A TAXONOMIC REVISION OF UTRICULARIA (LENTIBULARIACEAE) FOR AQUA FLORA OF IRAN

M. Dinavand

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For the preparing of aqua Flora of Iran, the appropriate materiaal collected from wetlands and identified. Among Utricularia species one new record to Iran namely Utricularia ochroleuca from a bog in Mazandaran was found. Other species, Utricularia minor collected from Gahar lake in Lorestan, U. vulgaris from Zarivar lake in Kurdistan and U. australis from Gilan. In this paper a key to the Iranian species is presented and the new record and other species are explained.

Mehri Dinavand (mdinarvand2003@yahoo.com), Research Center of Agriculture and Natural Resources of Khuzestan province & PhD Student of Ferdowsi University of Mashhad, Iran.

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INTRODUCTION

The members of the family Lentibulariaceae are carnivorous herbs that is placed in the order Lamiales (Judd et al. 2008). It contains 284 species of three genera, Pinguiicula L., Genlisea St. Hil. and Utricularia L.

Utricularia is a cosmopolitan genus with concentration on tropical and subtropical regions. It includes 214 species in two subgenera Polypondophyly Lehmi. and Utricularia L. (Taylor 1989). Casper (1969) surveyed this family in Flora Iranica only with U. neglecta Lehmi. from Mazandaran province. Parsa (1950) in Flore de l’Iran introduced this family with species U. vulgaris from same province although this might be an erroneous detection (Naqinzezhad 2008).

Casper (1969) in Flora Iranica reported three species namely U. minor, U. ochroleuca and U. vulgaris from Afghanistan and U. vulgaris for Pakistan. Naqinzezhad et al. (2008) reported the species U. australis from Tehran and U. minor from Tehran and Mazandaran for the first time and although they refer Tehran University Herbarium as stored but in this research, I did not find their specimens in TUH. Ali (1993) in Flora of West Pakistan explained that U. vulgaris does not occur in Pakistan and material belongs to U. australis, also other species in this region are, U. minor and U. aurea. The family Lentibulariaceae have 2 genera in Turkey and Europe, Pinguiicula and Utricularia. There are three species of Utricularia in Turkey and six in Europe, on the other hand three species (U. minor, U. australis and U. vulgaris) are common between Turkey, Iran and Europe. But it is important to mention that, the species of Turkey are very similar in characters with Iranian species (Davis 1978; Taylor 1972). In Flora of the U.S.S.R. (Komarov 1958) six species of Utricularia encountered, three of them are the same as in Iran, U. minor, U. vulgaris and U. major. The author has been preparing the draft of aqua Flora of Iran and therefore has been collecting and revising the genus Utricularia in Iran. The aim of this paper is to presenting an identification key for the Iranian species and explaining the new record to Iran.

RESULTS

Key to Utricularia species in Iran

1. Stems dimorphic, Leaves polymorphic 2
   - Stems and leaves monomorphic 3

2. Leaves indistinctly denticulate or not denticulate; all segments dichotomously divided 1. U. minor
   - Leaves distinctly denticulate; segments dichotomously and pinnately divided 4. U. ochroleuca
3. Leaves multipinnatifid. Internode 1-1.5 cm.
Pedicels 1-1.5 cm. Lower lip flat and spreading

2. **U. australis**

- Leaves pinnate. Internode 4-8 mm. Pedicels 0.5-1 cm. Lower lip flat and deflexed

3. **U. vulgaris**


*Specimen examined.* Lorestan province: Doroud, Gahar lake, 2358 m, Dinarvand & Mohamadi. 8757 (TARI and Research Center of Agriculture & Natural Resources of Khuzestan Herbarium).

Submerged herbs. Stems filiform, dimorphic; green; internode 4-7 mm. Leaves alternate, polymorphic, with 2 primary segments from the base, 2-10 mm long, semi-ovate in outline; secondary segments dichotomously divided into 2-5 segments, narrowly linear, 0.2-0.3 mm wide, margin entire or sparsely denticulate, apex acute. Traps on leaf segments, with short stalk, 0.2 mm, oblique ovate, 1.5-2 mm wide and 0.9-1 mm long. Antennae on mouth of traps much branched, 2 mm long.

2. **U. australis** R. Br., Prodr.: 430 (1810), Fig. 1.


*Specimens examined.* Mazandaran province: Fereydon Kenar, Azbaran village, -5 m, Dinarvand & Mohamadi. 8797 (TARI. Research Center of Agriculture & Natural Resources of Khuzestan Herbarium). Gilan province: Anzali wetland, Mobayen (Herbarium of Tehran University); Lahijan, 2 km S. Khazar, Amir Kalayeh wetland, Moradi,1529. (Research Center of Agriculture & Natural Resources of Gilan & Khuzestan Herbarium)

Submerged herbs. Stems filiform, monomorphic, all green; internode 1-1.5 cm. Leaves alternate, monomorphic, with 2 primary segments from the base, 1-1.5 cm wide and 2.5-3.5 cm long, oblong to ovate in outline; secondary segments filiform, more than 10, multipinnately divided, margin denticulate, obviously with bristle on each tooth, oblong to ovate in outline. Traps on leaf segments, with shortly stalk, 0.2-0.4 mm, oblique ovate, 1.5 mm wide and 1.5-2 mm long. Antennae on mouth of traps much branched, 2-3 mm long. Inflorescent raceme peduncle emerged, erect, 10-20 cm. Bracts amplexicaul, rounded at apex, 2-4 mm long. Flowers yellow, 5-7 mm long; pedicels 1-1.5 cm. Corolla bilabiate with spure; lower lip flat and spreading. Calyx with 2 dimorphic lobes, connate at base; the upper with rounded and the lower with emarginated apex, 3.5 mm long. Capsule globose, 2-5 mm long.


*Specimen examined.* Kurdestan province: Marivan, Zarivar lake, 1300 m, Dinarvand & Mohamadi 8312 (TARI and Research Center of Agriculture & Natural Resources of Khuzestan Herbarium).

Submerged herbs. Stems filiform, monomorphic, all green; internode 4-8 mm. Leaves alternate, monomorphic, with 2 primary segments from the base, 1-2.5 cm long, oblong to ovate in outline; secondary segments filiform, 5-7, pinnately divided; margin denticulate, obviously with bristle on each tooth, rounded to ovate in outline. Traps on leaf segments, with shortly stalk, 0.1-0.2 mm, oblique ovate, 2.5 mm wide and 3 mm long. Antennae on mouth of traps much branched, 2-3 mm long. Inflorescent raceme peduncle emerged, erect, 6-10 cm. Bracts amplexicaul, rounded at apex, 3 mm long. Flowers yellow, 5-6 mm long; pedicels 0.5-1 cm. Calyx 2 with dimorphic lobes, connate at base; the upper with rounded and the lower with emarginated apex, 3 mm long. Corolla bilabiate with spure; lower lip flat and deflexed. Stamina 2; filament curved, 2 mm. Capsule globose, 2 mm long.

4. **U. ochroleuca** R. Hartman, Bot. Not. 1857: 30 (1857), Fig. 2.

*Specimen examined.* Mazandaran province: Beginning of the road from Chalos to Noshahr, under metal bridge, 8 m, Dinarvand & Mohamadi. 8787 (TARI. Research Center of Agriculture & Natural Resources of Khuzestan Herbarium).

Submerged herbs. Stems filiform, dimorphic; internode 4-7 mm. Green and colourless. Leaves alternate, polymorphic, with 2 primary segments from the base, 3-10 mm long, oblong, ovate or semi-ovate in outline; secondary segments dichotomously and pinnately divided, into 3-9 segments, narrowly linear, 0.1-0.6 mm wide, margin denticulate, obviously with bristle on each tooth; apex acute. Traps on leaf segments or on stems without leaf, with shortly stalk, 0.1-0.2 mm, oblique ovate, 1-2.5 mm wide and 1.5-2 mm long. Antennae on mouth of traps much branched, 2 mm long.

The Iranian species of the genus *Utricularia* are all non endemic aquatics with a distributed range between -5 to 2358 m altitudes in N and W Iran (Fig. 3).

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Fig. 1. *Urticularia australis* (×2.64); trap (×26.4); fruit (×7).
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REFERENCES

Fig. 2. Utricularia ochroleuca. Green stem (×5.3); colorless stem (×13.2); expanded turion leaf (×44); trap (×12).


Naqinezhad, A., Rice, B. A., Attar, F. & Jalili, A. 2008: