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Spiders collected by pitfall trapping and vacuum sampling in four stands of Dorset heathland representing different growth phases of heather

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Summary

Four stands of heathland vegetation in Dorset representing the four recognised growth phases of heather were sampled for one year by pitfall trapping and D-vac suction sampling. A total of 139 species was collected, 112 in the pitfalls and 75 in the D-vac. The total numbers of adult individuals of each species captured by the two methods are compared with previous data from Ashdown Forest (Merrett & Snazell, 1983). Differences in the results between the four sites in Dorset are discussed in relation to the age of the vegetation and possible changes in efficiency of the two sampling methods. The seasonal changes in numbers of individuals and species recorded by the two methods are briefly discussed.

Introduction

In an earlier study (Merrett & Snazell, 1983) a comparison was made of the spiders caught by pitfall trapping and D-vac suction sampling at Ashdown Forest in south-east England. The 12 sites studied there were composed mainly of mature vegetation, but there was a considerable range from wet heath to dry heath and variation in vegetation diversity which enabled a site classification to be presented based on both collecting methods.

In the study reported in this paper four sites in Dorset were sampled using the same methods, but the sites were all on dry heathland and were selected as representing the four recognised growth phases of heather (Watt, 1955; Gimingham, 1972). This formed part of an investigation into the invertebrates available as food for the Dartford Warbler, *Sylvia undata* (Boddaert) (Bibby, 1977, 1979). This comparison is also of interest because the spider fauna of Dorset heathland differs considerably from that of Ashdown Forest, since the latter area is at much higher altitude and lies on the Cretaceous Hastings Beds whereas the former lies on the Eocene Bagshot Beds comprising much coarser sand.

Study area and methods

The four sites selected to represent the growth phases of heather were as follows:

1. Post-burn phase: Coombe Heath, Grid ref. SY 974869.
2. Building phase: Hartland Moor, Grid ref. SY 960851.
3. Mature phase: Arne Heath, Grid ref. SY 964883.
4. Degenerate phase: Grip Heath, Grid ref. SY 975876.

The age, height and percentage composition of the vegetation at each site is shown in Table 1, which is derived from Bibby (1977). Coombe had the shortest vegetation and a considerable amount of bare ground and *Erica tetralix* L. Hartland and Arne had progressively taller vegetation, and the percentage cover and uniformity of *Calluna vulgaris* (L.) increased. The vegetation at Grip was the same age as at Arne, but many *Calluna* plants had died, leaving large bare or lichen-covered areas between clumps of tall *Calluna*. Thus the mean height was lower than at Arne but the variation was much greater. *Erica tetralix* was frequent at Grip, as at Coombe.

Spiders were collected monthly with a D-vac suction sampler from March 1974 to May 1975, but in order to make the results comparable with the results from the pitfall traps only the collections from April 1974 to March 1975 have been included in the detailed analysis of species. On each occasion four 1 m^2 samples were taken at each site, each sample consisting of eleven sub-samples. The suction head was placed down firmly over the vegetation, so as to sample from both the vegetation and litter layers as far as possible, but collections from the litter layer are obviously likely to be less complete from under tall vegetation than from areas of short vegetation. All suction sampling was done in dry weather.

Six pitfall traps were used continuously at each site from April 1975 to April 1976. The traps were plastic pots 7.5 cm in diameter, with a depth of 10.5 cm and holes drilled in the side 3 cm from the top to allow drainage. They were partly filled with water and a little preservative ('Panacide'), with detergent

(Teepol) added to prevent the spiders escaping. The traps were emptied monthly.

Results

Relative effectiveness of pitfalls and D-vac

Before attempting any detailed comparison of the results from the two methods, it is necessary to emphasise that they operate on different ranges of microhabitats in addition to differing in their effectiveness according to the size and activity of the spiders. Pitfall traps are relatively most effective at catching large, active, ground-living species, whereas the D-vac catches mainly small species living higher among the vegetation.

The total number of species recorded was 139, 112 in the pitfalls and 75 in the D-vac; thus 64 species were exclusive to the pitfalls and 27 were exclusive to the D-vac. The total numbers of adult individuals were 2999 in the pitfalls and 1663 in the D-vac. Since the numbers taken in pitfall traps cannot be related to population density, the efficiency of the pitfalls and D-vac cannot be compared directly within a species, but it is of interest to compare the results obtained for related species and different families by the two methods. This not only provides information about the collecting methods, but also indicates differences in the ecology or behaviour of species which render them more susceptible to capture by one method rather than the other. The proportion of the total catch (n) of each family (or subfamily) taken in the pitfalls and in the D-vac is shown in Fig. 1, and the proportion taken by the two methods for each of the 35 commonest species (i.e. those of which a total of over 20 individuals was caught) is shown in Fig. 2. The numbers of individuals taken by the two methods for a further 36 rarer species (those of which between 4 and 20 individuals were caught) are given in Table 2; these results based on small numbers could be misleading if shown as proportions as in Fig. 2, and some of the smallest differences are not statistically significant, but the presence of a species at least shows that it is taken by one method although its absence may not be significant. When considered in conjunction with the similar results obtained on heathland at Ashdown Forest (Merrett & Snazell, 1983), some of these results based on small numbers also strongly suggest that a species is more likely to be caught by one method than by the other.

It is interesting to compare these results with those obtained previously by the same methods at Ashdown Forest (Merrett & Snazell, 1983, figs. 2-3, table 2). In relation to the numbers of pitfall traps used, about 4.5 times more D-vac sampling was done in Dorset than at Ashdown Forest (Dorset: 24 pitfalls for one year, 192 m^2 D-vac samples; Ashdown Forest: 96 pitfalls for one year, 168 m^2 D-vac samples). In spite of this, however, the percentage of the total catch taken in the D-vac at the two places was not very different (43.1% at Ashdown Forest and 35.7% in Dorset). This is probably because the sites at Ashdown Forest were mostly in mature vegetation where the D-vac is relatively more effective than pitfall traps, since in the few sites at Ashdown Forest where there was short vegetation the results

Site name	**Coombe Heath**	**Hartland Moor**	**Arne Heath**	**Grip Heath**
Growth phase	**Post-burn**	**Building**	**Mature**	**Degenerate**
Age (years)	4	14	30	30
Vegetation height (cm ± s.e.)	7.15 ± 3.71	15.05 ± 5.05	30.45 ± 6.63	19.45 ± 11.91
Coefficient of variation	51.9%	33.6%	21.8%	61.2%
***Calluna vulgaris* (L.)**	65.6	82.9	94.9	56.2
***Erica cinerea* L.**	1.3	2.9	2.2	5.9
***E. tetralix* L.**	13.2	1.6	–	12.4
***Ulex minor* Roth**	0.6	8.4	0.8	2.0
***Agrostis setacea* Curt.**	–	0.9	–	0.2
***Molinia caerulea* (L.)**	–	0.2	–	–
***Pteridium aquilinum* (L.)**	–	–	0.8	0.1
Bare ground or lichens	19.3	3.1	1.3	23.3

Table 1: Age, height and percentage cover of vegetation at the four sites. Figures derived from 100 0.25 m^2 quadrats at each site, recorded in autumn 1975.

obtained were similar to those from Dorset. Nevertheless, this difference in overall relative efficiency of the two methods in the two areas has the fortuitous effect of cancelling out the difference in number of traps used, so that the results for individual species presented in Fig. 2 and Table 2 are more readily comparable with those shown in Merrett & Snazell (1983, fig. 3, table 2).

For those species which were abundant in both areas, the results shown in Fig. 2 are remarkably similar to those from Ashdown Forest. The five species of Gnaphosidae from Dorset were all taken exclusively in the pitfalls, as were the four species from Ashdown Forest. The three species of clubionids and liocranids which were common to both areas, *Clubiona trivialis* C. L. Koch, *Agroeca proxima* (O. P.-C.) and *Scotina gracilipes* (Bl.), were all taken in about the same proportions by each method in the two areas. It is also interesting that the two additional species of *Scotina* from Dorset, *S. celans* (Bl.) and *S. palliardi* (L. Koch), which usually occur more frequently among litter under older heather, were taken almost exclusively in the pitfalls whereas appreciable numbers of *S. gracilipes*, which occurs in more open areas, were taken in the D-vac. A moderate proportion of the frequently arboreal zorid, *Zora spinimana* (Sund.) was taken in the D-vac in both areas.

Although recorded only in small numbers, the results for the salticids were similar at both places. More were taken in the pitfalls in Dorset than at Ashdown Forest, but the D-vac catch was still the greater of the two. The numbers of lycosids caught in Dorset were generally smaller than at Ashdown Forest, but *Pardosa nigriceps* (Thorell) was the only species taken in the D-vac in Dorset, this being strikingly similar to the result obtained at Ashdown Forest.

Among the Hahniidae, *H. nava* (Bl.) was caught almost exclusively in the pitfalls, as at Ashdown Forest; although only four specimens of *H. montana* (Bl.) were taken in Dorset, they were all in the D-vac, again resembling the situation at Ashdown Forest where 73% of the total of 105 specimens were in the D-vac. *H. helveola* Simon, which usually occurs deep in litter, was taken almost exclusively in the pitfalls at both places, like *H. nava*. Both species of *Ero* were taken in rather small numbers, but in both areas the proportion caught in the pitfalls was greater for *E. furcata* (Villers) than for *E. cambridgei* Kulcz. This suggests that there may be a behavioural difference between these two species which are frequently found together in the same habitats. Among the theridiids, *Theridion bimaculatum* (Linn.) and *Pholcomma gibbum* (Westr.) were caught mainly in the D-vac, as at Ashdown Forest, while *Robertus lividus* (Bl.), *Enoplognatha thoracica* (Hahn) and *Episinus truncatus* Latr. were taken exclusively in the pitfalls. The last named was not found at Ashdown Forest, but there half of the 12 specimens of the closely related *E. angulatus* (Bl.) were in the D-vac. Although these are small numbers, this may represent a real difference in behaviour, since *E. angulatus* appears to occur more frequently among the branches of heather whereas *E. truncatus* is often found closer to ground level.

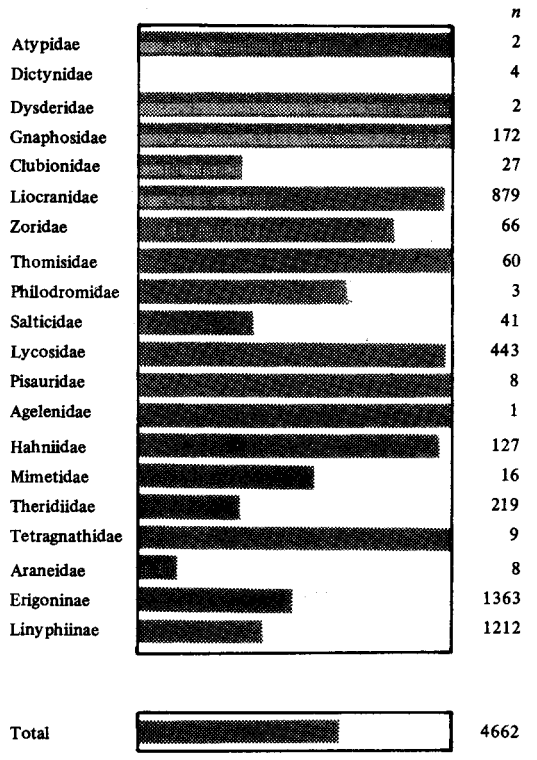

Fig. 1: Proportion of the total catch (*n*) of each family (or subfamily) taken in the pitfalls (shaded bars) and in the D-vac (open bars). Families designated as in Brignoli (1983).

Taking the linyphiids as a whole, about the same proportion of the total was taken in the D-vac in Dorset (55%) as at Ashdown Forest (52%). However, the proportions within the two sub-families were reversed, in Dorset 50% of the Erigoninae and 60% of the Linyphiinae being in the D-vac, whereas at Ashdown Forest the figures were 56% and 47% respectively. This difference is probably attributable to the fact that the Linyphiinae contain a larger number of abundant winter-active species, and D-vac sampling was continued throughout the winter in Dorset but not at Ashdown Forest.

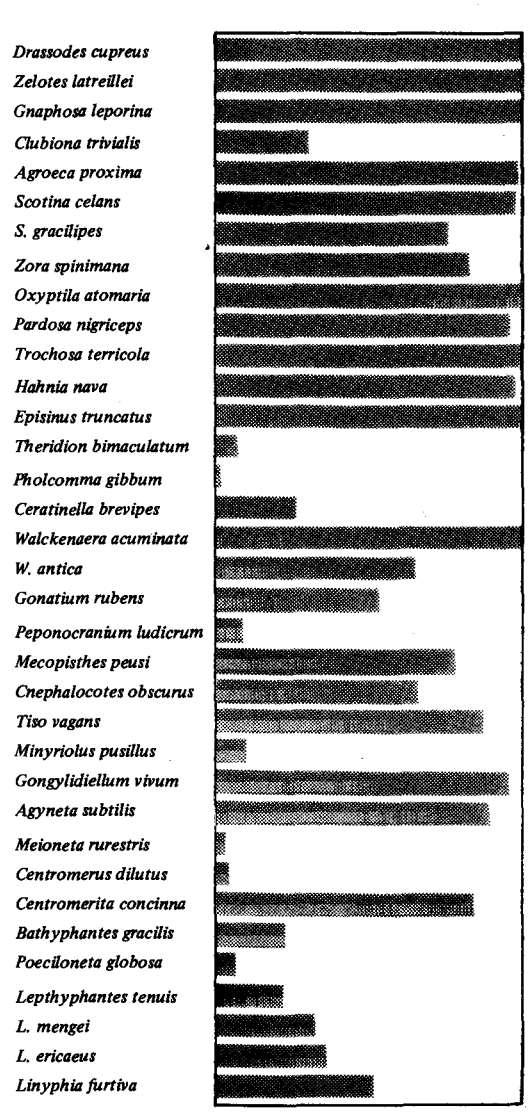

Fig. 2: Proportion of the total catch (*n*) of each of the 35 commonest species taken in the pitfalls (shaded bars) and in the D-vac (open bars). Nomenclature as in Locket, Millidge & Merrett (1974).

Ceratinella brevipes (Westr.) was taken mainly in the D-vac in Dorset, as at Ashdown Forest. Only four individuals of *C. brevis* (Wider) were caught in Dorset, but they were all in the pitfalls, which tends to support the result from Ashdown Forest where 78% of the 63 specimens were in the pitfalls. *Walckenaera acuminata* Bl. occurred exclusively in the pitfalls, but most of the other species of *Walckenaera* were taken in moderate numbers in the D-vac. This was similar to the results obtained at Ashdown Forest. Only two other species of erigonines were caught in fairly large numbers and almost exclusively in the pitfalls in Dorset, namely *Tiso vagans* (Bl.) and *Gongylidiellum vivum* (O. P.-C.). These results were very similar to those obtained for these species at Ashdown Forest. *Peponocranium ludicrum* (O. P.-C.) was the only erigonine found abundantly at both places and almost exclusively in the D-vac, but *Gonatium rubens* (Bl.) was also common in the D-vac in both areas.

There were also some interesting parallels between Dorset and Ashdown Forest among the linyphiines. *Agyneta subtilis* (O. P.-C.) (and at Ashdown *A. conigera* (O. P.-C.)) was caught predominantly in the pitfalls, while the related *Meioneta rurestris* (C. L. Koch) was taken almost entirely in the D-vac in both areas. A similar situation occurred with *Centromerus dilutus* (O. P.-C.) and *Centromerita concinna* (Thorell), the former being mainly in the D-vac and the latter mainly in the pitfalls; a larger proportion of both species was taken in the D-vac in Dorset than at Ashdown Forest, but that was probably because both are winter-maturing species and the D-vac was used between December and March in Dorset alone. *Oreonetides abnormis* (Bl.) was taken only in small numbers, but exclusively in the pitfalls, as at Ashdown Forest. *Lepthyphantes obscurus* (Bl.), however, was caught only in the D-vac and *Poeciloneta globosa* (Wider) nearly so, also as at Ashdown Forest; the former is found frequently on gorse bushes or high among the branches of heather. The only really contradictory result between the two areas concerns *Floronia bucculenta* (Clerck). Only five individuals were caught in Dorset, all in the

pitfalls, but at Ashdown Forest only one out of the total of 92 specimens was taken in the pitfalls. Apart from *L. obscurus,* the other *Lepthyphantes* species were all caught by both methods to some extent, but the results show no clear consistent differences between the species. It is interesting that *Linyphia clathrata* Sund. and *L. furtiva* O. P.-C. both occurred in considerable numbers in the pitfalls, as the former did also at Ashdown Forest, where, however, the much more arboreal *L. triangularis* (Cl.) was almost confined to the D-vac.

Differences between sites

Some of the species showed considerable differences in numbers caught at each of the four sites. The results for 30 of the more interesting species (i.e. those which showed some consistent differences between sites) are shown in Table 3, the figures given being the total numbers of adults caught by the two methods during the year. Many of these species show a gradient from the young vegetation with much bare ground of Coombe to the tall mature heather of Arne, and in many cases a partial return at Grip, with its large bare areas, to the conditions prevailing at Coombe. *Mecopisthes peusi* Wunderlich and *Centromerita concinna,* and possibly *Tiso vagans,* show a clear trend based on the results of both collecting methods to a decrease in numbers from the bare areas to tall heather. Similar results for the D-vac alone were obtained for *Meioneta rurestris* and *Bathyphantes gracilis* (Bl.), which are common aeronauts and colonisers of newly created habitats. The pitfall results suggest similar trends for *Drassodes cupreus* (Bl.), *Haplodrassus signifer* (C. L. Koch), *Scotina gracilipes, Pardosa palustris* (Linn.), *Enoplognatha thoracica* and possibly *Zelotes latreillei* (Simon); these results alone cannot be regarded as conclusive evidence of a real reduction in numbers in older heather, since the increased amount of vegetation may impede movement and hence reduce pitfall catches, but at least in the cases of *D. cupreus, S. gracilipes, P. palustris* and *E. thoracica* these results are supported by collections made elsewhere which indicate that these species are less abundant among very dense vegetation.

The results for some other species indicate larger numbers in the older vegetation, both in the pitfalls and D-vac, e.g. *Agroeca proxima, Zora spinimana, Theridion bimaculatum, Ceratinella brevipes, Minyriolus pusillus* (Wider) and possibly *Neon reticulatus* (Bl.) and *Lepthyphantes zimmermanni* Bertkau. This trend is also indicated by the D-vac results for *Pholcomma gibbum, Gonatium rubens* (Bl.), *Centromerus dilutus* and *Lepthyphantes obscurus.*

The results for a few species, e.g. *Pardosa nigriceps, Hahnia nava,* and possibly *Peponocranium ludicrum* and *Lepthyphantes mengei* Kulcz., suggest

	Pitfalls	D-vac
Dictyna arundinacea (Linn.)	0	4
Haplodrassus signifer (C. L. Koch)	18	0
Zelotes praeficus (L. Koch)	6	0
Scotina palliardi (L. Koch)	8	0
Xysticus cristatus (Clerck)	6	0
Neon reticulatus (Blackwall)	3	16
Euophrys frontalis (Walckenaer)	4	5
Pardosa monticola (Clerck)	4	0
P. palustris (Linn.)	15	0
P. pullata (Clerck)	18	0
P. lugubris (Walckenaer)	7	0
Alopecosa pulverulenta (Clerck)	6	0
A. accentuata (Latreille)	18	0
Pisaura mirabilis (Clerck)	8	0
Hahnia montana (Blackwall)	0	4
H. helveola Simon	14	0
Ero cambridgei Kulczynski	2	3
E. furcata (Villers)	6	4

	Pitfalls	D-vac
Enoplognatha thoracica (Hahn)	13	0
Robertus lividus (Blackwall)	13	0
Pachygnatha degeeri Sundevall	9	0
Mangora acalypha (Walckenaer)	0	4
Ceratinella brevis (Wider)	4	0
Walckenaera nodosa O. P.-Cambridge	3	1
W. dysderoides (Wider)	9	0
W. unicornis O. P.-Cambridge	3	1
Pelecopsis parallela (Wider)	0	6
P. nemoralis (Blackwall)	1	3
Micrargus herbigradus (Blackwall)	5	0
Savignya frontata (Blackwall)	1	5
Erigone atra (Blackwall)	1	16
Oreonetides abnormis (Blackwall)	7	0
Floronia bucculenta (Clerck)	5	0
Lepthyphantes obscurus (Blackwall)	0	17
L. zimmermanni Bertkau	11	7
Linyphia clathrata Sundevall	3	2

Table 2: Total numbers taken in the pitfalls and D-vac of those species of which between 4 and 20 individuals were caught.

that peak numbers may occur in the moderately old vegetation of Hartland with subsequent declines in the older sites. Conversely *Gonatium rubens* and *Centromerus dilutus* were apparently lacking at Hartland but present at all other sites. It is possible that these odd distributions may be at least partly related to some factor other than the age of the vegetation.

Gnaphosa leporina (L. Koch) is unusual in that the largest numbers were trapped at Grip. This is probably because it occurs mainly on wet heath, and Grip contained a considerable amount of *Erica tetralix*, indicating impeded drainage, which may also have been partly responsible for the degenerate condition of the vegetation on this site. *E. tetralix* was also frequent at Coombe, but the vegetation here was too young to provide a suitable habitat for *G. leporina*. It is possible that the capture of larger numbers of *Zelotes latreillei* (also common on wet heath) at Coombe and Grip than at Hartland and Arne is related more to the impeded drainage of these sites than to the age of their vegetation.

It is perhaps surprising that for those species which were taken in both the pitfalls and D-vac the trends indicated by the results for the two methods are generally in very good agreement, and in no case are they directly opposed to each other.

Seasonal changes

The mean numbers of individuals per square metre collected in the D-vac between March 1974 and May 1975 are shown in Fig. 3. There were two low peaks in the numbers of adults, in May-June and again in October-November. This was similar to the

	Coombe		Hartland		Arne		Grip	
Drassodes cupreus (Blackwall)	20	(0)	8	(0)	3	(0)	13	(0)
Haplodrassus signifer (C. L. Koch)	7	(0)	4	(0)	1	(0)	6	(0)
Zelotes latreillei (Simon)	17	(0)	7	(0)	6	(0)	13	(0)
Gnaphosa leporina (L. Koch)	0	(0)	3	(0)	2	(0)	50	(0)
Agroeca proxima (O. P.-Cambridge)	67	(0)	197	(1)	224	(4)	235	(0)
Scotina gracilipes (Bl.)	24	(2)	7	(5)	3	(0)	13	(8)
Zora spinimana (Sund.)	3	(0)	9	(0)	25	(11)	17	(0)
Oxyptila atomaria (Panzer)	15	(0)	14	(0)	2	(0)	19	(0)
Neon reticulatus (Bl.)	0	(2)	0	(0)	3	(14)	0	(0)
Pardosa palustris (Linn.)	10	(0)	0	(0)	0	(0)	5	(0)
P. nigriceps (Thorell)	38	(0)	121	(4)	36	(3)	42	(2)
Hahnia nava (Bl.)	12	(0)	96	(1)	0	(0)	0	(0)
Theridion bimaculatum (Linn.)	0	(1)	0	(10)	4	(63)	2	(3)
Enoplognatha thoracica (Hahn)	8	(0)	5	(0)	0	(0)	0	(0)
Pholcomma gibbum (Westr.)	1	(13)	0	(4)	0	(42)	0	(9)
Ceratinella brevipes (Westr.)	0	(0)	0	(1)	18	(52)	5	(9)
Gonatium rubens (Bl.)	19	(5)	0	(0)	58	(65)	31	(25)
Peponocranium ludicrum (O. P.-C.)	2	(38)	12	(92)	10	(88)	4	(74)
Mecopisthes peusi Wunderlich	194	(57)	5	(13)	2	(1)	87	(10)
Tiso vagans (Blackwall)	57	(8)	0	(0)	0	(0)	0	(0)
Minyriolus pusillus (Wider)	0	(0)	0	(1)	4	(50)	3	(8)
Meioneta rurestris (C. L. Koch)	0	(11)	0	(9)	0	(4)	1	(9)
Centromerus dilutus (O. P.-C.)	3	(7)	0	(0)	1	(45)	4	(90)
Centromerita concinna (Thorell)	138	(14)	17	(12)	9	(0)	25	(9)
Bathyphantes gracilis (Blackwall)	4	(17)	1	(5)	2	(2)	1	(3)
Lepthyphantes obscurus (Blackwall)	0	(0)	0	(0)	0	(15)	0	(2)
L. tenuis (Blackwall)	13	(29)	2	(21)	6	(19)	1	(8)
L. zimmermanni Bertkau	0	(0)	1	(1)	8	(6)	2	(0)
L. mengei Kulcz.	8	(38)	51	(139)	16	(42)	55	(48)
L. ericaeus (Blackwall)	6	(6)	23	(23)	7	(30)	2	(7)

Table 3: Total numbers of adult individuals of 30 species collected at each site in pitfalls (first figure) and D-vac (second figure – in parentheses).

result obtained at Ashdown Forest (Merrett & Snazell, 1983), but the numbers of adults in Dorset were much smaller, the mean for the seven months sampled at Ashdown Forest being 31.6, while for the same seven months in Dorset it was 9.7 per m^2. This difference is probably largely attributable to the fact that the vegetation sampled in Dorset was on average much shorter and less diverse than at Ashdown Forest. The numbers of juveniles taken in Dorset were also smaller than at Ashdown Forest, but to a less marked extent. The pattern of change was, however, again similar, numbers reaching a peak in October followed by a small drop over the winter months and a steep decline from February to a low point in July. The seasonal changes in Dorset were similar for all four sites, but with Arne recording the highest numbers, Hartland second for most of the year, Grip third, and Coombe with the youngest vegetation being the lowest. The highest density recorded for adults and juveniles combined was 239 per m^2 at Arne in October, and the lowest 11 per m^2 at Coombe in July.

The numbers of adult individuals taken in the 6 pitfall traps at each site during the year April 1975 to April 1976 are shown in Fig. 4 (juveniles were not collected from the pitfalls). This shows an autumn peak from September to November similar to that recorded by the D-vac, but there was also a large spring peak in April/May followed by a steep decline to the low point in July/August. This larger spring peak in the pitfalls was caused mainly by large numbers of *Mecopisthes peusi, Hahnia nava, Pardosa nigriceps* and *Trochosa terricola,* few of which were collected in the D-vac. Since these species were caught in much smaller numbers in the tall vegetation at Arne, the spring peak there was much smaller than at the other sites and resembled more closely the D-vac results. Coombe, which had the highest spring peak, also had the lowest autumn peak; it would be expected that the spring-active cursorial species would be most in evidence at the site with the youngest vegetation, and that winter-active litter-

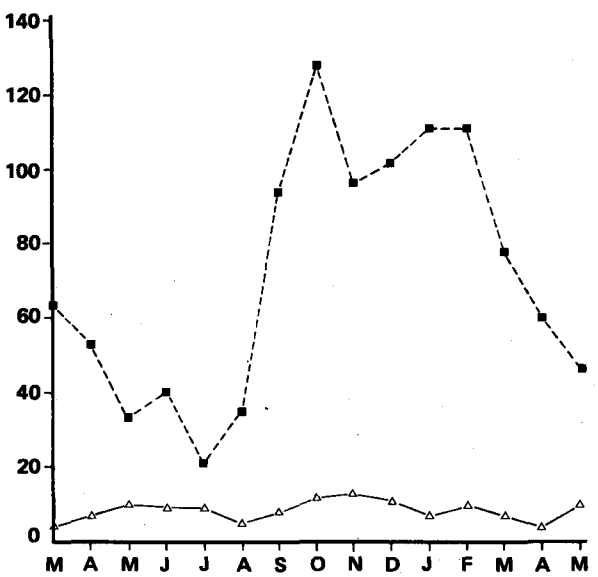

Fig. 3: Mean numbers per square metre of all spider species collected in the D-vac between March 1974 and May 1975. Solid line = adults, dashed line = juveniles.

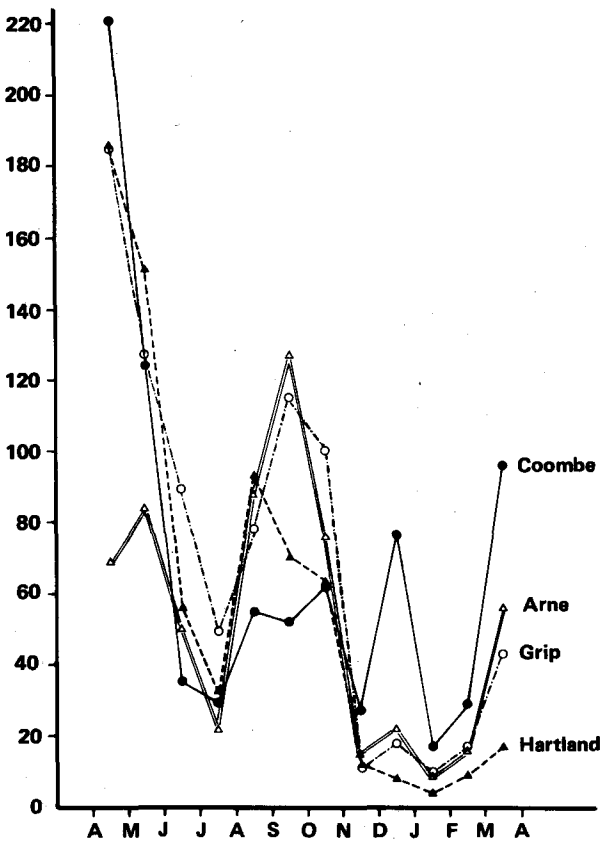

Fig. 4: Numbers of adult individuals of all spider species taken in the 6 pitfall traps at each site between 23 April 1975 and 21 April 1976.

living species would be caught less frequently there than in the older heather (as was found also in the D-vac). Apart from these relatively minor differences, the seasonal changes recorded at all four sites were extremely similar.

The seasonal changes in the numbers of species caught by the two methods (Fig. 5) were similar to the changes in numbers of adult individuals. The D-vac results showed some suggestion of three low peaks, in June, October/November and March, with low points between in April, August and January. Apart from the March peak, this closely resembles the results obtained for adult individuals (Fig. 3). The pitfall trap results showed a much higher number of species than in the D-vac in the spring, corresponding to the spring peak of adult individuals which was also recorded by the pitfalls. In the winter, however, the numbers of ground-active species in the pitfalls became lower than the numbers of species taken among the taller vegetation by the D-vac.

The phenology of individual species of spiders on Dorset heathland, as determined by pitfall trapping, has been described earlier (Merrett, 1967, 1968, 1969). The collections made in the present study provide a small amount of additional information on the phenology of some species which were taken in low numbers previously, but this will be included in a later paper on the phenology of spiders in Dorset.

Discussion

The results presented in this paper are largely complementary to those given for the comparison of pitfall trapping and D-vac sampling in Merrett & Snazell (1983), and to those given for the changes during the first ten years after heathland fires in Merrett (1976).

Fig. 5: Total numbers of species at all sites taken each month in the D-vac (solid line) and pitfalls (dashed line).

Many of the results shown for the comparison of the two collecting methods in individual species are based on very small numbers, and the differences suggested are not statistically significant, but it is interesting that in nearly all cases these results closely parallel those obtained at Ashdown Forest in the earlier study. As stressed before, the actual proportion of any species taken by each method is of no significance in itself, but when two closely related species which occur together are taken in large numbers consistently in very different proportions by the two methods, some interesting differences in ecology or behaviour are indicated. In the case of a species which was taken only in small numbers, it may not be possible to state that it is *not* taken by one method, but at least its *presence* in the collections made by one or both methods is of some interest.

It is not possible to make much useful comparison between the results given for the different aged sites here and those presented earlier for the first ten years after burning (Merrett, 1976). The vegetation on only one site, Coombe, was less than ten years old, and the burnt area was very small compared with that studied previously, and a long way from other burnt areas. This probably accounts for the absence at Coombe of several species which are normally characteristic of recently burnt heathland, e.g. *Arctosa perita* (Latr.), *Steatoda albomaculata* (Degeer) and *Phaulothrix hardyi* (Bl.). Perhaps the most surprising feature of the present study was that the differences between sites suggested by the pitfall trap and D-vac results were similar for nearly all species which were taken by both methods.

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