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**A new population of *Polyommatus ripartii* (Freyer, 1830) in South Italy (Lepidoptera: Lycaenidae)**Giuseppe RIJLLO<sup>1,2,\*</sup>, Sara LA CAVA<sup>1,2</sup>, Giada ZUCCO<sup>1</sup>, Giuseppe LUZZI<sup>3</sup>, Donata COPPOLA<sup>3</sup>, Luciano FERRARO<sup>3</sup>, Stefano SCALERCIO<sup>1,2</sup><sup>1</sup> Council for agricultural research and economics, Research Centre for Forestry and Wood, Rende (Cosenza), 87036, Italy – giuseppe.rijllo@crea.gov.it; sara.lacava@crea.gov.it; giada.zucco@crea.gov.it; stefano.scalercio@crea.gov.it<sup>2</sup> NBFC, National Biodiversity Future Center, Palermo 90133, Italy<sup>3</sup> Ente Parco Nazionale Appennino Lucano-Val d'Agri-Lagonegrese, Marsico Nuovo 85052, Potenza, Italy – direttore@parcoappenninolucano.it; d.coppola@parcoappenninolucano.it; l.ferraro@parcoappenninolucano.it

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**Abstract**

In the present study, we recorded the presence of *Polyommatus ripartii* (Freyer, 1830) in a new area, enlarging the range of this species in southern Italy. Previously recorded only in the Pollino National Park, where it was initially described as a different species, a new population was discovered northward in the Appennino Lucano-Val d'Agri-Lagonegrese National Park.

**Keywords:** distribution, new record, *Polyommatus galloi*, National Park, biodiversity.**Introduction**

*Polyommatus* Latreille, 1804 is one of the largest genera within the family Lycaenidae Leach, 1815 in Europe, comprising 25 species (Wiemers et al. 2018). Some of the species are included in the subgenus *Agrodiaetus* (elevated by some authors to the level of genus), which groups together species that are morphologically indistinguishable but with marked genetic, molecular and karyotypic differences (Munguira et al. 1995; Lukhtanov et al. 2006; VILA et al. 2010). Despite the low morphological variability, a large number of endemic species have been described due to the very restricted and isolated distribution of some European populations (Dennis et al. 2008; Kudrna et al., 2011). One such species was found in southern Italy, which, prior to the work of Vila et al. (2010), was considered an endemic species of the Pollino Massif, identified as *Polyommatus galloi* (Balletto & Toso 1979). Following a detailed analysis of the species' karyotype, it was excluded from the European Butterfly Checklist (Wiemers et al. 2018). Consequently, the specimens present in southern Italy are now considered (Vila et al. 2010) to represent an isolated population of *Polyommatus ripartii* (Freyer, 1830). This species has a highly fragmented distribution, with isolated populations from Spain to Mongolia in the east, Russia in the North and Iran in the South (Dincă et al. 2013; Bonelli et al. 2018). Its considerable number of subspecies and synonyms is a direct

consequence of its punctiform distribution and the existence of highly isolated populations throughout southern Europe.

The typical environment frequented by *P. ripartii* is characterised by open grasslands referable to xerothermic associations of the class Festuco-Brometea Br. Bl. et R.Tx, characteristic of limestone soils (Przybyłowicz 2014). All the hosts plants belong to the genus *Onobrychis* and in southern Italy the populations of *P. ripartii* are monophagous on *Onobrychis caputgalli* (L.) Lam. and monovoltine, with adults on wings from July to August. This species can overwinter as eggs (Buszko & Masłowski 2008) or as a first-instar larva amongst dry plant remains (Tolman & Lewington 1997; Warecki 2010; Przybyłowicz 2014). The caterpillars of *P. ripartii* are facultatively myrmecophilous, having been observed frequently associated with ants of the genus *Lasius* Fabricius, 1804 [*Lasius alienus* (Föerster, 1850) and *Lasius niger* Linnaeus, 1758 in Poland, and *Lasius paralienus* Seifert, 1992 in Greece (Przybyłowicz 2014)]. No information is available regarding the presence of these ants on the Pollino Massif or in the areas where *P. ripartii* is present in southern Italy, nor on interactions between the local populations and other ant species.

Some specimens of this species were discovered within the boundaries of the Appennino Lucano Val d'Agri-Lagonegrese National Park, thereby extending northwards the known range of the previously isolated population known from the Pollino National Park.

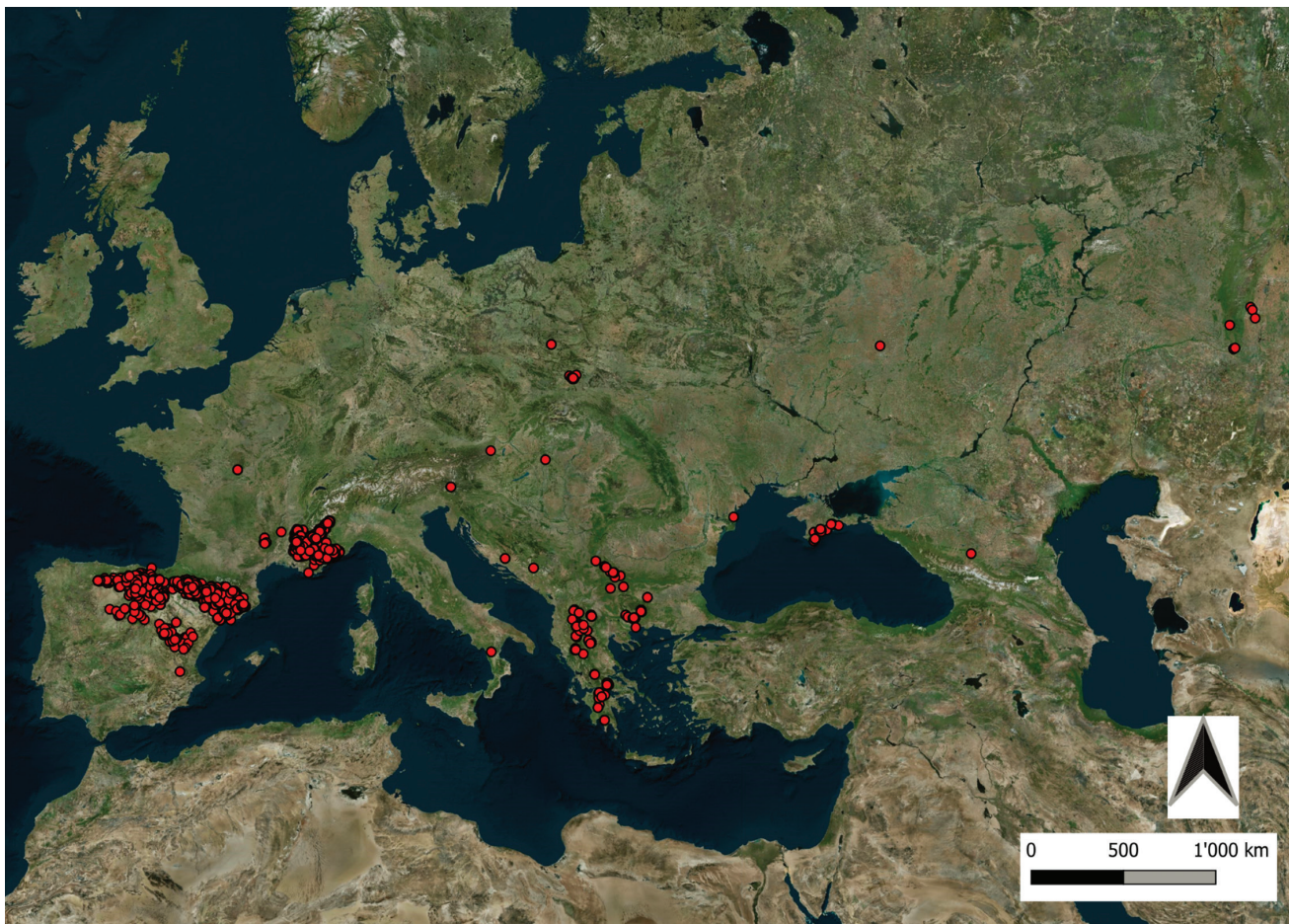
## Material and method

A butterfly monitoring programme was conducted as part of a collaborative project undertaken between the Appennino Lucano Val d'Agri – Lagonegrese National Park and the Research Centre for Forestry and Wood, Rende, Italy. The goal of the project was the monitoring of pollinator insects

in the Italian national parks following a standard protocol according to which butterflies should be counted along fixed georeferenced transects. The specimens were found near a transect (latitude 40.1866°N; longitude 16.0018°E) (DD), in the locality of Piscicolo at 1090 m a.s.l., on the southern slope of Verro Croce mountain, municipality of Castelsaraceno, Province of Potenza, Basilicata region (Italy). The



**Fig. 1** – Dorsal and ventral view of two different specimens of *Polyommatus ripartii* (Freyer, 1830). Collecting data: 10 July 2024, Castelsaraceno (PZ), Italy. **a**, Dorsal view; **b**, Ventral view.



**Fig. 2** – Range of *Polyommatus ripartii* (Freyer, 1830) in Europe. Data downloaded from GBIF.org (<https://doi.org/10.15468/dl.kh9eze>, accessed via GBIF.org on 14 Oct 2024). Map source: <http://ecn.t3.tiles.virtualearth.net/tiles/a{q}.jpeg?g=1>



collected specimens are preserved in the Lepidoptera collection of the Wildlife Management and Forest Biodiversity Laboratory of the Research Centre for Forestry and Wood, Rende, Italy. In order to create a tentatively complete European distribution map of the species, the relevant dataset has been downloaded from GBIF.org (<https://doi.org/10.15468/dl.kh9eze>, accessed via GBIF.org on 14 Oct 2024). The final data set used to create the map was obtained through the application of filters that excluded non-European records and included only those with geographical coordinates and no temporal limitations. Furthermore, unpublished data from Calabrian populations were also incorporated.

## Results

*Polyommatus ripartii* (Freyer, 1830) (Lycanidae, Polyommatinae) (Fig.1)

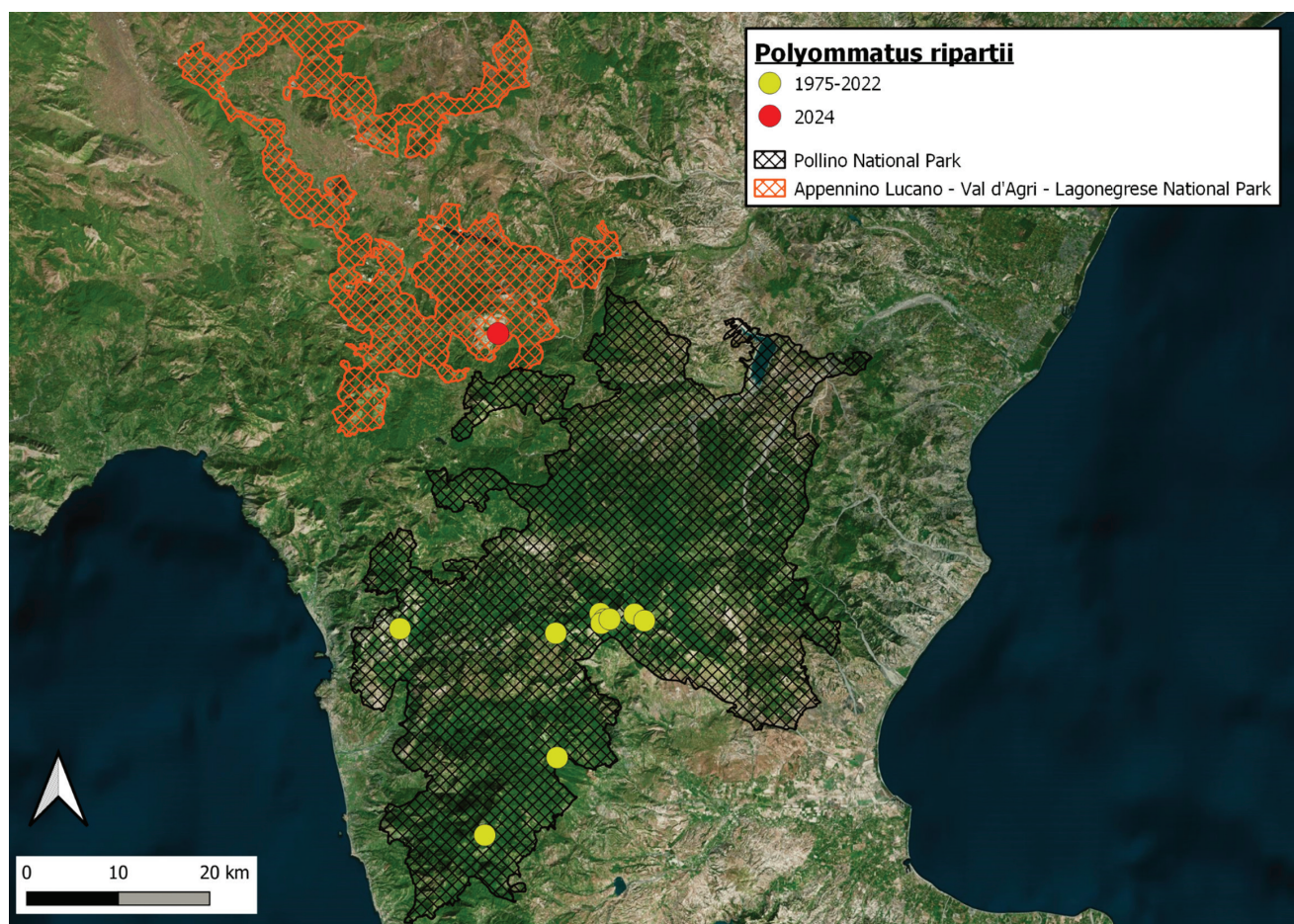
6 ♂♂, **ITALY**: Basilicata, Piscicolo, Castelsaraceno, Potenza province, 1090m a.s.l., latitude 40.1796°N, longitude 16.0103°E (DD), 10 July 2024.

The specimens have wingspan ranging from 24 to 28 mm with wing pattern in good condition that allowed an easy

identification of the species and their sex. They were discovered near a puddle, exhibiting water consumption behaviour. The area is typified by mountain grasslands alternating with shrublands, which have proliferated following a reduction in grazing intensity. The field operator had recorded a temperature near to 32°C, little wind and no cloud cover.

## Conclusions

*Polyommatus ripartii* exhibits a highly fragmented distribution, with notable concentrations in certain regions, such as Spain and French Alps, where it was repeatedly recorded (Fig. 2). Conversely, in other areas it exhibits a more fragmented distribution, with isolated populations present in small areas, including the Italian Pollino Massif (Fig. 3) (Gallo & Della Bruna 1974; Balletto et al. 1977; Balletto & Toso 1979; Pellecchia 1999; Parenzan & Porcelli 2006; Scalercio unpublished). However, thanks to this new record, the population previously identified as *P. galloi* is no longer restricted to the Pollino National Park, and its geographic range is now enlarged northward to the Appennino Lucano Val d'Agri – Lagonegrese National Park.



**Fig. 3** – Range of *Polyommatus ripartii* (Freyer, 1830) in southern Italy. Data from literature (Gallo & Della Bruna 1974; Balletto et al. 1977; Balletto & Toso 1979; Pellecchia 1999; Parenzan & Porcelli 2006) implemented by Scalercio unpublished data. Map source: <http://ecn.t3.tiles.virtualearth.net/tiles/a{q}.jpeg?g=1>

onegrese National Park. This and other studies are filling the many gaps in our knowledge of the lepidoptero fauna of southern Italy (Rijllo et al., 2024; La Cava et al. 2024). Indeed, in the first red list of Italian butterflies (Bonelli et al. 2018) *P. galloi* was indicated as Vulnerable. Although this population have now been identified as *P. ripartii*, a species evaluated as Near Threatened in the same list, it is one of the most isolated populations of this species. It is of great importance to monitor animal populations that provide ecosystem services, such as pollination, in order to ensure their survival. National parks can facilitate the implementation of ad-hoc conservation programmes designed to protect these animals and their habitats.

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