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ORIGINAL ARTICLE

New generic and species records for the flora of Saudi Arabia

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Abstract Recent field works in the central and southern regions of Saudi Arabia including agricultural centers have managed to collect four vascular plants new to terrestrial and wetland flora of the country. These new additions include one new genus *Malvastrum* A. Gray (*M. coromandelianum*) subsp. *capitato-spicatum* (O. Kuntze) S.R. Hill, *Potamogeton perfoliatus* L. (Potamogetonaceae), *Euphorbia tirucalli* L. (Euphorbiaceae) and *Sesuvium portulacastrum* (L.) L. (Aizoaceae). Detailed morphological description, distribution and habitat of each of these species are provided along with illustrations and photographs. The report of new additions to the flora of Saudi Arabia indicated that the country needs thorough botanical explorations.

1. Introduction

Despite arid and extra arid climate of Saudi Arabia, the flora is rich owing to the combination of East African, Mediterranean and Irano-Turanian species (White and Leonard, 1991; Alfarhan, 1999), and due to the unique geographical location of the country between Africa and south Asia, and a varied climate ranging from extra arid to arid to humid. A large number of publications have appeared which provide an accurate and up-to-date compendium of the angiosperms of Arabian Peninsula (Böer and Chaudhary, 1999; Miller and Cope, 1996; Wood, 1993, 1997; Kilian, 1999; Kilian et al., 2002) or of Saudi Arabia (Chaudhary, 1999, 2000a,b,c, 2001; Collenette, 1999; Mandaville, 1990). A total of 2284 species including naturalized and alien plants have been reported from various habitats of Saudi Arabia alone (Thomas, 2011). These records not only furnish an important baseline for the floristic elements but also give an authoritative knowledge about the distribution of these species. However, during the last few years, botanists and enthusiastic plant collectors have encountered several taxa new to the flora of Saudi Arabia, some of them turned out to be new species (Abedin, 1986; Al-Zahrani and El-Karemy, 2007; Fayed and Al-Zahrani, 2007) while others are reported as new records (Abedin

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et al., 1985; Alfarhan et al., 1997; Nader, 1982; Sokoloff, 2001; Masrahi et al., 2010, 2011). As some of the areas in Saudi Arabia are apparently under-collected, one can come across with many more unexpected species previously not recorded for the flora of Saudi Arabia. Detailed study of a few of the specimens collected during the recent field explorations turned out to be species hitherto unknown to Saudi Arabia. The present paper deals with updated nomenclature, detailed morphological description, phenology, habitat, and distribution of the species. The aim of this contribution is to provide supplementary data on the existing vascular plant records and to outline the taxonomic and phytogeographical background of these newly discovered species.

2. Material and methods

Field explorations were conducted during 2012 as part of plant collection for the King Saud University Herbarium (KSU) of the Department of Botany and Microbiology and for a research project on the impacts of invasive species in Saudi Arabia. All relevant field data including associated species have been recorded. The specimens which were not collected earlier were studied in detail and identified using relevant flora, revisions and monographs and were processed and deposited in the Herbarium.

3. Results

Malvastrum A. Gray, Mem. Amer. Acad. Arts, Series 2, 4(1): 21. 1849, *nom. cons.*

Type: Malvastrum wrightii A. Gray [= *M. aurantiacum* (Scheele) Walpers].

Sidopsis Rydberg, Fl. Prairie Plains Centr. N. Amer. 541. 1932.

Plants suffrutescent or herbaceous perennials or annuals with one to several ascending or erect primary stems; vesture of vegetative parts with closely appressed or tufted, occasionally tuberculate or pustular-based, (2) 4–12-rayed stellate hairs, or less frequently, sub-lepidote or simple hairs; leaves petiolate; stipules appressed or reflexed, caducous or persistent, with 1–5 parallel veins; petioles as long as or subequal in length to blade; blades wide-ovate to lanceolate and occasionally obscurely 3-lobed, cordate truncate to wide-cuneate at base, acuminate to rounded at apex, sparsely to densely pubescent on both surfaces, margins crenate–dentate to dentate–serrate or denticulate, palmate veins 3–7; flowers axillary and solitary or in terminal racemes, congested terminal spikes, or in leafless glomerate axillary spicate racemes in the upper half of the plant, pedicellate to nearly sessile, pedicels subtended by leaves and/or stipules or a bifid bract derived from stipules; involucel or 3 bracteoles distinct, appressed, free or adnate basally to calyx, half as long as or subequal to calyx; calyx in bud often strongly 5-angled, somewhat accrescent in fruit, sepals united at base, erect, spreading, or incurved in fruit, with 3–5 subparallel veins/lobe; nectarines 5, indistinct; corolla campanulate, or rotate, petals 5 (rarely 6), and infrequently subequal to the calyx-lobes or exceeding them, distinct, yellow or yellow-orange to pale orange, asymmetrically obovate and usually emarginate or unequally cleft, imbricate in bud, confluent with staminal column at base; androecium with 16–50, monadelphous stamens, column shorter than petals, stamens with terminal dorsifixed

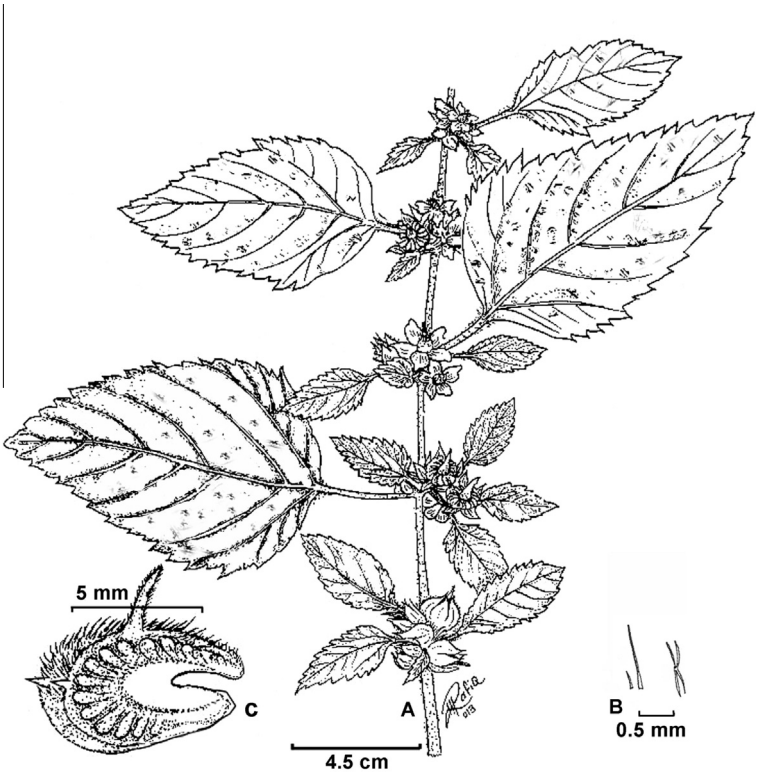

Figure 1 *Malvastrum coromandelianum* subsp. *capitato-spicatum* (O. Kuntze) S.R. Hill. (A) Habit – a portion of stem with axillary short-spicate racemes having flowers and fruits; (B) Simple and 4-rayed hairs; (C) Mericarp.