Spider Recording Scheme News
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My thanks to those who have contributed to this issue. S.R.S. News No. 56 will be published in November 2006. Please send contributions by the end of September at the latest to Peter Harvey, 32 Lodge Lane, GRAYS, Essex, RM16 2YP; e-mail: grays@peterharvey.freeserve.co.uk

Editorial

Despite the late arrival of several large datasets it has now been possible to work through all the new records submitted to the recording scheme, sort out any problems in the data and generate a basic database of taxon, grid reference and year combining both the provisional atlas data and new records. This has been used in the status review and for producing updated distribution maps.

Where records have been submitted on cards or as Excel files it will take much longer to get all the information into MapMate, hence it will be some time before we know whether we are starting to get enough phase 2 data to evaluate more detailed aspects of species autecology. When all the data fields are brought into one overall database towards the end of the year, these will also be provided to the NBN Gateway for inclusion in the spider data already available. The updated maps are already available on the SRS pages of the BAS website as a single downloadable pdf file. Please note that this is a large file at over 18Mb.

Despite the large amount of data available to the Spider Recording Scheme, more than in almost any other major invertebrate group, the Status Review Subgroup has found the application of the IUCN criteria extremely difficult. A major problem is how to interpret in a sensible and consistent way the decline criteria that form the basis of the process. This has taken longer than expected and is now scheduled to be completed by late 2006. An explanation of the process used in the status review and the reasons for the date bands used in the maps is provided in the next article.

Please continue to send in your records - we will be able to keep distribution maps up to date very easily, especially if records are provided using MapMate - the synchronisation process makes the process of sending new or edited records very easy. Card records will be much more of a problem, but please continue to provide records in this way, if you cannot do so using MapMate or using another computerised format. However the difficulty of data entry and validation of card records will mean that there will be a long timescale needed before this kind of record can be included in any new maps.

Status Review Background

The status review is based on the revised IUCN Guidelines (IUCN 1994). The main categories that can be applied to spiders are EXTINCT (EX), CRITICALLY ENDANGERED (CR), VULNERABLE (VU), LOWER RISK (LR), DATA DEFICIENT (DD) and NOT EVALUATED (NE). Taxa included in the Lower Risk category can be separated into three sub-categories:

- Conservation Dependent (cd). Taxa which are the focus of a continuing taxon-specific or habitat-specific conservation programme targeted towards the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories above within a period of five years.
- Near Threatened (nt). Taxa which do not qualify for Lower Risk (conservation dependent), but which are close to qualifying for Vulnerable.
- Least Concern

The methods used closely follow guidance set out in Dr Stuart Ball's draft paper *Wildlife Statistics Project: Estimating range change from general biological recording data*.

The data

The data used in the status review consist of a combination of the provisional atlas data and new data, totalling 723,384 records in total. The new data consist of 240,067 records from MapMate (including Excel data imported into MapMate after work to get them into standardised and consistent format), which have presented no problem in use for analyses, but 23,534 records from Excel files received at a late stage have had to be used as they stand, generating many, many more instances where problems over date and grid references have had to be resolved before use.

Excluded data

Records were not included if from the Channel Islands or Ireland (Eire or Northern Ireland). These had to be excluded from the analysis dataset.

Tetrad grid references were required for estimates of occurrence. These can be extracted from the atlas dataset and provided by records in MapMate, but the new BRC entered data and very large Excel datasets from several sources that could not be imported into MapMate in the timescale available presented a problem. In the end, they had to be temporarily imported into a second copy of MapMate in order to extract tetrad grid references.

Analyses

1. Finding the year during which half the records in the scheme were made

The first stage of the analyses involved finding the year during which half of the records in the Spider Recording Scheme were made, and the 25%, 50% and 75% percentile years.

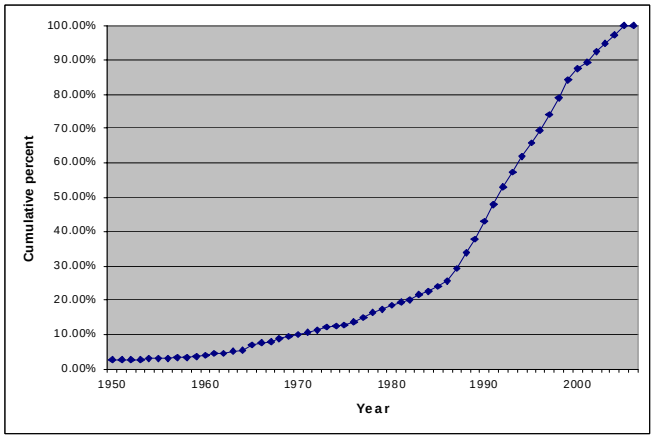


Figure 1. Cumulative records in the scheme by year

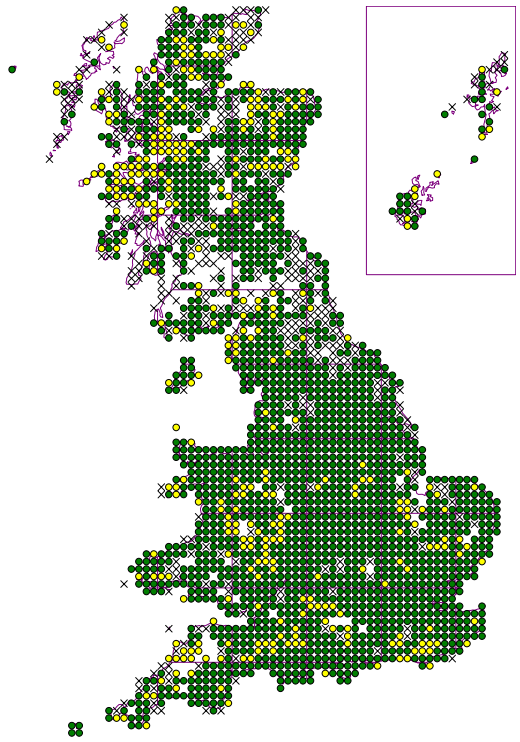
The results are
25 percentile year = 1986
50 percentile year = 1992
75 percentile year = 1998

Hence ranges are compared for records up to 1992 and with those from 1992 onwards. Calculated change is deemed to have occurred between 1986 and 1998, i.e. over a period of 12 years.

Finding the squares surveyed in both periods

The second stage involved finding the subset of 10km squares for which there are records in the dataset from both the earlier and later half of the records.

Period	No. of 10Km sqs.
Up to 1992 only	355
1992 onwards only	353
Both before and after 1992	1830
Total	2538



X = 10km squares with records only <1992, yellow circles records only 1992-on, green circles records for both periods.

3. Counting the number of squares for each species

Considering only the subset of 10km squares that were surveyed in both periods, the number of 10km squares was calculated in which each species was recorded in each of the two time periods.

4. Calculating the change in range

The proportional change in range of a species was calculated using squares recorded in both survey periods, by dividing the number of squares from which it was recorded in the later period (>=1992) by the number in the earlier period (<1992), shown as a percentage.

Taxon	10km <1992	10km >=1992	Ratio >=1992/<1992
Acartauchenius scurrilis	4	3	75.00%
Achaearanea lunata	106	182	171.70%
Achaearanea riparia	23	9	39.13%
Achaearanea simulans	28	108	385.71%
Achaearanea tepidariorum	23	50	217.39%
Achaearanea veruculata	1	1	100.00%
Aelurillus v-insignitus	27	19	70.37%
Agalenatea redii	139	223	160.43%
Agelena labyrinthica	223	274	122.87%
Agraecina striata	26	21	80.77%
Agroeca brunnea	117	93	79.49%
Agroeca cuprea	6	3	50.00%
Agroeca dentigera	1	1	100.00%
Agroeca inopina	89	58	65.17%

5. Deciding whether or not the change is significant

The standard error was calculated according to the formula provided in Stuart Ball's paper, together with 95% confidence limits (which are only considered significant if the sample size N is sufficiently large (>=30) and the proportion p is not too close to 1 or zero (usually considered to mean $0.1 < p < 0.9$). If the 95% confidence limit is less than 1.0 for a decline, or the lower confidence interval is above 1.0 for an increase, then the change is considered significant.

6. Area of Occupancy

Area of Occupancy is defined as "the area within the 'extent of occurrence' which is occupied by the taxon, excluding cases of vagrancy."

IUCN recommend the use of a 2x2 km grid (i.e. tetrads) to estimate Area of Occupancy. However Stuart Ball recommends the use of 10km squares on the basis that recording schemes are usually based on 10km resolution, and that the proportion of records at greater resolution varies greatly between recording schemes. The Spider Recording Scheme appears to represent an example where a very high proportion of records are available at higher resolution:

Resolution	No. records	Percentage
10km	17359	2.40%
2km	483	0.07%
1km	222714	31%
100m	482704	67%
Total	723379	

In other words 97.6% of the total dataset is available at 2km or tetrad resolution. On this basis there is good reason to suggest that we should use tetrads for Area of Occupancy in respect of spiders, especially if interpretation of these is used with caution and applied making use of existing ecological knowledge.

7. Frequency Ratios

Species may occur in a very restricted number of 10km squares yet be quite common and widespread within these areas with high tetrad numbers. Species occurring in a small number of 10km squares but with low tetrad numbers indicate a scattered, possibly even widespread, distribution but now with isolated sites and populations. These are the vulnerable species that require the greatest nature conservation effort (Pearman, 1997). The huge losses of semi-natural habitat in many parts of the country make the isolation of populations a very real problem for many species. Even the more widespread species which occur in many more 10km squares but with very low tetrad numbers may be under much greater threat of decline through loss or degradation of habitat than apparent from a 10km or tetrad distribution map.

Pearman calculates a Frequency Ratio of tetrads/10km square by comparing the number of tetrad and 10km square records for a species. With every tetrad thoroughly covered and a species found in every tetrad the maximum Frequency Ratio is 25. This figure is unlikely to be approached except in some very common and widespread species and for complete coverage of every tetrad square. A very low Frequency Ratio however may indicate that a species should be of nature conservation concern even though the 10km square distribution may suggest a widespread and common species. Significantly Pearman demonstrates that many Scarce plants have very low Frequency Ratios compared to some RDB species which are quite common and widespread where they occur.

Frequency Ratios as a ratio of for example 1992-on tetrad/10km square records can be used here to allow some form of assessment of the frequency of species and the isolation of their populations. Unfortunately this is still far from a satisfactory method of assessing the isolation of populations: one tetrad record in one 10km square will provide the same Tetrad Frequency as fifteen tetrad records in fifteen 10km squares; the fifteen 10km square records may be grouped together in one part of the country, or separated and spread across the country. Also the results assume good, or at least consistent, coverage of tetrads across the country, and this is clearly unlikely. However it seems worth investigating as a method to help add background to the decisions on status.

The following table summarises the ratio of tetrads to 10km squares for the whole dataset:

Year range	No. recorded 10km sqs	No. recorded tetrads	Ratio tetrad/10km
>=1986 (25% percentile)	2361	12521	5.30
>=1987 (start of SRS)	2329	12336	5.29
>=1992 (50% percentile)	2177	10554	4.84

If every tetrad in the country had been recorded, the tetrad/10km square ratio would be 25, so considering the average ratio for the whole dataset and for each species provides an overall context.

In addition a higher ratio figure is more likely to indicate that a species, even one recorded from few 10km squares, is less isolated and vulnerable than comparable species with lower ratios. Some examples are given in the following table for species with similar counts of 10km squares:

Taxon	10km sq	Tetrads	Tetrad/10km Ratio
Zilla diodia	136	243	1.79
Xysticus ulmi	143	246	1.72
Xysticus erraticus	145	165	1.14
Walckenaeria vigilax	137	163	1.19
Uloborus plumipes	139	167	1.20
Silometopus elegans	141	182	1.29
Philodromus albidus	135	236	1.75
Ozyptila atomaria	136	169	1.24
Oedothorax agrestis	143	157	1.10
Minyriolus pusillus	142	188	1.32
Lepthyphantes leprosus	142	201	1.42
Erigone promiscua	144	185	1.28
Enoplognatha latimana	139	227	1.63
Drassyllus pusillus	145	189	1.30
Argiope bruennichi	145	350	2.41
Agyneta conigera	145	173	1.19

There is an indication from these ratios that species such as *Xysticus erraticus, Oedothorax agrestis* and *Walckenaeria vigilax* should be viewed as more vulnerable than species such as *Argiope bruennichi, Zilla diodia, Xysticus ulmi* and *Philodromus albidus.* This can be supported by knowledge on the ecology of these species and the experience of arachnologists in the field. *Oedothorax agrestis* for example appears to have very restricted requirements, such as an association with flood debris along streams and rivers, whereas *Argiope bruennichi, Zilla diodia, Xysticus ulmi* and *Philodromus albidus* may be widely distributed and frequent in much wider areas of the countryside, as in Essex.

The low ratio for *Uloborus plumipes* can be explained by the widely scattered nature of its garden centre locations, and is an example of where we obviously have to interpret the data sensibly.

Other statuses

Lower Risk (Nationally Scarce)

Other new status reviews have continued to use the nationally scarce (Notable or Scarce) category for appropriate species in the Lower Risk category e.g. Lower Risk (Nationally Scarce) in Falk & Crossley (2005). Lower Risk (Nationally Scarce) is not a threat category, but rather an estimate of the extent of distribution of these species. Lower Risk (Nationally Scarce) refers to species which are not included within the IUCN threat categories and are estimated to occur in less than 100 hectads of the Ordnance Survey national grid in Great Britain (formerly termed “Nationally Notable” by Falk 1991).

We propose to continue the subdivision of this category into Scarce A and Scarce B, i.e. **Scarce A** refers to species estimated to occur within the range up to 30 10-kilometre squares of the National Grid System. **Scarce B** refers to species estimated to occur within the range 31 to 100 10-kilometre squares of the National Grid System.

A proposal for further categories

There are systems in use to enable an evaluation of the quality of a recorded fauna, which can then be used to compare sites e.g. Dr Michael Archer has published a system for use with the aculeate Hymenoptera (Archer, 1995) and there is a comparable system in use for evaluating saproxylic beetle fauna (Fowles, Alexander & Key, 1999).

Michael Archer's method for comparing the species quality of the solitary aculeate Hymenoptera at different sites uses status values for each species to calculate a national quality score and a method of deriving a Species Quality Score, by dividing the total score by the number of species recorded . The six statuses used are Very rare, Rare, Scarce, Restricted, Widespread and Universal. These statuses are derived from data being made available in atlases published by the Bees, Wasps and Ants Society (BWARS) and the Centre for Ecology and Hydrology (Biological Records Centre) at Monks Wood. Major problems however reside over the cut off dates used in the atlases, with all modern records being post-1969 – this means that the statuses are derived from data up to 36 years old and there have certainly been major declines in the distribution of species that are not apparent from the maps, and not a reflected in the statuses. On the other hand where species have spread and become more frequent, such as with the Bee Wolf *Philanthus triangulum*, because recent records are included in the maps the changes are reflected.

To enable the evaluation and comparison of wooded habitats for the conservation of dead-wood Coleoptera rarity categories are given to each qualifying species. The categories and scores used are summarised in the following table:

Rarity category	Score
RDB1, RDB2, RDB Appendix, Extinct	32
RDBI (Indeterminate)/RDB3	24
Nationally Scarce A/RDBK	16
Nationally Scarce B	8
Very Local / Uncertain	4
Local	2
Common	1

The Saproxylic Quality Index for a site is then calculated by dividing the total score by the number of saproxylic species.

Discussion proposals for spiders

We propose that we set up a comparable status category system for spiders, to facilitate a similar method for the evaluation and comparison of the spider fauna present at sites, of particular importance where there are threats from development or management priorities need to be decided. The BAS are in the best position to place each British spider taxon into categories beyond those based on the IUCN criteria, using the data we have available from the Spider Recording Scheme. Obviously these statuses should be reviewed as new data become available to enable them to be kept up to date.

We would very much welcome comments on these proposals and ideas for their development.

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The updated maps

Many thanks indeed to the many recorders who have submitted records to the recording scheme to enable the distribution maps to be updated. The previous article explains how the 50% percentile year for records submitted to the scheme is 1992. Hence the new maps have used 1992-on records as the most recent date band symbol, with 1950-1991, 1900-1949 and pre-1900 as earlier date band symbols. This has enabled change to be estimated by comparing the numbers of 10km square records before and after the 50% percentile year for those squares where survey has been undertaken in both survey periods. The results are available for download from the BAS website, and it is very interesting to see the changes in different species.

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Araneus angulatus in a garden in Hampshire

by Shirley Cardus

I was first alerted to the possible presence of *Araneus angulatus* in my garden near Basingstoke in VC12 when a specimen was found (but never formally identified) at a moth trapping evening in July 2003. Its web was large (like so many orb-web spiders I hear you cry!), stretching between two hedges. I've been on the lookout ever since and the large web was all I had to go on. Perseverance paid off when I noticed a large web spanning a gap of about 1 metre between two leylandii hedges in late May this year. I traced the web into the hedge and sure enough there was a spider that looked awfully like *A. angulatus*. I watched it over the next few days and examined it in situ with a hand lens, becoming more and more convinced of its identity. Meanwhile I continued to search my garden for other evidence of this spider in the belief that it was unlikely that there would only be one specimen. Again, it was the web, this time stretching from another leylandii hedge across to tall plants in a wild flower area, which gave away the presence of the second of these spiders.

This time I wanted confirmation. So a bit of internet searching brought me to the Spider Recording Scheme and Peter Harvey. Peter was, understandably, rather sceptical when he received my email. Undeterred by his suggestion that this was a variant garden spider I badgered him with more details until he offered to identify a live specimen for me. A spider was duly posted to him and I was thrilled to receive his confirmation that it was *Araneus angulatus*, only the 12th record since 1991 and a first for a garden. On its return I was able to return the spider to the exact spot he had been taken from and as I write, 10 days later, he is still there.

Notes and observations:

Both spiders were found on the north faces of separate leylandii hedges. These hedges act as windbreaks from the prevailing southwest winds. They are trimmed annually so that they remain at about 7 feet tall by about 18 inches deep. My guess is that they are approximately 20 years old and they are about 700 metres long in total. One spider was found at a height of about 5 feet 6 inches, the other lower at around 2 feet 6 inches..

The garden extends to approximately 3 acres and comprises areas of short-mown grass (lawn is too grand a title for my weed infested grass!), large areas of rough pasture grass, leylandii hedging, mature yew and beech hedges, flower beds, shrubs and mature trees (oak, horse chestnut, whitebeam, holly, bird cherry, plane). In two areas the rough pasture grass has been allowed to grow, creating wild flower areas; these are cut once annually. No pesticides have been used on the garden in the last 6 years.

The garden is surrounded on three sides by paddocks; on two sides these are in organic conversion and are grazed by cattle.

I have noted during the time that I have been watching the spiders (only one since 16th June) that there is little evidence of web spinning on a regular basis – I assumed that a new web would be made each night but the occurrence seems to be much less frequent than this – maybe only once a week. Is this normal? Each spider has a few strands of web covering a small area of the hedge where they reside; could these act as triggers for an ambush attack?

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The subadult male *Araneus angulatus* from Hampshire, photograph Peter Harvey

Steatoda nobilis (Thorell 1875) a spider new to Wales at Barry, Glamorgan (VC41)

by Greg Jones

On 11th January 2006 I visited The Knap, a large shingle beach to the south west of Barry to search for the rare and elusive woodlouse *Buddelundiella cataractae* Verhoeff 1930. After several hours of unsuccessful searching I decided to cut my losses and spend the remaining hour or so of daylight in pursuit of arachnids.

The first site that I visited was the public lavatory at The Knap car-park at ST099665. In a corner, just behind the door and *c.* 20 centimetres from the floor, was a large male theridiid. The weather, although bright and sunny was rather chilly, rendering the specimen torpid so that it was easily potted. Although I had never encountered *Steatoda nobilis* before, I was reasonably certain of its identity because of its size and distinctive abdominal markings. The only other species present at this site was *Zygiella x-notata* in small numbers. I then visited Barry Island, the resort area of the town a kilometre to the east of The Knap and searched the public lavatories there, but all that I found were several *Z. x-notata* and a solitary *Pholcus phalangioides.*

At home later the same evening I examined the specimen microscopically and this confirmed my provisional field determination as *S. nobilis.* I took several transparencies of the specimen before preservation in ethanol. Several days later the specimen was examined by Simon Warmingham who agreed with my determination. Then on 9th February 2006 I again visited the public lavatory at The Knap and on this occasion I found another specimen ..... a dead mature female, suspended from the ceiling. Both specimens were seen and examined by SWAG members at a Theridiidae ID workshop at the National Museum of Wales, Cardiff on 25th February 2006.

Steatoda nobilis male © Greg Jones

As to the origin of *S. nobilis* at Barry: the town was one of the major banana ports in Britain for many decades during the twentieth century but this trade has now ceased and has moved further up the Bristol Channel to Newport in Monmouthshire (VC 35). Roberts (1995) says that "..... the species has been repeatedly introduced, from the Canary Islands and Madeira, with bananas" and that it is "well established near the south coast of England".

Following this find, I intend to conduct extensive searches of Barry, especially the largely abandoned dockland area, to determine the extent to which *Steatoda nobilis* is established there. Also, visits to the docklands of Cardiff and Newport could well reveal the presence of *S. nobilis* and possibly other alien arachnids associated with the banana trade.

References

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A spider in sheep's clothing

by John Bratton

While collecting sheep wool from a barbed wire fence on 19 March 2006, five of the tufts of wool were found to contain a single *Larinioides cornutus*, each in a tightly spun silk cell. The fence was crossing rushy pasture in Malltraeth Marsh RSPB reserve, Anglesey, SH456713. Of the three specimens collected, one was immature and the other two were adult females. The weather at the time was similar to the previous five days, and may be significant: sunny but with a cold east wind, and the tufts of wool were exposed to both.

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A plea for regular articles

Please send in articles (and pictures) for the SRS News on any observations or discoveries of interest to the recording scheme. Don't think that other arachnologists will not be interested - they will! Short or longer pieces are just as welcome. Send your contributions to Peter Harvey at 32 Lodge Lane, Grays, Essex, RM16 2YP or by e-mail: grays@peterharvey.freeserve.co.uk

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