

axes capillaceous, 0.5-1.0 cm long, often with a single bract similar to the outer involucre bracts just below the capitulum. *Capitula* with c. 35-45 flowers. *Receptacle* at fruiting time c. 1.5-2.0 mm in diameter. *Involucre* at anthesis somewhat clubshaped, 6-7 mm long, towards fruiting time narrowly cylindrical, somewhat prolonged after anthesis and finally \pm 8 mm long, at time of fruit dispersal involucre bracts spreading and basal part of their midrib swollen and hardened; outer involucre bracts 5-7, with somewhat sinuate, non-scarious margin, the outermost narrowly lanceolate, acute, 2.8-3.2 mm long, the following bracts gradually longer and \pm linear-lanceolate, the innermost almost equalling up the inner involucre bracts; inner involucre bracts \pm 8, in one row, linear-lanceolate, subequal, 6-8 \times 1.5-2.0 mm, with indistinct scarious margin. *Flowers* with a golden yellow ligule of 5-6 \times 1.5-1.8 mm and a tube 3-4 mm long; anther tube without appendages 1.6-1.9 mm long, apical appendages \pm 0.2 mm and basal appendages 0.2-0.3 mm long; style branches 0.8-1.2 mm long, sweeping hairs yellow(?). *Achenes* rather abruptly contracted into a long filiform beak, including the beak 3.9-4.5 \times 0.3-0.4 mm, beak 2.6-2.8 mm long, heteromorphic, inner 4-angular, subcolumnar to subfusiform with 4 main ribs each accompanied by 2 secondary ribs, \pm smooth, especially on the ribs with short, narrowly triangular, acute, hyaline papillae, corpus dark brown, beak pale and basally slightly papillose like the corpus; marginal 5-angular, subfusiform, slightly curved and compressed, with 5 main ribs each accompanied by 2 secondary ribs, otherwise like inner. *Pappus* c. 3.5 mm long, deciduous, homomorphic, of c. 40-50 setaceous rays.

The achenes of *Launaea lackii* have the ultimately pronounced and longest beak in the genus.

Distribution and ecology

Launaea lackii is only known from two collections, from Suria Malableh near Berbera, NW Somalia, where it grows on a gypsum hill. Both were made on the same day and comprise flowering as well as fruiting material.

Additional specimen seen:

SOMALIA: Suria Malableh, 16 km SE of Berbera, on gypsum hill, 22.1.1973, *Lavranos & Horwood 10413* (E).

(6) *Launaea almahrahensis*

Launaea almahrahensis N. Kilian, **sp. nova** – Holotype: Yemen, Hadramaut, Umgebung von Nitaua, einer Ortschaft bei Ras Fartak, 7./8.3.1899, *Paulay* (WU!) – Fig. 88.

A *Launaea omanensi* caulibus floriferis pluribus procumbentibus vel ascendentibus et plerumque gracilioribus usque ad 20 cm altis (versus saepe caule florifero solo uno, plerumque \pm erecto et usque ad > 50 cm alto, rariore pluribus ascendentibus), foliis apice rotundato et segmentis latoribus rotundatis (versus apice acuto et segmentis angustis acutis), caulibus floriferis aphyllis (versus foliaceis), antherarum tubo sine appendicibus 1.8-2.4 mm (versus 2.6-3.2 mm) longo, stylorum pilis nigris

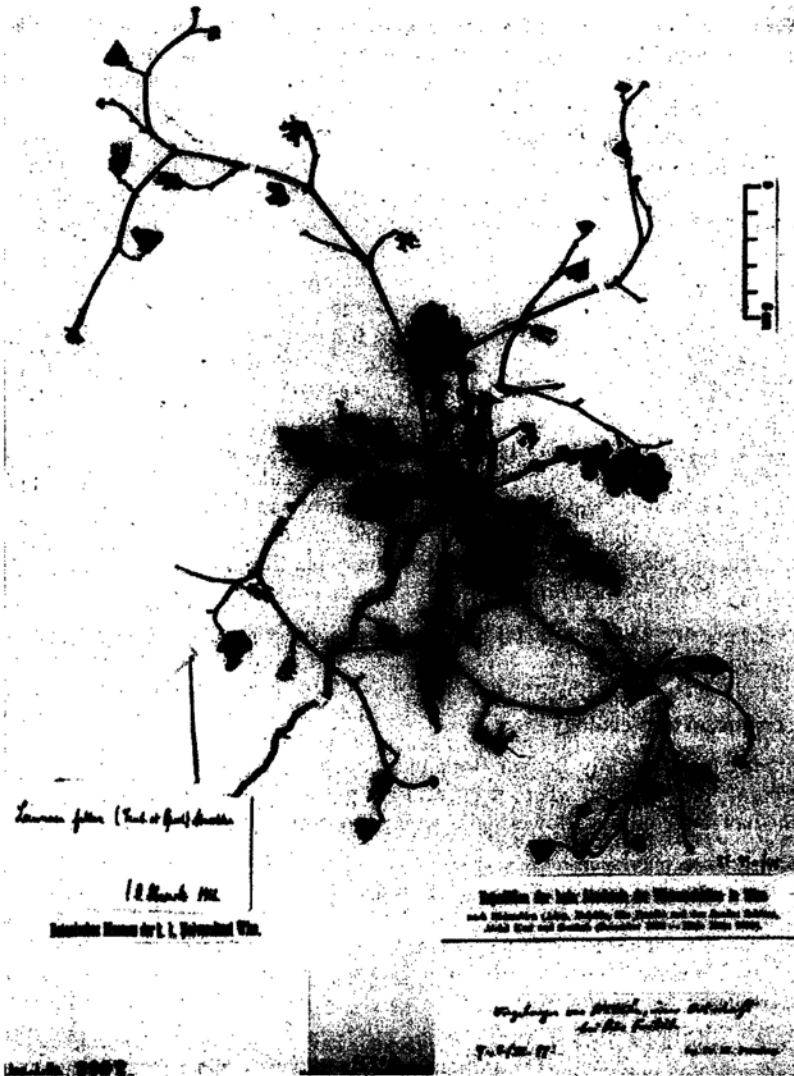


Fig. 88. *Launaea almahrahensis* (holotype specimen).

(versus *concoloris*), papillis longioribus achaeniorum marginalium 0.1-0.2 mm (versus usque ad 0.12 mm) longis, pappo 5-9 mm (versus 9-12 mm) longo, deciduo (versus persistente), distributione geographica in regionibus Arabiae peninsulae meridionalibus Al Mahrah et Dhofar (versus in parte regionis Arabiae peninsulae austro-orientalis) distinguitur. A *Launaea quettaënsis* et *L. amal-aminae* praecipue

achaeniis rostratis rostro glabro (versus attenuatis vel cuspidatis apice papilloso), marginalibus dense papilloso (versus leviter papilloso) et papillis typi majoris 0.1-0.2 mm (versus 0.04-0.08 mm) longis differt.

lc.: Figs 13e-f, 88.

Description (v.v.)

Perennial herb with slender taproot, flowering c. 10-20 cm high, with leaves in basal rosette and with a few procumbent to ascending, divaricately branched, leafless flowering stems. *Rosette leaves* 2-9 × 1-2.5 cm, obovate or broadly to narrowly spatulate and tapering into an almost petiol-like base, sinuate(-dentate) to ± irregularly pinnatifid with ± rounded segments and the apex rounded to subacute, margin white-cartilagineously denticulate, lamina somewhat fleshy; flowering stems with cordate, acute to acuminate bracts. *Synflorescence* of a flowering stem with several capitula single at the end of the divaricate branchings, the main axis with its terminal capitulum very short, overtopped by the ± monochasial branches. *Peduncles* as the terminal segment of the flowering axes 0.5-2.5 cm long, with a few bracts similar to or passing over into the outer involucre bracts. *Capitula* with c. 20-55 flowers. *Receptacle* at fruiting time 3-4 mm in diameter. *Involucre* at anthesis 9-11 mm and at fruiting time up to 13(-16) mm long, at anthesis rather stout, cylindrical to somewhat clubshaped, after anthesis prolonged and slender-cylindrical; at time of fruit dispersal inner involucre bracts star-wise outspread and their midrib basally swollen and hardened; involucre bracts with a ± distinct narrow scarious margin and ± contracted into a white and, in case of the outer bracts, ± cartilagineous tip; outer involucre bracts 6-8, the outermost broadly cordate (± as long as broad), 1.5-2.0 mm long, the following gradually longer, obovate to spatulate, the innermost ± linear-lanceolate and $\geq 2/3$ as long as inner involucre bracts at anthesis; inner involucre bracts 8-10(12), at flowering time ± equal, linear-lanceolate, with the postfloral prolongation becoming different in length. *Flowers* with a yellow ligule of c. 7-7.5 × 2.0 mm and a tube c. 4-4.5 mm long; anther tube without appendages c. 1.8-2.4 mm long, basal appendages 0.3-0.4 mm and apical appendages 0.2-0.3 mm long; style branches c. 1.8-2.0 mm long, sweeping hairs blackish. *Achenes*, including a short beak of c. 0.3-0.5 mm length, 3.6-4.2 × 0.3-0.5 mm, heteromorphic, inner ± columnar, prismatic, with 4 distinct main ribs each accompanied by 2 distinct secondary ribs, brown; marginal with 5 distinct main ribs each accompanied by 2 distinct secondary ribs, in particular the outermost somewhat shorter and stouter, somewhat curved and slightly compressed, tending to a subfusiform shape, covered with both minute, dustgrainlike and 0.1-0.2 mm long, linear-lanceolate papillae, otherwise similar to the inner. *Pappus* 5-9 mm long, deciduous, dimorphic, of downy and a somewhat smaller number of setaceous, longer inner rays.

Chromosome number: Unknown.

Variability

The rather scarce material indicates that *Launaea almahrahensis* develops root-born shoots, but this needs to be confirmed. Leafless flowering stems seem typi-

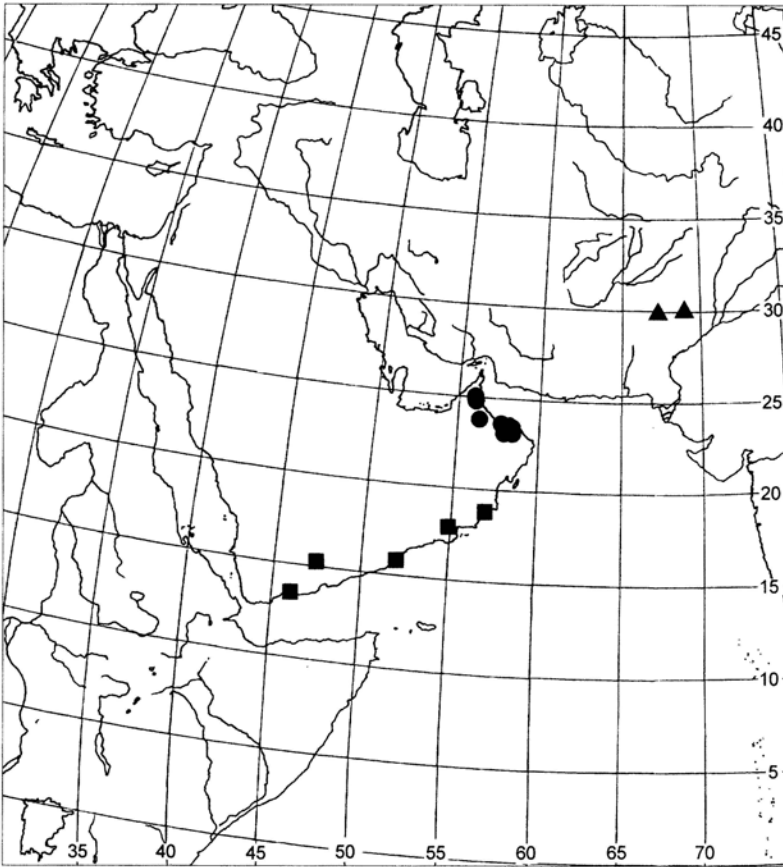


Fig. 89. Distribution of *Launaea almahrahensis* (squares), *L. omanensis* (circles), and *L. quettaënsis* (triangles).

cal for the species in contrast to *L. omanensis*. The leaf shape of the type specimen, resembling that of *L. amal-aminae*, is typical, and found in all the specimens apart from Miller & al. 8070, whose deeply pinnatifid leaves have exceptionally narrow segments. Specimens with rather few-flowered capitula are *Deflers 1099* (with a minimum of c. 20 and *Popov 68/36* with a minimum of 26 flowers). The fruiting involucre in most specimens is about equally long as in the type, but in *Deflers 1099* it reaches an exceptional 15-16 mm. Usually the inner achenes have failed for some unknown reason in the specimens examined. In all specimens the pappus has a clear tendency to fall off while it is throughout persistent in *L. omanensis*.

Very recent own collections in the Lawdaw area, Yemen (Wadi nr. Djahayn, 13°28'40"N, 45°45'40"E, 720 m, 25.3.1997, *Kilian 4540* & *Al-Gifri* (B, etc.); Naqil Thirah, 13°53'18"N, 45°45'45"E, 1720 m, 26.3.1997, *Kilian 4596* & *Al-Gifri* (B, etc.)) deviate from the material referred to in the description and diagnosis by

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, stylium 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-aminæ* 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

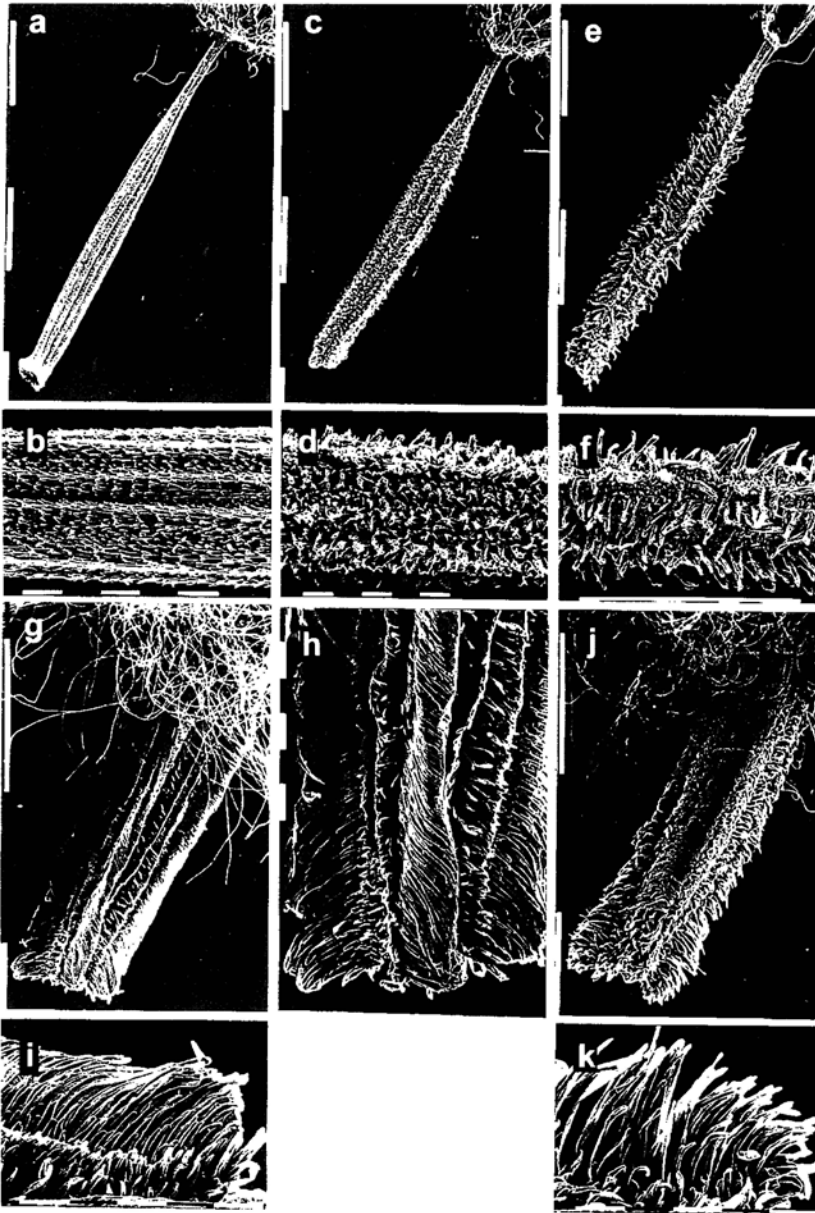


Fig. 13. SEM micrographs of *Launaea* achenes – a-d: *L. omanensis*, inner (a-b), marginal (c-d) (Whitcombe 741, E); e-f: *L. almahrahensis*, marginal (Miller 2743, E); g-i: *L. angustifolia* subsp. *arabica*, marginal, total (g), lower third (h), wingforming papillae (i) (Rechinger 8571, B); j-k: *L.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