ISSN 2755-3531

Vol. 45, no. 5 **Journal of Conchology** 4 January 2026

Published by the Conchological Society of Great Britain and Ireland, established 1874

First interception of *Xeropicta derbentina* in the Benelux (Gastropoda: Geomitridae)

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Abstract. In October 2025, an adult live specimen of *Xeropicta derbentina* (Krynicky, 1836) was discovered in an organic grocery store in Brussels, representing the first record of this species in Belgium. Fertilized eggs were laid by the individual and successfully hatched. Although the animal was found in vegetables it has most certainly reach Belgium adhering to other products. *Xeropicta derbentina* could potentially establish in North-western Europe helped by urban microclimates. Early detection and monitoring of this invasive species, particularly via citizen science, are therefore essential.

ZooBank identifier. urn:lsid:zoobank.org:pub:275A7712-9448-424D-9D15-87393ED2D28A

DOI. https://doi.org/10.61733/jconch/4561

On 5 October 2025, the second author (ML) posted on the citizen-science platform Observations.be a documented record of an unknown terrestrial gastropod (https://observations.be/observation/375125252/; Fig. 1). During the validation process of terrestrial gastropod records, the first author (LB) suspected that the specimen belonged to *Xeropicta derbentina* (Krynicky, 1836). This xerophilous species inhabits open habitats and is thought to be native to northern Greece, Bulgaria, Romania, the Caucasus extending to the Caspian Sea, the southern coast of Crimea, and Turkey (Welter-Schultes 2012). It has also been found in northern Italy and Croatia, and recently in Belarus (De Mattia 2007; Ostrovsky 2022). Its introduction into southern France, where it is now well established, is dated between 1931 and 1949 (Labaune & Magnin 1999; Wagner 2021; Bartolucci & Bertrand 2022). Recently, *X. derbentina* has been recorded in northeastern France, notably in Haute-Marne and Alsace (Wagner 2021; Bartolucci & Bertrand 2022). However, the species was hitherto unrecorded in the Benelux.

The shell is whitish and almost smooth, measuring 8.6 mm in height and 12.1 mm in width, with an ochre-coloured protoconch and 5.25 rapidly increasing whorls. Close inspection reveals fine, irregular transverse growth striae, as well as delicate, wavy spiral striae. The last whorl descends slightly near the aperture, which bears a white inner lip. The perspectival umbilicus, accounting for approximately one-fifth of the shell width, together with frequent growth interruptions, are characteristic features of this species (Labaune & Magnin 1999; Welter-Schultes 2012; Wagner 2023).

The identification was confirmed through examination of the genitalia (Fig. 2). The presence of four stylophores in the dart-sac complex is typical of the genus *Xeropicta* (Fig. 2A). The relatively short length of the flagellum compared to the epiphallus (ratio of about 1:10) indicates *X. derbentina* rather than *X. krynickii* (which displays a ratio of about 1:2.5) (De Mattia 2007; Gojšina *et al.* 2022).

The specimen was found among a batch of vegetables purchased on 3 October 2025 from a store of the organic grocery chain "The Barn" (Uccle, Brussels Region, 50.705°N, 003.649°E) and subsequently released into ML's garden (Ixelles, Brussels Region, 50.811°N, 004.388°E) on 5 October at 15:30 h. It was recaptured on 6 October and placed in a small terrarium (700 cm^3) lined with soil taken from the place where the animal had been released. The terrarium was kept in a well-lit room at 18–19 °C until it was transferred to LB on 13 October. On 14 October, LB discovered within the box immature individuals of *Lauria cylindracea* (da Costa, 1778) together with white spherical eggs, 1.0 mm in diameter, which could not belong to *L. cylindracea*, an ovoviviparous species (Heller *et al.* 1997). One egg adhering to the edge of the box strongly suggests the egg was laid there. Two eggs were preserved in 97% ethanol. On 21 October, 19 newly hatched snails were found on the soil surface in

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Figure 1. *Xeropicta derbentina*, found Ixelles, Belgium, October 2025. Shell (H = 8.6 mm × W = 12.1 mm) and live animal.

the box, along with three unhatched eggs. By 3 November, a total of 45 newly hatched snails have been recorded along the edges of the box. The shape, colour, and microsculpture of their protoconch were compared with those of the adult specimen and found to be congruent. Hatching occurred 15.5 days after the adult was released in the garden (corresponding to 14.5 days after its placement in the box). Consequently, the interval between oviposition to hatching was at or shortly below the lower limit of the range reported in the literature (15–20 days; Kiss *et al.* 2005). However, the egg diameter (1.0 mm) and the number of newly hatched individuals (45) are consistent with published data (maximum diameter 1.1–1.2 mm; 28–117 newly hatched per adult, and 14–64 newly hatched per egg-laying, respectively; Kiss *et al.* 2005).

The shell, genitalia, a sole extract and the eggs have been deposited in the collections of the Royal Belgian Institute of Natural Sciences (RBINS, Brussels): I.G. 35062, INV 325825 and INV325826.

According to the staff of the grocery store, the vegetables purchased by ML (coriander, flat-leaved parsley, and radishes) most likely originated from Belgian producers. However, the store also sources fresh fruits and vegetables from producers in Sicily. Other products (e.g. oils, dairy products, pasta, olives, and prepared foods) originate from southern France (Valence), Algeria, Burkina Faso, Romania, and Greece. Introduction via fresh fruits or vegetables—frequent among several species of snails and slugs (e.g. Dörge *et al.* 1999; Port and Ester 2002)—therefore seems unlikely in this case: *X. derbentina* is unknown from both Belgium and Sicily (the three Sicilian records on GBIF most likely are *Theba pisana* (O.F. Müller, 1774)). Introduction through adhesion to inanimate objects (e.g. food boxes, crates, and vehicles) appears more likely, since the species has long been

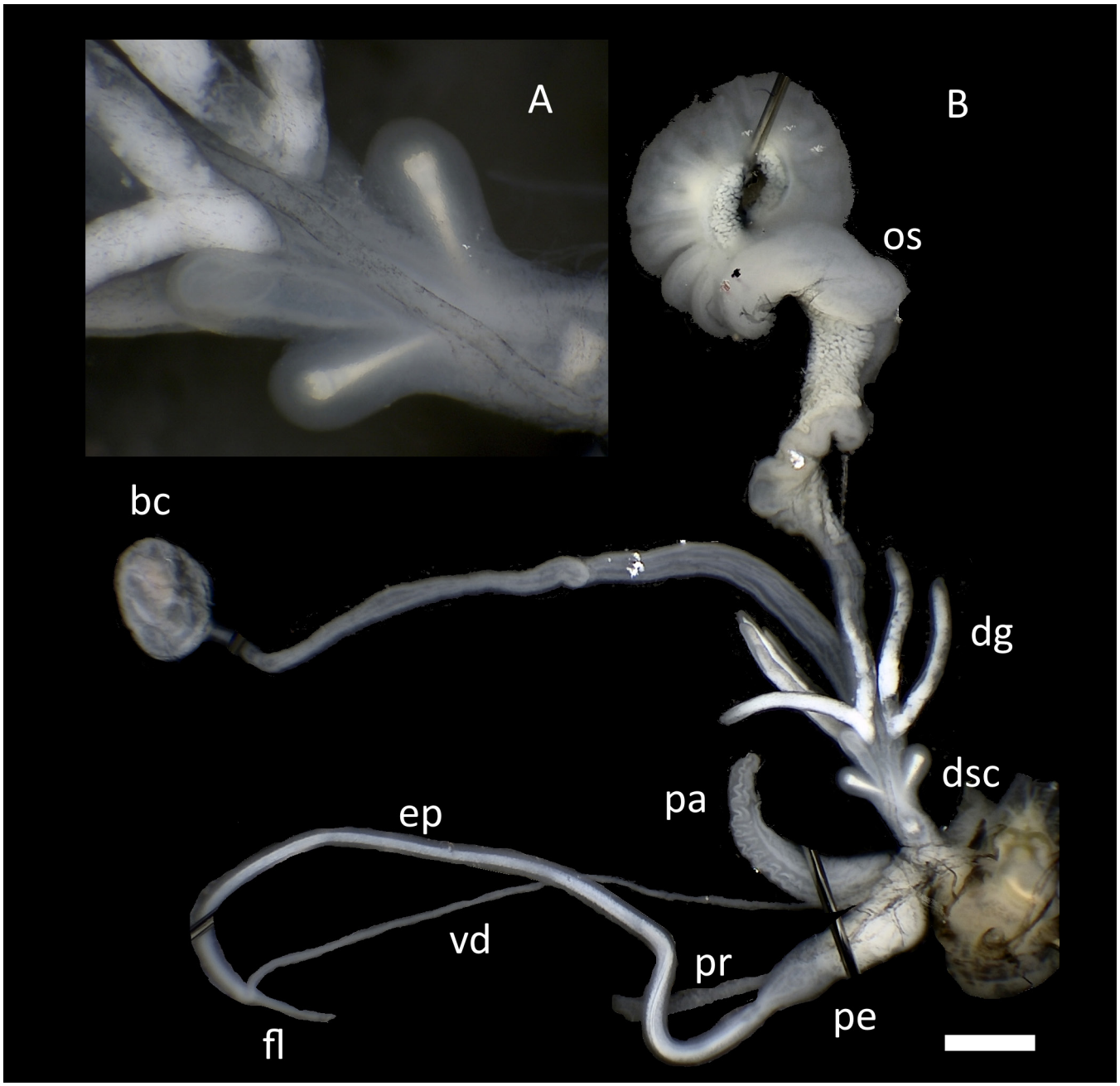

Figure 2. *Xeropicta derbentina*, found Ixelles, Belgium, October 2025 **A**, close-up of the dart-sac complex, with three dart sacs visible; right-upper sac hidden behind digitiform gland. Dart present in both the rightmost sacs. **B**, distal genitalia. Abbreviations: bc: bursa copulatrix; dg: digitiform glands; dsc: dart-sac complex; ep: epiphallus; fl: flagellum; os: ovispermiduct; pa: penial appendage; pe: penis; pr: penial retractor muscle; vd: vas deferens. Scale bar: 1 mm (A, not to scale).

documented in Greece and Romania, and is well established in southern France, where it has been progressively expanding northwards over the past few decades (Aubry *et al.* 2006; Welter-Schultes 2012; Bartolucci & Bertrand 2022). *Xeropicta derbentina* possesses a behavioural mechanism that facilitates passive transport on human-made objects: during the summer, individuals climb onto plants and structures to aestivate above ground, thereby avoiding the heat of the soil (Aubry *et al.* 2006). Passive transport has been confirmed or suspected on or within automobiles, train cars, and boats (De Mattia & Pešić 2014; Bartolucci & Bertrand 2022; Ostrovsky 2022). Magnin & Martin (2012) consider that in Provence during summer, more than one in a hundred vehicles carries at least one live individual of *X. derbentina*.

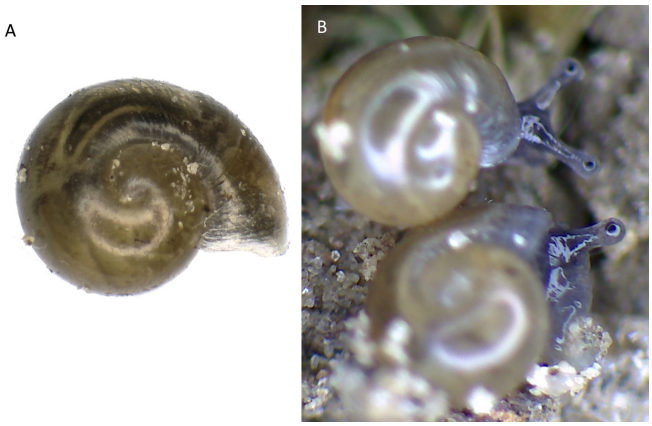

Figure 3. *Xeropicta derbentina*, newly hatched snails. **A**, retracted into shell (width: 1.1 mm). **B**, extended from shell.

Vehicles and goods are major vectors for the introduction of land snails, which are primarily transported as contaminants of commodities or as stowaways on human conveyances (Dörge *et al.* 1999; Hulme *et al.* 2008; Carvadino 2022). Such anthropogenic transport can involve a wide range of goods, ranging from agricultural and horticultural products to different types of non-organic goods (Michalak & Price 2010). In Belgium, various examples underscore the role of non–organic-matter-related pathways. A live juvenile of *Eobania vermiculata* (O.F. Müller, 1774), for instance, was found to have travelled from Spain to Antwerp among luggage in a car (https://observations.be/observation/291697708/). The arrival of several species of Mediterranean origin—*Charpentieria itala* (Martens, 1824), *Chilostoma cingulatum* (Studer, 1820), *Hygromia limbata* (Draparnaud, 1805), and *Xerotricha conspurcata* (Draparnaud, 1801)—appears to be at least partly associated with the stone trade (Bronne & Delcourt 2024a, b; Bronne *et al.* 2024). Transport while adhering to vehicles is also considered an important pathway for another southern species now widespread in Belgium, *Hygromia cinctella* (Draparnaud, 1801) (Van den Neucker & Scheers 2014; Gural-Sverlova & Andrik 2023; Bronne & Delcourt 2024a). Multiple pathways, however, often contribute to the spread of a single species. *Hygromia cinctella* and *X. conspurcata*, for instance, are frequently encountered on plants sold in Belgian garden shops (LB, pers. obs.). Similarly, livestock movements constitute a documented introduction route for *X. derbentina* (Aubry *et al.* 2006).

Regardless of the pathway leading to the species' arrival in the Brussels grocery store, the accidental release of even a single fertilized individual could have been sufficient to establish a population in Belgium. Such a scenario is plausible considering the species' well-documented ecological plasticity (Kiss *et al.* 2005), its invasive behaviour in southern France (Labaune & Magnin 1999; Kiss *et al.* 2005), and the recent reports of new populations in northern France (Bartolucci & Bertrand 2022; Wagner 2023). Since the minimum temperature of the coldest month represents the main limiting factor for its potential distribution (Adamova *et al.* 2022), its arrival in an urban environment—where the urban heat-island effect creates numerous warm microclimates that buffer against low temperatures, particularly in the current context of a warming climate, could facilitate its establishment and further spread. The species is likely to establish outdoors in other temperate oceanic climate ("Cfb" in the Köppen climate-classification system) countries, and its probability of establishing in the UK is high according to the Global Register of Introduced and Invasive Species (Pagad *et al.* 2018; Cavadino 2022).

Xeropicta derbentina can locally reach high population densities, with biomass values of up to 1.4 kg/m^2 recorded in the native range (Aubry *et al.* 2005). Pictures of human-man structures or vegetation completely covered by hundreds or even thousands of individuals are frequently published (e.g. Labaune & Magnin 1999; Magnin & Martin 2012). Such densities are likely to affect other components of local biodiversity. At a fine spatial scale in southern France, Aubry et al. (2005) observed a negative correlation between the abundance of *X. derbentina* and land-snail diversity. In orchards or vineyards, large summer aggregations on stems can interfere with harvesting operations, and accumulations on heads and stalks have also been associated with bud canker (Kiss et al. 2005; Cavadino 2022). Nevertheless, direct feeding damage to cultivated plants (leaves, fruits, young shoots, etc.) appears to be limited, as *X. derbentina* primarily consumes decaying organic matter (Kiss et al. 2005; Cavadino 2022).

Limiting the spread of any invasive species requires early detection to ensure that eradication measures remain as cost-effective as possible (Simberloff 2003). In the case of *X. derbentina*, this entails targeted monitoring of locations receiving large volumes of imported goods. However, given the high likelihood that individuals may be transported while attached to various types of vehicles, surveillance must also encompass any area where vehicles may be stored or temporarily parked. In this context, the deployment of citizen-science systems—combining the broad spatial coverage provided by numerous contributors with the expertise of specialists capable of validating records and identifying problematic occurrences—appears to be the most effective monitoring approach (Swinnen *et al.* 2018).

Appendix

A second record of *X. derbentina* for Belgium reported on 21 October 2026 was confirmed anatomically (https://observations.be/observation/377174074/). The live adult specimen was found adhering to a succulent in a private house in Liège. Introduction via the plant is unlikely, as it had been owned for several years. The residents' trip to Cannes, France, a few months earlier appears to be a likely pathway.

Acknowledgements

Johann Delcourt kindly directed us to valuable references. Susana Mateo Sánchez generously provided the specimen found in Liège, together with helpful contextual information. We also thank the editor, Xavier Cucherat, and an anonymous reviewer for their constructive comments, that greatly improved the manuscript.

References

Adamova V, Orlov M, Sheludkov A. 2022. Land snails *Brephulopsis cylindrica* and *Xeropicta derbentina* (Gastropoda: Stylommatophora): case study of invasive species distribution modelling. *Ruthenica, Russian Malacological Journal* **32**: 121–136. doi: 10.35885/ruthenica.2022.32(3).5

Aubry S, Labaune C, Magnin F, Kiss L. 2005. Habitat and integration within indigenous communities of *Xeropicta derbentina* (Gastropoda: Hygromiidae) a recently introduced land snail in south-eastern France. *Diversity and Distributions* **11**: 539–547. doi: 10.1111/j.1366-9516.2005.00189.x

Aubry S, Labaune C, Magnin F, Roche P, Kiss L. 2006. Active and passive dispersal of an invading land snail in Mediterranean France. *The Journal of animal ecology* **75**: 802–13. doi: 10.1111/j.1365-2656.2006.01100.x

Bartolucci JC, Bertrand A. 2022. Première observation de *Xeropicta derbentina* (Krynicki, 1836) (Mollusca, Gastropoda, Geomitridae), en Haute-Marne (France, Grand Est). *Folia Conchyliologica* **66**: 73–76.

Bronne L, Delcourt J. 2024a. First record of a population of *Hygromia limbata* (Draparnaud, 1805) in the Benelux (Gastropoda: Hygromiidae). *Basteria* **88** (1): 68–75.

Bronne L, Delcourt J. 2024b. The find of six species new to Belgium highlights the role of the stone trade as a pathway for non-native land snails (Gastropoda: Stylommatophora). *Belgian Journal of Zoology* **154**: 11–30. doi: 10.26496/bjz.2024.116

Bronne L, Pigneur LM, Michaux J. 2024. Découverte de populations établies de l'Hélicette veloutée *Xerotricha conspurcata* (Draparnaud, 1801) en Belgique et commentaires sur l'utilisation des banques de données de séquences génétiques pour l'identification des gastéropodes (Gastropoda : Stylommatophora : Geomitridae). *MalaCo* **20**: 4–9.

Cavadino I. 2022. *A Review of Slug and Snail Species of Potential Threat to Plant Health in Britain. Final Report to Defra Plant Health.* PH04103, March 2022, 95 pp.

De Mattia W. 2007. *Xeropicta derbentina* (Krynicky, 1836) (Gastropoda, Hygromiidae) in Italy and along the Croatian coast, with notes on its systematics and nomenclature. *Basteria* **71**: 1–12.

De Mattia W, Pešić V. 2014. *Xeropicta* (Gastropoda, Hygromiidae) goes west: the first record of *X. krynickii* (Krynicki, 1833) for Montenegro, with a description of its shell and genital morphology, and an additional record of *X. derbentina* (Krynicki, 1836) for Italy. *Ecologica Montenegrina* **1**: 193–200. doi: 10.37828/em.2014.1.27

Dörge N, Walther C, Beinlich B, Platcher H. 1999. The significance of passive transport for dispersal in terrestrial snails (Gastropoda, Pulmonata). *Zeitschrift für Ökologie und Natuurschutz* **8**: 1–10.

Gojšina V, Páll-Gergely B, Vujić M, Dedov I. 2022. First record of the genus *Xeropicta* Monterosato, 1892 (Gastropoda: Eupulmonata: Geomitridae) in Serbia. *Folia Malacologica* **30**: 47–53. doi: 10.12657/folmal.030.008

Gural-Sverlova N, Andrik E. 2023. First record of *Hygromia cinctella* (Draparnaud, 1801) (Gastropoda: Hygromiidae) in Ukraine outside Crimea. *Folia Malacologica* **31** (2): 119–125. doi: 10.12657/folmal.031.017

Heller J, Sivan N, Hodgson AN. 1997. Reproductive biology and population dynamics of an ovoviviparous land snail, *Lauria cylindracea* (Pupillidae). *Journal of Zoology* **243** (2): 263–280. doi: 10.1111/j.1469-7998.1997.tb02781.x

Kiss L, Labaune C, Magnin F, Aubry S. 2005. Plasticity of the life cycle of *Xeropicta derbentina* (Krynicki, 1836), a recently introduced snail in Mediterranean France. *Journal of Molluscan Studies* **71**: 221–231. doi: 10.1093/mollus/eyi030

Labaune C, Magnin F. 1999. Un escargot nouveau venu dans le Lubéron et en Provence *Xeropicta derbentina* (Krynicki, 1836). *Courrier scientifique du Parc naturel régional du Lubéron* **3**: 145–152.

Magnin F, Martin S. 2012. Escargots synanthropiques et domestication de la nature. *Techniques & Culture Revue semestrielle d'anthropologie des techniques* **59**: 260–283. doi: 10.4000/tc.6701

Ostrovsky A. 2022. *Xeropicta derbentina* (Krynicki, 1836) (Gastropoda: Eupulmonata: Geomitridae) in Belarus—new data. *Folia Malacologica* **31** (1): 43–47. doi: 10.12657/folmal.031.006

Pagad S, Genovesi P, Carnevali L, Schigel D, McGeoch MA. 2018. Introducing the Global Register of Introduced and Invasive Species. *Scientific Data* **5** (1): 170202. doi: 10.1038/sdata.2017.202

Port G, Ester A. 2002. Gastropods as pests in vegetable and ornamental crops in Western Europe. Pp. 337–351 in: Barker

GM (Ed.) *Molluscs as Crop Pests*. CABI Publishing, Wallingford, Oxfordshire, UK. doi: 10.1079/9780851993201.0337

Simberloff D. 2003. How Much Information on Population Biology Is Needed to Manage Introduced Species? *Conservation Biology* **17** (1): 83–92. doi: 10.1046/j.1523-1739.2003.02028.x

Swinnen K, Vercayie D, Vanreusel W, Barendse R, Boers K, Bogaert J, Dekeukeleire D, Driessens G, Dupriez P, Jooris R, Steeman R, Asten K, Van den Neucker T, Van Dorsselaer P, Vooren P, Wysmantel N, Gielen K, Desmet P, Herremans M. 2018. Waarnemingen.be—Non-native plant and animal occurrences in Flanders and the Brussels Capital Region, Belgium. *BioInvasions Records* **7** (3): 335–342. doi: 10.3391/bir.2018.7.3.17

Van den Neucker T, Scheers K. 2014. The recent colonisation and rapid spread in Belgium of the alien Girdled Snail *Hygromia cinctella* (Gastropoda: Hygromiidae). *Journal of Conchology* **41** (6): 779–780.

Wagner A. 2023. Première observation de l'Hélicelle des Balkans, *Xeropicta derbentina* (Krynicki, 1836) (Mollusca, Gastropoda, Geomitridae) en Alsace (France, Grand Est, Bas-Rhin). *Bulletin de la Société d'Histoire naturelle et d'Ethnographie de Colmar* **77** (10): 144–145.

Welter-Schultes F. 2012. *European Non-marine Molluscs, a Guide for Species Identification*. Planet Poster Edition, Göttigen, 674 pp.

Manuscript submitted: 22 October 2025
Revised manuscript accepted: 3 January 2026
Editor: Robert Forsyth