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Samica vrste *Colletes graeffei* na *Allium pulchellum* iz Sedovca. Foto: Andrej Gogala.
Female Colletes graeffei on Allium pulchellum at Sedovec. Photo: Andrej Gogala.

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Čebele iz družine Colletidae v Sloveniji (Hymenoptera: Apoidea: Colletidae)

Colletid bees of Slovenia (Hymenoptera: Apoidea: Colletidae)

Andrej GOGALA¹

Izveček

Podatki o razširjenosti 48 vrst čebel opark (družina Colletidae) v Sloveniji so zbrani iz literature, zbirk Prirodoslovnega muzeja Slovenije in zapisov iz drugih opazovanj. Štiri vrste so prvič zabeležene za Slovenijo: *Colletes inexpectatus*, *Hylaeus intermedius*, *Hylaeus incongruus* in *Hylaeus bifasciatus*.

Ključne besede: Apocrita, Apoidea, favnistika, razširjenost vrst, taksonomija

Abstract

Data on the distribution of 48 species of Colletid bees in Slovenia have been compiled from literature, collections of the Slovenian Museum of Natural History and other observations. Four species have been recorded for Slovenia for the first time: *Colletes inexpectatus*, *Hylaeus intermedius*, *Hylaeus incongruus* and *Hylaeus bifasciatus*.

Key words: Apocrita, Apoidea, faunistics, species ranges, taxonomy

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Uvod

Favnistične raziskave v Sloveniji se navadno začnejo s Scopolijem, ki pa, kot kaže, ni vključil nobene vrste iz družine Colletidae med kranjske vrste. Tako lahko začnemo s švicarskim entomologom Edvardom Graeffejem (1833–1916), ki je pri Tolminu našel vrsto *Colletes graeffei* in jo je kasneje ALFKEN (1900) opisal in poimenoval po njem. WARNCKE (1972) je opisal vrsto *Hylaeus adriaticus* z ozemlja Italije tik ob meji leta 1972. Med obema svetovnjima vojnama je bil najpomembnejši zbiralec kožekrilcev Evgen Jaeger (1892–1959), po izobrazbi zdravnik. Njegova zbirka je shranjena v Prirodoslovnem muzeju Slovenije v Ljubljani. Sam sem začel zbirati primerke za zbirko v sedemdesetih letih prejšnjega stoletja. V zadnjih letih se je Nacionalni Inštitut za biologijo (NIB) lotil zbiranja primerkov s pastmi na določenih območjih Slovenije.

Okrajšave

leg. = legit / nabral

vid. = videt / opazoval

det. = določil

PMSL = Zbirka Prirodoslovnega muzeja Slovenije v Ljubljani

NIB = Nacionalni inštitut za biologijo

Sv. = Sveti

Ključ za okrajšave na listkih/etiketah v zbirki Evgena Jaegerja (povzeto po Milivojević et. al 2009):

Gr – Podčetrtek, reka Sotla

N – severno od Podčetrтка

NO – severovzhodno od Podčetrтка

NW – severozahodno od Podčetrтка

OL – Podčetrtek, Olimje

P – Podčetrtek

SOT – Podčetrtek, reka Sotla

TRO – Podčetrtek, Olimje, Trobevnik

Za sledeče okrajšave nisem uspel razložiti njihovega pomena: GA, NO, SL, STR in TR.

Introduction

The history of Slovenian faunal research usually starts with Scopoli, but as far as Colletidae are concerned, Scopoli seemingly did not list a single species in his review of Carniolan entomofauna. We have to start with Eduard Graeffe (1833–1916), a Swiss researcher who worked in Trieste and found *Colletes graeffei* in Tolmin, which was subsequently described by ALFKEN in 1900 as his eponym. WARNCKE (1972) described *Hylaeus adriaticus* from the territory of Italy close to the border in 1972. The most important Hymenoptera collector between the two world wars was Eugen Jaeger (1892–1959), a physician in Podčetrtek. His collection is preserved in the Slovenian Museum of Natural History in Ljubljana. I started to collect bees in the 1970s. In recent years, the National Institute of Biology (NIB) has been collecting bees with traps at several localities in Slovenia.

Abbreviations

leg. = legit / collected by

vid. = videt / observed by

det. = determined by

PMSL = Collection of the Slovenian Museum of Natural History in Ljubljana

NIB = National Institute for Biology

Sv. = Saint

Key to label abbreviations of localities in Evgen Jaeger's collection (according to MILIVOJEVIĆ et. al 2009):

Gr – Podčetrtek, Sotla River

N – North of Podčetrtek

NO – North-east of Podčetrtek

NW – North-west of Podčetrtek

OL – Podčetrtek, Olimje

P – Podčetrtek

SOT – Podčetrtek, Sotla River

TRO – Podčetrtek, Olimje, Trobevnik

I was not able to interpretate the following abbreviations: GA, NO, SL, STR, and TR.

Seznam vrst**List of species****Genus: *Colletes* Latreille, 1802**

Filogenske raziskave so potrdile južno-ameriški izvor rodu z mnogimi izmenjavami med severnoameriško in evrazijsko favno (KUHLMANN et al. 2009). Filogenske raziskave podpirajo monofilijo večine podrodov Starega sveta in prikazujejo potrebo po vnovičnem razdeljevanju preostalih podrodov. Dokler to ni storjeno, se namesto podrodov raje uporabljajo skupine vrst (KUHLMANN & PROSHCHALYKIN 2014). Večina vrst iz rodu *Colletes* je oligolektična in gnezdi v tleh.

Phylogenetic results confirmed the South American origin of the genus *Colletes* and multiple faunal exchange events between North America and Eurasia (KUHLMANN et al. 2009). Our results corroborate the monophyly of about half of the Old World subgenera and show the need for a taxonomic re-delimitation of other groups as currently accepted in KUHLMANN et al. (2009). As long as subgenera are not delimited, the species groups are used instead of the subgenera (KUHLMANN & PROSHCHALYKIN 2014). The majority of *Colletes* species are oligolectic and nest in the ground.

Colletes albomaculatus* (Lucas, 1849)Colletes spectabilis* Morawitz, 1868*Colletes niveofasciatus* Dours, 1872

Nests in the ground. Polylectic with preference for Resedaceae (SCHEUCHL & WILLNER 2015)

Published records:

GOGALA (1999, 2018).

Specimens examined:

Dragonja, Sv. Štefan, UL93, 31. 5. 1997, 1♀, A. Gogala leg.

***Colletes carinatus* Radoszkowski, 1891**Oligolectic, specialized for *Allium* (Liliaceae) (personal observation).

Published records:

GOGALA (1999).

Specimens examined:

Dragonja, Stena, UL93, 22. 6. 1994, 2♀2♂, A. Gogala leg.; 3. 7. 2008, 1♀, A. Gogala vid.

Sočerga, Veli Badin, VL13, 3. 7. 1994, 1♀, A. Gogala leg.

Senadolice, VL16, 5. 8. 1995, 1♀, A. Gogala leg.

Brje pri Komnu, VL07, 29. 6. 1996, 1♀1♂, A. Gogala leg.; 7. 7. 1996 on *Allium ameloprasum*,

1♂, photo A. Gogala.

Strunjan, UL94, 22. 6. 1994, 1♂, A. Gogala leg.

Gorjansko, UL97, 14. 7. 1996, 1♂, A. Gogala leg.

Lukovec, Rabotnica, VL07, 2. 7. 2005 on *Allium sphaerocephalon*, 1♀, photo A. Gogala;

12. 7. 2008, 1♀, A. Gogala vid.; 4. 7. 2010, 1♂, A. Gogala vid.

Gorjansko, Vale, UL97; 6. 7. 1999, 1♀, A. Gogala vid.

Lukovec, Golec, VL07, 11. 7. 2009, 1♀, A. Gogala vid.

Trstelj, UL97, 14. 7. 2019 on *Allium sphaerocephalon*, 1♂, A. Gogala vid.

Colletes cunicularius (Linnaeus, 1761)

Nests in large nest aggregations in the ground. Polylectic with preference for *Salix* (Salicaceae) (SCHEUCHL & WILLNER 2015).

Published records:

GOGALA (1991, 1994)

Podčetrtek, 13. 4. 1931, 1♂, E. Jaeger leg. (GOGALA 1991); WM41, 4. 4. 1932, 1♀, E. Jaeger leg.; 25. 4. 1932, 1♂, E. Jaeger leg. (GOGALA 1999).

Dol pri Ljubljani, Senožeti, VM80, 14. 4. 2006, 1♀1♂, photo A. Gogala (GOGALA & GRAD 2008).

Specimens examined:

Podčetrtek (P), 4. 4. 1932, 1♀, E. Jaeger leg.

North of Podčetrtek (N), 25. 4. 1932, 1♂, E. Jaeger leg.

Dobova, Mihalovec, WL58, 27. 3. 1994, 1♀, A. Gogala leg.

Melinci, WM96, 9. 4. 1995, 1♀1♂, A. Gogala leg.

Borl, WM73, 22. 4. 1995, 1♀, A. Gogala leg.

Vonartje, WM41, 9. 4. 1997, 1♀, A. Gogala leg.

Dol pri Ljubljani, ob Savi, VM70, 14. 4. 2006, 1♀, A. Gogala leg.

Predgrad, Laze, WL03, 12. 3. 1994, 1♂, A. Gogala leg.

Ljubljana, Črnuče, VM60, 13. 4. 1995, 1♂, A. Gogala leg.; Jarški prod, 26. 3. 2008, 1♂, A. Gogala vid.

Bizeljsko, peskokop Župjek, WL59, 21. 4. 2000, 1♀, A. Gogala leg.

Ig, Kremenica, VL68, 17. 3. 2009, 1♂, A. Gogala leg.; 16. 3. 2007, 1♀, A. Gogala vid.; 22. 3. 2011, 1♀1♂, A. Gogala vid.; 16. 4. 2013, 1♀, A. Gogala vid.; 3. 2016, 2♂, A. Gogala vid.; 16. 3. 2017, 1♂, A. Gogala vid.; 6. 4. 2018, 1♀, A. Gogala vid.; 17. 3. 2020, 2♀1♂, A. Gogala vid.

Dol pri Ljubljani, Senožeti, VM80, 14. 4. 2006, 1♀1♂, photo A. Gogala; 17. 3. 2017, 1♂ on *Salix*, A. Gogala vid.

Blatna Brezovica, VL49, 16. 4. 2009, 1♂ on *Salix*, A. Gogala vid.

Colletes daviesanus Smith, 1846

Oligolectic, specialized on Asteraceae (SCHEUCHL & WILLNER 2015).

Published records:

Podčetrtek, WM41, 9. 8. 1932, 3♀1♂, E. Jaeger leg. (GOGALA 1994, 1999).

Specimens examined:

North of Podčetrtek (N), 9. 8. 1932, 3♀1♂, E. Jaeger leg.

Brezovica, VL59, 2. 8. 1995, 1♀, A. Gogala leg.

Cerkniško jezero: Laze, VL56, 24. 6. 1999, 1♀1♂, A. Gogala leg.

Zaplana, VL39, 23. 7. 1999, 1♀, A. Gogala leg.

Bizeljsko, peskokop Župjek, WL59, 25. 8. 1999, 1♀, A. Gogala leg.; 19. 8. 2010, 1♀1♂, A. Gogala vid.

Hrastovlje, VL14, 13. 6. 1992, 1♂, A. Gogala leg.

Sečovlje, Fontanigge, UL93, 7. 6. 1994, 3♂, A. Gogala leg.

Dol pri Ljubljani, ob Savi, VM70, 28. 7. 2006, 1♂, A. Gogala leg.

Izvir Rižane, VL14, 17. 6. 2006, 1♀, photo A. Gogala.

Loka pri Mengšu, VM61, 13. 7. 2020, 1♀, NIB.

Colletes floralis Eversmann, 1852

Polylectic with preference for Apiaceae (SCHEUCHL & WILLNER 2015).

Published records:

Kamnik, 5. 8. (VOGRIN 1955; GOGALA 1999, 2018).

Colletes fodiens (Geoffroy in Fourcroy, 1785)

Oligolectic, specialized for Asteraceae (SCHEUCHL & WILLNER 2015).

Published records:

GOGALA (1994, 1999, 2018)

Specimens examined:

Ljubljana, Črnuče, Jarški prod, VM60, 11. 8. 1993, 2♀2♂, A. Gogala leg.; 6. 8. 2004, 1♀, A. Gogala vid.; 10. 8. 2004, 1♂, A. Gogala leg.
Bevke, VL49, 5. 8. 1996, 1♀, A. Gogala leg.

Colletes graeffei Alfken, 1900

Oligolectic, specialized for *Allium* (Liliaceae). In Slovenia, it visits exclusively *Allium pulchellum* and has not been found on *Allium carinatum* in the same meadow (pers. observation); the two are treated as subspecies by many botanists. In Austria and Slovakia, the species visits *Allium flavum*; in Crimea, it visits *Allium waldsteinii* (OSYCHNJUK 1970).

Published records:

Polhograjsko hribovje (ERLANDSSON 1986).

ALFKEN (1900).

Tolmin (GRAEFFE 1902).

Tolmin, 1♀1♂; Rimske Toplice, 1♂ (NOSKIEWICZ 1936).

Tolmin, 4♀1♂, coll. Gräffe (GOGALA 1999; BARBATTINI et al. 2005).

Grgar, Ravnica, UL99, 16. 8. 1997, 1♀, A. Gogala leg. (GOGALA 2018).

Specimens examined:

Grmada, VM40; 6. 8. 1998, 1♀, A. Gogala leg.; 7. 8. 2004, 1♀, A. Gogala vid.

Vojščica, UL97, 8. 8. 1999, 1♀, A. Gogala leg.

Nanos: Šembijska bajta, VL27, 10. 8. 1996, 1♂, A. Gogala leg.

Zazid, Lipnik, 700 m, VL13, 26. 7. 2000, 1♂, A. Gogala leg.

Famlje, Školj, VL25, 31. 7. 1998, 1♂, A. Gogala leg.

Gračišče, Smokvica, VL13, 5. 8. 1999, 1♂, A. Gogala leg.

Trstelj, UL97, 15. 8. 1999, 1♂, A. Gogala leg., 7. 8. 2010, 1♀1♂, A. Gogala vid.; 2. 8. 2012, 1♀, A. Gogala vid.

Trnovo, Sedovec, VL09, 23. 8. 1997, 1♀1♂, photo A. Gogala.

Sočerga, Veli Badin, VL13, 5. 8. 1999, 1♀, A. Gogala vid.

Kregolišče, VL07, 14. 8. 1999, 1♀, A. Gogala vid.

Materija, Brezovica, VL25, 26. 8. 2000, 1♀, A. Gogala vid.

Pivka, Petelinjsko jezero, VL46, 24. 7. 2001, 1♀, A. Gogala vid.

Veliki Dol, VL07, 13. 8. 2001, 1♀, A. Gogala vid.

Lukovec, Rabotnica, VL07, 14. 8. 2004, 1♀, A. Gogala vid.

Čaven, Kucelj, VL08, 28. 8. 2004, 1♀, A. Gogala vid.

Lukovec, Golec, VL07, 6. 8. 2005, 1♀, A. Gogala vid.; 5. 8. 2006, 1♀, A. Gogala vid.

Lukovec, Poljska gora, VL07, 15. 8. 2010, 1♀, A. Gogala vid.
Kovk, Črne stene, VL18, 28. 7. 2012, 1♀, A. Gogala vid.
Otlica, VL18, 25. 7. 2015, 1♀ on *Allium pulchellum*, A. Gogala vid.
Otlica, Otliško okno, VL18, 29. 7. 2017, 1♀ on *Allium pulchellum*, A. Gogala vid.

***Colletes hederæ* Schmidt & Westrich, 1993**

Oligolectic, specialized for *Hedera* (SCHEUCHL & WILLNER, 2015).

Published records:

Hrastovlje, VL14, 5. 9. 1993, 1♂ (GOGALA 1994, 1999).

Specimens examined:

Kras: Brje pri Komnu, VL07, 18. 8. 1991, 1♀, A. Gogala leg.; 31. 8. 1991, 2♂, A. Gogala leg.;
23. 9. 2012, 1♀, A. Gogala vid.; 15. 9. 2018 on *Hedera*, 2♀1♂, A. Gogala vid.

Cerknica, Otok, VL56, 26. 8. 1995, 1♀, A. Gogala leg.

Kras: Gorjansko, UL97, 28. 9. 1996, 1♀, A. Gogala leg.; 1. 9. 1991, 1♂, A. Gogala leg.;
21. 8. 1993, 1♂, A. Gogala leg.; 24. 9. 2006, 2♀, A. Gogala vid.; 12. 8. 2007, 1♂, A. Gogala
vid.

Istra: Dragonja, UL93, 4. 10. 1997, 1♀, A. Gogala leg.

Istra: Sečovelje, Fontanigge, UL93, 27. 8. 2008, 1♀1♂, A. Gogala leg.

Istra: Movraž, Movraška vala, VL13, 8. 9. 1999, 1♂, A. Gogala leg.

Gorjansko, Vale, UL97, 12. 10. 1996, 1♀, photo A. Gogala

Škofi, VL07, 10. 9. 1994, 1♀1♂, A. Gogala vid., 13. 10. 1996, 1♀, photo A. Gogala; 2. 9. 2007,
1♀, A. Gogala vid.

Istra: Boršt, VL03, 24. 9. 1999, 1♀, A. Gogala vid.

Lukovec, Golec, VL07, 19. 8. 2006, 1♂, photo A. Gogala

Volčji Grad, VL07, 24. 9. 2006, 1♀, A. Gogala vid.; 22. 9. 2013 on *Hedera*, 1♀, A. Gogala vid.

Stomaž, VL17, 15. 9. 2012, 1♀, A. Gogala vid.

Zazid, Lipnik, VL13, 31. 8. 2013 on *Echinops*, 1♀, A. Gogala vid.

Kazlje, dolina Raše, VL16, 3. 9. 2016, 5♂, A. Gogala vid.

Senovo, Mali Kamen, WL39, 12. 9. 2016, 1♀, photo Dušan Klenovšek.

Loka pri Mengšu, VM61, 16. 9. 2020, 1♀, NIB.

***Colletes hylaeiformis* Eversmann, 1852**

Oligolectic, specialized for *Eryngium* (Apiaceae) (pers. observation; SCHEUCHL & WILLNER 2015).

Published records:

GOGALA (1991, 1994, 1999).

Specimens examined:

Podgorje, VL14, 24. 8. 1991, 2♀1♂, A. Gogala leg.

Kastelec, VL14, 17. 8. 1993, 1♀, A. Gogala leg.

Gorjansko, UL97, 21. 8. 1993, 1♀, A. Gogala leg.; 12. 8. 2007, 1♀, A. Gogala vid.

Zazid, Lipnik, 700 m, VL13, 26. 7. 2000, 1♀, A. Gogala leg.; 9. 8. 2005, 1♀1♂, photo
A. Gogala; 31. 8. 2013 on *Eryngium*, 1♀, A. Gogala vid.

Lukovec, Golec, VL07, 6. 8. 2005, 1♂, photo A. Gogala; 10. 9. 2005, 1♀, A. Gogala vid.

Gorjansko, Vale, UL97, 8. 8. 1999, 1♀, A. Gogala vid.

Rakitovec, Kavčič, VL23, 12. 8. 2008, 1♀, A. Gogala vid.; 17. 8. 2010, 1♀1♂, A. Gogala vid.

Lukovec, Rabotnica, VL07, 15. 8. 2010, 1♀, A. Gogala vid.



Slika 1: Samica *Colletes albomaculatus* iz Dragonje

Figure 1: Female *Colletes albomaculatus* from Dragonja.



Slika 2: Samica vrste *Colletes carinatus* na *Allium sphaerocephalon*; Rabotnica, Lukovec.

Figure 2: Female *Colletes carinatus* on *Allium sphaerocephalon*; Rabotnica, Lukovec.



Slika 3: Samica vrste *Colletes cunicularius* na gnezdišču pri Senožetih.

Figure 3: Female *Colletes cunicularius* on the nest ground at Senožeti.



Slika 4: Samec in samica vrste *Colletes cunicularius* na gnezdišču pri Senožetih.

Figure 4: A male and female *Colletes cunicularius* on the nest ground at Senožeti.



Slika 5: Samica vrste *Colletes daviesanus* vstopa v rov v peskokopu Župjek pri Bizeljskem.

Figure 5: Female *Colletes daviesanus* entering its burrow in a sand pit Župjek near Bizeljsko.



Slika 6: Samica vrste *Colletes fodiens* iz Bevk.

Figure 6: Female *Colletes fodiens* from Bevke.



Slika 7: Samica vrste *Colletes graeffei* na *Allium pulchellum* iz Sedovca.

Figure 7: Female *Colletes graeffei* on *Allium pulchellum* at Sedovec.



Slika 8: Samica vrste *Colletes hederæ* na bršljanu (rod *Hedera*).

Figure 8: Female *Colletes hederæ* on *Hedera*.



Slika 9: Samec vrste *Colletes hederæ* na ametistasti možini (*Eryngium amethystinum*).

Figure 9: Male *Colletes hederæ* on *Eryngium amethystinum*.



Slika 10: Samica vrste *Colletes hylaeiformis* na ametistasti možini (*Eryngium amethystinum*) na Lipniku pri Zazidu.

Figure 10: Female *Colletes hylaeiformis* on *Eryngium amethystinum* at Lipnik, Zazid.



Slika 11: Samec vrste *Colletes hylaeiformis* na ametistasti možini (*Eryngium amethystinum*) na Lipniku pri Zazidu.

Figure 11: Male *Colletes hylaeiformis* on *Eryngium amethystinum* at Lipnik, Zazid.



Slika 12: Samec vrste *Colletes inexpectatus* iz Petišovcev.

Figure 12: Male *Colletes inexpectatus* from Petišovci.



Slika 13: Pri vrsti *Colletes inexpectatus* je bazalni člen stopalca pri zadnjem paru nog sploščen (zgoraj) in ni preprost kot pri vrsti *Colletes daviesanus* (spodaj).

Figure 13: In *Colletes inexpectatus* the basal tarsus segment in the last pair of legs is flattened (above) and not simple as in *Colletes daviesanus* (below).

***Colletes inexpectatus* Noskiewicz, 1936**

NOSKIEWICZ (1936) observed these bees on *Medicago* and *Trifolium* (Fabaceae). Pollen analysis showed Asteroideae as the main source of food (SCHEUCHL & WILLNER 2015).

Specimens examined:

Petišovci, XM15, 4. 8. 1995, 1♂, A. Gogala leg.

***Colletes marginatus* Smith, 1846**

Polylectic with preference for Fabaceae, Apiaceae and Orobanchaceae (*Odontites*) (SCHEUCHL & WILLNER 2015).

Published record:

Slovenia (KUHLMANN & PROSHCHALYKIN 2014).

Recorded erroneously for Slovenia (M. Kuhlmann, pers. comm.) therefore omitted from the list of Slovenian species.

***Colletes nigricans* Gistel, 1857**

Colletes alluaudi Cockerell, 1931

Colletes flavescens Noskiewicz, 1936

Colletes dimidiatus nigricans Warncke, 1978

Published records:

Salcano (= Solkan), Maidl leg. (As *C. flavescens*; NOSKIEWICZ 1936).

Erroneously reported as *Colletes eous* in GOGALA (1994); see GOGALA (1999).

Specimens examined:

Sečovlje, Fontanigge, UL93, 17. 7. 1996, 1♀1♂, A. Gogala leg.; 16. 7. 1999, 1♂, A. Gogala leg.

Strunjan, UL94, 6. 7. 1998, 1♀, A. Gogala leg.

Movraž, Movraška vala, VL13, 16. 8. 1998, 2♀, A. Gogala leg.

Izvir Rižane, VL14, 17. 8. 1993, 1♂, A. Gogala leg.

Komen, Škofi, VL07, 11. 9. 2011 on *Reseda*, 1♀, A. Gogala leg. & photo.

***Colletes similis* Schenck, 1853**

Colletes picistigma Thomson, 1872

Polylectic with preference for Asteraceae (SCHEUCHL & WILLNER 2015).

Published records:

Podčetrtek, WM41, 20. 6. 1932, 1♂, E. Jaeger leg. (GOGALA 1991, 1994).

Ljubljana, Črnuče, VM60, 23. 6. 1993, 1♀ (GOGALA 1999).

Dol pri Ljubljani, ob Savi, VM70, 28. 7. 2006, 1♀, A. Gogala vid. (GOGALA & GRAD 2008).

Specimens examined:

Podčetrtek (P), 20. 6. 1932, 1♂, E. Jaeger leg.

Podčetrtek, Sotla River (Gr), 3. 9. 1931, 1♀, E. Jaeger leg.

Ljubljana, Črnuče, VM60, 23. 6. 1993, 1♀, Jarški prod; 9. 9. 2004, 1♀, photo A. Gogala; 29. 8. 2013, 1♀, A. Gogala vid.

Dol pri Ljubljani, ob Savi, VM70, 28. 7. 2006, 1♀, A. Gogala vid.

Log, Lukovica, VL59, 26. 7. 1990, 1♀1♂, A. Gogala leg.; 12. 9. 1993, 1♀, A. Gogala leg.;

27. 6. 1990, 1♂, A. Gogala leg.; 22. 7. 1993, 1♀, A. Gogala leg.

Podpeč, VL14, 24. 8. 1991, 2♀1♂, A. Gogala leg.
 Radovna, VM24, 10. 8. 1994, 1♀, A. Gogala leg.
 Brje pri Komnu, VL07, 14. 8. 1994, 1♀, A. Gogala leg.; 23. 9. 1990, 1♀1♂, A. Gogala leg.;
 14. 7. 1991, 1♂, A. Gogala leg.; 7. 9. 1989, 1♀, A. Gogala leg.; 2. 9. 1990, 1♀, A. Gogala leg.
 Dragonja, Stena, UL93, 11. 9. 1995, 1♀, A. Gogala leg.
 Hrastovlje, VL14, 13. 6. 1992, 1♂, A. Gogala leg.
 Dobova, Mihalovec, WL58, 23. 8. 1994, 1♂, A. Gogala leg.; 16. 8. 2007, 1♀1♂, A. Gogala vid.
 Gor. Brezovica, Vrh, VL58, 31. 5. 2007, 1♂, A. Gogala leg.
 Ravnje, Raša, dolina Raše, VL17, 30. 8. 2008, 1♀, A. Gogala leg. & photo
 Pl. Vogar, VM12, 7. 7. 1995, 1♂, A. Gogala leg.
 Gorjansko, UL97, 28. 8. 1994, 1♀, photo A. Gogala.
 Laze pri Predgradu, WL03, 19. 8. 1994, 1♀, A. Gogala vid.
 Pokojišče, VL58, 24. 8. 1996, 1♀, A. Gogala vid.
 Bevke, VL59, 18. 8. 2007, 1♀1♂, A. Gogala vid.

Colletes succinctus (Linnaeus, 1758)

Published records:

Kamnik, 3. 9. 1929, 1♀ (LEBEDEV 1931); attributed to *C. hederæ* (GOGALA 1991).
 Podčetrtek, WM41, 8. 9. 1932, 1♀, E. Jaeger leg. (GOGALA 1999, 2018).

Specimens examined:

Podčetrtek, Olimje, Trobevnik (TRO), 8. 9. 1932, 2♀, E. Jaeger leg., Westrich det. 1993.
 Podčetrtek (TR), 12. 8. 1932, 1♂, E. Jaeger leg., Westrich det. 1993.
 Sp. Brnik, VM62, 29. 8. 1993, 2♀, A. Gogala leg.; 10. 8. 1993, 3♂, A. Gogala leg.
 Log, Lukovica, Debeli hrib, VL59, 31. 8. 1993, 1♂, A. Gogala leg.
 Vel. Račna, Radensko polje, VL78, 27. 8. 2011, 1♀1♂ on *Calluna vulgaris*, photo A. Gogala.

Genus: *Hylaeus* Fabricius, 1793

Prosopis Fabricius, 1804

Zakrinkane čebele so dolgo veljale za najprimitivnejše čebele, saj so v mnogih značilnostih podobne osam grebačam. So majhne in temne in brez dlakavih organov za prenašanje peloda. Pelod prenašajo v golši. Genske analize pa so pokazale, da so značilni primerki pripadnic družine Colletidae, kjer imajo posebno mesto (Dathe et al. 2016). Svetle obrazne maske so pri samcih večje kot pri samicah. To je verjetno posledica rivalstva med samci. Samci imajo svoje teritorije, ki so lahko označeni z njihovim vonjem. Julija 2004 sem opazoval samca vrste *Hylaeus nigrinus* v njegovem teritoriju okrog razglednega mesta na cvetu. Obiskoval je vrhove travnih bilk, se pritisnil obnje in se pomaknil proti dnu, tako da je verjetno pustil svoj vonj. Večino vrst rodu *Hylaeus* poznamo

The masked bees were long known as the most primitive bees as they showed similar characters as digger wasps. They are small, dark and without scopa. They transport pollen in the crop. Genetic analysis put them in the family Colletidae, where they have a specific place without similar genera (DATHE et al. 2016). Masks are larger in males than in females. This should have been related to the sexual rivals between males. Males maintain territories and some species may mark them by smell. In July 2004, I observed a male *Hylaeus nigrinus* in its territory around the lookout place in the flower. He was visiting grass blades from the top, pressing itself against them, moving to the bottom of the grass and probably leaving the smell behind. Most species of *Hylaeus* are polylectic,

kot polilektrične, z izjemo nekaterih, kot je *Hylaeus signatus*, ki je vezan na rastline iz rodu *Reseda* (Resedaceae). Ta zaključek sicer ni skladen z rezultati Müllerja, temelječimi na disekciji zadka (MÜLLER 2023).

with the exception of *Hylaeus signatus*, which is specialized for *Reseda* (Resedaceae). The conclusion however is not consistent with the results of MÜLLER (2023) based on dissection of metasoma.

Subgenus: *Abrupta* Popov, 1939

Hylaeus cornutus Curtis, 1831

Mediterranean species, present in the sub-Pannonian and pre-Alpine regions of Slovenia.

Probably a polylectic species. Nests in pre-existing cavities, e.g., in hollow stems. Carries the pollen by a different method than other members of the genus, forming a ball of pollen which is transported inside a hollow on the face, between the two horn-like processes.

Univoltine. Flies from June to August.

Published records:

Podčetrtek, 13. 5., E. Jaeger leg. (VOGRIN 1955; GOGALA 1999).

Specimens examined:

Kamnik, VM62, 20. 8. 1994, 1♀1♂, A. Gogala leg.

Muriša, XM25, 16. 7. 1995, 1♀, A. Gogala leg.

Ig, Lj. barje, VL69, 19. 8. 2020, 1♀, Rok Šturm leg., NIB.

Celje, Levec, WM12, 26. 7. 2021, 1♂, NIB.

Subgenus: *Dentigera* Popov, 1939

Hylaeus brevicornis Nylander, 1852

Published records:

Podčetrtek, 25. 5., 1. – 14. 6., 13./23. 7., 23./25. 8., E. Jaeger leg. (VOGRIN 1955).

Postojna, 19. 7. 1961, 1♀ (ERLANDSSON 1986).

Podčetrtek, WM41, 19. 9. 1932, 1♀, E. Jaeger leg. (probably *H. intermedius*); (GOGALA 1999).

Specimens examined:

Log, Lukovica, VL59, 23. 8. 1990, 1♀, A. Gogala leg.; 21. 6. 1991, 1♀, A. Gogala leg.

Črnotiče, VL14, 8. 7. 1990, 1♀, A. Gogala leg.

Sočerga, Veli Badin, VL13, 14. 6. 1991, 1♀, A. Gogala leg.

Brezovica pri Lj., VL59, 17. 8. 1991, 1♀, A. Gogala leg.

Begunjščica, VM44, 3. 8. 1994, 1♀, A. Gogala leg.

Dragonja, Stena, UL93, 17. 6. 1995, 1♀, A. Gogala leg.; 11. 9. 1995, 1♀, A. Gogala leg.

Ljubljana, Črnuče, VM60, 31. 8. 1995, 1♀, A. Gogala leg.

Gradišče pri Lukovici, VM71, 31. 7. 1996, 1♀, A. Gogala leg.

Kresnice, VM80, 11. 9. 1997, 1♀, A. Gogala leg.

Hotedršica, Žejna dolina, VL39, 29. 7. 1999, 1♀, A. Gogala leg.

Brje pri Komnu, VL07, 2. 9. 1990, 1♂, A. Gogala leg.; 7. 9. 1996, 1♀, A. Gogala vid.

Kregolišče, VL07, 31. 7. 1991, 1♂, A. Gogala leg.

Stari trg ob Kolpi, WL03, 26. 5. 1993, 1♂, A. Gogala leg.

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

Črni Vrh, Pasja ravan, VM40, 14. 8. 1996, 1♂, A. Gogala leg.

Sečovlje, Fontanigge, UL93, 14. 9. 1996, 1♂, A. Gogala leg.

Strunjan, Belvedere, UL94, 14. 6. 1998, 1♂, A. Gogala leg.
 Koper, Bertoki, Škocjanski zatok, VL04, 22. 7. 2000, 1♂, A. Gogala leg.
 Sp. Pirniče, VM50, 8. 6. 1995, 1♀, A. Gogala vid.
 Movraž, Movraška vala, VL13, 5. 8. 1999, 1♀, A. Gogala leg.
 Škofljica, VL69, 14. 9. 2020, 1♀, Rok Šturm leg., NIB.
 Cerkniško jez.: Dolenja vas, Cvinger, VL47, 2. 9. 2020, 1♀, NIB.
 Cerkniško jez.: Dol. Jezero, Gorica, VL56, 6. 8. 2020, 1♀, NIB.
 Ljubljana: NIB, VM50, 19. 6. 2020, 1♀, NIB.
 Ljubljana: Vič, VM60, 13. 7. 2020, 1♀, 26. 8. 2020, 1♀, NIB.
 Records prior to 1994 published by GOGALA (1991, 1994).

Hylaeus gredleri Förster, 1871

European species, widely distributed in Slovenia.

Probably polylectic; univoltine.

Flies from June till August.

Published records:

GOGALA (1994, 1999).

Specimens examined:

Iški Vintgar, VL68, 26. 7. 1995, 2♀1♂, A. Gogala leg.
 Ig, Draga, VL68, 2. 8. 1995, 1♀1♂, A. Gogala leg.; 13. 7. 1999, 1♂, A. Gogala leg.
 Cerknica, Otok, VL56, 26. 8. 1995, 2♀, A. Gogala leg.
 Vonarje, WM41, 6. 8. 1996, 1♀, A. Gogala leg.
 Planina Vogar, VM12, 21. 8. 1996, 1♀2♂, A. Gogala leg.
 Log, Lukovica, VL59, 1. 9. 1996, 2♀, A. Gogala leg.; 11. 8. 1990, 1♂, A. Gogala leg.
 Planinsko polje: Laze, VL47, 21. 8. 1997, 1♀, A. Gogala leg.
 Filipčje brdo, VL16, 13. 7. 1996, 1♀, A. Gogala leg.
 Pivka, Trnje, V. vrh, VL46, 31. 8. 1999, 1♀, A. Gogala leg.
 Petanjci, WM86, 16. 7. 1995, 1♂, A. Gogala leg.
 Vremščica, VL26, 18. 7. 1998, 1♂, A. Gogala leg.
 Čaven, VL08, 25. 7. 1993, 1♂, A. Gogala leg.
 Zaplana, VL39, 23. 7. 1999, 1♂, A. Gogala leg.
 Kranj, Brdo, VM52, 14. 6. 2007, 1♂, A. Gogala leg.
 Ig, VL69, 8. 7. 2020, 1♀, Rok Šturm leg., NIB.
 Ig, Lj. Barje, VL69, 8. 7. 2020, 1♀, Rok Šturm leg., NIB.
 Cerkniško jez.: Dolenja vas, Cvinger, VL47, 8. 7. 2020, 1♂, 28. 6. 2021, 2♂, NIB.
 Cerkniško jez.: Dol. Jezero, Kleni vrh, VL56, 8. 7. 2020, 1♀, NIB.
 Cerkniško jez.: Dol. Jezero, Gorica, VL56, 20. 7. 2021, 1♀1♂, NIB.
 Ljubljana: NIB, VM50, 13. 7. 2020, 1♂, NIB.
 Ljubljana: Vič, VM60, 13. 7. 2020, 1♂, NIB.
 Ljubljana: Šentvid, Gunclje, VM50, 13. 7. 2020, 1♀, NIB.

Hylaeus imparilis Förster, 1871

Mediterranean species, present in the sub-Mediterranean region of Slovenia.

Polylectic, bivoltine. Flies from June till September.

Published records:

GOGALA (1991, 1994, 1999); partly other species (*H. intermedius*).

Specimens examined:

- Trstelj, UL97, 19. 8. 1990, 1♀, A. Gogala leg.; 21. 7. 1991, 1♂, A. Gogala leg.
Brje pri Komnu, VL07, 1. 8. 1991, 1♀, A. Gogala leg.; 10. 9. 1995, 1♀, A. Gogala leg.;
17. 7. 1991, 1♂, A. Gogala leg.
Strunjan, UL94, 11. 9. 1995, 1♀1♂, A. Gogala leg.
Sečovlje, Fontanigge, UL93, 13. 9. 2006, 1♂, A. Gogala vid.
Dragonja, UL93, 4. 10. 1997, 1♀, A. Gogala leg.
Dragonja, Stena, 23. 8. 1995, 1♂, A. Gogala vid.
Tublje pri Komnu, VL07, 15. 8. 2004, 1♂, photo A. Gogala
Kregolišče, VL07, 20. 9. 2009, 1♀, A. Gogala leg.; 31. 7. 1991, 1♂, A. Gogala leg.
Rakitovec, VL13, 3. 6. 1992, 1♂, A. Gogala leg.
Škofi, VL07, 27. 8. 1994, 1♂, A. Gogala leg.
Sela na Krasu, UL97, 30. 4. 1995, 1♂, A. Gogala leg.
Golič, VL13, 13. 8. 2002, 1♂, A. Gogala leg.
Gorjansko, Vale, UL97, 6. 8. 1995, 1♂, A. Gogala vid.

Hylaeus intermedius Förster, 1871

Mediterranean species. In contrast to a similar *Hylaeus imparilis* it is present also in the sub-Pannonian and Dinaric regions.

Published records:

- Podčetrtek, WM41, 3. 6. 1932, 1♂, E. Jaeger leg. (GOGALA 1994; as *H. imparilis*).

Specimens examined:

- Podčetrtek (P), 3. 6. 1932, 2♂, E. Jaeger leg.
Podčetrtek, Sotla River (Gr), 3. 9. 1930, 1♀, E. Jaeger leg.
Sečovlje, Fontanigge, UL93, 12. 9. 1992, 2♂, A. Gogala leg.; 14. 9. 1996, 1♀, A. Gogala leg.
Koštabona, Škrline, VL03, 29. 6. 1993, 1♂, A. Gogala leg.; 4. 8. 1993, 1♂, A. Gogala leg.
Padna, UL93, 23. 8. 1995, 1♀, A. Gogala leg.
Strunjan, UL94, 11. 9. 1995, 1♀, A. Gogala leg.
Strunjan, Belvedere, UL94, 14. 6. 1998, 1♂, A. Gogala leg.
Tublje pri Komnu, VL07, 15. 8. 2004, 1♂, A. Gogala leg.
Borovnica, Pako, VL58, 6. 8. 2020, 1♂, Rok Šturm leg., NIB.

Hylaeus kahri Förster, 1871

Mediterranean species, widely distributed in Slovenia.

Probably polylectic (personal observation).

Bivoltine. Flies from June to September.

Published records:

- Podčetrtek, 14. 6., 7. 9., E. Jaeger leg. (VOGRIN 1955).
Podčetrtek, WM41, 15. 6. 1932, 1♂, E. Jaeger leg. (GOGALA 1991, 1994, 1999).

Specimens examined:

- Podčetrtek (GA), 15. 6. 1932, 1♂, E. Jaeger leg.
Hrastovlje, VL14, 9. 6. 1993, 1♀, A. Gogala leg.
Čaven, VL08, 22. 8. 1992, 1♀, A. Gogala leg.
Pl. Vogar, VM12, 20. 7. 1995, 2♀, A. Gogala leg.
Bloke: Volčje, Bloško jezero, VL67, 4. 8. 1991, 1♀, A. Gogala leg.
Gradišče pri Lukovici, VM71, 31. 7. 1996, 1♀, A. Gogala leg.

Movraž, Movraška vala, VL13, 5. 8. 1999, 1♀, A. Gogala leg.
 Kranj, Brdo, VM52, 14. 6. 2007, 1♀, A. Gogala leg.
 Brje pri Komnu, VL07, 16. 6. 1991, 1♂, A. Gogala leg.; 23. 8. 1992, 1♂, A. Gogala leg.
 Gorjansko, UL97, 7. 9. 1991, 1♂, A. Gogala leg.; 15. 8. 1997, 1♂, A. Gogala leg.
 Sočerga, Veli Badin, VL13, 27. 6. 1995, 1♂, A. Gogala leg.
 Strunjan, UL94, 27. 6. 1995, 1♂, A. Gogala leg.
 Lukovec, Golec, VL07, 4. 6. 2005, 1♂, A. Gogala leg. & photo.

Subgenus: *Hylaeus* Fabricius, 1793

Hylaeus adriaticus (Warncke, 1972)

Klaus Warncke described this species in 1972 from material collected in Opčine (Opicina) near Trieste. Contrary to the related *H. nivalis* and *H. nivaliformis*, *H. adriaticus* was not found in true mountains, only on the Karst Plateau. I found the species also in the Slovene territory, at the same altitude. The species is distributed also in Greece (from 300 to 2200 m), central Spain, Italy, Croatia, Bosnia and Montenegro (DATHE 1980, 2000).

Published records:

GOGALA (1991, 1999).

Specimens examined:

Kozina, Glavica, VL14, 23. 6. 1991, 1♀, A. Gogala leg.:

Hylaeus angustatus (Schenck, 1861)

West Palaearctic species, present in the sub-Mediterranean, pre-Alpine and sub-Pannonian regions of Slovenia.

Polylectic species. Nests in pre-existing cavities, e.g., in wood burrows.

Univoltine. Flies from June to August.

Published records:

Podčetrtek, 6. – 7., E. Jaeger leg. (VOGRIN 1955).

Podčetrtek, WM41, 2. 6. 1932, 1♂, E. Jaeger leg. (GOGALA 1991, 1994, 1999).

Specimens examined:

Podčetrtek (P), 6. 6. 1932, 1♂, E. Jaeger leg.

Brje pri Komnu, VL07, 1. 6. 1991, 2♀2♂, A. Gogala leg.; 22. 7. 1991, 1♀, A. Gogala leg.;

28. 9. 1996, 1♀, A. Gogala leg.; 20. 7. 2009, 1♀, A. Gogala leg.

Kozina, Glavica, VL14, 23. 6. 1991, 1♀1♂, A. Gogala leg.

Škofi, VL07, 9. 6. 1991, 1♀, A. Gogala leg.

Gorjansko, UL97, 21. 8. 1993, 1♀, A. Gogala leg.

Dragonja, Stena, UL93, 11. 9. 1995, 1♀, A. Gogala leg.

Podgorje, VL14, 24. 8. 1991, 1♂, A. Gogala leg.

Brestovica, UL97, 24. 5. 1997, 1♂, A. Gogala leg.

Šentjakob ob Savi, VM60, 15. 6. 1997, 1♂, A. Gogala leg.

Borovnica, Pako, VL58, 22. 6. 2020, 1♀, Rok Šturm leg., NIB.

Polzela, Zakl, WM02, 22. 7. 2020, 1♀, Katarina Meža leg., NIB.

Celje, Levec, WM12, 22. 7. 2020, 1♀, Katarina Meža leg., NIB.

Cerkniško jez.: Dol. Jezero, Kleni vrh, VL56, 21. 5. 2020, 1♀, NIB.

Cerkniško jez.: Laze, VL56, 20. 7. 2021, 1♂, NIB.

Ljubljana: Botanični vrt, VL69, 11. 8. 2020, 1♀, NIB.



Slika 14: Samica vrste *Colletes nigricans* na katancu (rod *Reseda*) pri Škofih.

Figure 14: Female *Colletes nigricans* on *Reseda* at Škofi.



Slika 15: Samica vrste *Colletes similis* iz doline Raša pri Ravnju.

Figure 15: Female *Colletes similis* at Raša, Ravnje.



Slika 16: Samica vrste *Colletes succinctus* na jesenski vresi (rod *Calluna*) iz Radenskega polja.

Figure 16: Female *Colletes succinctus* on *Calluna* at Radensko polje.



Slika 17: Obraz samca vrste *Hylaeus cornutus* iz Kamnika.

Figure 17: Face of a male *Hylaeus cornutus* from Kamnik.



Slika 18: Obraz samice vrste *Hylaeus cornutus* iz Muriše.

Figure 18: Face of a female *Hylaeus cornutus* from Muriša.



Slika 19: Obraz samca vrste *Hylaeus brevicornis* iz Sečovelj.

Figure 19: Face of male *Hylaeus brevicornis* from Sečovelje.



Slika 20: Obraz samca vrste *Hylaeus gredleri* iz Drage pri Igu.

Figure 20: Face of a male *Hylaeus gredleri* from Draga near Ig.



Slika 21: Samec vrste *Hylaeus imparilis* na razglednem mestu v Tubljah.

Figure 21: Male *Hylaeus imparilis* on his lookout place in Tublje.



Slika 22: Samica vrste *Hylaeus imparilis* na hermeliki (*Sedum maximum*) iz Kregolišča.

Figure 22: Female *Hylaeus imparilis* on *Sedum maximum* at Kregolišče.



Slika 23: Obraz samca vrste *Hylaeus imparilis* iz Brja.

Figure 23: Face of a male *Hylaeus imparilis* from Brje.



Slika 24: Pri vrsti *Hylaeus imparilis* (levo) so valve penisa močnejše ukrivljene kot pri vrsti *Hylaeus intermedius* (desno).

Figure 24: In *Hylaeus imparilis* (left) the penis valves are more strongly curved than in *Hylaeus intermedius* (right).



Slika 25: Obraz samca vrste *Hylaeus intermedius* iz Strunjana.

Figure 25: Face of a male *Hylaeus intermedius* from Strunjan.



Slika 26: Obraz samca vrste *Hylaeus kahri* iz Lukovca.

Figure 26: Face of a male *Hylaeus kahri* from Lukovec.



Slika 27: Obraz samice vrste *Hylaeus adriaticus* iz Kozine.

Figure 27: Face of a female *Hylaeus adriaticus* from Kozina.



Slika 28: Obraz samca vrste *Hylaeus angustatus* iz Podgorja.

Figure 28: Face of a male *Hylaeus angustatus* from Podgorje.



Slika 29: Obraz samice vrste *Hylaeus annulatus* iz Vršiča.

Figure 29: Face of a female *Hylaeus annulatus* from Vršič.

Hylaeus annulatus (Linnaeus, 1758)

Published records:

GOGALA (1999).

Specimens examined:

Vršič, Poštarski dom, ~1690 m, VM04, 14. 7. 1994, 1♀, A. Gogala leg.

Hylaeus communis Nylander, 1852

Prosopis annulata auct.

West Palaearctic species, widely distributed in Slovenia.

Polylectic species. Nests in pre-existing cavities, e.g., wood burrows.

Bivoltine. Flies from May to September.

Published records:

Podčetrtek, 14./18. 6., 10./12. 7., 9./12. 8., E. Jaeger leg. (VOGRIN 1955).

Podčetrtek, WM41, 10. 6. 1932, 1♂, E. Jaeger leg. (GOGALA 1991, 1994, 1999).

Specimens examined:

Podčetrtek (P), 10. 6. 1932, 1♂, E. Jaeger leg.

Log, Lukovica, VL59, 1. 7. 1991, 1♀, A. Gogala leg.; 23. 8. 1990, 1♂, A. Gogala leg.; 11. 6. 1990, 1♀, A. Gogala leg.; 18. 6. 1991, 1♀, A. Gogala leg.; 14. 6. 1990, 1♂, A. Gogala leg.

Bloke: Volčje, Bloško jezero, VL67, 4. 8. 1991, 2♀, A. Gogala leg.

Cerkniško jezero: Laze – Otok, VL56, 4. 8. 1991, 2♀1♂, A. Gogala leg.

Podpeč, VL14, 24. 8. 1991, 1♀, A. Gogala leg.

Brje pri Komnu, VL07, 31. 8. 1991, 1♀, A. Gogala leg.

Begunjščica, VM44, 3. 8. 1994, 1♀, A. Gogala leg.

Radovna, VM24, 10. 8. 1994, 1♀, A. Gogala leg.

Ljubljana, Črnuče, Jarški prod, VM60, 3. 9. 1998, 1♀, A. Gogala leg.

Pivka, Trnje, V. vrh, VL46, 31. 8. 1999, 1♀, A. Gogala leg.

Bohinj: Ukanc, VM02, 8. 7. 1992, 1♂, A. Gogala leg.

Olimje, WM41, 8. 7. 1993, 1♂, A. Gogala leg.

Pl. Vogar, VM12, 7. 7. 1995, 1♂, A. Gogala leg.; 21. 8. 1996, 1♀1♂, A. Gogala vid.

Pokojišče, VL48, 24. 8. 1996, 1♂, A. Gogala leg.

Kresnice, VM80, 11. 9. 1997, 1♂, A. Gogala leg.

Vremščica, VL26, 18. 7. 1998, 1♂, A. Gogala leg.

Kranj, Brdo, VM52, 27. 8. 2007, 2♀1♂, A. Gogala leg.; 12. 9. 2007, 1♀, photo A. Gogala

Luzarji, izvir Iške, VL67, 12. 8. 1998, 1♀, A. Gogala leg.

Dol pri Ljubljani, ob Savi, VM70, 28. 7. 2006, 1♀, A. Gogala leg.; 22. 8. 2006, 1♀, A. Gogala leg.

Ljubljana, VM60, 24. 5. 1938, 1♀, M. Hafner leg.

Iški Vintgar, VL68, 26. 7. 1995, 1♀1♂, A. Gogala vid.; 22. 8. 1996, 1♂, A. Gogala vid.

Ig, Draga, VL68, 2. 8. 1995, 1♀, A. Gogala vid.; 19. 8. 2020, 1♀, 2. 9. 2020, 1♀, Rok Šturm leg., NIB

Cerknica, Dol. Jezero, VL56, 26. 8. 1995, 1♀, A. Gogala vid.

Cerknica, Gor. Jezero, VL56, 26. 8. 1995, 1♀, A. Gogala vid.

Mali Kum, WM00, 26. 7. 1996, 1♀, A. Gogala vid.

Gradišče pri Lukovici, VM71, 31. 7. 1996, 1♀1♂, A. Gogala vid.; 5. 9. 1996, 1♀, A. Gogala vid.

Vonarje, WM41, 6. 8. 1996, 1♀, A. Gogala vid.

Bevke, VL59, 6. 9. 1996, 1♂, A. Gogala vid.

Ig, VL69, 6. 8. 2020, 2♀, Rok Šturm leg., NIB.

Polzela, Zakl, WM02, 5. 5. 2020, 1♂, 8. 9. 2020, 1♀, Katarina Meža leg., NIB.
 Celje, Levec, WM12, 22. 7. 2020, 1♀, Katarina Meža leg., NIB.
 Vojnik, WM22, 22. 7. 2020, 1♀, Katarina Meža leg., NIB.
 Celje, Šmarjeta, WM22, 21. 9. 2020, 1♀, Katarina Meža leg., NIB.
 Suhadole, VM61, 13. 7. 2020, 1♀, NIB.
 Komenda, VM61, 27. 7. 2020, 2♀, 11. 8. 2020, 1♀, NIB.
 Cerknjiško jez.: Dol. Jezero, Gorica, VL56, 8. 7. 2020, 1♀, NIB.
 Cerknjiško jez.: Dol. Jezero, Kleni vrh, VL56, 23. 6. 2020, 1♀, 20. 7. 2021, 1♂, NIB.
 Cerknjiško jez.: Otok, Otočec, VL56, 10. 6. 2020, 1♀, 8. 7. 2020, 1♀, NIB.
 Cerknjiško jez.: Gor. Jezero, VL56, 19. 8. 2020, 1♀, NIB.
 Cerknjiško jez.: Otok, Pocinov laz, VL56, 12. 7. 2021, 1♀, NIB.
 Ljubljana: Nove Jarše, VM60, 20. 9. 2021, 1♀, NIB.

Hylaeus leptcephalus (Morawitz, 1870)

Hylaeus bisinuatus Förster, 1871

European species. In Slovenia found in the Sečovlje salt-pans (sub-Mediterranean region), Ljubljana and Podčetrtek (sub-Pannonian region).

Probably a polylectic species. Nests in pre-existing cavities.

Univoltine. Flies from June to August.

Published records:

Podčetrtek, 3. 6., 10. 7., E. Jaeger leg. (VOGRIN 1955).

Podčetrtek, WM41, 28. 6. 1932, 1♂, E. Jaeger leg.; 10. 7. 1932, 1♀, E. Jaeger leg. (GOGALA 1999).

Specimens examined:

Podčetrtek (P), 10. 7. 1932, 1♀, 19. 9. 1932, 1♂, E. Jaeger leg.

Podčetrtek, Olimje (OL), 28. 6. 1932, 1♂, E. Jaeger leg.

Podčetrtek (STR), 15. 7. 1932, 1♀, E. Jaeger leg.

Sečovlje, Fontanigge, UL93, 16. 7. 1999, 2♂, A. Gogala leg.

Cerkniško jez.: Dolenja vas, Cvinger, VL47, 2. 9. 2020, 1♀, NIB.

Ljubljana: Botanični vrt, VL69, 19. 6. 2020, 1♀, NIB.

Ljubljana: Bežigrad, KIS, VM60, 19. 6. 2020, 1♂, NIB.

Ljubljana: Nove Jarše, VM60, 26. 8. 2020, 1♂, NIB.

Ljubljana: Brod, VM50, 3. 5. 2021, 1♂, NIB.

Hylaeus moricei (Friese, 1898)

Mediterranean species. In Slovenia found in the Sečovlje salt-pans, Škocjanski zatok near Koper (sub-Mediterranean region) and Lake Cerknica (Dinaric region).

Nests in reedgalls on *Phragmites* (SCHEUCHL & WILLNER 2015).

Polylectic species. Univoltine. Flies from June to September.

Published records:

GOGALA (1999).

Specimens examined:

Sečovlje, Fontanigge, UL93, 14. 9. 1996, 1♀, A. Gogala leg.; 8. 9. 1999, 1♀, A. Gogala leg.

Koper, Bertoki, Škocjanski zatok, VL04, 22. 7. 2000, 1♀, A. Gogala leg.

Cerkniško jezero: Otok, VL56, 15. 9. 1999, 1♂, A. Gogala leg.

Ljubljana: Botanični vrt, VL69, 19. 6. 2020, 1♂, NIB.

Hylaeus nigrinus (Fabricius, 1798)

European species, present in the sub-Pannonian, pre-Alpine and Dinaric regions of Slovenia. Oligolectic, specialized on Asteraceae. Nests in stone crevices and other pre-existing cavities. Univoltine. Flies from June to August.

Published records:

Podčetrtek, 9. – 27. 8., E. Jaeger leg. (VOGRIN 1955).

Podčetrtek, WM41, 11. 6. 1921, 1♂, E. Jaeger leg. (from Miljana, on the Croatian side of the Sotla River); 9. 8. 1932, 1♀, E. Jaeger leg. (GOGALA 1991, 1994, 1999).

Specimens examined:

Štatenberg, WM53, 29. 7. 1994, 1♀, A. Gogala leg.

Log, Lukovica, VL59, 4. 7. 1990, 1♂, A. Gogala leg.; 6. 7. 1991, 1♂, A. Gogala leg.

Mali Kum, WM00, 26. 7. 1996, 1♂, A. Gogala leg.

Preserje pod Krimom, VL59, 6. 7. 2004, 1♂, A. Gogala leg.

Dolsko, Križevska vas, VM70, 13. 6. 2006, 1♂, A. Gogala leg.

Borovnica, Pako, VL58, 2. 6. 2020, 2♀1♂, 20. 7. 2020, 1♀, Rok Šturm leg., NIB.

Dol pri Borovnici, VL48, 8. 7. 2020, 1♀, Rok Šturm leg., NIB.

Vojnik, Rožni vrh, WM12, 11. 6. 2020, 1♀, 22. 6. 2020, 1♀, Katarina Meža leg., NIB.

Polzela, Zakl, WM02, 22. 6. 2020, 1♀, Katarina Meža leg., NIB.

Celje, Levec, WM12, 4. 7. 2020, 1♀1♂, 22. 7. 2020, 1♀, 10. 8. 2020, 1♀, 21. 8. 2020, 1♀, Katarina Meža leg.; 14. 6. 2021, 1♀, NIB.

Polzela, Trnava, WM02, 22. 7. 2020, 1♂, Katarina Meža leg., NIB.

Loka pri Mengšu, VM61, 13. 7. 2020, 2♀, NIB.

Ljubljana: Botanični vrt, VL69, 19. 6. 2020, 1♀, NIB.

Hylaeus nivaliformis Dathe, 1977

East Alpine species. In Slovenia present above the treeline in the Alps. The record from Podčetrtek is dubious, it might belong to *H. adriaticus*.

Polylectic species (personal observation).

Univoltine. Flies in July and August.

Published records:

GOGALA (1991, 1994, 1999).

Podčetrtek, 20. 8., E. Jaeger leg. (as *P. nivalis*) (VOGRIN 1955). The locality does not fit with the species distribution in the Alps.

Jul. Alpe: Vršič, 1♂ (WARNCKE 1988).

Karavanke: Belščica, 1700 – 1800 m, VM34, 4. 8. 1993, 2♀ (EBMER 1996)

Specimens examined:

Košuta: Pl. Šija, 1530 – 1800 m, VM44, 20. 8. 1991, 3♀1♂, A. Gogala leg.

Mangartsko sedlo, UM94, 2. 7. 1993, 3♀1♂, A. Gogala leg.

Hylaeus tyrolensis Förster, 1871

North Mediterranean species, present in the sub-Mediterranean, Dinaric, pre-Alpine and sub-Pannonian regions of Slovenia.

Polylectic species. Nests in pre-existing cavities.

Bivoltine. Flies from May to September.

Published records:

Podčetrtek, WM41, 30. 6. 1946, 1♀, E. Jaeger leg., 2. 7. 1946, 1♂, E. Jaeger leg. (GOGALA 1991, 1994, 1999).

Specimens examined:

- North of Podčetrtek (N), 18. 6. 1932, 1♂, E. Jaeger leg.
 Podčetrtek (SL), 23. 6. 1943, 1♂, E. Jaeger leg.
 Podčetrtek (TR), 30. 6. 1946, 5♀, E. Jaeger leg.
 North-east of Podčetrtek (NO), 2. 7. 1946, 1♂, E. Jaeger leg.
 Log, Lukovica, VL59, 28. 6. 1990, 1♂, A. Gogala leg.; 5. 7. 1996, 1♂, A. Gogala leg.
 Ljubljana: Vič, VM60, 15. 6. 2021, 1♀, NIB.

Subgenus: *Koptogaster* ALFKEN 1912***Hylaeus bifasciatus* (Jurine, 1807)**

The known foodplant is *Allium*, Amaryllidaceae (SCHEUCHL & WILLNER 2015).

A new species for Slovenia. One female was hidden among *H. variegatus* specimens, which also have red abdomen.

Specimens examined:

- Famlje, grad Školj, VL25, 20. 7. 1999, 1♀ on Apiaceae, A. Gogala leg.

***Hylaeus punctulatissimus* Smith, 1842**

Mediterranean species. In the sub-Mediterranean and sub-Pannonian regions of Slovenia.

Oligolectic, specialized on *Allium* (Amaryllidaceae) (SCHEUCHL & WILLNER 2015). Nests probably in pre-existing cavities, e. g. wood burrows.

Univoltine. Flies in June and July.

Published records:

- Podčetrtek, 15. 7., E. Jaeger leg. (VOGRIN 1955).
 Maribor, WM55, 6. 7. 1921, 1♂, E. Jaeger leg. (GOGALA 1991, 1994, 1999).

Specimens examined:

- Marburg (= Maribor), 6. 7. 1921, 1♂, E. Jaeger leg.
 Brje pri Komnu, VL07, 17. 7. 1991, 1♀, A. Gogala leg.; 20. 6. 1993, 1♀, A. Gogala leg.;
 22. 6. 2008, 1♂, photo A. Gogala.
 Škocjan, VL25, 16. 6. 1993, 1♀1♂, A. Gogala leg.
 Strunjan, UL94, 7. 6. 1994, 1♀1♂, A. Gogala leg.
 Padna, UL93, 17. 6. 1995, 1♀, A. Gogala leg.
 Čepovan, Puštale, VL09, 27. 7. 1995, 1♀, A. Gogala leg.
 Podpeč, VL14, 13. 6. 1992, 2♂, A. Gogala leg.

Subgenus: *Lambdopsis* Popov, 1939***Hylaeus dilatatus* (Kirby, 1802)**

Hylaeus annularis auct.

Prosopis cervicornis Costa, 1858

West Palaearctic species, widely distributed in Slovenia.

Polylectic species. Nests in pre-existing cavities, e. g. wood burrows.

Univoltine. Flies from June to September.

Published records:

Podčetrtak, 15. – 27. 7., 23. 8., 5. 9., E. Jaeger leg. (VOGRIN 1955).

Podčetrtak, WM41, 12. 6. 1931, 1♂, E. Jaeger leg. (GOGALA 1999; as *H. annularis*).

Specimens examined:

Podčetrtak, 18. 8. 1931, 1♀, E. Jaeger leg.; 27. 6. 1932, 1♂, 13. 7. 1932, 1♀, E. Jaeger leg.

Log, Lukovica, VL59, 24. 7. 1991, 1♀, A. Gogala leg.; 14. 8. 1991, 1♀, A. Gogala leg.

Brje pri Komnu, VL07, 17. 7. 1991, 2♀, A. Gogala leg.

Gorjansko, UL97, 19. 7. 1992, 1♀, A. Gogala leg.

Dobova, Mihalovec, WL58, 23. 8. 1994, 1♀, A. Gogala leg.

Ljubljana, Črnuče, VM60, 11. 8. 1995, 1♀, A. Gogala leg.

Filipčje brdo, VL16, 13. 7. 1996, 1♀, A. Gogala leg.

Planinsko polje: Laze, VL47, 21. 8. 1997, 1♀, A. Gogala leg.

Nanos: Sv. Hieronim – Pleša, VL27, 4. 7. 1998, 1♀, A. Gogala leg.

Pivka, Klenik, Palško jezero, VL46, 31. 8. 1999, 1♀, A. Gogala leg.

Kregolišče, VL07, 20. 9. 2009, 1♀, A. Gogala leg.

Brezovica pri Lj., VL59, 29. 7. 1991, 1♂, A. Gogala leg.

Dragonja, Stena, UL93, 4. 8. 1993, 1♂, A. Gogala leg.; 9. 6. 1990, 1♀, A. Gogala leg.

Ig, Draga, VL68, 13. 7. 1999, 1♂, A. Gogala leg.; 20. 7. 2020, 1♀, 6. 8. 2020, 2♀, 19. 8. 2020, 2♀, 2. 9. 2020, 1♀, Rok Šturm leg., NIB.

Ig, Lj. barje, VL69, 21. 5. 2020, 1♀, Rok Šturm leg., NIB.

Škofljica, VL69, 21. 5. 2020, 1♀, 22. 6. 2020, 1♀, 14. 9. 2020, 1♀, Rok Šturm leg., NIB.

Škofljica, Lj. barje, VL69, 19. 8. 2020, 1♀, Rok Šturm leg., NIB.

Borovnica, Pako, VL58, 22. 6. 2020, 1♂, 20. 7. 2020, 1♀, Rok Šturm leg., NIB.

Celje, Levec, WM12, 4. 7. 2020, 1♀, 8. 9. 2020, 1♀, Katarina Meža leg., NIB.

Polzela, Zakl, WM02, 21. 8. 2020, 1♀, Katarina Meža leg., NIB.

Celje, Šmarjeta, WM22, 21. 8. 2020, 1♀, Katarina Meža leg., NIB.

Cerkniško jez.: Dolenja vas, Cvinger, VL47, 19. 8. 2020, 1♀, 19. 8. 2021, 2♀, 6. 9. 2021, 1♀, NIB.

Cerkniško jez.: Otok, Otočec, VL56, 6. 8. 2020, 1♀, NIB.

Cerkniško jez.: Laze, 12. 7. 2021, 1♀, NIB.

Ljubljana: Vič, VM60, 26. 8. 2020, 1♀, NIB.

Ljubljana: Dravljana, VM50, 26. 8. 2020, 1♀, NIB.

Hylaeus pfankuchi (Alfken, 1919)

European species. In Slovenia at Lake Cerknica and at Draga near Ig (Dinaric region).

Feeds on Apiaceae and Asteraceae. Nests have not been observed yet, but probably dwell in reed stems due to the distribution of the species (SCHEUCHL & WILLNER 2015).

Univoltine. Flies from June to August.

Published records:

GOGALA (1999, 2018).

Specimens examined:

Ig, Draga, VL68, 2. 8. 1995, 3♀, A. Gogala leg.

Cerknica, Otok, VL56, 26. 8. 1995, 4♀1♂, A. Gogala leg.

Cerknica, Gor. Jezero, VL56, 26. 8. 1995, 1♂, A. Gogala leg., 2. 9. 2020, 1♀, 22. 9. 2021, 1♀, NIB.

Cerkniško jez.: Otok, Otočec, VL56, 6. 8. 2020, 1♀, NIB.

Cerkniško jez.: Laze, VL56, 10. 6. 2020, 1♀, NIB.



Slika 30: Obraz samca vrste *Hylaeus communis* z Vremščice.

Figure 30: Face of a male *Hylaeus communis* from Vremščica.



Slika 31: Obraz samca vrste *Hylaeus leptocephalus* iz Sečovelj.

Figure 31: Face of a male *Hylaeus leptocephalus* from Sečovelje.



Slika 32: Obraz samca vrste *Hylaeus moricei* s Cerkniškega jezera.

Figure 32: Face of a male *Hylaeus moricei* from Lake Cerknica.



Slika 33: Obraz samca vrste *Hylaeus nigritus* iz Preserij.

Figure 33: Face of a male *Hylaeus nigritus* from Preserje.



Slika 34: Obraz samca vrste *Hylaeus nivaliformis* z Mangarta.

Figure 34: Face of a male *Hylaeus nivaliformis* from Mt. Mangart.



Slika 35: Obraz samca vrste *Hylaeus tyrolensis* iz Lukovice.

Figure 35: Face of a male *Hylaeus tyrolensis* from Lukovica.



Slika 36: Obraz samice vrste *Hylaeus bifasciatus* iz Famelj.

Figure 36: Face of a female *Hylaeus bifasciatus* from Famlje.



Slika 37: Obraz samca vrste *Hylaeus punctulatissimus* iz Strunjana.

Figure 37: Face of a male *Hylaeus punctulatissimus* from Strunjan.



Slika 38: Obraz samca vrste *Hylaeus dilatatus* iz Drage pri Igu.

Figure 38: Face of a male *Hylaeus dilatatus* from Draga near Ig.



Slika 39: Obraz samca vrste *Hylaeus pfankuchi* iz Gorenjega Jezera.

Figure 39: Face of a male *Hylaeus pfankuchi* from Gorenje Jezero.

Subgenus: *Paraprosopis* Popov, 1939

Hylaeus clypearis (Schenck, 1853)

Mediterranean species. In the sub-Mediterranean, pre-Alpine and Dinaric regions of Slovenia.

Polylectic species. Nests in pre-existing cavities, e. g. wood burrows.

Univoltine. Flies from May to August.

Published records:

Planina, 24. 6. 1961, 1♂ (ERLANDSSON 1986; GOGALA 1991, 1994, 1999).

Specimens examined:

Brezovica, VL14, 14. 6. 1991, 1♀, A. Gogala leg.

Strunjan, UL94, 11. 9. 1995, 1♀1♂, A. Gogala leg.; 5. 8. 1993, 3♂, A. Gogala leg.

Črnotiče, VL14, 8. 7. 1990, 1♂, A. Gogala leg.

Brje pri Komnu, VL07, 14. 7. 1991, 1♂, A. Gogala leg.

Sečovlje, Fontanigge, UL93, 30. 5. 1993, 1♂, A. Gogala leg.

Ljubljana: Nove Jarše, VM60, 21. 9. 2020, 1♀, NIB.

Hylaeus lineolatus (Schenck, 1859)

Mediterranean species. In the sub-Mediterranean and sub-Pannonian regions of Slovenia.

Polylectic species. Nests in pre-existing cavities, e.g., hollow stems.

Bivoltine. Flies from June to September.

Published records:

Podčetrtek, 18./19. 6., 3. 8., E. Jaeger leg. (VOGRIN 1955).

Podčetrtek, WM41, 20. 8. 1930, 1♂, E. Jaeger leg. (GOGALA 1991, 1994, 1999).

Specimens examined:

Podčetrtek (P), 19. 6. 1932, 1♂, E. Jaeger leg.

Trstelj, UL97, 19. 8. 1990, 1♀1♂, A. Gogala leg.; 21. 7. 1991, 2♂, A. Gogala leg.

Brje pri Komnu, VL07, 2. 9. 1990, 1♀, A. Gogala leg.; 1. 8. 1991, 1♂, A. Gogala leg.

Sočerga, Veli Badin, VL13, 14. 6. 1991, 1♀, A. Gogala leg.; 1. 8. 1990, 2♂, A. Gogala leg.;

27. 7. 2011, 1♂, A. Gogala leg.

Hrpelje, Glavica, VL14, 9. 7. 1995, 1♀, A. Gogala leg.

Senadolice, VL16, 5. 8. 1995, 1♀, A. Gogala leg.

Gorjansko, VL07, 12. 6. 2004, 1♀, A. Gogala leg.; UL97, 29. 7. 2004, 1♂, photo A. Gogala

Golič, VL13, 13. 8. 2002, 1♂, A. Gogala leg.

Kregolišče, VL07, 31. 7. 1991, 3♂, A. Gogala leg.

Škofi, VL07, 27. 8. 1994, 1♂, A. Gogala leg.

Podsabotin, UL99, 27. 7. 1995, 1♂, A. Gogala leg.

Strunjan, UL94, 11. 9. 1995, 1♂, A. Gogala leg.

Vremščica, VL26, 18. 7. 1998, 1♂, A. Gogala leg.

Gorjansko, Vale, UL97, 6. 8. 1995, 1♂, A. Gogala vid.

Hylaeus pictipes Nylander, 1852

Hylaeus panzeri Förster, 1871

Published records:

Podčetrtek, 6. – 23. 6., 24. 7., 6. – 23. 8., 2.9., E. Jaeger leg. (VOGRIN 1955).

Podčetrtek, WM41, 25. 6. 1932, 1♂, E. Jaeger leg.; 10. 7. 1932, 1♀, E. Jaeger leg. (GOGALA 1994, 1999).

Specimens examined:

Podčetrtek (P), 11. 6. 1932, 1♂, 19. 6. 1932, 1♀1♂, 25. 6. 1932, 1♂, 10. 7. 1932, 3♀, *pictipes* Alfken det., 11. 6. 1937, ♀, E. Jaeger leg.
 North-West of Podčetrtek (NW), 11. 8. 1931, 2♂, E. Jaeger leg.
 North of Podčetrtek (N), 18. 6. 1932, 1♂, E. Jaeger leg.
 North-east of Podčetrtek (NO), 2. 7. 1946, 2♂, E. Jaeger leg.
 Podčetrtek, Olimje, WM41, 12. 6. 1931, 1♀2♂, E. Jaeger leg., *pictipes* Alfken det., 28. 6. 1932, 1♂, E. Jaeger leg.

Hylaeus sinuatus (Schenck, 1853)

Prosopis minuta auct.

Published records:

Rimske Toplice, 23. 7. 1924, 1♂ (LEBEDEV 1931).
 Podčetrtek, 4. – 10. 6., 23./24. 7., 11./25. 8., 2./3. 9., E. Jaeger leg. (VOGRIN 1955).
 Podčetrtek, WM41, 13. 8. 1932, 1♂, E. Jaeger leg. (GOGALA 1994, 1999).

Specimens examined:

Podčetrtek, TR, 13. 8. 1932, 1♂, E. Jaeger leg.
 Podčetrtek (P), 6. 7. 1932, 1♂, E. Jaeger leg.
 Kregolišče, VL07, 31. 7. 1991, 1♀, A. Gogala leg.
 Pl. Vogar, VM12, 20. 7. 1995, 1♀, A. Gogala leg.; 20. 7. 1996, 1♀, A. Gogala leg.
 Bohinj: Ukanc, VM02, 17. 8. 1996, 1♀, A. Gogala leg.
 Log, Lukovica, VL59, 1. 9. 1996, 1♀, A. Gogala leg.
 Planinsko polje: Laze, VL47, 21. 8. 1997, 1♀, A. Gogala leg.
 Zaplana, VL39, 23. 7. 1999, 1♀, A. Gogala leg.
 Iški Vintgar, VL68, 26. 7. 1995, 1♂, A. Gogala leg.
 Padna, UL93, 23. 8. 1995, 1♂, A. Gogala leg.
 Mali Kum, WM00, 26. 7. 1996, 1♂, A. Gogala leg.
 Vonarje, WM41, 6. 8. 1996, 1♂, A. Gogala leg.
 Bloke: Volčje, Bloško jezero, VL67, 18. 7. 1999, 2♂, A. Gogala leg.
 Borovnica, Pako, VL58, 22. 6. 2020, 1♂, Rok Šturm leg., NIB.
 Ljubljana: NIB, VM50, 11. 8. 2020, 1♀, NIB.
 Ljubljana: Vič, VM60, 6. 7. 2021, 1♂, NIB.
 Cerkljiško jez.: Dol. Jezero, Kleni vrh, VL56, 12. 7. 2021, 1♂, NIB.

Hylaeus styriacus Förster, 1871

Published records:

Podčetrtek, 6. – 25. 6., 24. 7., 6. – 23. 8., 2. 9., E. Jaeger leg. (VOGRIN 1955).
 Podčetrtek, WM41, 17. 6. 1931, 1♀, E. Jaeger leg., 15. 6. 1932, 1♂, E. Jaeger leg. (GOGALA 1994, 1999).

Specimens examined:

Podčetrtek (P), 10. 7. 1932, 1♂, 2. 9. 1932, 1♀, E. Jaeger leg.
 Log, Lukovica, VL59, 14. 8. 1995, 1♀, A. Gogala leg.; 22. 7. 1993, 1♂, A. Gogala leg.;
 1. 8. 1995, 1♂, A. Gogala leg.
 Gradišče pri Lukovici, VM71, 31. 7. 1996, 2♀1♂, A. Gogala leg.

Iški Vintgar, VL68, 22. 8. 1996, 1♀, A. Gogala leg.
Bloke: Volčje, Bloško jezero, VL67, 18. 7. 1999, 1♀, A. Gogala leg.
Famlje, Školj, VL25, 20. 7. 1999, 1♀, A. Gogala leg.
Hotedršica, Žejna dolina, VL39, 29. 7. 1999, 1♀, A. Gogala leg.
Ljubljana, Črnuče, VM60, 15. 6. 1993, 1♂, A. Gogala leg.
Vonarje, WM41, 6. 8. 1996, 1♂, A. Gogala leg.
Ig, Draga, VL68, 13. 7. 1999, 1♂, A. Gogala leg.
Celje, Šmarjeta, WM22, 4. 7. 2020, 1♀, Katarina Meža leg., NIB.
Cerkniško jez.: Dol. Jezero, Kleni vrh, VL56, 8. 7. 2020, 1♂, NIB.
Cerkniško jez.: Otok, Pocinov laz, VL56, 19. 8. 2020, 1♀, NIB.
Cerkniško jez.: Martinjak, VL57, 8. 7. 2020, 1♂, NIB.

***Hylaeus taeniolatus* Förster, 1871**

Hylaeus diplonymus Dathe, 1980

Published as *P. diplonymus*, partly other species (GOGALA 1999).

Specimens examined:

Trstelj, UL97, 21. 7. 1991, 1♂, A. Gogala leg.

Subgenus: *Patagiata* Blüthgen, 1949

***Hylaeus difformis* (Eversmann, 1852)**

European species. In the sub-Pannonian, pre-Alpine and Alpine regions of Slovenia.

Polylectic species. Nests in pre-existing cavities.

Univoltine. Flies from May to August.

Published records:

Podčetrtek, 10. 6., E. Jaeger leg. (VOGRIN 1955).

Podčetrtek, WM41, 22. 5. 1934, 1♂, E. Jaeger leg. (GOGALA 1991, 1994, 1999).

Specimens examined:

Podčetrtek, (STR), 15. 7. 1932, 1♂, E. Jaeger leg.

Log, Lukovica, VL59, 5. 4. 1991, 1♀, A. Gogala leg.; 30. 6. 1990, 1♀, A. Gogala leg.

Petanjci, WM86, 16. 7. 1995, 1♀, A. Gogala leg.

Krško, Anovec, WL49, 1. 8. 1996, 1♀, A. Gogala leg.

Mali Kum, WM00, 26. 7. 1996, 1♂, A. Gogala leg.

Soča, Vrsnik, 620 m, UM93, 6. 8. 1995, 1♀, B. Komac leg., det. A. Gogala

Cerkniško jez.: Dolenja vas, Cvinger, VL47, 8. 7. 2020, 1♀1♂, NIB.

Subgenus: *Prosopis* Fabricius 1804

***Hylaeus confusus* Nylander, 1852**

European species, widely distributed in Slovenia.

Polylectic species. Nests in pre-existing cavities, e.g., wood burrows.

Bivoltine. Flies from May to September.

Published records:

Podčetrtek, 11./18. 6., 10./13. 7., 6./23. 8., 3. 9., E. Jaeger leg. (VOGRIN 1955).

Podčetrtek, WM41, 22. 7. 1931, 1♀, E. Jaeger leg. (GOGALA 1991, 1994, 1999).

Specimens examined:

- Podčetrtek, Sotla River (Gr), 14. 6. 1932, 2♂, E. Jaeger leg.
 Podčetrtek (P), 10. 6. 1932, 1♂, 25. 6. 1932, 1♂, E. Jaeger leg.
 Sorško polje, VM51, 31. 8. 1938, 1♀, M. Hafner leg.
 Log, Lukovica, VL59, 18. 6. 1991, 1♀, A. Gogala leg.; 1. 7. 1991, 1♀1♂, A. Gogala leg.;
 20. 6. 1991, 1♂, A. Gogala leg.; 21. 6. 1991, 1♂, A. Gogala leg.; 6. 7. 1991, 1♂, A. Gogala
 leg.; 11. 7. 1991, 1♂, A. Gogala leg.; 14. 6. 1990, 1♀, A. Gogala leg.; 14. 8. 1991, 1♀,
 A. Gogala leg.; 21. 6. 1992, 1♀, photo A. Gogala.
 Brje pri Komnu, VL07, 16. 6. 1991, 1♀, A. Gogala leg.
 Slavnik, VL14, 23. 6. 1991, 1♀, A. Gogala leg.
 Cerknjiško jezero: Laze – Otok, VL56, 4. 8. 1991, 1♀, A. Gogala leg.
 Cerknjiško jezero: Otok, VL56, 28. 8. 2009, 1♀, A. Gogala leg.; 26. 8. 1995, 1♀, A. Gogala vid.
 Korensko sedlo, VM05, 23. 7. 1993, 1♀, A. Gogala leg.
 Kočevje, Strmec, VL85, 25. 6. 1994, 1♀, A. Gogala leg.
 Podkoren, VM05, 1. 7. 1994, 1♀1♂, A. Gogala leg.
 Pl. Vogar, VM12, 7. 7. 1995, 1♀1♂, A. Gogala leg.
 Vremščica, VL26, 18. 7. 1998, 1♀, A. Gogala leg.
 Dol pri Ljubljani, ob Savi, VM70, 13. 6. 2006, 1♀, A. Gogala leg.
 Mala Polana, Črni log, XM06, 23. 5. 1992, 1♂, A. Gogala leg.
 Mojstrana, VM14, 1. 6. 1993, 1♂, A. Gogala leg.
 Bohinj: Ukanc, VM02, 25. 8. 1990, 1♀, A. Gogala leg.; 17. 8. 1996, 1♀1♂, A. Gogala vid.
 Gradišče pri Lukovici, VM71, 11. 7. 1996, 1♀, A. Gogala leg.
 Črni Vrh, Pasja ravan, VM40, 14. 8. 1996, 1♀, A. Gogala leg.; 4. 7. 1996, 1♂, A. Gogala vid.
 Hotedršica, Žejna dolina, VL39, 29. 7. 1999, 1♀, A. Gogala leg.
 Hotedršica, Žejna dolina, VL38, 7. 6. 2020, 1♀, A. Gogala leg.
 Polhograjsko hrib.: Setnica, Grmada, VM40, 2. 7. 1999, 1♀, A. Gogala leg.
 Sp. Pirniče, VM50, 8. 6. 1995, 1♂, A. Gogala vid.
 Hrpelje, Glavica, VL14, 9. 7. 1995, 1♂, A. Gogala vid.
 Cerknica, Dol. Jezero, VL56, 26. 8. 1995, 1♀, A. Gogala vid.
 Ljubljana, Črnuče, VM60, 31. 8. 1995, 1♀, A. Gogala vid.
 Kum, WM00, 26. 7. 1996, 1♂, A. Gogala vid.
 Brestanica, WL39, 6. 8. 1996, 1♀, A. Gogala vid.
 Pokojišče, VL48, 24. 8. 1996, 1♀, A. Gogala vid.
 Bistra, VL48, 4. 5. 2020, 1♀, 21. 5. 2020, 1♀, 2. 6. 2020, 1♀1♂, 2. 9. 2020, 1♀, Rok Šturm
 leg., NIB.
 Bistra, Lj. barje, VL58, 2. 6. 2020, 2♀, 22. 6. 2020, 1♀, 20. 7. 2020, 1♀, Rok Šturm leg., NIB.
 Dol pri Borovnici, VL48, 2. 6. 2020, 1♀, 2. 9. 2020, 1♀, Rok Šturm leg., NIB.
 Borovnica, Pako, VL58, 21. 5. 2020, 1♂, Rok Šturm leg., NIB.
 Ig, Lj. barje, VL69, 22. 6. 2020, 1♀, Rok Šturm leg., NIB.
 Škofljica, Lj. barje, VL69, 21. 5. 2020, 2♀, 19. 8. 2020, 1♀, Rok Šturm leg., NIB.
 Škofljica, VL69, 21. 5. 2020, 1♀, 22. 6. 2020, 1♀, Rok Šturm leg., NIB.
 Vojnik, Nova Cerkev, WM22, 5. 5. 2020, 1♀, 11. 6. 2020, 4♀, 22. 6. 2020, 1♀, 4. 7. 2020, 1♀,
 Katarina Meža leg., NIB.
 Celje, Kasaze, WM12, 20. 5. 2020, 1♀, Katarina Meža leg., NIB.
 Celje, Šmarjeta, WM22, 20. 5. 2020, 1♂, Katarina Meža leg., NIB.
 Polzela, Zakl, WM02, 22. 6. 2020, 1♀, Katarina Meža leg., NIB.
 Vojnik, WM22, 22. 6. 2020, 1♀, Katarina Meža leg., NIB.
 Žeje pri Komendi, VM61, 11. 8. 2020, 1♀, NIB.

Suhadole, VM61, 16. 9. 2020, 1♀, NIB.

Cerkniško jez.: Dolenja vas, Cvinger, VL47, 10. 6. 2020, 1♀, 23. 6. 2020, 2♀, 28. 6. 2021, 1♂, 20. 7. 2021, 1♀, NIB.

Cerkniško jez.: Otok, Otočec, VL56, 10. 6. 2020, 2♂, 6. 8. 2020, 1♀1♂, 19. 8. 2021, 1♀, NIB.

Cerkniško jez.: Otok, Pocinov laz, VL56, 10. 6. 2020, 1♀, NIB.

Cerkniško jez.: Laze, VL56, 10. 6. 2020, 1♂, NIB.

Cerkniško jez.: Gor. Jezero, VL56, 2. 9. 2020, 1♂, NIB.

Ljubljana: Ježica, VM60, 1. 6. 2021, 1♂, NIB.

Hylaeus duckei (Alfken, 1904)

North Mediterranean species. In the sub-Mediterranean, pre-Alpine and sub-Pannonian regions of Slovenia.

Probably polylectic species. Visits Apiaceae (personal observation).

Univoltine. Flies from June to August

Published records:

Podčetrtek, 14. 6., 15. – 27. 7., 5. 9., E. Jaeger leg. (VOGRIN 1955).

Podčetrtek, WM41, 19. 6. 1932, 1♂, E. Jaeger leg. (GOGALA 1991, 1994, 1999).

Specimens examined:

Podčetrtek (P), 10. 6. 1932, 1♂, 11. 6. 1932, 1♂, E. Jaeger leg.

Škocjan, VL25, 15. 6. 1994, 1♀, A. Gogala leg.

Plave, UM80, 26. 7. 1994, 1♀, A. Gogala leg.

Sečovlje, Fontanigge, UL93, 23. 8. 1995, 1♀, A. Gogala leg.

Šentjakob ob Savi, VM60, 15. 6. 1997, 1♀1♂, A. Gogala leg.

Famlje, Školj, VL25, 20. 7. 1999, 1♀, A. Gogala leg.

Bezovica, VL14, 14. 6. 1991, 1♂, A. Gogala leg.

Ljubljana, Črnuče, VM60, 15. 6. 1993, 1♂, A. Gogala leg.

Trstelj, UL97, 2. 8. 1998, 1♂, A. Gogala leg.

Celje, Levec, WM12, 26. 7. 2021, 1♂, NIB.

Hylaeus gibbus Saunders, 1850

North Mediterranean species. In the sub-Mediterranean, pre-Alpine and sub-Pannonian regions of Slovenia.

Polylectic species. Nests in pre-existing cavities, e.g., wood burrows.

Bivoltine. Flies from May to September.

Published records:

Kamnik, 27. 7. 1929, 1♀ (LEBEDEV 1931).

Podčetrtek, 6. – 25. 6., 4. – 25. 7., 11. 8., 3. 9., E. Jaeger leg. (VOGRIN 1955); WM41, 18. 8. 1931, 1♀, E. Jaeger leg. (GOGALA 1994, 1999).

Partly reported as *H. pictus* (GOGALA 1991).

Specimens examined:

Podčetrtek, 18. 8. 1931, 1♀1♂, E. Jaeger leg.

Brje pri Komnu, VL07, 2. 9. 1990, 1♀1♂, A. Gogala leg.; 18. 8. 1991, 1♀1♂, A. Gogala leg.; 5. 8. 1990, 1♀, A. Gogala leg.

Log, Lukovica, VL59, 22. 8. 1990, 1♀, A. Gogala leg.

Podpeč, VL14, 24. 8. 1991, 1♀, A. Gogala leg.; 23. 5. 1995, 1♂, A. Gogala leg.

Koštabona, Škrline, VL03, 4. 8. 1993, 1♀1♂, A. Gogala leg.

Izvir Rižane, VL14, 17. 8. 1993, 1♀, A. Gogala leg.
 Petišovci, XM15, 4. 8. 1995, 1♀, A. Gogala leg.
 Petanjci, WM86, 16. 7. 1995, 1♀, A. Gogala leg.
 Ljubljana, VM60, 23. 1. 1991, 1♂, A. Gogala leg.
 Sečovlje, Fontanigge, UL93, 24. 8. 1991, 2♂, A. Gogala leg.
 Trstelj, UL97, 21. 7. 1991, 1♂, A. Gogala leg.
 Kregolišče, VL07, 31. 7. 1991, 1♂, A. Gogala leg.
 Dragonja, Stena, UL93, 17. 6. 1995, 1♂, A. Gogala leg.; 11. 9. 1995, 1♀, A. Gogala vid.
 Gradišče pri Lukovici, VM71, 31. 7. 1996, 1♀, A. Gogala leg.
 Boršt, dolina Dragonje, VL03, 24. 9. 1999, 1♀, A. Gogala leg.
 Podsabotin, UL99, 27. 7. 1995, 1♀1♂, A. Gogala vid.
 Strunjan, UL94, 11. 9. 1995, 1♀, A. Gogala vid.
 Ig, Lj. barje, VL69, 6. 8. 2020, 1♂, Rok Šturm leg., NIB.
 Cerkniško Lake: Otok, Otočec, VL56, 6. 8. 2020, 1♀, NIB.
 Cerkniško Lake: Gor. Jezero, VL56, 28. 6. 2021, 1♀, NIB.

Hylaeus incongruus Förster, 1871

This species was recognized by STRAKA & BOGUSCH (2011) who separated it from *H. confusus* and *H. gibbus*, primarily on the basis of larger fields in the face without points above the feelers.

Specimens examined:

Podčetrtek (P), 30. 8. 1930, 1♀, 2. 6. 1932, 1♂, E. Jaeger leg.
 Podčetrtek (TR), 13. 8. 1932, 1♂, E. Jaeger leg.
 Kozina, VL15, 22. 6. 1991, 1♀, A. Gogala leg.
 Krško, Anovec, WL49, 1. 8. 1996, 1♀, A. Gogala leg.
 Gorjansko, UL97, 7. 6. 1992, 1♂, A. Gogala leg.
 Vojnik, WM22, 22. 7. 2020, 1♂, Katarina Meža leg., NIB.
 Ljubljana: Botanični vrt, VL69, 15. 6. 2021, 1♀, NIB.

Hylaeus signatus (Panzer, 1798)

Prosopis pratensis (Geoffroy, in Fourcroy, 1785)

Prosopis bipunctata (Fabricius, 1798)

Oligolectic, specialized on *Reseda* (Resedaceae).

European species. In the sub-Mediterranean, pre-Alpine and sub-Pannonian regions of Slovenia
 Partly bivoltine. Flies from June to September (SCHEUHL & WILLNER 2015).

Nests in pre-existing cavities.

Published records:

Podčetrtek, 14./23. 6., 13. 8., E. Jaeger leg. (VOGRIN 1955).
 Maribor, WM55, 10. 7. 1921, 1♀, E. Jaeger leg.; Podčetrtek, WM41, 20. 6. 1933, 1♂, E. Jaeger leg. (GOGALA 1991, 1994, 1999).

Specimens examined:

Marburg (= Maribor), 7. 7. 1921, 1♂, E. Jaeger leg.
 Podčetrtek (P), 12. 6. 1932, 1♂, E. Jaeger leg.
 Podčetrtek, Olimje, Trobevnik (TRO), 19. 8. 1933, 3♀, E. Jaeger leg.
 Ljubljana, Črnuče, VM60, 11. 7. 1994, 1♀, A. Gogala leg.

Sečovlje, Fontanigge, UL93, 19. 8. 1996, 1♀1♂, A. Gogala leg.
Komen, Vale, UL97, 6. 7. 1999, 1♀, A. Gogala leg.
Bezovica, VL14, 14. 6. 1991, 3♂, A. Gogala leg.
Črni Kal, VL14, 13. 6. 1992, 2♂, A. Gogala leg.
Brje pri Komnu, VL07, 20. 6. 1993, 1♂, A. Gogala leg.
Strunjan, UL94, 27. 6. 1995, 1♂, M. Gogala leg.; 6. 7. 1998, 1♂, A. Gogala leg.
Dol pri Ljubljani, ob Savi, VM70, 28. 7. 2006, 1♂, A. Gogala leg.
Strunjan, Belvedere, UL94, 26. 7. 2009, 1♂, A. Gogala leg.
Celje, Šmarjeta, WM22, 8. 9. 2020, 1♀, Katarina Meža leg., NIB.

***Hylaeus variegatus* (Fabricius, 1798)**

Nests in holes found in the ground, mostly made by other hymenopterans (SCHEUCHL & WILLNER 2015).

Published records:

Podčetrtek, 15. 6., 13./23. 7., 15./20. 8., E. Jaeger leg. (VOGRIN 1955).
Lendava, XM16, 14. 7. 1935, 1♀, E. Jaeger leg.; Podčetrtek, WM41, 6. 8. 1932, 1♀, E. Jaeger leg. (GOGALA 1991, 1994, 1999).

Specimens examined:

Dol. Lendava (= Lendava), 14. 7. 1935, 1♀, E. Jaeger leg.
Podčetrtek, (TR), 13. 8. 1932, 1♂, E. Jaeger leg.
Podpeč, VL14, 24. 8. 1991, 1♀, A. Gogala leg.; 13. 6. 1992, 1♂, A. Gogala leg.
Log, Lukovica, VL59, 19. 8. 1992, 1♀, A. Gogala leg.; 14. 8. 1995, 1♂, A. Gogala leg.
Kamnik, VM62, 20. 8. 1994, 1♂, A. Gogala leg.
Ljubljana, Črnuče, VM60, 4. 7. 1993, 1♀, A. Gogala leg.
Padna, UL93, 23. 8. 1995, 1♀, A. Gogala leg.
Strunjan, UL94, 11. 9. 1995, 1♀, A. Gogala leg.
Gradišče pri Lukovici, VM71, 11. 7. 1996, 1♀, A. Gogala leg.

Subgenus: *Spatulariella* Popov, 1939

***Hylaeus alpinus* (Morawitz, 1867)**

Alpine species. In Slovenia in the Alps and the Nanos and Snežnik Mts. (Alpine, sub-Mediterranean and Dinaric regions).

Probably polylectic species (personal observation).

Univoltine. Flies in July and August.

Published records:

GOGALA (1991, 1994, 1999).

Specimens examined:

Tosc, 1800 m, VM13, 6. 8. 1991, 1♀, A. Gogala leg.
Snežnik, VL54, 22. 7. 1992, 1♀2♂, A. Gogala leg.
Ilirska Bistrica, Štanga, VL44, 22. 7. 1992, 1♀, A. Gogala leg.
Nanos: Sv. Hieronim, VL27, 17. 7. 1993, 1♀1♂, A. Gogala leg.
Korensko sedlo, VM05, 23. 7. 1993, 1♀, A. Gogala leg.
Pl. Vogar, VM12, 20. 7. 1996, 1♂, A. Gogala leg.

***Hylaeus hyalinatus* Smith, 1842**

Published records:

- Podčetrtek, 15. 7., 3. 8., E. Jaeger leg. (VOGRIN 1955).
 Podčetrtek, WM41, 15. 7. 1932, 1♂, E. Jaeger leg. (GOGALA 1991, 1994, 1999).
 Ljubljana, Bežigrad VM60, 12. 8. 2012, ♂, photo T. Trilar (TRILAR 2012).

Specimens examined:

- Podčetrtek (P), 19. 6. 1932, 1♂, E. Jaeger leg.
 Sočerga, Veli Badin, VL13, 14. 6. 1991, 1♀, A. Gogala leg.
 Cerknjsko jezero: Laze – Otok, VL56, 4. 8. 1991, 1♀, A. Gogala leg.
 Podgorje, VL14, 24. 8. 1991, 1♀, A. Gogala leg.
 Nanos: Sv. Hieronim, VL27, 25. 7. 1992, 1♀, A. Gogala leg.
 Pokojišče, VL48, 24. 8. 1996, 1♀1♂, A. Gogala leg.
 Brje pri Komnu, VL07, 2. 6. 1991, 1♂, A. Gogala leg.; 16. 6. 1991, 1♂, A. Gogala leg.;
 1. 8. 1991, 1♂, A. Gogala leg.
 Trstelj, UL97, 21. 7. 1991, 1♂, A. Gogala leg.
 Rakitovec, VL13, 3. 6. 1992, 1♂, A. Gogala leg.
 Topol, Grmada, VM40, 1. 8. 1993, 1♂, A. Gogala leg.
 Sp. Pirniče, VM51, 8. 6. 1995, 1♂, A. Gogala leg.
 Ljubljana, Črnuče, VM60, 15. 6. 1995, 1♂, A. Gogala leg.
 Slavnik, VL14, 9. 7. 1995, 1♂, A. Gogala leg.
 Borovnica, Pako, VL58, 6. 8. 2020, 1♀, 14. 9. 2020, 1♀, Rok Šturm leg., NIB.
 Celje, Kasaze, WM12, 22. 7. 2020, 1♂, Katarina Meža leg., NIB.
 Ljubljana: Vič, VM60, 19. 6. 2020, 1♂, 11. 8. 2020, 1♂, NIB.
 Ljubljana: Nove Jarše, VM60, 21. 9. 2020, 1♀, NIB.

***Hylaeus punctatus* (Brullé, 1832)**

Mediterranean species. In the sub-Mediterranean, pre-Alpine and sub-Pannonian regions of Slovenia.

Polylectic species. Nests probably in pre-existing cavities.

Univoltine. Flies from June to August.

Published records:

- Podčetrtek, WM41, 23. 8. 1932, 1♂, E. Jaeger leg. (GOGALA 1991, 1994).
 Prekmurje: Gančani, WM96, 3. 7. 1988, 1♂, S. Gomboc leg. (GOGALA 1999).

Specimens examined:

- Podčetrtek, Sotla river (SOT), 23. 8. 1932, 1♂, E. Jaeger leg.
 Log, Lukovica, VL59, 5. 7. 1991, 1♀1♂, A. Gogala leg.
 Sečovlje, Fontanigge, UL93, 23. 8. 1995, 1♀, A. Gogala leg.; 19. 8. 1996, 1♀1♂, A. Gogala leg.;
 16. 7. 1999, 1♂, A. Gogala leg.
 Brje pri Komnu, VL07, 14. 7. 1991, 1♂, A. Gogala leg.
 Kregolišče, VL07, 31. 7. 1991, 1♂, A. Gogala leg.
 Vojnik, Nova Cerkev, WM22, 4. 7. 2020, 1♀, Katarina Meža leg., NIB.
 Ljubljana: Vič, VM60, 19. 6. 2020, 1♀, 30. 6. 2020, 1♀, NIB.
 Ljubljana: Nove Jarše, VM60, 19. 6. 2020, 1♀, NIB.
 Ljubljana, NIB, VM50, 12. 7. 2021, 1♂, NIB.
 Cerknjsko jez.: Gor. Jezero, VL56, 20. 7. 2021, 1♀, NIB.



Slika 40: Obraz samca vrste *Hylaeus clypearis* iz Strunjana.

Figure 40: Face of a male *Hylaeus clypearis* from Strunjan.



Slika 41: Obraz samca vrste *Hylaeus lineolatus* iz Sočerge.

Figure 41: Face of a male *Hylaeus lineolatus* from Sočerga.



Slika 42: Obraz samca vrste *Hylaeus pictipes* iz Olimja.

Figure 42: Face of a male *Hylaeus pictipes* from Olimje.



Slika 43: Obraz samice vrste *Hylaeus pictipes* iz Olimja.

Figure 43: Face of a female *Hylaeus pictipes* from Olimje.



Slika 44: Gonoforcepsi so pri vrsti *Hylaeus pictipes* apikalno koničasti (levo), medtem ko so pri vrsti *Hylaeus taeniolatus* zaobljeni (desno).

Figure 44: Gonoforceps of *Hylaeus pictipes* are apically pointed (left), while those of *Hylaeus taeniolatus* are rounded (right).



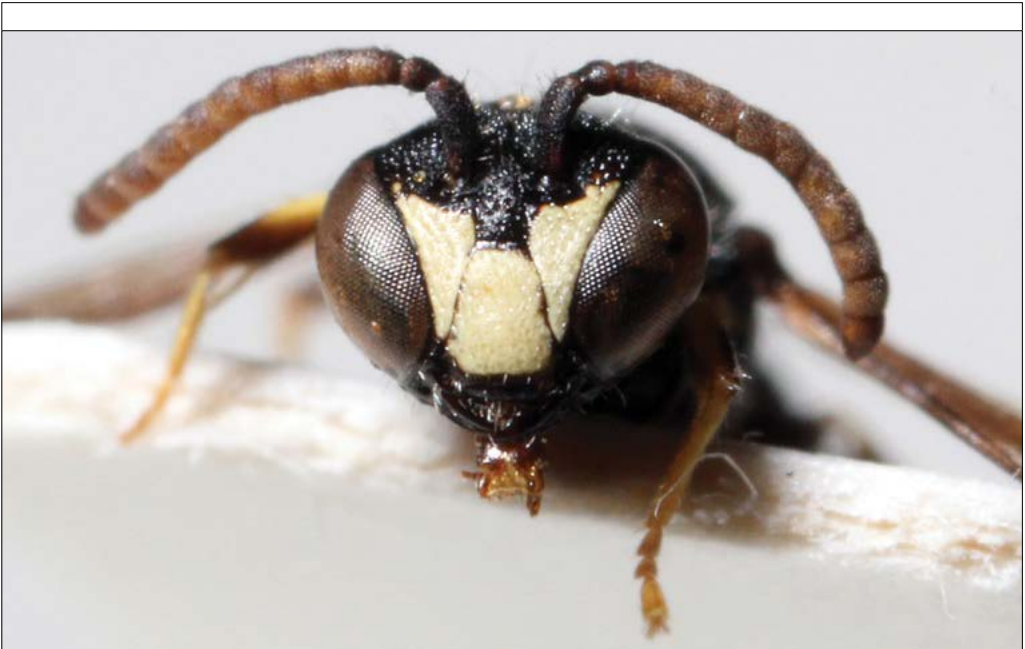
Slika 45: Obraz samca vrste *Hylaeus sinuatus* z Bloke.

Figure 45: Face of a male *Hylaeus sinuatus* from Bloke.



Slika 46: Obraz samca vrste *Hylaeus styriacus* iz Drage pri Igu.

Figure 46: Face of a male *Hylaeus styriacus* from Draga near Ig.



Slika 47: Obraz samca vrste *Hylaeus taeniolatus* iz Trstelja.

Figure 47: Face of a male *Hylaeus taeniolatus* from Trstelj.



Slika 48: Obraz samca vrste *Hylaeus difformis* iz Malega Kuma.

Figure 48: Face of a male *Hylaeus difformis* from Mali Kum.



Slika 49: Obraz samca vrste *Hylaeus confusus* s planine Vogar.

Figure 49: Face of a male *Hylaeus confusus* from Vogar.



Slika 50: Obraz samca vrste *Hylaeus duckei* iz Trstelja.

Figure 50: Face of a male *Hylaeus duckei* from Trstelj.



Slika 51: Obraz samca vrste *Hylaeus gibbus* iz Podpeči.

Figure 51: Face of a male *Hylaeus gibbus* from Podpeč.



Slika 52: Obraz samca vrste *Hylaeus incongruus* iz Gorjanskega.

Figure 52: Face of a male *Hylaeus incongruus* from Gorjansko.



Slika 53: Samec vrste *Hylaeus signatus* na katancu (rod *Reseda*) v Strunjanu.

Figure 53: *Hylaeus signatus* male on *Reseda* in Strunjan.



Slika 54: Obraz samca vrste *Hylaeus variegatus* iz Lukovice.

Figure 54: Face of a male *Hylaeus variegatus* from Lukovica.



Slika 55: Obraz samca vrste *Hylaeus alpinus* s Planine Vogar.

Figure 55: Face of a male *Hylaeus alpinus* from Planina Vogar.



Slika 56: Obraz samca vrste *Hylaeus hyalinatus* iz Spodnjih Pirnič.

Figure 56: Face of a male *Hylaeus hyalinatus* from Spodnje Pirniče.



Slika 57: Obraz samca vrste *Hylaeus punctatus* iz Sečovelj.

Figure 57: Face of a male *Hylaeus punctatus* from Sečovlje.

Zaključki

V Sloveniji je bilo najdenih 48 vrst čebel opnark (družina Colletidae). Od teh je 13 opnark (rod *Colletes*), preostalih 35 pa je zakrinskih čebel (rod *Hylaeus*). Štiri vrste so bile prvič zabeležene za Slovenijo. Tri so bile v zadnjih letih prepoznane v revizijah vrst ali ponovno prepoznanih vrst, zato so bile njihove najdbe v Sloveniji pričakovane. Podobno je bila v Prekmurju pričakovana *Colletes inexpectatus*, ki je pogosta v Panonskem območju. Vrsta *Hylaeus bifasciatus* se je skrivala v zbirki med podobnimi primerki vrste *Hylaeus variegatus* s prav tako rdečim zadkom. *Hylaeus imparilis* naseljuje le sub-mediteransko območje, *H. intermedius* pa je znana tudi z nahajališč v osrednji Sloveniji, kot sta Podčetrtek in južni rob Ljubljanskega barja. Vrsta *H. incongruus* je manj pogosta kot podobni vrsti *H. confusus* in *H. gibbus*. Vrsta *Colletes marginatus* je umaknjena s seznama vrst Slovenije zaradi napačne navedbe.

Conclusions

48 species of Colletidae are distributed in Slovenia, 13 species in the genus *Colletes* and 35 species in the genus *Hylaeus*. Four species have been registered for Slovenia for the first time. *Hylaeus bifasciatus* has been hiding among similar *H. variegatus* specimens with red abdomen in my collection. *Colletes inexpectatus* is common in Pannonia hence its occurrence in Prekmurje was expected. While *Hylaeus imparilis* is found only in the sub-Mediterranean region. *Hylaeus intermedius* is present also in some central localities like Podčetrtek and southern limit of Ljubljansko barje. The species *H. incongruus* is less frequent than similar species of *H. confusus* and *H. gibbus*. *Colletes marginatus*, previously erroneously reported for Slovenia, is no longer included in the country's species list.

References

- ALFKEN, J. D., 1900: Zwei neue Colletes-Arten des palaearktischen Gebietes. *Entomologische Nachrichten*, 26: 74—77.
- BARBATTINI, R., F. FRILLI, P., ZANDIGIACOMO, G. PAGLIANO, M. QUARANTA, 2005: Apoidea del Friuli Venezia Giulia e di territori confinanti. I: Introduzione generale e Colletidae. *Gortania*, 27: 305—338.
- DATHE, H. H., 1980: Arten von *Hylaeus* in Europa (Hymenoptera: Apoidea, Colletidae). *Mitteilungen aus dem zoologischen Museum in Berlin*, 56 (2): 207—294.
- DATHE, H. H., 2000: Studien zur Systematik und Taxonomie der Gattung *Hylaeus* F. (3) Revision der *Hylaeus-nivalis*-Gruppe in Europa und Klärung weiterer westpaläarktischer Arten (Apidae, Colletinae). *Beiträge zur Entomologie*, 50 (1): 151—174.
- DATHE, H. H., E. SCHEUCHL, E. OCKERMÜLLER, 2016: Illustrierte Bestimmungstabelle für die Arten der Gattung *Hylaeus* F. (Maskenbienen) in Deutschland, Österreich und der Schweiz. *Entomologica Austriaca, Suppl.* 1: 1—51.
- ERLANDSSON, S., 1986: Hymenoptera Aculeata from the european part of the Mediterranean countries, III. *Boll. Mus. Civ. St. Nat. Venezia*, 35: 53—66.
- GOGALA, A., 1991: Contribution to the Knowledge of the Bee Fauna of Slovenia (Hymenoptera: Apidae). *Scopolia*, 25: 1—33.
- GOGALA, A., 1994: Contribution to the Knowledge of the Bee Fauna of Slovenia II. (Hymenoptera: Apidae). *Scopolia*, 31: 1—40.
- GOGALA, A., 1999: Bee Fauna of Slovenia: Checklist of Species (Hymenoptera: Apoidea). *Scopolia*, 42: 1—79.
- GOGALA, A., 2018: Threatened bee species of Europe in Slovenia = Ogrožene čebele Evrope v Sloveniji. *Folia biologica et geologica*, 59 (2): 21—43.
- GOGALA, A., J. GRAD, 2008: Divje čebele in čmrlji (Hymenoptera: Apoidea) v občini Dol pri Ljubljani. V: Iz dežele Jurija Vege, Zbornik občine Dol pri Ljubljani. Občina Dol pri Ljubljani, pp. 201—214.
- GRAEFFE, E., 1902: Die Apiden-Fauna des österreichischen Küstenlandes. *Verh. k. k. zool.-bot. Ges. Wien*, 52: 113—135.
- KUHLMANN, M., M. Y. PROSHCHALYKIN, 2014: The bees of the genus *Colletes* Latreille 1802 of the European part of Russia, with keys to species (Hymenoptera: Apoidea: Colletidae). *Zootaxa*, 3878 (3): 201—247.
- KUHLMANN, M., E.A.B., ALMEIDA, N., LAURENEE, D.L.J., QUICKE, 2009: Molecular phylogeny and historical biogeography of the bee genus *Colletes* Latreille, 1802 (Hymenoptera: Apiformes: Colletidae), based on mitochondrial COI and nuclear 28S sequence data. *Insect Systematics & Evolution*, 40: 291—318.
- LEBEDEV, A., 1931: Prilog poznavanju jugoslovenskih pčela. *Acta Societatis Entomologicae Jugoslavicae*, 5—6: 39—48.
- MÜLLER, A., 2023: The hidden diet – examination of crop content reveals distinct patterns of pollen host use by Central European bees of the genus *Hylaeus* (Hymenoptera, Colletidae). *Alpine Entomology*, 7: 21—35.
- MILIVOJEVIĆ, T., T. TRILAR, Z. NIKOLIĆ 2009: Sawflies (Hymenoptera: Symphyta) in the collections of the Slovenian museum of natural history. *Acta entomologica Slovenica*, 17 (1): 45—72.
- NOSKIEWICZ, J., 1936: Die palaearktischen Colletes-Arten. *Prace Naukowe*, (2)3, Lwow.
- OSYCHNJUK, A.Z., 1970: Bdzoly koletidy. *Fauna Ukrainy*, 12, Vyp. 4.

- SCHEUCHL E., W. WILLNER, 2015: Taschenlexikon der Wildbienen Mitteleuropas. Quelle & Meyer Verlag Wiebelsheim, 917 pp.
- STRAKA J., P. BOGUSCH, 2011: Contribution to the taxonomy of the *Hylaeus gibbus* species group in Europe. (Hymenoptera Apoidea and Colletidae. *Zootaxa*, 293(2): 51—67.
- TRILAR, T. 2012: *Hylaeus hyalinatus* Smith, 1842. *Podatkovna zbirka fotografij nevretenčarjev*. (Dostop: 16. 4. 2023) Dostopno na naslovu: <http://www1.pms-lj.si/animalia/load.php?species=3463>.
- VOGRIN, V., 1955: Prilog fauni Hymenoptera-Aculeata Jugoslavije. *Zaštita bilja* (Beograd), 31: Dodatak. 74 pp.
- WARNCKE K., 1972: Beitrag zur Systematik und Verbreitung der Bienengattung *Prosopis* F. in der Westpaläarktis. *Bull. Rech. Agron. Gembloux, N. S.*, 5: 745—768.

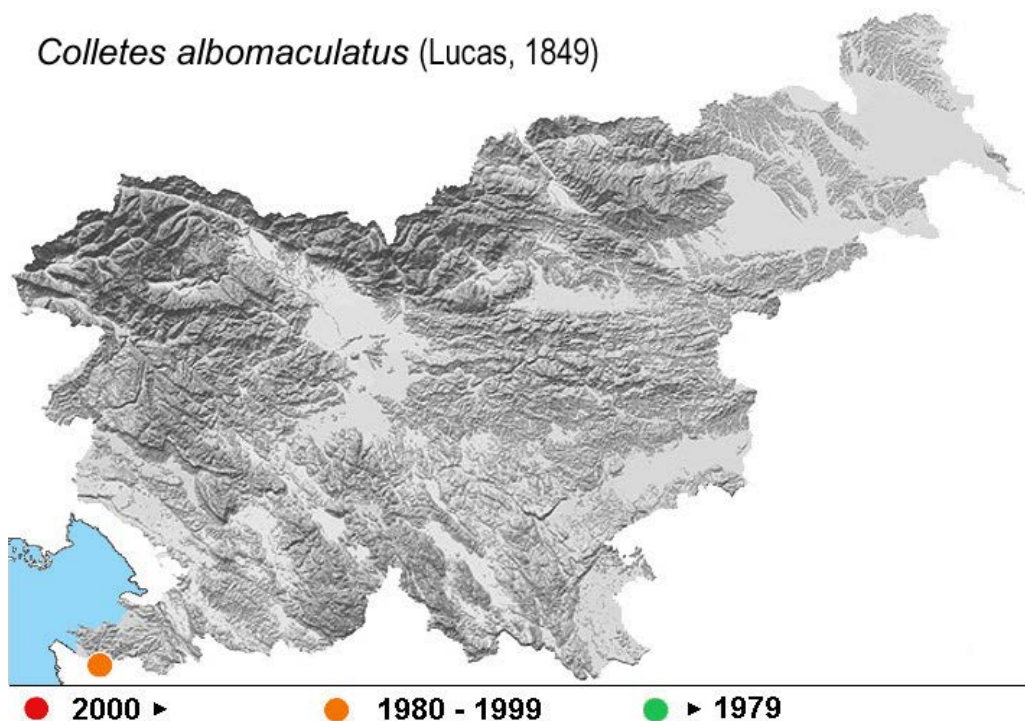
Priloga: Karte razširjenosti

Najdbe do leta 1979 so zabeležene z zeleno, od 1980 do 1999 z oranžno in po letu 2000 z rdečo barvo.

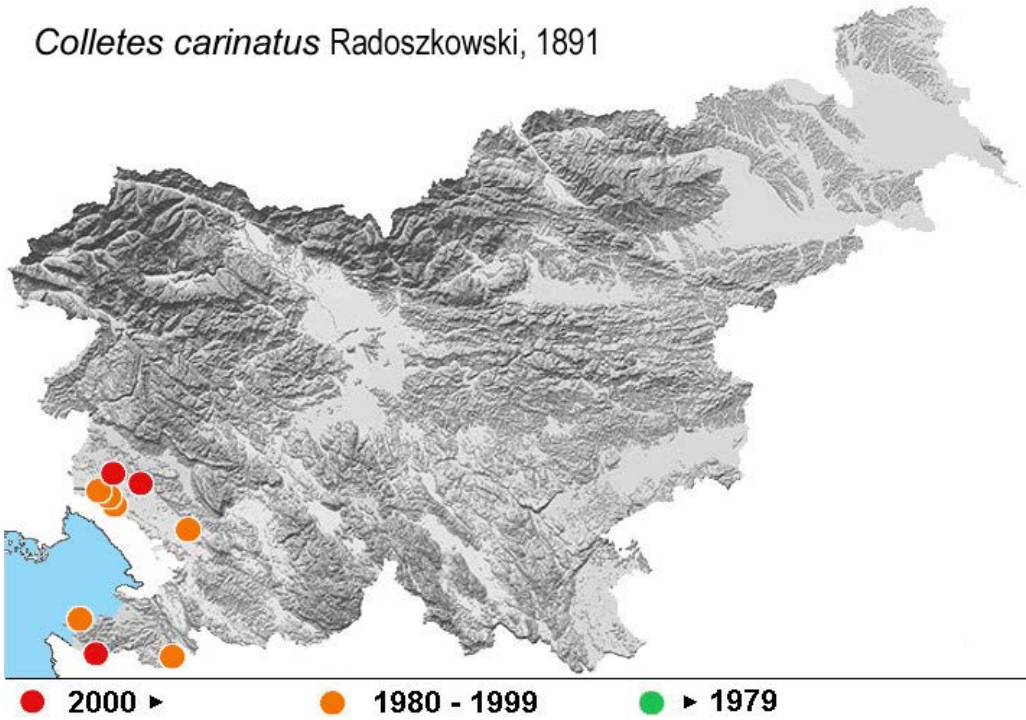
Appendix: Distribution maps

Records untill the year 1929 are shown in green, from 1980 to 1999 in orange and after 2000 in red.

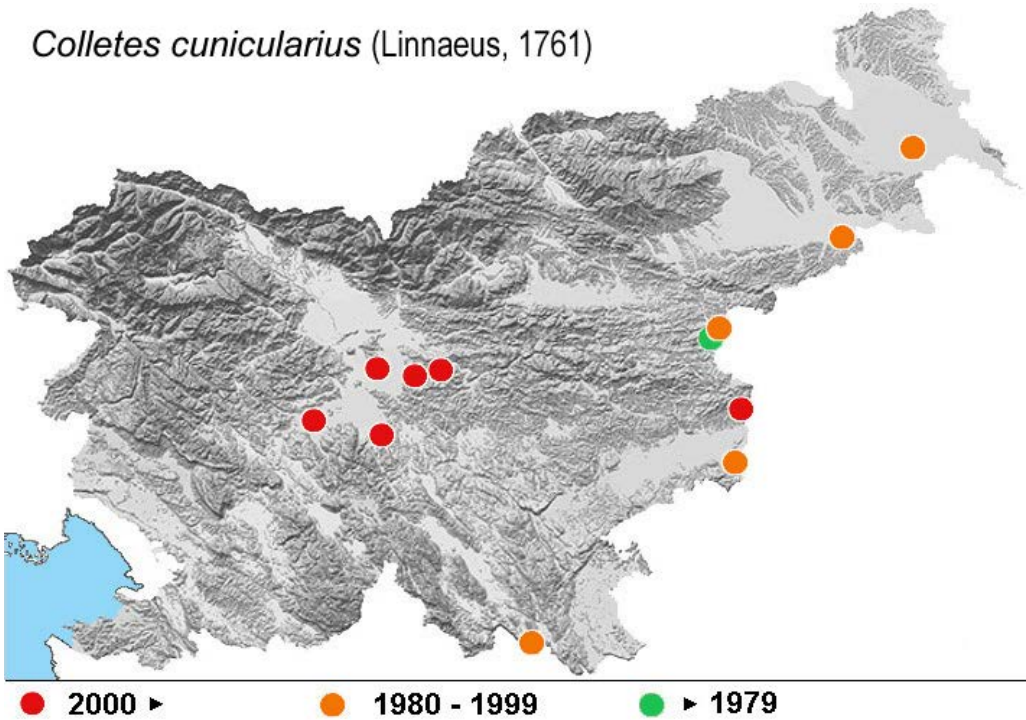
Colletes albomaculatus (Lucas, 1849)



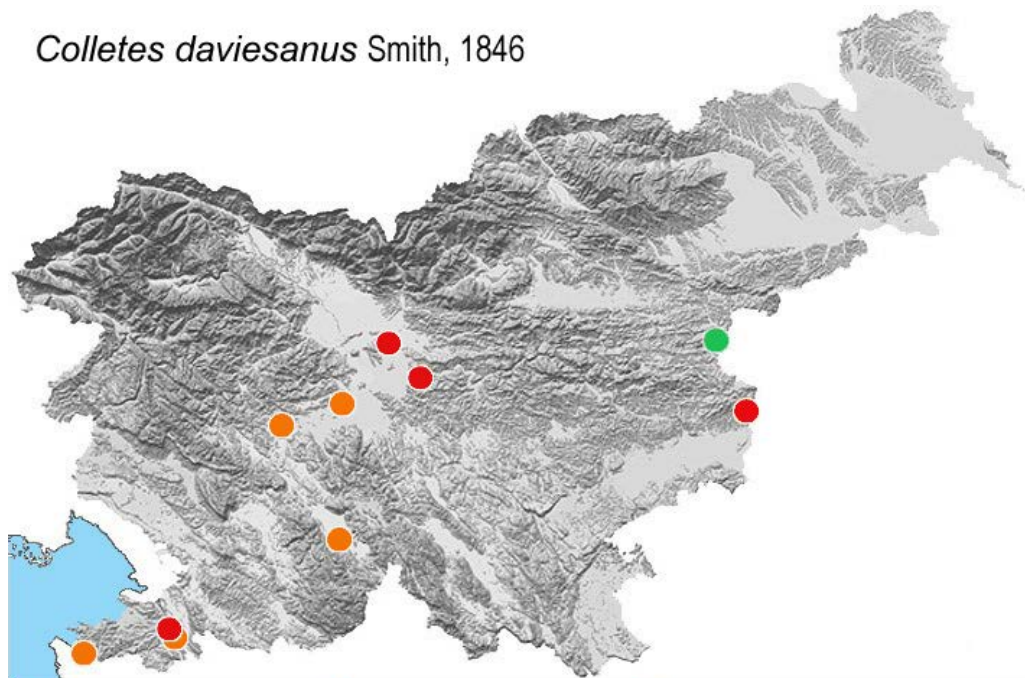
Colletes carinatus Radoszkowski, 1891



Colletes cunicularius (Linnaeus, 1761)



Colletes daviesanus Smith, 1846



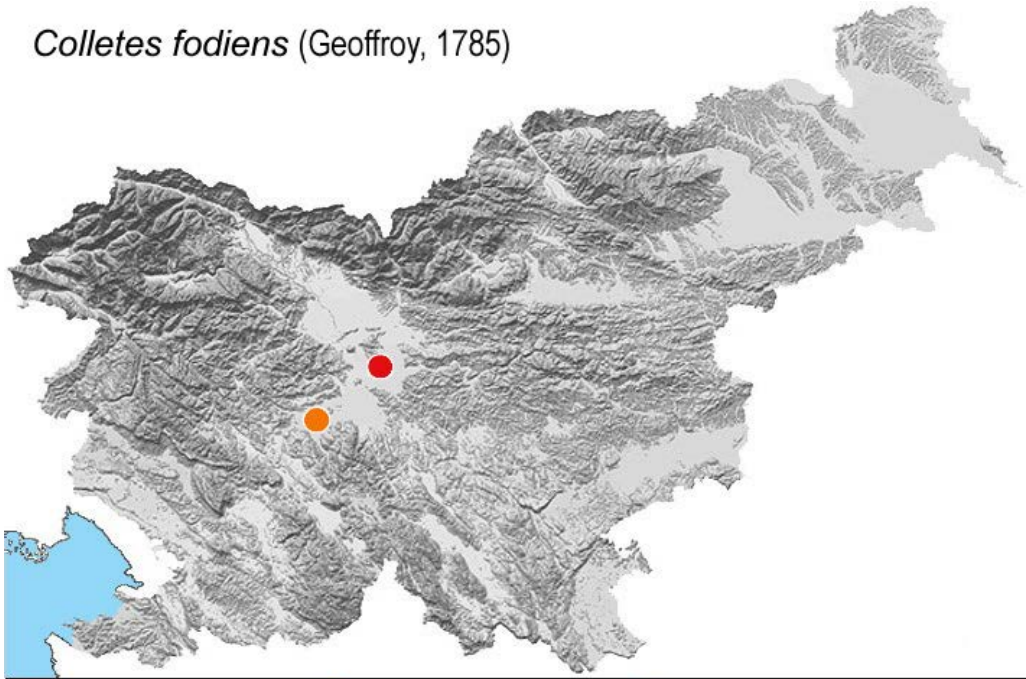
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Colletes floralis Eversmann, 1852



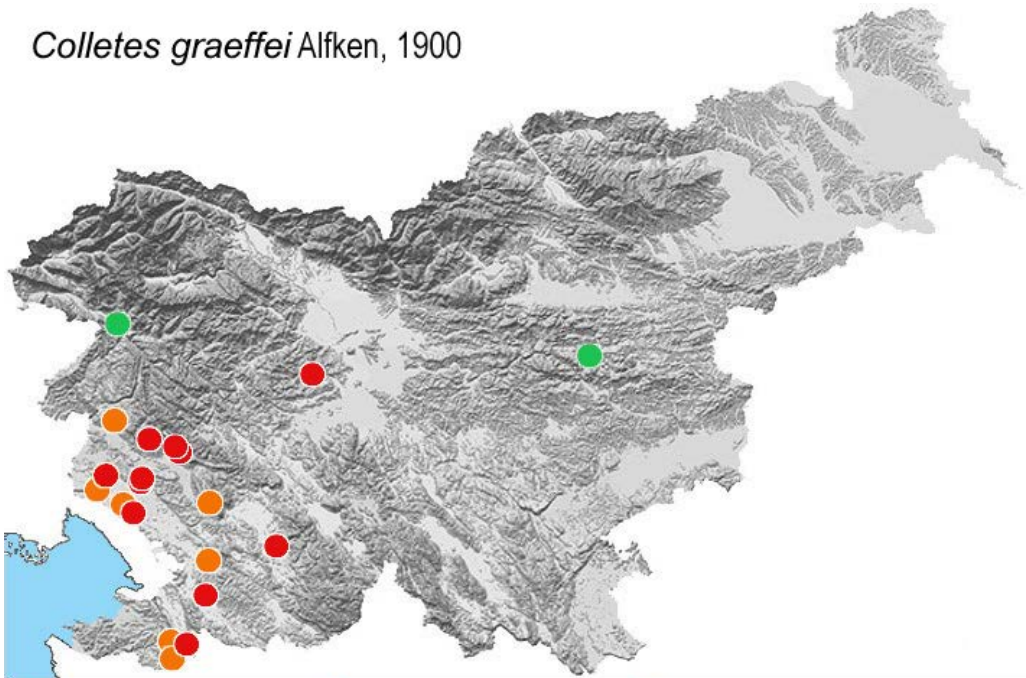
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Colletes fodiens (Geoffroy, 1785)



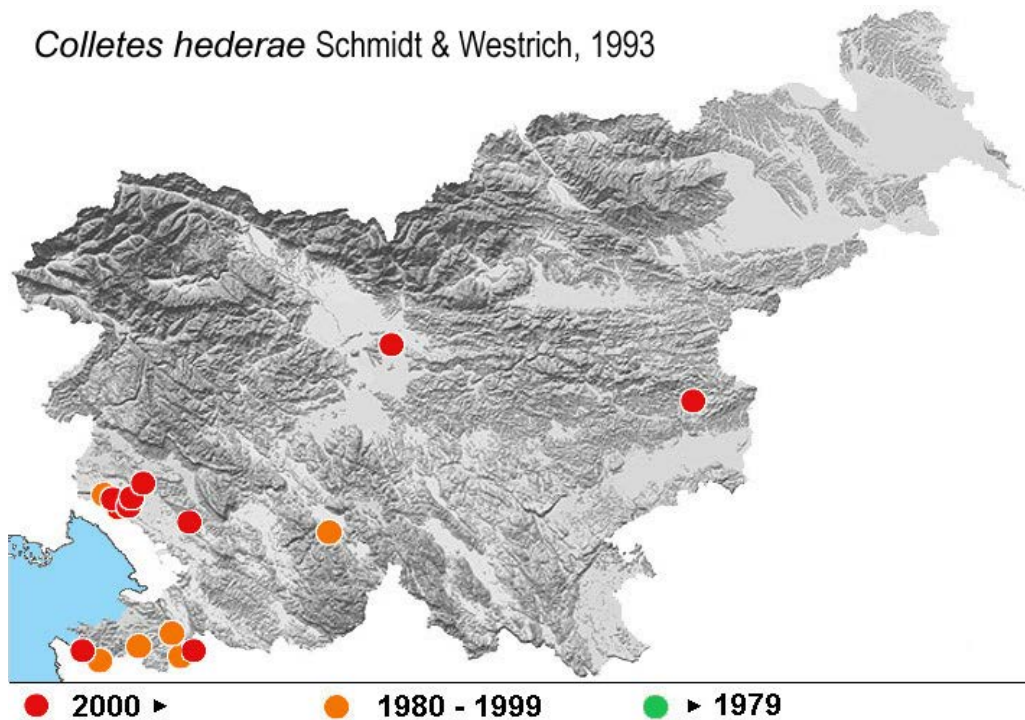
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Colletes graeffei Alfken, 1900

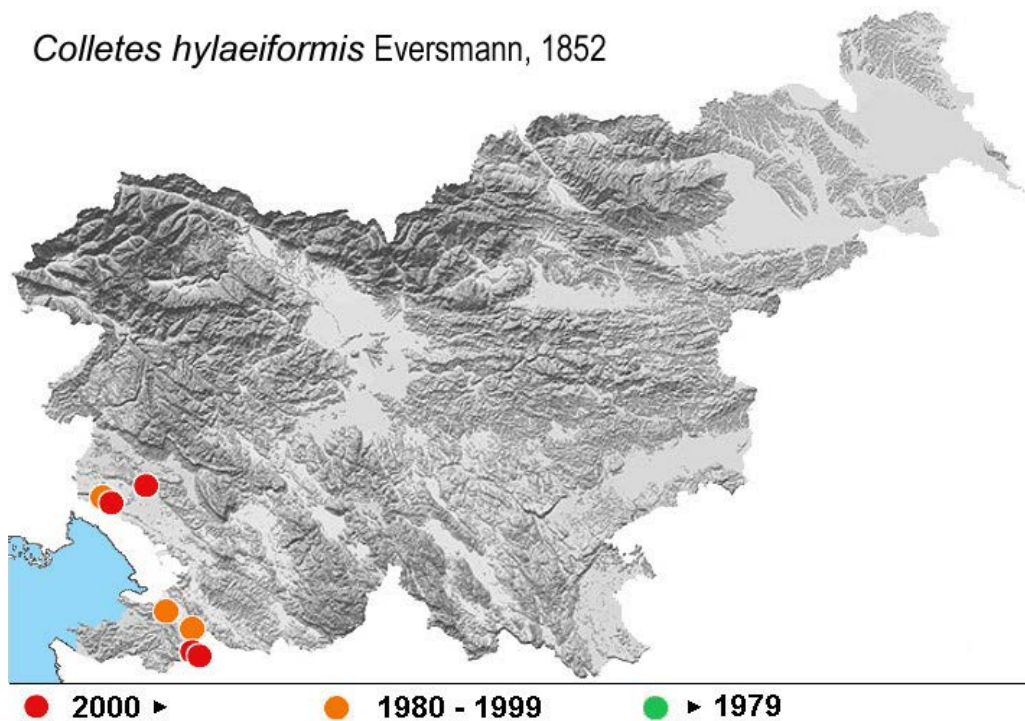


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Colletes hederæ Schmidt & Westrich, 1993



Colletes hylaeiformis Eversmann, 1852

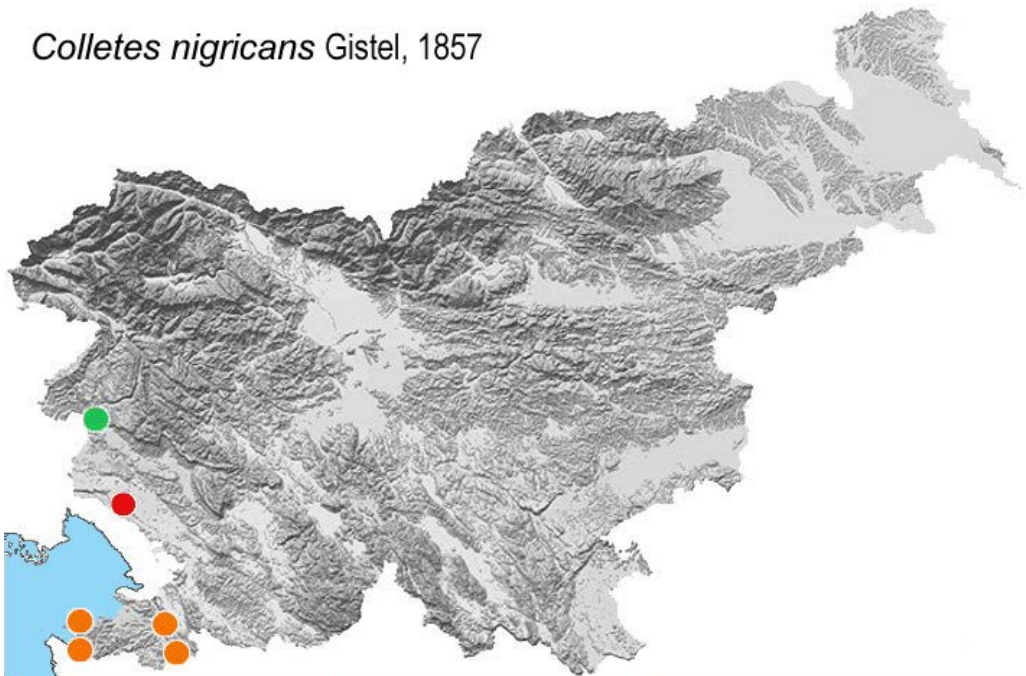


Colletes inexpectatus Noskiewicz, 1936



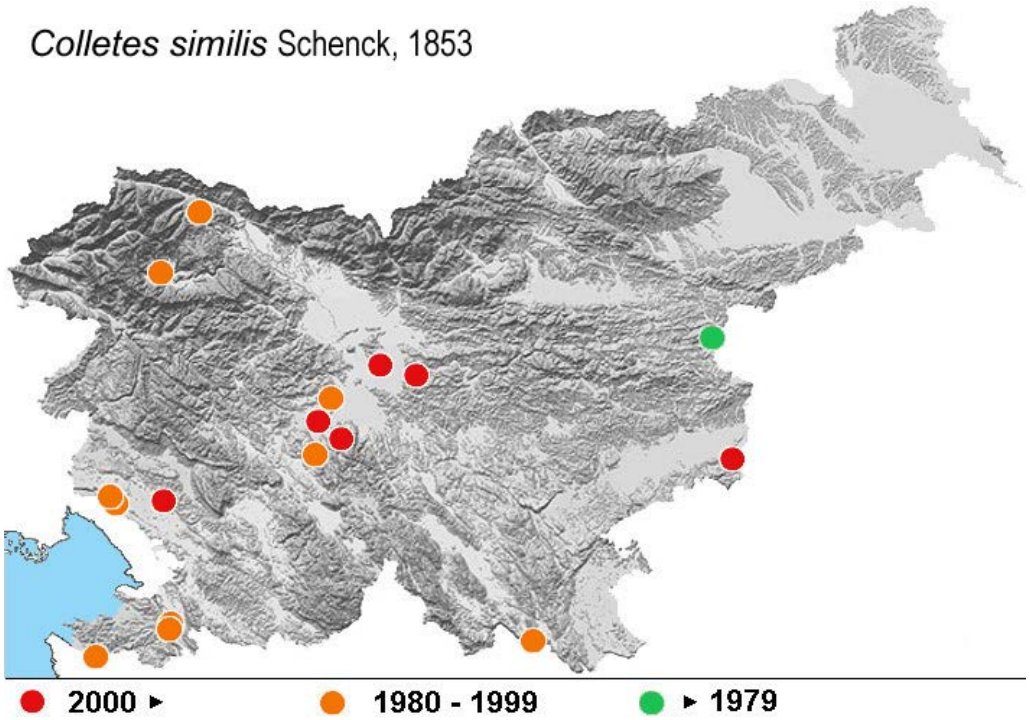
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Colletes nigricans Gistel, 1857

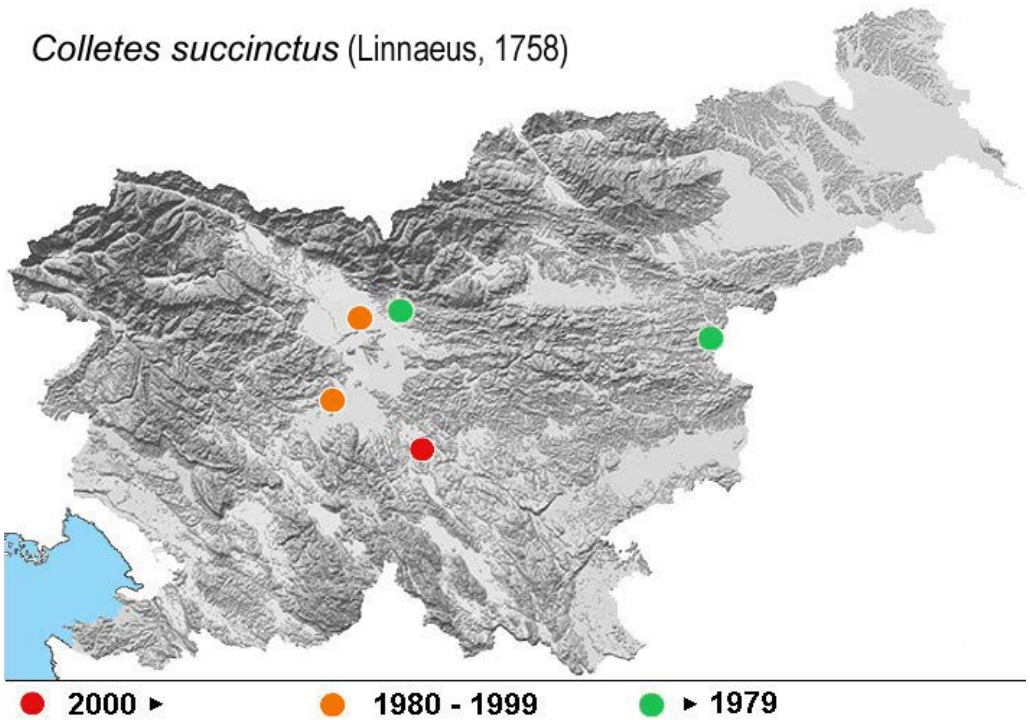


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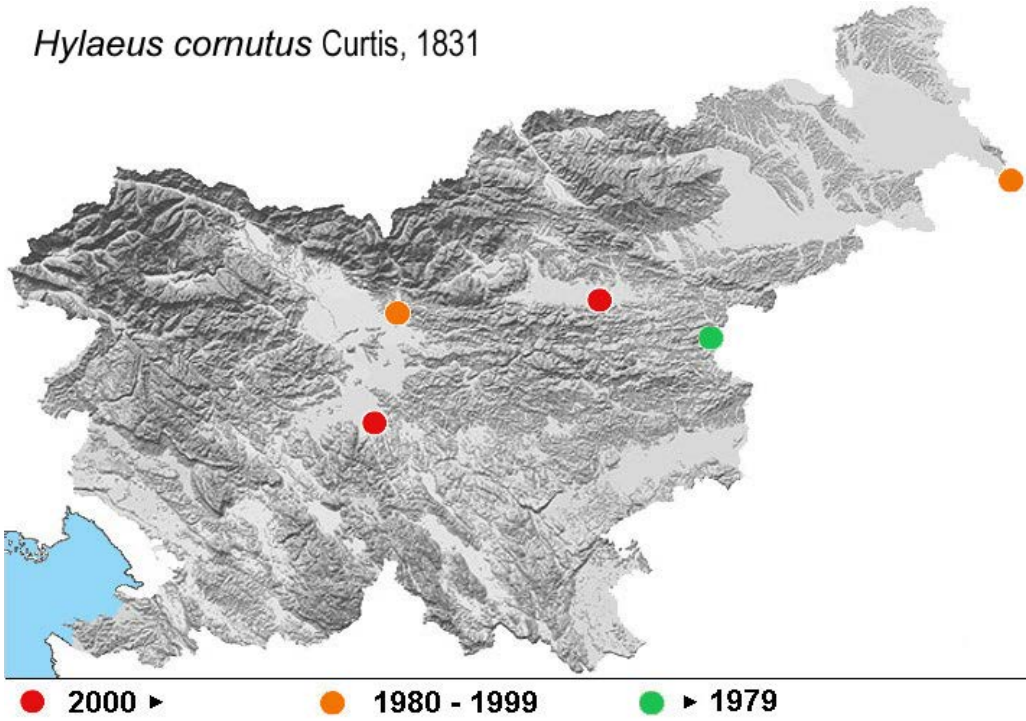
Colletes similis Schenck, 1853



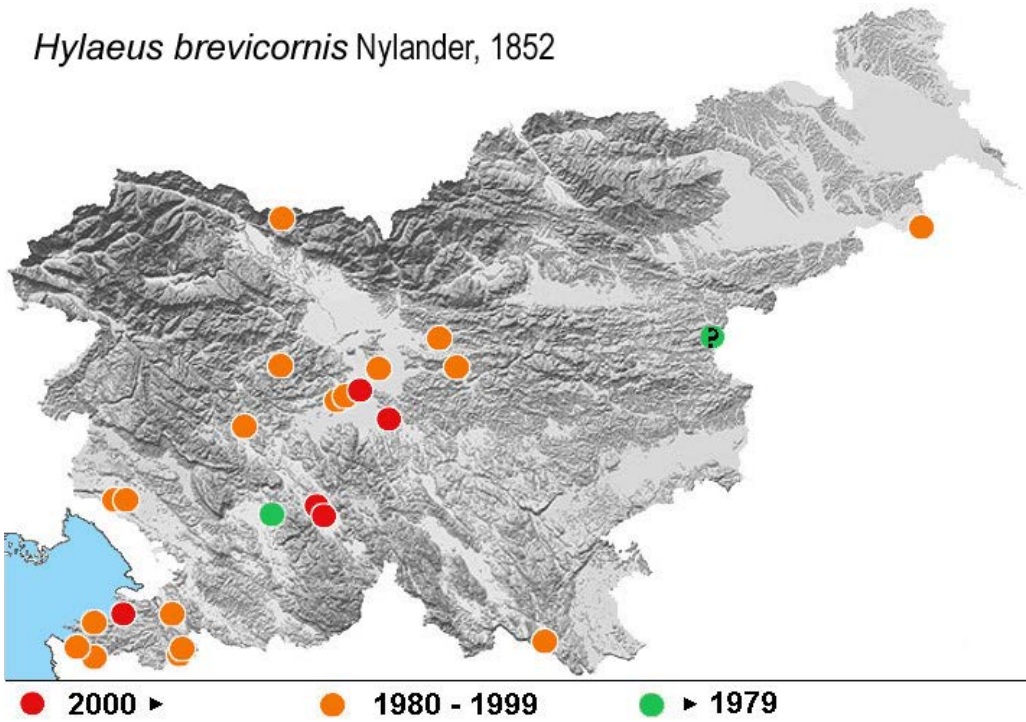
Colletes succinctus (Linnaeus, 1758)



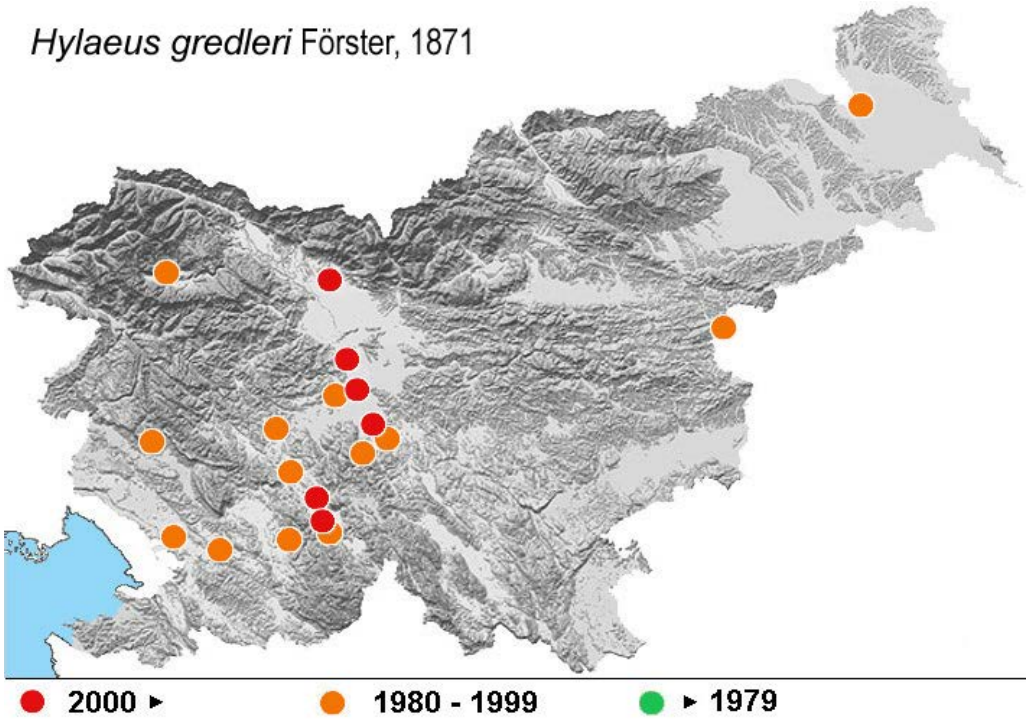
Hylaeus cornutus Curtis, 1831



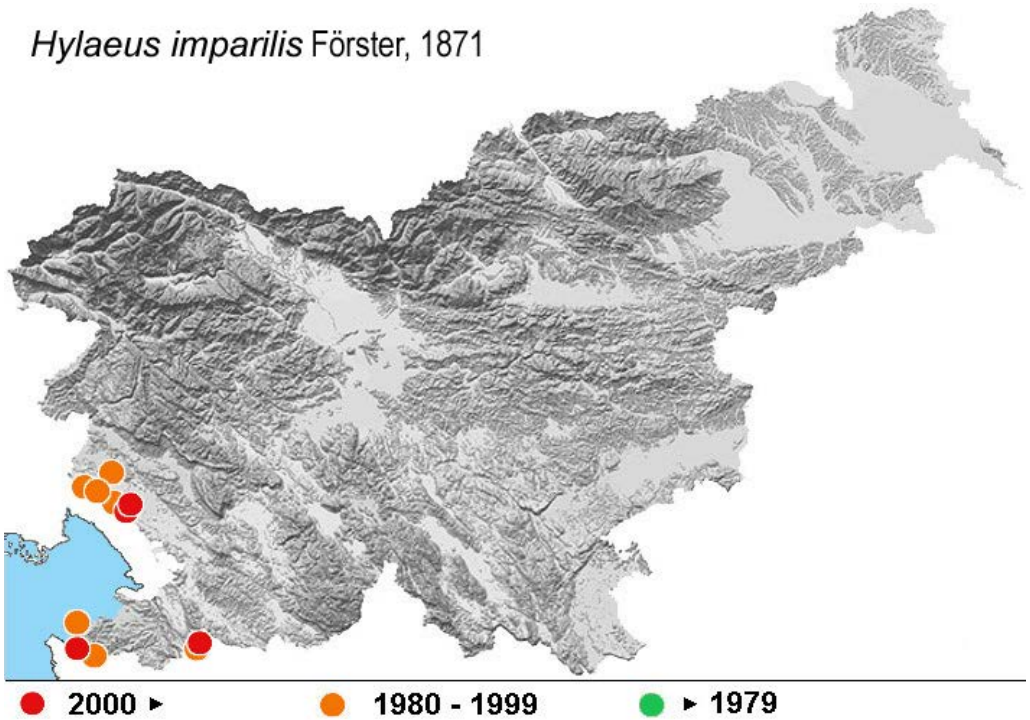
Hylaeus brevicornis Nylander, 1852



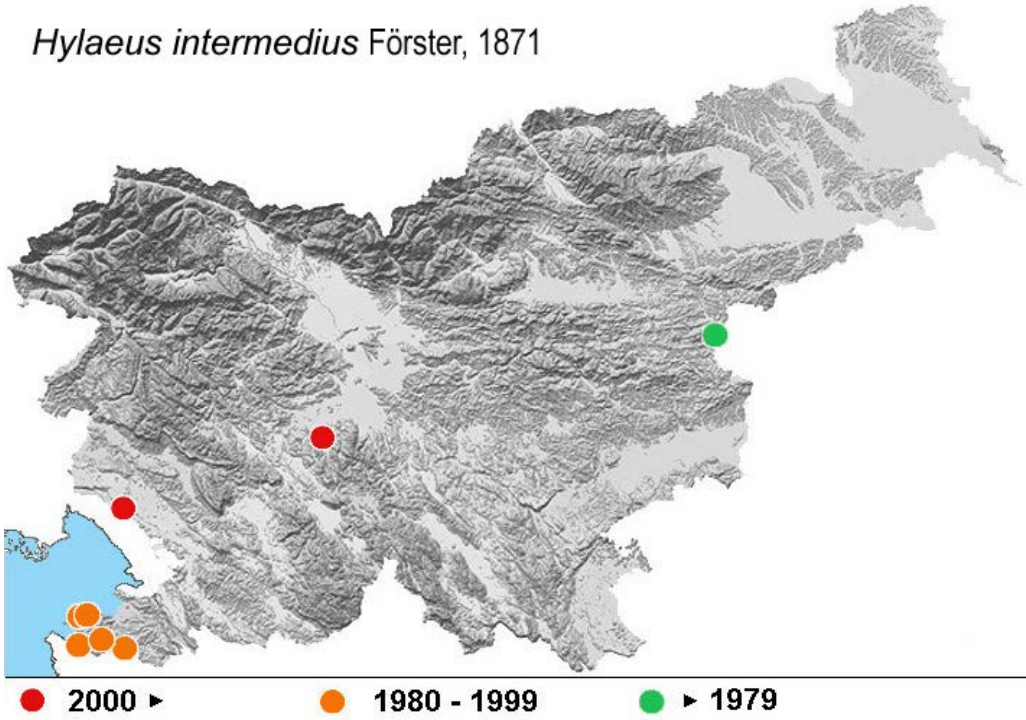
Hylaeus gredleri Förster, 1871



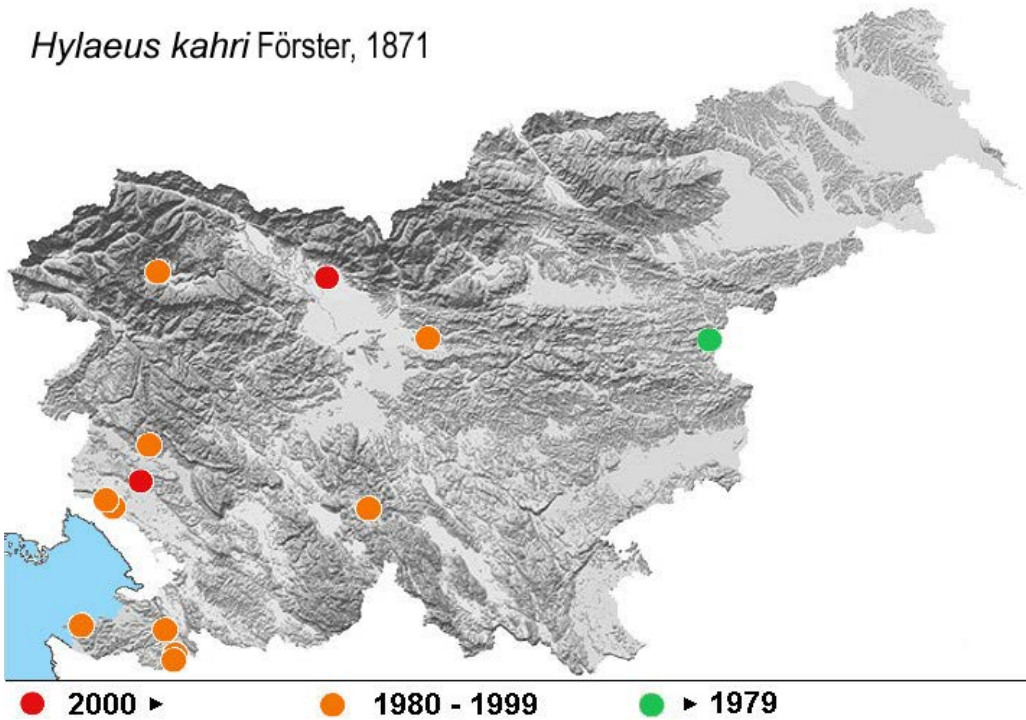
Hylaeus imparilis Förster, 1871



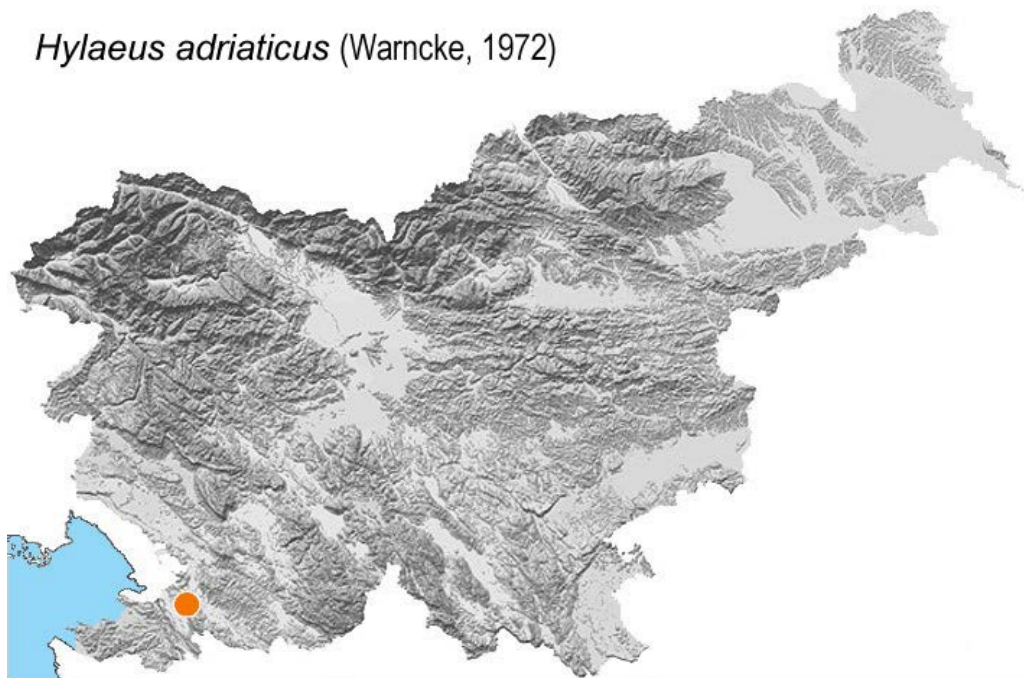
Hylaeus intermedius Förster, 1871



Hylaeus kahri Förster, 1871

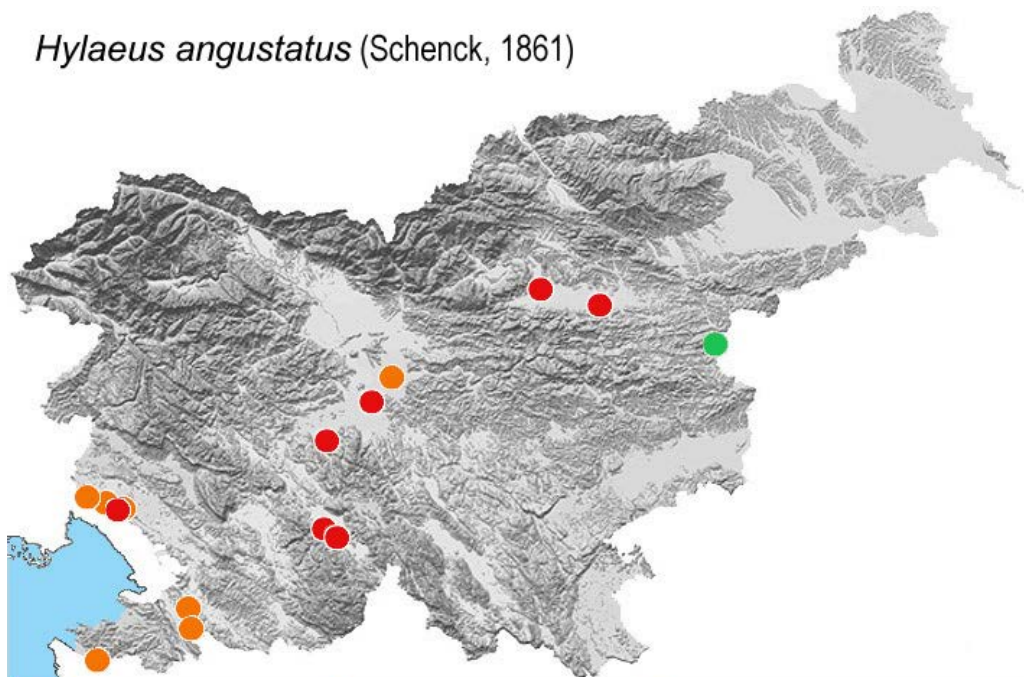


Hylaeus adriaticus (Warncke, 1972)



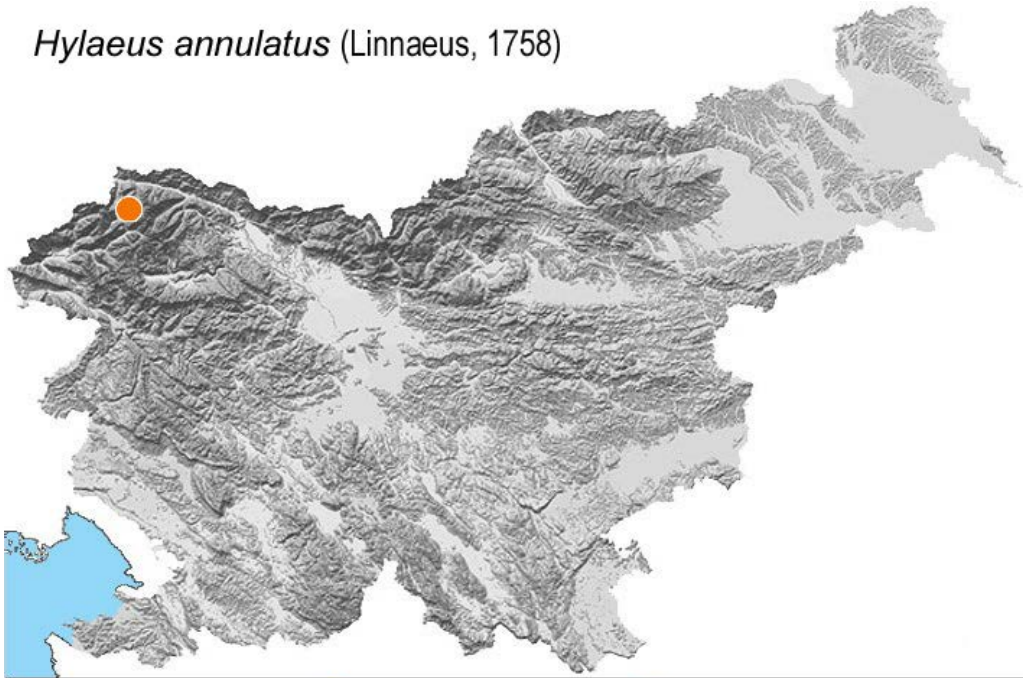
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Hylaeus angustatus (Schenck, 1861)



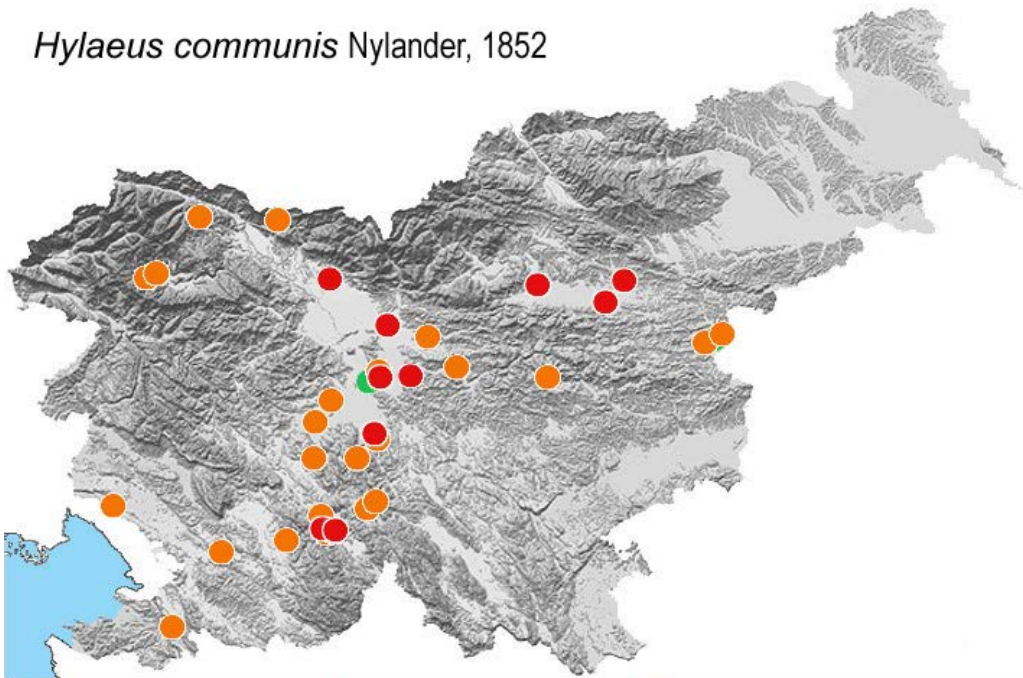
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Hylaes annulatus (Linnaeus, 1758)



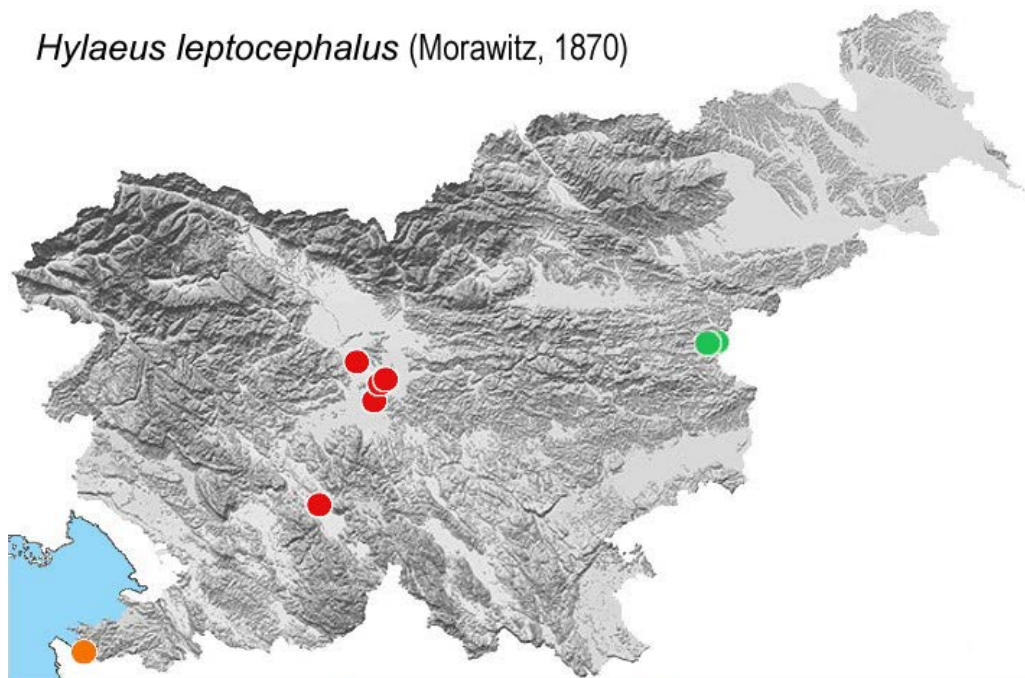
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Hylaes communis Nylander, 1852



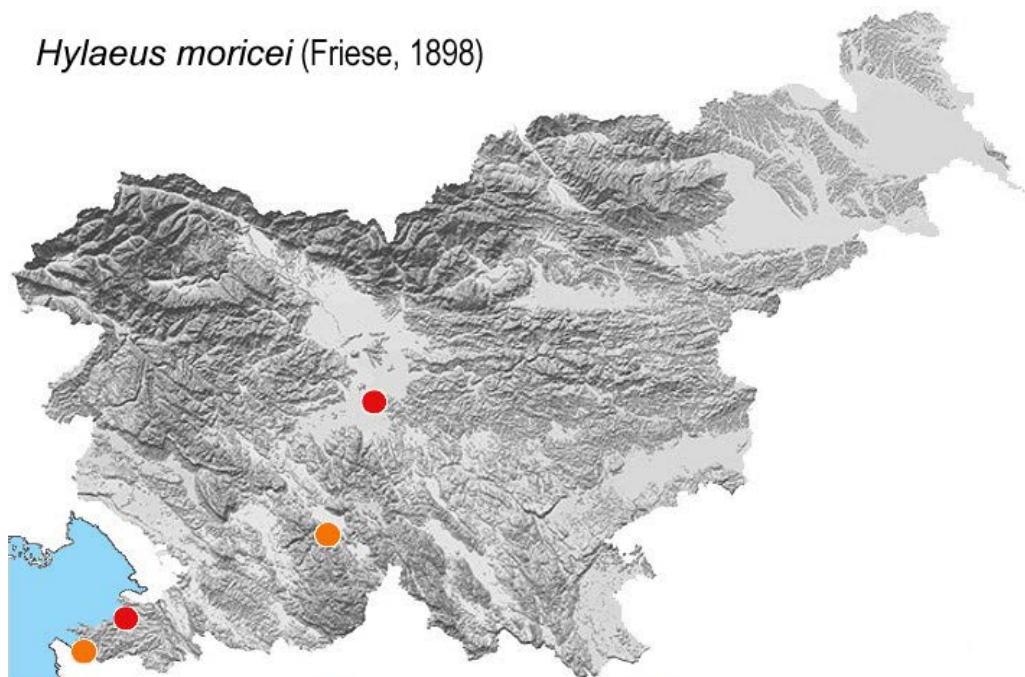
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Hylaeus leptocephalus (Morawitz, 1870)



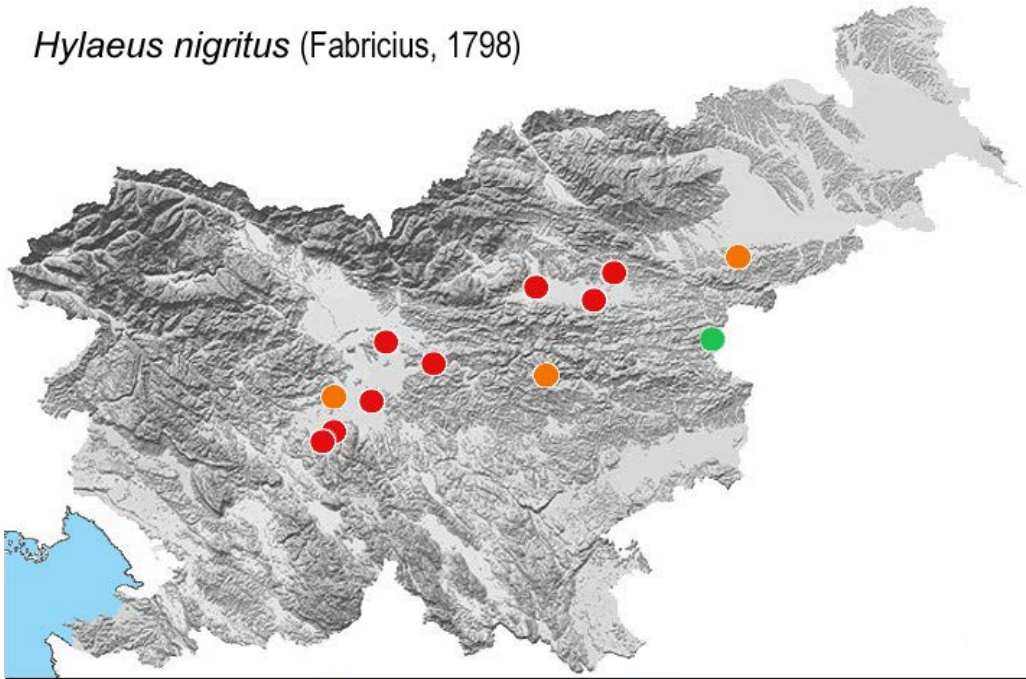
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Hylaeus moricei (Friese, 1898)



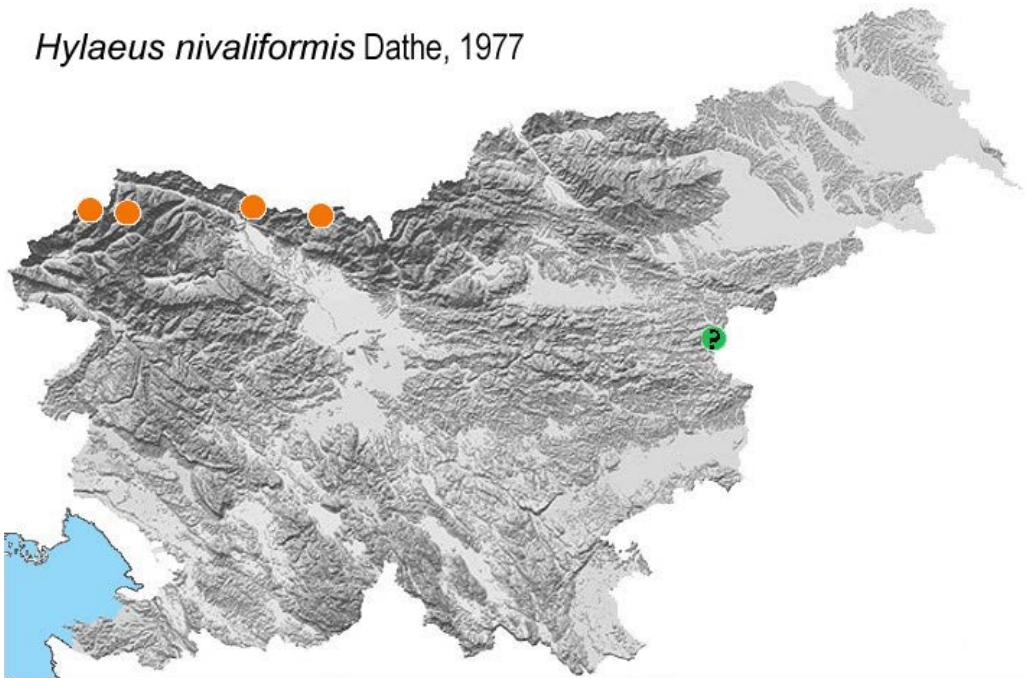
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Hylaeus nigrinus (Fabricius, 1798)



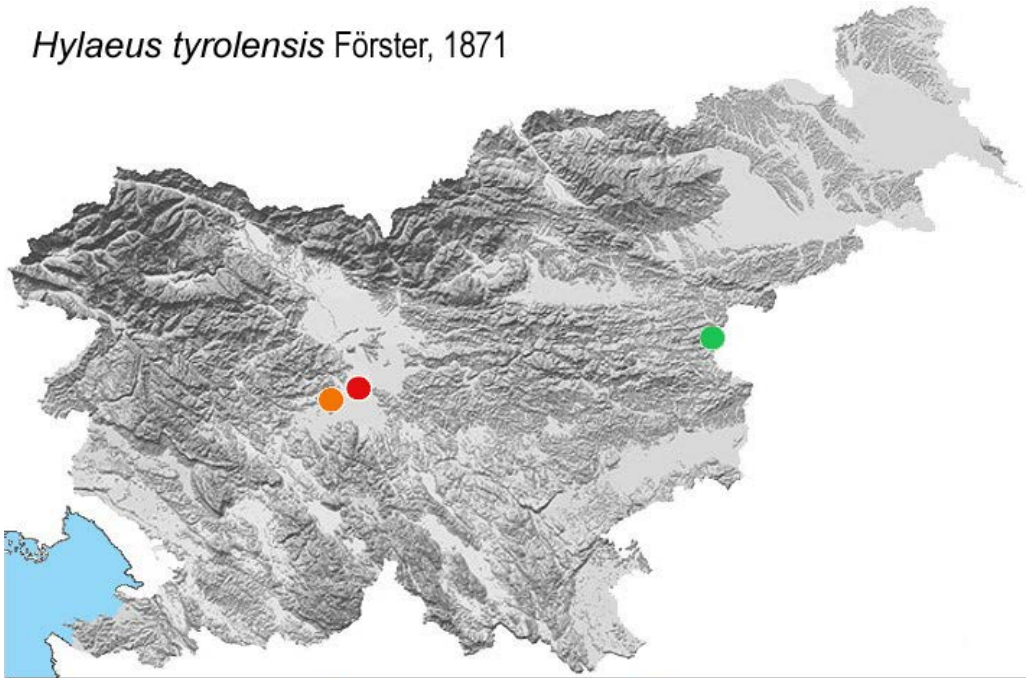
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Hylaeus nivaliformis Dathe, 1977



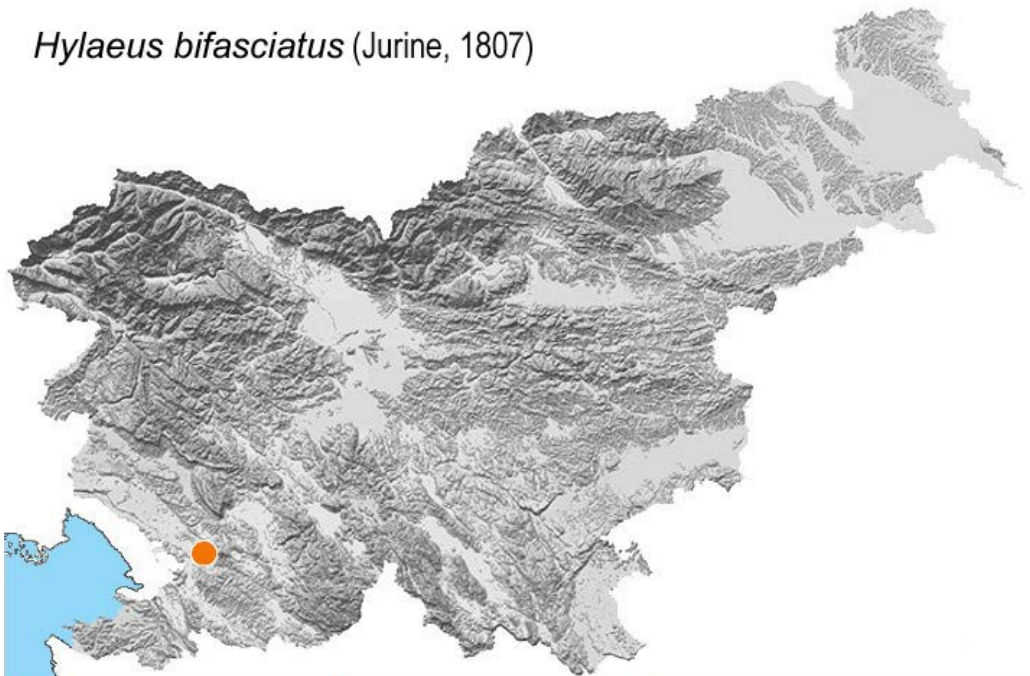
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Hylaeus tyrolensis Förster, 1871



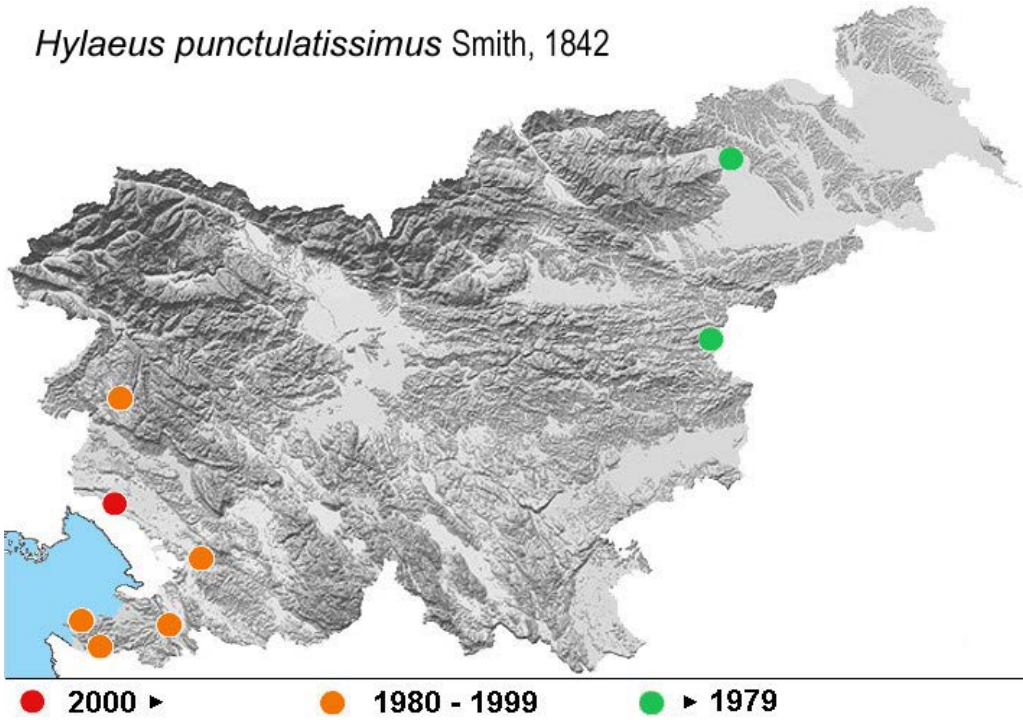
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Hylaeus bifasciatus (Jurine, 1807)

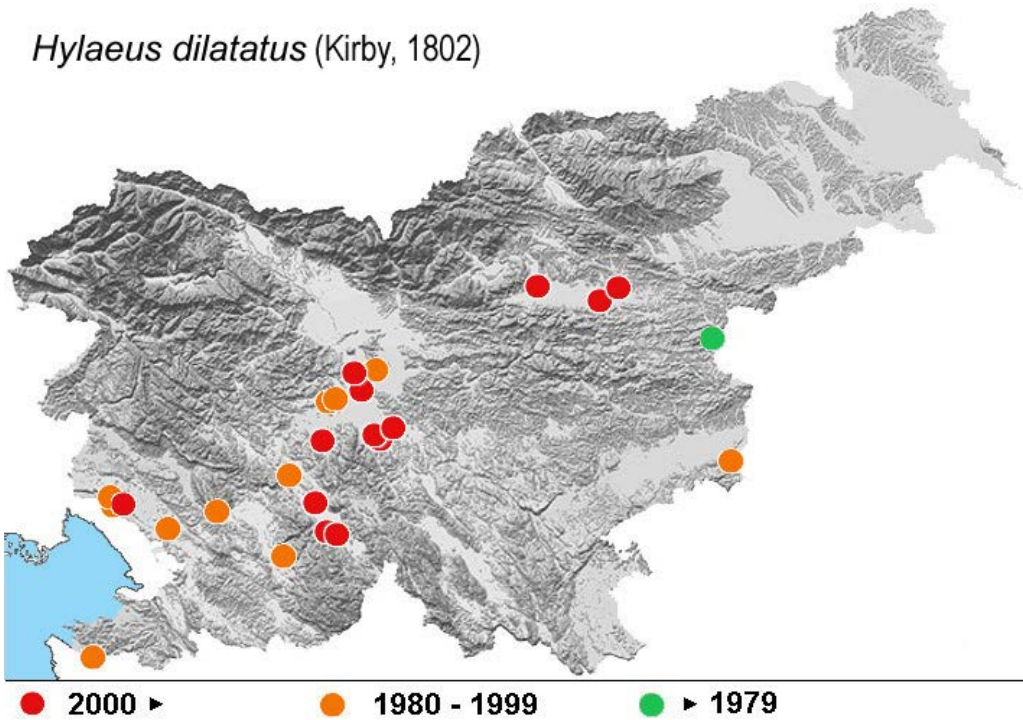


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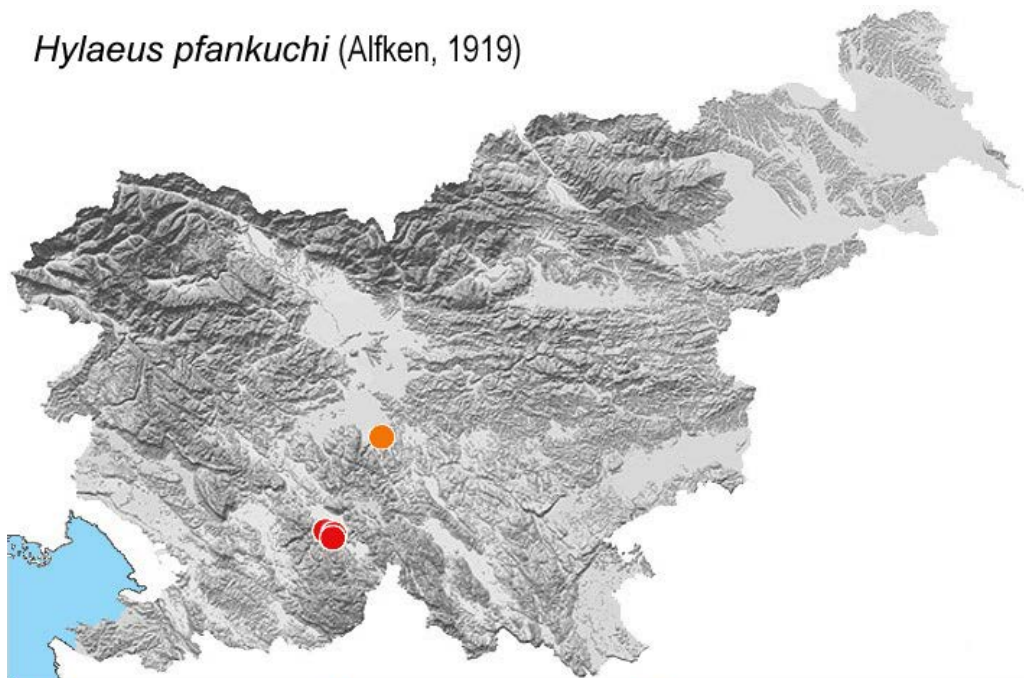
Hylaeus punctulatus Smith, 1842



Hylaeus dilatatus (Kirby, 1802)

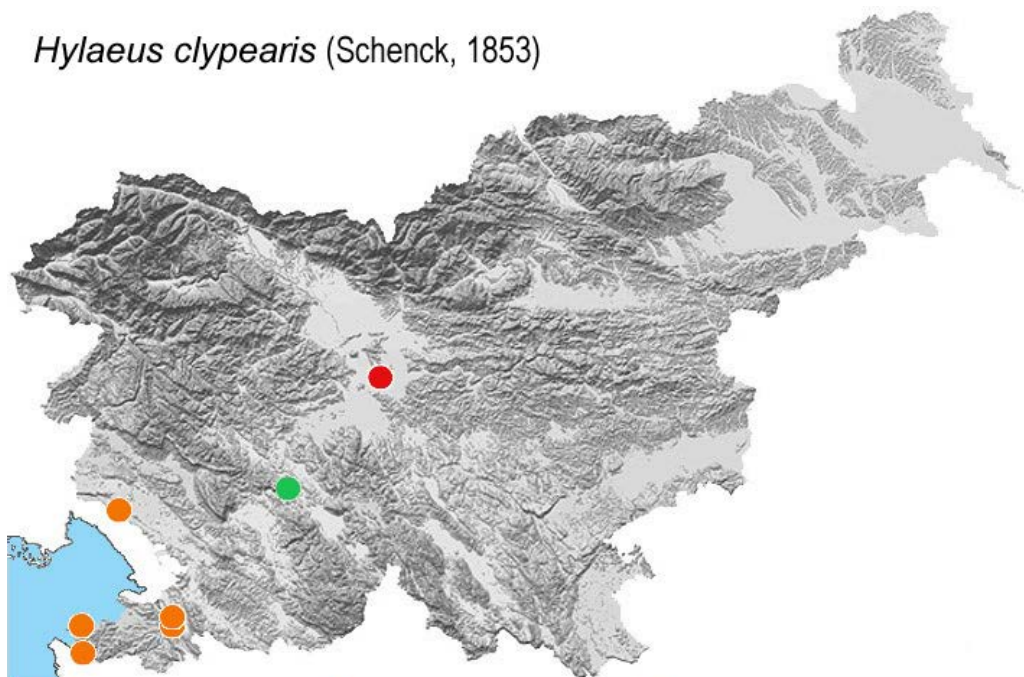


Hylaeus pfankuchi (Alfken, 1919)



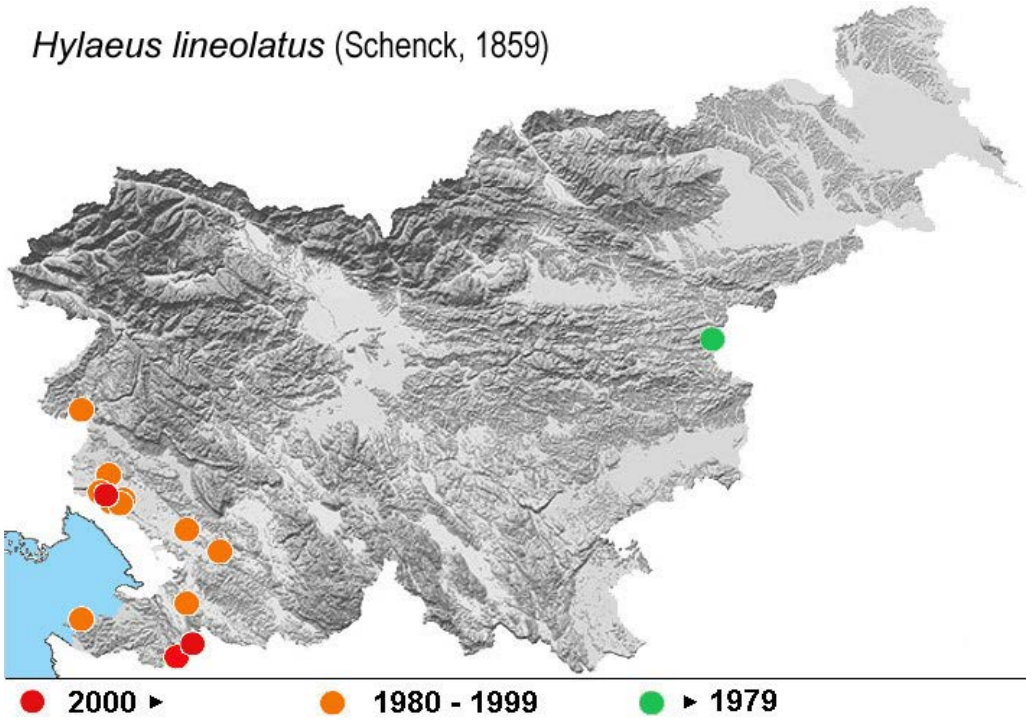
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Hylaeus clypearis (Schenck, 1853)

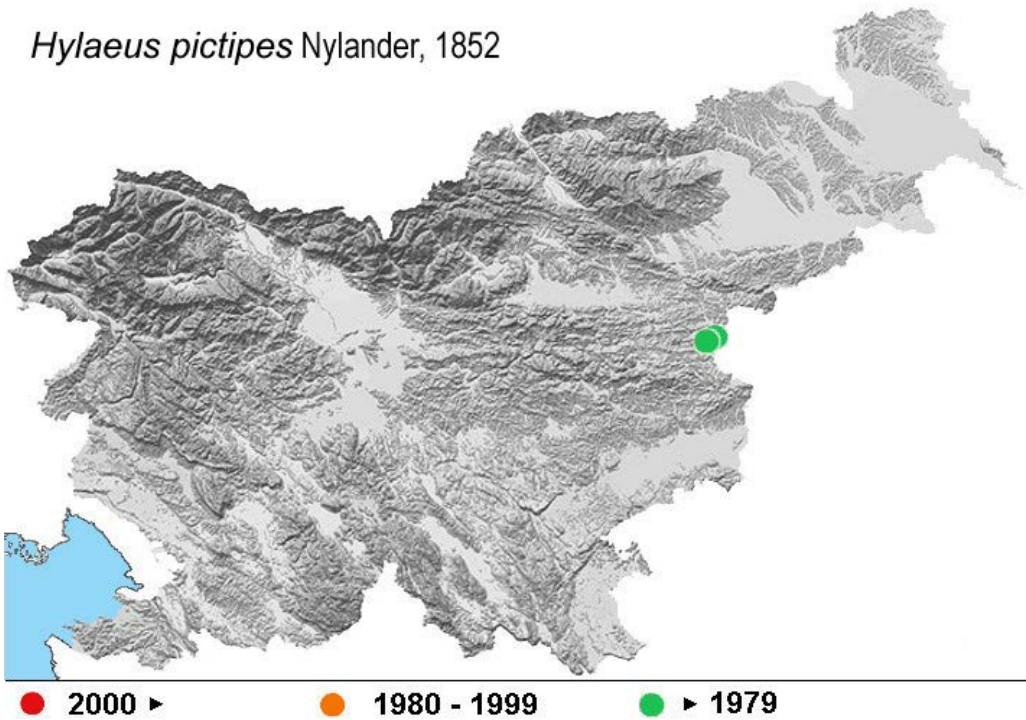


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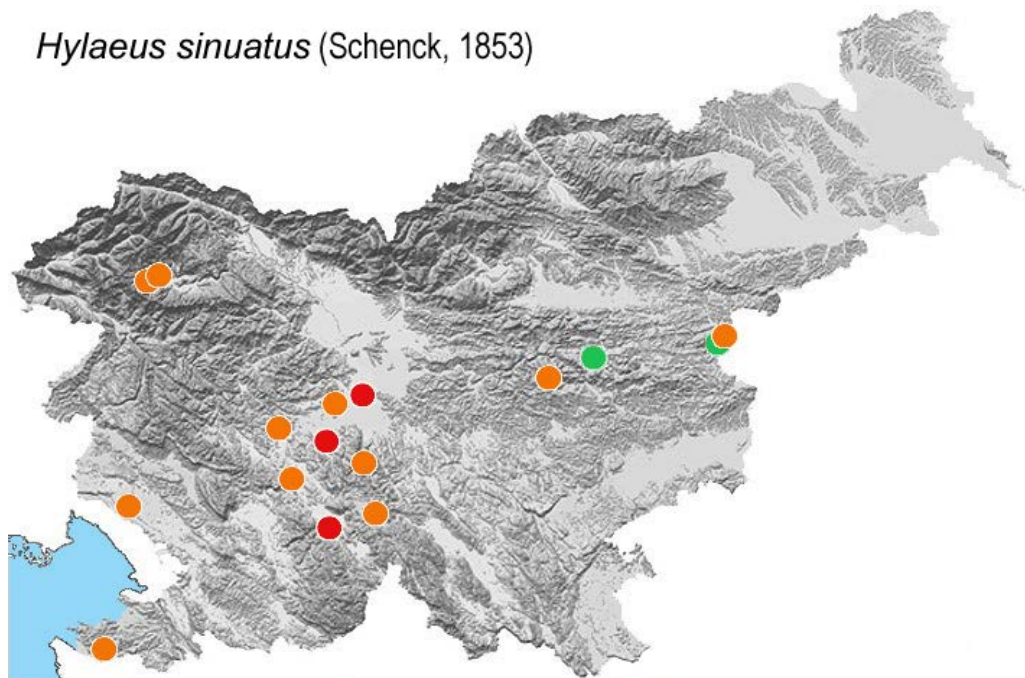
Hylaeus lineolatus (Schenck, 1859)



Hylaeus pictipes Nylander, 1852

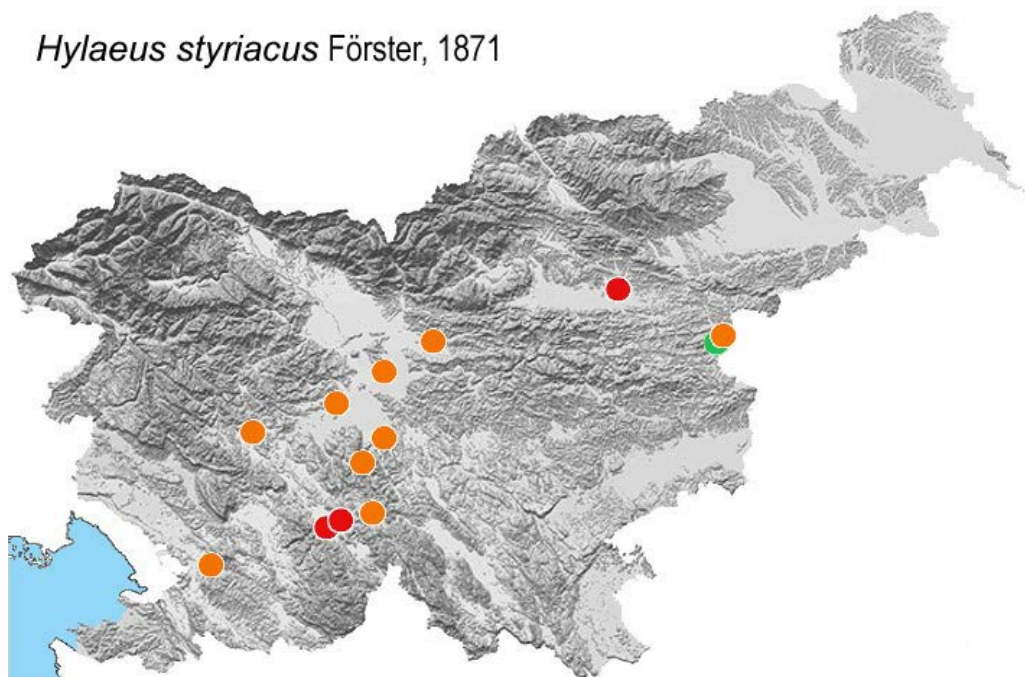


Hylaeus sinuatus (Schenk, 1853)



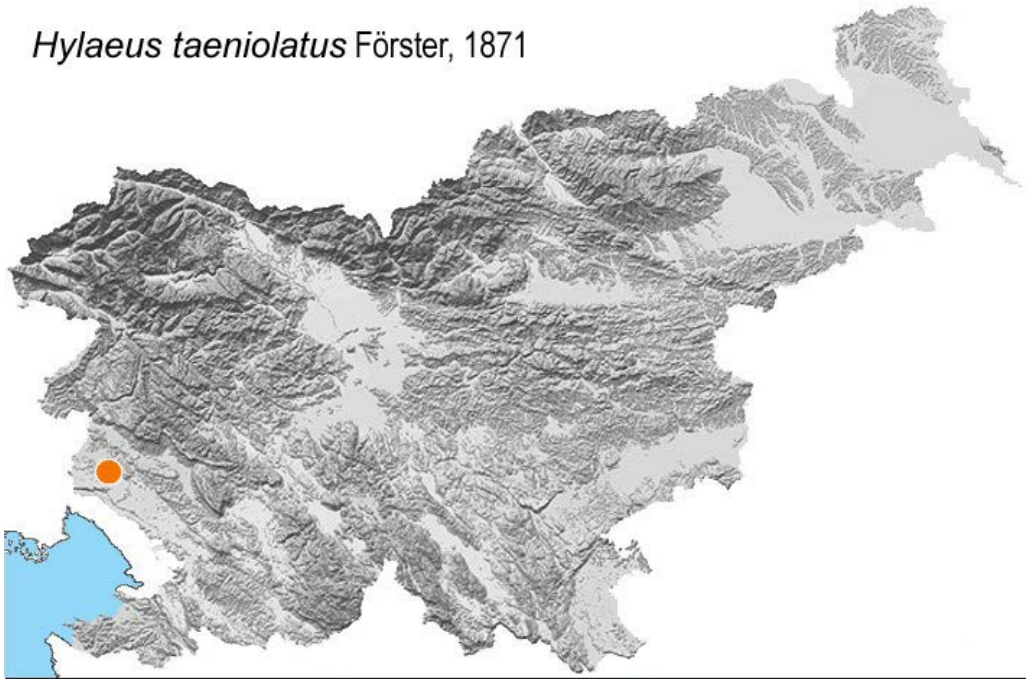
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Hylaeus styriacus Förster, 1871



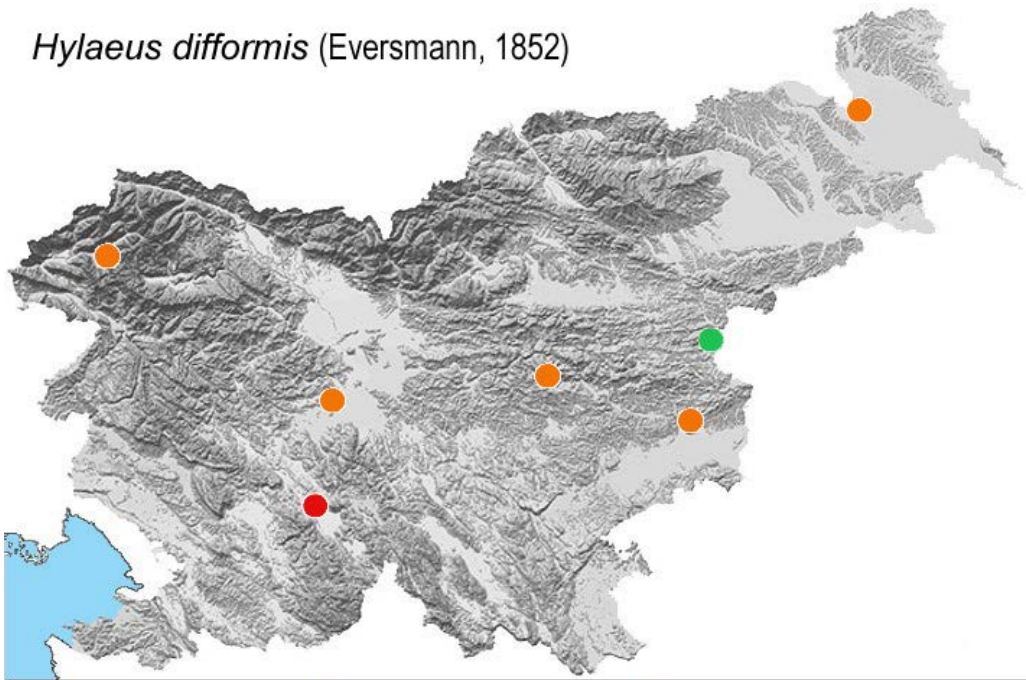
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Hylaeus taeniolatus Förster, 1871



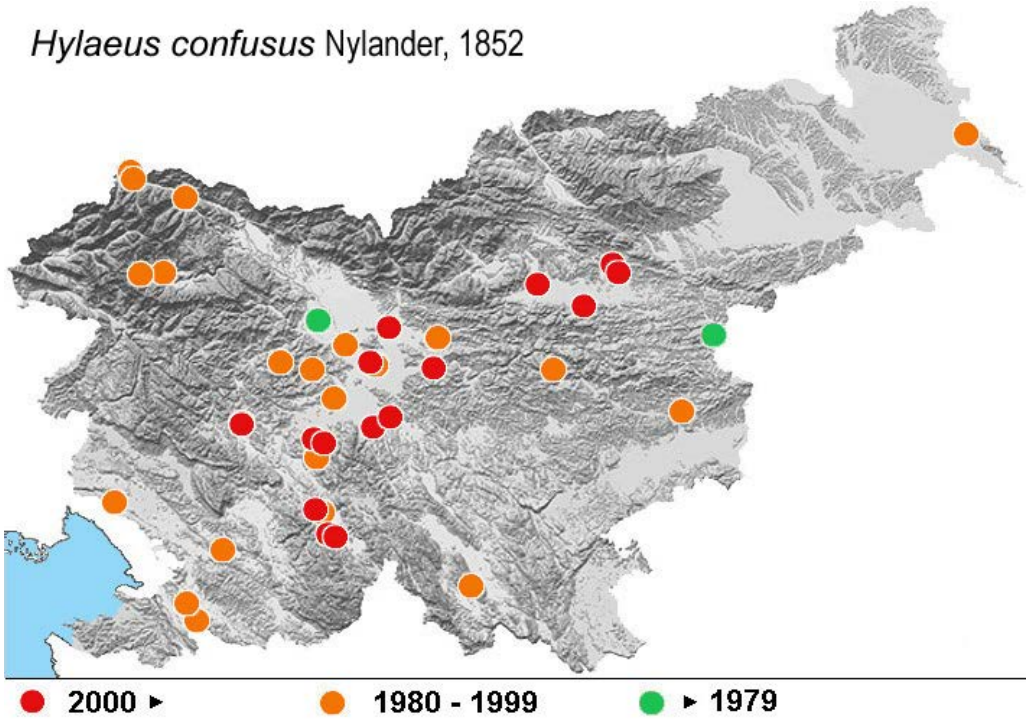
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Hylaeus difformis (Eversmann, 1852)

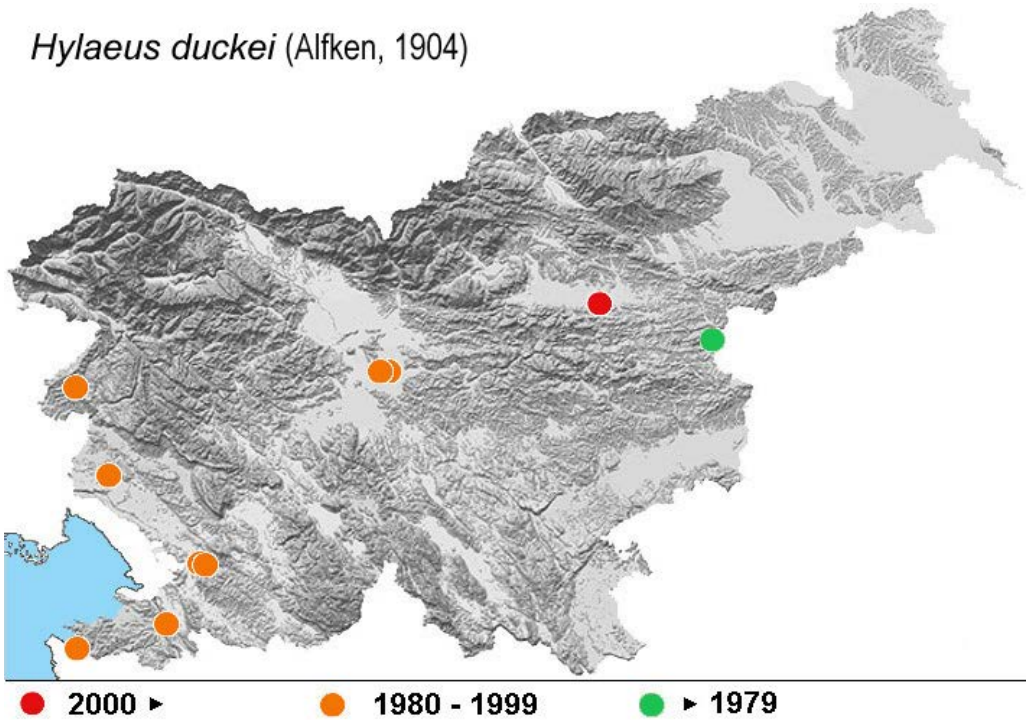


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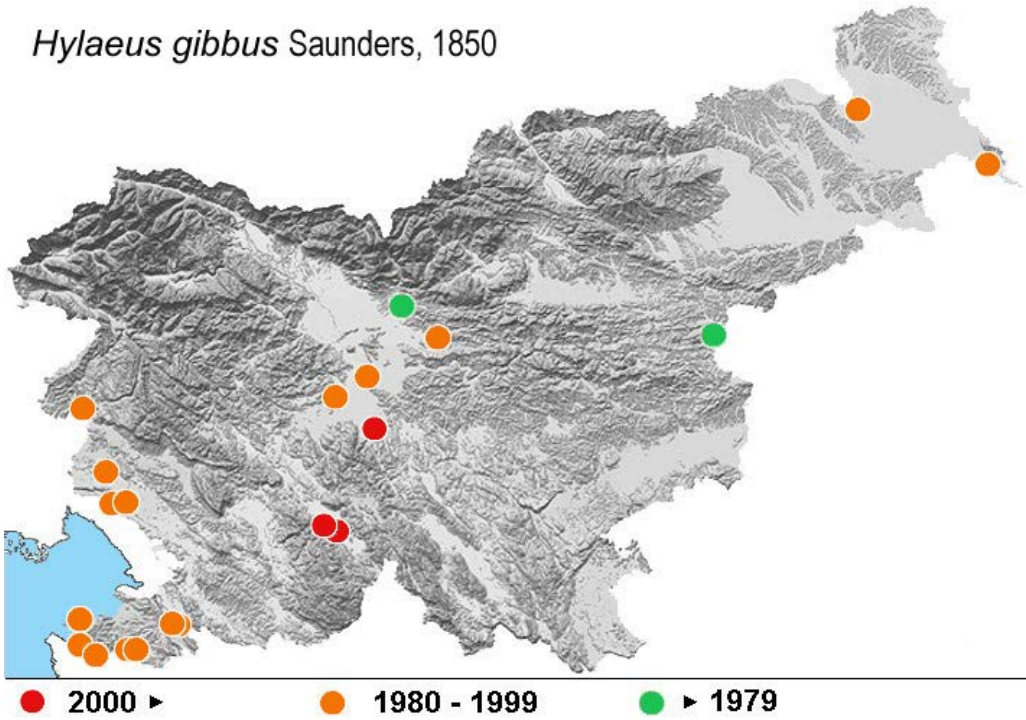
Hylaeus confusus Nylander, 1852



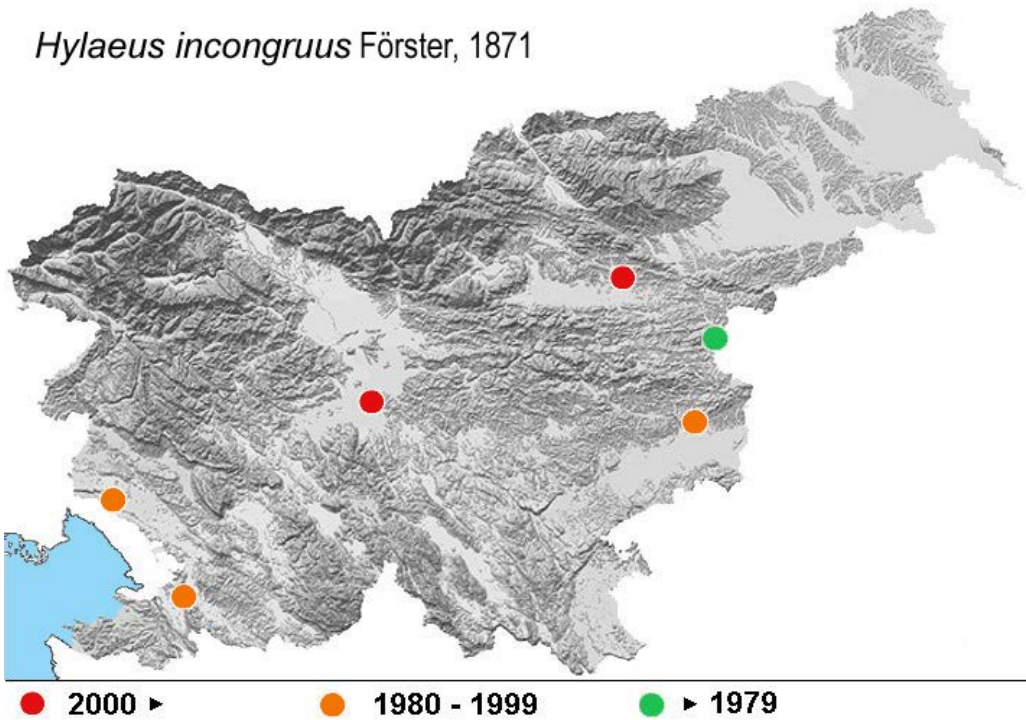
Hylaeus duckei (Alfken, 1904)



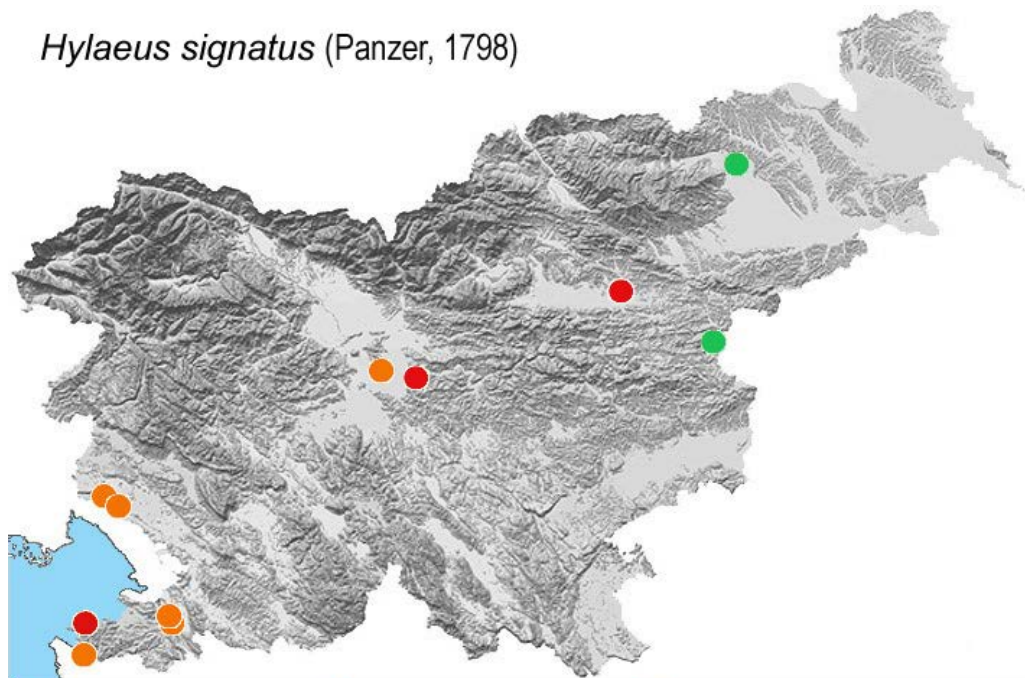
Hylaeus gibbus Saunders, 1850



Hylaeus incongruus Förster, 1871

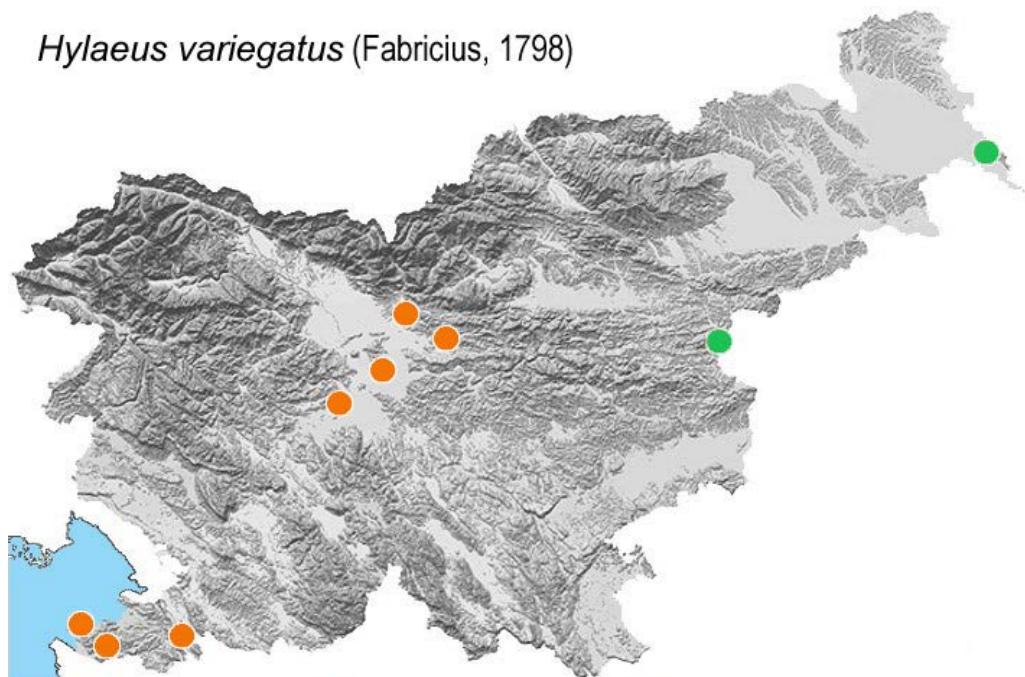


Hylaeus signatus (Panzer, 1798)



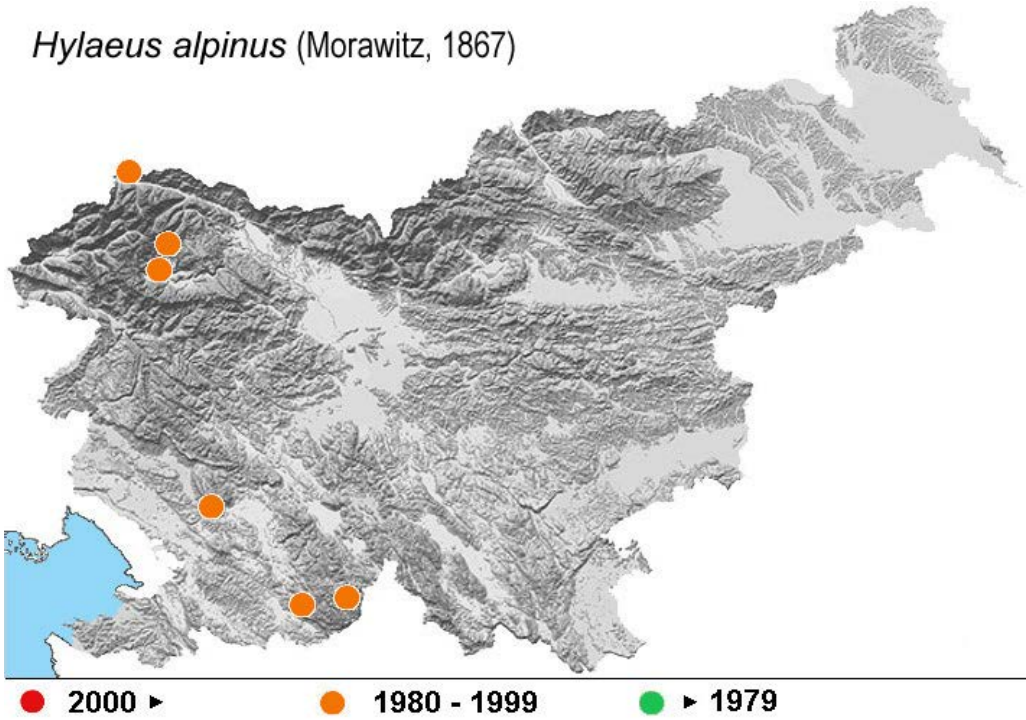
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Hylaeus variegatus (Fabricius, 1798)

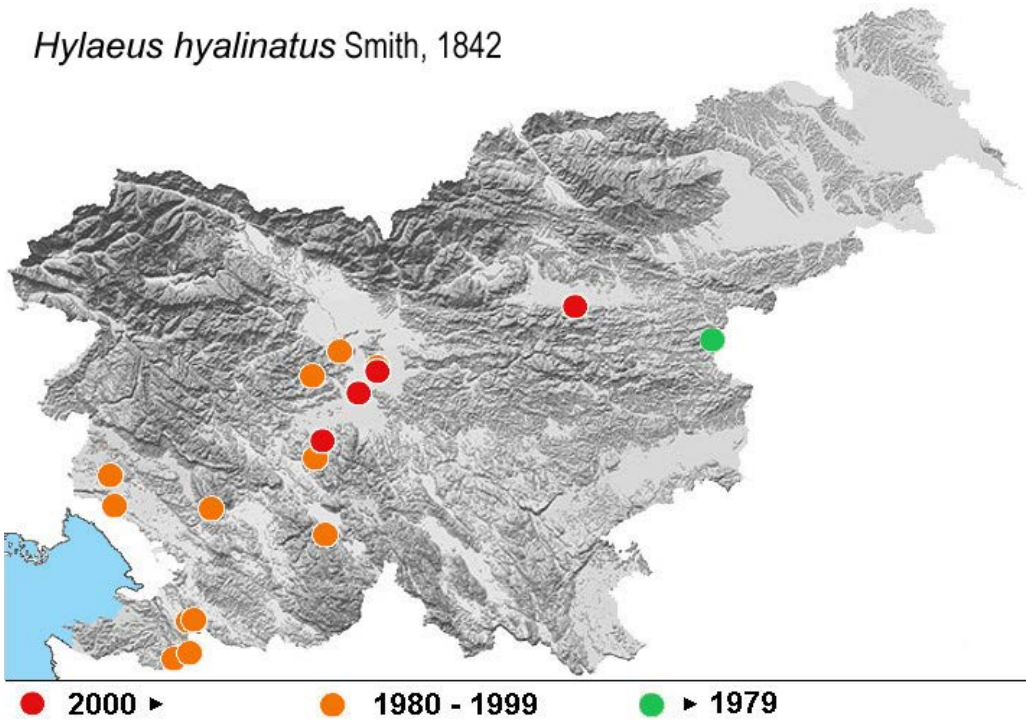


● 2000 ▶ ● 1980 - 1999 ● ▶ 1979

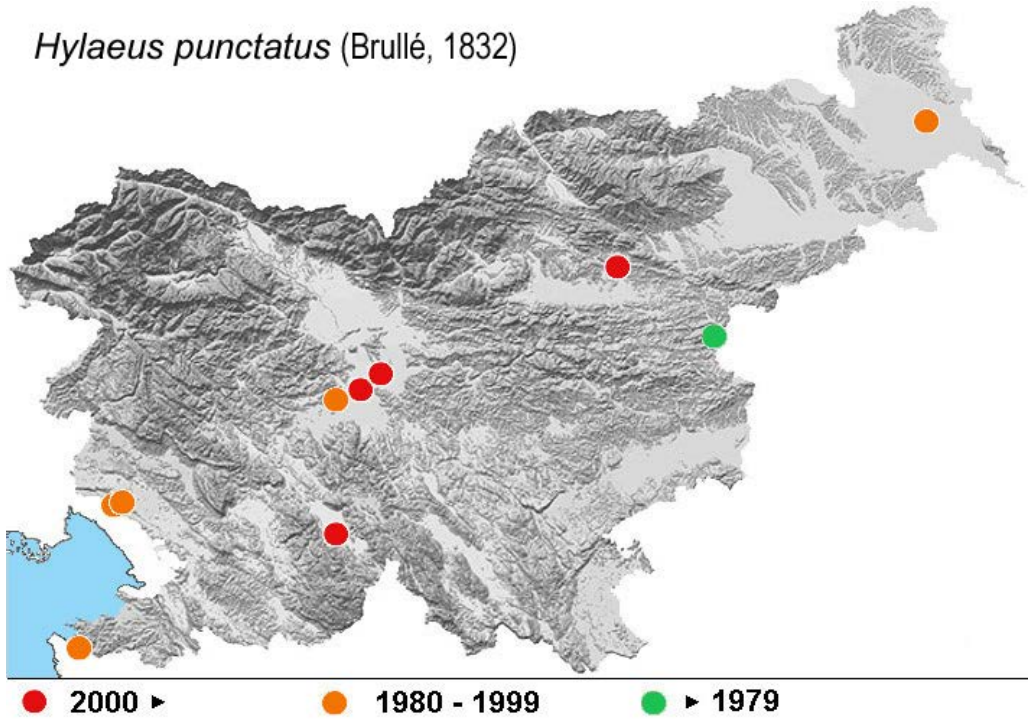
Hylaeus alpinus (Morawitz, 1867)



Hylaeus hyalinatus Smith, 1842



Hylaeus punctatus (Brullé, 1832)





Samica vrste *Hylaeus communis* na lepljivi kadulji (*Salvia glutinosa*)

Female *Hylaeus communis* on *Salvia glutinosa*.



Samec vrste *Hylaeus nigrinus* na razglednem mestu v Preserjah.

Male *Hylaeus nigrinus* on his lookout place in Preserje.



Samec vrste *Hylaeus kahri* na skali na Lukovcu.

Male *Hylaeus kahri* on a stone in Lukovec.



Samec *Hylaeus punctulatissimus* na oblastem luku (*Allium sphaerocephalon*)

Male *Hylaeus punctulatissimus* on *Allium sphaerocephalon*



Samec vrste *Hylaeus lineolatus* na ametistasti možini (*Eryngium amethystinum*) na Gorjanskem.

Male *Hylaeus lineolatus* on *Eryngium amethystinum* in Gorjansko.

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