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Xerochloa R.Br. (Gramineae, Paniceae) in Thailand

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ABSTRACT. The Australian/Malesian species *Xerochloa imberbis* R.Br. (Gramineae) has been found in the Gulf of Thailand from Prachuap Khiri Khan to Chonburi and represents a very much neglected generic record for SE Asia. The synonym *Kerinozoma* Steud. is lectotypified. Descriptions of the genus and its only SE Asian species are given.

KEY WORDS: Australia, Gramineae, *Kerinozoma*, Malesia, Paniceae, *Xerochloa*, Thailand.

Xerochloa R.Br. (Gramineae) is a much-overlooked genus with three rare, but locally common halotolerant species and mainly occurs in Australia. Clayton & Renvoize (1986) only mentioned Australia, but in the generic synonymy they included *Kerinozoma suraboja* Steud. ("*suraboja*" = Surabaya, the major marine harbour in E Java). It belongs to the mainly Australian subtribe *Spinificinae* Ohwi (1924) of the *Paniceae* R. Br. whose members are adapted to very arid habitats and so have a predisposition for distribution along sea shores. Because the rachis of the inflorescence does not end in a spikelet, but in a point, it is part of the so-called "bristle grass clade" discussed in a morphological cladistic analysis by Zuloaga et al. (2000). This monophyletic group includes all panicoid taxa in which at least some terminal inflorescence branch meristems are converted into setae or bristles. Within this clade the subtribe seems to be exceptional for the combination of spatheate inflorescences and disarticulation at the base of the inflorescence (at least in the female ones). However, no species of *Xerochloa* appears to have been included in any molecular analysis to date (see e.g. Doust et al., 2007).

Another remarkable feature is that at least *X. imberbis* is monoecious: the spikelets have a male lower floret and a female upper one.

For Thailand it was listed by Nanakorn & Norsangsri (2001), but without any data on its distribution there. Recently, two collections from Prachuap Khiri Khan made in 2005 and 2007 were received in Leiden (L) and prompted my curiosity. Further inquiries on what Nanakorn & Norsangsri had based their earlier report showed that two collections are present in BKF, one made in the same province (1966), the other in Samut Songkhram (1957), where it was already common then (Pooma, in litt.). Surprisingly, Cope (in litt.) reported the presence of no less than 4 collections by Kerr between 1920 and 1928 from Chonburi and Samut Sakhon indicating that the species has been in Thailand for many years.

This is a generally overlooked genus for Continental Asia. Admittedly, Clayton et al. (2006+) reported it for "Tropical Asia", but this included Malesia as well, from where it was already long known, and (Clayton et al., 2002+) mentioned the current species for

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"Indochina and Malesia", but this represents very low resolution distribution data.

The type species, *X. imberbis* R.Br., occurs in W Australia to Queensland (Webster, 1987), but is also found in Indonesia: Java and Madura in mangroves, salt pans, shrimp farms, and other saline places near the coast, which generally are not enticing to collectors (Monod de Froideville,1968).

Its presence in Thailand represents a far disjunct distribution, but as Kerr already collected in 1920, it appears to be a natural one and thus it may be expected to occur in similar inhospitable places on the East coast of the Malay Peninsula, Sumatra, and Bangka.

XEROCHLOA

R.Br., Prodr.: 196. 1810. Type: *Xerochloa imberbis* R.Br.— *Kerinozoma* Steud., Syn. Pl. Glumac. 1: 358. 1854.— (*Cerinozoma* Zoll. ex Kuntze in T.Post & Kuntze, Lex. Gen. Phan.: 112, 618. 1903, *orth. var.*). Lectotype: *Kerinozoma suraboja* Steud. (= *Xerochloa imberbis* R. Br.), here designated (suggested by Clayton & Renvoize).

Monoecious perennials, branching intravaginally at base, tufted or decumbent and rooting from the nodes. Culms solid. Ligule collar-shaped, membranous, ciliolate. Panicle composed of fascicles of 2–6 spikes in the axil of a spathe, each with a spatheole at base; racemes deciduous, with few spikelets, rachis ending in a point. Spikelets solitary, abaxial, sessile, in 2 rows in cavities of the rachis, laterally compressed. Glumes very unequal; first glume small, 0–3-nerved; second glume shorter than the spikelet, 5-nerved. Lemmas chartaceous; first one paleate, male or neuter, with a dorsal groove; stamens or staminodes 2 or 3, filaments connate; second lemma female with staminodes, or bisexual, fusiform, 2-nerved, germination flap absent, margins laying flat on the palea, muticous. Staminodes 2 or 3. Styles more or less connate, stigmas free. Hilum ovate; embryo more than half as long as the caryopsis.

Distribution.— Australia with three halotolerant species, of which one in Malesia and possibly introduced in Thailand.

Etymology.— *Xerochloa* from Gr. *xeros* (ξερος, dry) and *chloa* (actually chloë, χλοη, grass)(Backer, 1936: 631), alluding to its biotope

Kerinozoma from Gr. *kèrinos* (κηρινος, wax-like) and *zooma* (ζωμα, girdle), referring to the white waxy spathe (Backer, 1936: 301).

Xerochloa imberbis R.Br., Prodr.: 97. 1810. Type: *Brown* 6143 (holotype **BM**; isotype **K**, **E**).— *Kerinozoma cheribon* Steud., Syn. Pl. Glumac. 1: 358. 1854.— *Kerinozoma littoralis* Zoll. (Syst. Verz.: 57. 1854, *nom. nud.*) ex Miq., Fl. Ned. Ind. 3: 404. 1857, *nom. superfl.*— *Xerochloa littoralis* (Zoll. ex Miq.) Baill., Bull. Mens. Soc. Linn., Paris 2: 1019. 1829, *nom. superfl.*— *Xerochloa cheribon* (Steud.) Ohwi, Bull. Tokyo Sci. Mus. 18: 4. 1947. Type: *Zollinger* 3238 (holotype **P**; isotype **G**).— *Kerinozoma suraboja* Steud., Syn. Pl. Glumac. 1: 358. 1854. *Kerinozoma collina* Zoll. (Syst. Verz.: 57. 1854, *nom. nud*.) ex Miq., Fl. Ned. Ind. 3: 404. 1857, *nom. superfl.* Type: *Zollinger* 2968 (holotype **P**; isotype **G**).

Culms wiry, floating, ascending to tufted and erect, 0.1–0.6 m tall, glabrous. Ligule truncate, 0.15–0.5 mm long. Blades linear, involute to nearly subulate, 2–12 cm by 1–3 mm, acute. Inflorescence branches 1–1.5 cm long. Rachis smooth to scaberulous, terminal point 3–4 mm long. Spikelets 3–5 per spike, ovate-oblong, 5.5–9 mm long, glabrous. First glume ovate, 1–2.75 mm long, obtuse; second glume 4–5.5 mm long, 5-nerved, margin broadly scarious, acute. Lower lemma 3-nerved; upper lemma ovate-lanceolate, apex falcate. Anthers 3–4 mm long.

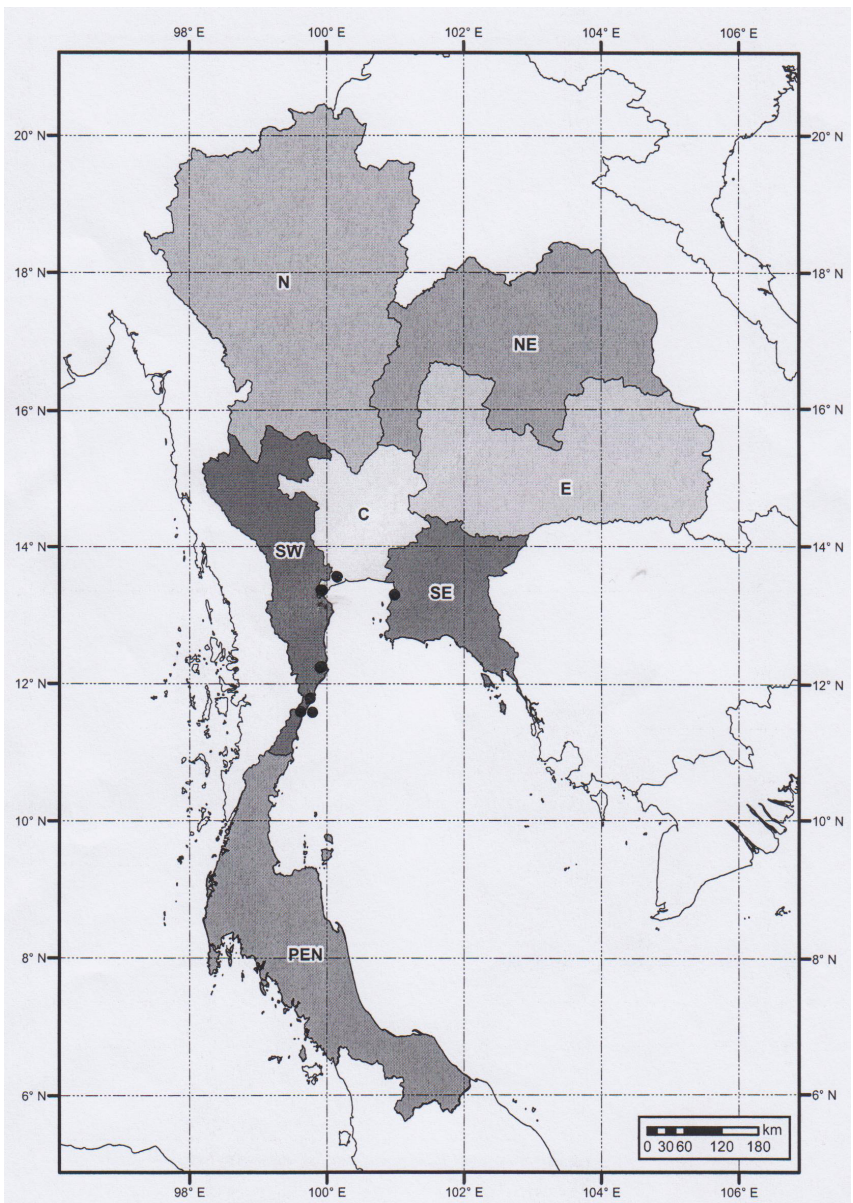

Figure 1. The distribution of *Xerochloa imberbis* in Thailand along the Gulf of Thailand coast.

Thailand.— CENTRAL: Samut Sakhon [Tachin = Ta Chin, 13˚32'N 100˚14' E, 31 March 1926, *Kerr* 10664 (**K**), 24 Oct. 1926, *Kerr* 11052 (**K**)], Samut Songkhram (formerly part of Bangkok) [ca 13˚22'N 100˚E, Pak Nam, 9 Jan. 1957, *Smitinand* 3696 (**BKF**)]; SOUTH-EASTERN: Chonburi [Bang Pla Soi, 27 Jan. 1920, *Kerr* 3967 (**K**), 13˚23'N, 100˚59'E]; SOUTH-WESTERN: Prachuap Khiri Khan [Sam Roi Yot (not Rachaburi!), ca 12˚13'7"N 99˚58'21"E, 7 Aug. 1966, *Larsen, Smitinand & Warncke* 1213 (**AAU**, **BKF**, **K**), Kuiburi, KM 37 on road no. 1020 near Khao Daeng, 12˚7.54'N 99˚37.56' E (and not as on the label 12˚7'54"N 99˚37'56"E), 26 April 2005, *Pooma et al*. 5289 (**BKF**, **E**, **L!**), (ibid., 12˚8.858'N 99˚57.829' E, not 12˚88'58"N 99˚57'83"E, 30 April 2007, *Pooma et al*. 6710 (**A**, **AAU**, **BKF**, **E**, **GZU**, **K**, **KEP**, **L!**, **SING**), Hua Hin, Khao Tao, 12˚34' N 99˚57' E, 8 Nov. 1928, *Kerr* 16118 (**K**)].

Said to be very common along the Gulf of Thailand coast from mid Prachuap Khiri Khan to Chonburi, especially near shrimp and salt farms (Fig. 1).

Distribution.— Malesia: Java (N coast: Jakarta, Ceribon, Pekalongan, Semarang, Rembang, Surabaya), Madura, W Australia to Queensland.

Ecology.— Littoral in mangroves, on beaches, along fish ponds, roadsides, on heavy loam, occasionally inundated, also inland along salt creeks and lakes, up to 100 m alt.

Collector's notes.— Erect grass, tufted, nodes pale green. Spikelets purplish brown. Glumes greenish. Stigma purple and white. Anthers whitish.

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