

# First records of six ant species (Hymenoptera: Formicidae) for Slovenia

Gregor BRÄČKO<sup>1</sup> & Lucija ČESNIK<sup>2</sup>

<sup>1</sup> University of Ljubljana, Biotechnical Faculty, Department of Biology, Jamnikarjeva 101, 1000 Ljubljana, Slovenia;

E-mail: gregor.bracko@bf.uni-lj.si

<sup>2</sup> Ravne 25a, 5262 Črniče, Slovenia

**Abstract.** Six ant species recorded for the first time in Slovenia are presented: *Camponotus gestroi*, *Hypoponera eduardi*, *Lasius lasioides*, *Tapinoma* cf. *nigerrimum*, *Temnothorax jailensis* and *Temnothorax turcicus*. They were found in the period of the last 9 years, five of them in southwestern Slovenia in the Submediterranean region, while *T. turcicus* was recorded in northeastern Slovenia. Findings of *C. gestroi* and *T. jailensis* considerably extend their previously known ranges in Europe.

Key words: ants, Slovenia, Mediterranean species, faunistics

**Izvleček. Prve najdbe šestih vrst mravelj (Hymenoptera: Formicidae) za Slovenijo** – Predstavljamo šest vrst mravelj, ki so bile prvič zabeležene v Sloveniji: *Camponotus gestroi*, *Hypoponera eduardi*, *Lasius lasioides*, *Tapinoma* cf. *nigerrimum*, *Temnothorax jailensis* in *Temnothorax turcicus*. Najdene so bile v obdobju zadnjih 9 let, od tega pet vrst v jugozahodni Sloveniji v submediteranski regiji, medtem ko je bila *T. turcicus* odkrita v severovzhodni Sloveniji. Najdbi vrst *C. gestroi* in *T. jailensis* znatno povečujeta njuni doslej znani območji razširjenosti v Evropi.

Ključne besede: mravlje, Slovenija, mediteranske vrste, favnistika

## Introduction

Investigations of the Slovenian ant fauna became more systematic only in the last 20 years. As the result of more extensive sampling and included literature data, first general review of the Slovenian ant fauna, which included 105 species, was prepared (Bračko 2000). In the last checklist of ants of Slovenia, 132 species were listed (Bračko 2007). In the following years, two additional species were mentioned for the country, i.e. *Myrmica hellenica* Finzi, 1926 (Seifert et al. 2009) and *Myrmoxenus gordiagini* Ruzsky, 1902 (Bračko 2010). Within Slovenia, the ant fauna is not uniformly distributed. The richest region is the southwestern (Submediterranean) part of the country, where approximately 75% of all Slovenian species have been found (Bračko 2007).

The article presents six ant species recorded in Slovenia for the first time, five of them from the southwestern and one from the northeastern parts of the country.

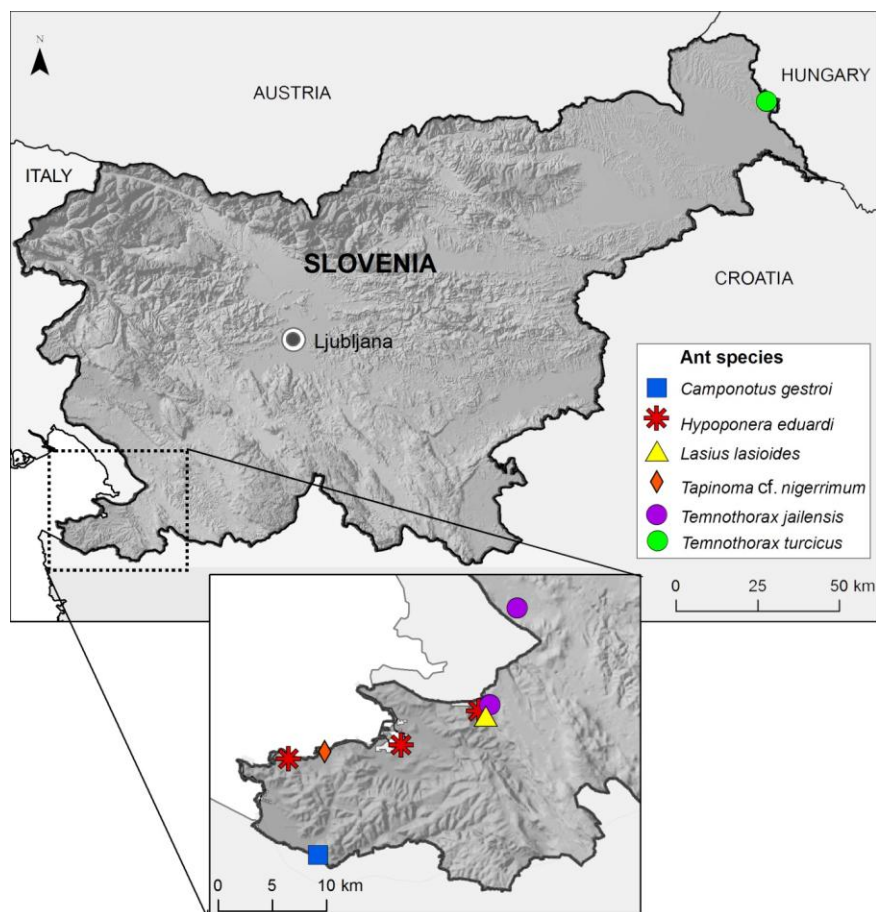
## Materials and methods

The faunistic studies that we refer to were conducted in the years 2008 to 2016. The main collection method applied was direct sampling (hand collecting), while in one case pitfall trapping was applied as well. In the latter case, 7 cm diameter plastic pots placed in the ground with vinegar as the fixative were used. All specimens were preserved in 70% ethanol. We used the relevant taxonomic literature (Seifert 1992, 2007, 2012), as well as high quality images of the type specimens on the AntWeb website (<http://www.antweb.org>) for species identification. All specimens are kept in the collection of ants of the first author.

## Results and discussion

We found six new species for the Slovenian ant fauna. Five of them were recorded in the southwestern part (Submediterranean region) of the country, proving that ants are richly represented here and that additional faunistic investigations in this region can still bring new species. Based on their known ranges, *Hypoponera eduardi* and *Temnothorax turcicus* could be expected for southwestern and northeastern Slovenia, respectively, while the findings of *Camponotus gestroi* and *Temnothorax jailensis* were rather unexpected and considerably extended their previously known ranges in Europe. New records of the two *Temnothorax* species are valuable as in general they have been rarely collected and the literature data on them are scarce. The probable reason is that they are small-sized arboricolous species with small colonies and consequently often overlooked in faunistic studies.

In the following text we present the list of records of each species, with WGS84 coordinates of each locality, followed by notes on each species. Localities are shown in Fig. 1.



**Figure 1.** Localities of six ant species recorded in Slovenia for the first time.  
**Slika 1.** Lokalitete šestih vrst mravelj, ki so bile prvič najdene v Sloveniji.

### ***Camponotus gestroi* Emery, 1878**

Record: Patchy karst meadow with surrounding scrub and trees, 0.5 km S of Dragonja village, Piran, SLO, 45°27.19'N, 13°39.61'E, 30 m a.s.l., 21.5.2016, hand collecting, leg. G. Bračko & L. Česnik.

The finding of *C. gestroi* in Slovenia was rather unexpected. Its so far known distribution range extends from southern Europe to Iran (Bračko et al. 2014a). In the Balkan Peninsula, it has been reported from Greece (Borowiec & Salata 2012), southern Bulgaria (Lapeva-Gjonova et al. 2010, Lapeva-Gjonova & Kiran 2012), Republic of Macedonia (Bračko et al. 2014a) and southern Montenegro (Bračko et al. 2014b), while in Italy it is known from the southern part of the mainland, Sardinia and Sicily (Poldi et al. 1995). Slovenian record indicates that the range of *C. gestroi* extends much further to the north. We found this species at the limestone hill in the lower Dragonja Valley in Coastal Slovenia. The hill is known for its species rich

eumediterranean flora (Wraber 2002) and many Mediterranean invertebrate species (Kostanjšek 2003, Gogala et al. 2007), including several other Mediterranean ants which we have collected during the past myrmecological surveys of the site, e.g. *Aphaenogaster epirotes* (Emery, 1895), *Camponotus dalmaticus* (Nylander, 1849), *Messor capitatus* (Latreille, 1798), *Temnothorax exilis* (Emery, 1869), *Tetramorium* cf. *semilaeve* André, 1883 (Bračko, unpubl. data).

#### ***Hypoponera eduardi* (Forel, 1894)**

Records: Grassy, partly shrubby bank of a brackish lagoon, Škocjanski zatok, 2 km E of Koper, SLO, 45°32.73'N, 13°45.39'E, 3 m a.s.l., 15.10.2009, pitfall traps, leg. S. Polak; Forest edge along the road, 1 km NW of Osp, SLO, 45°34.48'N, 13°50.86'E, 30 m a.s.l., 23.6.2012, hand collecting, leg. G. Bračko; Grassy bank along the road, 3 km W of Izola, SLO, 45°31.96'N, 13°37.45'E, 100 m a.s.l., 21.5.2016, hand collecting, leg. G. Bračko & L. Česnik.

*H. eduardi* is distributed in the Mediterranean region, Middle East and Central Asia, but occurs in many parts of the world as a tramp species (Bolton & Fisher 2011). In Central Europe, two other related species, *H. ergatandria* (Forel, 1893) and *H. punctatissima* (Roger, 1859), can be found in heated buildings or outdoors in mounds of decomposing, heat-producing organic material (Seifert 2013). Since *Hypoponera* ants are small and cryptobiotic (Schmidt & Shattuck 2014), they are hard to detect, therefore three new records of *H. eduardi*, all from Coastal Slovenia, suggest that it is not so rare in this part of the country at least. The species could be expected here, as it was already found in Trieste, Italy (Finzi 1928) and central Istria, Croatia (Bračko, unpubl. data).

#### ***Lasius lasioides* (Emery, 1869)**

Record: Grassy bank along the path, Osp, SLO, 45°34.22'N, 13°51.37'E, 30 m a.s.l., 23.6.2012, hand collecting, leg. G. Bračko.

This species' distribution range spreads from the Mediterranean region towards the east to Central Asia (Bračko et al. 2014a). The closest known records of *L. lasioides* to the Slovenian one are from North Dalmatia, Croatia (Bračko, unpubl. data). Our locality is in the vicinity of a limestone rock wall above Osp village (southwestern Slovenia), where we have already found several other Mediterranean ant species, e.g. *Aphaenogaster muelleriana* Wolf, 1915, *Camponotus dalmaticus*, *Messor capitatus*, *Temnothorax exilis*, *Temnothorax* cf. *recedens* (Nylander, 1856) (Bračko, unpubl. data).

#### ***Tapinoma* cf. *nigerrimum* (Nylander, 1856)**

Record: Urban park, next to the city cemetery in Izola, SLO, 45°32.32'N, 13°39.97'E, 3 m a.s.l., 20.4.2008 & 30.5.2011, hand collecting, leg. G. Bračko.

In Slovenia, two species of the genus *Tapinoma* are widespread, i.e. *T. erraticum* (Latreille, 1798) and *T. subboreale* Seifert, 2012 (the latter listed under the name *T. ambiguum* Emery, 1925 in Bračko (2007)). Here we report on the third *Tapinoma* species found in the coastal town of Izola. It belongs to the taxonomically still unresolved *Tapinoma nigerrimum* complex, which includes three described and one undescribed species (Dekoninck et al. 2015). They are distributed in the Mediterranean region and have larger workers and usually form much larger colonies compared to *T. erraticum* and *T. subboreale* (Seifert 2012, Dekoninck et al. 2015). One species of the complex was reported outside its natural range

from few cities in Germany, Belgium and the Netherlands, to where it was imported with soil and plant material and shows invasive behaviour (Seifert 2012, Dekoninck et al. 2015, Noordijk 2016). Regarding the Slovenian record, a large nest was discovered, spreading several meters along the herbaceous border in an urban park in Izola. The origin of the finding is not clear. This could present the natural site of the species, with the next closest records coming from Rab Island and Northern Dalmatia, Croatia (Bračko 2006) and from northern Italy (Venice) (Emery 1925). It is possible, however, that the colony was established here after being transported with soil and plant material from other parts of the Mediterranean area.

#### ***Temnothorax jailensis* (Arnoldi, 1977)**

Records: Thermophilic open forest on a rocky slope, 1 km SW of Kastelec, Kozina, SLO, 45°34.79'N, 13°51.63'E, 290 m a.s.l., 14.6.2014, hand collecting, leg. G. Bračko; Karst meadow with some trees, Lipica, Sežana, SLO, 45°39.62'N, 13°53.46'E, 410 m a.s.l., 20.5.2016, hand collecting, leg. G. Bračko.

This is a rarely recorded arboricolous species known from few localities in Austria (Schlick-Steiner et al. 2003), Hungary (Csósz et al. 2011), Czech Republic (Vodka et al. 2010), Slovakia (Werner & Wiezik 2007) and Ukraine (Crimea) (Radchenko 1995). In addition, Vodka et al. (2010) mention unpublished and unspecified records from Italy and the Balkans. We found it at two localities in southwestern Slovenia: two colonies on pubescent oak (*Quercus pubescens*) at a height of approximately 1.5 to 2 m, in a highly thermophilic open forest near Kastelec, and few individual workers again on *Q. pubescens* in Lipica. These are the first specified localities of the species from the Mediterranean region.

#### ***Temnothorax turcicus* (Santschi, 1934)**

Record: Meadow with some trees, 1 km NW of Kobilje, Lendava, SLO, 46°41.38'N, 16°22.63'E, 190 m a.s.l., 11.5.2012, hand collecting, leg. G. Bračko.

This is another rarely recorded arboricolous species known from the eastern part of Central Europe, southern part of the Balkan Peninsula and western Anatolia (Wagner et al. 2011). We collected a single worker on sessile oak (*Quercus petraea*). Since *T. turcicus* was reported from eastern Austria, southern Slovakia (Wagner et al. 2011) and from the vicinity of Budapest, Hungary (S. Csósz, pers. comm. 2016), its finding near Kobilje village in northeastern (Subpannonian) Slovenia is not surprising.

## **Povzetek**

Po doslej objavljenih podatkih je bilo na ozemlju Slovenije najdenih 134 vrst mravelj (Bračko 2007, 2010, Seifert et al. 2009), pri čemer je z vrstami najbogatejši jugozahodni (submediteranski) del države. S favnističnimi raziskavami, ki so potekale v obdobju zadnjih 9 let, smo našli šest doslej za Slovenijo neregistriranih vrst, od tega pet v jugozahodnem delu države v submediteranski regiji (*Camponotus gestroi*, *Hypoponera eduardi*, *Lasius lasioides*, *Tapinoma* cf. *nigerrimum* in *Temnothorax jailensis*) ter eno v severovzhodnem delu (*Temnothorax turcicus*). Večina mravelj je bila nabrana z metodo direktnega vzorčenja (ročnega nabiranja), v enem primeru pa s talnimi pastmi. Za določevanje smo poleg

taksonomske literature nabrane osebkje primerjali tudi z visoko kvalitetnimi fotografijami tipskih primerkov na spletni strani AntWeb (<http://www.antweb.org>). Medtem ko sta bili vrsti *H. eduardi* in *T. turcicus* na podlagi njunega pojavljanja na sosednjih območjih pričakovani, pa sta bili najdbi vrst *C. gestroi* in *T. jaiensis* precej presenetljivi in znatno povečujeta njuna doslej znana areala razširjenosti v Evropi. Vrsta *C. gestroi* je bila do sedaj registrirana precej južneje na Balkanu in v južni Italiji. Našli smo jo na apnenčastem griču v dolini Dragonje, znanem po rastišču eumediteranske flore in nahajališču več mediteranskih nevretenčarskih vrst. Vrsta *L. lasioides*, ki smo jo zabeležili v Ospu, je bila slovenskemu ozemlju najbližje poznana iz severne Dalmacije. Kriptično živeča vrsta *H. eduardi* je bila najdena na treh lokalitetah na Obali, tako da predvidevamo, da je tu dosti pogostejša, kot so kazale dosedanje raziskave. V mestnem parku v Izoli smo odkrili večje mravljišče vrste *T. cf. nigerrimum* (eno izmed štirih mediteranskih vrst iz taksonomsko še nerazrešenega kompleksa *T. nigerrimum*). Ni jasno, ali najdba pomeni naravno območje razširjenosti vrste, ali pa je bila kolonija tja prinesena s prstjo in rastlinami iz drugih delov Mediterana, kot je bilo pri vrsti iz omenjenega kompleksa že opaženo iz nekaj mest v srednji in zahodni Evropi. Odkrili smo tudi dve redko zabeleženi arborikalni vrsti iz rodu *Temnothorax*. Vrsto *T. jaiensis* smo našli na dveh lokalitetah (Kastelec in Lipica) na puhastem hrastu, *T. turcicus* pa na gradnu pri vasi Kobilje.

## Acknowledgements

We thank Slavko Polak (Postojna) who delivered ant material from Škocjanski zatok. We are grateful to Lech Borowiec (Wrocław) for the identification of *Temnothorax jaiensis* and to Sándor Csösz (San Francisco) for the information on *Temnothorax turcicus*. We wish to thank Maja Zagmajster (Ljubljana) for preparing the map.

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