

# ***Ononis varelae* (Fabaceae), a new species to the Portuguese flora**

André Carapeto<sup>\*1,2</sup> & Maria João Correia<sup>3</sup>

<sup>1</sup>MARE-ULisboa – Centro de Ciências do Mar e Ambiente. Faculdade de Ciências da Universidade de Lisboa, Campo Grande, 1749-016, Lisboa, Portugal

<sup>2</sup>Sociedade Portuguesa de Botânica – Travessa do Jardim n.º 3 2615-018 A-dos-Potes, Alverca, Portugal.

<sup>3</sup>Herbário da Universidade do Algarve, Campus de Gambelas, 8005-139 Faro, Portugal.

**\*Author for correspondence:** carapeto@hotmail.com

**Received:** 15 April 2025. **Accepted:** 03 July 2025. **Published:** 22 July 2025

**Edited by:** João Farminhão

## **Abstract**

Two specimens of *Ononis varelae* Devesa were collected by the authors in 2024 at two different locations within the Odeleite River valley in Serra do Caldeirão, Algarve. Initially believed to be the first gatherings of this species in Portugal, a thorough examination of herbarium material revealed an earlier specimen from the same region, collected in 1969. These records extend to the west the known distribution range of this species, previously considered endemic to the Sierra Morena, in southwestern Spain. Plants were found in similar habitat conditions to the ones described in the literature. Therefore, it should be added to the Portuguese vascular flora as a native species and considered as an Iberian endemic. It is preliminarily assessed as Endangered in Portugal, following the IUCN red list criteria.

**Key words:** Iberian endemic, new country record, Portugal, Serra do Caldeirão, regional Red List assessment.

## **Resumen**

### ***Ononis varelae* (Fabaceae), una nueva especie para la flora portuguesa**

Dos ejemplares de *Ononis varelae* Devesa fueron recolectados por los autores en 2024 en dos lugares distintos en el valle del río Odeleite, en la Serra do Caldeirão, Algarve. Inicialmente se pensó que eran las primeras colectas de esta especie en Portugal, sin embargo, un análisis detallado del material de herbario reveló un ejemplar anterior de la misma región, recolectado en 1969. Estos registros amplían hacia el Oeste el rango de distribución conocido de esta planta, anteriormente considerada endémica de Sierra Morena, en el Suroeste de España. Esta planta aparece en condiciones de hábitat similares a las descritas en la literatura, por lo que debe añadirse a la flora vascular portuguesa como nativa y considerarse como endemismo ibérico. La especie es evaluada preliminarmente como En Peligro en Portugal, siguiendo los criterios de la lista roja de la UICN.

**Palabras clave:** endemismo ibérico, nuevo registro nacional, Portugal, Serra do Caldeirão, evaluación regional de Lista Roja.



***Ononis varelae*** Devesa, Lagasalia 14: 84 (1986)

PORTUGAL. Algarve (Ag): Tavira, Cachopo, entre Cortelha de Cima e o leito da rib<sup>a</sup> de Odeleite, 240 m., 29SPB02, 5-IV-2024, A. Carapeto s.n. (COI00108988) (Figure 1); Ribeira de Odeleite, 29SPB12, 29-IV-2024, M. J. Correia s.n. (ALGU15882); Tavira, a N de Peralva, 195 m., 24-V-1969, J. Horta Correia s.n. (LISI020995) (Figure 2).



**Figure 1.** *Ononis varelae*, Tavira, Cachopo, entre Cortelha de Cima e o leito da Rib<sup>a</sup> de Odeleite, 5-IV-2024 (COI00108988). Photograph: André Carapeto.

**Figura 1.** *Ononis varelae*, Tavira, Cachopo, entre Cortelha de Cima e o leito da Rib<sup>a</sup> de Odeleite, 5-IV-2024 (COI00108988). Fotografia: André Carapeto.

*Ononis varelae* Devesa is an annual herb, previously believed to be endemic to the Sierra Morena, in southern Spain (Devesa 1999), where it occurs in the provinces of Cordoba, Huelva, Jaén, Seville and Ciudad Real (Devesa & Martínez-Sagarra 2023; Quintanar *et al.* 2004). However, in 2024 this species was collected by the authors at two different locations in Serra do Caldeirão, Algarve, southern Portugal. Both collections were made in the valley of the Ribeira de Odeleite, a temporary river tributary of the Guadiana River, located in the eastern part of Algarve. In addition to the two collection sites, the species was also observed by the second author at two further locations: one approximately 200 m from the site where specimen ALGU15882 was collected, and another in the vicinity of Portela, approximately 1500 m upstream from that location (Figure 3). This species was firstly observed by the first author in 2020, but no material was collected on that occasion, therefore the identification of the taxon could not be properly

confirmed. The nearest location in Spain lies about 120 km to the east, in Sierra de Aracena (Huelva), near Campofrío (Anthos 2024, GBIF 2024).

This species was not mentioned in the most recent reference works for the Portuguese vascular flora (Franco, 1971; Devesa, 1999; Sequeira *et al.*, 2011). However, Coutinho (1939) had previously mentioned one of its synonyms, *Ononis broteriana* DC var. *grandiflora* (Coss. ex Willk.) Cout. as occurring in the Algarve (Lagos and Tavira). Sampaio (1946) considered the same plant under a different combination, *O. subspicata* Lag. var. *grandiflora* Samp., and cited it for the Algarve (Lagos, Tavira and Vila Real de Santo António). According to Devesa (1986), all these Portuguese records of *O. varelae* synonyms should be assigned to *O. baetica* Clemente var. *baetica*.

A recent search in GBIF (2024) added some additional uncertainty, as it retrieved two records of *O. varelae* from Portugal. One of these records corresponded to an herbarium specimen (HSS006808), collected in 2001, near Alcácer do Sal (Baixo Alentejo), in pine forests on sandy soils, and the other was a record from Anthos (2024: code 2394230, identified as *O. picardii* var. *grandiflora* based on COI00053491), from near Lagos. Both are to be attributed to *O. baetica*.

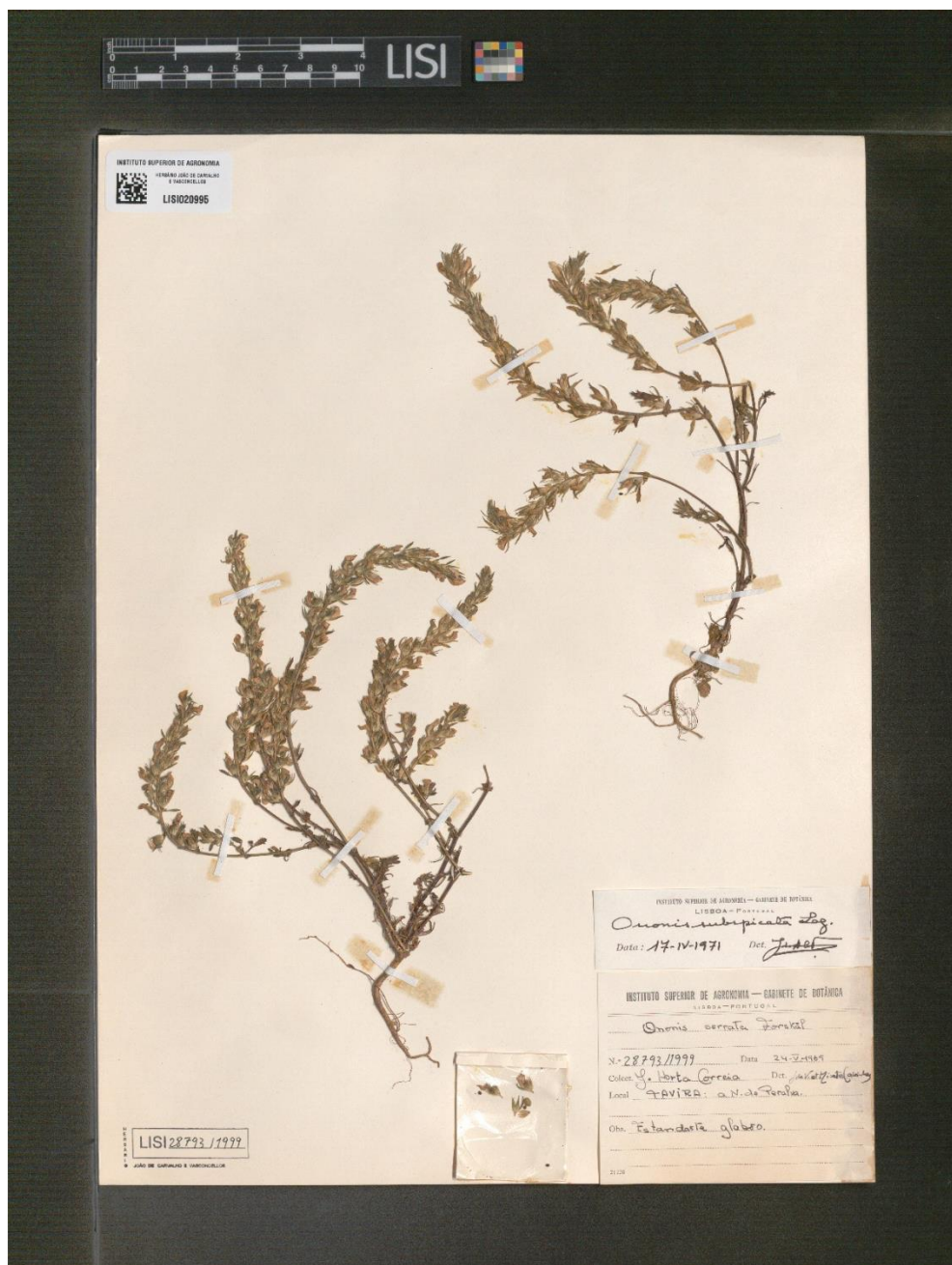
Although taxonomic studies on the genus *Ononis* in Portugal and in Andalusia were published in the late 1980s (Devesa 1986, 1988), the distribution of species of section *Diffusae* Širj. in Portugal has remained somewhat unclear due to the complex synonymies within this section. Considering also that more than three decades have passed since those studies were published, it seemed plausible that additional specimens of *O. varelae* might have been misidentified or overlooked in some Portuguese herbaria.

To confirm if *O. varelae* had been previously collected in Portugal, the authors contacted several Portuguese herbaria (COI, PO, LISU, LISE, LISI, LISFA, UEVH, ALGU) and two Spanish herbaria (MA and HSS). From all the herbarium material consulted, only one specimen corresponds to a previous collection of *O. varelae* in Portuguese territory.

None of the specimens that were formerly identified as synonyms of *O. varelae*, such as *O. picardii* var. *grandiflora* (LISU19627; MA-01-00720685), corresponds to *O. varelae*. The citations of these synonyms in Coutinho (1939) and Sampaio (1946) are likely based on the collections by *Borgeau* from Lagos (COI00053491), by *Palhinha et al.* from Tavira (LISU19600) and by *Sampaio* from Vila Real de Santo António (PO3681). None of these specimens corresponds to *O. varelae* either.

Among specimens previously identified as *O. subspicata* in Portuguese herbaria, the authors found several gatherings that correspond to *O. broteriana* DC. (e.g., PO3682, PO13199, COI85106, COI85107) or to *O. baetica* (e.g., PO3683, PO13201, COI85002, COI85080), but only one specimen could be assigned to *O. varelae*, collected by the agronomist Joaquim Horta Correia in 1969 (LISI020995), during his tenure at *Posto Agrário de Tavira* (García-Pereda 2022).

The correct identification of this plant may have past unnoticed because in the specimen label there is an observation stating “estandarte glabro” (glabrous banner). This is a key character for identifying *Ononis* species (Devesa, 1999). *Ononis varelae* is characterised as having a pubescent-glandulous banner, whereas both *O. broteriana* and *O. baetica* have it glabrous. That note must have contributed to the erroneous identification of this specimen, because its general appearance is clearly similar to *O. varelae*, showing a characteristic lax racemose inflorescence, very distinct from those of *O. broteriana* or *O. baetica* (both present the flowers grouped at the top of the inflorescence). Also, the specimen was collected in the same geographic area where the authors collected *O. varelae* in 2024, a territory dominated by rocky schist soils, while the other two species occur on sandy soils. The discovery of *Ononis varelae* in Algarve expands the species global distribution range by more than 120 km to the west. The species was found in annual grasslands on gravelly schist soils, embedded within a matrix of *Cistus ladanifer* shrubland and *Quercus suber* woodland—the same type of habitat described by Devesa (1987, 1999). Its presence appears well established, supporting its status as a native species in Portugal. Therefore, it should be considered in a future addendum of the Portuguese Flora Checklist (Sequeira *et al.*, 2011).



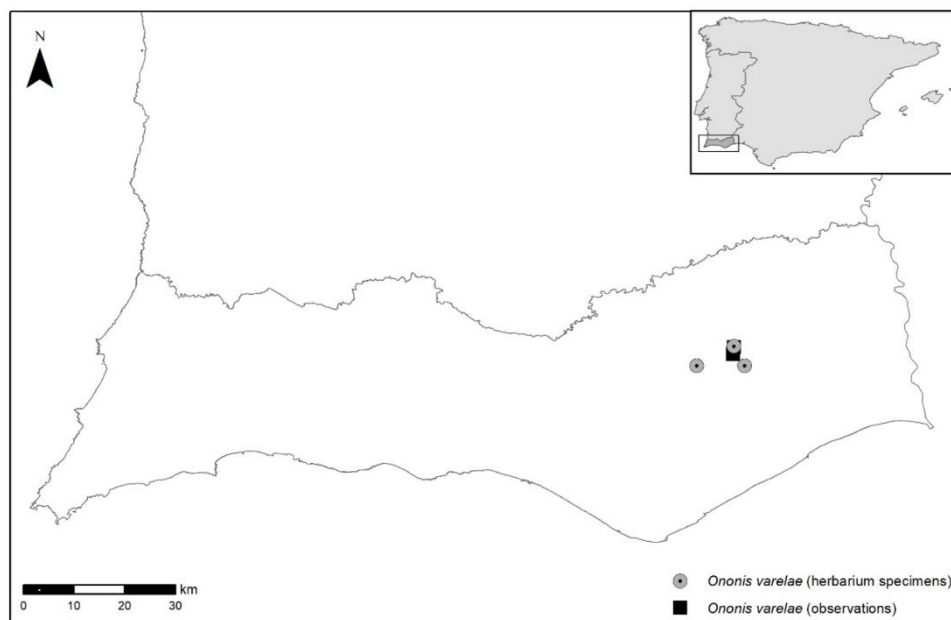
**Figure 2.** First known collection of *Ononis varelae* in Portugal (LISI020995). Photograph: Pedro Arsénio.

**Figura 2.** Primera colecta conocida de *Ononis varelae* en Portugal (LISI020995). Fotografía: Pedro Arsénio.

Because the plant is suspected to be restricted to a small geographical area in eastern Algarve and all known sites are very small (estimated at under 100 m<sup>2</sup>), facing plausible threats, a regional extinction risk assessment was prepared following the IUCN Red List guidelines (IUCN Standards and Petitions Committee, 2024). The extent of occurrence (EOO) and area of occupancy (AOO) were calculated using GeoCAT (Bachman *et al.*, 2011).

All known locations lie within the valley of river Odeleite or its vicinity, and both the known EOO and AOO are very small (ca. 15 km<sup>2</sup> and 12 km<sup>2</sup>, respectively). The plant may also occur along the valleys of two other tributaries of the Guadiana River, namely the Foupana and Vascão, as they share similar ecological conditions. Further surveying is recommended to improve the knowledge on its distribution in Portugal, but it can be inferred that this species is regionally rare, because relevant botanical surveys

previously made in Serra do Caldeirão (Quinto-Canas, 2015; Porto, 2012) have failed to report its presence, and only one previous collection from Portugal is known. Considering all this information, the hypothetical EOO and AOO are not likely to surpass 1000 km<sup>2</sup> and 500 km<sup>2</sup> respectively, therefore fulfilling the subcriteria B1 and B2 for Endangered.



**Figure 3.** Location of the Portuguese records of *Ononis varelae*.

**Figure 3.** Localización de los registros portugueses de *Ononis varelae*.

The limited size of all known *O. varelae* sites makes them vulnerable to destruction from forest management activities (e.g., road widening, slope preparation for new plantations), as well as other unpredictable human disturbances. An unquantified population reduction and habitat loss is suspected to have occurred as result of the Odeleite dam construction in 1996, which was responsible for the submersion of 720 hectares in this valley (“Plano de Gestão das Bacias Hidrográficas integradas na Região Hidrográfica 7”, 2011). There are plans for the construction of a new large dam in the nearby Foupana river, and if that project is approved, a large area of potential habitat will be destroyed. Considering all the above, this plant is regionally assessed as Endangered, fulfilling the criterion B1ab(iii)+2ab(iii), due to the small EOO and AOO, a projected continued decline in habitat area and less than five known locations. It should be included in a future addendum of the Red List of Vascular Plants of Mainland Portugal (Carapeto *et al.* 2020).

Additional specimens examined from section *Diffusae* Širj:

*O. baetica* Clemente (COI00081329, COI82032, ALGU3454, ALGU12641, ALGU12642, ALGU12643, ALGU15656); *O. broteriana* DC. (COI00081308, COI00085077, ALGU12644, LISU19600, MA-01-00060971, MA-01-00060978, MA-01-00060979, MA-01-00060980, MA-01-00170778, MA-01-00170881, MA-01-00263764, MA-01-00283088, MA-01-00283089, MA-01-00283090, MA-01-00420800, MA-01-00450738, MA-01-00479750, MA-01-00711619, MA-01-00720685); *O. subspicata* Lag. (COI00085116, LISU19627, LISI020980, LISI021000, PO3678, PO3679, PO3680, PO3681, PO3682, PO3683, PO13196, PO13197, PO13198, PO13199, PO13200, PO13201, PO13202, PO13203, PO13204); *O. picardii* Boiss. (COI00053490, COI00053491).

Note: The species names presented here correspond to those currently indicated on the specimen labels. A revision of these labels—incorporating nomenclatural updates and correcting misidentifications where necessary—is required; however, this task falls outside the scope of the present article.

## Conflicts of Interest

The authors declare that they have no conflicts of interest relevant to the content of this manuscript.

## CRedit authorship contribution statement

Conceptualization: AC. Investigation: AC, MJC. Writing - Original Draft Preparation: AC. Writing - Review & Editing: AC, MJC.

## Acknowledgements

The authors thank Filipe Covelo e Fátima Sales (COI – Herbário da Universidade de Coimbra), Cristiana Vieira (PO – Herbário da Universidade do Porto), Pedro Arsénio (LISI – Herbário João de Carvalho e Vasconcellos, ISA/UL), Francisco Márquez-García (HSS - Herbarium of Agrarian Research Institute Finca “La Orden-Valdesequera” - CICYTEX), Ana Isabel Correia (LISU – Herbário do Museu Nacional de História Natural e da Ciência), Jorge Capelo (LISE - Herbário da Estação Agronómica Nacional), Maria Manuela David (ALGU – Herbário da Universidade do Algarve), Carla Pinto Cruz (UEVH - Herbário da Universidade de Évora), Eva García Ibáñez (MA - Herbario del Real Jardín Botánico de Madrid), and Miguel Porto (Sociedade Portuguesa de Botânica, for searching the LISI specimens).

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