

First records of *Centaurea hyalolepis* Boiss. subsp. *hyalolepis* (Asteraceae, Cardueae-Centaureinae) in Tunisia

Ridha El Mokni ^{1, 2}

¹University of Monastir, Laboratory of Botany, Cryptogamy and Plant Biology, Faculty of Pharmacy of Monastir, Avenue Avicenna, 5000-Monastir, Tunisia.

²University of Carthage, IRESA, Laboratory of Forest Ecology, National Research Institute of Rural Engineering, Water and Forests, 2080-Ariana, Tunisia.

Author for correspondence: ridha.elmokni@fphm.rnu.tn; ridhaelmokni@yahoo.fr

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Abstract

Botanical surveys within Tunisian territory undertaken during the last two decades led to the discovery of many scattered and extended populations of *Centaurea hyalolepis* subsp. *hyalolepis* (*Centaurea* sect. *Calcitrapa*, Asteraceae). A taxon, native in the east Mediterranean to Iran and Arabian Peninsula but widely naturalized in many European countries, here firstly reported for Tunisia. The plant seems to be well-established and takes part within ruderal/sub-nitrophilous vegetation, representing the first case of appointment/naturalization in Tunisia. Phenology of the species as well as original photographs are here provided.

Key words: Asteraceae, *Centaurea*, new records, aliens, North Africa.

Resumen

Primeros registros de *Centaurea hyalolepis* Boiss. subsp. *hyalolepis* (Asteraceae, Cardueae-Centaureinae) en Túnez

Los estudios botánicos realizados en el territorio tunecino durante las últimas dos décadas condujeron al descubrimiento de muchas poblaciones dispersas y extendidas de *Centaurea hyalolepis* subsp. *hyalolepis* (*Centaurea* sect. *Calcitrapa*, Asteraceae). Se trata de una taxón nativo del Mediterráneo oriental, hasta Irán y la Península Arábiga, pero ampliamente naturalizado en muchos países europeos, que se cita aquí por primera vez para Túnez. La especie parece estar bien establecida aquí formando parte de la vegetación ruderal/subnitrófila, por lo que se trata de la primera cita sobre su naturalización en Túnez. Se proporciona aquí la fenología de la especie así como fotografías originales.

Palabras clave: Asteraceae, *Centaurea*, nuevos registros, especies exóticas, África del Norte.

In the course of floristic surveys along Tunisian territory aiming updates of the Asteraceae family taxa (see e.g., El Mokni & Iamónico, 2018a, 2018b; El Mokni & Domina, 2020; El Mokni *et al.*, 2022, 2023; El Mokni, 2024a, 2024b) and due to iterate careful field investigations one more species of the *Centaurea* genus within the sect. *Calcitrapa*, not previously recorded for the vascular flora of the country was firstly discovered, in 2013. The plant was found firstly growing among roadsides' sub-nitrophilous plant communities in the surroundings of Kairouan-city (Kairouan, CE of Tunisia), identified later as *C. hyalolepis* Boiss subsp. *hyalolepis*. In this work, we report first occurrences of *Centaurea hyalolepis* subsp. *hyalolepis* in Tunisia providing information on its distribution, ecology, together with original photographs.

Botanical surveys carried out through different regions of the north-western and central-eastern of Tunisia since more than two decades aiming updates about its wild/non-native flora, especially the undocumented ones. Data on the plant populations and the habitats of the recoded taxa were also compiled. For the identification and the identity of the species, relevant literature (see e.g. Mouterde, 1984: 489; Crespo, 1992: 131; Devesa Alcaraz *et al.*, 2012: 256-258; Devesa Alcaraz, 2014: 519-521 et 2016: 256-258; Zater *et al.*, 2019) and examination of specimens preserved at some accessible herbaria were used (CLF, GAP, LY, MPU, NCY, P, VTA, acronyms follow Thiers, 2025+ [continuously update]). Collected specimens, identified as *Centaurea hyalolepis* Boiss. subsp. *hyalolepis*, are deposited at the personal herbarium of the author (Herb. R. El Mokni) housed in the Herbarium of Monastir University (not listed in *Index Herbariorum*). The nomenclature of reported taxa mainly follows APD (2025).

Centaurea hyalolepis Boiss., Diagn. Pl. Orient. 6: 133 (1846) subsp. ***hyalolepis*** (Figure 1)

≡ *C. pallescens* subsp. *hyalolepis* (Boiss.) Holmboe, Bergens Mus. Skr. ser. 2, 1: 190 (1914)

≡ *Calcitrapa hyalolepis* (Boiss.) Holub, Preslia 46: 227 (1974)

Iconography. Crespo (1992, Fig. 2); Devesa Alcaraz *et al.* (2012, 244, Fig. 1c, capitulum; Devesa Alcaraz, 2014: 520; 2016: 330).

Centaurea hyalolepis Boiss. subsp. *hyalolepis* is a biannual, branchy stems divaricate from the base, up to 100 cm long, pubescent, spidery branches (Figure 1B) distinguished mainly with its glabrous, pale bracts of the involucre ovate, ending in a semi-lunar, transparent appendage, itself ending in a strong spine longer than the flowers (Figure 1A).

Phenology in Tunisia. *Centaurea hyalolepis* subsp. *hyalolepis* begins to vegetate in (the end of February-) March, flowering since May, and begins fruiting in June. Flowering and fruiting specimens have been seen from the end of May to late July(-August) for many years in different localities.

General distribution. *Centaurea hyalolepis* subsp. *hyalolepis* first described from Syria (Boissier, 1846) has a native range that extends to southwestern Asian arid and semi-arid places. The plant was then introduced into various countries in the western European Mediterranean region including Italy, France, Germany, Belgium with Luxembourg and Spain and only into Morocco with more recently to Algeria, within the Mediterranean North African region (see more in Zater *et al.*, 2019; Khellaf *et al.*, 2021).

In Tunisia, the plant was found at several localities (distant from each other's, all situated in the inland part of Tunisia) within different governorates from centre to north with many located to very extended populations within an area of occupancy that exceed sometimes 10 ha. So far, the original vector for introduction of *Centaurea hyalolepis* subsp. *hyalolepis* in Tunisia remains unknown. However, the observation of this plant on the edge of cultivated fields raises the possibility of its accidental introduction due to annual crop seeds contamination, without excluding eventual other pathways among which its occasionally introduction from seeds escaped from cultivation of from ornamental plants. According to Pyšek *et al.* (2004) and Richardson & Pyšek (2006), we assess here *Centaurea hyalolepis* subsp. *hyalolepis* as a well-established to invasive alien for Tunisia, as part of the Mediterranean North African region (Figure 2).

Habitat and ecology in Tunisia. The species grows sporadically in anthropized sites such as borders of plantations, grasslands in wastelands, on the edges of roads and highways at an altitude that various from 10-700 m a.s.l. It grows mainly with *Amaranthus viridis* L., *Bidens pilosa* L., *Carlina* sp., *Centaurea*

calcitrapa L., *Cuscuta campestris* Yunck., *Cynodon dactylon* (L.) Pers., *Datura wrightii* Regel, *Diploaxis simplex* (Viv.) Spreng., *Dittrichia graveolens* (L.) Greuter, *Echinops spinosissimus* Turra, *Lactuca serriola* L., *Lolium multiflorum* Lam., *Malva parviflora* L., *Medicago monspeliaca* (L.) Trautv., *Peganum harmala* L., *Plantago albicans* L., *Portulaca oleracea* L. s.l., *Polygonum aviculare* L., *Salvia aegyptiaca* L., *Scolymus grandiflorus* Desf., *Sonchus tenerrimus* L., *Trigonella maritima* Poir., etc.



Figure 1. *Centaurea hyalolepis* in Tunisia. (A) Detail of a capitula. (B) Habit. Photos: Ridha El Mokni.

Figura 1. *Centaurea hyalolepis* en Túnez. (A) Detalle de un capítulo. (B) Hábito. Fotografías: Ridha El Mokni.

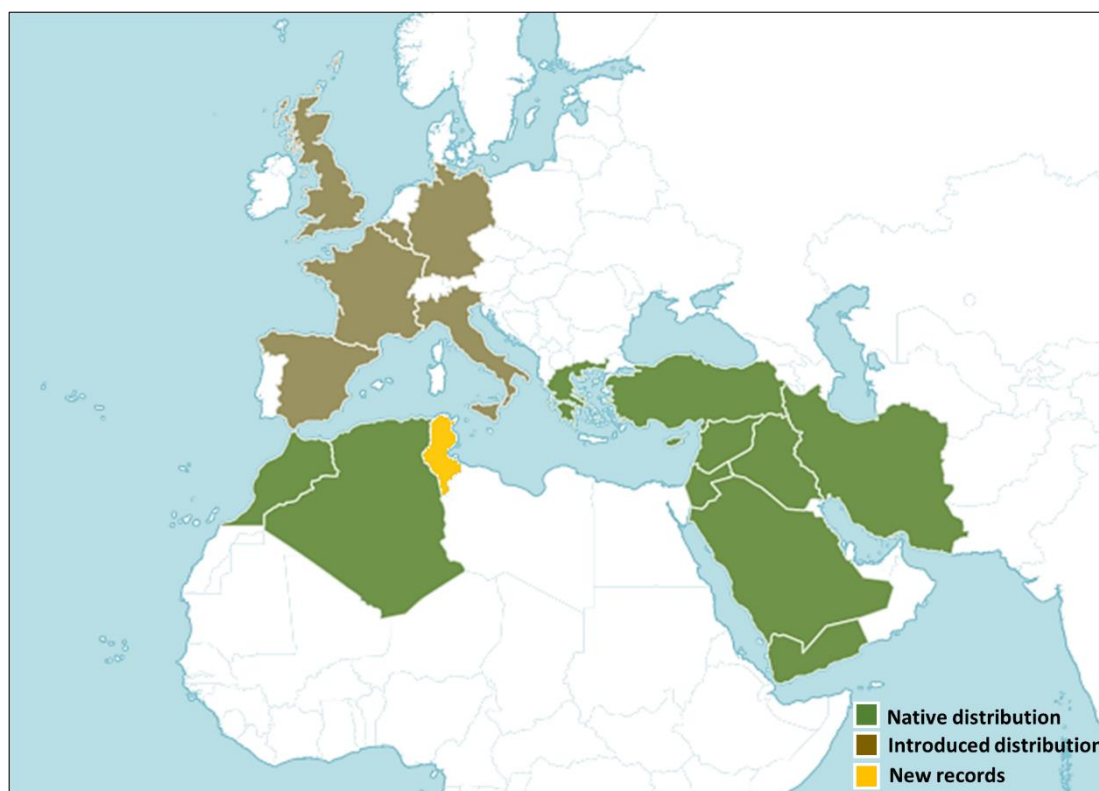


Figure 2. Map of the actual world-wide distribution of *Centaurea hyalolepis* subsp. *hyalolepis*, retrieved from WFO (2025) with modification.

Figura 2. Mapa de la distribución mundial actual de *Centaurea hyalolepis* subsp. *hyalolepis*, recuperado de WFO (2025) con modificación.

Specimens examined (our collections). TUNISIA. Kairouan: Kairouan-city, on borders of cultivated lands and roadsides, 60-70 m a.s.l., 01 May 2013, El Mokni s.n. (Herb. Univ. Monastir), 20 individuals on an area of ca. 100 m²; *ibidem*, on roadsides 50-60 m a.s.l., 26 May 2022, El Mokni & Domina s.n. (Herb. Univ. Monastir, PAL), 300 individuals on an area of ca. 1 ha; *ibidem*, on roadsides, 60-70 m a.s.l., 01 June 2024, El Mokni s.n. (Herb. Univ. Monastir), thousands of individuals on an area of ca. 11 ha. Monastir: Ksar Hellal, on abandoned field destined for construction, 20-30 m a.s.l., 04 May 2018, El Mokni s.n. (Herb. Univ. Monastir), 3 individuals in an area of ca. 100 m²; *ibidem*, on roadsides, 20-30 m a.s.l., 16 May 2023, El Mokni s.n. (Herb. Univ. Monastir), 10 individuals in an area of ca. 100 m². Borgine, on roadsides, 50-60 m a.s.l., 01 June 2024, El Mokni s.n. (Herb. Univ. Monastir), 100 individuals in an area of ca. 1 ha. Moknine, on edges of cultivated fields, 20-30 m a.s.l., 04 June 2024, El Mokni s.n. (Herb. Univ. Monastir), 6 individuals in an area of 100 m². Tunis: Tunis-city, on roadsides, 10-20 m a.s.l., 11 July 2023, El Mokni s.n. (Herb. Univ. Monastir), 8 individuals in an area of ca. 100 m². Sousse: M'saken, on roadsides, 50-60 m a.s.l., 01 June 2024, El Mokni s.n. (Herb. Univ. Monastir), hundreds of individuals in an area of ca. 1 ha. Le Kef: Kalâat Snène, on roadsides and abandoned fields destined for construction, 60-70 m a.s.l., 12 June 2024, El Mokni s.n. (Herb. Univ. Monastir), hundreds of individuals in an area of ca. 2 ha. Mahdia: Souassi, on roadsides, 48-50 m a.s.l., 17 May 2025, El Mokni s.n. (Herb. Univ. Monastir), several huge individuals in an area of ca. 1 ha. Monastir, Bembla, on roadsides and abandoned fields destined for construction, 18-20 m a.s.l., 28 May 2025, El Mokni s.n. (Herb. Univ. Monastir), several sporadic individuals in an area of ca. 100 m².

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Conflicts of interest

The author declare that he has not conflicts of interest relevant to the content of this manuscript.

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