Journal on New Biological Reports
JNBR 4(3) 207 – 210 (2015)

ISSN 2319 – 1104 (Online)

Published by
www.researchtrend.net

New records for the two Fabaceae species from the United Arab Emirates

Mohammad Shahid and N.K. Rao

International Center for Biosaline Agriculture, P.O. Box 14660, Dubai, United Arab Emirates

***Corresponding author:** m.shahid@biosaline.org.ae

| **Received**: 21 September 2015 | **Accepted**: 01 November 2015 |

ABSTRACT

Two species of the plant family Fabaceae (Leguminosae), *Astragalus epiglottis* L. and *Medicago monantha* (C.A. Mey.) Trautv. are described, which have not been reported earlier from the United Arab Emirates. During floristic surveys of the country *A. epiglottis* was found growing on sandy soils of Dubai emirate, while *M. monantha* was observed in the mountainous region of the emirate of Fujairah. It is also the first time that *A. epiglottis* has been reported from the Arabian Peninsula.

Key Words: *Astragalus epiglottis*, Arabian Peninsula, Dubai, Fabaceae, Fujairah, *Medicago monantha*, United Arab Emirates.

INTRODUCTION

The Leguminosae or Fabaceae, which is generally called legume, bean or pea family, is very important as most of its members facilitate in fixing nitrogen in the soil with the collaboration of special bacteria that live in their roots. Though most of its species are herbs, shrubs and trees are found in the group. Its species can be recognized by their fruit (legume) and compound leaves. It is the third largest plant family with 650 genera and more than 18, 860 species (Judd et al., 2002) found both in temperate and tropical regions.

Astragalus is the largest genus of flowering plants comprising of nearly 3,000 species of herbs and small shrubs (Frodin, 2004). The genus is found in arid and semiarid regions of the Northern Hemisphere and South America (Sanderson and Wojciechowski, 1996). The highest diversity of the genus has been observed in southwest Asia, where around 1,500 of its species are found. Many of its species are used as food plant by larvae of some Lepidoptera species that include butterflies and moths. One of its species *A. membranaceus* has been used in folk Chinese medicines for millennia to treat different diseases.

In comparison with *Astragalus*, the genus *Medicago* contains relatively small number of species, i.e., around 87 species, which are found mainly around the Mediterranean (Steele et al., 2010). The genus has broad range of diversity for its ploidy as its species are diploids, tetraploids or even hexaploids (Prosperi et al., 1995). Some of the major forage crops including alfalfa (*M. sativa*) belong to the genus (Steele, 2010).

Different studies have revealed that there are around 61 species of the Fabaceae, which are found in different parts of the United Arab Emirates (Western, 1989; Jongbloed, 2003; Karim and Fawzi, 2007). Ten species of *Astragalus* have been reported from the country (Table-1), and most of them are found in its northern parts. On the other hand, UAE have 2 wild species of the genus *Medicago*, viz., *M. laciniata* (L) Mill. and *M.*

polymorpha L (Jongbloed, 2003). A cultivated species (*M. Sativa*) of the genus has also been reported from the region (Karim and Fawzi, 2007).

MATERIALS AND METHODS

Several floral expeditions (2013-15) were carried out to different parts of the United Arab Emirates (UAE) to document its wild plants. During the explorations, the specimens of the Fabaceae species, *Astragalus epiglottis* L. and *Medicago monantha* (C.A. Mey.) Trautv. were collected. Information on the plant populations and habitations was also compiled. For the geographic coordinates of the specimens collecting locations, a Garmin GPS 72H was used. The species were identified using appropriate literature (Flora of Israel online; Flora of China online; Small and Fawzy, 1992).

RESULTS

***Astragalus epiglottis* L**. Sp. Pl. 2:759. 1753

Figs. 1, 2 & 3

Annual herbs, 15-30 cm. Stems semi-erect or erect, branched at base, hard, covered with hairs. Leaves 2-4 cm; leaflets 8-12 mm, oblong to obtriangular, both surfaces covered with hairs, 4-7 paired; stipules 2-5 mm; petioles 1-2.5 cm. Inflorescences stalked with 5-15 subsessile flowers. Corolla light purple, 3-5 mm. Calyx 2-3 mm. Stamens 5. Legumes 5-9 mm long, triangular-ovoid, covered with white hairs. Flowering March to April. Fruiting May to June.

The species is found in Europe, North Africa and parts of West Asia including Israel, Jordan, Lebanon, Syria and Turkey (Legumes online net).

During a botanical exploration by the authors to the UAE, *Astragalus epiglottis* was found at a site near Dibba (25°35.793”N, 056°14.955”E) in Fujairah emirate. Around 15 plants of the species were seen growing in one place. Review of the pertinent literature (Western, 1989; Jongbloed, 2003; Karim and Fawzi, 2007) shows that the species has not been described in the UAE before. The relevant literature study also indicates that species has not been reported either from the other countries of the Arabian Peninsula; Saudi Arabia, (Chaudhary, 1999) Yemen (Wood, 1997), Oman (Ghazanfar, 2003), Qatar (Norton et al., 2009), Kuwait (Omar, 2000) and Bahrain (Cornes and Cornes, 1989). Therefore it is the first time that *A. epiglottis* has been recorded in Arabia. With the report of this species, the number of known *Astragalus* species in the UAE is now 11.

***Medicago monantha* (C.A. Mey.) Trautv.** Sci. Acad. Imp. Sci. Saint-Pétersbourg. 8:272. 1841

Figs. 4, 5 & 6

Synonyms: *Trigonella brahuica* Boiss., *Trigonella monantha* C.A. Mey., *Trigonella neoana* Boiss., *Trigonella polycerata* auct. non. L.

Annual herbs, 10-30 cm. Stems prostate or ascending with many basal branches, covered with hairs. Leaves trifoliate; leaflets obovates, 6-12 x 4-8 mm, dentate in the upper part; stipules 5-7 mm; petioles 1-2 cm. Racemes 2-3 flowered, sessile or subsessile. Corolla yellow, longer than wings and keels. Pods 40-80 mm long, 1-2 mm wide, erect, cylindrical, straight to curved, pubescent. Seed several, brown, oblong, 2 mm.

Flowering February to March. Fruiting March to April.

The natural range of *Medicago monantha* is vast areas of central, South and West Asia. In Arabian Peninsula, it is found in Qatar and eastern parts of Saudi Arabia (Bisby, 1994).

About 5 plants were found growing in one place on sandy soils (25°35.793”N, 056°14.955”E) at the International Center for Biosaline Agriculture, Dubai. Study of the floristic literature on UAE (Western, 1989; Jongbloed, 2003; Karim and Fawzi, 2007) points out that *M. monantha* has not been described from the country in past. So it is first time that this Fabaceae species has been recorded from the UAE and making it the third country of the Arabian Peninsula, where it is found. The documentation of *M. monantha* brings the recoded wild *Medicago* species in the country to 3.

Table1. The *Astragalus* species found in the United Arab Emirates (Jongbloed, 2003; Karim and Fawzi, 2007)

S. N.	Species
1	*Astragalus annularis* Forssk.
2	*Astragalus corrugatus* Bertol.
3	*Astragalus eremophilus* Boiss.
4	*Astragalus fasciculifolius* Boiss.
5	*Astragalus hamosus* L.
6	*Astragalus hauarensis* Bioss.
7	*Astragalus schimperi* Boiss.
8	*Astragalus squarrosus* Bunge
9	*Astragalus tribuloides* Delile
10	*Astragalus vogelii* (Webb) Bornm.

Fig. 1. *Astragalus epiglottis* L. growing in Dibba, Fujairah, United Arab Emirates.

Fig. 2. Flowers of *Astragalus epiglottis* L.

Fig. 3. *Astragalus epiglottis* L. pods.

Fig. 4. A single plant of *Medicago monantha* (C.A. Mey.) Trautv. thriving in sand, Dubai, United Arab Emirates.

Fig. 5. Flowers and leaves of *Medicago monantha* (C.A. Mey.) Trautv.

Fig. 6. Pods of *Medicago monantha* (C.A. Mey.) Trautv.

ACKNOWLEDGEMENTS

The authors are thankful to the management of the International Centre for Biosaline Agriculture (ICBA) for their financial and moral support to the study of the local flora. Without their help, it may have been difficult to carry out this project.

REFERENCES

Bisby F. 1994. Phytochemical Dictionary of the Leguminosae. University Press. Cambrige, UK.

Chaudhary SA. 2001. Flora of the Kingdom of Saudi Arabia illustrated. Vol. 2 (1). National Agriculture and Water Research Centre, Riyadh, Saudi Arabia.

Cornes MD and Cornes CD. 1989. The wild : An illustrated guide. Immel Publishing Limited, London, UK.

Flora of China online http://www.efloras.org/index.aspx

Flora of Israel online http://flora.huji.ac.il

Frodin DG. 2004. History and concepts of big plant genera. Taxon 53 (3): 753–776.

Ghazanfar SA. 1992. An annotated catalogue of the vascular plants of Oman and their vernacular names. Vol. 2. National Botanic Garden of Belgium, Meise, Belgium.

Jongbloed M. 2003. The comprehensive guide to the wild flowers of the United Arab Emirates. Environmental Research and Wildlife Development Agency, Abu Dhabi, UAE.

Judd WS, Campbell C S, Kellogg EA, Stevens PF and Donoghue, MJ. 2002. Plant systematics: a phylogenetic approach. 2nd edition. Sinauer Assoc., Sunderland, MA, USA. pp 287-292.

Karim FM. and Fawzi NM. 2007. *Flora of the United Arab Emirates*. United Arab Emirates University, Al Ain, UAE.

Legume online net http://www.legumes-online.net/ildis/aweb/td025/td_05108.htm

Norton J, Majid SA, Allan D, Al Safran M, Böer B and Richer R. 2009. An illustrated checklist of the flora of Qatar. Browndown Publications, Gosport, UK.

flowering plants of Bahrain

Omar SAS. 2001. Vegetation of Kuwait: A comprehensive illustrative guide to the flora andecology of the desert of Kuwait. Kuwait Institute for Scientific Research, Kuwait.

Prosperi JM, Guy P, Genier G, Angevain M. 1995. Les luzernes ou le genre *Medicago*. In Ressources génétiques des plantes fourragères et à gazon, (eds. Prosperi JM, Guy P and Balfourier F), INRA Editions, Paris, France. pp131-140.

Sanderson MJ and Wojciechowski MF. 1996. Diversification rates in a temperate legume clade: Are there "so many species" of Astragalus? Am J Bot 83 (11): 488-1502

Small E and Fawzy M**.** 1992. Morphogeographic variation in the *Medicago monantha* complex. Canad J Bot 70:1292–1301.

Steele KP, Ickert-Bond SM, Zarre S and Wojciechowski MF. 2010. Phylogeny and character evolution in *Medicago* (Leguminosae): Evidence from analyses of plastid *trn*K/*mat*K and nuclear *A3ox1* sequences. Am J Bot 97(7): 1142-1155.

Western AR. 1989. The flora of the United Arab Emirates: An introduction. United Arab Emirates University, Al Ain, UAE.

Wood JRI. 1997. A handbook of the Yemen flora. Royal Botanic Gardens, Kew. UK.