

Polygala obliqua Pendry, a new species of Polygalaceae from northern Thailand

COLIN A. PENDRY¹ & FRITS ADEMA²

ABSTRACT. *Polygala obliqua* Pendry (Polygalaceae) a new species from Tak Province is described and illustrated.

KEY WORDS: Polygalaceae, new species, Thailand.

INTRODUCTION

Two specimens of *Polygala* L. collected near Ban Tha Song Yang, in Tak Province, northern Thailand belong to a species which is clearly distinct from the other members of the genus and it is described here as a new species of *Polygala*. The species belongs to section *Pseudosemiocardium* (represented in Thailand by *P. cardiocarpa* Kurz, *P. malesiana* Adema, *P. umbonata* Craib; see Pendry 2001) because of the caducous calyx which falls after anthesis, lamellate keel appendage and persistent disk consisting of a single lobe. However, the new species is distinguished from the other Thai species by its greater stature, longer, branching inflorescences and capsules which are distinctly asymmetric.

DESCRIPTION

Polygala obliqua Pendry sp. nov. Close to *Polygala malesiana* Adema, but differing in its much greater stature, its inflorescence of several to many upward-curving racemes, its capsules with markedly asymmetric wings and in the absence of a strophiole on the seed.— Type: Thailand, Tak, Tha Song Yang, in Mae Ta Wo Ranger Unit areas, 17° 32' 34" N 97° 56' 24" E, 175 m, 6 Nov. 2011, Pooma, Pattharahirantricin, Sirimongkol & Supachok 7536 (holotype BKF!, isotype E!, L!).

Annual herb to 60 cm. *Stems* terete, glabrous. *Leaves* elliptic, 1.5–3.0 by 0.5–1.3 cm, apex acute, base decurrent, margin slightly inrolled, glabrous below, sparsely short hairy above, denser towards margin; petioles glabrous, 0.4–1.6 cm. *Inflorescence* of few to many upward-curving racemes to 25 cm long; bracts linear, glabrous, ca. 0.5 mm, soon caducous. *Flowers* purple-pink, ca. 2 mm; pedicel reddish, 1 mm. *Outer sepals* almost equal, but the upper more boat-shaped, ovate, glabrous, 0.8–0.9 mm. *Alae* obovate, glabrous, 2.4–2.7 mm. *Upper petals* glabrous, 2.5–2.7 mm, the free parts oblong, ca. 1.0 mm. *Keel* 3.0 mm; appendage lamellar, cup-like, 0.7 by 0.5 mm. *Stamens*, slightly more connate towards centre of the notched staminal sheath and hairy on the margin of the sheath, 2.5 mm, the free parts of the filament 0.8–0.9 mm. *Disk* a single oblong lobe on upper side of receptacle, 0.2 mm. *Ovary* obliquely obcordate, with the upper locule slightly more developed, ca. 0.9 by 0.7 mm; style sharply bent towards apex, stigmatic lobes close, the upper slightly smaller. *Capsule* without persistent calyx or corolla, obliquely obcordate, deeply emarginate, the face of each cell usually with a single vein, ca. 3 by 4 mm; wing ribbed, wider on the upper edge, 0.6–1.0 mm. *Seeds* black, oblong, laterally compressed, rather densely set with white hairs, and with a small black umbo at the chalazal side, 1.2 by 0.6 mm; aril 2-lobed, 0.2 mm.

¹ Royal Botanic Garden Edinburgh, 20a Inverleith Row, Edinburgh, Scotland, EH3 5LR, UK.

² Naturalis Biodiversity Center, sector Herbarium, P.O. Box 9514, 2300 RA Leiden, The Netherlands.

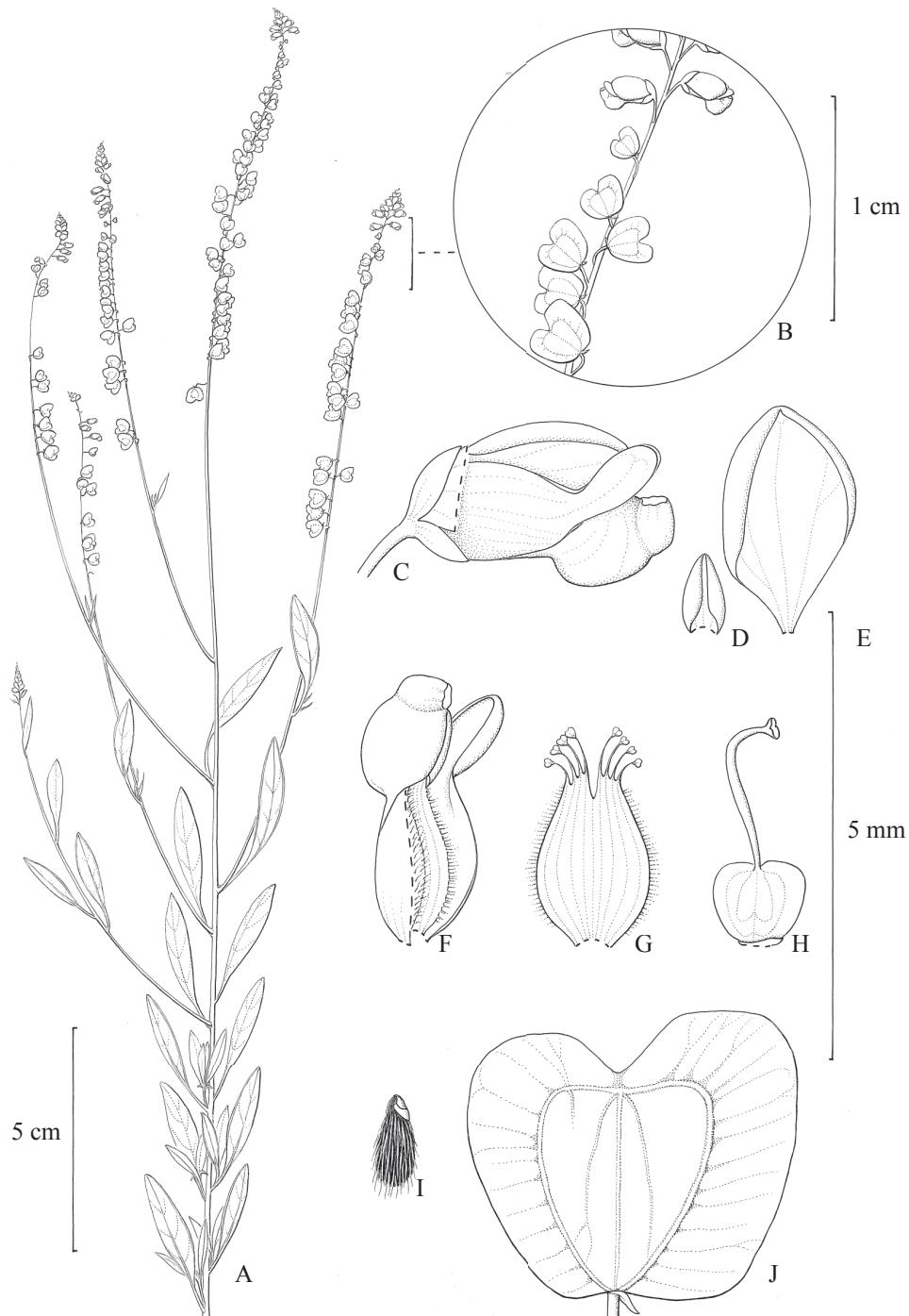


Figure 1. *Polygala obliqua* Pendry: A. habit; B. enlargement of section of inflorescence; C. side view of flower with one ala (wing sepal) removed; D. dorsal sepal; E. ala (wing sepal); F. corolla with one upper petal removed; G. staminal sheath; H. ovary and style; I. seed; J. capsule.

Thailand.—NORTHERN: Tak, Tha Song Yang, Ban Tha Song Yang, Road side, Tha Song Yang – Mae Sa-riang, km 134–133, Mae Ta Wo Ranger Unit, $17^{\circ} 32' 43''$ N $97^{\circ} 56' 10''$ E, 175 m, 22 March 2006, *Pooma, Phuphatanaphong, Phattarahiranakanok, Sirimongkol & Satarak* 6239 (BKF!, E!, L!).

Distribution.—Endemic to Thailand.

Ecology.—Found in wet grasslands.

Notes.—The species is named for its oblique capsules with their prominent wings, narrowing abruptly to the base on the upper edge, giving a somewhat square corner and more slender wing which tapers more gradually along the lower edge. This contrasts with the other species of section *Pseudosemiocardium* which all have very cordate capsules which narrow gradually to the base. The broad, strongly asymmetric wing of *P. obliqua* is up to 1 mm wide, whilst in the other species it never exceeds 0.6 mm wide. The seed is hairy, just as in *P. malesiana* and *P. umbonata*, but lacks the strophiole seen in those species, and has only a small black appendage (umbo) at the chalazal side, similar to that seen in *P. cardiocarpa*; the latter species, however, has glabrous, tuberculate seeds. Overall, *P. obliqua* is larger than all the other species in the section, reaching 60 cm whilst none of the others are taller than 30 cm, and it has a much more upright, less bushy habit and has longer inflorescences (up to 25 cm long vs. 1 to 15 cm).

Conservation.—The only known population is in a protected area, so it is to be hoped that it is under no immediate threat. Until there is more information from other collections the proposed IUCN red list category is ‘Data Deficient’ (IUCN, 2012).

DISCUSSION

As traditionally circumscribed (Chodat 1891, 1893), *Polygala* is very variable and includes herbs, climbers, shrubs and small trees growing in almost every habitat from tropical forest to arctic tundra. Molecular studies (Persson 2001, Forest et al. 2007, Abbott 2011) have shown that with this broad circumscription *Polygala* is polyphyletic and a new classification is required. To date most work has been carried out on the New World species and Abbott (2011) has split them into 5

genera, all of which have previously been recognised as infrageneric taxa within *Polygala*.

In the Old World, Paiva (1998) reinstated Kuntze’s genus *Heterosamara* (Kuntze 1891) for species in Adema’s section *Pseudosemiocardium*, but maintained a broad circumscription for the rest of the species of *Polygala*. It is evident that the Old World species of *Polygala* must be reanalysed in the light of molecular evidence from wide sampling across the whole region to get a clear understanding of relationships within the genus (Abbott 2011). Such a study will undoubtedly result in the genus being split into several segregate genera. Until that work has been carried out it is considered appropriate to describe this new Thai species within *Polygala* s.l. to maintain consistency with the existing Flora of Thailand account (Pendry 2001).

ACKNOWLEDGEMENTS

The authors would like to thank Rachun Pooma, collector of the type specimen and director of the Forest Herbarium of the Department of National Parks, Wildlife and Plant Conservation, Bangkok for making the material available for study, and Claire Banks for her excellent illustration.

REFERENCES

- Abbott, J.R. (2011). Notes on the Disintegration of *Polygala* (Polygalaceae) with Four New Genera for the Flora of North America. *Journal of the Botanical Research Institute of Texas* 5(1): 125–137.
- Chodat, R. (1891). *Monographia polygalacearum*, 1. *Mémoires de la Société de Physique et d’Histoire Naturelle de Genève*, Supplement 1890: 1–143.
- Chodat, R. (1893). *Monographia polygalacearum*, 2. *Mémoires de la Société de Physique et d’Histoire Naturelle de Genève* 31: 1–500.
- Forest, F., Chase, M.W., Persson, C., Crane, P.R., & Hawkins, J.A. (2007). The role of biotic and abiotic factors in evolution of ant-dispersal in the milkwort family (Polygalaceae). *Evolution* 61: 1675–1694.

IUCN. (2012). IUCN Red List Categories and Criteria. Version 3.1, 2nd Edition, Gland, Switzerland

Kuntze, O. (1891). *Revisio generum plantarum* 1: I-CLV, 1–374. Leipzig, London, Milan, New York, Paris.

Paiva, J.A.R. (1998). *Polygalarum Africanarum et Madagascariensium prodromus atque gerontogaei generis *Heterosamara* Kuntze, a genere *Polygala* L. segregati et a nobis denuo recepti, synopsis monographica*. *Fontqueria* 50: 1–346.

Pendry, C.A. (2001). Polygalaceae. In: T. Santisuk & K. Larsen (eds.), *Flora of Thailand* 7(3): 498–538.

Persson, C. (2001). Phylogenetic relationships in the Polygalaceae based on plastid DNA sequences from the *trnL-F* region. *Taxon* 50: 763–779.