

**SOME INTERESTING NOTES ON THE *ANDRENA* SPECIES
IN SLOVENIA (HYMENOPTERA: ANDRENIDAE)**

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Abstract – Notes on the distribution and behaviour of seven *Andrena* species in Slovenia are presented, among them the first record of *Andrena nuptialis*, while *A. alutacea* had been distinguished from *A. proxima*.

KEY WORDS: Hymenoptera, Andrenidae, *Andrena*, Slovenia, fauna

Izveček – NEKAJ ZANIMIVIH PODATKOV O VRSTAH RODU *ANDRENA* V SLOVENIJI (HYMENOPTERA: ANDRENIDAE)

Predstavljeni so podatki o razširjenosti in vedenju sedmih vrst iz rodu *Andrena* v Sloveniji. Prvič je zabeležena vrsta *Andrena nuptialis*, medtem ko je *A. alutacea* razlikovana od vrste *A. proxima*.

KLJUČNE BESEDE: Hymenoptera, Andrenidae, *Andrena*, Slovenija, favna

Introduction

The genus *Andrena* is the largest among bee genera in Europe. Many species are oligolectic, specialized for a specific plant species, genus or family. In Slovenia, 118 *Andrena* species had been found. Interesting notes on the distribution and behaviour of some species accumulated in recent years and are presented in this contribution. *Andrena nuptialis* had been found for the first time and *A. alutacea* distinguished from *A. proxima*.

List of species

Andrena alutacea Stoeckhert, 1942
Records from Slovenia:

Log, Lukovica, VL59, 6. 7. 1991, 1♀, A. Gogala leg.
 Brezovica pri Lj., VL59, 29. 7. 1991, 1♀, A. Gogala leg.
 Rakitna, VL58, 11. 6. 1993, 1♀, A. Gogala leg.
 Nanos: Sv. Hieronim – Pleša, VL27, 4. 7. 1998, 1♀, A. Gogala leg.
 Čaven: planinska koča, VL18, 7. 7. 2007 on *Laserpitium siler*, 1♀, A. Gogala leg.
 Kranj, Brdo, VM52, 14. 6. 2007, 1♀, A. Gogala leg.

I treated *A. alutacea* as a synonym of *Andrena proxima* (Kirby) in the Checklist of the bee fauna of Slovenia (Gogala 1999). Schmid-Egger (2005) published a revision in which he treats it as a distinct species. Apart from the morphological differences, *A. alutacea* is active later in the season than *A. proxima*. In Slovenia, proved specimens of *A. proxima* were collected from the April 14th to May 8th (males and females), and females of *A. alutacea* from June 11th to July 29th (males were not found yet).

***Andrena chrysopus* Pérez, 1903**

Records from Slovenia:

Kras: Tublje pri Komnu, VL07, 10. 5. 2003 on *Asparagus officinalis*, 1♀, A. Gogala leg.
 Lukovec, Rabotnica, VL07, 10. 5. 2009 on *Asparagus officinalis*, 1♀, photo A. Gogala

In the first record of this oligolectic species for Slovenia (Gogala 2004) I stated that it was observed and collected on *Asparagus tenuifolius*. That's wrong. I didn't know at the time that *Asparagus officinalis* also grows in the wild in the Kras plateau and looks similar. Later I found and photographed *A. chrysopus* on the Rabotnica hill near Lukovec, again on *A. officinalis* (Fig. 1). I never found it on *A. tenuifolius*, which blooms approximately at the same time. On that *Asparagus* species *Andrena fulvata* Stoeckert, a poliolectic species, was found to collect several times. I conclude that *Andrena chrysopus* is monolectic in Slovenia (collects pollen of a single plant species).

***Andrena lapponica* Zetterstedt, 1838**

Records from Slovenia:

Dragomer, VL59, 14. 4. 1992, 1♀, A. Gogala leg., 29. 3. 1997, 1♀, A. Gogala leg.
 Dragomer, Debeli hrib, VL59, 25. 4. 2004 on *Vaccinium myrtillus*, 1♀, photo A. Gogala

Log, Lukovica, VL59, 6. 4. 1993, 1♂, A. Gogala leg.

Črni Vrh, Pasja ravan, VM40, 30. 3. 1994, 1♂, A. Gogala leg.

Kamniška Bistrica, VM63, 31. 3. 1994, 2♂, A. Gogala leg., 1♀, A. Gogala vid.

Smrekovec, 1520 m, VM94, 2. 6. 1999 on *Vaccinium myrtillus*, 1♀1♂, A. Gogala leg.

Snežnik, 1600 m, VL54, 3. 6. 2000, 1♀, A. Gogala leg., 1700 m, 25. 6. 2008 on

Salix, 1♀, A. Gogala leg., 1780 m, 30. 6. 2010 on *Helianthemum*, 1♀, photo A. Gogala

A. lapponica is known as an oligolectic species, collecting from *Vaccinium* species (Ericaceae) in most of its range. *Vaccinium myrtillus* is its host plant in Alpine and pre-Alpine regions of Slovenia. But this bee is present also on Mt. Snežnik, the high-

est Dinaric mountain in Slovenia. The limestone ground there is not suitable for *Vaccinium myrtillus*, which grows in acidic substrate only. *A. lapponica* is a common species there up to the top of the mountain at 1796 m. In contrast to its behaviour elsewhere it collects pollen from *Salix* and *Heliathemum* flowers (Fig. 2) in this locality. Obviously, this population at the southern limit of distribution is polilectic (*A. lapponica* is a boreo-montane species). The population on Mt. Snežnik is probably a relic from the ice-age. Both host plants are visited, however, also in the Austrian Alps and pollen collected at least from *Helianthemum* also there (Ebmer 2003). Therefore, *A. lapponica* is not so strict an oligolege that it could not adapt to local circumstances.

***Andrena nuptialis* Pérez, 1902**

New to Slovenia:

Istra: Rakitovec, Kavčič, 780 m, VL23, 29. 7. 2009 on *Eryngium amethystinum*, 1♀, A. Gogala leg.

North Mediterranean species, bivoltine. While spring generation is polilectic, the oligolectic summer generation collects from Apiaceae only. Summer generation could possibly be a distinct species (Westrich 1990). At the end of July 2009 I visited Mt. Kavčič in Čičarija, Slovene Istria, again. At the place where I found specimens of *Melitta tomentosa* Friese and *Hoplitis mazzuccoi* (Schwarz & Gusenleitner) for the first time before (Gogala 2009a, b), several females of *Andrena nuptialis* collected pollen or nectar from *Eryngium amethystinum* inflorescences (Fig. 3). Although the host plant is very numerous in the whole Kras plateau, *A. nuptialis* had never been found before in Slovenia.

***Andrena pellucens* Pérez, 1895**

Records from Slovenia:

Podčetrtek, WM41, 28. 8. 1937, 1♀, E. Jaeger leg.

Brje pri Komnu, VL07, 29. 9. 1990, 1♀, A. Gogala leg., 7. 9. 1996, 2♀, A. Gogala leg., 13. 9. 1992, 1♂, A. Gogala leg.

Komen, Škrbina, VL07, 7. 9. 2008 on *Crepis*, 1♀, A. Gogala leg.

Preserje pod Krimom, Ponikve, VL58, 12. 9. 2008, 1♀, A. Gogala leg., 15. 9. 2008, 1♂, photo A. Gogala, 8. 10. 2008, 2♀, A. Gogala vid.

A. pellucens is known to collect pollen of *Colchicum*, *Smilax* and related plants in the Liliaceae and Iridaceae families (K. & L. Standfuss 2010, Scheuchl pers. comm.). In the Kras plateau in Slovenia, however, I observed it many times on yellow Asteraceae Cichorioideae, as *Leontodon* and *Crepis* species (Fig. 4). Analysis of pollen loads were not made, but females were collecting pollen almost certainly. It is a question whether species is polilectic or oligolectic, but adaptable.

In September 2008 I found the species in Central Slovenia for the first time. A numerous nest aggregation was situated in a cart track crossing a meadow on a sunny slope near Preserje pod Krimom (Dinaric region). During cloudy weather females and males rested on *Cichorium* and *Leontodon* flowers. Females were still active in

October, when very few bee species could be seen. It is thus one of the last *Andrena* species in the season.

Andrena rogenhoferi Morawitz, 1872

Records from Slovenia:

Ebmer, 1997: Karavanke, Košutnikov turn, 1700 m, 22. 7. 1996, 1♀

Triglav: Mali Triglav, 2700 m, VM13, 7. 8. 1991 on *Potentilla nitida*, 1♀, A. Gogala leg.

Bohinj: Ukanc, VM02, 24. 4. 1994 on *Salix*, 2♂, A. Gogala leg.

Snežnik, 1600 m, VL54, 28. 6. 2008 on *Rosa*, 1♀, photo A. Gogala, 1700 m, 30. 6. 2010 on *Salix*, 1♀, photo A. Gogala

Snežnik, 1780 m, VL54, 3. 6. 2000, 1♀, A. Gogala vid.

Čaven: Kucelj, VL08, 10. 7. 2010 on *Laserpitium siler*, 1♀, A. Gogala vid.

A. rogenhoferi is an Alpine species. According to Zettel et al. (2008) it is distributed in the whole Alpine arch with only one record outside it: Jura Mts. in Switzerland. In the south-east it should be distributed to the Karavanke Mts. at the northern border of Slovenia, although the authors cite also my record from Mt. Triglav (Julian Alps). The highest locality where I found the species in Slovenia is at 2700 m (Mali Triglav) and the lowest point in Ukanc in the Bohinj valley at 530 m a.s.l. where males were found. In recent years I found this species also on Mt. Snežnik, the highest Dinaric mountain in Slovenia. That is the first record of the species in the Balkan mountain ranges and expands considerably its known distribution to the south. In 2010 I've seen one specimen also on Mt. Čaven, a locality in-between the Dinaric and Alpine records of the species. On Mt. Snežnik *A. rogenhoferi* can be seen above the forest limit from 1600 m a.s.l. to the top of the mountain at 1796 m. I documented it collecting pollen from *Rosa* (Fig. 5) and *Salix* flowers. It is a polilectic species. It is interesting that the German name of Mt. Snežnik, used in the time of Austro-Hungarian empire, is Schneeberg (translation of the Slovene name). That is also the name of one of the localities, where syntypes of *A. rogenhoferi* were collected, but that Schneeberg mountain is situated near Wien in Austria (Zettel et al. 2008).

Andrena susterai Alfken, 1914

Records from Slovenia:

Kras: Kregolišče, VL07, 16. 5. 1992 on *Cotinus coggygia*, 1♀, A. Gogala leg.

Kraški rob: Podpeč, VL14, 23. 5. 1995, 1♀, A. Gogala leg.

Sočerga, Veli Badin, VL13, 2. 5. 2009 on *Cotinus coggygia*, 1♀, A. Gogala leg.

Obrež, Grabe, WM94, 29. 6. 1995, 1♂, A. Gogala leg.

A. susterai is a species with a pontic distribution which reaches its western limit in the Kras plateau in Slovenia. It is a polilectic species (Schmid-Egger & Scheuchl 1997), but in the Kras I observed it only on the flowers of *Cotinus coggygia* (Fig. 6). This is a rich source of nectar, so it attracts many bees and other insects, but no specialized oligolectic bees are known to collect only its pollen. Examinations of the pollen loads of *A. susterai* females are needed before we make conclusions about its food preferences.



Fig. 1: *Andrena chrysopus* on *Asparagus officinalis*. Rabotnica, May 2009.

Fig. 2: *Andrena lapponica* on *Helianthemum*. Snežnik, 1780 m, June 2010.

Fig. 3: *Andrena nuptialis* on *Eryngium amethystinum*. Kavčič, July 2009.

Fig. 4: *Andrena pellucens* on *Crepis*. Škrbina, September 2008.

Discussion

With two additional species (*Andrena alutacea* and *A. nuptialis*) the number of recorded bee species in Slovenia rose to 558. *Lasioglossum aeratum* (Kirby) is not included in that number although listed by Gogala (1999), because the records of this species are not proved yet. Included are, however, species of bumblebees and a *Ceratina* species recorded by Barbattini et al. (2007) on the basis of old specimens in the Trieste Museum: *Ceratina callosa* found in Lipica by Gräffe, *Bombus ruderatus*, found in Pivka in 1915, *B. pomorum*, found in Postojna (1927), and *B. maxillosus* (from Rodik, Lipica and Nanos). *Andrena parviceps* Kriechbaumer, 1873, is also missing in the Checklist, although var. *basalis* was described on a specimen from Lipica (Kriechbaumer 1873).

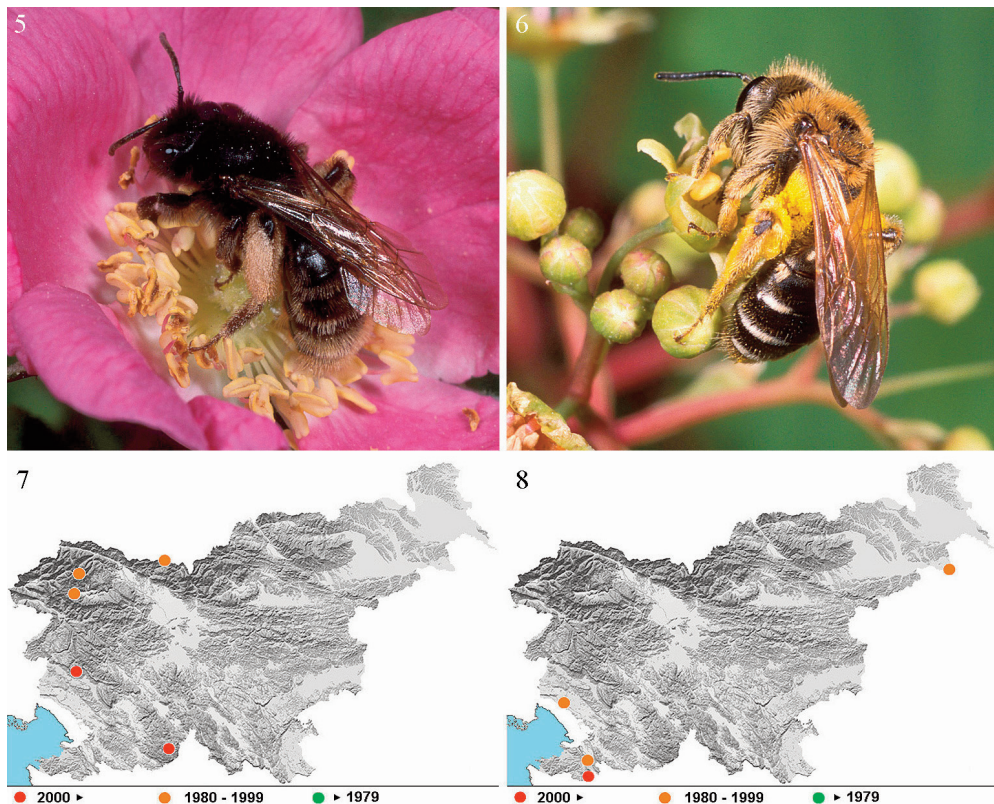


Fig. 5: *Andrena rogenhoferi* on *Rosa*. Snežnik, 1600 m, June 2008.

Fig. 6: *Andrena susterai* on *Cotinus coggygria*. Veli Badin, May 2009.

Fig. 7: The distribution of *Andrena rogenhoferi* in Slovenia.

Fig. 8: The distribution of *Andrena susterai* in Slovenia.

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3. SLOVENSKI ENTOMOLOŠKI SIMPOZIJ Z MEDNARODNO UDELEŽBO

Biologi z Oddelka za biologijo – sodelavci obeh zooloških kateder (Katedre za zoofiziologijo in etologijo, Katedre za zoologijo) bomo skupaj s Slovenskim entomološkim društvom Štefana Michielija organizirali 3. slovenski entomološki simpozij z mednarodno udeležbo.

Simpozij bo potekal **27. in 28. januarja 2012 v Mariboru.**

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