



NEW DISTRIBUTION DATA ON THE ENDEMIC BUTTERFLY *PROTEREBIA AFRA DALMATA* (GODART, [1824]) (NYMPHALIDAE, SATYRINAE) IN CROATIA

IVA MIHOCI & MARTINA ŠAŠIĆ

Croatian Natural History Museum, Department of Zoology,
Demetrova 1, 10000 Zagreb, Croatia

Mihoci, I. & Šašić, M.: New distribution data on the endemic butterfly *Proterebia afra dalmata* (Godart, [1824]) (Nymphalidae, Satyrinae) in Croatia. *Nat. Croat.*, Vol. 16, No. 3., 205–210, 2007, Zagreb.

The endemic butterfly the Dalmatian Ringlet *Proterebia afra dalmata* (Godart, [1824]) was found at several new sites in the years 2006 and 2007. In this paper we present the current distribution of this endemic subspecies in Croatia.

Key words: *Proterebia afra dalmata*, Croatian fauna, distribution

Mihoci, I. & Šašić, M.: Prilog poznavanju rasprostranjenja endemične svojte leptira *Proterebia afra dalmata* (Godart, [1824]) (Nymphalidae, Satyrinae) u Hrvatskoj. *Nat. Croat.*, Vol. 16, No. 3., 205–210, 2007, Zagreb.

Endem Hrvatske, leptir dalmatinski okaš *Proterebia afra dalmata* (Godart, [1824]), nađen je na nekoliko novih lokaliteta u 2006. i 2007. godini. U radu se prikazuje sadašnje rasprostranjenje podvrste u Hrvatskoj.

Ključne riječi: *Proterebia afra dalmata*, fauna, Hrvatska, rasprostranjenje

The nymphalid butterfly *Proterebia afra* (Fabricius, 1787) is a Eurasian species with a disjunctive distribution in Europe. Three subspecies occur in the European fauna: *Proterebia afra dalmata* (Godart, [1824]) in Croatia, *Proterebia afra pyramus* in Greece (DE LOUKER & DILS, 1987) and *Proterebia afra krymaea* in Crimea (NEKRUTENKO, 1985).

The endemic butterfly *Proterebia afra dalmata* has one generation per year, with adults flying from the end of April till the end of May (TOLMAN & LEWINGTON, 1997). During our field trips in 2006, imagoes were regularly observed from May 4th till May 12th and in 2007 from April 18th till May 1st. According to MIHOCI & ŠAŠIĆ (2005) *Proterebia afra dalmata* is a xerothermophile butterfly, usually occurring in

Sub-Mediterranean belts of the Mediterranean region in Croatia from 40 m a.s.l to 700 m a.s.l., attached to calcareous semi-natural habitats with *Juniperus* bushes. The subspecies life-cycle has never been studied in its natural habitats but the characteristics of the development are very well known from specimens reared in captivity (ROOS *et al.*, 1984). Recently, ČELIK *et al.* (2006) observed oviposition on *Bromus condensatus* and the feeding of adults on *Aethionema saxatile*, *Alyssum montanum*, *Ornithogalum kochii* and *Thymus longicaulis*.

In the last few years a great deal of effort has been made to determine the subspecies distributional range in Croatia. The distribution of the Dalmatian Ringlet as published in MIHOCI & ŠAŠIĆ (2005), ZAKŠEK (2005) and ČELIK *et al.* (2006) shows a disjunctive distribution from the narrow coastal area (the island of Pag, vicinity of Zadar, Lozovac and Šibenik) to the Sub-Mediterranean inland area near Knin, the spring of the Cetina River and several locations on the northern slopes of Biokovo Mountain (all within the Biokovo Nature Park).



Fig. 1. Distributional map of the Dalmatian Ringlet *Proterebia afra dalmata* (Godart, [1824]) in Croatia (blue dots – MIHOCI & ŠAŠIĆ (2005), ZAKŠEK (2005) and ČELIK *et al.* (2006), red dots – new data 2006 & 2007: between Blato na Cetini and Nova Sela, Katuni, Cista Provo, Pribude (Svilaja Mountain), spring of the Ruda River, turn to Biskupija village, near the Krčić – spring of the Krka River, Kotluša above Paško polje, turn to Kistanje, turn to Zrmanja village, turn to the Vrelo Zrmanje, after Surčevac viaduct and after Otrić, Gradina near Šibenik and Matiči between Benkovac and Obrovac).

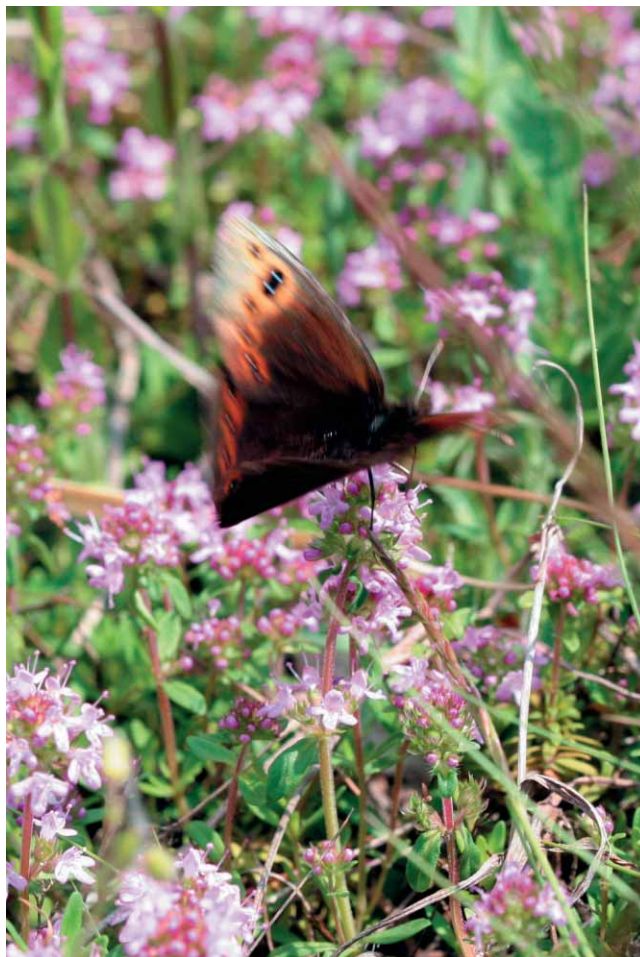


Fig. 2. *Proterebia afra dalmata* resting and feeding on thyme flowers (*Thymus* sp.) (photo: D. Mihoci).

During the field trips in May 2006 and April & May 2007 the Dalmatian Ringlet was reconfirmed and found for the first time at several localities in the Mediterranean region of Croatia showing that the area of distribution is much more continuous than previously thought (Fig. 1).

Reconfirmed (from north to the south):

- east from Gajac, island of Pag (May 4th, 2006)
- at Velo Blato (Stipančevica), island of Pag (May 4th, 2006)
- the spring Glavaš, Cetina River (May 7th, 2006 and May 12th, 2006)
- Donji Stublac, Nature Park »Biokovo« (May 7th, 2006)

Newly found:

Inland area:

- Between Blato na Cetini and Nova Sela, Cetina River (April 22nd, 2007)
- Kotluša, above Paško polje, Cetina River (May 12th, 2006)
- Katuni, near Šestanovac (May 7th, 2006 and April 18th, 2007)
- Cista Provo (May 7th, 2006)
- Pribude, Podsvilaja, Svilaja Mt. (May 5th, 2007)
- Near the spring of the Ruda River (April 22nd, 2007)
- Main road D1, turn to the Biskupija village (April 22nd, 2007)
- Near the Krčić – spring of the Krka River (April 22nd, 2007)
- Main road D1, turn to the Kistanje (May 12th, 2006)
- Main road D1, turn to the Zrmanja village (May 12th, 2006)
- Main road D1, turn to the Vrelo Zrmanje (May 12th, 2006)
- Main road D1, after Surčevac viaduct (May 12th, 2006)
- Main road D1, after Otrić (May 12th, 2006)

Coastal area:

- Gradina near Šibenik (April 29th, 2007)
- Matići, between Benkovac and Obrovac (April 30th, 2007)

All the sites found contribute to the knowledge of the distribution of the Dalmatian Ringlet in the inland and coastal area of the Mediterranean region of Croatia. The newly found inland localities are situated between Blato na Cetini village and the main road (D1) from Šestanovac to the Gračac over a distance of approximately 150 kilometers. On the coastal side the newly found locality Gradina is situated near Šibenik and the site Matići between Benkovac and Obrovac. Habitat types of recently found locations are similar to those already known – dry and grassy slopes, more or less limestone rocks with open or semi-closed *Juniperus* scrub. Butterflies were usually observed in low flight near *Juniperus* bushes or resting and feeding on thyme flowers (*Thymus* sp.), *Veronica austriaca* subsp. *dentata* (F. W. Schmidt) Watzl, and *Crepis rubra* L. (Fig. 2).

In this study and in further studies on the distribution of this endemic subspecies in the Croatian fauna we are creating the basis for future research dealing with the subspecies' life-cycle, habitat preferences and population size. According to ŠAŠIĆ & KUČINIĆ (2004) the current threat status of this subspecies in Croatia is DD (data deficient) meaning that all future studies on this subspecies contribute to a more precise threat assessment. For this subspecies as well as for the recently found threatened species in Croatia (*Coenonympha oedippus* Fab., *Lycaena ottomanus* Lef. and *Polyommatus (Agrodiaetus) damon* Den. & Sch) (KUČINIĆ *et al.*, 1999; MIHOCI *et al.*, 2005; 2006) population abundance and dynamic should be established.

ACKNOWLEDGEMENTS

We would like to thank David Mihoci for photographing specimens in their natural habitat. We are thankful to senior taxidermist Mladen Vajdić (CNHM), Dr

Mladen Kučinić (University of Zagreb, Faculty of Science), Dr. Antun Delić (Univ. of Zagreb, Faculty of Education) and Ivan Vučković BSc (Croatian Waters) for help during the fieldwork.

Received November 10, 2006

REFERENCES

- ČELIK, T., ZAKŠEK, V., VREŠ, B. & VEROVNIK, R., 2006: Distribution and habitat characteristics of *Proterebia afra* (Fabricius, 1787) (Lepidoptera, Satyrinae) in Croatia. 1st Slovenian Entomological Symposium. Book of Abstracts, pp. 8–9.
- DE LOUKER, S. & DILS, J., 1987: The occurrence of *Proterebia phegea* Borkhausen in Greece with description of a new subspecies (Lepidoptera: Nymphalidae: Satyrinae). *Phegea* **15** (3), 157–160.
- GODART, J.-B., [1824]: [Article] Papillon. In: LATREILLE, P. A. & GODART J.-B. *Satyrus Dalmata*. Histoire Naturelle. Entomologie Encyclopédie Méthodique **9**, 530.
- KUČINIĆ, M., TVRTKOVIĆ, N. & KLETEČKI, E., 1999: The False Ringlet (*Coenonympha oedippus* F.) is a member of the Croatian butterfly fauna after all. *Nat. Croat.* **8** (4), 399–407.
- MIHOČI, I. & ŠAŠIĆ, M., 2005: New findings of the butterfly Dalmatian Ringlet, *Proterebia afra dalmata* (Godart, [1824]) (Lepidoptera, Satyrinae) in Croatia. *Natura Croatica* **14** (2), 121–129.
- MIHOČI, I., TVRTKOVIĆ, N. & ŠAŠIĆ, M., 2005: Grecian Copper *Lycaena ottomanus* (Lefebvre, 1830) (Lepidoptera, Lycaenidae) – new species in the Croatian butterfly fauna. *Nat. Croat.* **14** (4), 255–262.
- MIHOČI, I., VAJDIĆ, M. & ŠAŠIĆ, M., 2006: The status of the Damon Blue *Polyommatus (Agrodiaetus) damon* (Denis and Schiffermuller, 1775) (Papilionoidea: Lycaenidae, Polyommadini) in the Croatian butterfly fauna. *Nat. Croat.* **15** (1–2), 15–25.
- NEKRUTENKO, J., 1985: Rhopalocera of the Crimea. *Naukova Dymka*, Kiev. pp. 152+ 24 pl. (in Russian).
- ROOS, P., ARNSCHEID, W., STANGELMAIER, G., BEIL, B., 1984: Präimaginale Merkmale in der Gattung *Proterebia*. In: ROOS, P. & ARNSCHEID, W. (eds): *Beweise für die phylogenetische Distanz zur Gattung Erebia DALMAN* (Satyridae). *Nota lepid.* **7** (4), 361–374.
- ŠAŠIĆ, M. & KUČINIĆ, M., 2004: The Red Data List of Croatian Butterflies. In MARKOVIĆ, D. (ur). *Državni zavod za zaštitu prirode*. pp. 112.
- TOLMAN, T. & LEWINGTON, R., 1997: *Butterflies of Britain and Europe*. Harper Collins Publishers. London, pp. 320.
- ZAKŠEK, V., 2005: On the presence of *Proterebia afra* (Lepidoptera: Nymphalidae: Satyrinae) on the island of Pag, Croatia. *Phegea* **33** (3), 118–120.

S A Ž E T A K

Novi nalazi endemičnog leptira *Proterebia afra dalmata* (Godart, [1824]) (Nymphalidae, Satyrinae) u Hrvatskoj

I. Mihoci & M. Šašić

Dalmatinski okaš *Proterebia afra dalmata* (Godart, [1824]) endem je Hrvatske, a jedan od tri europske endemične podvrste nominalne vrste *Proterebia afra* (Fabricius, 1787). U posljednjih nekoliko godina uloženo je mnogo terenskog rada u utvrđivanje rasprostranjenja dalmatinskog okaša u Hrvatskoj. Dalmatinski okaš poznat je s nekoliko lokaliteta na otoku Pagu, s lokaliteta u blizini Zadra, Lozovca i Šibenika, kao i iz unutrašnjeg djela mediteranskog područja Hrvatske: okolice Knina, izvora Cetine te nekoliko lokaliteta sa sjeverne ekspozicije Biokova (MIHOCI & ŠAŠIĆ, 2005; ZAKŠEK, 2005; ČELIK *et al.*, 2006).

Početak svibnja 2006. godine podvrsta je nađena na nekoliko lokaliteta u unutarnjem dijelu mediteranskog područja Hrvatske: u Katunima, Cisti Provo, u blizini sela Kotluša iznad Paškog polja, u neposrednoj blizini skretanja za Kistanje poslije Knina, kod skretanja za selo Zrmanja i vrelo Zrmanje, iza vijadukta Surčevac te poslije Otrića. Godine 2007. pronađena je na prostoru između Blata na Cetini i Novih Sela, Pribudama u Podsvilaji, u blizini izvora rijeke Rude, u neposrednoj blizini Krčića – izvora rijeke Krke te na skretanju prema Biskupiji (cesta D1). Isto tako zabilježena je na lokalitetu Gradina blizu Šibenika i blizu Matica kod Obrovca na putu od Benkovca do Obrovca. Staništa vrste na novoutvrđenim lokalitetima su suhe livadne površine blagog nagiba, s vapnenačkim kamenjem i nižom makijom više ili manje zatvorenom. Imago je najčešće zabilježen u niskom letu, sjedeći ili hraneći se na cvatovima majčine dušice (*Thymus* sp.) te na nazubljenoj čestoslavici (*Veronica austriaca* subsp. *dentata*) i ružičastom dimku (*Crepis rubra* L.).

Rezultati ovog i budućih istraživanja područja rasprostranjenja i širenja dalmatinskog okaša poslužiti će kao podloga za ekološka i populacijsko-genetička istraživanja ove endemične podvrste u Hrvatskoj.