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RECORDER'S FOURTH REPORT ON THE ACULEATE HYMENOPTERA IN WATSONIAN YORKSHIRE AND THE DEVELOPMENT OF A QUALITY SCORING SYSTEM

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The Watsonian list of aculeate Hymenoptera (YLIST) in January 1993 contained 306 species and 11017 records (Table 1). A record is an observation on a specimen differing in one of the following three variables: name, sex and day of capture or observation. J. T. Burn has added one species of Dryinidae (*Anteon flaviscapus*) and the first species of the family Embolemidae (*Embolemus ruddii* Westwood) since my third report (*Naturalist* **115**: 105).

TABLE 1
The number of species and records of aculeate
Hymenoptera from Watsonian Yorkshire

Family	No. species	No. records
Dryinidae	22	—
Embolemidae	1	—
Bethylidae	5	—
Chrysididae	16	342
Tiphidae	2	9
Mutillidae	2	92
Sapygidae	2	26
Formicidae	17	—
Pompilidae	21	576
Eumenidae	13	557
Vespidae	7	—
Sphecidae	73	2827
Collectidae	9	270
Andrenidae	35	2467
Halictidae	27	2089
Melittidae	1	6
Megachilidae	13	370
Anthophoridae	19	1386
Apidae	22	—

Omalus aeneus (Fabricius, 1787). New species for Watsonian Yorkshire. Howell Wood (SE40, Aug. 1992, J. D. Coldwell). This was recorded by Roebuck (1907, Victoria County History) from Yarm by G. T. Rudd. However, the Yarm specimen cannot be found so the new specimen confirms its presence in Yorkshire.

Chysis pseudobretvitaris Linsenmaier, 1951. This species, which was first reported in *Naturalist* **115**: 106, should be withdrawn. Attempts to locate further specimens at Keswick Fitts have failed so the previous specimen should be considered a small male of *C. impressa* Schenck, 1856 with the unusual feature that both spurs of the tibiae of the middle leg are more-or-less the same length.

- Priocnemis susterai* Haupt, 1927. New species for Watsonian Yorkshire. Gundale (SE88, May 1990, M. E. Archer).
- Cerceris arenaria* (Linnaeus, 1758). New species for Watsonian Yorkshire. Crow Wood (SK69, Aug. 1991, J. T. Burn).
- Colletes halophilus* Verhoeff, 1943. The second record has been reported from Welwick saltmarsh (TA31, Sept. 1991, D. Sheppard).
- Nomada flava* Panzer, 1798. This species, reported first in *Naturalist* 112: 111, should be withdrawn. Studies of males of *N. panzeri* Lepeletier, 1841 show that it exists as both a small dark form and a large light-coloured form in Watsonian Yorkshire. The records of *N. flava* are based on the male which corresponds to the large light-coloured form of *N. panzeri*. It is possible that *N. flava* will be found in Yorkshire as recently I have seen two females from Derbyshire (nr. Hollin Wood, SK3175; Calke Park, SK3622).
- Nomada fulvicornis* Fabricius, 1793 (*lineola* Panzer, 1798). This species was reported first for Watsonian Yorkshire by Roebuck (1877, *Trans. Y.N.U.*: 57) from Smith MS. Butterfield and Fordham (*Naturalist* 55: 243) stated the records from Smith MS. were of species that occurred or should occur near Wakefield. As such this record cannot be accepted. The species was reported from Humanby (*Naturalist* 96: 137), Speeton (*Naturalist* 97: 30) and Faxfleet (*Naturalist* 105: 55) based on specimens determined by J. H. Flint. I have seen the Speeton and Faxfleet specimens which were misidentified and are *N. goodenian* (Kirkby, 1802) so these three records can be rejected. However, the species has recently been found at Crow Wood (SK69, April 1987, M. E. Archer) so that at last Frederick Smith has been proved correct.

With the completion of the assembly of the records of the solitary species an attempt can be made to develop a quality scoring system so that localities can be graded. The solitary wasp and bee species were ranked separately according to the number of localities in which each species was found. A locality is defined by its one kilometre grid reference so that no two localities can have the same one kilometre grid reference. A locality can extend over more than one kilometre square. The ranked species were divided, as equally as possible, into four statuses: common, frequent, occasional and rare. Where the divide between two statuses occurred within a run of the same number of localities the nearer change in the number of localities was taken as the separating boundary. Each species could then be given a status score (Table 2). In addition a species was given a higher status score if it was a nationally scarce or rare (Red Data Book) species (Table 2).

TABLE 2
Status scores of different species statuses

Species status	Status score
Common	1
Frequent	2
Occasional	4
Rare	8
Nationally scarce	16
Nationally rare	32

For a given locality all the species from that locality can be given a status score. If these scores are added up the quality for that locality is attained, e.g. Crow Wood with 101 species of solitary wasps and bees has a quality score of 405. If the quality score of the locality is divided by the number of species the species quality score for that locality is attained, e.g. Crow Wood has a species quality score of 405/101 equal to 4.0. Species quality scores are given for several Watsonian Yorkshire localities in Table 3. Table 3 also shows the number

of Watsonian Yorkshire rare species found at each locality. At present 35 species of solitary wasps and 26 species of solitary bees are considered rare in a Watsonian Yorkshire context.

The term 'local' as applied to a species can be defined as a species having relatively more records from relatively fewer localities, i.e. a higher record/locality ratio. Based upon record/locality plot (*Naturalist* 114: 6) and personal experience 31 species of solitary wasps (record/locality ratio for species above 2.44) and 25 species of solitary bees (record/locality ratio above 2.31) are considered to be local species (Table 3).

Finally, a locality can be characterized by the number of nationally scarce and rare species recorded from it (Table 3).

Table 3 shows six measures of locality quality. The rank order of the localities will vary according to the quality measure used. The advantage of the species quality score is that it allows comparison between localities without regard to species richness (number of species) or the area of the locality; for example, the species quality scores of Skipwith Common and Swincarr Plantation are more-or-less equal although the locality sampled at Swincarr Plantation was really just a small sand pit.

Ideally the quality characteristics of localities should be based upon the results of systematic recording. In practice many records are casual records from people interested in other groups of organisms or specialists looking for rarities. Such specialist recording could artificially enhance the species quality score of a locality. Only by considering localities with more-or-less complete lists can the problems associated with unsystematic sampling be avoided. However the message must be that all species, no matter how common, should be recorded on each visit to a locality.

TABLE 3

Quality characteristics of Watsonian Yorkshire localities based on solitary wasp and bee species ranked in order of importance of species quality score

	No. species	Quality score	Species quality score	No. Yorks. local spp.	No. Yorks. rare spp.	No. national scarce & spp.
Crow Wood	101	405	4.0	30	15	9
Pre-coniferised:						
Allerthorpe Common	129	484	3.8	43	6	9
Strensall Common	91	289	3.2	36	5	6
Post-coniferised:						
Allerthorpe Common	75	212	2.8	36	1	3
Pompocali	52	138	2.7	16	1	3
Skipwith Common	69	149	2.2	23	1	2
Swincarr Plantation	35	74	2.1	21	0	1
Thorne Moor	63	125	2.0	14	1	1

FIELD NOTE

SYSTEMUS PALLIDUS (DIPTERA, DOLICHOPODIDAE) IN YORKSHIRE

On 1st August 1992, a male of this species was swept from Pot Ridings Wood near Doncaster, South Yorkshire (GR SE5300). Speight and Meuffels (1989) added this species to the British Isles list on the basis of specimens bred from water-filled tree cavities ('rot-holes') in Ireland, and from an examination of English material in the Paris Museum, which revealed a male and female from Cambridgeshire and a male from Suffolk. The species was described from Chartreuse, France (Vaillant 1978) and does not appear to have been recorded elsewhere. It was formerly confused with *S. pallipes*, regarded as 'notable' by the Nature Conservancy Council (Falk 1991).

Pot Ridings Wood is a designated SSSI of mainly ancient woodland situated on magnesian limestone. A long list of 'red data book' and 'notable' species have been recorded from this wood. Water-filled tree holes are frequent but no attempt has been made to breed Diptera from these, although mosquito and hoverfly (*Eristalis* sp.) larvae have been noted in them.

Examination of *S. pallipes* in collections will probably reveal *S. pallidus* to be more widespread than the scanty records currently show.

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BOOK REVIEW

The Correspondence of Charles Darwin, Volume 8, 1860 edited by **Frederick Burkhardt, Duncan M. Porter, Janet Browne and Marsha Richmond**. Pp. xl + 766, plus 9 plates. Cambridge University Press, 1993. £40.00.

This authoritative work maintains the very high standard of the previous volumes (vide earlier reviews in *The Naturalist*). Although the approach is encyclopaedic, the letters build up a fascinating autobiographical account of this remarkable man. This volume is particularly interesting in that it contains the correspondence arising from, and reference to reviews of, the *Origin of Species*, published the previous year, including (as Appendix V) Patrick Matthew's letter to the *Gardeners' Chronicle*, in which he claimed to have formulated a principle of natural selection. The letter, reproduced in full, contains sections of his *Naval Timber and Arboriculture*, published in 1831, thereby predating Darwin's work. In a letter to the *Gardeners' Chronicle*, Darwin replied ". . . I freely acknowledge that Mr. Matthew has anticipated by many years the explanation which I have offered of the origin of species, under the name of natural selection. I think that no one will feel surprised that neither I, nor apparently any other naturalist, had heard of Mr. Matthew's views, considering how briefly they are given, and that they appeared in the appendix to a work on Naval Timber and Arboriculture. I can do no more than offer my apologies to Mr. Matthew for my entire ignorance of his publication. If another edition of my work is called for, I will insert a notice to the foregoing effect". Darwin did indeed revise the historical sketch to the third edition of *Origin* in order to name Matthew among his predecessors.

As well as containing c. 470 letters, many of them relating to Darwin's reaction to public opinion of his revolutionary theory, there are very detailed editorial notes and comments, a bibliography (more than 540 entries), a biographical register and index to correspondents, a chronology for 1860, details of new material added to the American edition of the *Origin*, a list of the reviews of the *Origin* which appeared in 1859-1860, and a report of the famous British Association in Oxford at which Huxley defended Darwin's theory in debate with Samuel Wilberforce, Bishop of Oxford.

The editors are to be congratulated once again for their dedication to this project and the publishers for their production of this definitive work.

MRDS