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# Evidence of northward range expansion: new record of *Curruca melanocephala* (Gmelin, 1789) (Passeriformes, Sylviidae) in Serbia

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**Abstract.** The Sardinian Warbler, *Curruca melanocephala* (Gmelin, 1789), a typically Mediterranean species, is only occasionally recorded in continental parts of the Balkans. This note presents the fourth national record and the earliest seasonal observation of this species from Serbia. An adult male was photo-documented near Niš in March 2025. The individual was recorded in dense shrub vegetation adjacent to a wet meadow. This find may reflect a broader pattern of vagrancy or northward range expansion into continental parts of the Balkans.

**Key words.** Balkan Peninsula, passerine, range expansion, Sardinian Warbler, shrub vegetation, vagrancy

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## Introduction

The Sardinian Warbler, *Curruca melanocephala* (Gmelin, 1789), is a small passerine bird belonging to the family Sylviidae. It is widely distributed throughout the Mediterranean region, with its core breeding range covering southern Europe, northern Africa, and parts of the Middle East (Aymí and Gargallo 2015; BirdLife International 2018). The species is typically associated with scrubland, maquis, coastal vegetation, and open woodland habitats, and it may even breed in areas previously affected by wildfires (Pons and Prodon 1996).

Estimates indicate that between 7.73 and 16.1 million pairs of *C. melanocephala* breed in Europe, corresponding to approximately 15.46 to 32.20 million mature individuals (BirdLife International 2021). The European population accounts for about 60% of the species' global range, and a preliminary estimate of the global population size ranges from 25.5 to 53.5 million mature individuals, although further research is needed to obtain more precise figures (BirdLife International 2018).

*Curruca melanocephala* is predominantly a resident species, although populations breeding in the colder parts of its range tend to undertake short-distance movements. Fully migratory behavior has been recorded in populations from the Black Sea region. The species occurs in a wide variety of habitats and is considered the most common among the Mediterranean warblers (Keller et al. 2020).

Results from the second European Breeding Bird Atlas (Herrando et al. 2020) indicate a clear trend of northward expansion of the species, particularly along the Atlantic coasts of Spain and south-western France, as well as in southern Bulgaria. This trend is consistent with climate change projections and is partly driven by agricultural abandonment and vegetation succession, which promote the development of dense shrub habitats (Herrando et al. 2020).

Although *C. melanocephala* is abundant in the Mediterranean region, it is considered a rare vagrant in continental areas north of its core range. In Serbia, the species has been recorded only three times to date: first in April 1947 at Crni Kamen on Suva Planina (Matvejev 1950), then as a ringed individual in April 2004 (Žuljević 2004) at Lugovo near Sombor, and most recently during the period from 2020 to 2022, when a breeding pair with fledged young was observed on Starac Mountain, within the Special Nature Reserve "Dolina Pčinje" (Medenica and Raković 2025), marking the first confirmed breeding record of this species in Serbia.

In this paper, I present a new, well-documented observation of *C. melanocephala* near Niš, south-eastern Serbia, which represents the fourth record for the country. The find is noteworthy as it fits

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**Figure 1.** A male *Curruca melanocephala* (Gmelin, 1789) photographed near Bubanj, Niš, Serbia.

within the broader pattern of northward range expansion and suggests the possibility of increasingly frequent occurrences of this species in continental parts of the Balkan Peninsula.

# Methods

The observation was made opportunistically during fieldwork conducted as part of an avian breeding monitoring program on wet meadows near Niš, south-eastern Serbia. A male *Curruca melanocephala* was sighted on 21 March 2025. It was foraging in a dense shrub belt along a secondary asphalt road. The bird was observed and successfully photographed. The observation was made using Nikon 7s 8 × 42 binoculars, and the individual was photographed with a Canon 7D Mark II camera and a Sigma 150–600 mm lens.

# Results

Family Sylviidae

***Curruca melanocephala* (Gmelin, 1789)**

Figure 1

**New record.** SERBIA — **Nišava District** • City of Niš, near Bubanj; 43°18′14.61″N, 021°50′43.50″E; elev. 185 m; 21.III.2025; Marko Nikolić obs.; dense shrub vegetation (primarily *Prunus spinosa* L. and *Crataegus monogyna* Jacq.) along a secondary asphalt road adjacent to a wet meadow; 1 adult ♂, photo-documented.

The individual was observed foraging actively within a narrow, linear patch of thorny shrubs bordering a wet meadow. The bird exhibited typical behaviour for the species, moving low through the vegetation and occasionally perching atop shrubs. The surrounding habitat consisted of an agro-pastoral mosaic with scattered thickets and seasonally wet grasslands. The site is part of a broader monitoring area where breeding populations of Northern Lapwing, *Vanellus vanellus* (Linnaeus, 1758), are regularly surveyed. The locality was revisited the following day, but the bird was not detected during the subsequent visit.

**Identification.** The observed bird (Figure 1) was confidently identified as a male *C. melanocephala* based on a combination of morphological traits and typical behaviour. Distinctive features that

separate this species from other members of the family include the jet-black head, contrasting white throat, and prominent red orbital ring. Species recognition was verified using a standard regional field guide (Svensson et al. 2022).

# Discussion

The new record of *Curruca melanocephala* represents the fourth occurrence of this species in Serbia (Figure 2) and the earliest documented presence within a calendar year. The March observation further supports the possibility that the species may appear in continental parts of the Balkan Peninsula outside its core range, likely because of migratory deviations or potential northward range expansion (Herrando et al. 2020).

Previous records from 1947, 2004, and during fieldwork conducted between 2020 and 2022 (Matvejev 1950; Žuljević 2004; Medenica and Radaković 2025) indicate the exceptional rarity of this species in Serbia. Confirmed breeding in the valley of the Pčinja River (Medenica and Radaković 2025) suggests the presence of favourable microclimatic conditions or habitat features which may support the occurrence of *C. melanocephala* in Serbia and a potential northward expansion of its breeding range. Medenica and Radaković (2025) also noted that this species is likely to occur on rocky slopes and shrublands of Mount Rujen that face the valley of the Pčinja. Additional evidence relevant to this pattern comes from the vicinity of the Macedonian–Serbian border, where Puzović (1998) reported an observation from the Pčinja Valley near the current study area. Furthermore, the species was absent or extremely rare in the IBA Pčinja-Petrošnica-Kriva Reka in North Macedonia (Škorpíková et al. 2011), which further supports the interpretation that its recent occurrence in southern Serbia may reflect a contemporary expansion along the Pčinja Valley.

According to data from the second European Breeding Bird Atlas (Herrando et al. 2020), *C. melanocephala* is exhibiting a clear trend of northward expansion, particularly along the Atlantic coasts of the Iberian Peninsula, south-western France, and southern Bulgaria. These changes align with climate projections and are partly associated with the abandonment of traditional agriculture and subsequent vegetation succession, which promotes the development of dense shrub habitats (Herrando et al. 2020). The new record from Serbia fits within this broader pattern and may indicate increasingly frequent vagrancy events or local occurrences of the species driven by favourable ecological changes. Serbia was not marked as part of the species' breeding range in the European Breeding Bird Atlas, as


**Figure 2.** Location of the observation of a male *Curruca melanocephala* (Gmelin, 1789) at Bubanj, Niš, Serbia (red pin) (source: Google Earth Pro and Airbus satellite imagery). Inset: position of the new record shown with a red circle on a map of Serbia; previous national records are marked with black circles.

confirmed breeding was documented after 2020 (Medenica and Radaković 2025).

The individual reported herein was recorded in a shrub belt dominated by dense vegetation composed primarily of *Prunus spinosa* and *Crataegus monogyna* and located along the edge of a wet meadow and a secondary road (Figure 2). This represents suitable habitat for species, such as *C. melanocephala*, which prefer habitat mosaics with shrub cover and low vegetation (Shirihai et al. 2001; Žuljević 2004).

Within its natural range, *C. melanocephala* is known to have high ecological tolerance, occupying a wide variety of habitats including maquis, Mediterranean scrub, coastal vegetation, and even urban green spaces; areas rich in shrub layers are particularly favourable (Cody and Walter 1976). This species typically places its nest 30–60 cm above ground in scrub or low bushes, and occasionally in dense herbaceous vegetation or small trees, which may facilitate colonization of new habitats where suitable shrub cover exists (Aymí and Gargallo 2015). Breeding mainly occurs from March to June (Aymí and Gargallo 2015), which aligns with the timing of the present observation in late March. However, the timing of this record is likely too early to indicate potential breeding at this site, considering that species sharing a similar range with *C. melanocephala*, such as *Curruca cantillans* (Pallas, 1764) and *Curruca crassirostris* (Cretzschmar, 1830), typically begin breeding in Serbia in May (Puzović et al. 2015).

In addition to its insectivorous diet, *C. melanocephala* consumes significant amounts of fruit during autumn and winter (Aymí and Gargallo 2015), a trait that may aid survival in marginal or newly colonized habitats. The tendency of inland and northern populations of *C. melanocephala*, especially in the eastern part of the range, to exhibit partial migratory behaviour may explain its occurrence in Serbia.

This observation highlights the need for increased attention during field surveys in transitional and semi-natural habitats, especially in spring and autumn when such unexpected records are more likely. It is also necessary to further investigate the breeding range of *C. melanocephala* in the southern part of the country. Considering the species' apparent responsiveness to environmental shifts, ongoing monitoring is essential to assess how climate change may influence the occurrence, dispersal, and potential establishment of *C. melanocephala* in previously unoccupied areas.

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## Additional information

**Conflict of interest**

The author declares that no competing interests exist.

**Ethical statement**

No ethical statement is reported.

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**Data availability**

All data that support the findings of this study are available in the main text.

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