

The genus *Antrophyum* Kaulfuss (Vittariaceae) in Nokrek Biosphere Reserve with special reference to new record in Garo Hills and recollection in Meghalaya

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[Received revised 23.04.2011; Accepted 10.05.2011]

Abstract

The paper deals with a comprehensive taxonomic study on three species of *Antrophyum* Kaulfuss (Vittariaceae) reported for the first time from Nokrek Biosphere Reserve (NBR) in Meghalaya. *A. obovatum* Baker is reported for the first time from Garo Hills and two other species namely, *A. plantagineum* (Cavan) Kaulfuss and *A. reticulatum* (G.Forster) Kaulfuss are collected after a gap of fifty years from Meghalaya. The present communication includes key to species, taxonomic description, habitat, distribution and line drawings of the species.

Key words: *Antrophyum* Kaulfuss, NBR, Garo Hills, Meghalaya

INTRODUCTION

The family Vittariaceae is represented by 7 genera distributed in the tropical and temperate regions of the World (Singh & Panigrahi 2005). *Antrophyum* Kaulfuss and *Vittaria* Smith are the only two Vittarioid genera reported from India (Dixit 1984). Of these, while *Antrophyum* Kaulfuss is represented by 30 species, the other genus *Vittaria* Smith is by 50 species in the World (Mabberley 1997). In India, while Singh & Panigrahi (2005) reported 8 species of *Antrophyum*, Dixit (1984) reported the occurrence of 16 species of *Vittaria*. However, the only published work on 'Fern and Fern-allies of Meghalaya' by Baishya & Rao (1982) reported only one species of *Antrophyum* and one species of *Vittaria* from the state of Meghalaya.

While studying the 'Arboreal Flora of Nokrek Biosphere Reserve, Meghalaya (NBR)', during 2007 – 2010 in NBR a good numbers of pteridophytic plant samples also were collected. Voucher specimens were processed following the standard herbarium techniques (Jain & Rao 1977) and have been deposited in ASSAM herbarium at Botanical Survey of India, Eastern Regional Centre, Shillong.

The examination of herbarium specimens and scrutiny of literature revealed that the genus *Antrophyum* has been represented by three species viz., *A. obovatum* Baker, *A. plantagineum* (Cavan) Kaulfuss and *A. reticulatum* (G. Forster) Kaulfuss in this biosphere reserve. Out of these, *A. obovatum* is collected for the first time from Garo Hills and the two other species viz., *A. plantagineum* and *A. reticulatum* are recollected from Meghalaya after a gap of fifty years or more. It is interesting to note that no publication has appeared so far on these two species from the state and from the study site although there are some herbarium materials of these two species housed in ASSAM. So, these three species on the other hand recorded for the first time from the Nokrek Biosphere Reserve. All the species are epiphytic and usually grow on tree trunks of *Lithocarpus dealbatus* (Hooker f. & Thomson ex Miquel) Rehder, *Schima wallichii* (DC.) Korthals, *Quercus griffithii* Hooker f. & Thomson ex Miquel and *Castanopsis indica* (Roxburgh) Miquel in shady tropical and subtropical forests. Therefore, an attempt has been made in this paper to provide the taxonomic account of these three species along with their habitat and distribution. Keys to species and line drawings are also provided for their easy identification.

Antrophyum* KaulfussArtificial Key to the Species*

- 1a. Lamina obovate; midrib absent *A. obovatum*
 1b. Lamina lanceolate; midrib present at the base of lamina2
 2a. Lamina oblong-lanceolate; sori immersed, arranged in two rows on surface of veins *A. plantagineum*
 2b. Lamina linear-lanceolate; sori immersed along grooved surface of veinlets *A. reticulatum*

Antrophyum obovatum Baker, Kew Bull. Misc. Inf. 238. 1898; Bhandari *et al.*, Indian Fern J. 21: 36. 2004. *Antrophyum latifolium sensu quoad* Beddome, Handb. Ferns Brit. India 404. 1883. *Antrophyum japonicum* Makina, Phan Pterid. Jap. 4 Stet. 26. 1899 [Figure 1]

Epiphytic herbaceous plants, 13 – 21 cm in length. Rhizomes short, creeping, brown, covered with deep-brown scales; roots blackish brown, covered with many root hairs. Fronds tufted, green, 9 – 14 × 3.2 – 4.9 cm; petioles 3.8 – 5.6 cm long, thick, fleshy, winged; lamina typically obovate, acutely lobed, acute to acuminate, long cuneate at base, midrib absent, veins raised on abaxial surface and reticulate, entire along margin, but looks slightly wavy in dried specimens. Sori immersed, develop in 8 to 14 rows on the abaxial surface along reticulate veins. Spores trilete-tetrahedral.

Fertile: June – September.

Habitat: Grows on moss covered tree trunks of *Castanopsis indica* in dense subtropical forests; occasional in Meghalaya.

Distribution: INDIA (Darjeeling, Sikkim, Arunachal Pradesh & Meghalaya), Bhutan, China, Nepal and Vietnam.

Specimens cited: Meghalaya: NBR, Nokrek Peak, 28.05.2010, *B Singh 114700A* (ASSAM).

Antrophyum plantagineum (Cavan) Kaulfuss, Enum. Fil. 197. 282. 1824; Baishya & Rao, Ferns & Fern-allies Meghalaya 147. 1982; Bhandari *et al.*, Indian Fern J. 21: 39. 2004. *Hemionitis plantaginea* Cavan, Descr. 260. 1802 [Figure 2]

Epiphytic and lithophytic herbaceous plants, 8 – 25 cm in length. Rhizomes short creeping, brownish black, tufted, covered with ferruginous obovate-lanceolate scales; roots black, branched, covered with root hairs. Fronds tufted, green, 8 – 20 × 1.5 – 2.8 cm; petioles 1 – 2.6 cm long, distinctly winged; lamina oblong-lanceolate, broader towards the upper half, slightly falcate, acuminate, narrowly decurrent at base, midrib present only at base, absent in upper parts, veins depressed and reticulate, entire along margin. Sori immersed, arranged in two rows on surface of veins, continuous, brown. Spores trilete.

Fertile: October – December.

Habitat: Grows on moss covered tree trunks and on moss covered rocks in shaded places in tropical to subtropical forests; occasional in Meghalaya.

Distribution: INDIA (north-eastern states, West Bengal & Sikkim), Bhutan, Nepal, Sri Lanka and Polynesia.

Specimens cited: Meghalaya: NBR, on way to Nokrek Peak, 29.05.2010, *B Singh 118600* (ASSAM).

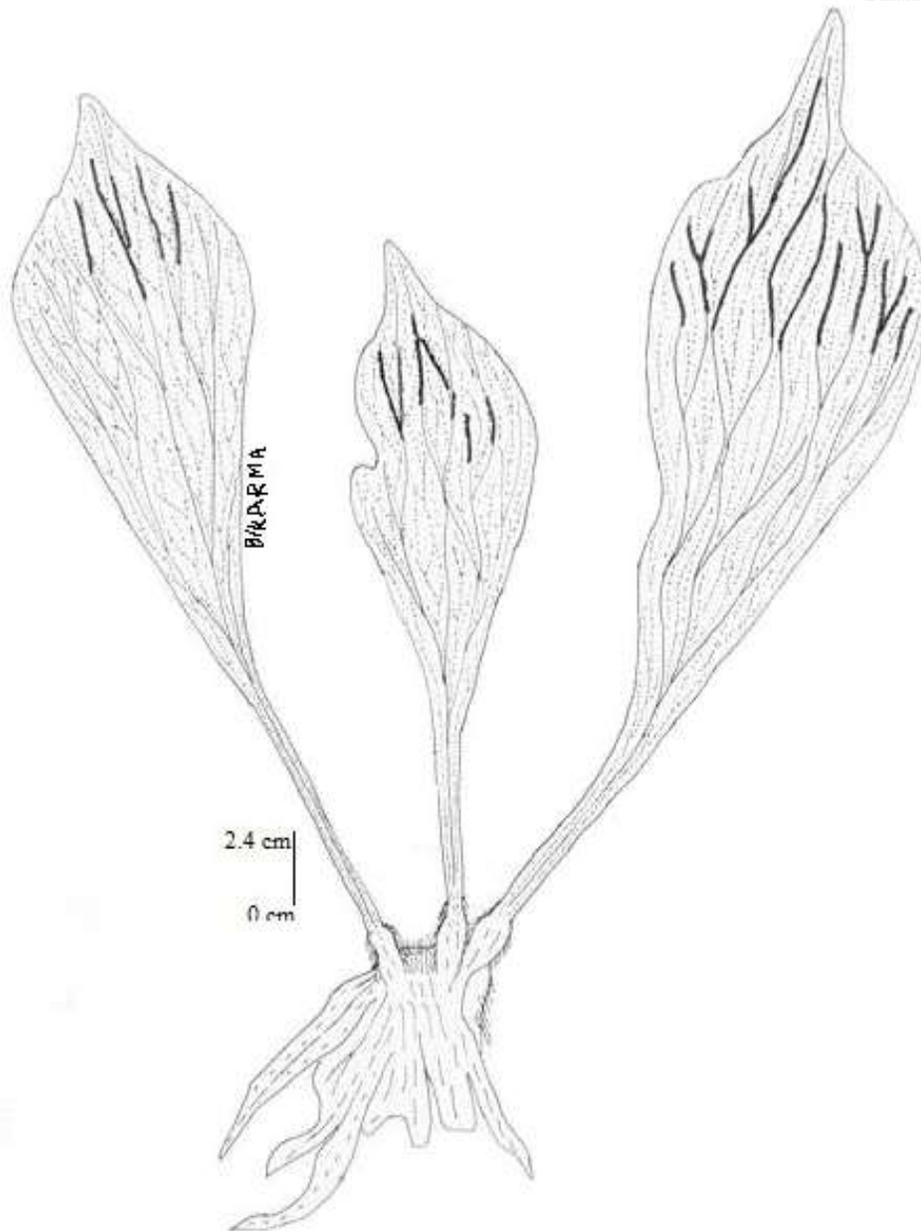


Figure 1: *Antrophyum obovatum* Baker

Antrophyum reticulatum (G. Forster) Kaulfuss, Enum. Fil. 198. 1824; Bhandari *et al*, Indian Fern J. 21: 40. 2004; Singh & Panigrahi, Ferns & Fern-allies Arunachal Pradesh 2: 789. 2005. *Hemionitis reticulata* G. Forster, Fil. Inst. Austr. Prod. 79. 1786 [Figure 3]

Epiphytic, herbaceous, 13 – 30 cm in length. Rhizomes creeping, tufted, surface covered with linear-lanceolate dark brown scales; roots black to brown, covered with many root hairs. Fronds simple, green, 13 – 25 × 1.2 – 1.8 cm; petioles 0.5 – 1 cm long, fleshy; lamina linear-lanceolate, acuminate, cuneate at base, midrib prominently present at base and gradually divides in distal parts, veins raised, 8 – 12 veinlets in middle portion of lamina which anastomose and produce a reticulate pattern. Sori immersed along grooved surface of veinlets. Spores trilete-tetrahedral.

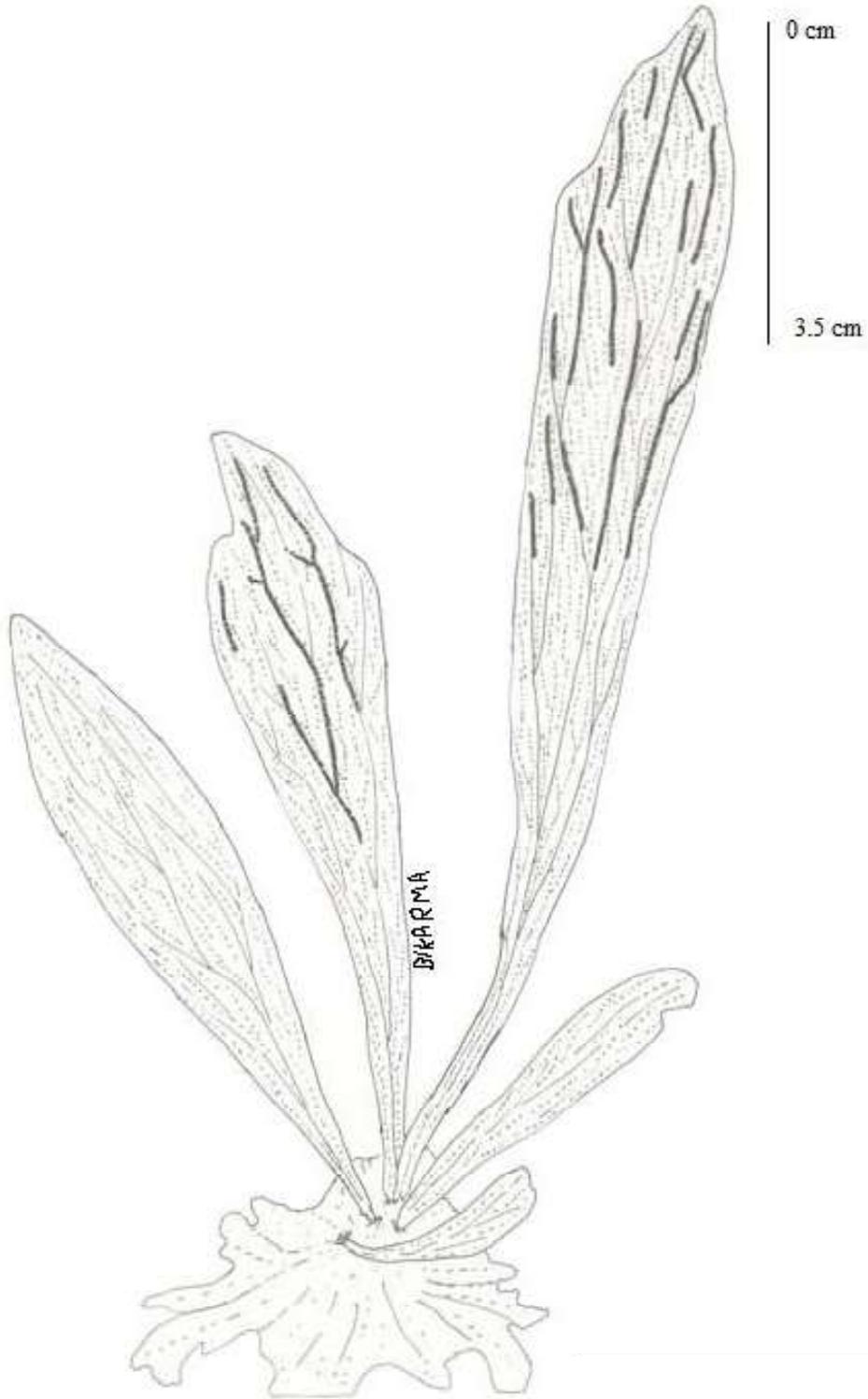


Figure 2: *Antrophyum plantagineum* (Cavan) Kaul f.

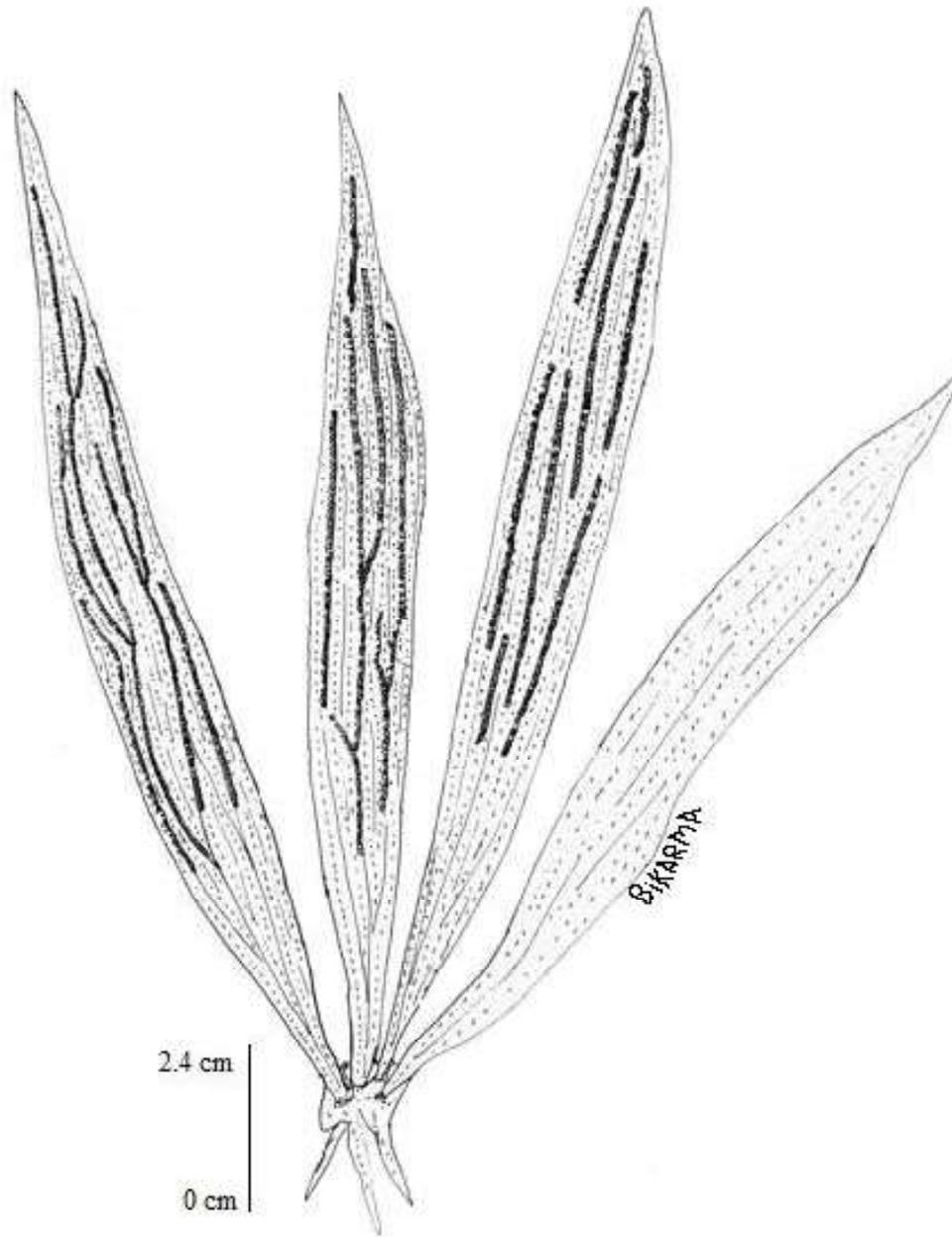


Figure 3: *Antrophyum reticulatum* (G. Forster) Kaul f.

Fertile: August – November.

Habitat: Grows on moss covered tree trunks and rocks in shaded places in tropical to subtropical forests; fairly common in Meghalaya.

Distribution: INDIA (Sikkim, Assam & Meghalaya), Bhutan, China, Nepal, Australia and Indonesia.

Specimens cited: Meghalaya: NBR, 28.05.2010, on way to Jetagiri, *B Singh 118594* (ASSAM); Tura Peak, 29.8.1962, *DB Deb 28957* (ASSAM).

Acknowledgements

The authors are thankful to Director, Botanical Survey of India, Kolkata for the encouragement and facilities.

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