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Two New Records from Lebanon: *Chamaesyce nutans* (Lag.) Small (Euphorbiaceae) and *Eleusine indica* (L.) Gaertner (Poaceae)

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Abstract: *Chamaesyce nutans* (Lag.) Small (Euphorbiaceae) and *Eleusine indica* (L.) Gaertner (Poaceae) are described as new records for the flora of Lebanon. Specimens of *C. nutans* collected from roadsides and rocks in a middle mountain forest confirm the occurrence of the species on the western slopes of the Mount Lebanon Range. Additionally, specimens of *E. indica* were collected from wasteland and roadsides in the coastal town of Kaslik. The species were observed to thrive abundantly in similar habitats along the coastal urban zone of Lebanon.

Key Words: Adventitious species, biodiversity, Euphorbiaceae, flora, Gramineae, Lebanon, Mediterranean, Poaceae

Introduction

Chamaesyce nutans is (Lag.) Small established in many countries of the European continent, particularly in the central and southern regions, where it is described to occur as a locally naturalised species (Smith & Tutin, 1968). In the neighbouring region, *C. nutans* is reported from Palestine, where it is uncommonly encountered in nurseries and waste places in the Judean Mountains (Zohary, 1972). The *Flora of Turkey* does not indicate any reference to the presence of the species (Radcliffe-Smith, 1982). Similarly, *C. nutans* has never been reported from Lebanon or Syria (Post, 1932; Mouterde, 1970).

Eleusine indica (L.) Gaertner is generally considered an adventitious species originally native to the tropical and subtropical regions (Hansen, 1980; Tan, 1985; Feinbrun-Donthan, 1986). In southern Europe it represents a naturalised species occupying roadsides and disturbed grounds (Hansen, 1980). It is the only species of the genus that has established itself in parts of the eastern Mediterranean, as recorded in the *Flora of Turkey* and *Flora Palaestina* (Tan, 1985; Feinbrun-Donthan, 1986). Despite of its adventitious nature, it has not been reported from Lebanon or Syria (Post, 1932; Mouterde, 1966).

Under the Wild Flora Project initiated 25 years ago, surveys of the coastal flora of Lebanon revealed the prevalence of *E. indica*, particularly in disturbed habitats. Similarly, exploration of the flora of an oak forest in the middle mountain zone of the Mount Lebanon Range resulted in the discovery of *C. nutans* populations surviving in this natural system.

Results and Discussion

Chamaesyce nutans (Lag.) Small, Linnaea 15: 685 (1841). Synonym: *Euphorbia nutans* Lag., Gen. et Sp. Nov. 17 (1816). *E. preslii* Guss. Fl. Sicul. Prodr. 1:539 (1827). *E. hypericifolia* sensu Engelm. in Chapm. Fl. S.U.S. 403 (1860). *Tithymalus nutans* (Lag.) Samp., Anais Fac. Sci. Porto 17: 5 (1931). (Illustration: Zohary, 1972).

Examined specimen: Lebanon: Kesrouan Province, Chenan-Aair, 785 m, lat 34°00'16" N, long 35°40'28"E, 29 July 2005, R. Haber and M. Semaan, no. 3382 (BEI).

Annual herb, glabrescent to sparsely hirsute; stems 10-15 cm, procumbent to ascending, branched from base; leaves 0.8-1.5 x 0.4-0.8 cm, opposite, subsessile, elliptic-oblong, acute, serrate, oblique at base, sparsely hirsute above, glabrous beneath, green with purple tint,

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often with reddish spots in the middle; petiole 1-2 mm; stipules 0.5 mm, triangular, reddish, fringed; involucre campanulate, glabrous outside, hairy within, lobes lanceolate; glands yellow, ovate to orbicular, with an entire or obscurely sinuate appendage; capsule 1.8-2 x 2 mm, globular, 3-sulcate; carpels slightly keeled, smooth, glabrous; seeds 1-1.2 mm, tetragonous-ovoid, blackish, transversely rugulose.

Eleusine indica (L.) Gaertner, Fruct. Stem. Pl. 1:8 (1788). Synonym: *Cynosurus indicus* L., Sp. Pl. 1:72 (1753). *E. domingensis* Sieber ex Schultes, Mant. 2: 323 (1824). Figure 1.



Figure 1. *Eleusine indica* (L.) Gaertner.
A. Whole plant. B. Inflorescence.

Examined specimens: Lebanon: Kesrouan Province, Kaslik city, 45 m, lat 3°58'40.3"N, long 3°36'51.5"E, 19 November 2005, R. Haber and M. Semaan, no. 3463 (BEI).

Annual grass, 15-150 cm high, tufted, erect or geniculate-ascending; leaf-sheaths glabrous; ligule long ciliate; leaves linear, 15-50 x 0.4-0.6 cm, adaxial surface sparsely pilose; spikes 4-9, 5-10 x 0.3-0.6 cm, straight, slender, in a terminal whorl, sometimes with 1 or 2 spikes below whorl, axis glabrous, not exerted; spikelets 5-6 mm, awnless, 3-7 flowered, elliptic, laterally compressed, in 2-rowed arrangement on a zigzag rachis; glumes oblong-lanceolate, acute, glabrous, keeled, with elevated veins, lower 2-4 mm, upper 3-5 mm; lemma 2.5-5 mm, lanceolate, membranous, glabrous, acute, keeled; palea 2.4-2.6 mm, bidentate, 2-keeled, narrowly winged; caryopsis 1.5 mm, oblong-ovoid, greyish-black.

Distribution and habitat. The 2 new records were observed in different habitats. *C. nutans* survives in a mixed forest of *Quercus coccifera* associated with several tree species. This middle mountain forest extends from 500-800 m asl on the western slopes of the Mount Lebanon range. Climatic conditions are moderate with cold winters of considerable rainfall and dry summers (Service Météorologique, 1966, 1967). There, *C. nutans* grows in pockets of Terra Rosa soil on limestone rocks (Gèze, 1956) as well as in disturbed areas, such as the sides of newly cut roads in the forest. Its population is of a small size and widely dispersed. The sprawl of urban development constitutes the major threat to the site. The flowering season of *C. nutans* extends from June to mid August.

The adventitious nature of *Eleusine indica* is clearly recognisable in the expansion mode of the species in Lebanon. It occurs profusely on roadsides and in disturbed areas in many of the coastal cities, mainly noted in central Lebanon between Jounieh and Khaldeh cities. Its abundance is markedly associated with the prevalence of humid conditions resulting from water canals, ditches, drainage systems, etc.

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