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# A CONTRIBUTION TO THE KNOWLEDGE OF DISTRIBUTION OF THE SPECIES *PRENOLEPIS NITENS* (MAYR, 1853) (HYMENOPTERA: FORMICIDAE) IN THE SOUTHWEST PART OF THE BALKAN PENINSULA

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## Abstract

Study of myrmecofauna in the southwest part of the Balkan Peninsula has a long tradition but it is also characterised by a small number of studies of exclusively faunistic character. Analysis of material collected at Popovo Polje yielded the first record of *Prenolepis nitens* (Mayr, 1853) in Bosnia and Herzegovina. Subsequent analysis of literature data showed that the species inhabits all of the countries of the western Balkans: Slovenia (Ljubljana), Croatia (wider area of Zagreb and Dalmatia), Montenegro (Kotor) and Serbia (Stara planina). Discovery of *Prenolepis nitens* (Mayr, 1853) in Bosnia and Herzegovina represents irrefutable evidence of continuity in the distribution area of the species along the southern boarder of the Balkan peninsula and it also makes a significant contribution to the knowledge of distribution of *Prenolepis nitens* (Mayr, 1853) species across the surveyed area.

KEY WORDS: *Prenolepis nitens*, Distribution, Balkan Peninsula

## Introduction

Genus *Prenolepis* Mayr, 1861 (False Honey Ants) had been taxonomically introduced based on the nominal species *Prenolepis nitens* (Mayr, 1853), previously described as *Tapinoma nitens* Mayr, 1853 (BOLTON, 1995). Genus *Prenolepis* Mayr is one of the smaller genera within the subfamily Formicinae and it contains around 20 species. According to the most up-to-date checklist of ants on Fauna Europaea web portal (www.faunaeur.org), this genus is represented in Europe with the *Prenolepis nitens* (Mayr) species.

The first data regarding *Prenolepis nitens* (Mayr, 1853) in the western part of the Balkan Peninsula was given by G.L. Mayr (Mayr, 1852) (BRAČKO, 2000). Since 1852 records for the western part of the Balkan Peninsula

regarding *Prenolepis nitens* (Mayr, 1853) have been given by: COBELLI, 1906; MÜLLER, 1923a; ZIMMERMANN, 1934; AGOSTI & COLLINGWOOD, 1987; PETROV & MESAROŠ, 1988; PETROV & COLLINGWOOD, 1992; PETROV, 2004; KARAMAN & KARAMAN, 2003; KARAMAN, 2004; KARAMAN & KARAMAN, 2006; BRAČKO, 2000, 2006, 2007; VESNIĆ & LELO, 2008.

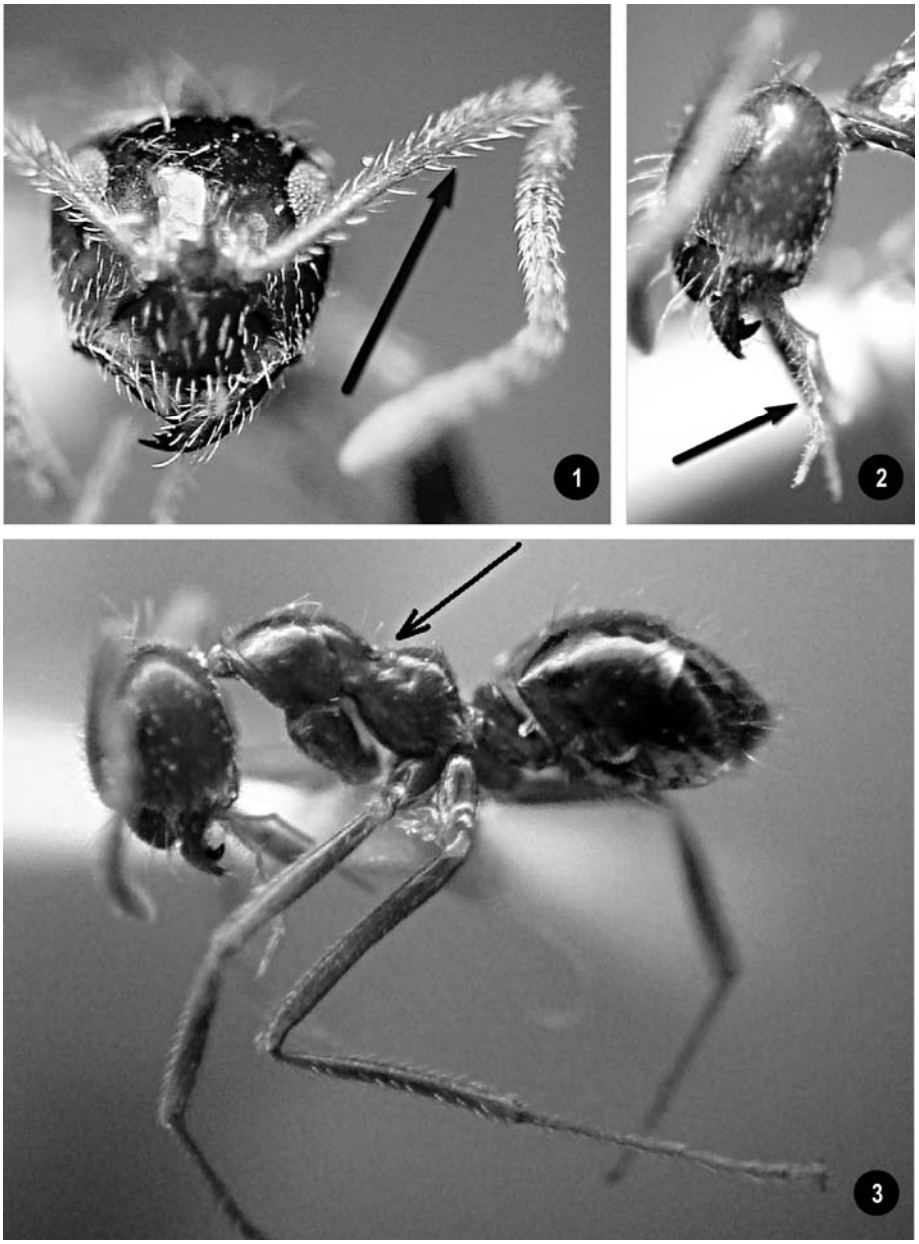
In general, the area of distribution of *Prenolepis nitens* (Mayr) covers the west of Italy, across southern Austria, Czech Republic, Slovakia, Hungary, Romania to the Caucasus in the east (coast of the Black Sea); in the south the area of distribution spreads over countries of the Balkan Peninsula and Asia Minor (SEIFERT, 2007).The workers have a large head which is wider than their abdomen. The occipital part of the head is flat. Their mandibles are covered by a small number of circular notches with pale hairs growing out of them. The scape passes the upper line of the head, is longer than the width of the head itself, and is covered in hairs which are subdecumbent. On the masticator line the mandible has six large teeth with the apical tooth standing out because of its size. The worker caste has eyes placed above the midline of the head with ocelli missing. The length of the maxillary palps in the worker caste is the same as the width of the head. The mesosoma is considerably narrowed between mesonotum and propodeum. Metanotal and propodeal workers' spiracles are very pronounced and round. The propodeal spiracle is located near the posterior border of the propodeum. The petiole of workers is squamous and not covered by gaster. The body is a glistening reddish-brown and covered in long, pale hairs. The body length of workers varies between 3,0 and 3,5 mm. The colour of the extremities is slightly lighter than the body, and the underside of the stomach is dark brown (Figs. 1-3). Hairs on the mesosoma are longer than those on the scape and extremities (AGOSTI & COLLINGWOOD, 1987; SEIFERT, 2007). The exact principle of colony formation is unknown. Anthills are built underground, under rocks and boulders, but also in dried and fallen trees, and most often in thermophile meadows, but they can also often be found in vineyards (BREGANT, 1998). Anthill tunnels range from one to three meters in depth, with the surface part of the anthill being quite small and almost unnoticeable. According to Seifert the founding of colonies in species *Prenolepis nitens* (Mayr) is independent. It has been suggested that false honey ants are temporarily parasitic on species from genus *Lasius* Fabricius, 1804 during the period of colony founding (BREGANT, 1998; SEIFERT, 2007).

Members of this species feed mostly on sweet fruits, nectar and elaiosom. The European false honey ant has specific methods of storing food where certain workers are used as a "live vessel" (*replete*). Workers used to store liquid foods receive the nectar from workers which bring the food into the anthill (BREGANT, 1998).

## Materials and Methods

Data regarding distribution of *Prenolepis nitens* (Mayr, 1853) has been taken from multiple sources: AGOSTI & COLLINGWOOD, 1987; PETROV & COLLINGWOOD, 1992; KARAMAN & KARAMAN, 2003; KARAMAN, 2004; KARAMAN & KARAMAN, 2006; PETROV, 2005; BRAČKO, 2000; 2006; 2007; VESNIĆ & LELO, 2008. Existing information on the distribution of *Prenolepis nitens* (Mayr) has been updated with the new findings from Bosnia and Herzegovina, municipality Ravno, location Zavala.

Material, individuals of *Prenolepis nitens* (Mayr), was collected on the 6th of June 2006. Eight individuals belonging to the worker caste have been stored in ethanol with three individuals having been mounted on card triangles. Material has been identified using: AGOSTI & COLLINGWOOD, 1987. Biological data was given by SEIFERT, 2007.




Figures 1-3. Photographs of worker caste of *Prenolepis nitens* (Mayr, 1853) with emphasis on taxonomic characters: (1) Frontal and lateral view of the head with emphasis on width of the head and length of the scape (top left), (2) length of the maxillary palp (top right), (3) lateral view of the stricture (bottom).

Images were taken using a "Sony d.s.c. H2" digital camera and a binocular stereo microscope Zrak MST 130. A graphic display of regional distribution of *Prenolepis nitens* (Mayr) was done using a UTM map of SFR Yugoslavia and an outline map of the western Balkan Peninsula.

## Results and Discussion

Analysis of faunistic checklists of ants of Bosnia and Herzegovina, Montenegro, Slovenia and Serbia (i.e. western part of Balkan Peninsula) resulted in 51 confirmed sites of collection of *Prenolepis nitens* (Mayr, 1853). Once again we note that literature data contained no sites located in Bosnia and Herzegovina so our find makes the 52nd known site for the area of the western Balkan Peninsula.

The highest number of recorded sites (31) is noted for Croatia (BRAČKO, 2006). Slovenia has records for multiple sites, but only grid references for 10 different UTM squares. The author of The Checklist of Ants of Slovenia did not provide exact site names, except in the case of a site in Ljubljana, but he did provide a UTM map with nine quadrants in which the species *Prenolepis nitens* (Mayr) had been recorded (BRAČKO, 2000). According to the same author in Slovenia the species is distributed over five phytogeographic regions: Prealpine, Submediterranean, Dinaric, Predinaric and Subpannonian region (BRAČKO, 2007).

This kind of research of myrmecofauna is unrecorded in Bosnia and Herzegovina. S. Cimerman, using the record from Kotor and referring to A. Forela, lists „far north" Herzegovina as part of the area of distribution of the species: „1928. – Kotor (A. F.). A. Forel gibt ferner die Art ohne nähere Fundortsbezeichnung aus der Herzegovina an" (ZIMMERMANN, 1934), but this is only an assumption with no record of a find.

In Montenegro several literature sources list 14 sites: Kotor (KARAMAN, 2003), Podgorica - Selišta, Kuči - Fundina, Kuči - Medun (KARAMAN, & KARAMAN, 2006), Donji Stoliv, Gornji Stoliv, Lovćen - Kaluđerović, Spas - Prijevor, Crmnica - Gornji Limljani, Skadarsko jezero - Seoca, Rajca, Rumija - Mali Mikulići, Rumija - Ostros, Ulcinj (KARAMAN, pers. comm.).

For Serbia there are five records in the literature (PETROV & COLLINGWOOD, 1992; KARAMAN & KARAMAN, 2003).

Review of literature data collected for *Prenolepis nitens* (Mayr) indicates a continuous area of distribution of the species. Out of 52 recorded locations for *Prenolepis nitens* (Mayr) in the western part of the Balkan Peninsula, 42 sites or 80,8 % of finds are in the Mediterranean and Submediterranean zones, while 10 sites are in the continental part (Tab. I; Fig. 4). It has to be noted that these 52 records do not include records for nine UTM quadrants from Slovenia which are shown in (Fig. 4).

The highest number of finds of *Prenolepis nitens* (Mayr), originates from the Mediterranean and Submediterranean zones, which is in accordance with literature data dealing with the general distribution and ecology of *Prenolepis nitens* (Mayr) species. E. Bregant claims that Prenolepis *nitens* (Mayr) is a sinatropic species inhabiting areas of lower altitude (BREGANT, 1998). However, apart from the typical Mediterranean locations in the western Balkan Peninsula, there are also 10 locations of continental character, which implies a higher degree of adaptability of this species then E. BREGANT thought.

Table I. Review of locations/sites with confirmed *Prenolepis nitens* (Mayr) finds and their sources in literature for the western part of Balkan Peninsula.

| Literature source | Country | Locations/Sites (No.) |
|---|---|---|
| BRAČKO (2006) | Croatia | Rovinj (1), Momjan (2), Pula (3), Veliki Brijuni (4), Lupoglav (5), Opatija (6), Raška (7), Rijeka (8), Orehovica (9), Vežica (10), Bakar (11), Draga (12), Cres (13), Veli Lošinj (14), Sv. Petar (15), Ilovik (16), Dalmacija (17), Dugi otok (18), Kaštel Lukšić (19), Kaštel Sućurac (20), Split (21), Hvar (22), Gornja Vručica (23), Oskorušno (24), Dubrovnik (25), Gruž (26), Lapad (27), Zagreb (28), Šestine (29), Sljeme (30), Krapina (31) |
| VESNIĆ & LELO (2008) | Bosnia and Herzegovina | Zavala (32) |
| PETROV & COLLINGWOOD (1992) | Serbia | Horgoš (33), Jastrebac (34), Stara Planina (35), Cernica (36) |
| KARAMAN & KARAMAN (2003) | Serbia | Novi Sad (37) |
| BRAČKO (2000) | Slovenia | Ljubljana (38) |
| KARAMAN (2003) | Montenegro | Kotor (39) |
| (KARAMAN, G. M., pers. comm.) | Montenegro | Rumija (40), Crmnica (41), Ulcinj (42),Podgorica (43) |

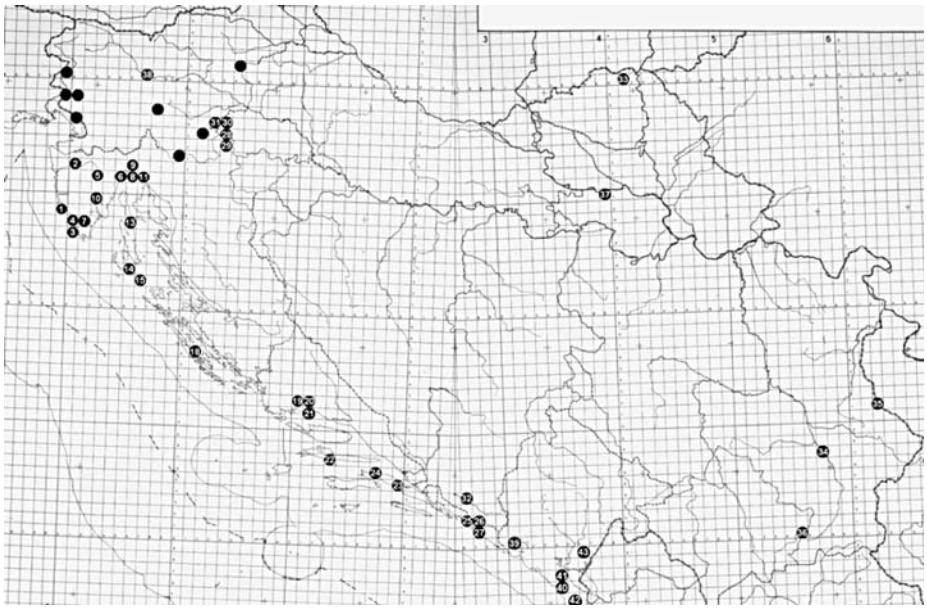


Figure 4. UTM map of SFR Yugoslavia showing sites for *Prenolepis nitens* (Mayr), dark symbols represent UTM squares with no specific locations.

Everything mentioned thus far leads us to conclude that the area of distribution of the species covers Slovenia down to the west and south Croatia (most likely all of western Croatia), southern Bosnia and Herzegovina, across to the south of Montenegro and north and east Serbia (Fig. 5).

The continuity of finds along the wider area of the Adriatic coast is perfectly understandable, but Serbian finds are very interesting and indicate the need for very subtle analysis of this species' local populations and metapopulations in the inner parts of the Balkan Peninsula.

Figure 5. Map showing current distribution *Prenolepis nitens* (Mayr) in the western part of Balkan Peninsula based on available literature data.

## Conclusion

Review of literature data for countries of the western Balkan Peninsula yielded 52 records for *Prenolepis nitens* (Mayr, 1853). Out of the total of 52 recorded sites for *Prenolepis nitens* (Mayr) 42 sites are in the Mediterranean and Submediterranean zones which leads us to conclude that *Prenolepis nitens* (Mayr) is distributed continuously down the west border of the Balkan Peninsula.

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# ПРИЛОГ ПОЗНАВАЊУ РАСПРОСТРАЊЕЊА ВРСТЕ *PRENOLEPIS NITENS* (MAYR, 1853) (HYMENOPTERA, FORMICIDAE) (ЕВРОПСКИ ЛАЖНИ МЕДНИ МРАВ), У ЈУГОЗАПАДНОМ ДЕЛУ БАЛКАНСКОГ ПОЛУОСТРВА

Ади Веснић и Сувад Лело

## Извод

Истраживање мирмекофауне у западном делу Балканског полуострва има дугу историју, али су подаци за Босну и Херцеговину малобројни и искључиво фаунистичког карактера. Анализом материјала из Поповог поља по први пут је констатована врста *Prenolepis nitens* (Mayr, 1853). Накнадна анализа литературних података је показала је да поменута врста спорадично насељава све државе западног дела Балканског полуострва: Словенију (Љубљана), Хрватску (околина Загреба и Далмација), Црну Гору (Котор) и Србију (Стара планина).

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