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MEDITERRANEAN BEE SPECIES, NEWLY RECORDED IN SLOVENIA (HYMENOPTERA: APOIDEA)

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Abstract – Five bee species are newly recorded in Slovenia: *Lasioglossum laterale* (Brullé, 1832), *Andrena thomsoni* Ducke, 1898, *Melitta tomentosa* Friese, 1900, *Protosmia tiflensis* (Morawitz, 1876) and *Ceratina chalcites* Germar, 1839. The food plants of the concerned bee species are reported.

KEY WORDS: Hymenoptera, Apoidea, Halictidae, Andrenidae, Melittidae, Megachilidae, Apidae, fauna, Slovenia.

Izvleček – MEDITERANSKE VRSTE ČEBEL, PRVIČ NAJDENE V SLOVENIJI (HYMENOPTERA: APOIDEA)

Pet vrst čebel je prvič najdenih v Sloveniji: *Lasioglossum laterale* (Brullé, 1832), *Andrena thomsoni* Ducke, 1898, *Melitta tomentosa* Friese, 1900, *Protosmia tiflensis* (Morawitz, 1876) in *Ceratina chalcites* Germar, 1839. Ugotovljene so hranilne rastline teh vrst.

KLJUČNE BESEDE: Hymenoptera, Apoidea, Halictidae, Andrenidae, Melittidae, Megachilidae, Apidae, favna, Slovenija.

Introduction

The climate change of the last years had unfavorable impacts on many wild bee species. The severe summer droughts caused likely radical decrease or extinctions of populations of many species active in the summer months. Their food plants did not flower or are affected in their nectar production, leading to a secondary impact on bees.

In early spring the species suffer also, due to the mild winters. They emerge earlier, but are then threatened by the random cold episodes.

In spite of these issues, I found during the last few years some still unrecorded Mediterranean species in Slovene Istria. Some of them are very rare and only a few specimens are owned by the world museums. We know very little about their life habits. I report here the findings of species, not listed for Slovenia by Gogala (1999), Gogala & Jenič (2003) or later publications.

List of species

HALICTIDAE

Lasioglossum laterale (Brullé, 1832)

Hrastovlje, Zanigrad, UTM: VL14, 29. 3. 2008 on *Prunus mahaleb*, 1♀, A. Gogala leg.

Lasioglossum laterale is rare in the northern Mediterranean basin. The species ranges from Spain to Turkey and to Switzerland and Hungary in the North (Ebmer, 1988). In early spring (March 29th) I observed and photographed females of this species on mahaleb cherry (*Prunus mahaleb*) in Zanigrad (at the Karst edge, limit of the Karst area). I observed specimens in copulation (not collected). Finding a male in this period would be important as only in a few halictid bee species males fly in the spring. In most species, males are active in the autumn, when the new generation emerges. I tried to confirm this observation in 2009, but the longer winter delayed the blooming of the mahaleb cherries. During the April flowering, I didn't find any specimen. In 2008, when I observed them, the flowering bush was one of a few already in bloom and the bees congregated there.

ANDRENIDAE

Andrena thomsoni Duce, 1898

Podpeč, UTM: VL14, 1. 5. 1994, 1♀, A. Gogala leg.

Hrastovlje, Zanigrad, UTM: VL14, 29. 3. 2008 on *Prunus mahaleb*, 1♀, A. Gogala leg.

The North Mediterranean andrenid bee *Andrena thomsoni* was found on the same mahaleb cherry bush as the previous species. The specimen from Podpeč, found in 1994, was misidentified as *A. congruens*.

The species is polylectic (visiting *Prunus* and *Salix* in spring, *Inula* and *Daucus* in June (Duce, 1898)), bivoltine and flies from March to May and in June. The species was described on the material collected by A. Duce near Trieste and Monfalcone in Italy, as well as in Rijeka (Croatia) by H. Friese.

MELITTIDAE

Melitta tomentosa Friese, 1900

Rakitovec, Kavčič, UTM: VL23, 15. 9. 2007, 1♀, A. Gogala leg., 12. 8. 2008, 1♂, A. Gogala leg.

Sočerga, Veli Badin, UTM: VL13, 10. 8. 2008, 1♂, A. Gogala vid., 19. 8. 2008, 1♀, photo A. Gogala, 1♂, A. Gogala vid.

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Melitta tomentosa was described by H. Friese in 1900 based on two specimens collected in Rijeka, Croatia, by A. Korlević. These were the only known specimens until Michez & Eardley (2007) found 5 additional museum specimens from Quarner and Opicina near Trieste, where one male was found on *Campanula* by E. Graeffe in 1855. I found females in September 2007 on Mt. Kavčič above Rakitovec at the Karst edge in Slovene Istria. They collected pollen of *Campanula pyramidalis*. In the same place and on the same plant, I found one male in August 2008. In Veli Badin near Sočerga, not far away, I observed both sexes visiting flowers of *Campanula pyramidalis* as well. I conclude that the bee is monolectic, dependent on this Illyric-Adriatic plant species, distributed from North Italy to Albania along the Adriatic coast (Topić & Ilijanić, 2005).

MEGACHILIDAE

Protosmia tiflensis (Morawitz, 1876)

Osmia graeffei Schmiedeknecht, 1892

Dragonja, Stena, UTM: UL93, 27. 5. 2008 on *Stachys subcrenata*, 1♂, A. Gogala leg., 1♀1♂, photo A. Gogala

Protosmia tiflensis was described based on specimens from Caucasus, and *Osmia graeffei* Schmiedeknecht, 1892 from individuals caught in Trieste. It was found by E. Gräffe, who observed a female entering beetle burrows in wood (Gräffe, 1892). It is hypothesized that the species nests in these burrows. I noticed and photographed a copulating couple on the flower of *Stachys recta* (Lamiaceae) at the Stena near Dragonja in Istria on May 27, 2008. Additional males patrolled around these plants; I am consequently suggesting that it is the foodplant, but I cannot say it is the only one. Banaszak & Romasenko (1998) list Fabaceae and Lamiaceae as the flowers visited. Univoltine species, active from April to June.

APIDAE

Ceratina chalcites Germar, 1839

Rakitovec, UTM: VL13, 3. 6. 1992, 1♀, A. Gogala leg.

Movraž, Movraška vala, UTM: VL13, 5. 8. 1999, 1♀, A. Gogala leg.

Rakitovec, Kavčič, UTM: VL23, 19. 6. 2008, 1♀, A. Gogala leg.

North Mediterranean species, the largest *Ceratina* in Europe. Found in Slovenia at the Karst edge in Istria (Rakitovec and Movraž, submediterranean region). The specimens found in 1992 and 1999 were misidentified as *C. chalybea*.

Polylectic species (Terzo et al., 2007). In Slovenia observed on *Cirsium pannonicum* in June. Nests in hollow plant stems. Univoltine. Flies from April to October.

Discussion

The newly recorded species were already known from the vicinity, whether from the surroundings of Trieste in Italy, or the Croatian coast. But the Slovenian coast is



Fig. 1: *Lasioglossum laterale* female on *Prunus mahaleb*. Zanimgrad, March 2008.



Fig. 2: *Andrena thomsoni* female on *Prunus mahaleb*. Although observed in March (early for most bee species), the specimens were worn off already.

generally less warm than the coast near Trieste or Rijeka, because it is built of sandstone. The warmer limestone ground is found in the interior at higher elevations, with the exception of a small area near the village Dragonja. All the species concerned were found at localities on the limestone ground. Most of them at the southern edge of the Kras (Karst) plateau, and *Protosmia tiftensis* in the isolated limestone area near Dragonja.

There is a question whether the species were overlooked in Slovenia in the past, or they spread their territories in the last warm years. The answer is clear for *Ceratina chalcites* and *Andrena thomsoni*, because older specimens were found in the collection. We do not know the answer for other species, but the populations of species must fluctuate in response to the weather conditions. With better knowledge of the food plants and other preferences of the species, we can expect to find more

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Fig. 3: *Melitta tomentosa* female on *Campanula pyramidalis*. Veli Badin, August 2008.



Fig. 4: *Protosmia tiflensis* couple on *Stachys recta*. Dragonja, May 2008.

localities of rare species. We can search for *Melitta tomentosa*, for example, wherever *Campanula pyramidalis* grows, from North Italy to Albania. The territories of bee species, however, could be much smaller than the territories of their food plants, as they are dependent on other conditions also.

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Fig. 5: *Ceratina chalcites* female on *Cirsium pannonicum*. Kavčič, Rakitovec, June 2008.

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Andrej Gogala: *Micronecta poweri* (Douglas & Scott) in Slovenia (Heteroptera: Corixidae)

FAVNISTIČNI ZAPISKI / FAUNISTICAL NOTES

***MICRONECTA POWERI* (DOUGLAS & SCOTT) IN SLOVENIA
(HETEROPTERA: CORIXIDAE)**

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Abstract – A lesser boatman species *Micronecta poweri* (Douglas & Scott, 1869) was discovered in the Višnjica stream near Krka in the pre-Dinaric region of Slovenia. This is the first reliable record of the species in Slovenia.

KEY WORDS: Heteroptera, Corixidae, *Micronecta*, fauna, Slovenia

**Izvleček - *MICRONECTA POWERI* (DOUGLAS & SCOTT) V SLOVENIJI
(HETEROPTERA: CORIXIDAE)**

Micronecta poweri (Douglas & Scott, 1869), vrsta pritlikave veslavke, je bila najdena v potoku Višnjica pri Krki v preddinarskem območju Slovenije. To je prva zanesljiva najdba te vrste v Sloveniji.

KLJUČNE BESEDE: Heteroptera, Corixidae, *Micronecta*, favna, Slovenija

Species of the genus *Micronecta* are the smallest water bugs. Usually they are included in the family Corixidae (water boatmen), but Nieser (2002) put them in their own family Micronectidae due to several morphological differences. Their behaviour is also different from other corixids in many respects. They are found in stagnant or slowly flowing waters, usually along shores with little (or without) vegetation. They live in small to very large swarms. Their food is not known, but they can be kept alive just with fresh bottom material from their habitats (Jansson, 1986). They breathe the oxygen dissolved in water and do not come for the air to the surface. So they cannot live in oxygen-poor waters and are hard-hit by pollution. They overwinter as larvae and reach the adult stage in early summer. In warmer areas, they can have two to three generations in a season. The males stridulate very loudly for their small size during courtship.

The *Micronecta* species in Slovenia are not well known. *Micronecta scholtzi* (Fieber, 1860) is a common species in Prekmurje (sub-Pannonian region). *Micronecta griseola* Horváth, 1899 was recorded from the Cerknjščica river (Dinaric region). Jansson (1995) listed Slovenia among countries where *Micronecta poweri* (Douglas & Scott, 1869) is present. But we do not know the source of this record and the exact locality. On the map of distribution published by Jansson (1986) no locality in Slovenia is marked, so it is possible that some records from Slovakia were mistakenly attributed to Slovenia in the Catalogue (Gogala, 2003). However, the species was found in Slovenia in 2008, and the find is presented here.

Micronecta poweri (Douglas & Scott, 1869)

Record from Slovenia:

Krka, Trebnja Gorica, r. Višnjica, 14°47'E 45°53'N, UTM: VL88, 23. 5. 2008, A. Gogala leg.

I noticed a large swarm of corixid larvae at the shore of the Višnjica stream near its confluence with the Krka river already on May 8, 2008. Many of the larvae were half-buried into the loose, muddy bottom in shallow water. As I expected to find adult *Micronecta* specimens later, I visited the same spot on May 23, and successfully collected many specimens. I photographed some specimens in natural environment as well, as I did also with the larvae before. The colour pattern of the adults was typical for *Micronecta poweri* and the identification was proved by the examination of the genitalia.

The Višnjica stream is a slowly flowing, meandering brook in an agricultural landscape. Not far from the collecting spot it fuses with the Krka river, which has a source nearby. This is a karstic river with karstic springs. The banks of both streams near the village Krka are similar and are suitable habitats for *Micronecta* species. Any pollution or regulation of the stream flow, however, would threaten the existence of the *Micronecta* population.



Fig. 1: The Višnjica stream near the village Trebnja Gorica, at the place where the *Micronecta* specimens were found.

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Fig. 2: Larvae of *Micronecta poweri*, photographed in the natural environment of the Višnjica stream, May 8, 2008.



Fig. 3: Adult specimen of *Micronecta poweri* in its environment, May 23, 2008.

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