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The clarification and synonymisation of two taxa of *Vittaria* from Peninsular Malaysia and a new combination in *Haplopteris* (Pteridaceae subfam. Vittarioideae)

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ABSTRACT. A variety and a species of *Vittaria* in Peninsular Malaysia are synonymised and the new combination *Haplopteris sessilifrons* (Miyamoto & H.Ohba) S.Linds. is made.

Keywords. Adiantaceae, *Haplopteris sessilifrons*, *Vittaria ensiformis* var. *latifolia*, *Vittaria sessilifrons*, Vittariaceae

Introduction

As research towards an account of Adiantaceae for the *Flora of Peninsular Malaysia* is progressing, papers are being published to clarify the correct generic placement of a number of species (Lindsay, 2010; Lindsay & Chen, 2014). Wider discussions on the current delimitation of the Asian genera formerly placed in the family Vittariaceae (most often treated as part of Pteridaceae subfam. Vittarioideae but to be included in Adiantaceae for the *Flora of Peninsular Malaysia*) can be found in Crane (1998), Lindsay (2004), Ruhfel et al. (2008) and Lindsay & Chen (2014).

This current paper concerns a species described by Miyamoto & Ohba (1992), *Vittaria sessilifrons* Miyamoto & H.Ohba, and a variety written about by Holttum (1955), *Vittaria ensiformis* var. *latifolia*.

Miyamoto & Ohba (1992) described *Vittaria sessilifrons* based on several of their own collections from Pahang in Peninsular Malaysia. We had been unable to locate any of the isotypes or paratypes, said to be in a number of herbaria, until it was discovered that none of the type material had been distributed. This has now been rectified and SING herbarium received an isotype and two paratypes in 2014. Examination of this material has revealed it to be the same taxon previously written about as *Vittaria ensiformis* var. *latifolia* by Holttum (1955). Unfortunately, Holttum's variety was not validly published due to the lack of a Latin diagnosis or description (Art. 39.1; McNeill et al. 2012).

We had earlier delayed making a decision on what to do with the material referable to *Vittaria ensiformis* var. *latifolia*, due to its apparent intermediate position

between *Haplopteris ensiformis* (Sw.) E.H.Crane and *H. elongata* (Sw.) E.H.Crane (formerly *Vittaria ensiformis* Sw. and *V. elongata* Sw.). Until the additional three specimens were received from Japan, we had seen only five specimens that could be referred to this taxon (three annotated by Holttum plus two others: *Mohd Shah & Samsuri MS3822* (SING) and *R. Kiew RK1989* (KEP)). We remained unsure as to whether it blurred the distinction between *Haplopteris ensiformis* and *H. elongata*, whether it should be described as a variety of one or the other (but leaning towards *H. elongata*), or whether it should be described as a new species (before we discovered that it was already described as *Vittaria sessilifrons*). Holttum (1955) made it a variety of *Vittaria ensiformis*, based on its sessile fronds, but noted its similarities to *V. elongata*. Miyamoto & Ohba (1992), however, compared their new species to *Vittaria elongata* and *V. scolopendrina* (Bory) Schkuhr ex Thwaites & Hook. (now *Haplopteris scolopendrina* (Bory) C.Presl) although noted it 'differs greatly' from the latter.

With the availability of more material, now covering a broader geographical distribution in Peninsular Malaysia, it has become clear that the characters which define this taxon are quite stable and that Miyamoto & Ohba (1992) were quite correct to describe it at the rank of species. It is similar to *Haplopteris ensiformis* in having sessile fronds and sori in deep marginal or submarginal grooves but differs in having a distinct costa above (at least in the lower half of the frond) and a wider and thinner lamina in which the lateral veins are visible (at least with transmitted light). It is similar to *Haplopteris elongata* in the width and texture of the lamina, the visibility of the venation and the position and structure of the sori, but differs in having sessile fronds and costae that are more strongly raised above (the costae of *H. elongata* are usually distinct but flat or hardly raised above). It is similar to *Haplopteris scolopendrina* in the texture of the lamina and the visibility of the venation but differs in having much narrower and shorter fronds and sori in deep marginal or submarginal grooves (the sori of *H. scolopendrina* are in shallow and broad submarginal grooves).

Based on the arguments to be found in Crane (1998) and Lindsay (2004), *Vittaria sessilifrons* now requires a combination in *Haplopteris* which is here provided.

New combination

Haplopteris sessilifrons (Miyamoto & H.Ohba) S.Linds., **comb. nov.** – *Vittaria sessilifrons* Miyamoto & H.Ohba, Acta Phytotax. Geobot. 43(1): 33, f. 2 (1992). – TYPE: Peninsular Malaysia, Pahang, Gunung Tahan, Sungai Luis, alt. 700 m, 19 March 1990, *Ohba, H. & Miyamoto, F. 900536* (holotype TI!; isotypes FRI, L, US, SING!).

Vittaria ensiformis var. *latifolia* Holttum, Rev. Fl. Malaya 2: 614 (1955 ['1954']), nom. inval.

Epiphytic or lithopyhtic. ***Rhizome*** short-creeping, usually obscured by a mass of extremely hairy roots, c. 1–2 mm diameter (in the dry state), bearing fronds close

together, densely scaly. ***Scales*** linear, stiff, straight, gradually narrowing from a cordate base towards a long-tailed and ultimately filiform apex, up to c. 6 mm long and c. 0.7 mm wide (at base), clathrate, sparsely toothed at margin particularly near base and somewhat bicoloured, the walls of the inner cells being thicker and darker than those of the outer cells (most noticeable in the section of the tail that is two cells wide; the common wall in the middle is thick and black while the two marginal walls are thinner and somewhat red). ***Fronds*** pendulous, simple, linear, 9–40 cm long, 0.45–1.3 cm wide, gradually narrowing towards both ends, the apex narrowly acute, the base sessile. ***Lamina*** coriaceous, glabrous, the margins revolute almost the entire length of the frond, midrib and margins moderately to strongly raised on the upper surface particularly in the lower half of the frond, the midrib usually becoming flatter towards the frond apex but the margins remaining raised throughout, midrib flat and indistinct below. ***Lateral veins*** more-or-less visible from above (or with transmitted light), indistinct below, simple, very oblique, parallel, joined by a continuous submarginal vein. ***Sori*** very long, linear, uninterrupted, appearing to be marginal (but actually arising from the submarginal vein), in a deep, two-lipped, groove in the revolute frond margin (therefore only visible from below), the two lips more-or-less equal. ***Sporangia*** with annuli composed of 16–18 cells. ***Soral paraphyses*** copious, their stalks multicellular, filiform, mostly colourless; their apical cells large, funnelform, twice as long as wide or longer, reddish-brown. ***Structures resembling sporangial stalks*** (but without sporangia attached) more numerous than paraphyses. ***Spores*** bilateral, bean-shaped, monolete, pale, translucent, smooth.

Distribution. Peninsular Malaysia and, possibly, Borneo. We have seen specimens from Johor, Negeri Sembilan, Pahang and Terengganu (close to the border with Kelantan) in Peninsular Malaysia. Holttum (1955) lists Perak too. We have not verified material from Borneo listed as *Vittaria ensiformis* var. *latifolia* in online herbarium specimen databases.

Ecology. Information is scant. However, three collections are described as epiphytic on mossy tree-trunks near streams in forests, one as epiphytic 3 m from the ground above a river, and one as growing on rocks. The lowest recorded altitude is 200 m and the highest is 762 m.

Provisional IUCN conservation assessment. Data Deficient (DD). Although not often collected, this species is widespread in Peninsular Malaysia which would suggest an assessment of Least Concern. However, of the collections known, several are more than 100 years old and none have been collected since 1990.

Additional specimens examined. PENINSULAR MALAYSIA: **Johor:** Kota Tinggi, [locality illegible], 1910 [month illegible], *Ridley, H.N. s.n.* (SING [SING0033264]); Mount Austin, [1901?; date illegible], *Ridley, H.N. s.n.* (SING [SING0085661]); Sungai Salat, Ulu Endau, Sep 1985, *Kiew, R. RK1989* (KEP). **Negeri Sembilan:** Gunung Angsi, alt., 2500 ft. [762 m], 22 Nov 1923., *Nur, Md SFN11617* (SING). **Pahang:** Gunung Tahan, Sungai Juram, alt. 200 m, 11

Mar 1990, *Ohba, H. & Miyamoto, F. 900120* (SING, TI); Sungai Juram to Sungai Luis, alt. 700 m, 13 Mar 1990, *Ohba, H. & Miyamoto, F. 900208* (SING, TI). **Terengganu:** Gunung Ayam via Ulu Besut, alt. 2,400 ft. [732 m], 5 Mar 1976, *Shah, Mohd & Samsuri MS3822* (SING).

Notes. The holotype and SING isotype are clearly labelled as having been collected on 19 March 1990; the date in the protologue of 13 March 1990 is a printing error.

In his key to the Malayan species of *Vittaria*, Holttum (1955: 608) says of *Vittaria ensiformis* var. *latifolia* that the "midrib [is] never strongly raised on [the] upper surface". This statement is at odds with the protologue of *Vittaria sessilifrons* which says "costa and margin raised on upper side" and illustrates both as being rather strongly raised (see Miyamoto & Ohba, 1992, Fig. 2E & G). We have examined three specimens annotated by Holttum and, in each, the costa and margins are moderately to strongly raised on the upper surface of the basal half of the frond.

Miyamoto & Ohba (1992) state that *Vittaria sessilifrons* differs greatly from *V. scolopendrina* in having a raised costa. This implies that *Haplopteris scolopendrina*, using the current name, does not have a raised costa when in reality it does. The costa of *Haplopteris scolopendrina* is, in fact, very strongly raised on the upper surface of the frond (even more so than in *Haplopteris sessilifrons*) for almost the entire length of the frond.

The illustration of the paraphyses in the protologue of *Vittaria sessilifrons* shows them with ovoid or clavate heads but we have not seen any paraphyses of this sort in the type material or in any other material. Instead, all material that we have examined has paraphyses with funnelform apical cells, a shape that is typical for *Haplopteris*. As well as these paraphyses, all of the specimens of *Haplopteris sessilifrons* have a very large number of structures that look like sporangial stalks without sporangia attached. It is unclear whether these are an artefact of dried specimens or if, as we suspect, these develop without ever producing sporangia. Similar structures are sometimes found in both *Haplopteris elongata* and *H. ensiformis* but never so densely.

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