AL FAATEH UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF BOTANY

FLORA OF LIBYA

67

1st November, 1979

Editors:

S.M.H. JAFRI & A. EL-GADI
Al Faateh University,
Faculty of Science,
Department of Botany, Tripoli.

PLANTAGINACEAE

by M.A. SIDDIQI

Illustrations by
M.Y. SALEEM

Fl. Lib. 67:1-29.1979

PLANTAGINACEAE

M. A. SIDDIQI

Herbs, mostly acaulescent. Leaves radiate, sometimes cauline, arranged in rosette, alternate or opposite on branched stems. Flowers inconspicuous, many in pedunculate spikes or heads, bracteate, regular, tetramerous, usually bisexual, rarely unisexual, dimorphic (polygamous). Calyx 4-lobed, connate at base, segments subequal or the outer two larger, persistent. Corolla small, scarious with an ampuliform or cylindric tube, 4-lobed, lobes spreading, imbricate in bud. Stamens 4, filaments long; anthers conspicuous, inserted in the corolla tube, anthers 2-celled, the cells parallel, dehiscing longitudinally. Ovary superior, usually 1-2 (or 4)-locular with false free septa; ovules one or more in each locule; placentation basal or axile; style erect simple, filiform, often exserted, with 2-opposite longitudinal stigmatic lines along its length. Fruit a membranous, pyriform capsule, dehiscing transversely at the middle or near the base or indehiscent. Seeds 2 to many; endospermic, embryo straight mucilaginous when wet.

A small family of 3 genera and 270 species, widely spread over the world, chiefly in the temperate regions; represented by a single genus with 16 species in Libya.

PLANTAGO

L.,Sp.Pl.112.1753; Gen.Pl.ed.5:52.1754.

Herbs usually with a basal rosette of leaves and scapigerous. Floral and fruit characters same as that of the family.

A cosmopolitan genus with c. 200 species; represented here by 16 species.

1. +Plants caulescent with opposite leaves — 2
   −Plants acaulescent with scapes arising from a leafy-rosette, or caulescent with alternate leaves — 5

2.	+Corolla with a showy dark spot in the throat	1. **P.phaeostoma**
	−Corolla not as above	3
3.	+Bracts all similar in shape, without lateral veins	2. **P.afra**
	−Lowest bracts very dissimilar from the upper, with lateral veins at the base	4
4.	+Plant erect. Leaves not fleshy. Lowest 2 bracts rotund-ovate with wide scarious margins and linear-subulate apex	3. **P.arenaria**
	−Plant decumbent or ascending. Leaves ± fleshy. Lowest 2 bracts lanceolate with very narrow scarious margins and caudate-recurved apex	4. **P.squarrosa**
5.	+Leaves pinnatifid, at least with a few lobes	6
	−Leaves undivided with entire, rarely minutely dentate at margin	8
6.	+Spikes wooly. Corolla with a brown spot in the throat	5. **P.notata**
	−Spikes not wooly. Corolla without a brown spot in the throat	7
7.	+Scapes smaller than the leaves, swollen at the base. Spikes short and round. Bract sparsely hairy. Style as long as the stamen filaments	6. **P.crypsoides**
	−Scapes ± longer than the leaves, not swollen at the base. Spikes long and cylindrical. Bracts appressed hairy. Style smaller than the stamen-filaments	7. **P.coronopus**
8.	+Stem and leaves thinly pilose to glabrous	9
	−Stem and leaves densely pubescent to villous	13
9.	+Leaves thick, fleshy, narrowly linear with distantly dentate margin	8. **P.crassifolia**
	−Leaves thin, broadly ovate or ± lanceolate; margin not as above	10

10.	+Leaves broad ovate	9.**P.major**
	−Leaves ± lanceolate	11
11.	+Stem short but conspicuous. Leaves amplexicaul	10.**P.amplexicaulis**
	−Stem short and inconspicuous. Leaves not amplexicaul	12
12.	+Annual. Spikes densely wooly in the juvenile state	11.**P.lagopus**
	−Perennial. Spikes not wooly	12.**P.lanceolata**
13.	+Petals densely ciliated by long hairs	13.**P.ciliata**
	−Petals glabrous	14
14.	+Perennial. Spikes long, often interrupted	14.**P.albicans**
	−Annual. Spike ovate, dense	15
15.	+Plant acaulescent, 3.5 (-4.5) cm tall. Scapes half as long as the leaves. Bract without a midrib and coriaceous	15.**P.cyrenaica**
	−Plant subcaulescent, 5 (-10) cm tall. Scapes as long as or scarcely exceeding the leaves. Bracts with a distinct brown midrib and membranous	16.**P.ovata**

1. **Plantago phaeostoma** Boiss..& Heldr. in Boiss.Diag. ser. 2.4:71.1859; Durand & Barratte, Fl. Lib. Prodr. 20.1910; Pamp., Prodr. Fl. Cir. 418.1931; Keith, Prelim. Check List Lib. Fl. 781.1965. (Fig. 1, A-B)

Annual herb, 4-8 cm tall, glandular-pubescent, divaricately branched from the neck. Leaves linear, 1-2.5 cm long, entire. Scapes as long as the leaves or shorter; spikes oblong, 2-14 cm long, dense, hirsute. Bracts oblong-linear, obtuse, shorter than the calyx except the lowest one. Sepals oblong, obtuse, equal. Corolla lobes ovate, mucronate with a showy dark spot in the throat.

Type: "Hab. in Aegypto prope Alexandriam" *Samaritani*.

A-7 El-Karsa, coastal road Derna-Ras-el-Hilal, Gebel Akhdar, 11.3.1968, *L. Boulos* 2136 (ULT); Al-Tamimi, S.E. Derna, 13.3.1968, *L. Boulos* 2269 (ULT).

Also recorded from Kussabat, Tarhuna, Benghazi, Ajedabia, Derna, Kenisse, Bomba, Tobruk etc. by Durand & Barratte, (l.c.) and others.

Distribution: Libya, Egypt & Arabia.

Fl. Mar.-Apr.

2. **Plantago afra** L., Sp. Pl. ed. 2:168.1762. (Fig. 1, C & D)

P. psyllium sensu L., Sp. Pl. ed. 2.167.1762, *nom. ambig.*; Durand & Barratte, l.c. 200; Corti, Fl. Veg. Fezzan 237.1942; Keith, l.c. 781; *P. cynops* L., Sp. Pl. 116.1753, *nom. ambig.*

Annual herb, 11-30 cm tall, stem erect, simple or thyrsoid-branched with a mixture of rigid hairs and minute glandular hairs. Leaves opposite, linear-lanceolate, 1.8-4 cm x 2-3 mm, entire or with a few teeth, narrowed at both ends, glabrescent or with short or long hairs mixed, sometimes villous near the base. Inflorescence arises from upper axils, scapes 1-5 cm long; spikes ovate-spherical (0.5-)-0.7-1.5 cm long, glandular hairy. Bracts ovate-lanceolate to lanceolate 3.5-5-(8) mm long, all similar, acute or acuminate with wide scarious margin below, without lateral veins. Sepals 3-4 mm long, hairy and glandular, equal, oblanceolate. Corolla cream to yellow, ± 4 mm long, lobes narrow ovate, acute, 2 mm long. Seeds 2, 2-3 mm long, narrow-elliptic, reddish-brown, shining.

Type: Habitat in regno Tunetano.

A-2 Tagma (near Yafran Broadcasting Station) c. 6 km from Yafran towards Garian, limestone hill, 9.4.1974, *S.I. Ali & S.A. Faruqi* 1877 (ULT); id. *El-Jaley* 229 (ULT); Wadi Elmaiet Project, 28.5.1974, *B. Faris* 371, 372 (ULT); **A-3** 15 km from Benghashir, sandy soil, cult. area, 25.3.1976, *M.A. Terbellou* 16(ULT); id. *M. Shuehdi* 11 (ULT).

Distribution: Canary Islands, Spain, Mediterranean regions, Afghanistan and Pakistan.

Official in British Pharmacopia under Psyllium, used as a cure of dysentery in the tropics.

Fl. Mar.-May *Vern.* English: dark psyllium seeds. Arabic: Aslouj, Harmola, Qotoona, Bizr qotoona.

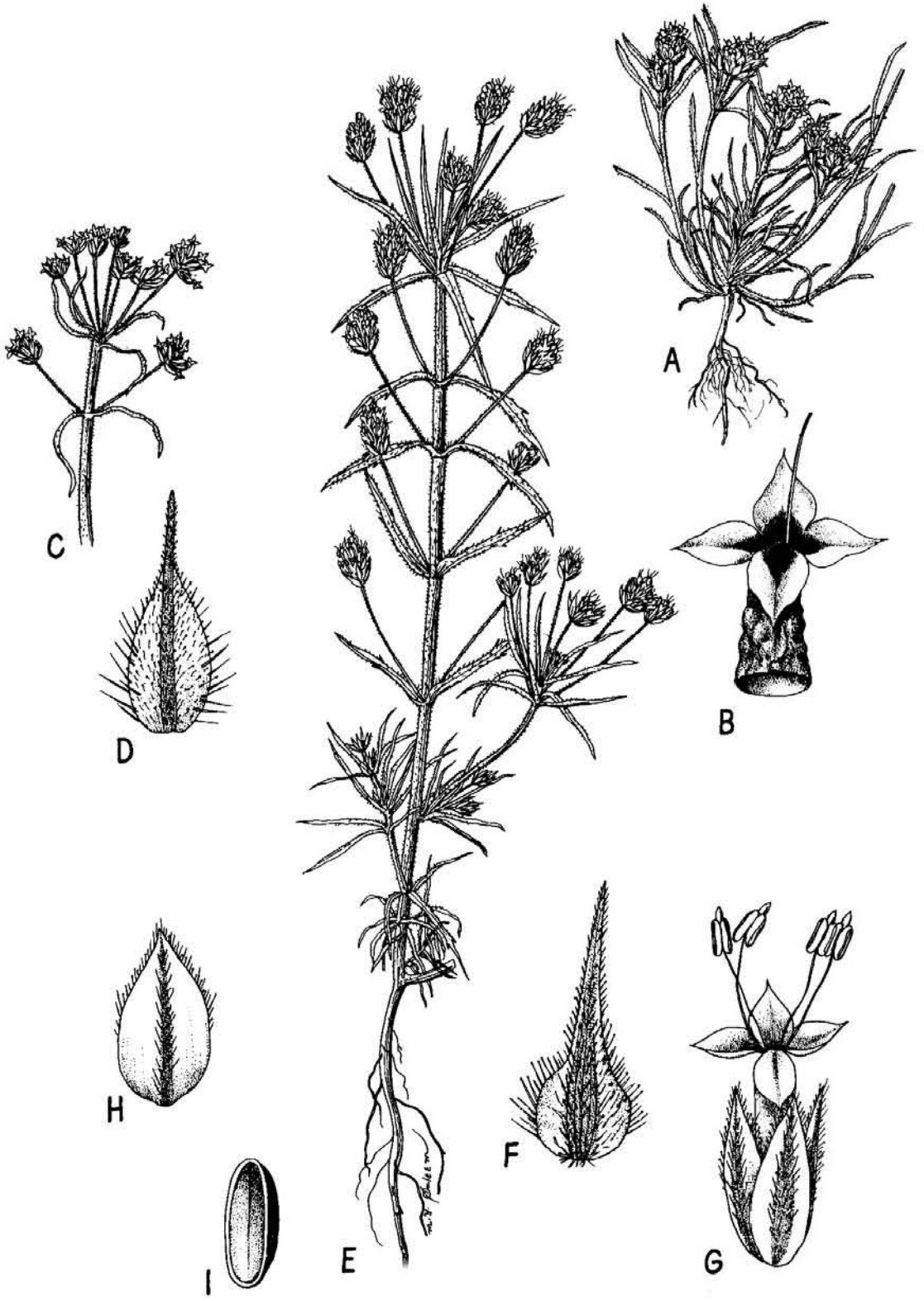


Fig. 1. **Plantago phaeostoma:** A, habit x 0.5; B, corolla x 6. **P.afra:** C, portion of plant x 0.5; D, bract x 6. **P.arenaria:**E, habit x 0.5; F, lowest bract x 6; G, flower x 6; H, upper bract x 6; I, seed x 6.

3. **Plantago arenaria** Waldst. & Kit., Pl. Rar. Hung. 1:51.Tab. 51.1802; Chater and Cartier in Tutin et al Fl. Europ. 4:43.1976. (Fig. 1, E-I)

P. indica L., Syt. Nat. ed. 10:2.996.1759. *nom. illegit.; P. psyllium* Linn., Sp. Pl. 115.1753 (non Sp. Pl. ed. 2.168.1762), *nom. ambig.*; *P. ramosa* (Gilib.) Ascherson, Fl. Brandenb. 547.1864.

Annual herb, (5) 10-50 cm tall, erect, with ascending straight branches, covered with patent hairs ± minutely glandular above. Leaves 3-4 cm x 1.5-2 mm, linear or linear-lanceolate, not fleshy. Scapes 1-2.5 cm; spikes dense 0.5-1.5 cm long, lowest 2 bracts very dissimilar from the upper, up to 5 mm long, wide scarious margined, rotund-ovate with lateral veins at the base, abruptly produced into a linear-subulate apex, straight or suberect, upper part covered with long white, glandular hairs. Upper bracts 3.5-4.5 mm long, ovate-orbicular. Sepals 3.5-4 mm long, obovate-spathulate, densely covered with short glandular hairs, the posterior 3-3.5 mm long, ovate-lanceolate, keeled, short ciliate, keel dorsally hirsute. Corolla tube 3.5-4 mm long, lobes 2 mm long, ovate-lanceolate, acute. Capsule 3-3.5 mm long, seed 2.5-3 mm long, cymbiform, oblong elliptic, reddish brown, shining.

Type: Described from Hungary.

A-2 Arromeia, 30.3.1975, *K. Sefao* 285 (ULT); **A-3** 15 km from Ben Gashier, erect plant, flower with dark spot, 25.3.1976, *Amina A. Aziz* 6 (ULT); *M. Zarmouh* 19 (ULT); Tarhouna, 30.3.1975, *Zenab A. Raya* 221 (ULT); Sharshara, erect 35 cm, flower red in colour, 25.3.1976, *A.W. Muftah* 31 (ULT); Wadi Elgenine, 20.3.1974, *G.H. Faris* 121 (ULT); **A-4** Gulf of Sirte, between Misurata and Bu-Gren, 20 m, poor sandy barley fields in Sebkha, annual, 23 March, 1970, *P.H. Davis* 49844 (ULT).

Distribution: Widely distributed in Europe, N. Africa (Morocco to Egypt), S.W. Asia, Iran, Pakistan and the mountains of Tian Shan.

Seeds are used as a cure for dysentery.

Fl. Feb.-Mar. *Vern.* Asloug, Habbel-baraagheet.

4. **Plantago squarrosa** Murr., Comment. Gottin 4(Cl. Phys.):38.1782; Post, Fl. Syr. Pal. & Sin. (ed.2).2.423. 1933; Keith, l.c. 781; Chater and Cartier in Tutin et al, l.c. 43.

P. aegyptica Jacq., Coll.1.45.1786.

Annual herb, 20-30 cm tall, decumbent or ascending, branching from neck, papillose iry. Leaves 2-4 (8) cm x 1-3 (-5) mm, linear to linear- oblong, freshy. Scapes axillary 1-5 mm; spikes 0.5-2 cm long, oblong or cylindrical. Lowest 2 bracts 5-10 mm long, very narrowly scarious margined, lanceolate-caudate, recurved, with lateral veins at the base. Upper bracts 3-4 mm, obovate-oblong, as long as the calyx or longer. Sepals unequal, the anterior oblong-spathulate, the posterior 2.5-3 mm long, ovate, keeled. Corolla tube 3.5-4 mm; lobes 2 mm, ovate-oblong, acute. Capsule 2-2.5 mm long; seeds c. 2 mm long, cymbiform, ovate-elliptic.

Type: Not indicated (probably described from Syria and Egypt).

Reported from Tripolitania by Keith, (l.c.).

Distribution: Crete, Greece, Libya and Egypt.

Usually found in dry and sandy places.

Fl. Apr.-May *Vern.* Krain el djedja, sbed

5. **Plantago notata** Lag. Gen. Sp. Nov. 7.1816; Durand & Barratte, l.c. 197; Pamp., l.c. 414; Keith, l.c. 780. (Fig. 2)

P. syrtica Viv., Fl. Lib. Spec. 7.t.3.1824.

Annual acaulescent herb with rosette leaves, 2.5-10 cm tall. Leaves sessile, 2-14 x 0.2-1.6 cm, linear-lanceolate, entire or remotely lobed, 3-5-veined, sparsely or densely hirsute. Scapes 1.2-7 cm long, terete, appressed-pubescent, spikes 0.6-3.5 cm long, dense, ovate-cylindrical. Bracts 2.5-3 mm long, ovate-orbicular, villous on keel, long ciliated at apex. Sepals c. 2 mm long, ovate, obtuse, long ciliate at apex. Corolla tube c. 2 mm long, glabrous, lobes 1.5 mm long, ovate-orbicular, buff coloured with a brown spot in the throat, obtuse. Style long, filiform, exserted. Capsule 2-5 mm long, broadly rotund. Seeds 2, c. 2 mm long, cymbiform.

Type: "Hispania: Pulpi inter Cuevas et Heliocrata".

A-2 Garian outside Youth Centre, limestone hill exposed place, 11.4.1974, *S.I. Ali & S.A. Faruqi* 2108 (ULT); id., *M. Godeh* 289 (ULT).

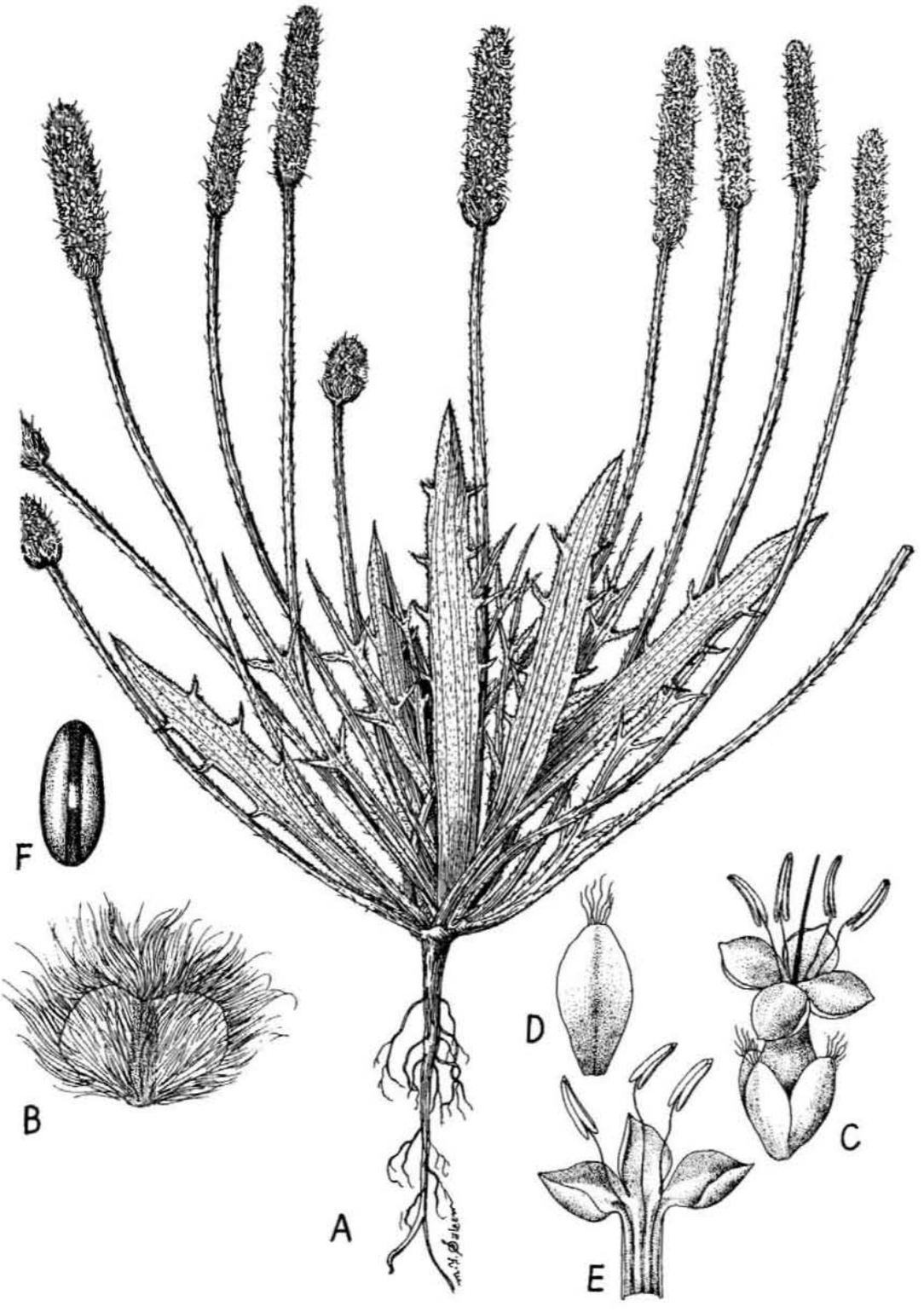


Fig. 2, **Plantago notata:** A, habit x 0.5; B, bract x 8; C, flower x 6; D, sepal x 10; E, corolla spread open with stamens x 6; F, seed x 10.

Distribution: S. Spain, N. Africa (Algeria, Tunisia, Libya, Egypt), Iraq, S. Iran and Transcaucasia.

Fl. Mar.-July

6. **Plantago crypsoides** Boiss., Fl. Or. 4:888.1879; Durand & Barratte, l.c. 200; Pamp., l.c. 417; Keith, l.c. 778. (Fig. 3)

Annual, acaulescent herb with a single rosette of leaves. Leaves pinnatifid-pinnatisect, linear-lanceolate, hirsute, much longer than the peduncles. Scapes many, arising rom the centre of the leaf rosette, very much swollen at the base. Spikes dense, short, ovoid or oblong, green, nearly as long as the scapes. Bracts oblong-ovate, sparsely hairy with wide scarious, ciliate margin. Corolla densely hairy in the neck.

Type: Not indicated (probably from Alexandria).

A-8 C: Tamimi to Omm Rezem 5-50 m, sandy wadis (flooded last autumn), annual, 30 March, 1970, *P.H. Davis* 50310 (ULT); **B-6** Qaminis-Benghazi road, 9.3.1968, *L. Boulos* 1990 (ULT); 79 km from Ajdabia on way to Bengházi, 3.5.1978, *A. El-Gadi, Jafri & Siddiqi* 1328 (ULT).

Also reported from Tripoli, Benghazi, Fueihat, Shallabi el Bebas, Casa Auari, Skleidima, Derna, Tobruk by Pamp., (l.c.) and Keith, (l.c.).

Distribution: Libya & Egypt.

Fl. Jan.-April

7. **Plantago coronopus** L., Sp. Pl. 115.1753; Durand & Barratte, l.c. 199; Pamp., l.c. 416; Keith, l.c. 778.(Fig. 4)

Annual or perennial, acaulescent herb, up to 3-15 (-20) cm tall, hirsute, hairs ± appressed. Leaves linear to lanceolate, 1-10 (-12) cm x 1.5-5 mm, pinnate-dentate to 1-2-pinnatifid; lobes linear or lanceolate, acute, rarely entire, glabrous or pubescent. Scapes usually many, 1.5-5 (-8) cm long, decumbent or ascendent, longer or sometimes shorter than the leaves. Spikes narrow cylindrical, dense. Bracts ovate, margin scarious, narrow, subacute, or abruptly attenuate into a long apex, shorter than or as long as calyx, short appressed hairy. Anterior sepals elliptic, 2-3 mm long, margins scarious, ciliate,

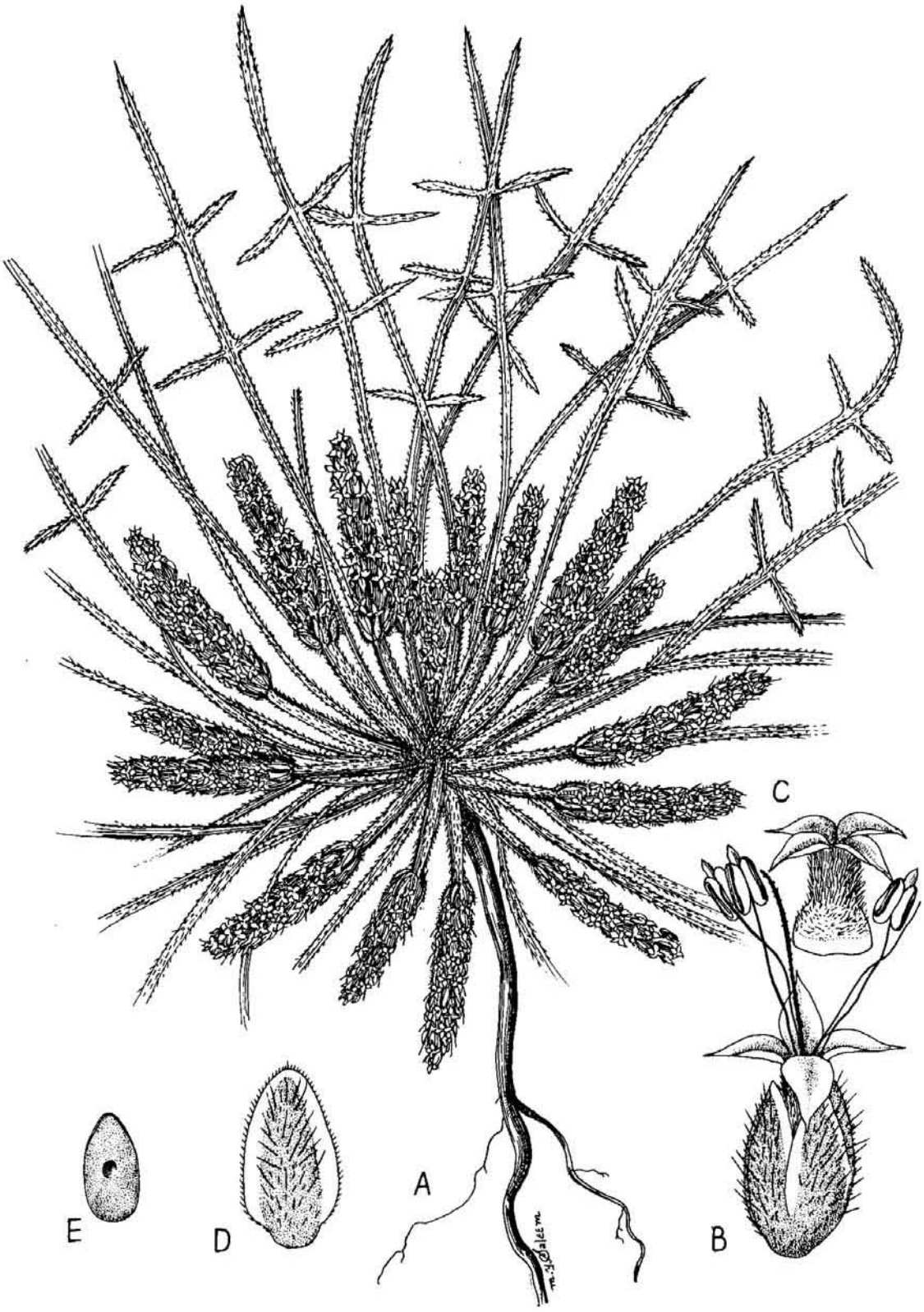


Fig. 3, **Plantago crypsoides:** A, habit x 1.5; B, flower x 10; C, corolla showing hairy neck x 8; D, bract x 8; E, seed x 15.

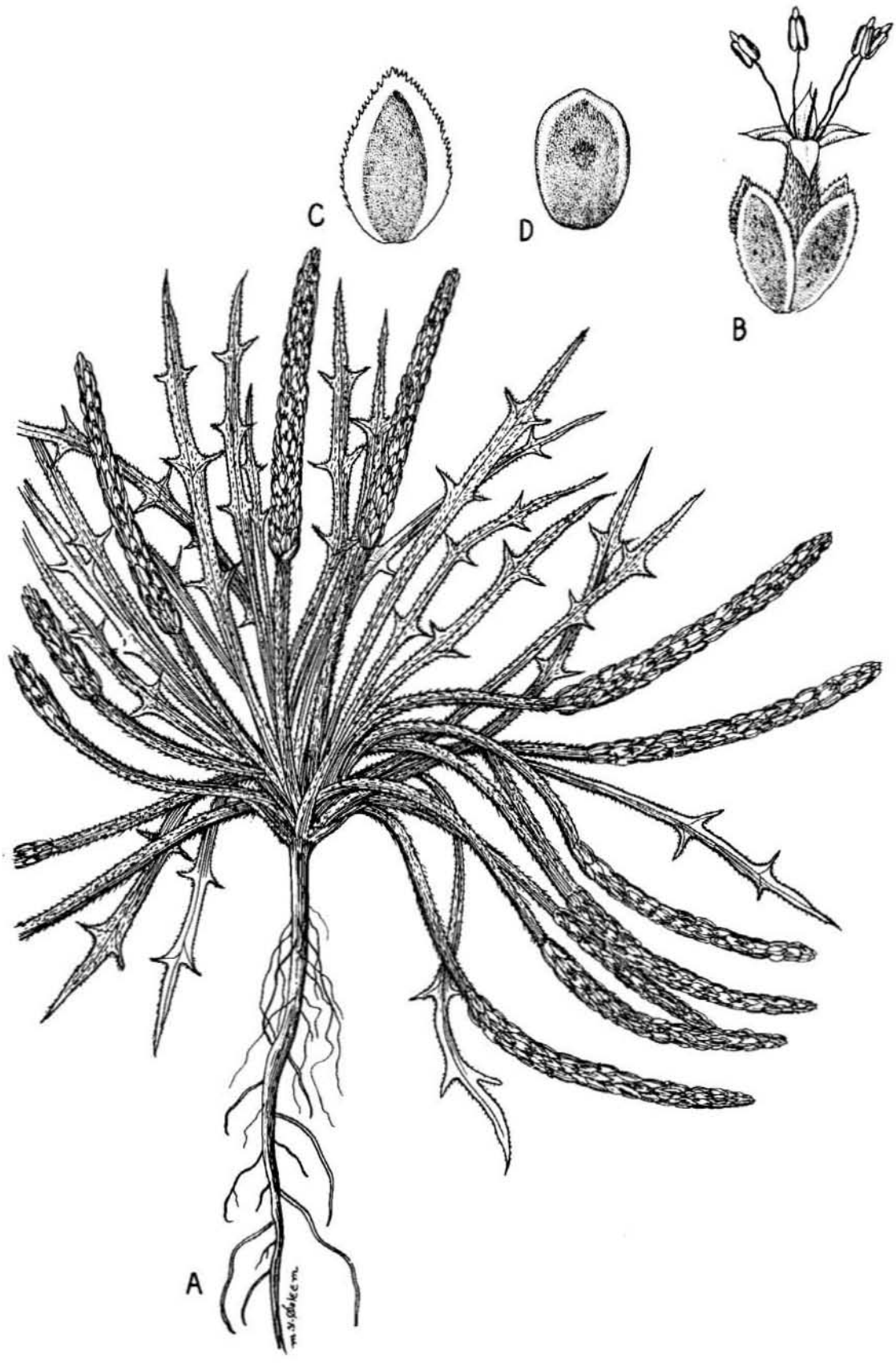


Fig. 4, **Plantago coronopus:** A, habit x 1; B, flower x 6; C, sepal x 8; D, seed x 20.

keeled, posterior sepals ovate, c. 3 mm long, slightly ciliate. Corolla-tube pilose, lobes ovate-lanceolate, acuminate. Capsule 3-locular. Seeds 3-6, c. 1 mm long, cymbiform.

Type: "Hab. in Europae glareosis", (LINN).

A-2 Between Bir Shakshuk and Qasr Alhaj, common in sandy ground, 29.3.1976, *S.M.H. Jafri* 6618 (ULT); Farwa Island near Zawara, 1.4.1971, *2nd year Ecology students* 13 (ULT); Al Awenia, c. 7 km from Rumia near barley field, 11.4.1974, *S.I. Ali* 2058 (ULT); 5 km after Asaba (c. 24 km from Garian) near cult. field, 9.4.1974, *S.I. Ali* 1758 (ULT); **A-3** Sharshara, prostrate herb, 25.3.1976, *A.M. Dlango* 42 (ULT); Tripoli, barley field in front of Faculty of Science, University of Al-Faateh, herb, rosette, spike, 17.4.1972, *Samira, A. Moti, Nuria* 20 (ULT); id., *A.S. Sharif et al* 23 (ULT).

Distribution: Europe from S. Scandinavia to England and Mediterranean regions to W. Asia. Introduced in N. America, Australia & Newzealand, Iran, Afghanistan & Pakistan.

Fl. Mar.-July *Vern.* Rijil-el-Ghrab, Aghis, Krah digiagia, Wideina.

8. **Plantago crassifolia** Forskal, Fl. Aeg.-Arab. 31.1775; Durand & Barratte, l.c. 199; Keith, l.c. 778. (Fig. 5)

Perennial, acaulescent herb. Leaves fleshy, narrow-linear, 3-nerved, entire or remotely dentate, glabrous or sparsely papillose or hirsute at sheathing base. Scapes longer than the leaves, spikes cylindrical, somewhat lax, 1.5-5 cm long. Bracts ovate, concave, narrow margined. Sepals obtuse, broad margined, carina of the posterior lobes green, expanded into a narrow scarious margin. Corolla tube appressed-hirsute, lobes ovate, acute. Capsule 2-celled, each cell 1-seeded.

Type: Not indicated (probably Alexandria).

A-2 Gebel Nefousa, 23.3.1971, *L. Boulos* 3525 (ULT); **A-3** 10-20 km E. Tripoli along the coastal road to Khoms, 22.11.1966, *L. Boulos* 1008 (ULT); **A-4** Tawurgha, saline flat, caespitose, inflorescence c. 5-7 cm tall, 23.3.1972, *S.I. Ali* 31 (ULT).

Also reported from Tripoli, Tajura & Ain Zara by Keith, (l.c.).

Distribution: Portugal, Spain, France, Italy, Yugoslavia, Albania, Greece, Turkey, Mediterranean region of N. Africa from Morocco to Egypt and Palestine.

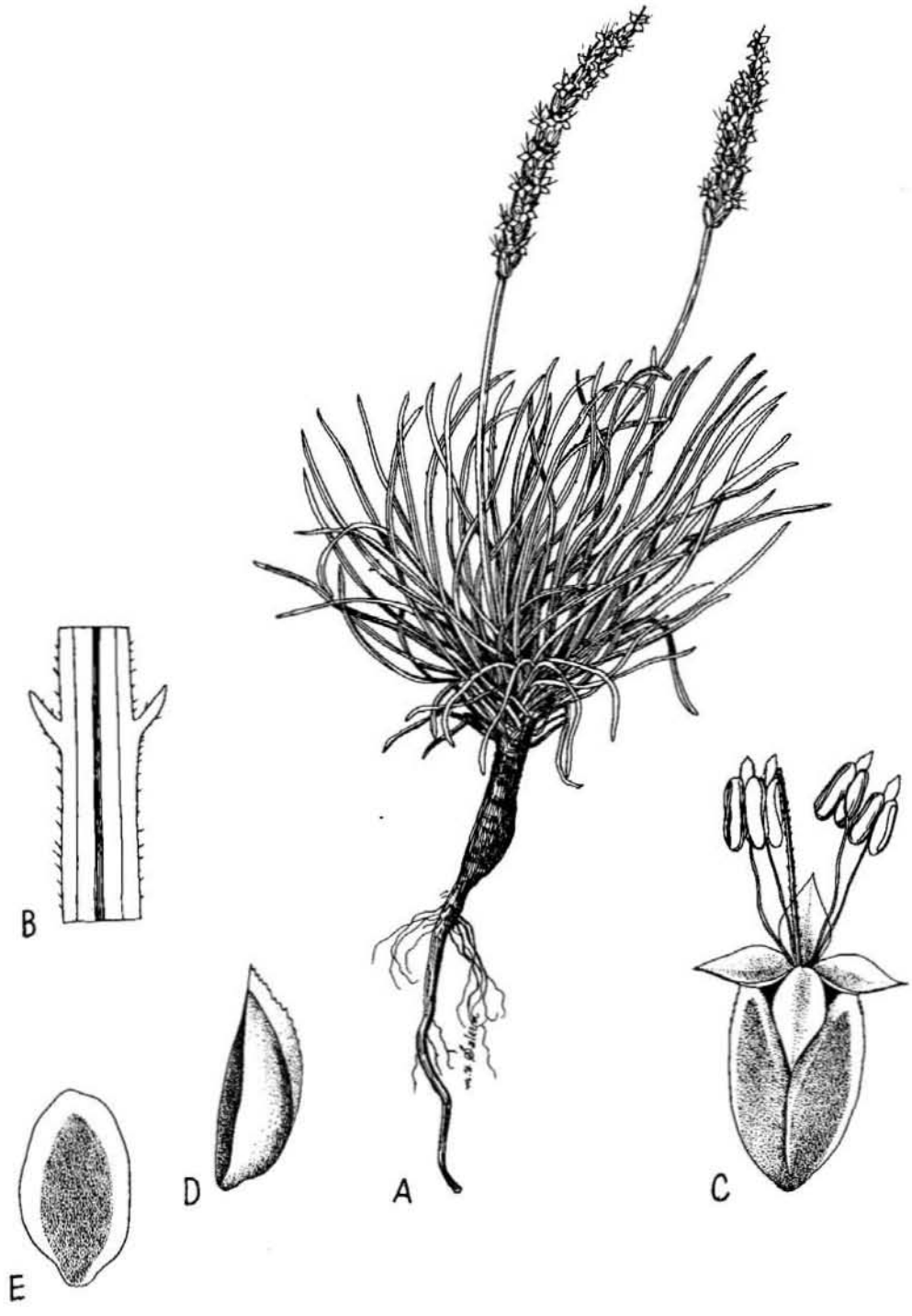


Fig. 5, **Plantago crassifolia:** A, habit x 1; B, part of leaf showing venation and ciliate margin x 10; C, flower x 8; D, sepal x 8; E, seed x 8.

Fl. Mar.-July

9. **Plantago major** Sp. Pl. 112.1753; Durand & Barratte, l.c. 197; Pamp., l.c. 413; Keith, l.c. 780. (Fig. 6)

Perennial acaulescent herb up to 60 cm tall. Leaves usually in one or few rosettes, with long sheathing petiole (1.5-) 5-15 (-30) x (1-) 4-6 (-16) cm, ovate to ovate- oblong, entire or sinuately dentate, 3 to 7-veined, glabrous, apex obtuse. Scape as long as or exceeding the leaves, appressed hairy; spikes linear cylindrical, 5-50 (-60) cm long, dense. Bracts 1-2 mm, ovate, concave, carinate. Sepals 1.5-2.5 mm, glabrous, green, narrow scarious argined. Corolla-tube c. 2 mm, glabrous, lobes c. 1 mm, ovate, subobtuse. Stamens 2-3 mm long, exserted. Capsule ovoid, 2-2.5 mm, seeds (4-) 6-34, 1-1.6 mm, ellipsoid or ellipsoid-trigonous, rugose.

Type: Herb. Linn. 144.1 (LINN.).

A-3 c. 85 km east of Tripoli on way to Tajura-Arada road, a plant with large broad leaves and long scapes, growing as a weed in cult. field. Very common near water, 18.6.1978, *Fathi, B.R.* 240 (ULT).

Also reported from Shahat, Maatan Borghu, Derna by Keith (l.c.).

Distribution: Europe, N. & Central Asia, and introduced all over the world.

Very large, and common near water.

Fl. Mar.-Sept.

10. **Plantago amplexicaulis** Cav., Icon. Descr. 2:22, Tab. 125.1793; Durand & Barratte, l.c. 199; Pamp., l.c. 416; Keith, l.c. 777. (Fig. 7)

Annual up to 5-15 (30) cm tall. Leaves2-15 x 0.2-(-1.5) cm spirally arranged, lanceolate to linear-lanceolate, entire or distantly denticulate, amplexicaul, vaginate, 3- to 5-veined, sparsely or densely, long patent hairy, turning black on drying. Scapes axillary erect or slightly arcuate, 4.5-25 (-30) cm long; spikes 1-2 (2.5) cm long, dense, ovate to cylindrical. Bracts 5-6 mm long, broadly ovate-oblong, obtuse, scarious, midrib purplish-brown. Sepals unequal, anterior ones 3.5-4 mm long, with a purplish-brown, strongly hairy keel, posterior sepals 3-3.5 mm, scarious, concave, faintly veined. Corolla-tube 3-4

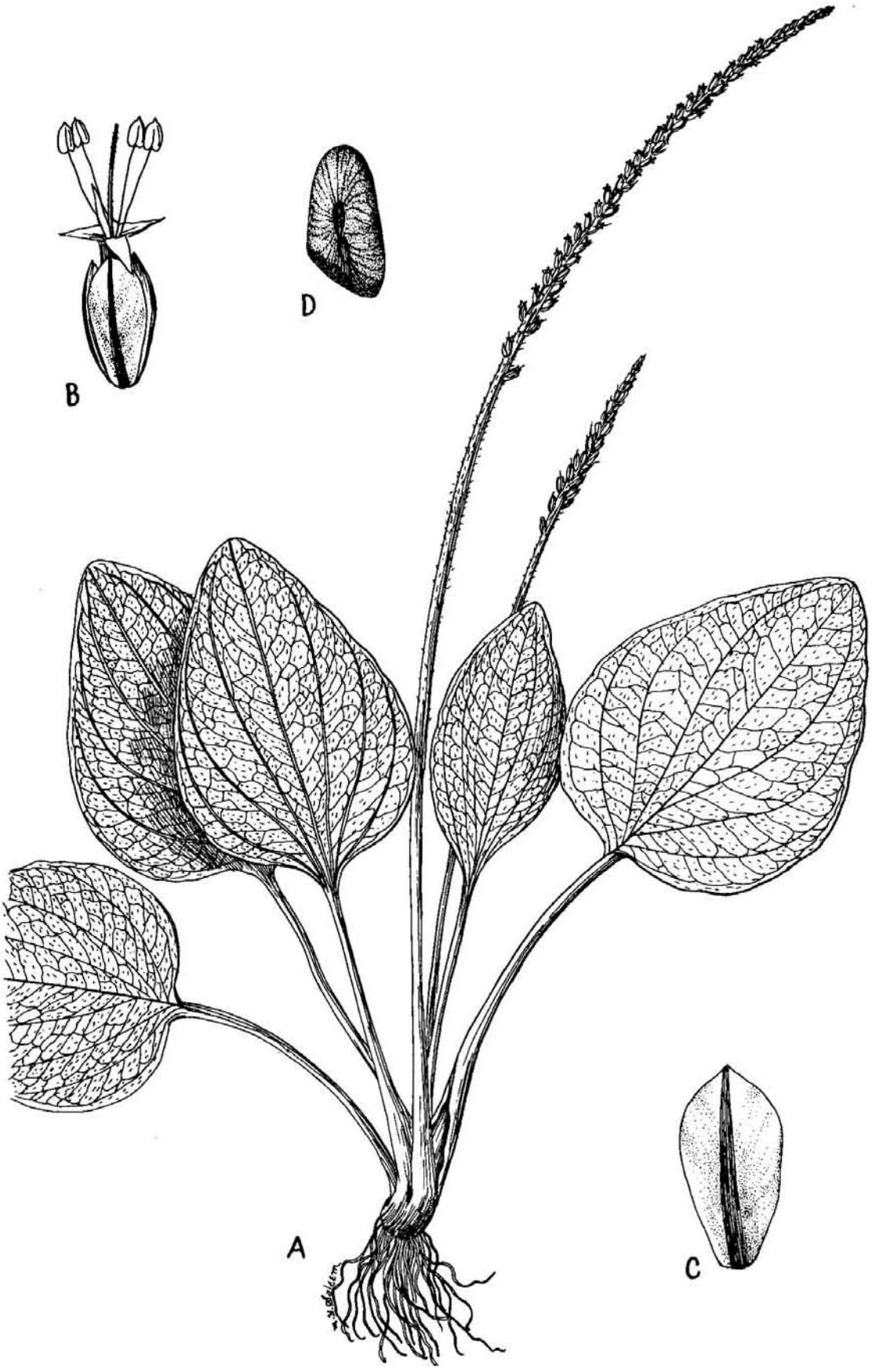


Fig. 6, **Plantago major:** A, habit x 0.5; B, flower x 10; C, sepal x 15; D, seed x 15.

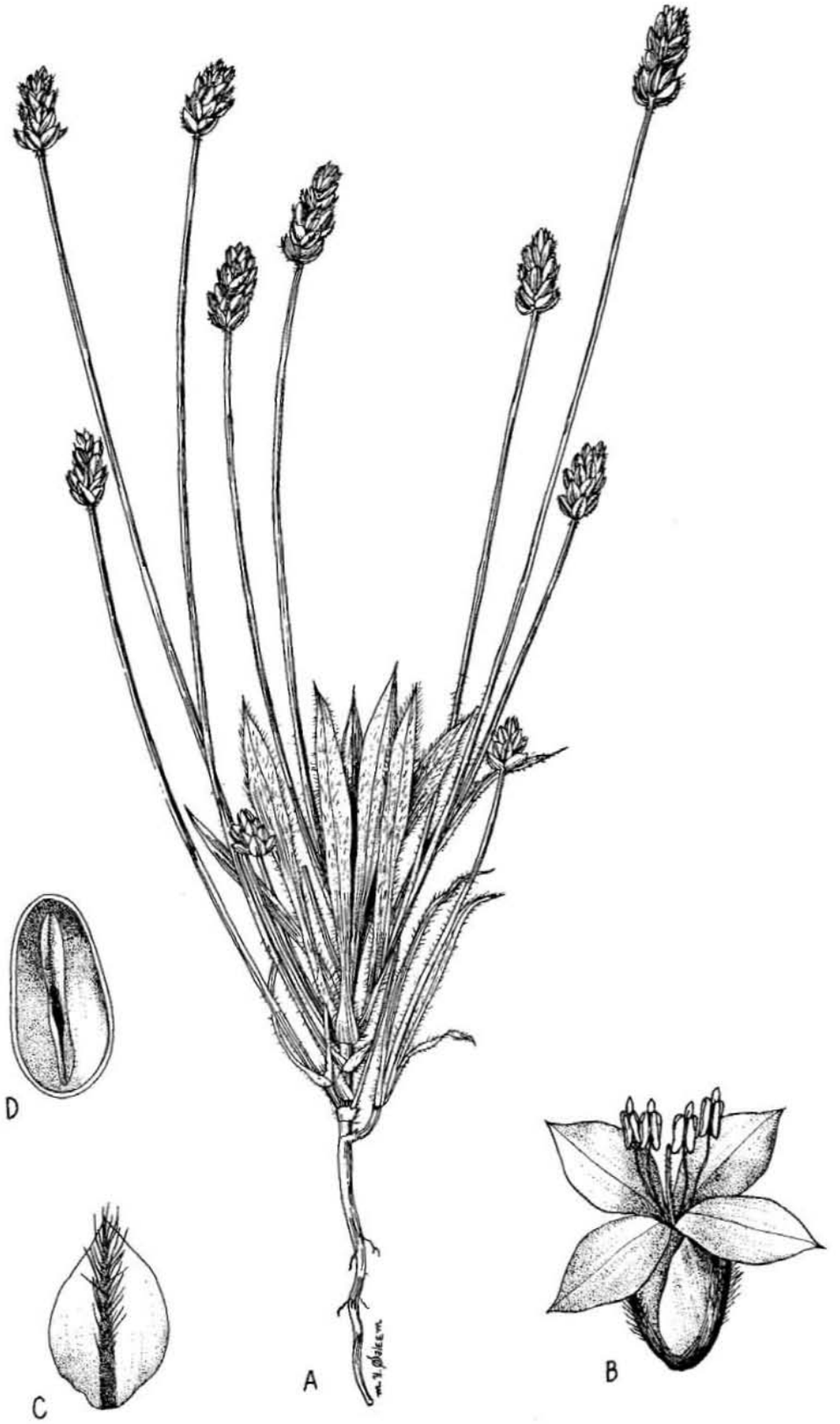


Fig. 7, **Plantago amplexicaulis:** A, habit x 0.5; B, flower x 5; C, sepal x 5; D, seed x 5.

mm, glabrous; lobes c. 3 mm, ovate-oblong, acute.Capsule 5-6 mm. Seeds 3-5 mm, cymbiform.

Type: "In Saguntina arcis vetustissimo muro", *Cavanilles*.

A-2 Gebel Nefousa, 23.3.1971, *L. Boulos* 4543 (ULT); Abughilan, rocky soil, erect, 15 cm, grey coloured flowers, *M.A. Terbellou* 67 (ULT); Bir Elghanam, clayey soil, 5.4.1974, *S.I. Ali & S.A. Faruqi* 291 (ULT); **B-1** Wadi Malah, c. 10 km from Nalut, scapose, scapi c. 30 cm, 4.5.1972, *S.I. Ali & S.A. Faruqi* 252 (ULT).

Distribution: Spain, Algeria, Tunisia, Libya, Egypt, Arabia, Iran, Pakistan & W. India.

Fl. Mar.-June *Vern.* Alesnab

11. **Plantago lagopus** L., Sp. Pl. 114.1753; Durand & Barratte, l.c. 198; Pamp., Fl. Trip. 415.1931; Keith, l.c. (Fig. 8)

P. lusitanica L., Sp. Pl. ed. 2.1667.

Annual herb up to 30 cm tall. Stem penta-angular, hairy. Leaves in rosettes or sometimes alternate, decumbent to ascendent, broad lanceolate, 5-16.5 (-27) x 1.1-3.5 (-4) m, tapering at both ends, acute, attenuated into narrow petioles, usually 5-nerved, pilose to glabrous. Scapes ± flexuose, arcuate, 10-30 (-40) cm long. Spikes dense, ovoid, later becoming short cylindrical 1-3 (-4.5) cm long, shortly 5-sulcate. Bracts lanceolate to ovate-lanceolate, 3-4 mm long, hirsute, pilose, keeled. Anterior sepals connate for more than half their length, densely villous at the apices with long hairs. Corolla bilobed, lobes c. 2 mm long, long-acuminate, sparsely hairy. Capsule c. 2.5 mm long. Seeds 2, c. 2 mm long, ellipsoid.

Syntypes: "Hab. in Gallia Narbonesi, Hispania-Lusitania"

A-2 Abo-Ghelan, 29.4.1976, *A.M. Dlango* 84 (ULT); id., *Fathi, B.R.* 91 (ULT); id., *M.M. Shuehdi* 66 (ULT); Manghel Behar, 2 km before Kaleba, 17.3.1973, *S.I. Ali* 1854 (ULT); **A-3** Sharshara, 25.3.1976, *A.M.Dlango* 41 (ULT); id., *Amina Gammudi* 287 (ULT); id., *Fathi, B.R.* 32 (ULT); 8 km from Tripoli University, 16.2.1976, *Fathi, B.R.* 70 (ULT); Tripoli University Campus, 20.3.1976, *S.M.H. Jafri* 1208 (ULT); id., *M. Godeh* 2 (ULT); id., *S.M.H. Jafri* 6461 (ULT); 15 km from Bengashir, 25.3.1976, *Amina A.Aziz* 3 (ULT); **A-6** Around El Abiar, 50-60 km E. of Benghazi, 300 m, edge of wheat field on low

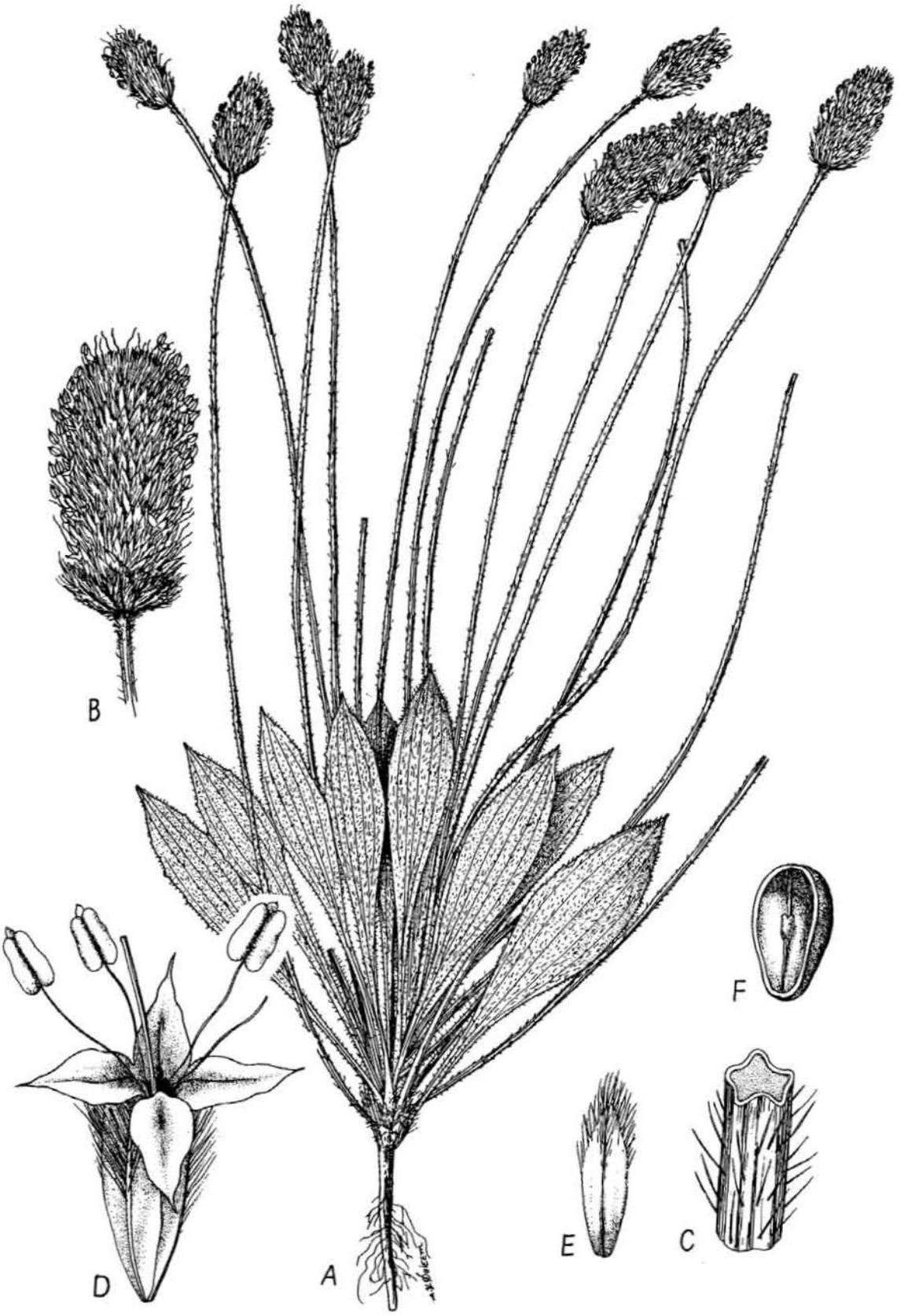


Fig. 8, **Plantago lagopus:** A, habit x 0.5; B, spike x 1.5; C, part of stem x 10; D, flower x 10; E, anterior sepal x 8; F, seed x 13.

plateau, 20 March, 1970, *P.H. Davis* 59885 (ULT); **A-7** Sbag, 2.3.1973, *A.S. Sharif* 110 (ULT); id., *S.I.Ali & S.A. Faruqi* 1208 (ULT); id., *Samira Tushani* 115 (ULT); Mirawa, 2.3.1973, *S.I. Ali & S.A. Faruqi* 1202 (ULT); Al Gubba, 1.3.1973, *S.I. Ali & S.A. Faruqi* 1202 (ULT); **B-2** Rumia, limestone hillock slope, 10.4.1975, *S.I. Ali & S.A. Faruqi* 2699 (ULT); id., *K. Sifaw* 279 (ULT).

Distribution : Widely distributed all over the Mediterranean region to Afghanistan & Pakistan.

Fl. Feb.-July *Vern.* Widna

12. **Plantago lanceolata** L., Sp. Pl. 113.1753; Durand & Barratte, l.c. 198; Pamp., l.c. 415; Keith, l.c. 770. (Fig. 9)

P. orientalis Stapf. in Denkschr. Akad. Wiss. Wien. Math. Nat. Kl. 50:33.1885.

Acaulescent perennial herb, 30 (-60) cm tall. Leaves thin ± narrow lanceolate or narrow elliptic, 2-25 (-30) cm x 0.5-3.5 (-5) cm, sometimes long attenuate, apex acute, with narrow petioled base, 3-5 (-7)-nerved, appressed pubescent along the nerves or glabrous, entire or slightly dentate. Scapes erect, 15-30 (-60) cm long, twice as long as the leaves, strongly 5-sulcate, appressed hairy. Spikes dense, short, conical-cylindric or subglobose, 4.5 (-8) cm long. Bracts usually ovate, 2.5-3.5 (-5) mm long, ovate, glabrous or shortly hairy. Sepals 2.5-3 mm long, glabrous or villous at the margin; anterior sepals connate more than half their length, obovate, bilobed. Corolla tube 2-3 mm long, glabrous, lobes narrow, 1.5-2.5 mm long, lanceolate-ovate, acute or acuminate, glabrous. Stamens 3-5 mm long, exserted, anthers yellow. Capsule 3-4 mm; seeds 2, cymbiform, c. 2 mm long, smooth.

Type: ex Europae campis sterilibus.

A-7 13 km from Ras-el-Hilal on way to El-Gubba, 13.4.1979, *Abdel Ben Omran et al* 72 (ULT).

Also reported from Tripoli, Gubba, Derna, Wadi Derna, Seghifa, Tobruk by Durand & Barratte (l.c.) and others.

Distribution: N. Africa, Europe, S. Asia to the mountains of Tien Shan, Pamir Alaj and Australia.

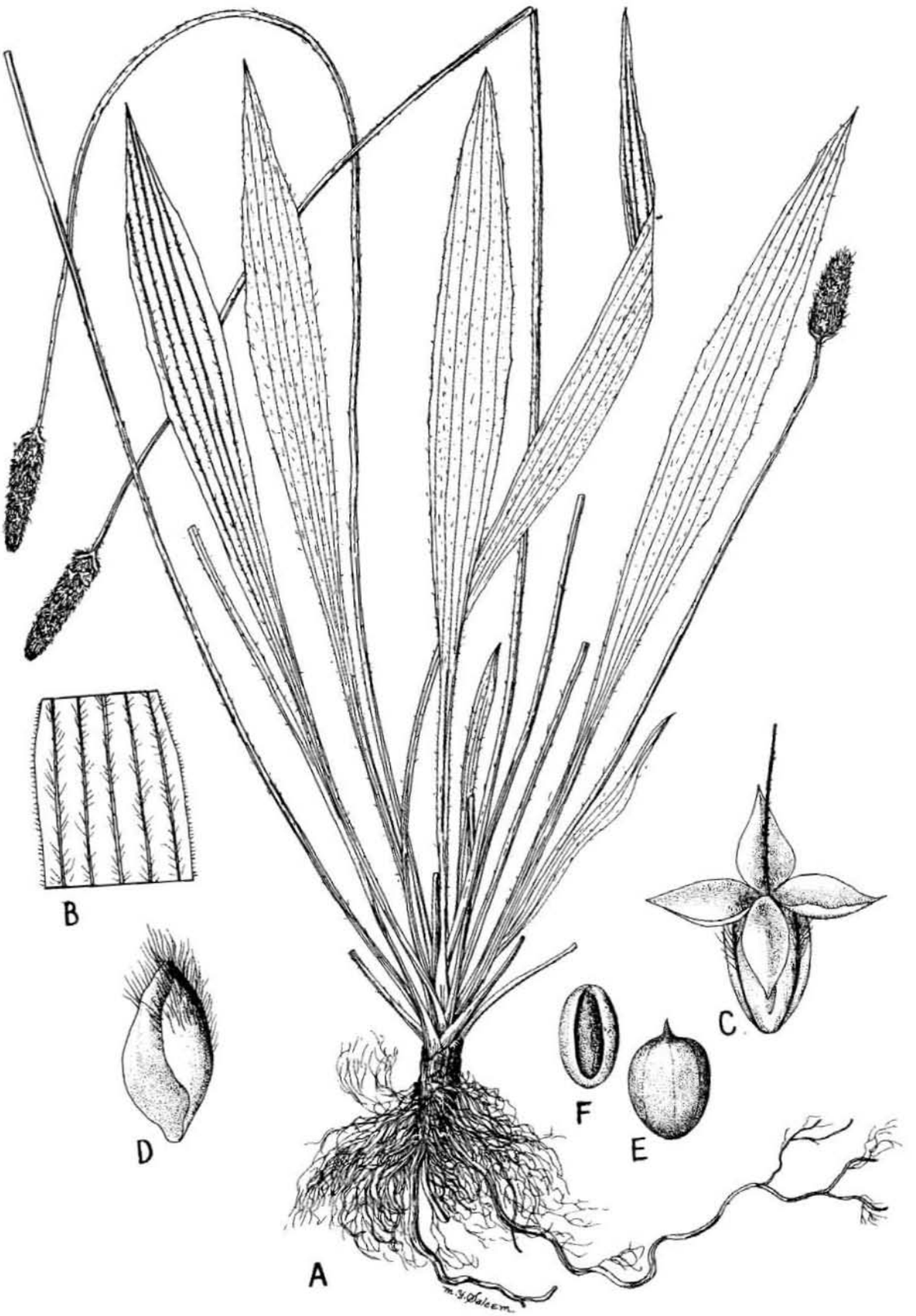


Fig. 9, **Plantago lanceolata:** A, habit x 0.5; B, part of leaf from ventral side showing venation and hairs along the veins x 1; C, flower x 8; D, sepal x 8; E, fruit x 8; F, seed x 8.

An exceedingly variable species due to its vast distribution all over the world. Seeds are purgative and haemostatic. Leaves are sometimes applied to wounds.

Fl. March-July

13. **Plantago ciliata** Desf., Fl. Atlant. 1:137, tab. 39, Fig. 3.1798; Durand & Barratte, l.c. 198; Pamp., l.c. 415; Keith, l.c. 777 (Fig. 10).

Annual, acaulescent or subacaulescent, branched herb, 4-11 cm tall, densely floccose. Leaves in rosettes, 1.5-9 x 0.4-1.1 cm, obovate or lanceolate-spathulate, cuneate, base vaginate-dilated, apices hardened, acutish, entire, floccose. Scapes 1-9 cm long, thick, decumbent, ascendent or arcuate, densely villous; spikes 1-2 cm long, dense, ovoid or short cylindrical. Bracts ovate, obtuse, 3.5 mm long, with a green midrib, margin ciliate, keeled. Sepals obovate, 3 mm long, villous at margin and apex. Corolla lobes patent, lanceolate, 1.5 mm long, acute. Capsule subglobose. Seeds 2, cymbiform, pale brown.

Type: "In arenis deserti prope Cafsam et Elhammah".

A-3 Masrata, 30.3.1975, *Zenab A. Raya* 176 (ULT); **B-1** c. 9 km after Sinawan, c. 109 km from Nalut (Gadames-Nalut road), sandy roadside with small stones, 26.2.1975, *S.I. Ali* 217 (ULT); **B-6** 17 km from Ajdabia on way to Aujila, 16.4.1978, *Ramadan, Fathi & Siddiqi* 326 (ULT); **C-4** 30 km from Hun towards Tripoli, sandy roadside depression, 2.4.1973, *S.I. Ali* 1553 (ULT); c. 95 km from Hun, Wadi Soda main dried water course, 1.4.1973, *S.I. Ali* 1484 (ULT); c. 2 km from Weska, Wadi Zaggar, 26.3.1975, *S.I. Ali & S.A. Faruqi* 2343 (ULT).

Distribution: Canary Islands, North and S.W. Africa.

Fl. March-June

14. **Plantago albicans** L., Sp. Pl. 114.1753; Durand & Barratte, l.c. 197; Pamp., l.c. 413; Keith, l.c. 776. (Fig. 11)

A perennial herb, 6-40 (-45) cm tall. Root-stock woody with branches bearing terminal leaf rosettes. Leaves broadly lanceolate to narrowly linear, entire or wavy, faintly 3-veined, sericeous wooly. Scapes much longer than leaves usually twice as long, terete, tomentose; spikes cylindrical, dense above, lax below. Bracts concave, 3.5-4 mm long, ovate, scarious, shortly villous. Sepals 3-3.5 mm long, ovate, almost free, slightly keeled to the tip, with wide scarious margin, villous at the apex. Corolla tube 3-3.5 mm long,

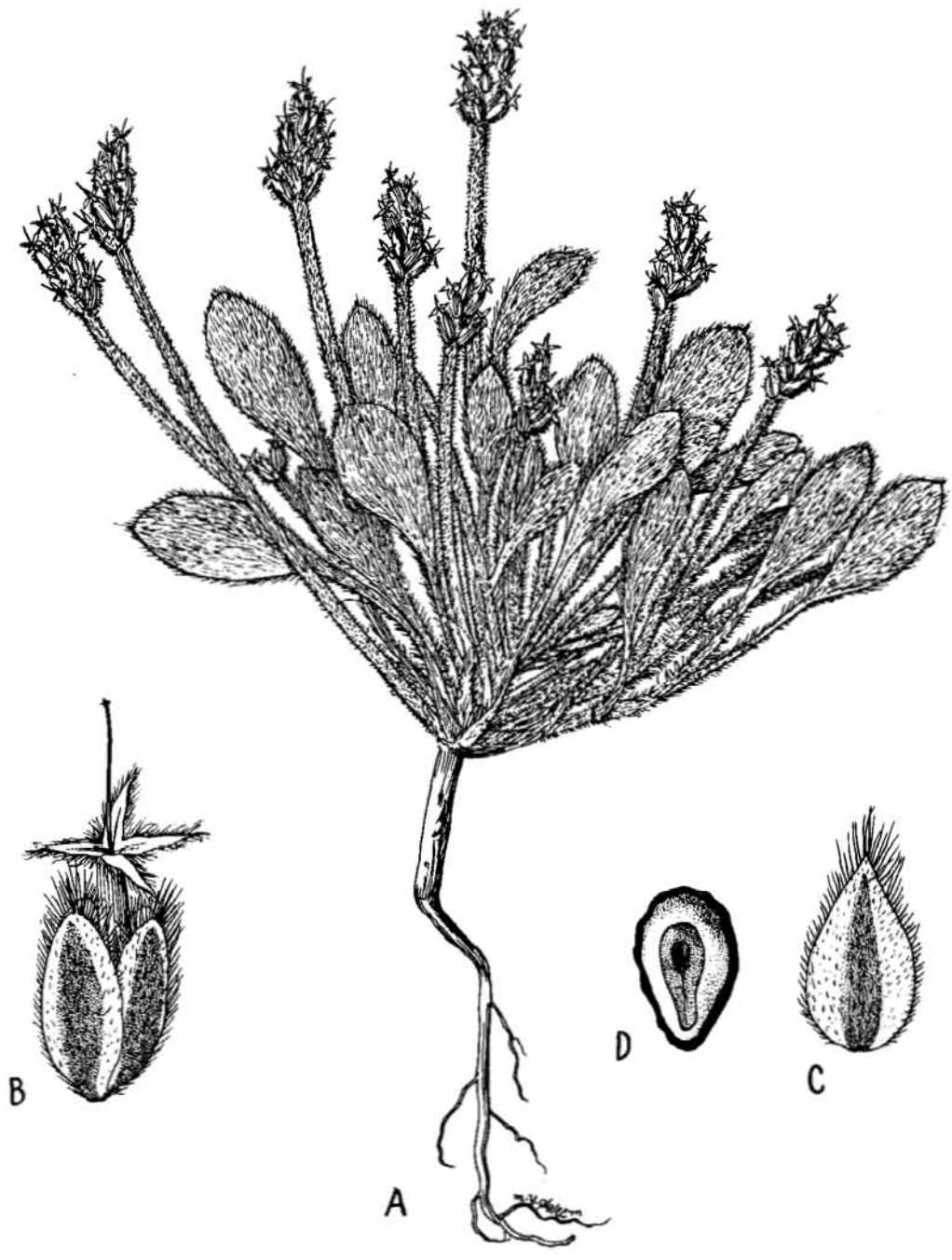


Fig. 10, **Plantago ciliata:** A, habit x 1; B, flower x 8; C, bract x 8; D, seed x 20.

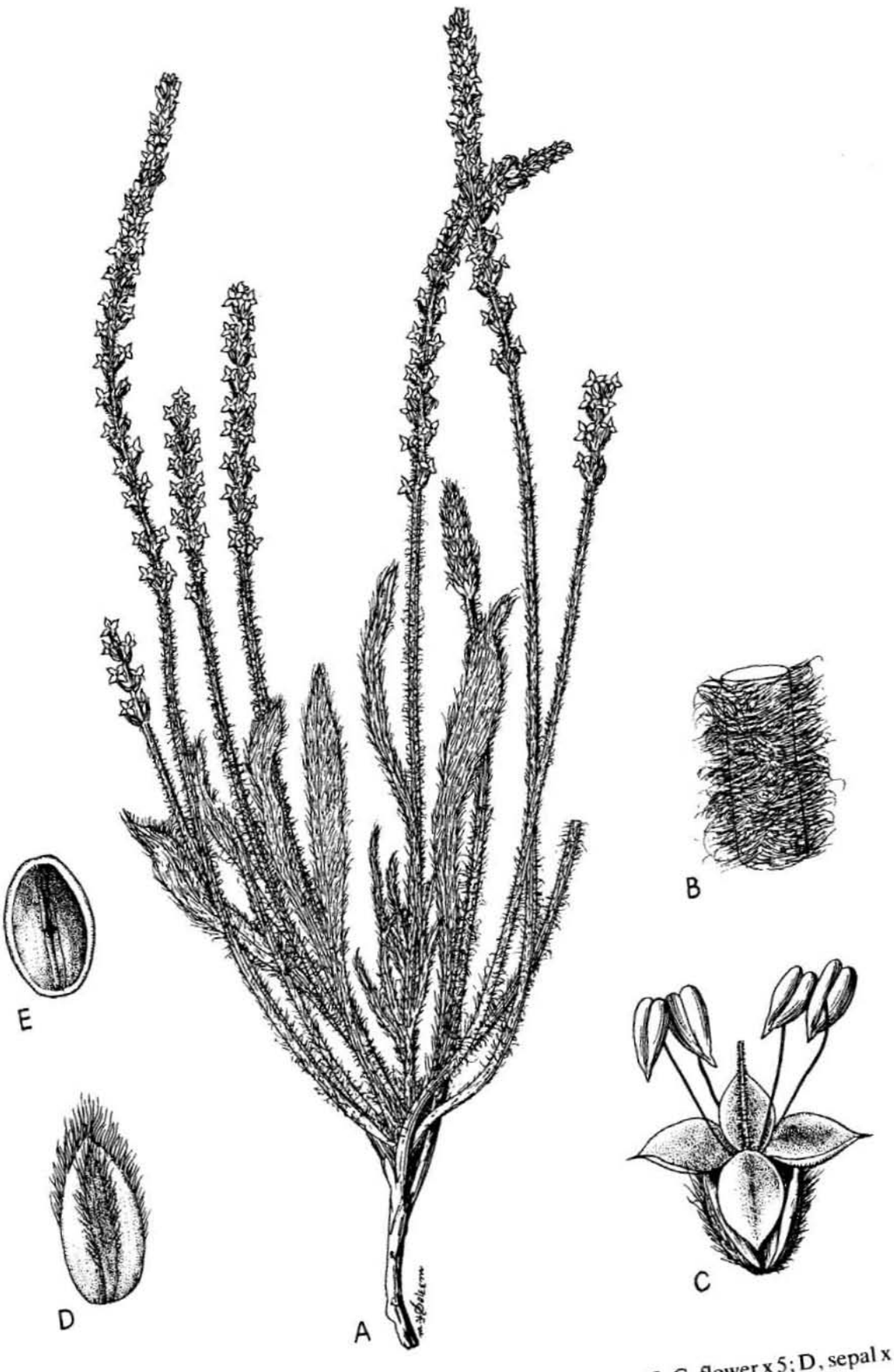


Fig. 11, **Plantago albicans:** A, habit x 0.5; B, part of stem x 5; C, flower x 5; D, sepal x 8; E, seed x 5.

glabrous; lobes 2-3 mm long, broad concave, ovate- oblong, subacuminate, glabrous. Stamens exserted 4-7 mm, anthers white. Capsule 3.5 mm long. Seeds 2, c. 3 mm long, cymbiform.

Syntype: Ex Hispania et Narbona.

A-2 Reana, sandy plain, moist soil near Shakshook, 5.5.1972, *S.I.Ali and S.A. Faruqi* 412 (ULT); "Abouzian" Maugh El-Bhar, 2 km before Kaleba, herb erect, 20-25 cm tall, pink flowers; 8.4.1974, *B. Faris* 13 (ULT); Wadi Elhira, uncult. area, 29.4.1976, *M.A. Terbellou* 74 (ULT); id., *A.W. Muftah, G.* 60, 63 (ULT); *M.M. Zarmouh* 80 (ULT); Gebel Nefousa, 39 km from Giado to Jefren, 650 m, edge of barley fields on sandy soil, 18 March, 1970, *P.H. Davis* 49720 (ULT); 7 km from Shakshuk on way to Giado, plains at base of mountains, sandy clay soil with gravel, 27.11.1976, *A. Ghafoor, S.A. Alavi & F.B. Rateeb* 180 (ULT); El-Kaleba, 30 km from Garian, rocky soil, 10.4.1970, *M. Godeh* 198 (ULT); Maugh El-Bhar, 2 km before Kaleba, *S.I. Ali & S.A. Faruqi* 1914 (ULT); 2 km before Gharian, limestone hill, stony slope, *S.I. Ali* 1622 (ULT); 1 km from Jefren to the way down to Karina, clayey soil, *B. Faris* 259 (ULT); Bu Ghelan, 29.4.1976, *M.M. Shuehdi* 54 (ULT); Safeet, c. 57 km from Garian, sandy ground near cultivated field, slight slope, *S.I. Ali & S.A. Faruqi* 1844 (ULT); **A-3** Sidi el-Mesri, near Faculty of Science, Tripoli, 19.2.1967, *I.S. Fareg* 6 (ULT); id., *A. Sharif, A.A. Misellati, A.M. El-Morayed* 15 (ULT); id., *M. Godeh* 12 (ULT); id., *Nuria, Samira, A. Moti* 20 (ULT); id., *S.M.H. Jafri* 6429 (ULT); id., *S.I. Ali & S.A. Faruqi* 21 (ULT); id., *A.A. Eltiafe, O.M. Elkweldi* 13 (ULT); id., *S. El-Jaley* 5 (ULT); Tripoli Airport, *B. Faris* 101 (ULT); 1 km before Miggi (Tarhuna), sandy soil, olive farm, flowers yellow, *B. Faris* 54 (ULT); Tarhuna, 30.3.1975, *Zenab A. Raya* 210, 220 (ULT); Sharshara, erect, 15 cm tall, white flowers, sandy soil, *M.A. Terbellou* 17 (ULT); id., *M. Mohamed* 51 (ULT); id., *B. Faris* 60 (ULT); Tajura-Stunifar, sandy soil, 3.3.1974, *B. Faris* 127 (ULT); El-Zentan, 11.4.1974, *A.M. Abdelrazig* 381 (ULT); Leptis Magna (Lubda), ruins near Septimius Severus arch, dense spike, yellowish corolla, *B. Faris* 341 (ULT); Masrata, 29.3.1975, *Zenab A. Raya* 171 (ULT); Al Awenia, c. 7 km from Rumia in cult. field, sandy soil, *S.I. Ali & S.A. Faruqi* 2008 (ULT); id., *M Godeh* 231 (ULT); **A-6** Tolmeta, 23.3.1975, *Amina Gammudi* 156 (ULT); **B-2** Rumia (limestone hill) 15 km from Yefren, *S.I. Ali & S.A. Faruqi* 1876 (ULT); Ain Elromia 10.4.1975, *Amina Gammudi* 305, 336 (ULT).

Distribution: Spain, Portugal and the Mediterranean region to Iran.

Common in dry places.

Fl. Feb.-July *Vern.* Anam, aenm, Henam, inem, inhem.



Fig. 12, **Plantago cyrenaica:** A, habit x 2; B, bract x 6; C, flower x 6; D, sepal x 6; E, seed x 8.

15. **Plantago cyrenaica** Durand & Barratte, l.c. 198; Pamp., l.c. 414; Keith, l.c. 779. (Fig. 12)

Dwarf annual herb, 3.5-4.5 cm tall, acaulescent, villose. Leaves always radical, erect, 1.5-4 cm x 1.5-4 mm, linear-lanceolate, acute, 3-nerved, gradually attenuate, lowermost with dilated bases. Scapes thick, short 8-12 mm long, terete, patent, spreading or arcuately recurved with long spreading hairs, glandular-tomentose, ± sericeous; spikes ovoid or ovoid-oblong, 5-10 mm long, often 1-3, equal to scapes or a little shorter. Bracts ovate, 5-6 x 2-5 mm acute, coriaceous, dorso-convex, without striation, pubescent, margins ciliate, shorter than sepals. Sepals ovate- oblong, pubescent, acute, margin submembranous. Corolla grabrous, lobes oblong, patent. Capsule globose, scarious, 2-celled with one ovule in each cell. Seeds 2, cymbiform, emarginate, outer surface convex, inner surface sulcate, dark brown, 2.5-3 x 1-2 mm.

Type: Derna, dans les lieux humides de la plaine a l'Est de la ville (*Taubert*, 14 avril 1887, no.293).

A-6 Wadi el Kouf, 8.5.1978, *A. El-Gadi, Jafri & Siddiqi* 1822 (ULT); **A-7** Gebel Akhdar, Gasr-El-Libya, c. 150 m from sea level, clay loam soil, 5.5.1978, *A. Ghafoor* 394 (ULT); Ain Dabusia village, gravelly soil, 15.4.1979, *Ramadan & Siddiqi* 2602 (ULT); 9 km from El-Baida on way to Shahat, 14.4.1979, *Fauzi A. Ouheda* 96 (ULT).

Also reported from Benghazi, Benina, Mat, Barce, El Auelia, El Gatres, Shahat Derna & Tobruk by Durand & Barratte, (l.c.); and others.

Distribution: Endemic to Cyrenaica (Libya).

Fl. Mar.-May *Vern.* Degghis

16. **Plantago ovata** Forskal, Fl. Egypt-Arab, 31.1775; Durand & Barratte, l.c. 197; Pamp., l.c. 414; Corti, l.c. 238; Keith, l.c. 780. (Fig. 13)

Perennial, subcaulescent herb, up to 5 (-10) cm tall. Leaves in rosettes, narrow linear, 2-5 (-10) cm x 1-2 (-3) mm, obtuse to acute, entire or remotely denticulate, 3-nerved, densely covered with appressed wooly hairs with bases slightly dilated. Scapes scarcely exceeding the leaves 1-9 cm; spikes dense, globular to ovate or oblong, 0.5-2.5 cm long. Bracts c. 3 mm long, rotund-ovate, glabrous, obtuse, midrib herbaceous, extending to tip, margin scarious; sometimes slightly hairy. Sepals ovate, carinate, c. 3 mm long, obtuse, scarious, glabrous, the anterior one usually pubescent. Corolla-tube 1.5-2 mm

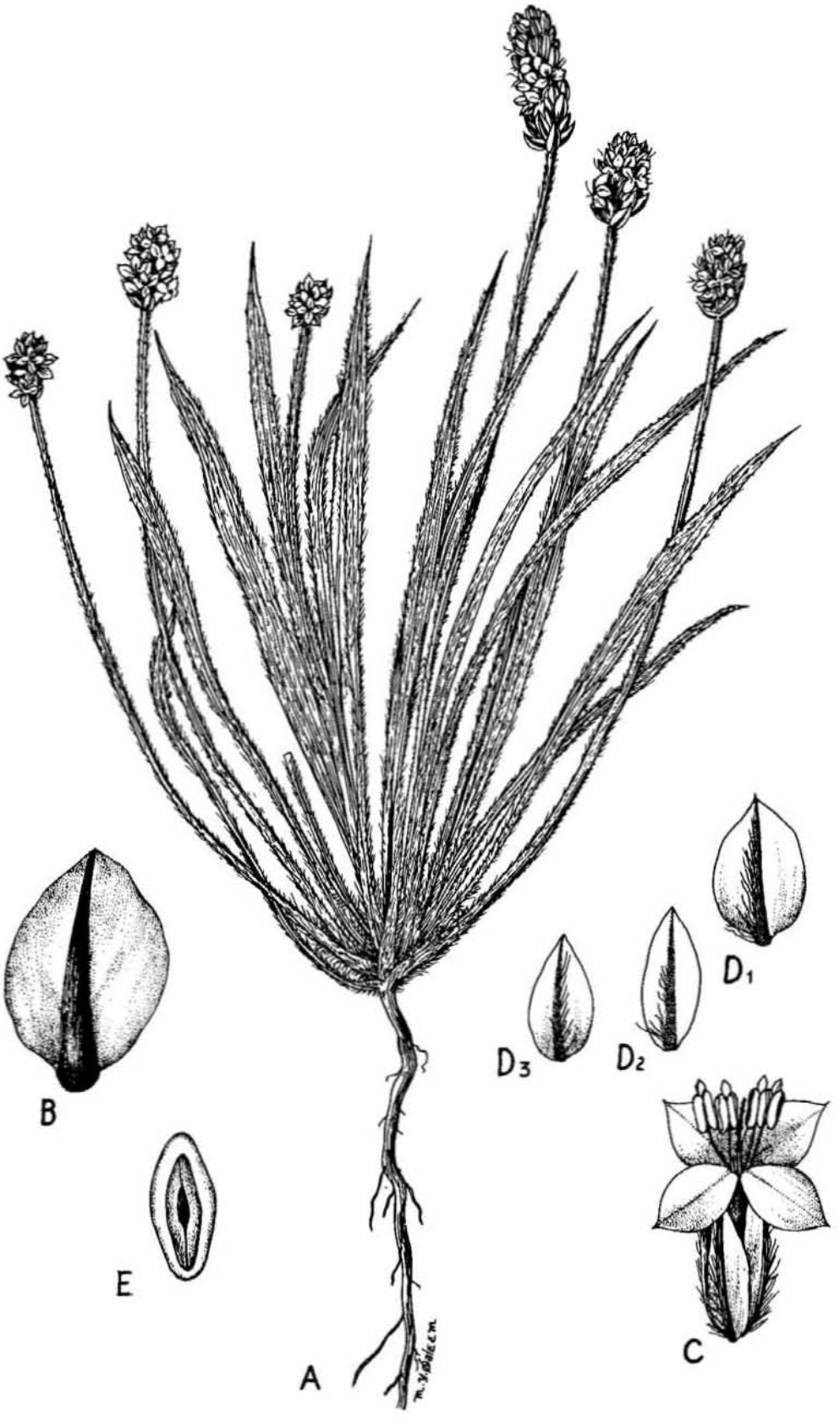


Fig. 13, **Plantago ovata:** A, habit x 1; B, bract x 8; C, flower x 6; D_1 - D_3, sepals showing variation x 8; E, seed x 10.

long, lobes ovate or orbicular, glabrous, 2.5-2.75 mm long. Stamens exserted up to 1 mm. Capsule c. 3 mm long. Seeds 2, cymbiform, smooth, pale-brown.

Type: Alexandria, Forskal (C).

A-2 Between Bir Shakshuk & Qaser Al-Haj, common in sandy roadside, 29.3.1976, *S.M.H. Jafri* 6611 (ULT); Gharian, winter annual, 24.1.1970, *I.I. Chaudhri* s.n. (ULT); **B-1** c. 2 km from the main road, c. 26 km from Nalut, 27.2.1975, *S.I. Ali & S.A. Faruqi* 2206, 2238 (ULT); 25 km from Nalut towards Wazzen, soil clayey rocky, 9.6.1974, *B. Faris* 1591 (ULT); c. 11 km from Nalut (Nalut & Gadames road), below sand on limestone, 18.4.1975; *S.I.Ali & S.A. Faruki* 2836 (ULT); **B-2** Rumia (limestone hill), 15 km from Jefren, 9.4.1974, *S.I. Ali & S.A. Faruqi* 1835 (ULT); **B-3** c. 4 km from Bugrain (going towards Misrata) sandy ground with pebbles, 28.3.1975,*S.I. Ali & S.A. Faruqi* 2472 (ULT).

Distribution: Widely distributed from Canary Islands, Mediterranean region to the deserts of Kizil Kum, Afghanistan & Pakistan.

Seeds are of great medicinal importance and are used as a cure for dysentery under the name of Ispaghule in different Pharmacopeias.

Fl. Feb.-May *Vern.* Aslouj, Alura, geneyme, halma, loqmet en-nage.

INDEX TO PLANTAGINACEAE

Plantago L. 1
P. aegyptica Jacq. 7
P. afra L. 4
P. albicans L. 21
P. amplexicaulis Cav. 14
P. arenaria Waldst. & Kit. 6
P. ciliata Desf. 21
P. coronopus L. 9
P. crassifolia Forskal 12
P. crypsoides Boiss. 9
P. cynops L. 4
P. cyrenaica Durand & Barratte 26
P. indica L. 6
P. lagopus L. 17
P. lanceolata L. 19
P. lusitanica L. 17
P. major L. 14
P. notata Lag. 7
P. orientalis Stapf. 19
O. ovata Forskal 26
P. phaeostoma Boiss & Heldr. 3
P. psyllium L. 6
P. ramosa (Gilib.) Ascher. 6
P. squarrosa Murr. 6
P. syrtica Viv. 7