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A New Record of *Potentilla lignosa* Willd. (Rosaceae) in Iraq-Short Communication

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Abstract

Potentilla lignosa Willd is a new additional species to the Rosaceae family in Iraq, from Qandil mountain (north-east of Erbil) within Rowanduz district (MRO). The identity of the species was confirmed by identification using keys in the available references, morphological description was prepared, and some discriminative characters are given in the associated figures. In addition, some characters of the pollen grains have been studied such as shapes, colors, sizes and numbers.

Key words: *Potentilla lignosa*, Rosaceae, Rowandus district, Iraq.

1. Introduction

One of the families in the Flora of Iraq is Rosaceae that involves 2800 species throughout the world which, distributed on 95 genera (Simpson, 2006), in Iraq, involves 53 species distributed on 19 genera (Al-Rawi, 1964). In the Flora of U.S.S.R., Komarov (1941) indicated 148 species of the genus *Potentilla* L. Matthews (1972) in Turkey mentioned 53 species of the genus involving *Potentilla lignose*. In Europe, Ball et al. (1968) stated 75 species of the genus *Potentilla*. In Iran, Schiman (1969) mentioned that 51 species of the genus found including *Potentilla lignosa*. In the Flora of low land Iraq, Rechinger (1964) stated 1 species. Al-Rawi (1964), Meikle (1966) and Ridda & Daood (1982) indicated that 6 species found in Iraq. Faris (1983) mentioned 1 species in Piramagrun Mountain. None of Khalaf (1980), Fatah (2003) and Ahmad (2013) mentioned any species of the genus *Potentilla* in Sinjar, Haibat Sultan and Hawraman mountains, respectively.

The present study assured the occurrence of *P. lignosa* in Iraq based on recent collection, as well as morphological characters and pollen grains characters, to added extra information to support the identity of this species.

2. Materials and Methods

Plant specimens have been collected during the field trips in different regions of northern districts of Iraq in 2016, identification of the specimens were done using some of the keys, especially in Flora of Iraq, Flora of Turkey and Flora Iranica. The specimens were treated and preserved, and placed in herbarium of Education College (ESUH). Species' geographical distribution was presented, association of some ecological notes as shown in the map (Figure 1). For the study of pollen grains, anthers were fixed in FAA; then a single anther was removed and placed in a drop of water or 50% glycerol (the latter to prevent the material from drying out). The anther was dissected with a scalpel to extrude the pollen grains. The anther wall material was removed after crushing pollen grains. And a drop of safranin was added and then a cover-slip was slided on top of the pollen (Simpson, 2006).

3. Results

Potentilla lignosa Willd., in Ges. Nat. Freunde Berlin Mag. 7:293 (1816); Fl. Iranica, Schiman, No.42/15.3: 85 (1969); Fl. Turkey, Matthews, 4: 45 (1972). Syn: *P. plagiophylla* Rech. fil. in Symb. Bot. Upsal. 11(5):24, t. 12 (1952).

Dwarf suffruiticose with thick woody branches adpressed to rocks, pilose-pubescent, Perennial, herbs, 6-15 cm, stem erect-ascending, pilose-pubescent, green, 2.5-9x0.2-1 cm. Leaves alternate, Leaves compound, petiolate, leaflets 5, terminal ones the largest, oblanceolate, margin entire, apex obtuse, 3-5 toothed, base acute or oblique, pilose-pubescent, green, basal leaves 14-16x7-9 mm, leaflets 5.5-8x2.5-4.5 mm, lower cauline leaves 19-24x9-11 mm, leaflets 5.2-7x2-3 mm, upper cauline leaves 10-12.5x7-9 mm, leaflets 4-6.2x2-4 mm, stipules adnate, auriculate, brown, pubescent, 1.5-3.5x1-1.3 mm. Bracts 2, opposite, narrowly oblong, lanceolate-narrowly elliptic, margin entire, apex acutuminate, base obtuse, pubescent, brown, 1.5-2x0.4-0.6 mm. Flowers terminal, solitary or paired, 10-12x14-17 mm, pedicel teret, pilose-pubescent, green-yellow or green-brown, 15-25x2-3 mm, epicalyx segments 5, linear, pilose-pubescent, green, 1.7-2.5x0.4-0.6 mm. Calyx of 5 sepals, persistent, lanceolate or oblong, margin entire, apex acuminate or acute-acuminate, base truncate, pilose-pubescent, green, 4-6x1.5-2.6 mm. Corolla of 5 petals, suborbicular-orbicular, margin undulate, apex obtuse and emarginate, base truncate, unguiculate

glabrous, white, 4.7-6.6x2.8-3.7 mm, Stamens 17-20, filaments filiform, pink, 2-3x0.15-0.20 mm, anthers oblong, pink, versatile attechment with the filaments, 0.8-1x0.25-0.30 mm. Pollens yellow, single, tricolporate, oblate-prolate in equatorial view, triangular-spheroid in polar view, small according to (Erdtman, 1971), equatorial axis 12-14 µm, polar axis 10-13 µm, numerous. Pistils 8-10, ovaries superior, oblanceolate-oblong, pilose-pubescent, brown, 0.8-1.7x0.4-0.5 mm, style sub-basal, filiform, pink, 3.5-4.6x0.1-0.12 mm. Stigma undifferentiated. Persistent epicalyx 1.8-2.7x0.4-0.7 mm, Persistent sepals 4.8-6.5x2-2.8 mm. Achenes oblanceolate-oblong, sub-basal stylar scar appear on the achenes, pilose-pubescent, brown, 1.1-2x0.5-0.8 mm. Seed single, basal, oblong, yellow, 1-1.6x0.35-0.45 mm. (Plates 1-4).

Type: [Iran] Samarische Schneegebirge, Pallas.

Selected samples from the studied specimens

MRO: ESUH/ Qandil mountain (north-east of Erbil), 2140-2200 m, 25.8.2016, A. Sardar, S. Al-Dabagh and K. Rasul 7451.

Environment & Geographical Distribution

Found as individuals in the region, in wet places on the rocks; altitude: 2140-2200 m; flowering: June-August. Found in Qandil mountain within Rowanduz district (MRO) (Figure 1).

Plate 1: Field photograph of *P. lignosa*

A part of plant

A part of plant showing branching

Basal leaf: abaxial

Lower cauline leaves: abaxial & adaxial

Upper cauline leaf: adaxial

Upper cauline leaf: abaxial

Adnate stipules

Plate 2. Vegetative parts of *P. lignosa*

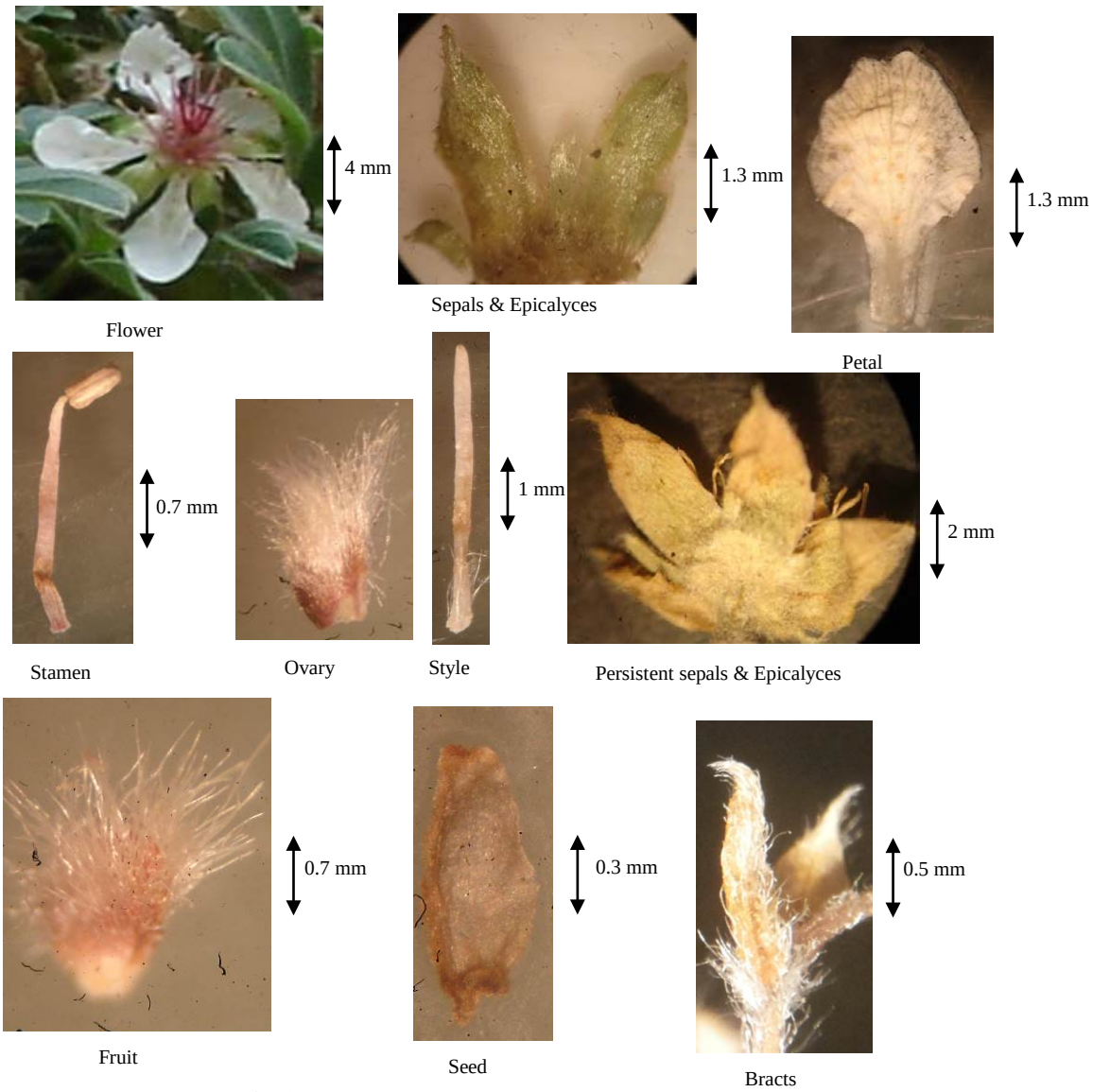

Plate 3. Reproductive parts of *P. lignosa*

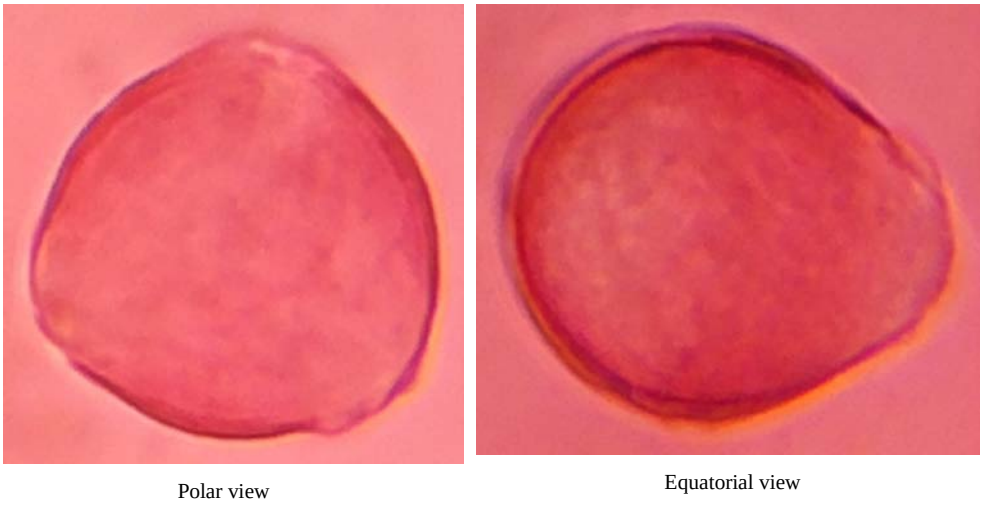

Plate 4. pollen grain of *P. lignosa* x100

Figure 1. A map of Iraq shows the regions and districts depending on Guest (1966) and FAO (2002) • *P. lignosa*

4. Discussion

The present study dealt with a new record of *Potentilla* species which is *P. lignosa* from Rosaceae family in Iraq, the study included some aspects as the morphological characters and the environment. Within literature review connected to the genus *Potentilla* in Iraq, involving the specimens of National Herbarium of Iraq (BAG), College of Science Herbarium, University of Salahaddin - Erbil, Iraq (ARB) and College of Education Herbarium, University of Salahaddin - Erbil, Iraq (ESUH), the researcher did not find any specimens belongs to *P. lignosa*, therefore it will be regarded as a new species to the Flora of Iraq (new record in Iraq) from Qandil mountain.

P. lignosa has some characters different from *P. supina* L. found in Iraq and has pinnately compound leaves (the other Iraqi species have palmately compound leaves), and these characters include that *P. lignosa* is a perennial, dwarf suffruiticose with thick woody branches adpressed to rocks, leaves short petiolate, leaflets 5, 3-5 toothed at apex, stipules auriculate, Flowers terminal, solitary or paired, sepals lanceolate or oblong, acuminate, petals unguiculate, white, Achenes oblanceolate-oblong, pilose-pubescent. In addition, pollen grains were yellow, single, tricolporate, oblate-prolate in equatorial view, triangular-spheroid in polar view, small and numerous.

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