



TWO NEW RECORDS OF THE GENUS PHELIPANCHE (OROBANCHACEAE) FROM IRAQ

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Abstract

Two new records of Phelipanche, *Phelipanche hypertomentosa* (M.J.Y. Foley) M.J.Y. Foley and *Phelipanche orientalis* (Beck) Sojak were added to the Flora of Iraq for the first time.

P. hypertomentosa was collected near the Iraqi Kuwait-Saudi Arabia border, on Jarishan-Khadher al-Mai road, and *P. orientalis* was collected from Kurdistan North Iraq. Their distribution, habitat and hosts were reported. Comparison and relationships between the recorded species and other closely related species were discussed.

Keyword: *Phelipanche*, *Orobanchaceae*, *Broomrapes*, *Parasitic plant*, *Iraq*.

Introduction

Orobanche hypertomentosa M.J.Y. Foley was described as a new species for the first time by M.J.Y. Foley from Saudi Arabia in 1998. Then in 2004 he included it in his Orobanchaceae of the Arabian peninsula as an Endemic species to Arabian peninsula. He later in 2007 transferred it to Phelipanche and made a new combination *Phelipanche hypertomentosa* (M.J.Y. Foley) M.J.Y. Foley [Foley, 1998; Foley, 2004 and Foley, 2007]. He mainly based his description upon preserved herbarium materials collected from Arabian peninsula. He recognized his species by the presence of a highly arachnoid-tomentose glandular/ eglandular indumentum on the stem, bracteoles and calyces (Foley, 2004). He also mentioned that the species is distributed only in Bahrin and Saudi Arabian and the host is possibly *Calligonum comosum*.

Orobanche orientalis G. Beck was described by G. Beck from Afghanistan in 1890, then in Pflanzenr. IV, 1930. Komarov in Flora URSS, 1958 mentioned that *O. orientalis* found in Soviet central Asia, Iran, Afghanistan and Indian Himalayas. He also mentioned that *O. orientalis* is related to *O. schultzii* Matel. Schiman-Czeika in Rechinger 1964 mentioned the presence of the species in Iran. In 1972, Sojak transferred the species to the genus Phelipanche making a new combination *P. orientalis* (G. Beck) Sojak. In 2016 Al-Asadi and Al-Mayah collected the plant from Kurdistan north of Iraq but misidentified as *P. schultzii*.

In Iraq the family Orobanchaceae has been poorly studied and the genus Phelipanche was included in *Orobanche* L. s.l. Taxonomically there is little work published on the genus in Iraq. Rechinger, 1964 described five species of *Orobanche* s.l. in the lowland of Iraq. Al-Rawi, 1964 listed 10 species of *Orobanche* s.l. in his checklist of wild plant of Iraq. Salih, 2002 in his MSc. thesis (unpublished) provided a systematic study on the family Orobanchaceae in Kurdistan of north Iraq. Neither those authors nor any other researchers mentioned our newly recorded species of Phelipanche to occur in Iraq.

Material and Methods

The material used in this study was collected during a survey carried out in 2014-2016 in Iraq. The survey included the southern deserts, Mesopotamia and Kurdistan of Iraq. Voucher specimens were made and deposited in Basrah University Herbarium (BSRA). Plants were photographed with their hosts in the field, collected together and vouchered. For comparison herbarium materials from National Herbarium of Iraq BAG and Baghdad University Herbarium BUH were examined. Plant materials and their photographs were compared with photographs of type specimens and sent to Professor Renata Piwowacczyk from Poland as expert to confirm the identification. For identification, Beck 1930, Comarov 1958, Rechinger 1964a,b, Davis 1982, Rumsey and Jury 1991, Foley 2004, 2007 were consulted.

Results and Discussion

Newly recorded species

Phelipanche hypertomentosa (M.J.Y Foley) M.J.Y. Foley Edinb. Jour. Bot. 64(2): 209-211 (2007).

Basionym: *Orobanche hypertomentosa* M.J.Y. Foley. Orobanchaceae of the Arabian peninsula, Candollea 59, 2004.

Type: Saudi Arabia, South-west of Zabirah 200km north of Buraydah, red sand dunes, 22. IV.1981, Collenette 2506 (holo.: E; iso: K).

Species characteristics (table 1., Fig.1)

Phelipanche hypertomentosa was collected by the authors from the southern desert of Iraq on Jrishan Khadhr al-Mai road 15km before Khadhr al-Mai, it was parasitize on Reseda sp. and Cruciferae sp. (*Eremobium aegyptiacum*) and grown on sandy or compact sandy soil, flowering from March to April. The species is distinguishable from the related species by the presence of a densely arachnoid-tomentose glandular or eglandular hairs on the stems, bracteoles and calyx, together with lax inflorescence and few pale blue flowers. The similarity and differences between *P. hypertomentosa* and its closely related species are shown in table 1.

Phelipanche orientalis (Beck) Sojak in Cas. Nar. Muz, Prir. 140: 130 (1972).

Basionym: *Orobanche orientalis* Beck in Bibioth. Bot. 19: 110[111] (1980).

Type: from Afghanistan, K61351, isotype LE.

This species was collected for the first time by the authors in Kurdistan of Iraq from Sulaimanya District MSU on Dara Tari Sanaralwa mountain near Iraq-Iran border, the second locality was from Pera-Magron mountain in the same district, the third locality was from Amadiya District MAM near to the Iraq-Turkish border. *Phelipanche orientalis* is easily separated from closely related taxa by having almost branched stem, distinctly calyx teeth longer than calyx tube and elongated, narrow and pointed spike. Fig. 1.

The species is different from *P. schultzi* (Mutel)Sojak by its branched stem and from *P. oxyloba* by its calyx teeth being much longer than calyx tube. The species is parasitize on Galium and grown frequently on mountain soil. The differences and similarities between *P. orientalis* and its closely related species are shown in table 2.

Host and Habitat

Foley 2004 said that his new species *Orobanche hypertomentosa* which is latter became *Phelipanche hypertomentosa* parasitize on *Calligonum comosam* and grown on red sand dune, but we found the species grown on sandy or compact sandy gravelly soil in an area where no *Calligonum* present. It is found to parasitize on Reseda and Cruciferae, this means that the species neither endemic to Arabian peninsula nor specified to a certain host.

For *P. orientalis*, Comarov 1958 mentioned that the species is parasitize on Amagdylyus, but in Kurdistan we found it parasitize on Galium, this suggest that the species is perhaps a multihosts plant.

Table 1: Comparison between *P. hypertomentosa* and its closely related species.

Character	<i>P. aegyptiaca</i>	<i>P. ramosa</i>	<i>P. hypertomentosa</i>
Height of plant (cm)	15-50 glandular-pilose	10-30 Glandular-pubescent	12-25 Arachnoid-tomentose
Stem (cm)	Branched or simple	Simple or branched	Simple or sometime branched
Inflorescence (cm)	10-35	2-10	5-9.5
Calyx (mm)	8-12	4-9	7-12
Calyx teeth (mm)	Equaling calyx tube	Subequal or shorter than calyx tube	Equaling calyx tube
Corolla (mm)	20-42 glandular-pilose	10-17 Glandular-pubescent	15-22 Arachnoid, glandular/ eglandular hairs
Lower lip	Acuminate	rounded	Acute or rounded
Filaments (mm)	Hairy at base	Glabrous	Hairy at base
Anther	With dense long lanate – hairy	Glabrous	Glabrous or white hair in base
Style	Glabrous	Glandular-pilose	Glandular

Table 2: Comparison between *P. orientalis* and its closely related species.

Character	<i>P. schultzi</i>	<i>P. oxyloba</i>	<i>P. orientalis</i>
Height of plant (cm)	10-60	10-40	7-60
Stem (cm)	Simple	Simple or branched	Branched
Inflorescence (cm)	Spike	Dense spike	Lax
Calyx teeth (mm)	1-2 as long as tube	Equaling tube	Longer than tube
Corolla (mm)	16-21 lilac, lavender	15-19 lilac, lavender	14-20 pale blue
Lower limb of corolla	Acuminate	Acuminate	Acuminate
Filaments (mm)	Hairy at base	glabrous	Glabrous or subglabrous
Anther	Hairy	Glabrous or hairy at base	Hairy
Style	Glandular	Glandular	Glandular



Fig. 1: Distribution in Iraq of *P. hypertomentosa* ▲ and *P. orientalis* ●



Fig. 2: a- *Phelipanche hypertomentosa* on *Resida arabica* b- *Phelipanche orientalis* on *Galium*

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