
New record for the flora of Kurdistan region of Iraq: *Eranthis kurdica* (Ranunculaceae)

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Abstract

Eranthis kurdica Rukšāns (Ranunculaceae), a new record for flora of Kurdistan region of Iraq, is described. The specimens were collected in Akre/Hewler province, Kurdistan region of Iraq. Among them, *Eranthis kurdica* is known from Iran and Turkey, new added to Kurdistan region of Iraq. Detailed morphological description, vernacular name, its photographs in its natural distribution area and the updated map of the distribution area are presented in the study.

Keywords: *Eranthis kurdica*, Hewler, Iraq, Kurdistan, New record, Ranunculaceae

Introduction

The genus *Eranthis* Salisb. (Ranunculaceae) consists of eight to ten species distributed in southern Europe and temperate Asia (Lee et al. 2012; Park et al. 2019). On the basis of morphology, the genus has been divided into two sections: *E. sect. Eranthis* and *E. sect. Shibateranthis* (Nakai) Tamura (Tamura 1987). Furthermore, they are geographically separated, with section *Eranthis* occurring in Europe (*E. hyemalis*) and SW & W Asia (*E. cilicica* Schott & Kotschy, *E. longistipitata* Regel) and section *Shibateranthis* distributed in temperate N & E Asia (*E. albiflora* Franch., *E. byunsanensis* B.Y.Sun, *E. lobulata* W.T.Wang, *E. pinnatifida* Maxim., *E. pungdoensis* B.U.Oh, *E. sibirica* DC. and *E. stellata* Maxim.: Park et al. 2019). Four additional species with yellow sepals, *E. bulgarica* (Stef.) Stef. (Stefanoff 1963), *E. iranica* Rukšāns & Zetterl. (Rukšāns and Zetterlund 2018), *E. tanhoensis* Erst (Erst et al. 2020) and *E. kurdica* Rukšāns (Rukšāns 2022) have been described from Bulgaria, Iran and Russia.

In the flora of Iraq, the genus *Eranthis* is known only with *E. hyemalis* (L.) Salisb Riedl, (1992). A recent study by Fırat (2023), *Eranthis cilicica* Schott & Kotschy are spared in Turkey. *E. hyemalis* species did not spread in Turkey and spreading in Turkey is *E. cilicica*. *Eranthis kurdica* is first time recorded for the flora of Turkey with emended description by Fırat (2023). And the *Eranthis* species in Iraq was found to be *Eranthis kurdica*. In summary, *E. hyemalis* species does not spread in Iraq. *Eranthis kurdica* is the first time recorded for the flora of Iraq (Kurdistan region).

Materials and Methods

Senior author during floristic surveys in Hewler (Fig. 1) in April 2011, and 2023 specimens were collected of one unidentified species from genus *Eranthis*, therefore

decided to analyze the morphological characters of the species. Then collected some other specimens and examined using a wide range of literature for identification (e.g. Davis et al. 1965, Riedl, 1992, Rukšāns and Zetterlund 2018, Rukšāns, 2022). As a result of this effort and with the light of new characters observed, the specimens belong to *Eranthis kurdica* Rukšāns which is a new record for the Flora of Iraq (Kurdistan region).

Images of the living material were taken with a Sony DSCR1 digital camera. Geographical positions were identified using a Magellan eXplorist 710 GPS, and inserted in Figure 1. A total of 10 herbarium specimens of the new species were collected from three adjacent localities and deposited in the herbaria VHLV (acronyms according to Thiers, 2022), and in the personal herbarium of the author (Herb. Firat).

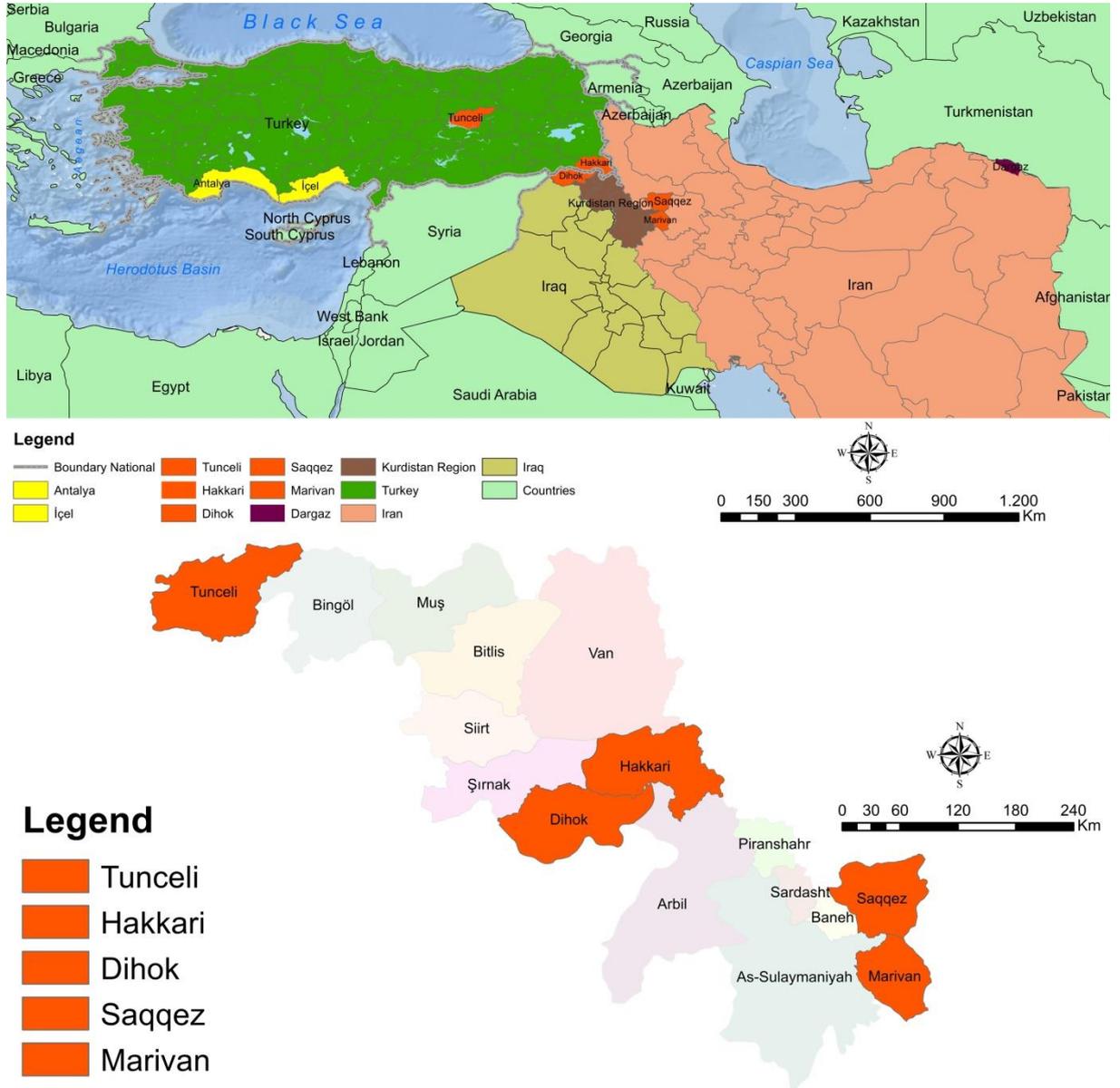


Figure 1. Distribution map of *Eranthis kurdica* (orange) in Iraq (Kurdistan region), Turkey and Iran, *E. cilicica* (yellow) in Turkey, *E. iranica* (purple) in Iran.

Results

Eranthis kurdica Rukšāns (Figure 2–6)

Type: Iran, Kurdistan, along the road from Saqqez to Marivan, on gentle slopes of mountain pass at altitude 2130 m; 35°43'N; 46°23'E Leg. J. Rukšāns 12 April 2022 (22IRS-089). Holotype: RIG! (University of Latvia).

Description: *Herb* perennial, stems erect, up to 21 cm long at flowering and up to 27 cm long at fruiting. *Tubers* elongated, branching few or many small, round daughter tubers more or less, 1.4–3.5 cm diam., producing thin fibrous roots, 1–9 cm long. *Basal leaf* usually absent some times one or two, 2–3.5 cm, palmately 3–5-parted, deeply dissected almost to the base, each lobe in turn dissected into 2–3(-4) secondary lobes, at the start of vegetation light green or brownish green, very narrowly edged brown, later becoming dark green; the leafless stem 5–12 cm long, shaded brownish over green with a single very shortly pedicelled flower at the top. *Involucral bracts (cauline leaf)* 3–5.5 cm in flowers, 4.5–9 cm in fruit, divided (more or less) similarly to the basal leaves and of the same colour. *Flowers* bisexual, actinomorphic, solitary, erect, 2.5–4 cm diam. *Sepals* (outer perianth segments) 6, petaloid, deciduous in fruit, elliptic to orbicular, 1.1–2.6 × 0.5–1.3 cm, pure yellow or yellow (when older or dry becoming sulfur yellow), flat, narrowly obovate or elliptic, 1.4–2.5 × 0.8–0.9 cm. *Petals* tubular (inner perianth segments) 6, 5–6 × 0.1–1.5 mm (limb 3–4 × 1–1.5 mm, claw 2–3 × 0.1–0.3 mm), yellow. *Stamens* are numerous, 0.5–1.4 cm, filaments filiform, yellow; anthers yellow. *Fruit* a group of follicles 3–15. *Follicles* 10–19 × 4–6 mm (including beak), stalks 3–7 mm, beak 2–4 mm, filiform, divergent towards the end of fruiting, curved. *Seeds* black (mature), 2–2.4 × 1–1.5 mm, prolate to spheroidal, rugose.



Figure 2. *Eranthis kurdica*: A-B habitat in Barzan region.



Figure 3. Habit of *Eranthis kurdica*.



Figure 4. The habit of *Eranthis kurdica* [tubers with fibrous roots, basal leaves, Involucral bracts (cauline leaves) early stage of fruit] in fresh material.

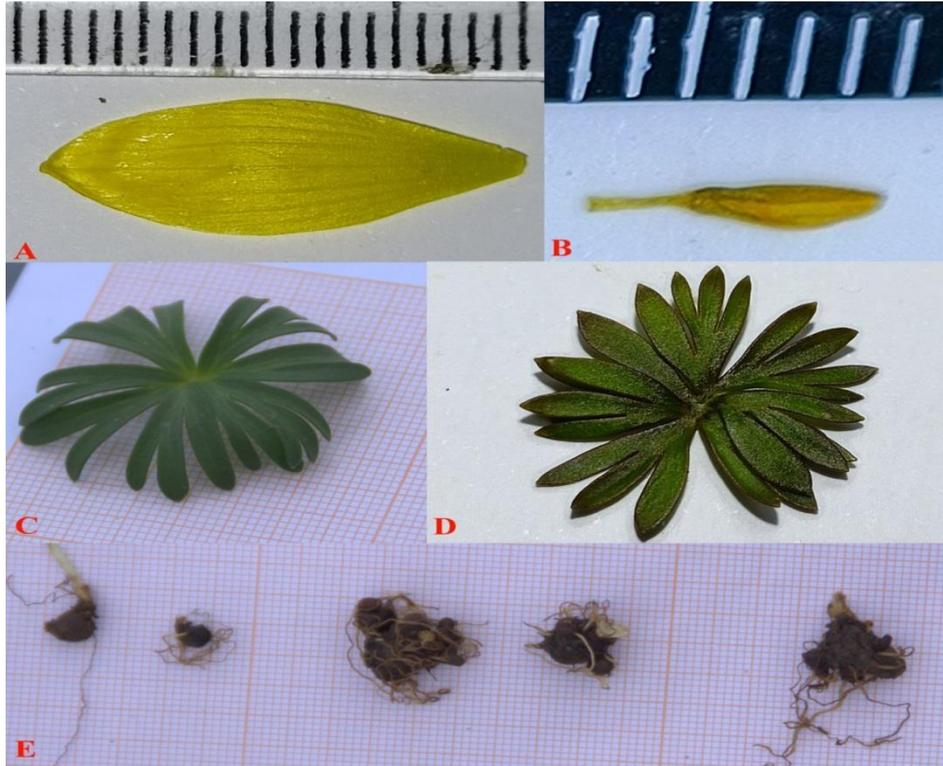


Figure 5. *Eranthis kurdica*: A. sepals (outer perianth segments), B. petals (outer perianth segments), C. basal leaves (5 parts), D. involucral bracts (cauline leaf), E. variation of tubers.

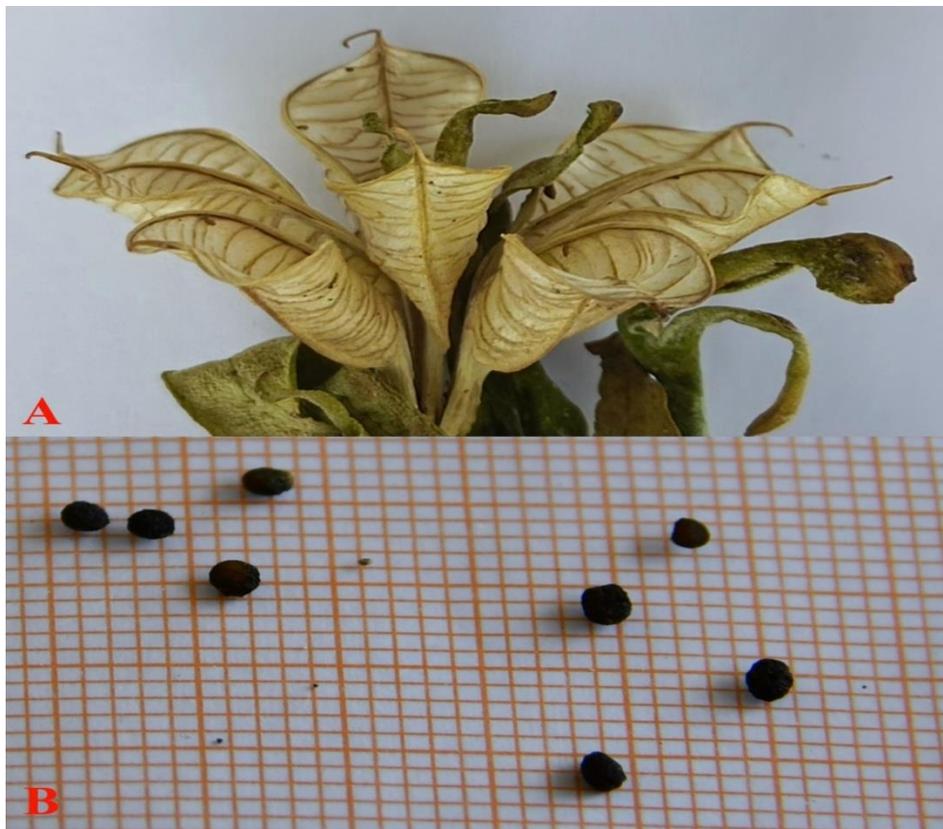


Figure 6. *Eranthis kurdica*: A. follicles (ripe fruit), B. mature seeds (scale: 1mm).

Habitat: Opening wet oak area of mountain, 900–1100 m.

Phenology: Flowering from March to April and fruiting from April to May.

Distribution in Kurdistan Region of Iraq: Mêrgesor/Hewler

General distribution: Iran, Turkey and new to Kurdistan Region of Iraq

Vernacular name: *Eranthis kurdica* is called is Kurdish as “Gula befrê” by the local people of the Alka/Mêrgesor province.

New locality: *Eranthis kurdica*: KURDISTAN REGION OF IRAQ. Hewler: Barzan region, Nearlı Border of Turkey (Derecik District), opening wet oak area of mountain, 929 m, 37°01’58”N 44°11’43”E, 04 April 2011, M. Fırat 26972 (Herb. M. Fırat) in flower; Hewler: Mêrgesor district, Barzan region, Alka village, Pîris Mountain, opening wet oak area of mountain, 1041 m, 36°49’57”N 44°00’29”E, 1 March 2023, M. Fırat 36005 (Herb. M. Fırat) in flower; ibid. 11 April 2023, M. Fırat 36095 (Herb. M. Fırat) in fruit.

Other locality examined: TURKEY. C10 Hakkâri: Şemdinli district, Geliya Helena, Zogros Mountain, Neraly border of Iran, areas where the snow melts of mountain pass, 1472 m, 37°12’58”N 44°16’55”E, 11 April 2011, M. Fırat 27054 (VHLV and Herb. M. Fırat) in flower; from Cîyayê Govende (Güney Dağı) to Oremar (Dağlıca), wet area of on gentle slopes of mountain pass, 1472 m, 37°12’58”N 44°16’55”E, 11 April 2012, M. Fırat 27793 (VHLV and Herb. M. Fırat) in flower; Cîyayê Govende wet area, 1244 m, 37°03’24”N 44°14’09”E, 19 April 2016, M. Fırat 32633 (VHLV and Herb. M. Fırat) in flower; Derya village, wet area in grape garden, 1522 m, 37°21’51”N 44°31’31”E, 22 April 2016, M. Fırat 32669 (VHLV and Herb. M. Fırat) in flower; Derya village, wet area in grape garden, 1522 m, 37°21’51”N 44°31’31”E, 19 May 2022, M. Fırat 32680 (VHLV and Herb. M. Fırat) in fruit; Derya village, wet area in grape garden, 1754 m, 37°22’15”N 44°33’57”E, 09 April 2023, M. Fırat 36081 (VHLV and Herb. M. Fırat) in flower; B7 Tunceli: Ovacık district, wet area of on gentle slopes of mountain pass, 1220 m, 39°20’50”N 39°15’06”E, 11 May 2016, M. Fırat 32674 (VHLV and Herb. M. Fırat) in flower

Comments: *Eranthis kurdica* belongs to section *Eranthis*. With the new record, the number of Kurdistan Region of Iraq *Eranthis* species amounts to 1, belonging to section *Eranthis*.

Eranthis kurdica species has been observed to come from the Kurdistan province of Iran to the Tunceli province of Eastern Anatolia in the mountainous region of Turkey. This situation showed us the eastern Taurus Mountains and the Mountainous Zagros region of Turkey, starting from Iran. Considering the distribution area, it is estimated that this species will also spread in the mountainous Kurdistan region of Iraq. Although it is recorded in Hakkari and Tunceli in Turkey, it is estimated that it spreads in these intermediate regions in future studies (Fırat, 2023).

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