

***Myrmecophilus gallicus*, a new species of ant cricket from France
(Orthoptera: Myrmecophilidae)**

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Abstract

A new species of ant cricket, *Myrmecophilus gallicus* sp. n., collected in France is described and illustrated. *Camponotus aethiops* (Latreille, 1798), *C. cruentatus* (Latreille, 1802), *C. sylvaticus* (Olivier, 1792), *Crematogaster scutellaris* (Olivier, 1792), *Formica gagates* Latreille, 1798 and *Messor* sp. were the host ant species. The habitat was evergreen garrigue shrubland with interspersed limestone, evergreen oak forest and sparse pine forest in southern France and Corsica. The species is closely related to *Myrmecophilus fuscus* Stalling, 2013 and belongs to the subgenus *Myrmecophilus* Berthold, 1827. The holotype specimen was deposited in the collection of the Natural History Museum of Basel.

Zusammenfassung

Es wird eine neue Ameisengrillen-Art, *Myrmecophilus gallicus* sp. n., aus Frankreich beschrieben. Als Wirtsameisen wurden *Camponotus aethiops* (Latreille, 1798), *C. cruentatus* (Latreille, 1802), *C. sylvaticus* (Olivier, 1792), *Crematogaster scutellaris* (Olivier, 1792), *Formica gagates* Latreille, 1798 und *Messor* sp. festgestellt. Die Art wurde in immergrüner, mit Kalkfelsen durchsetzter Garrigue, in Steineichenwald und in lichtem Kiefernwald in Südfrankreich und auf Korsika gefunden. Die Art ist *Myrmecophilus fuscus* Stalling, 2013 sehr ähnlich und wird der Untergattung *Myrmecophilus* Berthold, 1827 zugeordnet. Der Holotypus wurde im Naturhistorischen Museum Basel deponiert.

Introduction

Ant crickets (genus *Myrmecophilus* Berthold, 1827) are small crickets that live as guests in ant's nests. Most species live as kleptoparasites (SCHIMMER 1909, HÖLLDOBLER 1947, JUNKER 1997, WETTERER & HUGEL 2008). The crickets feed on food resources in the ant nest and provoke their hosts to regurgitate liquid food (WETTERER & HUGEL 2008).

Five *Myrmecophilus* species are known from southwestern Europe; *Myrmecophilus acervorum* (Panzer, [1799]) has a wide distribution in the region and occurs from eastern Europe to southern France and Spain (SARDET et al. 2015, STALLING & BIRNER 2013, STALLING et al. 2015); *Myrmecophilus aequispina* Chopard, 1923 is known from southern France and northwestern Italy (BACCETTI 1966, SARDET et al. 2015); *Myrmecophilus fuscus* Stalling, 2013 was described recently from the Balearic Islands (STALLING 2013) and also occurs in mainland Spain (STALLING et al. 2015), southern France, southern Italy and Malta (STALLING

2015); *Myrmecophilus myrmecophilus* (Savi, 1819) occurs from the eastern Mediterranean to Italy (BACCETTI 1966) and France (SARDET et al. 2015); *Myrmecophilus ochraceus* Fischer, 1853 is known from southern Spain and the Balearic Islands (ESPADALER & OLMO-VIDAL 2011) and southern Italy (MASSA et al. 2012, STALLING 2016).

Many ant nests have been checked for the presence of *Myrmecophilus* in France during the past decade. Some of the collected specimens belong to a previously undescribed species, which is described in the present study.

Materials and Methods

Ant nests were checked for the presence of *Myrmecophilus* in France by several orthopterologists and myrmecologists. The ant nests were usually found by turning over stones. All specimens were captured and preserved in 70% ethanol, and subsequently most of them were pinned and dried.

Results

Myrmecophilus gallicus sp. n. (Figs. 1-5)

Materials. Holotype female adult: 12.05.2016, France, Vaucluse, Lioux, N 43° 27' 19.0", E 005° 18' 05.9", 390 m, in nest of *Camponotus sylvaticus*, leg. & coll. T. Stalling. The holotype was deposited in the Natural History Museum of Basel (NHMB).

Paratypes: France. **Alpes Maritimes:** La Turbie, 29.5.2003, 1 ad. female in an ant nest, N 43° 43' 45" N, E 007° 23' 55" E, 400 m, leg. and coll. S. Birrer. **Aude:** Salsigne, 15.6.2010, 1 ad. female in a *Messor* sp. nest, N 43° 19' 44.4", E 002° 20' 16.8", 320 m, leg. M. Aubert, coll. S. Puissant; Lagrasse, 16.5.2013, 1 ad. female in a *Camponotus cruentatus* nest, N 43° 05' 20.0", E 002° 36' 38.8", 240 m, leg. and coll. T. Stalling. **Bouches-du-Rhone:** Aureille, 08.04.2009, 1 ad. female in a *Camponotus sylvaticus* nest, N 43° 43' 40.8", E 004° 57' 19.6", 220 m, leg. C. Roesti, coll. T. Stalling; Eygalières, 16.04.2017, 1 ad. female in a *Formica gagates* nest, N 43° 45' 15.8", E 004° 59' 09.9", 170 m, leg. L. Zechner & E. Sardet, coll. T. Stalling; Lambesc, 01.08.2011, 2 ad. females, N 43° 39', E 005° 16', leg. T. Colin, coll. T. Stalling; Venelles, 28.02.2016, 1 ad. female in an ant nest, N 43.35°, E 005.28°, leg. G. Aubin, coll. T. Stalling. **Corse-du-Sud:** Marignana, 12.05.2015, 1 ad. male in a *Crematogaster scutellaris* nest, N 42° 11' 08.5", E 008° 38' 23.9", 325 m, leg. M. Roffet, coll. T. Stalling. **Drome:** Le Pègue, 23.09.2017, 2 ad. females in a *Camponotus* sp. nest, N 44° 25' 28.5", E 005° 02' 03", 405 m, leg. & coll. T. Stalling. **Haute-Corse:** Casabianca, 05.06.2013, 4 ad. females in a *Camponotus aethiops* nest, N 42° 26' 55.3", E 009° 22' 26.6", 750 m, leg. R. Blatrix, coll. T. Stalling. **Herault:** Assas, 21.6.2012, 1 ad. female in an ant nest, N 43° 42', E 003° 53', leg. & coll. S. Puissant; Prades-le-Lez, 23.5.2012, 1 ad. female in a *Formica gagates* nest, N 43° 41', E 003° 52', leg. M. Aubert, coll. S. Puissant. **Var:** Roquebrune-sur-Argens, 19.05.2013, 1 ad. male in a *Camponotus cruentatus* nest, N 43° 26' 06.7", E 006° 37' 27.1", 245 m, leg. and coll. T. Stalling. **Vaucluse:** La Roque-sur-Pernes, 19.05.2016, 1 ad. female in an ant nest, N 43° 58' 05", E 005° 05' 25", leg. and coll. G. Aubin; Lioux,

20.05.2013, 2 ad. females in a *Camponotus cruentatus* nest, N 43° 57' 16.5", E 005° 18' 04.9", 390 m, leg. and coll. T. Stalling; Lioux, 11.05.2016, 1 ad. male and 2 ad. females in a *Camponotus sylvaticus* nest, N 43° 57' 17.4", E 005° 18' 03.7", 390 m, leg. & coll. T. Stalling; Lioux, 14.05.2016, 1 ad. female in a *Camponotus sylvaticus* nest, N 43° 57' 16.5", E 005° 18' 04.4", 385 m, leg. & coll. T. Stalling.

Description. Adult female (Fig. 1). Measurements: body length, 3.2 mm; pronotum, 1.0 mm long and 1.5 mm wide; hind femur, 1.6 mm; hind tibia, 1.2 mm; cerci, 1.3 mm. Body curved, 1.9 times as long as wide; pronotum curved, narrowed distally, turned in the posterior third; colour, dark ochreous, except the posterior margins of pronotum, mesonotum and tergites 1-3, which are contrasting pale ochreous. Pronotum and tergites densely covered with dense, close-fitting hairs and relatively few, interspersed, protuberant hairs. Antennae are almost as long as the body and dark ochreous, and the first two segments are pale ochreous. Palpi are ochreous. Eyes are black. Hind legs: hind femur, 1.6 times as long as wide; hind tibia with four inner subapical spurs, the first and third shorter than the second and the fourth, the third spine slightly shorter than the first spine; hind tibia with three inner apical spurs. Outer side of tibia with two subapical and two short apical spurs; first segment of basitarsus slender, with two spines (one short spine in the distal and one in the medial third) and with two apical spurs. Cerci are rotund, pointed distally, densely covered with fitting hairs and, in between, long, robust distant hairs. Tenth abdominal tergite with bilobate extension, with deep, rounded emargination. Epiproct is small and unmodified. Subgenital plate, emarginated; outer valvae seen from lateral as double-pointed (Fig. 2)



Figure 1:
Holotype of *Myrmecophilus gallicus* sp. n. (female), dorsal (A) and lateral (B) view. Scale bar, 1 mm.

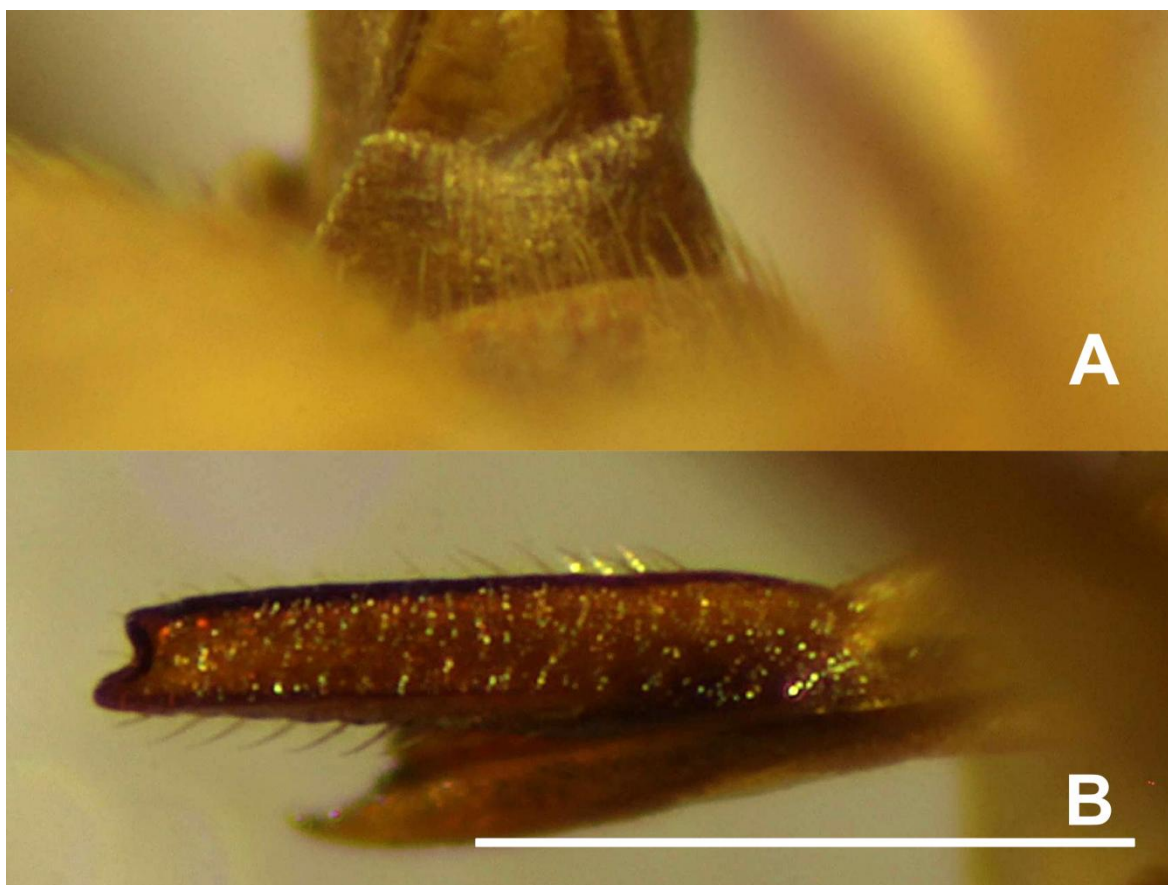


Figure 2: Paratype of *Myrmecophilus gallicus* sp. n. (female). Subgenital plate, ventral view (A) and tip of outer valva, lateral view (B). 20.05.2013, France, Vaucluse, Lioux. Scale bar, 0.5 mm.

Variability. Paratypes vary in size only. Body length is 2.3-2.5 mm in males and 2.3-3.8 mm in females. Appearance of the male (Fig. 3) is the same as that of the female (Fig. 4), but with different terminalia; subgenital plate short and recessed, covered with golden-yellow hairs; internal male phallic complex not dissected, so as not to destroy the very few existing male paratypes.

Diagnosis. *Myrmecophilus gallicus* sp. n. differs from other *Myrmecophilus* species from the Western Mediterranean based on the following characteristics: valvae of female (laterally seen), double-pointed (rounded in *M. ochraceus*); hairs of front and antennae of male, short and inconspicuous (long, distant and bushy in male of *M. ochraceus*); first segment of basitarsus with two or sometimes three subapical spines (only one spine in *M. ochraceus*). Subgenital plate of female clearly emarginated (rounded or sometimes slightly emarginated in *M. myrmecophilus* and *M. aequispina*). *M. gallicus* sp. n. has two different types of hairs on pro- and mesonotum and tergites (relatively few protuberant hairs and, moreover, many short, closely-fitting hairs); *M. acervorum*, *M. fuscus* and *M. myrmecophilus* have only one type of inclined, distant, relatively long hairs. Coloration is dark ochreous with pale ochreous posterior margins of pronotum, mesonotum and tergites 1-3 (pale ochreous with no or inconspicuous pale posterior margins of pronotum, mesonotum and tergites in *M. myrmecophilus* and *M. aequispina*; dark reddish-brown colouration with pale ochreous posterior margins of pronotum and mesonotum in *M. acervorum*).



Figure 3:
Male *Myrmecophilus gallicus* sp. n. (paratype). 14.05.2016, France, Vaucluse, Lioux.



Figure 4:
Female *Myrmecophilus gallicus* sp. n. (paratype). 11.05.2016, France, Vaucluse, Lioux.

Taxonomy. *Myrmecophilus gallicus* sp. n. belongs to the subgenus *Myrmecophilus* Berthold, 1827.

Habitat and ecology. The species was found in evergreen garrigue shrubland with interspersed limestone, evergreen oak (*Quercus ilex* Linné, 1753) forest and sparse *Pinus halepensis* Miller, 1768 forest. The specimens were found with the ant species *Camponotus aethiops* (Latreille, 1798), *C. cruentatus* (Latreille, 1802), *C. sylvaticus* (Olivier, 1792), *Crematogaster scutellaris* (Olivier, 1792), *Formica gagates* Latreille, 1798 and *Messor* sp. The adults were found between February and August.

Distribution. At present, the species is only known from mainland France and Corsica (Fig. 5).

Derivatio nominis. The name is a Latin adjective related to France, as this species was the first recognized from material collected in mainland France and Corsica.

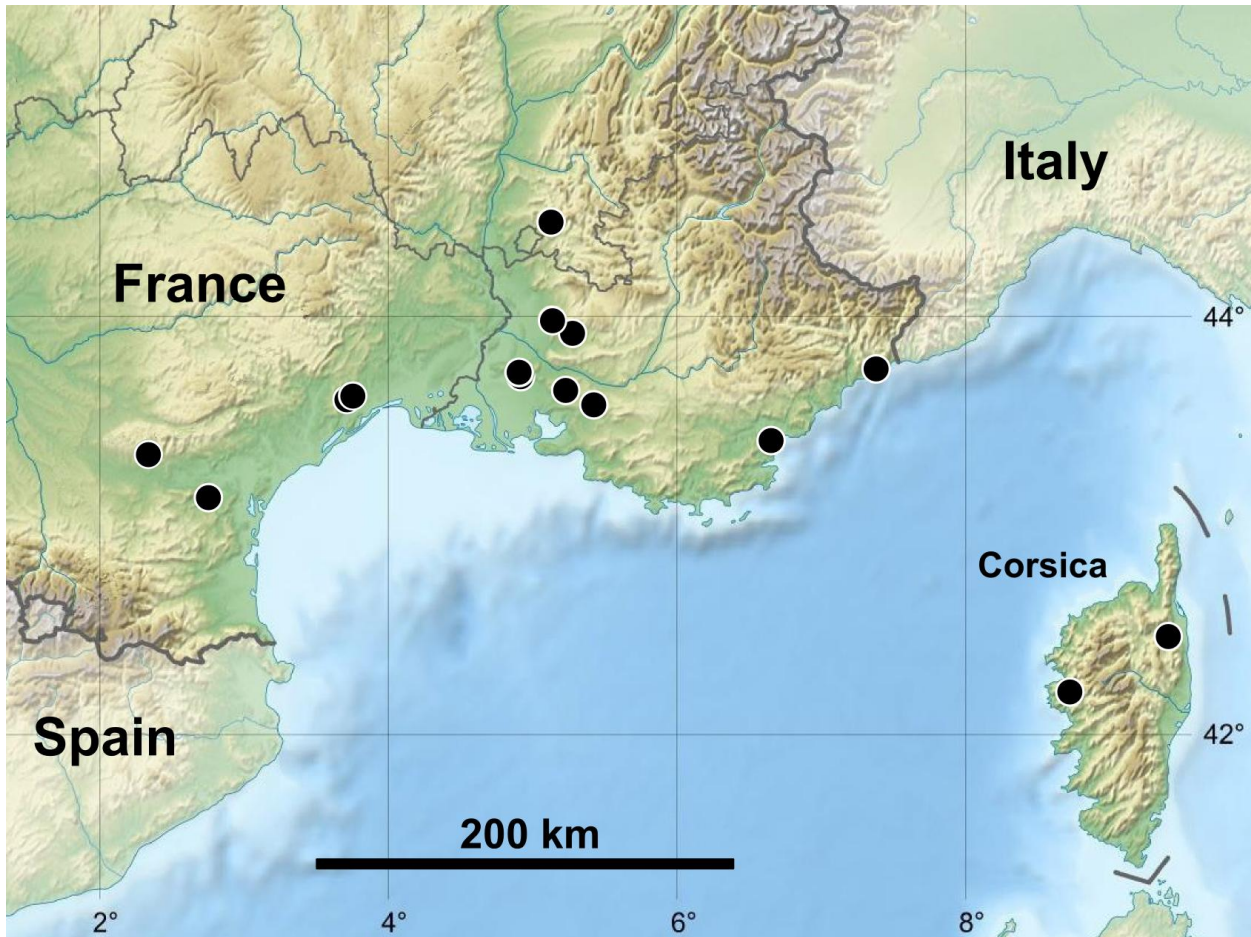


Figure 5: Distribution of *Myrmecophilus gallicus* sp. n. (black dots). Based on a map from Eric Gaba, © CC BY-SA license.

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