



**New medicinal family recorded for Sudan flora (Martyniaceae, species:
Proboscidea parviflora subsp. *parviflora*)**

**Maha A. Y. Kordofani¹, Manal S. Y. EL Hakim¹, Iain Darbyshire², Nahla M. M. Ali¹,
Imadeldin Farag¹ and Hoyam O. Ahmed¹**

¹University of Khartoum Faculty of Science, Department of Botany (Herbarium), Sudan
²Royal Botanic Gardens, Kew, Herbarium, London, UK.

ABSTRACT

Proboscidea parviflora (Wooton.) Wooton. & Standl. subsp. *parviflora* is a flowering plant that has been recently collected from Sudan (Feddasi El Halimab area at Eljezira state). This collection represents the first records for this species, the genus *Proboscidea* and the family Martyniaceae in Sudan. From the literature this family is known to have medicinal uses.

Key words: Eljezira; Martyniaceae; *Proboscidea*; *parviflora*; Sudan.

INTRODUCTION

Collection of plant species from Feddasi El Halimab area at Eljezira state (Sudan) during 2006-2011 revealed the presence of *Proboscidea parviflora* which is clearly absent from the flora literature for Sudan, e.g. [5], [6], [8] and [9]. Although *Proboscidea louisianica*, *P. louisianica* subsp. *fragrans* & *P. schmidel* are listed in the African Plant Database website (2012), *Proboscidea parviflora* is not listed and now reported as a new record in Sudan, the genus (*Proboscidea*) and the family (Martyniaceae) are also new additions for the flora of Sudan.

The area (Feddasi El Halimab) lies about twenty kilometers north of Wad Madani town along the surfaced road of Wad Madani-Khartoum and is one kilometer away from the Blue Nile River bank (Fig,1). The grid reference point is latitude 14° 33' N and longitude 33° 31" E.

The area falls within the zone of arid climate [15] with a short rainy season that extends from July to September with a peak well defined in August, where the average annual rainfall is about 300mm. The mean temperature is 29°C, the mean relative humidity is 39% and the annual evaporation is about 2500mm a year [12].

The underlying solid geology of this area is included in Mesozoic Nubian Sandstones [7]. The overlying unconsolidated mantle, which forms the soils, is believed to be of superficial alluvial in origin laid down by the Blue Nile River from the basic igneous rocks of the Ethiopian Plateau.

Martyniaceae, the Unicorn plant is a family of flowering plants in the order Lamiales. It is closely related to the family Bignoniaceae. It was included in the Pedaliaceae in the Cronquist system [1] under the order Scrophularis, but it is recognized as a separate family by the APG I [2] The parietal placentation in the unilocular ovary [11] and the phylogenetic studies by the APG [2&3] showed that the two families are not closely related although both families are characterized by having mucilaginous hair and often have fruits with hooks or horns.

This family contains 4 genera (*Craniolaria*, *Ibicella*, *Martynia* and *Proboscidea*) to which belong about 13 species [2] 17 – 20 species [13]. The generic name *Proboscidea* is derived from the Greek word **proboskis**, referring to the long beak or horn of the fruit. Hence they are called devil's claws. They produce strange seed pods. One plant may produce 50 or more of the curious pods which ripen by late summer and early fall.

Members of this family are restricted to the new world, reported from tropical subtropical South America and from Mexico. One species is naturalized in China which is *Martynia annua* [13]. Species of Martyniaceae have medicinal uses; root decoction of *Martynia* is administered for snake bite, juice of leaf used for epilepsy, tuberculosis and sore throat. Seeds and fruits used for Asthma, itch and Ecema [4].

EXPERIMENTAL SECTION

Fresh material was collected from Feddasi El Halimab area at Eljezira state (2006 -2011) and photographed. Morphological characters were examined with the naked eyes and magnified at X10 hand-lens whereas the fine structures were examined under a binocular dissecting microscope and then botanically illustrated. Then the specimens pressed inside plant press, the dried specimens were mounted onto a labeled herbarium sheets and deposited at the Herbarium of the Botany Department, Faculty of Science University of Khartoum and at the Herbarium of the Royal Botanic Gardens, Kew, London. Confirmation of the identified material was carried out by using the available relevant floras e.g. [11] and [14] and compared with specimens in Kew Herbarium, London.



Fig.1: ● The study area (Feddasi Elhalimab)

RESULTS

New record

Family: *Martyniaceae* Stapf in Engler & Prantl, Nat. Pflanzenfam. IV, 3b: 265(1895), nom.cons.

Description

Herbs, some annuals, the perennials often having tuberous roots. Plants covered with sticky hairs. Leaves opposite or alternate, without stipules. Inflorescences terminal, racemes, sometimes subtended by bracts; flowers showy, bisexual, and two-lipped; calyx is either spathe-like or composed of five free sepals, corolla bell-shaped or funnel-shaped tube with five, curved lobes. Stamens attached to the petals: in *Proboscidea* and *Craniolaria* are four, two longer than the rest and the fifth is represented by a posterior staminode: *Martynia* has two fertile stamens and three staminodes; anthers bilocular, coherent in pairs and opening by slits. Ovary superior, surrounded at the base by a nectariferous disk; carpels two, fused, a single locule with few to many anatropous ovules with parietal placentas; style single, slender. Fruit loculicidal capsule, with persistent style forming a usually hooked projection at the end. Seeds sculptured.

Genus: *Proboscidea* Schmidel. Ic. Pl. (ed. Keller): 49-52(1763); Van Eseltine, New York Agric. Exp. Stat. Tech. Bull. 149: 13-31 (1929), rev.

Annual or perennial herbs, sometimes with a thickened primary root. Sepals connate for at least half of their length, tube with a ventral slit. Corolla purple, pink, lavender or cream or yellow to orange (subgen. *Dissolophia*), campanulate, constricted at the base; fertile stamens 4. Fruit with long (up to 12 cm) horns, longer than the body, on

the adaxial side and occasionally also on the abaxial side with a serrate crest up to 1cm high, surface usually not distinctly echnate.

Proboscidea parviflora (Wooton) Wooton & Standl. Subsp. *parviflora* Contr. U.S. Natl. Herb. 19: 602 (1915). (Plate 1& Fig. 2, 3&4)

Type: Elmer O. Wooton, #580 (MO). (www.jstor.org).

Synonyms

Martynia parviflora Wooton. Bull. Torrey Bot. Club 25(8): 453-455 (1898).

Proboscidea crassibracteata Correll.

Vernacular Names: Unicorn plant, double claw, Arizona devil's claw, red devil's claw.

Annual or perennial tap rooted branched glandular- hairy herb. Stem prostrate spreading, generally 1 m. Leaves, opposite, long petiolate up to 17 cm, long), exstipulate, leaf blade 5-15 cm wide, broadly ovate- triangular, 5-7 shallowly lobed. Inflorescence, raceme, bracelets 2 just below the flower. Flower pink, bisexual; sepals 5 free unequal, 1-2 cm; corolla 2-5 cm. bell to funnel- shaped, bent down word, and limb with 5 unequal lobes. Stamens 5 attached to the petal; two longer than the rest, the fifth is represented by a posterior staminode. Ovary is superior, two fused carpels; style 1, slender, attenuated from the ovary, placentation parietal. Fruit capsule, fusiform, outer layer fleshy deciduous, inner layer ultimately exposed woody; beak incurved, splitting to form 2 claws, claws 2x body.

Global Distribution

USA, Mexico and Peru.

Conservation Status

Least Concern (LC). [10].



(a) Flowering branch



(b) Fruit

Plate (1): *Proboscidea parviflora* subsp. *parviflora*

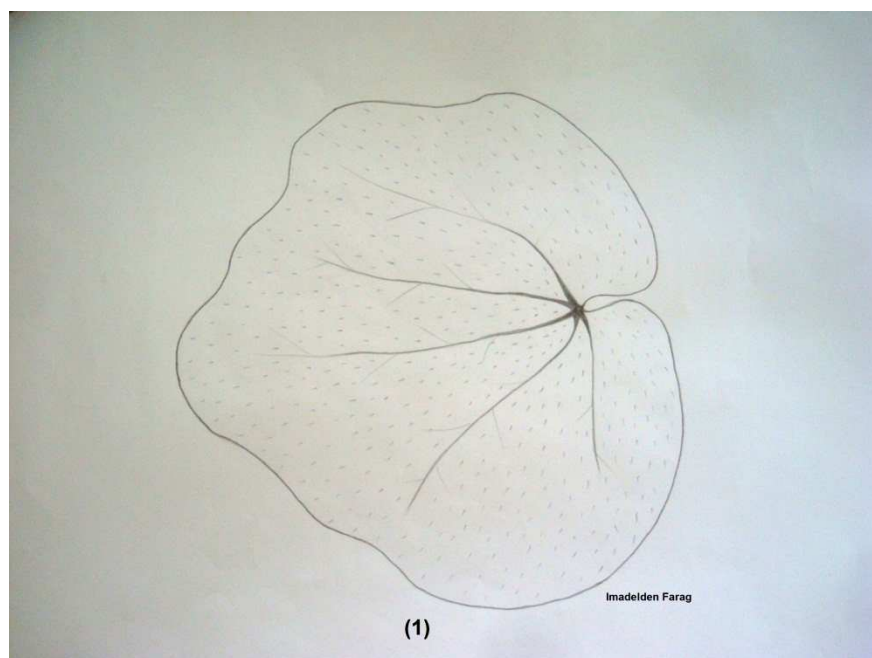


Fig. (2): *Proboscidea parviflora* subsp. *parviflora* (Leaf (1)) x 2.

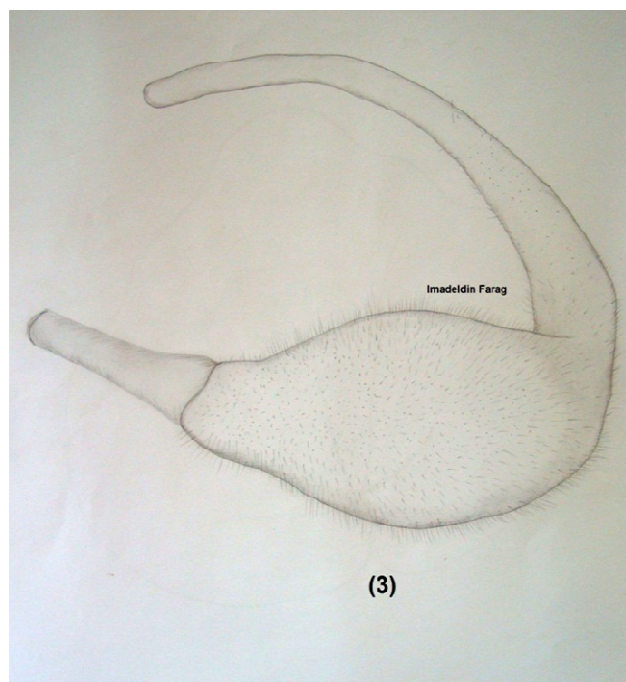
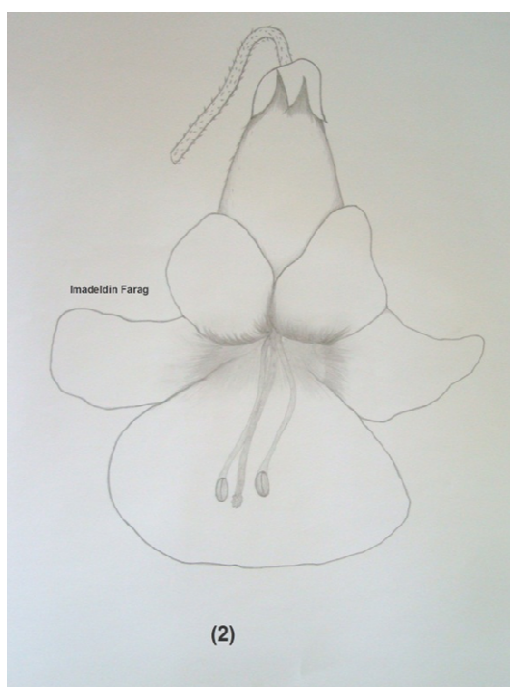


Fig. (3) *Proboscidea parviflora* subsp. *parviflora* (Flower(2) and Fruit(3)). X 2

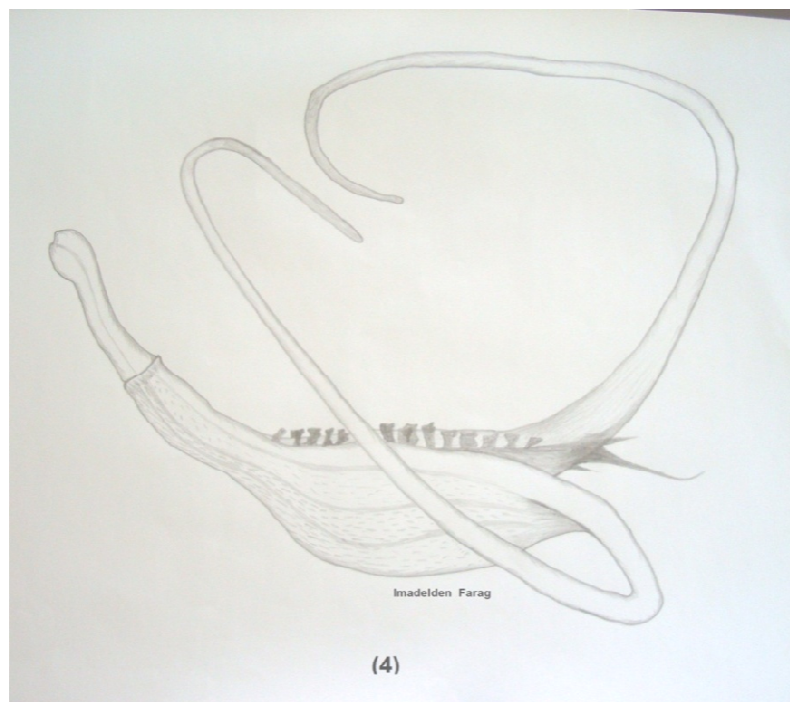


Fig. (4): *Proboscidea parviflora* subsp. *parviflora* (Riped fruit with double claw(4)). X 2.

DISCUSSION

There is always possibility of recording and adding new species to the previously listed flora in Sudan. This is mainly due to the fact that the main work covering the flora of Sudan was by [6] and more than five decades have passed without updating the flora, also living (human, animals.ect) or non –living (water, wind etc.) that carries the reproductive parts and thereby they contributed to the dispersal process.

The seed capsules of devil's claws are clearly adapted for hitchhiking on the hooves of large grazing animals; this might be attributed to its migration from neighboring East African countries if it is reported, unless it may be carried via living human.

This species is considered as naturalized since it exists and tolerates the new environment in Eljezira.

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Main websites used:

<http://plants.jstor.org/search?searchText=Proboscidea%20parviflora>

<http://www.ville-ge.ch/musinfo/bd/cjb/africa/recherche.php>