Notes on the taxonomy and distribution of *Cololejeunea platyneura* (Hepaticae, Lejeuneaceae)

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*Cololejeunea astyla* Mizut., previously known only from North Borneo, is proposed as a synonym of *C. platyneura* (Spruce) A. Evans, which was known from Africa, South America and Vietnam and is here reported for the first time for China (Yunnan). The taxonomy of *C. platyneura* and related species is discussed and a distribution map of it is provided.

**Key words:** Borneo, China, *Cololejeunea astyla*, *C. platyneura*, distribution, epiphyllous liverworts, Lejeuneaceae

*Cololejeunea platyneura* (Spruce) A. Evans, an epiphyllous hepatic, was first described from Brazil by Spruce (1884) as *Lejeunea platyneura* Spruce. Stephani (1916) described an African species, *Physocolea vittata* Steph., which was rejected by Jones (1954) as a *nomen confusum*. Jones introduced a new name, *Cololejeunea usambarica* E. W. Jones. Pócs (1992) reported *Cololejeunea bichiana* Tix. for Madagascar and the Mascarene Islands. Tixier (1992) reduced *C. bichiana* Tix. and the African *usambarica* to synonyms of *C. platyneura*. In Asia this species was known only from Vietnam (Tixier 1992, 1994). In the course of our recent studies on epiphyllous hepatics, we found that *C. astyla* Mizut. of North Borneo is conspecific with *C. platyneura*. We report it also for Yunnan, China, which is its northernmost locality.

*Cololejeunea platyneura* (Spruce) A. Evans

(Fig. 1)


As mentioned by Jones (1954), there are three specimens under the name *Cololejeunea vittata* in Stephani’s herbarium. The first one is from New Guinea (*leg. Nyman*), and it clearly belongs to *Cololejeunea peraffinis* (Schiffn.) Schiffn. The second (*Brunnthaler 25* from Usambara, Tanzania) contains scanty material of *C. obliqua* (Nees & Mont.) Schiffn., and the third (Herb. E. Levier...
4530, G-17499) is the holotype of Physocoloea vittata. Jones (1954) erroneously introduced a new name Cololejeunea usambarica, based on that specimen. Therefore, C. usambarica E. W. Jones is an illegitimate name.

Cololejeunea platyneura is well characterized and easily recognized by (1) absence of a stylus, (2) presence of a vitta-like area in the leaf lobe, (3) a hyaline papilla which is situated on the proximal side of the first tooth, (4) small and low papillae on the dorsal side of the leaf lobe, (5) large leaf cells usually with distinct trigones, (6) an epiphyllous habitat, (7) a free margin consisting of one row of 4–6 elongated cells, and (8) usually 16–18-celled gemmae.

Pócs (1975) described Cololejeunea platyneura in detail as C. usambarica, based on African material. The species shows slight variations in several features. In the type material from Brazil, the keel margins of the perianth are more or less serrulate or papillose (Fig. 1C and N). However, they are nearly entire in Vietnamese and Chinese material as well as in most specimens from Africa. The leaf shape also varies. Usually the leaves are more or less falcate and rounded at the apex, but in Chinese specimens the ventral margin is mostly straight (Fig. 1B, J and K). The first tooth of the leaf lobe varies from one to two cells. It usually points towards the apex of leaf lobe (Fig. 1E and F), but sometimes also towards the stem apex, as shown in Fig. 1D. A vitta-like area is developed more strongly in Malaysian, Brazilian and African material than in Chinese material (Fig. 1M). The Chinese plants have numerous perianths. The spores in the Chinese material are irregular in shape, usually rectangular, 22–41 × 20–22 µm, minutely papillose under light microscope, but densely beset with verruca-like processes without rosettes under scanning electron microscope. C. astyla is identical with C. platyneura except for the relatively smaller leaf lobules (Fig. 1I).

Cololejeunea platyneura is closely related to C. tenella Benedix, which is known from Australia, Cambodia, China, Indonesia, Malaysia, Sri Lanka and Vietnam (Benedix 1953, Tixier 1985, Thiers 1988). They share the same habit, apical structure of leaf lobe, position of hyaline papilla and basal cells of leaf lobe which are usually elongated. However, they can be separated by the following key:

1. Dorsal protrusion of leaf lobe small and low; median cells of leaf lobe 17–30 × 10–20 µm; perianth wall cells with low papillae; leaves slightly falcate; ocellus-like basal cells absent; epiphyllous .......... C. platyneura
1. Dorsal protrusion of leaf lobe large and high; median cells of leaf lobe 8–18 × 6–10 µm; perianth wall cells with high papillae; leaves usually strongly falcate; ocellus-like basal cells usually present (1 or 2 per lobe leaf); epiphyllous or epiphloeodic ................. C. tenella

As pointed out by Pócs (1993), Cololejeunea magillii Pócs, which is known from the Comoro Islands, is similar to C. platyneura. However, the former differs in its hyaline papilla which is situated on the inner surface of base of the first tooth of the leaf lobe.

Pócs (1975) compared Cololejeunea platyneura with C. elegans Steph. The latter lacks a vitta-like area, has large papillae on dorsal side of leaf lobe, a 1-celled stylus, a dental hyaline papilla, and large leaf lobules (with 7–16 free marginal cells). Tixier’s (1985) illustration of C. elegans may not be correct, because a distinct vitta-like area was illustrated.

Pócs (1975) placed Cololejeunea platyneura in the subgenus Taeniolejeunea (Zwickel) Benedix. However, we think it belongs to the subgenus Cololejeunea because of its large leaf cells, inflated perianths with 4–5 keels, and absence of a stylus and true ocelli.

Cololejeunea platyneura is a pantropical epiphyllous species, and the total range is shown in Fig. 2. Yanjiang (ca. 25°N, 98°E), China is the northermost locality for this species. Though widely distributed in Africa (Grolle 1995, Wigginton et al. 1996), it seems to be rare in Asia. Only the two Chinese specimens cited below were available for examination.


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