Biological Records centre

Oxfordshire Museums Store Witney Road Standlake Oxon OX8 7QG

Technical Paper

Occasional Paper No. 17

AN ATLAS OF OXFORDSHIRE ISOPODA: ONISCIDEA (WOODLICE)

S.J.Gregory, Northmoor Trust and J.M.Campbell, Oxon BRC

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INTRODUCTION

Woodlice (Isopoda: Oniscidea) are Crustaceans and therefore more closely related to shrimps and crabs than to the more widely known Insects. Woodlice are the only Crustaceans to have become widespread in terrestrial habitats. Many British species occupy coastal sites or damp habitats inland, though some such as the pill-woodlice (*Armadillidium* spp.) show considerable adaptation for water conservation and may be active even in full sun. Woodlice play an important, but largely unappreciated, role in recycling nutrients locked within dead and decaying plant material back into the soil.

RECORDING: PAST AND PRESENT

The first reference to woodlice in Oxfordshire is given in Bate & Westwood (1868) who record *Platyarthrus hoffmannseggi* "in ants' nests in the neighbourhood of Stow Wood, near Oxford" and *Porcellionides pruinosus* as "plentiful in the vicinity of Oxford". In the first decade of the twentieth century the Rev T.R.R. Stebbing collected nine species from the Witney area including *Porcellio spinicornis* and *P.laevis*. In 1913 Dr R.S.Bagnell added two elusive species to the county list, *Haplophthalmus danicus* and *H. mengei* agg., both from the Oxford area.

In 1938 the Victoria County History (Salzman, 1938) was published. This collated all the known records for old Oxfordshire (now known as vice-county 23) including those mentioned above. Additional species of note, collected mainly from the Oxford area, include *Armadillidium nasatum, Cylisticus convexus, Porcellio dilatatus* and *Trachelipus rathkei*. Following publication of the VCH recording continued to be very patchy. The majority of these records were generated by the Bureau of Animal Population Studies at Oxford University (the 'Wytham Survey').

In the late 1980's collections of woodlice were made in the county by S.P.Hopkin and D.T.Bilton. The outstanding find was the discovery of *Haplophthalmus montivagus* and *Trichoniscoides helveticus* from Wytham Wood near Oxford, two species previously unknown in Britain.

Since 1989 the authors have put much effort into filling in the gaps for the common species and defining the ranges of the more local ones. Species records have been made in accordance with guidelines given by the British Isopod Study Group. As many habitats as possible were sampled throughout the county. These included not only semi-natural sites such as woodland, grassland, meadow and fen, but also man-made (synanthropic) sites such as old churchyards which hold their own unique, but little studied, fauna.

Full details of all records are held by the Oxfordshire Biological Records Centre on a computerised database (using RECORDER). Records are site based and to the end of September 1995 this amounts to 4210 woodlouse records for 24 species. The majority of these records are post 1990 and mainly attributable to the authors. It should be stressed that the collection of data is on-going. Any records for Oxfordshire woodlice will be gratefully received by the O.B.R.C.

OXFORDSHIRE BIOLOGICAL RECORDS CENTRE

The O.B.R.C. was set up in 1976 by the County Council Department of Museum Services and co-ordinates biological recording in the current administrative county of Oxfordshire. This was created during the local government reorganisation of 1974 by the amalgamation of 'old' Oxfordshire (vice-county 23) with the north-west part of Berkshire (vc. 22).

The uses of the O.B.R.C. are manifold and include planning, conservation, education and research. Details about the O.B.R.C. and an annual newsletter are available to recorders and potential recorders at the following address:

O.B.R.C. Oxon County Museums Store, Witney Road, Standlake, Oxon, OX8 7QG

ACKNOWLEDGEMENTS

We are indebted to Dr Steve Hopkin for identifying *Metatrichoniscoides leydigi* a species previously unknown from Britain. Both Dr Hopkin and Dr David Bilton most generously confirmed or identified difficult specimens (particularly of *Haplophthalmus* and *Trichoniscoides* spp.) and also made their own records for the county available.

Mr Charles Elton kindly made the data in the Wytham Survey available for inclusion in this atlas.

Thanks are also due to Mark Stevenson for advice and assistance with the subtleties of word processing.

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HABITAT ASSOCIATIONS

Many species of woodlice are quite tolerant of a wide range of habitat conditions and some readily colonise disturbed (synanthropic) sites such as gardens, churchyards and waste ground. Others are more specialised and restricted to undisturbed semi-natural habitats.

Oxfordshire species are listed below showing their preference for a range of habitat types found throughout the county: deciduous woodland (wood), dry grassland (grass), damp riverside meadows and wetland (river), gardens and churchyards (garden), arable fields (arable), farm yards and out-buildings (farm) and waste-ground (waste). Habitat preference is indicated as follows:

- +++ a strong habitat preference
- ++ a frequent occurrence
- + a unusual record from that habitat.

	HABI	ΓATS (see abo	ove for de	efinition	ıs)	
Species	Wood	Grass	River	Garden	Arable	Farm	Waste
Ligidium hypnorum	+++		+				
Androniscus dentiger	+		++	+++		++	+++
Buddelundiella cataractae				+++			
Haplophthalmus danicus	+++		+++	++		+	
Haplophthalmus mengei	++	+	+++	+		+	
Haplophthalmus montivagus	+++						
Metatrichoniscoides leydigi				+++			
Trichoniscoides albidus	++		+++	+	+		
Trichoniscoides helveticus	+++	+++					
Trichoniscus pusillus	+++	+++	+++	+++	++	++	+++
Trichoniscus pygmaeus	++	++	+	+++		+	
Oniscus asellus	+++	++	+++	+++	++	+++	+++
Philoscia muscorum	++	+++	++	+++	++	++	++
Platyarthrus hoffmannseggi	+	+++	+	+++	+	+	++
Armadillidium depressum				+++			
Armadillidium nasatum		+		+++			+++
Armadillidium vulgare	+	+++	+	+++	++	+++	+++
Cylisticus convexus							+++
Porcellio dilatatus				++		+++	
Porcellio laevis				+++			
Porcellio scaber	+++	++	+++	+++	++	++	+++
Porcellio spinicornis				+++		+++	
Porcellionides pruinosus	+			++		+++	
Trachelipus rathkei	+		+++	+	++	+	++

Semi-Natural Habitats

Woodlands: In the generally damp conditions prevailing within woodland 16 species were collected. Characteristic species include *Trichoniscus pusillus*, *Oniscus asellus* and *Porcellio scaber*. Woodland is an important habitat for three scarce species *Ligidium hypnorum*, *Haplophthalmus montivagus* and *Trichoniscoides helveticus*. The first two seem to be confined to ancient woodland within the county.

Dry grasslands: The drier conditions limit the number of species recorded to 10. Characteristic species include, *Philoscia muscorum*, *Platyarthrus hoffmannseggi* (in ants' nests) and *Armadillidium vulgare*. Calcareous grassland is an important habitat in the county for the rare *Trichoniscoides helveticus*.

Meadows and wetlands: 14 species were recorded. Three local species, *Haplophthalmus mengei, Trichoniscoides albidus* and *Trachelipus rathkei*, are strongly associated with damp river-side meadows.

Man-Made (Synanthropic) Habitats

Churchyards and gardens: With a total of 20 species (83% of the County fauna) this habitat proved the most diverse. Many churchyards and some gardens are very old with a long period of introduction for many species and a wide range of micro-sites for occupation. Piles of stone and rubble may harbour Androniscus dentiger, Haplophthalmus mengei and Trichoniscus pygmaeus. Platyarthrus hoffmannseggi is common in the often botanically rich grassland of graveyards. On stone walls Armadillidium depressum and Porcellio spinicornis can be abundant. Haplophthalmus danicus, Porcellio dilatatus, P. laevis or Porcellionides pruinosus can be found in compost heaps. Two rare species, Buddelundiella cataractae and Metatrichoniscoides leydigi, have been collected from a garden centre in Oxford and may have been introduced into gardens elsewhere in the county.

Arable: Few collections have been made from arable fields. Only 8 species have been recorded from this inhospitable habitat, mainly from the field margins. A few species including *Trachelipus rathkei* have been recorded within the crop.

Wasteground: Wasteground such as railway sidings, working quarries and derelict areas revealed just 10 species. In this typically dry, exposed and sparsely vegetated habitat characteristic 'coastal' species such as *Androniscus dentiger*, *Armadillidium nasatum* and *Cylisticus convexus* have been found.

Farmyards and stables: 13 species were collected from this habitat. Many of these species are also found in churchyards and wasteground. Animal housing, such as cowsheds and stables, and their associated manure heaps are an important habitat for two species *Porcellio dilatatus* and *Porcellionides pruinosus*..

INTRODUCTION TO THE MAPS

The species maps have been produced from the computerised data-base held at the O.B.R.C. using DMAP mapping software.

Species records are site based but the maps indicate the occurrence of a given species within tetrads. Tetrads are 2km by 2km areas defined by the even numbered national grid lines shown on Ordinance Survey maps. The 10km grid squares are shown in as numbered solid lines with the tetrads between. Also shown is the course of the River Thames which is the pre-1974 county boundary between Oxfordshire (vc.23) and Berkshire (vc.22).

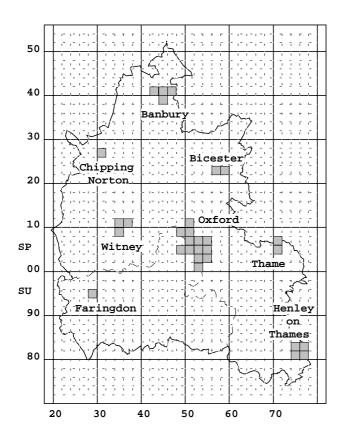
The species maps are shown with records falling into two time categories. Only the most recent record for a given tetrad is shown.

Pre-1980 records are shown by stippled circles (**).

Post 1980 records (mostly post 1990) are shown as solid dots (•).

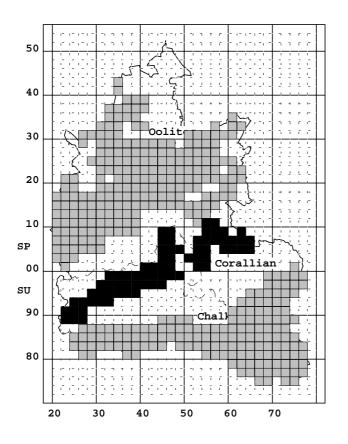
Species names follow those used in Hopkin (1991). The presence of each species within the two vice-counties is indicated above the species account. Nationally Notable species (i.e. those occurring in less than 100 10km grid squares throughout the British Isles) are also noted. VCH refers to Victoria County History (Salzman, 1938).

MAIN TOWNS



As an aid to orientation the location of several towns and the city of Oxford are shown. In most cases the towns do not cover completely the tetrads in which they are shown to occur.

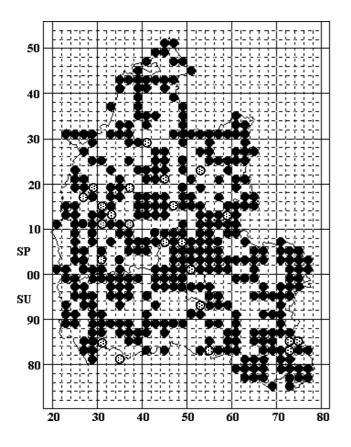
CALCAREOUS ROCKS



The occurrence of underlying calcareous bed-rock is indicated. In parts these rocks may be locally masked by clay drift of more recent origin.

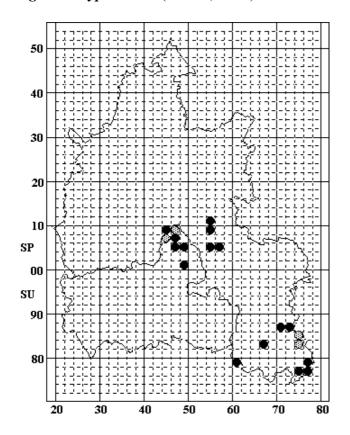
In the remaining tetrads outcrops of clay occur: Lower Lias in the north, then a band of Oxford clay, with Gault and Kimmeridge clays forming the southern-most band.

TETRAD COVERAGE



In order to give an indication of the extent of coverage throughout the county all tetrads with at least one woodlouse record are shown.

Ligidium hypnorum (Cuvier, 1792)

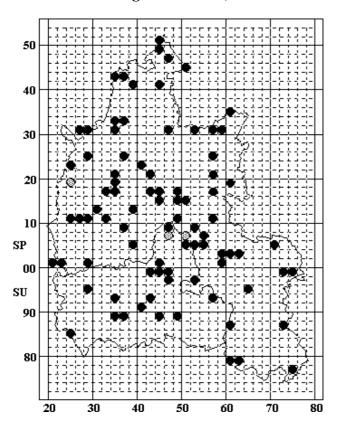


vc.22 & vc.23

This litter dwelling species is scarce in the county and appears to have two centres of distribution. In the Oxford area it can be numerous in primary wet woodland and carr associated with the Corallian limestones and sands. In the Chiltern Hills it is typically found in small numbers within north facing deciduous woodlands, but has also been collected from a willow thicket beside the River Thames.

This species has a marked southeastern distribution in England where it can be locally common in deciduous woodland and marsh.

Androniscus dentiger Verhoeff, 1908

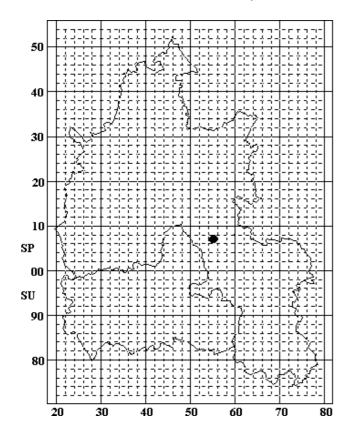


vc.22 & vc.23

This distinctive species, typically bright orange or pink in colour, is fairly common in the county. Records are mainly from amongst rubble and under stones in man-made habitats such as churchyards or quarries. It is occasionally found in semi-natural sites typically near water. It is recorded in the VCH from Oxford city.

A common species at least in England and Wales characteristic of disturbed sites

Buddelundiella cataractae Verhoef, 1930

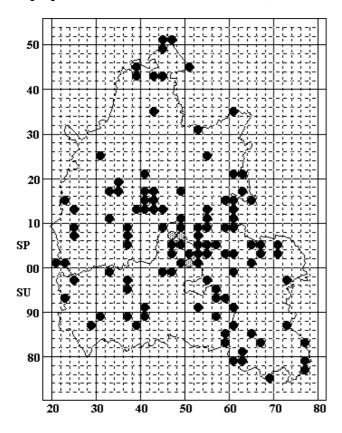


vc.23 only Notable/Nb

This small inconspicuous species was discovered at an Oxford garden centre in 1989 and was still present the following year. Several specimens were found beneath a piece of wood lying on gravel and also under stones and amongst peaty debris next to a building, a spot now lost following rebuilding work. At both locations *H. mengei* and *T. pygmaeus* were frequent.

Apparently a rare species in Britain recorded from a garden in Cardiff and coastal shingles or riverside gravels in South Wales, Norfolk and most recently Sussex. The species is probably under-recorded.

Haplophthalmus danicus Budde-lund, 1880

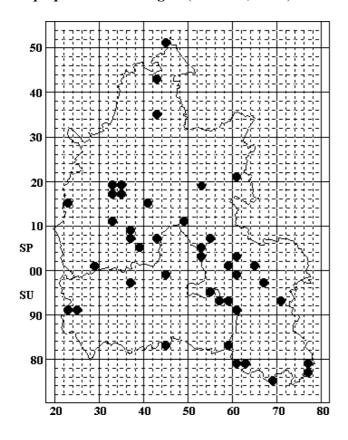


vc.22 & vc.23

The only common member of the genus in the county, particularly along the Thames valley. However it is easily overlooked due to it's small size and sluggish movements. It is often found in or beneath damp rotten wood, within compost heaps or amongst wet litter in fens; rarely in soil. First recorded from 'Oxford' by R.S.Bagnall (1913).

In southern and eastern England this is a common species but scarce elsewhere.

Haplophthalmus mengei (Zaddach, 1844)

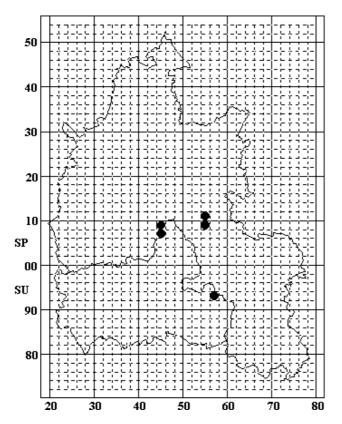


vc.22 & vc.23

A local species in Oxfordshire found amongst rubble, in friable soil or beneath dead wood usually in damp calcareous habitats (often with *H. danicus*). Typical semi-natural sites include riverside meadows and wet woodland, but it has also been collected from dry chalk grasslands during frosty weather. Synanthropic sites include farm-yards and church-yards. Listed by Bagnall (1913) from 'Oxford' but this could refer to either this species or the then unknown *H.montivagus*.

Nationally a local species of friable calcareous soils, including coastal sites, throughout Britain.

Haplophthalmus montivagus Verhoeff, 1941



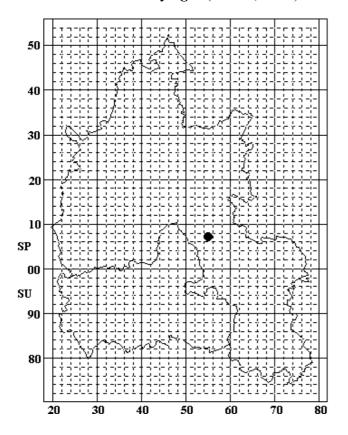
vc.22 & vc.23

Notable/Nb

The few records are from the Oxford area where it is found in ancient woodlands on a variety of friable calcareous soils. Most easily found in winter, under stones and dead wood, but also hand-sorted from soil in summer. Its restricted range is puzzling. At many apparently suitable sites (e.g. Wychwood Forest) *H. mengei* has been found instead. Both species occur together at a riverside woodland south of Oxford but this is unusual and normally the two are mutually exclusive, though the reason is unclear.

This species was recognised as British in 1987 following detailed examination of collections of *H. mengei* (Hopkin, 1991). It is now known from a handful of sites in southern England.

Metatrichoniscoides leydigi (Weber, 1880)

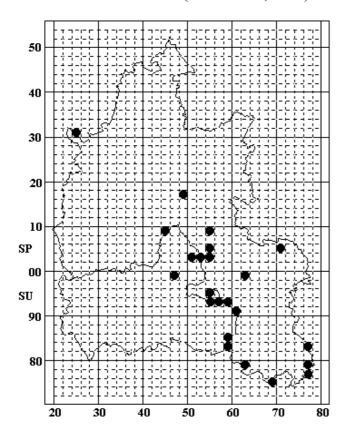


vc.23 only

This small soil dwelling species was found at an Oxford garden centre in October 1989. Until the end of April it was frequent amongst gravel, under pallets, plant pots, etc. on the site of a former car park in association with *H. mengei* and *T. pygmaeus*. During the following summer months it was very elusive and was found up to a depth of 30cm amongst underlying ballast and sand. In all probability this species as been introduced (the site is part of a former plant nursery).

This is the only known British site for this species otherwise only recorded from the coasts of France and Holland and introduced to synanthropic sites inland.

Trichoniscoides albidus (Budde-lund, 1880)



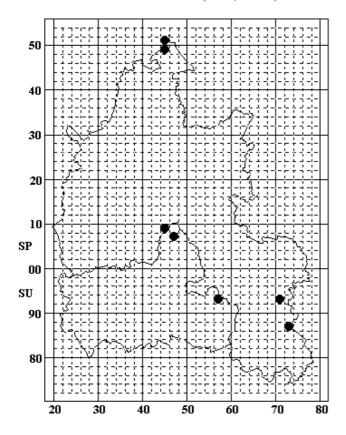
vc.22 & vc.23

Notable/Nb

This small sluggish soil dwelling species is probably under-recorded in the county. It is both elusive and easily mistaken for the ubiquitous *T. pusillus*. It is common in the lower Thames valley. Specimens are most easily found in winter, usually singly, on the underside of deeply embedded stones beside water courses in meadows or woodland. It has been hand-sorted from leaf-litter in damp woodland and twice taken in pit-fall traps.

Nationally an apparently scarce species with an eastern bias found in a variety of wet sites including coastal habitats. It is probably very underrecorded and may prove locally common in the south-east.

Trichoniscoides helveticus (Carl, 1908)

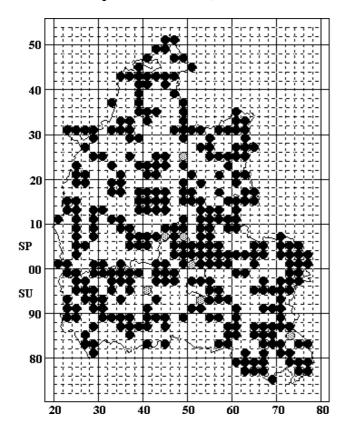


vc.22 & vc.23 Notable/Nb

Another small and elusive soil dwelling species. The few records are mostly from ancient woodland or grassland where undisturbed friable calcareous soils occur. It is most easily collected during the winter months from the underside of large stones embedded in soil..

This species has recently been recognised as British following close examination of specimens of 'T. sarsi' (a species not yet found in the county) held in British collections (Hopkin, 1991). It is now known from a handful of sites in south-east England.

Trichoniscus pusillus Brandt, 1833

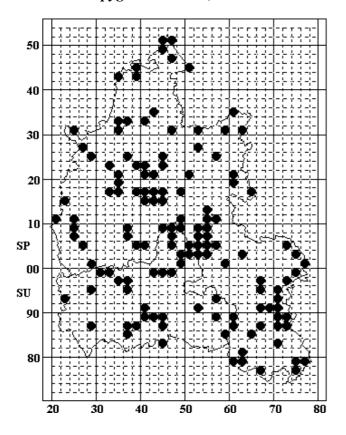


vc.22 & vc.23

The only abundant and ubiquitous 'small' woodlouse in the county found in all but the driest sites. It is readily found under stones and dead-wood but specimens quickly disappear upon disturbance. First collected in 1908 from Witney and widely recorded in the VCH. It should turn up in all tetrads in time.

It is equally ubiquitous throughout Britain often reaching densities of thousands per square metre. Two genetically distinct forms, incapable of interbreeding, are recognised. Both occur in Oxfordshire (Sutton & Harding, 1985) but were not differentiated during this survey.

Trichoniscus pygmaeus Sars, 1899

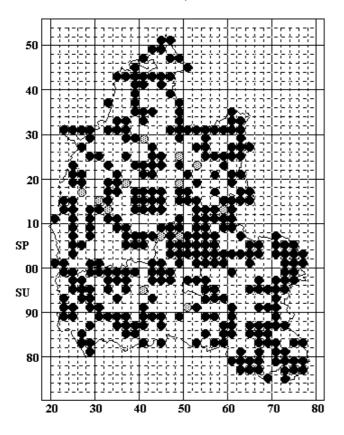


vc.22 & vc.23

A fairly common soil dwelling species in the county. Usually found in small numbers under stones or amongst rubble in damp spots in both seminatural and disturbed sites. During cold or wet weather it can be much easier to locate. It is smaller, paler and more sluggish than *T.pusillus* but in the abundant background of the latter it can be easily overlooked

It is widespread in the British Isles but shows considerable recorder bias. It is probably common wherever damp free-draining soils are found.

Oniscus asellus Linnaeus, 1758

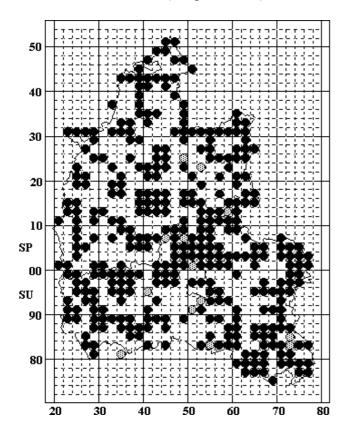


vc.22 & vc.23

Readily found under dead wood and stones throughout the county and widely recorded in the VCH. It should occur in all tetrads. The subspecies *O. asellus asellus* occurs in Oxon but some specimens collected from Wych-wood Forest were found to be hybrids between this and the newly described *O. asellus occidentalis* (Bilton, 1994).

O. asellus asellus is abundant over much of Britain with a preference for urban sites. In the extreme south-west it is replaced by O. asellus occidentalis which prefers rural sites. Hybrids occur in the overlap between these two ranges.

Philoscia muscorum (Scopoli, 1763)

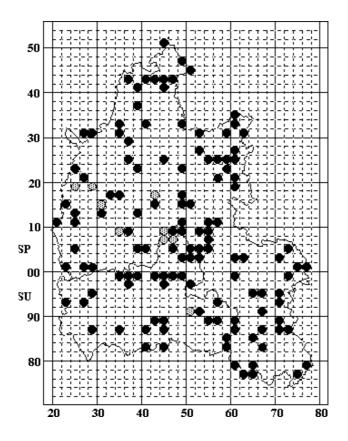


vc.22 & vc.23

Another abundant and ubiquitous species in the county with a preference for grassy sites. It is widely recorded in the VCH and should occur in all tetrads.

An abundant species in southern Britain but more local and coastal in the north.

Platyarthrus hoffmannseggi Brandt, 1833

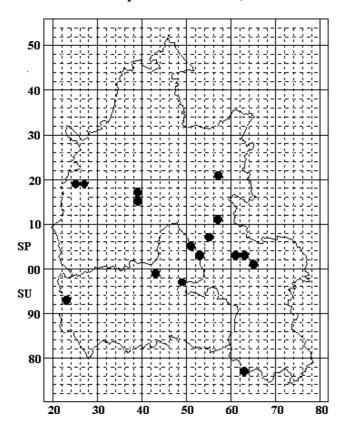


vc.22 & vc.23

A common species in the county always found in, or near, the nests of ants (Typically *Lasius* or *Myrmica* species) both in semi-natural grasslands and in churchyards and gardens. First recorded in the county in 1868 from Stow Wood near Oxford (VCH).

In much of southern England this is a common species but becomes much scarcer and more coastal further north, apparently limited by the distribution of the host ant species.

Armadillidium depressum Brandt, 1833

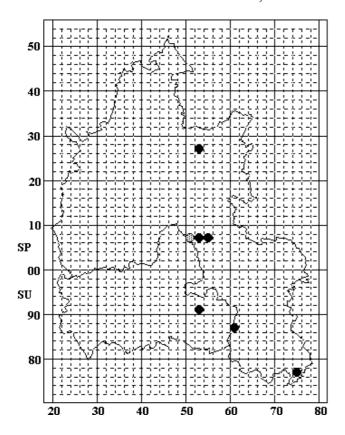


vc.22 & vc.23

This pill-woodlouse is uncommon but widespread in the county but can be numerous when found. First recorded from Shipton-under-Wychwood in 1980, it was found to be still abundant there in 1992. Usually recorded from old limestone walls, but has also been collected from a limestone railway cutting.

With a south-western distribution in Britain the Oxfordshire records are probably old introductions beyond this natural range. Occasionally it can be a pest inside old damp houses.

Armadillidium nasatum Budde-lund, 1885

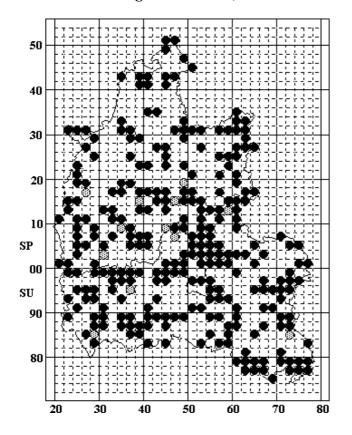


vc.22 & vc.23

Another uncommon pill-woodlouse in the county recorded from dry sparsely vegetated sites such as railway sidings, garden centres and disused quarries. Recorded in VCH from the Oxford Botanic Gardens and still present in 1990 beneath stones in a rockery.

This species can be locally common in the south where it appears to be native on exposed coastal grasslands. It has been widely spread elsewhere by man.

Armadillidium vulgare Latreille, 1804

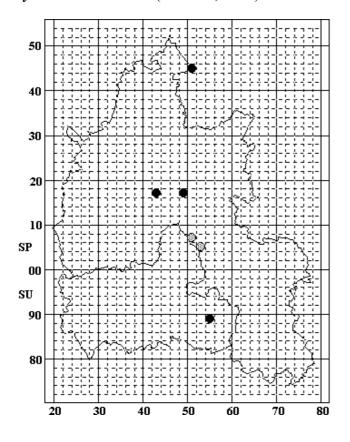


vc.22 & vc.23

This is the familiar pill-woodlouse which is common in gardens or grasslands throughout the county. In damp or wooded sites it is less frequent, especially in the north-west of the county. It is widely recorded in the VCH.

South of The Wash and the Severn estuary this species is common, but becomes scarcer and more coastal to the north.

Cylisticus convexus (De Geer, 1778)

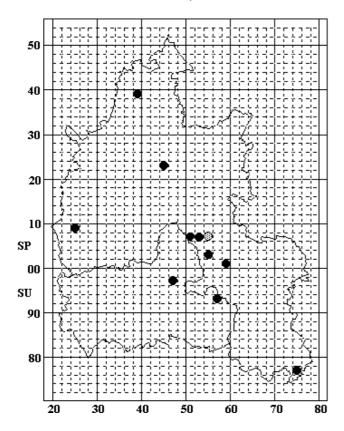


vc.22 & vc.23

An apparently rare pill-woodlouse in the county. The few recent records are from sparsely vegetated disturbed sites such as a railway siding and disused quarries. It is probably underrecorded and may prove more widespread in other similar sites including farm-yards. The VCH gives two records from Oxford city centre where the species may still persist.

This is a local species throughout the British Isles occurring naturally on exposed, unstable coastal habitats and readily occupying similarly disturbed synanthropic sites inland.

Porcellio dilatatus Brandt, 1833

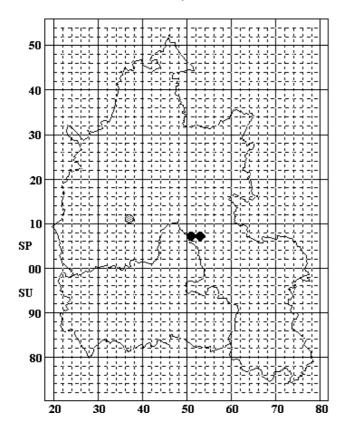


vc.22 & vc.23

This large species is probably considerably under-recorded in the county. The few records are from man-made sites such as cow-sheds, stables and compost heaps, where typically single specimens are found with difficulty. Several Oxford localities are given in the VCH when stables (and perhaps the species) were much more common.

Nationally this seems to be an uncommon species but a recent survey in Leicestershire (Daws, 1994) has shown the species to be common on dairy farms (a habitat not sampled during this survey). A few records are from natural coastal sites.

Porcellio laevis Latreille, 1804

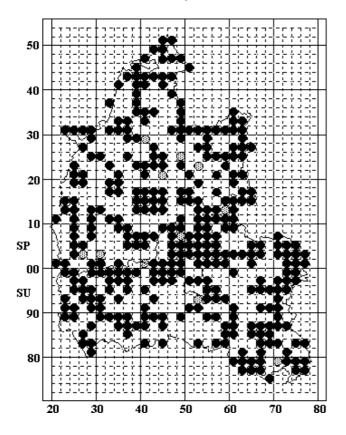


vc.23 only

Another large species, with just two recent records both from Oxford city centre. It has long been known from the Botanical Gardens but in 1990 a large population was discovered nearby, in a compost heap within a walled garden, suggesting it maybe more widespread within the city. The VCH lists records from Witney (1908) and Oxford

Outside Oxfordshire this is a widespread but uncommon species mainly associated with farm outbuildings. A few records are from natural coastal sites

Porcellio scaber Latreille, 1804

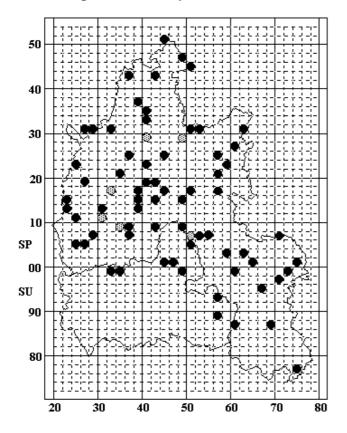


vc.22 & vc.23

A ubiquitous and abundant species readily found under stones and deadwood, on walls and even under the bark of trees high above the ground. It is the woodlouse most likely to be found inside houses. Widely recorded in the VCH it should be present in all tetrads.

This species is equally abundant throughout much of Britain.

Porcellio spinicornis Say, 1818

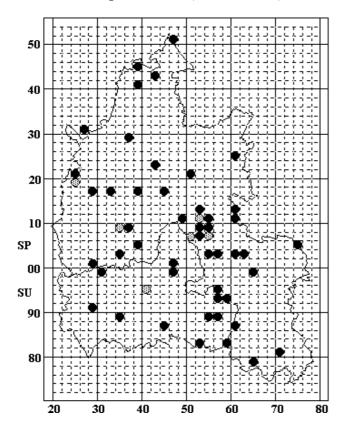


vc.22 & vc.23

This attractively marked species is common over much of the county. It is usually collected from limestone walls, often in small numbers, but occasionally in abundance. Two records are from disused limestone quarry workings. In the south of county where walls tend to be made of flint or sarcen stone the species seems to be much scarcer. The VCH lists several records.

Locally common in limestone areas throughout Britain, typically on walls but also on natural limestone seacliffs.

Porcellionides pruinosus (Brandt, 1833)

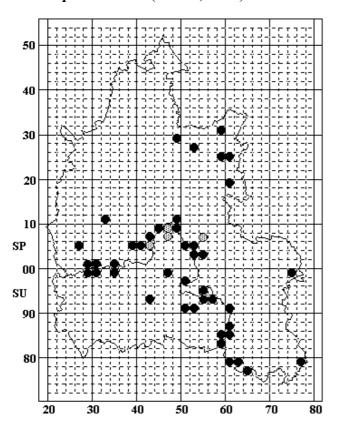


vc.22 & vc.23

A common species which can be abundant in compost and manure heaps. It can persist away from such sites and has been found under stones in churchyards and on road verges. Many specimens were seen under the bark of over-mature oaks at a nature reserve near Oxford but these were probably introduced via an adjacent rubbish tip. First recorded in 1868 as 'Plentiful in the vicinity of Oxford' the VCH gives several additional records.

Nationally a widespread species with an apparent eastern bias strongly associated with manure and compost heaps.

Trachelipus rathkei (Brandt, 1833)



vc.22 & vc.23

A widespread species in the county, with two apparent centres of distribution. In the Thames Valley it is frequent and locally common in damp meadows, gravel-pits and disused quarries. The cluster of records from the north-east of the county appear to be associated with the River Great Ouse. Several records from Oxford are listed in the VCH

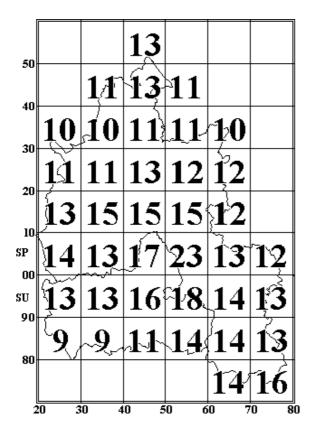
The distribution of this species is restricted to parts of the south-east and the midlands, where it can be locally common. Many old records outside this range have been shown to be erroneous.

Trachelipus ratzeburgi (Brandt, 1833)

The VCH records *T.ratzeburgi* from Witney in 1908. Harding & Sutton (1985) have shown that old British records for this species are erroneous and usually refer to *Oniscus asellus* or *Porcellio* spp.. No recent British records exist. Consequently this species has not been mapped.

T. ratzeburgi is a central European species often characteristic of high alpine pastures. Specimens collected from Hungary are quite distinct from T. rathkei and superficially very like O. asellus in general appearance.

10KM GRID SQUARE SUMMARY



The number of species of woodlice recorded from each 10 km grid square is indicated. There is a general decline in species richness towards the north of the county reflecting the limited availability of habitats in this part of the county.