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FRANKENIACEAE

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FRANKENIACEAE

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Halophytic herbs or undershrubs. Leaves opposite, verticillate, simple, revolute, exstipulate. Stem jointed, usually covered with calcium oxalate crystals. Flowers solitary axillary or in dichasial cymes; hermaphrodite, regular. Calyx tubular, 4-5 (-7) toothed, persistent. Corolla polypetalous, 4-5 (-7) lobed, clawed, with a scale-like appendage on the inner surface of the claw, imbricate. Stamens 4-6 or more, in 2-whorls. Carpels usually 3-4, syncarpous, ovary superior, unilocular, ovules many on parietal placentas. Style 1, stigmas 3-4, filiform. Fruit a loculicidal capsule enclosed within the persistent calyx. Seeds numerous, minute, endospermic.

A family of 5 genera and about 90 species, mostly distributed in temperate and subtropical regions of the world; represented by 1 genus in Libya.

FRANKENIA

L., Sp.Pl.331.1753; Gen. Pl.ed. 5.154:1754.

Herbs or dwarf shrubs, profusely branched. Leaves small, simple, exstipulate, opposite or verticillate. Flowers sessile, solitary axillary or in terminal and lateral cymes. Sepals (4-) 5, connate, persistent. Petals (4-) 5, pink rarely white; clawed with an adnate scale on the inside of the claw. Stamens usually 6, in 2 whorls, the outer ones shorter; filaments filiform, dilated at the base; style filiform, parted, with 3-4 oblong or clavate lobes, stigmatic on the inner surface. Capsule unilocular, dehiscing into 3-4 valves.

A genus with about 80 species, mostly subtropical, found in Canary Islands, Mediterranean region of Europe, N. Africa (Morocco to Egypt), Turkey, S. Iran, Pakistan, W. India, W. South America, California and W. & S.W. Australia; represented here by 5 species.

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|---|--------------------------|
| 1. + Herbaceous annuals. Leaves obovate, retuse or obtuse, flat, without revolute margins | 1.F. pulverulenta |
| -- Suffrutescent perennials. Leaves acicular, linear or linear lanceolate with revolute margins | 2 |

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|----|--|------------------------|
| 2. | + Stem procumbent, mat-forming | 3 |
| | -- Stem erect or ascending, not mat-forming | 4 |
| 3. | + Stems scabrous-puberulent. Flowers in terminal corymbiform clusters | 2. F. hirsuta |
| | -- Stems neither scabrous nor puberulent. Flowers scattered throughout the upper part of the plant | 3. F. laevis |
| 4. | + Calyx 2-3 mm with simple hairs, c. 1 mm long throughout. Petals 4-6 mm long, pale purplish, much longer than the calyx | 4. F. corymbosa |
| | -- Calyx 4-6 mm with conspicuous swollen hairs, c. 0.5 mm long on the lower half. Petals 5-7 mm long, purple, scarcely longer than the calyx | 5. F. boissieri |
1. **Frankenia pulverulenta** L., Sp. Pl. 332.1753; Durand and Barratte, Fl. Lib. Prodr. 47. 1910; Pamp. Prodr. Fl. Cir. 321. 1931; Corti, Fl. Veg. Fezzan 184. 1942; Ozenda, Fl. Sahara 341. 1958; Keith, Prelim. Check List Lib. Fl. 505.1965. (Fig. 1).

Annual herb, diffused, much branched, finely pubescent, 10-30 cm tall. Stems prostrate, branches many, decumbent. Leaves mostly 4, clustered in a whorl, sessile, obovate or oblong-spathulate, 2-7 x 1-2.5 mm, cuneate at base, petiole 1-1.5 mm long, obtuse or retuse, flat, setulose-pubescent, often covered with calcium oxalate crystals. Flowers sessile, pink or purple, solitary or in lax dichotomously branched cymes. Sepals 5, glabrous, tubular or cylindric, 2-3.5 x 1-1.5 mm, prominently 5-ribbed, teeth 5, subulate, 0.5-1 mm long. Petals pink, 3.5-4.5 x 0.7-1 mm, clawed with a ligular adnate appendage. Stamens 6 in 2 whorls. Capsule oblong-ovoid, 3-valved, 2-3 x 1 mm; seed oblong-ellipsoid, 0.5-0.7 x 1 mm, pale brown, sparsely and minutely papillose.

Type: Described from Britain, France & Italy. Herb. Linn. 475/6 (LINN).

A-2 Sabrata ruins, stony and sandy ground. Flowers white, common, 12.6.1976, *S.M.H.Jafri* 6710 (ULT); id, 19.5.1977, *M.A.Siddiqi* 248 (ULT); **A-3** Leptis Magna, prostrate with small, minute pinkish flowers, 1.5.1974, *Bashir Faris* 332 (ULT); id, *M. Godeh* 328 (ULT); id, *G. Faris* 622 (ULT); coastal area near Endir Clinic, 25.4.1977, soil sandy common, *Abdul Ghafoor* 312 (ULT); salt marsh near

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Fig. 1, *Frankenia pulverulenta*: A, habit x 0.5; B, a portion of the flowering shoot x 5; C, flower x 10; D, petal x 10; E, seed x 11.

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Al-Kararim, 8.3.1968, *L. Boulos* 1918 (ULT); A-7 c. 4 km from Ras al Tin, near cult. field, prostrate, 21.6.1972, *S.I.Ali* 860 (ULT).

Distribution: S. & S.E. Europe, Africa, Siberia, Turkey, Iran, Syria, Palestine, Arabia, Pakistan & N.W. India.

Fl. April-August. *Vern.* Mellah/Al-mellah.

2. ***Frankenia hirsuta*** L., Sp. Pl. 331.1753; Viv., Fl. Lib. Spec. 22.1824; Cullen in Davis, Fl. Turk. 2: 352.1967; Zohary, Fl. Palaest., 2:364, t. 530.1972; Meikle, Fl. Cypr. 1: 210.1977 (Fig. 2).

Frankenia hispida DC. Prodr. 1: 349.1824; *Frankenia intermedia* DC., l.c.; *F. revoluta* Forsk., Fl. Aegypt, 75.1775; Pamp., Prod. Fl. Cir. 322.1931; Keith, l.c. 506; *Frankenia aucheri* Jaub. et Spach, Illustr. 2: 105, 187.1844-1847.

Perennial herb or subshrub, suffrutescent, 10-30 cm tall; scabrous-puberulent, canescent. Stem hispid, branches many, erect or ascending. Leaves sessile, oblong-linear or linear-subulate, 4-6 x 1-1.5 mm, subacute, margins scarcely or conspicuously revolute, scabrous hispid with spreading white hairs, ciliate at the base, fasciculate. Flowers found in clusters in lateral-terminal cymes, or arranged in dichotomously much branched inflorescence. Sepals 4-5, sparsely hirsute, linear, $\pm$ acute, 5-6 mm, lobe 1-2 mm. Petals 6-8 x 1.5-2 mm, obovate, long clawed, finely denticulate above. Stamens 6. Capsules 2.5-3 mm, 3-valved, ovoid or oblong-ovoid. Seeds minute, oblong-ellipsoid.

Type: Described from Italy and Crete. Herb. Linn. 457/4 (LINN).

A-2 Juddaem, 23.3.1968, *L. Boulos* s.n. (ULT); Sabrata beach, an undershrub, leaves deeply revolute margined, verticillate. Flowers pink. Stamens slightly exerted, 19.5.1977, *M.A.Siddiqi* 245 (ULT); Talil beach, c. 10 km from Sabrata, sandy rocky slopes. Flowers white, *S.M.H.Jafri* 6671B (ULT); A-3 Wadi-i-Kaam, violet flowers, 18.4.1978, *O. Shetwey* 4 (ULT); B-4 Salt marsh near Al Kararim, 8.3.1968, *L. Boulos* 1903 (ULT); Twarga. Salicornia community, 18.3.1971, *II Year students* 5 (ULT); Saline flat near Twarga, flowers light violet, c. 15-20 cm tall, 23.3.1972, *S.I.Ali* 34 (ULT); Road between Bugrain and Al-Buayrat in a salt marsh, 15.1.1967, *L. Boulos* (ULT); 50 km West of Sirte, 7.12.1969, *Ali Auan*, s.n. (ULT); 10 km before Sirte, saline ground, along roadside, 22.10.1975, *S.M.H.Jafri* 6003

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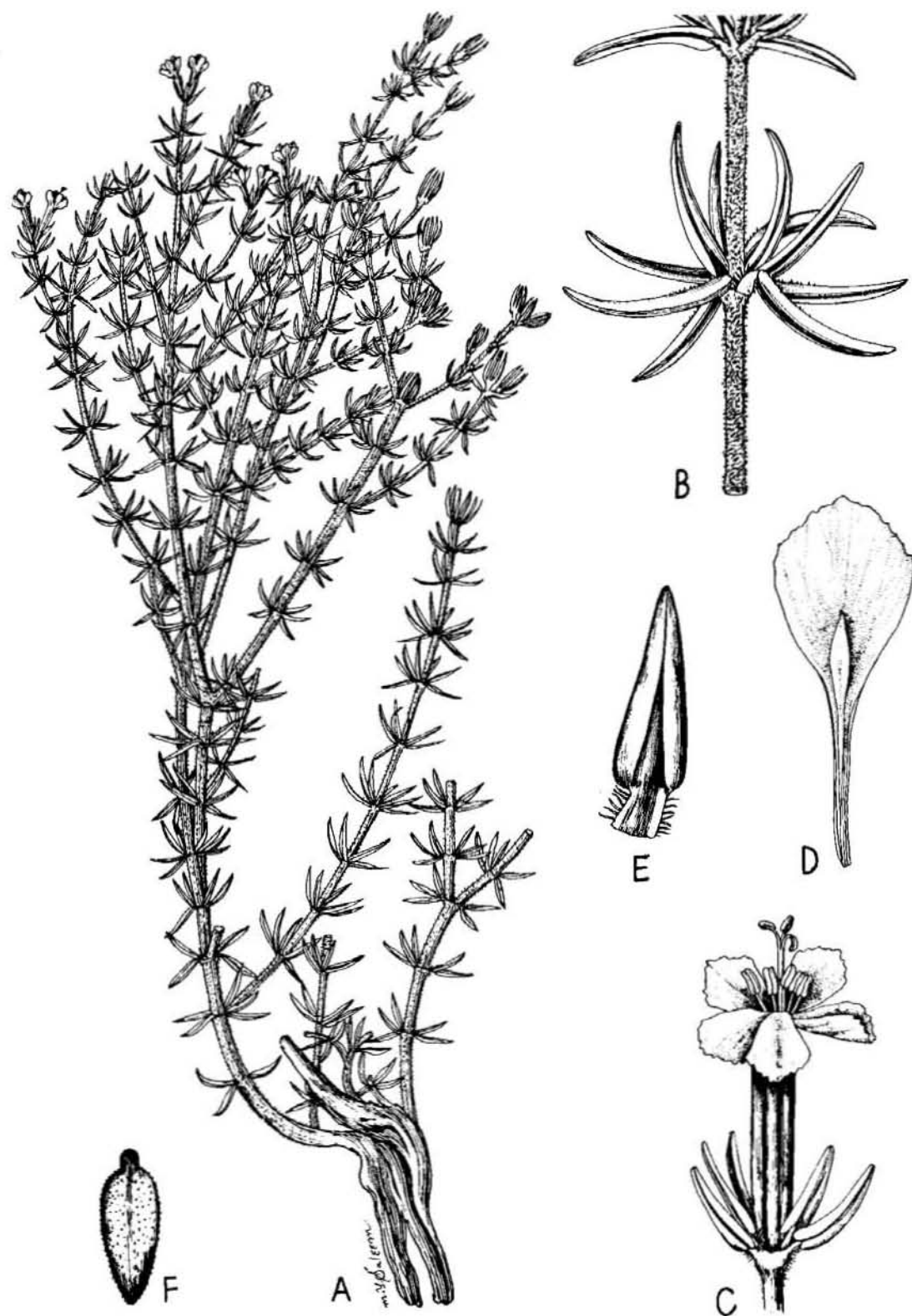


Fig. 2, *Frankenia hirsuta*: A, habit x 1; B, a portion of shoot showing the arrangement of leaves x 4; C, terminal portion of flowering shoot x 5; D, petal x 5; E, one of the leaves subtending flower x 10; F, seed x 20.

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(ULT); 1 km W. of Poultry Farm before Sirte, flowers pinkish, 2.5.1978, A. El-Gadi, Jafri & Siddiqi 1280 (ULT); **B-5** 80 km from Ras Lanuf along roadside, a perennial herb with verticillate leaves, flowers light pink or pale pink, 22.10.1977, M.A.Siddiqi & F.B.Ratib 144 (ULT).

Distribution: S. Europe, N. Africa and S.W.Asia.

A very variable species in habit, inflorescences and indumentum, and recognition of any infraspecific taxa is difficult, because plants growing together show all sorts of variations.

Fl. March-June *Vern.* Mellah

3. **Frankenia laevis** L., Sp. Pl. 331. 1753; Durand & Barratte, l.c. 47; Pamp., l.c. 321; Keith, l.c. 505. (Fig. 3).

A straggling suffrutescent perennial herb, 3-15 (40) cm tall. Stem decumbent, very much branched, mat-forming. Leaves 2-4 mm long, linear, revolute, with broad ciliate base. Flowers solitary scattered throughout the upper part of the stem and in the forks of the branches and not confined to terminal corymbiform clusters. Flowers 5 mm in diam. Calyx erect, narrow acute. Corolla pink, petals obovate, cuneate, obtuse. Capsule rarely ripening, hidden in the calyx tube, conical, trigonus; seed 1.0 x 0.5 mm, ovoid, smooth. Described from S. European coastal areas.

Type: Habit in Europae australis maritimis. Herb. Linn. 457/1 & 2 (LINN).

A-7 Cyrenaica: Apollonia (Marsa Susa), near sea level, among ruins, prostrate, flowers mauve-pink, 27 March, 1970, P.H.Davis 50137 (ULT); **B-1** About 20 km from Ghadames towards Derj in sandy soil, 29.1.1977, M.A.Siddiqi & F.B.Ratib 436 (ULT); **D-3** c. 18 km before Brak, prostrate weed in cultivated field, 30.3.1973, S.I.Ali 1409 (ULT).

Distribution: Mediterranean region (S. Europe & N.Africa).

Fl.: March-June.

4. **Frankenia boissieri** Reut. ex Boiss., Voy. Bot. Midi Espagne, 2: 721. 1845; Pamp. in Nuovo Giornale Bot. It. n.s., 23: 274.1916; Prodr. Fl. Cir. 322, 1931;

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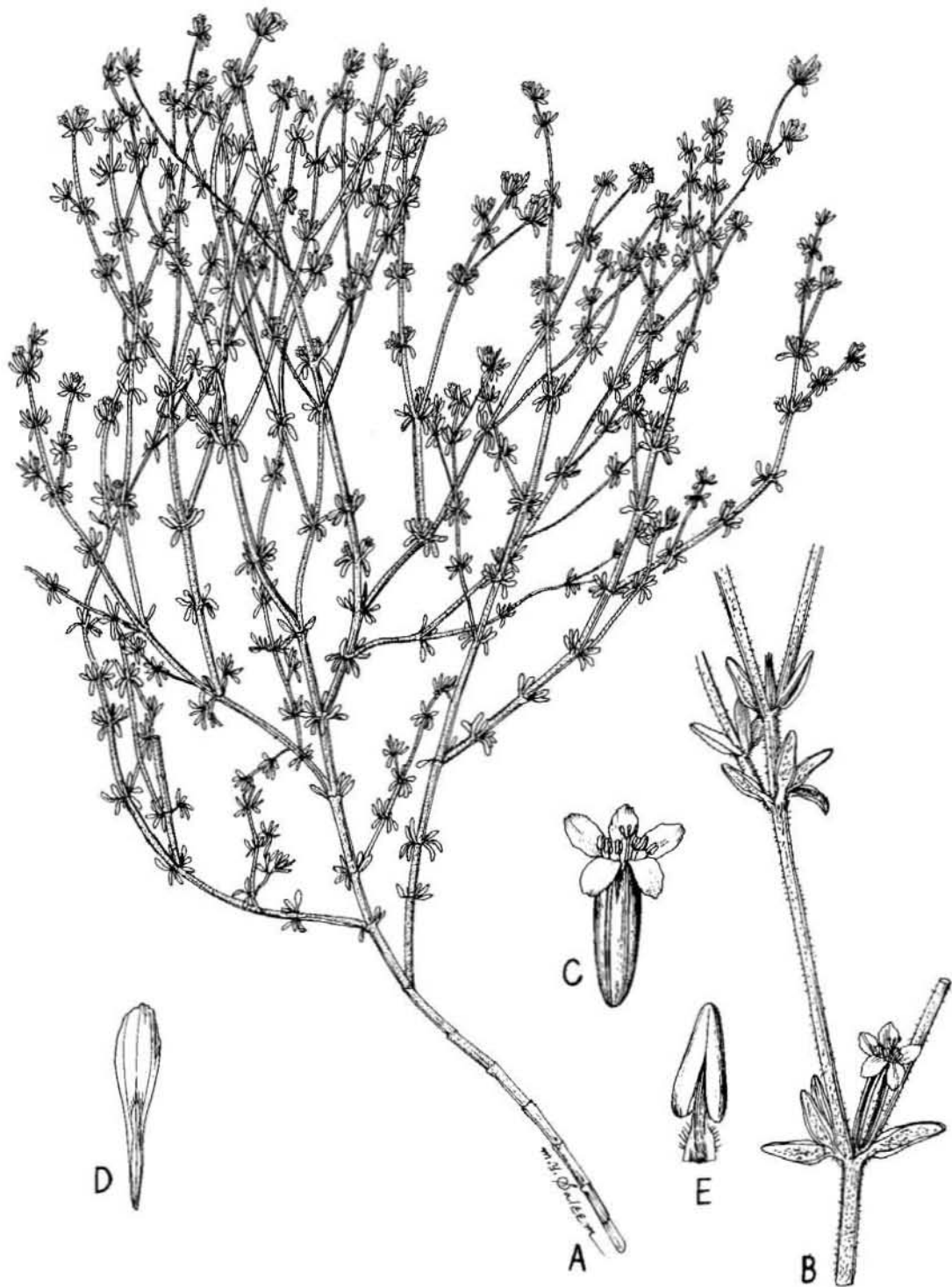


Fig. 3. *Frankenia laevis*: A, habit x 0.5; B, a portion of the flowering shoot x 4; C, flower x 5; D, petal x 5; E, one of the leaves subtending flower x 10.

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Quezel & Santa, in Nouv. Fl. Alger 2: 686. 1963; Keith, l.c. 505; Chater in Tutin et al, Fl. Europ. 2: 295. 1968.

Erect or ascending, suffrutescent, perennial, up to 30 cm tall, branched, minutely and sparsely puberulent, or with long, patent sparse hairs, or subglabrous. Leaves (2.5-) 4-7 mm, glabrous above, crystalline papillose beneath, with a white crust; margins revolute. Flowers in dense, terminal or axillary cymes. Calyx 4-6 mm long, with distinct swollen hairs c. 0.5 mm on lower half. Petals 5-7 mm long, purplish.

Type: Described from Spain.

Reported by Pampanini (l.c.) and Keith (l.c.) from Benghazi (Giuliana).

Distribution: S. Portugal, S.W.Spain & N.Africa (Libya).

5. **Frankenia corymbosa** Desf., Fl. Atl. 1: 315. 1798; Jahandiez & Maire, Cat. Pl. Maroc. 2: 486. 1932; Ozenda, Fl. Sahara, 341. 1958; Chater in Tutin et al, l.c. 295.

Frankenia corymbosa Desf. var. *syrtica* Maire & Weill., Keith, l.c. 505; *F. webbii* Boiss. & Reut., Pugillus 16. 1852.

Like the last but puberulent. Leaves 2-6 mm, sparsely or densely puberulent on both sides and with a white coat or powder which partially covers the surface. Calyx 2-3 mm, sparsely or densely puberulent $\pm$ throughout, with hairs c. 1 mm long, petals 4-6 mm long, pale purplish, much longer than the calyx.

Type: « Habitat ad Maris Littora prope arzeu (P) ».

Distribution: S. Spain & N. Africa.

Reported from Tripolitania (Sands in littoral of Sirtica, Buerat, 21 km west of Ageila) by Keith, l.c.

A polymorphic species.

Fl. April-June

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