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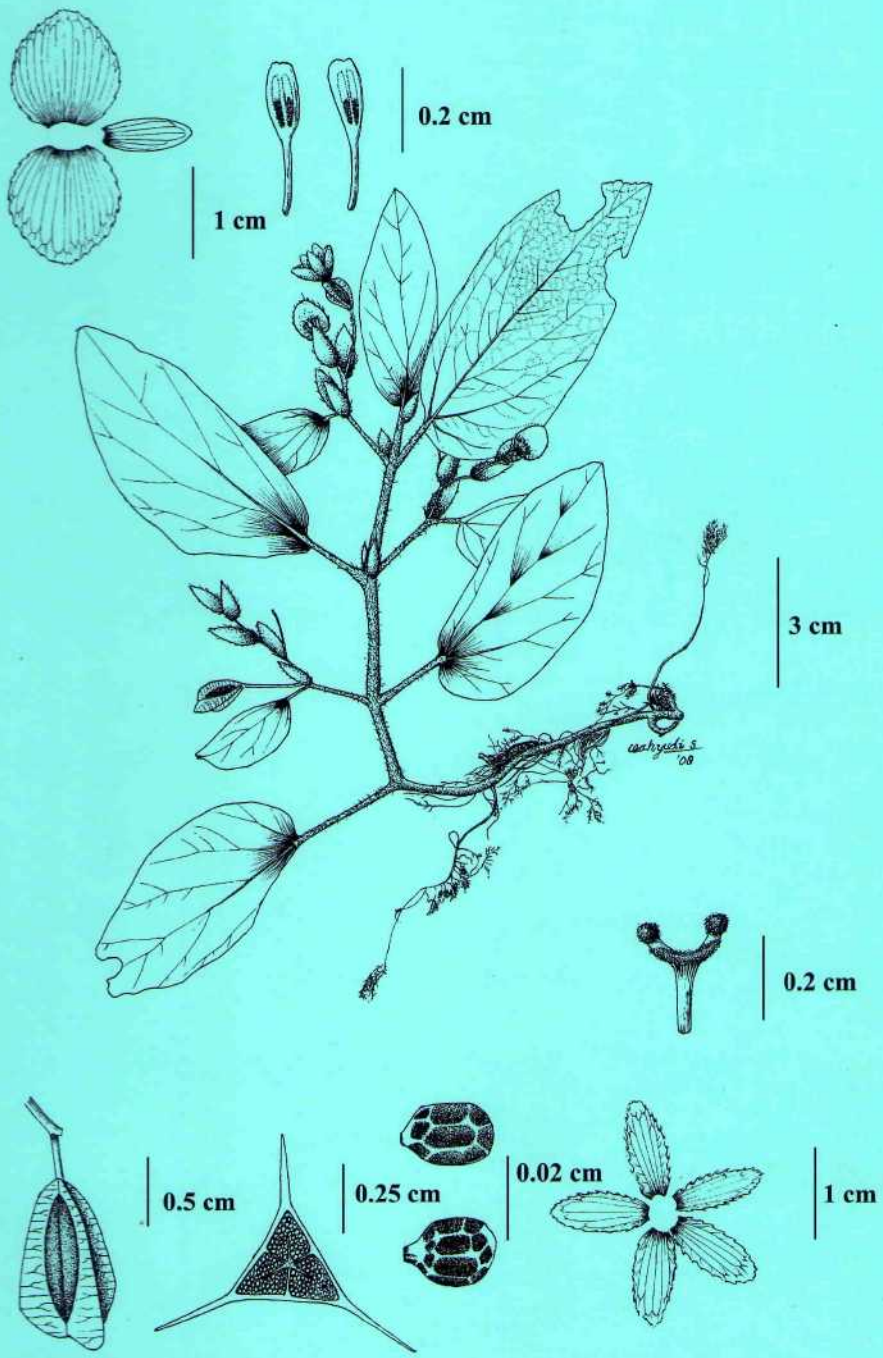

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NEW VARIETY, RECORDS & DISCOVERIES OF SOME SPECIES OF PANDANUS (PANDANACEAE) IN SUMATRA & KALIMANTAN, INDONESIA

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ABSTRACT
KEIM, A.P. 2012. New variety, records & discoveries of some species of *Pandanus* (*Pandanaceae*) in Sumatra & Kalimantan, Indonesia. *Reinwardtia* 13(3): 255−262. — This current study shows the presence of a new variety of *Pandanus korthalsii* Solms from Bengkulu, *P. korthalsii* Solms var. *bengkuluensis* A.P. Keim and records the presence of three species from *Pandanus* previously unknown to Sumatra and Borneo, particularly Kalimantan: *Pandanus irregularis* Ridl., *P. labyrinthicus* Kurz, and *P. stelliger* Ridl. The result of this study also indicates that in Sumatra the coastal-inhabitant *P. labyrinthicus* can also be found further inland from its previously known habitat.

Keywords: Borneo, Kalimantan, *Pandanaceae*, *Pandanus*, Sumatra.

ABSTRAK
KEIM, A.P. 2012. Varietas baru, catatan dan penemuan beberapa jenis *Pandanus* (*Pandanaceae*) di Sumatera & Kalimantan, Indonesia. *Reinwardtia* 13(3): 255−262. — Hasil kajian terbaru ini mencatat satu varietas baru dari *Pandanus korthalsii* Solms. asal Bengkulu, *P. korthalsii* Solms var. *bengkuluensis* A.P. Keim dan juga merekam kehadiran tiga *Pandanus* yang sebelumnya tidak diketahui di Sumatera dan Kalimantan: *Pandanus irregularis* Ridl., *P. labyrinthicus* Kurz, dan *P. stelliger* Ridl. Hasil kajian ini juga menunjukkan bahwa di Sumatera *P. labyrinthicus* merupakan jenis yang hidup di pesisir pantai juga dapat ditemukan jauh di pedalaman.

Kata kunci: Borneo, Kalimantan, *Pandanaceae, Pandanus*, Sumatera**.**

INTRODUCTION

Sumatra, despite being the second most explored island in the Malay Archipelago after Java, the pandan flora in this island is still vaguely known. The situation is worsened by the fact that practically there has been no detailed publication on the pandan flora of Sumatra since "Unumerazione delle Pandanaceae" (Martelli, 1910, 1913, 1914), where several new species were described. On the contrary, the pandan flora of Borneo is better known at least through two special publications by Stone (1970 for *Freycinetia*; 1993 for *Pandanus*). Although fine publications, most of the species described were from Sarawak and Sabah. Little was known then from the Indonesian part of Borneo (*i.e.* Kalimantan).

After the last work by Stone, the study on the pandan flora of Sumatra and Kalimantan has been resumed by Keim *et al.* (2006), Keim and Mahendra (2008) and Keim (2009), in which several new species of *Freycinetia*, new records and rediscovery of the illusive *P. aristatus* were published.

The current study is based on herbarium specimens available at Herbarium Bogoriense (BO) and the result adds new information to the pandan flora of Sumatra and Kalimantan including the presence of a new variety of *Pandanus korthalsii* Solms from Bengkulu in southern Sumatra, namely *P. korthalsii* Solms var. *bengkuluensis* A.P. Keim and the records the presence of three species from the genus *Pandanus* previously unknown to Sumatra and Borneo, particularly Kalimantan: *P. irregularis* Ridl., *P. labyrinthicus* Kurz, and *P. stelliger* Ridl. The result of this study also indicates that in Sumatra the coastal-inhabitant *P. labyrinthicus* can also be found further inland from its previously known habitat.

TAXONOMIC ENUMERATION

1. PANDANUS IRREGULARIS Ridl. — Fig. 1.

Notes. Prior to this current study *P. irregularis* was known only from the limestone area of Batu Bau-Sungai Ketah, Kelantan (Ridley, 1925) and Gua Tipus (Tikus?), Pahang in the Malay Peninsula (St. John, 1963). The discovery of the same species in Sijunjung, Sumatra is thus a new record. *P. irregularis* is well known as a species that prefers

Fig. 1. *Pandanus irregularis* Ridl. from *J. Dransfield* 3968 (BO!) showing an infructescence consists of four cephalia, in which each cephalium is composed of several knobbly phalanges. Each phalange is observed with two stigmas arranged in a single straight of row. Photo: A.P. Keim.

a limestone-based soil habitat. St. John (1963) even described this species as the common pandan on the limestone. Sijunjung is also well known for the distinctive limestone-based soil (Laumonier 1997) as featured by the striking string of astonishing karst hills that characterize the central part of West Sumatra Province, which stretched from Payakumbuh to Sijunjung. Gunung Putih is one of the hills in mountainous Sijunjung and the name itself means White Mountain in Indonesian, which clearly indicates the dominant type of soil there, chalk or limestone. In other word, Sijunjung shares the same habitat with both the type locality of *P. irregularis* and collection locality of specimen mentioned by St. John (1963). The identification of a specimen collected from Sijunjung, *J. Dransfield* 3968 (Figure 1) as *P. irregularis* is based on the observation and field note that indicate this specimen as having an infructescence consisting of four dark green cephalia, in which each cephalium is composed of several rather knobbly phalanges. Each phalange is observed with two stigmas arranged in a single straight of row, thus evidently shows that it is a member of the subgenus *Rykia*. However, *P. irregularis* straightforwardly differs from the other more famous member of the sub genus, the gigantic and beach-dweller *P. dubius*, in which *P. dubius* possesses an infructescence with only a single, massive and globose cephalium.

Specimen examined. Indonesia, Sumatra, West Sumatra, Sijunjung, Gunung Putih, Muaro Kulampi, 27 Feb. 1974, *J. Dransfield* 3968 (BO!).

2. **Pandanus korthalsii** Solms var. **bengkuluensis** A.P. Keim *var. nov.* — Fig. 2.

Pandanus korthalsii Solms similis sed cephalium ellipsoideus et longioribus (4.5–6.5 cm); stigmata conspicue rostrata et longioribus (50–60 mm). — Typus: *J. Dransfield* 3575 (BO!), Indonesia, Sumatra, Bengkulu, Km 12, on the road from Kepahiang to Bengkulu, 25 Aug. 1973.

Slender, shrubby pandan, apparently clustered, 5 m tall. *Stem* slender, sparsely branched, diameter ca. 2 cm, pale brown, spiny. *Leaves* in a rosette, spirally arranged in three ranks (tristichous), *ca.* 75 cm long, *ca.* 2 cm wide, spines throughout margin, apex acumminate; adaxial surface green, adaxial ventral pleats minute; abaxial surface green, recurved spines absent. *Infructescence* terminal, interfoliar, 30–35 cm long, spicate, consisting of 3–4 cephalia; peduncle 25.5–26 cm long, densely covered with red-brown tomentose; peduncular bracts caducous. *Cephalia* not uniform in sizes, the most basal part being the largest; each cephalium elongated ellipsoidal, 4.5–6.5 cm long, 2.8–3 cm wide, glaucous. *Drupe* elongated ellipsoidal, 1–1.2 cm long, *ca.* 0.5 cm wide; stigmatic remain sharp, obviously beaked, brown, 0.5–0.6 cm long.

Etymology. After Bengkulu an Indonesian province in southern part of Sumatra, where the type was collected.

Distribution. Known only from the type locality.

Habitat. Lowland tropical rainforest on ridge top, hill of Dipterocarps forests at about 700 m altitude.

Notes. The differences between this newly proposed variety and *P. korthalsii* Solms var. *korthalsii* are mainly in the shapes and dimensions of cephalia and drupes (Table 1). Apart from these four morphological characters, the two taxa are exceedingly similar. However, as the shape and dimension of cephalia in *P. korthalsii* var. *korthalsii* from Borneo (including the Anambas Islands) and Sumatra (North Sumatra) are surprisingly quite uniform, which are fairly globose (Table 1), the taxon from Bengkulu (Figure 2) are regarded here as a distinct from the widely distributed *P. korthalsii* var. *korthalsii*. Nonetheless, the differences are regarded insufficient to place the taxon from Bengkulu as a distinct species. Thus,

Table 1. Morphological differences between *P. korthalsii* var. *korthalsii* and *P. korthalsii* var. *bengkuluensis*.

Species	Shape of cephalium	Size of cephalium	Size of drupe	Length of stigma
Pandanus korthalsii var. *korthalsii*	Fairly globose	3.5–4 by 2.5 cm	0.8 by 0.4 cm	0.1–0.2 cm
Pandanus korthalsii var. *bengkuluensis*	Elongated-ellipsoidal	4.5–6.5 by 2.8–3 cm	1–1.2 by 0.5 cm	0.5–0.6 cm

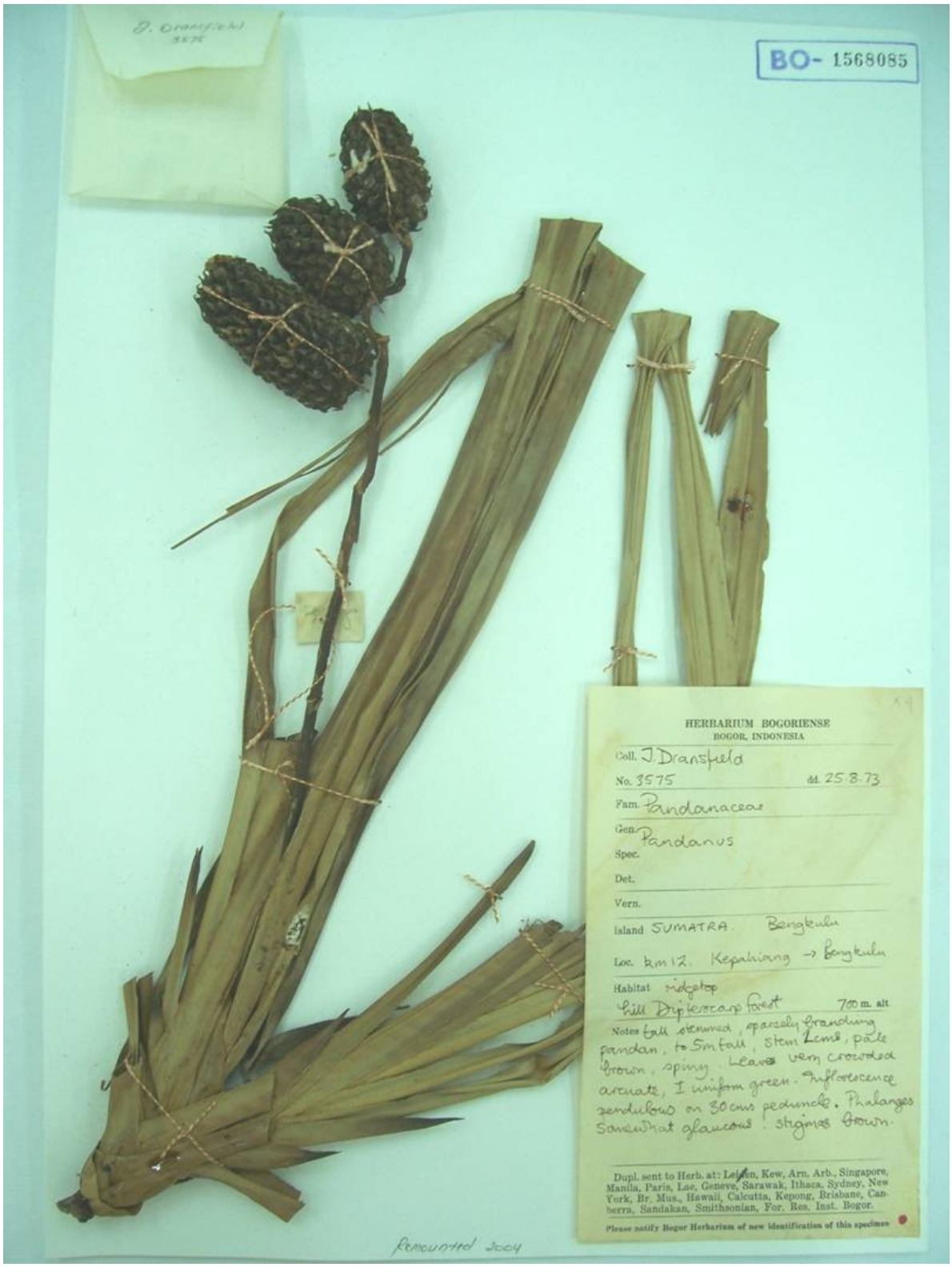

Fig. 2. *Pandanus korthalsii* Solms var. *bengkuluensis* A.P. Keim from *J. Dransfield* 3575 (holo. BO!) showing the elongated ellipsoidal cephalia and obvious beaked stigmatic remains. Photo: A.P. Keim.

Fig. 3. *Pandanus labyrinthicus* Kurz from *W. Meijer* 2567 (BO!) collected from Tarakan Island, East Kalimantan, showing the slender habit, a spike infructescence composed of rounded-rather depressed and crowdedly arranged drupes. Each drupe has ascending forked stigmatic remains. Photo: A.P. Keim.

Fig. 4. *Pandanus labyrinthicus* Kurz from *J. Dransfield* 3964 (BO!) collected from Gunung Putih, Sijunjung, West Sumatra, showing slender habit, a spike infructescence composed of rounded-fairly depressed and crowdedly arranged drupes. Each drupe has ascending forked stigmatic remains. Photo: A.P. Keim.

Fig. 5. *Pandanus stelliger* Ridl. from *G. Shea* 28015 (BO!), showing a spike infructescence. Each drupe is with blunt and rather ascending star-shaped stigmatic remains. Photo: A.P. Keim.

until the data from molecular analysis becomes available in this current study the taxon from Bengkulu is regarded as a new variety of *P. korthalsii*, *P. korthalsii Solms* var. *bengkuluensis*.

Specimen examined. Indonesia, Sumatra, Bengkulu, Km 12, on the road from Kepahiang to Bengkulu, 25 Aug. 1973, *J. Dransfield* 3575 (holo. BO!; iso. L).

3. PANDANUS LABYRINTHICUS Kurz — Figs. 3 & 4.

Notes. *Pandanus labyrinthicus* was previously reported only from the type locality, which was in the west coast of Sumatra (*see* Warburg, 1900). The presence of this species outside Sumatra was briefly mentioned by Keim (2009). This study confirms its presence in Borneo, particularly on Tarakan Island (Figure 3). *Pandanus labyrinthicus* was previously known as a coastal species. It is interesting to underline that the specimen collected from the Gunung Putih, Sijunjung, West Sumatra (*J. Dransfield* 3964; Figure 4) grows further inland. *Pandanus labyrinthicus* is characterized by its slender habit, its spicate infructescence, in which each composed of rounded-rather depressed and compactly (*i.e.* crowdedly) arranged drupes. Each drupe has ascending forked stigmatic remains. This morphological character allows to clearly distinct the eastern Malesian *P. labyrinthicus* from another coastal slender clustered pandan, the western Malesian *P. polycephalus*, in which possesses blunt stigmatic remains. As previously discussed, the soil type in Sijunjung is predominantly limestone-based. This raises a question whether Sijunjung and vicinity used to be a coastal area. In other word, the presence of the coastal *P. labyrinthicus* might have been the reminiscence of Sijunjung geological past. A further study is essential.

Specimens examined. Indonesia, Sumatra, West Sumatra, Sijunjung, Gunung Putih, Muaro Kulampi, 27 Feb. 1974, *J. Dransfield* 3964 (BO!); Borneo, East Kalimantan, Tarakan Island, 16 Dec. 1953, *W. Meijer* 2567 (BO!).

4. PANDANUS STELLIGER Ridl. — Fig. 5.

Notes. *Pandanus stelliger* was previously known only from the Malay Peninsula (Ridley, 1904; St. John, 1963). In the field *P. stelliger* is easily identified through the possession of a spike infructescence with each cephalium consists of drupes with blunt and fairly ascending star-shaped stigmatic remains. A specimen collected from Kalimantan, *G. Shea* 28015 (Figure 5) possesses morphological characters that match with *P. stelliger* and it is identified here as belonging to that species; thus, a new record of *P. stelliger* in Borneo.

Specimen examined. Indonesia, Borneo, West Kalimantan, Pontianak, Bentiang, Kampung Semakong, Gunung Sengkayu, 10 Nov. 1980, *G. Shea* 28015 (BO!).

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ERRATUM

REINWARDTIA Vol. 13, Part 2, 2010

1. Please change the existing word in p. 213, LINE 7 on ABSTRAK (written in Bahasa Indonesia version) with the following:

Keberadaan dua jenis terakhir melampaui distribusi yang sebelumnya hanya diketahui di **barat** garis Wallace.

2. Please change the existing epithet name in p, 214, COLUMN 1, LINE 40 on Key to the species of *Marantaceae* in Sulawesi number 5.a. after *Phrynium:*

……*longispicum*

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