

# FIRST RECORD OF *Chersotis rectangula* ([Denis & Schiffermüller], 1775) IN CROATIA WITH NEW DATA FOR *Chersotis multangula* (Hübner, 1803) (Lepidoptera: Noctuidae)

PRVI NALAZ *Chersotis rectangula* ([Denis & Schiffermüller], 1775) ZA HRVATSKU I NOVI PODACI O *Chersotis multangula* (Hübner, 1803) (Lepidoptera: Noctuidae)

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## Summary:

During the moth survey of the hills Straninjščica and Ivanščica in the Krapina-Zagorje County in Croatia in 2014, many interesting moth species were recorded. Among them, the noctuid *Chersotis rectangula* ([Denis & Schiffermüller], 1775), new for Croatian fauna. Three specimens of *Ch. rectangula* were collected on the UV light traps at the top of Ivanščica Mt., on 8 June 2014. This is the sixth species of the genus *Chersotis* occurring in Croatia. Other species are *Ch. multangula* (Hübner, 1803), *Ch. margaritacea* (Villers, 1789), *Ch. elegans* (Eversmann, 1837), *Ch. fimbriola* (Esper, 1803) and *Ch. cuprea* (Denis & Schiffermüller, 1775). Aside from *Ch. rectangula*, *Ch. multangula* was also recorded in the same season on Straninjščica and Ivanščica Mts., which is the north-easternmost occurrence of this species for the country.

**KEY WORDS:** distribution, fauna, noctuids, *Chersotis*, Ivanščica, Straninjščica

## INTRODUCTION

### UVOD

Of the most numerous moth families in Croatia (e.g. Erebiidae, Crambidae, Geometridae, Noctuidae, Pyralidae, Tortricidae), the Noctuidae are by far the best studied family. This is mostly due to several larger previous surveys in various parts of Croatia: Krk Island (Habeler 2003), Kupa River (Mladinov 1977), Gorski Kotar (Kučinić et al. 1993), north-western Croatia (Kučinić & Bregović 1996), Podravina (Kranjčev 1984), Kopački Rit (Vignjević et al. 2010), reviews of the data from museum collections (Mladinov

1958; Kučinić & Hrašovec 1999), as well as contributions of several new species records for the country (Kučinić & Perović 1997; Kučinić et al. 1998; Kučinić & Lorković 1999). Except these contributions, the noctuid fauna of Croatia remains poorly known, since most of the studies were concentrated on a very small area and were not systematic surveys. The northern part of the country is the least studied region.

The genus *Chersotis* Boisduval, 1840 consists of 76 species, of which 20 can be found in Europe (Fibiger & Hacker 1990; Fibiger 1993; Witt & Ronkay 2011; Fibiger & Skule 2013; Varga et al 2013). They are usually connected to mountain-

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**Table 1.** Records of *Ch. rectangula* and *Ch. multangula* from the NE of Croatia.**Tablica 1.** Nalazi vrsta *Ch. rectangula* i *Ch. Multangula* iz sjevero zapadnog dijela Hrvatske

Species – vrste	Locality – lokacija	Date – datum	N of specimens broj primjeraka	WGS84 N	WGS84 E	a.s.l. m nadmorska visina
<i>Ch. rectangula</i>	Krapinsko-zagorska county, Ivanščica, mountain top	8.6.2014	3	46,18014	16,12426	1015
<i>Ch. multangula</i>	Krapinsko-zagorska county, Ivanščica, mountain top	8.6.2014	1	46,18014	16,12426	1015
<i>Ch. multangula</i>	Krapinsko-zagorska county, Strahinjščica, Strahinje Radobojsko, thermophilic forest on south slope	20.7.2014	1	46,17638	15,91049	356
<i>Ch. multangula</i>	Krapinsko-zagorska county, Strahinjščica, Radoboj, Sv. Jakov, Plat, xerotherm meadows	20.7.2014	2	46,17689	15,93922	490

ous or meso-montane xerothermophilic habitats, and are generally rare and local except for some high mountain species. They hibernate mostly as larvae. The food plants include various species from the genera *Vicia*, *Trifolium*, *Plantago*, *Galium*, *Asperula*, *Cirsium* etc. (Kučinić & Lorković 1999). This is one of the few genera for which an overview of known species and data was given for Croatia (Kučinić & Lorković 1998). According to the authors, four species of this genus have been recorded for the Croatian fauna: *Chersotis multangula* (Hübner, 1803), *Chersotis margaritacea* (Villers, 1789), *Chersotis elegans* (Evermann, 1843) and *Chersotis cuprea* (Denis & Schiffermüller, 1775) (Kučinić & Lorković 1998). An additional species record of *Chersotis fimbriola* (Esper 1803) is cited in the Fauna Europaea database (Fibiger & Skule 2013), increasing the number of the known species up to five. However, this species needs to be confirmed either in the literature or in the museum collections. Another *Chersotis* species, *Ch. laeta leonhardi* Rebel, 1904 has the type-locality in the vicinity of Croatia (Bosnia and Herzegovina, Maklen-Pass at Korićna and Kalinovik (Hacker, Varga 1990)) and can also be expected in Croatia.

Only one or a few records exist for each *Chersotis* species in Croatia, so their distribution in the country is mostly unknown. Additionally, most records are citations from older literature, and need confirmation. In this contribution we give the first record of *Chersotis rectangula* ([Denis & Schiffermüller], 1775) and additional data for *Chersotis multangula* (Hübner, 1803) from NW Croatia.

## MATERIAL AND METHODS

### MATERIJALI I METODE

Specimens of *Ch. rectangula* and *Ch. multangula* were collected during the survey of Ivanščica and Strahinjščica Mts. in 2014 (Table 1, Fig. 1). Moths were attracted by UV light traps. The observed habitats mostly consist of a beech forest with rich forest road edge vegetation and partly mixed beech-spruce forest at higher altitudes on calcareous rock. Aside from the forest road, the whole nearby and surround-

ing area is covered with continental deciduous forest. The identification is based on the author's collections and was confirmed by literature for the genus *Chersotis* (Fibiger, 1993). Two specimens are stored in the private collection of Toni Koren in Pazin. All records and identifications were made by Stanislav Gomboc and Toni Koren.

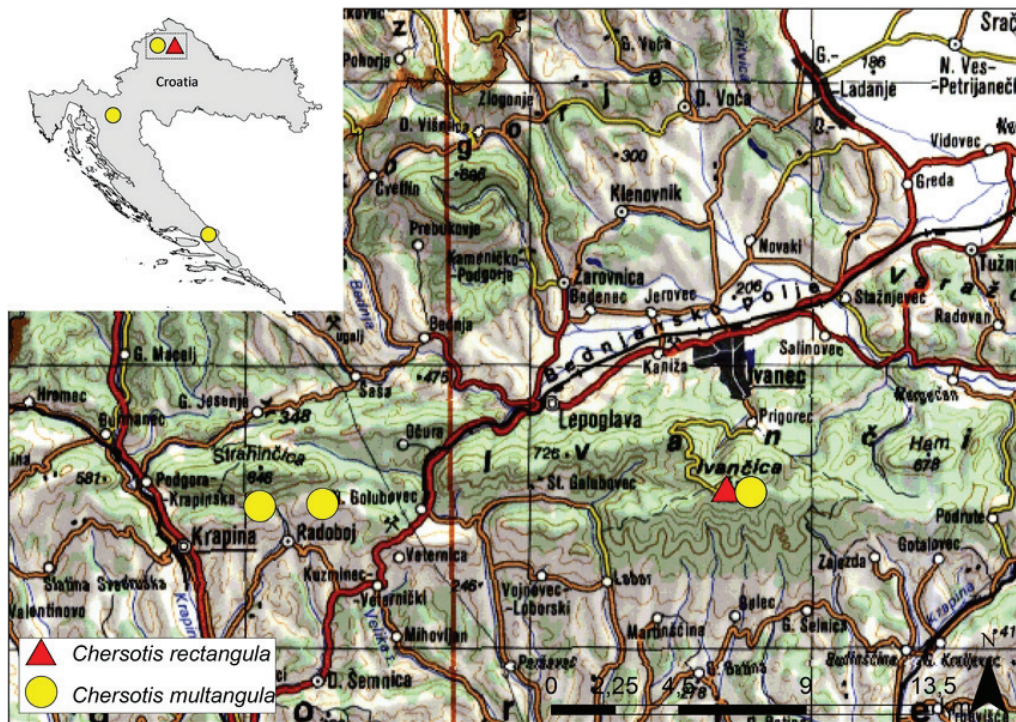
The presence of the *Chersotis* genus in Croatia was checked in Croatian and foreign entomological collections by Kučinić & Lorković (1998), where the presence of 4 species was confirmed for Croatia. We also checked all the available literature where we could not find any additional data for *Ch. rectangula* for Croatia (e.g. Abafi-Ainger 1910; Abafi-Ainger et al. 1896; Bartol et al. 1964; Bohatch 1891; Burgermeister 1964; Galvagni 1902, 1909, 1934; Habeler 2003; Koča 1901; Kranjčev 1985; Kučinić 1992; Kučinić & Lorković 1998; Mann 1867; Mladinov & Kučinić 1993; Schawerda 1921; Stauder 1925).

## RESULTS AND DISCUSSION

### REZULTATI I RASPRAVA

*Ch. rectangula* is the type species of the genus *Chersotis*. It has a wingspan of 29-37 mm, grey and brown wings with inconspicuous markings (Fig. 2). This is a Ponto-Mediterranean species, which inhabits the southern part of central Europe: Poland, the Czech Republic, Slovakia, Austria and Hungary. Its distribution in Europe is discontinuous, being connected to the larger mountain ranges, where it is usually rare and local.

This xero-montane species inhabits bushy habitats, mainly in the subalpine zone, but also can be found in rocky grassland at lower altitudes between 600 and 2400 meters above sea level (Dufay 1971). Adults fly from late June to mid-September, and are attracted to light and bait traps (Fibiger 1990, 1997). Larvae are polyphagous and feed on different herbaceous plants like *Melilotus* spp. and *Vicia* spp. (Nowacki 2009). As three specimens were recorded, we may presume that this species has a population in the area, and the specimens do not represent migrating or vagrant individu-



**Figure 1.** New and historical records of *Chersotis rectangula* and *Chersotis multangula* on Strahinjščica and Ivanščica Mts. Two southernmost records of *Ch. multangula* on the map of Croatia represent literature records.

**Slika 1.** Novi i povijesni nalazi vrste *Chersotis rectangula* i *Chersotis multangula* na planinama Strahinjščici i Ivanščici. Dva južnija nalaza vrste *Ch. multangula* na karti Hrvatske predstavljaju literaturne nalaze.



**Figure 2.** *Chersotis rectangula* from Mt. Ivanščica, June 8<sup>th</sup>, 2014. Koren T. photo.

**Slika 2.** *Chersotis rectangula* sa planine Ivanščice, zabilježene 6. Lipnja 2014. Fotografija: Koren T.

als from other localities. Ivanščica Mt. is the highest mountain in north-western Croatia, and probably represents the only suitable habitat for this species in the region. Possibly, the species may occur on the nearby Strahinjščica Mt., which is not as high (the highest peak is Strahinjščica, at 847 m a.s.l.). None of the two mentioned mountains has been surveyed in the past, and additional species records are to be expected. It is also possible that these species could

be found on some other poorly surveyed mountains in Croatia, especially throughout Gorski Kotar or Mt. Velebit.

The presence of *Ch. rectangula* in Croatia was expected since the species is known from the neighbouring regions (Slovenia, Hungary and Bosnia and Herzegovina (Fibiger & Skule 2013).

Besides *Ch. rectangula*, on the same locality and date we recorded another congeneric species, *Ch. multangula* (Fig. 3). Another two records of this species were made on the



**Figure – 3** Figure 3. *Chersotis multangula* from Mt. Strahinjščica, July 20<sup>th</sup>, 2014. Gomboc S. photo.

**Slika 3.** *Chersotis multangula* sa planine Strahinjščice, zabilježene 20. srpnja 2014. Fotografija: Gomboc S.

southern slopes of Strahinjščica (Table 1). Until now, this species has been recorded only at a few localities in Croatia: Josipdol (Mann 1867), Bosiljevo and Biokovo Mt. (Kučinić & Lorković 1998). Our records from Ivanščica and Strahinjščica Mts. represent the most northern record in Croatia, and the first record in NW Croatia whatsoever.

Records of these two species of genus *Chersotis* shows that the noctuid fauna of Croatia is still not surveyed enough and new and interesting findings may be expected. No checklist of the „former” Noctuidae family of Croatia exists, but according to the latest data, and our new record, the noctuid fauna (including former members, now in the family Erebiidae) numbers about 586 species in Croatia (Kučinić 1997; Kučinić & Lorković 1998; Kučinić et al. 1998; Koren & Lauš 2011). Also, a lot of the noctuid species records for Croatia are based on old literature data, and need to be confirmed in the future.

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## REFERENCES

### LITERATURA

- Abafi-Aigner, L., Pavel, J., Uhryk, F., 1896: Fauna Regni Hungariae. Lepidoptera. Regia Societas Scientiarum Naturalium Hungarica, 1–82.
- Abafi-Aigner, L., 1910: Adalék a Magyar Tengeremlék, Horvátország és Dalmácia Lepkefaunájához. Rovartani Lapok, 17: 71–105.
- Bartol, B., Bartol, V. & Michieli, Š., 1964: Beitrag zur Kenntnis der Makrolepidopterenfauna der adriatischen Insel Krg (Veglia). Nachrichtenblatt der Bayerischen Entomologen, 13(4–6): 33–59.
- Bohatsch, O., 1891: Beiträge zur Lepidopteren-Fauna Slavoniens. Zeitschrift der Wiener Entomologischen Vereines (II. Jahresbericht), 31–50.
- Burgermeister, F., 1964: Makrolepidopteren aus dem Raume Dubrovnik. Zeitschrift der Wiener Entomologischen Gesellschaft, 49: 137–152.
- Dufay, Cl., 1971: Sur la géonémie de quelques Noctuidae et d'un Lycenidae. Alexonor 7(4): 180–185.
- Fibiger, M., Hacker, H., 1990: Systematic List of the Noctuidae of Europe. Esperiana, 2: 1–111.
- Fibiger, M., 1990: Noctuinae I. Noctuidae Europaeae. Volume 1. Entomological Press, 208 p, Soros.
- Fibiger, M., 1993: Noctuinae II. Noctuidae Europaeae. Volume 2. Entomological Press, 230 p, Sorø.
- Fibiger M., 1997: Noctuidae Europaeae. Vol. 3 (Noctuinae III). Entomological Press, 418 p, Sorø.
- Galvagni, E., 1902: Beiträge zur Kenntnis der Fauna einiger dalmatinischer Inseln. Verhandlungen zoologisch-botanischen Gesellschaft in Wien, 52: 362–388.
- Galvagni, E., 1909: Die zoologische Reise des Naturwissenschaftlichen Vereines nach Dalmatien im April 1906 (Beiträge zur Kenntnis der Lepidopterenfauna der Adriatischen Inseln). Mitteilungen des Naturwissenschaftlichen Vereines auf der Universität Wien, 7: 154–254.
- Galvagni, E., 1934: Beiträge zur Kenntnis der Schmetterlingsfauna von Hvar (Lesina). Mitteilungen des Naturwissenschaftlichen Vereines auf der Universität Wien, 84: 118–121.
- Fibiger, M., Skule, B., 2013: Fauna Europaea: Noctuidae. In: Karsholt, O., Nieuwerkerken, E.J. van, de Jong, Y.S.D.M., 2013: Lepidoptera, Moths. Fauna Europaea version 2.6, <http://www.faunaeur.org>.
- Habeler, H., 2003: Die Schmetterlinge der Adria-Insel Krk. Eine ökofaunistische Studie. Delta Druck, Verlag Heinz Peks, Graz: 1–221.
- Hacker, H., Varga, Z. 1990: Die Gattung *Chersotis* Boisduval, 1840, 1. Die *fimbriola* (Esper, [1803] / *laeta* [Rebel, 1904]) – Gruppe (Lepidoptera, Noctuidae). Spixiana 13:277–327.
- Koča, Gj., 1901: Prilog fauni leptira (Lepidoptera) Hrvatske i Slavonije. Glasnik Hrvatskog naravoslovnog društva, 13(1–2): 1–67.
- Koren, T., Lauš, B., 2012: The first faunistic records of butterflies and moths from two small Adriatic islands, Olib and Šćedro, Croatia. Entomologia Croatica, 16: 115–124.
- Kranjčev, R., 1985: Odnos faune makrolepidoptera prema prirodnim i antropogenim staništima Podravine i podravskih pijesak (I). Podravski zbornik, 200–226.
- Kučinić, M., 1992: The Noctuidae (Insecta, Lepidoptera) of Lička Plješevica mountain (Croatia). Natura Croatica, 1: 71–80.
- Kučinić, M., 1997: Faunističke, ekološke i zoogeografske značajke sova Hrvatske. Magistarski rad, Sveučilište u Zagrebu, 1–131.
- Kučinić, M., Lorković, Z., 1999: The distribution of the genus *Chersotis* Boisduval, 1840 (Insecta: Lepidoptera: Noctuidae) in Croatia. Natura Croatica, 7(2): 113–120.
- Kučinić, M., Perović, F., 1997: *Dasypolia templi* (Thunberg, 1792) the new species of Noctuids (Insecta, Lepidoptera, Noctuidae) in fauna of Croatia. Natura Croatica, 5(3): 249–257.
- Kučinić, M., Bregović, A., 1996: A Contribution to the Knowledge of Faunal and Zoogeographical Characteristics of Noctuids (Insecta, Lepidoptera, Noctuidae) in North-western Croatia. Natura Croatica, 5(4): 265–289.
- Kučinić, M., Hrašovec, B., 1999: Faunal and zoogeographical review of Lepidoptera collections of Faculty of Forestry, University of Zagreb, part I: Noctuidae (Insecta: Lepidoptera). Natura Croatica, 8(1): 27–47.
- Kučinić, M., Igalffy, K., Šašić, M., Balen, S., 1994: A contribution on the Heterocera fauna (Insecta, Lepidoptera) of the central-mountain part (Risnjak & Lička Plješevica) of the Republic of Croatia. Natura Croatica, 3(1): 23–40.
- Kučinić, M., Jalžić, B., Pelić, D., 1998: *Xylocampa areola* (Esper, 1789), *Eurois occulta* (Linnaeus, 1758) and *Euxoa decora* (Denis

- & Schiffermüller, 1775), new elements of the noctuid fauna (Insecta: Lepidoptera: Noctuidae) of Croatia. *Natura Croatica*, 7(3): 213–226.
- Kućinić, M., Šašić, M., Balen, S., 1993. Faunističke, ekološke i zoogeografske karakteristike sovice (Noctuidae, Lepidoptera) Gorskog kotara. *Šumarski list*, 117(9-10): 369–382.
  - Mann, J., 1867: Schmetterlinge gesammelt im Jahre 1866 um Josefstahl in der kroatischen Militärgrenze. *Verhandlungen der zoologisch-botanischen Gesellschaft in Wien*, 17: 63–67.
  - Mladinov, L., 1958: Popis noćnih leptira (Noctua) Zagreba i okolice. *Hrvatski narodni zoološki muzej*, Zagreb, 1: 1–61.
  - Mladinov, L., 1977: Lepidoptera iz doline gornjeg toka rijeke Kupe III. Noctuidae. *Acta Entomologica Jugoslavica*, 13(1–2): 77–88.
  - Nowacki, J., 2009: *The Noctuids of Central Europe*. Coronet Books, 144 p, Bratislava.
  - Schawerda, K., 1921: Beiträge zur Lepidopterenfauna der kroatischen Küste und Neubeschreibungen. *Deutsche Entomologische Zeitschrift Iris*, 35: 111–138.
  - Stauder, H., 1925: Die Schmetterlings Fauna der illyro-adriatischen Festland- und Inselzone. (Faunula-Illyro-Adriatica). *Zeitschrift für wissenschaftliche Insektenbiologie*, 20: 191–226.
  - Varga, Z., Gyulai P., Ronkay, G. & Ronkay L., 2013: A Taxonomic Atlas of the Eurasian and North African Noctuoidea. The Witt Catalogue, Volume VI. Noctuidae 1. The genus *Chersotis*. Heterocera Press, Budapest, 313 pp. + 49 colour plates.
  - Vignjević, G., Zahirović, Ž., Turić, N., Merdić, E., 2010: Moths (Lepidoptera: Heterocera) of Kopački rit Nature park – results of preliminary research. *Entomologia Croatica*, 14(3–4): 17–32.
  - Witt, Th. J., Ronkay, L., (eds.) 2011: *Lymantriinae – Arctiinae, including Phylogeny and Check List of the Quadrid Noctuoidea of Europe*. Noctuidae Europaeae. Volume 13. Entomological Press, 448 p, Sorø.

## Sažetak

Tijekom istraživanja planina Strahinjšćice i Ivanščice u Krapinsko-zagorskoj Županiji, zabilježene su mnoge zanimljive vrste noćnih leptira. Među njima, sovice *Chersotis rectangula* ([Denis & Schiffermüller], 1775) nova je vrsta za faunu Hrvatske. Primjerci vrste *Ch. rectangula* sakupljeni su 8. lipnja 2014. na UV svjetlosnim zamkama na vrhu Ivanščice. Ova ksero-montana sovice nastanjuje grmovita staništa, uglavnom u subalpskoj zoni, no znana je i s kamenitih travnjaka na visinama između 600 i 2400 metara. Gusjenice ove vrste hrane se različitim zeljastim biljkama poput *Melilotus* spp. i *Vicia* spp. Kako smo na istraživanome području zabilježili tri primjerka, možemo poretpostaviti da na Ivanščici uistinu postoji populacija ove vrste, a zabilježeni primjerci ne predstavljaju migratorne ili dolutale jedinice. Ivanščica je najviša planina u sjeverozapadnoj Hrvatskoj i vjerojatno jedino pogodno stanište za ovu vrstu u regiji. Dodatni nalazi ove sovice mogu se očekivati u brdovitim predjelima Gorskog Kotara i Velebita. Ovo je šesta zabilježena vrsta roda *Chersotis* u Hrvatskoj. Ostale vrste su *Ch. multangula* (Hübner, 1803), *Ch. margaritacea* (Villers, 1789), *Ch. elegans* (Eversmann, 1837), *Ch. fimbriola* (Esper 1803) i *Ch. cuprea* (Denis & Schiffermüller, 1775). Na Strahinjšćici i Ivanščici zabilježili smo i drugu rijetku vrstu ovog roda, *Ch. multangula*, što predstavlja najsjeverniji nalaz ove vrste u Hrvatskoj.

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**KLJUČNE RIJEČI:** distribucija, fauna, sovice, *Chersotis*, Strahinjšćica, Ivanščica