

### THREE NEW FRITILLARIES FROM EASTERN TURKEY

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ABSTRACT. Three new species of *Fritillaria* are described from E Turkey: *F. carduchorum* Rix, *F. minima* Rix and *F. alburyana* Rix. The identity of *F. minuta* Boiss. & Noë is discussed and it is proposed that the name be rejected as a *nomen dubium* because of the incompleteness of the type material and description.

#### INTRODUCTION

Recent expeditions to Turkey have made several collections of *Fritillaria* which cannot be assigned satisfactorily to already described species. The three described below are the most distinct. They were illustrated and discussed briefly by Furse (1970), where *F. minima* Rix was mentioned under the name *F. minuta* Boiss. & Noë, a species described from two specimens collected by Noë near Van in 1849 (Boissier, 1859). The type collection is in L'Herbier Conservatoire Botanique Genève and consists of two depauperate plants without female parts, and I have been unable to find specimens in other herbaria. While the type specimens of *F. minuta* most probably belong either to *F. carduchorum* Rix or *F. minima* Rix, it is impossible to say to which, without knowledge of the flower colour when fresh or the details of the style. The original description says merely that the flower colour is pale reddish when dry and that the style is missing. Therefore, I have decided to regard the name *F. minuta* Boiss. & Noë as a *nomen dubium*, and not to take it up for either of the two species which are described below.

***Fritillaria carduchorum* Rix, sp. nov.** (Sect. *Fritillaria* Boiss.) Fig. 1A.

Affinis *F. pinardii* Boiss. sed ab ea stylo glabro ad medium usque trifido inter alia differt.

*Bulbus* ad 3 cm latus, plerumque bulbilifer, sine stolonibus. *Caulis* 10–20 cm altus, 2–5 mm diam. circa folia infima papillatus. *Folia* 4–10, vulgo 6, atrovirentia, nitida; infima alternata vel subopposita, lanceolata, acuta, magnitudine 7–12 × 1–3 cm, interdum margine papillata; suprema solitaria vel ternata, 4–8 × 0·3–0·4 cm. *Flores* 1–3, ad maturitatem nutantes, anguste campanulati, ad orem ampliati; tepala haud tessellata, interdum leviter maculata, subinde ochracea, castanea vel vinosa, lanceolata; externa acuta 1·6–2·2 × 0·7 cm; interna similia c. 0·8 cm lata. *Nectaria* lanceolata, viridia, 2–4 × 1 mm, ad basem tepalorum insidentia. *Filamenta* parum dilatata, papillosa, 6–10 mm longa; antherae luteae, 3–7 mm longae. *Stylus* 4–7 mm longus, glaber, ad dimidium trifidus, brachiis ad maturitatem reflexis. *Capsula* 35–50 × 1·8–2·0 cm cylindrica versus basem decrescens, apice rotundata. *Fl.* 4–7.

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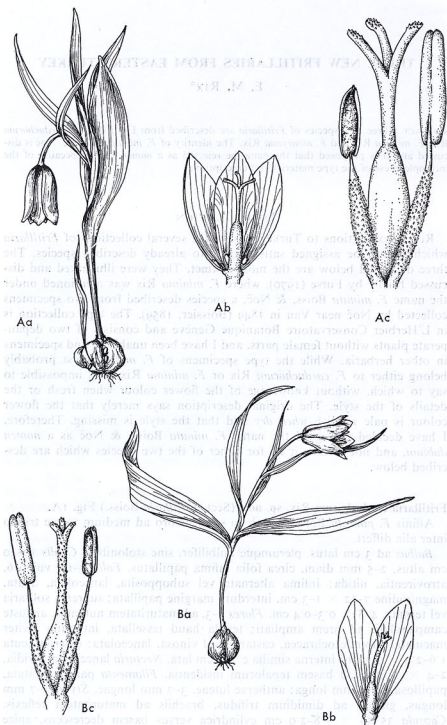


FIG. 1. A, *Fritillaria carduchorum* Rix. B, *Fritillaria minima* Rix. a, habit  $\times \frac{1}{3}$ ; b, flower dissected  $\times \frac{1}{3}$ ; c, androecium showing anther before and after dehiscence  $\times \frac{1}{3}$ .

TURKEY. B8 Bitlis: Kambos Da. above Hurmuz, 2500 m, by late snow, 31 vi 1954, Davis & O. Polunin, D. 23464 (holo E; iso BM, K); Bingöl: Kuruca geçidi, 2000 m, Rix 1625; Erzurum: Hamurpet Da., ESE of Hınız, Cheese, Mitchell & Watson 2813; Siirt: Sason Da., NE of Silvan, Albury, Cheese & Watson 1268; Bitlis: Kambos Da., vii 54 (fruit), Davis & O. Polunin, D. 23474. B9 Van: pass from Tatvan to Resadiye, Mathew & Tomlinson 4204. C9 Hakkari: Kara Da., Davis & O. Polunin, D. 24335. C10 Hakkari: Haruna geçidi, Albury, Cheese & Watson 1587.

This species was discovered by P. H. Davis and O. Polunin in 1954 near Bitlis and has since been collected from Bingöl to Hakkari along the southern part of the Turkish plateau between 1000 and 3000 m. It usually occurs in large dense colonies on the bare soil associated with late snow patches, completing its growth before the large herb flora dominated by *Feruloid Umbelliferae* has grown up to shade it; it has also been found at lower altitudes in *Quercus* scrub. It probably increases mainly vegetatively, as all the clones I have seen produce large numbers of bulbils around the parent bulb, and colonies are composed largely of immature individuals.

It belongs to Subsection *Trichostylae* Boiss. on account of its divided style, but the small narrowly campanulate unmarked flower is more akin to members of Subsection *Olostylae* Boiss., to which I consider it is more closely related. It shares many characters, especially the papillae found on the stem and the relatively large leaves for the size of plant, with some forms of the *F. pinardii* species-complex from central southern Turkey. Stem papillae are very rare in Subsection *Trichostylae*, having been observed only on *F. whitallii* Baker and on *F. olivieri* Baker on which they are very poorly developed.

***Fritillaria minima* Rix, sp. nov.** (Sect. *Fritillaria* Boiss.) Fig. 1B.

Affinis *F. carduchorum* Rix sed stylo papilloso florisque colore differt. A *F. sibthorpiana* (Sm.) Baker foliis atrovirentibus haud glaucis et stylo gracili distinguenda est.

*Bulbus* ad 1.5 cm diam., plerumque bulbilifer, sine stolonibus. *Caulis* 4–8 cm altus, 2–3 mm diam., circa nodos papillatus. *Folia* 4–7, vulgo 5, atrovirentia, nitida, interdum margine papillata, omnia alternata vel infima subopposita, acuta, lanceolata; infima 5–9 cm longa, 0.6–1.5 cm lata, suprema linearia 2.5–5.5 cm longa. *Flores* 1–2, ad maturitatem nutantes vel horizontales, anguste campanulati ad orem ampliati; tepala haud tessellata, lutea, post anthesin rufescentia, anguste ovata, obtusa; externa 1.3–2.0 cm longa, 3–7 mm lata; interna c. 1 mm latiora. *Nectaria* ovata, fusca, 1 × 0.5 mm ad basem tepalorum insidentia. *Filamenta* parum dilatata 6–11 mm longa, papillosa; antherae 3–6 mm longae. *Stylus* gracilis, breviter papillosus, 5–8 mm longus, apice usque ad 2 mm trifidus, brachiis ad maturitatem reflexis. *Capsula* 2–3 cm longa, 1–1.2 cm diam., versus basem decrescens. *Fl.* 6–7.

TURKEY. B8 Van: Gevaş, Artos Da., 3000 m, by melting snow, 16 vii 1954, Davis & O. Polunin, D. 22795 (holo E; iso K, BM) and (fruit) Davis & O. Polunin, D. 22809; Artos Da., c. 3000 m, N-facing slope at foot of limestone cliff, by late snow, Rix 735 and (fruit) 735A.

*F. minima* was discovered by P. H. Davis and O. Polunin in 1954 and I found it at the type locality in 1968. This is the only place from which it has been recorded and it appears to be rare even here: only two colonies were seen. *F. kurdica* Boiss. & Noë and *F. carduchorum* Rix grow nearby, but we saw no hybrids, and no seed has been obtained from artificial crosses with either of these species. The habitat of *F. minima* is somewhat similar to that of *F. carduchorum* Rix, though on Artos Da. the former grows at a higher altitude. It was in flower in July below late snow patches at the foot of a small limestone cliff. As the spring flowering bulbous species die down, the area becomes covered with lush deep-rooted herbaceous vegetation, especially *Ferula* spp.

This species is very isolated geographically from its nearest relative *F. sibthorpiana* (Sm.) Baker which occurs along the Mediterranean coast of Turkey and on the Aegean Islands.

***Fritillaria alburyana* Rix, sp. nov. (Sect. *Fritillaria* Boiss.). Fig. 2.**

Valde distincta; ab alteris huius sectionis flore roseo pateriforme vel etiam cupulato, styloque glabro apice ad  $\frac{1}{2}$  partem trifido differt.

*Bulbus* globularis, ad 2 cm latus, bulbillis multis saepe praeditus. *Caulis* humilis 4–10 cm altus, glaber. *Folia* 3–4, viridia, inferiora subopposita vel alternata, lanceolata, 5–8 cm longa, 1–2.5 cm lata; superiora anguste lanceolata 3–5 cm longa. *Flores* 1–2, plerumque cernui, haud nutantes, pateriformes vel cupulati: tepala pallide vel obscure rosea, leviter tessellata; externa ovata vel anguste ovata; interna parum latiora, acuta vel obtusa 2–3 cm longa, 1–1.5 cm lata. *Nectaria* elliptica, 1 mm longa, supra basem tepalorum 1 mm insidentia, viridia, tria externa a tepalis internis occulta. *Filamenta* 10–15 mm longa, gracillima, alba, breviter pilosa: antherae (ante dehiscenciam)

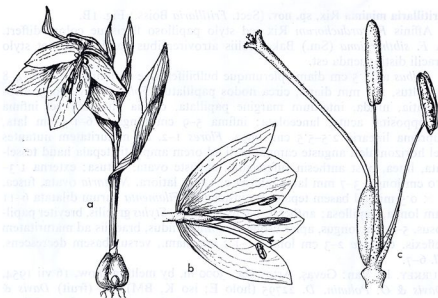


FIG. 2. *Fritillaria alburyana* Rix: a, habit  $\times \frac{2}{3}$ ; b, flower dissected  $\times 1 \frac{1}{2}$ ; c, androecium showing anther before and after dehiscence  $\times 3 \frac{1}{2}$ .

5–10 mm longae, brunneae. *Stylus* 9–15 mm longus, apice usque 1–2 mm trifidus, gracilis, glaber. *Capsula* breviter cylindrica. *Fl.* 5–7.

TURKEY. B8 Erzurum: pass between Erzurum and Çat, c. 2000 m, 19 v 70, Rix 1685 (holo E; iso K). A8 Erzurum: Kop Da. geçidi, c. 2000 m, Rix 1704; Ferik Da. NE of Ispir, c. 2500 m, C. Barclay 946. B9 Erzurum: Karyazi, Çakmak Da., c. 3000 m, Albury, Cheese & Watson 1664.

This very distinct species was discovered by S. Albury, M. Cheese & J. M. Watson in 1966 near Karyazi about 50 miles ESE of Erzurum, and has since been found in one or two other localities in this region. Its habitat is open soil and scree usually by late snow patches.

Its style, long, slender, glabrous and trifid at the apex, is unique in the genus (Fig. 2c). It differs from other asiatic species of Section *Fritillaria* in its open flower which resembles in shape that of *F. tuntasia* Heldr. ex Hal. from the Cyclades, or the American species *F. pluriflora* Baker, which also has pink-coloured flowers. Among asiatic species it is similar to some members of the Section *Rhinopetalum* Boiss. in its pink colouring with faint tessellations as well as in its open flower. However, unlike those of Section *Rhinopetalum*, the nectaries of *F. alburyana* are small and poorly developed, all similar in size and situated at the base of the perianth segment. When the flower is open, the three nectaries on the outer segments are hidden, in contrast to other members of the genus where all six are conspicuous in the open flower, and often provided with nectar guides.

On its style characters this species falls into subsection *Olostylae* Boiss., but it is not obviously related to any other members of the subsection, or to any other species in the genus. I am honoured to name this species after S. D. Albury, one of the discoverers, who died while plant collecting in Nepal in June 1970. An English description and photograph appeared in Watson & Rix (1970).

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