A survey of *Andrena nigrospina* at Upper Blackstone Farm, Worcestershire in 2008

Worcestershire Biological Records Centre

2008

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Cover photograph:
Andrena nigrospina on wild radish (*Raphanus raphanistrum*)

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1. Background

1.1 Survey Aims

A group of recorders with an interest in the hymenoptera was brought together to survey the *A. nigrospina* population at Upper Blackstone Farm with the objectives of establishing:

- The size of the population
- The flight period
- Nectaring and pollen collection preferences
- Nest sites
- The geographical distribution

1.2 Previous Work

Three fields, part of Upper Blackstone Farm, adjacent to the Worcestershire Wildlife Trust's Devil's Spittleful heathland reserve were purchased by the Trust in 2006 with the intention of re-creating heathland as an extension to the reserve. The fields are also adjacent to the West Midlands Safari Park. Both the reserve and the safari park are separated from the Upper Blackstone fields by the Severn Valley railway. The three fields had been farmed as arable though sugar beet had been grown in previous years. Their central OS grid references are field 1 SO798745, field 2 SO801746 and field 3 SO802745. Records from land not owned by Worcestershire Wildlife Trust were, set aside field with bramble approximately SO801743 and the wheat field approximately SO798744.

The fields had wide margins containing a variety of wild flowers though the dominant species were poppy (*Papaver rhoeas*) and wild radish (*Raphanus raphinistrum*). Under Worcestershire Wildlife Trust management the arable has been retained whilst feasibility studies for heathland re-creation are carried out but the field margins have been widened and a large area registered as set a side. These areas have been cultivated each spring but not re-seeded. One of the margins and an area of set a side are shown in Figures 3 and 4.

Initial biological surveys were undertaken in 2007 which showed the fields to be important for arable weeds and for invertebrates. Three invertebrate recorders took specimens of a black bee with dark wings which was at first unidentified but which was found by G.H.Trevis almost certainly to be *Andrena nigrospina*. These findings had implications for the management plan which, if directed solely at heath restoration, would have wiped out both the arable weeds and, probably, the most important invertebrate populations.

2. Results

2.1 Population size

Techniques were not available for accurate assessment of the population but bees were encountered throughout June and July with peaks on 15th June and 1st July. Numbers appeared to be related to weather conditions though at no time was *A. nigrospina* abundant suggesting that the population is not large (see table 1).

Table 1 Record of visits and outcomes

Date	**Number of bees recorded**	**Site**	**Notes**
6th June	"several"	Field 1	Males and females in evidence. All disappeared when sun went in.
13th June	Nil	Fields 1 & 2	Overcast conditions. Temperature 15°C.
14th June	Nil		Dry. Overcast. Windy. 14°C. About 4 pm.
15th June	10 – 15	Field 2	Sunny. Warm.
20th June	4	Field 1 Wheat field	2 on radish, 1 on hogweed, 1 on bramble. All appeared to be nectaring and not pollen collecting. No further data
24th June	1	Field 2	
1st July	5 11	Field 1 Field 2	1 specimen with pollen taken from spider's web. *Nomada fulvicornis bimaculata* taken at nest entrance.
13th July	2	Field with bramble	Photographed
15th July	1 "several"	Field 3 Field 2	 Margin adjacent to disused railway.
29th July	Nil	All fields	Hot, sunny. Calm.

2.2 Flight period

In 2007 the first record was on 29th May and the last in the first week of August whereas in 2008 there were records over a shorter period from 6th June until 15th July with no bees being seen on 29th July when the weather seemed ideal for the species. As several individuals were seen on 6th June the flight period probably started a little earlier but weather conditions had prevented visits to the site prior to this. It would seem, therefore, that the late spring in 2008 did not significantly affect emergence time though the length of the flight period may have been curtailed by bad weather in July.

In summary, the flight period would seem to be from late May to early August.

2.3 Preferred plants for nectar and pollen

The field margins contain a very high proportion of wild radish and observations of the bees were made almost exclusively on this plant. Individuals were occasionally seen on poppies but these seemed to be resting and not collecting nectar or pollen. There was a single record from hogweed, although it was not certain whether this individual was collecting nectar or pollen and a couple of records from bramble on which nectaring seemed to be taking place (see Figure 2). Pollen was collected from several bees for analysis at a specialist laboratory to confirm plant preferences.

2.4 Nest sites

Attempts were made to track bees back to their nests but these proved unsuccessful. As direct observation had failed an attempt was made to watch several bees over a period of time to see in which direction they flew with pollen loads. There seemed to be no clear pattern to indicate a colony in a particular place. By chance one bee was seen entering a hole close to a field edge. This hole was in the cultivated area, not in the uncultivated field margin (see Figures 5 and 6). One interesting hypothesis is that the bees fly over the Severn Valley railway to the safari park where there are extensive areas of thin grassland or bare ground on a sandy substrate. For obvious reasons this idea could not be followed up. Another point of interest is that *A. nigrospina* has never been recorded from the Devil's Spittleful reserve or other adjacent heaths.

2.5 Parasites

A specimen of *Nomada fulvicornis bimaculata* had been taken in the area of the nest in 2007 and during the 2008 season one was seen entering the nest. It was collected for identification to validate the record.

2.6 Geographical distribution

A. nigrospina has been found only in the three fields belonging to the Worcestershire Wildlife Trust and a couple of fields across a lane and footpath next to the Trust fields. In all cases there wild radish, bramble and a rich mix of other wild flowers were present. The bee seems totally dependent on these field margins and is therefore vulnerable to changes in farming practice and to heath re-creation, either of which could have an adverse effect.

The map in Figure 7 shows the fields, the locations of the bees observed and the location of the nest. The clusters on either side of a disused railway line are in the most sheltered parts of the site, again indicating the need of this bee for warm situations sheltered from the prevailing winds.

3. Acknowledgements

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Appendix 1: Figures 1 - 6

Figure 4: Field Margin (*Raphanus raphanistrum*)

Figure1: *A. nigrospina* on wild radish

Figure 2: *A. nigrospina* on Bramble (*Rubus fruticosus* agg.)

Figure 5: Entrance to nest

Figure 3: Field margin

Figure 6: Recorders indicating nest

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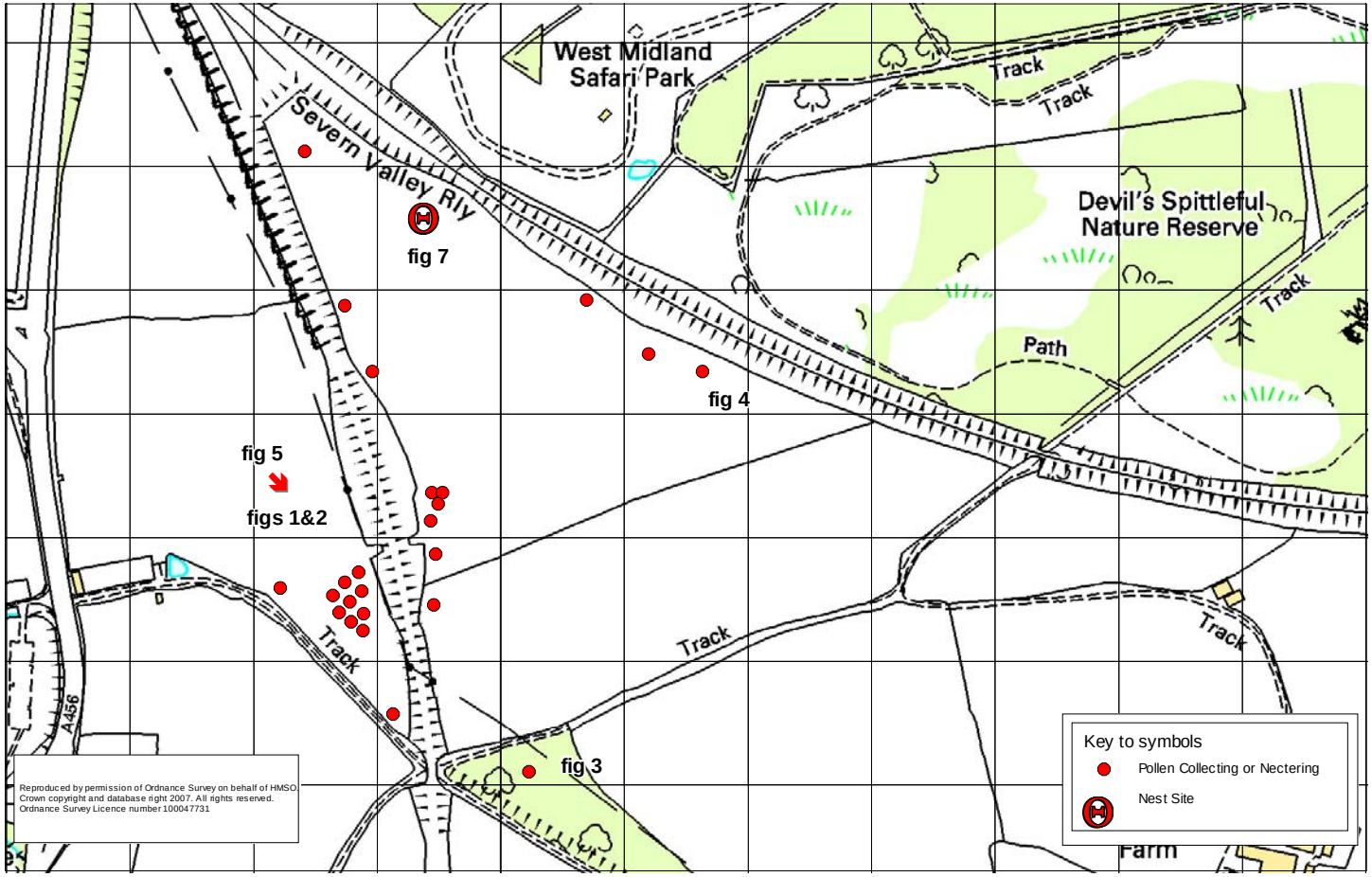

Figure 7: Map showing locations of bee records and nest site