

**GALACTIA (FABACEAE) IN FLORIDA:
COMMENTS ON FRANCK'S RECENT STUDY**

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ABSTRACT

Review of recent taxonomic suggestions by A.R. Franck for *Galactia* in Florida finds that (1) *G. fasciculata* and *G. floridana* are distinct species, (2) the type of *G. brachypoda* is not a hybrid between *G. erecta* and *G. mollis*, thus Franck's newly proposed *G. michauxii* becomes a synonym of *G. brachypoda*, and (3) Franck's description of an endemic species narrowly distributed in southern Florida as *G. austrofloridensis* sp. nov. is reasonable, but its distinction is weakly supported; I identified it earlier as *G. grisebachii*, primarily a Caribbean species.

For taxa of *Galactia* in Florida, Franck (2017) has essentially reprised my treatment of the genus (for the USA, Nesom 2015), diverging from its taxonomy in three instances: (1) treatment of *G. fasciculata* Vail as a synonym of *G. floridana* Torr. & Gray; (2) interpretation of the type of *G. brachypoda* Torr. & Gray as a hybrid between *G. erecta* (Walt.) Vail and *G. mollis* Michx., then description as a new species (*G. michauxii* Franck) the plants that I identified as *G. brachypoda*; and (3) description as a new species (*G. austrofloridensis* Franck) the plants that I identified as *G. grisebachii* Urb., the consequence of interpreting the latter as a Caribbean endemic. These taxonomic disparities are discussed below.

(1) *Galactia fasciculata* vs. *Galactia floridana*

My treatment separated these two entities by habit and vestiture, the contrasts below drawn from the descriptions I provided. Further, the ecologies of the two are distinct and, while they are partially sympatric, their geographic ranges also are distinct (see Figs. 1 and 2, including ecological information in the legends).

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| 1. Stems procumbent, creeping, rooting at nodes, sometimes climbing-sprawling but not twining, densely short-tomentose to hirsute-villous with spreading-erect, irregularly oriented hairs; leaflets adaxially glabrous | Galactia floridana |
| 1. Stems high-climbing, twining; loosely strigose with short, loosely appressed, retrorse hairs; leaflets adaxially sparsely strigose-sericeous with loosely appressed hairs | Galactia fasciculata |

I noted that (2015, p. 11) "*Galactia fasciculata* is distinguished by its strongly lignescent, twining and high-climbing stems with densely and loosely retrorse-strigose vestiture, coriaceous leaves dark and glossy above, and relatively short inflorescences with large flowers. It has sometimes been identified as *G. floridana* but the latter is completely distinct from *G. fasciculata* in its procumbent habit, tomentose to hirsute-villous stems, persistently hairy adaxial leaf surfaces, elongate inflorescences with distally positioned flowers, and villous calyces."

Franck (p. 147) noted that "Because of their similarities, *Galactia fasciculata* is here tentatively treated as a synonym of *G. floridana*." He emphasized (a) similarities in stem and calyx vestiture, (b) the inconsistent production of fasciculate inflorescences in *G. floridana* (originally distinguished, but not by me, as fasciculate), and (c) a tendency for stems to curve and twine in *G. floridana*. While infraspecific variation may exist in vestiture, it does not alter my essential characterizations of the two entities. Stem vestiture of the types of *G. fasciculata* (including *G.*

volubilis var. *baltzelliana*, a synonym) is regularly retrorsely oriented and not like that characteristic of *G. floridana*. Stems in *G. floridana* sometimes may become loosely twining distally (procumbent and rooting at the nodes proximally) and even climb over low shrubs, but they are not like the climbing stems of *G. fasciculata*. *Lakela* 25304 (Hernando Co., USF, digital image!) and *Lakela* 253779 (Hillsborough Co., USF, digital image!), cited by Franck as examples of 'twining' habit in *G. floridana*, indeed clearly are *G. floridana* — but different from the climbing, coiling stems of *G. fasciculata*. I did not find a difference between the two in inflorescence morphology.

A field study probably will resolve the question but based on evidence at hand, I remain convinced that *Galactia fasciculata* is a species distinct from *G. floridana*.

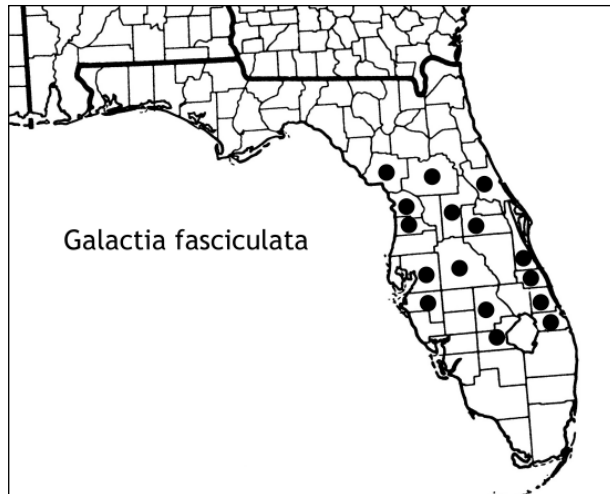


Figure 1. Distribution of *Galactia fasciculata*. Habitat: sand-pine scrub, dunes and hills with sand pine-oak, oak-hickory, scrubby flatwoods, river banks with live oak, longleaf pine, and saw palmetto, disturbed areas.

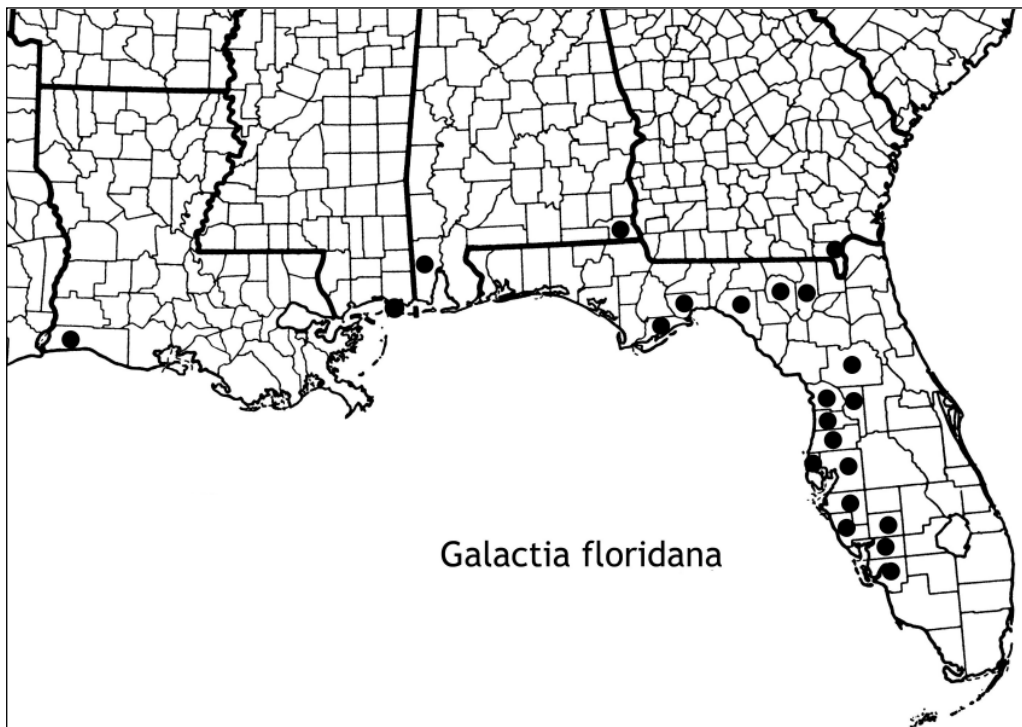


Figure 2. Distribution of *Galactia floridana*. Habitat: open pine woods, pine barrens, longleaf pine-turkey oak-blue oak woods, sandhill scrub, sandhills, roadsides.



Figure 3. Holotype of *Galactia brachypoda* Torr. & Gray. The habit is procumbent, vestiture short-strigose. Leaflets vary in shape from relatively narrow (as in the holotype) to more broadly elliptic.

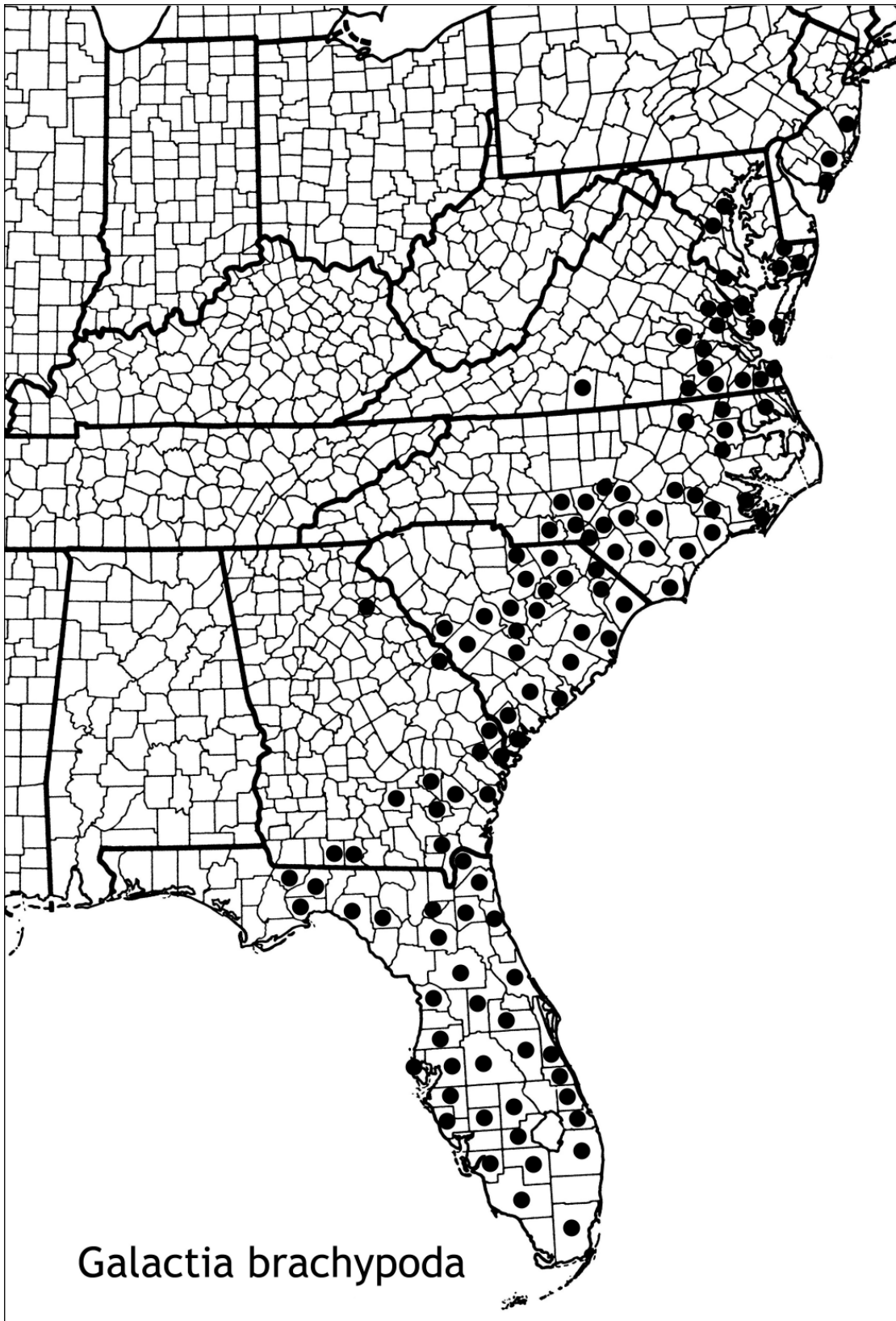


Figure 4. Distribution of *Galactia brachypoda*.

(2) The type of *G. brachypoda* and corresponding description of *G. michauxii* (sp. nov.)

Franck's rationale lies in his interpretation of the type specimen of *G. brachypoda* (Fig. 3; Figs. 6 and 7 of Franck). He sees it as a hybrid between *G. mollis* and *G. erecta*, noting as evidence "corollas drying or withering to a reddish color on specimens" (as in *G. mollis*) and "narrowly elliptic leaflets and petiole longer than the terminal leaflet" (as in *G. erecta*). He also points out difficulties of earlier botanists in distinguishing between *G. erecta* and *G. brachypoda* — but these difficulties almost certainly reflect attempts to find two entities within a single species, i.e., within the species I identify as *G. erecta*. My earlier treatment provided a perspective (p. 12) on confusion in the typification of *G. brachypoda*.

"Another Chapman collection at NY [besides the holotype/isotype] has been tentatively identified as *G. brachypoda* (8089) — but it is *G. erecta*, which perhaps accounts for the placement of *G. brachypoda* in some accounts as a synonym of *G. erecta* (e.g., Vail described and keyed *G. brachypoda* as having an erect habit). It also presumably accounts for why Isely (1998, p. 566) thought the type was so aberrant ("probably either a freak form of *G. erecta* or an exceptionally rare hybrid with one of the viny species") — if not, the basis of his statement is not clear."

I see no clear evidence that the type of *Galactia brachypoda* is a *mollis-erecta* hybrid. Franck is hardly certain about the hypothesis — he says "it seems likely that *G. erecta* and *G. mollis* hybridize" (p. 146) and notes that "*G. brachypoda* is possibly intermediate" between the two (p. 147). Instead, *G. brachypoda* appears to be representative of the species as I have identified it. The inflorescences of the holotype are immature and corolla color is ambiguous; the inflorescence axes (including peduncles) are 15–20 mm long (not like the sessile to subsessile inflorescences of *G. erecta*); stems are prostrate and up to 37 cm long, impossible to interpret as erect; vestiture of the stems and calyces is very sparse and while the hair orientation cannot be seen, the plant apparently is part of the southern 'antrorse' population system of *G. brachypoda* (see Nesom 2015, p. 14). Leaf and leaflet morphology are variable in *G. brachypoda* (see comments in Nesom 2015) and the leaves of the holotype are easily within the bounds of variability of the species. Finally, Franck apparently had no difficulty in separating *G. brachypoda* of my interpretation (he treats it as a distinct species, with a different name) from *G. erecta*.

Franck found only three other collections that he thought might have a *mollis-erecta* hybrid origin (*Anderson 15642* from Baker Co., Ga.—FSU; *Duncan 17113* from Colquitt Co., Ga.—GA; *Chapman s.n.* from Gulf Co. Fla.—MO). An image of the Anderson collection is online — it indeed is closely similar to the type of *Galactia brachypoda*.

If accepted (as here) that *Galactia brachypoda* is correctly applied in my earlier treatment, then *G. michauxii* Franck is a synonym. In my concept the holotype of *G. michauxii* belongs among plants of the variable and broadly distributed *G. brachypoda*.

(3) Identification of *Galactia grisebachii* and description of *G. austrofloridensis* (as sp. nov.)

Numerous collections of a morphologically unambiguous species have been made from Dade, Lee, and Monroe counties in southern Florida (Fig. 6) — from pinelands, pine-palmetto, hammocks, weedy grassland, sandy fields, and beaches. As characterized earlier (Nesom 2015, including Fig. 13, photos of the lectotype and isolectotype, here as Fig. 5), the stems are climbing-twining, filiform, sparsely and minutely strigose with antrorse hairs, leaves consistently linear-oblong, without raised veins, the inflorescence axis 10–40(–130) mm, and flowers solitary and axillary or 2–5(–10) in reduced pseudoracemes.

These plants had previously been recognized as *Galactia parvifolia* A. Rich. but I identified them as *G. grisebachii* Urb., establishing that *G. parvifolia* applies not to the Florida plants but instead to a species known from at least from Hispaniola, Cuba, and the Bahamas. *Galactia*



Figure 5. *Galactia grisebachii* Urb. Left. Lectotype, BREM Right. Isolectotype, K.

parvifolia (2015, Fig. 14) has broadly oblong to oblong-elliptic leaflets from base to the top of the stem, distinct from the consistent linear shape of *G. grisebachii*. They are not the same species.

Franck observed that plants matching the lectotype of *Galactia grisebachii* (from Cuba) are restricted to the West Indies (at least Cuba, Jamaica, and Hispaniola), the Florida plants thus without

a name, which he then provided — as *G. austrofloridensis* A.R. Franck. He contrasted *G. austrofloridensis* with *G. grisebachii* as follows: (a) long inflorescences often exerted beyond the leaves, with up to 9 flowers (vs. short inflorescences of *G. grisebachii* rarely exerted beyond the leaves, with up to 5 flowers) and (b) conspicuously raised-reticulate venation adaxially (vs. leaflets without raised-reticulate venation in *G. grisebachii*).

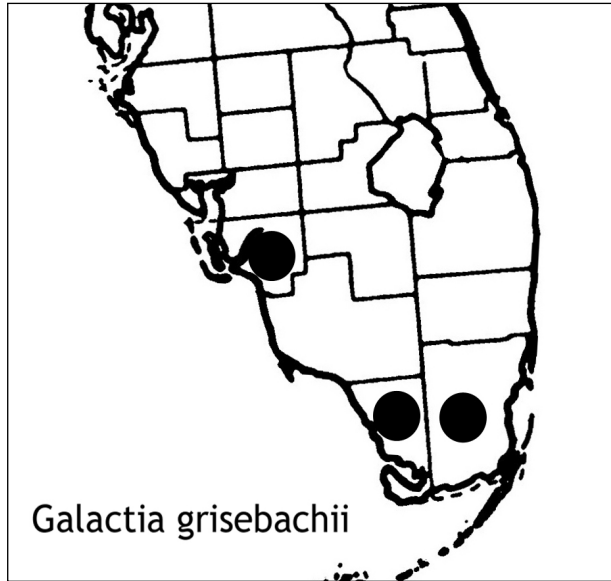


Figure 6. Distribution of *Galactia grisebachii* in Florida

In 2015, I considered the possibility that the Florida plants might be considered as an undescribed species but took the conservative route because of their morphological resemblance to *Galactia grisebachii* of the West Indies and because of their relatively common occurrence in ruderal habitats, which suggested they might not be native. Inflorescence axis length and number of flowers in the Florida plants is variable and overlaps with the West Indian plants. Whether a distinction in venation is constant remains to be clearly documented and affirmed.

In any case, Franck's hypothesis is reasonable, although he himself expressed doubt about it (p. 145): "Because of the obvious similarity and likely gradation between

Galactia austrofloridensis and *G. volubilis*, I find it unsatisfactory to recognize *G. austrofloridensis* at the species level and am wont to use infraspecific taxonomy, or lump it into *G. volubilis* as was done by Rogers (1949). However, many other taxa of the '*G. volubilis* group' could be recognized at the infraspecific level or synonymized for the same reasons. Until relationships are better understood within the '*G. volubilis* group,' *G. austrofloridensis* is reluctantly recognized."

I find no indication that *Galactia grisebachii* intergrades with *G. volubilis*, nor do I find credible Franck's assertion (p. 145) that *G. austrofloridensis* "has clear affinities with *G. volubilis*" (presumably he meant a close evolutionary/cladistic relationship), which I take to be no more than a guess. My own guess is that its relationships are closer to West Indian taxa if it is indeed not conspecific with one of them. Nor do I see the possibility that "many other taxa of the '*G. volubilis* group' could be recognized at the infraspecific level or synonymized."

LITERATURE CITED

- Franck, A.R. 2017. Notes on trifoliolate species of *Galactia* (Fabaceae) in Florida. *Phytologia* 99: 139–185.
 Nesom, G.L. 2015. Taxonomy of *Galactia* (Fabaceae) in the USA. *Phytoneuron* 2015-42: 1–54.