

***LOBELIA BATSONII* (CAMPANULACEAE),
A NEW SPECIES FROM THE SANDHILLS OF THE CAROLINAS**

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ABSTRACT

Lobelia batsonii A.B. Pittman & Sorrie, **sp. nov.**, is described from the Sandhills Region of the Carolinas. It previously has been identified as *L. glandulosa* Walt. but differs in a number of features, notably the glabrous interior of corolla tube and throat and the suberose outer seed coat. Supporting data are provided, along with cited specimens and a distribution map.

In recent years references have been made to an undescribed *Lobelia* in the Sandhills Region of North and South Carolina (Amoroso & Finnegan 2002; Sorrie et al. 2006; Sorrie 2011; Spaulding et al. 2016; Weakley 2018). In this paper we provide a name for this new species — *Lobelia batsonii* A.B. Pittman & Sorrie — and describe its morphological and ecological characteristics.

Pittman first recognized this entity as similar to *Lobelia glandulosa* Walt. but as differing in several points. In a letter to Sorrie (undated, mid 1990s), he stated that "the new lobelia is close to *L. glandulosa* which is distinctly hirsute in the throat of the corolla. Fernald (1947) described variety *laevicalyx*, but throat is still hirsute inside." Here Pittman was alluding to the primary distinguishing character of *L. batsonii*: the glabrous interior of corolla tube and throat. Subsequent research revealed the presence of a soft corky seed coat in late season plants unlike any other *Lobelia* in the Carolina flora.

A search by the authors through various herbaria has uncovered specimens of *Lobelia batsonii* dating back to the mid-1800s, e.g., South Carolina, undated, *M.A. Curtis s.n.* (GH, annotated by Pittman). Once botanists were alerted by Pittman in the 1990s to the new species' habitat and morphology, many populations were found throughout the Sandhills Region (Map 1).

LOBELIA BATSONII A.B. Pittman & Sorrie, **sp. nov.** **TYPE: South Carolina.** Lexington Co.: Shealy's Pond Heritage Preserve, 1.5 mi W of community of Edmund on SC Secondary Rd 279, mature white cedar swamp along Scouter Creek, forming clones in seepages and springheads lined with peatmoss hummocks, also in mucky soils along pond margins, 19 Oct 1991, *A.B. Pittman 10199101* (holotype USCH, Fig. 1; isotypes CU!, DUKE!, GH!, MO!, NCU!, NY!).

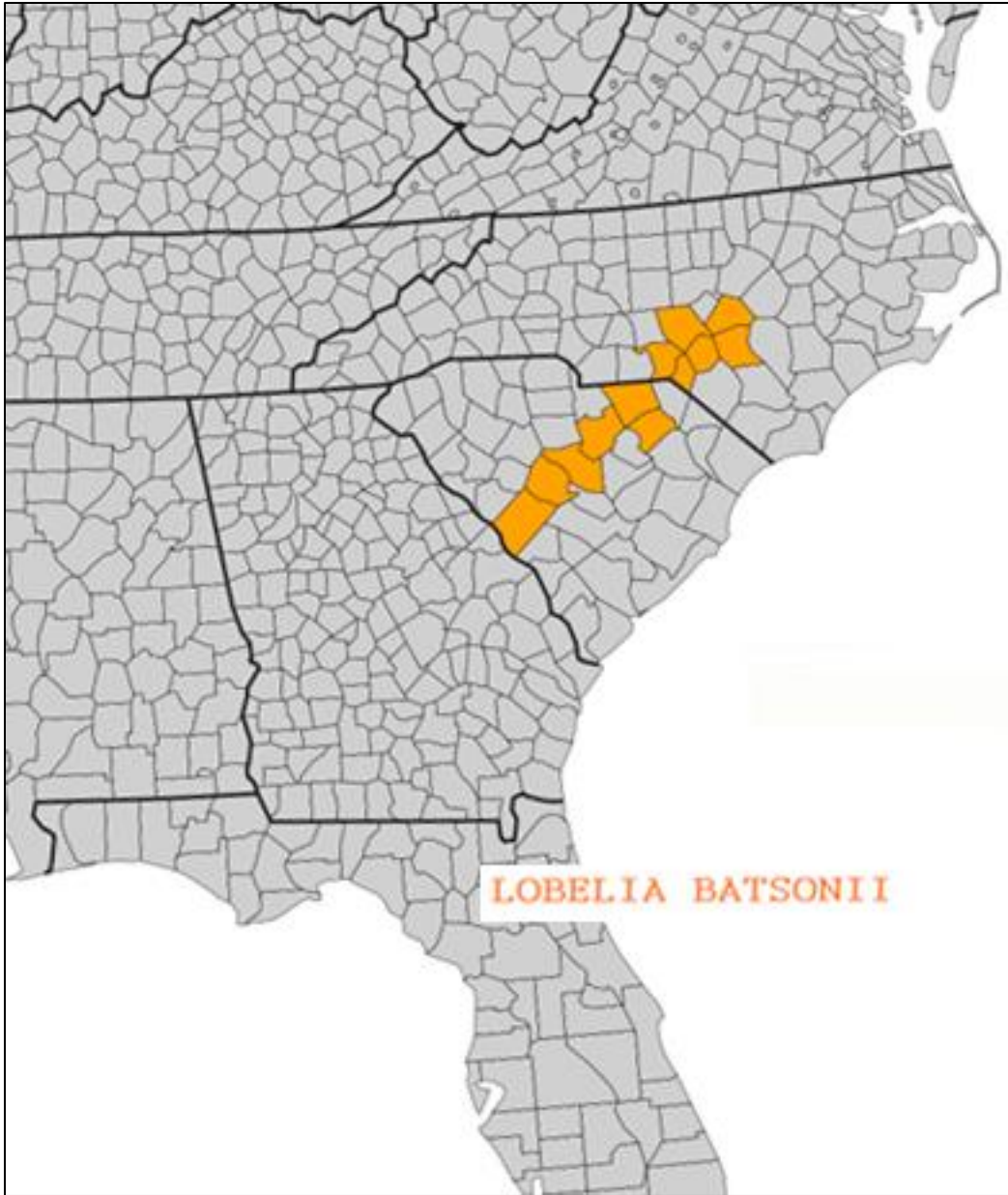
Most similar to *Lobelia glandulosa* but differing notably in the glabrous calyx, glabrous corolla tube interior and throat (vs. densely pubescent), and in generally smaller dimensions.

Perennial herb, usually(?) producing early season basal offsets and stolons. Stems and leaves glabrous, unbranched or few-branched. Offsets and basal leaves short to long-petioled, lanceolate to elliptical or orbicular, usually absent at anthesis. Cauline leaves 3–15, well-spaced, sessile, blades linear to lanceolate, 20–100 x 2–10 mm, margins denticulate to subentire. Inflorescences 3–15 flowered, unbranched, secund. Pedicels 3–10 mm, 2-bracteolate basally. Sepals glabrous, lobes linear to very narrowly triangular, 5–10 mm, entire. Corolla pinkish blue to lavender blue, with white eye and 2 white guidelines, 17–22 mm including lobes, corolla tube 9–10 mm, fenestrate, base of lower lip and interior of tube glabrous. Filament tube 7.0–8.5 mm, anther tube 3.5–4.0 mm, apically tufted with white hairs. Capsules ascending, 6–7 mm. Seeds 0.9–1.0 mm, outer seed coat suberose.

We are pleased to name this plant after Wade T. Batson (1913-2015), for 30 years Professor of Botany at the University of South Carolina in Columbia, mentor to many undergraduate and graduate students and a lifelong student of the flora of the Carolinas.

Additional specimens examined (due to Covid-19 restrictions, not all specimens assigned a repository have yet been distributed). **North Carolina.** Cumberland Co.: Fayetteville city watershed land, NW end of Bonnie Doone Lake, saturated floor of narrow swamp forest, 27 May 1998, *Sorrie 9745* (NCU, AMAL). Harnett Co.: margin of artificial pond, 10.6 miles E of Lee County line on U.S. 421, 18 Oct 1956, *Laing 628* (NCU). Hoke Co.: Fort Bragg, wet streamhead, NW branch of Mott Lake at firebreak 14, 8 Sept 1992, *Sorrie 6925* (NCSC); Fort Bragg, seepy mucky edge of shrubby streamhead, S of firebreak 29, 11 Sept 1993, *Sorrie 7659* (AMAL); Fort Bragg, outlet at S end of Mott Lake, *Taxodium ascendens-Nyssa biflora* swamp, 30 Sept 1993, *Sorrie 7727* (NCU, GH); Fort Bragg, Deep Creek swamp S of firebreak 18, in pools and rivulets, 2 Aug 2000, *Sorrie 10581* (US); Fort Bragg, former borrow pit, now a wet gladey swamp with *Decodon*, 150 plants all basal leaves, 9 Aug 2000, *Sorrie, Hall, & Hoffman* (sight record); Fort Bragg, boggy glade just below beaver dam at western third of Green Spring Pond, 10 Aug 2000, *Sorrie & Hall 10595* (US); Fort Bragg, East Fork Deep Creek at firebreak 22, 27 Sept 2000, *Sorrie & Hall 10632* (GA, NCU, USCH); Quewhiffle Preserve, 29 Sept 2002, *Sorrie 11021* (BRIT); Calloway Preserve, unnamed tributary of Mill Creek, with *Coreopsis gladiata* s. str., *Lycopus cokeri*, 9 Sept 2019, *Sorrie et al. 13770* (NCU). Moore Co.: Pinehurst, 1897, *Katzenstein s.n.* (GH); Niagara, common in wet sphagnum of ditch at base of seepage slope, Niagara-Carthage Road near McDeed's Creek, 29 Sept 2002, *Sorrie 11023* (NCU); in powerline, boggy margin of beaver pond in Nick's Creek, 22 Oct 2019, *Sorrie et al. 13795* (MO, NCU). Richmond Co.: Sandhills Game Land, NW of Six Corners, 7 Oct 1997, *Sorrie 9595* (NCU); Sandhills Game Land, just E of Deatons Lane and S of Naked Creek Lane, wet sphagnum streamhead, 26 Aug 1998, *Sorrie 9919* (NCU, USCH); Sandhills Game Land, N side of Nursery Lane, headwaters of Bones Fork, 14 Oct 1998, *Sorrie 10021* (GH, NCU); Sandhills Game Land, shortly S of Nursery Lane, headwaters of Bones Fork, 14 Oct 1998, *Sorrie 10022* (US, USCH). Scotland Co.: Sandhills Wildlife Management Area, 4.7 miles SSE of Hoffman on Broadacres Lake Road, 21 Sept 1958, *Gupton 971* (NCU). **South Carolina.** Chesterfield Co.: Cheraw State Park, peat-sedge bog, 29 Sep 1956, *Radford 18639* (NCU). Darlington Co.: Segars Mill Pond, 5 Oct 1940, *Smith 1398* (NCU); same place, 20 Sep 1940, *Smith 1400* (NCU); Society Hill, 1 Oct 1940, *Smith 1399* (NCU); Hartsville, 28 Sept 1909, *Coker s.n.* (NCU); same place, 9 Oct 1909, *Coker s.n.* (NCU); Hartsville, Prestwood Lake, 10 Nov 1921, *Norton s.n.* (NCU); Hartsville, along shores of Black Creek pond, 20 Nov 1921, *Norton s.n.* (US); Hartsville, 5 Oct 1940, *B.E. Smith 1397* (NCU). Lexington Co.: Bog near Scouter Creek, 2 miles W of Edmund, 5 Oct 1957, *Radford 29844* (NCU); W of Pelion, downstream from US 178, on log in impoundment in drainage of Black Creek, 24 Sept 2011, *Nelson 30087* (USCH). Richland Co.: Wet bog near Columbia, 26 Sep 1883, *Donnell Smith s.n.* (GH, MO). **No county** named, no date, *M.A. Curtis s.n.* (GH).

Lobelia batsonii is restricted to the Sandhills Physiographic Region of North and South Carolina (Fenneman 1938). It is not known to occur on the younger sediments of the flatter portions of the Coastal Plain (to the east of the Sandhills) nor is it known to be syntopic with *L. glandulosa*. Botanists should also search adjacent Georgia for *L. batsonii*. Flowering late August to mid October, occasionally until frost.



Map 1. Distribution of *Lobelia batsonii*.

Lobelia batsonii is found in a narrow suite of habitats. Primarily, it occupies perennially saturated, sphagnous, blackwater streamheads under open to closed canopy of *Acer rubrum*, *Nyssa biflora*, *Liriodendron tulipifera*, and *Chamaecyparis thyoides*. Associates include *Asclepias rubra*, *Cyrilla racemiflora*, *Doellingeria sericocarpoides*, *Eupatorium resinosum*, *Gentiana catesbaei*, *Juncus trigonocarpus*, *Lindera subcoriacea*, *Lycopus cokeri*, *Lyonia lucida*, *Solidago salicina*, *Zenobia pulverulenta*, and the recently described *Carex austrodeflexa*. Plants occupy the wettest zones with sphagnum moss and also laterally into the shrub-graminoid ecotone of the longleaf pine-wiregrass community, especially where disturbance such as a road or a trail has opened the canopy. Beavers often create ponds in the same streams, sometimes with *L. batsonii* in the upslope margins. Plants also occur in more or less isolated areas of seepage, including pitcher plant seepage slopes. Elevations range from 50-200 meters.



Figure 1. *Lobelia batsonii*. Holotype, Pittman 10199101 (USCH).



Figure 2. *Lobelia batsonii*, leaves and lower stem. Moore Co., North Carolina, September 2020.
Photo by B.A. Sorrie



Figure 3. *Lobelia batsonii* inflorescence, Moore Co., North Carolina, September 2020. Photo by Sorrie.



Figure 4. Top (left) *Lobelia batsonii* — short corolla tube, photo by Sorrie; (right) *Lobelia glandulosa* — long corolla tube, photo by J. Pippen. Bottom (left) *Lobelia batsonii* — lack of pubescence at corolla mouth, photo by Sorrie; (right) *Lobelia glandulosa* — pubescence extending out from corolla mouth, photo by J. Pippen.

Table 1 compares a number of characters that separate *Lobelia batsonii* from *L. glandulosa*. Fernald (1947), and others have confused *L. elongata* Small with *L. glandulosa* and the new species, but *L. elongata* is highly distinct in its broadly lanceolate to elliptical leaves, longer and denser inflorescence, glabrous exterior of calyx tube, and pubescent interior of corolla tube. In the field, one would never confuse *L. elongata* with either *L. glandulosa* or *L. batsonii* (see images of *L. elongata* and *L. glandulosa* in Spaulding and Barger 2016). McVaugh (1936) mentioned seeing some specimens of *L. glandulosa* "... with nearly or wholly entire leaves and lobes of the calyx" [i.e. without glandular teeth]. Fernald (1947) named such plants *L. glandulosa* var. *laevicalyx* Fern.; as Table 1 indicates, they are clearly aligned with species *L. glandulosa* and not with *L. batsonii*.

Table 1. Primary morphological and habitat characters of *Lobelia batsonii* and *L. glandulosa*. For measurements, n = 25.

Character	<i>L. batsonii</i>	<i>L. glandulosa</i> var. <i>glandulosa</i>	<i>L. glandulosa</i> var. <i>laevicalyx</i>
Cauline leaves	linear, occasionally lanceolate	linear, occasionally lanceolate	linear, occasionally lanceolate
Inflorescence	sparsely flowered to moderate	sparsely flowered	sparsely flowered
Calyx tube pubescent externally	no	yes	no or glabrate
Calyx lobes glandular-toothed	no	long to short, occasionally no	long to short, occasionally no
Corolla length (mm)	17–22	19–27	19–27
Corolla tube pubescent within, and proximal to orifice	no	yes, usually densely hirsute	yes, usually densely hirsute
Seed coat	tuberculate-alveolate, suberose, soft	tuberculate-alveolate, cartilaginous	tuberculate-alveolate, cartilaginous
Habitat	wet mossy streamheads, ecotones, seepage slopes along streams, black-water impoundments	wet flatwoods, savannas, seepages	wet flatwoods, savannas, seepages

In addition to the contrasts in Table 1, plants of *Lobelia batsonii* tend to be shorter (maximum 80 cm vs. 140 cm in *L. glandulosa*), have shorter and narrower cauline leaves (maximum 100 mm vs. 150 mm long; maximum 10 mm vs. 14 mm wide), shorter sepals (maximum 10 mm vs. 15 mm), shorter corolla tubes (maximum 10 mm vs. 12 mm), and shorter filament tubes (maximum 8.5 mm vs. 12 mm). Data are from the FNA draft treatment of *Lobelia glandulosa* (Lammers 2020) and from specimens of *L. batsonii* examined by the authors.

Finally, we call attention to the presence of basal leaves, seen in the holotype (Fig. 1) and a few other specimens, a character not mentioned in the literature for *Lobelia glandulosa* sensu lato. They are present early in the growing season (March-May), occurring as well-spaced, elliptical blades with well-developed petioles, but sometimes clustered together as "rosettes" with orbicular leaves and short petioles. Whitish stolons suggest a perennating habit reminiscent of *Eryngium prostratum* Nutt. ex DC. We have seen only a handful of specimens with such basal leaves and stolons. A search of online specimens at several herbaria confirms that early season basal leaves also occur in *L.*

glandulosa. However, the tiny percentage recorded (1.6%) renders any statements about significance moot, and we recommend that additional studies be conducted.

ACKNOWLEDGEMENTS

We thank curators and staff of the following herbaria for access to physical specimens: CU, DUKE, GH, NCSC, NCU, USCH. Financial support for this project was provided by an anonymous donor. Alan Weakley (NCU), John Nelson (USCH), Keith Bradley (SC Heritage Trust), and Dan Spaulding (AMAL) provided important discussions or substantial revisions to this paper. Herrick Brown (USCH) provided the holotype image. Jeff Pippen provided images of *L. glandulosa*. Mike Lee developed the map-making program.

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