

Aculeate Hymenoptera of note recorded during 2021 at Penny Hill Bank & Penny Hill Quarry.

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At the beginning of 2021 I decided to concentrate most of my recording activities at Penny Hill Bank & Quarry close to my place of work; but with a particular intention to collect as many records as possible of the aculeate hymenoptera (except ants) on a relatively casual basis, therefore, no water pan-trapping or vigorous sweep-netting was employed, just simple observation/photography, with occasional use of a hand-net. To the best of my knowledge, the hymenoptera has not been investigated thoroughly during recent times at these sites.

Penny Hill Bank NR & SSSI is a species-rich limestone grassland owned and managed specifically for its important plant communities and associated invertebrates by Worcestershire Wildlife Trust, but access is limited by permission only. I am therefore very grateful to Dominique Cragg, the WWT Officer responsible for managing this and other sites, for granting permission for me to monitor the site regularly, particularly with regard to species of conservation concern. Penny Hill Quarry can be accessed *via* a public footpath.

A total of eighty-three species were recorded from both sites, and it is considered highly likely that all are present at Penny Hill Bank and the Quarry area above due to the similarity of niche habitats and plant species present. Of the eighty-three species recorded twenty are either regionally or nationally scarce in varying degrees; this is considered entirely due to the scarcity of high quality limestone grassland habitats generally; but especially in the English midlands. Comments about selected species of note found during 2021 follow in alphabetical order by family.

Andrena apicata (Andrenidae). Scarce. (01, 02).

This nationally scarce species is one of several mining bees to emerge early in the year, males can be found flying up and down telegraph poles and tree trunks searching for females during the first warm days in March. Females can be found at *Salix* flowers. Positive identification is only possible by microscopic examination. This species is not confined to limestone grasslands, it nests in light soils generally, and good populations exist on the sandy soils at Hartlebury Common and the Devil's Spittleful. *A.apicata* is parasitized by *Nomada leucophthalma*.



01. *Andrena apicata* (male) collected from Penny Hill Bank on 24.03.2021. K.McGee.



02. *Andrena apicata* (female) collected at Penny Hill Bank on 24.03.2021. K.McGee.

Andrena bucephala (Andrenidae). Notable A. (03, 04).

Another nationally scarce species adapted to nest in fine soils on steep slopes in a wide variety of habitats, the flight season coincides with flowering hawthorn and field maple. Females can form small aggregations in ideal situations, but they are not social insects. Males have noticeably large heads but can only be safely identified by microscopic examination of the mandibles to separate them from the similar *A. ferox* and *A. trimmerana*. This species is parasitized by the rare *Nomada hirtipes* (06 & 07)



03. *Andrena bucephala* (male) collected at Penny Hill Bank on 06.05.2021. K.McGee.

Andrena labiata (Andrenidae). Restricted. (04).

This is one of very few bee species that can be confidently identified by sight, the three central abdominal segments of both sexes are bright red and the species is particularly attracted to the flowers of Germander Speedwell. This distinctive bee is considered scarce, but patiently watching large swathes of flowering Germander Speedwell on sunny days in mid-May at sheltered places along woodland edges, field margins, and churchyards (for example), will often be rewarded by the appearance of males in search of a female. However, despite several false alarms I have yet to find the very rare *Nomada guttulata*, the cleptoparasite of *A. labiata*. *N.guttulata* is similar in overall appearance to *N. striata*, females of both *Nomadas* will visit flowering Germander Speedwell.



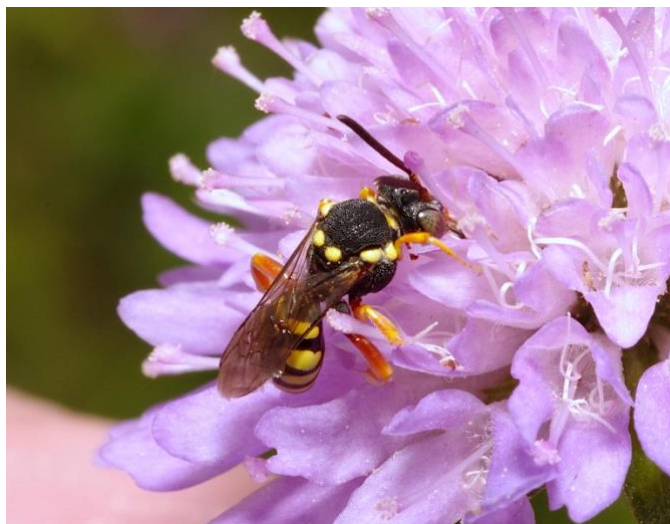
04. *Andrena labiata* (female) at Penny Hill Bank on 18.05.2021. K.McGee.

Andrena trimmerana (Andrenidae). Scarce

A summer brood female was collected from bramble flowers at Penny Hill Bank on 15.07.2021. Although considered fairly common in the south of England, this double-brooded mining bee becomes increasingly more uncommon further to the north and west. The cleptoparasite is the very common *Nomada goodeniana*.

Nomada flavopicta (Anthophoridae). Notable . (05).

Confirmation of this striking but seldom encountered cleptoparasite is always intriguing because its (probable) main host in the English midlands is *Melitta leporina*; a solitary bee fond of visiting clovers in flower-rich grasslands rarely recorded in the midlands. I have never found one, but the presence of *N. flavopicta* confirms the likely presence of *M.leporina*. It's well worth checking any slightly worn females of the summer brood of *Andrena flavipes* in flower-rich meadows during July and August because one could possibly be an overlooked *M.leporina*.



05. *Nomada flavopicta* (female) on Field Scabious at Penny Hill Bank on 29.07.2021. K.McGee.

Nomada fucata (Anthophoridae). Restricted

One female was observed at Penny Hill Quarry on 18.04.2021. Its host, the now widespread and quite common *Andrena flavipes*, is only present in small numbers at the quarry area and Penny Hill Bank.

Nomada hirtipes (Anthophoridae). Very Rare. (06, 07).

This very rare species parasitises *Andrena bucephala* (see Plate 03 above). It has a superficial resemblance to *N. striata*, but the overall build is somewhat elongated and the antennae are particularly long.



06. *Nomada hirtipes* (female) at Penny Hill Bank on 09.05.2021. K.McGee.



07. *Nomada hirtipes* (female) at Penny Hill Bank on 09.05.2021. K.McGee. 09.05.2021.

Bombus humilis (Apidae). Scarce. (08).

Two, male and female, were photographed on 15.08.2021 visiting Common Knapweeds at Penny Hill Quarry from several angles that confirmed them as *B. humilis* among the abundant specimens of *B. pascuorum* also active at the time. One was positively identified visiting Field Scabious at Penny Hill Bank on 18.08.2021.



08. *Bombus humilis* (male) on Common Knapweed at Penny Hill Quarry on 15.08.2021. K.McGee.

Eucera longicornis (Apidae). Notable A. (09)

An old male losing the bright ginger colouration on the thoracic pile was seen moving rapidly between Meadow Vetchling flowers at Penny Hill Bank on 26.06.2021. Legumes are an important source of nectar for this species, with Meadow Vetchling and Bush Vetch being the most likely species visited by the Worcestershire population.



09. *Eucera longicornis* (male) briefly on Meadow Vetchling at Penny Hill Bank 26.06.2021. K.McGee.

Hylaeus dilatatus (Colletidae). Rare

One female was collected from Wild Carrot flowers at Penny Hill Quarry on 13.08.2021. This species is closely associated with calcareous sites and there are very few Worcestershire records, it has also been recorded from Kemerton Lakes and Rough Hill Orchard. *H. dilatatus* nests in hollow stems of woody shrubs such as bramble and dog-rose.

Lasioglossum fulvicorne (Halictidae). Local. (10).

This is another uncommon bee in Worcestershire due to its close association with calcareous sites, where they can sometimes be abundant from late March until October. *L. fulvicorne* is parasitized by *Sphecodes hyalinatus* and *S. ferruginatus*, however, despite capturing several *Sphecodes* species at Penny Hill I have yet to find either.



10. *Lasioglossum fulvicorne* (female) collected from Primrose at Penny Hill Bank on 22.03.2021. © K.McGee.

Lasioglossum laevigatum (Halictidae). Restricted. (11).

Also confined to light soils and sparsely vegetated ground in calcareous districts this is another uncommon bee in Worcestershire. This is quite a robust insect being larger and more brightly marked than most other *Lasioglossum* species; it can at first glance resemble a *Halictus* species. I recorded females at Penny Hill Bank on three

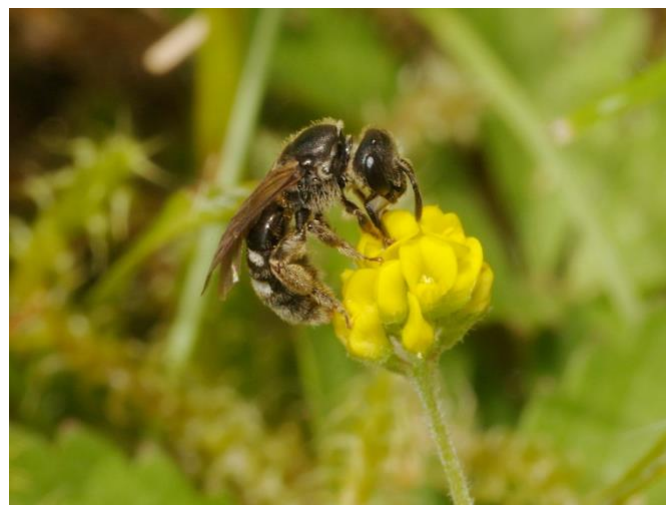
occasions between 25.05 and 07.06.2021 from flowers of Creeping Buttercup, Hogweed, and Ox-eye Daisy. The only other location I have found *L. laevigatum* is on a steep calcareous slope near the River Rea at the Shakenhurst Estate on the Worcs/Shrops border (see 11 below).



11. *Lasioglossum laevigatum* (female) on Daisy at the Shakenhurst Estate on 04.04.2020. K.McGee.

Lasioglossum lativentre (Halictidae). Widespread. (12).

This small unassuming bee is found in various habitats but is never common, and its nesting requirements remain poorly understood. It is known to be parasitized by *Sphecodes ephippius*, which is frequent at Penny Hill and throughout Worcestershire generally.



12. *Lasioglossum lativentre* (female) collected from Black Medick at Penny Hill Bank on 25.06.2021. K.McGee.

Lasioglossum pauxillum (Halictidae). Restricted. (13).

This species was until recently considered scarce but is now common in parts of southern England where it occurs in a range of open habitats including calcareous sites. As with most of the *Lasioglossum* bees identification to species level is only possible by microscopic examination. This can sometimes require careful inspection of the tiny projections on the hind tibial spur, fortunately, females of *L. pauxillum* are unique as they have broad round projections on the spur rather than the short pegs found on similar *Lasioglossum* species. *L. pauxillum* can sometimes be found nesting in large aggregations, and although not particularly large, I estimated an aggregation of approximately ten females nesting in the loose dry soils at one area of bare ground at Penny Hill Quarry on 08.05.2021. *Sphecodes crassus* is thought to be a cleptoparasite of *L. pauxillum* on the Continent (see below).



13. *Lasioglossum pauxillum* (female) collected at Penny Hill Quarry on 02.05.2021. K.McGee.

Sphecodes crassus (Halictidae). Notable B

This locally very scarce species is quite difficult to identify and is similar to the common and widespread *S. geofrellus*. I collected my first ever definite record (a female from Penny Hill Quarry) on 05.06.2021. The identification keys require careful inspection of the length of the labrum, which is much longer than that of *S. geofrellus* and obvious when seen for the first time, so too is the more swollen shape of the hind femora when compared to *S. geofrellus*. A female was collected at Penny Hill Bank on 13.06.2021, and a male and female were collected from Penny Hill Quarry on 12.07.2021 at the same location where an aggregation of *Lasioglossum pauxillum* were nesting; now thought to be one of the main hosts of *S. crassus*.

Sphecodes niger (Halictidae). Restricted. (14).

This very small species is thought to be extending its range further north but remains scarce in Worcestershire. Microscopic identification of males and females is quite straightforward (the males are entirely black and can appear similar to small *Lasioglossum* species). The main host is considered likely to be *Lasioglossum morio*, although more work is required to be certain. I collected a female from Penny Hill Quarry on 05.06.2021 and another female from the same site on 13.06.2021. There is another small population of *S. niger* nearby, along a low south-facing wall at St Peters Churchyard in Martley (see 14 below).



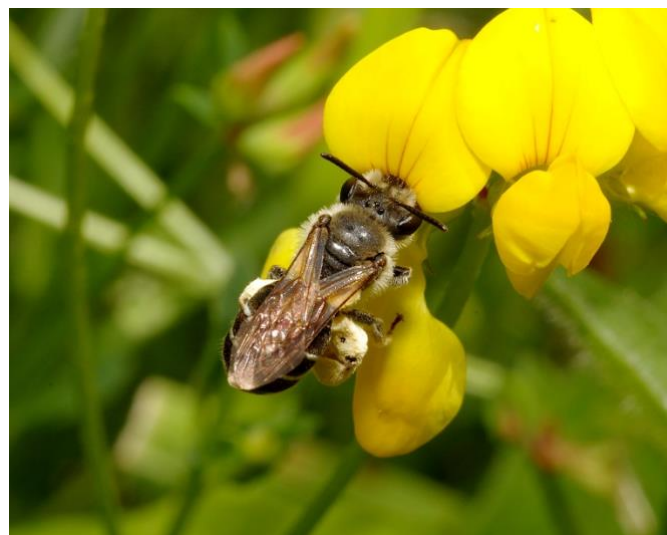
14. *Sphecodes niger* (female) at St Peters Church, Martley, on 13.07.2017. K.McGee.

Chelostoma campanularum (Megachilidae). Widespread

Up to five were observed visiting flowers of Harebell at Penny Hill Bank between 17.07 and 20.07.2021.

Hoplitis claviventris (Megachilidae). Widespread. (15, 16)

This is another species that can be quite common on suitable habitats in southern England but becomes much less frequent further towards the midlands. My only previous record from Worcestershire was of a worn male collected from the Devil's Spittleful on 09.07.2017. This species has a strong association with sparsely vegetated open sites with a plentiful supply of Bird's-foot Trefoil and it nests in predominately small hollow stems of woody shrubs such as Bramble and Dog-rose. I collected a female from Bird's-foot Trefoil flowers at Penny Hill Bank on 05.06.2021, by 13.06.2021 there were approximately ten observed visiting Birds-foot Trefoils at Penny Hill Bank, and at the quarry site above. A male appeared to be defending territory on an ant-hill at Penny Hill Bank on 13.06 (see Plate 16) and the last one was observed here on 01.07.2021. *H. claviventris* is parasitized by the very rare *Stelis ornatula*, which has been recorded in nearby Shropshire.



15. *Hoplitis claviventris* (female) visiting Bird's-foot Trefoil at Penny Hill Quarry on 13.06.2021. © K.McGee.



16. *Hoplitis claviventris* (male) on an ant-hill at Penny Hill Bank on 13.06.2021. K.McGee.

Osmia bicolor (Megachilidae). Scarce. (17, 18, 19).

This species is strongly associated with calcareous sites where it nests by building separate small partitions (using masticated leaf material) inside empty snail shells. Such habitats are uncommon in Worcestershire; consequently the bee is infrequently recorded. However, it is one of the most commonly encountered bee species at Penny Hill Bank and Quarry between mid-March (when the first males appear) and mid to late June. The peak month is April when many of the distinctive females can commonly be seen in search of nest sites, or visiting various flowers including Barren Strawberry, Sweet Violet, Creeping Buttercup, Bluebell, and Germander Speedwell. Despite their abundance at Penny Hill they are very difficult to photograph being easily spooked when approached

closely! On occasions, it is possible to observed females in flight carrying small pieces of dried plant stalks and twigs to cover and conceal a nest site (see 19).



17. *Osmia bicolor* (male) at Penny Hill Bank on 24.03.2021. K.McGee.



18. *Osmia bicolor* (female) at Penny Hill Bank on 18.04.2021. K.McGee.



19. *Osmia bicolor* (female) concealing a nest site with small twigs. At Penny Hill Bank on 04.06.2021. K.McGee.

Osmia spinulosa (Megachilidae). Widespread. (20). Along with *Osmia bicolor*, this species is also strongly associated with calcareous sites where it nests by building separate small partitions (using masticated leaf material) inside empty snail shells. *O. spinulosa* was first recorded at Penny Hill Bank and Quarry during 2020 (McGee, 2020) when a single female was collected from flowers of Common Ragwort at Penny Hill Bank on 31.07.2020. This may have been the second Worcestershire record;

the NBN Atlas distribution map shows one record from a site near Broadway in the south-east of the county. On 08.08.2020 a female was collected from flowers of Common Fleabane at Penny Hill Quarry. Flowers visited by *O. spinulosa* include Hawkbits, Hawk's-beards, Ox-eye Daisy, Common Fleabane, Ragworts, Knapweeds, and Thistles (Falk & Lewington, 2015). The preferred species at the quarry is Common Fleabane based on my observations.

O. spinulosa is only present in very low numbers at Penny Hill with never more than four being seen during a single visit. The first record during 2021 was of a female on yellow compositae at Penny Hill Bank on 25.06 and the last record was of one on Common Fleabane at the quarry on 05.09.2021.



20. *Osmia spinulosa* (female) visiting yellow compositae flowers at Penny Hill Quarry on 29.08.2021. K.McGee.

Table 1. Aculeate Hymenoptera recorded at Penny Hill Bank & Penny Hill Quarry during 2021. Species of note are highlighted.

Family	Species
Andrenidae	<i>Andrena apicata</i>
Andrenidae	<i>Andrena bicolor</i>
Andrenidae	<i>Andrena bucephala</i>
Andrenidae	<i>Andrena cineraria</i>
Andrenidae	<i>Andrena dorsata</i>
Andrenidae	<i>Andrena flavipes</i>
Andrenidae	<i>Andrena fulva</i>
Andrenidae	<i>Andrena haemorrhoa</i>
Andrenidae	<i>Andrena labiata</i>
Andrenidae	<i>Andrena minutula</i>
Andrenidae	<i>Andrena nigroaenea</i>
Andrenidae	<i>Andrena nitida</i>
Andrenidae	<i>Andrena praecox</i>
Andrenidae	<i>Andrena scotica</i>
Andrenidae	<i>Andrena subopaca</i>
Andrenidae	<i>Andrena trimmerana</i>
Andrenidae	<i>Andrena wilkella</i>
Anthophoridae	<i>Anthophora furcata</i>
Anthophoridae	<i>Anthophora plumipes</i>
Anthophoridae	<i>Melecta albifrons</i>
Anthophoridae	<i>Nomada fabriciana</i>

Anthophoridae	<i>Nomada flava</i>
Anthophoridae	<i>Nomada flavoguttata</i>
Anthophoridae	<i>Nomada flavopicta</i>
Anthophoridae	<i>Nomada fucata</i>
Anthophoridae	<i>Nomada goodeniana</i>
Anthophoridae	<i>Nomada hirtipes</i>
Anthophoridae	<i>Nomada lathburiana</i>
Anthophoridae	<i>Nomada leucophthalma</i>
Anthophoridae	<i>Nomada marshamella</i>
Anthophoridae	<i>Nomada striata</i>
Apidae	<i>Bombus humilis</i>
Apidae	<i>Bombus hortorum</i>
Apidae	<i>Bombus hypnorum</i>
Apidae	<i>Bombus lapidarius</i>
Apidae	<i>Bombus lucorum</i> agg.
Apidae	<i>Bombus pascuorum</i>
Apidae	<i>Bombus pratorum</i>
Apidae	<i>Bombus sylvestris</i>
Apidae	<i>Bombus terrestris</i>
Apidae	<i>Bombus vestalis</i>
Apidae	<i>Eucera longicornis</i>
Chrysididae	<i>Chrysis angustula</i>
Chrysididae	<i>Chrysis ignita</i>
Chrysididae	<i>Trichrysis cyanea</i>
Colletidae	<i>Colletes daviesanus</i>
Colletidae	<i>Hylaeus dilatatus</i>
Colletidae	<i>Hylaeus hyalinatus</i>
Halictidae	<i>Halictus rubicundus</i>
Halictidae	<i>Halictus tumulorum</i>
Halictidae	<i>Lasioglossum albipes</i>
Halictidae	<i>Lasioglossum calceatum</i>
Halictidae	<i>Lasioglossum fulvicorne</i>
Halictidae	<i>Lasioglossum laevigatum</i>
Halictidae	<i>Lasioglossum lativentre</i>
Halictidae	<i>Lasioglossum morio</i>
Halictidae	<i>Lasioglossum pauxillum</i>
Halictidae	<i>Sphecodes crassus</i>
Halictidae	<i>Sphecodes ephippius</i>
Halictidae	<i>Sphecodes geofrellus</i>
Halictidae	<i>Sphecodes monilicornis</i>
Halictidae	<i>Sphecodes niger</i>
Megachilidae	<i>Chelostoma campanularum</i>
Megachilidae	<i>Coelioxys elongata</i>
Megachilidae	<i>Hoplitis claviventris</i>
Megachilidae	<i>Megachile ligniseca</i>
Megachilidae	<i>Megachile versicolor</i>
Megachilidae	<i>Megachile willughbiella</i>
Megachilidae	<i>Osmia bicolor</i>

Megachilidae	<i>Osmia bicornis</i>
Megachilidae	<i>Osmia caeruleascens</i>
Megachilidae	<i>Osmia leaiana</i>
Megachilidae	<i>Osmia spinulosa</i>
Pompilidae	<i>Anoplius nigerrimus</i>
Sphecidae	<i>Argogorytes mystaceus</i>
Sphecidae	<i>Crossocerus annulipes</i>
Sphecidae	<i>Crossocerus megacephalus</i>
Sphecidae	<i>Crossocerus styrius</i>
Sphecidae	<i>Ectemnius continuus</i>
Sphecidae	<i>Pemphredon lugubris</i>
Vespidae	<i>Dolichovespula saxonica</i>
Vespidae	<i>Dolichovespula sylvestris</i>
Vespidae	<i>Vespula vulgaris</i>

Conclusions to date.

Looking at the records from the first full season it is clear that Penny Hill Bank & Quarry are important sites for significant populations (in a local context) of *Osmia bicolor*, *Osmia spinulosa*, *Hoplitis claviventris*, and *Lasioglossum pauxillum*. The two *Osmia* species are strongly associated with calcareous sites where they rely on an abundance of suitable empty snail shells in which they construct nest cells, whereas *H. claviventris* and *L. pauxillum* can be found at a wider variety of open habitats but are generally uncommon in Worcestershire. Other species of note found are *Bombus humilis*, *Eucera longicornis*, *Nomada hirtipes*, *Hylaeus dilatatus*, *Lasioglossum laevigatum*, and *Sphecodes crassus*, but more work is required to establish more precise details of population levels and nest sites. The future management of both sites should continue to maintain large areas of sparsely vegetated open ground by preventing the establishment of woody shrubs and scrub that would eventually become woodland.

It is also interesting to reflect on species either absent (or not yet found) that would normally be expected. For example, the Pompilidae (spider-hunting wasps) are represented by just a single species; the common and widespread *Anoplius nigerrimus*. This is surprising considering the ideal dry, open habitats preferred by many spider species; particularly several *Pardosa* species in the family Lycosidae which are abundant at the quarry. However, it is of no surprise to reflect on the low representation of the Sphecidae (digger wasps) due to the combined paucity of dead wood and soft soils suitable for creating nest burrows.

References

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Images

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