



Original article

Phragmites australis (Poaceae): New addition to flora of southwestern Saudi Arabia

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ABSTRACT

Phragmites australis (Poaceae) is a cosmopolitan reed grass, so far reported only in Eastern Region of Saudi Arabia. Our recent field exploration in the South West Region of Saudi Arabia resulted in documentation of this species in Gizan City (Jazan Region). The species is reported here as a first record in Jazan Region and an addition to Jazan flora. A note on distribution, ecology, and brief description of the plant is also provided.

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1. Introduction

The flora of Saudi Arabia is diverse having affinities with floras of East African, North African, and Mediterranean countries. It includes about 2282 species (Thomas, 2011) and has early been studied by several workers (Migahid, 1989, 1990; Mandaville, 1990; Colenette, 1999; Chaudhary, 1999, 2000, 2001). Recent explorations by subsequent workers brought several additions to the flora of Saudi Arabia (Alfarhan et al., 1997; Al-Turki, 2003; Fayed and Al-Zahrani, 2007; Masrahi et al., 2010, 2012a,b; Thomas et al., 2014; Masrahi, 2015). These recent explorations have repeatedly indicated that the flora of most of the regions in Saudi Arabia is still under explored. In addition, systematic accounts on regional flora of Saudi Arabia are also rare and are available for only a few Regions (Alfarhan et al., 2005; Masrahi, 2012; Osman et al., 2014; Al-Aklabi et al., 2016). This reflects the necessity for more floristic expeditions in various provinces and floristic regions of Saudi Arabia to understand distribution, habitat, and conservation status of various species. The present paper

accounts for a new distributional record of the reed grass *Phragmites australis* (Cav.) Trin. ex Steud. (Poaceae) from Jazan Region Southwest of Saudi Arabia.

2. Material and methods

Work included several field explorations in 2017 to document urban flora of Gizan City (Jazan Region, Saudi Arabia). Jazan Region south west of Saudi Arabia of variable land forms extends from a long Red Sea coastal line with littoral saltmarshes and mudflats in the west, to the high Sarawat Mountains in the east (Muller, 1984). Stony transitional zone lies between these two extremes with desert plains and desert pavements and a climate influenced by Polar Continental air mass in winter and Tropical Continental air mass in summer (Brown and Jackson, 1979, Fisher and Membery, 1998).

The study site in Gizan City (16°53'N, 42°33'E) is part of Red Sea Coastal line in arid region south west of Saudi Arabia (Fig. 1). The site is characterized by silt-loam soil, short wet season (June – August), and a long dry season with high temperature and high irradiance (Masrahi et al., 2015). High summer temperatures are associated with strong sand storms that add harshness to the environment (Middleton, 1986). Field explorations included herbarium specimen collection and preparation as per standard methods (Bridson and Forman, 1999). Collected specimens were identified using relevant flora books and taxonomic literature (Chaudhary, 1999, 2000, 2001; Alfarhan et al., 2005) and were deposited in Jazan University Herbarium (JAZUH) for further reference.

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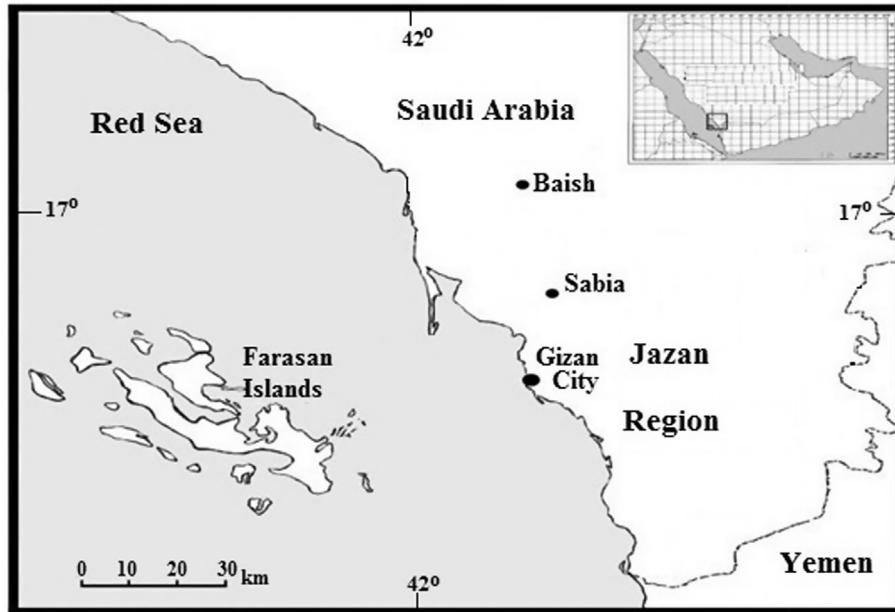


Fig. 1. The study site in Jazan Region Southwest of Saudi Arabia.

3. Results

The genus *Phragmites* was first described by Michel Adanson in his book *Familles des Plantes* published in 1763. This genus is currently represented by four species, namely; *P. australis*, *P. japonicus*, *P. karka*, and *P. mauritanus*.

3.1. Taxonomy

Phragmites australis (Cav.) Trinius ex Steud., *Nomencl. Bot.*, ed. 2.2: 324. 1841; Clayton in *Kew Bull.* 21:113. 1967; Bor in *Towns., Guest & Al-Rawi, Fl. Iraq* 9:374. 1968; Clayton in *Taxon* 17:168, 1968; Bor in *Rech.f., Fl. Iran.* 70:352. 1970; Tzvelev, *Poaceae URSS* 606. 1976; Tutin in *Tutin et al., Fl. Eur.* 5: 253. 1980. *Arundoaustralis* Cav., *Anales Hist. Nat.* 1: 100. 1799. Type: AUSTRALIA: New South Wales: Ca. half a league before reaching Botany Bay, coming from Port Jackson, Apr, Nee s.n. (holotype: MA).

3.2. Description

Phragmites australis (Cav.) Trin. ex Steud. is a perennial reed grass with creeping rhizomes. Culms erect, 1–3 m high. Leaf-blades 20–40 cm long and 0.5–0.8 cm wide, glabrous, smooth or margins scabrous, tapering to a filiform apex; ligule a minute membranous rim, ciliate. Inflorescence panicles of spikelets, the spikelets are 12–18 mm long, the rachilla-hairs 6–10 mm long, copious, silky, florets 2–5, lower glume 3–4.5 mm long; upper glume lanceolate, 5–9 mm long, sharply acute, usually apiculate; lowest lemma linear lanceolate to linear-oblong, 8–15 mm long; fertile lemmas very narrowly lanceolate, 9–13 mm long. Fruit a caryopsis, seeds are brown 6 mm to 8 mm long (Fig. 2).

3.3. Distribution

The grass flora of Saudi Arabia is complex including a wide diversity of chorotypes (Masrahi et al., 2012a). Of these grasses of *P. australis* is of Mediterranean-Irano-Turanian chorotype (Masrahi et al., 2012a). It generally occurs in wetland habitats, from margins of small ditches through banks of river, ponds, lakes, and reservoirs to vast expanses of reed marshes growing

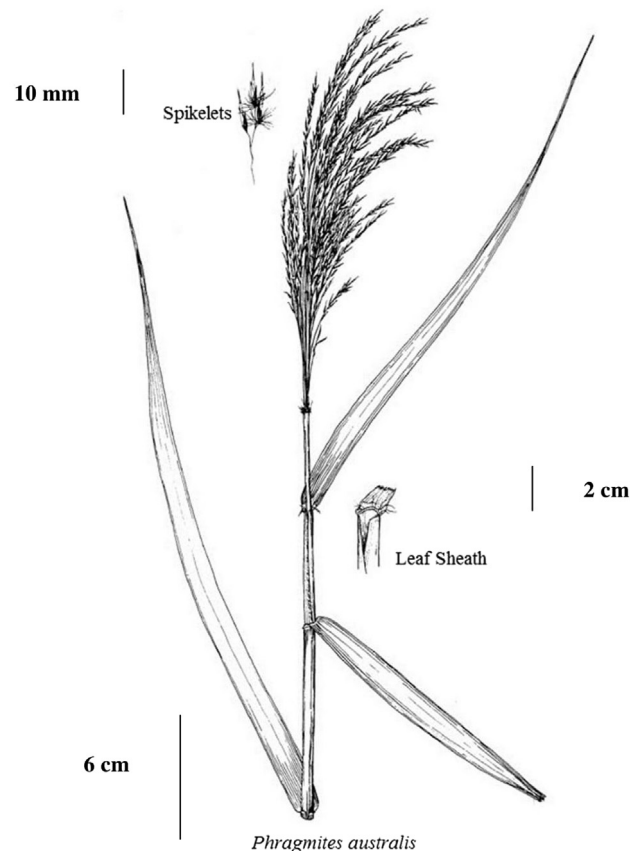


Fig. 2. *Phragmites australis* twig with inflorescence.

in shallow water or out of deep water (Lansdown, 2017). It is considered to be one of the most widespread species occurring from north-west Europe through central and southern Europe to North Africa spreading southward through South Africa to the Cape. It also occurs throughout the Middle East to Russia,

Far East, and through South-east Asia to Australia (Lansdown, 2017). It is also present in Canada, United States, Mexico, and in Latin America as far south as Chile and Argentina (Marks et al., 1994; Lansdown, 2017).

The species *P. australis* has previously been recorded in Saudi Arabia in areas of Eastern Region including Al-Hasa Governorate (Collenette, 1999), Al-Asfar Lake (Elsheik et al., 2016), and Summan Plateau (Shaltout et al., 1997) and Central Region (Chaudhary, 1989; Zoghet and Al Alsheikh, 1999). Therefore, *P. australis* has never been reported in western or southwestern regions of Saudi Arabia. Our present study presents the first report of *P. australis* in the southwest of Saudi Arabia. The plant was recorded growing in saline soil of inland saltmarshes about 1 km from Red Sea coastal line in Gizan City of Jazan Region southwest of Saudi Arabia (Fig. 3).

3.4. Specimen examined

Saudi Arabia, Jazan, M. Remesh and Osama H. Sayed 1201 (JAZUH) (Fig. 4).

4. Discussion

The plant *P. australis* is reported as one of the invasive reed grasses in several parts of the world (Mal and Narine, 2004; Rudrappa et al., 2007; Saltonstall, 2002). However, this invasiveness has not been reported in Asian countries (Srivastava et al., 2014) or in Saudi Arabia (Shaltout et al., 1997). Report of *P. australis* in this paper is the first report of this species in southwestern Saudi Arabia. The plant occurs in inland saltmarshes of urban localities in Gizan City (Jazan Region). Our further comprehensive floristic explorations to various parts of Jazan Region showed that *P. australis* populations are rare and are confined to urban parts of Gizan City. It is also worth noting that the reported population of *P. australis* is fragile and is threatened by pressures of extensive anthropogenic activities and expanding urbanization in the area. It is, therefore, recommended that proper conservation measures



Fig. 4. *P. australis* (Cav.) Trin. ex Steud. (Poaceae) at Jazan University Herbarium (JAZUH).

should be considered to preserve this small population of *P. australis* in Jazan Region.



Fig. 3. *P. australis* population reported in Gizan City (Jazan Region) southwest of Saudi Arabia.

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Conflict of interest

The authors declare that there are no conflicts of interest.

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