

THREE NEW SPECIES OF *GENIANTHUS* (ASCLEPIADACEAE) FROM THAILAND

J. Klackenberg

Naturhistoriska Riksmuseet, Sektionen för Botanik, S-104 05 Stockholm
SWEDEN

ABSTRACT

Three new species of *Genianthus* (Asclepiadaceae) are described on material from the northern and western mountain areas of Thailand. They are all similar to the Indian-SE Asian *G. laurifolius*, one found only in Thailand, the two others also in the southeastern Himalayas.

KEY WORDS: Asclepiadaceae, *Genianthus*, Thailand, new species

During the course of a study of phylogenetic interrelationships in the paleotropical tribe Secamoneae (Asclepiadaceae), I have come across three new species of the Asian genus *Genianthus*, one of usually five recognized genera within the tribe.

Genianthus was described by Hooker (1883: 15) who included three species characterized by bearded corolla lobes and valvate aestivation. The generic delimitations within the tribe are not distinct and the characters used for the delimitation of *Toxocarpus* and *Secamone*, the two large genera within the tribe, are diffuse (Klackenberg 1992: 8). The bearded corolla lobes are characteristic and a possible synapomorphy of *Genianthus*. The aestivation, however, stated by Hooker as being valvate, is in fact usually slightly contorted. There are about fifteen species of *Genianthus* distributed from the Himalayas to Indonesia and from southwestern India to the Philippines with most taxa found in Malaysia. However, only two taxa, *G. laurifolius* (Roxb.) Hook. f. and *G. crassifolius* (Wight) Hook. f. are hitherto reported from Thailand. Here are now added three more species, which are all similar to *G. laurifolius* in general appearance and in gross flower morphology. On the other hand, *G. crassifolius* belongs to a group characterized by a different type of inflorescence, i.e., sparsely branched with the flowers on brachyblasts. The three species described here as well as *G. laurifolius* all lack brachyblasts and are furnished with more or less profuse multiple thyrses.

Genianthus bicoronatus Klack., *spec. nov.* HOLOTYPUS: THAILAND. Hiu Hia, base of Doi Chiengdao, ca. 480 m alt., 1941, *Garrett 1234*, (L); Isotypus: E.

Species haec *G. laurifolio* (Roxb.) Hook. *f.* similis sed differt lobis coronae distincte duplicibus cum lobo interiore caudatiformi et cum stigmatate peltiforme.

Suffrutescent twiner with youngest branches covered with short retrorse reddish hairs. Leaves herbaceous, flat or slightly revolute at the very margin; blade 7-13 × 3-8 cm, ± elliptic to broadly elliptic, cuneate at the base, abruptly acuminate at the apex, glabrous, with many glands at the very base above; venation pinnate, arched to looped, with light-coloured nerves when dry; midrib impressed near the petiole above, raised below; epidermis ± smooth on both sides of the leaf; petiole 2-4 cm long. Inflorescences extraaxillary, shorter than the adjacent leaves; cyme a multiplex thyse, lax but with flowers in several rather dense clusters, many-flowered, pubescent, with few axes ca. 2-3 cm long but with much shorter ones towards the apex; pedicels up to 2 mm long; bracts ca. 1 mm long. Calyx lobes 1.1-1.6 × 0.8-1.2 mm, ovate to broadly elliptic, rounded at the apex, with sparse appressed reddish hairs outside, with latex cells. Corolla slightly contorted with the left lobe margin overlying and with the lobes fused for 1/3 - 2/9 of their length into a tube, with abundant latex cells, yellow to yellowish orange; tube 0.5-1 mm long, hairy especially near the mouth; lobes 1.8-2.3 × 1.0-1.5 mm, somewhat accrescent and marcescent after anthesis, oblong, rounded at the apex, with dense long hairs at inner surface, rather thin. Staminal column 0.9-1.1 mm high. Coronal lobes double, outer ones much broader, dorsiventrally compressed, broadly ovate to ± circular in outline, inner ones longer, caudate, ± straight, about as long as the thecae. Pollinia ca. 0.1 mm long, ellipsoidal. Stigma head projecting above the staminal column; upper narrower part about as long as the lower broader part, ca. 0.5 mm long, entire, distinctly flat and broadened at the apex covering the staminal column. Follicles 9-12 × 0.5-1 cm, very narrowly ovate to linear in outline, rather thick-walled, glabrous, recurved ca. 90°. Seeds not seen.

Additional collections examined: CHINA. Yunnan: *Henry 13009*, Sze mao (NY); *Rock 2568*, between Keng Hung and Muang Hing, in the valley of Meh Kong, near Pnag Khun, between Muang Mah, 1922 (A); *Wang 77737*, Dah-meng-lung, Che-li, 950 m alt., 1936 (A,IBSC).

BURMA. *Kurz 2358*, Pegu, Yoma (K); *MacGregor 1210*, S Shan States (E); *Po Khant 16*, Insein Distr., Myaukhlaing reserve, 30 m alt., 1948 (A); *Rock 2326*, Shan State, Keng Tung, between Muang Mah and the Chinese-Yunnan border, 850-950 m alt., 1922 (A).

THAILAND. *Kerr 2910*, Chiang Mai, Ban Pong Yaeng, between Me Rim and Samong, 750 m alt., 1913 (BM,E,K).

Genianthus bicoronatus is distributed in the mountains in Yunnan in southern China to northern Thailand. It is said to grow in evergreen forest between 400 and 1000 m altitude. Flowering specimens seen from January and February.

This species is in its general stature much resembling *Genianthus laurifolius* known from southern India, southern Thailand and Vietnam. It differs, however, very distinctly in the structure of the gynostegium, having an outer broad almost circular coronal lobe but also a much longer caudate inner one. It is the only taxon within the genus having a very distinctly flat and broadened stigma head giving the appearance of a mushroom covering the anther column.

Genianthus hastatus Klack., *spec. nov.* HOLOTYPE: THAILAND. Nan Prov., Doi Phu Ka, 1450 m alt., 1990, *Banziger 668* (K).

Species haec a *G. laurifolio* (Roxb.) Hook. f. differt lobis coronae distincte duplicibus cum lobo externo hastato et inflorescentia longiore >5 cm longa.

Suffrutescent twiner with younger branches covered with \pm retrorse short reddish hairs. Leaves herbaceous, flat or slightly revolute at the very margin; blade ca. 8-10 \times 4-5 cm, elliptic to somewhat oblong, cuneate to usually truncate at the base, acuminate at the apex, with sparse many-celled hairs mostly below and along the nerves, with many glands at the very base above; venation pinnate, arched to looped, with darker-coloured nerves when dry, \pm reticulate; midrib impressed near the petiole above, raised below; epidermis \pm smooth on both sides of the leaf; petiole 1.5-2.0 cm long. Inflorescences extraaxillary, shorter to much longer than the adjacent leaves; cyme a multiplex thyse, rather lax but with flowers in several rather dense clusters, many-flowered, pubescent, with longer and shorter axes alternating, up to 4 cm long but with much shorter ones towards the apex; pedicels 2-3 mm long; bracts ca. 1 mm long. Calyx lobes 1.1-1.4 \times 0.8-1.1 mm, elliptic to ovate, rounded at the apex, with appressed reddish hairs outside, with latex cells. Corolla slightly contorted with the left lobe margin overlying and with the lobes fused for ca. 1/3 of their length into a tube, with dense long hairs at inner surface, with abundant latex cells; colour unknown; tube ca. 1.0 mm long; lobes ca. 1.6-2.0 \times 1.0-1.2 mm, somewhat accrescent and marcescent after anthesis, oblong, rounded at the apex, rather thin. Staminal column ca. 1.1-1.3 mm high. Coronal lobes double, outer ones triangular in outline with flat back and hastate base, inner ones narrower and longer but shorter than the thecae. Pollinia ca. 0.1 mm long, ellipsoidal. Stigma head slightly projecting above the staminal column; upper narrower part about as long as the lower broader part, ca. 0.5 mm long, entire, \pm broadened near the apex. Fruits and seeds not seen.

Additional collections examined: INDIA. *Cave s.n.*, Sikkim, above Labdah (A,G); *Chand 4388*, India, Assam, Lushai Hills, Hmunta (L).

Genianthus hastatus is known from Sikkim and Assam in India as well as from northern Thailand and has been reported from forest at ca. 1500-2000 m altitude. Flowering specimens seen from April and May.

This species has been confused with *Genianthus laurifolius*, but differs in several characters, viz. shape of coronal lobes and stigma head, type and density of pubescence, and type of inflorescence. *Genianthus hastatus* has more clearly double coronal lobes. Furthermore, the outer lobe is narrower and triangular in outline with a hastate base, jutting out creating a large cavity between the lobes. In *G. laurifolius* as well as in *G. bicoronatus* and *G. siamicus*, the next species, the outer coronal lobes are broad, sometimes almost circular, with the margins pressed to each other. *Genianthus hastatus* has darker veins at the lower side of the leaves when dry, quite different from the whitish ones of *G. laurifolius* and *G. bicoronatus*. The inflorescences are longer (>5 cm long) than those of *G. laurifolius*, and with ca. 1 mm long bracts compared with the minute ones less than 0.5 mm long found in *G. laurifolius*. The inflorescences are also more branched, multistoried. In contrast, *G. laurifolius* has inflorescences consisting of several branches from near the stem, each less than 5 cm long, and with one major branching point with three clusters of flowers at each. The leaf hairs of *G. hastatus* and also of *G. siamicus* are multicellular of a type found on leaves within *Genianthus* otherwise only in combination with flowers on brachyblasts. The stigma head differs from *G. laurifolius* by having its upper narrower part almost as long as the broader lower one (not much shorter) and projecting slightly above the staminal column. It is furthermore slightly broadened but not at all mushroom like as in *G. bicoronatus*. As in all species here discussed, the bark is glossy with many lenticels.

Genianthus siamicus Klack., *spec. nov.* HOLOTYPE: THAILAND.

Kanchanaburi Prov., Khao Yai, E Sangkhla, ca. 1150 m alt., 1968, *van Beusekom & Phengkhlai 200* (L).

Species haec a *G. laurifolio* (Roxb.) Hook. f. differt inflorescentia longiore et a *G. hastato* Klack. lobo coronae latiore et rectangularis non hastato differt.

Suffrutescent twiner with younger branches covered with short \pm retrorse reddish hairs. Leaves herbaceous, flat or slightly revolute at the very margin; blade ca. 13 \times 5.5 cm, elliptic, cuneate at the base, acuminate at the apex, with sparse many-celled hairs on both sides, with many glands at the very base above; venation pinnate, arched to looped, with darker-coloured nerves when dry, \pm reticulate; midrib impressed near the petiole above, raised below; epidermis \pm smooth on both sides of the leaf; petiole 1.5-2.0 cm long.

Inflorescences extraaxillary, probably \pm as long as the adjacent leaves; cyme a multiplex lax thyrses, many-flowered, sparsely pubescent but more densely so at the bracts, with longer and shorter axes alternating, up to 8 cm long but with much shorter ones towards the apex; pedicels 2-3 mm long; bracts ca. 1 mm long. Calyx lobes ca. 1.6×1.0 mm, elliptic to oblong, rounded at the apex, glabrous or with a few reddish hairs outside, with latex cells. Corolla slightly contorted with the left lobe margin overlying and with the lobes fused for $2/5 - 1/3$ of their length into a tube, with dense long hairs but more sparsely so at the tube at inner surface, with abundant latex cells, pale yellow; tube ca. 1.2 mm long; lobes ca. 2.1×1.2 mm, somewhat accrescent and marcescent after anthesis, oblong, obtuse at the apex, rather thin. Staminal column ca. 1.0 mm high. Coronal lobes double, dorsiventrally compressed, outer ones broad and \pm rectangular in outline with the margins pressed to each other, inner one narrower and somewhat arched inclining towards the stigma head, longer than the thecae. Pollinia slightly shorter than 0.1 mm long, ellipsoidal. Stigma head distinctly projecting above the staminal column; upper narrower part about as long as the lower broader part, ca. 0.8 mm long, entire, club-shaped. Fruits and seeds not seen.

Genianthus siamicus is known only from the type collected near the Burmese border in western Thailand. It was found in flower in March in dry evergreen forest at ca. 1150 m altitude.

This species differs from *Genianthus laurifolius* by its profuse inflorescence and multicellular leaf hairs. In both these characters it is similar to *G. hastatus* from which it is differentiated by its broad and rectangular coronal lobes completely covering the lower half of the anther wings.

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