

***RUBUS BEAMANII*, A NEW NAME FOR *RUBUS VAGUS* L.H. BAILEY,
A GLANDULAR DEWBERRY
DESCRIBED FROM KALAMAZOO COUNTY, MICHIGAN,
AND RECENTLY DISCOVERED IN OHIO**

MARK P. WIDRLECHNER

Department of Horticulture/Department of Ecology, Evolution, and Organismal Biology
Iowa State University
Ames, Iowa 50011

BRIAN P. RILEY

Ohio Army National Guard
Camp Ravenna Joint Military Training Center
Newton Falls, Ohio 44444

ABSTRACT

The recent discovery of *Rubus vagus* L.H. Bailey at Camp Ravenna Joint Military Training Center in Portage and Trumbull County, Ohio, has highlighted a seldom-seen species of North American *Rubus* that, for 70 years, has been illegitimately named. We propose a valid name for it: ***Rubus beamanii*** Widrechner & Riley, **nom. nov.**, honoring Professor John Beaman (1929-2015). A key to the glandular dewberries of Ohio and surrounding states is included as an aid to distinguishing *R. beamanii* from the other glandular dewberries encountered in the region.

In the early 1940s, the genus *Rubus* was extensively collected in Kalamazoo Co., Michigan, by Clarence and Florence Hanes and Fred Rapp. Their specimens were shared with Liberty Hyde Bailey for identification in preparation for the publication of “The Flora of Kalamazoo County, Michigan” (Hanes & Hanes 1947). In that book, Bailey described 14 new species of *Rubus*, including six new members of a group he referred to as sect. *Flagellares* (L.H. Bailey) L.H. Bailey. As noted by Reveal (2014), the correct name for this diverse section is actually the earlier sect. *Procumbentes* (Rydb.) L.H. Bailey. Hereafter, we refer to members of this section as dewberries.

The recent Flora North America treatment (Alice et al. 2014) treats the dewberries, which vary widely in their morphology, phenology, habitat preferences, and ploidy levels, with more than 50 species recognized in the most recent sectional revision (Davis et al. 1968), as a single, highly polymorphic taxon, *Rubus flagellaris* Willd., downplaying studies that have examined the diverse, polyploid cytogenetics and breeding biology of dewberry taxa (Einset 1947; Thompson 1961, 1962, 1997).

In the north-central USA, dewberries are widely distributed and are typically found in old fields, prairies, savannas, and woodlands. Most dewberry taxa in this region lack stipitate glands. For example, of the seven dewberry species native to Minnesota, only *Rubus ithacanus* bears stipitate glands (Widrechner & Smith 2008), and of the 11 species native to Missouri, only *R. deamii* and *R. leviculus* bear them (Widrechner 2013). As a group, the glandular dewberries of the region are poorly understood and have been infrequently collected. In Iowa, no glandular dewberry populations have been well-documented since the 1950s.

In July 2014, Riley discovered a glandular dewberry population at Camp Ravenna Joint Military Training Center (Camp Ravenna) located on the Trumbull Co., Ohio, side of the 8775-hectare facility. This distinct, eye-catching dewberry was found growing in loamy, well-drained soil on a small rise on the edge of a mature swamp woods (flatwoods) dominated by *Quercus palustris*

and *Quercus bicolor*. There, the population encompassed about 80 m². Its low-arching, tip-rooting primocanes are densely covered with stipitate glands (Fig. 1), which give the canes and petioles a purplish appearance that, coupled with its leaves of mostly five leaflets, superficially resembles *R. trivialis* Michx. *Rubus trivialis*, or southern dewberry, is a state-endangered species in Ohio with only one extant population found along the banks of the Ohio River in Clermont County and a single known historical collection from 1916 in Hamilton County (ODNR 2016). The probability of this new find in northeast Ohio being *R. trivialis* seemed quite low, which motivated Riley to contact Widrechner. Riley collected numerous specimens from this site in 2014 and deposited them at ISC and OS (abbreviations follow Thiers et al. 2016).

In September 2015, while walking along an abandoned railroad track through a mature, dry-mesic woods consisting primarily of *Quercus alba* and *Q. rubra* at Camp Ravenna, Riley found a second, smaller (18 m²) population of this same glandular dewberry, on the Portage County side of the post, located 2.6 km southwest of the initial Trumbull County site. Several voucher specimens were made from this second population. These specimens, like those collected in 2014, are housed at ISC and OS.

Upon examination of numerous photographs depicting many of this dewberry's morphological traits, in addition to petiole and pedicel measurement data, Widrechner concluded that what Riley had found most closely resembled *R. vagus* L.H. Bailey, based on the sectional key of Davis et al. (1968). *Rubus vagus* was among the six dewberry species that Bailey published in Hanes & Hanes (1947). However, during further investigation of this name, Widrechner discovered that *R. vagus* was a later homonym and thus illegitimate, because *R. vagus* had been validly published earlier by W.O. Focke (1899) to name an Old World blackberry. The illegitimacy of *R. vagus* L.H. Bailey was independently noted by Alice et al. (2014).

We provide here a new name for *Rubus vagus* L.H. Bailey and present a key summarizing its distinctions (including the glandular dewberry populations found at Camp Ravenna) from other glandular dewberries known from Ohio and nearby states. Our intent for doing so is four-fold. First, it allows us to honor a distinguished botanist and educator who inspired many plant scientists throughout his long career. Second, it gives field botanists in the North Central region a quick identification tool for distinguishing among glandular dewberries. Third, it allows a valid name to be assigned for a potentially globally rare species that is likely deserving of protection in Michigan and Ohio, the only two states in which this species has been found and accurately verified. And finally, it sets the stage for future studies of this group, ones that can bring together phenotypic, cytological, and genetic analyses to develop a clearer picture of all the eastern North American glandular dewberries.

Rubus beamanii Widrechner & Riley, **nom. nov.** *Rubus vagus* L.H. Bailey [nom. illeg.], Flora of Kalamazoo County, Michigan, 148, illus. 149. 1947 (non *Rubus vagus* Focke 1899). **TYPE:** **USA. Michigan.** Kalamazoo Co.: Alamo Township, Section 7, 30 Jul 1942, C.R. Hanes 1712 (holotype: BH!). (Figures 2-4)

Representative collections. Michigan. Kalamazoo Co.: Section 7, Alamo Twp., moist woods, C.R. Hanes 1773, 11 Jun 1943 (BH, WMU), C.R. Hanes 1773x, 6 Aug 1943 (BH, WMU). (The WMU specimens include F.N. Hanes as a second collector.) **Ohio.** Portage Co.: SE ¼ Windham Twp., rare; small, local, native population with low-arching, tip-rooting primocanes growing on abandoned railroad ballast within mature mesic oak woods where plants receive half sun at most, SW of Ramsdell Quarry, Camp Ravenna Joint Military Training Center, Ravenna, 14 Sep 2015, B.P. Riley 3318 (OS); *ibid.*, B.P. Riley 3319 (ISC). Trumbull Co.: SW ¼ Braceville Twp., small, local, non-fruiting population consisting of one individual with low arching, tip-rooting canes growing on wet-moist, semi-shaded edge of mature wet woods, S edge of 50-foot wide clearing,

North of Group 7 igloo block, Camp Ravenna Joint Military Training Center, Newton Falls, 17 Jul 2014, *B.P. Riley 3037* (OS); SW ¼ Braceville Twp., rare; rather large, local, fruiting population with low-arching, tip-rooting canes growing on slightly elevated, loam, acidic soil on W edge of mature pin oak flatwoods, N of Group 7 igloo block, Camp Ravenna Joint Military Training Center, Newton Falls, 21 Jul 2014, *B.P. Riley 3038* (OS); *ibid*, 29 Jul 2014, *B.P. Riley 3039* (ISC) (Figures 1, 5); *ibid*, 6 Aug 2015, *B.P. Riley 3320* (OS); *ibid*, *B.P. Riley 3321* (ISC).

We have been unable to confirm/document additional populations of *Rubus beamanii*. County distribution maps for this species show records for Monroe Co., Wisconsin (Kartesz 2015; USDA-NRCS 2016), and Clare Co., Michigan (Kartesz 2015), and we have examined likely “candidate” specimens from both counties, including *Davis 8745* (CM) from Clare County (based on its citation in Davis et al. 1968) and *Ugent s.n.* (WIS) from Monroe County (based on its annotation by A.M. Fuller as “could be *R. vagus*, Bailey”). However, both of those collections are samples of the more common mounding dewberry, *R. ithacanus*.

We have selected the epithet “*beamanii*” in honor of the late John Homer Beaman (1929-2015), Professor Emeritus of Botany at Michigan State University (MSU). Widrechner took his first college plant taxonomy course from Professor Beaman in 1975 and was one of many students he inspired to continue their studies of plant systematics and evolution. Given Professor Beaman’s long and productive career at MSU, aptly described by Clark & Donoghue (2005) and summarized by JSTOR (2016), and his interests in both plant conservation and field work, we feel that it is particularly fitting to give this epithet to an uncommon, native species originally described from Michigan.

To assist in identifying *Rubus beamanii*, we present the following key along with pertinent observations about the habitats and morphology of the glandular dewberries treated in the key.

Key to glandular dewberries of Ohio and surrounding states

1. Basal portion of canes ≥ 4 mm in diameter (often much stouter); plants forming a mounding tangle, only the terminal third to half of the canes trailing.
 2. Prickles on canes both broad-based and aciculate (needle-like), of varying lengths and strengths, 7–20+ per cm of cane **Rubus biformispinus** Blanchard
 2. Prickles on canes uniformly broad-based, 0–6 per cm of cane.
 3. Prickles on canes 0–4 per cm, inflorescence generally racemose, but sometimes ascendate (long-pedicellate, especially the more basal flowers) or (rarely) corymbose, with 5–15 (–20) flowers **Rubus ithacanus** L.H. Bailey
 3. Prickles on canes 2–6 per cm, inflorescence ascendate with ≤ 6 flowers **Rubus exsularis** L.H. Bailey
1. Basal portion of canes ≤ 5 mm in diameter; plants low-arching to prostrate.
 4. Inflorescences predominantly 1-flowered (rarely up to 3 flowers).
 5. Central leaflet of primocane leaves wide-ovate, with a cordate base **Rubus centralis** L.H. Bailey
 5. Central leaflet of primocane leaves elliptic, with a cuneate to rounded base **Rubus leviculus** L.H. Bailey
 4. Inflorescences predominantly 3–10 (–15)-flowered (1-flowered inflorescences may be present on weak canes or near cane tips).

6. Canes bearing stipitate glands.

7. Inflorescences ascendate; margin of primocane leaves irregularly serrate to dentate, base of central leaflets rounded **Rubus profusiflorus** L.H. Bailey

7. Inflorescences racemiform; margin of primocane leaves finely serrate, base of central leaflets subcordate **Rubus beamanii**

6. Canes lacking stipitate glands.

8. Primocane leaflets softly pubescent beneath.

9. Primocane leaves predominantly 3-foliolate, central leaflet ≤ 7 cm long and 4.5 cm wide **Rubus deamii** L.H. Bailey

9. Primocane leaves either 5-foliolate or a mixture of 3 and 5-foliolate, central leaflet ≥ 7 cm long and 4.5 cm wide **Rubus invisus** (L.H. Bailey) Britt.

8. Primocane leaflets thinly pubescent to glabrous beneath.

10. Primocane leaves 3-foliolate, central leaflet wide-elliptic to rhomboid, abruptly shouldered **Rubus kentuckiensis** L.H. Bailey

10. Primocane leaves either 3- or 5-foliolate, central leaflet ovate, gradually acuminate **Rubus depavitus** L.H. Bailey

Relatively little is known about the habitat preferences of most of the 11 glandular dewberries keyed here. Among this group, associations with dry, sandy woodlands and open edges and roadsides are probably the most common, although all the well-described sites for *Rubus profusiflorus* are of sterile sands or sand prairies. *Rubus beamanii* differs somewhat from this tendency in that has typically been found in more mesic oak woodlands. Of the other 10 glandular dewberries, only *R. ithacanus* is regularly found in such settings (Widrechner & Smith 2008).

Rubus beamanii produces relatively thin, whip-like primocanes that are low-arching to prostrate, quite unlike the large, mounding canes of *R. biformispinus*, *R. exsularis*, and *R. ithacanus*. Of 7 other low-arching to prostrate dewberries, only *R. profusiflorus* and some populations of *R. leviculus* typically share *R. beamanii*'s trait of bearing stipitate glands on their primocane axes. Remarkably, the protologue of *R. vagus* (Hanes & Hanes 1947) indicated that its canes "are free of glands," in direct conflict with the holotype, which clearly bears many stipitate glands (Figure 4).

When comparing primocane leaves, *Rubus beamanii* bears predominantly 5-foliolate leaves, with elliptic-ovate to elliptic central leaflets, most closely resembling *R. depavitus* and *R. invisus* in general form. However, the primocane leaves of *R. depavitus* are thinly pubescent to glabrous beneath, in contrast to the softly-pubescent undersides of the leaves of *R. beamanii* (and *R. invisus*). The central leaflets of *R. profusiflorus*, while sometimes ovate to elliptic, have a jagged appearance, with rough, 2 to 4 mm long teeth at a density of about 2 to 3 teeth per cm. The edges of *R. beamanii*'s central leaflets are finely serrate, with 0.5 to 2 mm long teeth at a density of about 4 to 5 per cm.

The most notable feature of floriculture morphology of *Rubus beamanii* is its racemiform inflorescences (the longest ≤ 18 cm), typically bearing 7 to 10 (sometimes up to 15) flowers on relatively uniform pedicels (the longest ≤ 3 cm), most not subtended by leaflets (Figures 3, 5). Of the dewberries keyed here, only *R. biformispinus* and *R. ithacanus* typically bear racemose inflorescences, but they are often much longer both in overall and pedicel length. The remaining taxa in this key bear ascendate inflorescences with flaring pedicels, varying greatly in length, the most basal ones sometimes exceeding 8 cm in length.

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LITERATURE CITED

- Alice, L.A., D.H. Goldman, J.A. Macklin, and G. Moore. 2014. *Rubus* (Rosaceae). Pp. 28–56, in *Flora of North America North of Mexico*, Vol. 9. Oxford Univ. Press, New York and Oxford.
- Clark, L.G. and M.J. Donoghue. 2005. John H. Beaman – Recipient of the 2004 Asa Gray Award. *Syst. Bot.* 30: 1–6.
- Davis, H.A., A.M. Fuller, and T. Davis. 1968. Contributions toward the revision of the Eubati of eastern North America. III. *Flagellares*. *Castanea* 33: 206–241.
- Einset, J. 1947. Chromosome studies in *Rubus*. *Gentes Herb.* 7: 181–192.
- Focke, W.O. 1899. *Rubus vagus*. P. 12, in E.B. Burnat. *Flore des Alpes Maritimes*, Vol. 3. H. Georg, Geneva, Switzerland. <<http://www.biodiversitylibrary.org/item/45129#page/54/mode/1up>> Accessed October 2016.
- Hanes, C.R. and F.N. Hanes. 1947. *Flora of Kalamazoo County, Michigan: Vascular Plants*. Anthoensen Press, Portland, Maine.
- JSTOR Global Plants. 2016. John Homer Beaman (1929 -). <<http://plants.jstor.org/stable/10.5555/al.ap.person.bm000000527>> Accessed December 2016.
- Kartesz, J.T. 2015. The Biota of North America Program (BONAP). *North American Plant Atlas*. Chapel Hill, North Carolina. <<http://bonap.net/NAPA/TaxonMaps/Genus/County/Rubus>> Accessed December 2016.
- Ohio Department of Natural Resources (ODNR). 2016. 2016-2017 Rare Native Ohio Plants Status List. <<http://naturepreserves.ohiodnr.gov/rareplants>>. Accessed January 2017.
- Reveal, J.L. 2014. Lexicon of infrageneric names in *Rubus* (Rosaceae, Rubeae). *Kew Bull.* 69: 9524. Doi: 10.1007/s12225-014-9524-y
- Thiers, B. 2016 (continuously updated). *Index Herbariorum: A global directory of public herbaria and associated staff*. New York Botanical Garden's Virtual Herbarium. <<http://sweetgum.nybg.org/ih/>>
- USDA-NRCS. 2016. PLANTS Database. <<http://www.plants.usda.gov/core/profile?symbol=RUIA>> Accessed December 2016.
- Thompson, M.M. 1961. Cytogenetics in *Rubus*. II. Cytological studies of the varieties 'Young', 'Boysen', and related forms. *Amer. J. Bot.* 48: 667–673.
- Thompson, M.M. 1961. Cytogenetics in *Rubus*. III. Meiotic instability in some higher polyploids. *Amer. J. Bot.* 49: 575–582.
- Thompson, M.M. 1997. Survey of chromosome numbers in *Rubus* (Rosaceae: Rosoideae). *Ann. Missouri Bot. Gard.* 84: 128–164.
- Widrechner, M.P. and W.R. Smith. 2008. *Rubus*, blackberries and raspberries. Pp. 440–511, in W.R. Smith. *Trees and Shrubs of Minnesota*. Univ. of Minnesota Press, Minneapolis.
- Widrechner, M.P. 2013. 25. *Rubus* L. (raspberry, blackberry, bramble). Pp. 976–977, 979–1004, in G. Yatskievych. *Steyermark's Flora of Missouri*. Vol. 3. Missouri Botanical Garden (St. Louis) and Missouri Dept. of Conservation (Jefferson City).

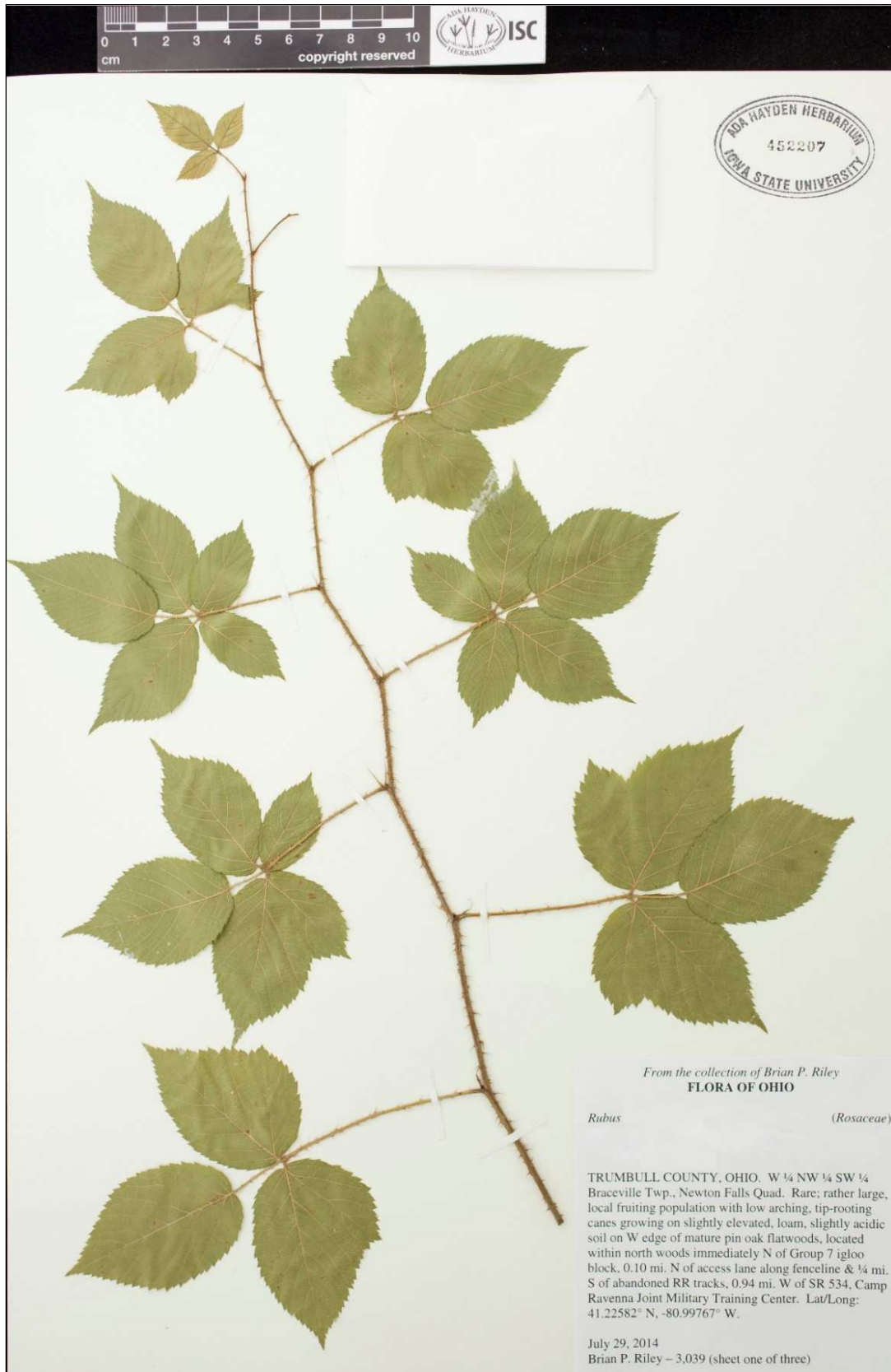


Figure 1. *Rubus beamanii* primocane from Camp Ravenna in Trumbull Co., Ohio, July 2014.

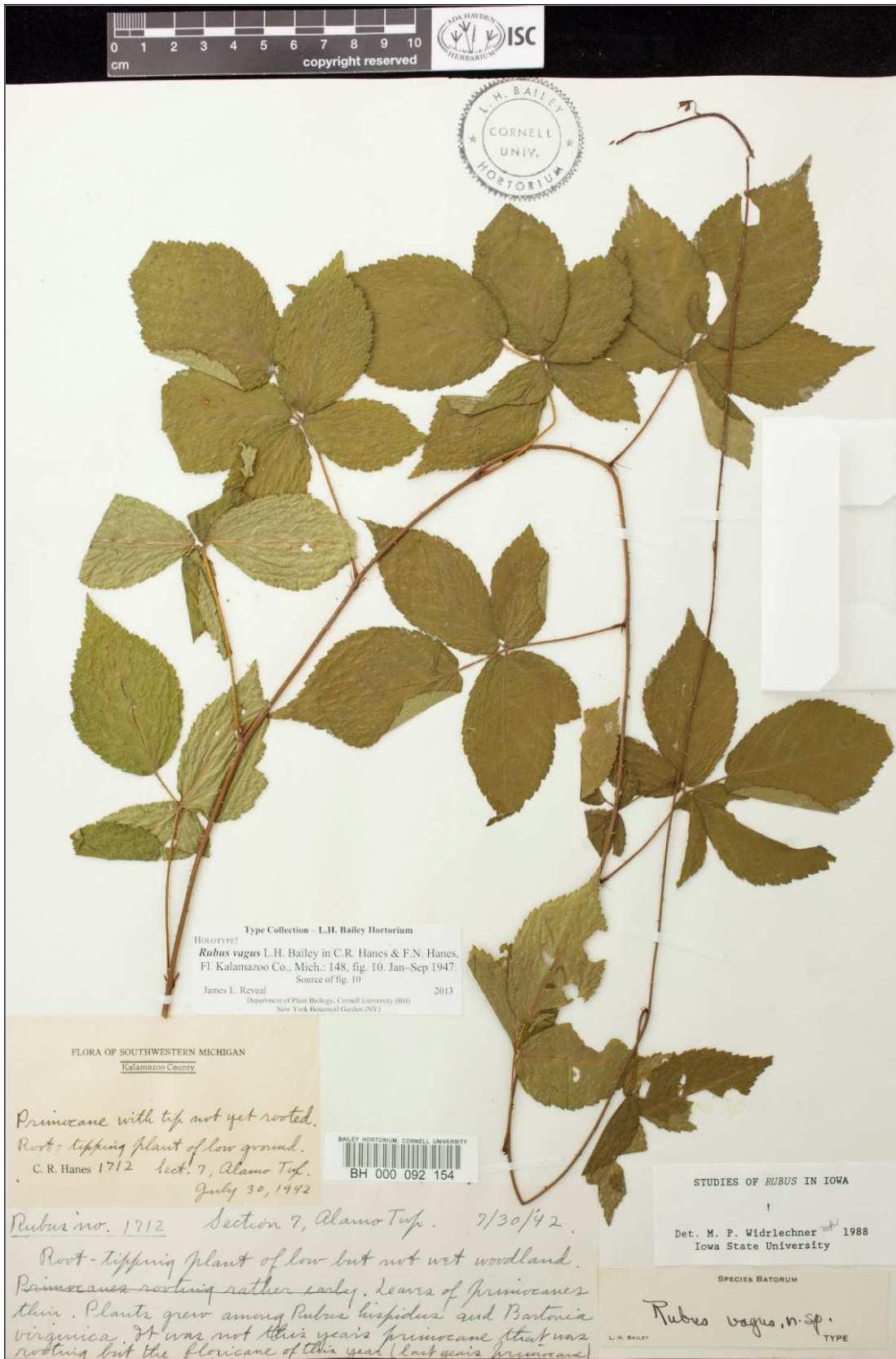


Figure 2. A primocane from the holotype of *Rubus vagus*.



Figure 3. A floriscane from the holotype of *Rubus vagus*.



Figure 4. Close-up of a primocane from the holotype of *Rubus vagus*, showing stipitate glands on its cane and petioles.

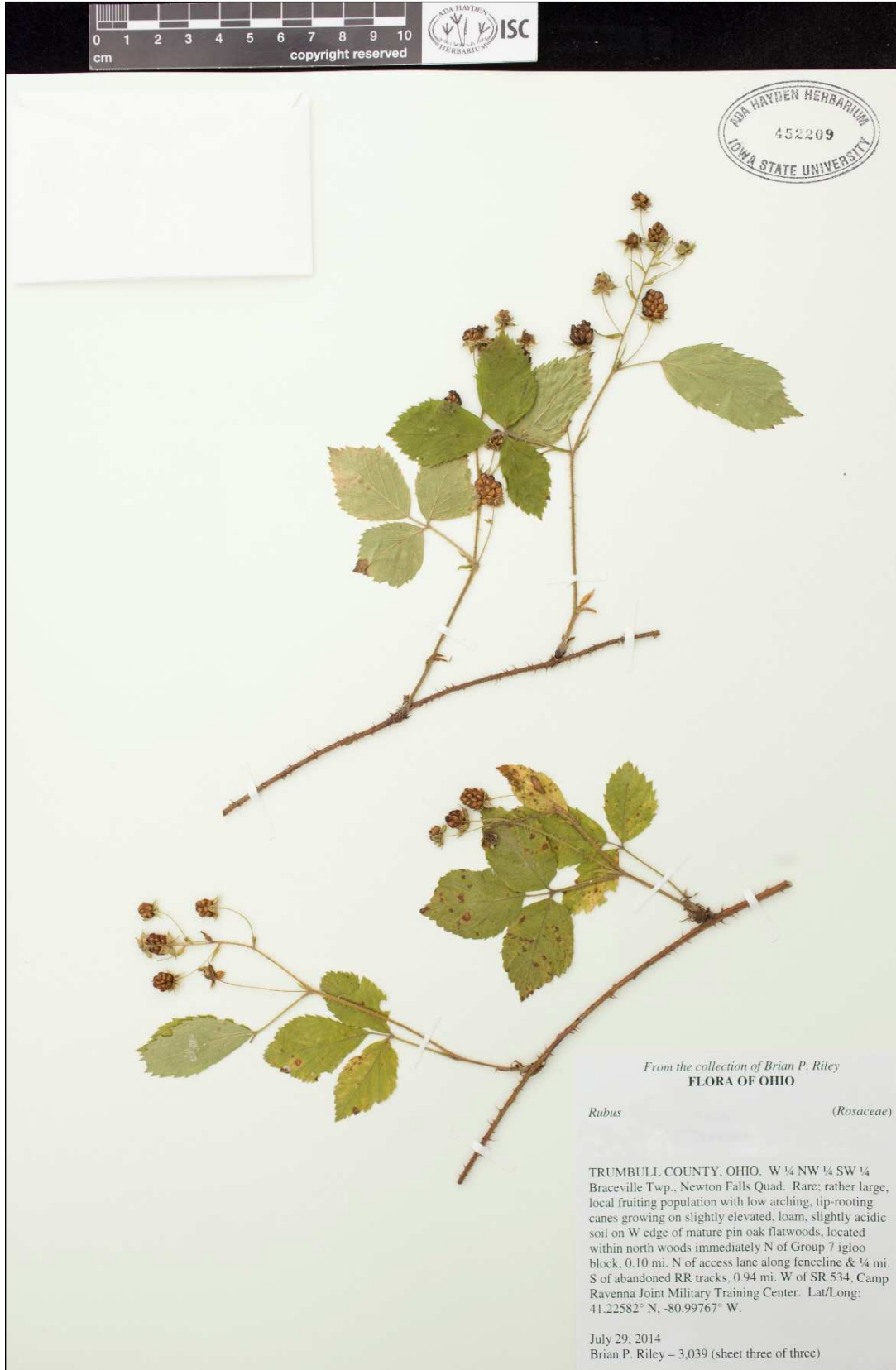


Figure 5. *Rubus beamanii* floricane from Camp Ravenna in Trumbull Co., Ohio, July 2014.