

An occurrence of *Lasius sabularum* (Bondroit, 1918) and *Lasius umbratus* (Nylander, 1846) within the same nest in Lincolnshire, England.

Alan L. Phillips 64 Elsenham Road, Grimsby, N.E. Lincs., DN31 2QR

Phil J. Attewell 69 Thornbury Gardens, Boreham Wood, Herts., WD6 1RD

Introduction

The ants *Lasius sabularum* and *L. umbratus* are members of the subgenus *Chthonolasius* which are temporary social parasites of other species of *Lasius*. The workers are yellowish in colour whereas the queens are brownish and the males black. The dealate females enter host nests and found their colonies by somehow taking control of the host workers and usurping the resident queen. Although some aspects of nest foundation of these species are known there are large gaps in our knowledge of the mechanisms at work, especially in the much rarer *L. sabularum*. There are currently only 18 records of *L. sabularum* from 14 separate sites in the BWARS records database (Fox, pers. comm.).

Records

On the 15 May 2010, the 1st author made a visit to Chambers Farm Wood, 4 km SE of Wragby, Lincolnshire (TF147744; 53.2542°N, -0.2822°W; 31 m a.s.l.). This is a woodland which forms part of the wider Lincolnshire (or Bardney) Limewoods Region, and an area of woodland managed primarily by the Forestry Commission.

The site was located in an area of relatively recently (2007-2008) felled woodland which was cleared in order to extend the adjacent "Little Scrubb Meadow", which is an old flower-rich unimproved neutral grassland with a SSSI designation. Although re-sown with seeds from the neighbouring meadow and other local sources, the cleared area was still in a relatively early successional stage and contained many areas of bare ground, much of which was dry and cracked due to the recent dry weather (the underlying substrate being clay). The remaining woodland edge contained many dead stumps and branches that were left-over from the tree felling stage.

Along this woodland edge, approximately 10 yellow-coloured worker ants were collected from a nest under the loose bark of a rotten tree stump (possibly Larch *Larix decidua*) and the bark then replaced to minimise further disturbance to the nest. The specimens were later provisionally identified as *Lasius umbratus*, but as two of the ants lacked standing hairs on the antennal scapes, the specimens were sent to the second author for further opinion. The initial identification of *Lasius umbratus* was confirmed but it was suggested the two specimens which lacked standing hairs on the scapes showed further features which pointed to these being *Lasius sabularum*. However, the presence of the two species together in the same nest seemed odd, until by an extreme coincidence, a new paper by Polish myrmecologist Marek Borowiec was seen, reporting a similar find in Poland (Borowiec, 2010). Marek Borowiec was contacted, and expressed great interest in the Lincolnshire find, which, together with his own discovery, constitutes one of only two documented instances anywhere of the two species being found together in the same nest. He advised contacting Bernhard Seifert, who had examined his Polish specimens, and who was also currently reviewing the morphology of *L. umbratus*. After the specimens had been photographed by the second author, it was decided to seek further confirmation, and they were duly sent to Bernhard Seifert who kindly confirmed the identifications of both species, and suggested possible explanations for their co-existence. He also supplied interesting data from his ongoing review of *L. umbratus*, and requested further samples from the Lincolnshire site, if possible (Seifert, pers. comm.). Morphological data from the samples has been incorporated into his *L. umbratus* database.

Images showing pilosity characters of scape, hind-tibia, and dorsal mid-body of *Lasius sabularum* and *L. umbratus*, are shown as Plates 3 to 8, constructed from image stacks shot through a trinocular microscope port, using a Canon Powershot digital camera, with Helicon Focus, Combine ZP and MS Digital Image Pro software used to focus and process the images. The clearest diagnostic characters are differences in pilosity of scape and hind tibiae. *L. umbratus* has numerous erect hairs on the scapes and along the whole extensor surfaces of the hind tibiae (Plates 3 and 4), whilst the scapes of *L. sabularum* bear mostly appressed pubescence (similar to *L. mixtus*) and the hind tibiae have only a very few erect hairs over a restricted portion of the extensor surfaces (Plates 6 and 7). Another possible confirmatory character can be seen in the pilosity

of the occiput and dorsal midbody, seen in profile, which is even in length and distribution in *L. umbratus* (Plate 5), but clumped and uneven in length in *L. sabularum* (Plate 8), somewhat analogous to the condition in *L. niger* and *L. platythorax*, respectively.

Other species recorded in the immediate vicinity included *Formica fusca*, *F. lemni*, *Lasius flavus* (from the SSSI meadow), *L. niger*, *Myrmica rubra*, *M. ruginodis* and *M. scabrinodis* (most of these collected from nests in tree stumps or under deadwood, and from along the same woodland margin)

The site was revisited 10 months later on the 14 March 2011 and although quite cool, the nest was found to be active and a larger sample of 44 workers was collected (details below). Again, care was taken to cause minimum disturbance/damage to the nest (as in the first visit, most specimens just fell from the nest galleries after the loose bark was removed).

Summary

The first sample from May 2010 contained 8 *Lasius umbratus* and 2 *L. sabularum* at a ratio of 4:1. For a more representative result the March 2011 sample was larger with 29 *L. umbratus* and 15 *L. sabularum* collected, resulting in a (rounded) ratio of 2:1. This early sample, taken before adults from 2011 brood had been reared, can be regarded as being representative of the 2010 worker population, allowing for some winter deaths. If the nest stayed viable it may have been possible to take a similar sized sample later in 2011 (or even 2012) in order to evaluate if one of the species will eventually become the dominant one and on what timescale. Unfortunately, when the nest was checked in late June 2011 some disturbance had taken place (whether by human or animal unknown), with most of the bark pulled away from the tree stump, and with the *Lasius* nest having been replaced with an early-stage nest of *Myrmica rubra*.

Lack of knowledge of both *L. sabularum* and *L. umbratus* makes speculation difficult but possible scenarios suggested (Seifert, Borowiec, pers. comms.) include: both species coincidentally invading a host nest at the same time (allopleometrosis), or one of the species being in the act of usurping the other after the host nest was originally invaded by one of them (hyperparasitism). Due to identification issues there is a possibility *L. sabularum* is more common than thought and many nests attributed solely to *L. umbratus* may be masking the presence of *L. sabularum*. With this in mind it would be worthwhile for others to recheck their *L. umbratus* specimens and double-checking future samples with literature such as Seifert (2007). That said, at present the lack of instances of this 'nest-sharing' may indicate that these particular occurrences could also be considered interesting anomalies.

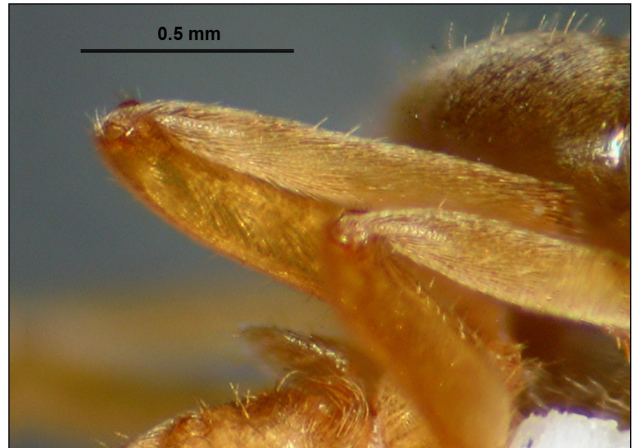
Representative specimens of both *Lasius sabularum* and *L. umbratus* from the Lincolnshire find are retained in the collections of A.L. Phillips, P.J. Attewell, B. Seifert and M. Fox. The addition of *L. sabularum* to the current Lincolnshire ant species list (Phillips, 2010) brings the total to 20 species found in both Lincolnshire vice-counties as a whole (South Lincolnshire VC53 & North Lincolnshire VC54).

Acknowledgements

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References

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Plates 3-5 (left). *Lasius umbratus*

Plates 6-8 (right). *Lasius sabularum*

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