FLORA OF NEPAL NOTULAE I: TAXONOMIC NOTES ON NEPALESE SALVIA

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While preparing the account of Salvia L. for the Flora of Nepal, two unnamed species were noted. These species are described here as Salvia clementae Pendry & Y.K.Wei and S. manasluensis Pendry & Y.K.Wei. Salvia transhimalaica Yonek., recently described from Mustang, is reduced to synonymy under S. przewalskii Maxim. A key to the species of Salvia in Nepal is presented.

Keywords: Nepal, Salvia, Salvia clementae, Salvia manasluensis, Salvia transhimalaica, taxonomy.

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Introduction

The Flora of Nepal (Watson et al., 2011) is the first comprehensive account of Nepal’s estimated 7000 species of vascular plants. The Flora’s taxonomic accounts are being published in ten volumes and are also made available online (Royal Botanic Garden Edinburgh, continuously updated), but neither of these formats include nomenclatural novelties. These will be published in an intermittent series entitled Flora of Nepal Notulae, of which this is the first.

Salvia clementae Pendry & Y.K.Wei

Peter (1936) described Salvia campanulata var. hirtella E.Peter primarily on indumentum characters, but Clement (1999), in her account of Salvia for the Flora of Bhutan, noted that this taxon is distinct from both S. campanulata Wall. ex Benth. and S. castanea Diels, the other Bhutanese species it most resembles. Clement did not formally name this species but listed it as ‘Salvia Species A’ in her account. The straight, purplish red corollas of these plants clearly distinguish them from the yellow-flowered Salvia campanulata, and they are easily separable from S. castanea, whose corollas are dark purple-brown, sigmoid and much larger (30–35 mm long versus 20–28 mm long). Furthermore, the leaves of the new taxon are broadly ovate with pronounced cordate bases and occasionally with slightly hastate upper leaves, whereas those of the other two species are more narrowly ovate, and are sometimes elliptic in Salvia castanea.

Clement suggested that more research would be necessary to ensure that the species had not been described elsewhere, but because no such description has been found, it has
been decided to formally publish this species here. The name Salvia hirtella is not available, because it was used by Vahl to describe a Peruvian species (Vahl, 1804), so this species is named S. clementae in recognition of Clement's work on Himalayan Labiatae.

Salvia clementae is also found in Nepal, and most of the Nepalese specimens of S. clementae had previously been determined as S. hians Royle ex Benth. This name has been a source of considerable confusion, and it has also been misapplied to specimens of both Salvia castanea and S. przewalskii Maxim. (see below). Salvia hians has large (27–35 mm long), purplish blue flowers with a conspicuous white lower lip and is a western Himalayan species that does not occur east of Mustang. Salvia przewalskii is Chinese species with purplish pink flowers similar to those of S. clementae, and although there are no published records of it from Nepal, L. S. Springate annotated several Nepalese specimens at E with this name. Salvia clementae and S. przewalskii are easily distinguished, because the leaves of the latter are much narrower and whitish tomentose below.

Salvia clementae Penndry & Y.K. Wei, nom. et stat. nov.
Salvia campanulata var. hirtella E. Peter, Feddes Repert. 39: 179 (1936).
Salvia ‘species A’ Clement, Fl. Bhutan 2(2): 973 (1999).

Species close to Salvia przewalskii Maxim. but differing in its broadly ovate leaves that are almost glabrous below, compared with the narrower, more hastate leaves of the latter, which are tomentose below. Differs from Salvia campanulata Wall. ex Benth. in its pinkish purple, not yellow, flowers, and from S. castanea Diels, which has larger, dark purple-brown sigmoid flowers. – Holotype: India, Sikkim, Laghep, 11,000 ft, 15 viii 1913, R.E. Cooper 508 (holo E [E00317504]). Figure 1.

Perennial herb, 30–80 cm. Stems erect, with a short indumentum of simple or viscid glandular hairs. Petioles of lower leaves up to 13 cm. Leaves all cauline, broadly ovate, 5–26 × 1.5–15 cm, smaller above, base cordate or rarely slightly hastate in upper leaves, apex acute to acuminate, margin crennate to doubly crennate or serrate, glabrous to sparsely pubescent above, almost glabrous and minutely gland-spotted below. Inflorescence a panicle of 2(–6)-flowered verticillasters. Bracts broadly elliptic, 8–20 mm, entire. Bracteoles linear to broadly elliptic, 3–5 mm. Calyx campanulate 10–12 mm, upper lip rounded, 3–5 mm, mucronate or 1-toothed, lower lip 5–6 mm, teeth 3–4 mm, acute. Corolla purplish pink, 20–28 mm, tube 14–20 mm, 8–10 mm wide, obliquely annulate c.5 mm above base, upper lip straight, 6–8 mm, lower lip 6–10 mm, middle lobe to 6 × 9 mm. Stamens fused, filaments 6–7 mm, connective upper arm 3–4 mm, lower arm 1.5–3 mm, upper theca 2.5–3 mm, lower theca fertile, 1.5–2 mm. Staminodes present. Style 24–27 mm, included or up to 3 mm exerted. Nutlets flattened, broadly ellipsoid, 2.5–3 mm.

Altitudinal range. 2200–3900 m.

Ecology. In Abies and Quercus forests, under shade and in clearings, or on open slopes.
Figure 1. *Salvia clementae* Pendry & Y.K.Wei, nom. et stat. nov. A, Basal leaf; B, upper leaves and stem; C, inflorescence; D, opened calyx (outer view); E, opened corolla (inner view); F, ovary and style. Scale bars: A–C, 5 cm; D–F, 1 cm. Drawn by Claire Banks from D.G. Long et al. 225 (E).
Phenology. Flowering June to September, fruiting July to October.

Distribution. Nepal, India, Bhutan and Southwest China.

Additional specimens examined. BHUTAN. Punakha: Naki to Hing Lai La, 6500–11,300 ft, 6 vii 1938, B.J. Gould 848 (E). Thimpu: Above Chenkaphug, 3250 m, 20 vii 1979, A.J.C. Grierson & D.G. Long 2803 (E); Dotena to Barshong, 3050 m, 20 viii 1989, R. King (E); Above Changri Monastery, 2500 m, 3 vii 1987, J.R.I. Wood 5562 (E); Above Dotena to Barshong, 2500 m, 11 ix 1988, J.R.I. Wood 6664 (E); Above Dotena, 2600 m, 22 vii 1989, J.R.I. Wood 7016 (E); Below Barshong, 3300 m, 25 vii 1990, J.R.I. Wood 7298 (E). Upper Mo Chu: Koina, 3000 m, 28 vii 1983, C. Sargent 60 (E).

CHINA. Xizang: Yatung, 1897, H.E. Hobson s.n. (K).

INDIA. Darjeeling: Phalut, 11,000 ft, 21 vii 1919, fl., Anon. s.n. (E); Kalipokhri, 10,000 ft, 12 viii 1913, fl., Rohmoo Lepcha 1209 (E); s. loc., 7000 ft, viii 1881 fl., J.S. Gamble 9620 (K [K000939542]). Sikkim: Megu, 14,000 ft, 21 vii 1913, fl., Rohmoo Lepcha 813 (E); Phedup, 13,000 ft, 12 vii 1913, fl., Rohmoo Lepcha 1126 (E).

NEPAL. Kaski: Seti Khola, 11,500 ft, 28 vii 1954, J.D.A. Stainton et al. 6535 (E). Myagdi: 10,000 ft, 17 vii 1964, T.B. Shrestha & M.S. Bista 1958 (E); Ghorepani, 2200 m, 20 vii 1973, C. Grey-Wilson & B. Phillips 323 (BM). Rasuwa: 3900 m, 21 vii 1972, A. Maire, AMA 423 (E); Gatlang, 3200 m, 20 vii 1974, J.H. de Haas (BM). Sankhuwasabha: Kasuwa Khola, 10,000 ft, 11 vi 1956, J.D.A. Stainton 618 (E); Thasi Gaon to Bhainsi Kharka, 2470 m, 3 viii 1990, M. Minaki et al. 9010101 (BM); Thasi Gaon, 2450 m, 3 viii 1990, D.G. Long et al. 225 (E, KATH). Syangja: Bhurungdi Khola, 9500 ft, 15 vi 1954, J.D.A. Stainton et al. 5781 (BM, E). Taplejung: Topke Gola, 10,500 ft, 13 vii 1956, J.D.A. Stainton 979 (BM).

Salvia manasluensis Pendry & Y.K.Wei

A single population of this large-flowered Salvia was recorded during fieldwork in the Manaslu region of western Nepal. Although only one specimen was collected, it is considered to be sufficiently distinct from other species of Salvia to merit its description as a new species.

Salvia manasluensis Pendry & Y.K.Wei, sp. nov.

Species of Salvia close to S. campanulata Wall. ex Benth. but with markedly larger flowers (33 mm versus 23–26 mm). – Holotype, here designated: Nepal, Manang, southwest of Bimtang, 28°37‘11”N, 84°27‘57”E, 3380 m, 14 viii 2008, Ikeda et al. 20818143 (holo TI; iso E [E00662247], KATH). Figure 2.

Perennial herb to 1.5 m. Stems erect, with an indumentum of long, brown, simple or glandular hairs. Basal leaves not seen. Petioles of upper leaves 0.5–3 cm, shorter above. Leaves broadly ovate, 5–22 × 4–20 cm, markedly smaller above, base deeply cordate to obtuse in uppermost leaves, apex acute to acuminate, margin serrate to crenate, glabrous above, brown villous and minutely gland-spotted below, denser along the veins. Inflorescence a panicle of 2(–6)-flowered verticillasters. Bracts ovate, acuminate, 8–22 mm, entire. Bracteoles elliptic, 5 × 3 mm. Calyx campanulate 18 mm, upper lip rounded, 2 mm, 1-toothed, lower lip 7 mm, teeth 4 mm, cuspidate. Corolla yellow, 33 mm, tube 21 mm,
Figure 2. *Salvia manasluensis* Pendry & Y.K. Wei, sp. nov. A, Basal leaf; B, upper leaves and stem; C, inflorescence; D, opened calyx (outer view); E, opened corolla (inner view); F, ovary and style. Scale bars: A–C, 5 cm; D–F, 1 cm. Drawn by Claire Banks from *Ikeda* et al. 20818143 (E and TI).
12 mm wide, annulus 7 mm from base, upper lip straight, 12 mm, lower lip 14 mm, middle lobe to 8 × 14 mm. _Stamens_ fused, filaments 7 mm, connective upper arm 4 mm, lower arm 3 mm, upper theca 3.5 mm, lower theca fertile, 2 mm. _Staminodes_ 2 mm. _Style_ 33 mm, included or up to 2 mm exerted. _Nutlets_ not seen.

**Altitudinal range.** c.3400 m.

_Ecology._ Open areas in _Abies_ woodland.

**Phenology.** Flowering in August, fruiting in September.

_Distribution._ Endemic to Nepal. Known only from the type collection. _Salvia manasluensis_ is clearly closely related to _S. campanulata_, but it is easily distinguished by its very much larger flowers.

**Salvia przewalskii Maxim.**

Yonekura (2008) described _Salvia transhimalaica_ Yonek. for specimens from Mustang that had previously been identified as _S. hians_. His Latin diagnosis can be translated as:

Species similar to _Salvia castanea_ and _S. przewalskii_ but differing from the former by the straight not sigmoid corolla tube and triangular-hastate leaf with hastate-cordate base, and from the latter in purple-blue corolla and leaves densely tomentose above and densely strigose-tomentose below. It is distinguished from _Salvia hians_ by the purple, not white, lower lip.

The Mustang specimens are clearly distinguished from _Salvia castanea_ and _S. hians_ by the characters discussed by Yonekura, but the distinction between them and _S. przewalskii_ is not at all clear. _Salvia przewalskii_ is widespread in China and is found from 2100 to 4000 m in Gansu, Hubei, Sichuan, Xizang and Yunnan. _Salvia przewalskii_ also has purplish flowers, and its leaves are tomentose below, but it is a rather variable species and the _Flora of China_ account includes four varieties that are distinguished by differences in their indumentum and flower colour (Li & Hedge, 1994). The specimens from Mustang, and others from Manang and Dolpa, show no clear differences from material of _Salvia przewalskii_ at either CSH or E, and there is a complete overlap in floral measurements. _Salvia transhimalaica_ is therefore considered within the circumscription of _S. przewalskii_ and so is treated here as a synonym.

_Salvia przewalskii_ Maxim., Bull. Acad. Imp. Sci. Saint-Pétersbourg 27: 526 (1881).

_Salvia transhimalaica_ Yonek., Fl. Mustang: 265, pl. 4 (2008), _syn. nov._

The Nepalese collections are all from trans-Himalayan areas to the north of the main ranges of the Himalayas, growing at elevations between 2810 and 4090 m, where the climate is similar to that of the regions of the Tibetan Plateau where _Salvia przewalskii_ is found. It should be noted that the lower elevational limit of 1100 m reported in the _Flora of China_ is
probably incorrect. During extensive fieldwork in the region, the second author has rarely seen this species below 2500 m, and the account in *Florae Republicae Popularis Sinicae* gives a range of 2100 to 4050 m (Wu & Li, 1977).

The following specimens, previously identified as *Salvia hians*, and also as *S. castanea*, *S. lanata* Roxb. (= *S. mukerjeei* Bennet & Raizada), *S. nubicola* Wall. ex Sweet and *S. transhimalaica*, are redetermined as *S. przewalskii*.

*Specimens examined. Nepal. Dolpa:* Phoksumdo Tal, 3800 m, 5 ix 2014, *BRD A274* (E, KATH, TI); Lulo Khola, 13500 ft, 18 ix 1952, O.V. *Polunin* et al. 3463 (BM, E); Lulo Khola, 13500 ft, 18 ix 1952, O.V. *Polunin* et al. 3493 (BM, E). *Manang:* Marsiandi, 12000 ft, 23 vii 1950, D.G. Lowndes 1224 (BM, E); Manang, 12000 ft, 29 vii 1983, R.J.D. McBeath et al. 1546 (E); Lower Pisang, 3000 m, 15 viii 1994, M. Mikage et al. 9485435 (E, KATH); Manang, 3100 m, 24 ix 1969, T. Wraber 396 (BM). *Mustang:* Samar, 3700–3880 m, 11 vii 2000, Y. Iokawa et al. 20020092 (E); Kagbeni-Muktinath, 2810–3650 m, 11 ix 1999, S. Ishizawa et al. 99911017 (E); Bhona, 3860 m, 16 viii 2002, F. Miyamoto et al. 20220141 (E); Alubari Kharka, 3730 m, 31 vii 2001, S. Noshiro et al. 20104047 (E); Muktinath, 12000 ft, 26 vi 1966, T.B. Shrestha 5460 (BM); Thinigaon, 11500 ft, 18 vii 1954, J.D.A. Stainton et al. 1370 (BM, E); Tukuche, 11000 ft, 18 vii 1954, J.D.A. Stainton et al. 1878 (BM, E); Ghemi, 12000 ft, 14 viii 1954, J.D.A. Stainton et al. 7229 (BM, E); Muktinath, 13500 ft, 1 ix 1954, J.D.A. Stainton et al. 8055 (BM, E).

**Key to the native and naturalised species of Salvia in Nepal**

1a. Herbs to 30 cm. Leaves all in a basal rosette ......................................................... 2
1b. Herbs or shrubs to 120 cm. Cauline leaves present .................................................. 3

2a. Leaves elliptic-oblong, entire, lanate below .................................................................. *S. mukerjeei*
2b. Leaves ovate, crenate, sparsely hairy on veins below ______ *S. saxicola* Wall. ex Benth.

3a. Bracts caducous. Corolla red or white. Cultivated or naturalised ................................. 4
3b. Bracts persistent. Corolla blue, violet, yellow, pinkish purple or purple-brown. Native ____ 5

4a. Corolla white. Calyx lanate, venation obscured ....................................................... *S. leucantha* Cav.
4b. Corolla red. Calyx sparsely hairy, venation evident ______ *S. coccinea* Buc’hoz ex Etl.

5a. Corolla up to 18 mm. Calyx 2.5–11 mm .................................................................... 6
5b. Corolla 23–35 mm. Calyx 10–18 mm ....................................................................... 7

6a. Corolla less than 6 mm ......................................................................................... *S. plebeia* R.Br.
6b. Corolla 12–18 mm .................................................................................................. *S. roborowskii* Maxim.

7a. Corolla yellow ........................................................................................................ 8
7b. Corolla blue, violet, maroon or purple brown .......................................................... 10

8a. Lower theca sterile. Leaves hastate ............................................................................ *S. nubicola*
8b. Lower theca fertile. Leaves cordate, rarely slightly hastate ........................................ 9
9a. Corolla c.33 mm long .................................................. S. manasluensis
9b. Corolla 23–26 mm long ............................................. S. campanulata

10a. Underside of leaves densely greyish white tomentose, sometimes glabrescent
      S. przewalskii

10b. Underside of leaves glabrous to sparsely hairy .................................. 11

11a. Bracts prominent, 8–17 mm wide. Calyx teeth acerose ___ S. moorcroftiana Wall. ex Benth.
11b. Bracts up to 6 mm wide. Calyx teeth acute or mucrunote .................................. 12

12a. Corolla purple-brown, sigmoid at the base. Nutlets 4–4.5 mm __________ S. castanea
12b. Corolla blue or pinkish purple, straight at the base. Nutlets up to 3.5 mm __________ 13

13a. Corolla pinkish purple with darker spots 2–2.8 cm ________________ S. clementae
13b. Corolla blue with white lower lip, 2.7–3.5 cm __________________________ S. hians

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