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RESEARCH ARTICLE

UMBILICUS TROPAEOLIFOLIUS BOISS (CRASSULACEAE) A NEW RECORD TO THE FLORA OF THE ARABIAN PENINSULA

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Abstract

The plant diversity South West of the Arabian Peninsula is considered to be very high due to its location, variation of climates, and geographical features. Generally, the Arabian Peninsula characterized by a very rich flora and is still not explored well. During the field survey of rare plant species, the authors collected a specimen of new taxa from the remote and inaccessible habitats in Jabal Ibrahim of the Asir region, Saudi Arabia. The plant was not reported so far in the flora of the Arabian Peninsula. The present paper deals with the record of one new plant species (*Umbilicus tropaeolifolius* Boiss) to the flora of Saudi Arabia and the Arabian Peninsula. The plant has a very small population range and very limited occupancy. The plant specimen was collected and later on identified and described with the available flora reference and with contact of a botanist.

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Introduction:-

Jabal Ibrahim, also called Jabal Bather and Jabal Al-Abyad. It is a granite mountain within the Hijaz mountain range in southwestern Saudi Arabia, center of QureiBani Malik, and located 80 Km. NW al Baha city (Figure 1). That mountain is distinguished from other neighboring mountains by its high altitude, as its height is estimated at about 2,604 meters above sea level (Bird Life International, 2020).

Umbilicus is a genus of 10-12 species of flowering plants in the family Crassulaceae, it is perennial glabrous plant characterized by circular, succulent leaves, mostly with a tuberous or rhizome rootstocks (Hedberg, & Edwards, 1989; Miller and Cope, 1996). The inflorescence is a long stem bearing many drooping tubular or bell-shaped flowers and most of the plants in this genus have peltate leaves except *Umbilicus oppositifolius* which has saxifrage-like leaves (<https://succulent-plant.com/families/crassulaceae/umbilicus.html>).

The main distribution of *Umbilicus tropaeolifolius* is in Turkey (Rüstemoğlu and Beçet, 2015), Iran (Kanani, 2016; Veiskarami&Sharifi-Tehrani, 2017) and Iraq (Hameed and Uzun, 2016; Key Biodiversity Survey of Iraq, 2010). In Flora of Somalia vol. 4: 277 (1995) and Vol 1, (1993), Thulin pointed out that the species also occurs between 1100 and 1500m in northern Somalia and Sudan (Thulin, 2008). (Figure 1). There is also a very similar plant to *U. tropaeolifolius* named as *U.paniculiformis* Wickens from the Red Sea Hills in Sudan (Wickens, 1997) and northern Eritrea (Hedberg, & Edwards, 1989).

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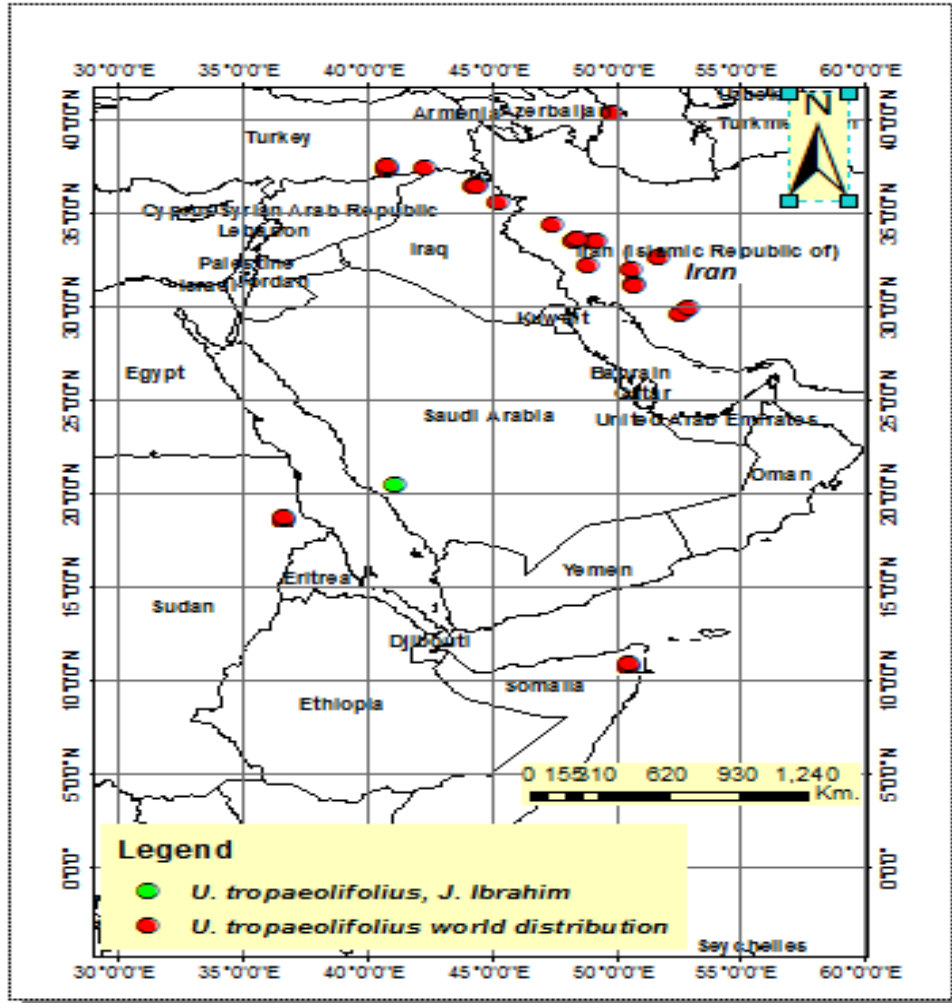


Figure 1:- The distribution of the plant in the world.

U. tropaeolifolius is considered as first record from the Arabian Peninsula, although the occurrence is fairly close to the localities in Sudan across the Red Sea (Thulin, 2008). Two plant species of *Umbilicus*, *U. rupestris* (Salisb.) Dandy and *U. horizontalis* (Guss.) DC. with 2 varieties (var. *horizontalis* and var. *intermedius*) were recorded from Arabian Peninsula, mainly between 1000 and 2950m, (Wood, 1977; Miller and Cope, 1996; Collenette, 1999; and Al-Khulaidi, 2013). *U. horizontalis* var. *intermedius* (Boiss.) D.F. Chamb. considered in Kew science resource as a synonyme of *U. intermedius* Boiss (<https://www.ipni.org/n/276961-1>), which raised the *Umbilicus* species in Arabian Peninsula including *U. tropaeolifolius* to four species.

The present paper deals with a morphological description and geographical distribution of unknown and new plant species. The aim of the study is to add a new plant that has not been previously recorded to the Saudi Arabian's and Arabian Peninsula's plants.

The location area:

U. tropaeolifolius is found at Jabal Ibrahim, Asir region, 75 Km. NW al Baha city, Saudi Arabia

Materials and Methods:-

Several visits were made in the Asir region for the rare plant species survey during 2019 in different seasons. Unknown plants were found inside a cave, in Jabal Ibrahim, Asir region. The identification and description of collected plant samples have been done with the relevant literature (Wickens, G. E. (1997; Thulin, 2008; Hedberg,

& Edwards, 1989). The plant has been sufficiently dried, pressed and reserved in the Herbarium of Al-Baha University, Saudi Arabia. Under: Al-Khulaidi; 9-2020

Result and Discussion:-

Umbilicustropaeolifolius Boiss, *Diagn. Pl. Orient. ser. 1, 3: 14 (1843)*. (Crassulaceae):

Synonyms:

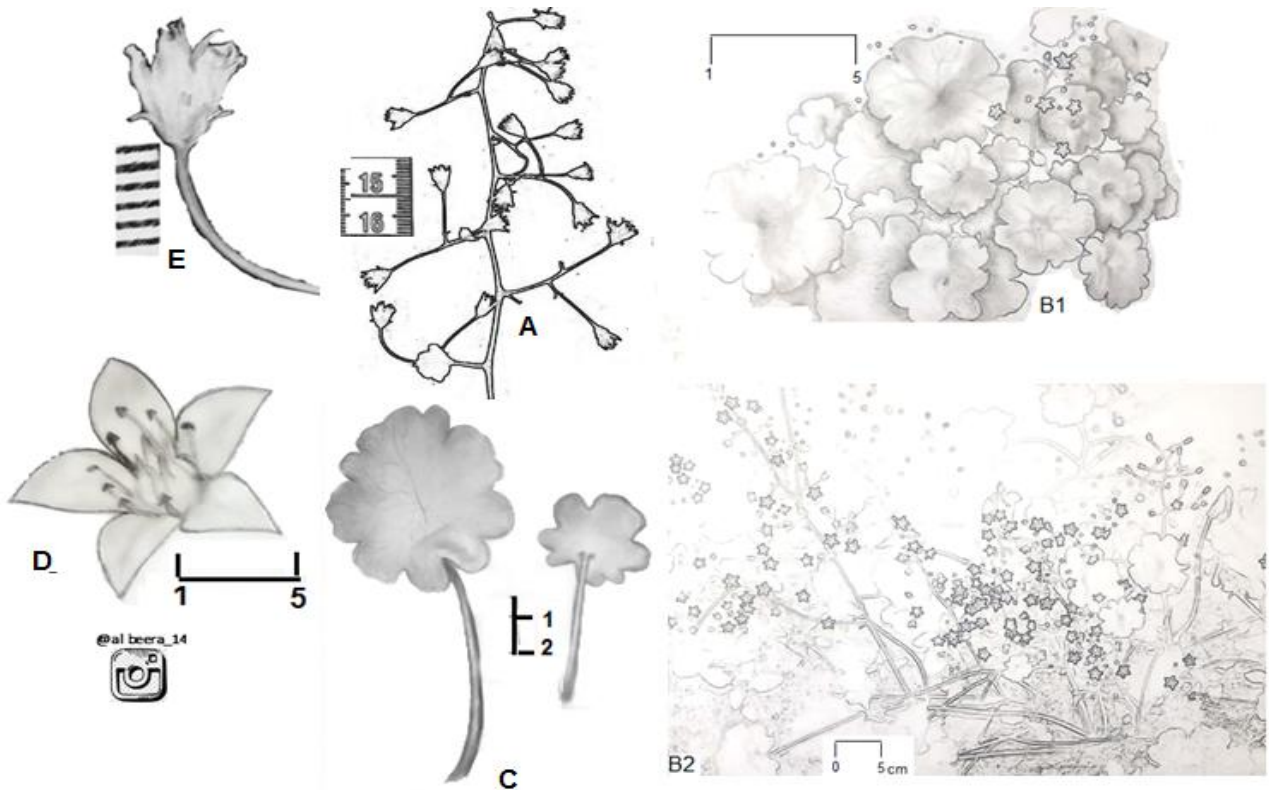
Cotyledontropaeolifolia Bornm., *Beih. Bot. Centralbl., Abt. 2. 32(2): 389 (1914)*.

Umbilicusoxyptetalus Boiss., *Diagn. Pl. Orient. ser. 1, 3: 15 (1843)*.

Specimen: Jabal Ibrahim, Asir region, 75 Km. NW al Baha city, Saudi Arabia.

Description:

An erect or procumbent perennial herb. The stem up to 30 cm tall. leaves orbicular -peltate; petiole up to 6.5 cm long; Cauline leaves alternate and smaller than basal leaves, blade from 2 to 5 cm in diameter, irregularly crenate-lobbed margin. Inflorescence terminal, in panicle, erect to sub erect, up to 15 cm high, sparsely branched, bearing many bell-shaped, white flowers, pedicle 2-3 cm. Calyx-lobes lanceolate, 2-3 mm long. Petals white 5-parted, campanulate, up to 5 mm long, 5 carpels up to 5mm and 10 stamens.



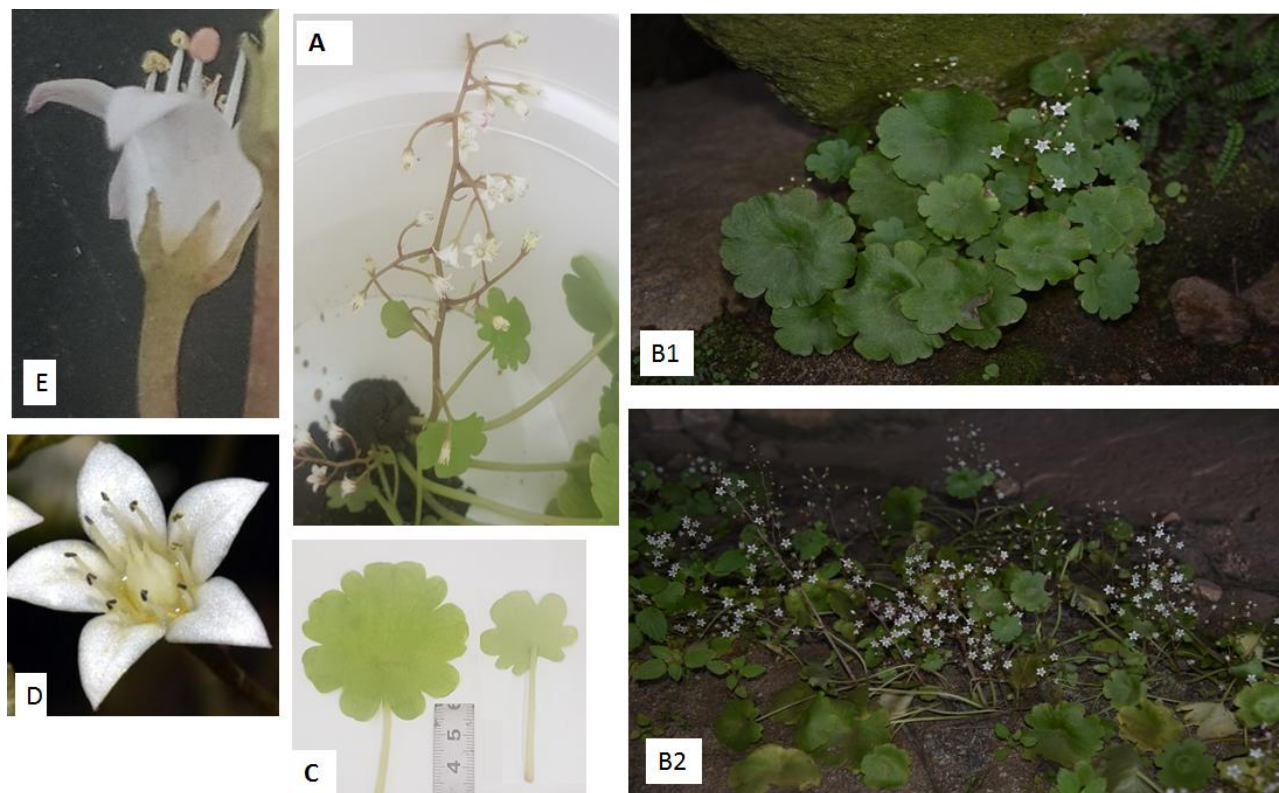


Figure 2:- *Umbilicustrophaeolifolius*. A. inflorescence; B1&2. Habit; C. leaf D. opened flower with 5 carpels and 10 stamens; E. flower showing the calyx. Drown by Miss. Abeer Abdul Jalil.

Discussion:-

A large number of palaeotropical taxa belong to the Afromontane element are found in JibalAssurat including Jabal Ibrahim, these plant species may arrived by migration from the East African mountain chains c. 15-35 million years ago (Kürschner, 2008). It is expected with the extra exploring of the vegetation and the flora of the region to discover new plants not previously recorded and additions to Flora of the Saudi Arabia and Arabian Peninsula, as well as to the Flora of Arabian Peninsula.

U.trophaeolifolius and *U. paniculiformis* from Sudan, distinguished from other members of the genus by the distinctive paniculate inflorescence (Wickens, 1997; Egli, 2003) and deeply divided corolla (Hedberg, & Edwards, 1989). The different between the two species suggested to be the pedicel length, the pedicel in *U. paniculiformis* ranges between 2-6 mm (Wickens, 1997), while in *U.trophaeolifolius* ranges between 2-3 cm. Molecular study is recommended to make sure that the two plants being different or the same.

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