A SURVEY OF THE ACULEATE HYMENOPTERA OF BROOMSCOT COMMON

By Geoff Nobes

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Boomscot Common

Background

Broomscot Common, in the Parish of Garboldisham in Norfolk has been leased by the Lower Ouse Headwaters Project from the Garboldisham Parish Charities since late 2010. The common covers an area of 11.4 hectares close to the Little Ouse. It is designated as a County Wildlife Site and contains a mix of habitats ranging from wet fen at the north end of the site to very dry, sandy grassland.

Conservation

The common has a rich mosaic of habitats, but the main area is lowand dry, acid grassland and lichen heath, interspersed with with gorse and heavily grazed by rabbits with abundant burrows. After years of no management, the common needed serious restoration work, sheep grazing has been introduced. Ragwort infested the site and has been controlled by targeted herbicide. Rotational coppicing has been carried out to control the spread of gorse. The small pond at the eastern end of the site has been opened up by removal of scrub and some de-silting has been carried out. Hedgerows on the boundaries of the site will be been managed by pollarding and coppicing to promote new growth.

Survey work

The LOHP team are keen to record as much of the flora and fauna on the site so as management can be targeted at particular species. Entomologist Geoff Nobes was asked to carry out a brief survey of the aculeate hymenoptera of the site in August 2013 and the results are contained in this report.

Methods

Broomscot Common was surveyed for its aculeate hymenoptera faunae on 21st August 2013.

The methods used are outlined below:

Sixty white pan water traps where distributed throughout the site to capture flying bees and wasps. These only contained plain water with the addition of a very small amount of washing up liquid to break the surface tension so that insects trapped sank and did not escape from the pan. Water traps were left for the whole day and specimens potted up at the end of the day and taken home for identification.

The rest of the day was spent searching for and netting aculeate hymenoptera on flowers and foliage with a butterfly net.

Sweeping vegetation and trees for aculeates with a sweep net.

Visually searching for aculeates along pathways and around rabbit burrows in the open sandy areas.

Some specimens captured where identified in the field and released others were retained for later microscopic identification to determine the species.

Photographs were taken of the site with a digital camera.

A list of the species recorded is produced in the report along with their conservation status.

Species accounts of the rare and more interesting species recorded was also produced.

Photographs of the rare and local species recorded is also produced in the report.

A list of other observations made of flora and fauna during the aculeate survey is also produced.

Some recommendations for future improvement of the site for nesting bees and wasps are also made in the report.

Notes on the rare species of aculeate hymenoptera recorded in the survey

***Cerceris quinquefasciata*. RDB3**

Although widely distributed in southern England (especially in the south-east), this is a rare species. Nests are often aggregated and tend to occur in relatively hard sandy soil, such as paths; its prey are small weevils such as *Apion* and *Sitona* and each cell may contain 50 or more specimens. This species is a probable host of the Chrysid *Hedychrum niemelai* (also recorded in the survey). This species is subject to a National and local Biodiversity Action Plan and several specimens were observed on thistles amongst scrub during the survey.

***Hedychrum niemelai.* RDB3**

A ruby-tailed wasp which is a parasitoid of Sphecid wasps of the genus Cerceris, these being characteristic of open sandy habitats such as heathland and dunes where they dig nesting burrows in sunny areas of bare sand. On detecting a host's nest the female enters and lays an egg in a cell. On hatching, the chrysidid larva acts as a parasitoid consuming either the mature larva or prepupa of the host. This species is often found on the flowers of yarrow. This species can be locally common in the Brecks where its hosts are found. It is also recorded from Cornwall to Kent and north to Oxfordshire and Lincolnshire. This species was found during the survey on flowers of angelica.

***Lasioglossum pauperatum*. RDB3**

This small bee is a rare and localised species restricted to southern England, being found mainly on light soils such as heathlands and sand and gravel pits. Little is known about its life-history or its habits although it probably nests in sandy soil as other species in the genus do. This appears to be only the third Norfolk record for this species, the other two being from Caister Quarry in 2008 and 2010.

***Chrysis illigeri*. Na**

This brilliantly coloured jewel wasp parasitises the small crabronid wasp *Tachyshex pompiliformis.*It is a southern species with records only as far north as Nottingham. This species is found on light sandy soil where its host nests. Several specimens of this wasp were caught in water traps along the perimeter track of the site. This species is fairly frequent the Norfolk in suitable habitat such as heathland and the Brecks.

***Lasioglossum malachurum*. Nb**

This formerly scarce, medium-sized bee is widespread and locally common in south-eastern England. It is now found in a wide variety of open habitats. This species has a long flight period from April to October. It nests in aggregations in exposed soil at the base of cliffs and banks where the vegetation is sparse. It is parasitized by the cuckoo-bee *Sphecodes monilicornis.*

Broomscot Common. 21st August 2013. Aculeate hymenoptera recorded by Geoff Nobes		
Wasps		
Cerceris arenaria		A hunting wasp
Cerceris quinquefasciata	RDB3	A hunting wasp
Chrysis illigeri	Na	A jewel wasp
Crossocerus megacephalus		A hunting wasp
Ectemnius rubicola		A hunting wasp
Episyron rufipes		A spider-hunting wasp
Hedychridium ardens		A jewel wasp
Hedychrum niemelai	RDB3	A jewel wasp
Oxybelus uniglumis		A hunting wasp
Trichrysis cyanea		A jewel wasp
Vespula vulgaris		Common wasp
Bees		
Andrena dorsata		A mining bee
Bombus lapidarius		Red-tailed bumblebee
Bombus pascuorum		Common carder bumblebee
Bombus terrestis		Buff-tailed bumblebee
Bombus vestalis		Vestal cuckoo bumblebee
Bomus lucorum		White-tailed bumblebee
Chelostoma campanularum		A mining bee
Colletes daviesanus		A mining bee
Colletes succinctus		A mining bee
Hylaeus communis		A white-faced mining bee
Lasioglossum calceatum		A mining bee
Lasioglossum lativentre		A mining bee
Lasioglossum malachurum	Nb	A mining bee
Lasioglossum pauperatum	RDB3	A mining bee
Megachile ligniseca		A leaf-cutter bee
Osmia leaiana		A mining bee
27species		

Other invertebrates noted during the survey	
Terrestrial bugs	
Rhopalidae	
Corizus hyoscyami	A Rhopalid bug
Saldidae	
Chartoscira cincta	A shorebug (In small pond)
Terrestrial beetles	
Chrysomelidae	
Prasocuris junci	A Chrysomelid beetle
Coccinellinae	
Harmonia axyridis	Harlequin ladybird
Diptera	
Conopidae	
Sicus ferruginatus	A Conopid fly
Asilidae	
Machimus atricapillus	Kite-tailed robberfly
Lepidoptera	
Noctuidae	
Cerapteryx graminus	Antler moth
Polygonia c-album	Comma
Aglais urticae	Small tortoiseshell
Vanessa cardui	Painted lady
Inachis io	Peacock
Maniola jurtina	Meadow brown
Pieris brassicae	Large white
Pieris rapae	Small white
Lycaena phlaeas	Small copper
Polyommatus icarus	Common blue
Gonepteryx rhamni	Brimstone
Water beetles	**In small pond in corner**
Hydroporus planus	A diving beetle
Laccobius minutus	A diving beetle
Agabus bipustulatus	A diving beetle
Helophorus minutus	A crawling water beetle
Helochares punctatus	A crawling water beetle
Anacaena globulus	A crawling water beetle
Anacaenaa limbata	A crawling water beetle
Ochthebius minutus	A crawling water beetle

Conclusions

This has been a brief, one day survey of the aculeate hymenoptera of Broomscot Common on 21st August 2013 Twenty-seven species of bees and wasps were recorded. The conclusions are that it already has some rare bees and wasps on site with three Red Data Book and two Notable species recorded.
To adequately survey a site for its aculeate hymenoptera one needs to make at least six visits throughout the season. Many species of solitary bees nest in spring and are other by early summer.
It is suggested that three visits be made next year in mid spring, early summer and mid/late summer to get a better idea of the number of species on site.
The sandy areas around the rabbit holes were extensively sampled with the aid of about 40 white pan water traps. Unfortunately this form of collecting was spectacularly unsuccessful in catching any insects. Only one *Lasioglossum* bee was caught here. A few specimens of the spider hunting wasp *Epysyon rufipes* were seen but little else. Very noticeable here was the almost total lack of flowering plants as nectar and pollen sources for bees and wasps. The flat, open wind-swept nature of the terrain offered little shelter for insects.
The water traps were a lot more successful in the open areas in the shelter of the gorse scrub and also along the perimeter paths in the shelter of trees and shrubs. Here there were a few thistles flowering and many aculeates were captured on these plants including the rare hunting wasp. *Cerceris quinquefasciata*. Many of the smaller auleates such as *Lassioglossum* bees and jewel wasps were trapped by the water traps here. A large sand wasp was seen along the perimeter sandy track but I failed to net it. It looked like the rare *Podalonia affinis* but equally it could have been the common *Ammophila sabulosa*. Brambles were a good source of nectar here amongst the gorse and the perimeter trees, especially the oaks were favoured by hunting wasp searching for prey. The wetter areas with scrub and tall vegetation and a few flowering plants were good areas for aculeates. The area around the small, drying-up pond produced two species of leaf-cutter bees. The few angelica flowers on site were a haven for insects including the rare jewel wasp *Hedychrum niemelai*

Discussion

Broomscot Common has the potential to become an excellent site for bees and wasps. I would like to make a few suggestions on the management of the site so as to improve its attractiveness for this group of insects. The open sandy area could be improved for flying insects, especially bees and wasps if some shallow pits were dug into the sand and some steep, south facing cliff faces made in the southern side. This would provide shelter from winds and would create a much warmer mini-habitat for these insects. The mining bees would tunnel into the sandy sides to create their nests.
These pits would best be sited where there is some clay soil intermixed with the sand so as to make a firmer surface for tunnelling of nest chambers. There are some areas already in the middle of the common where there are nettles. There is a long path along the western boundary between trees and scrub. This area would make an ideal nesting site for solitary bees and wasps if the surface of the sandy soil could be scraped to create some bare, compacted soil. The spoil created could then be used to create a small bank along either side of the path, also creating good nesting sites.The rare solitary wasp present on the site *Cerceris quinquefasciata* favours sandy,fairly hard, compacted paths for nesting.All of the work suggested could be carried out with the use of a small JCB

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Photographs of sites surveyed

Open sandy area with rabbit burrows

Disturbed soil, scrub in background

Gorse scrub at edge of sandy area

Open, wind-swept heath, with few low plants

Plate 1

Photographs of the rare species recorded

Hedychrum niemelai, female. RDB3

Cerceris quinquefasciata, male. RDB3

Lasioglossum pauperatum, male. RDB3

Chrysis illigeri. Na

Lasioglossum malachurum, female. Nb

Hedychridium ardens

Plate 2