

Veldkampia (*Gramineae*), a New Genus from Myanmar

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(Received on October 12, 2007)

A new genus *Veldkampia* (*Gramineae*) is described from Alaungdaw Kathapa National Park, Myanmar. This new genus is characterized by the effacement of the pediceled spikelet, containing two well-developed caryopses in a spikelet, and in having a terminal cupule-like appendage on the joints of a sessile spikelet. This plant may be included in *Saccharinae*, *Andropogoneae*, however, the phylogenetic position and the evolution of their diagnostic characters are unclear.

Key words: Alaungdaw Kathapa National Park, Myanmar, *Pogonatherum*, *Schizachyrium*, *Veldkampia*.

In 2004, during an expedition organized by the Myanmar-Japan Cooperative Program in Myanmar, the second author found an unusual small grass species belonging to the tribe *Andropogoneae* on a rocky bank.

This small grass was found in Alaungdaw Kathapa National Park, located in the north-west region of Myanmar, which is a mountainous area stretching from the Himalayas. Because of the wide ecological variation, the flora of Myanmar is thought to be highly diverse, and one of the richest in Asia. However, there has been no properly organized botanical expedition to Myanmar for over 50 years. Herbaria worldwide contain merely old specimens and thus the flora of Myanmar is still relatively uncatalogued.

The habitat of the plant was a small stream about 5 m wide, which was dried up at the time of specimen collection. Many individuals were growing in clumps, mainly in clefts on the bedrock along the stream (Fig. 1).

The following characteristics suggest that this annual grass belongs to the tribe *Andropogoneae*, subfamily *Panicoideae*: It

has a spikelet with two flowers; a sessile spikelet and a pediceled spikelet are paired, though the latter is reduced to the pedicel; the spikelets are arranged in fragile racemes; the upper lemma is geniculately awned; the lower glume is almost the same length as the spikelet.

However, this grass has several characteristics that are anomalous for *Andropogoneae*. The pediceled spikelet is completely absent and only the pedicel remains (Figs. 2, 3). The lower floret of the spikelet in members of this tribe is said to be sterile or rarely male (Clayton and Renvoize 1986), but here the spikelet contains two well-developed caryopses (Fig. 4). On the upper end of the rachis, a cupule-like appendage is present (Figs. 2–4). This small translucent appendage covers the base of the sessile spikelet, the pedicel of the pediceled spikelet and the base of the adjacent rachis. Although it may be a modified hair or an extension of the rachis, further examination may be necessary to interpret its morphological significance. The glumes are laterally compressed (Fig. 2).



Fig. 1. Type locality of *Veldkampia sagaingensis* (near Yagyi, Sagaing Division, Alaungdaw Kathapa National Park, Myanmar).

Members of the tribe *Andropogoneae* usually have a dorsally compressed glume, and only a few genera have a laterally compressed glume. Therefore, this characteristic is useful for identification of this tribe.

Thus, it is considered that the inflorescence of this small grass differentiated from that found generally in the *Andropogoneae* through a change such as reduction of the pediceled spikelet and addition of a small cupule-like appendage of the rachis (Figs. 2, 3).

Within this tribe, the genera *Pogonatherum* P. Beauv. and *Schizachyrium* Nees appear to bear the closest resemblance to this unknown grass, as they possess common diagnostic characteristics such as a laterally

compressed glume or a cupule-like appendage.

In fact this grass does resemble *Pogonatherum* at first glance, but apparently differs in several important characteristics. In *Pogonatherum*, the pediceled spikelet is not retrogressed, the rachis has no cupule-like appendage at its tip, and the lower floret is not fertile.

Schizachyrium has a cupule-like appendage, and the pediceled spikelet is also commonly smaller than the sessile spikelet. However, as the lower floret of this genus is infertile and the lower glume is dorsally compressed, we consider the plant to be incongruent with the genus *Schizachyrium*.

Lophopogon Hack. and *Apluda* L. also have a laterally compressed lower glume, but they never possess a cupule-like appendage on the rachis.

Identification of the plant based on morphological information including the characteristics discussed above, i. e., a cupule-like appendage on the rachis, glume shape, etc., was unfruitful. Keys provided by authentic papers (Bor 1960, Gilliland 1971, Clayton and Renvoize 1986, Santo 1986, Shetty and Singh 1993, Shukla 1996, Moulik 1997, Wu and Raven 2006) and an analysis using the DELTA files for grass genera (Watson and Dallwitz 1997; see also <http://delta-intkey.com/>) both indicated that this unknown plant should be placed near *Pogonatherum*. Identification using the more recent GrassBase (Clayton et al. 2006: <http://www.kew.org/data/grasses-db.html>.) yielded no plausible results (Dr. Jan Frits Veldkamp pers. com.).

On the basis of our findings, we conclude that this grass cannot be included in any existing genera. The morphological characteristics indicate that it should be included in the *Saccharinae*, *Andropogoneae*. However, its phylogenetic position and the evolution of the unusual diagnostic characteristics are quite unclear. Further research on this plant is anticipated.

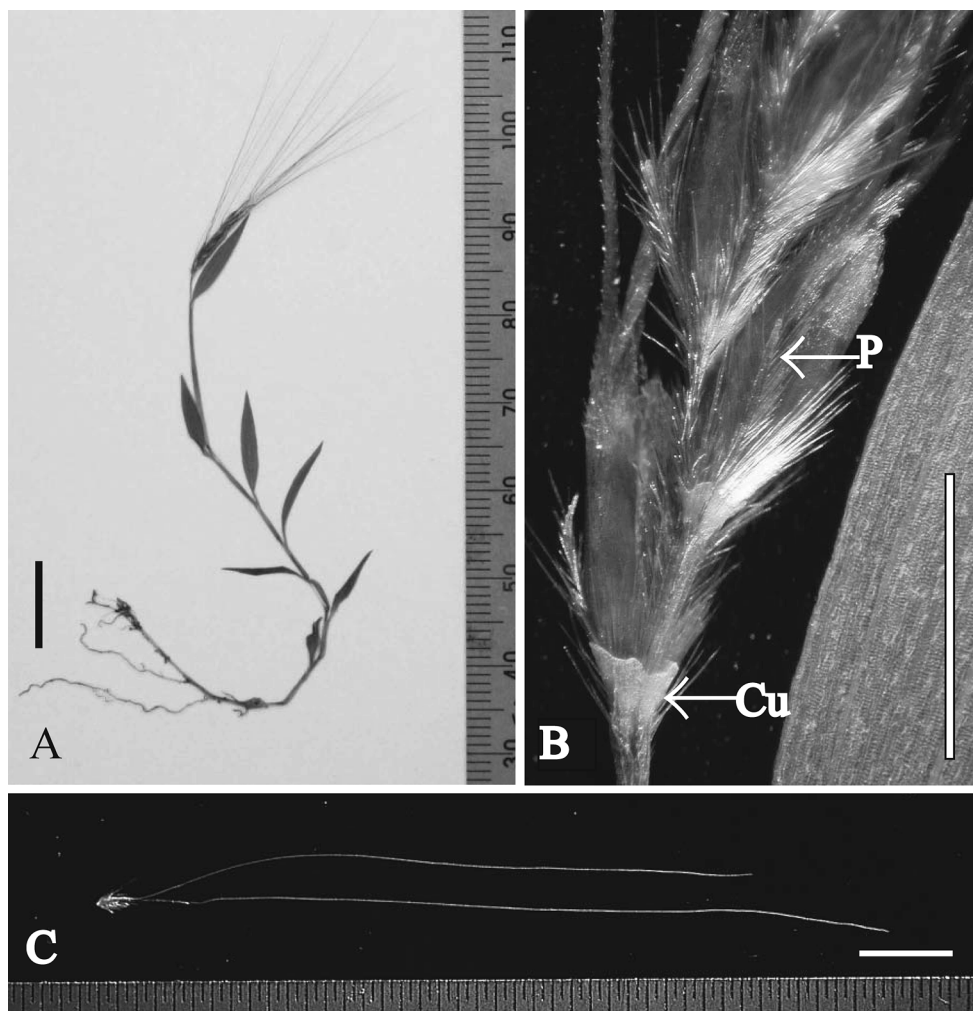


Fig. 2. *Veldkampia sagaingensis*. A. Individual showing annual habit. Culm is rooting from the nodes of decumbent stem. Scale bar = 1 cm. B. A part of inflorescence. P. Pedicel of a pedicelled spikelet. Cu. Cupule-like appendage. Scale bar = 1 mm. C. Spikelet. Scale bar = 5 mm.

Veldkampia sagaingensis Ibaragi & Shiro Kobay., gen. et sp. nov. [Fig. 5]

Cum generibus *Pogonathero* *Schizachyrio*-que hoc genus novum comparandum est; spiculae geminatis sed spiculae pedicellatis complete evasis ac reductionibus ad pedicellos. Spiculae sessilibus lateraliter compressis bifloribus uterque flosculi plerumque fertilibus. Internodia rachidis ca. 0.9 mm longis cum apicali apicali cupulata appendice.

Type: Myanmar, Sagaing Division, Alaungdaw Kathapa National Park, near Yagyi, 22°31'52–59" N, 94°35'10–17" E, 10 December 2004. S. Kobayashi & M. Hamaguchi 031779 (RAF-holo; K, L, MBK, TI, TKPM-iso)

An annual. Culms solitary, geniculate, with a short rootstock, but without cataphylls or intra- or extravaginal branches, rooting from the decumbent nodes, erect part 5–7 cm long. Sheaths pilose, suffused with purple.

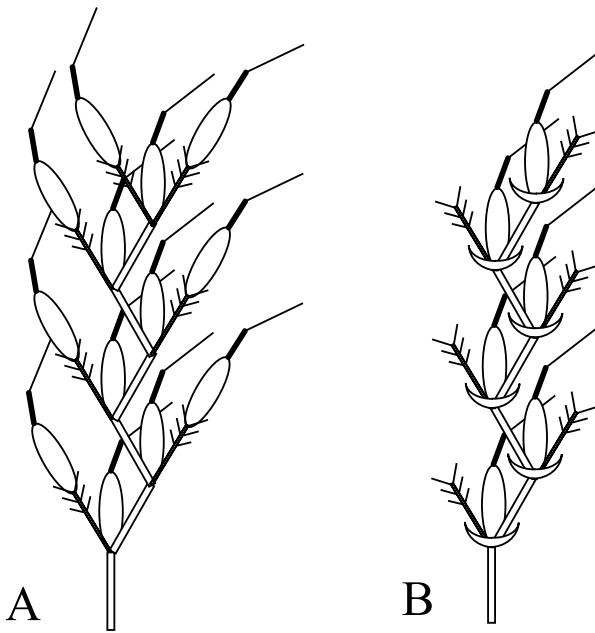


Fig. 3. Diagrams of inflorescence. A. Typical raceme of the *Andropogoneae*. B. Raceme of *Veldkampia*. R. Rachis. P. Pedicel of a pediceled spikelet. Sp. Spikelet. Cu. Cupule-like appendage.

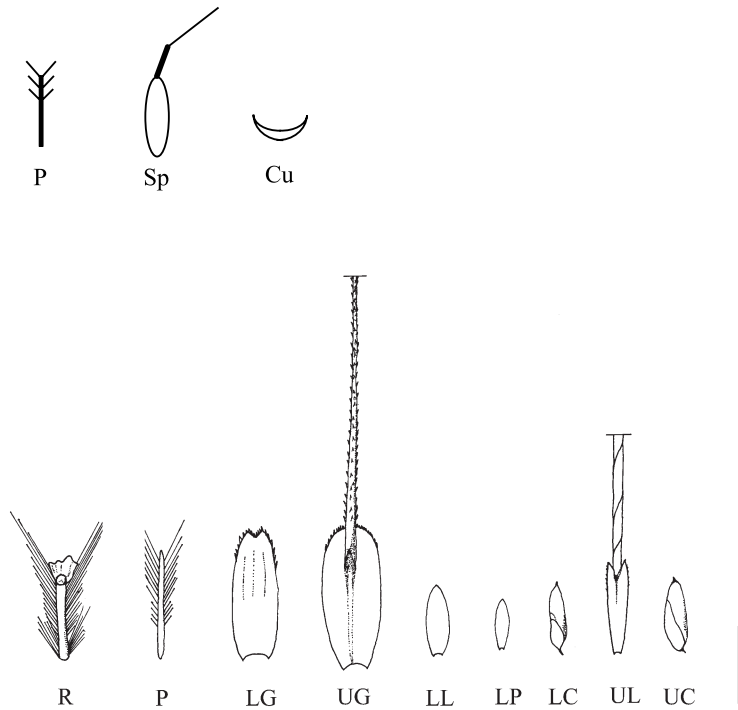


Fig. 4. Anatomical drawing of sessile spikelet, rachis and pedicel of *Veldkampia*. R. Rachis. P. Pedicel of a pediceled spikelet. LG. Lower glume. UG. Upper glume. LL. Lower lemma. LP. Lower palea. LC. Caryopsis of lower floret. UL. Upper lemma. UC. Caryopsis of upper floret. Scale bar = 1 mm.



Fig. 5. Type specimen of *Veldkampia sagaingensis* Ibaragi & Shiro Kobay. (Myanmar, Sagaing Division, Alaungdaw Kathapa National Park, near Yagyi, 22°31'52–59'N, 94°35'10–17'E, 10 December 2004, S. Kobayashi & M. Hamaguchi 031779, MBK, Isotype).

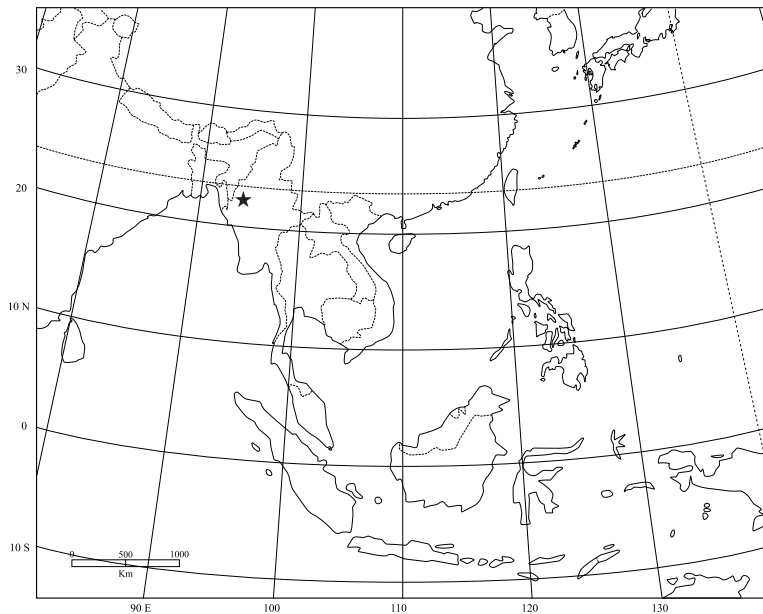


Fig. 6. Distribution map of *Veldkampia sagaingensis*.

Nodes 7–10, glabrous. Ligule membranous, collar-shaped, 0.5–0.7 mm long. Blades linear-lanceolate, glabrous, flat, 1.0–2.0 × 1.4–3.5 mm, apex acute, base attenuate to pseudopetiolate. Pseudopetioles up to 3.5 mm long, their upper side with some long hairs. Inflorescences terminal on culm and branches, espatheate, a single fragile spike-like raceme, 0.5–1.7 cm with ca. 14 spikelets; no homogamous spikelets at base. Spikelets paired, but the pediceled spikelet completely disappear and reduced to the pedicel. Pedicel as joint, hairy on the ridge. Sessile spikelet, laterally compressed, 2-flowered, both flowers fertile, ca. 1.7 mm long, glabrous, except for the callus, brownish. Rachis internode ca. 0.9 mm long, ca. half as long as the spikelet, with a terminal cupule-like appendage. Cupule-like appendage 0.2–0.3 mm high, ribs hairy, hairs white, 0.6–1.7 mm long. Lower glume shorter than the upper, ca. 1.5 mm long, obtuse or bidentate. Upper glume as long as the spikelet, awn subapical, ca. 30 mm long,

straight. Callus short, blunt, hairs 0.3–1.0 mm long, white. Lower lemma membranous, apex acute, ca 1mm long. Lower palea membranous, apex obtuse, ca. 0.7 mm long. Upper lemma reduced to a membranous scale, body ca. 1.3 mm long, apex bifid; awn inserted in the sinus, geniculate, blackish brown, column glabrous, ca. 3.5 mm long, arista scabrous, ca. 32 mm long. Upper palea absent. Anthers not seen. Caryopses ca. 0.8 mm long.

Distribution: Only known the type from Myanmar (Fig. 6).

Habitat: On rocks by stream, 520–560 m alt.

Ethymology: The genus is named after Dr. Jan Frits Veldkamp who is an authority of the botany of Asia. The epithet is named after the type locality Sagaing Division in Myanmar.

We wish to show our sincere thanks to Dr. Jan Frits Veldkamp for his kind support to our research. We wish to express our thanks

to Dr. H. Ohashi, Tohoku University and Dr. W. D. Clayton, Royal Botanic Gardens, Kew for their support of our study. Thanks are also due to Dr. Nobuyuki Tanaka for providing us with the map and information. We are also grateful to Dr. Hidenobu Funakoshi who kindly sent us photographs of some specimens kept in L. We would like to thank anonymous reviewers for their valuable suggestions on improving the paper. This research is partly supported by a Grant-in-Aid from the Japanese Ministry of Education, Culture, Sports, Science and Technology to Prof. Jin Murata (17255004) and a Grant-in-Aid from Kochi Prefectural Government.

茨木 靖^a, 小林史郎^b: ミャンマー産イネ科の 1 新属 *Veldkampia* (イネ科)

ミャンマー産の新属新種のイネ科植物 *Veldkampia sagaingensis* を記載した。この植物は、ミャンマー北西部の Alaungdaw Kathapa National Park で発見されたもので、有柄小穂が退化消失していること、花軸の節部に杯状の構造を有すること、多くの場合、一つの穂の二花ともに稔性がある

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ことなど既存の属では見られない著しい特徴を有する。本植物は、キビ亜科ヒメアブラススキ連に含まれると考えられるが、その分類学的位置づけや形質の進化については今後の検討が必要である。

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