

## **Appendix 12-I Invertebrates**

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## 12-I.1 Aquatic Beetles and Bugs

### Introduction

12-I.1.1 A body of data has been built up for the Combe Haven valley beginning with work by Peter Hodge in 1991. He sampled 25 ditches at the centre of Combe Haven for aquatic Coleoptera and Hemiptera (Table 12-I.1), although he also obtained records for other taxa. Flooding immediately prior to sampling caused large numbers of small insects to come to the surface (including terrestrial species), so that they could be scooped off, providing a better record than would usually be obtained. One set of samples was for Watermill Stream, which had flowing water fauna entirely different from the ditches, notably three species of Elmidae (riffle beetles). In all 35 species of RDB or Notable status were found as summarised below:

**Table 12-I.1 1991 Survey undertaken in 25 Ditches in Combe Haven**

	RDB	Na	Nb	N
<b>Coleoptera (aquatic)</b>	1	1	15	-
<b>Coleoptera (terrestrial)</b>	-	2	12	-
<b>Diptera</b>	1	-	-	2
<b>Hemiptera</b>	-	-	-	-
<b>Neuroptera</b>	-	-	1	-
	<b>2</b>	<b>3</b>	<b>28</b>	<b>2</b>

12-I.1.2 Another survey of Coleoptera and Hemiptera was carried out along the line of the Orange Route in 1995 as part of work for the public inquiry. The purpose was to calculate Water Quality Scores and Species Quality Scores for streams or ditches that might be affected by the Orange Route. The following Notable species of Coleoptera were recorded:

*Hygrotus decoratus*

*Rhanatus suturalis*

*Hydrochus angustatus*

*Helophopus nanus*

*Cercyton convexusculus*

*Hydracena testacea*

12-I.1.3 A further survey was carried out by Peter Hodge in 2004 (Table 12-I.2) concentrating on aquatic Hemiptera and Coleoptera, since the terrestrial beetle records of 1991 were the result of exceptional circumstances. It was originally intended to re visit all of the 1991 ditches. However, it soon became apparent that there was little point in re-sampling many of them because they had changed substantially as a result of altered management or succession. Ten

ditches were re-sampled and they had an average Species Quality Score (SQS) of 1.34 in 2004 as opposed to 1.73 in 1991. The difference is not statistically significant since it largely results from the presence of a Red Data Book (RDB) species in one ditch. In general there was little change in individual scores, although there was a substantial change in the species present.

12-I.1.4 The 2004 survey was extended to include a representative selection of ditches with varied aquatic vegetation and some open water. This gives an overall picture of status of the ditches compared with 1991, since aquatic Coleoptera are widely regarded as overall indicators of ditch quality. Forty-seven species were recorded in 2004 as opposed to 66 in 1991, although the average SQS had risen from 2.1 to 2.4 largely as a result of the presence of a small number of RDB and Notable species. Unsurprisingly, the best part of the site is the area between D34 and D98 on the south bank of the Haven, which is also the richest botanically.

12-I.1.5 The following Notable and RDB species were recorded in 2004:

*Hydaticus seminger*

*Hydroglyphus pusuillus*

*Hygrotus decoratus*

*Ratanus grapii*

*Ratanus suturalis*

*Gyrinus suturalis*

*Peltodytes caesus*

*Hydranea testacea*

*Hydrochus angustatus*

*Hydrochus ignicollis* RDB3

*Anacaena bipustula*

*Berosus affinis*

*Cercyon tristis*

*Cercyon ustulatus*

*Enochorus melanocephalus*

*Enochorus ochropterus*

*Helochaeres lividus*

*Hydrophilus piceus* RDB3

12-I.1.6 It was noted that Combe Haven has a more restricted fauna than some of the other major Sussex wetlands, as Table 2 illustrates, but this does not necessarily mean that it is of lower biodiversity interest.

**Table 12-I.2 Comparative Data for Water Beetles recorded from Sussex Levels Collected by Peter Hodge - Tables last updated September 2004**

**Summary of Red Data Book and Nationally Scarce Species**

Red Data Book and Nationally Notable species	Total for all sites	Walland Marsh	Rye Level	Tillingham Level	Brede Level	Pett Level	Combe Haven Level	Pevensey Level	Cuckmere Valley	Ouse Valley	Adur Valley	Arun Valley
<b>NATIONALLY SCARCE SPECIES</b>												
Nationally Notable (Na) species	11	5	8	0	2	3	1	4	1	6	0	0
Nationally Notable (Nb) species	51	30	34	5	21	13	17	33	24	36	3	7
<b>TOTAL Nb + Na SPECIES</b>	<b>62</b>	<b>35</b>	<b>42</b>	<b>5</b>	<b>23</b>	<b>16</b>	<b>18</b>	<b>37</b>	<b>25</b>	<b>42</b>	<b>3</b>	<b>7</b>
<b>RED DATA BOOK SPECIES</b>												
Red Data Book (RDB1) species	4	1	0	0	0	1?	0	0	0	0	0	0
Red Data Book (RDB2) species	3	1	0	0	1	2	1	1	0	2	0	0
Red Data Book (RDB3) species	17	7	5	3	2	4	2	8	3	11	0	0
<b>TOTAL RDB SPECIES</b>	<b>24</b>	<b>9</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>7</b>	<b>3</b>	<b>9</b>	<b>3</b>	<b>13</b>	<b>0</b>	<b>0</b>
<b>TOTAL RDB + Na + Nb SPECIES</b>	<b>86</b>	<b>44</b>	<b>47</b>	<b>8</b>	<b>26</b>	<b>23</b>	<b>21</b>	<b>46</b>	<b>28</b>	<b>55</b>	<b>3</b>	<b>7</b>

**Water Beetle Species Quality Scores**

Species Quality Scores	Total for all sites	Walland Marsh	Rye Level	Tillingham Level	Brede Level	Pett Level	Combe Haven Level	Pevensey Level	Cuckmere Valley	Ouse Valley	Adur Valley	Arun Valley
Number of species (= NOS)	172	102	113	45	86	64	82	120	80	138	40	61
Points aggregate (= WET)	790	397	342	112	206	269	209	389	191	478	63	107
Species Quality Score (= SQS)	4.59	3.89	3.03	2.49	2.40	4.20	2.55	3.41	2.39	3.46	1.58	1.75

12-I.1.7 Further surveys were carried out in 2005 and 2006 to supplement the overall picture and in 2006 to provide more detailed information on the ditches that would be directly affected by the scheme This information is shown on Table 12-I.3.

**Table 12-I.3 Species Quality Scores for Ditches on or Near the Route**

	D2	D3	D4	D5	D12	D13	D16	D18	D16a	D20a	D27
Points scored per ditch sample (WET)	2	0	3	17	1	2	6	8	8	0	18
Number of Species (NOS)	2	0	3	11	1	2	5	4	5	0	8
Species Quality Score (SQS)	1	0	1	1.5	1	1	1.2	2	1.6	0	2.3
Number of Nationally Scarce species	0	0	0	0	0	0	0	0	0	0	1

  

	D24	D24b	D57	D26	D29	D36	W37n	D34w	D44	D42
Points scored per ditch sample (WET)	0	0	11	21	28	10	1	0	3	0
Number of Species (NOS)	0	0	6	8	16	9	1	0	2	0
Species Quality Score (SQS)	0	0	1.8	2.6	1.8	1.1	1	0	1.5	0
Number of Nationally Scarce species	0	0	1	3	3	0	0	0	0	0

  

	D44	D4	D45	D48	D46	D4	DP strm	H121	Pd in F2	Pd in F29
Points scored per ditch sample (WET)	15	32	3	0	3	12	0	0	5	5
Number of Species (NOS)	9	15	2	0	3	8	0	0	4	3
Species Quality Score (SQS)	1.7	2.1	1.5	0	1	1.5	0	0	1.3	1.7
Number of Nationally Scarce species	2	5	0	0	0	1	0	0	0	0

### **Characteristics of the Notable and RDB Species**

COLEOPTERA (Beetles)

CARABIDAE (Ground beetles)

Nb *Demetrias imperialis*

12-I.1.8 100 years ago this species was rare and declining but during the past fifty years it has spread from its headquarters in East Anglia and Kent to many parts of southern England and may still be increasing its range. It occurs in wetland habitats and is particularly associated with reed-beds in fens and coastal grazing marshes.

Nb *Oodes helopioides*

12-I.1.9 Widespread but local in England and Wales. Found amongst lush vegetation in wetland habitats, often where there is soft mud or boggy areas along the margins of ponds and ditches.

CURCULIONIDAE (Weevils)

Nb *Notaris scirpi*

12-I.1.10 Widespread but local in England and Wales and not recorded from South-west England. Associated with Lesser Pond Sedge *Carex acutiformis* and Reedmace *Typha latifolia*.

DYTISCIDAE (Water beetles)

RDB3 *Acilius canaliculatus*

12-I.1.11 Colonies are widely scattered in Britain, but perhaps most frequent in the north. In many parts of its range it has declined, but the colonisation of ponds in south-east England appears to be very recent. It can occur in a variety of habitats including fen drains and woodland pools including water-filled holes left by fallen trees in acid fen.

Nb *Hydaticus seminiger*

12-I.1.12 Rarely found outside East Anglia and south-east England, this species is found in ponds and dykes containing thick aquatic vegetation.



Nb        *Hydroglyphus pusillus*

12-I.1.13    A local but widespread species which is found in silt-ponds, gravel-pits and freshly cleaned-out dykes. Confined to England, this beetle may be somewhat under-recorded.

Nb        *Rhantus suturalis*

12-I.1.14    Widely distributed throughout England but most frequent in the south. It is a strong flyer and quickly colonises freshly cleaned-out dykes.

#### GYRINIDAE (Whirlygig beetles)

Nb        *Gyrinus urinator*

12-I.1.15    A local species which is most frequent to the south of London although there are a few records as far north as the Scottish borders. It is confined to rivers, streams, and occasionally large lakes.

#### HALIPLIDAE (Water beetles)

Nb        *Peltodytes caesus*

12-I.1.16    This may be a declining fenland species. There are recent (i.e. post-1960) records for the Gwent Levels, Somerset Levels, East Sussex Levels, Kent Levels and isolated sites in Cambridgeshire, Oxfordshire and Middlesex.

#### HYDRAENIDAE (Water beetles)

Nb        *Hydraena testacea*

12-I.1.17    This widespread but local species occurs as far north as southern Scotland although it is more frequent in the south of England. Many records are for fenland and grazing marshes but it can also be associated with other freshwater habitats.

pRDB3    *Ochthebius exaratus*

12-I.1.18    A minute but very distinct water beetle which is confined to ponds and ditches in the coastal grazing marshes of Hampshire, Isle of Wight, East Sussex, Kent, Essex and Suffolk. The few recent records are all from Essex, Kent and East Sussex. Not listed in the insect Red Data Book (Shirt, 1987).

pRDB3 *Ochthebius pusillus*

12-I.1.19 Widely scattered and very local in Southern England. Found in clay-bottomed ponds where there is little or no aquatic vegetation. Not listed in the insect Red Data Book (Shirt, 1987).

HYDROPHILIDAE (Water beetles)

Nb *Anacaena bipustulata*

12-I.1.20 Widely distributed south-east of a line from the Bristol Channel to the Humber. It often occurs in gravel-pits and dislikes stagnant water.

Nb *Berosus affinis*

12-I.1.21 Most recent records for this local species are from the coastal grazing marshes of Essex, Kent, East Sussex, Somerset, and Monmouth. It quickly colonises freshly cleaned-out dykes.

Nb *Cercyon convexiusculus*

12-I.1.22 A widely distributed but local species which is found at the margins of water. It is most frequently found in areas of ancient wetland

Nb *Cercyon tristis*

12-I.1.23 A widely distributed but local species which is found at the margins of water. It is most frequently found in areas of ancient wetland

Nb *Cercyon ustulatus*

12-I.1.24 Widespread but local in Britain. Associated with the margins of ponds and ditches, probably preferring long established wetland habitats.

Nb *Helochares lividus*

12-I.1.25 Widely distributed in England and Wales, this species is most frequent in the south. It occurs in ponds inland as well as in dykes on the coastal levels.

RDB3 *Hydrophilus piceus*

12-I.1.26 The "Great Silver Water Beetle" is usually regarded as Britain's largest resident beetle. It is virtually confined to the Coastal grazing marshes of Norfolk, Essex, Kent, East

Sussex, Somerset and Monmouth. There is a recent West Sussex record for Amberley Wild Brooks.

Nb *Limnoxenus niger*

12-I.1.27 Very local and mainly confined to coastal grazing marshes in Kent, East Sussex and Somerset. There are isolated colonies elsewhere, including a few in East Anglia where it was once more widespread. It is often deceptively numerous where it occurs.

#### COLEOPTERA (Beetles)

##### CARABIDAE (Ground beetles)

##### CURCULIONIDAE (Weevils)

Nb *Notaris scirpi*

12-I.1.28 Widespread but local in England and Wales and not recorded from South-west England. Associated with Lesser Pond Sedge *Carex acutiformis* and Reedmace *Typha latifolia*.

##### DYTISCIDAE (Water beetles)

Nb *Hydaticus seminiger*

12-I.1.29 Rarely found outside East Anglia and south-east England, this species is found in ponds and dykes containing thick aquatic vegetation.

Nb *Rhantus grapii*

12-I.1.30 Widely distributed in England and Wales south of The Humber, this species is found in richly vegetated fen drains and similar habitats elsewhere. It is perhaps most common in Kent, East Sussex, Somerset, and East Anglia.

Nb *Rhantus suturalis*

12-I.1.31 Widely distributed throughout England but most frequent in the south. It is a strong flyer and quickly colonises freshly cleaned-out dykes.

##### HYDRAENIDAE (Water beetles)

Nb *Hydraena testacea*

12-I.1.32 This widespread but local species occurs as far north as southern Scotland although it is more frequent in the south of England. Many records are for fenland and grazing marshes but it can also be associated with other freshwater habitats.

#### HYDROCHIDAE (Water beetles)

Nb *Hydrochus angustatus*

12-I.1.33 Widely distributed throughout England and Wales but much more frequent in southern counties. It is said to prefer heathland.

#### HYDROPHILIDAE (Water beetles)

Nb *Anacaena bipustulata*

12-I.1.34 Widely distributed south-east of a line from the Bristol Channel to the Humber. It often occurs in gravel-pits and dislikes stagnant water.

Nb *Cercyon tristis*

12-I.1.35 A widely distributed but local species which is found at the margins of water. It is most frequently found in areas of ancient wetland

Nb *Cercyon ustulatus*

12-I.1.36 Widespread but local in Britain. Associated with the margins of ponds and ditches, probably preferring long established wetland habitats.

Nb *Enochrus ochropterus*

12-I.1.37 Widespread but local in the British Isles. It is found in a variety of aquatic habitats including ditches on grazing marshes and amongst sphagnum in acidic water.

Nb *Helochaeres lividus*

12-I.1.38 Widely distributed in England and Wales, this species is most frequent in the south. It occurs in ponds inland as well as in dykes on the coastal levels.

#### STAPHYLINIDAE (Rove beetles)

N            *Sepedophilus pedicularius*

12-I.1.39    Widespread but local in England with isolated colonies in Northern Ireland and the Irish Republic. Found in fens and bogs where it occurs in wet moss, sedge and reed litter, etc.

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