



White-legged Damselfly (*Platycnemis pennipes*), a rare success story for Bedfordshire invertebrates.

Bedfordshire and Luton
Waterways and Wetlands BAP
Key Invertebrates
An Assessment and Recommendations for the Future
Interim Report N^o. 1.

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10/11/2005



The Ivel and Ouse Countryside Project is an environmental service of the Bedfordshire Rural Communities Charity.



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1. Summary

Table 1 shows the recommended amended list of Bedfordshire and Luton Waterways and Wetlands Biodiversity Action Plan Key Invertebrate Species, this includes 7 new species or species groups and the removal of one species that is now widespread and common throughout the county. The rest of this document outlines the justification for the new list and gives some information about the species and conservation action required (where currently known).

Table 1 Recommended WWBAP Key Species.

Species		SAP	National Status
<i>Biblopectus tenebrosus</i>	A beetle	-	Vulnerable
<i>Pisidium tenuilineatum</i>	Fine-lined Pea Mussel	-	RDB3
<i>Austropotamobius pallipes</i>	White-clawed Crayfish	LSAP	
<i>Ischnura pumilio</i>	Scarce Blue-tailed Damselfly	LSAP	Nationally scarce
<i>Brachytron pratense</i>	Hairy Dragonfly	-	Nationally Scarce
<i>Pseudanodonta complanata</i>	Depressed River Mussel	-	RDB?
<i>Aplexa hypnorum</i>	Moss Bladder Snail	-	
<i>Aromia muschata</i>	Musk Beetle	-	Nb
<i>Libellula fulva</i>	Scarce Chaser	-	RDB3
<i>Erythromma viridulum</i>	Small Red-eyed Damselfly	-	Recent colonist
<i>Lestes sponsa</i>	Emerald Damselfly	-	Locally common
<i>Monosynamma spp.</i>	Willow Thicket Bugs	-	RDB3 or Nb

2. Introduction

This report has been undertaken as an output of the Bedfordshire Otters and Rivers Project (BORP): "Target gaps in waterways BAP inverts" by the Ivel and Ouse Countryside Project (an environmental Service of the Bedfordshire Rural Communities Charity).

The report analyses the list of Key Invertebrate Species published in the 2001 Luton and Bedfordshire Waterways and Wetland Biodiversity Action Plan (BLWG 2001a) and outlines the current state of affairs for those species as far as is known and discusses whether or not those species should continue to be included on the list.

The second half of the report identifies other rare and uncommon waterways and wetland invertebrates known from the county and attempts to assess whether or not they should be recommended for inclusion in a revised Key Species list. In addition to this some basic recommendations for the future conservation of those species considered for inclusion are given.

Finally a revised Key Species list is put forward along with proposed lead organisations or individuals who would be appropriate for taking forward conservation action on those species identified (where these are known).

3. Current Key Species

There are currently six invertebrate species included as Key Species in the Luton and Bedfordshire Waterways and Wetland Biodiversity Action Plan, see Table 2. Two of these species have their own Species Action Plan already in place (White-clawed Crayfish and Scarce Blue-tailed damselfly, (BLWG 2001b and BLWG 2001c)).

Table 2 Bedfordshire and Luton WWBAP Key Species (Invertebrates)

Species		SAP	Status	Current surveys
<i>Biblopectus tenebrosus</i>	A beetle		Vulnerable	None
<i>Pisidium tenuilineatum</i>	Fine-lined Pea Mussel		RDB3	None
<i>Austropotamobius pallipes</i>	White-clawed crayfish	LSAP		Current site is regularly monitored. Data held by county recorder and BRMC. Summary of monitoring between 2001 and 2005 being published.
<i>Ischnura pumilio</i>	Scarce blue tailed damselfly	LSAP	Nationally scarce	Regular site checks by various observers. Data held by county recorder and BRMC
<i>Brachytron pratense</i>	Hairy dragonfly		Nationally Scarce	Regularly recorded, data held by county recorder and BRMC.
<i>Platycnemis pennipes</i>	White legged damselfly		-	Regularly recorded data held by County recorder and BRMC

The following section gives more detail about each of the current species and makes recommendations for the future.

3.1 *Biblopectus tenebrosus* (Reitter, 1880), A beetle.

Currently known locations

Biblopectus tenebrosus (formerly known as *B. margaritae*) has been recorded from a single location in Bedfordshire, Flitwick Moor, TL046354. The species is only known from six other sites in the country, two of which are in Cambridgeshire, see table 3.

Table 3 British records of *Biblopectus tenebrosus*.

Site name	Gridref	Date Recorded
Holme Fen, Cambs	TL205895	1986
Holme Fen, Cambs	TL205895	2005
Hickling Broad, Norfolk	TG4421	1979
Askham Bog, North Yorks	SE5748	1965
Askham Bog, North Yorks	SE5748	2005
The New Forest sens. lat.	SU30	1951
Flitwick Moor, Beds	TL046354	1994
Woodwalton Fen, Cambs	TL223835	2005
Rhinefield, Hampshire	SU20	2005

Data from English Nature Invertebrate Site Register and NBN Gateway, the Data Provider, and the NBN Trust bear no responsibility for any further analysis or interpretation of this material, data and/or information.

Habitats and ecology

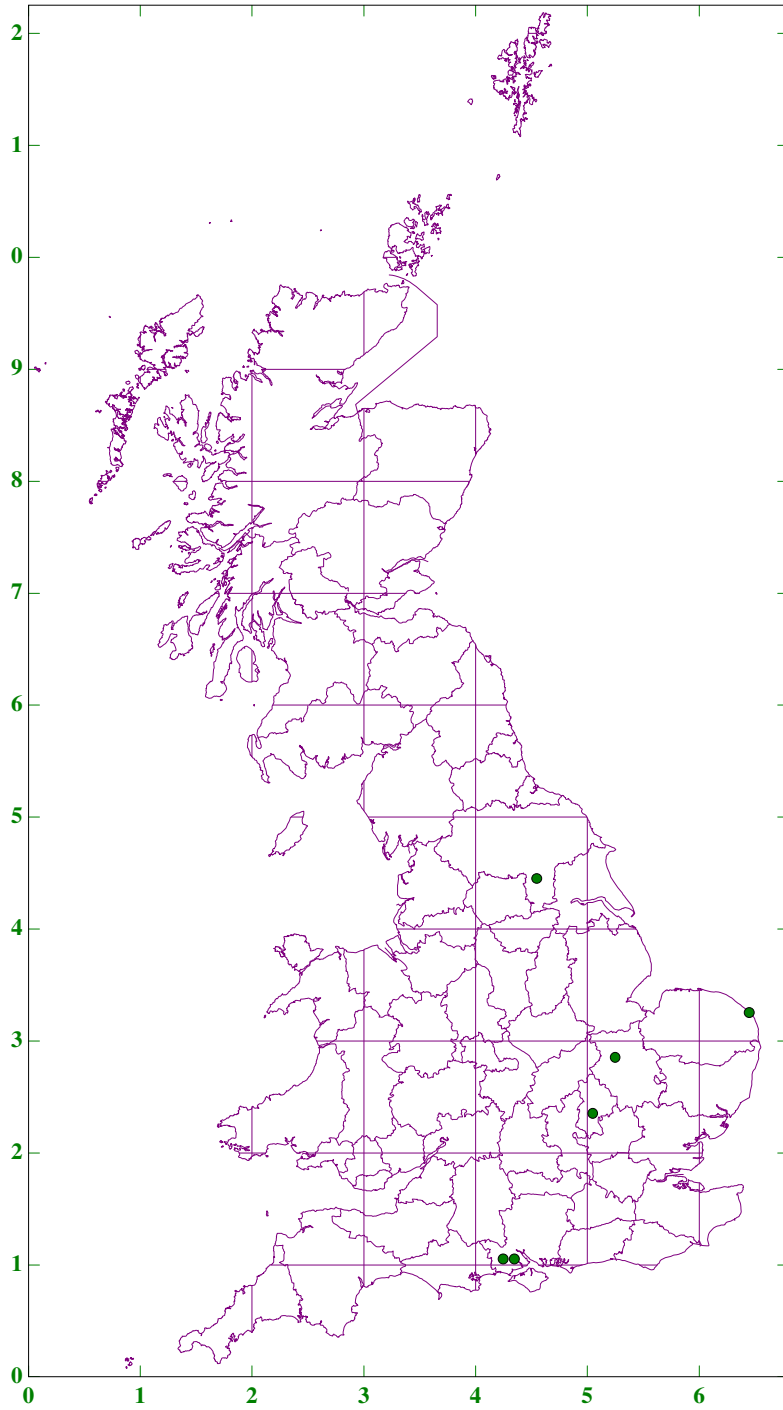
Little appears to be known about this beetle, other than it is found in thick deep moss in bogs and swamps, or in grass tussocks or the base of sedges. The larvae are currently unknown.

The beetle is small and easily overlooked and no easy to use identification key that includes this species is readily available. It is possible that it occurs at other sites but there are few sites in Bedfordshire that have habitat similar to Flitwick Moor and so this does not seem likely.

Recommendations for this species

- Investigation into the literature and current knowledge of this species to establish best time of year for survey and likely locations in Bedfordshire.
- Establish suitable person to confirm identification of likely specimens.
- Surveys of suitable sites in Bedfordshire at the appropriate time of year by either pitfall trapping in areas of *Sphagnum* moss or sieving sedge refuse.
- Check currently known site for continued occurrence.

Biblopectus tenebrosus



Map 1 Countrywide distribution of *Biblopectus tenebrosus*
(Data from Table 3)

3.2. *Pisidium tenuilineatum* (Stelfox 1918), Fine-lined Pea Mussel

Currently known locations

This species is recorded from two 10km squares (TL05 and TL04) in Bedfordshire but does not appear to have been found alive in the recent past. There are 74 records in the "Mollusc (non-marine) data for Great Britain and Ireland" database and 27 in the Invertebrate Site Register. The most recent records for the country are from the period 1950 to 1983. There are 45 10km grid squares in Britain from where this species has been recorded.

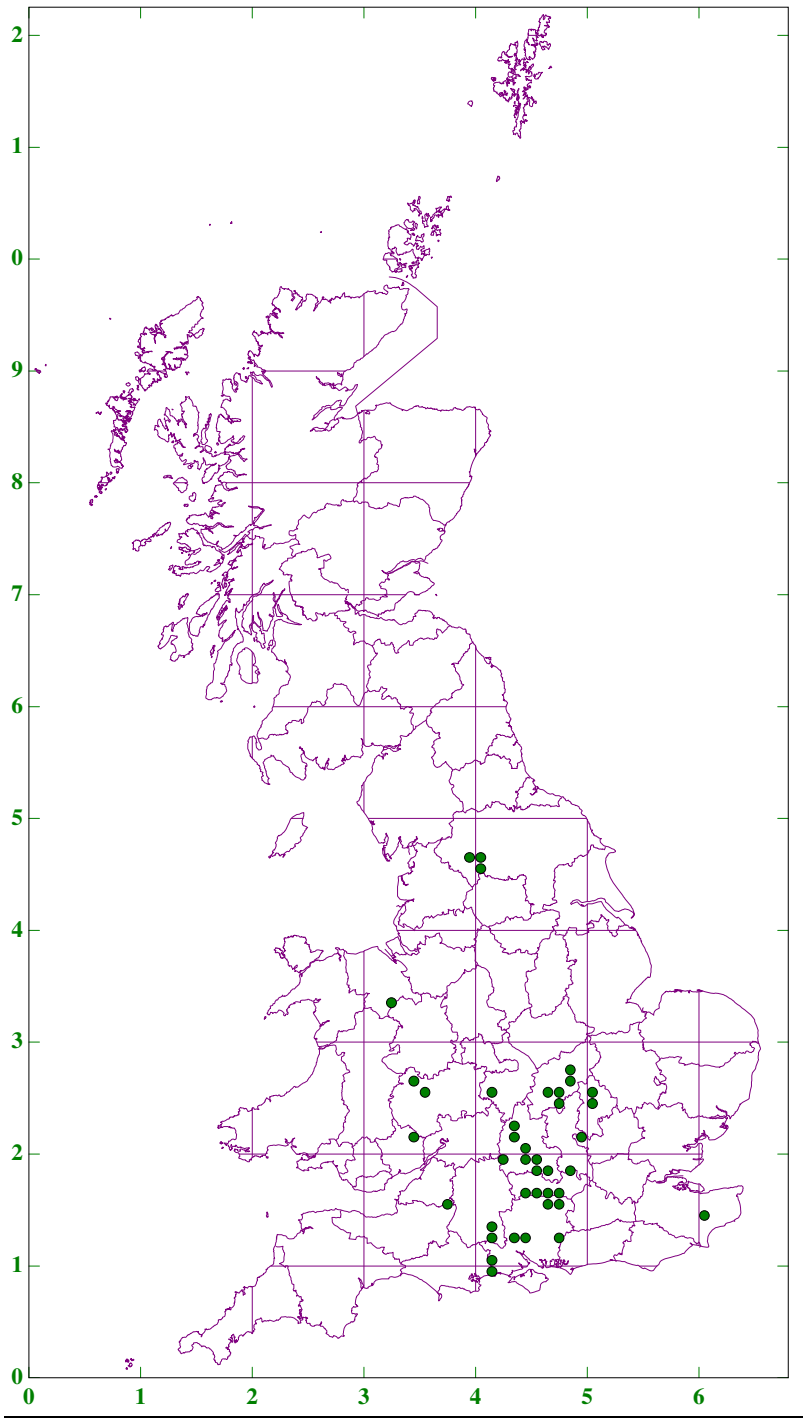
Habitats and ecology

P. tenuilineatum lives mainly in canals and lowland rivers, particularly in the fine sediments that accumulate at river margins downstream of emergent macrophytes. It has twice been found in large ponds (South Harting, West Sussex and Aymestrey, Herefordshire) although not recently. Numbers of individuals are usually low at any site (less than 10%) but may reach high proportions of the pea-mussel catch in some circumstances (Killeen et al, 2004). On the Continent it is reported also from limestone springs, a type of habitat in which it has not yet been found living in Britain though it occurs as a fossil in early Postglacial spring deposits in Kent and in the Isle of Wight.

Recommendations for this species

- Investigation into the literature and current knowledge of this species to establish best time of year for survey and likely locations in Bedfordshire.
- Check previously known sites for this species.
- Survey apparently suitable sites at the correct time of year.

Pisidium tenuilineatum



Map 2 Countrywide distribution of *Pisidium tenuilineatum*

(Data for map x is from Mollusc (non-marine) data for Great Britain and provided by the Conchological Society of Great Britain & Ireland and the Invertebrate Site Register - England, provided by English Nature through the NBN gateway.)

3.3. *Austropotamobius pallipes* (Lereboullet, 1858), White-clawed Crayfish.

Currently known locations

Known in Bedfordshire from only one short section of the River Ivel although this population may have been lost in 2005. Introduced into three still water sites in conjunction with local landowners and the Zoological Society of London but has not subsequently been seen at two of those locations. Monitoring of last surviving specimens translocated to Whipsnade Wild Animal Park continues with only one living specimen found subsequent to original translocation.

Habitats and ecology

See the Species Action Plan for details on habitats and ecology.

Recommendations for this species

This species has its own Species Action Plan. Consideration should be given to the following additional actions:

- Continue current monitoring regime
- Seek additional still water sites to establish breeding populations of the species at several locations in the county.

3.4. *Ischnura pumilio* (Charpentier, 1825), Scarce Blue-tailed Damselfly.

Currently known locations

Known from only one site in East Anglia (Sundon Pit, Bedfordshire) (the only other previous site in Houghton Regis Pit is no longer suitable due to drying out of the water seepages). Not recorded from the county in 2004 or 2005. Recorded in the past at College Lake near Tring but lost for similar reasons to Houghton Regis Pit.

Habitats and ecology

These are detailed in the Species Action Plan for this species (BLWG, 2001).

Recommendations for this species

This species has its own Species Action Plan (BLWG, 2001) and it is being regularly surveyed for by the County Recorder and others including S Cham. No additional recommendations for this species are made here.

S. Cham and English Nature have met with the site owners with regard to undertaking management for this species at Sundon Pit in Autumn 2005.

- Continue to monitor previous known sites.

3.5. *Brachytron pratense* (Muller, 1764), Hairy Dragonfly.

Currently known locations

Hairy Dragonfly " is turning up everywhere and in some locations in good numbers (S. Cham, pers. com.)." However this species is still one of the least recorded in the county (D. Anderson, pers. com) and so should be kept on the list.

Habitats and ecology

For details on habitats and ecology please see Cham, 2004. Adults favour still water with emergent vegetation, the adults deposit eggs in floating dead emergent vegetation.

Recommendations for this species

- Leave dead floating emergent vegetation at sites where this species occurs, or is likely to occur.

3.6. *Platycnemis pennipes* (Pallas, 1771), White-legged Damselfly.

Currently known locations

This species is now very common in Bedfordshire (D. Anderson pers. com.) and is breeding along most of the Ouse, down the Ivel and Flit and also the Ouzel. It has also recently been recorded breeding at still water sites in the county (S. Cham pers. Com., and pers. obs.).

Recommendations for this species

- Due to the success of this species in the county it should be removed from the Key Species list.

4. Recommended species

Table 4 shows those species considered worthy of inclusion on the WWBAP Key Species list but that are currently missed off. It includes species associated with wet features that have restricted distribution or breeding sites in the county. Several are also of national concern and several are not currently covered by any local or national recording schemes. A number of local and national experts were consulted during the compilation of this list but there may be additional species known from the county that are not included.

Table 4 Species recommended for inclusion as WWBAP Key Species

Species		SAP	Status	Current surveys
<i>Pseudanodonta complanata</i>	Depressed River Mussel	-	RDB?	Some recording done by Cambridge University, no current surveys.
<i>Aplexa hypnorum</i>	Moss bladder snail	-		None
<i>Aromia muschata</i>	Musk Beetle	-	Nb	None
<i>Libellula fulva</i>	Scarce Chaser	-	RDB3	Covered by county recorder
<i>Erythromma viridulum</i>	Small Red Eyed Damselfly	-	Recent colonist	Covered by county recorder
<i>Lestes sponsa</i>	Emerald Damselfly	-		Covered by county recorder

The following section gives more detail about each of the species listed in table 4 and makes recommendations for the future.

4.1. *Pseudanodonta complanata* (Rossmässler, 1835), Depressed River Mussel.

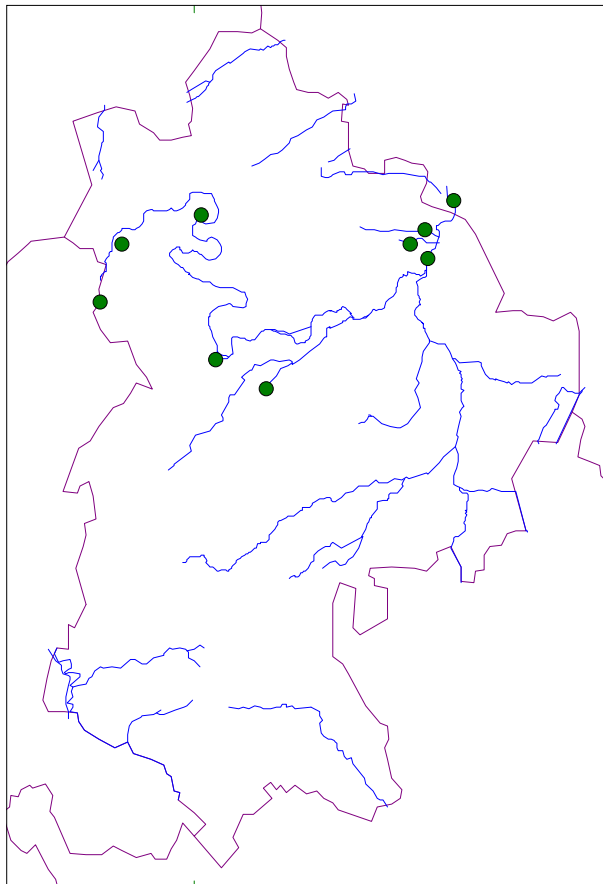
Currently known locations

There are nine sites recorded for *P. complanata* in Bedfordshire although the exact location of some of the sites is not clear from the data available most appear to be from the river Ouse (see Table 5 and Map 3). The most recent record for the species in Bedfordshire is from 1999. This is likely to indicate a lack of recording of the species since that time rather than the loss of the species from the county.

Table 5 Bedfordshire records of *Pseudanodonta complanata*

Site name	Gridref	Date	Source
Ouse near Turvey	SP935514	1999	Mclvor
Near Harrold/ Carlton	SP9555	1950	Arnold
Ouse at Radwell	TL005572	1999	Mclvor
Ouse at Kempston	TL015479	1970	Muller
Near Elstow	TL0545	1970	Arnold
Near Elstow	TL0545	1950	Arnold
Near Elstow	TL0545	1940	Arnold
Near Chawston	TL1555	1950	Arnold
Near Chawston	TL1555	1970	Arnold
Ouse near Roxton	TL162542	1999	Mclvor
Near Wyboston	TL1656	1970	Arnold
Ouse at St. Neots	TL180582	1999	Mclvor

Pseudanodonta complanata



Map 3 Bedfordshire distribution of *Pseudanodonta complanata*
(Data from Table 5)

Habitats and ecology

P. complanata lives in the bottom sediment of rivers near the banks and usually buries itself completely into the mud leaving its foot out to anchor itself into the substrate, never found in silt but occasionally occurs in sand substrates (Killeen, et al, 2004). It is thought to prefer rivers with high flow and high algal content. It reproduces between April and June and the larvae parasitise fish, probably perch and sticklebacks. It seems to be restricted to the main river channel of the catchments it is found in, (Aldridge et al, undated) i.e. not found in minor tributaries or particularly far upstream (Killeen, 2004) although this does not seem to be entirely the case in Bedfordshire as it appears to have been recorded from a long way upstream in the Elstow Brook where it could be considered a minor tributary.

Recommendations for this species

- Include on Key Species list due to national concern and lack of recent local records.
- Check previously known sites for this species.
- Survey apparently suitable sites at the correct time of year.

4.2. *Aplexa hypnorum* (Linnaeus, 1758), Moss Bladder Snail.

Currently known locations

There are no currently known locations for this species in the county although it was recorded from the upper Ouse in the 1970's, it was last known from an area of the track across the marsh between Bromham Park and the Ouse but this has been bone dry when looked at in recent years (B. Nau, pers. com.).

Habitats and ecology

Aplexa hypnorum lives in transiently wet places, small pools and ditches that dry up occasionally. It is widely distributed throughout the country, but becoming more local northwards. Although not yet a rarity, this species is undergoing a rapid decline throughout the country due to loss of habitat.

Recommendations for this species

- Include on Key species list due to national decline and lack of recent local records.
- Investigation into the literature and current knowledge of this species to establish best time of year for survey and likely locations in Bedfordshire.
- Check previously known sites for this species.
- Survey apparently suitable sites at the correct time of year.

4.3. *Aromia moschata* (Linnaeus, 1758), Musk Beetle

Currently known locations

A. moschata has been recorded from 6 sites in the county (see table 6) most of which are either from 1986 or 1944. Since then it has been recorded once in 1993 in Bedford and once in 2003 in Biggleswade, although it is thought the specimen came from Warren Villas Nature Reserve and was transported to the site of discovery on clothing. This is a large and obvious beetle and it seems likely that it is genuinely rare in the county.

Table 6 Bedfordshire records of *Aromia moschata*

Site name	Grid ref	Date Recorded
Clapham Park Woods	TL047532	1986
Priory Country Park	TL067493	1986
Pavenham	SP986551	1944
Bedford	TL0549	1993
Stevington Marsh	TL1931	1944
Biggleswade	TL195442	2003

Data from English Nature Invertebrate Site Register and NBN Gateway, with additional data from the authors own observations.

In 2005 two specimens were found in Bedfordshire (Table 6b) a number of other sites were visited in 2005 and searched for *A. moschatta* but none were found (Table

6a). Several sites were visited by Dr Peter Kirby during the appropriate time of year, he did not find any specimens but he did not specifically look for this species (Table 6c). Map 4 shows the distribution of all known *A moschatta* sites in Bedfordshire and the sites that were surveyed without success.

Table 6a Records in 2005

Site name	Grid ref	Date Recorded
The Smithy Old Warden	TL137438	22 July 2005
Priory Country Park	TL067493	18 July 2005

Table 6b Negative sites in 2005

Site name	Grid ref	Date visited
Bromham Mill	TL010507	16 July 2005
Warren Villas	TL180471	18 July 2005
The Riddy	TL164488	27 July 2005

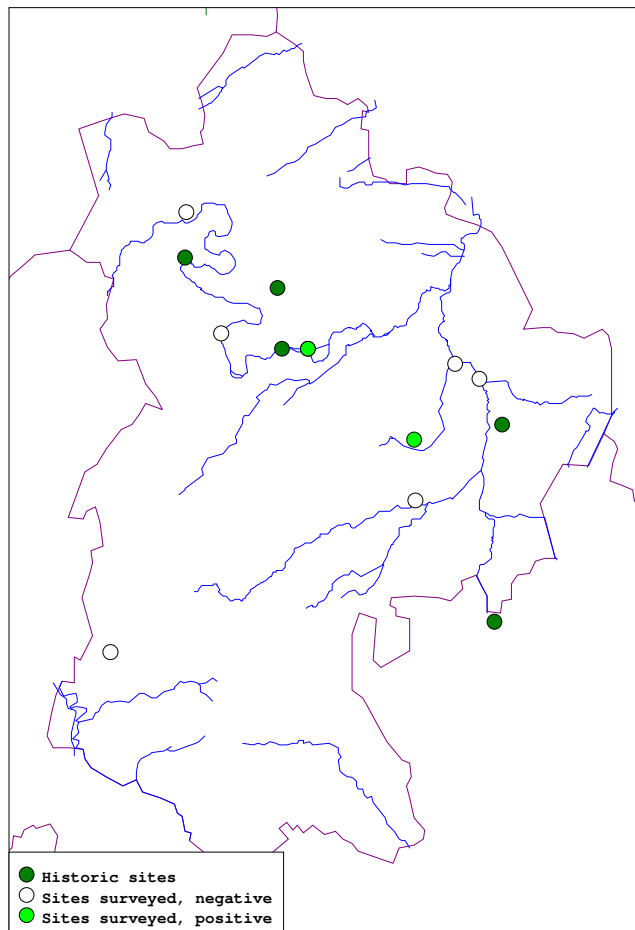
Table 6c Sites checked by P. Kirby

Site name	Grid ref	Date visited
Lower Alders near Chicksands	TL138390	? 2005
Felmersham Nature Reserve	SP987581	? 2005
Double Arhces	SP937297	? 2005

The Old Warden specimen may have come from a pile of cut willow stakes that are stored on the site; many of these came from Warren Villas. No exit holes could be found in these stakes, but not all of them could be thoroughly checked.

Habitats and ecology

Larvae develop in healthy young or mature Common Sallow, White Willow and Osier (and probably other *Salix* species), larvae have been reported to take 3 years to develop. Adults occur from May to September with the main period of emergence probably occurring from about mid June to early August. Adults are found on a number of flowers.



Map 4 Distribution of *Aromia moschata*
 (Data from Tables 6, 6a, 6b and 6c)

Recommendations for this species

- Include on Key Species list due lack of recent local records.
- Check previously known sites for this species.
- Survey apparently suitable sites at the correct time of year.
- Possible sites include: Warren Villas nature reserve, Harrold Odell Country Park.
- Ensure continuity of age structure of *Salix* species by planting and introducing pollarding on suitable sites. (Minimum of at least 4 year rotation).
- Ensure occurrence of umbelifers in areas near to suitable tree species.

4.4. *Libellula fulva* (Muller, 1764), Scarce Chaser.

Currently known locations

This is one of the rarest species of Odonata in Bedfordshire (D. Anderson pers. com.). Only one known breeding area in the County (the lakes and river Ouse in the Wyboston area). This species is rare nationally and is only associated with nine river systems throughout the country.

Habitats and ecology

For details on habitats and ecology please see Cham, 2004. Larvae are found in the mud around the roots of emergent vegetation and the adults appear to require lush meadow habitat around the breeding sites.

Recommendations for this species

- Include on Key Species List due to national and local rarity.
- Search during May and early June of likely sites to establish presence.
- Continued monitoring of currently known sites.
- Do not permit bank edge clearance of vegetation where the species is known to occur.
- Maintain lush meadow habitats around known breeding sites.

4.5. *Erythromma viridulum* (Charpentier, 1840), Small Red-eyed Damselfly.

Currently known locations

This species has dramatically increased in numbers and sites in the County since its discovery in the county in 2001. Bedfordshire was the first confirmed breeding location for this species in Britain (in 2003). Although listed here under species recommended for consideration as Key species, due to its rapid and continuing increase in numbers it may not need to be listed.

Habitats and ecology

For details on habitats and ecology please see Cham, 2004. Prefers lakes and large ponds with Rigid Hornwort, Water-milfoil or Canadian Waterweed.

Recommendations for this species

- Include on Key Species List due to national and local rarity.
- Ensure beds of Rigid Hornwort are retained at known breeding sites.

4.6. *Lestes sponsa* (Hansemann, 1823), Emerald Damselfly.

Currently known locations

Only 56 records between 2002 and 2004 for this species in the county (D. Anderson pers. com.). This species is locally common throughout the British Isles and does not have any national status, however it is one of the rarer species in Bedfordshire and is of some local concern.

Habitats and ecology

For details on habitats and ecology please see Cham, 2004. Favour shallow water with dense stands of emergent vegetation, often found in water bodies that dry out during the summer.

Recommendations for this species

- Include on Key Species List due to local rarity.
- Retention of some dense emergent vegetation in ponds where this species is known to occur.

4.7. *Monosynamma* spp.

Currently known locations

There are three *Monosynamma* spp. recognised from Britain, two of which have been recorded from Bedfordshire (*M. sabulicola* (Wagner) and *M. bohemani* (Fallen)) (Nau, 1998). The differentiation of the species is a subject for debate and as such the two will be grouped together for the purposes of this report. In Bedfordshire *Monosynamma* spp. have been recorded from Odell, Radwell (*M. sabulicola*) and Willington (*M. bohemani*). *M. bohemani* is only confirmed from one other site in the country (Virginia Water, Surrey). Currently *M. bohemani* is RDB 3 Rare and *M. sabulicola* is Nationally Notable (Nb).

Habitats and ecology

Monosynamma spp. are found in early successional habitats featuring young willows usually growing on sand or gravels adjacent to or just within water bodies. The separate species may be specific to certain willow species but this is not clear (as the differentiation of the species is also not clear).

Recommendations for this species

- Include on Key Species List (as a group) due to national and local rarity.
- Retention of some early successional vegetation particularly including willow spp. adjacent to water bodies, particularly at Harrold-Odell Country Park, Radwell and in the Willington area.

5. The way forward.

The next steps in taking forward the recommendations for the conservation of the Waterways and Wetland Key Invertebrates requires the identification of lead individuals, table 7 below outlines the proposed leads for most of the Key species but there are two species that are not covered here that require a suitable lead person to be identified who has sufficient knowledge of the species to undertake the work required.

Table 7 Proposed lead partners on WWBAP Key Inverts

Species	Proposed Lead
<i>Biblopectus tenebrosus</i>	?
<i>Pisidium tenuilineatum</i>	BORP
<i>Austropotamobius pallipes</i>	BORP
<i>Ischnura pumilio</i>	Regional/ County Dragonfly Recorders
<i>Brachytron pratense</i>	Regional/ County Dragonfly Recorders
<i>Pseudanodonta complanata</i>	BORP
<i>Aplexa hypnorum</i>	BORP
<i>Aromia muschata</i>	BORP
<i>Libellula fulva</i>	Regional/ County Dragonfly Recorders
<i>Erythromma viridulum</i>	Regional/ County Dragonfly Recorders
<i>Lestes sponsa</i>	Regional/ County Dragonfly Recorders
<i>Monosynamma spp.</i>	? County Bug Recorder

Over the next two years (2006/07 and 2007/08) the recommendations detailed in the preceding sections for each of the species with BORP identified as the lead organisation will be undertaken by the Bedfordshire Otters and Rivers Project.

6. References

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- The maps in this report were created in DMAP courtesy of Dr Alan Morton.
- The Data Providers, and the NBN Trust bear no responsibility for any further analysis or interpretation of the material, data and/or information provided through the NBN Gateway (http://www.searchnbn.net/index_homepage/index.jsp).