

**THE FIRST RECORD OF THE MYRMECOPHILOUS ROVE BEETLE  
*CLAVIGER LONGICORNIS* (COLEOPTERA, STAPHYLINIDAE)  
IN THE NEST OF THE FALSE HONEYPOT ANT *PRENOLEPIS NITENS*  
(HYMENOPTERA, FORMICIDAE)**

**Adrián Purkart & Milada Holecová**

Department of Zoology, Faculty of Natural Sciences, Comenius University, Ilkovičova 6, SK-842 15 Bratislava 4, Slovakia  
[mrvace.info@gmail.com]

**KEY WORDS**

*Claviger longicornis*,  
Coleoptera  
Staphylinidae  
Hymenoptera  
Formicidae  
myrmecophily  
new record  
*Prenolepis nitens*

**ABSTRACT**

This paper presents an observation of the myrmecophilous rove beetle *Claviger longicornis* (Müller, 1818) in the nest of the uncommon ant *Prenolepis nitens* (Mayr, 1853). It also represents the first record of an association between rove beetles (Coleoptera, Staphylinidae) and *Prenolepis nitens*. Some ecological data concerning the host ant species are discussed as well.

**INTRODUCTION**

Myrmecophiles are organisms whose survival rely on some aspect of the social structure of ant colonies, without leaving any clear benefit in return (PARKER 2016). Rove beetles of the genus *Claviger* Preysslser, 1790 are unique myrmecophiles that depend on their host ant for the duration of their entire life cycle. They live within the ant nests where they feed on food solicited from workers (BOROWIEC et al. 2010). There are two known species of the genus *Claviger* from Central Europe – *Claviger longicornis* Müller, 1818 and *Claviger testaceus testaceus* Preysslser, 1790 (SCHÜLKE & SMETANA 2015, JÁSZAY & HLAVÁČ 2016, ZAHRADNÍK 2017). The main hosts of the *Claviger longicornis* are among the ant genus *Lasius* Fabricius, 1804, predominantly *Lasius umbratus* (Nylander, 1846) and *Lasius mixtus* (Nylander, 1846), and, in rare cases, *Lasius alienus* (Foerster, 1850), *Lasius brunneus* (Latreille, 1798), *Lasius niger* (Linnaeus, 1758) and *Myrmica rubra* (Linnaeus, 1758) (BOROWIEC et al. 2010, JEANNEL 1950).

In Europe, the genus *Prenolepis* Mayr, 1861 is represented by a single species, *Prenolepis nitens* (Mayr, 1853). It can be found in several regions extending from the west of Italy across Central Europe and the Balkan Peninsula to the Caucasus and Asia Minor in the east (WHEELER 1930, BREGANT 1998, VESNIĆ & LELO 2010). *P. nitens* is predominantly found in warm deciduous forests, forest edges, dry grasslands (BREGANT 1998), but also in pine forests (HOLECOVÁ et al. 2016). Several studies have reported this species from anthropogenic habitats such as vineyards and urban areas (BREGANT 1998, KLESNIAKOVÁ et al. 2016). It constructs populous underground nests, with a specialized caste of workers, so-called “repletes”. Repletes are used as living vessels that store fat and liquid food (RÖSZLER 1937, TSCHINKEL 1987). Knowledge of their myrmecophilous associations and way of life so far has been very poor. Until recently, there has been only one record of the occurrence of nymphs of the cixiid planthopper, *Reptalus panzeri* (Löw, 1883) in two nests in mid-western Hungary (LŐRINCZI 2012).



Purkart A, Holecová, M, 2017. The first record of the myrmecophilous rove beetle *Claviger longicornis* (Coleoptera, Staphylinidae) in the nest of the false honeypot ant *Prenolepis nitens* (Hymenoptera, Formicidae). *Folia faunistica Slovaca* 22: 85–87.

[in English]

Received 5 August 2017

~

Accepted 18 September 2017

~

Published 18 December 2017



## MATERIAL AND METHODS

### Study area

Mníchov vrch (48°14'1" N, 17°11'17" E, 220 m a.s.l.) is situated on the SE side of the Malé Karpaty Mts, where rocky slopes are covered with oak-hornbeam forest (Fig. 1). Stone mounds and terraced landscaping suggest the remains of vineyards, which are currently situated in lower altitudes of the same hill.

### Methods

The observation was captured on video in situ by a high-resolution camera (Canon SX30 IS) with an attached macro adapter (Raynox DCR-250). Afterwards, the specimen of rove beetle and two specimens of ants were hand-collected in 70 % ethanol for further identification.

Determination of the specimens was done using the keys of SEIFERT (2007) and FREUDE et al. (1974). All specimens were examined using stereomicroscope Stemi 2000 (Carl Zeiss). Voucher specimens presented in the study are deposited at the Department of Zoology, Comenius University in Bratislava.

## RESULTS AND DISCUSSION

The observation took place on 17. 3. 2012, around 12 am by uncovering a stone (approximately 40×30×10 cm) located close to the foot of an oak

tree, where part of the nest of *P. nitens* was situated. This nest placement is typical for this ant species in this locality. Several nest chambers with winged alates were recognized, which is not surprising since the nuptial flight season of this species takes place very early in spring (BREGANT 1998, SEIFERT 2007). No replete workers were spotted. In the same area, other syntopic ant species were recorded as well, namely *Aphaenogaster subterranea* (Latreille, 1798), *Camponotus fallax* (Nylander, 1856), *Camponotus ligniperdus* (Latreille, 1802), *Colobopsis truncata* (Spinola, 1808), *Formica fusca* Linnaeus, 1758, *Formica gagates* Latreille, 1798, *Lasius brunneus* (Latreille, 1798), *Lasius emarginatus* (Olivier, 1792), *Myrmecina graminicola* (Latreille, 1802), *Ponera coarctata* (Latreille, 1802), *Stenamma debile* (Foerster, 1850) and *Temnothorax crassispinus* (Karavajev, 1926).

Although RÖSZLER (1937) suggested social parasitism of *P. nitens* in the colonies of *Lasius emarginatus*, even after more than eight years of searching, no mixed colonies of *P. nitens* with other ant species were found in this area. Only a single specimen of this myrmecophilous rove beetle moved under the uncovered stone, where the highly disturbed workers of *P. nitens* did not show any aggression towards it (Fig. 2). According to our observations and the video material, we can assume that workers were attracted by its chemical secretions, yet none of them tried to grab and carry the beetle to



**Figure 1.** The Mníchov vrch – the habitat of the host ant species *Prenolepis nitens* (photo: Adrián Purkart).

a safe place, as it is mentioned in other known host ant species of *Clavigerini* (OSTERLOFF 1889, CAMMAERTS 1999, BOROWIEC et al. 2010). The occurrence of *C. longicornis* in localities close to the Svätý Jur vineyards was also confirmed by MAJZLAN (2011). In some areas, *P. nitens* is one of the most abundant ant species, however, its biology is very little known (LŐRINCZI 2016). Populous colonies, a secretive underground lifestyle and the calm temperament of this species are good predispositions for presenting more undetected myrmecophilous associations.

#### ACKNOWLEDGEMENTS

We would like to thank Peter Hlaváč and Gábor Lőrinczi for their valuable comments on the manuscript. The study was supported by VEGA (Scientific Grant Agency of the Ministry of the Education and the Slovak Academy of Sciences), grant number 2/0012/17.

#### REFERENCES

- Borowiec ML, Ruta R, Kubisz D, 2010. New records of *Claviger testaceus* Preyssl, 1790 and *C. longicornis* Muller, 1818 (Coleoptera: Staphylinidae: Pselaphinae) in Poland with review of their habits. *Polish Journal of Entomology* 79 (3): 261–269.
- Bregant E, 1998. Zur Biologie und Verbreitung der Honigameise *Prenolepis nitens* (Mayr, 1852) in Österreich (Hymenoptera: Formicidae). *Myrmecologische Nachrichten* 2: 14–18.
- Cammaerts R, 1999. Transport location patterns of the guest beetle *Claviger testaceus* (Pselaphidae) and other objects moved by workers of the ant, *Lasius flavus* (Formicidae). *Sociobiology* 34 (3): 433–475.
- Freude H, Harde KW, Lohse GA, 1974. Die Käfer Mitteleuropas. Band 5. Staphylinidae II (Hypocyphtinae und Aleocharinae), Pselaphidae. Goecke & Evers, Krefeld, 381 pp.
- Holecová M, Klesniaková M, Hollá K, Šestáková A, 2016. Winter activity of ants in Scots pine canopies in Borská nížina lowland (SW Slovakia). *Folia faunistica Slovaca* 21 (3): 239–243.
- Jászay T, Hlaváč P, 2016. Zoznam drobníkovitých chrobákov Slovenska (Insecta: Coleoptera: Staphylinidae). Checklist of rove beetles of Slovakia (Insecta: Coleoptera: Staphylinidae). *Folia faunistica Slovaca* 21 (2): 131–216.
- Klesniaková M, Holecová M, Pavlíková A, 2016. Interesting ant species in the urban greenery of Bratislava. *Folia faunistica Slovaca* 21 (3): 235–238.
- Lőrinczi G, 2012. A novel association between *Aphaenogaster subterranea* (Hymenoptera: Formicidae) and the nymphs of *Reptalus panzeri* (Hemiptera: Cixiidae). *European Journal of Entomology* 109: 509–515.
- Lőrinczi G, 2016. Winter activity of the European false honeypot ant, *Prenolepis nitens* (Mayr, 1853). *Insectes Sociaux* 63 (1): 193–197.
- Majzlan O, 2010. Cenózy chrobákov (Coleoptera) vo vinohradoch Sv. Jura pri Bratislave. *Natura Tutela* 15 (2): 163–180.
- Osterloff F, 1889. O chrząszczach krajowych. II. Rodziny Pselaphidae i Scydmaenidae. *Pamiętnik Fizyograficzny* 9: 249–273.
- Parker J, 2016. Myrmecophily in Beetles (Coleoptera): Evolutionary Patterns and Biological Mechanisms. *Myrmecological News* 22: 65–108.
- Rösler P, 1937. Biologie der Honigameise (*Prenolepis imparis* v. *nitens* Mayr). *E Rschau* 54: 207–209, 348–352, 376–380.
- Seifert B, 2007. Die Ameisen Mittel- und Nordeuropas. Lutra & Vertriebsgesellschaft, Görlitz, 368 pp.
- Schülke M, Smetana A, 2015. Staphylinidae. pp 304–900. In: Löbl I & Löbl D (eds) 2015: Catalogue of Palearctic Coleoptera. Volume 2/1. Revised and Updated Edition. Hydrophiloidea – Staphyloidea. Brill, Leiden, Boston, XXVI+900 pp.
- Tschinkel WR, 1987. Seasonal life history and nest architecture of a winter-active ant, *Prenolepis imparis*. *Insectes Sociaux* 34: 143–164.
- Vesnić A, Lelo S, 2010. A contribution to the knowledge of distribution of the species *Prenolepis nitens* (Mayr, 1853) (Hymenoptera: Formicidae) in the southwest part of the Balkan Peninsula. *Acta Entomologica Serbica* 15: 121–128.
- Wheeler WM, 1930. The ant *Prenolepis imparis* Say. *Annals of the Entomological Society of America* 23: 1–26.
- Zahradník P, 2017. Seznam brouků České republiky a Slovenska. Lesnická práce, s.r.o., 544 pp.



**Figure 2.** The specimen of *Claviger longicornis* in the nest of *Prenolepis nitens* (photo: Adrián Purkart). Online [[www.youtube.com/watch?v=Fo\\_0YiX72o8](http://www.youtube.com/watch?v=Fo_0YiX72o8)].