



## Lectotypification of the name *Lycopus coreanus* (Lamiaceae)

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The genus *Lycopus* Linnaeus (1753: 21), well-known to include stoloniferous-perennial herbaceous plants of the mint family, consists of about fifteen species distributed in the Northern Hemisphere and Australia, which are distinguished by several morphological characteristics such as the dentate to pinnatifid, opposite leaves, flowers in compact, sessile axillary verticillasters, a 4–5 lobed tubular or campanulate calyx, a short subactinomorphic corolla with 2 adnate, exert stamens, and dry tetrahedral one-seeded nutlets (Henderson 1962, Moon & Hong 2006). In Northeast Asia (including northeastern China, Korea, Japan and Far East Russia), nine species are recognized, mostly occurring in low wetland areas (Murata & Yamazaki 1993, Li & Hedge 1994, Probatova 1995, Son *et al.* 2016).

*Lycopus coreanus* Léveillé (1910: 423), which is found in northeastern China, Korea and Japan was described as a new species on the basis of two collections cited in the protologue (*Taquet 1494*, *Taquet 3104*), which were gathered from Yeongsil (Yengsil) and Seohong-dong (Hongno) in Jeju-do (Quelpaert), Republic of Korea. Both collections are syntypes under Art. 9.5 of the International Code of Botanical Nomenclature (ICN, McNeill *et al.* 2012). Morphologically, this species is clearly distinguished from other taxa of *Lycopus* by characteristics such as its long creeping rhizomes lacking tubers, rhombic-shaped leaves with obtuse apex, and persistent calyces longer than the nutlets (Son *et al.* 2016). However, morphological characters in *Lycopus* show a high degree of variability which has made it difficult characterization of taxa (Henderson 1962, Li & Hedge 1994).

The name *L. coreanus* has been treated in very contrasting ways. Mckean (1982) considered it to be a synonym of *L. ramosissimus* (Makino 1898: 117) Makino (1917: 14) along with *L. cavaleriei* Léveillé (1910: 423). Conversely, Li (1991) treated it as a synonym of *L. cavaleriei* along with *L. ramosissimus*, whereas Li & Hedge (1994) regarded *L. coreanus* as a synonym of *L. cavaleriei* along with *L. ramosissimus* among other names. Such different treatments for those three names, which we consider to be synonyms, have created a confusing scenario still in need of clarification.

On the one hand, the name *L. maackianus* var. *ramosissimus* Makino (1898: 117), basionym of *L. ramosissimus*, has not the priority over the other two names, *L. coreanus* and *L. cavaleriei* by Art. 11.4 of the ICN. On the other hand, both latter names have equal priority because they were simultaneously published by Léveillé (1910). In this case, the priority is determined by Art. 11.5 of the ICN, in which whoever chooses to accept effectively one name and units the other as a synonym, that choice is to be followed and therefore the accepted name is treated as having priority. When Henderson (1962) revised *Lycopus* L., he treated the name *L. cavaleriei* as synonym of *L. coreanus*, and hence the latter name has the priority over the former.

Regarding typification of *L. coreanus*, Mckean (1982) considered the collections *Taquet 1494* and *Taquet 3104* to be syntypes of that name. He mentioned that specimens of both collections were conserved in the herbarium of the Royal Botanic Gardens, Edinburgh (E). However, we found several syntypes of *L. coreanus* at many herbaria (exsiccata of *Taquet 1494* are kept at E, as well as Royal Botanic Gardens, Kew [K], and Makino herbarium [MAK], whereas exsiccata of *Taquet 3104* are housed at E and the Conservatoire et Jardin botaniques de la Ville de Genève [G]). Only three sheets of them (E00275748 and K000929971 belonging to *Taquet 1494*, and E00275747 to *Taquet 3104*) have Taquet's handwriting label to come from Léveillé personal herbarium. Additionally, we found a single specimen (G00424190) as 'type material' at G. This specimen shows the collection locality, collection date and collector name in accordance with *Taquet 1494*, but the collection number is not annotated in the label. By the way, all the above specimens show minor contrasts in their collection date when compared with the protologue. In the protologue, only a single collection date was cited as 'August 1909'. The collections *Taquet 3104* perfectly fit the protologue, whereas the collection *Taquet 1494* show a different collection date as 'August 17, 1908'.



FIGURE 1. Lectotype of *Lycopodium coreanum* H.Lév. (E.J.Taquet 3104, E barcode E00275747).

Crucially, however, a close examination of materials from both collections reveals that they belong to different species. The collection *Taquet 1494* includes plants in which the calyx teeth are blunt at apex, a character that lead us to conclude it really belongs to *L. uniflorum* Michaux (1803: 14), whereas the collection *Taquet 3104* shows clearly spine-tipped calyx teeth and it belongs indeed to *L. coreanum*.

On that basis, Mckean (1982) argued that the name *L. coreanum* should be rejected under Art. 70 of the *Seattle Code* (Stafleu *et al.* 1972), and Li (1991) and Murata & Yamazaki (1993) agreed with his proposal. However, Art. 70 of the *Seattle Code* was removed at the Leningrad Congress on July, 1975 (Stafleu *et al.* 1978). For that reason, Mckean (1982) should have invoked not to the *Seattle Code* but the *Leningrad Code* (Stafleu *et al.* 1978). Besides, since 1978, any proposal to reject a name must be submitted to the General Committee (Stafleu *et al.* 1978, McNeill *et al.* 2012), which has to make a decision

about. However, Mckean (1982) did not submit any valid proposal for rejection of *L. coreanus* to the General Committee and therefore his 'rejection proposal' is not valid, the name *L. coreanus* being still available for use.

As mentioned above, syntypes of *L. coreanus* belong to two different taxa as currently accepted (*Taquet 1494* to *L. uniflorus* and *Taquet 3104* to *L. coreanus*, respectively). According to Art. 9A.4 of the ICN, when two or more heterogeneous elements were included in or cited with the original description or diagnosis of a name, a lectotype should be selected to preserve current usage of that name. Therefore, based on the information discussed before, we designate below the specimen *Taquet 3104* at E as lectotype of *L. coreanus*, since it is not in conflict with the protologue and matches the current application of that name.

### Lectotype designation

*Lycopus coreanus* H.Lév. (1910: 423)

= *L. maackianus* var. *ramosissimus* Makino (1898: 117) ≡ *L. ramosissimus* (Makino) Makino (1917: 14)

= *L. cavaleriei* Léveillé (1910: 423) ≡ *L. coreanus* var. *cavaleriei* (H.Lév.) Wu & Li (1977: 708)

**Type** (lectotype, designated here): —KOREA. Jeju-do: Quelpaert in orizetis Hongno, August 1909, *E.J. Taquet 3104* (E barcode E00275747 [digital photograph!], isolectotype G barcode G00424189 [digital photograph!]), Fig. 1.

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