



## Nomenclatural novelties in the fern genus *Tectaria* (Tectariaceae)

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### Abstract

Based on recent molecular data and morphology, here I propose eight new combinations and five new names to accommodate the species of *Heterogonium* in *Tectaria*.

**Keywords:** New combinations, new names, *Heterogonium*, pteridophytes

### Introduction

In this article nomenclatural changes are formally made as a result to reduce the fern genus *Heterogonium* C. Presl (1851: 142) to *Tectaria* Cavanilles (1799: 115) (Tectariaceae). *Heterogonium* has long been treated as an accepted genus based on morphological data (Pichi Sermolii 1977, Holttum 1986, 1991a, Kramer 1990). It differs from the species of *Tectaria* with free veins (or sometimes veins simply anastomosing) mainly in the form of basal pinna, i.e., basal basiscopic segments of basal pinnae reduced in *Heterogonium* while produced in *Tectaria* (Holttum 1949, 1986). Recently molecular evidence, however, does not support the separation of *Heterogonium* from *Tectaria*. In the phylogenetic study of 400 ferns based on three cpDNA regions (*atpA*, *atpB*, and *rbcL*), the representative of *Heterogonium* (*H. pinnatum* (Copel.) Holttum 1949: 163) was clustered together with species of *Tectaria* (Schuettpelz & Pryer 2007). The present author and his collaborators newly conducted a more detailed study on the delimitation and phylogeny based on sequences of five plastid regions (*atpB*, *ndhF*, *rbcL*, *rps16-matK*, and *trnL-F*). Our results strongly supported the inclusion of *Heterogonium* within *Tectaria* and indicated the homoplasy of the shape of basal pinnae for *Tectaria* (Ding *et al.* 2014). Of the 20 species currently known in *Heterogonium* (Tagawa 1966, Tagawa & Iwatsuki 1974, Holttum 1991a), six were sampled in our analyses and resultantly grouped with the species of *Tectaria* with fully or partially free veins, forming one of four well-supported clades within *Tectaria*. The monophyly of *Tectaria* with *Heterogonium* and other satellite genera included is supported by two synapomorphic characters, the arising pattern of veinlets and the basal chromosome number ( $x = 40$ ) (Ding *et al.* 2014). Thus *Heterogonium* should be submerged in *Tectaria*, which makes necessary the proposal of the following eight new combinations and five new names. Other necessary combinations and one substitute name pertinent to transferring *Heterogonium* into *Tectaria* have been proposed by Christenhusz (2010) and by Mazumdar (2014), respectively.

### Taxonomy

*Tectaria borneensis* S.Y. Dong, *nom. nov.*

Basionym:—*Acrostichum stenosemioides* Baker (1886: 230).

Type:—INDONESIA. Sarawak: Matang, March 1885, *Hose 158* (holotype K-000427701!).

Homotypic synonyms:—*Heterogonium stenosemioides* (Baker) C. Christensen (1934: 111), *syn. nov.*

Blocking name:—*Tectaria stenosemioides* (Alderwerelt 1920: 164) C. Christensen (1934: 184). Type:—INDONESIA. Sumatra: Sibolangit, 4 Jun. 1917, *Lorzing 5161* (holotype BO).

***Tectaria ceramensis*** (Holttum) S.Y. Dong, *comb. nov.*

Basionym:—*Heterogonium ceramense* Holttum (1975: 217).

Type:—INDONESIA. Moluccas: Mt. Soagor, eastern Ceram, 26 Aug. 1938, *Buwalda 5711* (holotype K, isotypes L-0051692!, US-00386230!).

***Tectaria hennipmanii*** (Tagawa & Iwatsuki) S.Y. Dong, *comb. nov.*

Basionym:—*Heterogonium hennipmanii* Tagawa & Iwatsuki (1974: 59).

Type:—THAILAND. Nakhon Sawan, 19 Nov. 1965, *Hennipman 3060* (holotype L-0051694!).

***Tectaria jermyi*** S.Y. Dong, *nom. nov.*

Basionym:—*Heterogonium rufescens* Holttum (1975: 215).

Type:—PAPUA NEW GUINEA. New Ireland: Danfu River Valley, 31 Jan. 1970, *Jermy 7863* (holotype BO!, isotypes BM-001048634!, BM-001048635!, L-0051698!).

Blocking name:—*Tectaria rufescens* Holttum (1991b: 555). Type:—INDONESIA. SE West Irian Jaya, 8 Jun. 1968, *Reksodihardjo 408* (holotype BO, isotype L-0052186!).

***Tectaria kalimantanensis*** S.Y. Dong, *nom. nov.*

Basionym:—*Heterogonium calcicola* Iwatsuki & Kato (1983: 133).

Type:—INDONESIA. Kalimantan: Gunung Buntung, 28 Aug. 1981, *Kato et al. B-11680* (holotype KYO).

Blocking name:—*Tectaria calcicola* Copeland (1931: 72). Type:—MALASIA. Sarawak: Bidi Cave, 21 Oct. 1929, *Clemens 7535* (Sarawak Museum no. 20745) (holotype UC-423235!, isotypes K, MICH-1191038!, NY-00128130!).

***Tectaria pluriseriata*** (Holttum) S.Y. Dong, *comb. nov.*

Basionym:—*Heterogonium pluriseriatum* Holttum (1975: 228).

Type:—INDONESIA. W Sumatra: Gunong Singgalang, 3 Jan. 1913, *Matthew s.n.* (holotype K-000421699!).

***Tectaria profereoides*** (Christ) S.Y. Dong, *comb. nov.*

Basionym:—*Aspidium profereoides* Christ (1907: 158).

Type:—PHILIPPINES. Mindanao: Davao (Todaya), 31 Oct. 1904, *Copeland 1467A* (holotype MICH-1190040!).

Homotypic synonyms:—*Pleocnemia profereoides* (Christ) Alderwerelt (1908: 812), *Heterogonium profereoides* (Christ) Copeland (1929: 61), *syn. nov.*

***Tectaria samariana*** S.Y. Dong, *nom. nov.*

Basionym:—*Heterogonium lobulatum* Holttum (1991b: 557).

Type:—PHILIPPINES. Samar: Hinabangan, 28–30 Jun. 1975, *Price & Hernaez 399* (holotype K-000427745-48, isotype MICH-1287163!).

Blocking name:—*Tectaria lobulata* (Blume 1828: 142) Iwatsuki & Kato (1980: 173). Type:—INDONESIA. Java, *Blume s.n.* (holotype L-0052159!).

***Tectaria subglabra*** (Holttum) S.Y. Dong, *comb. nov.*

Basionym:—*Heterogonium subglabrum* Holttum (1955: 273).

Type:—INDONESIA. Sumatra: Sibolangit, 17 Feb. 1918, *Lorzing 5520* (holotype BO, isotypes L-0051700, 0051700!, U-0251848, 0251848!).

***Tectaria teijsmanniana*** (Baker) S.Y. Dong, *comb. nov.*

Basionym:—*Acrostichum teijsmannianum* Baker in Beccari (1886: 56).

Type:—INDONESIA. Lesser Sunda Islands: Sumba, 21 Apr. 1930, *Teijsmann 10696* (holotype BO!, isotypes K-000427711!, L).

Homotypic synonyms:—*Stenosemia teijsmanniana* (Baker) Diels (1899: 198), *Heterogonium teijsmannianum* (Baker) Holttum (1950: 29), *syn. nov.*

***Tectaria wenzelii*** (Copel.) S.Y. Dong, *comb. nov.*

Basionym:—*Ctenitis wenzelii* Copeland (1952: 25).

Type:—PHILIPPINES. Leyte, 16 Jun. 1913, *Wenzel 165* (holotype US-00135283!, isotypes GH-00135556!, MICH-1190190!).

Homotypic synonym:—*Heterogonium wenzelii* (Copel.) Holttum (1991a: 111), *syn. nov.*

***Tectaria wigmanii*** (Racib.) S.Y. Dong, *comb. nov.*

Basionym:—*Aspidium wigmanii* Raciborski (1902: 61).

Type:—Cult. Hort. Bot. 2K.XI.13 (holotype BO, isotype L), original from Aru Islands, Indonesia.

Homotypic synonyms:—*Dryopteris wigmanii* (Racib.) C. Christensen (1905: 301). *Heterogonium wigmanii* (Racib.) Holttum (1955: 271), *syn. nov.*

***Tectaria zippelii*** S.Y. Dong, *nom. nov.*

Basionym:—*Heterogonium novoguineense* Holttum (1975: 221).

Type:—NEW GUINEA. Without locality, *s.coll., s.n.* (holotype L-0051695!).

Blocking name:—*Tectaria novoguineensis* (Rosenstock 1917: 4.) C.Christensen (1934: 182). Type:—WEST NEW GUINEA. Without locality, *Zippelius s.n.* (holotype L-0052177!, isotype L-0052178!).

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