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# FIRST CONFIRMED BREEDING RECORD OF THE EASTERN OLIVACEOUS WARBLERS (*IDUNA PALLIDA REISERI*. HILGERT, 1908) IN GHARDAÏA REGION, ALGERIAN SAHARA

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***Abstract***

*We observe the Eastern Olivaceous Warblers (Iduna pallida reiseri) breeding for the first time in the Ghardaïa region. It is the first confirmation of its reproduction in the northern Algerian Sahara. This subspecies is specific to the arid environments of North Africa. Our work just confirmed the important role of the Saharan ecosystems for the generation of this bird. This study also indicates that it is a regular breeder in this area.*

**Key words:** arid environment, breeding, North Africa, Saharan ecosystems

## INTRODUCTION

The Olivaceous Warblers is a group of species in the family Acrocephalidae distributed in the southern part of the Western Palearctic, central Asia and in the arid parts of northern Africa, and in parts of the sub-Saharan Sahel zone (Ottosson et al., 2005) have recently been divided into two distinct species: the monotypic Western Olivaceous Warbler (*Iduna opaca*) of Iberia, Morocco, Algeria (Antonov et al., 2007; Beaman and Madge, 2010; Isenmann and Moali, 2000; Ottosson et al., 2005; Salewski et al., 2009), and Tunisia (Alaya-Ltifi and Selmi, 2014). The polytypic Eastern Olivaceous Warbler, which has four subspecies (Parkin et al., 2004; Salewski et al., 2009; Svensson, 2020).

A subspecies from Southeast Europe, *I. p. elaeica* (Salewski, 2008), and three African species: *I. p. pallida* in Egypt (Helbig and Seibold, 1999; Isenmann and Thévenot, 2018), breeding in Niger, Nigeria, the Chad Basin, and western Sudan (Helbig and Seibold, 1999; Ottosson et al., 2005). The subspecies (*reiseri*) breeds in the Saharan part of North Africa (Helbig and Seibold, 1999; Isenmann and Thévenot, 2018), and migrates to sub-Saharan Africa in Senegal, Niger, Nigeria, and northern Cameroon (Salewski et al., 2005; Salewski and Herremans, 2006).

Its breeding range extends to southeastern Morocco (Bergier and Thévenot, 2010; Ottosson et al., 2005; Salewski, 2008; Salewski et al., 2009),

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probably Mauritania (Salewski et al., 2005), Tunisia (Salewski, 2008), and southwestern Libya (Faisel et al., 2015; Svensson, 2020), breeding in Algeria breeding occurs in the oases of the Sahara (Ouargla, Touggourt, El Goléa, Ain Salah, Hoggar, and Tassili) (Heim de Balsac and Mayaud, 1962; Isenmann and Moali, 2000).

The Ghardaia region, due to its central position in Algeria and north of the Sahara, lies on the central migration route of birds (Samraoui and Samraoui, 2013), which plays a crucial role for desert migrants such as water birds, raptors, and passerines crossing the Algerian Sahara. This urban landscape, composed of a mosaic of ecosystems (urban, agricultural, and aquatic), plays the role of an island in the heart of a rocky desert called Chebka. It thus serves as a stopover and breeding site for many migratory birds.

In this study, we reported the first confirmed breeding of the Eastern Olivaceous Warbler (*I. p. reiseri*, Hilgert, 1908) in the Ghardaïa region (South Algeria).

## MATERIAL AND METHOD

Our study was conducted from early February to July 2023 in the northern Algerian Sahara, specifically in the Ghardaïa province (32° 30' 14.0" N, 3° 39' 04.3" E), located 600 km south of the capital city, Algiers. This region is characterized by a hot arid climate with a mild winter (Boutmedjet et al., 2022) (Fig. 1).

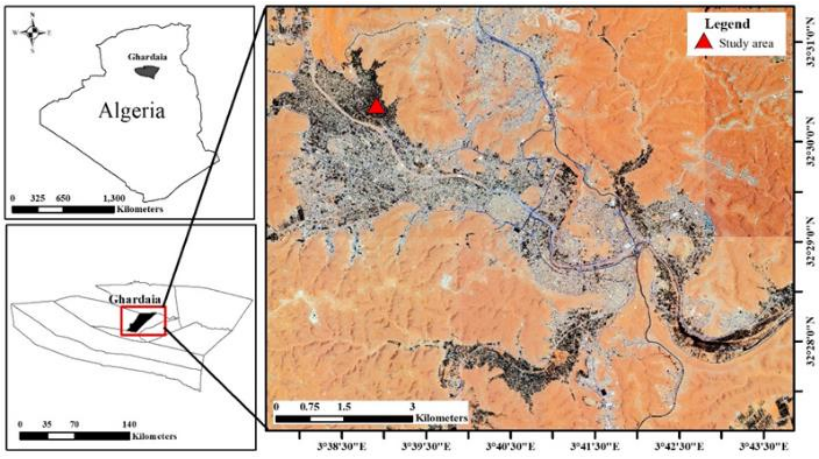


Fig. 1. Study area

A systematic search for nests and observation of territorial birds was carried (Akresh et al., 2017; Martin and Geupel, 1993), in a landscape consisting of different habitat types (natural environment, agroecosystem, and urban area) covering a total area of 60 hectares. Once the nests were

located, they were regularly visited every 2 to 3 days. At each visit, the nest contents were checked to determine the dates of laying, hatching, and fledging, clutch size, incubation period, and breeding success.

**RESULTS**

During our survey of the 60 hectares and among more than 250 nests belonging to 16 species, we located a new nest recently built in the form of an open cup. It is mainly made of cotton and plant debris and is located on a pomegranate tree. The nest is located at a height of 2.78 m from the ground and is oriented towards the east, about 15 cm from the center of the tree. After a distance observation, it appears to belong to a pair of Eastern Olivaceous Warblers. Another couple was detected in another part of our study site, but their nest has not yet been located.

The characterization of the nest reveals that the outer diameter of the nest is 8.5 cm, the inner diameter is 5 cm, the internal height of the nest is 3 cm and the external height is 9 cm (Fig. 2).

Fig. 2. Nest containing three eggs of the Western Olivaceous Warbler

Fig. 3. Nest containing three nestlings of the Western Olivaceous Warbler

The laying date is 11/05/2023. The nest contains a clutch of 3 eggs, white in color with black spots, with an average length of 2.3 ± 0.5 cm (1.9 - 2.3) and a width of 1.5 ± 0.3 cm (1.9 - 2.3). The incubation period is 15 days, and the 3 young birds will fledge (Fig. 3).

**DISCUSSION**

The subspecies of the Western Olivaceous Warbler, *I. p. reiseri*, is present in two pairs in our study area during the breeding season. It has a status of breeding migrant with significant numbers in the Ghardaïa region, according to the data provided by Chedad et al., 2023. Our area is located within the distribution range described by Parkin et al., 2004, while its presence in the Ghardaïa region constitutes an extension of its distribution range compared to the studies of Isenmann and Moali, 2000; Beaman and Madge, 2010 (Fig. 4).

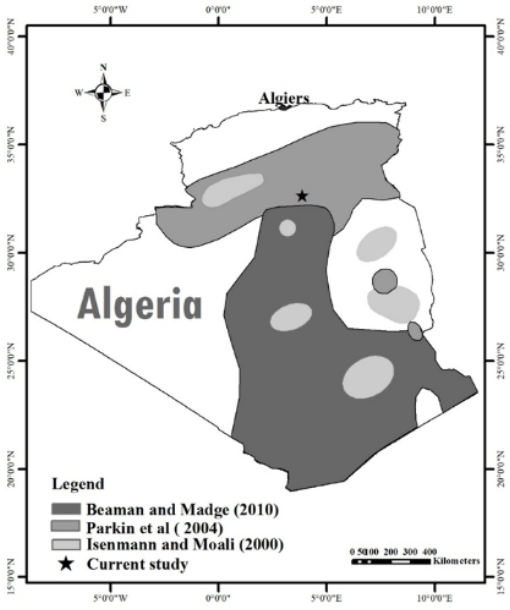


Fig. 4. Maps showing the previous distributions of the Western Olivaceous Warbler in Algeria

The nest height in this study was similar to that observed in the study by Antonov et al., 2007, on *I. p. elaeica* in northwestern Bulgaria (1.65 ± 0.08 (0.53 – 7.60) m), with a nest volume ranging from 64.3 to 175.9 cm. (Antonov, 2004).

The clutch size observed for the pair of Western Olivaceous Warblers monitored in our region is three eggs, which is similar to the data provided by Heim de Balsac and Mayaud, 1962, on the North African population (3.97 ± 0.58 (3 -5)).

Heim de Balsac and Mayaud, 1962, report that I. pallida begins to lay eggs from mid-May in North Africa. As for Antonov et al., 2007, they show that I. p. elaeica begins its reproduction from May 25th in northwest Bulgaria. We recorded the first egg laying on the eleventh ($11^{th}$) day of May, indicating that our breeding couple starts early reproduction due to the climatic factors of the region.

## CONCLUSIONS

This study is the first on the reproductive ecology of the Eastern Olivaceous Warblers (*Iduna pallida reiseri*) in the Ghardaia region, Algerian Sahara.

It is limited by the shortage of data on food resources, further studies are necessary to explore the link between distribution, habitat and trophic resources in order to provide a greater insight into this species ecological requirement, which can be used as markers of global changes.

This result can give us an image on the stability of the reproduction of this species despite the severe conditions.

The cycle of reproduction of this species faced with many troubles can may be affect the breeding success (the habitat destruction and the excessive disturbance) for this reason, we suggest providing actions that necessary to protect this species and also this ecosystem.

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