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# The correct genus for the jingle bell orchid, *Harrisella porrecta*

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## THE CORRECT GENUS FOR THE JINGLE BELL ORCHID, *HARRISELLA PORRECTA*

Barbara Carlswald & Mark Whitten

Note: Mark Whitten recently brought to my attention two of his recent publications that validate the inclusion of the familiar Florida jingle-bell orchid, *Harrisella porrecta*, in the genus *Dendrophylax*. The following is taken from these two papers: Molecular phylogenetics of neotropical leafless Angraecinae (Orchidaceae): reevaluation of generic concepts. Barbara S. Carlswald, W. Mark Whitten, and Norris H. Williams *International Journal of Plant Science* 164(1):43–51. 2003 and Ghosts of the Caribbean. Mark Whitten and Barbara S. Carlswald. *Orchids* 75(10): 742–49. 2006. PMB

All species of *Dendrophylax*, *Harrisella*, and *Polyradicion* are leafless, but *Campylocentrum* includes both leafy and leafless species. Flower size varies dramatically among and within genera. *Dendrophylax funalis* (Sw.) Benth. ex Rolfe, *Dendrophylax fawcettii* Rolfe, *Dendrophylax sallei* (Rchb.f.) Benth. ex Rolfe, and *Polyradicion lindenii* (Lindl.) Garay produce large white, nocturnally fragrant flowers with long, nectariferous spurs (ca. 15 cm in *D. fawcettii*), whereas other species of *Dendrophylax* produce much smaller, greenish flowers. *Harrisella porrecta* (Rchb.f.) Fawc. & Rendle has tiny, greenish tan flowers with a short (ca. 1 mm), bilobed spur; the inflorescence is few flowered and relatively lax. In contrast, most species of *Campylocentrum* produce short, congested inflorescence axes bearing 10–20 small, white flowers with relatively short spurs. Many of the Old World Angraecinae have large white, spurred flowers that exhibit a hawkmoth pollination syndrome.

Because vegetative characters are reduced or greatly altered in these leafless orchids, the generic concepts of Neotropical Angraecinae have been based largely on gross floral and pollinarium morphology. Most species were originally placed in the genus *Aeranthus* Lindl. by early workers and were later separated from the Paletropical taxa into segregate genera. The most recent comprehensive taxonomic treatment of Neotropical Angraecinae is that of Nir (2000) in his examination of Antillean Orchidaceae. In this work, Nir (2000) transferred *Polyradicion* and *Campylocentrum constanzense* Garay into *Dendrophylax* and transferred *Harrisella* into *Campylocentrum*, leaving two Neotropical genera distinguished by flower resupination and fruit size.

To date, four species of *Harrisella* have been described: *H. porrecta* (Fig. 1,2), *Harrisella filiformis* (Sw.) Cogn., *Harrisella Monteverdi* (Rchb.f.) Cogn., and *Harrisella uniflora* Dietrich. Ackerman (1995) examined the types of these taxa and concluded that *H. filiformis* and *H. monteverdi* were synonymous with the leafless *Campylocentrum filiforme* (Sw.) Cogn. ex Kuntze. Citing unpublished studies of Cuban *Harrisella* by Jorge Ferro Díaz, Ackerman (1995) also regarded *H. uniflora* as a synonym of *H. porrecta*. Conversely, Nir (2000) regarded *H. uniflora* as a synonym of *C. filiforme*. In both cases, *Harrisella* was reduced to a single species, *H. porrecta*.

Specimens were obtained from cultivated material, herbarium specimens, or wild-collected plants. Samples of *Polyradicion lindenii*, *Campylocentrum pachyrrhizum* (Rchb.f.) Rolfe, and *Harrisella porrecta* from Fakahatchee Strand State Preserve State Park, Florida, and *H. porrecta* from Grand Cayman are unvouchered; we were only allowed to collect root tips because of the rarity of these species at these localities. Protocols for extraction, amplification, and DNA sequencing from fresh and silica gel-dried material are given in Whitten et al. (2000).



The results of this work required the transfer of *Harrisella porrecta* to the genus *Dendrophylax*.

***Dendrophylax porrectus* (Rchb.f.) Carlsward & Whitten**

*Basionym.* *Aeranthus porrectus* Rchb.f., *Flora* 48:279, 1865.

*Synonyms.* *Campylocentrum porrectum* (Rchb.f.) Rolfe, *The Orchid Review* 11:247, 1903; *Harrisella porrecta* (Rchb.f.) Fawc. & Rendle, *Journal of Botany* 47:266, 1909; *Harrisella amesiana* Cogn., *Symbolae Antillanae* 6:687, 1910; *Harrisella uniflora* H. Dietr., *Die Orchidee* 33:18–19, 1982.

*Distribution.* El Salvador, Florida, Greater Antilles, Mexico.



Fig.1 Flowers of *D. porrectus*, showing the short, saccate, bilobed spur at the base.



Fig. 2 *D. porrectus* (in fruit) from south Florida, growing on *Taxodium* twigs; the roots are intertwined with spun silken tubes of web spinner insects (Embyoptera).

The molecular data also show that the large-flowered *D. lindenii* (syn. *Polyradicion lindenii*) and the diminutive *D. porrectus* (syn. *Harrisella porrecta*) are embedded within *Dendrophylax*, and merely represent extremes in flower size and adaptations to different sizes of pollinators (Fig. 3). Most species of *Dendrophylax* are endemic to the Caribbean island of Hispaniola (Haiti and the Dominican Republic) and bear small, relatively inconspicuous greenish to white flowers. Most are rarely collected by botanists and are poorly known. Botanical exploration of the mountains of the Dominican Republic and Cuba is likely to reveal undescribed species. *Dendrophylax porrectus* is the most wide-ranging species and can be locally abundant on slender twigs of a wide range of host trees, ranging from the humid swamps of south Florida to seasonally dry



forests of Yucatan to dry scrub forests in the Dominican Republic. Although the floral morphology of *D. porrectus* appears relatively uniform across its range, the plants vary geographically in size, root thickness, and habitat preference. DNA data reveal substantial sequence divergence among populations, and we suspect that there may be cryptic species within *D. porrectus* that have gone unrecognized by botanists because both floral and vegetative morphology are so reduced.

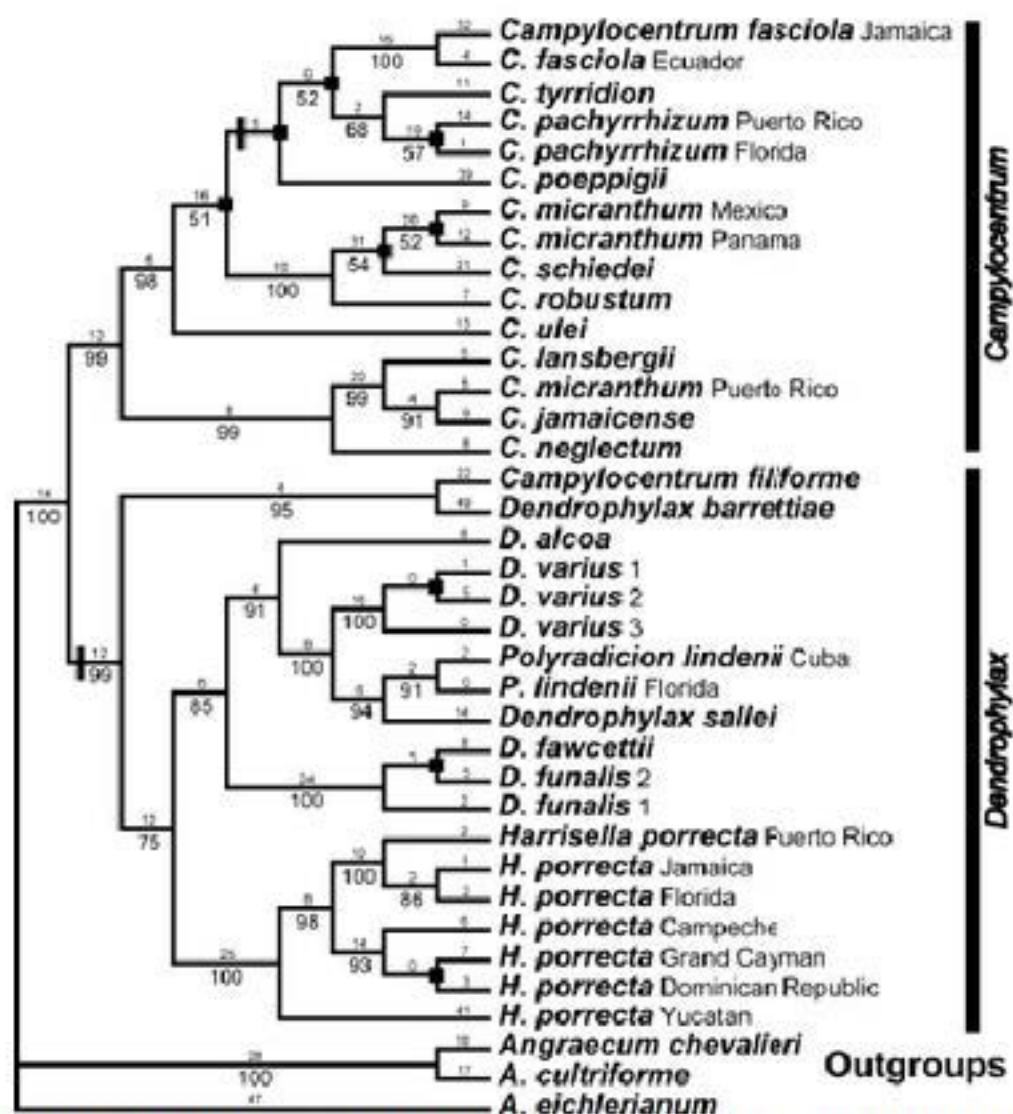


Fig. 3 One of 162 shortest evolutionary trees resulting from a heuristic parsimony search of the combined data matrix for three gene regions (ITS, trnL-F, and matK).

#### LITERATURE CITED:

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 Nir, M.A. 2000. *Orchidaceae Antillanae*. DAG Media, New York.  
 Whitten, M.W., N.H. Williams, and M.W. Chase. 2000. Subtribal and generic relationships of Maxillariaceae (Orchidaceae) with emphasis on Stanhopeinae: combined molecular evidence. *American Journal of Botany* 87:1842-57.

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Note: For readers who want a simplified explanation of cladistics (how these trees are made and how to read them), see Carlswald: Using the trees to see the forest. *The Orchid Review*. 111(no. 1251): 166-167, 174, & 178) 2003..