On the distribution and status of *Carcharodus lavatherae*, *Pyrgus carthami*, and *P. serratulae* (Lepidoptera: Hesperiidae) in Slovenia

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Abstract. A detailed survey of the publications and main Slovenian collections showed that only limited information on the distribution of *Carcharodus lavatherae*, *Pyrgus carthami*, and *Pyrgus serratulae* is available. Within the framework of the Slovenian butterfly atlas survey, several additional records have been gathered during the past two decades. *C. lavatherae* was found in four separate areas, but the knowledge about its threat status and habitat preference is still insufficient due to the scarcity of the encounters. The distribution of *Pyrgus carthami* in Slovenia is much more limited than considered by previous authors. All confirmed records are confined to southwest Slovenia, where the main strongholds are the south facing slopes north of the Vipava valley and western part of the Kras plateau. The large number of unpublished records is somewhat masking the actual decline of the species in Slovenia. *P. serratulae* is the most enigmatic of the three species with numerous published records but no vouchers that could verify its presence in Slovenia. The discovery of the species in the Poček military area is the first confirmed observation in Slovenia, putting this species right to the top of the conservation priorities in butterflies.

Key words: butterflies, Skippers, habitat, endangerment, Rhopalocera

Izvleček. O POJAVLJANJU *PYRGUS SERRATULAE* Z DODATNIMI INFORMACIJAMI O REDKIH DEBELOGLAVČKIH (LEPIDOPTERA: HESPERIIDAE) V SLOVENIJI - Kljub natančnemu pregledu literature in pomembnejših zbirk metuljev v Sloveniji je le malo znanega o razširjenosti treh preučevanih vrst *Carcharodus lavatherae*, *Pyrgus carthami* in *Pyrgus serratulae*. V zadnjih dveh desetletjih je bilo zbrano veliko število novih najdb, deloma tudi v okviru raziskav za atlas dnevnih metuljev Slovenije. *C. lavatherae* je bil najden na štirih ločenih območjih, vendar je poznavanje njegove ogroženosti in izbire habitatov zaradi majhnega števila opazovanj še vedno pomanjkljivo. *Pyrgus carthami* ima v Sloveniji veliko bolj omejeno razširjenost kot jo opisujejo prejšnji avtorji. Vsi potrjeni podatki so namreč iz jugovzhodne Slovenije, kjer je vrsta najbolj razširjena na pobočjih severno od Vipavske doline in na Komenskem krasu. Veliko število neobjavljenih podatkov deloma zakriva dejansko upadanje številčnosti vrste v Sloveniji. Najbolj skrivnostno pa je pojavljanje *P. serratulae* v Sloveniji, saj kljub velikemu številu objavljenih podatkov v zbirkah ni bil najden niti eden dokazni primerek. Tako lahko odkritje te vrste na vojaškem poligonu Poček jemljemo kot prvo potrjeno najdbo za Slovenijo. S tem se je *P. serratulae* znašel prav pri vrhu seznama najbolj ogroženih vrst metuljev v Sloveniji.

Ključne besede: dnevni metulji, debeloglavčki, habitat, ogroženost, Rhopalocera

Introduction

Butterflies are one of the best studied groups of insects. Their distribution and ecology at regional or country scale are well known, especially in Europe. Skippers, however, are an exception, as they are less attractive for amateur lepidopterists based on inconspicuous coloration, small size, fast flight and problematic identification. Apart from a few easily recognizable species, their distribution is usually less known and regularly obscured by erroneous records. Among the especially troublesome in Europe are the species of the genera *Pyrgus* and *Carcharodus*, which differ only in minor details in wing pattern and coloration. There are also species groups in both genera where dissection of genitalia is necessary to confirm determination.

The last published list of butterflies available for Slovenia (Carnelutti 1992a) included 23 species of the family Hesperiidae. Three species *Pyrgus cacaliae* (Rambur, 1839), *Pyrgus onopordi* (Rambur, 1839) and *Pyrgus sidae* (Esper, 1784) are considered extinct. Their presence in Slovenia is based on literature records from the 19th and beginning of the 20th century (Mann 1854, Hafner 1912, Carnelutti 1955). As these records could not be verified, their former occurrence in Slovenia is questionable. None of the mentioned species was found in a survey of the two largest butterfly collections in Slovenia: one at Slovenian Academy of Sciences and Arts (SAZU), Biological Institute, and Slovenian Natural History Museum (PMS).

During the last years, extensive field work has been carried out throughout Slovenia to collate records for the Slovenian butterfly atlas. These have shown much a more limited range for some skipper species than was indicated by Carnelutti (1992a) for biogeographical regions of Slovenia. The three species presented here in detail, *Carcharodus lavatherae* (Esper, 1783), *Pyrgus carthami* (Hübner, 1813), and *Pyrgus serratulae* (Rambur, 1839), all have a very limited distribution in Slovenia. Actually no material supporting the presence of *P. serratulae* in Slovenia was found in the studied collections, despite numerous published records (Hornig 1854, Galvagni 1909, Carnelutti & Michieli 1966, Carnelutti 1979, Carnelutti 1992a, Withrington 2001 and 2003, Phillips & Pickles 2007). *C. lavatherae* was always rare in Slovenia with only handful of records in the literature (Hafner 1909, Stauder 1923, Carnelutti 1979 and 1992b). *P. carthami*, however, was described as common and widespread in the SW part of Slovenia (Primorska) in older publications (Mann 1854, Hafner 1910, Stauder 1923), followed also by Carnelutti (1992a) who indicates widespread occurrence of this species in Slovenia. Surprisingly, the revision of major collections in Slovenia revealed that it was collected only at few sites in the Primorska region. Due to possible large scale declines suggested by the

comparison of the published and recent records, *C. lavatherae* (E - threatened) and *P. carthami* (V - vulnerable) have been included in the red list of Slovenia (Uradni list RS, No. 82/02).

Unpublished records

Carcharodus lavatherae (Marbled Skipper, čišljakov ostrozob)

Records are confined to four separate areas in SW Slovenia on or within close proximity of south facing slopes of Gora, Nanos, Vremščica and Volovja reber Mts. (Fig. 1).

1. date: 9.6.1999, locality: Vipava, Poreče, southern part of Mlake military area, altitude 130 m; Verovnik R.
2. date: 16.6.2001, locality: Vipava, Poreče, northern part of Mlake military area, altitude 130 m; Verovnik R.
3. date: 12.6.2002, locality: Ajdovščina, along the river Hubelj 400 m north of Hubelj hydroelectric power station, altitude 120 m; Kosmač M.
4. date: 8.6.2003, locality: Pivka, Volče, grasslands south of the village, bellow eastern slopes of Mt. Vremščica, altitude 620 m; Keymeulen A.
5. date: 6.7.2005, locality: Ilirska Bistrica, Mt. Volovja reber, eastern slopes of peak Lunjevica, altitude 1000 m; Lafranchis T.
6. date: 19.6.2006, locality: Vipava, Podnanos, on the lowest screes west of the road to Mt. Nanos, altitude 490 m; Verovnik R.
7. date: 19.6.2006, locality: Ajdovščina, at source of the river Hubelj, below the bridge and on a path on the western side of the stream, altitude 210-220 m; Verovnik R.
8. date: 21.6.2007, locality: Senožeče, Mt. Vremščica, north facing slope near ridge west of peak Čemparjev vrh, altitude 860 m; Zakšek V.

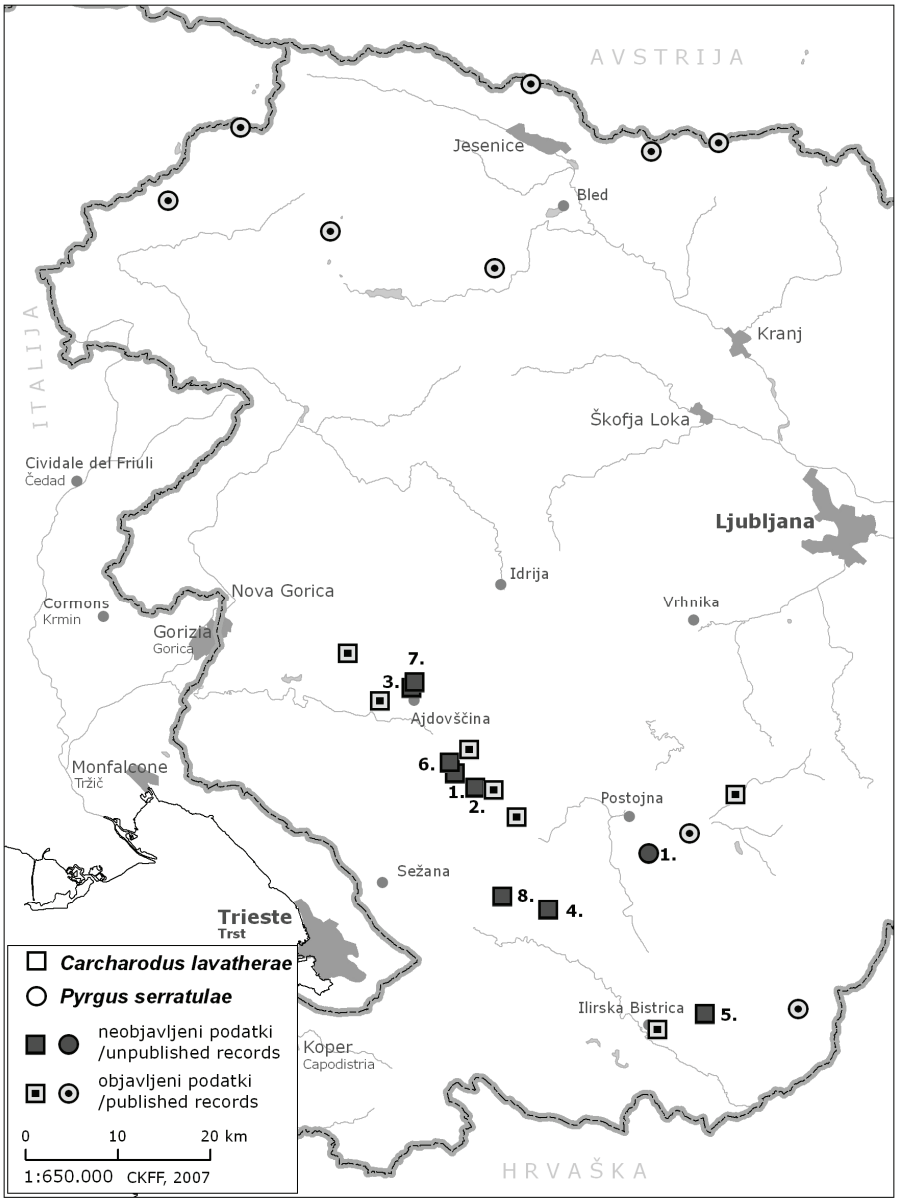

Figure 1. Distribution of *Carcharodus lavatherae* (Esper, 1783) and *Pyrgus serratulae* (Rambur, 1839) in Slovenia. The published records for *P. serratulae* could not be verified and should be considered questionable. The sites are numbered as in the list of the localities.

Slika 1. Razširjenost vrst *Carcharodus lavatherae* (Esper, 1783) in *Pyrgus serratulae* (Rambur, 1839) v Sloveniji. Objavljeni podatki o razširjenosti *P. serratulae* niso potrjeni, zato so te najdbe vprašljive. Lokacije so oštevilčene tako kot v seznamu lokalitet.

***Pyrgus carthami* (Safflower Skipper, veliki slezovček)**

The species was recorded mostly on the south facing edge of the Trnovski gozd plateau and Komenski kras – western part of the Kras plateau. Some of these microlocalities were merged as they most likely represent sampling of the same population. Isolated records come from Mt. Nanos, surroundings of Postojna and Pivka to the east and sites near Divača and Rakitovec to the south (Fig. 2). Alltogether, 35 records of the species are listed.

1. date: 21.5.1989, locality: Nova Gorica, Renče, at village Mrljaki, altitude 50 m; Štanta R.
2. date: 23.5.1990, locality: Nova Gorica, Bilje, at village Frnaža, altitude 50 m; Štanta R.
3. date: 15.6.1990, locality: Kobjeglava, grasslands near Jelenca hill, altitude 290 m; Štanta R.
4. date: 30.6.1990, locality: Kostanjevica na Krasu, Temnica, altitude 390 m; Štanta R.
5. date: 14.5.1991, locality: Kostanjevica na Krasu, Lipa, top of Mt. Trstelj, altitude 670 m; Štanta R.
6. date: 22.6.1991, locality: Kozina, Petrinje, altitude 430 m; Štanta R.
7. date: 26.6.1992, locality: Ajdovščina, Čaven, upper slopes of Mt. Kucelj, altitude 1100 – 1237 m; Štanta R. Subsequent records: 1.7.1993, Štanta R.; 19.7.1995, Verovnik R.; 25.7.1998, Verovnik R.; 25.6.1999, Verovnik R.; 7.7.2000, Verovnik R.; 17.7.2004, Štanta R.; 27.6.2005, Štanta R.
8. date: 1.7.1993, locality: Ajdovščina, Čaven, south facing slopes bellow Čaven chalet towards peak Mala Gora, altitude 1100-1200 m; Štanta R. Subsequent records: 4.7.1994, Štanta R.; 6.7.2000, Valič P.
9. date: 25.6.1998, locality: Ajdovščina, Kovk, grasslands on the eastern slopes of peak Sinji vrh, altitude 920 – 980 m; Verovnik R.
10. date: 25.6.1998, locality: Ajdovščina, Gozd, grasslands near ridge at farm Krog, altitude 860 – 880 m; Verovnik R.
11. date: 4.6.2000, locality: Vipava, Podnanos, Mt. Nanos at Lanišče, altitude 950 m; Štanta R.
12. date: 4.6.2000, locality: Vipava, Podnanos, Mt. Nanos, in the valley northeast of Šembijska bajta, altitude 800 m; Štanta R.
13. date: 6.6.2000, locality: Kozina, Vrhpolje, at top of the Golič peak, altitude 600 m; Verovnik R.
14. date: 29.5.2001, locality: Divača, Matavun, above road on the western slopes of dolina Globoček, altitude 415 m; Čelik T.
15. date: 24.6.2001, locality: Rakitovec, Zazid, near Zazid railway station, altitude 510 m; Verovnik R.

16. date: 16.6. 2002, locality: Gorjansko, Brestovica, Možci, altitude 100m; Štanta R.
17. date: 1.7.2002, locality: Kostanjevica na Krasu, Mali Dol, grasslands east of the road on the Komenšček plateau, altitude 270 m; Valič P. Subsequent records: 12.6.2005, Polak S.; 10.6.2006, Polak S.
18. date: 5.7.2002, locality: Kostanjevica na Krasu, Škofi, grasslands near road south of the village, altitude 210 m; Valič P.
19. date: 21.6.2005, locality: Nova Gorica, Trnovo, grasslands west of the village, altitude 700 m; Lafranchis T.
20. date: 9.6.2006, locality: Sežana, Orlek, meadow southeast of the village, altitude 360 m; Verovnik R.
21. date: 10.6.2006, locality: Rakitovec, grasslands on the slopes of Mt. Lipnik northwest of the village, altitude 580 m; Zakšek V.
22. date: 11.6.2006, locality: Divača, Lokev, top of the Mt. Jirmanec, altitude 660 m; Čelik T.
23. date: 28.6.2006, locality: Pivka, Volče, grasslands south of the village, bellow eastern slopes of Mt. Vremščica, altitude 620 m; Verovnik R.
24. date: 27.6.2007, locality: Postojna, Poček military area, small valley east of Grmača hill, altitude 560 m; Verovnik R.

***Pyrgus serratulae* (Olive Skipper, olivni slezovček)**

Two specimens seen in the largest Slovenian military area east of Postojna are the first confirmed records for Slovenia.

1. date: 6.7.2007, locality: Postojna, Poček military area, southern slopes of Praprotna reber, altitude 670 m; Verovnik R.

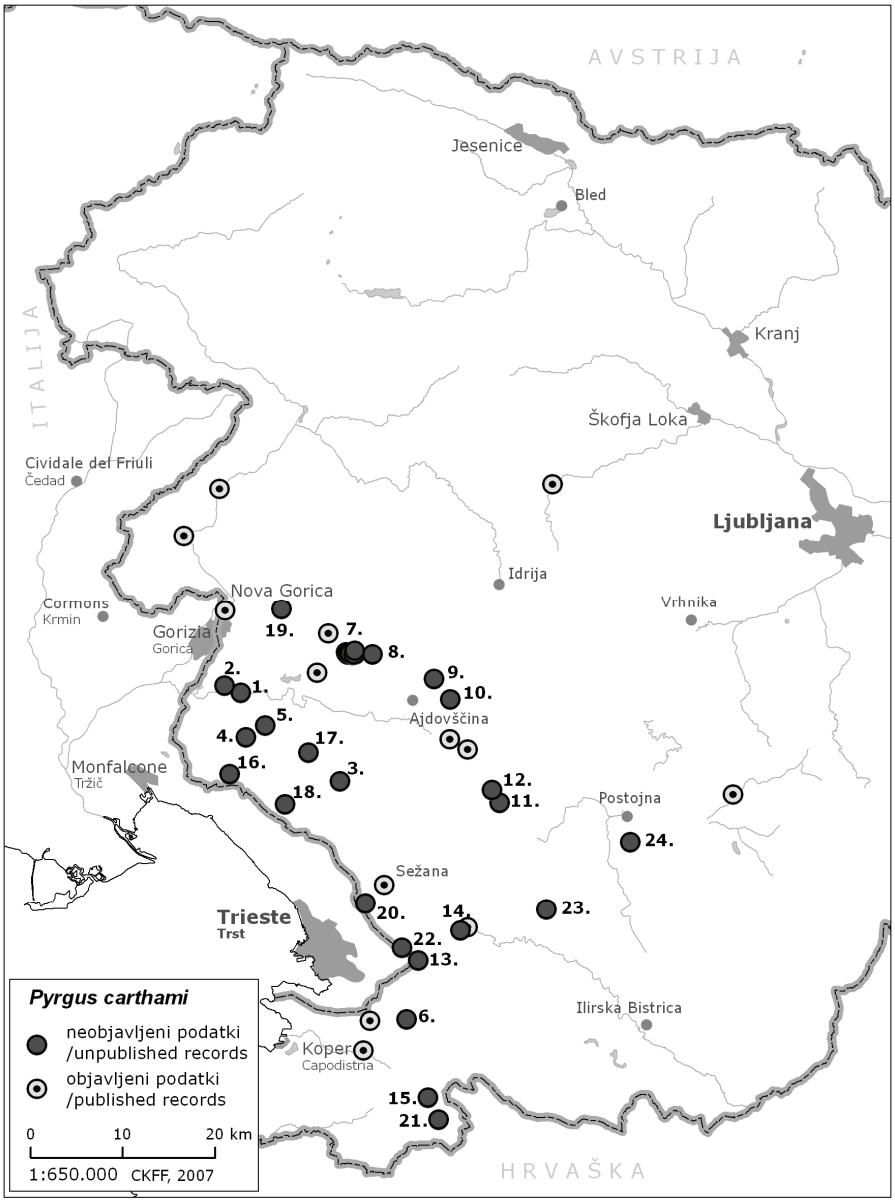

Figure 2. Distribution of *Pyrgus carthami* (Hübner, 1813) in Slovenia. The sites are numbered as in the list of the localities. The spots at site No. 7 reperesent microlocalities at this site.
Slika 2. Razširjenost *Pyrgus carthami* (Hübner, 1813) v Sloveniji. Lokacije so oštevilčene tako kot v seznamu lokalitet. Večje število točk pri št. 7 prikazuje pozicijo mikrolokacij, ki so v seznamu združene.

Discussion

Despite broader objectives of the survey for the Slovenian butterfly atlas, many interesting rare species were recorded. This is certainly true for the three studied skippers, which have not been searched for specifically at those sites. Given the limited information available from collections and scarcity of published records, the new finds substantially increase the knowledge about their distribution and habitat preferences in Slovenia.

Distribution and status of *C. lavatherae*

The new records for *C. lavatherae* did not extend its known range in Slovenia as they are all sandwiched between historical finds at Ilirska Bistrica in the southeast (collected by Hafner J. in 1911; PMS) and Mt. Čaven in the northwest (collected by Michieli Š. in 1966; PMS). According to Carnelutti (1979, 1992a, b), the Marbled Skipper was observed also near Cerknica northeast of the known range and even in the Dolenjska region in the southeastern part of Slovenia. As *C. lavatherae* is a habitat specialist of rich, flowering rocky calcareous grasslands (Pro Natura – SBN 1997, Huemer 2004, Slamka 2004), there are hardly any suitable habitats left for the species outside the Primorska region. Therefore, the presence of this species in Dolenjska without voucher specimens and no information on the exact localities is questionable.

One of the possible strongholds of the species is Mt. Nanos, especially the south facing slopes above the Vipava valley. It has been observed or collected there by Mann in 1854 (Mann 1854), Karlinger in 1902, Preissecker in 1907 (both reported by Hafner 1909), Michieli in 1955 (PMS), and recently confirmed by records from Mlake and the southern slopes. Mlake military area is situated at the base of Mt. Nanos and butterflies were seen on two occasions mud puddling at two different sites far from presumed larval habitat. Although small stands of *Stachys recta* L. occurred in the vicinity, no larvae were found despite intensive search. Due to the current motorway constructions and modernization of the shooting range, most of the area, including the mud puddling sites, was destroyed. The female observed on the southern slopes was nectaring on larval food plants on isolated scree in the middle of the forest, confirming that the species still persists on Mt. Nanos. Due to contiguous natural reforestation,

suitable patches for larval development will become fewer and smaller, making a long term survival of the species in this area questionable.

The site near Ajdovščina along the river Hubelj is also a mud puddling area as there are no larval food plants in the vicinity and butterflies were always seen on or near moist sands. The butterflies possibly descend from the screes of Mt. Gora, which are almost inaccessible and have not yet been surveyed. The scarcity of the observations (only three specimens) indicates that the population here is small and natural succession is again possibly the major threat for this population. Other sites in Vipava valley, where this species has been observed in the past, were also checked, but without any success.

Mt. Vremščica forms the next ridge southeast of Mt. Nanos and the species was discovered here only recently. However, most of the grasslands here are either intensively pastured or abandoned, so there is little suitable habitat left for the species. The situation near Volče east of the main ridge is even worse as the abandoned calcareous grasslands are now almost entirely overgrown. *P. carthami* still survives here on steeper rocky south facing slopes of small dolinas. After a short gap, a ridge continues in same general direction with Volovja reber. Some parts of the area there, especially near the actual observation site, still provides best possible habitat with abundant larval food plant, rocky south facing slopes and abundance of nectaring plants. Lower parts of these slopes, which are now mostly covered by forest, were a possible collecting site of the Hafner J. specimen labelled 'Ilirska Bistrica' (PMS), as this is the nearest large town situated just below the slopes. These slopes are among the most butterfly rich areas in Slovenia and were visited on several occasions, but no further specimens of *C. lavatherae* were found.

The Marbled Skipper is considered a sedentary species with males occupying and defending their territories (Pro Natura – SBN 1997), but they are also very strong flyers capable of flying long distances away from their larval habitat (pers. observ.). Combined with predominantly whitish colour, they are extremely hard to spot or follow, making it one of the hardest species to detect. Despite being possibly underrecorded, the species is extremely rare in Slovenia and its potential larval habitats are disappearing rapidly, therefore the red list status as threatened species (E) is adequate. The closest known populations are in South

Tyrol (Reichel 1992, Huemer 2004) in Italy and in Lower Austria in the northeast of the country (Reichel 1992, Höttinger & Pennerstorfer 1999). In Lower Austria, the species is nearly extinct (Höttinger & Pennerstorfer 1999), with a possibly single population surviving in the Wachau valley (Höttinger, pers. observ.).

Distribution and status of *P. carthami*

The main dilemma when describing the distribution of Safflower Skipper in Slovenia arises from Carnelutti's list (1992a) who describes the species as common or at least present in all Slovenian biogeographic regions. This is highly contrasted with available published and collection records indicating a much more limited range with only two records outside the Primorska region at Trebija in the Idrijsko-Cerkljansko region (Withrington 2003) and Cerknica in Notranjska (Carnelutti 1979), again without exact locality. How this wider distribution was obtained, is still a mystery and would require further investigation. The large number of unpublished records confirms well with the older reports (Mann 1854, Hafner 1910, Stauder 1923), presenting the species as common and widespread. But this is not entirely true as the species has not been mentioned from some of the sites discovered in the nineties, furthermore most of the records are based on single or few specimen observations in suboptimal already partially overgrown dry calcareous grasslands.

The only evident stronghold of the species in Slovenia is the Mt. Kucelj area (Verovnik 2000), where it can be abundant at peak flight season. It is much sparser further to the southeast on the ridges of Gora and Nanos Mts., where it has not been seen in the past five years. It is likely that small populations still exist in this region, as suitable habitats are widely available. In this respect, the situation on the Kras plateau is much worse with only few remaining dry calcareous grasslands suitable for the species. Both abandonment, causing swift encroachment of bushes, and fertilization pose great threats to the survival of P*. carthami* in this region. If this trend continues, the species will shortly disappear in more than half of the known range in Slovenia.

Among three outlying records, the site at Lipnik on the southern edge of the Kras plateau is the most promising with large areas of suitable open dry calcareous grasslands. Mapping of the detailed distribution of the Safflower Skipper in this region could be rewarding. The sites at Volče and near Postojna are possibly at the lower threshold of survivor of the species with dominant bush coverage and suitable habitats limited to small patches on steep slopes of small dolinas. It is very unlikely that these populations will survive the next decade, unless there are unknown more suitable habitats in the vicinity. The populations in Slovenia seem isolated, as there are no records from northeast Italy and southern Austria (Reichel 1992). *P. carthami* is therefore one of the most threatened skippers in Slovenia and should be considered threatened (E) in the next red list proposal.

On the presence of *Pyrgus serratulae*

One of the most intriguing questions regarding skippers in Slovenia is the presence and distribution of the Olive Skipper (Fig. 1). It was first mentioned by Hornig (1854) for summits of Mt. Rombon and Mt. Mangart in the western Julian Alps. Galvagni (1909) found it on Mt. Golica in the Karavanke Mts. and Carnelutti & Michieli (1966) found it in the central Julian Alps. The first two records were proven hard to verify as no material of this species from Slovenia was found in the Vienna Natural History Museum, hosting many important old collections partially covering Slovenian territory. However, both Golica and Mangart are among the easily accessible high alpine localities that have been surveyed many times in the past two decades. The only skippers observed there were the specimens of the alpine form of *Pyrgus alveus* (Hübner, 1803) and on Mangart also *Pyrgus warrenensis* (Verity, 1928) (pers. observ.). In the collection of Carnelutti at SAZU and Michieli's collection in PMS no *P. serratulae* was found from Slovenia, but there were several alpine forms of *P. alveus* collected at or near the site reported for *P. serratulae*. A possible misidentification is even more plausible as they reported *P. alveus* only from a lowland locality near Bohinj Lake. Records of Withrington (2001, 2003) refer to single female collected near Rakitna south of Ljubljana basin. After careful examination it turned out to be *P. alveus* again. The last published records by Phillips & Pickles (2007) referring to observations in the coastal region in 2003 are also highly suspicious due to other even more evident identification errors in their species list. Thus, there

was little hope that situation would ever be solved and the species was on the way out of the Slovenian species list.

It was a great surprise to finally find the species flying in one of the less accessible parts of Slovenia – the Poček military area. This brings us to the last unverified report by Carnelutti (1979) who describes the species as rare on the summits of Javorniki Mts. and Mt. Snežnik above 1000 m. Without voucher specimens, these records were considered doubtful, but in the perspective of this new discovery they seem more likely as Poček covers, in part, the southwestern slopes of Javorniki Mts. Most of the higher peaks of Javorniki were grazed in the past and could provide habitat for *P. serratulae*.

The two specimens were observed on rich flowering slopes above the main airplane target area, which is occasionally exposed to fires caused by shelling. Actually the exact site where *P. serratulae* was flying showed sings of recent burns. The military activities certainly have a positive effect on grassland species like butterflies, as they maintain great diversity of habitats in different succession stages and barren grounds frequented by many rare species for thermoregulation and mineral uptake. The potential habitat of Olive Skipper in this area is partly secured by their activities and still extensive, but further studies will be necessary to determine more precise distribution of the species. Being currently known only from a single site, the species should be considered highly threatened in Slovenia. The closest known populations are in the Austrian part of Styria (Meier 1963, Habeler 1965) and northern Carinthia (Habeler 1990, Huemer *et al*. 2001) mainly in the non-calcareous Alps and adjacent montane region. According to Reichel (1992), there are no records from northeast Italy as far westwards as South Tyrol. Other higher peaks and ridges on the Kras plateau should be next to search for this elusive species in Slovenia

Povzetek

Dnevni metulji so med najbolj raziskanimi skupinami žuželk v večjem delu Evrope, kar pa le deloma velja za debeloglavčke. Ti so namreč manj opazni, težavni za določanje in hitri, zaradi tega pa tudi manj atraktivni za amaterske lepidopterologe. Posledica tega je slabše poznavanje njihove razširjenosti in številne napačne določitve ter nepotrjene literaturne navedbe. V Sloveniji je po Carneluttijevem seznamu (Carnelutti 1992a) 23 vrst debeloglavčkov, od katerih so tri vrste, in sicer *Pyrgus cacaliae* (Rambur, 1839), *Pyrgus onopordi* (Rambur, 1839) in *Pyrgus sidae* (Esper, 1784), že izumrle. Te vrste navajajo nekateri starejši viri (Mann 1854, Hafner 1912, Carnelutti 1955), pri katerih pa je preverjanje najdb nemogoče. Tudi o pojavljanju treh predstavljenih vrst *Carcharodus lavatherae* (Esper, 1783), *Pyrgus carthami* (Hübner, 1813) in *Pyrgus serratulae* (Rambur, 1839) je v Sloveniji zelo malo znanega in tudi marsikaj vprašljivega. Zaradi možnega zmanjšanja areala sta v Rdeči seznam Slovenije vključena *C. lavatherae* kot ogrožena (E) in *P. carthami* kot ranljiva vrsta (V) (Uradni list RS, št. 82/02).

Čišljakov ostrozob (*C. lavatherae*) je v Sloveniji redka vrsta in tudi nova opažanja temeljijo na opazovanju največ enega ali dveh osebkov. Vrsta je vezana na bogato cvetoče kamnite kraške travnike (Pro Natura – SBN 1997, Huemer 2004, Slamka 2004), ki v Sloveniji pospešeno izginjajo. Nove najdbe so umeščene med dve že znani lokaciji: Čavnom na severozahodu (Michieli Š. leta 1966; PMS) in Ilirsko Bistrico na jugovzhodu (Hafner J. leta 1911; PMS). Precej širši areal vrste v Sloveniji omenja Carnelutti (1979, 1992b), vendar pa so njegove navedbe za okolico Cerknice in Dolenjsko preveč splošne. Čišljakov ostrozob je bil doslej največkrat najden na južnih pobočjih Nanosa, če k temu prištevamo tudi vojaško strelišče Mlake na njegovem vznožju. Vrsta je bila opažena tudi ob potoku Hubelj, na ovršju in vzhodnem vznožju Vremščice ter na pobočju Lunjevice na Volovji rebri. Predvsem slednje se najbolj odlikuje po ohranjenosti habitata, primernega za *C. lavatherae*. Vrsta je zelo slabo opazna predvsem zaradi zelo hitrega leta in prevladujoče svetle obarvanosti. To otežuje nadaljnje raziskave, ki pa so vendarle nujno potrebne.

Največji razkorak med objavljeno razširjenostjo in dejansko ugotovljenimi podatki o razširjenosti je bil ugotovljen pri velikem slezovčku (*P. carthami*), ki naj bi bil po Carneluttiju (1992b) razširjen v vseh biogeografskih regijah Slovenije. Že pregled objavljenih podatkov in zbirk kaže popolnoma drugačno sliko, saj se vrsta zunaj Primorske pojavlja le pri Trebiji na Cerkljanskem (Withrington 2003) in pri Cerknici na Notranjskem (Carnelutti 1979), vendar v tem primeru spet brez natančne navedbe lokacije. Tudi neobjavljeni podatki potrjujejo zelo omejeno razširjenost te vrste v Sloveniji z dvema glavnima območjema razširjenosti: Komenskim krasom in pobočji Čavna, Gore in Nanosa nad Vipavsko dolino. Posamične najdbe so tudi s Kraškega roba, okolice Divače in dveh verjetno izoliranih populacij pri Pivki ob vzhodnem vznožju Vremščice in na vojaškem poligonu Poček blizu Postojne. V obeh primerih so suhi kraški travniki tu že v večji meri zarasli, zato je dolgoročno preživetje populacij vprašljivo. Podobne procese zaraščanja in deloma tudi intenziviranja kraških travnikov z uporabo gnojil je opaziti tudi na Komenskem krasu, zato veliki slezovček sodi med naše najbolj ogrožene debeloglavčke.

Olivni slezovček (*P. serratulae*) je zaradi podobnosti z drugimi vrstami iz rodu *Pyrgus* eden izmed najbolj skrivnostnih slovenskih debeloglavčkov. Kljub velikemu številu objavljenih podatkov o pojavljanju vrste od Karavank, Julijskih Alp, Javornikov, Snežnika do slovenske obale (Hornig 1854, Galvagni 1909, Carnelutti & Michieli 1966, Carnelutti 1979, 1992a, Withrington 2001, 2003, Phillips & Pickles 2007), v več kot desetletju intenzivnega iskanja v zbirkah in na terenu ni bil najden niti en dokazni primerek. Tako je bila vrsta skoraj že umaknjena s slovenskega seznama do presenetljivega odkritja dveh osebkov te vrste na vojaškem poligonu Poček v letu 2007. Oba osebka sta bila opažena na bogato cvetočem kraškem travniku, ki je pred nekaj leti pogorel. Travnik je namreč del pobočja nad osrednjim vojaškim območjem, kjer so cilji letalskega in topovskega obstreljevanja, zato so občasni manjši požari pogosti. Ravno vojaške aktivnosti so za travniške vrste metuljev zelo koristne, saj preprečujejo zaraščanje in tvorijo pester mozaik delno zaraščenih travniških površin. Potencialni habitat olivnega slezovčka je razmeroma obsežen in vsaj deloma zavarovan zaradi vojaških aktivnosti, vendar pa bo treba natančneje raziskati razširjenost vrste na tem območju. Ker je razširjenost *P. serratulae* v Sloveniji omejena zgolj na eno samo znano lokacijo, vrsta zagotovo sodi med naše najbolj ogrožene metulje.

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