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# THE FIRST RECORD OF *IOLANA IOLAS* (OCHSENHEIMER, 1816) (LEPIDOPTERA: LYCAENIDAE) IN THE CROATIAN PART OF THE ISTRIAN PENINSULA

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**Gljušćić, E.: The first record of *Iolana iolas* (Ochsenheimer, 1816) (Lepidoptera: Lycaenidae) in the Croatian part of the Istrian Peninsula. Nat. Croat., Vol. 31, No. 1, 109-114, Zagreb, 2022.**

In this paper, the first record of *Iolana iolas* (Ochsenheimer, 1816) (Lepidoptera: Lycaenidae) from the Croatian part of the Istrian peninsula is presented. A single female was collected near the town of Pedrovica in July 2020. At the locality, multiple *Colutea arborescens* plants were present, and the specimen was found on one of them. This record fills in the gap in the distribution of *I. iolas* between the populations from Dalmatia, Krk and Cres islands and Slovenia.

**Keywords:** *Iolana iolas*, distribution, *Colutea arborescens,* faunistics

**Gljušćić, E.: Prvi nalaz vrste *Iolana iolas* (Ochsenheimer, 1816) (Lepidoptera: Lycaenidae) u hrvatskom dijelu Istarskog poluotoka. Nat. Croat., Vol. 31, No. 1, 109-114, Zagreb, 2022.**

U radu se predstavlja prvi nalaz vrste *Iolana iolas* (Ochsenheimer, 1816) (Lepidoptera: Lycaenidae) iz hrvatskog dijela Istarskog poluotoka. Jedna ženka prikupljena je u blizini sela Pedrovice u srpnju 2020. Na lokalitetu su bili brojni primjerci biljke *Colutea arborescens,* a na jednoj od njih je primjerak i nađen. Ovaj nalaz popunjava prazninu u rasprostranjenosti vrste *I. iolas* između populacija iz Dalmacije, otoka Krka i Cresa te Slovenije.

**Ključne riječi:** *Iolana iolas*, rasprostranjenost, *Colutea arborescens,* faunistika

## INTRODUCTION

The Istrian peninsula is located in the northern Adriatic Sea, surrounded by the Gulf of Trieste, and Kvarner bay. Most of the land lies in Croatia, while the north-western part lies in Slovenia and a small northern part (around the town of Muggia) lies in Italy. The peninsula is characterised by the Učka and Ćićarija massifs in the east, a hilly central part, with karst and flysch lowlands, river valleys and a predominantly karstic coastline. The climate of Istria can be described as temperate (Köppen, 1918; Šegota & Filipčić. 2003), but the higher northern and north-eastern parts (Učka and Ćićarija) share some characteristics of humid-boreal climate (Koren *et al*., 2018), while the extreme south (Cape Kamenjak and the adjacent areas) closely resembles Mediterranean climate. This is reflected in the temperature, humidity, precipitation rates, as well as biodiversity, especially the vegetation cover.

The Lepidoptera of Istria were relatively poorly studied up until the second half of the 20th century, with only sporadic records and surveys being published (Lipscomb, 1959, 1961; Withrington, 1984; Kučinić *et al*., 1999). More recently however, Istrian Lepidoptera have received much more attention (Šašić & Mihoci, 2007; Lorković, 2009;

Koren & Ladavac, 2010; Koren, 2012; Koren & Jugovic, 2012; Koren *et al*., 2013), with around 140 species being recorded up to date (Koren *et al*., 2018). However, some species, such as *Cupido osiris* and *Iolana iolas*, although expected due to the presence of populations in nearby Slovenia (Verovnik, 2003; Verovnik *et al*., 2012), were not recorded during the previous surveys.

The Iolas blue (*Iolana iolas* Ochsenheimer, 1816) is a monophagous, mostly univoltine butterfly species belonging to the family Lycaenidae. It is widespread in the south-eastern part of Europe, but typically very local (Tolman & Lewington, 2008). In Croatia, this species is found mostly in the coastal region (Lorković, 2009), mountain foothills (Koren & Lauš, 2013) and the islands (Luy, 2002; Habler, 2003; Koren & Lauš, 2012; Koren *et al*., 2014, 2015) but has been also recorded in the continental region of Baranja (Krčmar, 2002). Its distribution in closely linked to its larval host plant *Colutea arborescens* L. (Leguminosae) While the larvae feed on the seeds inside the bladders, adults prefer to feed on the nectar of the same species and are usually found in the proximity of the host plants. However, adults of both sexes are very capable fliers and are known to wander far from *C. arborescens* stands (Lorković, 2009; Verovnik *et al*., 2012; Koren & Lauš, 2013).

In Istria, *C. arborescens* can be found at several isolated localities, from the north-eastern hilly part, along the eastern coast and to the south-west, on Brijuni islands and around the city of Pula (Nikolić, 2015; Fig. 1). Despite this, no specimens of *I. iolas* were ever recorded in the area (Koren *et al*., 2018). This paper presents the first record of *I. iolas* on the Istrian Peninsula, filling a gap in this species' distribution.

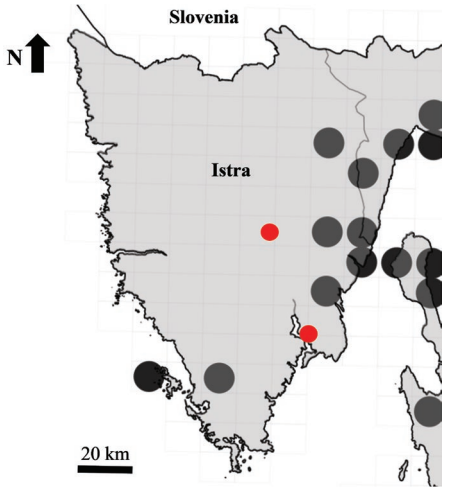


**Fig. 1.** The known distribution of *Colutea arborescens* in Croatian Istria, represented by black dots. Red dots represent two newly located *C. arborescens* stands. Map is an adaptation of the original by Nikolić (2015).

## METHODS

The search for *I. iolas* was performed at several localities with *C. arborescens* throughout May, June and July of 2020 and 2021, but the species was only located at one. The town of Pedrovica (45.20341071 N, 14.02393084 E) is situated just below Pićan, approximately 10 km from Pazin in Istria, Croatia. It is characterised by a combination of ruderal and cultivated lands, grasslands, mixed deciduous and conifer stands, as well as a creek connected to the Raša River. The most prominent feature is the eroded flysch

badlands, containing a relatively sparse, but soil-specific vegetation cover, as well as very low water permeability (Gulam *et al*., 2014; Fig. 2).

The area around the town of Pedrovica contains a previously uncharted population of *Colutea arborescens* shrubs (Fig. 2). In addition to the visual search for adults, the bladders of *C. arborescens* were also checked for caterpillars or eggs. Insects were to be either photographed for identification or caught by an entomological net if necessary. The collected data was logged by using the Biologer application for Android mobile OS (Popović *et al*., 2020).

**Fig. 2.** Flysch badlands and the surrounding vegetation including *Colutea arborescens* in the vicinity of Pedrovica, Istria, Croatia. Photo: E. Gljušćić, September 2020.

## RESULTS

During the search in July 2020, a single *I. iolas* female individual (Fig. 3) was caught on the southern edge of the searched area near Pedrovica - Croatia (Fig. 4), while it perched on a *C. arborescens* shrub. The individual was collected and preserved. The location was visited on multiple occasions afterwards, until the end of September. Four more surveys were conducted during late spring and summer in 2021, but no additional individuals were observed or collected.

## DISCUSSION

While *Iolana iolas* can be occasionally locally abundant and occurs along most of the Adriatic coast, it is still a very local species due to its monophagous nature and dependency on fairly substantial *Colutea arborescens* stands (Lorković, 2009; Verovnik *et al*., 2012; Koren & Lauš, 2013; Koren *et al*., 2014, 2015). Garcia-Rabasa *et al*. (2008) suggest that *C. hispanica (C. arborescens* subsp. *hispanica)* populations were less likely to be occupied by *I. iolas* (latter reclassified as *I. debilitata*, according to Wiemers *et al.* (2018)) the smaller they are, which is tied to their survivability in the context of habitat loss and local extinction. This could be a factor related to the rarity of *I. iolas* in Istria, since the patches of *C. arborescens* are relatively small and typically isolated from each other.

**Fig. 3.** *Iolana iolas* collected from Pedrovica, Istria, Croatia. Photo: E. Gljušćić, July 2020.

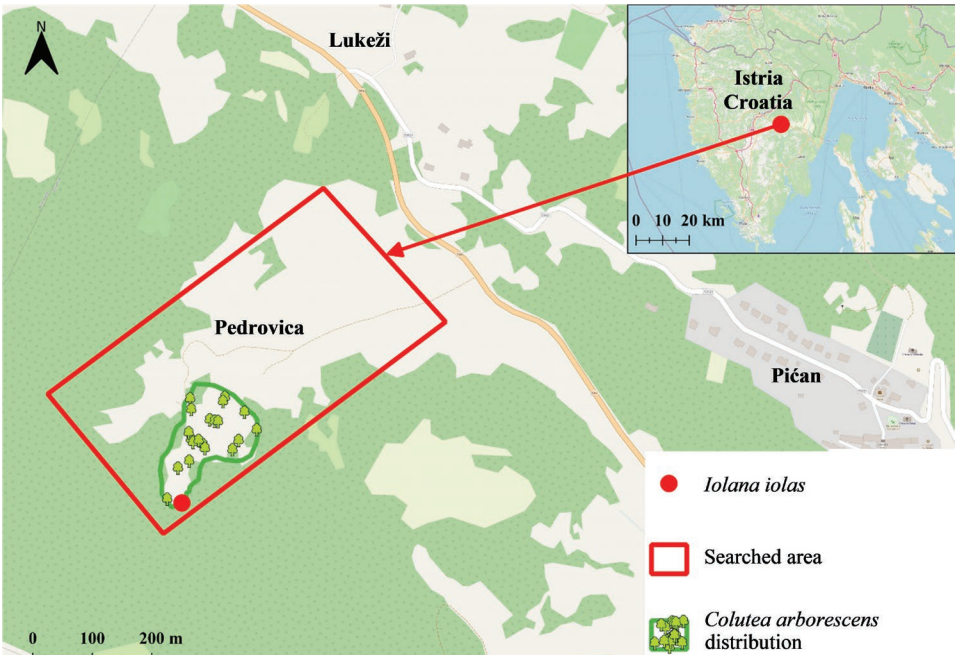


**Fig. 4.** Map of the surveyed area, showing the position of individual bushes of *Colutea arborescens* and the site where an *Iolana iolas* specimen was collected. Map created using QGIS 3.16.10-Hannover and Quick map services plugin.

While detailed surveys were performed during 2014-2015 across the Istrian Peninsula, *I. iolas*, although expected, was not found (Koren *et al*., 2018), which was interesting due to the species' presence in Slovenia. The presence of *I. iolas* in Slovenia was only confirmed in 2002 at Mt Nanos and in Kubed, very close to the Croatian border (Verovnik, 2003). While its distribution is very limited (due to host-plant distribution), and most of the records are from a small area around the towns of Osp and Sočerga,

the species may have been spreading in more recent years according to Verovnik *et al*. (2012). The towns previously mentioned are also just across the border from Croatia. *I. iolas* is also present on several islands in Croatia, most importantly on Cres, Krk and Rab (Luy, 2002; Habeler, 2003; Withrington & Verovnik, 2008). In conclusion, *I. iolas* is also present in Croatian Istria, but was missed during the previous surveys. The question remains if the populations in the region are stable. The species could be naturally rare, or a vagrant in the region, akin to the observations by Lorković (2009) and Koren & Lauš (2013). More vigorous surveys of *C. arborescens* stands and patches are required to properly assess the presence and distribution of *I. iolas* in Istria.

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