

Additional Notes on the Genus *Glycosmis* Correa (Rutaceae)

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Abstract

Updating of the Conspectus of the genus *Glycosmis* of Stone, 1985 is required as certain additions and corrections have to be made, and comments on recent publications that have dealt with this genus are required in the context of a monographic perspective. Three new proposed species are discussed, as well as various nomenclatural and taxonomic questions.

Introduction

Since the appearance of the author's "Conspectus of the Genus *Glycosmis*" (Stone, 1985) two new taxonomic contributions have been made to the genus (Tao, 1984; Huang, 1987) dealing chiefly with Chinese species. Also some anomalies have been detected in the Conspectus that require some taxonomic or nomenclatural adjustments. This paper is therefore intended as an extension of the Conspectus, to bring recent information and conclusions into the monographic perspective that is required.

Comments on three proposed new species of *Glycosmis*

1. *Glycosmis motuoensis* D.D. Tao

Acta Botanica Yunnanica 6(3): 285-287, 1984; ex Huang, *Flora Xizangica* 3: 30, 1986.

This tentatively accepted species seems to be closely allied to *G. cyanocarpa* var. *cymosa* Kurz, differing in (i) petals glabrous but very slightly ciliolate, and (ii) lateral veins somewhat more numerous and slender. These differences are minor at best, but may prove to be correlated with others when better material is available. If so, the taxon may stand. However, the status of *G. cyanocarpa* itself requires review. Currently, several varieties are distinguished within *G. cyanocarpa* (B1.) Sprengel, including var. *cymosa* Kurz. This variety has been regarded as a distinct species by Narayanaswamy (1941), who made a new combination (*G. cymosa* (Kurz) Narayan.). Unfortunately, as previously discussed in the Conspectus, Narayanaswamy conceptualized this species as jointly comprising the taxon *G. longifolia* Tanaka, which had been published earlier; this name

should therefore have been adopted by Narayanaswamy for his species. Despite this, the combination *G. cymosa* is validly published when *G. longifolia* is conceptually excluded. In other words, Narayanaswamy made a viable binomial with his combination of Kurz's varietal epithet, but incorrectly applied it to the taxon he recognized. At any rate, it is to Kurz's variety that Tao's *G. motuoensis* seems most similar, and not to *G. longifolia* (thus not to *G. cymosa* sensu Narayanaswamy!).

The type collection of *G. motuoensis* (Qinghai-Xizang Expedition no. 74-4540), was kindly made available on loan from Dr Tao and the South China Institute of Botany, Kunming, P.R.C. The type collection is from Medog, Tibet, at an altitude of about 800 m. It is thus quite possible that the plants formed part of a scattered population or series of populations that extend into Sikkim Himalaya. Plants of this series in other herbaria (especially in India) may have been previously identified as *G. cyanocarpa* var. *cymosa*.

The material seen is in an early state of flowering before anthesis; the floral parts are therefore smaller than their potential dimensions, which are estimated as being about twice those evident in the specimen. The stamens, although described as subequal, are definitely alternately longer and shorter, as is normally the case in most species of *Glycosmis*. The anthers do have connective glands, although they are smaller than the apical gland. Little else can be added to Tao's diagnosis, though it may be noted that the leaflet undersurfaces are pale grayish-green with a faint pinkish-brown tinge. More significantly, the dissection of the flowers shows that the ovary may be either 4- or 5-merous. Ovary locule number is an important character in the genus and should always be determined. In my synoptic key, *G. motuoensis* would key out to Group D, next to species 7 (*G. cyanocarpa*).

The protologue states that *G. motuoensis* is related to *G. erythrocarpa* Hay. (of Taiwan), probably on the basis of the shared trifoliolate character; but that relationship is not very close. For a fuller understanding of the proposed new species it appears necessary to obtain good material with ripe flowers and fruits, and to search for it also in adjacent areas (e.g. Bhutan and Nepal).

2. *Glycosmis lucida* Wall.

ex Huang, *Guihaia* 7(2): 119-120, 1987.

C.C. Huang has here validated Wallich's nomen nudum and applied it to a taxon conceptually identical to *G. cyanocarpa* var. *cymosa* Kurz. The synonymy has already been stated by Kurz (1876) and Narayanaswamy (1941), who used the binomial *G. cymosa* (Kurz) Narayan. However as mentioned above, because Narayanaswamy included *G. longifolia* Tanaka (1928) in his concept of *G. cymosa*, he should have adopted Tanaka's existing name for it. *G. longifolia* Tanaka is in fact conceptually identical to *G. cyanocarpa* var. *simplicifolia* Kurz.

Huang apparently typifies *G. lucida* Wall. ex Huang by a Griffith specimen

(no. 523 in K). This collection is mentioned by Kurz in his description of *G. cyanocarpa* var. *cymosa* Kurz.

Huang excludes *G. longifolia* from his concept of *G. lucida*; therefore the name *G. cymosa* (Kurz) Narayan. is the correct name to be adopted for this taxon. The name *G. cymosa* Zipp. ex Span. (1841) is mentioned by Huang, but that name, being a nomen nudum, has no validity and cannot pre-empt the usage of the epithet 'cymosa.' If this taxon deserves species rank, it must be called *Glycosmis cymosa* (Kurz) Narayan. (1941), and *G. longifolia* Tanaka (*G. cyanocarpa* var. *simplicifolia* Kurz) must be excluded.

If however the taxon is regarded as having varietal rank under a different species name, then Kurz's varietal epithet must be retained. If the variety is considered to be conspecific with (even if not convarietal with) *G. cyanocarpa* var. *simplicifolia* then the binomial '*G. cymosa*' cannot be used, and the earlier valid name *G. longifolia* Tanaka must be used. This has the same lectotype as *G. cyanocarpa* var. *simplicifolia*.

Huang also mentions other synonyms, which with one exception are also previously cited in the Conspectus (1985), viz. *G. oxyphylla* Wall., nom. nud.; *G. tetraphylla* Wall., nom. nud.; *G. pentaphylla* var. *yunnanensis* Huang, Icon. Corm. Sin. Suppl. 2: 159, 1983, nom. nud.

3. *Glycosmis oligantha* Huang

Guihaia 7(2): 122-123, 1987.

This validly published name (Latin diagnosis is provided) denotes a plant from Guangxi; the designated type specimen is S.C. Chen 3153. It is described as being similar to *G. gracilis* (Huang writes '*G. gracilis* Tanaka' which is an illegitimate name; the correct name is *G. gracilis* Stone, 1985). It seems however even closer to *G. craibii* Tanaka. It apparently belongs to Group D (in the key in the Conspectus), and according to this classification, *G. craibii* is better regarded as a variety of *G. puberula* Lindl. which is found in Group E, as it generally has unifoliate, though sometimes 2-3-foliate, leaves. *Glycosmis oligantha* is described as having mainly 4-7 leaflets; leaflet number being variable, there is probably no serious impediment to the implied relationships. More problematical, however, is the question of ovary-locule number, which is omitted in Huang's diagnosis. If for example the ovary is 3-locular, a relationship to *G. gracilis* would be more definitely supported; but if not, then a relationship with *G. puberula* var. *craibii* (Tan.) Stone could be supported. The diagnosis of *G. oligantha* also lacks a specification of the number and position of the anther glands, features which are often useful in the taxonomy of *Glycosmis*.

Huang cites seven specimens, all from Guangxi, mostly from forest habitats between 250 and 560 m altitude. For the present, judgment on the status of this species is reserved.

Other taxa discussed by Huang (1987)

In the same paper in which he describes *G. oligantha*, Huang discusses several other taxa for which he attempts some elucidation (he remarks that he . . . "attempted to elucidate those of the doubted and confused species so far . . . recorded from China.") To facilitate reference to these, I take these up here in the same order and add commentary as deemed appropriate.

***Glycosmis cochinchinesis* (Lour.) Pierre ex Engl.**

Huang (1987) and Stone (1985) clearly agree on the delimitation, typification, and synonymy of this species.

***Glycosmis montana* Pierre**

F1. For. Cochinch. Pl. 285b. 1893.

This species is included under *G. lanceolata* (B1.) Sprengel in the Conspectus. On further consideration this now seems incorrect, and I believe that Huang's interpretation of this taxon is correct or at least preferable. The short synonymy he gives is in agreement, so far as it goes, with my concept, except for *G. tonkinensis* Tanaka. The latter name, as cited (Tanaka ex Guillaumin, in Humbert, Fl. Gen. Indoch. Suppl. 1: 629. 1946) is an invalidly published name, without nomenclatural standing; it lacked a Latin diagnosis. It properly belongs as a synonym of *G. tetracronia* Stone (1985), and is definitely not the same as *G. montana* Pierre. The latter has a predominantly 3-locular ovary, the former a predominantly 5-(or 4-) locular ovary, an important difference in this genus. If *G. lanceolata* and *G. montana* are to be kept apart, a more exacting discrimination should be undertaken to establish reliable differentiating features. The latter seems to be the same taxon as *G. greenei* var. *simplex* Stone. The application of the name *G. lanceolata* as used in the Conspectus is incorrect; research on this matter is still in progress.

***Glycosmis pseudoracemosa* (Guill.) Swingle**

Not. Syst. 2: 162, 1911.

Both Huang (1987) and Stone (1985) fully agree on the status and synonymy of this species.

***Glycosmis longifolia* Tanaka**

Bull. Soc. Bot. France 75: 709. 1928.

This taxon has figured in the earlier discussions (see above). By recognizing this species, Huang implicitly accepts a division of the broad species concept of

G. cyanocarpa (Bl.) Sprengel; i.e. he agrees with Tanaka that *G. cyanocarpa* var. *simplicifolia* Kurz deserves separate status as a species. Moreover, he accepts species rank for *G. cyanocarpa* var. *cymosa*, although the name *G. lucida* which he applied to it is unnecessary; the correct name is *G. cymosa* (Kurz) Narayan.

Taxonomically, a subdivision of *G. cyanocarpa* sens. lat. is not at all objectionable, although in the Conspectus it was retained in the broad sense (but with ten recognized varieties!). If *G. cyanocarpa* is reinterpreted as a narrower concept, it becomes a strictly Malesian taxon; the Indian, Sri Lankan, Thai, Burmese, Chinese, and Tibetan populations would be excluded. This approach would reinstate both *G. longifolia* and *G. cymosa* as distinct species. However, such reinstatement does not fully satisfy the problem.

Huang cites the authority of *G. longifolia* as "(Oliver) Tanaka" but this is incorrect. Tanaka (1928) clearly distinguishes when he is publishing a new species and making a new combination. For example, see his paragraph on *G. esquirolii* which he clearly designates: '*G. esquirolii* (Levl.) Tanaka, n. comb.' In contrast, for *G. longifolia*, the form is: '*G. longifolia* Tanaka, n. sp.' This is a perfectly clear indication of Tanaka's nomenclatural meaning. Also, he distinctly includes a Latin diagnosis- something not ordinarily provided for a new combination.

It may also be noted that Oliver published the name '*longifolia*' at the rank of subvariety. This rarely used rank explains why Kurz's taxon, var. *simplicifolia*, bears a legitimate name. Oliver does not cite a holotype, but he does cite four specimens (i.e. syntypes) to typify the subvariety. Jenkins' Assam specimen has already been designated as lectotype (Stone, 1985) for both subvar. *longifolia* and *G. longifolia*. Tanaka states only "Type: Herb. Kew" without specifying a particular specimen.

***Glycosmis pentaphylla* (Retz.) DC.**

Huang (1987) and Stone (1985) essentially agree on the interpretation of this historically confused and much abused name. However, Huang attributes the contribution to Correa (Ann. Mus. Paris 6: 384, 1805), but Correa never actually made this combination; it was first made, in fact, by De Candolle (Prodr. 1: 538. 1824), although De Candolle misapplied the name. Both Huang and Stone include in *G. pentaphylla* the serrulate-margined plants originally named *Limonia arborea* Roxb. (i.e. *G. arborea* (Roxb.) DC.).

***Glycosmis esquirolii* (Levl.) Tanaka**

The synonymy for this species as given by Huang (1987) is correct, essentially the same as that given in the Conspectus (1985), but I have also included *G. winitii* Craib, of Thailand, as the same species.

Glycosmis parviflora (Sims) Little

Phytologia 2: 463. 1948.

Huang attributes this name to Kurz (he cites Journ. Bot. n.s. 5: 40. 1876). However, Kurz did not mention Sims as author, nor did he specifically cite *Limonia parviflora* as a basionym, though he gave a reference to Bot. Mag. t. 2416; in any case, Kurz did not accept the name, as he only mentions it as a synonym (under *G. citrifolia*, just the opposite of our modern conclusion as to the relative nomenclatural status of the two binomials). I do not believe that Kurz effectively made this combination, and prefer to attribute it to Little, who most explicitly did make it.

Glycosmis craibii Tanaka

Bull. Mus. Hist. Nat. Paris ser. 2, 2: 159, 1930.

Huang (1987) accepts this in the original conception of Tanaka; in the Conspectus, I have placed it as a variety of *G. puberula* Lindl., a relatively minor difference of interpretation. We agree on the delimitation of the taxon.

Glycosmis craibii var. **glabra** (Craib) Tanaka

l.c. 1930.

Huang (1987) accepts this variety in Tanaka's original sense. In the Conspectus, I consider it rather as a synonym of *G. ovoidea* Pierre, a species not discussed by Huang.

Corrections to the Conspectus

The correct name for *G. lanceolata* sensu Stone

In the Conspectus (p. 10) the name *G. lanceolata* is used for a rather broad concept covering 11 synonyms. It is now increasingly apparent that, while the taxon intended is comparatively homogeneous, the binominal *G. lanceolata* should not have been applied to it. Current research suggests that the correct name for this taxon is *G. trifoliata* (Bl.) Sprengel.

Correspondingly, the taxon denoted by *G. lanceolata* in the original sense is probably best suggested by Narayanaswamy (1941) in his interpretation. The relationship is probably near *G. pentaphylla*. A full resolution of this problem is still required.

The correct name for *G. sapindoides* is *G. macrophylla*

By some inexplicable oversight, the name *G. sapindoides* Lindl. in Wall. ex

Oliv. was retained despite the clear citation of an earlier binomical in the synonymy. The long usage of *G. sapindoides* would in another situation argue for its conservation, but it must be relegated to synonymy. The correct name and synonymy for this species are presented here, to serve as a replacement for species no. 34, in Proc. Acad. Nat. Sci. Philad. 137: 18. 1985. In addition, two new combinations are required, as shown below.

[34.] ***Glycosmis macrophylla* (Blume) Miquel**

Fl. Ned. Ind. 1, 2: 522, 1859. Type: Java, Tjanjor; Blume, L!

Syn. *G. sapindoides* Lindl. in Wall. ex Oliver, J. Linn. Soc. Bot. 5, Suppl. 2:38, 1861. Type: Penang, Wallich cat. 6376, K!

Syn. *G. cyanocarpa* var. *sapindoides* (Lindl.) Kurz, J. Bot. 14: 34. 1876.

Syn. *G. elata* Ridley, J. Fed. Mal. St. Mus. 10: 130. 1920. Type: Malaya, Kelantan, Chaning woods; Ridley, SING!

Syn. *Sclerostylis macrophylla* Blume, Bijdr. Fl. Ned. Ind. 3: 135. 1825. Type: Java, Tjanjor; Blume, L!

[34b.] ***Glycosmis macrophylla* var. *microphylla* (Stone) Stone, comb. nov.**

Syn. *G. sapindoides* var. *microphylla* Stone, Proc. Acad. Nat. Sci. Philad. 137: 18. 1985. Type: Flores Island, *Kostermans* 22059, AAU!

[34c.] ***Glycosmis macrophylla* var. *australiensis* (Stone) Stone, comb. nov.**

Syn. *G. sapindoides* var. *australiensis* Stone, Proc. Acad. Nat. Sci. Philad. 137: 18. 1985. Type: Western Australia, Augustin Island, *Wilson* 19775, PERTH!

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