

PELLICIERA BENTHAMII (TETRAMERISTACEAE): A NEW STATUS AND LECTOTYPIFICATION OF AN OVERLOOKED NEOTROPICAL MANGROVE

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Abstract. On the basis of previously documented genetic, morphological, and ecological evidence, a new status at specific rank and the respective lectotypification are formally presented for *Pelliciera rhizophorae* var. *benthamii* (Tetrameristaceae). A key to identify the species is provided.

Keywords: Mesoamerica, *Pelliciera*, Tetrameristaceae

Resumen. Con base en evidencia genética, morfológica y ecológica previamente presentada se establece formalmente un nuevo estatus a nivel de especie y se lectotipifica a *Pelliciera rhizophorae* var. *benthamii* (Tetrameristaceae). Se presenta una clave para la identificación de las especies de *Pelliciera*.

Palabras claves: Mesoamérica, *Pelliciera*, Tetrameristaceae

Pelliciera Planch. & Triana (Tetrameristaceae) is a Neotropical genus of mangrove that inhabits the Pacific coast from the Nicoya Gulf in the province of Puntarenas, western Costa Rica, to the Muisne estuary in the province of Esmeraldas, northwestern Ecuador; and on the Caribbean side, from the Gracias a Dios department in eastern Honduras, to the Bolivar department, northern Colombia (Kobuski, 1951; Jiménez, 1984; Cornejo, 2014). The genus is represented solely by *Pelliciera rhizophorae* Planch. & Triana, a species of mangrove with conspicuous flowers visited by hummingbirds and pollinated by bats and regarded as the oldest living mangrove, fossil records of which date back to the Eocene (Wijmstra, 1968). *P. rhizophorae* comprises two varieties, both formally presented at the same time in the original publication of the genus and species (Triana and Planchon, 1862). The typical variety is characterized by flowers with greenish floral bracts; the second variety, *P. rhizophorae* var. *benthamii* Triana & Planch., can be recognized at first glance in the field or fresh material by the pink to crimson-red floral bracts. Unfortunately, the original color of the floral bracts, which is regarded as among the main distinguishing morphological characters, and the color of the flower, which turns dark brown during the herborization process, cannot be observed in herbarium material (obs. pers.). Subsequently, *P. rhizophorae* var. *benthamii* has been reduced to synonymy with the typical species, even in regions where the former variety does not occur, such as in coastal Ecuador (Kobuski, 1951; Jørgensen and León-Yáñez, 1999).

In recent years, on the basis of molecular and morphological traits, as well as on geographical and climatic distribution, two well-defined groups, named variants or

morphotypes, have been found in populations of *Pelliciera rhizophorae* that occur on both coasts of America (Castillo-Cárdenas et al., 2014, 2015; Garzón-Bautista et al., 2018). “Variant A,” a group that comprises individuals with greenish, white-to-cream floral bracts that correspond to clade A (sensu Castillo-Cárdenas et al., 2014, 2015), is consistent with the typical variety; “variant B,” represented by individuals with pink-to-red floral bracts that correspond to clade B (sensu Castillo-Cárdenas et al., 2014, 2015), is consistent with *P. rhizophorae* var. *benthamii*. Both groups have been interpreted as “geographically isolated genetic variants” and “intraspecific lineages that inhabit different climatic niches” (Castillo-Cárdenas et al., 2014, 2015; Garzón-Bautista et al., 2018). However, differences in molecular and morphological traits among both highly differentiated groups and in their geographical and climatic distributions, the fact that neither intermixed populations nor hybrids between these two “variants” have been found in the field, and the lack of shared haplotypes in each group are here regarded as strong support for the recognition of *P. rhizophorae* var. *benthamii* at the rank of species and not merely as a second intraspecific lineage under *P. rhizophorae*, as had been previously suggested (Castillo-Cárdenas et al., 2014, 2015). Therefore, a new status is formally proposed for a second species of tea mangrove in the Neotropics. As no holotype was designated in the original publication of *P. rhizophorae* var. *benthamii*, just a reference of Bentham’s communication that was collected on the western coast of Central America by Sutton Hayes (Triana and Planchon, 1862), a lectotypification is also proposed following Arts. 7.11, 9.3, and 9.17 of the ICBN *Shenzhen Code* (Turland et al., 2018).

TAXONOMY

Pelliciera benthamii (Triana & Planch.) Cornejo, *stat. nov.* Fig. 1.

Basionym: *Pelliciera rhizophorae* var. *benthamii* Triana & Planch., *Ann. Sci. Nat., Bot. sér.* 4, 17: 381. 1862. TYPE: PANAMA. Rio Grande swamp

with mangroves, June 1861 (fl, fr), *S. Hayes* 76 (Lectotype: K-000630592 designated here; Isotype: K-000648531).

Synonym: *Pelliciera rhizophorae* var. *rhizophorae non auct.*
Local name: mangle piñuelo (Calderón-Sáenz, 1982).

Thanks are due to K herbarium for permission to reproduce the image of *Pelliciera rhizophorae* var. *benthamii*.

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FIGURE 1. *Pelliciera benthamii* (Triana & Planch.) Cornejo. Photograph of the lectotype proposed herein, S. Hayes 76 (K-000630592) © The Board of Trustees of the Royal Botanic Gardens, Kew. Reproduced with the consent of the Royal Botanic Gardens, Kew.

Habitat and distribution: Pacific coast of Panama and Caribbean basin, in river mouth at mangroves located in zones under 1850 mm of annual average precipitation (as variant B in Castillo-Cárdenas et al., 2014, 2015). Different from other mangroves in the Neotropics, the small trees of *Pelliciera benthamii* often look like a dwarf version of *P. rhizophorae* (Calderón-Sáenz, 1982). Taking into account that *P. rhizophorae* is pollinated by bats, particularly the leaf-nosed bat (*Glossophaga soricina*

Pallas, Phyllostomidae), as first hypothesized by Cornejo (2014) and more recently confirmed in a photograph by Chein Lee at Utría National Park, Department of Choco, Colombia (photograph available at <https://www.flickr.com/photos/25872797@N02/42642738092>), the notorious differences in floral sizes and colors of bracts among *P. rhizophorae* and *P. benthamii* may suggest different pollinators. Additional field studies are suggested for this interesting mangrove species.

KEY TO THE SPECIES OF *PELLICIERA*

- 1a. Trees to 30 m tall; floral bracts light green, white, or cream, often 8.8–10.2 cm long × 4.0–4.7 cm wide; sepals 1.5–2.5 cm long, pure white; petals pure white; pistil 5.8–7.2 cm long; in mangroves located in areas with over 1900 mm of annual average precipitation. *Pelliciera rhizophorae*
- 1b. Trees to 10 m tall; floral bracts pink to red, often 4.5–6.3 cm long × 1.4–1.8 cm wide; sepals 1.0–1.7 cm long, white to pink or reddish; petals often pink, few times white; pistil 3.2–5.0 cm long; in mangroves located in areas with less than 1850 mm of annual average precipitation. *Pelliciera benthamii*

LITERATURE CITED

- CALDERÓN-SÁENZ, E. 1982. Hallazgo de *Pelliciera rhizophorae* Triana & Planchón (Theaceae) en la costa del Atlántico, con observaciones taxonómicas y biogeográficas preliminares. *Acta Biológica Colombiana* 1(1): 99–110.
- CASTILLO-CÁRDENAS, M. F., F. DÍAZ-GONZALES, I. CERÓN-SOUZA, O. SANJUR, AND N. TORO-PEREA. 2014. Jumping a geographic barrier: Diversification of the mangrove species *Pelliciera rhizophorae* (Tetrameristaceae) across the Central American Isthmus. *Tree Genetics and Genomes* 11(1): 822.
- CASTILLO-CÁRDENAS, M. F., J. A. RAMÍREZ-SILVA, O. SANJUR, AND N. TORO-PEREA. 2015. Evidence of incipient speciation in the Neotropical mangrove *Pelliciera rhizophorae* (Tetrameristaceae) as revealed by molecular, morphological, physiological and climatic characteristics. *Botanical Journal of the Linnean Society* 179(3): 499–510.
- CORNEJO, X. 2014. *Plants of the South American Pacific Mangrove Swamps (Colombia, Ecuador, Peru)*. EDU QUIL, ED. Universidad de Guayaquil, Ecuador.
- GARZÓN-BAUTISTA, Y. M., M. BÁEZ, C. M. CAETANO, N. TORO-PEREA, M. GUERRA, AND M. F. CASTILLO-CÁRDENAS. 2018. Karyotype of the Neotropical mangrove species *Pelliciera rhizophorae* Triana and Planchon (Tetrameristaceae). *Caryologia* 71(2): 182–189.
- JIMÉNEZ, J. A. 1984. A hypothesis to explain the reduced distribution of the mangrove *Pelliciera rhizophorae* Tr. & Pl. *Biotropica* 16: 304–308.
- JØRGENSEN, P. M., AND S. LEÓN-YÁNEZ, EDs. 1999. *Catalogue of the Vascular Plants of Ecuador*. Monographs in Systematic Botany from the Missouri Botanical Garden 75: i–viii, 1–1181.
- KOBUSKI, C. E. 1951. Studies in the Theaceae, vol. 23. The genus *Pelliciera*. *Journal of the Arnold Arboretum* 32: 256–262.
- TRIANA, J., AND J. E. PLANCHON. 1862. *Prodromus Florae Novo-Granatensis ou Énumération des Plantes de la Nouvelle-Grenade, avec Description des Espèces Nouvelles*. *Annales des sciences naturelles, Botanique série 4*, 17: 319–382.
- TURLAND, N. J., J. H. WIERSEMA, F. R. BARRIE, W. GREUTER, D. L. HAWKSWORTH, P. S. HERENDEEN, S. KNAPP, W. H. KUSBER, D. Z. LI, K. MARHOLD, AND T. W. MAY. 2018. *International Code of Nomenclature for Algae, Fungi, and Plants (Shenzhen Code)*. Adopted by the Nineteenth International Botanical Congress, Shenzhen, China, July 2017. Koeltz Botanical Books, Königstein.
- WIJMSTRA, T. 1968. The identity of *Psitricolporites* and *Pelliciera*. *Acta Botanica Neerlandica* 17: 114–116.