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FLORA OF LIBYA

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ILLECEBRACEAE

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ABDUL GHAFOR

Herbs rarely shrublets. Leaves mostly opposite rarely alternate, simple, entire; stipules silvery scarious, interpetiolar, occasionally reduced or absent. Inflorescence axillary or terminal, lax cymes or dense cymose clusters, sometimes flowers solitary terminal. Flowers small, greenish, inconspicuous, bisexual, actinomorphic, usually perigynous, subtended by scarious stipule like bracts. Sepals (4-) 5 (-6), imbricate, persistent. Petals (4-) 5 or absent, free, inconspicuous, filiform. Stamens (2-3)-5, rarely more, antisepalous, filaments minute, free or basally united into a ring; anthers dithecous, longitudinally dehiscent. Carpels 1-3, syncarpous; ovary sessile or rarely stiped, 1-loculed with solitary, amphitropous or semianatropous ovule on basal placenta; style simple, terminal, 2-3-fid, rarely styles 2, free. Fruit indehiscent 1-seeded utricle or nut, enveloped by sepals. Seed globose, subglobose or reniform-lenticular with copious or no endosperm; embryo straight, curved or annular.

The family is sometimes included in *Caryophyllaceae*, from which it differs by its perigynous flowers, small filiform petals (considered as staminodes by some authors), basal placentation and the 1-seeded, indehiscent fruit.

A family of c. 20 genera and more than 100 species, distributed in warm dry regions. 5 genera and 15 species are reported from Libya.

1. + Peduncle inflated, leaf-like, oblanceolate-obovate, 3-flowered; lateral flowers male or sterile, central one only fertile, subtended by spinose bracts. Sepals 4. Petals absent. Stamens 4 1. *Pteranthus*
- Peduncle not inflated, filiform, more than 3-flowered or absent and flowers in axillary sessile clusters 2
2. + Leaves terete or subcylindrical. Flowers in pedunculate globose heads 3

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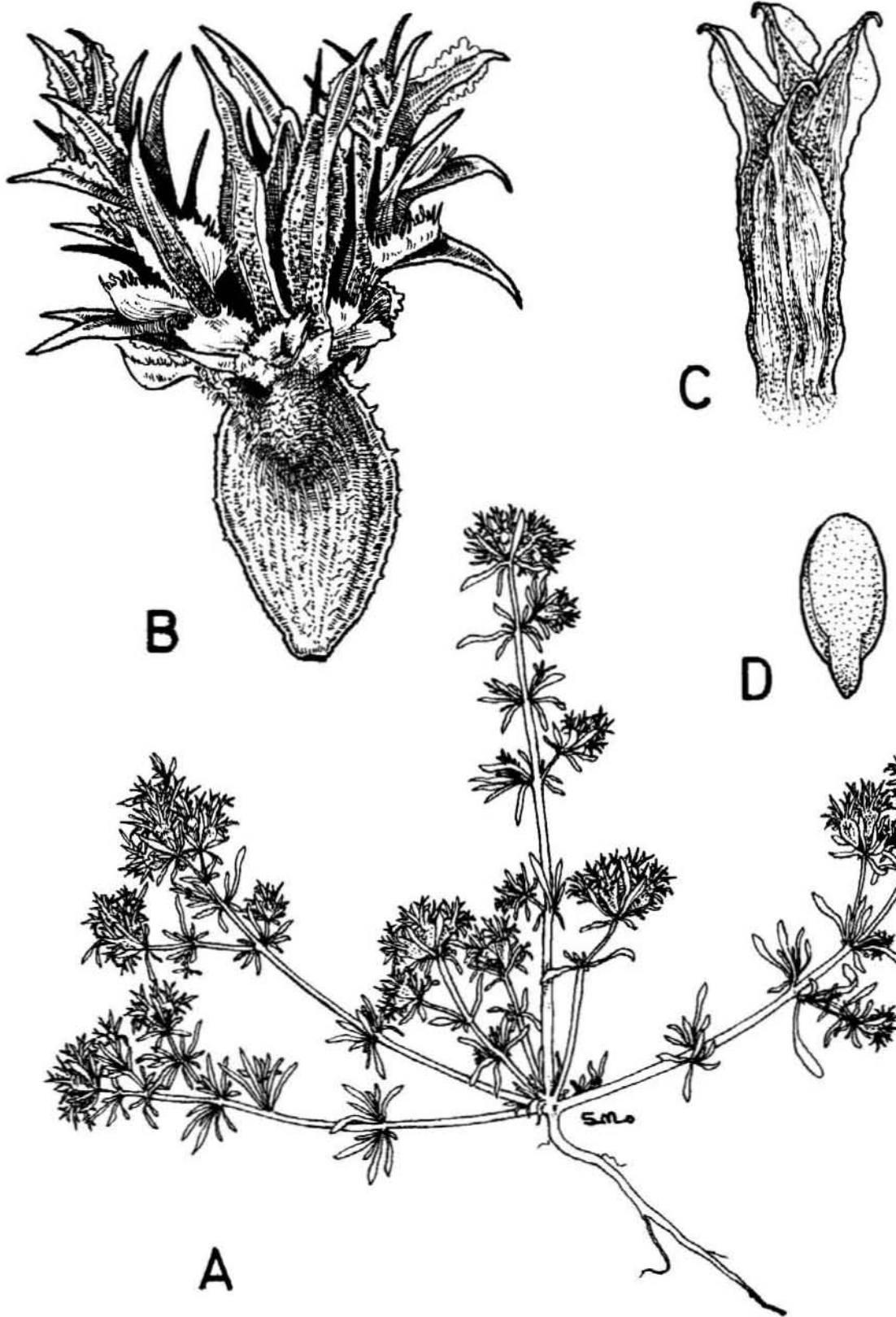


Fig.1, **Pteranthus dichotomus**: A, Habit x 1; B, Inflorescence x 8; C, Flower x 10; D, Seed x 10.

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|----|--|--------------------------|
| 3. | + An annual, prostrate herb. Flower heads prickly. Sepals dorsally hooded, spinose at the back. Style 2-fid | 2. Sclerocephalus |
| | — A perennial, suberect undershrub. Flower heads not prickly. Sepals dorsally hooded, awned at the back. Style 3-fid | 3. Gymnocarpus |
| 4. | + Bracts conspicuous, longer than flowers | 4. Paronychia |
| | — Bracts inconspicuous, shorter than flowers | 5 |
| 5. | + Leaves aristate with membranous margins | 4. Paronychia |
| | — Leaves not aristate, without membranous margins | 5. Herniaria |

1. PTERANTHUS

Forsk., Fl. Aegypt.-Arab. 36.1775

Louchea L'Herit, Stirp. Nov. 1:135. t. 65.1785.

Annual, suberect herbs. Leaves opposite, stipules minute. Inflorescence a 3-flowered cyme on dilated, foliaceous, oblanceolate-obovate peduncle. Flowers sessile, the central only fertile and bisexual, the lateral ones sterile, perigynous, subtended by spinous bracts. Sepals 4, straight, hooded, membranous margined, persistent. Petals absent. Stamens as many as and opposite to sepals, filaments expanded and connate at the base into a membranous cup; anthers versatile. Carpels 2-3, syncarpous, style with 2-3 stigmas. Utricle 1-seeded, enveloped by persistent sepals and bracts. Seed erect, compressed, endospermous.

A monotypic genus distributed from Morocco to S.W. Pakistan (Baluchistan) and Mediterranean Islands of Malta, Sicily and Cyprus.

Pteranthus dichotomus Forsk., Fl. Aegypt.-Arab. 36.1775; Durand & Barratte, Fl. Lib. Prodr. 45.1910; Ozenda, Fl. Sahara 210.1958; Quezel & Santa, Nouv. Fl. Alger. 1:315.1962; Maire, Fl. Afr. Nord. 9:64.1963; Keith, Prelim. Check List Lib. Fl. 2:807.1965 (Fig. 1).

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Comphorosma pteranthus Linn., Mant. 1:41.1767; *Pteranthus echinatus* Desf., Fl. Atl. 1:144.1798; *Pteranthus trigynus* Caball., Mem. Soc. Esp. Hist. Nat. 13 (1): t. 1.1913.

Fleshy, papillose-hairy, usually dichotomously branched, up to 30 cm tall, procumbent to suberect herb. Leaves sessile, linear-oblong, somewhat verticillate, 8-20 x 2-3 mm, entire, obtuse, fleshy; stipules whitish membranous, triangular ovate-lanceolate, lacerate, c. 2 mm long, persistent. Peduncle flattened, leaf-like, obovate-oblong, 6-12 x 4-6 mm, swollen and hollow, minutely papillate-hairy. Flowers green, subtended by minutely glandular hairy bracts, with spirally arranged, hooked, membranous margined spines. Sepals connivent, acuminate, 2 outer linear-oblong, c. 5-6 mm long, dorsally keeled with membranous broadly winged acumen, inner sepals ovate-lanceolate, c. 4-5 mm long, margins membranous. Stamens c. 2-3 mm long, with ovoid-subglobose anthers. Ovary bicarpellary, ovoid-obovoid; style filiform, bifid with 2, recurved stigmas. Utricle membranous, obovoid, c. 2.5 x c. 1.5 mm, enclosed in the spiny bracts and calyx. Seed obovate-oblong, compressed, c. 2 mm long, brown.

Type: « In desertis Kahirinis Orientalis » Forskal (C).

A-1 Wadi Malah, c. 10 km from Nalut, 4.5.1972, *S.I.Ali* 290 (ULT); **A-2** Abu-Ghilan mountains, small herb, greenish-flowers, 29.4.1976, *Muftah, M. Zarmouh* 118 (ULT); **B-4** c. 4 km from Bugrain (going towards Misrata), sandy ground with pebbles, 28.3.1975, *S.I.Ali & S.A.Faruqi* 2473 (ULT); c. 24 km from Mizda towards Al-Ghariat, erect, 13.2.1977, *M.A.Siddiqi* 42 (ULT).

Distribution: North Africa, Middle East, Iran and S.W.Pakistan (Baluchistan).

Fl. February-May

2. SCLEROCEPHALUS

Boiss., Diagn. Ser. 1(3):12.1843; Fl. Or. 1:748.1867.

Annual herb with linear-oblong, cylindrical, fleshy, stipulate leaves.

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Inflorescence a 4-7-flowered, spherical, shortly pedunculate spinose head. Flowers sessile, bisexual, perigynous, bracteate. Sepals 5, united at the base, erect with a dorsally spinose hood. Petals absent. Stamens 5, antisepalous, inserted at the rim of receptacle, filaments subulate, anthers ovate-globular, didymous. Ovary bicarpellary, syncarpous, ovoid, adnate at the base with the receptacle, ovule amphitropous, pendulous from basal funicle; style bifid with 2 recurved stigmas. Utricle membranous, basally adnate to receptacle, enclosed by persistent spiny, indurated, echinate sepals. Seeds ovate, compressed, with membranous testa; embryo annular.

A monotypic genus.

Sclerocephalus arabicus Boiss., *Diagn. ser.* 1(3):12.1843; Durand & Barratte, l.c. 45; Ozenda, l.c. 209; Quezel & Santa, *Nouv. Fl. Alger.* 1:316.1962; Maire, l.c. 58; Keith, l.c. 877 (Fig. 2).

Paronychia sclerocephala Decaisne, *Fl. Sinaica* 38.1834.

A suberect, up to 15 cm tall, glabrous herb with articulate stem. Leaves sessile, linear-terete, up to 2.5 cm long, mucronate; stipules interpetiolar, triangular-ovate, c. 3-4 mm long, acute-acuminate, entire, membranous, white. Inflorescence a spherical, capitulum-like head of dichasial cymes, c. 1-1.5 cm in diameter, involucreal leaves slightly longer than flowers, indurated and spiny in fruit. Flowers green, c. 4 mm long; receptacle cupular, c. 1.5 mm long, crisped hairy; bracts membranous, c. 3 mm long, acute. Sepals linear-lanceolate, erect, c. 2.5 mm long, margins membranous, cucullate at the apex, densely crisped hairy outside, persistent. Stamens shorter than sepals, anthers subglobose, didymous, yellow. Seeds obovate-reniform, 2.5-3 x 1.5-2 mm, compressed, glabrous.

Type: Described from Sinai.

C-4 Basalt hillock, Soda mountains, c. 80 km from Hun, 1.4.1973, *S.I.Ali* 1518 (ULT); c. 94 km from Hun, sandy soil with loam on top, *S.I.Ali* 1497 (ULT); El-Soda Mountains, Fezzan, 2.10.1972 *M.Godeh* s.n. (ULT).

Distribution: Cape Verde Islands, North Africa, Middle East, Arabia and Iran.

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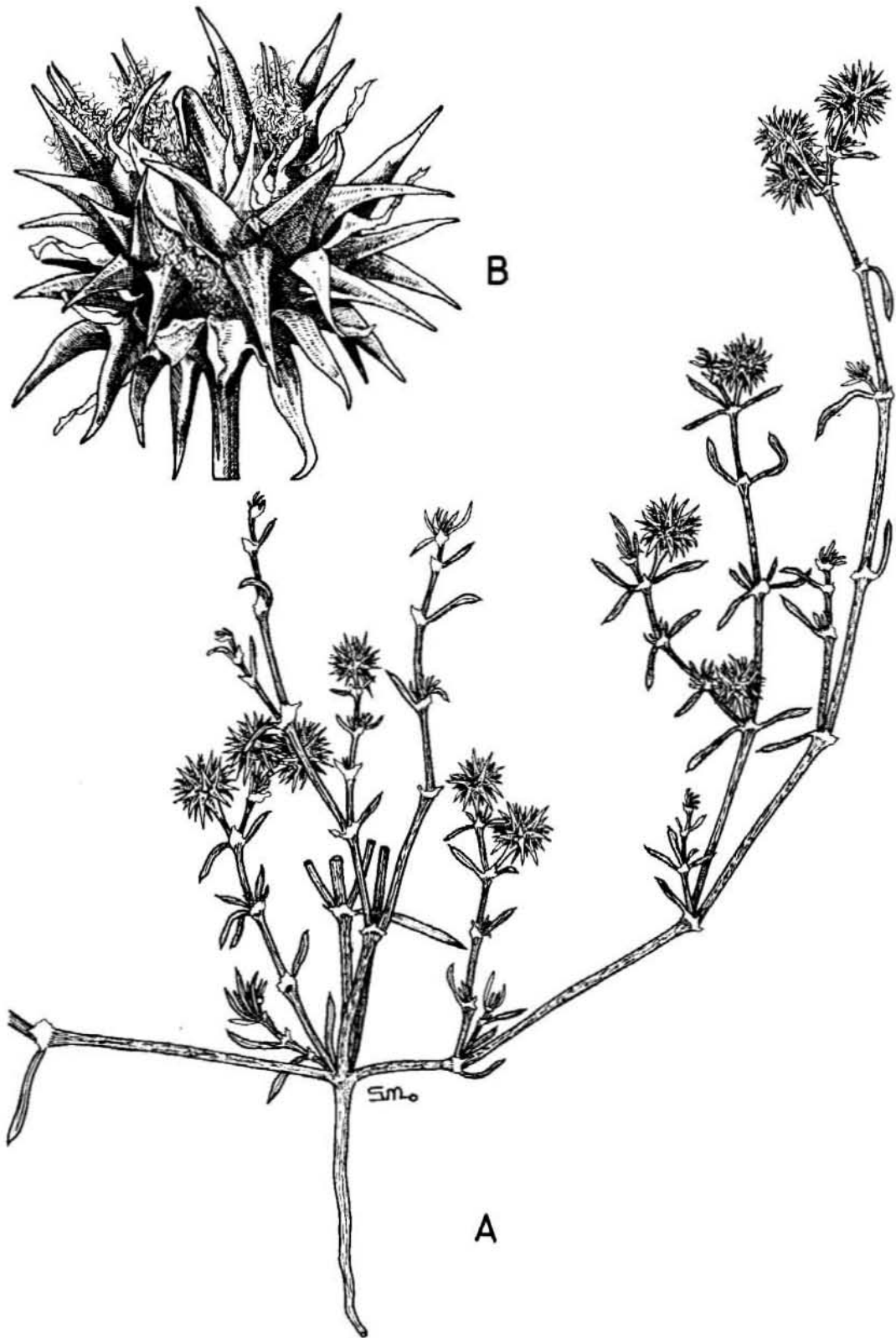


Fig.2, *Sclerocephalus arabicus*: A, Habit x 1; B, Inflorescence x 6.

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Fl. March-July

3. GYMNOCARPOS

Forsk., *Fl. Aegypt.-Arab.* 65.1775

Undershrubs with sessile, opposite, cylindrical, stipulate leaves. Inflorescence a shortly pedunculate, axillary or terminal dense cluster of cymes. Flowers sessile, bisexual, perigynous, bracteate. Sepals 5, free, antisepalous, inserted on the rim of the receptacle. Ovary trilocarpellary, syncarpous, sessile, densely papillose, with solitary, campylotropous ovule; style trifid, stigmas 3. Utricle membranous, enclosed by persistent sepals. Embryo horse-shoe shaped.

A genus with 2 species, one of which is endemic to Mongolia and the other distributed from Pakistan westwards to Canary Islands.

Gymnocarpus decander Forsk., *Fl. Aegypt.-Arab.* 65.1775; Pamp., *Pl. Trip.* 72.1914; Corti, *Fl. Veg. Fezzan* 103.1942; Ozenda, *l.c.* 207; Maire, *Fl. Afr. Nord.* 9:36.1963; Keith, *l.c.* 527 (Fig. 3).

Trianthema fruticosa Vahl, *Symb.* 1:32.1790; *G. fruticosum* (Vahl) Pers., *Syn.* 1:262.1805; Durand & Barratte, *Fl. Lib. Prodr.* 44.1910; Pamp., *Prodr. Fl. Cir.* 188.1931.

A woody, suberect to erect, up to 50 cm tall undershrub, with ash grey, much entangled branches. Leaves subterete to terete, 8-18 x c. 2 mm, entire, obtuse, mucronate, glabrous; stipules interpetiolar, scarious, triangular-ovate, c. 1.5 mm long, with ciliate margins. Inflorescence a cluster of 5-15 flowers in dichasial cymes. Flowers sessile, c. 6-8 mm long, c. 4 mm across; receptacle vase shaped, c. 2.5 mm long, hairy; bracts linear-subulate, c. 3 mm long, mucronate, never scarious. Sepals oblong, c. 3-4 mm long, dark brown or blood-red within, with membranous margins, cucullate at the apex, with a bunch of hairs around awn on hood, the rest glabrous. Petals subulate filiform, c. 1-1.5 mm long, acute, whitish brown. Stamens c. 2.5 mm long, with oblong, dorsifixed, yellow anthers. Ovary slightly fused with the receptacle, papillose; style c. as long as sepals. Utricle enclosed by persistent sepals. Seed oblong-reniform, compressed.

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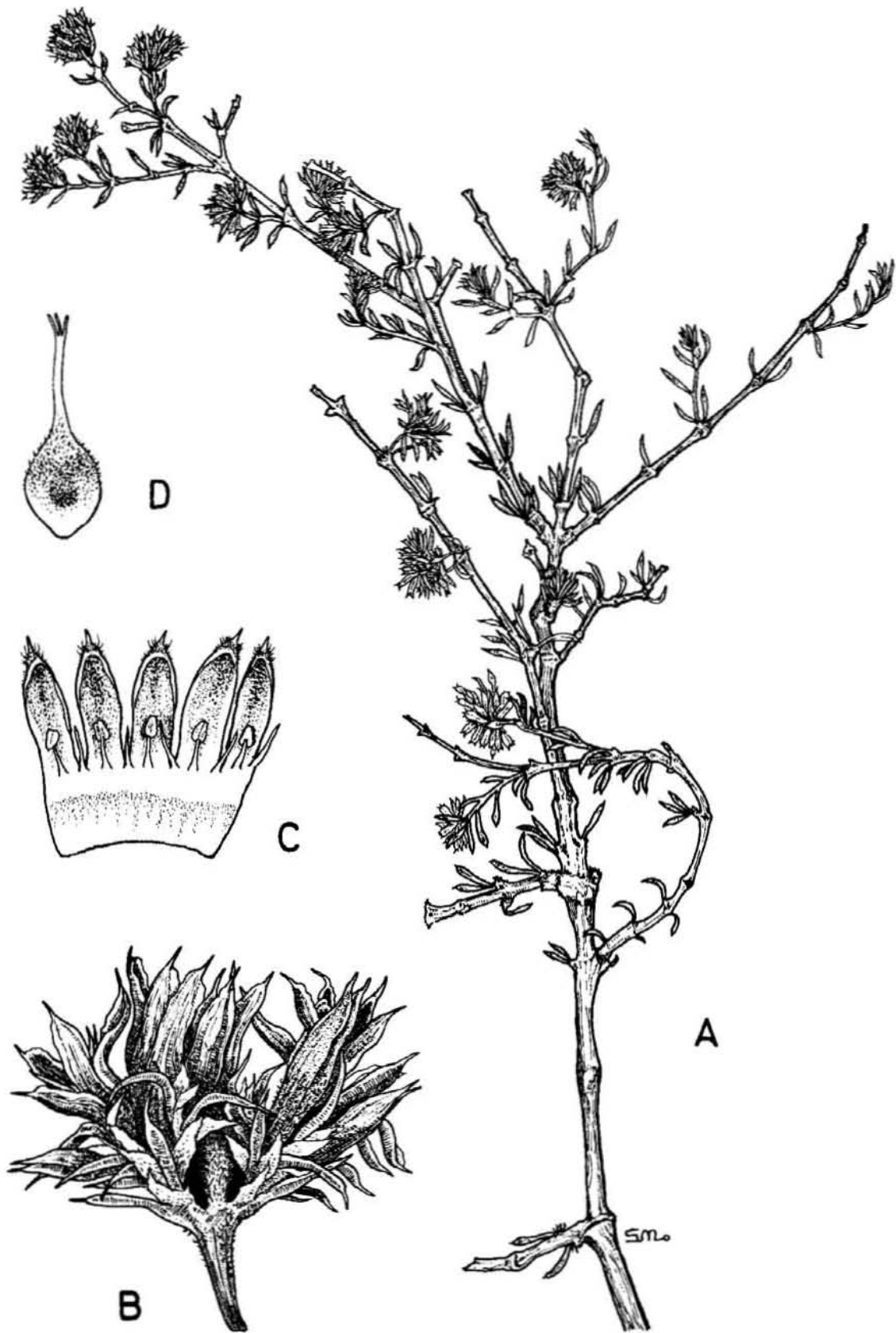


Fig.3, *Gymnocarpus decander*: A, Habit x 1; B, Inflorescence x 4; C, Dissected flower x 6; D, Ovary x 8.

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Type: « In desertis Kahrinis Orient » *Forskal* (C-holo; BM-Iso).

A-2 Wadi Al-Aital, roadside sand, 4.5.1972, *S.I.Ali & M.M.Khalifa* 236 (ULT); Ibid, flowers greenish with red margin, stony ground, 29.3.1976, *S.M.H.Jafri* 6588 (ULT); 2 km before Gharian, limestone hills, stony slope, *S.I.Ali & S.A.Faruqi* 1633 (ULT); Tagma, 5 km from Jefren Radio Station, 9.4.1974, *S.El-Jaley* 199 (ULT); Tagma, c. 6 km from Yafran towards Gharian, limestone hills, *S.I.Ali & S.A.Faruqi* 1879 (ULT); Al-Awenia (c. 7 km from Rumia), 11.4.1974, *S.I.Ali* 2000 (ULT); Rumia, top of limestone hills, 15 km from Jefren, 9.4.1974, *S.I.Ali* 1821 (ULT); **A-2-3** Gebel Nefousa, *L. Boulos* 3504 (ULT); **A-3** Bu-Ghilan, 24.1.1970, *M.M.Khalifa* s.n. (ULT); Abu Ghilan, 74 km from Tripoli, 16 km from Gharian, mountain valley, *S.I.Ali & S.A.Faruqi* 125 (ULT); Bu Ghilan, Gharian hills, spreading shrublet, 28.11.1976, *A.Ghafoor & S.A.Alavi* 245 AG (ULT); **B-1** c. 22 km from Nalut, 26.2.1975, petals blood red with white lining, *S.I.Ali* 2185 (ULT); Near Wadi Malah, c. 3 km from Nalut, flat limestone rocks, 18.4.1975, *S.I.Ali* 2843 (ULT); **B-2** 4 km west of Ain Zarga, 8.5.1970, *M.Khalifa* s.n. (ULT); c. 37 km from Kaleba (c. 67 km from Garian) towards Mesda, *S.I.Ali* 1964 (ULT).

Distribution: Canary Islands eastwards to Pakistan (Baluchistan) and Afghanistan through North Africa and Arabia.

The young shoots are grazed by camels and goats and the plant looks like a distorted browsed shrub. It is an indicator of shallow soils and grows most commonly in calcareous hillocks.

Fl. February-May. *Vern.:* Isinan, Jarad, Gharad

4. PARONYCHIA

Miller, Gard. Dict. ed. 4.vol.3.1754

Annual or perennial, basally woody herbs. Stem often woody at the base, diffusely branched, branches procumbent to suberect or subprostrate, Leaves opposite or occasionally apparently alternate, linear-lanceolate to elliptic or oblanceolate to obovate, entire, mucronate or not at the apex, subglabrous; stipules large, ovate to triangular-ovate, white-scarious, conspicuous. Inflorescence usually axillary or terminal, subspherical, sessile cymose clusters. Flowers bisexual, small,

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5-merous, perigynous, hairy all over with hooked or straight hairs or subglabrous-glabrous; bracts silvery-scarious, conspicuous and usually concealing the flowers. Sepals 5, equal or unequal, plano-concave or cucullate and awned at the back, with membranous margins. Petals 5, filiform, alternate with sepals. Stamens 5, rarely less, antisepalous, inserted on rim of cupule, filaments filiform, anthers ovoid-subglobose. Ovary bicarpellate, syncarpous, ovoid-obovoid to subglobose, attenuate to style, unilocular, with single amphitropous ovule; styles 2, long, free or sometimes united and 2-fid near the apex. Utricle oblong-globose to ovoid, membranous, irregularly dehiscent at base, enveloped by persistent sepals. Seeds endospermous with membranous testa and annular embryo.

A genus of c. 60 species, distributed in temperate and subtropical regions; 5 species are found in Libya.

- | | | |
|----|---|-------------------------|
| 1. | + Leaves mucronate. Sepals cucullate and awned at the apex, broadly membranous margined | 4 |
| | — Leaves without a mucro. Sepals neither cucullate nor awned at the apex, without membranous margins | 2 |
| 2. | + Flowers less than 3 mm long. Sepals almost equal, ± incurved at the apex | 3.P.kapela |
| | — Flowers more than 3 mm long. Sepals much unequal, recurved at the apex | 3 |
| 3. | + Leaves densely velutinous on both sides. Sepals velutinous all round, acute | 1.P.chlorothyrsa |
| | — Leaves strigose-pubescent to almost glabrous on both sides. Sepals glabrous within, strigose-pubescent to glabrescent outside, ± obtuse | 2. P.capitata |
| 4. | + Perigynous zone and back of sepals with hooked or circinate hairs | 4.P.arabica |
| | — Perigynous zone and back of sepals with straight hairs or glabrous | 5.P.argentea |

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1. **Paronychia chlorothyrsa** Murb. in Acta Univ. Lund. (Contr. Fl. Tunisia 1) 33:48. tab. 2. fig. 13-14.1897; Pamp., Pl. Trip. 75.1914; Prodr. Fl. Cir. 190.1931; Ozenda, Fl. Sah. 209. fig. 50.1958 (Fig. 4).

P. macrosepala Sensu Ball, Journ. Bot 204.1875 (non Boiss., Diagn. 1(3):11.1843); *P. capitata* (Linn.) Lamk. ssp. *chlorothyrsa* (Murb.) Maire et Weiller in Maire, Fl. Afr. Nord. 9:28.1963 p.p.

A much branched perennial, basally \pm woody, prostrate, silvery green herb. Branches spreading to c. 15-20 cm, internodes 4-10 (-12) mm long, terete, densely retrorse hairy. Leaves sessile to subsessile, linear-oblong to narrowly lanceolate, 4-8 (-10) x 2-3 mm, velutinous on both sides, entire, acute, neither aristate nor mucronate; stipules silvery scarious, mostly 4 at each node, free lateral, linear to narrowly lanceolate, acuminate acute, glabrous, minutely ciliolate on margins. Inflorescence dense, axillary and terminal, numerous clusters, each c. 10-15 mm in diameter. Flowers green, 4-8 mm long, sessile, perigynous zone very small, velutinous; bracts very broadly ovate, 6-8 x 4-7 mm, brown and oblique at the base, acute-mucronate at the apex, incompletely enveloping the flowers, glabrous. Sepals linear-oblong, 4-8 x 1-1.5 mm, much unequal, 2 outer very longer than 3 inner subequal ones, neither cucullate nor membranous on margins, awnless, velutinous on both sides, acute. Petals minute, thread-like. Stamens with c. 0.25 mm long, ovoid, yellow-orange anthers. Ovary ovoid, glabrous, style short, bifid. Utricle ovoid, c. 1.25 mm long, membranous, yellowish-brown. Seeds c. 1 mm long, yellowish-brown.

Type: Tunisia, El-Hafay, in alveo exsiccato, 15.4.1896, *Sv. Murbeck* (Lecto.-S).

A-2 Abourshada, Garian, 0 km, 12.4.1974, *Salem El Jaly* 358 (ULT); 2 km before Gharian, limestone hills, 17.4.1973, *S.I.Ali* 1642 (ULT); A-8 Omm Rezum, S.E.Derna, 13.3.1968, *L. Boulos* 2339 (ULT).

Distribution: Widespread in the Sahara from South Libyan desert in Egypt to Morocco and Eritrea.

Fl. Feb.-June Vern.: Khetor

2. **Pranychia capitata** (Linn) Lamk., Fl. Fr. 3:229.1778, Durand & Barratte, Fl.

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Fig. 4, **Paronychia chlorothyrsa**: A, Habit x 1.5; B, Leaf x 4; C, Flower x 5; D, Bract x 5.

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Lib. Prodr. 44.1910; Pamp., Prodr. Fl. Ciren. 189.1931; Maire et Weiller in Maire, l.c. 27 p.p. (Fig. 5).

Illecebrum capitatum Linn., Sp. Pl. 207.1753; *I. herniarioides* Pour. in Mem. Acad. Toulouse 3:321.1788; *P. rigida* Moench, Meth, 315.1794; *P. nivea* DC. in Poiret, Encycl. 5:25.1804; *P. capitata* (Linn.) Lamk. subsp. *nivea* (DC) Maire & Weiller in Maire, l.c. 9:31.1963.

A much branched perennial, \pm woody at the base, prostrate, mat-forming herb. Branches spreading to c. 10 (-15) cm, internodes 2-8 (-10) mm long, retrorsely hairy to glabrescent. Leaves sessile, narrowly oblong-lanceolate, 3-10 x 1.5-2.5 mm, acute, strigose-pubescent to almost glabrous on both sides, ciliate at the margins; stipules mostly 4 at each node, free lateral, narrowly lanceolate, usually shorter than leaves, rarely exceeding, acuminate-acute. Inflorescence dense, apical and subapical (axillary) silvery clusters, each 10-15 (-20) mm in diameter. Flowers green, (3-) 4-5 (-6) mm long, sessile, perigynous zone very small, c. 0.5 mm, glabrescent; bracts very broadly ovate to suborbiculate, 5-8 x 4-5 mm, oblique at the base, subacute-obtuse, almost enveloping the flowers, glabrous. Sepals linear-oblong, (2.5-) 3.5-4.5 (-5.5) x 1-1.5 mm, much unequal, 2 outer longer than 3 inner subequal ones, neither cucullate nor membranous on margins, awnless, distinctly 3-nerved, glabrous within, strigose-pubescent to glabrescent outside, \pm obtuse, margins densely ciliate. Petals minute, much shorter than sepals. Stamens with oblong, 0.25 mm long yellow anthers. Ovary ovoid-conical, styles 2, filiform, divergent-recurved. Utricle elliptic-oblong, c. 2 mm long, completely enveloped by sepals, glabrous. Seeds oblong-lenticular, c. 1.2-1.5 mm long.

Type: S. Europe, Herb. Linn. 290.17 (LINN).

A-2 Tagma (near Yefren Broadcasting station), c. 6 km from Yefren towards Gharian, limestone hills, *S.I.Ali* 1858 (ULT); **A-3** Tripoli, near University of Libya, 100 m, low sandy hills, perennial, 12.3.1970, *Davis* 49483 (E;ULT); Fandak Tugar, c. 32 km from Tripoli, sandy soil, wet ground, roadside, 6.4.1972, *S.I.Ali* & *S.A.Faruqi* 107 (ULT); Barley fields, Science Faculty, Tripoli University, 6.3.1977, *Abdul Ghafoor* 274 AG (ULT); 12 km west of Tripoli, near the sea shore, 24.3.1967, *Boulos, Tawil & Bouny* 1601 (ULT).

Distribution: North African Sahara, Palestine and South Europe.

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Fig.5, *Paronychia capitata*: A, Habit x 1.5; B, Leaf x 4; C, Flower with bract x 8.

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Fl. March-June.

3. ***Paronychia kapela*** (Hacq.) Kerner, Oestr. Bot. Zeitscher. 19:367.1869; 26.394.1876; 27:17.1877; Quezel & Santa, l.c. 318.1962; Maire, l.c. 33.

Illecebrum Kapela Hacq., Pl. Alp. Carn. 12. tab. 2, fig. 1.1782; *Paronychia capitata* DC. in Poiret, Encycl. 5: 25. 1804; non (Linn.) Lam. Fl. Fr. 3:229.1778.

Perennial, basally woody prostrate-procumbent, caespitose and matted herb. Branches spreading to c. 25 cm, internodes glabrous to retrorsely minutely pubescent. Leaves sessile, elliptic-obovate, occasionally suborbicular or oblong-elliptic, 2-5 (-7) x 1.5-2.5 mm, glabrous on both sides, ciliate at the margins; stipules 4 at each node, free lateral, narrowly ovate-lanceolate, shorter or as long as to rarely exceeding the leaves, glabrous, acute. Inflorescence dense, terminal, conspicuously globose clusters, each c. 8-15 mm in diameter. Flowers green, 2-3 mm long, rarely longer or smaller, sessile, perigynous zone densely adpressed hairy; bracts broadly ovate to nearly orbiculate, 5-7 x 3.5-6 mm, obtuse, completely enveloping the flowers, glabrous. Sepals linear-oblong to oblong-lanceolate, 1.5-2.5 mm long, neither cucullate nor awned, almost equal, densely hairy outside, obtuse and somewhat incurved at the apex. Petals c. 1 mm long. Stamens with c. 0.4 mm long, orange-yellow, ovoid anthers. Ovary ovoid, glabrous; styles 2, free, recurved and much divergent. Utricle ovoid-subglobose, c. 1.5-2 mm long, membranous, glabrous. Seeds c. 1.25-1.5 mm long, brown.

Type: Not precisely designated, probably in the Herb. Bot. Inst. Univ. Ljubljana, Yugoslavia (LJU).

Distribution: Libya westwards to Canary Isles, Morocco, South East Spain and Southern parts of Sicily.

This species has been reported from Bengazi and Tarhouna by Maire (l.c.) and Keith (l.c.).

Fl. May-August.

4. ***Paronychia arabica*** (Linn.) DC. in Lamk., Encycl. Method. Bot. 5:24.1804;

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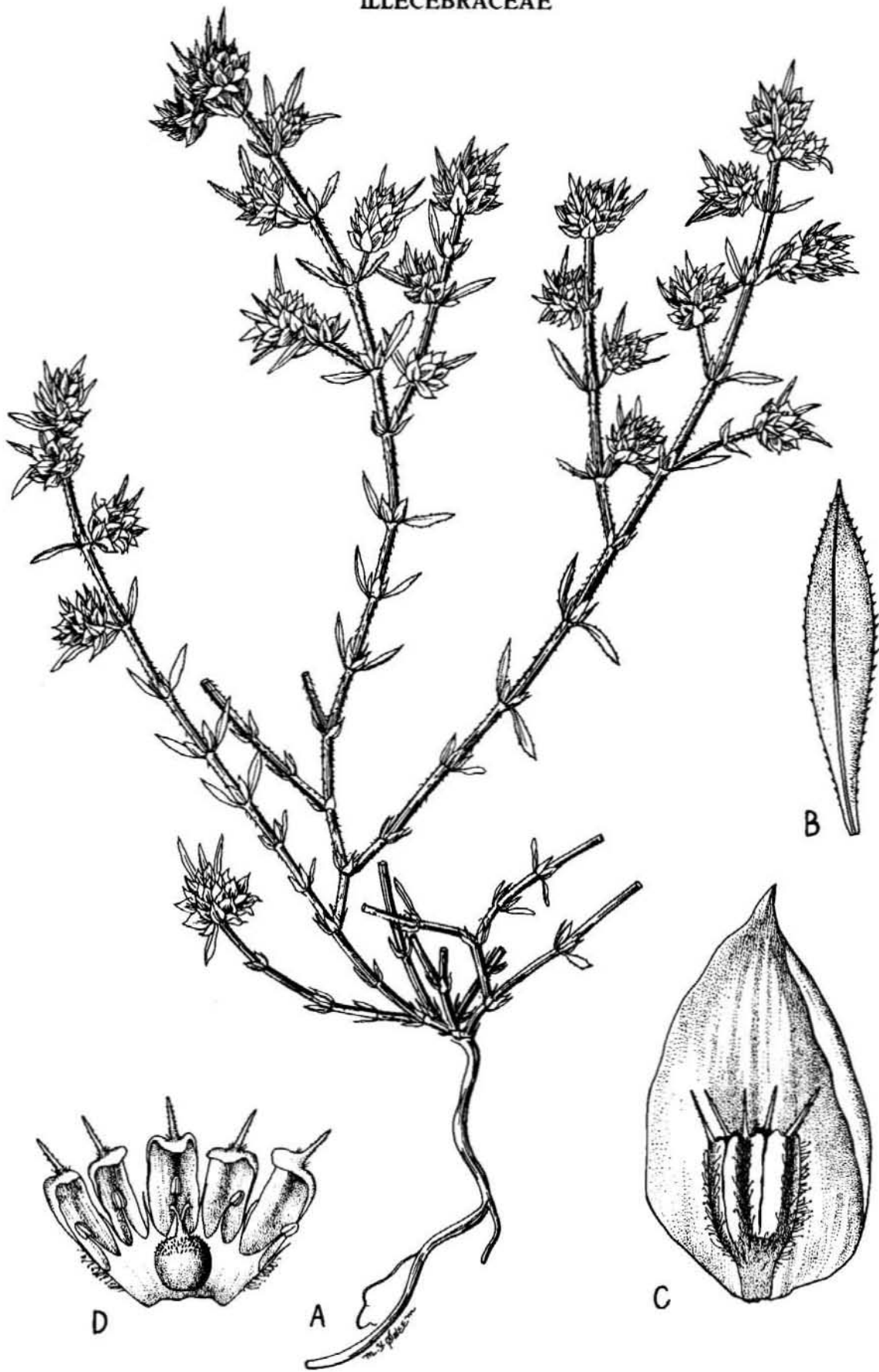


Fig.6, *Parnychia arabica*: A, Habit x 1; B, Leaf x 5; C, Flower with bract x 10; D, Dissected flower x 10.

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Durand & Barratte, l.c. 44; Pamp., Pl. Trip. 74.1914; Prodr. Fl. Cir. 189.1931; Ozenda, l.c. 209; Maire, l.c. 19.fig. 5 (Fig. 6).

Illecebrum arabicum Linn., Mant. 1:51.1767.

A diffusely branched, annual to perennial, prostrate to suberect herb. Branches spreading to c. 25-40 cm, articulate, internodes 5-40 mm long, \pm retrorsely hairy to glabrous. Leaves sessile to shortly petioled, linear-lanceolate to narrowly ovate, 5-15 x 2-4 mm, glabrous, minutely hairy on margins, acute, mucronate; stipules 2 at each node, interpetiolar, scarious, lanceolate-ovate, 2.5-4 x c. 2 mm, shorter than leaves, entire to finely ciliate. Inflorescence dense, axillary clusters, each c. 4-10 mm in diameter. Flowers greenish-white, c. (2-) 2.5 (-3) mm long, perigynous zone distinct, densely circinate-hooked hairy; bracts akin to stipules, broadly ovate, 5-6 x 3-4 mm, glabrous, \pm acuminate, completely enveloping the flowers. Sepals broadly oblong, c. 1.5-2 (-2.5) mm long with broad membranous margins and green median part, hooked hairy to glabrous outside, awned on hood, awn up to 1.25 (-1.5) mm long. Petals subulate, minute. Stamens with c. 0.5 mm long, ovoid, yellow anthers. Ovary ovoid, papillose to minutely hairy; styles 2, divergent. Utricle brown, papillate, membranous, ovoid-oblong, c. 1.25 mm long. Seeds lenticular, \pm compressed, c. 0.75-1 mm, glabrous.

Type: Herb. Linn. 290.19 (LINN).

A-2 c. 30 km from Sabrata on way to Zuara, soil sandy with salt, swampy area, 25.11.1976, *A.Ghafoor & S.A.Alavi* 73 AG (ULT); **A-3** Tripoli, nr. University of Libya, 100 m, edge of sandy barley fields, 12.3.1970, *Davis* 49455 (E;ULT); 20-23 km east of Tripoli, along coastal road to Khoms, 8.3.1967, *L. Boulos* 1553; 1560 (ULT); Tripoli, University Campus, opposite Science Faculty, reddish sandy soil, common, prostrate, 15.2.1976, *S.M.H.Jafri* 6261 (ULT); Hadeba Sharqia, University lane, under shade, *S.M.H.Jafri* 6441 (ULT); barley fields facing Faculty of Science, Sidi El Masri Tripoli, in sandy soil, 18.4.1967, *L. Boulos* 1716; 1730 (ULT); 6 km S.W.Tripoli, Sawani road, 1.1.1967, *L. Boulos* 1039 (ULT); Fandak Tugar, c. 32 km from Tripoli, wet ground, roadside, *S.I.Ali & S.A.Faruqi* 107a (ULT); **A-6** Around El Abiar, 50-60 km E. of Benghazi, 300 m, edge of wheat fields, on low plateau, annual, prostrate, 24.3.1970, *Davis* 49892 (E;ULT); **A-7** Derna, 18.1.1967, *L. Boulos* 1160 (ULT); Wadi El-Teir, Gebel Akhdar, c. 24 km W. Derna, along the coastal road to Susa, 19.1.1967, *L.Boulos* 1161 (ULT); Wadi Derna, *L.*

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Boulos 1304 (ULT); Susa, c. 10 km from Shahat, sandy soil, *S.I.Ali & S.A.Faruqi* 1074 (ULT); Slonta to Marwa (S. road from Derna to El-Merj (Barce), 750 m, *Cupressus & Pistacia* Forest/macchie, annual, in pasture, 1.4.1970, *Davis* 50566 (E;ULT); Roman aquaduct near Labrag, E. of Shahat (Cyrene), 700 m, limestone pavement, in Roman cart-tracks, annual, 29.3.1970, *Davis* 50246 (E;ULT); **A-8** Timimi to Omm Rezem, 5-50 m, sandy wadis (flooded last autumn), annual, prostrate, 30.3.1970, *Davis* 50270 (E;ULT); Om Rezum, S.E.Derna, 13.3.1968, *L. Boulos* 2337 (ULT); **B-1** 36 km from Nalut (on way to Tripoli), along the main road, sandy soil, *S.I.Ali* 2243 (ULT); **B-2** c. 7-8 km before Zintan (Between Reena & Zintan) near cultivated field, sandy soil, *S.I.Ali* 2060; 2067 (ULT); **C-4** c. 200 km from Sabha on Sebha-Hun highway, sandy depression, 31.3.1973, *S.I.Ali* 2312 (ULT); c. 100 km from Hun, along main highway, *S.I.Ali* 1447 (ULT); Gara el-Tifarni, c. 23 km from Weshka, gravel, 26.3.1975, *S.I.Ali* 2377 (ULT); 98 km to Hun, along the main highway from Sebha, Wadi Soda, along main dried water stream, sandy soil, 31.3.1973, *S.I.Ali* 1468 (ULT); c. 94 km from Hun, Wadi Soda, main dried water stream, sandy soil with loamy top, 1.4.1973, *S.I.Ali* 1493 (ULT); El-Soda Mountains, Fezzan, 2.10.1972, *M. Godeh* s.n. (ULT).

Distribution: North Africa, Turkey, Palestine, Jordan, Syria, Lebanon, Iraq, Kuwait, Saudi Arabia and Iran.

A highly polymorphic species and divided into a number of subspecies and varieties on the basis of habit, size of leaves, flower, awn, scariness of sepals, presence or absence and size of hairs on plant parts and size and shape of bracts.

Fl. Feb.-July. *Vern.*: Tifun

5. ***Paronychia argentea*** Lamk., *Fl. Fr.* 3:230.1779; Durand & Barratte, *l.c.* 43; Pampanini, *Pl. Trip.* 1914; Prodr. *Fl. Ciren.* 188.1931; Maire, *l.c.* 15. fig. 3 (includ. vars.); Keith, *l.c.* 734 (Fig. 7).

Illecebrum paronychia Linn., *Sp. Pl.* 206.1753; *I. argenteum* Pourr. in *Mem. Acad. Toul.* 3:321.1788; *P. nitida* Gaertn., *Fruct. Sem. Pl.* 2:218. t. 128.1791; *P. glomerata* Moench., *Meth.* 315.1794; *P. hispanica* DC. in Lamk., *Encycl. Method. Bot.* 5:24.1804.

Perennial, prostrate to procumbent, rusty or purple reddish, basally woody,

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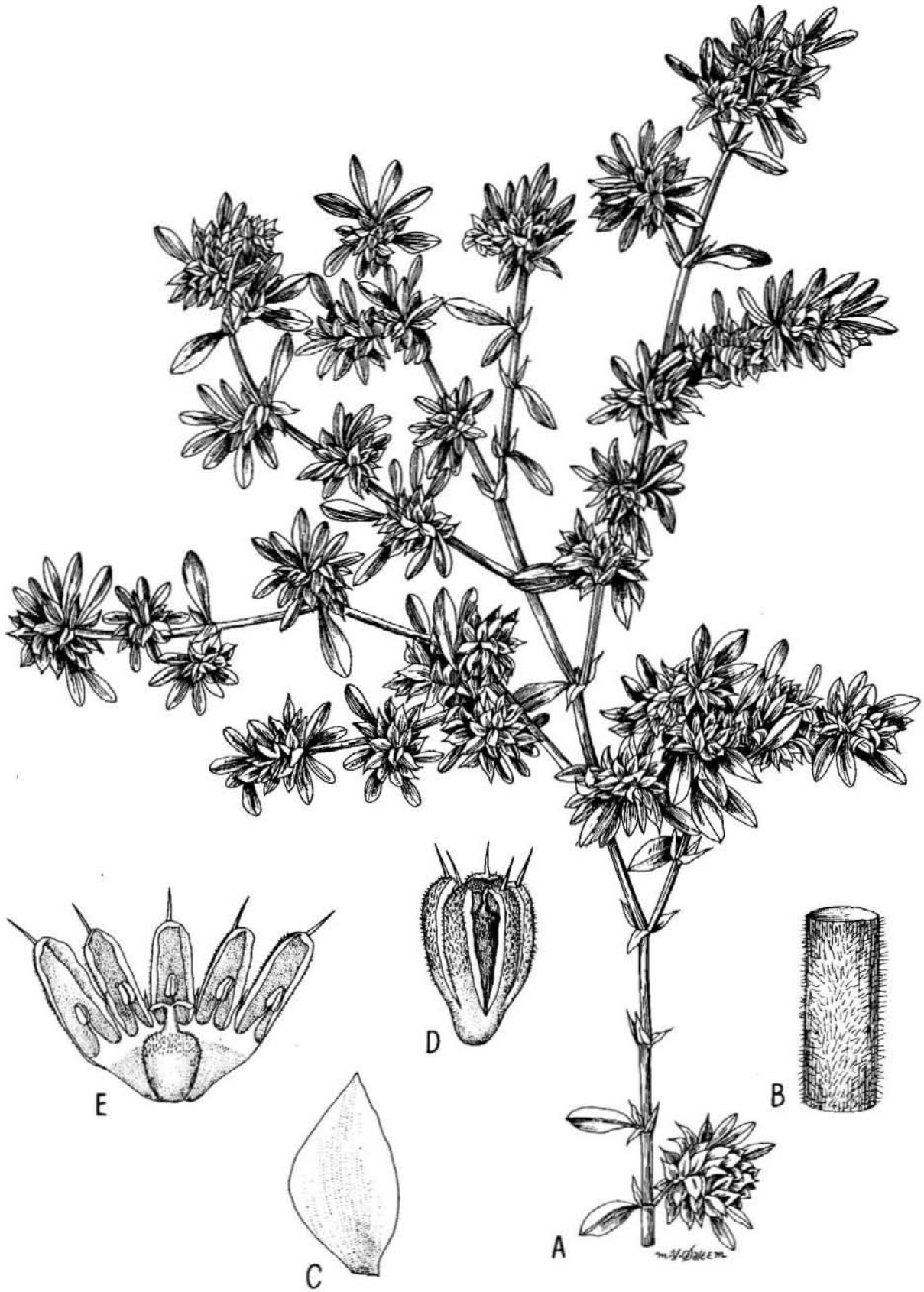


Fig. 7, *Paronychia argentea*: A, Flowering branches x 1; B, Part of internode x 10; C, Bract x 4; D, Flower x 8; E, Dissected flower x 8.

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diffusely branched herb. Branches spreading to c. 40 cm, internodes mostly longer or \pm equal to leaves, retrorsely hairy to glabrescent. Leaves sessile or minutely petioled, narrowly elliptic-oblongate or narrowly obovate, 4-10 (-15) x 2.5-5 (-6) mm, almost glabrous and scabrous, mucronate; stipules silvery scarious, 2 and interpetiolar or 4 free lateral at each node, broad ovate or narrowly oblique-ovate, 3.5-8 mm long, acute. Inflorescence dense, axillary and terminal, many-flowered well marked clusters, each c. 10-15 mm in diameter. Flowers whitish-green, 2-2.5 mm long, c. 4 mm across, sessile, perigynous zone with few straight hairs to almost glabrous; bracts oblique-ovate, 4-8 mm long, acute, completely concealing the flowers, glabrous. Sepals oblong, up to 2.5 mm long, carinate and cucullate, semi-scarious, straight haired or glabrous externally, awned on hood, awn c. 0.5 mm long, straight and stiff, margins broadly membranous. Petals subulate, c. 0.5 mm long. Stamen filaments as long as petals, anthers c. 0.5 mm, yellow. Ovary ovoid, papillose towards the apex; style short, 2-fid, branches stigmatic. Utricle brown, membranous, much papillate, obovoid to \pm globose, c. 1.5 mm long, enclosed by persistent sepals. Seed ovoid-round, c. 1 mm in diam., brownish-red, glabrous.

Lectotype: Hort. Cliff. 41, Herb. Linn. 290.14 (LINN).

A-6 Zawia, Between al-Marj and Taknes, 17.6.1972, *S.I.Ali* 536 (ULT); **A-6** Tokra, seaside, hard ground & limestone, 3.3.1973, *S.I.Ali* & *S.A.Faruqi* 1264 (ULT); c. 5 km from Shahat (from Baida), stony roadside, 17.6.1972, *S.I.Ali* & *S.A.Faruqi* 618 (ULT); c. 20 km from Labrag (c. 35 km from Lamluda), stony roadside, 19.6.1972, *S.I.Ali* & *S.A. Faruqi* 706 (ULT); Messa, c. 5 km from Baida, flat ground, 17.6.1972, *S.I.Ali* & *S.A.Faruqi* 583 (ULT); c. 17 km from Agaigan on way to Martuba, 21.6.1972, *S.I.Ali* & *S.A.Faruqi* 829 (ULT); Batta, c. 74 km from Baida on way to Al-Merj, *S.I.Ali* 886 (ULT); Sabag-Al- Gubba 2.3.1973, *S.I.Ali* 1206 (ULT); Al-Gubba, *S.I.Ali* & *S.A.Faruqi* 1198 (ULT); 22 km S.W.Massah, Gebel Akhdar, 17.1.1967, *L.Boulos* 1111 (ULT); Wadi Al-Kouf, Gebel Akhdar, 25.1.1967, *L. Boulos* 1473 (ULT).

Distribution: North Africa, South West Asia and Sout Europe.

Common in sandy and rocky places, in reddish soils, throughtout the coastal belt of Libya and abundant in the Gebel Akhdar area.

Fl. January-June *Vern.*: *Thaia* al arab; *theia* al Jabal; Tifun

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5. HERNIARIA

Linn., Sp. Pl. 218.1753; Gen. Pl. ed. 5.103.1754.

Heterochiton Graebn. & Mattfeld in Ascher. & Graeb.,

Syn. Mitteleurop. Fl. 5:870.1919.

Annual or perennial, hairy or rarely glabrous tufted herbs. Stem woody at the base, diffusely branched, branches prostrate-procumbent. Leaves opposite, or terminally becoming alternate by abortion of a member of the pair, subsessile to sessile, obovate-oblongate or narrowly elliptic, entire, rarely totally glabrous; stipules ovate-triangular with ciliate margins, membranous. Inflorescence dense leaf-opposed or pseudoaxillary, sessile cymose clusters. Flowers bisexual or occasionally unisexual, sessile or subsessile, 4-5-merous, perigynous, hairy all over or subglabrous to glabrous at perigynous zone, hairs straight or hooked; bracts inconspicuous. Sepals 4-5, plano-concave, unequal or equal in length, connivent, erect or patent. Petals 4-5, subulate-filiform, inserted on rim of cupule, alternate with and shorter than sepals. Stamens 2-5, opposite to sepals and inserted on rim of cupule, filaments filiform, anthers oblong or ovoid. Ovary bicarpellary, syncarpous, ovoid-subglobose, glabrous or papillose in the upper part, unilocular with solitary amphitropous ovule; style very short, 2-fid, rarely styles 2 or absent. Utricle ovoid-subglobose or ellipsoid, smooth or papillose above, indehiscent, enveloped by the persistent sepals. Seeds shining brown or black, lenticular to ovate-obovate, glabrous.

A genus of c. 50 species, chiefly in the Mediterranean region, Africa eastwards to India and South Africa. Represented by 6 species in Libya.

- | | | |
|----|--|--------------------|
| 1. | + Flowers 5-merous | 2 |
| | — Flowers 4-merous | 4 |
| 2. | + Sepals distinctly unequal (2 outer long, 3 inner short). Stamens 2, opposite to outer long sepals. Perigynous zone always with uncinat hairs | 1.H.cinerea |
| | — Sepals all equal. Stamens 5, opposite to sepals. Perigynous zone with minute straight hairs or glabrous | 3 |

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3. + Leaves elliptic-obovate to spatulate, glabrous. Perigynous zone and sepals glabrous (rarely sepals ciliated on margins). Utricle exceeding the sepals **2.H.glabra**
- Leaves narrowly elliptic-lanceolate, with marginal hairs. Perigynous zone and sepals with minute straight hairs. Utricle not exceeding the sepals **3.H.cyrenaica**
4. + Sepals distinctly much unequal. Petals absent. Stamens 2, opposite to inner smaller sepals; anthers c. 0.25 mm long **4.H.hemistemon**
- Sepals almost equal or subequal. Petals present. Stamens 4, antisepalous; anthers more than 0.25 (c. 0.4-0.5) mm long 5
5. + Leaves tetrastichous; stipules brownish or pale coloured. Perigynous zone with long curly hairs **5.H.ericifolia**
- Leaves distichous. Stipules purple-brown. Perigynous zone uncinat hairy **6.H.fontanesii**

1. **Herniaria cinerea** DC., Fl. Fr. Suppl. 6: 375. 1815; Durand & Barratte, Fl. Lib. Prodr. 43.1910; Pamp., Prodr. Fl. Cir. 190.1931; Keith, l.c. 551 (Fig. 8)

H. annua Lagasca, Genera et Sp. Nov. 12.1816; *H. diandra* Bunge, Del. Sem. Hort. Bot. Dorpat. 7:1843; *H. cinerea* DC. var. *diandra* (Bunge) Boiss., Fl. Orient. 1:740.1867; *H. virescens* Salzm. ex. DC., Prodr. 3:367.1868; *H. hirsuta* L. var. *cinerea* (DC.) Loret et Barrandon, Fl. Montp. 243.1876; Quezel & Santa, Nouv. Fl. Alger. 2:317.1963; *H. incana* Lamk. var. *cinerea* (DC.) Loret et Barrandon l.c.; Maire, l.c. 45.

Annual, pale-green, patent hairy herb with prostrate, spreading to c. 10-15 cm, branched from the base. Leaves sessile, narrowly elliptic-lanceolate to oblanceolate, 4-8 (-11) x 1.5-2.5 mm, hirsute, acute, with entire hairy margins; stipules membranous, white, c. 1 mm long, ciliate. Inflorescence a dense cymose cluster of 6-10-flowers. Flowers pale-green, pentamerous, 1.6-2.3 mm long, subsessile,

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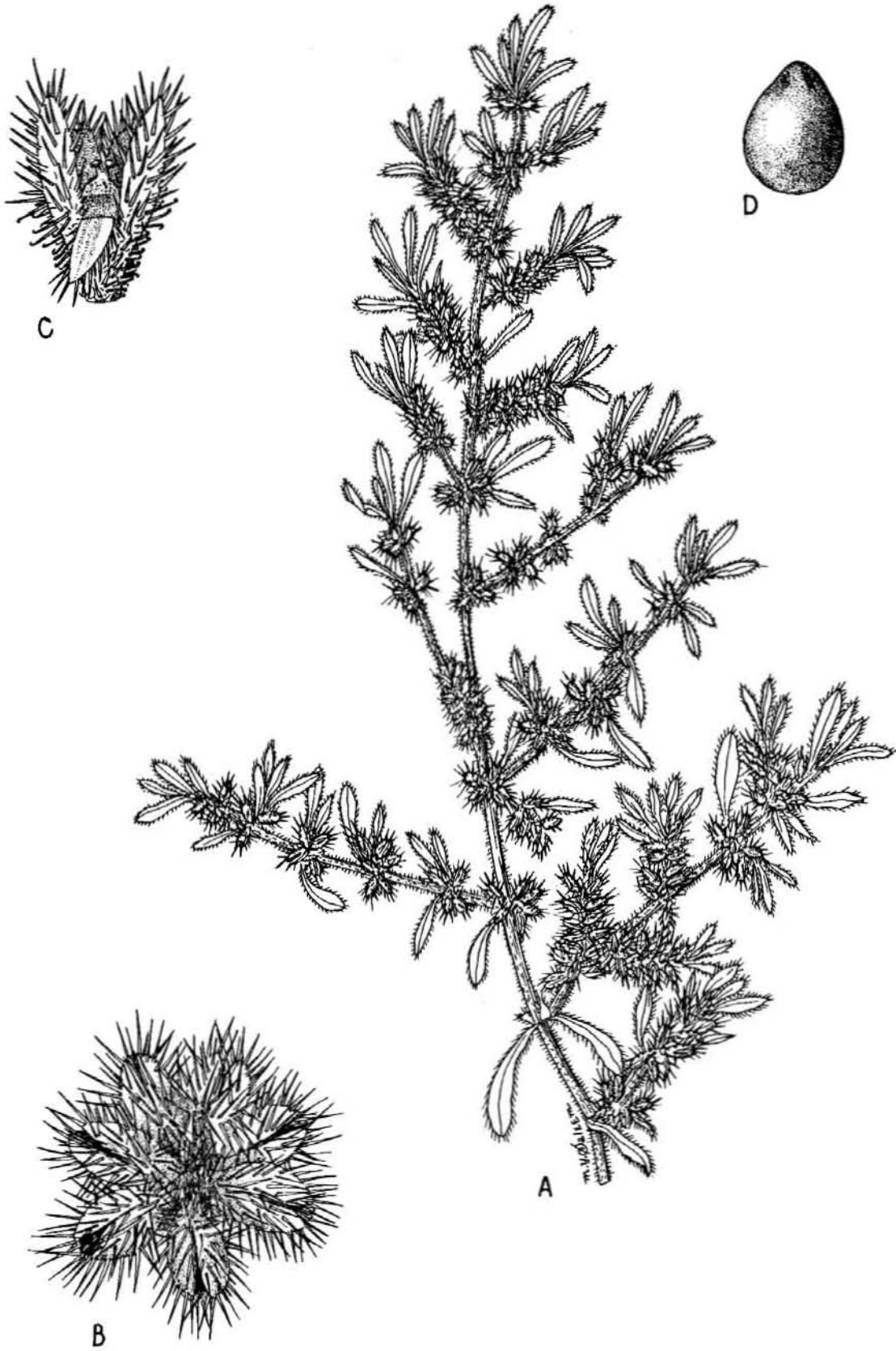


Fig. 8, ***Herniaria cinerea***: A, Flowering shoot x 1.5; B, Flower cluster x 8; C, Flower x 15; D, Seed x 25.

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perigynous zone and lower part of sepals densely hooked hairy, hairs 0.5 mm long; bracts akin to stipules. Sepals 5, distinctly unequal, hirsute, 2 outer up to 2 mm long, narrowly oblong, obtuse, 3 inner short, lanceolate, acute. Petals 5, free, setose. Stamens 2, free, opposite the outer large sepals, anthers oblong. Ovary papillose; style very minute, with 2 divergent stigmas. Utricle ovate-ellipsoid, papillose near the apex. Seeds shining black, lenticulate, c. 0.5 mm long, erect, with brittle testa.

Type: Env. Montpellier: Inter Cres and Castelnaud, *M. Pouzin* (holo. G-DC though without the name of collector or locality).

A-2 Garian, Youth Hostel compound, sandy soil, 12.4.1974, *S.I.Ali* 2092; 2095 (ULT); **A-3** Farm of Faculty of Agriculture, Sidi El-Masri, Tripoli, 10.4.1972, *Massud M. Godeh* s.n. (ULT); barley fields facing Faculty of Science, Sidi El-Masri, Tripoli, in sandy soil, 10.4.1967 *L. Boulos* 1675 (ULT); Ministry of Agriculture, Sidi El-Masri, Tripoli, *L. Boulos* 1724 (ULT); Tripoli near University Campus, 6.3.1977 *Abdul Ghafoor* 175 AG (ULT); Leptis Magna (Labda), 8.3.1968, *L. Boulos* 1882 (ULT); **A-6** Libya C: Around El-Abiar, 50-60 km E. of Benghazi, 300 m banks at edge of wheat fields on low plateau, annual, prostrate, 24.3.1970, *Davis* 49922 (E; ULT); **A-7** Derna beach, 1.3.1973, *S.I.Ali* & *S.A.Faruqi* 1178 (ULT); c. 5 km from Susa on way from Shahat, 20.6.1972, *S.I.Ali* 794 (ULT); **A-8** Libya; C: Timimi to Omm Rezem, 5-50 m, sandy wadis (flooded last autumn), annual, 30 March, 1970, *Davis* 50264 (E; ULT); Omm Rezum, S.E.Derna, 13.3.1968, *L. Boulos* 2334 (ULT).

Distribution: South West and South East Europe, Canary and Madeira Islands, North Africa, Middle East, Bahrein, Pakistan, Afganistan and Soviet Union (Azerbaijan).

Fl. March-May

- Herniaria glabra** Linn., Sp. Pl. 218.1753; Durand & Barratte, l.c. 43; Pamp., Prodr. Fl. Ciren. 190.1931; Maire, l.c. 39. fig. 10. (Excl. var. *cyrenaica* Pamp.); Keith l.c. 551 (Excl. var. *cyrenaica* Pamp.) (Fig. 8)

Annual to perennial, bright pale-green, with or without woody rootstock. Branches prostrate, spreading to 15-25 cm, internodes 1-2 cm long, glabrous or

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Fig.9, **Herniaria glabra**: A, Flowering branch x 1.5; B, Flower cluster x 6; C, Flower x 15; D, Flower (dissected) x 10.

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minutely hairy. Leaves subsessile or short petioled, opposite, alternate on floral shoots, elliptic-obovate to spatulate, 4-7 x 2.5-3.5 mm, glabrous or rarely ciliate on margins, acute; stipules scarious, triangular-ovate, finely ciliate on margins, acute. Inflorescence dense, axillary and terminal, 5-12-flowered cymose spicate clusters. Flowers pentamerous, c. 1.5 mm long, c. 3 mm across, subsessile, perigynous zone glabrous or very slightly puberulous; bracts similar to stipules. Sepals 5, all equal, lanceolate, c. 1 mm long, acute, glabrous or rarely ciliate on margins. Petals 5, linear, green, shorter than sepals. Stamens 5, antisepalous, anthers yellow, c. 0.25 mm long. Ovary subglobose, finely papillate at the apex; style minute, stigmas 2, suberect. Utricle ovoid, slightly exceeding sepals. c. 1.6 mm long, brownish. Seeds lenticular, c. 0.5 mm in diameter, glabrous, shining brown.

Type: Described from Europe.

A-7 Plateau 2 km. W. Wadi El-Mahboul, Susa coastal road, Gebel Akhdar, 11.3.1968, *L. Boulos* 2171 (ULT); Ruins of Cyrene (Shahat), 600-650 m, among ruins of sanctuaries, perennial, prostrate, 26.3.1970, *Davis* 50096 (E; ULT).

Distribution: North Africa, Europe, Syria, Iran, Russia (Transcaucasia, Siberia).

Fl. March-April

3. ***Herniaria cyrenaica*** Hermann in Fedde, Repert, 42:210.1937; Chaudhri, M.N., A revision of the Paronychiinae 363.1968 (Fig. 10).

H. incana Lamk, ssp. *cyrenaica* (Hermann) Maire & Weiller in Maire, Fl. Afr. Nord 9:48.1963; *H. glabra* Linn. var. *cyrenaica* Pamp., Archiv. Bot. 12:10.1936; Maire, l.c. 41.

Perennial prostrate herb with branches spreading to c. 10 cm from woody rootstock, internodes minutely patent hairy. Leaves almost sessile, narrowly elliptic-lanceolate, 2-6 x 1.5-2.5 mm, glabrous except the marginal hairs, acute; stipules membranous white, c. 1.5 mm long, ciliate. Inflorescence somewhat lax cymose cluster of 5-9-flowers. Flowers pale green, pentamerous, c. 1.5 mm long, c. 3 mm across, subsessile, perigynous zone with minute straight hairs. Sepals 5,

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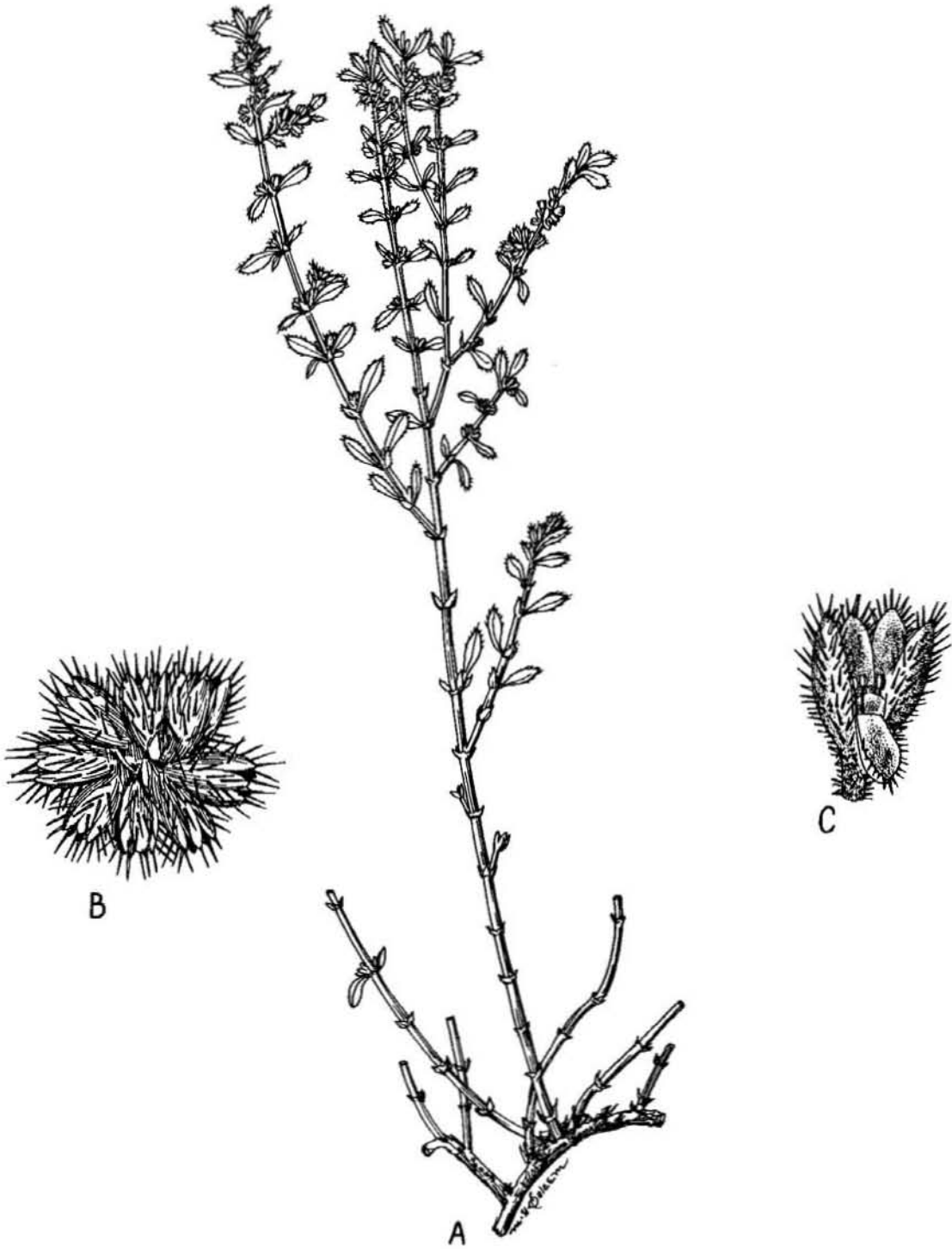


Fig.10, **Herniaria cyrenaica**: A, Flowering shoot x 1.5; B, Flower cluster x 8; C, Flower x 15.

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equal, lanceolate, c. 1 mm long, obtuse, beset with straight hairs externally. Petals 5, linear. Stamens 5, opposite to sepals, anthers yellow, c. 0.25 mm long. Ovary subglobose, papillate at the apex; style minute, 2-fid at the apex. Utricle ovoid, not exceeding the sepals, c. 1.5 mm long, brownish. Seeds lenticular, c. 0.5 mm, shining brown.

Type: Libya, cyrenaica; Benghazi, 27.1.1883, *G. Rhumer* 56 (as *H. hemistemon*) (holo.-B - Destroyed; Iso. - G; JE;LD:W;Z; Neo.-LD).

A-7 Libya, C: Roman aqueduct near Labrag, E. of Shahat (Cyrene), 700 m, limestone pavement, in cart-tracks, perennial?, prostrate, 29 March, 1970, *Davis* 50243 (E;ULT); Dariana, c. 40 km from Benghazi, c. 12 km from sea, near cultivated, saline flat, limestone, soil dark brown, 16.6.1972, *S.I.Ali* 484 (ULT); Benghazi, *Pampanini* 2417 & 2419 (FI); 2418 (FI, G, type of *H. glabra* var. *cyrenaica* Pamp.); Ibid, Sandwith 2228 (K); Cyrenaica, *Pampanini & Pichi-Sermoli* 2422 (FI); Sandwith, 2304 (K); *H.G.Keith* 382 (K).

Distribution: Libya and Egypt.

Fl. March-June.

4. ***Herniaria hemistemon*** J.Gay in Duch., Rev. Bot. 2:371.1847; Durand & Barratte, l.c. 43; Pamp., Prodr. Fl. Ciren. 191.1931; Maire, l.c. 54. fig. 16; Keith, l.c. 552 (Fig. 11).

H. fruticosa Linn. var. *hemistemon* (J.Gay) Barratte in B. & B., Cat. Tun 65.1896.

Perennial, pale-green, herb with woody rootstock. Branches woody, articulate, shortly tomentose, prostrate, spreading to 15 cm. Leaves sessile, opposite, alternate in floral region, elliptic to ovate-oblong, 4-6 x 2-3 mm, moderately crisped hairy on both sides, obtuse; stipules triangular-ovate, c. 1-1.5 mm long, purple-brown, becoming blackish in floral region, ciliate on margins. Inflorescence dense cymose clusters of 6-9 flowers, arranged spicately on younger shoots. Flowers pale-green, sessile, tetramerous, c. 1.6 mm long, perigynous zone uncinately hairy, bracts similar to stipules. Sepals 4, much unequal, outer 2 thick, c. 1 mm long, deltoid-ovate, divergent above, ciliate on margins, hairy externally, inner

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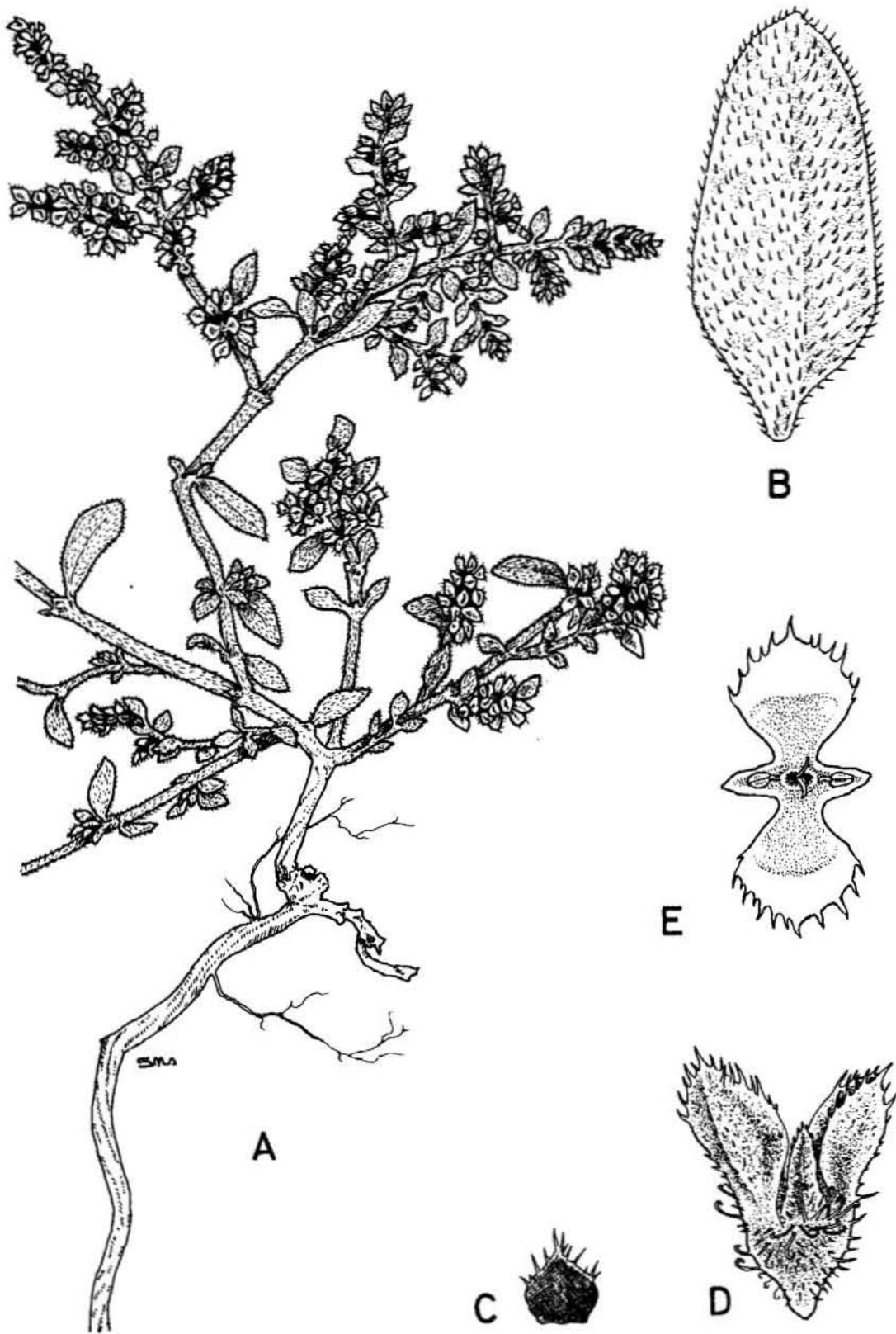


Fig. 11, **Herniaria hemistemon**: A, Habit x 2; B, Leaf x 8; C, Stipule x 20; D, Flower x 20; E, Surface view of flower x 20.

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2 membranous, oblong, c. half as long as outer, glabrous. Petals absent. Stamens 2, opposite to inner sepals, filaments minute, anthers oval-subglobose, c. 0.25 mm long, yellow. Ovary ovoid, papillose; style absent, stigmas 2, filiform, divergent. Utricle ovoid, c. 1 mm long, enclosed within sepals. Seeds ovoid-suborbicular, c. 0.5-0.7 mm long.

Type: Sinai, «Arabia Petraea» Hauara ad Ras Hammam, 16.3.1875, *W. Schimper* 195 (lecto.-G; Is.-E; FI).

A-2 c. 50 km from Tripoli, before Sabratha, saline and sandy ground, not common, prostrate perennial, 14.11.1975, *S.M.H.Jafri* 6201 (ULT); A-3 c. 50 km from Tripoli, before Sabratha, saline and sandy ground, not common, prostrate perennial, 14.11.1975, *S.M.H.Jafri* 6201 (ULT); A-3 22 km west of Khoms, on calcareous slopes, 25.4.1967, *L. Boulos* 1775 A (ULT); A-4 Near Al-Kararim, 8.3.1968, *L. Boulos* 1898 (ULT); C-4 c. 98 km towards Hun, along the main highway from Sebha, wadi Soda, along the main dried water stream, *S.I.Ali* 1458 (ULT); 40 km from Shoka, 25.3.1975, *Zenab Abou Raya* 78 (ULT).

Distribution: North Africa, Jordan, Iraq and Iran.

Fl. March-June

5. ***Herniaria ericifolia*** Townsend in Kew Bull. 20:427. fig. 1.1966.

Perennial, prostrate herb with horny woody older branches. Internodes deflexed tomentose. Leaves fleshy, opposite, tetrastichous, linear-lanceolate, 2-4 x 1.25 mm, minutely tomentellous, acute; stipules lanceolate, c. 1 mm long, walnut brown, pilose. Inflorescence dense cymose clusters of 6-9 flowers towards apices of branches. Flowers tetramerous, c. 1.6-2 mm long, perigynous zone with long straight hairs. Sepals 4, subequal, rough, glabrous outer 2 ovate, obtuse, fleshy, the inner ones slightly short, cucullate, membranous. Petals 4, broader towards base, acute, slightly smaller than sepals. Stamens 4, antisepalous, anthers oblong, 0.5 mm long, yellow. Style absent, stigmas divergent, papillose.

Holotype: Libya: Tripolitania, Ruins of Sabratha, in tufts on bare stony ground, 2 May 1965, *Sinnot* 524 (K).

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A-2 Tilel, c. 11 km from Sabratha on way to Zuara, c. 3 km north from highway, sandy soil, 25.11.1976, *A. Ghafoor & S.A. Alavi* 46 AG (ULT); 12 km west of Tripoli, near the sea shore, 24.3.1967, *Boulos, Tawil & Ei-Buni* 1627 (ULT).

Distribution: Endemic to Libya along the sea shore west of Tripoli.

Fl. April-May; October-November.

6. ***Herniaria fontanesii*** J. Gay in Duch., Rev. Bot. 2:371.1847; Durand & Barratte, l.c. 43; Pamp., Prodr. Fl. Cir. 191.1931; Ozenda, l.c. 209; Maire, l.c. 51. fig. 15 (Fig. 12).

H. fruticosa auct. non Linn., Cent. 1:8.1755; Desf. Fl. Atl. 1:213.1798.

Perennial, light green herb with woody rootstock. Branches woody, brittle, prostrate to suberect, spreading to c. 30 cm, with deflexed tomentose, 10-20 mm long internodes. Leaves sessile, opposite, alternate in floral region, linear-oblong or linear-lanceolate, 4-10 x 2-3 mm, fleshy, shortly crisped hairy to glabrescent; stipules triangular-ovate, c. 1.5 mm long, light purplish-brown with silvery-white ciliate margins, becoming dark purple brown in floral region. Inflorescence dense, axillary and terminal 5-8-flowered, cymose clusters borne along all the younger branches. Flowers whitish-green, tetramerous, subsessile, c. 2-2.5 mm long, preigynous zone uncinately hairy; bracts similar to stipules. Sepals 4, subequal, outer 2 thick, c. 1.5 mm long, deltoid-ovate, divergent above, ciliated or not on margins, glabrous, inner 2 not thickened, oblong with hairy membranous margins towards base, slightly shorter than outer ones and cucullate at the apex. Petals 4, setaceous, c. half as long as sepals. Stamens 4, as long as petals, anthers oblong, c. 0.5 mm long, yellow. Ovary ovoid, glabrous; style short, stigmas clavate, divergent, brownish. Utricle ovoid, c. 1 mm long, papillose and emarginate at apex, enveloped by sepals. Seeds compressed, ovoid, c. 0.75 mm, light brown.

Type: Described from N.W. Africa.

A-1 25 km from Nalut towards Wazen, soil clay-rocky, 9.6.1974, *Bashir Faris* 577 (ULT); **A-3** 22 km west of Khoms, on calcareous slopes, 25.4.1967, *L. Boulos* 1775 (ULT); Leptis Magna (Labda), 120 km east of Tripoli, 1.5.1974, *M. Godeh* 347 (ULT); Naqqaza, c. 97 km from Tripoli, 17 km from Khoms, prostrate, fls. green,

ILLECEBRACEAE

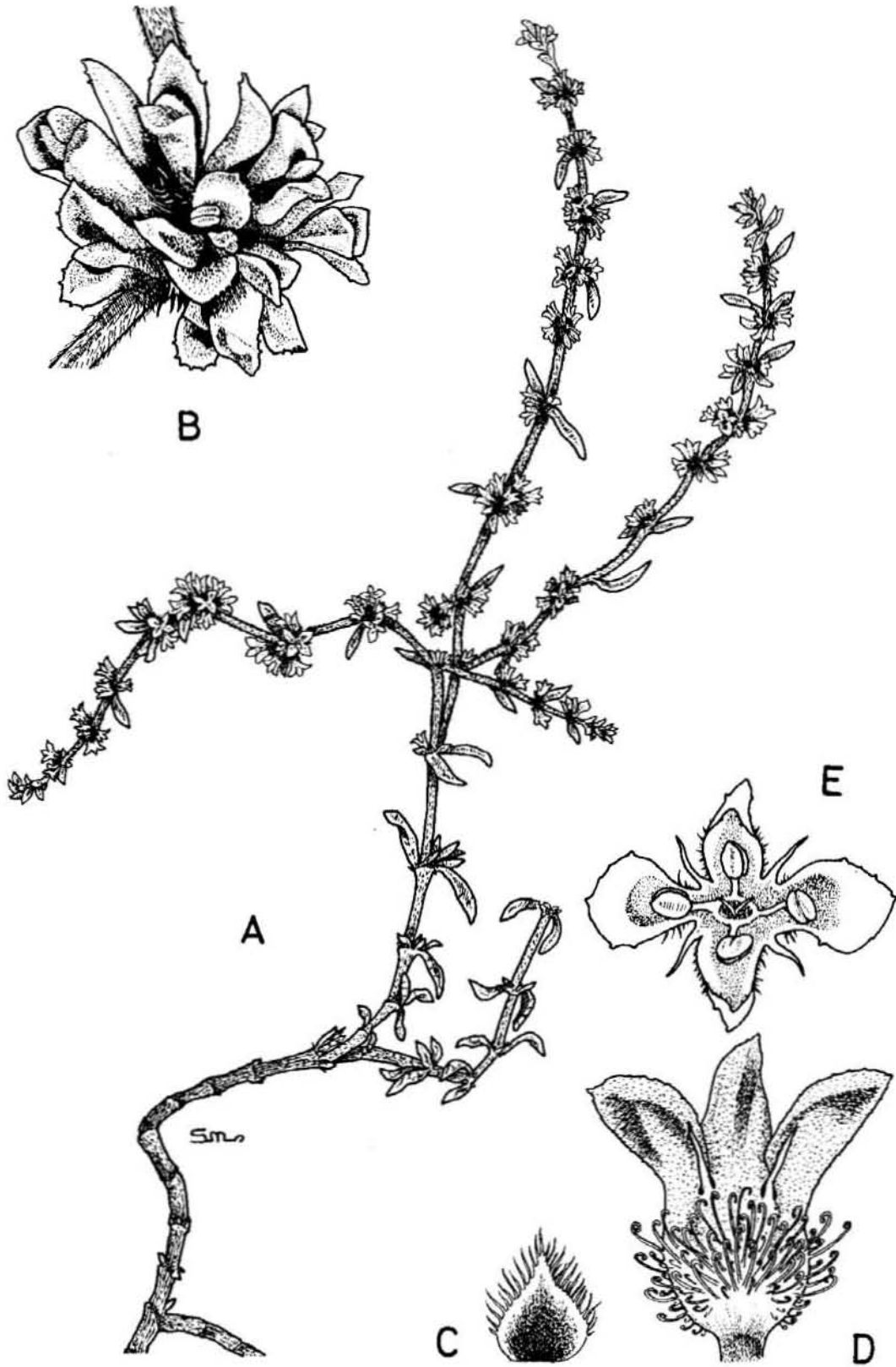


Fig. 12, *Herniaria fontanesii*: A, Flowering shoot x 2; B, Flower cluster x 12; C, Stipule x 10; D, Flower x 12; E, Surface view of flower x 12.

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1.5.1974, *Bashir Faris* 283 (ULT); Sea shore, north Misurata, 26.4.1967, *L. Boulos* 1826 (ULT); **A-6** Dariana, c. 40 km from Benghazi, sand c. 1/2 km from sea, near cultivated field, 16.6.1972, *S.I.Ali* 487 (ULT); **B-1** Near Wadi white margins, anthers yellow, 18.4.1975, *S.I.Ali* 2849; 2855 (ULT); c. 22 km from Nalut, 27.2.1975, *S.I.Ali* 2196 (ULT); Wadi Maleh, c. 10 km from Nalut, 4.5.1972, *S.I.Ali* 262 (ULT); **B-2** c. 37 km from Kaleba (c. 67 km from Garian) towards Mesda, prostrate, 10.4.1974, *S.I.Ali* 1959; 1968 (ULT); 15 km after Kaleba towards Misda, dry sandy ground, near a dry wadi, 10.4.1974, *S.I.Ali* 1927 (ULT); c. 24 km from Mesda, 10.4.1974, *S.I.Ali* 1983 (ULT); c. 1/2 km before Kabao, roadside valley, 5.5.1972, *S.I.Ali* 340; 378 (ULT); Al-Awenia (c. 7 km from Rumia) near Barley fields, 11.4.1974, *S.I.Ali* 2017 (ULT).

Distribution: South west Europe, North Africa and Sicily.

Fl. March-May

The material from **A-1** (between Nalut and Wazen, *B. Faris* 577) seems distinct in having very small stipules, 2-3-flowered very lax glomerules, subfleshy outer and cucullate inner sepals. More material is needed to decide its subspecific or specific rank. The above noted variation may be ecological in nature.

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