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# New combinations in *Acrosorus*, *Lellingeria*, *Prosaptia* and *Themelium* (Grammitidaceae: Filicales)

B. S. Parris<sup>1</sup>

**Summary.** New combinations are proposed for *Acrosorus grammitidiphyllus*, *Lellingeria tomensis*, *Prosaptia venulosoides*, *Themelium abebaion*, *T. blechnifrons*, *T. conjunctisorum*, *T. crenulatum*, *T. ctenoideum*, *T. curtisii*, *T. fasciatum*, *T. flagelliforme*, *T. graminifolium*, *T. halconense*, *T. integripaleatum*, *T. loherianum* and *T. sarawakense*.

## Introduction

The following new combinations in *Acrosorus*, *Prosaptia* and *Themelium* are proposed as part of a revision of Grammitidaceae for *Flora Malesiana*, while the new combination in *Lellingeria* comprises part of a revision of the African members of the family.

## Acrosorus

In his account of Grammitidaceae in New Guinea Copeland (1953) distinguished *Calymmodon grammitidiphyllus* Copel. and *C. kaniensis* (Brause) Copel. from other species of *Calymmodon* by the presence of dark binate bristles and forked veins. The type of *Calymmodon*, *C. cucullatus* (Nees & Blume) C. Presl, has a membranous to thinly coriaceous lamina, slender pale forked hairs and unbranched veins, with each vein ending marked by a hydathode on the adaxial surface of the lamina, while the type of *Acrosorus*, *A. exaltatus* (Copel.) Copel., a synonym of *A. friderici-et-pauli* (H. Christ) Copel., has a thickly coriaceous lamina, stout dark forked hairs and 1-forked veins lacking hydathodes at their endings on the adaxial surface of the lamina. Examination of the types of *Calymmodon grammitidiphyllus* and *Polypodium kaniense* Brause (= *Calymmodon kaniensis*, type from New Guinea, Schlechter 17247, BISH!, K!, UC!) has shown that they belong to *Acrosorus* rather than to *Calymmodon*. The former is here transferred to *Acrosorus* and the latter is to be regarded as a synonym of *A. reineckeii* (H. Christ) Copel. **synon. nov.** *Acrosorus reineckeii* was described from Samoa and the synonymy of *P. kaniense* with it extends the range of the species to Bougainville and Papua New Guinea.

## *Acrosorus grammitidiphyllus* (Copel.) Parris comb. nov.

*Calymmodon grammitidiphyllus* Copel., Univ. Calif. Publ. Bot. 18: 224 (1942). Type: New Guinea, Brass 13443 (holotype MICH!; isotype A, isotype fragment UC! photo. K!).

## Lellingeria

*Grammitis tomensis* Schelpe has a simple lamina that is entire apart from a very shallowly sinuate basal portion. It differs from all other species currently treated as *Grammitis* in the following combination of characters: dorsiventral rhizome with non-articulated stipes, dark brown clathrate iridescent rhizome scales that are glabrous apart from a solitary apical hair, lamina without dark sclerotic border, stipe and abaxial surface of mid-vein with 1(–3)-forked hairs with catenate base, simple eglandular branches and glandular apex, dark hydathodes at vein endings on adaxial surface of the lamina and glabrous sporangia. These characters are typical of the group of *Lellingeria myosuroides* (Sw.) A. R. Sm. & R. C. Moran (Smith *et al.* 1991), to which the African species of *Lellingeria* belong (Parris 2002, Smith *et al.* 1991), and *G. tomensis* is accordingly transferred to *Lellingeria*.

## *Lellingeria tomensis* (Schelpe) Parris comb. nov.

*Grammitis tomensis* Schelpe, Contr. Bolus Herb. 1: 6 (1969). Type: San Tome, Encasto do Pico, 2000 m alt., Quintas 11 (holotype BM! barcode 000585340).

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### **Prosaptia**

*Prosaptia venulosa* (Blume ex Kunze) M. G. Price (syn. *Ctenopteris venulosa* Blume ex Kunze) is closely related to *C. venulosoides* Copel. (Parris 1990). The former has soral pits without a rim or with a rim less than 0.1 mm high, with numerous hairs on the pit margin that intermesh across the sorus pit when it is immature, but become erect at sorus maturity, while the latter has soral pits with a glabrous rim 0.1–0.3 mm high. The two seem distinct enough to be treated as species, so *C. venulosoides* is here transferred to *Prosaptia*.

### **Prosaptia venulosoides** (Copel.) Parris **comb. nov.**

*Ctenopteris venulosoides* Copel., Univ. Calif. Publ. Bot. 18: 225 (1942). Type: New Guinea, *Clemens* 41394 (holotype MICH!; isotype UC!).

### **Themelium**

*Themelium* (T. Moore) Parris was distinguished (Parris 1997) from all other genera of *Grammitidaceae* by the following unique assemblage of characters: rhizome dorsiventral, stipes in two rows, scales medium to dark red-brown or medium to dark brown, glabrous, cells of scales not turgid and without cross-walls; frond hairs unbranched, medium to dark red-brown; laminae bipinnatifid to bipinnate, veins not anastomosing, hydathodes sometimes present at vein endings on adaxial surface of lamina, sori in two rows per pinna,  $\pm$  circular in outline, sori not sunken in lamina. Further study of the five original species has shown that additional characters are important in the delimitation of the genus, such as an abrupt transition to small pinnae at the base of the frond, the rachis being slightly prominent to prominent and dark (sclerotic) on the abaxial surface of the lamina, the hydathodes being more evident in, or restricted to, the basal part of the pinnae, and the sporangia nearly always glabrous (one or two simple eglandular hairs are occasionally present at the apex of the sporangium adjacent to the annulus in two collections (*T. tenuisectum* (Blume) Parris; Papua New Guinea, *Werner* 29, UC! and *T. yoderi* (Copel.) Parris; Papua New Guinea, *Frodin* NGF 28494, BM!). Most species also have subclathrate to clathrate rhizome scales that may be iridescent and tinged dark greyish.

Examination of the type of *Polypodium halconense* Copel. (Philippines, *Merrill* 5976, MICH!) shows that it is congeneric with *Themelium* as described above. Other species of *Grammitidaceae* that are less finely divided have all of the characters of *Themelium* apart from bipinnatifid to bipinnate fronds and appear to be more closely related to it than to other genera and species groups in the family; they are here transferred to *Themelium*. They include pinnate or deeply pinnatifid species with more than one sorus per

pinna that have sometimes been included in *Ctenopteris* Blume ex Kunze, pinnate or deeply pinnatifid species with only one sorus per pinna that have been treated as *Xiphopteris* Kaulf. and simple-fronded species that have been regarded as *Grammitis* Sw. (Copeland 1953 & 1960, Parris 1983 & 1990). Species previously included in *Ctenopteris* are *T. blechnifrons*, *T. curtisii*, *T. halconense*, *T. integrispaleatum* and *T. sarawakense*. The species previously treated as *Xiphopteris* is *T. conjunctisorum*. Species formerly regarded as *Grammitis* are *T. crenulatum*, *T. fasciatum*, *T. graminifolium* and *T. loherianum*. Species formerly lacking combinations in *Grammitidaceae* are *T. abebaion*, *T. ctenoideum* and *T. flagelliforme*.

### **Themelium abebaion** (Alderw.) Parris **comb. nov.**

*Polypodium abebaion* Alderw., Nova Guinea 14: 45 (1924). Type: mountain ridge near Doorman summit, 1420 m alt., 4 Oct. 1920, *Lam* 1508 (BO, L!).

### **Themelium blechnifrons** (Hayata) Parris **comb. nov.**

*Polypodium decrescens* var. *blechnifrons* Hayata, Icon. Pl. Form. 4: 245–247, f. 174 (1914). Type: Taiwan (Formosa), Arisan, between Funkiko & Taroyen, ad 6000 ped., Jan. 1912, *B. Hayata* & *S. Sasaki* s.n. (TI!). *Cryptosorus decrescens* var. *blechnifrons* (Hayata) Nakai ex H. Ito, J. Jap. Bot. 11(2): 90 (1935). *Ctenopteris curtisii* sensu Fl. Taiwan 1: 217, 219, t. 77, 220 (1975) et ed. 2, 521, 523, t. 203, 524 (1994).

### **Themelium conjunctisorum** (Baker) Parris **comb. nov.**

*Polypodium conjunctisorum* Baker, Ann. Bot. 8: 129 (1894). Type: New Guinea, Mt Suckling, received from Sir F. Mueller 1893, *Macgregor* s.n. (holotype K!). *Grammitis conjunctisora* (Baker) C. V. Morton, Contr. U.S. Natl. Herb. 38: 256 (1973). *Xiphopteris conjunctisora* (Baker) Copel., Philipp. J. Sci. 81: 94 (1953).

### **Themelium crenulatum** (Parris) Parris **comb. nov.**

*Grammitis crenulata* Parris, Blumea 29: 81, f. 11 (1983). Type: Papua New Guinea, Milne Bay Distr., Maneau Range, N slopes of Mt Dayman, 27 May 1953, *Brass* 22556 (holotype BM!; isotypes A!, CANB!, L!, LAE!).

### **Themelium ctenoideum** (Brause) Parris **comb. nov.**

*Polypodium ctenoideum* Brause, Bot. Jahrb. Syst. 56: 188–189 (1920). Type: Nordöstl. Neu-Guinea, Kaiserin-Augusta-Fluss-(Sepik-) Gebiet, Schraderberg, 2000–2500 m alt., 8 June 1913, *Ledermann* 12131A (B!).

***Themelium curtisii* (Baker) Parris comb. nov.**

*Polypodium curtisii* Baker, J. Bot. 19: 367 – 368 (1881).  
Type: Sumatra, Padang, *Curtis* 98 [sphalm. “28”]  
(holotype K!).

*Ctenopteris curtisii* (Baker) Copel., Philipp. J. Sci. 81:  
103 (1953).

***Themelium fasciatum* (Blume) Parris comb. nov.**

*Grammitis fasciata* Blume, Enum. Pl. Javae: 116 (1828).  
Type: Java, Mt Gede, *Blume* s.n. (lectotype L!  
(Parris 1983: 75); isolectotypes BO!, K!, L!, NSW!).

*Polypodium fasciatum* (Blume) C. Presl, Tentamen: 180  
(1836).

***Themelium flagelliforme* (Brause) Parris comb. nov.**

*Polypodium flagelliforme* Brause, Bot. Jahrb. Syst. 56:  
187 – 188 (1920). Type: Nordöstl. Neu-Guinea,  
Kaiserin-Augusta-Fluss-(Sepik-) Gebiet, Lordberg,  
1000 m alt., 5 Dec. 1912, *Ledermann* 10075 (B!).

***Themelium graminifolium* (Copel.) Parris comb. nov.**

*Grammitis graminifolia* Copel., Univ. Calif. Publ. Bot. 18:  
223 (1942). Type: New Guinea, *Brass* 5092 (holotype  
NY!; isotypes BM!, BO!, BRI!, GH!, MICH!).

***Themelium halconense* (Copel.) Parris comb. nov.**

*Polypodium halconense* Copel., Philipp. J. Sci., C. Bot. 2:  
138 (1907). Type: Philippines, Mindoro, Mt  
Halcon, 2300 m alt., *Merrill* 5976 (MICH!).

*Ctenopteris halconensis* (Copel.) Copel., Fern Fl.  
Philipp. 3: 533 (1960).

***Themelium integripaleatum* (Copel.) Parris comb. nov.**

*Ctenopteris integripaleata* Copel., Univ. Calif. Publ. Bot.  
18: 225 (1942). Type: New Guinea, *Brass* 12249  
(holotype MICH! herb. *Copeland* 17602; isotypes A,  
UC!).

***Themelium loherianum* (H. Christ) Parris comb. nov.**

*Polypodium loherianum* H. Christ, Bull. Herb. Boiss. 6:  
197, t. 3, f. 2 (1898). Type: Philippines, Luzon,  
Mountain Province, Mt Data, 2250 m alt., March  
1897, *Loher* 1131 (lectotype P!, **chosen here**;  
isolectotype K!).

*Grammitis loheriana* (H. Christ) Copel., Philipp. J. Sci.  
80(2): 213 (1952).

***Themelium sarawakense* (Parris) Parris comb. nov.**

*Ctenopteris sarawakensis* Parris, Hooker’s Icon. Pl. 40  
(4): t. 3986 (1990). Type: Borneo, Sarawak, Mt  
Dulit, *Richards* 1891 (holotype K!).

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