



Recognition of two morpho-types in eastern South American brackens (*Pteridium*—Dennstaedtiaceae—Polypodiopsida)

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Abstract

In this work we propose the recognition of two well defined morpho-types of *Pteridium* from eastern South America: *P. arachnoideum* subsp. *arachnoideum* s. str., wide-spread from north-eastern Brazil southwards to north-eastern Argentina and Uruguay, and *P. arachnoideum* subsp. *campestre*, comb. et stat. nov., endemic to north-eastern Brazil. Inevitably, we propose a narrower circumscription for *P. arachnoideum* subsp. *arachnoideum*, being restricted to eastern South America and characterized by free lobes between the distal segments, veins abaxially lanose with lax arachnoid hairs, and laminar tissue between the veins abaxially without farinose appearance, glabrous and visible (total absence of gnarled hairs). This morphological pattern is constant and stable in all 191 specimens studied (including living specimens), and geographically related. Plants from western South America and Central America, previously ascribed to *P. arachnoideum* s.l., shall be better reclassified into at least one other subspecies—for which no published name is current available. This is morphologically distinct and geographically segregated from *P. arachnoideum* subsp. *arachnoideum* s. str. by the South American *Dry Diagonal*. Based on stomatal guard-cells length, the two morpho-types from eastern South America are presumably diploid. We provide lectotypifications for the two taxa, complete and new synonymies, descriptions, illustrations, light microscopy images, distribution maps, and detailed information about the *Pteridium* specimens gathered in Brazil by Maximilian, the Prince of Wied, in the early 19th Century. We also indicate overlooked morphological characteristics with taxonomical value within the genus.

Key Words: Bracken fern, Prince of Wied-Neuwied, *Pteridium aquilinum*, *Pteris campestris*

Resumo (Português)

No presente trabalho, é proposto o reconhecimento de dois morfo-tipos bem definidos de *Pteridium*, ocorrentes no leste da América do Sul: *P. arachnoideum* subsp. *arachnoideum* s. str., amplamente distribuído desde o nordeste brasileiro, sentido sul até o nordeste argentino e Uruguai, e *P. arachnoideum* subsp. *campestre*, comb. et stat. nov., endêmico ao nordeste brasileiro. Inevitavelmente, é proposta uma circunscrição mais restrita para *P. arachnoideum* subsp. *arachnoideum*: restrito ao leste da América do Sul, e caracterizado por apresentar lobos livres entre os segmentos distais, nervuras abaxialmente lanosas com tricomas aracnóides laxos, e tecido laminar entre nervuras abaxialmente sem aparência farinosa, glabro e visível (ausência total de tricomas do tipo “gnarled”). Este padrão morfológico é constante e estável em todos os 191 espécimes estudados (incluindo espécimes vivos), e co-relacionado geograficamente. Plantas do oeste da América do Sul e América Central, previamente classificadas como *P. arachnoideum* s.l., devem futuramente ser re-classificadas em pelo menos uma outra sub-espécie—que permanece sem nome publicado disponível. Esta é morfológicamente diferente e geograficamente segregada de *P. arachnoideum* subsp. *arachnoideum* s. str., pela *Diagonal Seca* presente na América do Sul. Baseado no comprimento das células-guarda estomáticas, as duas sub-espécies presentes no leste da América do Sul são diplóides. São providas lectotipificações para os dois táxons, sinonímia nova e completa, descrições, ilustrações, imagens de microscopia, mapas de distribuição, e informação detalhada sobre os espécimes de *Pteridium* coletados por Maximilian, o Príncipe de Wied, ao início do Século XIX. Também são indicadas características morfológicas de valor taxonômico, previamente ignoradas.

Remarks:—Apart from us, some authors from the 19th Century had recognized this taxon as distinct from the other South American bracken, for example: Schrader (1824—as *Pteris campestris*), Presl (herbarium identifications—as *Aquilina gardneri*), and Ettingshausen (1864, 1865—as *Pteris gardneri* and *A. gardneri*).

Pteridium arachnoideum subsp. *campestre* is a smaller taxon than *P. arachnoideum* subsp. *arachnoideum* s. str., forming much smaller thickets. It has smaller fronds (1–1.5 × 0.6–1 m vs. 2–3 × 1.3–1.8 m), 3-pinnate-pinnatifid laminae (vs. 3–4-pinnate-pinnatifid), pinnae and pinnules without free lobes between the distal segments (vs. free lobes always present), compound distal segments equilateral, regularly dissected, not caudate at apex (vs. inequilateral, irregularly dissected and caudate at apex), simple distal segments up to 1(–1.5) cm long (vs. to 3(–4) cm long), costules abaxially slightly flattened (vs. strongly flattened, with wing-like appearance), veins abaxially slightly raised and hirsute, with stiff acicular hairs, 0.2–0.3 mm long (vs. strongly raised and lanose, with lax arachnoid hairs, 0.6–0.8 mm long), laminar tissue between the veins abaxially with farinose appearance, not visible, copiously furnished with gnarled hairs (vs. without farinose appearance, visible and glabrous), infertile pseudo-indusia 0.3–0.4 mm wide with the marginal cells vertical (vs. 0.2–0.3 mm wide, marginal cells horizontal) (Figs. 1A–C, 2E–G vs. Figs. 1D–F, 2B, C, and see also Ettingshausen 1865: t. 53, 54).

Pteridium caudatum also occurs in Brazil but is restricted to the Amazonian region in the north-west (Tryon 1941, Prado & Moran 2009). Besides geography and the distinguishing characteristics given in the key, *P. arachnoideum* subsp. *campestre* differs from *P. caudatum* by compound distal segments equilateral, regularly dissected and not caudate at apex (vs. inequilateral, irregularly dissected and caudate), and by simple distal segments which are up to 1(–1.5) cm long (vs. to 4(–7) cm long) (Figs. 1A–C, 2E–G).

Pteridium arachnoideum subsp. *campestre* differs from *P. aquilinum* subsp. *pseudocaudatum* (Clute 1900: 39) Hultén (1941: 44) by compound distal segments equilateral, regularly dissected and not caudate at apex (vs. inequilateral, irregularly dissected and caudate), simple distal segments that are up to 1(–1.5) cm long (vs. to 3 cm), and laminar tissue between the veins that is abaxially furnished with gnarled hairs (vs. glabrous). Finally, *Pteridium arachnoideum* subsp. *campestre* differs from *P. aquilinum* subsp. *feei* (W. Schaffn. ex Fée 1857: 73) Thomson *et al.* (2008: 13) by laminar tissue between the veins abaxially furnished with gnarled hairs (vs. glabrous) and infertile pseudo-indusia with glabrous margins (vs. margins ciliate) (Figs. 1A–C, 2E–G).

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