



Notes on Early Land Plants Today. 49. On *Lejeunea huctumalcensis* Lindenb. & Gottsche and the resurrection of *Otigoniolejeunea* (Spruce) Schiffn., an older name for *Physantholejeunea* R.M.Schust. (Marchantiophyta, Lejeuneaceae)

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Lejeunea huctumalcensis Lindenb. & Gottsche in Gottsche *et al.* (1847: 762), a widespread neotropical species, is one of the most unusual taxa in *Lejeunea* Libert (1820: 372) owing to the variable gynoecial innovation type which may be lejeuneoid or pycnolejeuneoid, the presence of ocelli in leaf lobes and the perianth keels usually with bifid or more ramified laciniae (Reiner-Drehwald & Ilkiu-Borges 2007). In other species of this large genus, innovations are invariably lejeuneoid, ocelli are lacking and perianth keels do not produce bifid or more ramified laciniae. The generic position of *Lejeunea huctumalcensis* has long been controversial and the species has been assigned to at least six different genera, including *Ceratolejeunea* (Spruce 1884: 77) Jack & Stephani (1892: 16), *Hygrolejeunea* (Spruce 1884: 77) Schiffner (1893: 124), *Lejeunea*, *Otigoniolejeunea* (Spruce 1884: 77) Schiffner (1893: 125), *Pycnolejeunea* (Spruce 1884: 246) Schiffner (1893: 124), and *Trachylejeunea* (Spruce 1884: 180) Schiffner (1893: 126) (Reiner-Drehwald & Ilkiu-Borges 2007). The latter authors showed that *L. huctumalcensis* is an older name for *L. xiphotis* Spruce (1884: 227), the type species of *Lejeunea* subg. *Otigoniolejeunea* Spruce (\equiv *Otigoniolejeunea* (Spruce) Schiffn.), and thus *L. huctumalcensis* automatically becomes a member of this group. *Otigoniolejeunea* was provisionally accepted by Reiner-Drehwald & Ilkiu-Borges (2007) as a subgenus of *Lejeunea*, with *L. huctumalcensis* as its only species. Other recent authors, however, have treated *Otigoniolejeunea* as a mere synonym of *Lejeunea* (e.g., Grolle 1983; Singh 2013).

Recent molecular studies by Wei (2013) and Czumay *et al.* (2013) have independently recovered *Lejeunea huctumalcensis* in a small and robust clade outside the genus *Lejeunea*, together with *Physantholejeunea portoricensis* (Hampe & Gottsche 1853: 352) Schuster (1978: 429). The latter taxon is a rare species from the West Indies which shares with *Lejeunea huctumalcensis* the occurrence of ocelli in the leaves, and the presence of pycnolejeuneoid type innovations (Gradstein *et al.* 2001). Although the two species differ in several important morphological respects (see key below), they may be considered congeneric based on the results of the molecular analysis. The results clearly confirm the importance of presence/absence of ocelli and gynoecial innovation type as stable and reliable generic characters in *Lejeunea* (Wei 2013). Moreover, the circumscription of *Lejeunea* has become much improved by the removal of *Lejeunea huctumalcensis* and other taxa with ocelli (Dong *et al.* 2013; Wei & Zhu 2013).

Based on the molecular results, Czumay *et al.* (2013) transferred *Lejeunea huctumalcensis* to *Physantholejeunea*. However, *Otigoniolejeunea* (Spruce) Schiffn. is a much older name than *Physantholejeunea* and has priority. Therefore, the generic *Otigoniolejeunea* has to be resurrected and the following treatment is necessary.

Formal treatment

The format of this note follows Söderström *et al.* (2012).

Otigoniolejeunea (Spruce) Schiffn. in *Engler & Prantl, Nat. Pflanzenfam.* 1(3): 118, 125, 1893 (Schiffner 1893).
Basionym: —*Lejeunea* subgenus *Otigoniolejeunea* Spruce, *Trans. Proc. Bot. Soc. Edinburgh* 15: 77, 226, 1884 (Spruce 1884).
Lectotype [designated by Vanden Berghen (1948)]:—*Otigoniolejeunea xiphotis* (Spruce) Schiffn. [= *Otigoniolejeunea huctumalcensis* (Lindenb. & Gottsche) Y.M.We, R.L.Zhu & Gradst.].
= *Physantholejeunea* R.M.Schust., *Phytologia* 39: 429, 1978 (Schuster 1978), *syn. nov.*
Type:—*Physantholejeunea portoricensis* (Hampe & Gottsche) R.M.Schust. [= *Lejeunea portoricensis* Hampe & Gottsche (1853)].

Otigoniolejeunea huctumalcensis (Lindenb. & Gottsche) Y.M.We, R.L.Zhu & Gradst., *comb. nov.*
Basionym:—*Lejeunea huctumalcensis* Lindenb. & Gottsche, *Syn. Hepat.*: 762, 1847 (Gottsche *et al.* 1847).
Lectotype [designated by Reiner-Drehwald & Ilkiu-Borges (2007)]: MEXICO. “ad Huctumalco”, Mai 1841, *Liebmann 458b* (W (Lindenberg Hepat. 6489); isolectotypes C, G-21590).
≡ *Physantholejeunea huctumalcensis* (Lindenb. & Gottsche) Heinrichs & Schäf.-Verw., *Austral. Syst. Bot.* 26: 389, 2013 (Czumay *et al.* 2013), *syn. nov.*
= *Lejeunea xiphotis* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 227, 1884 (Spruce 1884) ≡ *Otigoniolejeunea xiphotis* (Spruce) Schiffn. in *Engler & Prantl, Nat. Pflanzenfam.* 1(3): 125, 1893 (Schiffner 1893).
Type:—BRAZIL. Tanaú, prope Pará, Aug 1849, *Spruce L302* (holotype MANCH CC 18494; isotypes MANCH CC 18495, NY).

For further synonyms see Reiner-Drehwald & Ilkiu-Borges (2007) and Reiner-Drehwald (2011).

Otigoniolejeunea portoricensis (Hampe & Gottsche) Y.M.We, R.L.Zhu & Gradst., *comb. nov.*
Basionym:—*Lejeunea portoricensis* Hampe & Gottsche, *Linnaea* 25: 352, 1853 (Hampe & Gottsche 1853).
Type:—PUERTO RICO. *Schwanecke 32* (holotype G).
≡ *Neurolejeunea portoricensis* (Hampe & Gottsche) Schiffn., in *Engler & Prantl, Nat. Pflanzenfam.* 1(3): 131, 1893 (Schiffner 1893) ≡ *Ceratolejeunea portoricensis* (Hampe & Gottsche) A.Evans, *Bull. Torrey Bot. Club* 34: 15, 1907 (Evans 1907) ≡ *Physantholejeunea portoricensis* (Hampe & Gottsche) R.M.Schust., *Phytologia* 39: 429, 1978 (Schuster 1978).

Notes:—*Otigoniolejeunea* was originally described by Spruce as one of 38 subgenera in the broadly defined genus *Lejeunea* (Reiner-Drehwald 1999). Of 12 valid taxa (11 species, one variety) assigned to the genus *Otigoniolejeunea* by various authors (Singh 2013), ten have been moved to *Lejeunea* or were reduced to synonymy. Two species names, i.e., *O. crenulata* Stephani (1923: 408) and *O. ledermannii* Stephani (1923: 409), remain in the genus *Otigoniolejeunea* and are of doubtful status owing to the loss of the type specimens during the Second World War and the incomplete morphological descriptions (Grolle & Piippo 1984; Singh 2013). Schuster (1992) also placed *Lejeunea lopezii* Schuster (1992: 264) (*nom. inval.*) in *L.* subg. *Otigoniolejeunea* but the latter species lacks ocelli and therefore does not fit in this group. Thus, at present only two species are assigned to *Otigoniolejeunea* with certainty. They may be separated by the following key:

1. Underleaves bifid. Ocelli at leaf base only. Oil bodies present in green cells. Leaf apex without finger-like hyaline cells, occasionally hyaline rhizoids present on leaf margins. Lobular tooth short, obtuse. Perianth keels with lacinate extensions
..... *Otigoniolejeunea huctumalcensis*
1. Underleaves undivided. Ocelli at leaf base (in a cluster or row) and scattered in the leaf lamina. Oil bodies absent in green cells. Leaf apex in creeping plants with finger-like hyaline cells (lacking on ascending branches). Lobular tooth long, acuminate-falcate. Perianth keels with short horn-like extensions..... *Otigoniolejeunea portoricensis*

Based on the recent molecular studies (Wei 2013; Czumay *et al.* 2013) *Otigoniolejeunea* is a member of the subtribe *Ceratolejeuneinae* Gradstein (2013: 14) together with *Ceratolejeunea* and *Luteolejeunea* Piippo (1986: 56).

Acknowledgements

This research was sponsored by the National Natural Science Foundation of China (nos. 31170190, 31370238), the Special Program for the National Basic Work of the Ministry of Science and Technology, China (No. 2012FY110600), and 211 Project for the East China Normal University.

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