

longer corollas and anther tubes, yellow sweeping hairs, marginal achenes with the longer type of papillae not exceeding 0.1 mm, persistent pappi, and deeply pinatifid leaves with narrow segments. Further collections are needed to clarify the nature of this variation.

Distribution and ecology

The presently known localities of *Launaea almahrahensis* are confined to the S Arabian mountain ranges between Shuqra, Yemen, in the west, and Ras Madrahah, Oman, in the east (Fig. 89). The epithet refers to the region of Al Mahrah, E Yemen, in the centre of its known distribution area, where the type collection comes from.

Flowering and fruiting material was collected in October, February, March and May.

Additional specimens seen:

Y E M E N: Bilad Fodhli [= Fadli], ad declivia australis lapidosa montis d'Areys [= Dj. al Arays = Dj. al Urays, near the coast at c. 46°E], 2.5.1893, *Deflers 1099* (MPU); N slope of Jebel Madaran, J. Areays area, dry basaltic slopes, 1100 m, 11.2.1989, *Miller & al. 8070* (E); Wadi Hadramaut, about 100 miles inland, 2000-3000', 1936, *Maxwell Darling 188* (K).

O M A N: D H O F A R: Shaleem, c. 160 km ENE of Salalah, broad wadi bed, sand covering slabs of rock, c. 200 m, 14.10.1979, *A.G. Miller 2743* (E); Jazir Coast, [Jazir: 18°45'N, 56°50'E], 14.2.1968, *G. Popov 68/36* (BM).

(7) *Launaea omanensis*

Launaea omanensis N. Kilian, **sp. nova** – Holotype: Oman, Buraimi region, 4 km ENE of Mahdah, 24°37'N, 56°02'E, c. 200 m, lower slopes of rocky hill on edge of arid gravel plain, 28.4.1989, *R.A. Western 1182* (E) – Fig. 90.

A *Launaea almahrahensis* foliis apice acuto et segmentis angustis acutis (versus apice rotundato et segmentis latioribus rotundatis), pedunculis longioribus (raro < 2 cm, plerumque usque ad 8 cm versus 0.5-2.5 cm), caulibus floriferis foliaceis (versus aphyllis), antherarum tubo sine appendicibus 2.6-3.2 mm (versus 1.8-2.4 mm) longo, stylosum pilis concoloris (versus nigris), papillis longioribus acheniorum marginalium usque ad 0.12 mm (versus 0.1-0.2 mm) longis, pappo 9-12 mm (versus 5-9 mm) longo, persistente (versus deciduo), et distributione geographica in parte regionis Arabiae peninsulae austro-orientalis (versus meridionalis centralis) distinguitur. A *Launaea quettaënsi* et *L. amal-aminae* praecipue acheniis rostratis (versus attenuatis vel cuspidatis), marginalibus dense papillois et papillis typi majoris 0.08 mm superantibus (et usque ad 0.12 mm) differt.

lc.: Figs 13a-d, 90.

Description

Perennial herb, flowering 20- >50 cm high, with shoot bearing roots, mostly with a single erect, at least basally (but mostly also higher up) leafy flowering stem or

a few such stems. *Basal leaves* up to $2.5-13 \times 0.5-2$ cm, crowded together, rather variable, narrowly spatulate to narrowly elliptical in outline, tapering into the narrow base, sinuate-dentate to pinnatifid with narrow, acute segments, margin denticulate, apex acute to acuminate. *Cauline leaves* similar to the basal leaves but smaller, less incised, narrower to almost ribbonlike, tapering into a petiole-like base, apex acute or obtuse, higher up the stem passing over into lanceolate to narrowly ovate-acute bracts. *Synflorescence* of a flowering stem with 1-3 or several capitula, with the terminal capitulum of the main axis overtopped by a few, sometimes mono-capitulate branches. *Peduncles* as the terminal segment of the flowering axes wiry, spreading-erect, (1)2-8 cm long, with a few to several bracts similar to or passing over into the outer involucre bracts. *Capitula* with up to 50 flowers. *Receptacle* at fruiting time 2.5-3.0 mm in diameter. *Involucre* \pm club-shaped at anthesis and 11-15 mm long, prolonged after anthesis, later \pm cylindrical and finally 15-18 mm long, involucre bracts mucronate, at time of fruit dispersal spreading and their midrib in lower part swollen and hardened, after fruit dispersal bracts reflexed; outer involucre bracts 7-10, with white-cartilagineous tip, the outermost cordate, 0.8-1.2 mm long, the following bracts longer and \pm spatulate, the innermost linear-lanceolate, at anthesis c. $2/3-3/4$ as long as the inner involucre bracts; inner involucre bracts 8-12, linear-lanceolate, at anthesis subequal, at fruiting time distinctly differing in length, $11-18 \times 1.5-3$ mm, with the innermost being the longest. *Flowers* with a yellow ligule of $9-12 \times 2.4-3.4$ mm and a tube 8-10 mm long; anther tube without appendages 2.6-3.2 mm long, apical appendages 0.4-0.5 mm and basal appendages 0.4-0.6 mm long; style branches 3.0-3.2 mm long, with yellow sweeping hairs. *Achenes* rostrate, including the slender, 1.0-2.2 mm long beak, $4.2-7.1 \times 0.4-0.6$ mm, heteromorphic, inner with 4 main ribs each accompanied by 2 distinct secondary ribs, columnar to slightly subfusiform, tapering into the slender beak, subglabrous to shortly papillose, greyish-brown; the following denser papillose, with both minute and longer papillae, otherwise similar; the marginal with 5 main ribs each accompanied by 2 secondary ribs, subfusiform and with a shorter beak than the inner, somewhat curved and somewhat compressed, with 2 distinct types of hyaline papillae, one minute, globose, the other linear and up to 0.12 mm long, otherwise similar. *Pappus* 9-12 mm long, persistent, dimorphic, of numerous downy and a somewhat smaller number of setaceous, longer inner rays.

Chromosome number: Unknown.

Variability

Launaea omanesis appears to be a habitually fairly variable species. Specimens from Muscat and environment (*Rubens 91, Frey & Kürschner 89-144*), having a (browsed) main stem of 3-4 mm in diameter, suggest that the species may even grow taller than the 50 cm reported on the label of *Whitcombe 741*. The \pm dominant, \pm erect, earlier or later \pm divaricately branched and at least basally leafy main stem, as indicated in part of the specimens, would be a handsome character to key out the species from its allies *L. amal-aminae*, *L. almahrahensis* and *L. quettaënsis*, which are all rather delicate plants with a few or several, \pm equal,

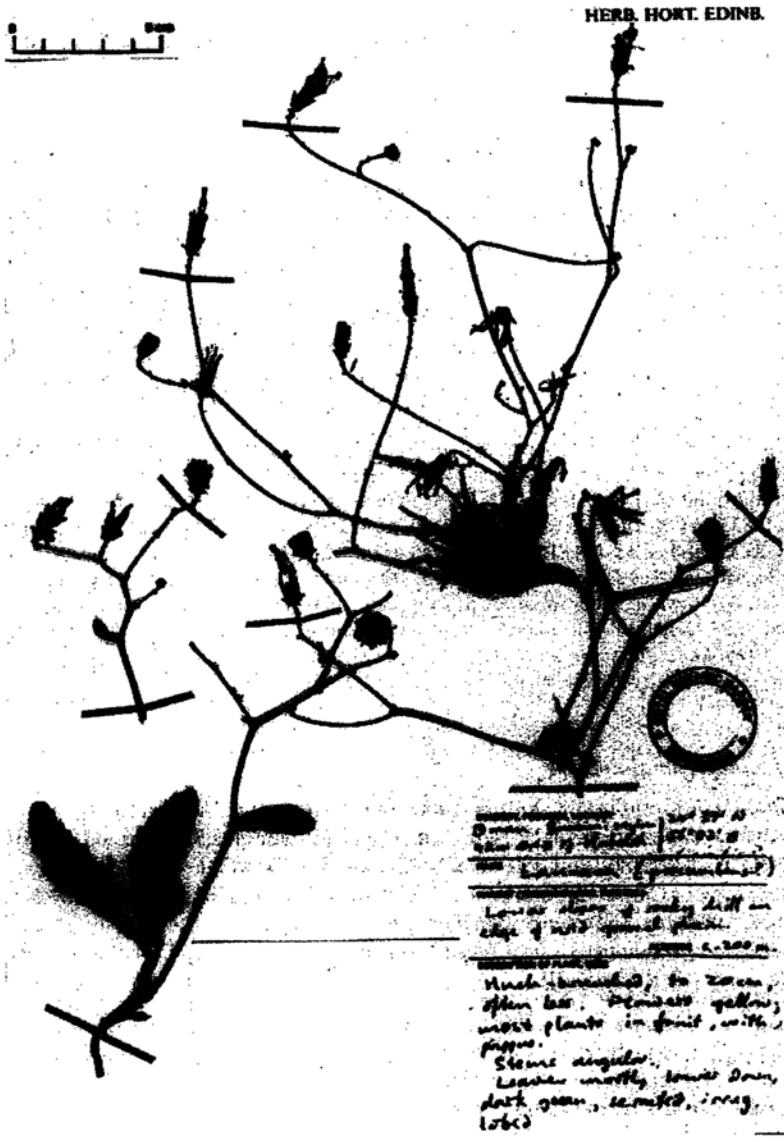


Fig. 90. *Launaea omanensis* (holotype specimen, E).

ascending, leafless stems. There are, however, other specimens (e.g. the holotype, and Radcliffe-Smith 3646, 4193), which habitually resemble the latter species and therefore make this feature unreliable. Similarly variable are the basal leaves and the degree of branching of the synflorescence.

Due to the usually rather vigorous habit and the fairly large capitula *L. omanensis* resembles species of the *mucronata* group and is commonly misidentified with in particular *L. mucronata*.

Distribution and ecology

The species seems to be restricted to the eastern escarpments of the E Oman mountain chain and its coastal plains (Fig. 89). *L. omanensis* is found there from sea level up to 1800 m; the collectors often mention rocky slopes as the habitat.

Flowering and fruiting material dates from March and April.

Additional specimens seen:

OMAN: W al Hajr Mts., Wadi el Gawr, 25°00'N, 56°00'E, hillsides, 17.2.1944, *Vesey-Fitz-Gerald 13244/1, 13244/2* (BM); Dhahirah, Wadi Fida below Yanqul [= Khabura Yanqul], 450 m, limestone slopes, 12.3.1980, *Edmondson 3355* (E); vicinity of Samail, 23°18'N, 57°56'E, c. 1000', rocky hillside, 20.4.1975, *Mandaville 6692* (BM); E. Batinah, 5 miles SE of Seeb [= Sib] Int. airport, wadi-bed, 26.2.1976, *Radcliffe-Smith 3646* (K); vicinity of Sib, 23°40'N, 58°12'E, 50', sand, 20.4.1975, *Mandaville 6702* (BM); Wadi Qid, 23°12'N, 58°37'E, 1500-1700', rocky hillside, 24.4.1975, *Mandaville 6822* (BM); c. 10 km W of Muscat, sandstone cliff at beach, 18.3.1975, *Rubens 91* (E); Muscat, Wadi Wattiyah, 15m, 14.2.1983, *Frey & Kürschner 83-69* (BSB); *ibid.*, Wadi Sarooj, 15-50m, Kalkhang, 15.2.1983, *Frey & Kürschner 83-144* (BSB); *ibid.*, 40-140m, 21.2.1983, *Frey & Kürschner 83-416* (BSB); Muscat, Ruwi Richtung Al Bustan, 100-300 m, 22.2.1983, *Frey & Kürschner 83-442* (BSB); Ruwi, in valley W of town, on igneous rock outcrop, 100', 11.4.1976, *Radcliffe-Smith 4193* (K); *ibid.*, on gravelly & rocky banks of wadi bed NW of the town, 100', 26.2.1976, *Radcliffe-Smith 3671* (K); Saiq ministry of agriculture farm, 1800 m, 18.2.1980, *Whitcombe 741* (E); Jabel Fayah, sandy soil, 2.1952, *Lee-Oldfield FNLO.100* (BM).

(8) *Launaea amal-aminae*

Launaea amal-aminae N. Kilian, **sp. nova** – Holotype: Algeria, 32 km S von Abadla an der Straße nach Beni Abbes, 610 m, sandiger Straßenrand, 30°46'N, 2°44'W, 4.4.1980, *Podlech 33787* (M!), isotypes G!, M!).

[= *Launaea cassiana* var. *marginata* Maire in Bull. Soc. Hist. Nat. Afrique N. 24: 221. 1933, p.p. [non sensu typi]].

[= *Launaea procumbens* sensu Alavi, Fl. Libya 107: 383, p.p. [non sensu (Roxb.) Ramayya & Rajagopal]]

A *Launaea almahrahensi* valde simili involucro minore (per anthesin 7-9 versus 9-11 mm, in statu fructifero usque ad 11(-12) versus 13(-16) mm longo), achae-niis marginalibus apicem versus attenuatis vel cuspidatis apice papilloso (versus breviter rostratis rostro glabro), papilloso-pubescentibus (versus dense papillosis) et papillis typi majoris 0.04-0.08 mm (versus 0.1-0.2 mm) longis distinguitur.

Ic.: Figs 12a-f, 19a, 91.

Description (v.v.)

Perennial herb, flowering c. 20-25 cm high, with a basal leaf rosette and several leafless, divaricately branched, procumbent to ascending, greyish-glaucous flower-

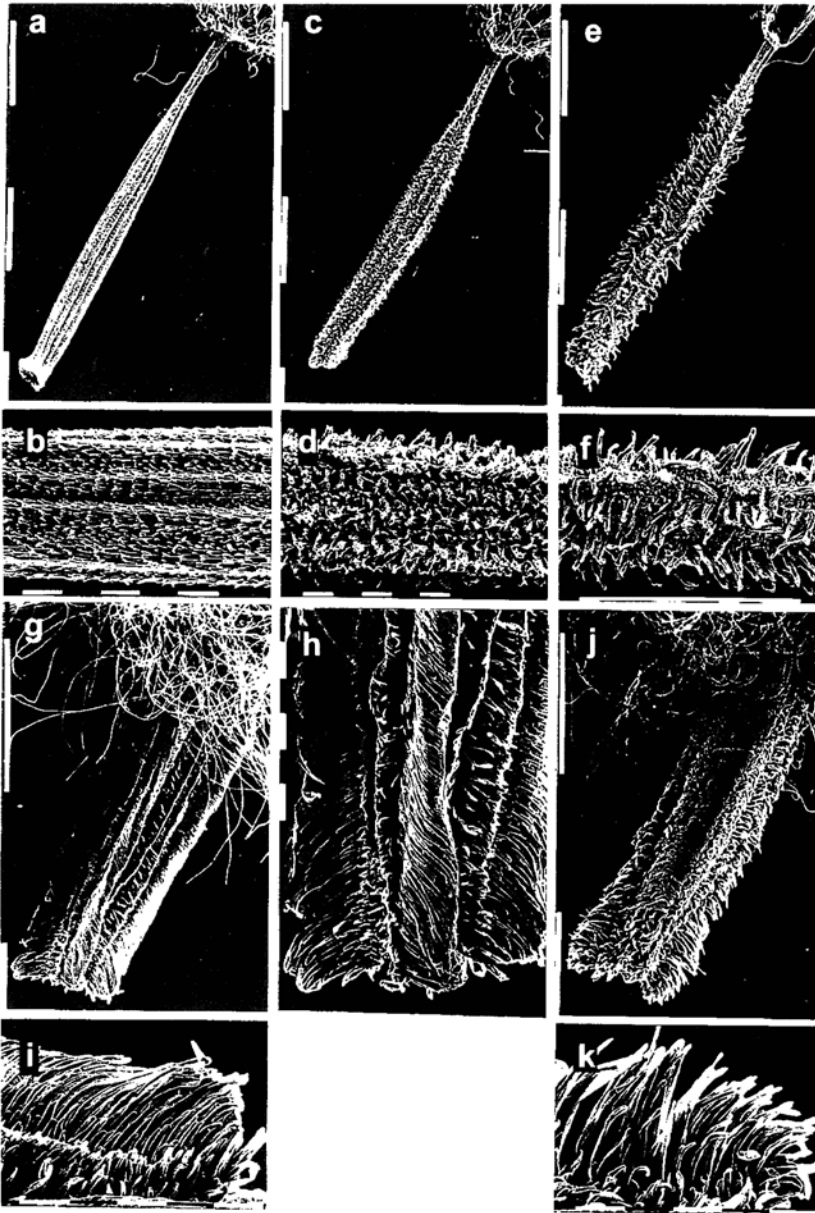


Fig. 13. SEM micrographs of *Launaea* achenes – a-d: *L. omanensis*, inner (a-b), marginal (c-d) (Whitcombe 741, E); e-f: *L. almahrahensis*, marginal (Miller 2743, E); g-i: *L. angustifolia* subsp. *arabica*, marginal, total (g), lower third (h), wingforming papillae (i) (Rechinger 8571, B); j-k: *L. angustifolia* subsp. *angustifolia*, marginal, total (j), wingforming papillae (k) (Vogt 12866 & Oberprieler, B). – Scale: 1 mm (a, c, e, g-h, j) and 0.1 mm (b, d, f, i, k).