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***Galinsoga parviflora* (Asteraceae): A new alien species recorded in Morocco**

Abstract

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Native to America, *Galinsoga parviflora* Cav. was recently discovered in Morocco for the first time, marking a further extension of its range. The species was identified as a naturalized species in the North Atlantic Morocco floristical division during botanical prospections carried out between 2022 and 2025. The morphological characters, geographical coordinates, habitat, and ecology of this species are described in this work.

Key words: First record, Alien flora, Invasive, North Atlantic Morocco.

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Introduction

In recent years, several alien species have been introduced and discovered in Morocco, including *Ageratum houstonianum* Mill., *Cardiospermum halicacabum* L., *Eichhornia crassipes* (Mart.) Solms, *Euphorbia hyssopifolia* L., *Ipomoea indica* (Burm.) Merr., *Ipomoea triloba* L., *Lemna minuta* Raf., *Mirabilis jalapa* L., *Physalis ixocarpa* Nees, *Setaria palmifolia* (J.Koenig) Stapf, *Tithonia diversifolia* (Hemsl.) A. Gray (Léger & al. 2025), *Lilium candidum* L. (Chriqui & al. 2024), *Chorisporea tenella* (Pall.) DC. (Homrani Bakali & al. 2024), *Cotula australis* Hook.f. (Chambouleyron 2023; Jbilou & al. 2023), *Amaranthus spinosus* L. and *Cardamine occulta* Hornem. (Sukhorukov & al. 2023), *Chenopodium glaucum* L. (Chambouleyron & al. 2022). *Galinsoga parviflora* Cav. can, from now be added to this list. The genus *Galinsoga* Ruiz & Pav. belongs to the Asteraceae family, with twelve species recognised worldwide and a native distribution in tropical and subtropical America (POWO 2025). The natural distribution range of this diverse and taxonomically complex genus extends from Mexico to Chile, covering part of South and Central America (Canne 1977; Boulos 2002). It spread quickly across Europe and was

reported by the early 19th century in several countries (Vinogradova & al. 2009). In North Africa, *Galinsoga* is represented by two species: *G. quadriradiata* Ruiz & Pav. and *G. parviflora* Cav. (Dobignard, Chatelain & al. 2011; APD 2025). In Morocco, according to Fennane (2021) and Dobignard (2025), this genus is represented only by *G. quadriradiata*. During our botanical surveys in the Rabat-Salé-Kénitra region (Man-3, Fig. 1) between January 2022 and March 2025, we discovered eight populations of *G. parviflora*. This species is very similar to *G. quadriradiata*; the possibility that both *Galinsoga* will hybridize (Gopinathan & Babu 1982) makes their determination difficult. So, we propose a comparison between these two species below (Fig. 2).

Materials and Methods

As part of updating the Moroccan vascular flora, several botanical surveys were carried out between 2022 and 2025 in the Moroccan Atlantic North-3 (Man-3) floristical division (as defined by Ibn Tattou & Fennane 2008). The geographical coordinates were measured with a GPS receiver (generally with a decametric inaccuracy). They are expressed in degrees-minutes-seconds (WGS84). The determination relied on relevant pertinent literature (e.g. Tutin & al. 1976). The nomenclature adopted follows the International Plant Name Index (IPNI 2025). Chorology is derived from databases such as POWO (2025), Euro+Med PlantBase (2025), and APD (2025). The exsiccata of these plants have been deposited at the Rabat National Herbarium (RAB114822) and the Emirates Center for Wildlife Propagation Herbarium (ECWP).

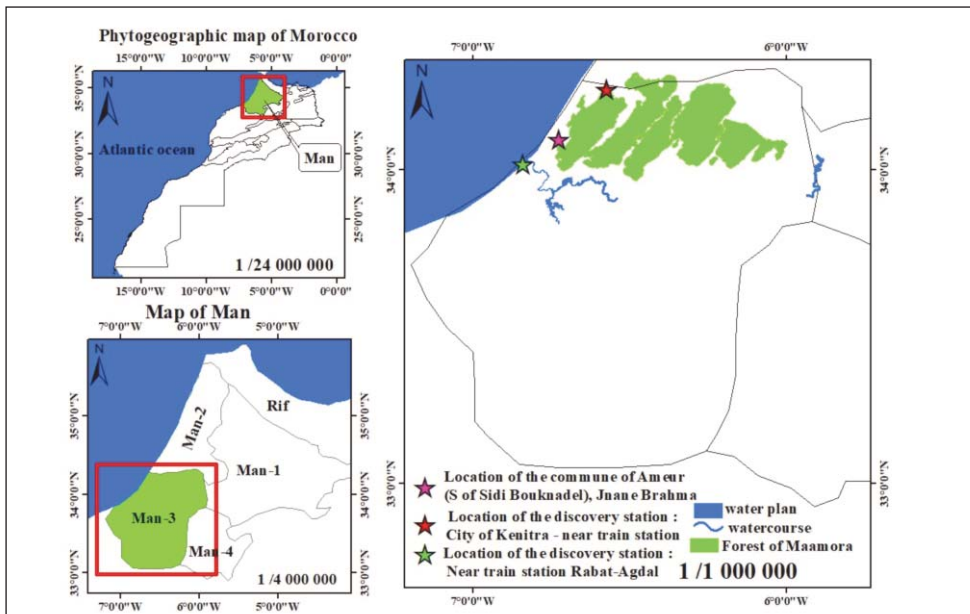


Fig. 1. Known locations of *Galinsoga parviflora* in Morocco.

Results and Discussion

Galinsoga parviflora Cav., Icon. Descr. 3: 41, t. 281 (1795). $\equiv$ *Adventina parviflora* (Cav.) Raf. in New Fl. 1: 67 (1836) $\equiv$ *Wiborgia parviflora* (Cav.) Kunth in F.W.H. von Humboldt, A.J.A. Bonpland & C.S. Kunth, Nov. Gen. Sp., ed. fol., 4: 201 (1818).

Morphology: Below, we provide Figure 2 illustrating the main diagnostic morphological characteristics of *Galinsoga parviflora* and *G. quadriradiata*.

G. parviflora differs from *G. quadriradiata* by the following characters: The Lower part of the *stem* is almost glabrous to pubescent (vs. densely hairy in *G. quadriradiata*), *leaves* very sparsely hairy (vs. densely hairy); *peduncle*: sparsely hairy, with appressed hairs and some reddish glandular hairs (vs. densely hairy with simple, spreading hairs and reddish glandular hairs); *Bracts* in three rows (vs. in two rows); *Receptacle scales*: deeply trifid, the central lobe being generally ob-lanceolate (vs. usually entire, or weakly bifid or trifid); *Achenes* of the ray flowers are 1.5–2 mm long (vs. 1.3–1.8 mm long).



Fig. 2. Distinctive Morphological characters of *G. parviflora* (A, C, F, G, I and K a) and *G. quadriradiata* (B, D, E, H, J and K b): A & B. Leafy stems with inflorescences; C & D. Flower peduncles topped by flower heads; E & F. Floral receptacles with internal scales; G & H. Internal scales; I & J. Central achenes & K. Peripheral achenes (Photos by O. Benkhniue, 2025).

Flowering and Fructification: *Galinsoga parviflora* is a ruderal plant found in agricultural and urban ecosystems. It grows rapidly and reproduces abundantly in disturbed environments. In Morocco, it flowers and fruits from January to late spring, then dries quickly.

Distribution and Ecology: *Galinsoga parviflora* mainly colonizes disturbed habitats and agricultural areas in Central and South America, as well as in Europe (Rojas-Sandoval & Acevedo-Rodríguez 2015). (It extends from Arizona to Texas, as well as in tropical America (POWO 2025). It has been introduced and widely naturalized throughout the world. It is sometimes considered invasive and problematic (e.g. Riemens & Weide 2008). These introductions were generally involuntary via shipments of seeds, fodder or soil. In North Africa, it was known until now in all countries, except Morocco (Boulos 2002; Dobignard & al. 2011; Brahim & al. 2024; APD 2025).

In Morocco, *Galinsoga parviflora* was found in eight locations in the North Atlantic region of Morocco (Man-3). The region exhibits a subhumid Mediterranean climate. O. Benkhniq documented a total of seven occurrence sites within the urban commune, four of which are situated in the city of Kénitra (La-Hay district, 34°14'56.3"N 6°34'51.6"W, 07.02.2023-2025; Av. Mohamed Diouri, 34°15'12.7"N 6°34'52.3"W, 10.02.2022- 2025; two sites in the la ville haute district (near Oued Sebou, 34°15'53"N 6°35'19"W, 22.02.2024 and Hammam El Fatouaki Street, 34°15'48"N 6°35'16"W, 22.02.2025) and three sites in the city of Rabat (two roadside sites and near the Arribat Center, 34°00'08.2"N 6°50'44.2"W, 12.02.2025, and in the Ministry of Education car park, 34°00'41"N 6°50'19"W, 10.01.2022-2025). J.-F. Léger did another observation in the rural commune (Ameur S of Sidi Bouknadel), Jnane Brahma 34°06'14"N 6°43'58"W, 13.02.2022, on the edge of a humus-rich field (det. M. Chambouleyron, then F. Verloove, herb. Emirates Center for Wildlife Propagation at Missouri (ECWP s.n.) (Fig. 1).

Regarding the habitat and ecology of *Galinsoga parviflora*, both in Rabat and Kénitra, we found this species in urban or rural locations with highly disturbed habitats and environments (e.g., roadsides, sidewalks, ornamental plant pots, old damp walls, wet ditches, gardens, greenhouses, nurseries, and abandoned gardens). Since January 2022, over 100 individuals of *G. parviflora* have been consistently observed in Man-3 on moderately humid sandy-clay soils, or at the edge of cultivated fields on humus-rich, hygrocline soils. This ecology is similar to that of other species cited in Spain (Blanca López & al. 2011).

Conclusion

Naturalized long ago around the Mediterranean and on the African continent, the introduction of *Galinsoga parviflora* into North Africa is recent (or remained unnoticed). After Egypt, Algeria, it is now observed in Morocco. It is one of two non-native *Galinsoga* species in Morocco and is often confused with *G. quadriradiata* due to morphological similarities. Recently, in Morocco, Fennane (2021) and Dobignard (2025) mentioned *G. quadriradiata* as a weed in the Middle Atlas region. Benkhniq & al. (2024) mentioned the recording of this species in a new floristical division (Man-3) and, more precisely, in the city of Kénitra. This is consistent with the fact that these two species have similar ecological needs, as previously reported by Warwick & Sweet (1983). The species was likely

introduced recently to Morocco through seeds present in horticultural substrates used for urban ornamental plantings. Now naturalized, it exhibits invasive potential in open environments such as vegetable crops.

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