

## ***Lobularia libyca* (Viv.) Meisn. (Brassicaceae), a new species for the mainland portuguese flora**

João Neiva<sup>1</sup>, Ricardo Quinto-Canas<sup>1</sup> & Manuela David<sup>2</sup>

<sup>1</sup> Centro de Ciências do Mar, Universidade do Algarve

<sup>2</sup> Herbário da Universidade do Algarve (ALGU), Universidade do Algarve

### Correspondencia

J. Neiva

E mail: [jmneiva@ualg.pt](mailto:jmneiva@ualg.pt)

Recibido: 1 julio 2022

Aceptado: 14 diciembre 2022

Publicado on-line: 19 diciembre 2022

Editado por: Marta Recio Criado

### Abstract

The annual *Lobularia libyca* (Brassicaceae) is first described from mainland Portugal. A single isolated population, composed of fruiting individuals approaching the end of their life cycle, was found in Ria Formosa (Algarve, southern Portugal) in early 2022, and was estimated to be less than 120 reproductive individuals. The native status and apparent rarity of the species, or at least of records, in the region, are discussed.

**Key words:** Brassicaceae, mainland Portugal, *Lobularia libyca*

### Resumen

*Lobularia libyca* (Viv.) Meisn. (Brassicaceae), una nueva especie para la flora continental portuguesa

La Brassicacea anual *Lobularia libyca* se describe por primera vez en Portugal continental. Una sola población aislada, compuesta por plantas bien fructificadas que se acercaban al final de su ciclo de vida, se encontró en Ria Formosa (Algarve, sur de Portugal) en 2022, y se estimó en menos de 120 individuos reproductivos. Se discute el estado nativo y la aparente rareza de la especie, o al menos de registros, en la región.

**Palabras clave:** Brassicaceae, Portugal continental, *Lobularia libyca*

*Lobularia libyca* (Viv.) Meisn. is a therophyte with a wide distribution range that includes Mediterranean, Irano-Turanian and Saharan-North Arabian biogeographical regions (Fernandes, 1997; GBIF.org, 2022), reaching the Macaronesian archipelagos of Canarias and Madeira (Porto Santo Island, Grupo Botânico da Madeira, 2013). In the Iberian Peninsula, the species is present along the coast from Alicante to Andalusia (Fernandes, 1997). In Andalusia it enjoys a “Least Concern” conservation status (Cueto *et al.*, 2018), but is considered very rare and localized in the Cádiz and Littoral Huelva biogeographic Sector (Hernández-Bermejo & Hidalgo, 1987). According to the main Portuguese Floras, such as Coutinho (1939), Franco (1971), Fernandes (1997) and Sequeira *et al.* (2011), this Brassicaceae is not part of the mainland Portugal flora.

Here we extend the distribution of *L. libyca* to the southern coast of Portugal (Algarve biogeographic District), where a single population was detected in the Ria Formosa Natural Park. The species was observed and collected in late January and early February 2022, near the village of Fuseta, in the municipality of Olhão. It was found in the access to the beach of Fuseta (also known as Praia dos Tesos), where several clusters of plants were observed, scattered in an isolated sandy plot ca. 500 m of perimeter. Despite being mid-winter, all plants were

approaching the final stages of their life cycle. Most basal and stem foliage was dried or lacking, with plants being reduced to long prostrate-ascending fruiting racemes. Flower size and morphology, and in particular diagnostic fruit and seed characteristics, allowed unambiguous identification (Figure 1). The elliptical, compressed and glabrescent silicles were 4-6 mm long, patent, had a persistent style, and each contained 3-6 brownish winged seeds ca. 0.5 mm long.

The population occurs in the dry thermomediterranean bioclimate, with a clear oceanic tendency (semihyperoceanic). The plants grew in open spaces of semi-fixed dunes (grey dunes), among *Malcolmia maritima* (L.) R.Br., *Paronychia argentea* Lam. and *Erodium cicutarium* subsp. *bipinnatum* (Cav.) Tourlet, with other *Erodium* spp. and *Emex spinosa* (L.) Campd. indicating some level of disturbance and nitrogen input. Other plants developing later in the season included *Pseudorlaya minuscula* (Pau) M.Laínz, *Pseudorlaya pumila* (L.) Grande, *Hedypnois arenaria* (Schousb.) DC. and *Silene nicaeensis* All. According to Quinto-Canas *et al.* (2021) the disturbance from human trampling and other activities causes the modification of the sandy ecosystem and, as a consequence, enhances the abundance of subnitrophilous species, which could cause a higher risk of disappearance of *L. libyca*.

Despite the abundance of this habitat and associated communities throughout the broader region, and notwithstanding additional surveying efforts, no other *L. libyca* populations were detected in the vicinity of this location. The restricted range of this population is enigmatic. It may be the case that the population has established relatively recently, associated with cross-border beach tourism, but indirect evidence suggests its presence in the area for more than a decade. A single isolated record of *Lobularia maritima* L., a superficially similar species present in the rocky coast of west and southwest Portugal, was recorded in this same area in January 2008 (Holyoak, 2008), strongly suggesting it was a case of misidentification of *L. libyca*. We suspect that the apparent rarity of *L. libyca* in central and eastern Algarve may reflect to some extent its early phenology, that reduces the likelihood of detection. Future work may confirm or not this hypothesis.



**Figure 1.** *Lobularia libyca* from Fuseta, Algarve, Portugal. General aspect of **a)** coastal habitat patch and **b)** tips of reproductive racemes; and detail of **c)** flower and silicules; and **d)** open silicules and winged seeds.

**Figura 1.** *Lobularia libyca* de Fuseta, Algarve, Portugal. Aspecto general de **a)** parcela de hábitat y **b)** puntas de racimos reproductivos; y detalle de **c)** flor y silículas; y **d)** silículas abiertas y semillas aladas.

*L. libyca* has very few records in Huelva province but is locally abundant in restricted areas around Doñana National Park (López-Albacete *et al.*, 2007). The mainland Portugal population apparently extends ca. 120 km westwards the known distribution in the Iberian Peninsula. Even considering the possibility of a "recent" colonization promoted by man, the species should be considered native, as its presence in Algarve is within its plausible geographic range. Considering the minimal extent of occurrence (EOO) and area of occupancy (AOO), the estimated number of reproductive individuals ( $n < 120$  in 2022), and the existence of several perceived local threats, such as excessive trampling, soil mobilization and organic input, this species (as currently known) is likely to classify, according to the criteria of the IUCN Red List, in a threat category, which require special

conservation measures. Therefore, it should be assessed in a future addition to the Portuguese Red List of Vascular Plants (Carapeto *et al.*, 2020), after carrying out a survey in the surrounding region, to collect additional data regarding its actual distribution and population size.

An herbarium voucher was prepared for future reference in the herbarium of University of Algarve (ALGU).

### *Lobularia libyca* (Viv.) Meisn

**PORTUGAL, Algarve** (Ag), Fuseta, 37.051689 Latitude, -7.743554 Longitude. Coastal sand dunes. João Neiva, Ricardo Quinto-Canas, Maria João Correia & Manuela David, 06-02-2022, (ALGU 15785).

## References

- Carapeto A., Francisco A., Pereira P., Porto M. (eds.) (2020). *Lista Vermelha da Flora Vascular de Portugal Continental*. Sociedade Portuguesa de Botânica, Associação Portuguesa de Ciência da Vegetação – PHYTOS e Instituto da Conservação da Natureza e das Florestas (coord.). Coleção «Botânica em Português», Volume 7. Lisboa: Imprensa Nacional.
- Coutinho, A. (1939). *Flora de Portugal (Plantas Vasculares)* 2ª Ed. Lisboa: Bertrand.
- Cueto, M., Luque M. M., Giménez, E., Fuentes, J., Carrique, E. L. & Blanca, G. (2018). First updated checklist of the vascular flora of Andalusia (S of Spain), one of the main biodiversity centres in the Mediterranean Basin. *Phytotaxa*, 339, 1–95.
- Fernandes, RB (1997). *Lobularia* Desv. [nom. cons.]. In Castroviejo, S. *et al.* (Eds). *Flora iberica* 4 (pp. 196-200). Madrid: Real Jardín Botánico, C.S.I.C.
- GBIF.org (2022). *Lobularia libyca* (Viv.) Meisn. In GBIF Secretariat (2021). GBIF Backbone Taxonomy. Checklist dataset <https://www.gbif.org/species/5373339> accessed via GBIF.org on 2022-04-05.
- Grupo Botânico da Madeira (2013). Checklist da Flora do Arquipélago da Madeira, accessed via [http://www4.uma.pt/gbm/checklist/lista\\_flora.php](http://www4.uma.pt/gbm/checklist/lista_flora.php) on 2022-04-05.
- Franco, J. (1971). *Nova Flora de Portugal (Continente e Açores)*. Lisboa: Autor.
- Hernández-Bermejo, J.E. & Hidalgo, B. (1987). 18. *Lobularia* Desv., *Jorn. Bot. Agric.* 3: 162 (1815), nom. cons. In Valdés *et al.* (Eds) *Flora Vascular de Andalucía Occidental* 1 (pp. 400-401). Barcelona: Ketres.
- Holyoak D. (2008). *Lobularia maritima* (L.) Desv. subsp. *maritima* - mapa de distribuição. In F.Clamote, A.Carapeto, P.Beja, M.Porto, P.V.Araújo, J.D.Almeida, M.J.Correia, U.Schwarzer, *et al.* (2022). *Flora-On: Flora de Portugal Interactiva*, Sociedade Portuguesa de Botânica. <http://www.flora-on.pt/#wLobularia+maritima+subsp.+maritima>, assessed 06-02-2022.

- López-Albacete, I., de las Heras, M. A., Gullón, E. S., Hidalgo, P. J., Muñoz Rodríguez, A. F. (2007). 132. Aportaciones florísticas para Doñana. *Lagascalia*, 27, 390-402.
- Quinto-Canas, R., Cano-Ortiz, A., Raposo, M., Musarella, C.M., Del Río, S., Raposo, M., Carapeto, A., Menezes, R., Piñar Fuentes, J., Bioret, F. & Pinto-Gomes, C. (2021). Coastal dune vegetation of the Ria Formosa (Algarve, Portugal) barrier island system. *International Journal of Geobotanical Research*, 10, 37-44.
- Sequeira, M., Espírito-Santo, D., Aguiar, C., Capelo, C., & Honrado, J.J. (Eds.) (2011). *Checklist da Flora de Portugal Continental, Açores e Madeira*. ALFA –Associação Lusitana de Fitossociologia.