

# FLORA ZAMBESIACA

MOZAMBIQUE  
MALAWI, ZAMBIA, ZIMBABWE  
BOTSWANA

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## 129. LAMIACEAE Martynov (LABIATAE Juss.)

by A.J. Paton, G. Bramley, O. Ryding, R.M. Polhill, Y.B. Harvey, M. Iwarsson,  
D.F. Otieno, K. Balkwill, P.B. Phillipson, R.M. Harley and F. Willis<sup>1</sup>

Trees, shrubs or herbs, rarely climbers, aromatic or not. Stems often square in cross-section. Leaves simple, sometimes compound but then digitate or pinnate, opposite, often decussate, sometimes whorled, very rarely alternate, entire, toothed or lobed, petiolate or sessile, rarely forming a basal rosette, exstipulate. Inflorescence composed of cymes and often arranged in a terminal, lax or congested indeterminate thyrse, which may be paniculate, raceme-like with cymes often 1-flowered, or spike-like, rarely congested into a head; often with bracts and sometimes with bracteoles. Flowers actinomorphic to zygomorphic, hypogynous, usually bisexual. Calyx gamosepalous, sometimes 2-lipped, often enlarging in fruit; lobes 2–many, often 5, equal or unequal, rarely obsolete, some lobes often fused, or lips entire. Corolla gamopetalous, actinomorphic to (more often) slightly to strongly zygomorphic, often 2-lipped, rarely 1-lipped; tube short to elongate, rarely spurred, often with a ring of hairs or appendaged within; lobes (2)4–5(16), equal or unequal, one or other lip often concave to galeate. Stamens epipetalous, attached within corolla-tube, usually 4, or 2 by abortion and then staminodes often present, more rarely stamens 5–8(16) when 4 often didynamous, usually free; filaments usually exerted from corolla tube, sometimes included within lip of corolla; anthers usually dithecos or monothechos by abortion, opening by longitudinal slits or rarely by pores. Disk at base of ovary often present, nectariferous. Gynoecium 2-carpellate, often 4-locular by intrusion of carpel wall forming a false septum, or rarely imperfectly 2-locular and free towards apex; ovary entire or lobed with terminal style, more often deeply 4-lobed, the locules often separated and with style gynobasic; ovules usually 4, anatropous to hemianatropous, usually basal or sub-basal, erect, rarely orthotropous, apical, pendulous, borne submarginally on placenta; style usually with 2 equal or unequal stigma-lobes, rarely entire with 1 stigma-lobe vestigial, or stigma capitate or very rarely 4-lobed. Fruit a drupe, often with pyrenes, or dry and indehiscent, or separating into two 2-seeded or frequently four 1-seeded mericarps, sometimes fewer by abortion; mericarps (nutlets) often with sculptured, tuberculate, hairy or rarely winged pericarp, mucilage cells often present. Seeds albuminous or exalbuminous; embryo straight or bent.

A cosmopolitan family of c.258 genera with around 7000 species, mainly in temperate zones and particularly diverse in the Mediterranean region. Around 34 genera and 330 species are found in the Flora Zambesiaca region; 26 other genera are introduced in cultivation.

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<sup>1</sup> Alan Paton, introduction, key and cultivated species, genera 2, 15, 16 (with Donald Otieno & Kevin Balkwill), 17–24, 27; Gemma Bramley, genera 6 & 28; Ray Harley, genus 10; Yvette Harvey, genera 5, 7 (with Mattias Iwarsson) & 8; Peter Phillipson, genus 25; Roger Polhill, genera 3, 4, 9, 13, 14; Olof Ryding, genera 11, 12, 26; Fiona Willis, genus 1. Only authors other than Alan Paton indicated in genus footnote.

short hairs, more plentiful on venation, punctate with yellow sessile glands; petiole 2–3 mm long. Inflorescence of 1–3 verticils spaced 10–55 mm apart, verticils few-flowered; pedicels 1–2 mm long, hairy; bracteoles 1–2 mm long, linear, pubescent with spreading hairs. Calyx tube funnel-shaped, 4–5 mm long at anthesis, extending 1–2 mm in fruit, pubescent with short hairs especially on vein ridges, and yellow sessile glands, inner surface with short appressed hairs; throat oblique, posterior side 1–1.5 mm longer than anterior; lobes 10, all very shortly triangular with tiny spinescent tips, centre lobes on posterior side slightly more conspicuous, up to 0.5 mm long. Corolla white, 12–13 mm long; tube  $\pm$  8 mm long, with appressed hairs in upper half, inner surface with papillae leading to undulate band of short glandular hairs halfway down tube; posterior lip 4–5 mm long, anterior lip 5–6 mm long, inner surface with short hairs leading to centre lobe, centre lobe with small papillae, outer surface with scattered hairs and yellow sessile glands. Nutlets 1.5–2 mm long, some glands at apex.

**Zambia.** E: Chipata Dist., Fort Young, fl. ix.1896, *Nicholson* s.n. (K). **Zimbabwe.** C: Harare (Salisbury), fl. 12.ix.1960, *Rutherford-Smith* 74 (K, SRGH). E: Nyanga Dist., Pine Tree Inn, c.5 km W of Juliusdale, fl. 17.ii.1997, *Goyder & Paton* 4115 (K). S: Mberengwa Dist., Mt Buhwa, fl. 31.x.1973, *Biegel, Pope & Gosden* 4344 (K, SRGH). **Malawi.** C: Dowa Dist., 11 km N of Lombadzi, fl. 23.vi.1970, *Brummitt* 1160 (K). S: Zomba Plateau, fl. 13.viii.1960, *Leach* 10429 (K, SRGH). **Mozambique.** N: Marrupa Dist., 2 km from Marrupa on road to Maúa, fl. 5.ii.1981, *Nuvunga* 467 (K, LISC). Z: Gurué Dist., Namuli Mt, fl. 26.xi.2007, *Chapama* 16 (K, LMA, MAL). MS: Sussundenga Dist., Dombe, fl. & fr. 27.x.1953, *Gomes e Pedro* 4456 (K).

Also in Tanzania. Miombo woodland, rock outcrops, often in burnt areas; 600–1900 m.

Conservation notes: Widespread; Least Concern.

Recognisable by its short funnel-shaped calyx oblique at the mouth, the posterior side being slighter longer than the anterior, and by its very short bracteoles.

## 7. LEONOTIS (Pers.) R. Br.<sup>10</sup>

**Leonotis** (Pers.) R. Br., Prodr. Fl. Nov. Holl.: 504 (1810). —Iwarsson & Harvey in Kew Bull. 58: 597–645 (2003). —Ryding in Kubitzki, Fam. Gen. Vasc. Pl. 7: 227 (2004).

*Phlomis* L. sect. *Leonotis* Pers., Syn. Pl. 2: 127 (1806).

Annual or perennial herbs or shrubs to 8 m tall. Stems quadrangular, occasionally rounded at base, pubescent, nodes thicker than internodes, often with prominent leaf scars. Leaves petiolate or occasionally sessile, margins crenate. Inflorescence composed of 1–5 verticils per shoot, verticils dense, spherical to ellipsoid, many-flowered; bracts leaf-like, bracteoles linear, mucronate. Calyx tubular, 10-nerved, 8–10-toothed, teeth triangular, mucronate. Corolla tubular, 2-lipped, white or faintly pink, covered by red, orange, yellow, buff (sometimes white) hairs, tube with 1–3 basal rings of hairs within; upper corolla lip entire, slightly shorter than tube, curved inwards at apex (hooded), fringe of long hairs at apex within covering anthers and stigma, occasionally coloured white; lower lip 3-lobed, considerably shorter than upper lip, darker than rest of corolla, reflexed to spreading, subglabrous; median lobe occasionally longer than outer lobes. Stamens 4, inserted at corolla mouth, didynamous, the lower pair longer; thecae 2, divaricate. Disk ventrally enlarged. Style (partially) bifid, dorsal stigma surface sessile. Nutlets obconic, 3-angled in transverse section, distally truncate, with sessile glands, otherwise glabrous, dark or pale brown.

Nine species in Africa, one of which, *Leonotis nepetifolia*, is a pantropical weed. *L. leonurus* (L.) R. Br. from South Africa and *L. nepetifolia* are cultivated worldwide.

<sup>10</sup> By Y.B. Harvey & M. Iwarsson

1. Calyx usually 8-toothed; dorsal calyx tooth 3-veined, 3–8.5 mm, longer than lateral or ventral teeth; lower lip of corolla spreading, with 3 lobes united at base, shrivelled and twisted . . . . . 2
  - Calyx usually 10(12)-toothed; teeth subequal or with a 1-veined dorsal tooth, less than 2(3) mm longer than lateral or ventral teeth; lower lip of corolla reflexed on corolla tube, with 3 separate lobes . . . . . 3
2. Perennial woody shrub from a swollen base; without longer hairs at nodes; corolla tube with one band of hairs inside near base . . . . . 6. *ocymifolia*
  - Annual or short-lived herb to 3 m high, not branched at base; usually with tufts of long hairs at nodes; corolla tube usually with 3 bands of hairs inside near base . . . . . 7. *nepetifolia*
3. Leaf blades mostly 50 mm or more long, linear, narrowly lanceolate-(elliptic) or narrowly ovate . . . . . 4
  - Leaf blades less than 50(55) mm long, rounded, broadly ovate, oblanceolate, rhombic or spatulate . . . . . 5
4. Calyx constricted at throat, dorsal, ventral and lateral teeth of distinctly different lengths; banding within corolla tube distinct; stem almost glabrous . . . 1. *grandis*
  - Calyx not constricted at throat, teeth subequal; banding within corolla tube diffuse; stem velutinous, shortly pubescent or pilose . . . . . 2. *decadonta*
5. Upper lip of corolla with white hairs on inner surface; dorsal tooth of calyx 3–4 mm long, other teeth 2–3 mm long; leaves toothed on upper two-thirds . . . . . 5. *pole-evansii*
  - Upper lip of corolla with orange hairs on inner surface; dorsal tooth of calyx 2–3 mm long, other teeth also shorter; leaves toothed only at apex . . . . . 6
6. Leaf blades obovate to narrowly oblanceolate, 3.5–10(18) mm wide, mostly eglandular; bracteoles 1–2 mm wide; calyx pale green to brown . . . 3. *myricifolia*
  - Leaf blades obtrullate to rhombic, 12–18 mm wide, both surfaces glandular; bracteoles less than 1 mm wide; calyx orange . . . . . 4. *myrothamnifolia*

1. **Leonotis grandis** Iwarsson & Y.B. Harv. in Kew Bull. 58: 605, fig.1 (2003). —Iwarsson & Harvey in F.T.E.A., Lamiaceae: 97 (2009). Type: Malawi, Chitipa–Chinunka road, near Kaseye Mission at bridge of Vumbo R., 25.vii.1978, Iwarsson & Ryding 972 (UPS holotype, DSM, EA, K, MAL, NHT). FIGURE 8.8.10.

Shrub (1.8)3–5 m high, branched towards apex, with up to 40 shoots from a woody rootstock. Stem internodes 1–3 cm long, with short antrorse hairs and a few longer hairs, occasionally with scattered sessile glands, green at apex, pale brown at midpoint, grey-striate at base with lenticles c.10 × 1 mm; nodes prominent with ring-like leaf scars. Leaves petiolate; blade lanceolate-elliptic to narrowly elliptic, 50–120 × (5)10–30 mm, apex acuminate, base attenuate, margin involute, crenate only in apical  $\frac{1}{2}$ – $\frac{2}{3}$ , both surfaces sparsely pubescent to glabrous and covered with sessile glands, 8–10 lateral nerves per leaf; petiole (6)8–12 mm long, densely covered with short antrorse hairs, occasionally with sessile glands. Inflorescence of 2–3(5) verticils per branch, internodes up to 10 cm long; bracts leaf-like, 42–90 × 5–12 mm, hairy like leaves; bracteoles green, linear, 10–20(30) × 1–2(3) mm, with short antrorse hairs and occasional scattered glands; verticils hemispherical, 37–66 mm wide, each with c.12 branches 2–5 mm long, c.10 buds per branch; pedicels 2–3(6 in fruit) mm long, pubescent, occasionally ridged. Calyx 18–25 mm long, 4–5 mm diameter at throat, buds urn-shaped, 10-toothed, teeth apiculate, brownish, shortly pubescent, covered with sessile glands; mouth oblique with 3 ventral teeth partially united and bent outwards to form a lower lip; dorsal tooth triangular, 3–5 mm long; lateral teeth triangular, 1–4 mm long; ventral teeth united for 1–2 mm, 2–3 mm wide, outer teeth 1–2 mm long, middle tooth slightly shorter, triangular. Corolla 43–50 mm long, with flame-orange to red hairs; tube 23–29 mm long with 3–4 distinct fringes (bands) within near base; upper lip 17–22 mm long with a 10 mm long distal hump, hair fringe at margin c.3 mm long, orange woolly hair enclosing anthers and stigma well developed; lower lip 3-lobed, 3–6 mm long, deflexed on



Fig. 8.8.10. *LEONOTIS GRANDIS*. 1, habit ( $\times \frac{2}{3}$ ); 2, opened calyx, inside ( $\times 2$ ); 3, corolla ( $\times 2$ ); 4, opened corolla, inside ( $\times 2$ ). 1,2 from *Fanshawe* 9280, 3,4 from *Issa* 69. Drawn by Emmanuel Papadopoulos. Reproduced from *Kew Bulletin* (2003).

tube, scantily covered with curved orange hairs on outer surface, all lobes retuse at apex, lateral lobes asymmetrically so, middle lobe retuse at mid-point. Nutlets oblong, 3.7–4.4 × 1.7–2.2 mm, 3-angled, with distinct marginal rim, truncate and glandular distally, glossy, glabrous.

**Zambia.** E: Lundazi Dist., fl. 16.viii.1965, *Fanshawe* 9280 (K, NDO, WAG). **Malawi.** N: Chitipa Dist., Chitipa–Chinunkha road, Kaseye Mission at bridge over Vumbo R., 25.vii.1978, *Iwarsson & Ryding* 972 (EA, K, MAL, UPS).

Also in Tanzania. Upland grassland and forest margins, occasionally extending into secondary forest and along roads; 1000–1300 m.

Conservation notes: Collected about 10 times in several districts of S Tanzania, but only once in both Zambia and Malawi. Threatened by encroaching settlement but occurs in disturbed areas; possibly VU D2.

Most similar to *Leonotis decadonta* var. *vestita*, but the calyx is constricted at the throat and has longer teeth, the corolla is longer and the leaves are more narrowly lanceolate.

2. *Leonotis decadonta* Gürke in Bot. Jahrb. Syst. 22: 144 (1895). —Baker in F.T.A. 5: 493 (1900). —White *et al.*, Evergr. For. Fl. Mal.: 294 (2001). Type: Malawi, no locality, 1891, *Buchanan* 202 (B† holotype, BM lectotype), lectotypified by *Iwarsson & Harvey* (2003).

*Leonotis leonurus* sensu White, For. Fl. N. Rhod.: 374 (1962).

Shrub to small tree 1.2–8 m high, little to much-branched, with 1 to more than 50 shoots from a woody swollen rootstock, shoots sometimes to 15 cm in diameter. Stems with internodes 1–5 cm long, long antrorse velutinous hairs and sessile glands at apex, 25–30 nodes below apex bark is more corky, brown to grey and with a striate surface, sometimes polished in between, nodes are thicker, more velutinous and with prominent leaf scars. Leaves petiolate; blade 50–184 × (13)15–80 mm, ovate, lanceolate, rarely elliptic or narrowly rhombic, apex acute, base truncate to attenuate, margin crenate to serrate with 10–40(100) teeth almost to base, or basal third of leaf devoid of teeth, upper surface softly velutinous-pubescent to loosely pilose, lower surface generally more densely hairy, both occasionally with sessile glands, 10–22 lateral nerves per leaf, venation mostly yellowish on lower surface; petiole 2–39 mm long. Inflorescence of (1)3–5 verticils per branch, internodes usually 38–330 mm long; bracts leaf-like, 26–117 × 6–36 mm; bracteoles linear to narrowly ovate, 5–20(26) × 1–2(3.5) mm, often a few broader (2–4 mm wide) and more leaf-like, apiculate; verticils hemispherical, 25–50 mm wide, with 10–20 branches (1)3–5 mm long, 8–14 buds per branch; pedicels 1–3(6) mm long, slightly extended in fruit, shortly pubescent. Calyx 12–20 mm long, c.4 mm wide at mouth, (8)10-toothed, appearing orange, sometimes with scattered sessile glands; mouth sometimes oblique with (3)5–7 lower teeth partially united and bent outwards to form a lower lip, teeth 0.5–6 mm long, equal or dorsal tooth longer, straight or recurved, apiculate. Corolla 30–45 mm long, with orange-scarlet hairs; tube 19–27 mm long widening at mouth, with 3 ± diffuse fringes within; upper lip 11–19 mm long, with small distal hump, hair fringe at margin 1–1.5 mm long, well developed white or orange woolly hair enclosing anthers and stigma; lower lip 3-lobed, 5–7 mm long, 2–3 mm broad, deflexed on tube, covered with orange hairs on outer surface. Nutlets brown, glossy, 3–3.8 × 1.3–1.7 mm, with a distal marginal rim.

Stem and leaves with short velutinous pubescence; leaf blades truncate or occasionally shortly attenuate at base; calyx teeth usually 4–6 mm long. . . . .

. . . . . var. *decadonta*

– Stem and leaves loosely pilose, rarely almost glabrous; leaf blades attenuate at base; calyx teeth 0.5–3 mm long. . . . . var. *vestita*

Var. **decadonta**. —*Iwarsson & Harvey* in F.T.E.A., Lamiaceae: 100 (2009).

Shrub to 8 m high. Cortex of stem greyish brown to grey, with antrorse velutinous pubescence and sessile glands. Leaves truncate to shortly attenuate at base, hairs on veins occasionally

yellowish; petioles (6)15–39 mm long, velutinous-pubescent. Internodes of inflorescence 4–22 cm long; verticils 25–50 mm in diameter (excluding corollas); bracts 27–48(80) × 9–36 mm; bracteoles few and insignificant, 7–11(15) × 1–2 mm. Calyx usually not 2-lipped, with short antrorse velutinous pubescence, eglandular, with a basal yellowish zone c.4 mm broad, distally green; teeth usually straight, linear, (1)4–6 mm long, apiculate with white apex, broader at base, subequal. Upper corolla lip with white woolly hair enclosing anthers and stigma.

**Zambia.** E: Nyika Plateau, 4 km SW of Rest House, fl. & fr. 22.x.1958, *Robson & Angus* 260 (BM, K, LISC, SRGH). **Malawi.** N: Nyika Plateau, fl. 11.viii.1946, *Brass* 17152 (BM, BR, K, PRE, SRGH). C: Dedza Dist., Dedza Mt, by radio station, fl. 2.vii.1978, *Iwarsson & Ryding* 868 (K, MAL, UPS). S: Blantyre Dist., Ndirande Mt, SW side, fl. 28.vi.1970, *Brummitt* 11713 (K, UPS).

Also in Tanzania. Upland grassland and forest margins, along streams and in open miombo woodland; 1200–2300 m.

Conservation notes: Occurs over a wide range of habitats and altitudes; Least Concern.

Var. *vestita* (Briq.) Iwarsson & Y.B. Harv. in *Kew Bull.* 58: 613 (2003). —Iwarsson & Harvey in *F.T.E.A., Lamiaceae*: 100 (2009). Type: Congo, Kasai, Lunda at Lulua R., v.1876, *Pogge* 360 (B† holotype).

*Leonotis leonurus* (L.) R. Br. var. *vestita* Briq. in *Bot. Jahrb. Syst.* 19: 194 (1894). —Brenan in *Mem. New York Bot. Gard.* 9: 55 (1954). —Figueiredo & Smith, *Pl. Angola*: 107 (2008).

*Leonotis leonurus* sensu auct. non (L.) R. Br. —Baker in *F.T.A.* 5: 492 (1900). —Brenan in *Mem. New York Bot. Gard.* 9: 54 (1954).

*Leonotis bequaertii* De Wild. in *Repert. Spec. Nov. Regni Veg.* 13: 212 (1914). Type: Congo, Katanga, Lubumbashi, 4.vi.1912, *Bequaert* 473 (BR holotype).

Shrub to 3 m high. Cortex of stem pale brown with short spreading antrorse pilose hairs and sessile glands, occasionally nearly smooth. Leaves attenuate at base, laxly pilose, notably on the midvein; petiole 2–22 mm long, laxly pilose to velutinous, occasionally with sessile glands. Internodes of inflorescence 3.8–13 cm long; verticils 28–39(50) mm in diameter (excluding corollas); bracts 41–117 × 11–36 mm; bracteoles frequently numerous, 5–18(26) × 1–2 mm. Calyx often faintly 2-lipped, shortly pubescent to pilose, with sessile glands, hairs white, yellowish to pale brown at base, distal half green; teeth bent to slightly recurved, deltate, 0.5–3 mm long, apiculate with white apex, ± oblique, subequal or the dorsal slightly longer. Upper corolla lip with orange (occasionally white) woolly hair enclosing anthers and stigma.

**Zambia.** N: Mbala Dist., Kambole–Mbala road, fl. 15.vi.1961, *Richards* 15275 (K, SRGH). W: Ndola Dist., Chichele, fl. & fr. 24.vii.1953, *Fanshawe* 170 (BR, K, SRGH). **Malawi.** N: Mzimba Dist., Viphya link road at Mzimba stream, fl. 31.viii.1970, *Paweek* 3712 (K, MAL). C: Dedza Dist., slopes of Dedza Mt near Mala compound, fl. 23.iv.1968, *Sahubeni* 1064 (K, MAL, SRGH). **Mozambique.** N: Ngauma Dist., Massangulo Mt, vi.1933, *Gomes e Sousa* 1483 (COI).

Also in Congo, Rwanda, Burundi, Tanzania and Angola. Damp or marshy places in riverine forest and seasonally flooded grassland, often on black alluvial soils or near termite mounds, sometimes in disturbed places along roads and on cultivated ground; 900–1600 m.

Conservation notes: Widespread; Least Concern.

This variety differs from var. *decadonta* in its smaller stature, attenuate leaves, shorter petioles, smaller verticils, glandular calyx with distinctly shorter teeth and by the orange rather than white hairs enclosing the anthers and stigma.

Var. *porotoensis* Iwarsson & Y.B. Harv. from the Southern Highlands of Tanzania has shortly pubescent stem and leaves like var. *decadonta*, but differs in its attenuate leaf bases and orange indumentum on the calyx.

3. *Leonotis myricifolia* Iwarsson & Y.B. Harv. in Kew Bull. 58: 615, fig.3 (2003). — Iwarsson & Harvey in F.T.E.A., Lamiaceae: 101 (2009). Type: Malawi, Nyika Nat. Park, 8 km from gate on Rumphi–Chelinda road, 31.vii.1978, *Iwarsson & Ryding* 986 (UPS holotype, DSM, EA, K, MAL, P).

*Leonotis pole-evansii* sensu White, For. Fl. N. Rhod.: 375 (1962); White *et al.*, Evergr. For. Fl. Malawi: 295 (2001).

Shrub (0.6)2–3 m high, laxly branched throughout, with up to 25 shoots from a woody rootstock. Stem internodes usually 5–8 cm long, cork-coloured to pale buff-brown, lenticels 5–25 × 1–2 mm, with antrorse long and/or short hairs, ± eglandular; branches darker brown towards apex, nodes minutely thicker and with a transverse pattern, upper 15 nodes with short (less than 2 cm long) sterile but leafy shoots. Leaves shortly petiolate; blade narrowly oblanceolate to obovate, 10–30(54) × 3.5–10(18) mm, apex acute to rounded, base attenuate, margin involute, crenate towards apex, with 3–7(19) teeth, entire towards base, both surfaces with mixture of short hairs and sessile glands (or glands on lower surface only), with 4–8 lateral nerves, basal ones parallel to leaf margin; petiole 1–9 mm (usually 2–3 mm) long, dorsiventrally flattened, pubescent, occasionally with sessile glands. Inflorescence of (1)2–3(4) verticils per branch, internodes to 9 cm long; bracts leaf-like, 20 × 5 mm, hairy like leaves, bracteoles linear (occasionally broader) 8–16 × 1–2 mm, covered with short hairs, occasionally with sessile glands; verticils hemispherical but flat below, 30–45 mm wide, with 10 branches, short (2–3 mm long), 7–9 buds per branch; pedicels 2–3(6 in fruit) mm long, densely covered with long antrorse hairs, appearing eglandular. Calyx 12–22 mm long, 10–12-toothed, pale green to brown, densely covered with short hairs and sessile glands or eglandular; mouth occasionally oblique with lower teeth partially united and bent outwards to form a lower lip; dorsal tooth narrowly triangular, 2–3 mm long, apiculate. Corolla (37)40–50 mm long, with orange hairs; tube 22–30 mm long, 3–4 hair fringes within; upper lip 14–20 mm long, well developed orange woolly hair enclosing anthers and stigma; lower lip 3-lobed, deflexed on corolla, central lobe 6–9 mm long, sometimes retuse, lateral lobes shorter and oblique, glabrous to laxly covered with short orange hairs on outer surface. Nutlets 3.8–4.4 × 2–2.2 mm.

**Zambia.** E: Chama Dist., Nyika plateau, Kangampande Mt, fl. 6.v.1952, *White* 2738 (BR, FHO, K). **Malawi.** N: Rumphi Dist., Nyika Nat. Park, 8 km from gate on Rumphi–Chelinda road, 31.vii.1978, *Iwarsson & Ryding* 986 (DSM, EA, K, MAL, P, UPS).

Also in S Tanzania. Upland grassland by outcrops and in secondary bushland; 1750–2350 m.

Conservation notes: Moderately widespread and probably not threatened in the Flora area, but considered VU D2 in Tanzania.

With the exception of *Iwarsson & Ryding* 1154 from Ifupa and 1192 from the Kitulo Plateau, the majority of Tanzanian specimens have obovate leaves with more numerous marginal teeth and sessile glands on both leaf surfaces, stems and calyx. Material from Malawi and Zambia has more narrowly oblanceolate leaves with fewer marginal teeth and is eglandular on the upper leaf surface, stem and calyx.

4. *Leonotis myrothamnifolia* Iwarsson & Y.B. Harv. in Kew Bull. 58: 619, fig.4 (2003).

Type: Malawi, Mafinga Mts, 5 km W of Chisenga, 23.vii.1978, *Iwarsson & Ryding* 959 (UPS holotype, DSM, EA, MAL, P). FIGURE 8.8.11.

Shrub 1.2–3 m high, branching towards apex, with few shoots from a woody rootstock. Stem internodes usually 1–3 cm long, brown, becoming corky, narrow lenticels only on mature wood over 2 years old, with antrorse velutinous hairs and scattered sessile glands; nodes minutely thicker and leaf scars present on young shoots, upper 15 nodes with short (less than 3 cm) sterile leafy shoots. Leaves shortly petiolate; blade dark green, obrullate to rhombic, 15–20 × 12–18 mm, apex bluntly rounded, base cuneate, margin occasionally involute, crenate only at apex with 6–12 teeth, both surfaces laxly puberulous, sessile glands on both upper and lower



Fig. 8.8.11. *LEONOTIS MYROTHAMNIFOLIA*. 1, habit ( $\times \frac{2}{3}$ ); 2, leaves ( $\times 1\frac{1}{2}$ ); 3, opened calyx, inside ( $\times 2$ ); 4, corolla ( $\times 2$ ); 5, opened corolla, inside ( $\times 2$ ). All from *Chisumpa* 50. Drawn by Emmanuel Papadopolous. Reproduced from *Kew Bulletin* (2003).

surfaces, 4 lateral nerves per leaf, basal ones parallel to leaf margin, venation not prominent beneath; petiole 4–7 mm long, with velutinous hairs and sessile glands. Inflorescence of 1–3 verticils per branch, internodes 30–60 mm long; bracts leaf-like, 10–16 × 5–8 mm, hairy, bracteoles green, linear, 6–10 × <1 mm, covered by long, shiny orange hairs and sessile glands, spinescent; verticils hemispherical, 25–40 mm wide, 12 branches 0–2 mm long, 6–8 flowers per branch; pedicels to 2 mm long, antrorsely velutinous-pubescent. Calyx 15–20 mm long, 10–12-toothed, yellowish orange-velutinous, with sessile glands making calyx appear orange, straight (not bending forwards), mouth slightly oblique; dorsal tooth 2–3 mm long, lateral and ventral teeth 1–2 mm long, all straight and narrowly acuminate. Corolla 39–46 mm long, dilated at mouth, orange hairy; tube 20–26 mm long, curved, 3–4 transverse hair fringes within, outer surface with sessile scattered glands; upper lip 15–26 mm long, well-developed orange woolly hairs to 2.5 mm long enclosing anthers and stigma; lower lip 3-lobed, 6–9 mm long, lobes deflexed on tube, faintly emarginate, laxly covered with short orange hairs on outer surface. Nutlets blackish brown, 3.6–3.9 × 1.4–1.8 mm.

**Zambia.** N: Isoka Dist., near Malawi–Zambia border, Mafinga Range, above Chisenga, fl. & fr. 22.xi.1952, *Angus* 825 (K). **Malawi.** N: Chisenga Dist., Mafinga Hills, 5 km W of Chisenga, 26.viii.1962, *Tyrer* 618 (BM, BR, SRGH).

Known only from the Mafinga Hills. Steep slopes at margins of evergreen forest and in montane grassland; 2000–2200 m.

Conservation notes: Known only from small populations on the protected Mafinga Hills; VU D2.

The copper-coloured calyx hairs provide an easy distinction from *Leonotis myricifolia* and *L. pole-evansii*.

5. ***Leonotis pole-evansii*** Hutch., Bot. Sthn. Africa: 501 (1946) as "*Pole Evansii*". Type: Zambia, near Serenje, 15.vii.1930, *Pole Evans* 2884 (K holotype, PRE, SRGH).

Erect shrub, 1.2–3 m high, branching scantily at base. Stem internodes 1.5–6.5 cm long on main shoot, pale brown, covered with a velutinous mixture of long and short antrorse hairs and sessile glands, especially velutinous on nodes, upper 15 nodes with short, sterile but leafy shoots. Leaves petiolate; blade rounded-ovate to spatulate, 13–55 × (7)23–40 mm, apex truncate to rounded, base attenuate, margin crenate in apical  $\frac{2}{3}$  of blade with 12–34 rounded teeth, tomentose with long and short hairs and sessile glands on upper and lower surfaces, 4–6 prominent lateral nerves, secondary venation appearing reticulate beneath; petiole 2–25 mm long, tomentose with long and short hairs and sessile glands. Inflorescence of (1)2–3 verticils per branch, internodes 10–85 mm long; bracts leaf-like, 14–27 × 8–11 mm, hairy, bracteoles linear, 5–16 × <1 mm, subvelutinous; verticils hemispherical, (25)30–52 mm wide (excluding corolla), branches very short; pedicels 2–4 mm long, tomentose. Calyx (10)17–20 mm long, teeth (8)10, densely tomentose with antrorse long and short, grey hairs and sessile glands, mouth oblique; dorsal tooth 3–4 mm long, lateral teeth 2–3 mm long, ventral teeth partially united, 2–3 mm long, slightly subtended, all teeth narrowly triangular, apiculate. Corolla 35–46 mm long, with orange to brick-red hairs; tube (20)25–30 mm long, widening at mouth, with 3–4 fringes within; upper lip 15–16 mm long, well-developed white woolly hairs enclosing anthers and stigma; lower lip 3-lobed, (5)7–8 mm long, subglabrous, deflexed on tube, central lobe retuse, lateral lobes obliquely retuse. Nutlets blackish brown, 3.7–4.1 × 1.8–2 mm.

**Zambia.** N: Mpika Dist., Lavushi Manda Nat. Park, Lavushi Mt, fl. 12.vi.1995, *Bingham* 10602 (K). C: Serenje Dist., Serenje Corner, fl. 15.vii.1930, *Hutchinson & Gillett* 3711 (BM, K).

Not known elsewhere. Grassland among rocks, rocky places in miombo woodland and on rocky mountain slopes; 1400–1800 m.

Conservation notes: Apparently endemic to north-central Zambia; possibly Near Threatened.

6. *Leonotis ocymifolia* (Burm. f.) Iwarsson in F.S.A. 28(4): 32 (1985). —White *et al.*, Evergr. For. Fl. Mal.: 295 (2001). Type: South Africa, Cape of Good Hope, *Herb. Burmann* s.n. (G holotype).

*Phlomis ocymifolia* Burm. f., Fl. Indica: 16 (1768).

Lanky woody shrub 0.6–5 m high, sparsely branched from swollen woody rootstock 2–15 cm wide, shoots up to 10 cm in diameter, rounded in section. Stems internodes 2–11 cm long, greyish buff to brownish buff, occasionally smooth and shiny, velutinous pubescence of antrorse or occasionally retrorse hairs and sessile glands; prominent leaf scars occasionally with a marginal rim; nodes prominent with a transverse line connecting leaf scars, more pubescent than internodes. Leaves usually petiolate; blade ovate to narrowly obovate, lanceolate to narrowly spatulate, 9–190(230) × 3–90 mm, apex acute, base cordate, truncate to attenuate, margin crenate ± to base with 7–65 teeth, surfaces laxly pubescent to velutinous with short, white to yellow hairs and sessile glands, (4) 10–16 lateral nerves, venation with slightly longer hairs, occasionally adpressed; petiole 0–55 mm long, velutinous with occasionally yellowish antrorse or retrorse hairs. Inflorescence of 1–5 verticils per branch, usually with prolonged internodes (10) 45–325 mm long; bracts leaf-like, (4) 17–85 (130) × 2–25 (85) mm, hairy; bracteoles linear, 6–22 × 0.3–2.5 mm, with short hairs, occasionally with sessile glands, apiculate; verticils hemispherical, 28–67(90) mm wide, with (8) 12–18 branches (1.5) 5–20 mm long, 5–19 buds per branch; pedicels 0.5–5(7) mm long. Calyx 14–31 mm long at anthesis, slightly enlarged in fruit, 4–5.5 mm in diameter at mouth, 8(11)-toothed, green, densely covered with short white (occasionally orange) hairs, mouth occasionally oblique, 3–5 lower teeth partially united, bent outwards forming a lower lip; dorsal tooth 2–14 mm long, lateral and ventral teeth 0.5–5.5 mm long, straight to slightly recurved, narrowly triangular, apiculate. Corolla 24–45 mm long, with white, buff, pale salmon-pink, orange or orange-red hairs (mostly orange or cream-buff); tube 15–25 mm long, with 1 (rarely 2) diffuse fringes within and 2 slightly higher markings; upper lip 12.5–22 mm long, well-developed white woolly hairs enclosing anthers and stigma; lower lip 3-lobed, (4) 6–10 mm long, median lobe retuse, subglabrous, lobes shrivelled and twisted. Nutlets blackish brown, glossy, 2.4–4.3 × 1.2–2.1 mm.

1. Leaves, including petiole, mostly more than 50 mm long, usually velvety beneath, rarely tomentose to almost smooth; main stem sparsely branched . . . . . **iii**) var. *raineriana*
  - Leaves up to 50 mm long, shortly pubescent to tomentose beneath; main stem with many short leafy shoots . . . . . 2
2. Leaf blades round to broadly ovate, base rounded to truncate, petiolate . . . . . **i**) var. *ocymifolia*
  - Leaf blades narrowly spatulate to oblanceolate or narrowly obovate, attenuate at base, sessile . . . . . **ii**) var. *schinzii*

- i) Var. *ocymifolia*. —Iwarsson in F.S.A. 28(4): 32 (1985). —Iwarsson & Harvey in F.T.E.A., Lamiaceae: 103 (2009).

*Phlomis leonotis* L., Mant. Pl. 1: 83 (1767). Type: South Africa, Cape of Good Hope, *Herb. Linn.* 740.21 (LINN lectotype), lectotypified by Iwarsson (1985).

*Leonotis leonitis* R. Br. in Aiton, Hort. Kew., ed. 2 3: 410 (1811). —White, For. Fl. N. Rhod.: 374 (1962).

*Leonotis dubia* Benth. in Meyer, Comment. Pl. Afr. Austr.: 242 (1838). —Baker in F.T.A. 5: 493 (1900). Type: South Africa, E Cape Province, Witrivier, near Enon, 1836, *Drège* 4831 (K).

Erect slender shrub, 0.6–3 m tall. Stems covered with hairs. Leaves round to broadly ovate, 9–53(60) × 8–28(30) mm, apex rounded, base rounded to truncate, shortly pubescent to tomentose beneath; petiole 2–20 mm long. Inflorescence terminal, sometimes with median shoot persistent and producing a new inflorescence next season; 1(2) verticils per stem, 0–65 mm apart; verticils (excluding corolla) 40–52 mm diameter; bracts similar to cauline leaves, 6–25 mm long; bracteoles 7–11 mm long; pedicels 1–2 mm long. Calyx 16–22 mm long at anthesis, densely to laxly hairy, apex asymmetric; dorsal tooth 3–6 mm long, lateral and ventral teeth 1–2 mm long. Corolla with long dull to bright orange hairs, 32–45 mm long; tube 18–25 mm long; lower lip 7–10 mm long.

**Zambia.** E: Petauke Dist., Great East Road, c.130 km on Chipata (Fort Jameson) to Lusaka road, fl. 24.v.1952, *White* 2873 (FHO, K). **Zimbabwe.** N: Mazowe Dist., Great Dyke, Vanad Pass, fl. 18.iii.1975, *Wild* 7987 (K, SRGH). C: Rusape, fl. 2.vi.1993, *Vos* 556 (K, NH, PRE). E: Nyanga Dist., near summit of Nyahokwe Mt, fl. 27.ii.1966, *Chase* 8385 (K, PRE, SRGH). S: Masvingo Dist., Great Zimbabwe, fl. & fr. 13.x.1930, *Norlindh, Weimarck & Fries* 2089 (K, LD, PRE, SRGH). **Malawi.** N: Nkhata Bay Dist., c.24 km N of Chikangawa, fl. 5.viii.1978, *Phillips* 3445 (K, MO). C: Lilongwe Dist., Mkhoma Mt, on S peak, 6.vii.1978, *Iwarsson & Ryding* 900 (K, MAL, UPS).

Also in Congo, Kenya, Tanzania, South Africa and Lesotho. On exposed rock outcrops, riverbeds and near evergreen forests; 960–2000 m.

Conservation notes: Widely distributed in diverse habitats; Least Concern.

ii) Var. **schinzii** (Gürke) Iwarsson in F.S.A. 28(4): 35 (1985). Type: Namibia, Nomeib (Homeib), iv.1885, *Schinz* 40 (B† holotype, Z lectotype), lectotypified by Iwarsson (1985).

*Leonotis schinzii* Gürke in Bot. Jahrb. Syst. 22: 143 (1895). —Baker in F.T.A. 5: 494 (1900).

*Leonotis randii* S. Moore in J. Bot. 38: 465 (1900). Type: Zimbabwe, Bulawayo, xii.1897, *Rand* 165 (BM holotype).

*Leonotis microphylla* Skan in F.C. 5(1): 377 (1910). Type: South Africa (Gauteng), Johannesburg, Jeppestown ridges, xii.1898, *Gilfillan* 6169 (K lectotype, BOL).

*Leonotis dysophylla* sensu Plowes & Drummond, Wild Fl. Rhodesia: t.141 (1976), non Benth.

Erect shrub 0.9–1.8 m tall. Stems slender, covered with retrorse hairs. Leaves sessile, narrowly spatulate to oblanceolate or narrowly obovate, 15–50(70) × 3–13 mm, apex acute, base attenuate, shortly pubescent to tomentose beneath. Inflorescence terminal; 1–3 verticils per stem, 75–160(278) mm apart; verticils (excluding corolla) 35–60(78) mm diameter; bracts similar to cauline leaves, (8)12–23(30) × 3–5 mm, sometimes deciduous; bracteoles 6–13(20) mm long; pedicels 1.5–3.5 mm long, covered with short hairs and occasionally sessile glands. Calyx 15–18(28) mm long at anthesis; dorsal tooth (3)4.5–6(9) mm long, lateral and ventral teeth 0.5–4 mm long. Corolla (24)32–44 mm long, with long orange to reddish orange hairs; tube 15–25 mm long, subglabrous; lower lip 6–7 mm long, subglabrous.

**Botswana.** SE: Gaborone, foot of Mokolodi Hill, SW of Kgale, fl. 15.x.1978, *Hansen* 3492 (C, GAB, K, PRE, SRGH, WAG). **Zimbabwe.** W: Nyamandhlovu Dist., Gwayi R., 43 km W of Nyamandhlovu, 20.iv.1972, *Grosvenor* 731 (S, SRGH).

Also in Namibia and South Africa. In *Acacia* woodland, open sites on rocky slopes, disturbed places by roads and along rivers, sometimes in burned areas; 950–1100 m.

Conservation notes: Widely distributed; Least Concern.

iii) Var. **raineriana** (Vis.) Iwarsson in F.S.A. 28(4): 35 (1985). —Figueiredo & Smith, Pl. Angola: 107 (2008). —Iwarsson & Harvey in F.T.E.A., Lamiaceae: 103 (2009). Type: Sudan, near Camamil and Kassan, cultivated plant from seed collected by Kotschy, *Kotschy* 519 (K lectotype, B, BM, FI-W, M, P, W), lectotypified by Iwarsson (1985).

*Leonotis intermedia* Lindl. in Bot. Reg. 10: t.850 (1824). —Meyer, Comment. Pl. Afr. Austr.: 242 (1838). —Skan in F.C. 5(1): 381 (1910). Type: Plant grown in garden of Horticultural Society, London from seed from Delagoa (Algoa) Bay, Mozambique collected by Forbes (CGE holotype, BM, BR, G-DC, K).

*Leonotis dysophylla* Benth. in Meyer, Comment. Pl. Afr. Austr.: 242 (1838). —Skan in F.C. 5(1): 380 (1910). —Lauert & Schreiber in Merxmüller, Prod. Fl. SW Afrika, fam.123: 15 (1969). —Compton, Fl. Swaziland: 493 (1976). Type: South Africa, Eastern Cape, between Omsamwubo and Omcomas, 1836, *Drège* 4832a (K lectotype), lectotypified by Iwarsson (1985).

*Leonotis raineriana* Vis., Orto Bot. Padova: 142 (1842).

*Leonotis velutina* Fenzl in Flora 27: 312 (1844). —Baker in F.T.A. 5: 492 (1900). Type: Sudan, near Camamil and Kassan, cultivated plant from seed collected by Kotschy, *Kotschy* 519 (K lectotype, B, BM, FI-W, M, P, W), lectotypified by Iwarsson & Harvey (2003).

*Leonotis laxifolia* MacOwan in Bull. Misc. Inform., Kew 1893: 13 (1893). —Skan in F.C. 5(1): 381 (1910). —Ross, Fl. Natal: 303 (1972). —Compton, Fl. Swaziland: 494 (1976). Type: South Africa, Eastern Cape, Malowe, iii.1886, *Tyson* 2766 in *Herb. A.A.* 1300 (GRA holotype, BM, BOL, K, SAM, UPS, W, Z).

*Leonotis mollissima* Gürke in Bot. Jahrb. Syst. 22: 141 (1895). —Baker in F.T.A. 5: 493 (1900). —Moore in J. Linn. Soc., Bot. 40: 180 (1911). —Brenan *et al.* in Mem. New York Bot. Gard. 9: 55 (1954). —White, For. Fl. N. Rhod.: 375 (1962). Type: Tanzania, Lushoto Dist., Usambara Mts, Kwa Mshusa, viii.1893, *Holst* 9075 (B† holotype, K lectotype, COI, M, P, W, Z), lectotypified by Iwarsson & Harvey (2003).

*Leonotis malacophylla* Gürke in Bot. Jahrb. Syst. 22: 142 (1895). Type: South Africa, KwaZulu-Natal, Clydesdale, iii.1886, *Tyson* 2729 in *Herb. A.A.* 1508 (K lectotype, G, SAM, UPS, W, Z), lectotypified by Iwarsson (1985).

*Leonotis bachmannii* Gürke in Bot. Jahrb. Syst. 22: 143 (1895). —Skan in F.C. 5(1): 382 (1910). Type: South Africa, Mpumalanga, Barberton, 19.iv.1890, *Galpin* 922 (Z lectotype), lectotypified by Iwarsson (1985).

*Leonotis latifolia* Gürke in Bot. Jahrb. Syst. 22: 143 (1895). —Skan in F.C. 5(1): 379 (1910). —Ross, Fl. Natal: 303 (1972). —Compton, Fl. Swaziland: 493 (1976). Type: South Africa, KwaZulu-Natal, Biggarsberge, n.d., *Rehmann* 7057 (Z lectotype), lectotypified by Iwarsson (1985).

*Leonotis melleri* Baker in F.T.A. 5: 491 (1900). Type: Malawi, Manganja Hills, ix.1861, *Meller* s.n. (K holotype).

*Leonotis dinteri* Briq. in Bull. Herb. Boiss., sér.2 3: 1090 (1903). Type: Namibia, Hereroland, near Okahandja, Tabakstuin, i.1899, *Dinter* 249 (Z holotype).

*Leonotis urticifolia* Briq. in Bull. Herb. Boiss., sér.2 3: 1091 (1903). Type: South Africa, KwaZulu-Natal, 1862, *Cooper* 1182 (Z holotype, BM, K, W), incorrectly cited as *Cooper* 1152.

*Leonotis hereroensis* Briq. in Bull. Herb. Boiss., sér.2 3: 1092 (1903). Type: Namibia, Hereroland, n.d., *Nels* s.n. (Z holotype).

*Leonotis newtonii* Briq. in Bull. Herb. Boiss., sér.2 3: 1093 (1903). Type: Angola, Mossamedes, Humpata, iii.1883, *Newton* 106 (Z lectotype, COI).

*Leonotis engleri* Gürke in Bot. Jahrb. Syst. 36: 121 (1905). Type: Tanzania, Lushoto Dist., W Usamabara Mts, near Magamba, 9.x.1902, *Engler* 1264 (B† holotype).

*Leonotis brevipes* Skan in F.C. 5(1): 378 (1910). Type: South Africa, Soutspansberg, Medingen, 17.vi.1906, *Burt Davy* 2657 (K holotype, PRE).

*Leonotis mollis* Benth. var. *albiflora* Skan in F.C. 5(1): 378 (1910). Type: South Africa, Eastern Cape, Boschberg, n.d., *MacOwan* s.n. (K lectotype), lectotypified by Iwarsson (1985).

*Leonotis galpinii* Skan in F.C. 5(1): 379 (1910). Type: South Africa, Eastern Cape, near Queenstown, 10.vi.1894, *Galpin* 1825 (K holotype, GRA, PRE, Z).

*Leonotis intermedia* var. *natalensis* Skan in F.C. 5(1): 381 (1910). Type: South Africa, KwaZulu-Natal, near Durban, 1840, *Peddie* s.n. in *Herb. A.A.* (K lectotype), lectotypified by Iwarsson (1985).

*Leonotis spectabilis* S. Moore in J. Linn. Soc., Bot. 40: 180 (1911). Type: Zimbabwe, Chimanimani Mts, 26.ix.1906, *Swynnerton* 2013 (BM holotype).

Robust, erect, semi-woody shrub, 0.9–5 m tall. Stems covered with retrorse (occasionally antrorse) velutinous hairs and sessile glands. Leaves lanceolate to narrowly lanceolate or ovate, (32)46–190(220) × 22–56(90) mm, apex acute, base attenuate to cordate, velutinous, rarely tomentose or subglabrous beneath; petiole generally (6)17–40 mm long. Inflorescence terminal; 1–5 verticils per stem 8–15 cm apart; verticils (excluding corolla) 35–90 mm in diameter; bracts sometimes absent, 30–85 mm long; bracteoles 9–17 mm long; pedicels 1–3(4) mm long, covered with short hairs and occasionally sessile glands. Calyx 14–31 mm long at anthesis, apex asymmetric; dorsal tooth 2–14 mm long, lateral and ventral teeth 0.5–5.5 mm long. Corolla with long whitish buff to pale salmon-pink or orange to orange-red hairs (colour forms sometimes mixed at a locality), (24)30–37(45) mm long; tube 10–25 mm long, subglabrous; lower lip 5–8 mm long.

**Zambia.** N: Mbala Dist., Uningi Pans, fl. 16.v.1968, *Sanane* 122 (BR, K). W: Ndola, fl. 4.v.1954, *Fanshawe* 1156 (BR, K, NDO, SRGH). C: Lusaka Dist., Mt Makulu Research Station, fl. n.d., *Angus* 3268 (K, LISC). E: Lundazi, fl. 31.v.1954, *Robinson* 794 (K). S: Kalomo Dist., Bowood Siding, n.d., *Rogers* 8054 (B, BR, K, LISC). **Zimbabwe.** C: Wedza Dist., SE slope of Wedza Mt., fl. 22.v.1968, *Rushworth* 1055 (K, SRGH). E: Chimanimani Dist., NW tributary of Rusitu R., between Jansen's Hill and Silver Streams, fl. 2.vii.1967, *Chase* 8587 (K, SRGH). **Malawi.** N: Nyika Plateau, Chowo Rock, fl. 4.vii.1971, *Paweke* 4955 (K, MAL). C: Ntchisi Dist., Ntchisi, fl. 1.viii.1946, *Brass* 17084 (K, SRGH). S: Blantyre Dist., Mpingwe Hill, fl. 17.vi.1986, *Banda, Tawakali & Nachamba* 2577 (K, MAL). **Mozambique.** N: Lichinga Dist., Lichinga, fl. 2.vi.1934, *Torre* 85 (COI, LISC). Z: Lugela Dist., Namagoa, fl. & fr. vii–viii.1944, *Faulkner* PRE 176 (COI, K, UPS). MS: Gorongosa Dist., W face of Gorongosa Mt, fl. 10.vii.1969, *Leach & Cannell* 14299 (K, LISC, SRGH). M: Namaacha Dist., Namaacha, Swaziland frontier, fl. ii.1931, *Gomes e Sousa* 410 (K).

Also in Sudan, Ethiopia, Eritrea, Uganda, Kenya, Tanzania, Congo, Rwanda, Burundi, Angola, Namibia, South Africa, Swaziland and Lesotho. In montane grassland, edges of montane forest and miombo woodland; 400–2300 m.

Conservation notes: Widespread; Least Concern.

7. ***Leonotis nepetifolia*** (L.) R. Br. in Aiton, Hort. Kew., ed.2 3: 409 (1811). —Baker in F.T.A. 5: 491 (1900). —Lauert & Schreiber in Merxmüller, Prodr. Fl. SW Afrika, fam.123: 16 (1969). —Morton in F.W.T.A., ed.2 2: 470, fig. (1963). —Iwarsson in F.S.A. 28(4): 37 (1985). —White *et al.*, Evergr. For. Fl. Mal.: 295 (2001). Type: Plate on p.117 of Hermann, Horti Academi Lugduno-Batavi Catalogus (1687), drawn from plant raised from seed from Surinam; lectotype chosen by Iwarsson (1985).

*Phlomis nepetifolia* L., Sp. Pl.: 586 (1753).

Annual or short-lived perennial herb (0.3)1–3(4.5) m high, with single stem from a taproot less than 10 cm long. Stem internodes 2–11 cm long, often repeatedly branching at nodes below inflorescence, green, brown at base, with short antrorse or retrorse hairs and sessile glands, nodose with tufts of white or yellowish hairs on upper half. Leaves ovate, (25)50–200(230) × (20)40–150 mm, apex acute to acuminate, base cuneate-attenuate to cordate, margin deeply crenate with 25–51 teeth from base to apex, both surfaces with short hairs and sessile glands, lower surface more densely pubescent, with 6–10 lateral nerves, venation yellowish white, branched at leaf margin; petiole (5)30–80(125) mm long. Inflorescence of (1)2–5(7) verticils per branch, spaced by prolonged internodes (50)70–280 mm long; bracts narrowly lanceolate or absent, 25–90(150) × 4–13 mm, acute, base attenuate, hairy, bracteoles linear, (3)7–15(20) × 0.5–1.5 mm, acuminate, apically white, hairy; verticils spherical to cylindrical, 30–67 mm wide, with 20–28 branches 2–16 mm long, 9–18 buds per branch; pedicels 0.5–2 mm long (slightly extended in fruit), shortly pubescent. Calyx 14–25 mm long at anthesis, slightly enlarged in fruit, 4–5.6 mm wide at mouth, 8(10)-toothed, short-pubescent, occasionally with tuft of long spreading hairs on upper third, with sessile glands; mouth oblique, tube slightly bent dorsally; teeth deltate to narrowly triangular, apiculate, dorsal tooth 4–7(11) mm long, lateral teeth 4, 1–3 mm long, ventral teeth 3, united at base forming recurved lower lip 4–7 mm long × 5 mm wide (including apiculate teeth). Corolla 19–38 mm long, with orange or whitish yellow hairs; tube 9–20 mm long, widening at mouth, 3 distinct hair fringes within; upper lip 10–20 mm long, well-developed white or orange woolly hairs enclosing anthers and stigma, lower lip 3-lobed, (3)5–7 mm long, deflexed on tube (but shrivelled and twisted), subglabrous, eglandular or with sessile glands. Nutlets with marble-like, non-glossy, slightly waxy surface, 2.9–4.3 × 1.1–1.9 mm.

Var. ***nepetifolia***. —Iwarsson & Harvey in Kew Bull. 58: 634 (2003); in F.T.E.A., Lamiaeae: 105 (2009). —Figueiredo & Smith, Pl. Angola: 107 (2008).

*Leonotis kwebensis* N.E. Br. in Bull. Misc. Inform., Kew 1909: 132 (1909). Type: Botswana, Kwebe Hills, 13.iv.1898, *E.J. Lugard* 222 (K holotype).

Corolla indumentum orange-coloured.

**Botswana.** N: Nata R. delta, fl. & fr. 14.iv.1976, *Ngoni* 490 (K, SRGH). SE: Palapye, Molete (Malete), fl. 7.ii.1958, *de Beer* 695 (K, PRE, SRGH). **Zambia.** B: Zambezi Dist., c.40 km from Zambezi (Balovale) and along Zambezi R., fl. & fr. 15.v.1957, *Scudder* 66 (B, K, SRGH). N: Mbala Dist., shore of Lake Tanganyika below Kasakalawe (Casacalawe), fl. & fr. 1.iii.1955, *Richards* 5032 (K). W: Ndola Dist., Kabunda village, fl. & fr. 1.v.1994, *Harder & Schmidt* 3017 (K, MO). C: Lusaka Dist., 8 km SE of Lusaka, fl. & fr. 29.iii.1957, *Noak* 185 (K, SRGH). E: Chipata Dist., Tundwe Munkanya, fl. 25.iv.1968, *Phiri* 202 (K). S: Choma Dist., Mapanza Mission, fl. 26.iv.1953, *Robinson* 189 (BR, K). **Zimbabwe.** N: Gokwe Dist., Sasame (Sessami) Tsetse Camp, fl. & fr. 28.vi.1963, *Bingham* 773 (K, SRGH). W: Hwange Dist., Victoria Falls, 11.iv.1978, *Mshasha* 51 (K, SRGH). S: Gwanda Dist., Buby R. near Buby Ranch homestead, fl. & fr. 3.v.1958, *Drummond* 5538 (BR, K, LISC, SRGH). **Malawi.** N: Rumphi Dist., S Rukuru river bridge, junction of Rumphi–Livingstonia roads, fl. & fr. 14.vi.1971, *Pawek* 4926 (K, MAL). C: Salima Dist., Salima lakeshore by Grand Beach Hotel, fl. & fr. 29.iv.1970, *Brummitt* 10283 (K). S: Mangochi Dist., Kamuzu Bridge, fl. & fr. 8.iii.1986, *Satubeni & Balaka* 4410 (K, MAL). **Mozambique.** N: ?Lichinga Dist., E coast of Lake Nyasa, fl. & fr. 22.ix.1900, *Johnson* 85 (K). Z: Lugela Dist., fl. & fr. vii.194-, *Faulkner* 19 (BR, COI, K, SRGH). T: Tete (Tette), fl. & fr. ii.1859, *Kirk* s.n. (K). MS: Maringuè Dist., Save (Sabi) R., fl. & fr. 25.vi.1950, *Chase* 2448 (K, SRGH). GI: Guija Dist., from Mapai to Combomune, fl. 12.v.1948, *Torre* 7785 (LISC). M: Namaacha Dist., Namaacha, 9.vi.1946, *Pimenta* in *Lab. Quim.* 35508 (LISC).

Widespread in tropical Africa from Sierra Leone to Angola and from Sudan south to South Africa; also widely cultivated and naturalised throughout much of the tropics. Mixed woodland, grassland, along streams and in rocky places, disturbed ground; 100–1500 m.

Conservation notes: Widely distributed in diverse habitats, sometimes considered a weed; Least Concern.

Var. **africana** (P. Beauv.) J.K. Morton in J. Linn. Soc., Bot. 58: 275 (1963); in F.W.T.A., ed. 2 2: 470 (1963). —Iwarsson & Harvey in F.T.E.A., Lamiaceae: 105 (2009). Type: Nigeria, Warri (Oware), 1786–88, *Palisot de Beauvois* s.n. (G-DC holotype).

*Phlomis africana* P. Beauv., Fl. Oware 2: 82, t.111 (1819), wrongly painted with blue/purple corollas at Kew.

*Leonotis pallida* (Schumach. & Thonn.) Benth., Labiat. Gen. Spec.: 619 (1834); in De Candolle, Prodr. 12: 535 (1848). —Baker in F.T.A. 5: 491 (1900). —De Wildeman in Ann. Mus. Congo, Bot. sér. 5 2: 338 (1908); 3: 469 (1912). Type: Ghana, Keta (Quitta) and Osu (Ursue), *Thonning* 1 (C holotype).

*Leonotis africana* (P. Beauv.) Briq. in Engler & Prantl, Nat. Pflanzenfam. 4(3a): 246 (1896). —Baker in F.T.A. 5: 491 (1900).

Corolla indumentum pale yellow to yellow-cream.

**Zambia.** W: Kasempa Dist., Kamusonge Hill, adjacent to Kamusonge Prison, c.2 km from town centre, 7.iii.1995, *Luwiika, Harder, Zimba & Nawa* 162 (K, MO). **Malawi.** N: Karonga Dist., near Chaminade, Bwiba Residential Area, 29.vii.1978, *Iwarsson & Ryding* 985 (K, MAL, UPS).

Mostly found in a band running from West Africa to NE tropical Africa, becoming less frequent in East Africa and rare further south. A weed of waste places and cultivated areas; c.1000 m.

Conservation notes: Sometimes considered a weed; Least Concern.

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*capensis* Benth. 50  
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