

**NOMENCLATURE OF THE NARROW-LEAVED FRINGED  
GENTIAN OF THE GREAT LAKES REGION,  
*GENTIANOPSIS VIRGATA* (RAF.) HOLUB (GENTIANACEAE)**

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Many readers will be familiar with the spectacular displays of the narrow-leaved fringed gentian in flower that appear each fall at such popular naturalists' destinations as Waugoshance Point and Grass Bay in Michigan and Dorcas Bay, Petrel Point, and St. Jean Point on the Bruce Peninsula in Ontario. With this species being so well known and so much admired, it is unfortunate that its correct specific epithet has long been in question.

Historically, this species was known as *Gentiana procera* Holm. Now it is generally placed in *Gentianopsis* Y.C. Ma, as substantial morphological and molecular evidence indicates that the fringed gentians are more closely related to certain other, widely accepted genera than to *Gentiana* in a stricter sense. As a species of *Gentianopsis*, it was initially called *G. procera* (Holm) Y.C. Ma. More recently, it has sometimes been designated *G. virgata* (Raf.) Holub. Gillett (1982) was apparently the first definitely to associate this name with the species hitherto called *G. procera*, as consultant on *Gentianopsis* for the United States Department of Agriculture *National List of Scientific Plant Names*, and in annotations of specimens at DBN in 1986 (Nelson & Dore 1987). This name was also adopted in the second edition (1984) of Morton & Venn's *Flora of Manitoulin Island*, in the Ontario floristic lists by Morton & Venn (1990) and Newmaster et al. (1998), in the *Checklist of vascular plants of Bruce and Grey counties*, Ontario (Bruce-Grey Plant Committee 1995), and in other Ontario checklists in which those references were followed. The epithet *virgata* dates from late 1837, and thus has 64 years' priority over *procera*, if these epithets are considered to be applicable to the same species.

Holub (1967), in making the combination *Gentianopsis virgata*, did not discuss the identity of the plants to which the name was applicable, the typification of the name, or its possible heterotypic synonymy. Earlier, Gillett (1957) had included the basionym *Anthopogon virgatum* Raf. in the synonymy of *Gentianella crinita* subsp. *procera* (Holm) J.M. Gillett "ex char." At that time he included the taxon *procera* within *G. crinita* at the rank of subspecies, and therefore was not faced with the question of the priority of the epithets at the rank of species. Kartesz (1994) and Cooperrider (1995) cited the names *Gentianopsis procera* and *G. virgata* as taxonomic synonyms, but rejected the latter without comment. Voss (1996) also designated this species *Gentianopsis procera*, with the comment that "there has been some attempt recently to resurrect an old name, which

I am not fully convinced applies to this species, in the combination *Gentianopsis virgata*.”

Rafinesque (1837) initially gave the range of his *Anthopogon virgatum* as “Canada and Allegheny [sic] mts.” The species considered here is not found in the Alleghenies, but it does occur in what was then and is now Canada. About a year later, Rafinesque (1838) excluded the Allegheny plants from his circumscription of *A. virgatum*, designating them *A. incarnatum* Raf., and thereby restricting his concept of *A. virgatum* to the Canadian plants. Rafinesque (1838) described *A. incarnatum* as having leaves “narrower than in *A. crinitum*, broader than in *A. virgatum*.” This further supports the interpretation of Rafinesque’s *A. virgatum* from Canada as being taxonomically equivalent to the plants later called *Gentiana procera*.

Rafinesque’s only visit to Canada was in the spring of 1826, too early in the season for fringed gentians to have been recognizable, but he could have seen specimens of Canadian origin in the herbaria of other botanists whom he had visited.

One of the botanists whom Rafinesque visited was John Torrey. From specimens that I had examined during my doctoral studies, I remembered that eastern North American gentians from Torrey’s herbarium, now at NY, had been annotated by Rafinesque. I have identified the annotations as his because the annotator was familiar with names being considered by Rafinesque whether or not they ever appeared in print; they occur only in association with names attributed to him; and the handwriting resembles that of Rafinesque on labels at PH, as illustrated by Mears (1978). The usual format is the proposed name, attributed to “Raf.,” usually with the designation “N. Sp.,” followed by “Med. Fl.,” “Monogr. Med. Fl.,” or “Monogr.” (Rafinesque published a *Medical Flora* in 1828–1830, but few of these annotated names appeared in it. Soon thereafter he began work on a supplementary volume, but it was never published.) I therefore looked for such an annotation among the fringed gentians from Torrey’s herbarium, and found one with Rafinesque’s annotation “Beautiful N. Sp.”; on the next line, “*G. virgata* Raf. Monogr.”; and on the next two lines, in the same handwriting but slightly smaller, “*Anthopogon* genus Necker 1790.” A label elsewhere on the sheet, perhaps supplied with the specimen by James or William McNab, says “Collected in Canada 1834.” Between “Canada” and “1834” someone else, presumably Torrey, inserted “by Mr. W. McNab.” (Actually it was William McNab’s father, James, who was in Canada in 1834.) This specimen represents the narrow-leaved fringed gentian historically known as *Gentiana procera* and called *Gentianopsis virgata* here and in the publications cited above. James McNab is known to have collected this species 18 August 1834 by the estuary of the Maitland River at Goderich, in present-day Huron County, Ontario (Nelson & Dore 1987).

Further evidence that Rafinesque’s description of *A. virgatum* was based at least in part on a specimen from Torrey’s herbarium appears in the similarity between it and Torrey’s (1843) own description of “*G. detonsa*.” Both, for example, included the minor detail of the cauline leaves being narrowed at the base, which is scarcely perceptible except in the lower leaves. Although this might be coincidental, it might also be due to Rafinesque’s having discussed this species

with Torrey. Because the McNab specimen noted above was seen and annotated by Rafinesque and clearly indicates to what Canadian species he applied the name *Anthopogon virgatum*, I hereby designate it the lectotype of that name.

Another epithet to be considered is *ventricosa*, published at species rank by Grisebach in July 1837, a few months earlier than Rafinesque's *virgatum*. It could legitimately have been disregarded in this context until the elimination of Article 71 on "monstrosities" from the *International Code of Botanical Nomenclature*. The type collection, *Drummond s.n.* (BM!, K!; photo of K specimen at DAO!), described as having much reduced flowers with greenish-yellow corollas, was obtained at Grand Rapids, Manitoba, in 1827. A similar specimen, *Scoggan 4407* (CAN), was found in the same area in 1948. I have seen such flowers on *G. virgata* late in the season, as the only flowers on a plant or on plants that also bore normal flowers, in a population of predominantly normal-flowered plants on the Bruce Peninsula. Their failure to develop fully appeared likely to be due to late bud formation and/or to stress from drought or other adverse growing conditions. In the case of *Gentiana ventricosa*, however, my examination of the type collection led me to suspect, as did Gray (1878), that it may merely comprise normal plants of *G. crinita* collected in bud rather than in full bloom. Thomas Drummond was at the type locality in mid-August 1827, relatively early in the flowering season for fringed gentians even at that latitude. Other specimens at BM, collected by John Richardson in present-day Canada but lacking locality data, were also identified as *G. ventricosa*, presumably by Grisebach. They likewise appear to be *G. crinita* with immature flowers.

Hybridization between *Gentianopsis crinita* (Froel.) Y.C. Ma s. lat., with a chromosome number of  $2n=78$  (base number  $x=13$ ), and *G. detonsa* (Rottbøll) Y.C. Ma s. lat., supposedly with  $2n=44$  (base number  $x=11$ ), has been suggested as a possible explanation for this abnormal flower development, but this now appears unlikely. No representatives of *G. detonsa* s. lat. are known to occur within several hundred km of Grand Rapids, Manitoba, nor have any plants of *Gentianopsis* in North America actually been found to have chromosomes in multiples of 11. It now seems likely that all have  $x=13$ , unless multiples of 11 occur in relatively distantly related western species. Reports of  $2n=44$  for some of the North American subspecies of *G. detonsa* and for *G. thermalis* (Kuntze) H.H. Iltis (which is sometimes included in *G. detonsa*) have been based only on an early report of  $2n=44$  for *G. detonsa* [subsp. *detonsa*] in Iceland, whereas all of the more recent counts for *G. detonsa*, including those for Icelandic plants, have been  $2n=78$ , the same number that has been reported for *G. crinita* and *G. virgata*.

Both *G. crinita*, represented by *Scoggan 4822* (CAN) and *4759* (CAN, GH!), and a subspecies of *G. virgata*, represented by *Scoggan 4854* (CAN, GH!), are known from Grand Rapids (Gillett 1957), but the abnormal flower development does not per se support a hypothesis of *G. crinita* x *G. virgata* hybrid origin. Although in general these species are morphologically distinct from each other and are more or less isolated ecologically, a few hybrid swarms are known, mostly in northern Ohio, in sites of recent disturbance (specimens I have so identified are at CLM). These hybrids have well-developed flowers. The relatively wide, lance-ovate cauline leaves of "*G. ventricosa*," as seen in the type collection and

as illustrated in Hooker's *Flora Boreali-Americana*, Atlas, pl. CLII, indicate that these specimens represent *G. crinita* s. str. rather than *G. virgata*. Therefore I do not feel that the name *Gentianopsis ventricosa* should be considered heterotypically synonymous with *G. virgata*.

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