

(3) *Launaea capitata*

- Launaea capitata* (Spreng.) Dandy in Andrews, Flow. Pl. Sudan 3: 40. 1956 [= *Chondrilla capitata* Sieber, Avis Pl.: 7. 1821, nom. nud.] ≡ *Sonchus capitatus* Spreng., Syst. Veg. Ed. 16, 3: 650. 1826. – Holotype: Egypt, Cairi desert, [12.1817-11.1818], Sieber (P [herb. Schultz-Bip., see Stafleu & Cowan (1985: 806)], not found; isotypes: B!, BM!, BR!, C!, FI-W!, FR!, G!, JE!, K!, KIEL!, L!, LE!, M!, W!).
- = *Lomatolepis glomerata* Cass. in Cuvier, Dict. Sci. Nat. 48: 423. 1827, nom. illeg. ≡ *Microrhynchus glomeratus* Jaub. & Spach, Ill. Pl. Orient. 3: 103, fig. 275. 1848 ≡ *Zollikoferia glomerata* Boiss., Fl. Orient. 3: 826. 1875, nom. illeg. ≡ *Launaea glomerata* Hook. f., Fl. Brit. India 3: 417. 1881, nom. illeg. – Holotype: Egypt, Cairi desert, Sieber (holotype: K [ex herb. J. Gay]; isotypes: as for *L. capitata*).
- = *Launaea glomerata* f. *minima* Pamp. in Atti Reale Ist. Veneto Sci. Lett. Arti 92: 236. 1932. – Holotype: Libya, Fezzan, oasi di Sèbha, 3.4.1931, Marcello (FI, not found).

[= *Sonchus mareoticus* Delile [Descr. Egypte, Hist. Nat. fig. 64(12) [ined.?]. 1826, nom. nud.], Delile ex Barbey, Herb. Levant: 176. 1882, nom. nud. – Based on a specimen labelled as such in herb. Delile, MPU!].

Ic.: Figs 4f, 9e-g, 74. – Jaubert & Spach 1847-50: fig. 275 sub *Microrhynchus glomeratus* (habit, details); Delile 1813-29: fig. 64(12) (habit); Pampanini 1928: fig. 1(4) (habit); Rechinger 1977: fig. 104 (specimen, achenes); Feinbrun-Dothan 1977: fig. 731 ≡ Al-Rawi 1987: p. 271, fig. 7 (habit, achene); Ozenda 1958, 1977: p. 461, fig. 175 ≡ Pottier-Alapetite 1981: p. 1115, fig. 1612 sub *L. glomerata* ≡ Barry & Selles 1992: p. 64, fig. 7 (habit, achene); Batanouny 1981: fig. 100 (habit); Alavi 1983: p. 384, fig. 104(F-H) (habit, details); El Amin 1983: p. 32 (habit); Léonard 1984: p. 43, fig. 5(C-F) (habit, details); Collenette 1985: p. 160 (capitulum); Chaudhary & Zuwawi 1983: fig. 30B(a) (achene); Chaudhary & Akram 1987: p. 64, fig. 1 (habit, achene); Migahid 1989: fig. 200 (habit, specimens); Bebawi & Neugebohrn 1991: p. 137, fig. 203 (habit).

Description (v.v.)

Annual herb with slender taproot and a basal leaf rosette, subcaulescent or with a few to several scapelike, procumbent to ascending or (more rarely) ± erect flowering stems up to c. 15(40) cm long and with a few (mostly short) flowering

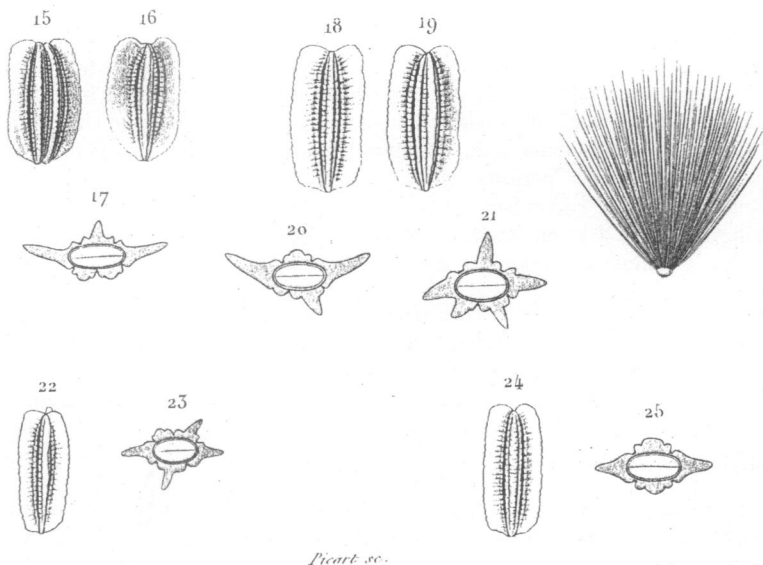


Fig. 74. Achenes of *Launaea capitata* (taken from Jaubert & Spach 1847-50: fig. 275) – 15-21: marginal achenes showing the variation in rib expansion, dorsal (15,19) and ventral (16,18,22) views, and cross section shapes (17, 20, 21, 23); 24-25: inner achene, side view (24) and cross section shape (25); s.n.: pappus fallen off together with pappus disk.

branches in upper part; flowering stems only occasionally with a single leaf subtending the first branch. *Rosette leaves* 2-16 × 0.5-5.5 cm, oblong to spatulate in outline, with ± rounded apex and tapering towards a narrow base, first leaves subentire to sinuate-dentate, later leaves runcinate, margin white-cartilagineously denticulate; leaves of the flowering stems ± reduced to inconspicuous bracts. *Synflorescence* with clustered (in groups of 2-7 or more), subsessile capitula situated in the centre of the rosette in acaulescent plants, otherwise at the end of the monopodial flowering stem and its one or two (or rarely more) branches. *Peduncles* almost lacking or, more rarely up to c. 0.5 cm long, wiry, with a few bracts passing over into the outer involucre bracts. *Capitula* with c. 25-50 flowers, at fruiting time ± nodding. *Receptacle* at fruiting time 4-6 mm in diameter. *Involucre* 8-12 mm long, thickly cylindrical before anthesis, thick subcampanulate to subglobose at fruiting time; at time of fruit dispersal involucre bracts spreading and their midrib in lower half swollen and hardened; outer involucre bracts c. 12-16, imbricate, their scarious margin distinctly wider than the herbaceous middle parts, the outermost bracts broadly ovate(-acute), c. 2-3.5 mm long and almost as wide as long, the following bracts longer and oblong to (broadly) lanceolate, the innermost up to c. 2/3 as long as the inner involucre bracts; inner involucre bracts 8(-12), lanceolate, 8-12 × 2.5-4 mm, with the scarious margin distinctly narrower than in the outer involucre bracts. *Flowers* with a bright yellow ligule of 4.5-6.0 × 1.2-1.6 mm and a somewhat longer tube; anther tube without appendages 1.1-1.3 mm long, apical appendages 0.2-0.3 mm, basal appendages 0.4-0.6 mm long; style branches 0.8-1.2 mm long, with yellow sweeping hairs. *Achenes* 3.1-4.3 × 1.2-2.1 mm, with pericarp of soft tissue, pale, heteromorphic, inner with 4 main ribs each accompanied by 2 secondary ribs; ribs somewhat transversally wrinkled; both median main ribs expanded into smooth to ± transversally striate wings with crenulate edge, each up to somewhat more than 1/2 of the achene diameter wide, commonly in single achenes 1-2(3) further ribs ± expanded into wings; marginal achenes somewhat curved, with 5 main ribs each accompanied by 2 secondary ribs, otherwise wrinkled and winged as in inner achenes. *Pappus* 4-7 mm long, deciduous together with the pappus disk, homomorphic, of numerous setaceous rays.

Chromosome number: Several counts of $n = 9$ and $2n = 18$, on material from Morocco, Tunisia, Egypt, Pakistan, and India are reported in literature (see Kilian & al. 1995: 276). A single deviating count ($2n = 16$) by Miège (1962) on NW African material is likely due to misidentification of the plant investigated.

Distribution and ecology

Launaea capitata has a Saharo-Arabian distribution with outposts in NE Afghanistan and Hissar, India (Fig. 75). Distribution maps for parts of its distribution area were given by Zaffran (1967: p. 204, fig. 1(A) sub *L. glomerata* for NW Africa) and Frankenberg & Klaus (1980: fig. 371 sub *L. glomerata* for the Sahara, based on literature records only).

L. capitata is a common species in its area, occurring from sea level up to >2000 m (e.g. in Yemen) and is usually found on sands, sandy soils, and silts in

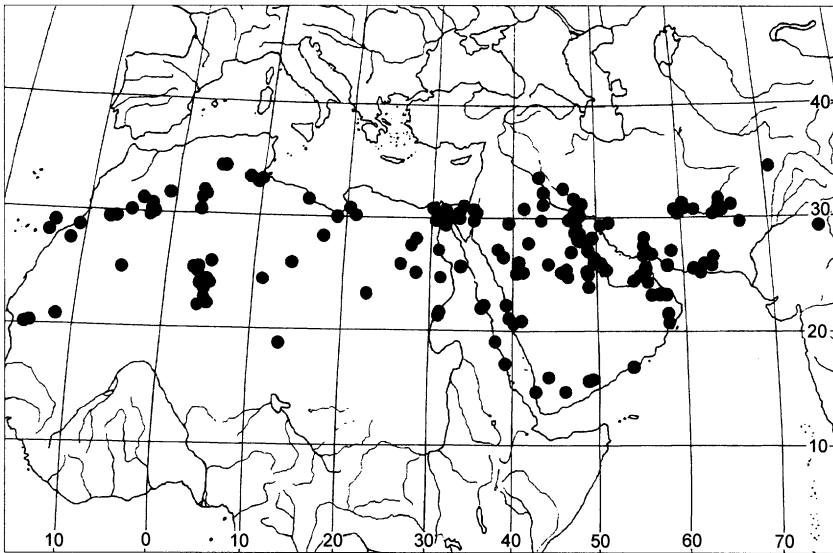


Fig. 75. Distribution of *Launaea capitata*.

desert habitats; this is also confirmed by Freitag (1986: 142) for Iran and Afghanistan who classified *L. capitata* as a typical psammophyte. The species furthermore is common as a (harmless) weed (see, e.g., Chaudhary & Akram 1987: 64) and as a ruderal species. Depending on the environmental conditions of the habitat, plants are either tiny and acaulescent, or they develop several \pm procumbent flowering stems under more favourable conditions. In sites with a presumably rich substrate and good water supply, as, e.g., on irrigated fields, however, vigorous plants with an ascending-erect stem of almost 40 cm height (e.g. *G. Taeckholm*, 25.2.1927, S) can be found occasionally.

Flowering and fruiting time is mainly from January to May.

Specimens seen:

AFRICA:

CANARY ISLANDS: LANZAROTE: La Graciosa, near village, 40 m, 8.4.1970, *Kunkel 13229* (C, G). – FUERTEVENTURA: Bw. Cabras (near the airport), sandy, 30.3.1976, *Kunkel 18963* (G); Parador National, 5 m, 8.6.1973, *Kunkel 15736* (G); *ibid.*, 5 m, 14.3.1976, *Kunkel 18939* (G); Puerto del Rosario, 5.1.1971, *E. & G. Wängsjö 4037* (LD).

SAHARA (W part, localities not found): Merhouma, 1921, *Heimsch* (MPU); Oufarta, 1921, *Heimsch* (MPU).

WESTERN SAHARA: Fum el Xeljat, 17.3.1946, *M. Agarino*[?] 79 (MA).

MAURITANIA: Bir Igni [= Bir Igueni], 20.2.1910, *M. Charles* (P); Akcher (vers 14°30'W), depression entre les dunes, 7.1.1937, *Miss. Etud. Biol. Acridiens 1803* (MPU); Adrar de Mauritanie, ante 7.1958, *A. Naegelé* (B); Ain Chegga, 2.1935, *Rolland 82*

(MPU); Dayer Et Tofla, 28.11.1910, *Chudeau* (P); Kerkche Maouloud, 19.1.1937, *Miss. Etud. Biol. Acridiens 1887* (MPU).

MOROCCO: Sebkhaz Tazra, 40 km E of Tarfaya, 40 m, sandy cliff, 7.5.1985, *Parker & Burt 131* (E); 52 km NE Tan-Tan, 28°41'N, 10°38'W, 260 m, 10.4.1986, *Podlech 40361* (M); c. 10 km S von Akka, an der Straße Akka - Tata (7084), auf Sand, 30.4.1994, *Kilian 3497* (B, herb. Kilian); 15-20 km E von Tissint, oued an Sanddünen grenzend, auf Sand, 2.5.1994, *Kilian 3527* (B, herb. Kilian); Oase Kasba-*ej-Joua*, c. 20 km W von Tissint an der Straße nach Tata, Palmenhain, auf Sand, 1.5.194, *Kilian 3505* (B, herb. Kilian); 25 km NE Zagora, 30°13'N, 5°36'W, 670 m, *F. Schuhwerk 90/928* (M); 10-20 km N of Erfoud, 800 m, sandy subsaline desert, 6.4.1969, *P. & J. Davis 49153* (BM, E); 12 km N Erfoud an der Straße nach Er-Rachidia, 830 m, 31°33'N, 4°10'W, Sand, 16.4.1987, *Podlech 42507* (G); ad radices montis Gara Mdouar (ad occ. oasis Tafilalet), 950 m, 13.4.1933, *Maire & Wilczek* (MPU); El Ardja [nr. Figuig], 4.1913, *Pitard 3566* (P); Oued Amestil près Assa, 1938, *Ollivier 172* (MPU).

ALGERIA: 14 km S von Abadla an der Straße nach Beni Abbes, 610 m, 30°57'N, 2°44'W, 4.4.1980, *Podlech 33788* (M); 12 km NE Abadla an der Straße nach Bechar, 620 m, kiesig-sandige Fläche, 31°06'N, 2°38'W, 4.4.1980, *Podlech 33818* (G, M); Montagnes du Zeramma, E-Abfall der Berge 19 km SW Zeramma ('Kheneg et Tlaia'), c. 55 km WSW Beni Abbes, 500 m, 29°51'N, 2°38'W, 1.4.1980, *Podlech 33625* (G, M); circa Beni Abbes, 8.3.1947, *Maire* (MPU); B 117 km c[?] seweku ot oasisa El Golea, 11.5.1968, *Rodin & Miroschnizhenko 2050* (LE); El Golea, 3.1919, *Surcouf* (MPU); Hassi-Fahl, 115 km S Ghardaia an der Straße nach El Golea, 360 m, 31°36'N, 3°41'E, 11.3.1981, *Podlech 34628* (G, M); Gardaia, in arenis fluvii "O. Mzab" sat frequens, 7.4.1899, *Chevallier 339* (A, B, FI, FR, G, JE, LD, M, WU); inter oppidum Gardaia et Beni Isguen, in ditone Mzab, 15.5.1858, *Perraudière* (B, C, FI, FI-W, G, GH, UPS, W); B 50 km ot gor. Ghardaia, 30.3.1965, *V.P. Botschantzev 868* (LE); Zelfana, 55 km ESE von Ghardaia, 360 m, 32°22'N, 4°13'E, 30.3.1981, *Podlech 35546* (G, M); Silet, [c.22°40'N, 4°30'E], on bank of irrigation ditch, 19.3.1930, *T.F. Clifff*[?] 98 (K); Mouydir mountains, reg near Oued Tirretimin, 4.3.1923, *K. Gram 586* (C); in montibus Emmidir (Mouydir), in faucibus Arak, 650-700 m, 2.3.1928, *Maire 764* (MPU); *ibid.*, Oued Emmeder, 18.2.1923, *K. Gram 454* (GH); in ditone Agerar, prope In-Iker [= In Ekker], in alveo limoso amnium, 1000-1100 m, 3.3.1928, *R. Maire 768* (G); in ditone Ahaggar, In-Amgel, in cultis, 1160 m, 4.3.1938, *Maire 761* (MPU); Hoggar mts., Tit, [22°59'N, 5°11'E], in dry wadi bed, 3600', 14.3.1931, *Meinertzhagen 83, 87* (BM, K); *ibid.*, Tamanrasset, 19.5.1933, *Lauriol* (MPU); *ibid.*, 1450 m, 30.10.1940, *Lhote 193* (MPU); Tefedest Mts, in amnis Ahetes, 1100-1200 m, 15.4.1928, *Maire 767* (MPU); *ibid.*, in manis Aragham, 1100 m, 10.4.1928, *Maire 766* (MPU); Fom Tabelet, 3.4.1912, *Chudeau* (P); Qued-Biskra, à Biskra, 2.4.1853, *Balansa 790* (B, BM, C, E, FI, FI-W, G, K, LE, LIV, W); Biskra., 26.3.1909, *Möbius* (FR); District Biskra, Ourellal, 16.3.1965, *V.P. Botschantzev 471* (LE); dans l'oued Souf, SE de la prov. de Constantine, 16.4.1858, *Cosson* (C, MPU, W); Lac Menkhough, *Guird 99* (P); Gomar, 2.11.1923, *G. Babault* (P); plateau de Tassili, Ouadi Allour, 29.2.1861, *Duregriez*[?] (P).

TUNISIA: El Fouara, 19.4.1889, *Letourneux* (FI); Matmata, 1942, *Bous*[?] 28 (G); 10 km E Limaguess, sandy slopes, 33°44.927'N, 9°09.442'E, 150 m, 11.5.1994, *Vogt 12868a & Oberprieler 7173a* (B).

NIGER: Region de l'Oasis de Bilma, 1.1.1911, *Ducellier* (P).

LIBYA: Fezzan, Uadi Tenezzuf, nel letto dell 'Uadi, c. 675 m, 7.5.1933, *R. Corti 492* (FI); *ibid.*, Morzuk [= Murzuq], 4.4.1869, *coll. illegible* (W); Tripolitania, Bir El Churgia

(Misurta - Sirte rd.), roadsides, 16.2.1958, *Guichard TR/5/58a* (BM); 12 km W of Agedabia, flat plain, brown arid differentiated crust carbonate saline light loamy soil, 18.3.1978, *U. Prатов 98* (LE); NE Vorland des Gebel Harudsch, Wadi mit Tamarisken SE Zella [= Zillah, 28°30'N, 17°33'E], 27.4.1970, *Scholz 70159b* (B); [Cyrenaica], El-Agheila, [19°E], 14.3.1933, *Pampanini 9145* (FI); fra l'Uadi Faregh [= Farigh] e Maatan Risam [ca 30°N, 21°E], 18.4.1928, *Krüger* (FI); Kufra Oases, El Giof Oasis, in damp sandy soil of drainage channel, 23.8.1963, *Cambridge Expedition 16* (K); 75 miles S of Bu Ngem, in small wadi, 4.2.1952, *Guichard KG/Lib/68* (BM); Fezzan, Wadi Berging, 9.4.1952, *Guichard KG/Lib/68b* (BM); 35 miles N of Bu Ngem, 9.3.1953, *Guichard KG/Lib/68a* (BM).

E G Y P T: S. loc., "ad limite agrorum aegypt. superiore ... [illegible]", 4.1844, *Figari* (FI); Farafra Oasis, Ain Qoshna, in clover field, 21.5.1983, *Abd el Ghani 6089* (E); *ibid.*, Ain Sheikh Marzouk, near cultivation, 20.5.1983, *Abd el Ghani 6025* (K); *ibid.*, Farafra town, 21.3.1968, *G. Romée 640* (LD); Baharya Oasis, s. loc., 1978, *Abd el Ghani* (M); *ibid.*, El-Heiz, Amel-Ezza, 21.1.1979, *Abd el Ghani* (K); *ibid.*, Al Aguz, 7.3.1979, *Abd el Ghani* (K); *ibid.*, Abu Arelja, 22.5.1962, *W. Botschantzev* (LE); *ibid.*, SE of Dist, 13.5.1969, *G. Romée* (LD); Dakhla oasis, s. loc., in irrigation ditch, 3.1928, *Meinertzhagen* (BM); *ibid.*, Mut, 12.2.1968, *G. Romée 130* (LD); Wadi Natrun, N part, 11.3.1968, *G. Romée 427* (LD); W 115 km ot gor. Alexandria, 9.4.1962, *W. Botschantzev* (LE); Kharga Oasis, s. loc., 6.2.1959, *Mustafa Imam* (K, MA, U, W); *ibid.*, Kharga town, W of coptic city, 17.2.1968, *G. Romée 262* (LD); El Harabe, 27°20'N, 19.3.1881, *Joad* (K); Aslut, border of desert, 10.3.1893, *Post* (Z); 20 miles au N d'Abou Simbel, 18.3.1891, *Deflers* (MPU); *ibid.*, in desertis arenosis ad pyramides (prope Gise), 25.4.1908, *Bornmüller 10820* (B); Kairo, *Niest* (B); um Kairo, 1903/04, *A. Keller 68* (Z); *ibid.*, 4.1904, *A. Keller 171* (BM); *ibid.*, 7.4.1892, *coll. illegible* (GZU); *ibid.*, *Kart* (BR); *ibid.*, *Bernhardi* (C); *ibid.*, Ouadi Doukla, 3.1879, *F.-E. Cramer* (G); *ibid.*, Birket-al-Hadji, 4.4.1848, *Kralik* (F-W, G, GH, S, W); *ibid.*, Taurah, region desertique, 4.4.1909, *Schweinfurth 4212* (L); *ibid.*, Eein el Chams, 25.3.1904, *A. Keller* (Z); Helouan, 9.5.1925, *C.C. Druce* (OXF); *ibid.*, 2.1896, *Schweinfurth* (Z); *ibid.*, Wadi Gerrawi, 1.4.1945, *P.H. Davis 10524* (E); Arab. Wüste E von Heluan, 1877, *Schweinfurth* (GZU); along Cairo - Amria desert road, 31.5.1964, *Täckholm* (BR, LD); Gebel Yammou el Asmar (nr. Bir Gindali, [29°55'N, 31°44'E]), 8.4.1945, *P.H. Davis 10407* (E,K); Ramsis [W Ismailia], 20.2.1877, *Letourneux 97* (E, LE, W); *ibid.*, ex desertis, 13.4.1890, *J. Ball 562* (K); inter Ismailija et Sues, prope Fayid in desertis ad pedem montis Dschebel Geneffe, 26.5.1908, *Bornmüller 10821* (B); Sinai, pobereche Suezkogo saliva skadistue peštanikovue sklonu wadi w gorach po doroge w sed. Umm-Bogma, 8.5.1962, *W. Botschantzev* (LE); *ibid.*, Mitla pass, sand over limestone, 13.4.1945, *P.H. Davis 10480* (K); *ibid.*, 10.5.1939, *M. Drar 603* (BM); *ibid.*, zwischen Maghara [30°44'N, 33°25'E] und Wadi Schellal, c. 200 m, 10.4.1902, *Kneucker* (B); *ibid.*, 24.3.1904, *Kneucker* (GH); *ibid.*, Wadi Heridin S of El'Arish, 4.4.1939, *M. Drar* (S); *ibid.*, environs d'el Arys, dunes, 1.4.1891, *Deflers* (MPU); *ibid.*, 31.3.1960, *H. & E. Walter 183* (B); Wüste zwischen Keneh und Kosser, zwischen O Kalet Dusai [?= Okalet Dawi] und Bir Ingles, 22.3.1864, *Schweinfurth 461* (BM, LE, W); *ibid.*, 1864, *Schweinfurth 461* (P); Küste zwischen Kosser und Ras Benass, wadi Mrehk[?], 23.3.1964, *Schweinfurth 462* (BM); kleine Oase E von Mendischeh, 2.5.1876, *Ascherson 319* (JE, M, WU); in the fields near Nazlet Ileiyān opposite El Billeida, 25.2.1927, *G. Täckholm* (S); Libeina, Gattaret al Diyura 1928, *G. Murray* (BM); Siut[?], 8.3.1891, *Sickenberger* (Z); El Kwumat - Zaafarana road, 9.3.1983, *Hassan Asw* (K); Basettin, 5.1823, *Ehrenberg* (S); Wadi Ibib, (Da. mer.), 1.-2.1932, *M. Drar 108* (S).

S U D A N: Wadi Kor Musa Pasca, N von Wadi Halfa, 9.2.1962, *Kasy* (W); Gebel Elba, 1.-2.1932, *M. Drar 120, 252* (S); *ibid.*, Wadi Suramtai[?], 13.1.1928, *Newberry 159* (BM); Port Sudan, coastal plain to S of town, 17.1.1953, *Drummond & Hemsley 942* (K); wady

near Port Sudan, 22.1.1912, *MacDougal & Syker 29* (BM); Suakin, 11.1.1951, *N.B. Marshall 66* (BM); Wadi Kewan, Mersa Halaib, 1.-2.1933, *M. Drar 32* (S); Aniba, 14.-18.11.1963, *Täckholm, Boulos & Zahran* (LE,S,U); Mersa Bela, 5.1.1951, *N.B. Marshall 15* (BM); Nubia inferior, Ouadi Allagui[?], 3.1881, *Letourneux* (C).

ERITREA: Wadi Assarai area, 200', coastal plains on sandy soil, 27.3.1949, *Bally 6871* (K).

ASIA:

PALESTINA/ISRAEL/JORDAN: Negev, Revivim, loess soil, 12.4.1952, *D'Angelis 589* (B, BH, BM, COI, E, FI, K, LE, M, MA, OXF, S, U, W, WU); Wadi Araba, 22.+25.3.1928, *Simpson 5822, 5846* (K); 4 km SE Ain el Fidan, Wadi Feinan, c. 150 m, Sanddüne 11.3.1986, *Baierle & Kürschner 86-406* (herb. Baierle); N-Arava, E des Moshav Hazeva, -200 m, ungefestigte Sanddüne, 7.4.1983, *Bierkamp 1382* (BSB).

SAUDI ARABIA: Al-Huwayyirah, 5 km WNW Madain Salih Sta., 2550', 24.2.1971, *Mandaville 3017* (BM); 25 km N Khaybar, 25.2.1971, *Mandaville 3043* (BM); 15 km WSW 'Uqlat as-Suqur, Najd, 25.2.1971, *Mandaville 3048* (BM); in palmetis vallis Fatme, *Fischer 34* (BM, BR, FI-W, GH, L, LE, M, MPU, W); near Rabigh, ± 15 m, 22°50'N, 39°00'E, 3.3.1962, *W. Zeller 2901* (BM); Djeddah, *Kruyt 53* (FI), 96 (L); *ibid.*, 23/29.3.1934, *G.L. Bates 2162, 2162a* (BM); *ibid.*, 1.1836, *Schimper 880* (BM, E, FI, FI-W, FR, G, GH, JE, L, LE, M, P, S, W, WU); *ibid.*, 8.1881, *Zohrab 102* (G, K, P); *ibid.*, 4.1872, *Hildebrandt 131* (L, W); *ibid.*, 15.2.1885, *Deflers* (MPU); 10 km NE of Jeddah, low rocky hills, 20.3.1979, *Collenette 1055* (K); Buraiman near Jeddah, spring 1950, *P. Kercher AL 112* (BM); Al Jouf, weed of a pea field, 1700', 23.2.1971, *J.R. Ironside Wood 46* (BM); prope Meccam, *Spitzel* (B, W); km 110 on Mecca bypass, 26.3.1980, *Lavranos & Collenette L18533* (E, FT); 52 km W Taif (21°13'N, 39°55'E), 340 m, Wadi mit Sand, 23.3.1982, *Baierle, Frey & König 82-710* (BSB); 40 km N As Sulayyil, 600 m, Wadi, 23.3.1984, *Frey, El-Sheikh & Kürschner 84-126* (BSB); 15 km S Khuff, 850m, Ebene, auf verdichtetem Sand mit Feinkies, 18.3.1982, *Baierle & al. 82-397* (BSB); Nafud as-Sirr, 17 km NE Al Khufai'ijah, 800 m, Annuellenflur auf Sanddüne, 18.3.1982, *Baierle & al. 82-378,-379* (BSB); Badanah (tapline pump station), ditch, 1.9.1964, *Mandaville 304* (BM, W); W. Hanakiyah, 850 m, 24°50'N, 40°30'E, 5.3.1962, *W. Zeller 3701* (BM); wadi 30 km S of Huleifah, ± 900 m, 25°43'N, 40°43'E, 7.3.1962, *W. Zeller 4203* (BM); 12 km E Marat, 690 m, 17.3.1982, *Baierle & al. 82-326* (BSB); S Nuqra, [25°30'N, 41°30'E], between Medina and Buraydah, 3000', in wide wadi, 11.3.1977, *Collenette 104* (K); near Hail, 20.5.1972, *Popov GP/72/62* (BM); irrigated field near Riyadh al Khabra, W of Buraydah, 2000', 13.2.1980, *Collenette 1824* (K); Wadi Kumrah, 60-70 km WNW Riyadh, 10.4.1981, *D. Hillcoat 408* (BM); 50 miles from Riyadh on Jeddah Road, 2000', in drainage lines, 9.3.1966, *C.F. Hemming 2399* (BM); 34 km SW Riyadh, 600 m, auf Sand, 15.3.1982, *Baierle & al. 82-255* (BSB); 4-corner boundary pt., al-Batin-al-'Awja, 21.3.1968, *Mandaville 1571* (BM); Thumama (Thumama Nature Park site), c. 80 km N Riyadh, 680 m, sandiges Wadiufer, 19.3.1985, *Baierle & Kürschner 85-68* (BSB); Dahl al Furayy, 26°47'N, 47°06'E, sand/silt, 26.1.1972, *Mandaville 3235* (BM); near Riyadh, c. 24°39'N, 46°46'E, 17.5.1969, *Popov 69/253* (BM); Ar-Riyadh, Al-Kharj, 9.3.1983, *Cook* (RIY); 2 km S Saudi-Kuwait border at 47°14'E, 22.3.1968, *Mandaville 1679* (BM); ash-Shayyit al-'Atshan, 42 km W Qaryat al-'Ulya, 23.2.1968, *Mandaville 1406* (BM); 15 km ENE Qaryat al-'Ulya, sand, 22.2.1968, *Mandaville 1266* (BM); 9 km S 'Ayn al-'Abd, sand, 22.3.1967, *Mandaville 865* (BM); Jabal al-Ba'al, N an-Nu'ayriyah, sand on limestone, 25.1.1968, *Mandaville 1150* (BM); Jibal an-Nu'ayriyah, 26.1.1968, *Mandaville 1241* (BM); 15 km WSW Al Hunayy, red sand on silt, 1.3.1969, *Mandaville 2229* (BM); 26 km ENE *ibid.*, sand on silt, 1.3.1969, *Mandaville 2250* (BM); 29 km ENE *ibid.*, sand on limestone, 1.3.1969, *Mandaville 2260* (BM); 26 km SSE *ibid.*, sand on silt, 28.2.1969, *Mandaville*

2216 (BM); 20 km SW Ras as-Saffaniyah, sand, 3.4.1967, *Mandaville 926* (BM); 8 km N Abu Hadriyah, sand, 6.4.1972, *Mandaville 3726* (BM); Jaww ad Dukhan, 24°48'N, 49°05'E, 27.2.1969, *Mandaville 2065* (BM); 5 km NE Khursaniyah, 23.3.1968, *Mandaville 1794* (BM); Yabrin, 3 km SW Al Jawamir, 27.2.1969, *Mandaville 2122* (BM); Karan Island, 27°42'N, 49°50'E, white carbonate sand, 15.12.1977, *Mandaville 7039* (BM); az-Zulayfayn, 26°51'N, 49°51'E, sand, 4.4.1974, *Mandaville 4061* (BM); 2 km E Al Ajam, 16.3.1968, *Mandaville 1473* (BM); Tapline road, NW of Damman, near Al Faq'ah, c. 200 m, stable dunes, 14.4.1982, A.C. *Podzorski 827* (E); 10 km SSW Al'Uwaynah, 8.5.1964, *Mandaville 227* (BM); 9 km SSW Hanidh, sand on sabkah, 7.5.1971, *Mandaville 3155* (BM); 12 km N Jabal al-'Amudah, coastal sand, 6.4.1967, *Mandaville 1006* (BM); 2 km E J. Ghuraymil, 8.3.1968, *Mandaville 1444* (BM); Jabal al-Amudah, sand on limestone, 23.3.1967, *Mandaville 896* (BM); Alafjan[?], 3.1933, *Dickson 78* (K).

Y E M E N: Hodeida, 6.1872, *Hildebrandt 764* (BM); between Rawdah and Beni Haradh, sandy plain with *Fagonia/Pegonium*, c. 2300 m, 6.4.1979, *J.R.I. Wood 2730* (E, K); Beihan [= Bayhan], 3400', weed of cultivation, 13.4.1955, *Grierson 243* (BM, E); garden in Saiyun, in irrigation furrows, 8.3.1952, *Popov, Illin & Gilliland 4247* (K); *ibid.*, 8.3.1952, *Popov & al. 4247* (BM); Wadi Hadramaut, c. 100 miles inland, 2000-3000', 1936, *Maxwell Darling 194* (K); Beni Harath, c. 2300 m, 6.4.1979, *J.R.I. Wood 2730* (BM); c. 10 km E of Mudia, sandy wadi bed, 800 m, 12.2.1989, *A.G. Miller & al. 8109B* (E).

K U W A I T: S. loc., *Halwagy* (W); 5 km S of Al-Abdali border station with Iraq, 45 m, 30°N, 47°40'E, 28.2.1985, *Boulos & Al-Hasan 15237* (BM); 3 km SW Um Al-Riman, N Jal Az-Zor, 70 m, 8.4.1990, *Boulos & I.M. Ibrahim 17550* (BM); Subaihiyah, KISR Experimental Farm, 14.4.1982, A. *Rawi* (E); Al-Khiran, southern coastal area, 10 m, 28°40'N, 48°20'E, 7.3.1985, *Boulos & R. Al-Hasan 15377* (S); Shabiyah-Umm Gadir road, loose sand, 1.5.1968, *R. & M. Halwagy 303* (K); Howal Gazal, open ground in uncultivated garden, 28.3.1962, *coll. illegible 120* (GH).

B A H R A I N: Sandy plain, c. 200', 3.4.1986, *Phillips 87* (K).

Q A T A R: Al Kharrarah and the area 5 km away towards the NE, 3.4.1977, *Boulos 11081* (K); Wadi Al Galaiel, towards the southern end of the Qatar Peninsula (Miocene), 2.4.1977, *Boulos* (B, E, G); Wakeir, *Elamin 15* (K); Jabal Al Wakrah (Eocene), 12 km S of Doha (3 km S of Al Wakrah), 31.3.1977, *Boulos* (B, E).

U N I T E D A R A B E M I R A T E S: Abu Dhabi Emirate, road to Daha, 2.11.1971, *Wilcox 163* (K, W); *ibid.*, road between Al-Ain and Ayn Al-Faidah, 27.2.1986, *Boulos & R. Al-Hasan 15757* (BM); *ibid.*, Al-Ain Hilton Hotel, weed, 26.2.1986, *Boulos & Al-Hasan* (E); Falay al Mualla, 3.3.1980, *Lamley 75* (K); 3 km N of Shwayb, c. 45 km N of Al Ain, 24°35'N, 55°47'E, 325 m, fixed dunes, 20.5.1982, *Western 166* (E); Ras El Kheima, 20.11.1950, *Guichard KG/113b/Oman* (BM); *ibid.*, near Digdaga, dravel plain/sand, 2.1973, *S.J. Tyler* (BM).

O M A N: Khatam N of Hafit, 20.12.19??, *W. Thesiger* (BM); Birkat al-Khalidiyah, near Sallalah, 16°02'N, 56°22'E, 550', 25.2.1979, *Mandaville 7199* (BM); Buraimi, 5.4.1948, *W. Thesiger* (BM); 6 km SW Sulayf, nr. Ibri, alluvial soil in open *Acacia* woodland, 13.4.1982, *Maconochie 3400* (E); Nizwa Agric.Inst.Firq, in irrigation trial plot, 9.1.1982, *Maconochie 3093* (E); W Hajar mts, Wadi Ahin, 1 km N of Waqbah, 760 m, stony slopes, 11.3.1980, *Edmondson 3342* (E); Wadi Ain, ± 1000[?], 8.5.1952, *Popov GP/52/97* (BM); Ras al Hamra, Mina al Fahd, 23°37'N, 58°31'E, sand, 22.3.1972, *Mandaville 3705* (BM); Muscat, Wadi Sarooj, 15 m, Wadigrund, 15.2.1983, *Frey & Kürschner 83-119* (BSB); Wahiba sands, 21°54'N, 58°41'E, growth following rain on 2.2.86, 24.3.1986, *Munton* (K); Ruwi [=? Ruways, 20°56'N, 28°51'E], sandy slopes, 150', 1.3.1976, *Radcliffe-Smith 3741* (K); W MASHIG, 2.5.19??, *W. Thesiger* (BM).

IRAQ: Prope Jumaima, 140 km SW As-Salman, [c. 30°30'N, 44°30'E], 390 m, 24.4.1957, *Rechinger 9392* (E, M, W); near Jumaima, c. 140 km SW of Salman), 390 m, in wadi, 24.4.1957, *Guest, Rawi & Rechinger* (K); Karbala Liwa, 32 km W of Karbala, 40 m, 4.5.1964, *Grant 15692* (W); Faluja desert, 20.4.1955, *Haines 206* (E, K); Distr. Diwaniya, 12 km SW Samawa, 20 m, 22.4.1957, *Rechinger 9260* (W); Distr. Kut al-Imara, 24 km a bifurcatione viae Kut-Amara versus Badra, 12.4.1957, *Rechinger 14050* (W); between Ali Al-Gharbi and Tib, 60 m, 21.4.1979, *Al Kaisi & Khayat* (K); prope Chilawa, 110 km SSW Basra, 170 m, 25.3.1957, *Rechinger 14397* (W); near (W of) Jaristan, c. 90 km SW of Basra, 120 m, 24.3.1957, *Guest, Rawi & Rechinger* (K), *Rechinger 14441* (W); Jabal Sanam, c. 30°10'N, 47°30'E, 24.3.1957, *Rechinger 8721* (W); NE of Jabal Sanam, sandy soil, 17.4.1974, *Weinert & al.* (GH); Busra, 2.1919, *R.D. Graham 518/bj* (BM); Umm Qasr, 40 km SSE Zubair, 23.3.1957, *Rechinger 14528* (W); Salt Sea, S shore, 27.4.1956, *Wheeler Haines* (E).

IRAN: Khuzestan, 20 km N Ahwaz, 12.3.1972, *Iranshar & Termé* (W); Ahvaz - Albaji, 30 m, 28.4.1971, *Gheissari 1257* (G, LE); Aghajari W Omidiyeh - Ramshir, 150 m, 4.3.1972, *Foroughi 3032* (G); insula Korgo [= Kharq], *Kotschy 841* (UPS); fl. Dalaki, p. Kotel Malla, 120 WSW Shiras. 4.1867, *Hausknecht* (JE, LE, W); in arenosis Bushir, 5.1868, *Hausknecht* (P); insula Kischm [= Qeshm], 22./23.2.1893, *Bornmüller 422* (B, BM, BR, E, G, JE, LD, OXF, P, PH, W, WU); *ibid.*, 30 m, 6.4.1974, *Kunkel 16708* (G); *ibid.*, central part, 40 m, between rocks on mountain table, 4.4.1975, *Kunkel 16675* (C, G); *ibid.*, bei Loft/Banader-va-Jazayer-e Omman, sandige Ebene, 6.4.1976, *Frey & al. 573/76* (BSB); bei Khamir/ Banader-va-Jazayer-e Omman, 2.4.1976, *Frey & al. 381/76* (BSB); Bandar-Abbas, between Qeshm and Dargahan, 20 m, 6.4.1975, *Wendelbo & Foroughi 15585* (W); Prov. Lar, inter Hadjibad prope Tarum et Bandar Abbas inter Ginau et Sarzeh, c. 250 m, 29.4.1948, *K.H. & F. Rechinger, Aellen & Esfandiari 3428* (G, W); 150 km N Bander-Abbas/Banader-va-jazayer-e Omman, 800 m, 31.3.1976, *Frey & al. 211/76* (BSB); ad Bender-Abbas, in arenosis, 24.2.1893, *Bornmüller 423* (B, FI, FR, G, JE, W, WU); Dünen 17 km E Bandar-Abbas, 2.4.1972, *Kasy 601* (W); Bandar Abbas, Sarzeh, 1.4.1972, *Riazi* (G); Hengam [Isl.], 25 m, 11.4.1974, *Kunkel 16868* (G); [Isl.] Larak, N side, 20 m, between rocks, 10.4.1974, *Kunkel 16826* (G); Hormoz [Isl.], SW, 50 m, sandy slope, 1.4.1974, *Kunkel 16413* (G); Minab, SE, 50 m, sand dunes, 28.1.1964, *Popov EP64/104* (G); Gabrig, Mokran coast, sandy areas, ±50 m, 25.1.1964, *Popov EP64/53* (G); E du Jaz Murian, 27°08'N, 58°35'E, dunes, 370 m, 23.4.1972, *Léonard 5746* (E, LE); E du Dasht-e-Lut, à l'est du grandes dunes, 30°10'N, 59°45'E, large oued, 930 m, 10.5.1972, *Léonard 6086* (BR); *ibid.*, 30°37'N, 59°52'E, 1100 m, 11.5.1972, *Léonard 6148* (BR, K, M); Prov. Sistan, inter Zabol et Neh, c. 60 km a Sefidabe (Safaidowa) N versus, c. 1000 m, [31°20'N, 60°20'E], 23.5.1948, *Rechinger K.H. & F., Aellen & Esfandiari 4127* (G, W); 208 km SE de Birjand entre Khouk et Safidabeh, 9.6.1961, *Dadashzadeh DE/69* (G); 17 km S Safidabeh (W de Zabol), 10.6.1961, *Dadashzadeh DE/96* (G); Zabol, 1.-3.1962, *T. Sacco 27* (FT).

AFGHANISTAN: Prov. Helmand, 80 km E of Dilaram on main road, roadside, 1040 m, 7.5.1969, *Hedge, Wendelbo & Ekberg W7654* (E); in arenosis deserti Registan prope Bhagat, 30°32'N, 63°52'E, 600 m, 19.5.1967, *Rechinger 34625* (W); "desert de Margo" SE de Margo, 13.4.1958, *Pabot A(x)* (G); Kandahar, in marginibus deserti Registan, 4-5 km SE Safer, 700 m, 19.5.1967, *Rechinger 34592* (W); prope Mianpushta inter Darweshan, 31°02'N, 64°08'E, et Safer, 30°38'N, 64°00'E, 700 m, 19./20.5.1967, *Rechinger 34559* (G, W); in deserto Dasht-i Margo 20 km NNW Darweshan, 20.5.1967, *Rechinger 34707* (G, W); SE de Darweshan, desert sableux, 14.4.1958, *Pabot A 398bis* (G); ad marginem deserti Dasht-i Margo SW Qala Bist, 31°28'N, 64°21'E, 820 m, 18.5.1967, *Rechinger 34504* (G, M, W); in collibus saxosis 44 km NE Qala Bist, 31°28'N, 64°21'E, 900 m, 21.5.1967, *Rechinger 34777* (W); 20 km S Kandahar, 31°36'N, 65°47'E, 1000 m, 27.5.1967, *Rechinger 35285* (B, E, G, W); Jallalabad, Flugsand, 13.5.1951, *Volk 2000* (W).

PAKISTAN: BALUCHISTAN: Makran, inter Gwadar, 25°09'N, 62°21'E, et Suntasar, 25°31'N, 62°02'E, 17.4.1965, *Rechinger 27967* (G, W); Ras Nuh prope Gwadar, 25°09'N, 62°21'E, 50-150 m, 15.4.1965, *Rechinger 27911* (W); 80 km S Turbat, 26°00'N, 63°06'E, versus Pasni, 25°13'N, 63°30'E, 13.4.1965, *Rechinger 27844* (G, W); *ibid.*, sandy wadi bottom, 13.4.1965, *J. Lamond 435* (E); 90-100 km S of Turbat, road to Pasni, inland sand dunes, 13.4.1965, *J. Lamond 436* (E); 8-25 km W Awaran versus Turbat, 26°00'N, 63°06'E, 11.4.1965, *Rechinger 27732* (G, W); inter Pasni, 25°13'N, 63°30'E, et Kappar, 25°18'N, 62°42'E, 14.4.1965, *Rechinger 27862* (W); Hoshab to Panjgur, c. 20-30 km from Panjgur, sandy plain, 20.4.1965, *J. Lamond 563* (E); 60 km S Panjgur, 26°06'N, 64°06'E, 800-850 m, 19.4.1965, *Rechinger 28078* (B, G, W); 20-30 km S Panjgur, 26°58'N, 64°06'E, 20.4.1965, *Rechinger 28137* (W); near Panjgur, 900 m, decomposing marl and silt hills, slightly saline, 27.5.1963, *Popov 173*; *ibid.*, 29.5.1963, *Popov 187a* (BM); inter Padag et Nushki, 29°33'N, 66°01'E, 30.3.1965, *Rechinger 27304* (B, G, W); near Nashki, 1500 m, silty plain, 3.6.1963, *Popov 254* (BM); Ghasreghand, 16 km Rask-road, 8.3.1974, *Shirdelpur* (W). – S I N D ("Scinde"), S. loc., *Stocks* (K);

I N D I A: Haryana, Hissar Distr., Siwani, [= Sewani, 28°58'N, 75°39'E], on loose sandy soil, 3.2.1966, *V.J. Nair 36612* (LE).

Use

Young leaves are locally eaten as salad (reported by Hartert in Schweinfurth 1913: 165 sub *Zollikoferia glomerata* for the Central W Sahara).

Use in folk medicine is reported from Baluchistan, Pakistan, were in the area of Turbat a decoction of the green parts is orally applied to infants up to three weeks old to relieve milk digestion and urinary tract problems (Goodman & Ghafoor 1992: 48). Kirtikar & al. (s.d.: 1449 sub *L. glomerata*) quote from Baluchistan, Pakistan, the application of a decoction mixed with some wheat meal into a poultice to the eyes to cure eye-ache (see also Baquar 1989: 256).