



## Notes on the genus *Swartzia* (Leguminosae) in Ecuador, with descriptions of two new species

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### Abstract

Herbarium- and field-based research indicates that the neotropical genus *Swartzia* is represented in Ecuador by at least 17 species. A key is provided to aid their identification. In addition, two species, previously undocumented in the literature, are described and illustrated. Both appear to be endemic to Ecuador. *Swartzia decidua* is known from a confined area of the pre-montane humid forest zone on the western slopes of the Andes Mountains in Pichincha Province, where it is threatened by habitat destruction. It belongs to *S.* sect. *Paucistaminae* and is notable in the context of the genus for its very large petal and deciduous phenology. *Swartzia yasuniensis* occurs in Amazonian rainforest in the drainage of the Napo River in Orellana Province and is a new member of *S.* sect. *Pittieriana*. In an intensively studied 25-hectare plot in Yasuni National Park, it averaged 4 individuals ( $\geq 1$  cm dbh) per hectare.

### Resumen

Investigación basada en trabajo de campo y de herbario indica que el género neotropical *Swartzia* está representado en Ecuador por lo menos por 17 especies. Se presenta una clave para ayudar con su identificación. Además, dos especies previamente indocumentadas en la literatura, son descritas e ilustradas. Ambas parecen ser endémicas para Ecuador. *Swartzia decidua* es conocida de un área confinada de la zona del bosque húmedo premontano en la vertiente occidental de la Cordillera de los Andes en la provincia de Pichincha, donde se ve amenazada por la destrucción del hábitat. Pertenece a *S.* sec. *Paucistaminae* y es notable en el contexto del género por su pétalo de gran tamaño y por ser árboles caducifolios. *Swartzia yasuniensis* ocurre en selva amazónica en la cuenca del río Napo en la provincia de Orellana y es un nuevo miembro de *S.* sec. *Pittieriana*. En una parcela de 25 hectáreas intensamente estudiada en el Parque Nacional Yasuní, se promedió 4 individuos ( $\geq 1$  cm dap) por hectárea.

**Key words:** endemic, Fabaceae, neotropic, Papilionoideae, taxonomy

### Introduction

*Swartzia* (Leguminosae), a neotropical genus of some 200 species of trees and shrubs, is well represented in the wet lowlands of Ecuador on both sides of the Andean Cordillera. Although there are many exceptions, the genus is characterized by red-oxidizing exudate in the secondary phloem, distichous, imparipinnate leaves, a stipellate leaf rachis, opposite lateral leaflets with brochidodromous secondary veins, monopetalous flowers, a zygomorphic androecium, dimorphic, relatively numerous stamens, and arillate seeds (Cowan, 1968; Torke & Mansano, 2009). It was weakly supported as monophyletic in the molecular phylogenetic analysis of Torke & Schaal (2008).

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## References

- Altamirano, C. (2012) *Commercial exploitation threatens Iriartea deltoidea and Wettinia quinaria in Northwestern Ecuador*. Master Thesis, Pontificia Universidad Católica del Ecuador, Quito, 44 pp.
- Amshoff, G.J.H. (1939) On South American Papilionaceae. *Mededeelingen van het Botanisch Museum en Herbarium van de Rijks Universiteit te Utrecht* 52: 1–78.
- Bentham, G. (1840) Contributions towards a flora of South America.—Enumeration of plants collected by Mr. Schomburgk in British Guiana. *The Journal of Botany; containing figures and descriptions of such plants as recommend themselves by their novelty, rarity, history, or uses; together with botanical notices and information and occasional portraits and memoirs of deceased botanists*. 2: 38–103.
- Bentham, G. (1870) Leguminosae II: Swartzieae. In: Martius, C.F.P., Eichler, S. & Urban, I. (eds.), *Flora Brasiliensis*, vol. 15(2). Frid. Fleischer, Monachii & Lipsiae, pp. 7–40.
- Britton, N.L. (1926) Studies of West Indian plants—XIII. *Bulletin of the Torrey Botanical Club* 53: 457–471.  
<http://dx.doi.org/10.2307/2479072>
- Cowan, R.S. (1968) *Flora Neotropica Monograph No. 1. Swartzia (Leguminosae, Caesalpinioideae, Swartzieae)*. Hafner Publishing Company, New York and London, 228 pp.
- Cowan, R.S. (1985) Studies in tropical American Leguminosae—IX. *Brittonia* 37: 291–304.
- Harms, H.A.T. (1915) Leguminosae (pro parte). In: T. Herzog (compiler) Die von Dr. Th. Herzog auf seiner zweiten Reise durch Bolivien in den Jahren 1910 und 1911 gesammelten Pflanzen—Teil II. *Mededeelingen van's Rijks Herbarium Leiden* 27: 31–60.
- Harms, H.A.T. (1926) Leguminosae. In: Mildbraed (ed.). *Plantae Tessmannianae peruvianae III. Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem* 9: 966–976.  
<http://dx.doi.org/10.2307/3994448>
- IUCN. (2001) *IUCN Red List categories and criteria*. Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK: [http://intranet.iucn.org/webfiles/doc/SSC/Red List/Red Listcatsenglish.pdf](http://intranet.iucn.org/webfiles/doc/SSC/Red%20List/Red%20Listcatsenglish.pdf).
- IUCN Standards and Petitions Subcommittee. (2011) *Guidelines for using the IUCN Red List categories and criteria*. Version 9.0. IUCN Standards and Petitions Subcommittee: [http://www.iucnRed List.org/documents/Red ListGuidelines.pdf](http://www.iucnRedList.org/documents/RedListGuidelines.pdf).
- Jørgensen, P.M. & Ulloa Ulloa, C. (1989) Estudios botánicos en la "Reserva ENDESA" Pichincha - Ecuador. *AAU Reports* 22: 1–138.
- Miquel, F.A.W. (1851) *Stirpes Surinamensis selectae*. Lugduni Batavorum, Leiden, 234 pp.
- Neill, D.A. & Palacios, W.A. (1989) *Arboles de la Amazonía Ecuatoriana, lista preliminar de especies*. Dirección Nacional Forestal, Quito, 120 pp.
- Neill, D.A. & Ulloa Ulloa, C. (2011) *Adiciones a la Flora del Ecuador: Segundo suplemento, 2005–2010*. Fundación Jatun Sacha, Quito, 202 pp.
- Neill, D.A., Klitgaard, B.B., Lewis, G.P. & Zarucchi, J.L. (1999) Fabaceae. In: Jørgensen, P.M. & León-Yanez, S. (eds.) *Catalogue of the vascular plants of Ecuador*. Missouri Botanical Garden, Saint Louis, pp. 468–484.
- Poeppig, E. (1845) *Nova genera ac species plantarum, quas in regno Chilensi Peruviano et in terra Amazonica annis MDCCCXXVII ad MDCCCXXXII*, vol. 3, F. Hofmeister, Leipzig, 91 pp.
- Renner, S.S., Balslev, H. & Holm Nielsen, L.B. (1990) Flowering plants of Amazonian Ecuador: A checklist. *AAU Reports* 24: 1–241.
- Silva, J.M.C., Rylands, A.B. & Fonseca, G.A.B. (2005) The fate of the Amazonian areas of endemism. *Conservation Biology* 19: 689–694.  
<http://dx.doi.org/10.1111/j.1523-1739.2005.00705.x>
- Schery, R.W. (1952) Leguminosae. In: Steyermark, J. et al. Contributions to the flora of Venezuela. *Fieldiana, Botany* 28: 256–270.
- Standley, P.C. (1935) Botany of the Maya area: Miscellaneous papers IV. New plants from the Yucatan Peninsula. *Publications of the Carnegie Institution of Washington* 461: 61.
- Torke, B.M. (2004) Two new species of *Swartzia* (Leguminosae) from the Amazon Basin of Brazil, with notes on the genus and a key to the unifoliolate species. *Systematic Botany* 29: 358–365.  
<http://dx.doi.org/10.1600/036364404774195548>

- Torke, B.M. (2007) New combinations and species-level synonyms in *Swartzia* (Leguminosae: Papilionoideae). *Novon* 17: 110–119.  
[http://dx.doi.org/10.3417/1055-3177\(2007\)17\[110:ncassi\]2.0.co;2](http://dx.doi.org/10.3417/1055-3177(2007)17[110:ncassi]2.0.co;2)
- Torke, B.M. & Schaal, B.A. (2008) Molecular phylogenetics of the species-rich neotropical genus *Swartzia* (Leguminosae-Papilionoideae) and related genera of the swartzioid clade. *American Journal of Botany* 95: 215–228.  
<http://dx.doi.org/10.3732/ajb.95.2.215>
- Torke, B.M. & Mansano, V.F. (2009) A phylogenetically based sectional classification of *Swartzia* (Leguminosae-Papilionoideae). *Taxon* 58: 913–924.
- Valencia, R., Foster, R., Villa, G., Condit, R., Svenning, J-C., Hernández, C., Romoleroux, K., Losos, E., Margård, E. & Balslev, H. (2004) Tree species distribution and local habitat variation in the Amazon: large forest plot in eastern Ecuador. *Journal of Ecology* 92: 214 – 229.  
<http://dx.doi.org/10.1111/j.0022-0477.2004.00876.x>
- Zeas, P. (2011) *Plan de ordenamiento territorial del Cantón Pedro Vicente Maldonado*. Habitierra, Cuenca, 135 pp.