

STREET SAFARI: RECORDING MYRIAPODS AND ISOPODS AS PART OF A COMMUNITY PROJECT IN SHEFFIELD, UK

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INTRODUCTION

Street Safari was a two-year community project funded by the Heritage Lottery Fund running from February 2005 to spring 2007. Run by Sheffield Galleries and Museums Trust in partnership with the Sorby Natural History Society (SNHS), the project aims were to involve the people of six adjoining north Sheffield districts in identifying and recording the wildlife of their local area. A series of events and activities took place aimed at encouraging a new generation of naturalists and producing new records for what is an under-recorded area of a well-recorded city.

The recording area is based around twenty 1km grid squares in a 5x4 pattern. It comprises a series of heavily built up housing estates. It is a generally deprived community that is part of an area regeneration scheme funded with Single Regeneration Budget and Objective One European money. Much of the area is given over to council housing, some of which has been recently demolished leaving open spaces between properties which have been cleared to some extent and since become overgrown. Many of the gardens back onto open land that in many cases has been used as a dumping ground for all manner of domestic waste. An eyesore to many, but a delight for the myriapodologist!

For many people it has been a great surprise to find that the estates contain many diverse habitats including sandstone cliffs, open heathland, small areas of ancient woodland and a major river that in recent times has recovered from severe industrial pollution and now supports a wide range of wildlife. Almost all of these areas are linked together forming a green artery running through the recording area. One site, Wardsend Cemetery, situated between the river and a railway line and last used for burials in 1977, is a wonderful area of graveyard, old heath, meadow and woodland containing copious quantities of urban rubble, which provides homes for mammals and invertebrates.

The nature of the landscape in the Street Safari area means that the recording of myriapods and isopods has been high on the agenda for the initial wildlife walks and events. They have also proved very easy to both demonstrate in classrooms and find in the field. To make the most of the two-year project these ground invertebrates have provided subject matter all year round, and obviously never fail to deliver when a specimen is required. A good list of species could therefore be guaranteed, whatever the date or weather.

Sheffield is particularly well recorded for ground invertebrates due to the ongoing surveys that produced *The Millipedes, Centipedes and Woodlice of the Sheffield area* (Richards 1995). However, the north of the city was much less well covered than the more accessible suburbs elsewhere. Therefore not only were all records useful to the survey, but they were also easily placed in the context of the rest of the city. It was possible to say that every record our contributors made was of real significance to an active data set.

RECORDING EVENTS

Many parents, unemployed and elderly people engaged with the street safari project, but the majority of events involved local primary school children. At several ‘children’s university’ events and after-school clubs, easily identified species were introduced for the children to become familiar with. “Rosy woodlice” (*Androniscus dentiger*) and “Stripy centipedes” (*Lithobius variegatus*) are some of the more obvious, but other seemingly difficult millipedes could also be discussed. Never underestimate the power of the word “genitalia” when trying to engage the attention of a 10 year old or their parents!

Sessions were developed looking at camouflage and habitat types, before going in search of real invertebrates. Sometimes prior preparation was required, laying logs and bricks into an environment some weeks in advance of a session. Resources were provided to help collect and identify specimens. Another useful tool was “Nature Notebook”. This is a user-friendly interface for the RECORDER biological recording software, which was developed for the “Nature Lab” area of the new Sheffield Weston Park Museum. This allows users to select from around 200 readily identifiable species, locate themselves on a map, add the date and their name and then enter the record into the main dataset. For invertebrates this includes *Glomeris marginata*, *Ommatoiulus sabulosus*, *Nanogona polydesmoides*, *Armadillidium vulgare* and *Lithobius variegatus* among others. Running this in the field on a laptop PC allows not only a quick reference identification check, but also the ability to add a record instantly to the dataset and see immediate feedback and context for the record as they see their new record mapped among the dots for the rest of the city. Other species were identified by the authors and members of SNHS. Training workshops were offered to develop identification skills further.

PRINCIPLE RESULTS

The introduction to a breadth of groups through Nature Notebook and other activities hopefully gave a wide base of knowledge for the participants to build on. They could become quite confident in the familiar species and were in turn more excited by the new things they found which took a bit more effort to identify. As more ‘common’ species were found, equally, specimens new to the recorders turned up, which would help to engage their interest further.

The area adjacent to a landfill site at Parkwood Springs provided records for the common pill woodlouse (*Armadillidium vulgare*) that is anything but common in Sheffield. This was in a new 10km square at only its third site within the city.

A number of locations in one square produced the nationally scarce millipede *Brachychaeteuma bradeae* (Photo 1). Several male specimens were found and comparisons of gonopods showed them to be very variable between the *B. bradeae* and *B. bagnalli* condition. Although on balance they were closer to *B. bradeae* in overall appearance, the great variation within a single population lends further fuel to the possibility that these two should be considered as a single, very variable species (Figure 1). Since this species is best found as an adult in winter (Lee 2006), it is an example of how valuable myriapod recording can be for inspiring beginners because it offers the opportunity to make significant discoveries at times when other wildlife groups are unavailable.

A significant find for Street Safari was the discovery of the centipede *Cryptops anomalans* (Photo 2) under a well-embedded stone, in an area of rubble and broken glass at the bottom of a garden next to a wood in Firth Park. This magnificent beast measured 60mm long and was immediately spotted as something out of the ordinary. Nothing else in Sheffield looks remotely similar, apart

from some wayward *Lithobius pilicornis*, which are equally far from their normal range in the south of England.

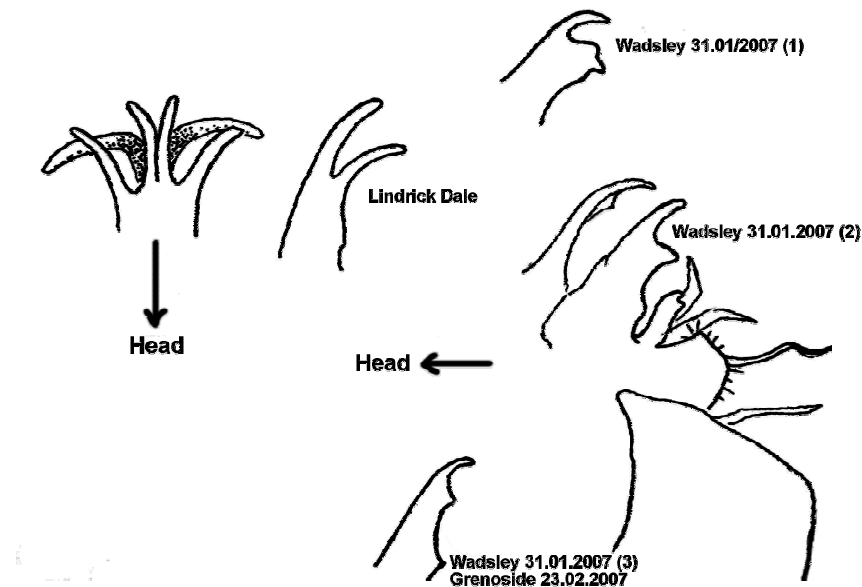


Figure 1: Gonopods of *Brachychaeteuma bradeae* from the Sheffield area

Chasing after dangerous carnivores is always a bonus on a guided walk, especially when it inflicted a noticeable bite on the walk organiser, Paul Richards, as he grabbed for it. The small puncture marks in his finger and localised redness and swelling made for a much more memorable trip for the participants! The rubbish and tipping around the area provide many such synanthropic opportunities when 'on safari'. In 1988 when the latest maps were published (Barber & Keay 1988) there were only 20 records of this species from Britain and Ireland, though today there are around twice that number recorded. It is mostly known from London and the southeast of England, although it has been recorded in Cardiff and Bristol. The Sheffield record is the first north of the Home Counties. It was a big surprise to find such a large and obvious creature and shows the value of Street Safari in getting into the less easily surveyed or less appealing synanthropic sites. Both *Lithobius pilicornis* and *Cryptops anomalans* again demonstrate the value of looking at myriapods in this educational setting. They offer exciting urban discoveries that really inspire new recorders to seek out the next 'first record' for the area.



Photo 1: *Brachychaeteuma bradeae*



Photo 2: *Cryptops anomalans*

Among the millipedes, significant new records were made of some less often recorded species. *Melogona scutellaris*, *Macrosternodesmus palicola*, *Archiboreoiulus pallidus*, *Boreoiulus tenuis* and *Polydesmus inconstans* were found, often several kilometres from previously known localities. In addition to the myriapods and isopods, the pseudoscorpion *Roncus lubricus* is a species that has only recently been found in Sheffield through pit-fall trapping in urban sites. It turned up in Street Safari as only the fifth record for the area.

In addition to these recording highlights there is now a much better coverage of the commoner species to give even greater validity to the distribution maps. A selection of appended 'before and after' maps shows the improvement there has been in our knowledge of the invertebrate fauna for this area. In total Street Safari added 1590 records of all species, of which well over a quarter (443) were myriapods and isopods. Table 1 shows the complete list of records for each species by 1km grid square.

For very practical reasons the national atlases for invertebrate distributions use 10km and even 100km national grid squares as the basic recording unit (Lee 2006, Barber & Keay 1988, Harding & Sutton 1985 and Kime 1990). All the records for Street Safari occur within a single 10Km square when mapped at a national scale. However, as the maps and data show, there is a huge amount to be gained from focusing in to the 1Km or closer scale for local distribution studies. Certainly for Street Safari it was also much more meaningful to compare species occurrences from adjacent 1km squares than for areas some miles away in virtually 'foreign' parts of Sheffield. Not only did this have more significance for people that live there, but it also helps to pick out the reality of local distributions as influenced by quite small changes in neighbourhood habitats. For example, the topography of Sheffield is such that one housing estate may have areas sitting above a steep, sandy, south-facing deforested embankment (Parkwood springs), while others are clustered around a damp ancient woodland (Roe wood). Both are in the same 10km grid square and Sheffield district, but each provides a very different species list for adjacent 1Km squares. At another level, some areas of parkland are mown and 'cared for', while others are left derelict and unmanaged. At an even closer focus, there are obvious differences between one garden and that next door that were noted but these do not show up even at the 1km level of recording. Observing these changes in biodiversity at such a small scale is eye opening for local residents and helps to generate a greater sense of ownership to the community. It is also beneficial to local conservation, ecological and planning authorities responsible for the management of these environments.

SOCIAL OBJECTIVES

Of the non-recording objectives achieved, it was most pleasing to find that the communities as a whole really latched on to what Street Safari was about and it became quite well-known in the area. Plans to cascade skills from experts to beginners were partially achieved, but are likely not to reach fruition unless considerable ongoing relationship with the museum is maintained. Street Safari leaves a 'legacy unit' of recording resources, including a laptop with Nature Notebook, collecting equipment, identification guides, binoculars, GPS and recording cards with which to continue the previous activities. This legacy also includes funding for a good number of school sessions within the museum on curriculum-based biological recording topics. Further to this the museum now offers a venue to develop a junior nature club where the more enthusiastic children can continue to feed their interest.

Table 1: Chart showing species occurrences by 1 Km grid square

SPECIES: Millipedes	Grid Ref. SK:	3290	3291	3292	3293	3390	3391	3392	3393	3490	3491	3492	3493	3590	3591	3592	3593	3690	3691	3692	3693
<i>Glomeris marginata</i>				x	x																
<i>Nanogona polydesmoides</i>		x			x	x													x	x	
<i>Melogona scutellaris</i>		x												x					x	x	x
<i>Brachychaeteuma bradeae</i>		x							x												
<i>Brachydesmus superus</i>																x					
<i>Polydesmus angustus</i>					x																
<i>Polydesmus coriaceus</i>							x		x	x				x		x		x			
<i>Polydesmus inconstans</i>										x											
<i>Macrosternodesmus palicola</i>		x							x	x											
<i>Ophiodesmus albonanus</i>									x												
<i>Proteroiulus fuscus</i>			x		x	x	x			x				x					x	x	
<i>Blaniulus guttulatus</i>		x				x				x	x				x					x	x
<i>Archiboreoiulus pallidus</i>							x			x											
<i>Boreoiulus tenuis</i>		x	x		x		x		x	x	x								x	x	x
<i>Nemasoma varicorne</i>														x		x					
<i>Julus scandinavicus</i>														x							
<i>Ophiulus pilosus</i>		x												x				x			
<i>Cylindroiulus britannicus</i>			x		x	x								x		x			x		
<i>Cylindroiulus punctatus</i>		x			x	x	x		x	x				x		x	x	x	x	x	x
<i>Ommatoiulus sabulosus</i>				x																	
<i>Tachypodoiulus niger</i>			x	x	x	x	x		x	x				x		x					x
Centipedes																					
<i>Stigmatogaster subterranea</i>		x			x			x	x	x	x	x		x			x	x	x		
<i>Schendyla nemorensis</i>		x							x												
<i>Geophilus electricus</i>		x																			
<i>Geophilus insculptus (alpinus)</i>					x		x														
<i>Geophilus flavus</i>										x										x	x
<i>Geophilus truncorum</i>							x														
<i>Cryptops anomalans</i>																			x		
<i>Cryptops hortensis</i>			x							x				x			x	x			
<i>Lithobius forficatus</i>			x		x	x		x		x		x	x	x				x	x		
<i>Lithobius microps</i>				x	x	x		x	x	x	x		x	x	x		x	x		x	x
<i>Lithobius variegatus</i>			x	x	x					x		x		x					x		
Woodlice																					
<i>Androniscus dentiger</i>																	x	x			
<i>Trichoniscus pusillus</i> agg.		x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Trichoniscus pygmaeus</i>									x									x		x	
<i>Armadillidium vulgare</i>										x											
<i>Oniscus asellus</i>		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Philoscia muscorum</i>		x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x		x	x
<i>Porcellio scaber</i>		x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x
Pseudoscorpion																					
<i>Roncus lubricus</i>				x																	

THE FUTURE

If funding can be secured, Street Safari will be expanded to communities across the city and make comparisons between each recording area. These will be in equally under-recorded sites and will offer the opportunity to add a considerable amount of new data on Sheffield's invertebrates. The city's existing biological records centre and the museum's 125 year run of weather data will also allow the city-wide data to enhance studies on climatic change studies as well as basic distribution information. Entomological studies have already shown clear northward distributional advances across the city in recent years and Street Safaris would be well placed to capture these small faunistic changes and relate them to environmental conditions.

For the current phase of Street Safari, the success of the project will be judged not only by the number of people (over 1000) who have become involved but also by the amount of new biological records generated. If Street Safari has meant that people have become more aware of the local wildlife and that some have been enthused enough to carry on recording and submitting records when the project is over then it will have been even more worthwhile. The test of this will be seen by the number of records that continue to be received from northern suburbs. In the meantime the biological data set has been enhanced enormously and a snapshot has been captured of what was formerly a big blank on the maps for all species, not just the myriapods.

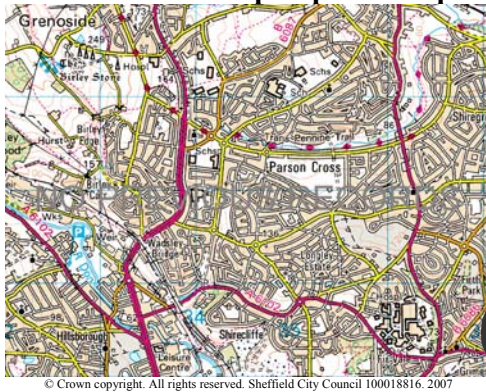
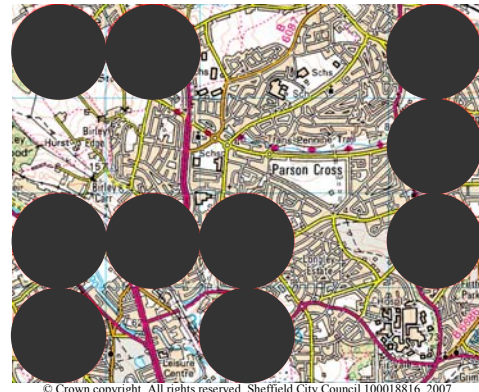
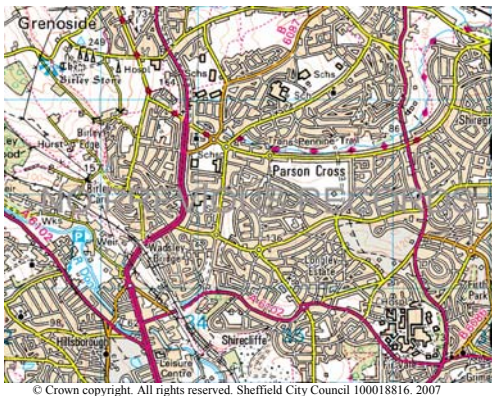
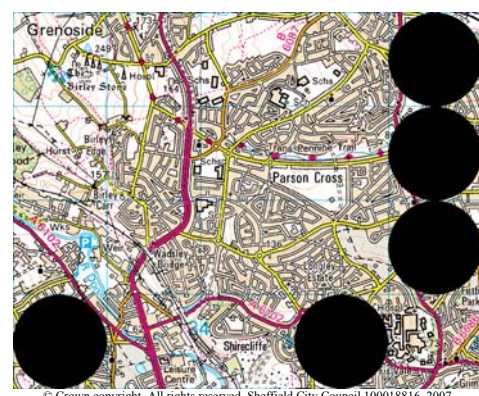
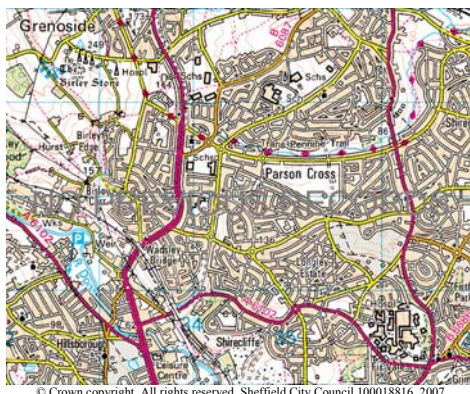
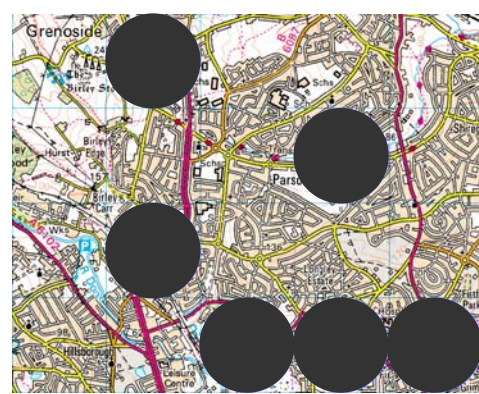
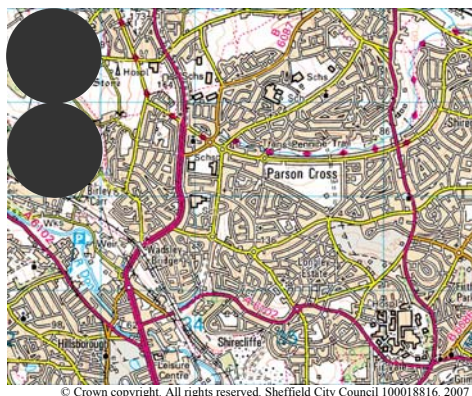
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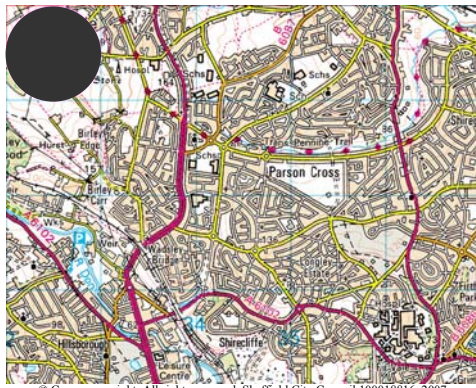
Thank you to Montenev, Mansel and Foxhill schools and everyone who took part in Street Safari and recorded things they'd never heard of. Thank you to the members of the Sorby Natural History Society for sharing their skills. We're especially grateful to Alistair McLean for all his efforts in sorting out the databases and producing the maps.

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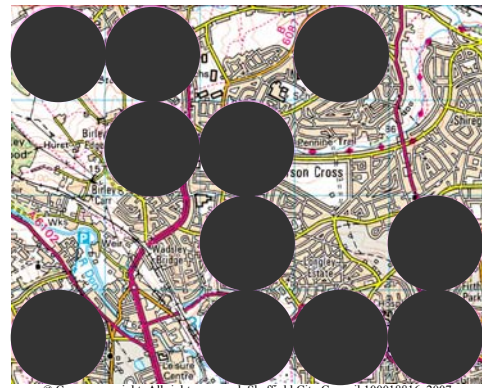
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APPENDICES: Example species maps.

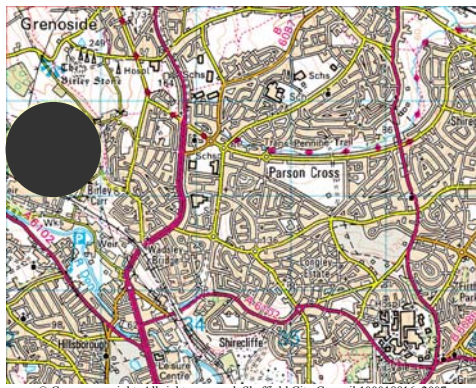
*Boreoiulus tenuis*, pre 2005*Boreoiulus tenuis*, with Street Safari records*Melogona scutellaris*, pre 2005*Melogona scutellaris*, with Street Safari records*Polydesmus coriaceus*, pre 2005*Polydesmus coriaceus*, with Street Safari records*Tachypodoiulus niger*, pre 2005*Tachypodoiulus niger*, with Street Safari records



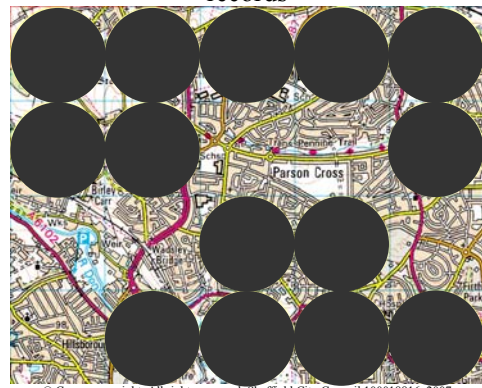
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Stigmatogaster subterranea, pre 2005



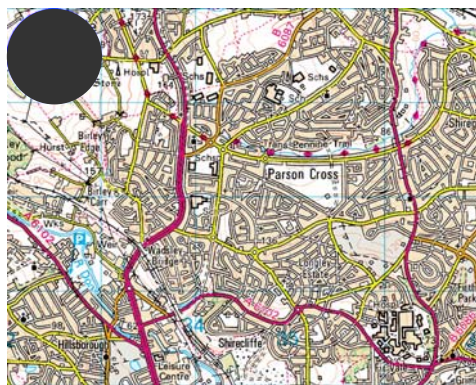
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Stigmatogaster subterranea, with Street Safari records



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Lithobius microps, pre 2005



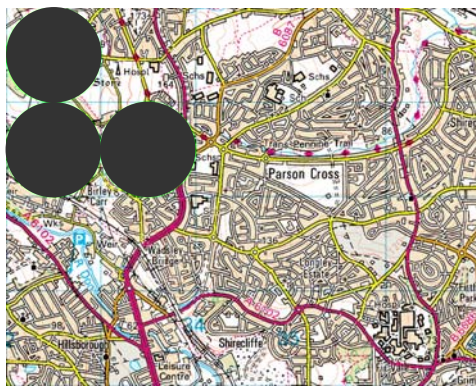
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Lithobius microps, with Street Safari records



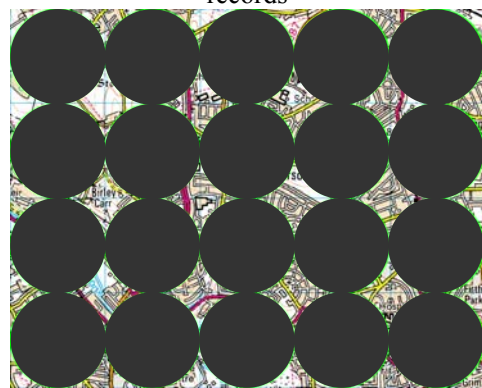
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Trichoniscus pusillus agg., pre 2005



© Crown copyright. All rights reserved. Sheffield City Council 100018816. 2007
Trichoniscus pusillus agg., with Street Safari records



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Oniscus asellus, pre 2005



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Oniscus asellus, with Street Safari records