

Sinske HATTORI*: **Illustration of Himalayan
*Frullania incisoduthiana***

服部新佐*: ヒマラヤ産 *Frullania incisoduthiana* の図説

In 1979 (p. 391), I published *Frullania incisoduthiana* and its var. *parva* from central Nepal, giving merely a brief diagnosis to each. The following presents more comprehensive descriptions of these two taxa:

Frullania (Trachycolea) **incisoduthiana** Hatt., J. Hattori Bot. Lab. 46: 391 (1979). Fig. 1.

Plants brown or \pm reddish-brown in herbaria, small, in patches on bark of trees; stems 1-2.5 cm long, ca 0.12 mm in diam., irregularly pinnately branched, primary branches obliquely to widely spreading, short (less than 5 mm) but occasionally elongate and again branched (similar to the stem), secondary branches few, ca 2 mm long. Lobes of stem-leaves moderately imbricate to contiguous, dorsally extending beyond the farther edge of stem, 1/2-1 the stem-width, usually with involute apices, when flat widely obovate, 0.65-0.75 mm long, 0.6-0.85 mm wide, rounded at apices, arched but usually not or slightly appendiculate at dorsal bases; cavities of marginal cells ca $15 \times 13 \mu\text{m}$, of median cells $15-20 \times 13-15 \mu\text{m}$, of basal cells $25-33 \times 20-23 \mu\text{m}$, walls with large, subtriangular, nearly nodulose trigones, \pm flexuose, hyaline or nearly so, cavities red-brown or nearly so, or at lobe-base almost hyaline; lobules galeate, with rounded apex and wide, obliquely truncate mouth, depressed along mouth, 0.2-0.3 mm long, 0.25-0.3 mm wide, beak minutely projecting; styli minute, of ca 4 uniseriate cells or 6 cells long, 2 (rarely 3) cells wide at bases, tipped with large, oblong hyaline papilla. Stem-underleaves comparatively large, incurved along margins (particularly the upper margins), nearly orbicular often with \pm narrowed bases, 0.5-0.7 mm long and 0.6-0.85 mm wide, 1/9-1/7 incised-bifid, sinus subobtuse, lobes acute or nearly so, insertion slightly sinuose; rhizoid-initial area somewhat below the middle, \pm convex, rhizoids rarely seen, long, hyaline, with age brownish. Branch-leaves and -underleaves similar to those of stem.

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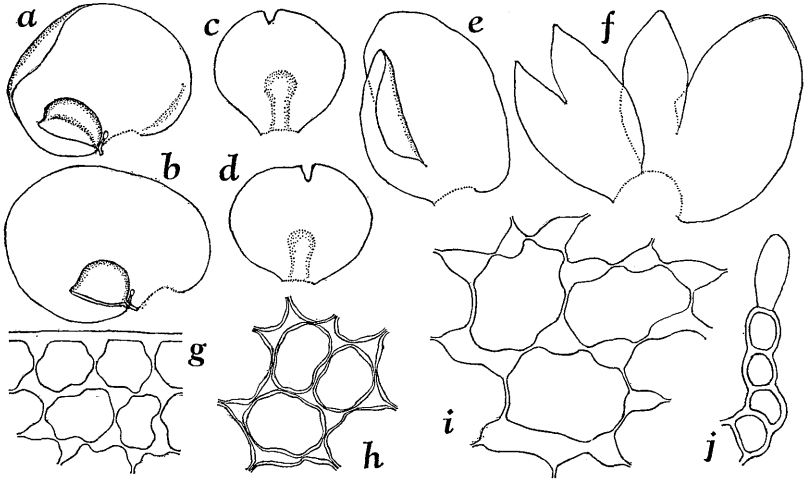


Fig. 1. *Frullania incisoduthiana* Hatt. a-b. Stem-leaves (b. flattened). $\times 35$. c-d. Stem-underleaves flattened. $\times 35$. e-f. Innermost pair of female bracts and bracteole, flattened. $\times 35$. g-i. Cells of lobe of stem-leaf; g from margin, h from middle, i from base. $\times 545$. j. Stylus. $\times 280$. Drawn from type.

Dioicous. Gynoecium terminal on stem or rarely on branch, with innovation below, the innovation may elongate and be similar to the stem; bracts in 2-3 pairs; innermost bract-lobe oblong, ca 0.85 mm long and 0.5 mm wide, with obtuse apex, the lobule shortly connate, oblong-lanceolate, ca 0.7 mm long and 0.3 mm wide, with apiculate to subobtuse apex; innermost bracteole oblong in outline, ca 0.75 mm long and 0.45 mm wide, 2/5-1/2-bifid, sinus acute, lobes oblong-lanceolate with acute apices; perianth, when mature, exserted, long pyriform, ca 1.75 mm long and 1 mm wide, trigonous, with 2 lateral keels and 1 ventral keel, the ventral keel widened and truncate with two sharp lateral plicae and often with small median plicae (so that it appears 2(-3)-plicate on inflated median portion), often with one (or rarely two) small plicae on dorsal surface, thus often 5(-8)-plicate in appearance, keels usually with scattered, small, bluntly triangular or angular protrusions, apex slightly retuse and shortly beaked. Androecia lateral on stems or branches, shortly stalked, capitate with 3-4 pairs of bracts, or spicate with 5-6 pairs of bracts.

Holotype: Annapurna Range, around the base camp below Lamjung Himal, 3600 m, on *Rhododendron*, May 2, 1976, S. Kuniyama et al., NICH 349969 (with

perianth). Paratypes: base camp, 3600 m, NICH 350044 (with androecia), 349970-72, 349980, 349986-87 (andr.), 350046, 350074-75, 350079 (andr.), 350492-94 (per.; mixed with *F. duthiana*), 350498; Bakrekharka, 2800 m, on tree, NICH 350820 (andr.; with *Herbertus pseudoceylanicus*, *Plagiochila* sp., *Metzgeria* sp.).

Distr.: Endemic.

var. **parva** Hatt., l.c. Fig. 2, i-n.

As shown in Fig. 2 (i-n) this variety is much smaller than the type, having much smaller, deeply bifid, obtuse underleaves, smaller leaves with lobes neither appendiculate nor auriculate, and the innermost female bract with a widely ovate lobe bearing a widely obtuse apex and a more longly connate, subtriangular lobule with strongly recurved and usually strongly 1-toothed free

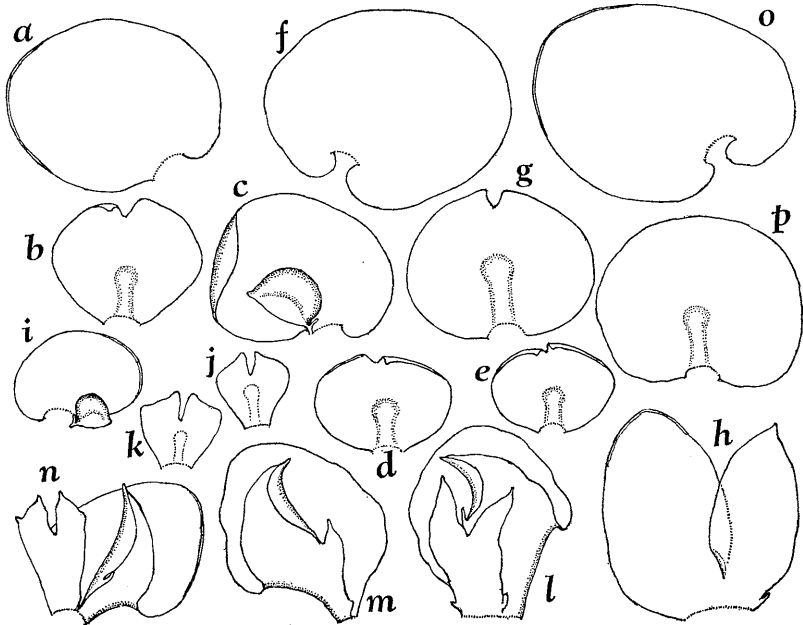


Fig. 2. *Frullania inciseduthiana* Hatt. (a-h), its var. *parva* Hatt. (i-n), and *F. duthiana* Steph. (o-p). a, c, f, i, o. Stem-leaves (leaves flattened, removing the lobules except c and i). b, d-e, g, j-k, p. Stem-underleaves. h, l-m. Innermost female bracts and bracteole. n. Second-innermost bract and bracteole. All $\times 35$. a-b drawn from specim. no. 350494; c-e from specim. no. 350044; f-g from specim. no. 350820; h from specim. no. 350079; i-n from specim. no. 350072; o-p from specim. no. 350494.

margin.

Holotype: Base camp, 3600–4200 m, on *Rhododendron*, May 3, 1976, S. Kunisawa et al., NICH 350072. Paratype: Bakrekharka, 2800 m, on tree, NICH 350821 (in the original diagnosis I cited this paratype erroneously as 350820).

This species is closely related, and similar, to *Frullania duthiana* Steph. in appearance, but the latter is readily distinguished by its holostipous (non-incised) and usually larger underleaves that are gibbous and somewhat auriculate at the bases. Other differences are: in *F. incisoduthiana* 1) the leaf-lobes are usually barely auriculate, 2) the innermost bracteole is longer, 2/5 or more bifid, with a narrow and acute sinus and shortly lanceolate, acute lobes, and hardly connate with the adjacent bract-lobule, and 3) the bract has an oblong lobe and a shortly connate, sublanceolate lobule; whereas in *F. duthiana* 1) the leaf-lobes are distinctly appendiculate, 2) the innermost female bracteole is often recurved and/or crispate-repand along the margin, shallowly bifid with a narrow to wide and often lunate sinus and sublanceolate to widely subtriangular, acute or subacute lobes, and more or less connate with the bract-lobule at one side, and 3) the bract has an ovate lobe with a subacute, obtuse, or rounded apex and a long connate, ovate-triangular lobule.

Only one collection (350820), made at lower altitude (2800 m), is somewhat different from the others from higher altitudes (3600–4200 m) as shown in Fig. 2 (f–g): plants are male, robust, deep reddish-brown, forming mats with *Herbertus pseudoceylanicus* and *Plagiochila* sp. on a tree; stems are 2–3 cm long, 0.15 mm in diam., and irregularly, slightly bipinnately branched, primary branches obliquely spreading, to 5–10 mm long, secondary branches few, ca 2 mm long; lobes of stem-leaves are ca 0.75 mm long and 0.85 mm wide, rounded-appendiculate at bases, lobules 0.25–0.3 mm long and wide, styli ca 6 cells long, uniseriate above, 2 or rarely 3 cells wide below, tipped with hyaline mucilaginous cells; stem-underleaves are widely orbicular, 0.7 mm long and 0.8–0.85 mm wide, and ca 1/7-bifid; and androecia are lateral on the primary branches, shortly stalked (stalk with a pair of \pm reduced leaves), and nearly capitate with 3–4 pairs of bracts. This form is therefore somewhat close to *F. duthiana*, particularly in the shape of lobes of stem-leaves which is also seen in specimen no. 350044 to some degree.

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References

Hattori, S. 1979. Frullaniaceae. In M. Mizutani (ed.), Hapatics from central Nepal collected by the Kochi Himalaya Expedition, 1976. J. Hattori Bot. Lab. 46: 391.

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1979年にネパールから *Frullania incisoduthiana* 及びその変種 var. *parva* なるものを記載したが、これらについて十分な論議が出来なかったので、ここに図示すると共に近縁関係について述べておいた。

○Materials for the distribution of lichens in Japan (8) 地衣類分布資料 (8)

○ *Physcia luganensis* Meresch. In Japan this species has been reported only from Taishaku-kyo, Hiroshima Prefecture (H. Kashiwadani, Ginkgoana 3: 1-77, 1975). Recently, I collected it on a large outcrop of calcareous rocks in a slightly shaded place of Akiyoshi-dai in Yamaguchi Pref., which is a second locality in Japan. This species closely resembles *Physcia melanchra* Hue, a common Japanese species of *Physcia*, in having laminal punctiform soralia, but can be easily distinguished from the latter by the presence of terminal lip-shaped soralia.

Specimen examined. Yamaguchi Pref., Mine-gun, Akiyoshi-dai, H. Miyawaki 5304 (HIRO, TNS). (Hiromi MIYAWAKI)

本種は、日本では柏谷博之博士によってただ一度広島県帝釈峡より報告されているのみであったが、最近筆者は山口県秋吉台において採集したので二番目の産地として報告する。生育場所は、やや日陰の石灰岩の露岩の側面である。(宮脇博巳)