire), with most records for the Thames Estuary and East Anglia. Many records are coastal.

Habitat Coastal grassland, including that associated with saltmarsh and sand dunes. Inland records are from water meadows and unimproved pastures.

Ecology Larvae probably develop in grass seeds like related species. They probably leave the seeds and pupariate in the ground beneath. Adults recorded in June and July.

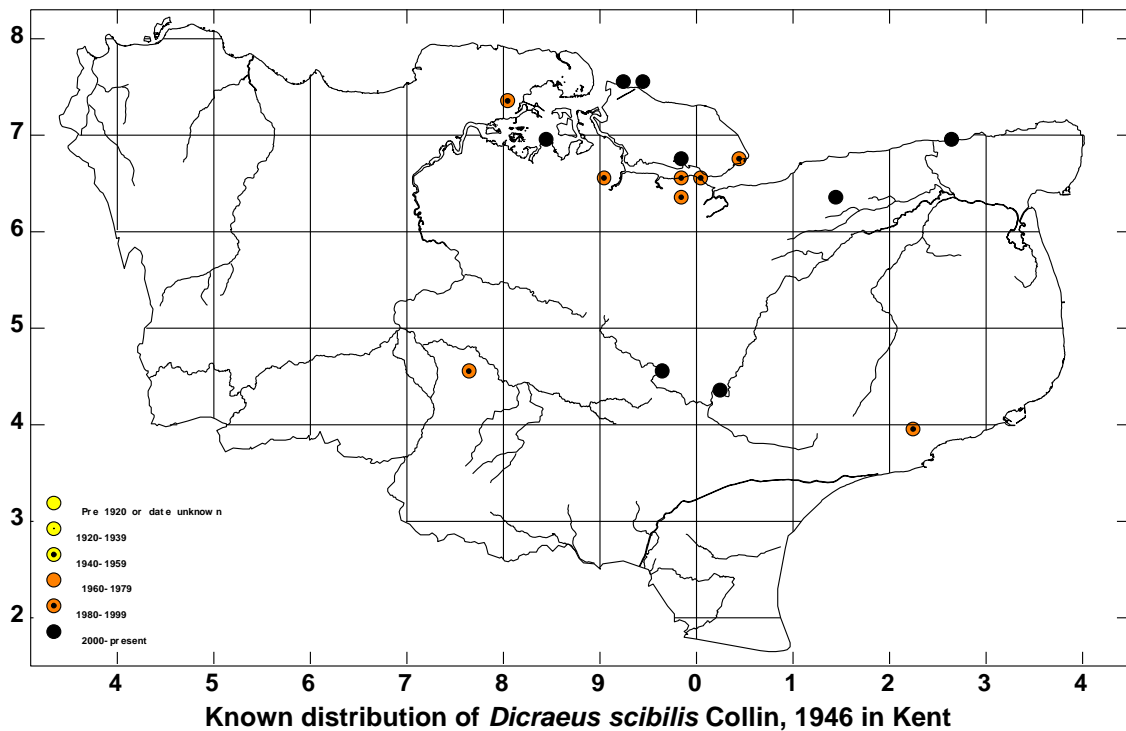
Status Highly localised and infrequently recorded, except on the North Kent marshes where it is locally frequent. About thirteen known post-1960 sites (four within Kent). There is evidence of strong population fluctuations; it may be abundant one year and apparently absent the next. Species of this genus have an extremely short flight period because of their association with developing seeds of grasses and may therefore be under-recorded.

Threat Habitat loss through coastal development and agricultural reclamation and recreational pressure on dunes. Overgrazing, or its cessation, with subsequent scrub invasion and a loss of floristic richness and diversity. Changes in traditional management of water meadows. Grazing or cutting grasses early so as to destroy larvae in seeds.

Management Maintain a full transition of vegetation types at sites, retaining a reasonably high water level in wet slacks or pools and avoiding invasion by scrub. Avoid cutting meadows before development of larvae, probably at the end of July.

The known Kent distribution is shown below.

Provisional invertebrate survey of land at Abbey Way, Willesborough



Grypus equiseti (Fabricius, 1775) (Coleoptera, Cuculionidae). One adult found in compartment 5 on 15 June. A large weevil. The following is reproduced from Hyman, P.S. 1992. A review of the scarce and threatened Coleoptera of Great Britain. Part 1. *UK Nature Conservation*. 484pp.

Grypus equiseti (F., 1775). Formerly known as *Grypidius equiseti* (F.).

Distribution England, Wales and Scotland.

Habitat and ecology Occurs in a variety of habitats including wetland, willow carr, disused gravel workings, grassland, field margins and roadside verges. Phytophagous. Associated with field horsetail *Equisetum arvense* and marsh horsetail *E. palustre*. Also recorded on great horsetail *E. telmateia*. The larvae feed in the stems. Adults occur at the base of the foodplants and have been recorded in March and from June to September.

Status Widespread but local. Possibly under-recorded because of its secretive nature.

Threats This species may be threatened by loss of habitat through conversion to other land use. Drainage, water abstraction schemes and natural succession may be further threats.

Management and conservation Water tables should be maintained at high levels. Grazing, cutting or some other disturbance, such as rotoation, on a rotational basis, is needed to maintain open conditions.

Pherbellia griseola (Fallén, 1820) (Diptera, Sciomyzidae). One male found in compartment 1 on 15 June.

A small snail-killing fly. The following is reproduced from Falk, S.J. 1991. A review of the scarce and threatened flies of Great Britain (Part 1). *Research and Survey in nature conservation* **31**, 1-192.

Pherbellia griseola (Fallén)

Distribution Recorded widely in England, Wales and Scotland, including a number of sites in Rhum.

Habitat A wide range of wetlands are used including fens, bogs, dune slacks and damp woods and a requirement for standing water is present.

Ecology The larvae develop as parasitoids of aquatic snails such as *Lymnaea palustris* (a wide range of hosts have been used in the laboratory. Adults recorded from early May to early September probably as four to six generations.

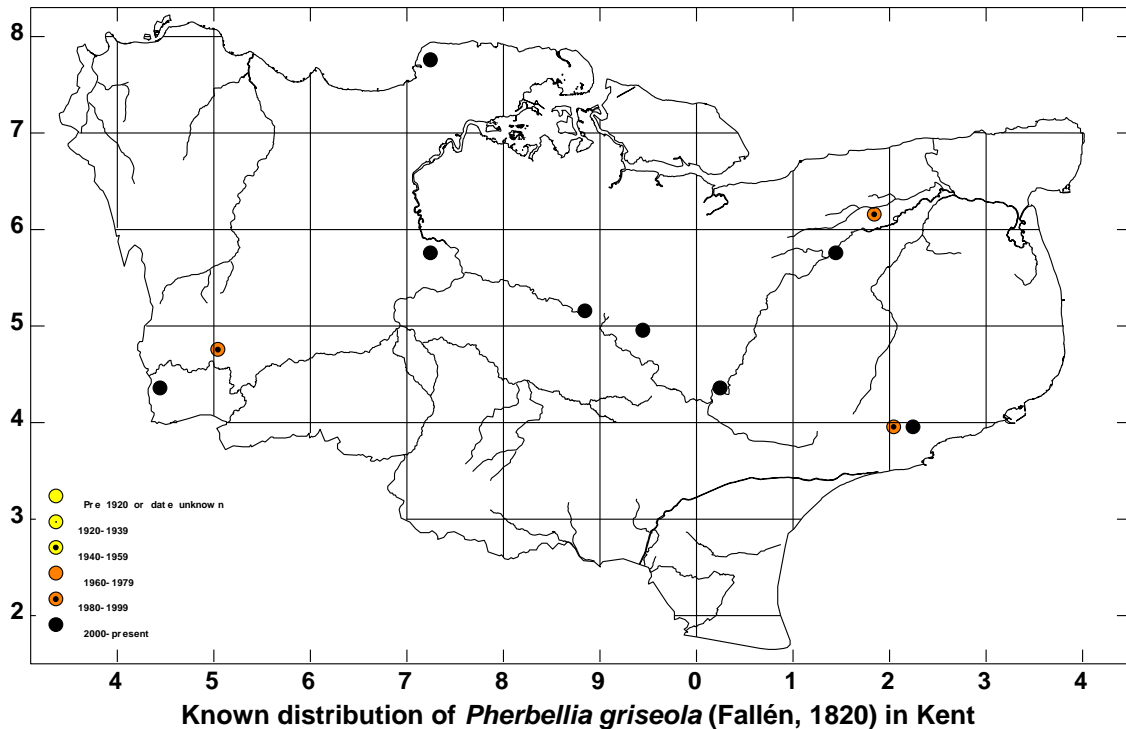
Status Widespread but very local in most areas with about 30 known post 1960 sites. Status revised from RDB (Shirt, 1987).

Threat The drainage of wetland areas for agriculture, coastal development or intensive forestry; complete or extensive clearance of marginal vegetation from water edges such as through river improvement schemes and the ditching of streams; pollution such as agricultural run-off; mismanagement of water levels with a loss of breeding sites and subsequent scrub invasion.

Management Prevent any drainage of sites and ensure a range of vegetational types including ponds, ditches and their marginal vegetation using rotational management where necessary. Seasonally fluctuating water levels may be of importance. Prevent scrub invasion.

The known Kent distribution is shown below.

Provisional invertebrate survey of land at Abbey Way, Willesborough



Siphonella oscinina (Fallén, 1820) (Diptera, Chloropidae). One female found in compartment 5 on 14 July. A small dark grass-fly. The following is reproduced from an unpublished manuscript on the scarce and threatened Acalytrate Diptera by J.W. Ismay and S.J. Falk in the mid 1990s.

Siphonella oscinina (Fallén)

Distribution Scattered localities in England (Kent, Surrey, Essex, Hertfordshire, Berkshire, Oxfordshire, Suffolk, Norfolk, Cambridgeshire, Staffordshire, Nottinghamshire), Wales (Glamorganshire) and Scotland (Elgin).

Habitat Preferences unclear though there are records from pine (*Pinus* sp.). Many records are from dry grassland or heath.

Ecology Larvae are said to have been reared from pine cones, though the virtual lack of information from pinewoods in Scotland is intriguing and suggest a strong link with plantations or isolated pines in other habitats. Adults recorded from April to September and were found at Barton Mills, Suffolk by sweeping conifers. At Grays in Essex the species was numerous on small yellow composite flowers in September 1995.

Status Widespread but localised with seven post-1960 sites. The species may be under-recorded due to the late flight period and the low level of recording in this group.

Threat Unclear.

Management Uncertain, though retention of some isolated pine trees may be beneficial.

There is one other known Kent record for this species - Beltinge Cliff, near Herne Bay TR192685 on 14 October 1984 by Laurence Clemons, another site lacking conifers.

Provisional invertebrate survey of land at Abbey Way, Willesborough

3.2 Locally scarce species

The following species of Diptera (True flies) are known from fewer than 10 hectads in Kent according to a database of Kent Diptera containing over 102000 records for 3138 species held by Laurence Clemons.

Family	Species	Number of hectads
Chaoboridae	<i>Chaoborus flavicans</i> (Meigen, 1830)	5
Phoridae	<i>Conicera tibialis</i> Schmitz, 1925	2
Chironomidae	<i>Endochironomus tendens</i> (Fabricius, 1775)	5
Agromyzidae	<i>Melanagromyza dettmeri</i> Hering, 1933	8
Muscidae	<i>Mydaea nebulosa</i> (Stein, 1893)	3
Chironomidae	<i>Orthocladius calvus</i> Pinder, 1985	1
Syrphidae	<i>Orthonевра brevicornis</i> (Loew, 1843)	7
Chironomidae	<i>Paratendipes plebeius</i> (Meigen, 1818)	3
Chironomidae	<i>Paratrichocladius rufiventris</i> (Meigen, 1830)	2
Milichiidae	<i>Phyllomyza flavitarsis</i> (Meigen, 1830)	6
Agromyzidae	<i>Phytomyza clematidis</i> Kaltenbach, 1859	2
Agromyzidae	<i>Phytomyza continua</i> Hendel, 1920	8
Syrphidae	<i>Platycheirus occultus</i> Goeldlin de Tiefenau, Maibach & Speight, 1990	8
Hybotidae	<i>Platypalpus australominutus</i> Grootaert, 1989	5
Chironomidae	<i>Prodiamesa olivacea</i> (Meigen, 1818)	7
Lauxaniidae	<i>Sapromyza sexpunctata</i> Meigen, 1826	9
Ceratopogonidae	<i>Serromyia femorata</i> (Meigen, 1804)	9
Muscidae	<i>Spanochaeta dorsalis</i> (von Roser, 1840)	9
Hybotidae	<i>Stilpon graminum</i> (Fallén, 1815)	6
Chironomidae	<i>Tanytarsus mendax</i> Kieffer, 1925	1
Keroplataidae	<i>Urytalpa dorsalis</i> (Staeger, 1840)	9

Abbey Way is the only known Kent site for the chironomids *Orthocladius calvus* Pinder, 1985 and *Tanytarsus mendax* Kieffer, 1925.

4. THE IMPORTANCE OF THE AREA FOR INVERTEBRATES

The three hundred and twenty three species obtained from active collecting/recording must be viewed as an absolute minimum. The table in 2.4 (above) shows the number of new species found subsequent to the first visit on 22 May, with the lower number on 14 July undoubtedly due to the hot weather. The use of passive collecting techniques such as Malaise traps, pitfall traps and water traps would have yielded many more species, particularly of beetles, spiders and other ground-dwelling taxa in the case of pitfall traps.

The occurrence of 5 Nationally Scarce species plus a further 21 regionally rare species suggests that the site is of prime local importance for invertebrates.

5. MANAGEMENT AND CONSERVATION

While the authors of the Scarce and Threatened taxa gave instructions for management and conservation the many species have unknown habitat requirements. The main recommendations here are

- Limit the growth of coarse grasses in compartment 1.
- Retain the tree and shrub line in compartment 2.
- Retain some of the brambles in compartment 3.
- Limit the spread of Bracken in compartment 4.
- Retain the *Oenanthe* and *Ranunculus* dominated marsh in compartment 5.

Provisional invertebrate survey of land at Abbey Way, Willesborough

6. APPENDIX

6.1 List of Diptera from Willesborough Lees TR0342

Family	Species	Date	Site	Grid	Collector
Pediciidae	<i>Pedicia rivosa</i> (Linnaeus, 1758)	02/08/1987	Willesborough Lees	TR0342	E.G. Philp
Bibionidae	<i>Bibio marci</i> (Linnaeus, 1758)	18/05/1977	Willesborough Lees	TR0342	E.G. Philp
Syrphidae	<i>Episyrphus balteatus</i> (De Geer, 1776)	02/08/1987	Willesborough Lees	TR0342	E.G. Philp
Syrphidae	<i>Eristalis pertinax</i> (Scopoli, 1763)	22/04/1988	Willesborough Lees	TR0342	N. Onslow
Syrphidae	<i>Syritta pipiens</i> (Linnaeus, 1758)	26/08/1988	Willesborough Lees	TR0342	N. Onslow
Syrphidae	<i>Volucella pellucens</i> (Linnaeus, 1758)	07/07/1987	Willesborough Lees	TR0342	N. Onslow