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An updated synopsis of *Hypolepis* Bernh. (Dennstaedtiaceae) from Argentina

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Abstract

An updated synopsis of the genus *Hypolepis* (Dennstaedtiaceae) from Argentina is presented, including the first report of *H. stolonifera* var. *stolonifera* for the country and the description of a new variety: *Hypolepis stolonifera* var. *delasotae*, named in honour of pteridologist Elías Ramón de la Sota. Four taxa are recognised in Argentina: *Hypolepis poeppigii*, *H. rugosula* subsp. *poeppigiana*, and *Hypolepis stolonifera* with var. *delasotae* and var. *stolonifera*; *Hypolepis repens* is excluded from the Argentinian flora.

Key words: Biogeography, *Hypolepis stolonifera* var. *delasotae*, South America, Southern Cone

Resumen

Se presenta una sinopsis actualizada del género *Hypolepis* (Dennstaedtiaceae) en Argentina, incluyendo el primer registro de *Hypolepis stolonifera* var. *stolonifera* para el país y la descripción de una nueva variedad: *Hypolepis stolonifera* var. *delasotae*, nombrada en honor al pteridólogo Elías Ramón de la Sota. Se reconocen cuatro taxones para Argentina: *Hypolepis poeppigii*, *H. rugosula* subsp. *poeppigiana* e *Hypolepis stolonifera* con las var. *delasotae* y var. *stolonifera*; *Hypolepis repens* es excluido de la flora argentina.

Introduction

Hypolepis Bernhardi (1806 [Nov 1805]: 34) is a genus based on *Lonchitis tenuifolia* Forster (1786: 80) [= *Hypolepis tenuifolia* (G. Forst.) Bernh.], a species collected on Vanuatu Island between 1772–1775 (Brownsey & Chinnock 1984). Later, Presl (1836) and Smith (1846) re-circumscribed the genus, with the addition of diagnostic vegetative characters as lamina architecture and sori position, combining species from the Neotropics, Africa, Tasmania and New Zealand into it. With this current circumscription, *Hypolepis* comprises medium sized to large, terrestrial or epilithic ferns distributed in tropical and south-temperate regions, with local extensions into tropical and temperate regions of the northern hemisphere. It is especially diverse in Australasia and Tropical America, where approximately 80 taxa are cited (e.g. Brownsey & Chinnock 1984, 1987; Brownsey 1987; Tryon & Tryon 1982; Kramer & Green 1990; Schwartsburd 2012a; Schwartsburd & Prado 2014).

Species of *Hypolepis* are characterized by long-creeping stems with pluricellular uniseriate trichomes, well-spaced leaves to ca. 10 m long, sometimes scandent on the surrounding vegetation, petioles often pubescent, regularly verruculose or even spiny, with a single vascular bundle U-shaped in cross section; the laminae are 2–4-pinnate-pinnatifid, nearly glabrous to usually pubescent, with free veins ending behind the margins; the larger pinnae are often sub-opposite and spreading at an open angle; the sori are marginal or nearly so, born on a single vein and protected by a short, about semi-circular, marginal reflexed flap, or this is vestigial and the sori are naked; the spores are monolete,

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References

- Arana, M.D., Ponce, M., & Vischi, N. (2004a) Note on Argentinian species of *Hypolepis* Bernhardi (Dennstaedtiaceae: Pteridophyta). *Biocell* 28 (2): 181.
- Arana, M.D., Ponce, M., & Vischi, N. (2004b) Sinopsis de los helechos y grupos relacionados (Pteridophyta) de la provincia de Córdoba, Argentina. *Boletín de la Sociedad Argentina de Botánica* 39 (1–2): 89–114.
- Arana, M.D., Bianco, C., Martínez Carretero, E., & Oggero, A.J. (2011) Licofitas y Helechos de Mendoza: Lycopodiidae, Equisetidae, Ophioglossidae y Polypodiidae. *Multequina* 20(3): 1–73.
- Arana, M.D. & Bianco, C.A. (2011) *Helechos y licofitas del centro de la Argentina*. Universidad Nacional de Río Cuarto, Río Cuarto, 85 pp. Available from: http://www.unrc.edu.ar/unrc/digital/Helechos_y_Licofitas_del_centro_de_la_Argentina.pdf.
- Bernhardi, J. J. (1806) Dritter Versuch einer Anordnung der Farrnkräuter. *Neues Journal für Botanik* 1(2): 1–50.
- Brownsey, P.J. & Chinnock, R.J. (1984) A taxonomic revision of the New Zealand species of *Hypolepis*. *New Zealand Journal of Botany* 22: 43–80.
<http://dx.doi.org/10.1080/0028825x.1984.10425234>
- Brownsey, P.J. & Chinnock, R.J. (1987) A taxonomic revision of the Australian species of *Hypolepis*. *Journal of Adelaide Botanical Garden* 10(1): 1–30.
- Christensen, C. & Skottsberg C.J.F. (1920) The Pteridophyta of the Juan Fernandez Islands. *The Natural History of Juan Fernandez and Easter Island* 2: 1–46.
<http://dx.doi.org/10.5962/bhl.title.25662>
- de la Sota, E.R. (1977) Pteridophyta. In: Cabrera, A.L. (Ed.) Flora de la Provincia de Jujuy, *Colección Científica del Instituto Nacional de Tecnología Agropecuaria* 13 (2): 1–275.
- de la Sota, E.R., Ponce, M.M., Morbelli, M.A., Cassá de Pazos, L.A. (1998) Pteridophyta. In: Correa, M.N. (Ed.) Flora Patagónica. *Colección Científica del Instituto Nacional de Tecnología Agropecuaria* 8(1): 252–369.
- Fée, A.L.A. (1852) *Mémoires sur les Familles des Fougères*. V. Berger-Levrault, Paris, 387 pp.
- Fée, A.L.A. (1857) *Iconographie des Species Nouvelles*. J.B. Bailliére et Fils, Paris, 138 pp.
- Fée, A.L.A. (1869) *Cryptogames vasculaires du Brésil*. J.J.B. Bailliére et Fils, Paris, 268 pp.
- Fée, A.L.A. (1872–1873) *Cryptogames vasculaires du Brésil. IIe partie: supplément et révision*. J.B. Bailliére et Fils, Paris, 115 pp.
- Forster, J.G.A. (1786) *Florulae Insularum Australium Prodromus*. Göttingen, Germany. 103pp.
<http://dx.doi.org/10.5962/bhl.title.10725>
- Fuwu, X., Faguo W., Funston A.M. & Gilbert M.G. (2013) *Hypolepis* Bernhardi. In: Wu, Z.Y., Raven, P.H. & Hong, D.Y. (Eds.) *Flora of China Vol. 2–3 (Pteridophytes)*. Beijing: Science Press; St. Louis: Missouri Botanical Garden Press, pp. 152–154.
- Ganem, M.A., Ramos Giacosa, J.P., Luna, M.L., Arana, M.D., Rotman, A., Ahumada, O., de la Sota, E.R. & Giudice, G.E. (2013) Diversidad de helechos y licofitas del Parque Nacional Calilegua, Provincia de Jujuy, Argentina. *Boletín de la Sociedad Argentina de Botánica* 48: 567–584.
- Hicken, C. (1906) Observations sur quelques fougères argentines nouvelles ou peu connues. *Anales de la Sociedad Científica Argentina* 62: 212.
- Hijmans, R.J. (2013) *DIVA-GIS, a geographic information system for the analysis of biodiversity data. Version 7.5*. Available from: <http://www.diva-gis.org> (accessed 15 November 2013).
- Jussieu, A.L. (1789) *Genera Plantarum secundum ordines naturales disposita, juxta methodum in Horto regio parisiensi exaratum, anno MDCCCLXXIV*. Herissant & T. Barrois, Paris, 498 pp.
<http://dx.doi.org/10.5962/bhl.title.7762>
- Kessler, M. & Smith, A.R. (2007) New species and other nomenclatural changes for ferns from Bolivia. *Brittonia* 59(2): 186–197.
[http://dx.doi.org/10.1663/0007-196X\(2007\)59\[186:nsaonc\]2.0.co;2](http://dx.doi.org/10.1663/0007-196X(2007)59[186:nsaonc]2.0.co;2)
- Klotzsch, J.F. (1840) Complurium specierum nomina addidit. *Linnaea* 14: 285–302.
- Klotzsch, J.F. (1847) Filices (Continuatio v. Linn. XVIII. p. 516–556). In: Klotzsch, J.F. Beiträge zu einer Flora der Aequinoctial-Gegenden der neuen Welt. *Linnaea* 20(3): 337–445.
- Kramer, K.U. (1990) Dennstaedtiaceae. In: Kramer, K.U. & Green, P.S. (Eds.) *The Families and Genera of Vascular Plants*. Vol. 1. Springer-Verlag, Berlin, pp. 81–94.
- Kramer, K.U. & Green, P.S. (1990) Pteridophytes and Gymnospermes. In: Kubitzki, K. (Ed.) *The Families and Genera of Vascular Plants*. Vol. 1. Springer-Verlag, Berlin, pp. 1–404.
- Kunze, G. (1834) Synopsis plantarum cryptogamicarum ab Eduardo Poeppig in Cuba Insula in America Meridionali collectarum. *Linnaea*

- 9: 1–111.
<http://dx.doi.org/10.5962/bhl.title.51054>
- Labillardière, J.J. (1806) *Nova Hollandiae plantarum specimen* 1(2). D. Huzard, Paris, pp. 89–96, pl. 111–120.
- Lellinger, D.B. (2002) A modern multilingual glossary for taxonomic pteridology. *Pteridologia* 3: 1–263.
- Linnaeus, C. (1753) *Species plantarum* 2. L. Salvius, Stockholm, 1200 pp.
- Martínez, O.G. & de la Sota, E.R. (2000) Dennstaedtiaceae. In: Novara, L.J. (Ed.) Flora del Valle de Lerma. *Aportes Botánicos de Salta, serie Flora* 6 (7): 1–11.
- Martínez, O.G., Chambi, C.J. & Avilés, Z. (2014) Gametophytic phase of two Neotropical ferns, *Dennstaedtia globulifera* (Poir.) Hieron. and *Hypolepis poeppigii* Mett. ex Maxon (Dennstaedtiaceae). *Plant Systematics and Evolution* 300: 909–915.
<http://dx.doi.org/10.1007/s00606-013-0930-7>
- Maxon, W.R. (1941) Polypodiaceae. In: Moldenke, H.N. (Ed.) Contributions to the flora of extra-tropical South America II. *Lilloa* 6: 286–291.
- Mettenius, G.H. (1856) *Filices Lechlerianae, Chilensis ac Peruanae* 1. L. Voss, Leipzig, 30 pp.
- Mettenius, G.H. (1858) Über einige FarnGattungen: IV. *Phegopteris, Aspidium*. *Abhandlungen herausgegeben von der Senckenbergischen Naturforschenden Gesellschaft* 2 (2): 285–420.
- Mickel, J.T. & Smith, A.R. (2004) The Pteridophytes of Mexico. *Memoirs of the New York Botanical Garden* 88: 1–1055.
- Moran, R.C. (1995) *Hypolepis*. In: Davise, G., Sousa, S. M. & Knapp, S. (Eds.) *Flora Mesoamericana*, Vol. 1. Universidad Autónoma de México, DF, pp. 153–157.
- Moran, R.C. & Riba, R. (1995) Psilotaceae a Salviniaceae. In: Davise, G., Sousa, S. M. & Knapp, S. (Eds.) *Flora Mesoamericana*, Vol. 1. Universidad Autónoma de México, DF, 470 pp.
- Morrone, J.J. (2014) Biogeographical regionalisation of the Neotropical region. *Zootaxa* 3782 (1): 1–110.
<http://dx.doi.org/10.11646/zootaxa.3782.1.1>
- Muñoz-Schick, M. & Morales, V. (2013) Complemento y correcciones al “Catálogo de plantas vasculares del Cono Sur”, para la Flora de Chile. *Boletín del Museo Nacional de Historia Natural* 62: 167–201.
- Philippi, R.A. (1873) Descripción de las plantas nuevas incorporadas últimamente en el herbario chileno. *Anales de la Universidad de Chile* 43: 479–583.
- Philippi, R.A. (1896) Plantas nuevas chilenas de las familias Bromeliaiceas, Iriideas, Dioscoriineas, Amariliideas, Liliaiceas, Juncaiceas, Ciperaiceas, Gramiineas, Equisetaiceas i helechos del tomo VI de Gay. *Anales de la Universidad de Chile. Santiago* 94: 5–34, 155–179, 341–362.
- Ponce, M.M., Prado, J., & de la Sota, E.R. (2008) Dennstaedtiaceae. In: Zuloaga, F.O., Morrone, O., Belgrano, M.J., Marticorena, C., Marchesi, E. (Eds.) Catálogo de las Plantas Vasculares del Cono Sur (Argentina, Sur de Brasil, Chile, Paraguay y Uruguay). *Monographs of Systematic Botany from Missouri Botanical Garden* 107(1): 26–31.
- Presl, C. (1836) *Tentamen Pteridographiae, seu genera filicacearum praesertim juxta venarum decursum et distributionem exposita*. T. Haase f., Prague, 290 pp.
<http://dx.doi.org/10.5962/bhl.title.630>
- Rodríguez, R. (1989) Comentarios fitogeográficos y taxonómicos de Pteridophyta chilenos. *Gayana Botánica* 46(3, 4): 199–208.
- Schwartsburd, P.B. (2012a) O gênero *Hypolepis* Bernh. (Dennstaedtiaceae) na América do Sul. Doctorate Thesis, Universidade de São Paulo, 214 pp.
- Schwartsburd, P.B. (2012b) Three new taxa of *Hypolepis* (Dennstaedtiaceae) from the Brazilian Atlantic forest, and a key to the Brazilian taxa. *Kew Bulletin* 67(4): 815–825.
<http://dx.doi.org/10.1007/s12225-012-9402-4>
- Schwartsburd, P.B., Boudrie, M. & Cremers, G. (2012) Two new species of *Hypolepis* (Dennstaedtiaceae: Pteridophyta) from Mount Roraima region (N South America) and a revised key for the Guianan species. *Fern Gazette* 19(1): 1–9.
- Schwartsburd, P.B. & Prado, J. (2014) Subspecies of *Hypolepis rugosula* (Dennstaedtiaceae; Pteridophyta) around the World: morphological and biogeographic perspectives. *Acta Botanica Brasilica* 28(2): 206–226.
<http://dx.doi.org/10.1590/s0102-33062014000200008>
- Smith, J. (1846) Additions to the “Hortus Kewensis”. [ser. 3] *Curtis' Botanical Magazine* 2: 1–9.
- Tryon, R.M. & Lugardon, B. (1991) *Spores of the Pteridophyta: surface, wall structure, and diversity based on electron microscope studies*. Springer-Verlag, New York, 648 pp.
<http://dx.doi.org/10.1007/978-1-4613-8991-0>
- Tryon, R.M. & Stolze, R.G. (1989) Pteridophyta of Peru. Part II: 13. Pteridaceae – 15. Dennstaedtiaceae. *Fieldiana, Botanica n.s.* 22: 1–128.
- Tryon, R.M. & Tryon, A.F. (1982) *Ferns and Allied Plants, with Special Reference to Tropical America*. Springer-Verlag, New York, 857 pp.
<http://dx.doi.org/10.1007/978-1-4613-8162-4>