



EUPHORBIA DRACUNCULOIDESLAM. (EUPHORBIACEAE):

A NEW RECORD TO THE FLORA OF YEMEN

Othman Saad Saeed Al-Hawshabi

Biology Department, Faculty of Education, Aden University, Yemen

othmanhamood773@yahoo.com

ABSTRACT:

Euphorbia dracunculoides Lam. (Euphorbiaceae) is reported as a new record for the flora of Yemen. The specimen was collected from Al-Kaud village, Abyan governorate. This new record was compared with similar species in Yemen. Description, distribution, and figures of this new record are given.

Key words: *New record, Euphorbiaceae, Euphorbia dracunculoides, Yemen.*

INTRODUCTION:

Euphorbiaceae is one of the largest families of flowering plants, with about 300 genera and 8.000 - 10.000 species widespread throughout the world, primarily in the tropical and subtropical regions (Thulin, 1993; Edwardset al., 1995). In Yemen this family is one of the six largest families represented by 17 genera and 106 species, around 30 species of them are endemic (Wood, 1997).The genus *Euphorbia* L. is one of the five most species-rich genera of flowering plants, with approximately 2000 species distributed world-wide in temperate and tropical zones. Sixty-two species (19 are endemic) of this genus are found in Yemen (Thulin, 1993; Wood, 1997; Kilian et al., 2006; Al-Khulaidi, 2013). This paper supplements six recent contributions by Boulos (1988) of 15 new records for flora of South Yemen from (Abyan, Aden, Lahej, Shabwa and Hadhramout), Thulin et al.,

(2001) of 50 new records for Yemen, mainly from Al-Mahrah, Kilian et al., (2002& 2004) added 130 new records of vascular plants for mainland Yemen, for the southern governorates of Yemen or larger parts of them, in particular from Hadhramout, Al-Mahrah, Abyan and Shabwa, Mohamed et al., (2014) have reported of *Syzygium jambos* (L.) Alston as a new record for Yemen from Tuban district, Lahej governorate and Al-Hawshabi (2014) added *Allium subhirsutum* L.(Alliaceae) and *Justicia ladanoides* Lam. (Acanthaceae), as new records for Arabian Peninsula from Toor Al Baha district, Lahej province, southwestern Yemen. The author collected some very interesting specimen belonging to the genus *Euphorbia* from Al-Kaud village, Abyan province, Yemen. The specimen collected was compared with the related taxa in the herbaria .

The areas of study:

The Republic of Yemen lies in the southwestern corner of the Arabian Peninsula. It extends between latitudes 12° 40' to 19° 00'N. and between longitudes 42° 30' to 53°

05'E. It is bordered by Kingdom of Saudi Arabia in the north, the Arabian Sea and the Gulf of Aden in the south, Sultanate of Oman in the east, and the Red Sea in the west (Fig.1).

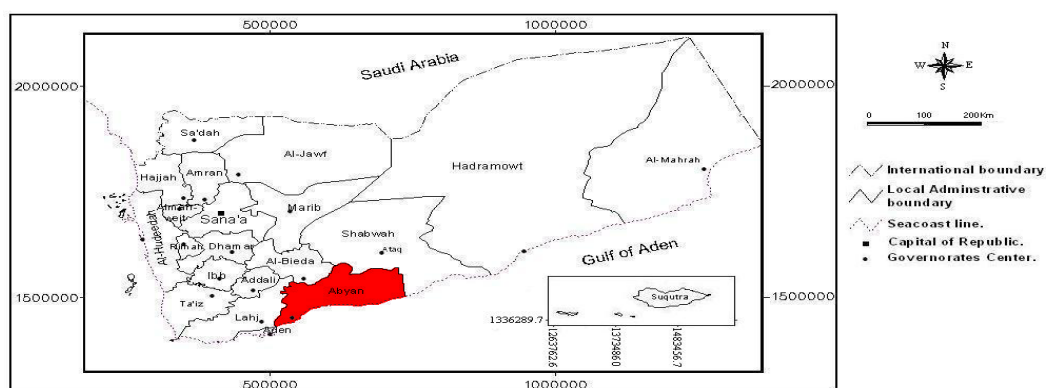


Fig. 1. Map of Yemen(modified afterError! Hyperlink reference not valid.), showing political map of Abyan governorate.

The climate of Yemen is generally ranging from semi-humid to semi-arid until reach to regions that have arid tropical climate. Temperatures in Yemen are changing from region to region and from season to season, also the relative humidity varies greatly in the different regions. It is ranging from 30% in the arid zones of the eastern region to above 80% in coastal areas. The average annual rainfall varies from less than 50 mm in the coastal areas to up to 1000 mm in the Southern uplands mainly around Ibb (FAO, 2009).

Republic of Yemen consists of twenty one governorates; Abyan (the study area) is one of them. It extends between latitudes 13° 00' to

14° 20'N. and between longitudes 45° 00' to 47° 00'E., with an area of about 28187 sq. km. The central of Abyan governorate (Zingbar) lies south of Sana'a (the capital of Yemen) by about 427 km and east of Aden by about 60 km. Abyan governorate is bounded from the east by Shabwa governorate, from the west by Aden and Lahej governorates, from the south by the Gulf of Aden and from the north by Al-Bayda governorate and parts of Shabwa governorate (Figs. 1 & 2).

According to Nagmouh (1983), the climate of Wadi Abyan delta, where *Euphorbia dracunculoides* Lam. grows (Fig. 2), ranges from arid to semi-arid, the

temperatures, rainfall as well as the relative humidity are variable during the different seasons of the year. The temperature is however moderate due to its proximity to the sea, and occasionally rising above 41.5 °C or falling below 7.5 °C. The humidity is high

throughout the year, particularly at night and in the early morning. In the summer the relative humidity is frequently over 82%. The annual rainfall ranges from 30 mm up to 150 mm, and few showers may occur in January on the coast.

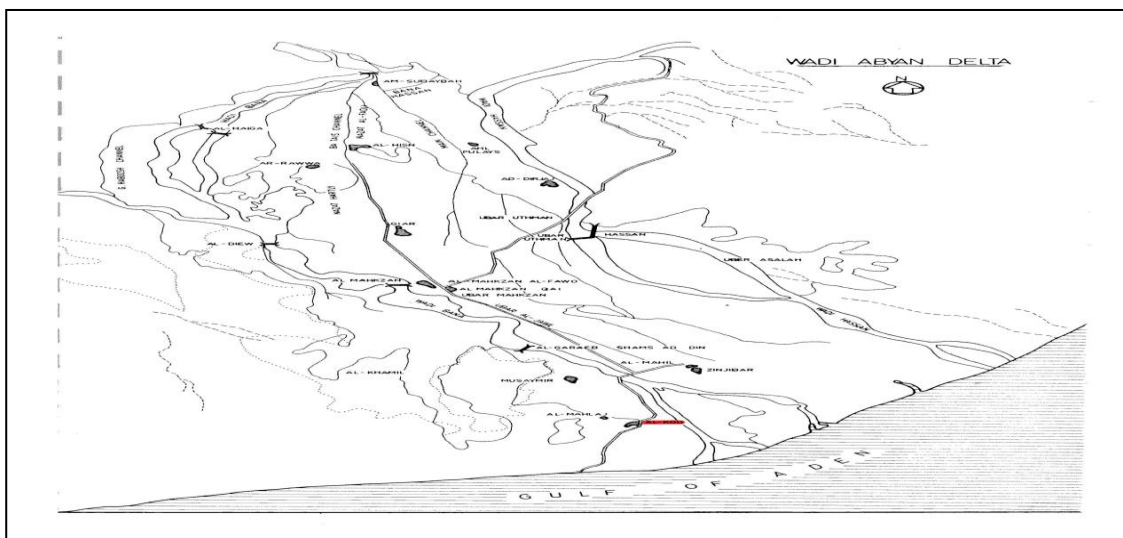


Fig. 2. Map of Abyan Delta with browsing the location of study area –Al-Kaud village, where *Euphorbia dracunculoides* grows (modified after Nagmouh, 1983).

MATERIALS AND METHODS:

The field work was carried out between December 2010 and February 2013. The identification work was finished in January 2014. The specimen upon whom this study is based was collected from Al-Kaud village, near Zingbar. It is located in the Abyan governorate and lies on the Gulf of Aden, approximately 55 km by road east of Aden. This investigated area is shown on the maps in Figs. 1 & 2. The collected specimen was first compared with similar species from flora of Yemen and then flora of

Kingdom of Saudi Arabia and flora of the United Arab Emirates in order to identify it.

The collected specimen from different parts of study area was studied and identified as *Euphorbia dracunculoides* Lam., using corresponding papers and flora (Boulos, 2000; Chaudhary, 2001; Karim and Fawzi, 2007). The collected specimen is deposited in the herbaria of Biology Department, faculty of Education, Aden University (Yemen). Morphological characteristics and other information like distribution, habitats and

Phytochory were studied for the new record, and comparison is also done for similar species.

Results:

Euphorbia dracunculoides Lam., *Encycl.* 2: 428 (1788). Fig. 3

Synonyms: *E. angustifolia* Buch-Ham. ex D. Don; *E. dracunculoides* var. *africana* Rikli & Schröt.; *E. dracunculoides* subsp.

dracunculoides; *E. hamiltonii* Oudejans; *E.*

lanceolata Spring.; *Tithymalus dracunculoides* (Lam.) Klotzsch & Garcke

Type: Djebel Bessam près du Kiss. Algeria, 1937 An ascending to erect, annual or short-lived perennial, 15–30 cm tall. Root terete, single, 30–40 cm × 3–8 mm. Stem sometimes branched basally, 3–7 mm thick, branches ascending, terete, glabrous in all parts. Leaves opposite on all the flowering parts, alternate on some of the lower parts of the stem and branches, sessile; stipules absent; leaf blade linear to linear-lanceolate, 1–3 cm × 2.5–4 mm, acute or obtuse, rounded in at the base, margin entire; lateral veins few, inconspicuous, at acute angle to midrib. Inflorescence an inconspicuous terminal few-rayed cyathium; primary involucre leaves similar to normal leaves, primary rays ca. 3, robust and ascending, dichotomous; cyathophylls 2, similar to normal leaves. Cyathium sessile; involucre broadly campanulate, 2–3 × 3–5 mm, lobes rounded; glands 4, pale brown, crescent-shaped, apex 2-horned, horns light green. Male flowers many, not exserted from involucre. Female flower:

ovary exserted from cup, smooth, glabrous; styles free, persistent; style arms 2-lobed. Fruiting peduncle ca. 3 mm; capsule subglobose, ca. 3.5 × 3.5 mm, smooth or obscurely reticulate, glabrous. Seeds ovoid-cylindric, ca. 2.5 × 1.5–2 mm, usually tuberculate-rugose, blackish-brown, with whitish network of thin ridges; caruncle 0.5 mm.

Flowering and Fruiting time: December – February.

Habitat: Known only from a single locality in Al-Kaud village, Abyan governorate, at distance about 55 km east of Aden, where it grows as a weed of irrigated fields in clay soil and around cultivation at alt. 20 m a.s.l.

Phytochory: Cosmopolitan

Previous report from Yemen: None.

Specimens examined: *Euphorbia*

dracunculoides - Yemen, Al-Kaud village, Abyan governorate, on alt. 20 m a.s.l., 13° 05' 521" N, 45° 21' 668" E, 2. 2. 2011, Othman 5020.

Discussion

The *Euphorbia* specimens collected from Al-Kaud village, Abyan governorate, at distance about 55 km east of Aden, were first compared with the related species in flora of Yemen. Then the specimens were identified by comparison of the floras of the neighboring countries viz. Flora of Kingdom of Saudi Arabia (Chaudhary, 2001); Flora of the United Arab Emirates (Karim and Fawzi, 2007), and it was found that the morphological characteristics of the collected species were

identical to those of *Euphorbia dracunculoides* Lam., and thus a new record for the flora of Yemen. With this new record, the total number of recorded *Euphorbia* in Yemen has reached 63. This species is distributed in Saudi Arabia, United Arab Emirates, Egypt,

Tanzania, Iraq, Afghanistan, Pakistan, India, Nepal, Spain, China and S Europe (Boulos, 2000; Chaudhary, 2001; Karim and Fawzi, 2007).

The most closely related species to *E. dracunculoides* in Yemen is *E.*

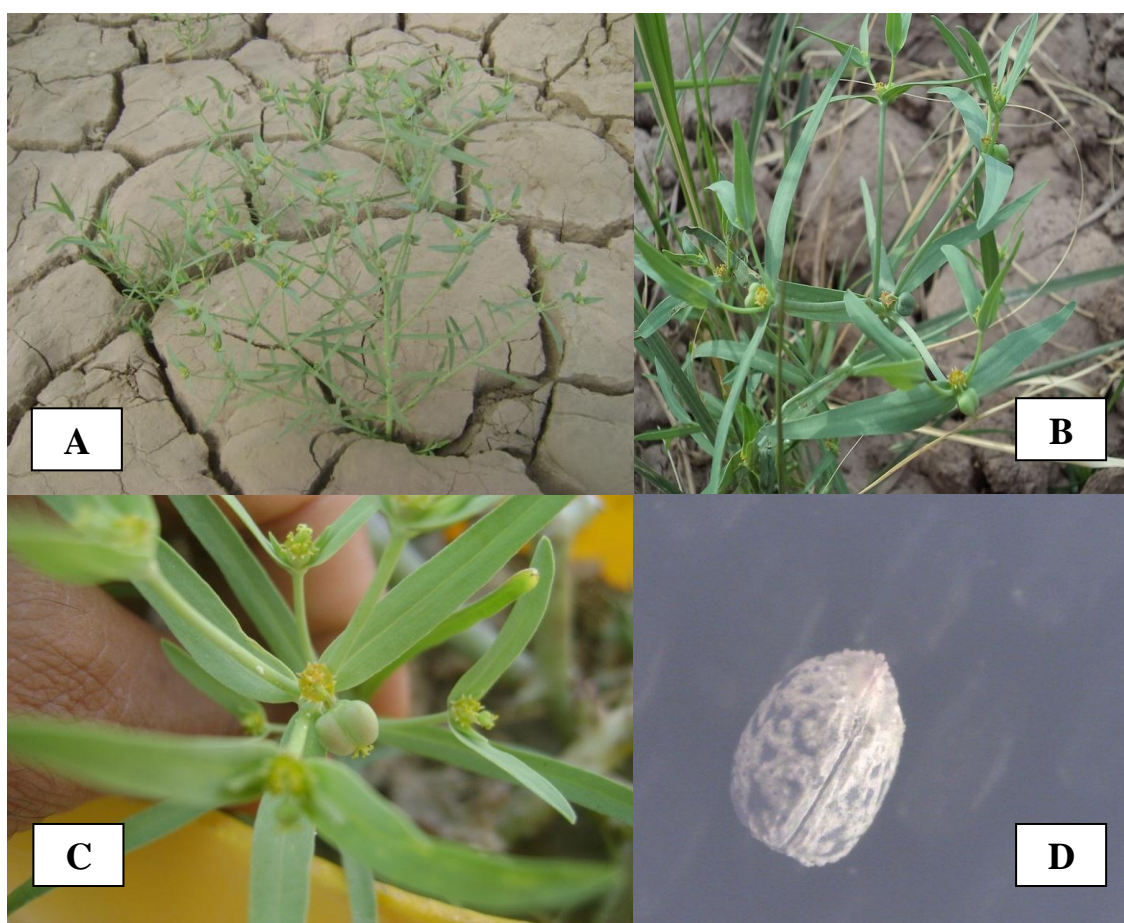


Fig. 3. *Euphorbia dracunculoides*, -A: Habit, -B& C: Inflorescence branches showing cyathium with subcyathial raylet leaves and mature capsule,-D: Seed.

shimperiana. The most important diagnostic characters for both species are shown in Table 1.

Table 1. Comparison between two species of Euphorbia

Species	High of Plant	Stem	Cauline leaves	Ray number	Raylet-leaves	Seed
<i>E.dracunculoides</i>	15-30 cm	Much branched basally	linear to linear-lanceolate, 1-3 cm × 2.5-4 mm	2-3	Linear-lanceolate, similar to Cauline leaves	Ovoid-cylindric, usually tuberculate-rugose, ca. 2.5 × 1.5-2 mm, blackish-brown, with whitish network of thin ridges
<i>E.shimperiana.</i>	25-60 cm	Much branched above, simple below	Linear-lanceolate, 1-3.5 cm × 2-4 mm	5-7	Triangular-ovate, dissimilar to Cauline leaves	Oblong-ovoid, ca. 2 × 1.5 mm, gray, brown spotted

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المخلص العربي

(الفصيلة اللبينية) تسجيل جديد لفلورا اليمن

EUPHORBIA DRACUNCULOIDES

عثمان سعد سعيد الحوشي*

قسم علوم الحياة، كلية التربية، جامعة عدن، اليمن*

othmanhamood773@yahoo.com

من الفصيلة اللبينية (السوسبية) سُجل لأول مرة كإضافة جديدة للفلورا اليمنية، *Euphorbia dracunculoides* Lam. تم جمع النوع من قرية الكود، محافظة أبين، اليمن على ارتفاع ٢٠م من سطح البحر، وقورن مع النوع المماثل له والمسجل ضمن الفلورا اليمنية من قبل. تم وصف النوع مع أنتشاره *uphorbia shimperiana* Scheele وصور توضيحية في هذه الدراسة.

كلمات مفتاحية: تسجيل جديد، الفصيلة اللبينية، *Euphorbia dracunculoides* ، اليمن.