

First insight into the ant diversity of the Vjosa valley, Albania (Hymenoptera: Formicidae)

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Thirty sites at the river Vjosa (Albania) were sampled with 150 pitfall traps in April 2017. The ant catches were determined and are presented. We identified 19 species; two of them show ripicolous tendencies. Nine species are considered to be first records for Albania; this demonstrates the poor investigation status of this territory.

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Dreißig Standorte am Fluss Vjosa (Albanien) wurden im April 2017 mit 150 Barberfallen beprobt. Die Ameisenfänge wurden determiniert und werden vorgestellt. Wir identifizierten 19 Arten, zwei davon zeigen ripikole Tendenzen. Neun Arten werden als Erstnachweise für Albanien betrachtet, was den schlechten Erforschungsstand dieses Landes demonstriert.

Keywords: Vjosa river, floodplain, riparian, ripicol, new records.

Introduction

The Balkans probably comprise the largest ant diversity of Europe (BOROWIEC & SALATA 2012b, BOROWIEC 2014, BRAČKO et al. 2014, LEBAS et al. 2016). Ant checklists are available for most Balkan nations (PETROV 2004, BRAČKO 2006, LAPEVA-GJONOVA et al. 2010, BOROWIEC & SALATA 2012a, BOROWIEC & SALATA 2012b, KIRAN & KARAMAN 2012, BRAČKO et al. 2014). In contrast, the ant fauna of Albania is poorly investigated. First faunistic data were collected in the late 19th and early 20th century (EMERY 1895, MAIDL 1921, FINZI 1923, FINZI 1926). In “A provisional list of the Balkan ants (Hym., Formicidae)”, AGOSTI & COLLINGWOOD (1987) mentioned 29 taxa for Albania, while BOROWIEC (2014) mentioned 70 species in “Catalogue of ants of Europe, the Mediterranean Basin and adjacent regions (Hymenoptera: Formicidae)”. No in-depth ant study has been conducted in Albania so far. In our study, we present catches of pitfall traps of 19 species.

Materials and Methods

The ant material presented in this study was collected between 24th and 28th April 2017 using 150 pitfall traps (leg. W. PAILL, J. GUNCZY, T. FRANK). The 30 sites near Kutë and sampling methods are described in detail in PAILL et al. (2018 in this volume) and SCHIEMER et al. (2018 in this volume). For determination, a LEICA MZ16 A high-performance stereomicroscope with magnifications of 80–294× was used. Since no complete and reliable key for all Balkan ants is available, a number of sources had to be used for safe determination (SEIFERT 1988, SEIFERT 1992, SEIFERT 2003, CSÓSZ et al. 2007, SEIFERT 2007, KARAMAN 2008, SEIFERT et al. 2009, SEIFERT & SCHULTZ 2009, CSÓSZ & SCHULZ 2010, SEIFERT 2016, SALATA & BOROWIEC 2017, SEIFERT et al. 2017, ANTWEB 2018). Material of *Tapinoma* was identified by B. SEIFERT based on clustering of morphometric data. The reference

material included 88 samples of the three next related *Tapinoma* species and investigation of type material. Material of the *Myrmica sabuleti* complex sensu SEIFERT (2005) was identified by B. SEIFERT based on clustering of morphometric data. The reference material included 161 samples of *M. spinosior* and *M. sabuleti*. The material investigated in this study is currently stored in the collection of R. Borovsky; a few samples are in the collection of H.C. Wagner and in the Senckenberg Museum für Naturkunde Görlitz. Potential national first records were evaluated based on the list of BOROWIEC (2014).

Results and Discussion

The 150 pitfall traps from 30 localities provided 56 species-site combinations. In total, 19 different species could be distinguished. Of these, 18 species could be determined to species level (e.g., Fig. 1-3), however, in three cases, doubts in using the correct scientific names remain (Tab. 1). In *Myrmica hellenica* and *Camponotus vagus*, only one gyne each was collected; in all other species, workers were available. Despite the low investigation effort, nine species (= 47%) are first records for Albania: *Cardiocondyla dalmatica*, *Monomorium monomorium*, *Myrmica hellenica*, *Myrmica spinosior*, *Tapinoma* sp. BALC, *Tetramorium moravicum*, *Tetramorium* cf. *kephalosi*, *Formica clara*, and *Lasius platythorax*. Herewith, the number of ant species for Albania increases from 70 (BOROWIEC 2014) to 79. *Messor wasmanni* have also not been mentioned in Albanian literature; however, the name *Messor*

Tab. 1: Ant species list with information on pitfall trap locations. – Tab. 1: Liste der Ameisenarten mit Angaben zu Barberfallenstandorten.

subfamily / species	[site]
Myrmicinae	
<i>Cardiocondyla dalmatica</i> SOUDEK, 1925	[4], [5], [8], [15], [17], [18], [24], [30]
<i>Crematogaster schmidti</i> (MAYR, 1853)	[18]
<i>Messor</i> cf. <i>wasmanni</i> KRAUSSE, 1911	[22]
<i>Monomorium monomorium</i> BOLTON, 1987	[28]
<i>Myrmica hellenica</i> FINZI, 1926	[18]
<i>Myrmica spinosior</i> SANTSCHI, 1931	[18], [19]
<i>Pheidole pallidula</i> (NYLANDER, 1849)	[10], [21], [28], [29]
<i>Solenopsis</i> sp.	[30]
<i>Tetramorium moravicum</i> KRATOCHVÍL, 1941	[28], [29]
<i>Tetramorium</i> cf. <i>kephalosi</i> SALATA & BOROWIEC, 2017	[21]
Dolichoderinae	
<i>Tapinoma</i> sp. BALC, according to SEIFERT	[6], [17], [18], [19], [28], [29], [30]
Formicinae	
<i>Camponotus aethiops</i> (LATREILLE, 1798)	[28]
<i>Camponotus piceus</i> (LEACH, 1825)	[28]
<i>Camponotus vagus</i> (SCOPOLI, 1763)	[24]
<i>Cataglyphis nodus</i> (BRULLÉ, 1832)	[9], [10], [15], [16], [22], [24]
<i>Formica clara</i> FOREL, 1886	[4], [5], [9], [12], [13], [16], [18], [24], [28]
<i>Lasius niger</i> (LINNAEUS, 1758)	[16]
<i>Lasius platythorax</i> SEIFERT, 1991	[24]
<i>Plagiolepis</i> cf. <i>taurica</i> SANTSCHI, 1920	[4], [9], [18], [19], [20], [24], [28]



Fig. 1: Workers of *Camponotus aethiops* carrying larvae (Photo: R. BOROVSKY, Istria). – Abb. 1: Arbeiterinnen von *Camponotus aethiops* tragen Larven (Foto: R. BOROVSKY, Istrien).

barbarus var. *meridionalis* sensu MAIDL (1921) and sensu FINZI (1923) putatively refers to the same species we found (cf. BOROWIEC 2014, cf. BRAČKO et al. 2014).

Two species, *Cardiocondyla dalmatica* and *Myrmica hellenica* are known to often occur in sun-exposed floodplains of rivers with sandy or gravelly soils and significant parts of bare surfaces (SEIFERT 2007, SEIFERT et al. 2009, B. SEIFERT in prep.). Surprisingly, common ant species with strong ripicolous tendencies like *Manica rubida* (LATREILLE, 1802) and members of the *Formica cinerea* group (SEIFERT 2002, cf. SEIFERT 2007, LEBAS et al. 2016) have not been detected. The remaining 17 species of the presented list have a broader habitat spectrum. Most of them are known to be thermophilous (SEIFERT 2007, SEIFERT et al. 2009, SEIFERT 2017). Most of the ant species presented in this study are common on the Balkans, and all except *Myrmica spinosior* and *Tapinoma* sp. BALC are also known, for example, from Greece (BOROWIEC & SALATA 2012b, SEIFERT 2016, SALATA & BOROWIEC 2017).

***Cardiocondyla dalmatica* SOUDEK, 1925**

The key of SEIFERT (2003) does not distinguish between *Cardiocondyla elegans* and *C. dalmatica*. However, a clear clustering based on morphometric data and zoogeographical arguments (unpublished data of B. SEIFERT) allows a separation of *C. dalmatica* as a parapatric eastern sibling species. *Cardiocondyla elegans* is known from Iberia, France, and Italy. In contrast, *C. dalmatica* occurs from Asia Minor, across the Balkans west to NW Italy and north to Hungary.



Fig. 2: Worker of *Camponotus piceus* (Photo: R. BOROVSKY, Istria). – Abb. 2: Arbeiterin von *Camponotus piceus* (Foto: R. BOROVSKY, Istrien).



Fig. 3: Workers of *Crematogaster schmidti* (Photo: R. BOROVSKY, Istria). – Abb. 3: Arbeiterinnen von *Crematogaster schmidti* (Foto: R. BOROVSKY, Istrien).

***Myrmica spinosior* SANTSCHI, 1931**

Based on clustering of morphometric data, material from two sites of this study clearly belongs to *Myrmica spinosior*. This species has been considered to occur (mainly) in the western Mediterranean so far (SEIFERT 2005, RADCHENKO & ELMES 2010, BOROWIEC 2014); however, it also occurs in Anatolia (SEIFERT 2005) and thus seems to be widespread in the Mediterranean. *Myrmica spinosior* is new for the Balkans!

***Pheidole pallidula* (NYLANDER, 1849)**

Most Balkan *Pheidole* records were referred to *P. pallidula* for a long time (e.g., KARAMAN & KARAMAN 2006, LAPEVA-GJONOVA et al. 2010, BOROWIEC 2014, BRAČKO et al. 2014). Within the traditional "*Pheidole pallidula*", SEIFERT (2016) delimited three European species different in morphometrics of major workers. All three also occur in the southern Balkans. Morphometric investigation of our material using the discriminant D_{PBK} (SEIFERT 2016) revealed positive values and thus supports the affiliation to *P. pallidula*.

***Tapinoma* sp. BALC, according to SEIFERT**

Tapinoma sp. BALC is an undescribed species which is very common in the southern Balkans. It is related to *T. erraticum* (LATREILLE, 1798) and *T. tauridis* EMERY, 1925 and will be described by B. SEIFERT.

***Tetramorium* cf. *kephalosi* SALATA & BOROWIEC, 2017**

Tetramorium kephalosi is very similar to the western Mediterranean *T. semilaeve* and the most common species of the *T. semilaeve* complex on the Balkans (SALATA & BOROWIEC 2017). Since some of the workers investigated in this study show smaller absolute and relative morphometric values than data of the smallest workers presented in the original description, doubts regarding our identification remain.

Outlook

The data shown in this study represent a first small insight into the ant fauna of the Vjosa valley. We recommend further investigations at the Vjosa river for two reasons: First, the river Vjosa is one of the last European rivers in a natural state and gives us an impression of how other European rivers might have looked hundreds of years ago (SCHIEMER et al. 2018 in this volume). Its riverine biotopes represent primary habitats, and further ant species specialized on such ecological conditions are likely to be detected. Second, the Albanian ant fauna, generally, is one of the least investigated of Europe. The current number of 79 species is much lower than would be expected based on the Mediterranean climate and the high species numbers of neighbouring nations (cf. BOROWIEC 2014). To summarize, further investigations are needed to establish meaningful ant species lists for the riverine biotopes at the river Vjosa as well as for the nation Albania.

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