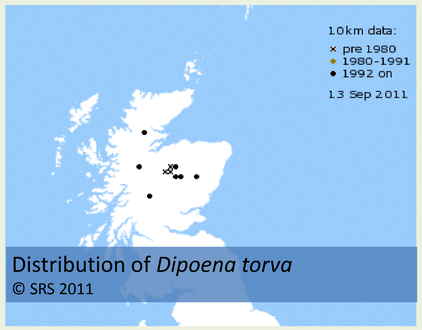
Some Observations on The Wood Ant Spider (*Dipoena torva*)
by Mike Davidson

Dipoena torva Male - © Mike Davidson 1991



Distribution of *Dipoena torva*
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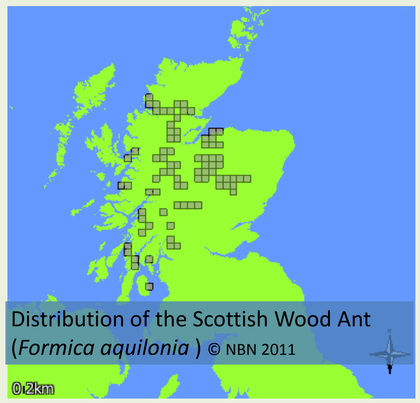


Distribution of the Scottish Wood Ant (*Formica aquilonia*) © NBN 2011

Introduction:

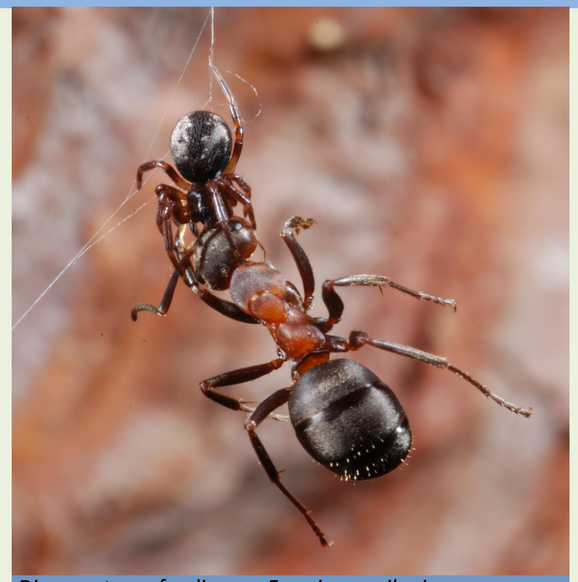
This poster summarises observations, made over 20 years, on the Wood Ant Spider (*Dipoena torva* (Thorell, 1875)). *D. torva* is a member of a largely tropical family (Theridiidae) and species in the genus *Dipoena* are specialist ant predators. Within the UK, *D. torva* is restricted to the Caledonian pinewood areas of Scotland but it is also known from Germany, Switzerland, Austria, Poland, Russia, Finland and the Balkans.
In Scotland, *D. torva* is normally found on the trunks of Scots pine trees where there are wood ant trails. Its presence is usually indicated by a wood ant corpse hanging on a silk thread. It is a relatively small spider (adults 2.5-4.0mm) compared to its prey (*Formica aquilonia* workers 4.0-8.5 mm). They look superficially like money spiders (Linyphiidae) and the male has a conically enlarged cephalothorax with a dent in the top – like a felt hat.

Life History

D. torva overwinters as a juvenile spider, either under the tree bark (where the adults will live) or in the litter at the base of the tree. They become adult in May/June and courtship by the male has been observed to take place when the female was occupied with feeding on an ant . Simon (1997) describes mating in the laboratory without prey. The eggs are laid under bark and will hatch during the following weeks – feeding and growing over the summer and autumn.

How does it catch its prey?

The spider is small with actively preying juveniles being not much bigger than a wood ant's head. It also has very small fangs and would appear to be poorly equipped to tackle such a large and well armoured prey as a wood ant. It is not known what the earliest instars feed on but certainly half-grown spiders are able to tackle a wood ant worker.
The spider spins a random network of silk threads across the crevices in the pine bark. The questing ants get their antennae tangled in the silk threads (corroborated by Simon). This allows the spider to nip along the silk and down the antenna to its base, where it is able to puncture the small area of soft membrane and deliver its highly toxic venom.
The spider may use additional silk to restrain the ant. Once the ant is subdued *Dipoena*, using its silk rope engineering skills, will manoeuvre the ant away from the surface (occasionally moving it to another part of the trunk), usually leaving it hanging by its antenna(e). This reduces the risk of it being scavenged by other ants. The spider is then able to feed – again through the base of the antennae, digesting the tissues in the ant's head. It does not appear to feed on any other part if its body.
The limited information available suggests it exclusively preys on *Formica aquilonia* – The Scottish Wood Ant. However this may be biased by search techniques. Simon associates it with *F. polyctena* in Germany, but does not say if this was its prey species.
The spider does not get it all its own way and occasionally they do end up as prey to the ant. A slightly crushed male was seen being carried off in Glen Tanar in 2011.



Dipoena torva feeding on *Formica aquilonia*
© Mike Davidson 2011

Conservation

Dipoena torva is a relatively rare species (formerly a BAP priority, as was *F. aquilonia*). Until the 1990s its known distribution was largely limited to the Blackwood of Rannoch and the Speyside pinewoods. It has since been found to be widespread in the Deeside woods from Mar to Glen Tanar and its northern limit has reached Amat in Ross-shire. All of the known sites have some level of statutory protection , for what that is worth.
The main threats to this species were summarised in Bratton (1991), the loss of Caledonian pinewood to commercial afforestation being the main one. This should also include wild fires as a risk factor.
The other major threat is loss of suitable habitat through excessive regeneration – as has happened in some areas on Deeside where deer were totally excluded by fencing.

Key priorities

•To fully establish its current range across suitable pinewoods which support populations of *F. aquilonia*.

•Establish whether *D. torva* uses other species of tree and to what extent it will use plantations and the "new" native pinewood areas.

•Working with the wood ant specialists, to establish the ecological conditions which will support this predator/prey partnership.

Ecological Requirements

In Scotland there is clearly an intimate relationship between the spider, the Scottish wood ant and the Scots pine – with the spider dependent on the tree as habitat and the ant as food. There may be other prey items used (particularly by the juveniles). In Germany, Simon records *D. torva* on *Pinus sylvestris* and *Quercus robur*.
They generally prefer relatively open pine wood with at least some sun reaching the tree – although the spiders are found on all aspects. Also they seem to prefer larger trees with fissured bark, a point emphasised by Aakra & Hauge (2000) – providing a more complex topography for their ambush technique. Simon's observations in Germany indicated that they were most abundant at 10m, extending up to the canopy but with few lower than 5m. My observations are largely based on areas of the trunk below 2m.

Photo sequence showing female *D. torva* feeding in *F. aquilonia*, male advancing from right and attempting to mate (photo) © Mike Davidson 1991

References:

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