NOTES ON BOTHRIOCHLOA KUNTZE (GRAMINEAE: ANDROPOGONEAE) IN MALESIA

Received December 3, 2008; accepted December 5, 2008

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ABSTRACT

Keyword: Bothriochloa, Dichanthium, Capillipedium, Malesia

INTRODUCTION

Trinius (1832) recognized Andropogon L. sect. Amphilophis. Hackel (1883) regarded it as subgenus, and Nash (1901) elevated in to the generic level: Amphilophis (Hack.) Nash. However, this is a taxonomic synonym of Bothriochloa Kuntze (1891). At present, there are about 30 (Chen & Phillips, 2006) to 35 (Phillips, 1995) species world wide. Thirty four (http://www.kew.org/data/grasses-db/sppindex.htm, accessed on 10 September 2008) species are recognised in GrassBase-The Online World Grass Flora (Clayton et al.), and are distributed worldwide in tropical and subropical areas: 17 are accepted as native to the America, 13 native to Africa and Eurasia, and four native to Australia. Twenty-one species (the four additional ones are treated as species synonyms by Clayton et al.) are accepted as native to the Americas (Zuloaga et al., 2003). They often occupy open or partly shaded places (Mclvor & Howden, 1992).

Five, or perhaps six species have been recorded from Malesia (Jansen, MS.). Note that different authors may have used different names for the same species, making an account of the species most confusing!

There are some local floras or checklists:

Malay Peninsula and surrounding area: Ridley (1925) had 2 species in Amphilophis Nash: A. glabra (R. Br.) Stapf and A. pertusa (L.) Stapf. Gilliland (1971) mentioned these as B. intermedia (R. Br.) A. Camus, which has numerous forms, and B. pertusa (L.) A. Camus, respectively. The first species is the only one in Singapore according to Duistermaat (2005) who used the presently correct name, B. bladhii (Retz.) S.T. Blake.


Borneo: Merrill (1917) reported Andropogon intermedius R. Br.

Philippines: Merrill (1923) mentioned Andropogon intermedius.

The Australian *B. evartiana* has been found in the Lesser Sunda Islands (Sumbawa, Timor), the Philippines (Luzon), and Papua New Guinea (Madang) are apparently new records for Malesia.

**DISCUSSION**

*Bothriochloa bladhii* seems to occur about everywhere in the area. The plants are facultatively apomictic (http://www.tropical-forages.info/key/Forages/Media/accessHtml/Bothriochloa_bladhii_subsp._glabra.htm, accessed 1 December 2008), but Soreng (pers. comm. 2008) mentioned obligately apomictic due to all sterile anthers. Therefore populations actually are clones. As a whole the species is therefore very variable as is shown by its many synonyms (only basionyms alphabetically given here): *Andropogon intermedius*, A. glaber Roxb., A. haenkei Presl, A. punctatus Roxb., *Amphilophis glabra* var. paupera Stapf ex Ridl., and *Rhaphis stricta* Nees in Hooker. The taxon is widely distributed over Tropical Africa and Asia. It is found in sunny and slightly sheltered grasslands, *Imperata* fields, on limestone, along roadsides, in teak forests, and in dry riverbeds, from 0–900 m.

The former name *B. intermedia* (R. Br.) A. Camus was well-chosen, but the name *B. bladhii* has priority. Occasionally, in the tetraploid stage, it hybridises with other species of *Bothriochloa*, *Capillipedium* Stapf, and *Dichanthium* Willemet, e.g. *B. evartiana*, *B. ischaemum*, *Capillipedium parviflorum* (R. Br.) Stapf, and *Dichanthium annulatum* (Forssk.) Stapf. The hybrids are genetically isolated from each other in the diploid and hexaploid stage. Celarier & Harlan (1955) therefore recognized *B. intermedia* complex (now *B. bladhii*), consisting of *B. caucasica* (Trin.) C. E. Hubb., *B. decipiens* (Hack.) C.E. Hubb., *B. intermedia* itself, *B. ischaemum*, *B. pertusa*, and *B. venusta* (Thwaites) A. Camus.

Because of hybridization and intermediacy, some have advocated merging *Capillipedium* into *Bothriochloa* (Ohwi, 1942). Others, De Wet & Harlan (1966) even included them in *Dichanthium*, but then Roberty (1960) recognized no less than 12 sections among which were *Dichanthium* sect. *Amphilophis* (Trin.) Roberty, *Dichanthium* sect. *Bothriochloa* (Kuntze) Roberty, and *Dichanthium* sect. *Dichanthium*.

*Bothriochloa evartiana*, basionym *Andropogon evartianus* Domin. The presence of this Australian species of *Bothriochloa* seems to be new record for Malesia and was only found (as far as known) in four locations, in coastal grassy plains that apparently were not subjected to burning.

*Bothriochloa insculpta*, basionym *Andropogon insculptus* Hochst. ex A. Rich. It is tentatively included here as it was introduced from Africa in a trial in Papua New Guinea, and no specimens have been reported since.

*Bothriochloa ischaemum*, basionyms: *Andropogon ischaemum L.*. *Andropogon ischaemum* var. *fallax* Hack. Its original distribution is from southern Europe to China. It occupies roadsides and disturbed areas, and used in erosion control and as forages. It was introduced in Malesia long ago: Central Java (Koorders 25277β on 1898), Timor (type of var. *fallax* and Cinatti 1962–52), New Guinea (Central Prov.).

*Bothriochloa modesta*, basionym: *Andropogon modestus* Backer. It occurs exclusively in East Java, Madura, and Bali. It exists on dry and sunny grassland, along roads, on cliffs, riverbeds up to 400 m, and is locally abundant.

*Bothriochloa pertusa*, basionym: *Holcus pertusus* L. It was originally distributed from South Africa to Burma (now Myanmar), and is introduced elsewhere. It is resistant to trampling, drought, and grazing.

Further research is obviously needed to define a clear delimitation of the Malesian taxa here included under *Bothriochloa*.

**ACKNOWLEDGEMENT**

The authors express thank to Dr. Steve Renvoize (K) and Dr. Robert Soreng (US) for reviewing the manuscript, and to Christy Natania for her time and kindliness reading and improving the manuscript.

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