

Oenanthe isabellina (Temminck, 1829),
a new bird species for the fauna of Serbia

(Aves, Passeriformes, Muscicapidae)

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The checklists of bird species in certain areas constantly change with time. Herein, we present a previously unknown member of the Serbian avifauna: Isabel-line Wheatear – *Oenanthe isabellina* (Temminck, 1829). The described record with prior data provides valuable insight into the species’ geographical distribution changes in Southeast Europe. It confirms previous assumptions about ongoing range extension in the west-northwest direction. Additionally, it highlights the importance of periodic monitoring of specific areas like Important Bird Areas (IBAs) for documenting the change in bird distributions and abundance.

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Introduction

The Balkan Peninsula, located in Southeastern Europe, is a prominent example of European geological, ecological, and biological richness and complexity (Stanković 1960, Griffiths et al. 2004, Savić 2008). Due to various factors, including the heterogeneity of habitats, a complex geological history, and convoluted interactions among species, populations, and ecosystems, the Balkan Peninsula is recognised as a global and European biodiversity hotspot (Hewitt 2000, Griffiths et al. 2004, Savić 2008, Conservation International 2024).

Despite satisfactory knowledge of the Balkan fauna, in recent decades, many studies have revealed novel discoveries and range extensions of biota, particularly among invertebrates and invasive species (e.g. Protić 1999, Antić et al. 2013, Vujić et al. 2022,

Vujić & Ivković 2023). However, among vertebrates, no such intensive spatiotemporal changes have been observed, except for avifauna at the national level, where a significant number of new, primarily vagrant species were discovered (Ignatov et al. 2015, Šćiban et al. 2015, Adamović & Topić 2018, Shurulinkov et al. 2021, Doszai et al. 2024). Besides wanderers and vagrants, in the last decades, a significant number of Mediterranean species have extended or shifted their ranges (Szabó-Szeley 2004, Krištin & Kaňuch 2005, Rózsa 2018, Anthes et al. 2019, Hatibović et al. 2019, Rajković et al. 2022), including into the inland parts of the Balkans (Huntley et al. 2007, Freeman et al. 2018), probably due to climate change. A notable species in the context of recent range shift and slow but continuous expansion is the Isabel-line Wheatear, *Oenanthe isabellina* (Temminck, 1829).

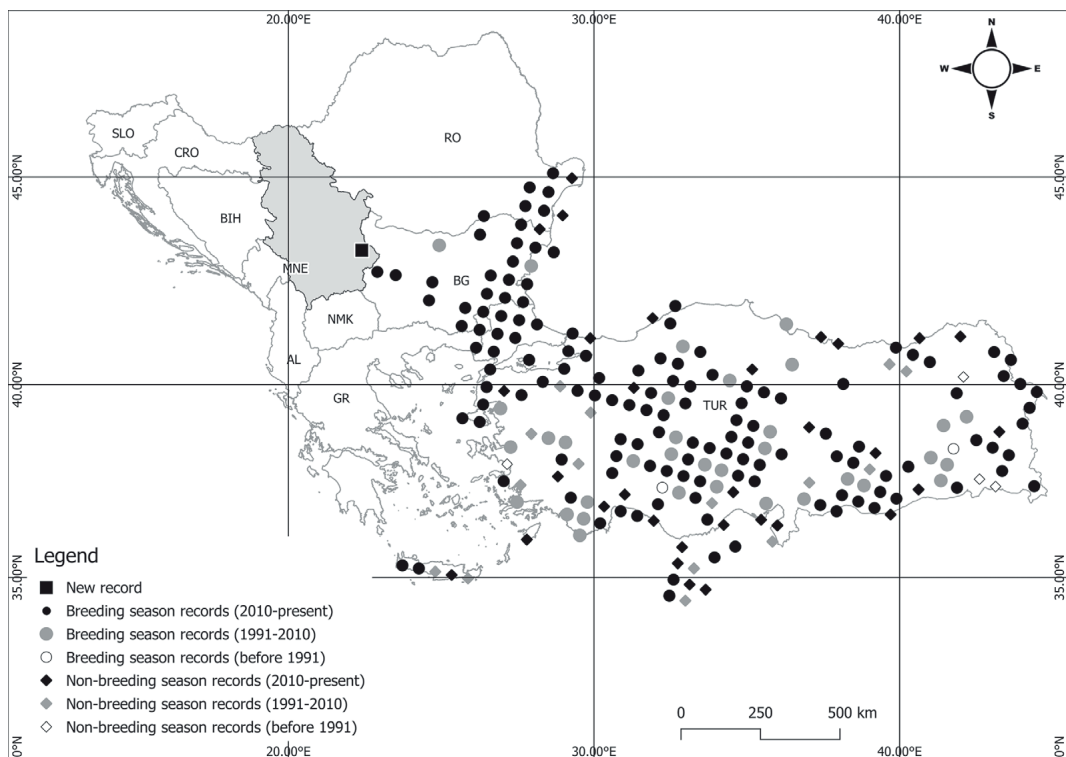


Fig. 1. Spatial distribution of Isabelline Wheatear records across the study area, categorized by season and time period. Symbols represent the most relevant record per UTM grid cell, selected through a hierarchical filtering process that prioritizes breeding season records and more recent data. The legend includes seven categories: new records (first documented presence), breeding season records from three time periods (before 1991, 1991–2010, and 2010 until present), and non-breeding season records from the same intervals. This method reduces visual overlap and emphasizes recent and ecologically significant occurrences.

Isabelline Wheatear is a species that has significantly spread its distribution range in Eastern and Southeastern Europe in recent decades (Kiss & Szabó 2000, Shurulinkov et al. 2008, Knaus 2020, Tsvelykh & Kucherenko 2020). It is a monotypic, mostly ground-dwelling migratory species which, during the breeding period, prefers arid, open, and sparsely vegetated landscapes across Eastern Greece, Southern Bulgaria, and the Middle East and extends to parts of Eastern Europe, and Central Asia as core area (Stepanyan 1978, Panov 1999, Shurulinkov et al. 2008, Collar 2020). During the winter in the Northern Hemisphere, it inhabits vast areas from the Sahel through Northeastern Africa to the Arabian Peninsula and Central India, in various places in the Middle East (Stepanyan 1978, Panov 1999, Collar 2020). Its diet primarily consists of numerous invertebrates, particularly beetles, ants, and various larvae (Panov 1999, Collar 2020). Breeding season depends on geographical latitude but generally from

late March till mid-July. A nest represents a shallow, bulky cup of dried grass, roots, and hair placed 1–3 m deep in a rodent burrow or burrow of a similar ground-dwelling mammal (Panov 1999, 2011, Collar 2020), less often in an old bee-eater (Meropidae) hole or occasionally natural hole or crevice (Panov 1999, Shurulinkov et al. 2008).

In this paper, we report the first record of Isabelline Wheatear in Serbia.

Methods

The observation was conducted as part of regular avifauna monitoring on Belava Mt. and the surrounding area near the Gnjljan village (43°10'15"N, 22°32'59"E) within the municipality of Pirot, Pirot District, Serbia. The monitoring was carried out as part of the research on the Important Bird Area (IBA) "Pirotsko polje" to enhance the protection of habitats and species. The location of the Isabelline Wheatear sighting is dominated by



Fig. 2. Photographs of observed Isabelline Wheatear in the village Gnijilan, located in southeast Serbia.

pastureland on shallow limestone soil characterised by undergoing competition and reaction phases of ecological succession. The Nikon P900 camera and Nikon Prostaff 5 binoculars were used during monitoring. The gathered data and photographs were archived in the eBird citizen-science database under checklist: <https://ebird.org/checklist/S85410860>.

The map depicting the observation (Fig. 1) was generated using QGIS v. 3.16.3 (QGIS.org 2021). Additionally, to illustrate the previously known geographical distribution of the Isabelline Wheatear, we integrated a map based on data downloaded from the Global Biodiversity Information Facility internet database (GBIF 2024).

Results

An individual of Isabelline Wheatear *Oenanthe isabellina* (Temminck, 1829) was detected, observed, and photographed during our survey (Fig. 2). The observation locality lies within Pirot municipality, Gnijilan village (43°10'15" N, 22°32'59" E) on elevation 500 m on 12.IV.2021. A single individual of Isabelline Wheatear (most probably male) was detected by Ivan Medenica and was shortly observed around 9 a.m. (Fig. 2). The individual was actively searching for food on the ground and flying from one to perch to another.

In the field, it was initially identified with the assistance of an identification guide by Svensson et al. (2009) and later, at the office, confirmed by Corso

(1997), van Duivendijk (2011), Demongin (2016) and Shirihi & Svensson (2018). To compare and identify the observed individual with similar species, we examined external morphological features, such as the colour and relative size of various body parts. In comparison to the Northern Wheatear *Oenanthe oenanthe* (Linnaeus, 1758), a species similar to the Isabelline Wheatear, there are several distinguishing characteristics such as larger size, longer legs, shorter primary projection, stouter bill, pale colour, prominent black alula, and white supercilium. Furthermore, there is a lack of obvious contrast among wing coverts and between the upperparts and underparts. In addition to these features, Isabelline Wheatear exhibited a typical upright stance when perching on the boulder tops during observation.

A map of Isabelline Wheatear records in Southeast Europe, together with a new record in Serbia (Fig. 1), shows that from 2011 until the present, this species expanded eastward towards Serbia as well as north along the Black Sea coast.

Discussion

Before the observation described above, the Isabelline Wheatear had never been officially recorded in Serbia (Šćiban et al. 2015). Therefore, this record introduces the Isabelline Wheatear as the latest avifauna member, following the recent documentation of Baillon's

Crake, *Zapornia pusilla* (Pallas, 1776) (Doszai et al. 2024), bringing the total number of recorded bird species in Serbia to 364. Also, it is the third species from the genus *Oenanthe* Vieillot, 1816 to be recorded in Serbia, following the Northern Wheatear, *Oenanthe oenanthe* (Linnaeus, 1758), and the Eastern Black-eared Wheatear, *Oenanthe melanoleuca* (Güldenstädt, 1775). In countries to the north and west of Serbia, the Isabelline Wheatear remains a scarce and irregular visitor. There is one reported record in Croatia (Kralj & Barišić 2013), four in Hungary (Zalai & Oláh 2017), and one in North Macedonia (Matvejev 1976). However, Veleviski & Vasić (2017) do not mention the abovementioned record for North Macedonia. In Bosnia & Herzegovina, Albania, and Montenegro, we could not find any valid records of Isabelline Wheatear.

For various reasons, the described observation suggests that the species may be starting to colonise a new breeding area and expanding its range. First, the timing of our observation aligns with the species known breeding season start: literature indicates that the Isabelline Wheatear arrives and starts singing and displaying at its nesting grounds as early as February in Turkey (Karataş 2022), March-April in Ukraine, the Russian Federation and Bulgaria (Panov 1999, Shurulinkov et al. 2008, Collar 2020). Second, the proximity of the observed site to the nearest established breeding area in Bulgaria, approximately 40 km from the Dragoman marshes (Shurulinkov et al. 2008), indicates a potential range expansion or exploration of new suitable breeding areas toward the northwest direction. Third, in the complete absence of a breeding population in the areas situated north and west of our observing site, the observed specimen is unlikely to be wandering during the breeding season. Lastly, the areas' high suitability for nesting of the Isabelline Wheatear due to the presence of dozens of European Bee-eaters *Merops apiaster* Linnaeus, 1758 colonies, hundreds of molehills, and tunnels of the Lesser blind mole-rat *Nannospalax leucodon* (Nordmann, 1840) and thousands of rodent burrows also support colonisation theory.

From a broader perspective, the occurrence of the Isabelline Wheatear in Serbia aligns with observed trends in neighbouring regions starting around the middle of the 20th century (Watson 1961, Bauer et al. 1969, Shurulinkov et al. 2008, Knaus 2020). In Bulgaria, for instance, the species has become a common and locally abundant breeder, with a notable increase in distribution and abundance from east to west over the past six decades (Shurulinkov et al. 2008). The species' range shift, at an approximate rate of 5–10 km annually in Bulgaria (Shurulinkov et al. 2008), underscores the probable significant influence of climatic factors (Huntley et al. 2007, Chen et

al. 2011, Knaus 2020). Indeed, the expansion of the Isabelline Wheatear's breeding range into areas like Crimea, Thrace, the Aegean Islands, Bulgaria, and Romanian Dobrudja has been attributed to climate changes, as a few models indicate higher temperatures, low evapotranspiration, and moisture deficit in the breeding period as the main factor determining distribution (Huntley et al. 2007, Knaus 2020). Future predictions of warmer and less rainy summers in the region of Southeastern Europe, with an average temperature increase of 1 to 2.5°C (Zittis et al. 2019, IPCC 2021, Vujadinović Mandić et al. 2022), likely contribute to the arid climate and habitat conditions favoured by this species (Huntley et al. 2007). Thus, it is reasonable to anticipate that future climatic predictions suggest that sightings of Isabelline Wheatear in southeast Serbia will grow soon.

In conclusion, considering the rising number of birdwatching enthusiasts, the ongoing expansion of geographical ranges over decades, and the anticipation of warmer, drier summers, it is reasonable to expect an increase in records of the Isabelline Wheatear in southeastern Serbia. It is necessary to continue monitoring the studied area and neighbouring areas in southeastern Serbia, to establish if our finding was a short-term pulsation of the area or, more likely, it is a question of colonisation of new areas. In this regard, we encourage more detailed research on this species and the publication of each new record.

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