

Research article

A new host plant record for *Dioszeghyana schmidtii* (Dioszeghy, 1935) (Lepidoptera: Noctuidae) from Greece: implications for larval ecology and conservation

Angelos Tsikas

Laboratory of Forest Protection and Environmental Pollution, Department of Forestry and Management of the Environment and Natural Resources, Democritus University of Thrace, Greece, atsikas@fmenr.duth.gr 
<https://orcid.org/0000-0001-9754-5135> 

Abstract: I report the first larval host plant record for the rare and protected noctuid moth *Dioszeghyana schmidtii* (Dioszeghy, 1935) in Greece. Two larvae were observed feeding on Valonia oak *Quercus ithaburens* subsp. *macrolepis* in a fire-affected Mediterranean oak forest north of Alexandroupoli, Evros (northeastern Greece), representing a previously undocumented host plant association for this species. This finding expands the known ecological amplitude of *D. schmidtii*, whose biology remains largely unknown despite its inclusion in Annexes II and IV of the EU Habitats Directive. The finding occurred near a Natura 2000 site recently affected by the catastrophic wildfires of 2023, highlighting the importance of post-fire monitoring for rare Lepidoptera. This short communication contributes to the biological knowledge and conservation planning of *D. schmidtii* and underscores the need for further ecological study of early life stages in noctuid moths of conservation concern.

Keywords: host plant, larval ecology, Lepidoptera, Mediterranean forest, Noctuidae, Valonia oak

Introduction

Understanding the ecological requirements of rare or protected insect species is critical for their conservation. *Dioszeghyana schmidtii* (Dioszeghy, 1935), a noctuid moth associated with xerothermic oak woodlands, is protected under Annexes II and IV of the EU Habitats Directive (92/43/EEC) and the Bern Convention (ETS No. 104) due to its rarity and specialised habitat requirements (Lepiforum, 2024). Its populations are primarily found in Hungary, Slovakia, Romania, Bulgaria, Greece, and Turkey, with few recent records (Hacker, 1989; Korompai, 2016; Ronkay et al., 2001). It is considered a Ponto-Mediterranean faunal element and a postglacial relict of biogeographical importance. Despite its conservation status, its larval ecology remains poorly documented, with confirmed host plant associations limited to *Quercus cerris* and *Q. pubescens* (Turčáni et al., 2010; Korompai, 2014), underscoring a specialised relationship with thermophilous oak-dominated habitats (Rákosy, 1996). While *Acer tataricum* and *A.*

campestre were historically considered primary hosts (König, 1971), recent studies emphasise *Q. cerris* as the critical larval resource (Korompai & Kozma, 2004; Korompai, 2014). In Greece, *D. schmidtii* populations are poorly documented, with no prior host plant records beyond generalised *Quercus* associations (Hacker 1989).

Here, I report the first evidence of larval *D. schmidtii* feeding on *Quercus ithaburens* subsp. *macrolepis* (Kotschy) Hedge & Yalt., a Mediterranean oak dominant in lowland forests of northern Greece and western Turkey. This record emerges from a region affected by the large-scale wildfires of 2023, suggesting that southern populations may utilise a broader set of host trees and persist in post-disturbance conditions.

Material and methods

Fieldwork was conducted on 9 May 2025 in oak woodlands north of Alexandroupoli, Evros, Greece



Fig. 1. Habitat of *Dioszeghyana schmidtii* (Dioszeghy, 1935) at the survey site in northern Greece (May 2025), showing open oak woodland dominated by *Quercus ithaburens* subsp. *macrolepis* (Kotschy) Hedge & Yalt. (photo: A. Tsikas).



Fig. 2. Lateral and dorsal view of a larva identified as *Dioszeghyana schmidtii* on a lower branch of *Quercus ithaburens* subsp. *macrolepis*, displaying characteristic morphological features including a brownish-grey dorsum and a deeply undulate pale lateral stripe (photo: A. Tsikas).

(40°57'03"N; 26°07'05"E), adjacent to burned zones from the 2023 wildfires (Fig. 1). The site was surveyed using standard larval beating techniques. Terminal branches of oak trees were tapped over a 1-metre beating sheet.

Two larvae displaying key morphological characters of *D. schmidtii* were collected from two separate individuals of *Q. ithaburens* subsp. *macrolepis*. Larvae were photographed *in situ*, examined visually, and returned to their branches.

Identification was based on established diagnostic characters (Turčáni et al., 2010).

Results and discussion

The larvae collected shared the following features: a cylindrical body with brownish-grey dorsal colouration, a deeply undulated pale lateral stripe extending across abdominal segments, large dark pinacula at the setae bases, and the absence of dorsal tufts or tubercles. These characters correspond with published descriptions and imagery of *D. schmidtii* larvae (Hreblay, 1993; Turčáni et al., 2010).

This is the first confirmed association of *D. schmidtii* with *Q. ithaburensis* subsp. *macrolepis*. Previous studies from Central Europe reported larvae on *Q. pubescens* and *Q. cerris* (Turčáni et al., 2010; Korompai, 2014, 2016), while *Acer tataricum* and *A. campestre* were earlier proposed as potential hosts (Issekutz, 1955; König, 1971). In Bulgaria, the species is generally described as associated with *Quercus* (Beshkov & Langourov, 2004), with additional mention of *Acer* species (Beshkov, 2011). Bekchiev et al. (2017) reported *D. schmidtii* as abundant in oak forests lacking *Acer*, strongly suggesting that larvae regularly feed on *Quercus*. However, none of these studies identified a specific *Quercus* species as larval host.

In Turkey, available records of *D. schmidtii* ssp. *pinkeri* – a subspecies of *D. schmidtii* – derive from higher-altitude habitats (e.g. >500 m; Hreblay, 1993), whereas our finding in Greece concerns lowland xerothermic stands of *Q. ithaburensis* subsp. *macrolepis*. Since *Q. ithaburensis* subsp. *macrolepis* does not exceed 400–500 m a.s.l. altitudinally (Boratynski et al., 1992), the present record represents the first certain species-level host plant association for the Balkans. Since this oak does not occur in Bulgaria, larvae there must feed on other *Quercus* spp., confirming that *D. schmidtii* is unlikely to be narrowly specialised. Rather, it appears to utilise the locally available thermophilous oaks, with host plasticity that may confer resilience in post-fire and managed landscapes. This broader feeding ecology has direct conservation implications: monitoring efforts should not restrict host surveys to a single oak species, but instead encompass the full set of dominant *Quercus* taxa present in xerothermic woodlands. This finding has implications for conservation monitoring and

habitat management. *D. schmidtii*'s survival depends on maintaining mature oak stands (>60–70 years) with minimal fragmentation (Korompai, 2016). Surveys that exclude Mediterranean oak types may underestimate the species' presence, particularly at the southern margins of its range. The result supports calls for host plant flexibility to be integrated into insect conservation planning, especially under disturbance regimes exacerbated by climate change. The proximity of the observation site to recently burned areas following the 2023 Evros wildfires further emphasises the conservation value of post-fire monitoring for threatened insect species.

Conclusion

This record provides the first confirmed association of *D. schmidtii* with *Q. ithaburensis* subsp. *macrolepis* in Greece and extends the species' known larval host range within *Quercus*. Given that *Q. ithaburensis* forms extensive lowland stands in the eastern Mediterranean, often interdigitating with *Q. cerris*, surveys that explicitly include both oaks – and sample multiple tree individuals across sun-exposed woodland edges and open stands – are likely to improve detectability of larvae. The site itself was unburned, yet lies adjacent to large areas severely affected by the 2023 Evros wildfires; documenting host associations in such landscapes is important for anticipating how early-instar resources and canopy structure may change during post-fire succession. In practical terms, I recommend: (i) targeted larval beating on *Q. ithaburensis* subsp. *macrolepis* and *Q. cerris* during May–June; (ii) night surveys of nearby adult flight periods to confirm occupancy; and (iii) deposition of georeferenced observations and voucher-quality images in open repositories to facilitate meta-analyses of range use and habitat connectivity. The new host plant record provide a concrete baseline for standardised monitoring and for prioritising Mediterranean oak woodlands that may harbour overlooked populations of this protected moth.

Acknowledgements

This work was carried out within the framework of the project “Supervision and assessment of the conservation status of invertebrate species (excluding

marine) of Community and national interest in Greece”, funded by the Hellenic Ministry of Environment and Energy through the Operational Programme “Transport Infrastructure, Environment and Sustainable Development” (O.P. T.I.E.S.D.). The project is co-financed by the European Union (Cohesion Fund) and national resources through the Public Investment Programme (MIS 5047786).

Conflicts of interest

No potential conflict of interest has been reported by the author, reviewers, or subject editor.

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