

**A NEW RECORD FOR THE FLORA OF IRAQ:
Orobanche oxyloba (Reut.) Beck. (OROBANCHACEAE)**

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ABSTRACT

The new records of *Orobanche* L. have been added to the 11 species of this genus previously reported from Iraq. Morphology of the taxa was discussed, geographical distributions are mapped, and details of their habitat. Comprehensive studies in literatures, herbaria and databases for approving the identification it is revealed that the name is correct and it is a new record for the flora of Iraq, the genus *Orobanche* L. has been represented by 12 species due to this new record in Iraq.

Keywords: Taxonomy, Orobanchaceae, *Orobanche*, new record, Iraq (Kurdistan Region).

INTRODUCTION

The genus *Orobanche* L. belongs to holoparasitic members of Orobanchaceae Vent. and includes about 170 species Uhlich, *et al.* (1995). *Orobanche* L. is the largest genus among the holoparasitic members of Orobanchaceae. It is mainly distributed throughout the subtropical and temperate regions of the northern hemisphere, and the Mediterranean region is one of the most important centers of its diversity Plaza *et al.* (2004). Based on the recent taxonomic study regarding this genus is represented by 11 species in Iraq Ridda and Daoud (1982) and Salih (2002), by 38 species in Turkey Gilli (1978) and Davis *et al.* (1988) and by 47 species in Iran Rechinger (1964).

Most species of *Orobanche* grow in sunny, preferably in arid and semi-arid grasslands. Some species are found frequently in ruderal pastures in thickets (especially in the Mediterranean region). A few *Orobanche* species growing in agricultural land in the Mediterranean countries and the near East have become real plagues; they cause extensive damage to various crops Kreuz (1995)

MATERIALS AND METHODS

Materials which depended as data for this study are labels of herbarial specimens of major herbaria of Iraq {Baghdad Iraq. National herbarium of Iraq (BAG), Baghdad, the university herbarium, college of Science, dept. of Biology (BUH), Arbil, Iraq. College of Science, University of Salahaddin (AUH) and Baghdad Iraq. College of Agriculture (BAH)} and field trips and the literatures, also on the lists of Iraqi plants were published by: Zohary (1946); Ridda and Daoud (1982); Salih (2002), and on the some Floras such as: Flora of Lowland of Iraq Rechinger (1964); Flora Iranica Rechinger (1964); Flora of Turkey Davis *et al.* (1982).

A large number of specimens were collected from the field during the spring of 2012 and 2013 with type material examined had its geographical distribution and habitat. Geographical distribution was made by aid of prepared maps (fig. 1, 2) and it is focused on Iraqi Kurdistan regions, some species were photographed in their natural habitats as in (fig.3)

The descriptions of the taxa are given here of seed morphology, and their distributions are given on a map (fig. 2). Data on the width and length of seeds are based on the measurement of 25 seeds; the seeds was examined with a Zeiss __ (10 x 100 oil) microscope and photographed with a Menolta camera.

RESULTS AND DISCUSSION

Annual herb, stem simple, 18-30cm long, 5-11mm thick at middle, erect, more thickened at the base, brown and glandular pubescent. Scales lanceolate, 12-16×3-5mm, Inflorescence spike, 5–10×2–4cm, shorter or equal to the remaining part of stem, dense in upper part, lax in the middle and lower parts. Bracts 6-10×1.5-3.5mm, light brown, lanceolate, glandular hairy. Calyx 3-7mm long, calyx tube bell shaped, dorsally opened, segments equal, 4-toothed, basally ovate, teeth long acuminate, glandular hairs, shorter or longer than the corolla tube. Corolla 10-18mm long, bell-shaped, blue violet, base yellowish, glabrous to sparsely hairy, dorsal line curved, upper lip curved, often slightly bilobed, lobes large, broadly rounded, lower lip large, patent or t deflexed, lobes rounded, with widely large folds between the lobes; all lobes irregularly denticulate at margin. Stamens dorsiflexed, inserted 2-5mm above the base of corolla, filaments solid cylindrical, 6–10×0.2-0.4mm, glandular hairy; anthers 0.7-1.5mm long, mucronate, brown, at suture sometimes hairy. Ovary ellipsoid, light brown, glabrous, 5-8mm long, style with numerous glandular hairs, 5-10mm long ; stigma, yellow or light brownish; capsule ellipsoid.

Seeds size are vary according to position of capsule within the inflorescence, 0.2-0.5 x 0.1-0.3mm long. alveolate; pyriform, ovoid or spherical to sub spherical in shape; light yellowish-orange to light brown.

Orobanche oxyloba (Reut.) G. Beck. In L. Koch, *Entwickl. Orobanche* 209 (1887).

Novopokr. in Kom., l.c., 64; Schi.-Czeika in Rech. f., l.c. 9; R.R. Stewart, l.c. 673.

Synonym: *Phelipaea oxyloba* Reut. In DC., *Prodr.* 11:9 (1847); Boiss., i. c. 497.

Distribution: Peninsula, Balcanica, Tauria, Anatolia, Armenia, Kurdistan, Persia, Caucasus, Pakistani.

Type: Caria and muros prope castellum Alayae, *Heldrich* (G).

Phenology and ecology: Flowering in April. Alluvial and sandy soils,

Altitude: 250-270m.

Hosts: Annual Compositae: *Centaurea* L.

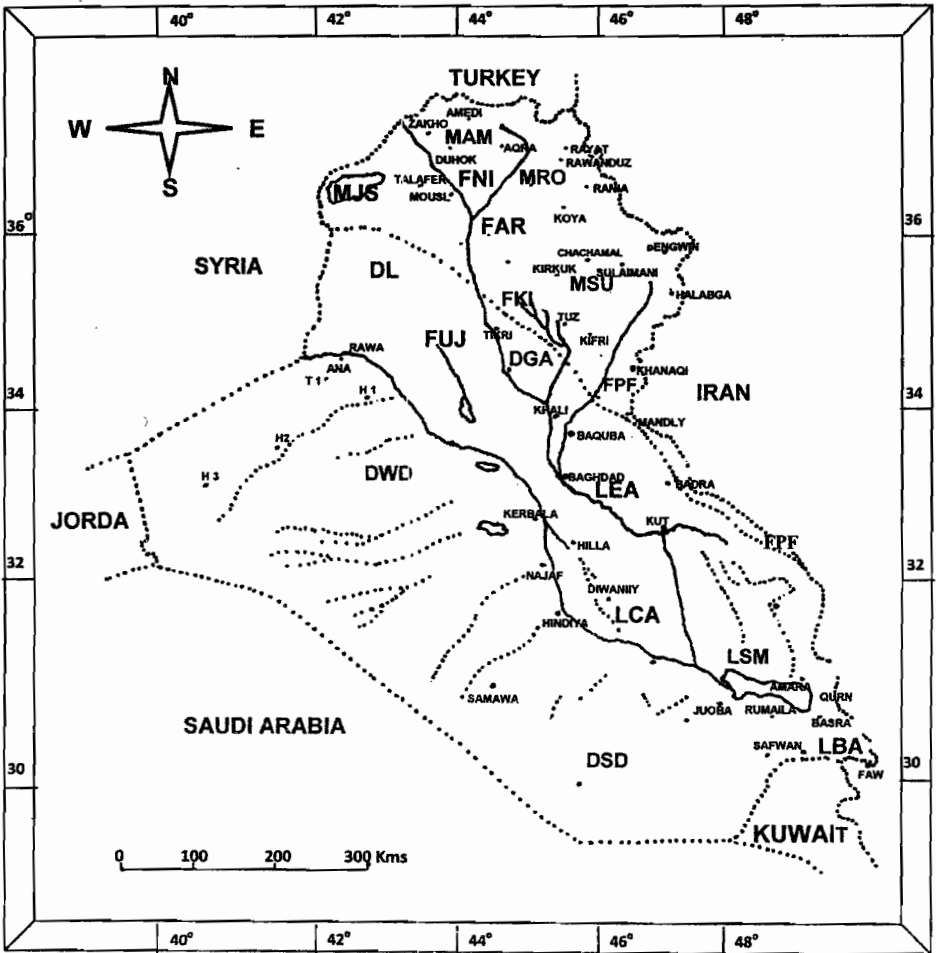


Figure (1) Physiographic regions and Districts map of Iraq
(from Guest, 1966, with some modifications)

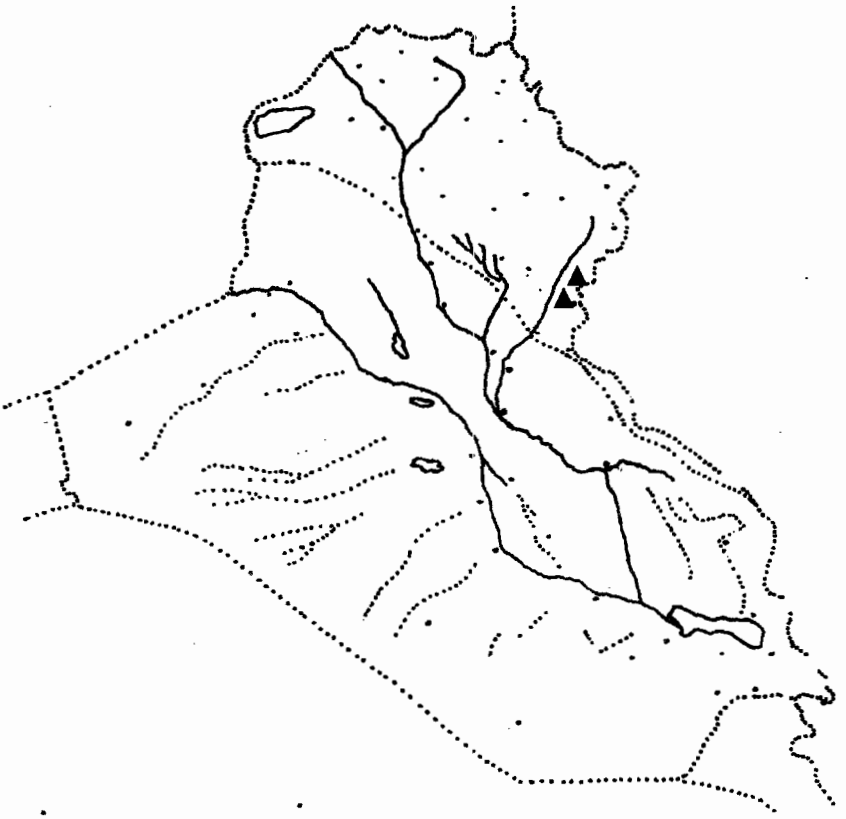


Figure (2) Distribution map of the sp. *Orobanch oxyloba* (▲)

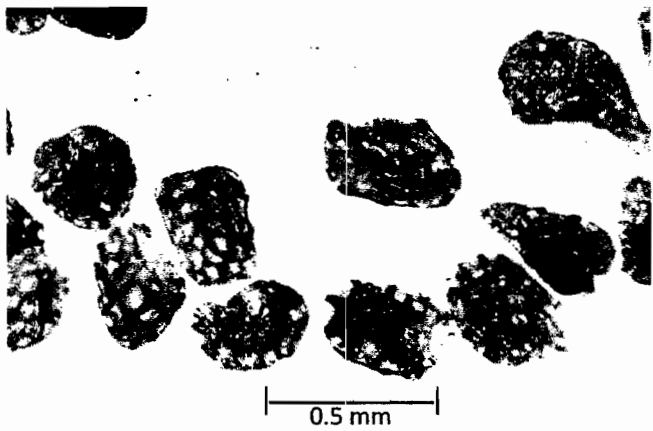


Figure (3) Seed of studied species

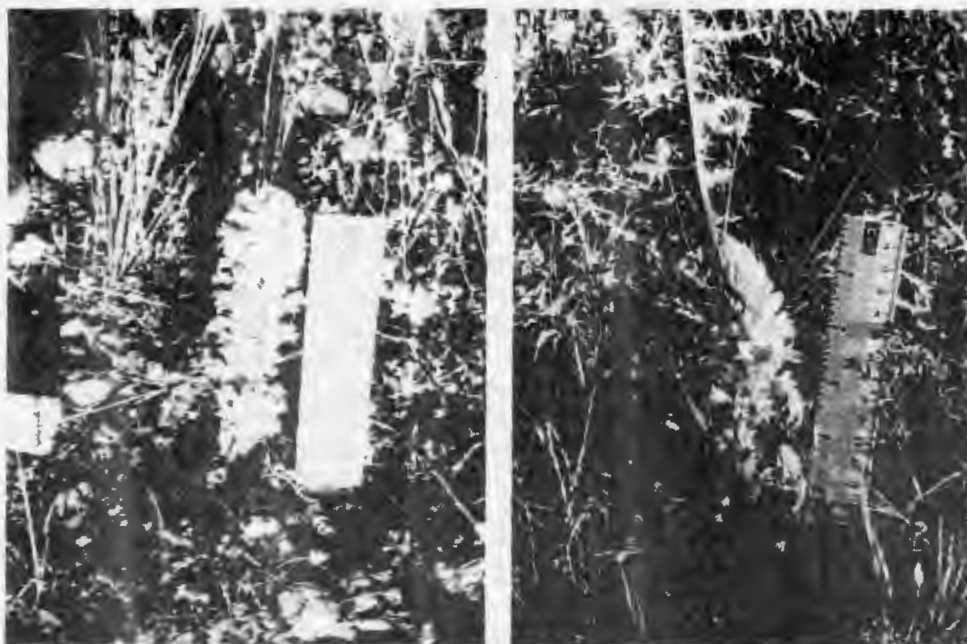


Figure (4) Photos of species in its habitat

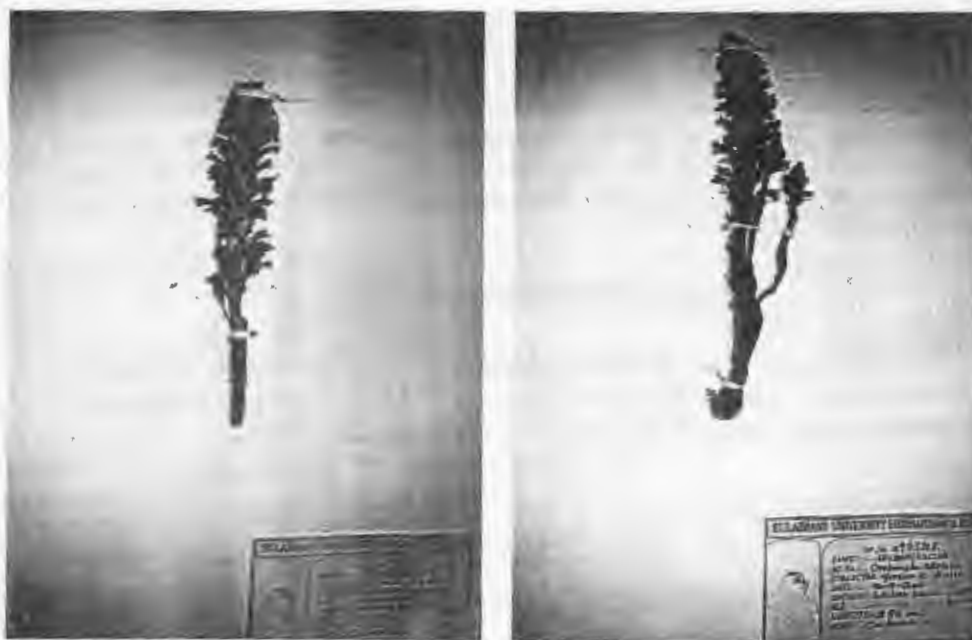


Figure (5) Photos of dry specimens

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Until recently, *Orobanche* s.l. has been treated under a single genus and comprises about 170 (Uhlisch et al., 1995) species in the world, 12 species of which are present in Iraq. However, recent phylogenetic analyses have revealed 2 separate phylogenetic lineages at the generic level, which overlap the 2 morphologically distinct sections and support splitting the genus *Orobanche* s.l. into 2 separate genera, as *Orobanche* and *Phelipanche* Schneeweiss *et al.*, 2004a, 2004b, Weiss-Schneeweiss *et al.*, 2006, Schneeweiss, 2007, Park *et al.*, 2008. In Flora of Iraq, all broomrape have been treated under a single genus, *Orobanche* L. Based on geographical information, *O. oxyloba* has reported from subalpine area and Mountains in Iran, distribution, ranges of the species starts from Iran and reach to Armenia to Pakistan to Caucasia to Turkey, thus, the present of this taxon in the east of Iraq near the Iran border was expected. Rechinger, 1964 in Flora Iranica referred to the distribution of this species in the Northwest of Iran (Iranian Kurdistan), during field trips in spring of 2012 and 2013 in the FPF district (fig. 1) between Sirwan river (Iraq) and Iranian border opposite Qasr Sheren city (Iran) about 13km east of Kalar and 29km north of Khanaqeen and the density of the spread of this species in the above mentioned areas were limited in the circular space (about 3 km diameter), this species were collected in the flat area (250-260m altitude) parasite on Compositae members, this may explains that this species has scattered from the border areas of Iran into Iraq. The genus *Orobanche* has been represented by 12 species due to this new record in Iraq.

Results of micromorphological study showed that seeds of *Orobanche* are less than 1 mm in size and their size is variable, both between and within individuals and according to the position of capsule with in the inflorescence. Seed shape is also a variable character, ranging from oblong and ellipsoid to ovoid, and the surface configuration is alveolar in all taxa (fig. 3). The results show that seeds characters singly are not very useful for identification of all taxa (Abu Sbaih and Jury, 1994 and Plaza, 2004) at the species level, but they can be helpful in addition to other morphological characters.

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تسجيل نوع جديد للفلورا العراقية

***Orobanche oxyloba* (Reut.) Beck. (OROBANCHACEAE)**

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سجلت الدراسة الحالية نوع جديد لجنس *Oobanche* L و اضيف الى ١١ نوعا مسجل سابقا في العراق، وجرى دراسة الصفات المظهرية والتوزيع الجغرافي لهذا النوع وتسجيل بعض الملاحظات البيئية، اظهرت الدراسات المظهرية المقارنة و المراجع و العينات المعشبية و المعلومات التصنيفية المتوفرة صحة التشخيص والاسم و اكدت بانه تسجيل جديد يضاف للفلورا العراقية، وان الجنس يتمثل حاليا ب ١٢ نوعا مع النوع المدروس في العراق

قام بتحكيم البحث

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