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# Chiloscyphus parapilistipulus (Lophocoleaceae), a new species of liverwort from New Caledonia, with the typification of *Lophocolea pilistipula*

Louis Thouvenot & Michelle J. Price

## Abstract

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During a review of *Lophocoleaceae* types housed in G in the context of research on the liverworts of New Caledonia, a set of three specimens collected by Louise Le Rat in 1909 that were filed as types of *Lophocolea pilistipula* Steph. (= *Chiloscyphus pilistipulus* (Steph.) J.J. Engel & R.M. Schust.) turned out to be heterogeneous: the one originating from Île des Pins is fertile and corresponds to the protologue as well as Stephani's illustration of this taxon. This original material is designated here as lectotype of *Lophocolea pilistipula*. The two other specimens in G collected on Mount Dogny are sterile and exhibit some morphological differences from the designated lectotype material, namely the plants are large, with wider stems that have larger and broader leaves with smooth rather than crenulate margins, and that lack trigones. A new fertile collection from Mount Dogny was identified as belonging to *Chiloscyphus* Corda and is conspecific with the material collected from Mount Dogny over a century earlier. A new species, *Chiloscyphus parapilistipulus* Thouvenot, is described. It closely resembles *Lophocolea pilistipula* but differs from it by its larger size, smooth leaf margins, the dioicous sexuality and the ventro-lateral position of the gynoecea at the apex of short leafless branches.

## Keywords

MARCHANTIOPHYTA – LOPHOCOLEACEAE – *Chiloscyphus* – *Lophocolea* – New Caledonia – Typification – New species

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## Introduction

During preliminary studies by the first author for a review of the *Lophocoleaceae* in New Caledonia, the type specimens of *Lophocolea pilistipula* Steph. (= *Chiloscyphus pilistipulus* (Steph.) J.J. Engel & R.M. Schust.) housed in G were studied. They turned out to be heterogeneous. Three different specimens of possible original material of *L. pilistipula* are housed in the Franz Stephani collection in G. All were collected in New Caledonia by Louise Le Rat in 1909. They were sent to Stephani by E.G. Paris, who was an important provider of New Caledonian liverworts which he sent to Stephani between 1900 and 1910 (unpublished correspondence from Stephani to Paris, in the library collection of University Rennes 1). *Lophocolea pilistipula* was published by STEPHANI (1922: 288). The name was reported earlier without any description by PARIS (1910), who mentioned that he accorded the name to Stephani based on the letters that he received from Stephani about this taxon. PARIS (1910) went on to explain that his mention of the species that was in the process of being described by Stephani was in order to ensure that another name was not given to the same entity from the same locality.

The labels on each of the three specimens in G are handwritten, most likely by Paris, and have been numbered in ink, presumably distribution numbers of Paris, but are without species names in his hand. The specimens are annotated in pencil as “*Lophocolea pilistipula* St nsp” or “*Lophocolea pilistipula* St. ms” by Stephani, but two different localities and dates are indicated on the labels of the three herbarium packets. The specimen [G00112487] (*E.G. Paris, n° 55*), was collected in May 1909 from the Watchia forest, Oupe Bay, Île des Pins and Stephani added the indication “c. per.” to the label. The specimens [G00051491] (*E.G. Paris, n° 359*), and [G00051492] (*E.G. Paris, n° 365*), were collected near Mt Dogny (1050 m) in July 1909 and are possibly duplicates of a single collection. Further duplicates of the material from Mt Dogny are housed in PC and REN. Other than the addition of the species name, neither of these latter specimens had any additional annotations by Stephani, and it was unlikely that he actually saw these specimens. STEPHANI (1922) did not designate a holotype and since the locality information given by Stephani in the protologue “*Hab. Nova Caledonia (Lerat legit)*”, as well as in the correspondence with Paris, is imprecise, all three specimens may be considered as syntypes of this name and a lectotype should be designated (TURLAND et al., 2018: Art. 9.4).

The three specimens in G were examined and were found to belong to two different species in two different genera. A lectotype is therefore designated for *L. pilistipula* based on the collection from Île des Pins and the plants originating from Mt Dogny are considered to belong to a new species described herein.

## Lectotypification of *Lophocolea pilistipula*

*Lophocolea pilistipula* Steph., Sp. Hepat. 6: 288. 1922.

= *Chiloscyphus pilistipulus* (Steph.) J.J. Engel & R.M. Schust in Nova Hedwigia 39: 421. 1985.

**Lectotypus** (designated here): NEW CALEDONIA. **Prov. Sud:** Île des Pins, forêt de Watchia, à la baie de Oupe, V.1909, *Le Rat s.n.* (G [G00112487]!; isolecto-: REN!).

*Notes.* – The succinct original description of *Lophocolea pilistipula* corresponds to the vegetative and sexual characters observed in the fertile plants from the Île des Pins [G00112487] and the illustration in *Icones Hepaticarum* represents the gynoecial parts of this specimen (STEPHANI, 1876–1917: tab. 5768). The fertile specimen from Île des Pins in G, seen by Stephani, is therefore designated as lectotype of *Lophocolea pilistipula*. A duplicate is housed in the General E.G. Paris herbarium (REN).

From a taxonomic point of view, we are adopting here the generic name *Lophocolea* as used in the World checklist of hornworts and liverworts (SÖDERSTRÖM et al., 2016). The name *Chiloscyphus pilistipulus* was created by ENGEL & SCHUSTER (1985) according to their broad concept of the genus *Chiloscyphus* which includes *Lophocolea* as a subgenus. Recent phylogenetic studies indicate that they represent two distinct genera (SÖDERSTRÖM et al., 2013; PATZAK et al., 2016).

## Description of a new species of *Chiloscyphus*

*Chiloscyphus parapilistipulus* Thouvenot, **sp. nov.** (Fig. 1–2).

**Holotypus:** NEW CALEDONIA. **Prov. Sud:** La Foa, Dogny plateau, on wet rock in the creek Dogny, [165°52'06"E 21°37'02"S], 918 m, 26.IX.2016, *Thouvenot NC2451* (PC [PC0763751]!; iso-: Herb. Thouvenot!).

*Chiloscyphus parapilistipulus* Thouvenot resembles *Lophocolea pilistipula* Steph. but differs by its dioicous condition with terminal gynoecia on highly abbreviated ventro-lateral intercalary branches, larger size with shoots up to 5 mm wide, leaf apices lunate to shortly bifid, entire and smooth leaf margins and leaf cells without trigones.

*Plants* olive green, medium to large, shoots up to 4.5 mm wide. *Stems* often attenuated with leaves becoming progressively smaller towards the shoot tips, rhizoids densely fasciculate, on the stem at the base of the underleaves. *Branches* ventro-lateral. *Leaves* succubous, spreading at a wide angle from the stem, slightly convex, alternate, not dorsally decurrent; leaves usually 1.4–2.0 mm long, 0.9–1.5 mm wide, oval-oblong, transversally to obliquely truncate, margins entire and smooth, apices usually lunate with a single acute tooth at both



**Fig. 1.** – *Chiloscyphus parapilistipulus* Thouvenot: habit, dorsal view. [Thouvenot NC2451]

distal angles, to shallowly bifid, lobes short, widely triangular, minutely apiculate, some leaves with rounded apices. *Leaf cells* hexagonal, isodiametric to slightly elongate, 44–66  $\mu\text{m}$  long, 25–52  $\mu\text{m}$  wide, walls thin without trigone. *Underleaves* small, not or hardly wider than the stem, overall oval, deeply bifid, disc wider than long, 3–4 cells high, insertion line semi-circular, lateral margins with a small obtuse tooth on both sides, teeth sometimes linear, lobes erect or crescent shaped, narrowly lanceolate acuminate to linear, sinus lunate. *Sexual condition* dioicous. *Gynoecia* (unfertilized), terminal on very short intercalary ventro-lateral branches without vegetative leaves or underleaves, bracts oval, 1.2–1.8 mm long, bifid, lobes ovate acute, a lanceolate segment usually developed on the upper part of a single lateral margin otherwise entire or with rare small teeth, bracteole deeply bifid, 1.5 mm long, lobes narrowly lanceolate, more or less convergent, margins entire, perianth 2–2.5 mm long, cyathiform, smooth, mouth tri-lobate, lobes deeply laciniate. *Androecia* not seen.

*Etymology.* – The species epithet refers to its morphological resemblance to *Lophocolea pilistipula*.

*Distribution and ecology.* – *Chiloscyphus parapilistipulus* is only known from three specimens from the Dogny region (Mt Dogny and the Dogny plateau) of New Caledonia at altitudes between 900 to 1050 m where it grows on damp rocks in wet forest.

*Notes.* – The two specimens collected by *L. Le Rat* in Mt Dogny are sterile. A fertile plant with similar vegetative characters to the *Le Rat* material was collected on the Dogny plateau in 2016 by the first author. This facilitated the generic assignment and the description of a new species. It belongs to the genus *Chiloscyphus* Corda because of the morphology

of the gynoecia and vegetative characters such as the free underleaves and the alternate leaves. *Chiloscyphus* is characterized by terminal gynoecia on short intercalary ventro-lateral branches that lack vegetative leaves or underleaves. Androecia are absent so this plant appears to be dioicous and exhibits a gynoecia implantation that is different from the *Lophocolea*-type (HENTSCHERL et al., 2006).

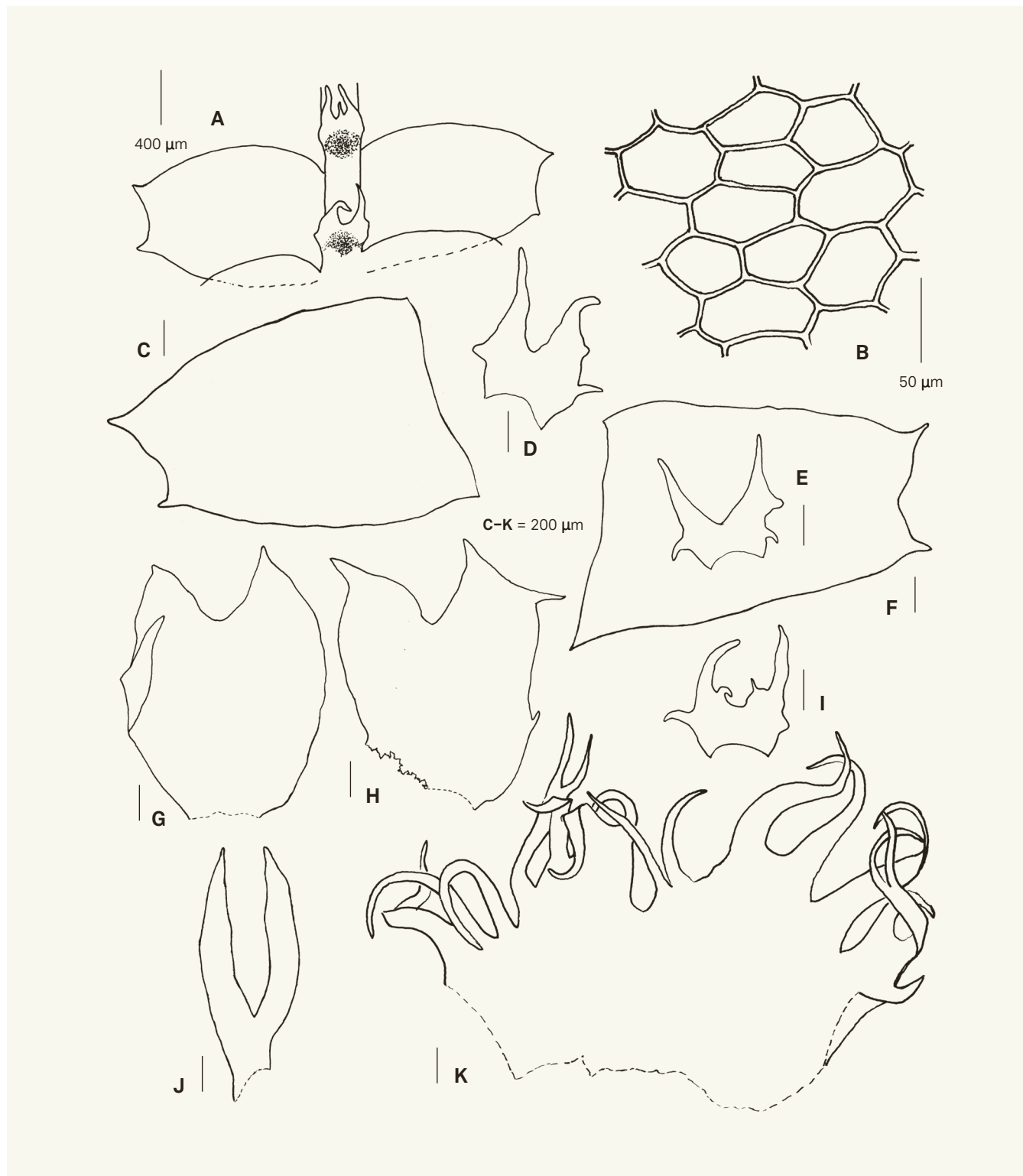
*Chiloscyphus parapilistipulus* resembles *Lophocolea pilistipula* but differs in the much larger size of its shoots, leaves and cells, the absence of trigones, the plane outer cell walls so that leaf margins are smooth. The latter has shoots that are 1.5 mm wide, leaves that are 0.8–1.2 mm long and 0.5–0.8 mm wide near the base and leaf cells that are 16–30  $\mu\text{m}$  wide.

The new species differs from all the *Lophocoleaceae* known from New Caledonia (THOUVENOT et al., 2011) and from *Chiloscyphus* species reported from neighbouring countries with bryophyte floras that have floristic relationships with New Caledonia.

*Paratypus.* – NEW CALEDONIA. **Prov. Sud:** “In jugo Dogny”, 1050 m, VII.1909, *Le Rat* s.n. (G [G00051491, G00051492], PC [PC0102406, PC0150609], REN).

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**Fig. 2.** – *Chiloscyphus parapilistipulus* Thouvenot. **A.** Shoot portion, ventral view; **B.** Leaf cells; **C, F.** Leaves; **D–E, I.** Underleaves; **G–H.** Female bracts; **J.** Female bracteole; **K.** Perianth open and flattened. [Thouvenot NC2451, PC] [Drawings: L. Thouvenot]



## Unpublished source

STEPHANI, F. [1876–1917]. *Icones Hepaticarum*. Archives de la Bibliothèque des Conservatoire et Jardin botaniques de Genève.

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