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Scientific Note: Typification of *Vaccinium elliottii* (Ericaceae), a Distinct Species

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ABSTRACT

Vaccinium sect. *Cyanococcus* contains 10–20 species native to the eastern United States. Most workers agree that *Vaccinium elliottii* is a distinct species of sect. *Cyanococcus*, although sometimes it has been relegated to synonymy under *V. corymbosum*. As far as we are aware, the type of *V. elliottii* has never been clarified. A lectotype is designated here from a collection of A.W. Chapman. A morphological description of the species is provided to further aid in the application of the name.

Key words: blueberry, southeastern United States, *Vaccinium* section *Cyanoccoccus*, *Vaccinium corymbosum*

Vaccinium L. is a polyphyletic genus of nearly 500 species (Kron et al. 2002; Powell and Kron 2002). Section *Cyanococcus* A. Gray is a morphologically distinct group of 10–20 species (Fritsch et al. 2024), which has suffered from widely divergent taxonomies. For example, the broadly circumscribed concept of *V. corymbosum* L. in Vander Kloet (2009) encompasses 13 species recognized by Camp (1945). Because of the taxonomic challenges in sect. *Cyanococcus*, typification is critical to accurately apply names.

One distinctive member of sect. *Cyanococcus* is *Vaccinium elliottii* Chapm., which ranges from southern Virginia to southern Arkansas, south to eastern Texas and northern Florida (Kartesz 2024). Although placed in synonymy under an expansive species concept of *V. corymbosum* L. by Vander Kloet (2009), nearly all other workers have confidently recognized *V. elliottii* as a distinct species (Ward 1974; Uttal 1987; Lyrene 1994; Vorsa 1996; Lyrene 2014; Crowl et al. 2022; Fritsch et al. 2024). However, as far as we are aware, the type of this name has never been clarified (Turland et al. 2018).

The purpose of this article is to typify *Vaccinium elliottii* to assist in the application of the name. Further, we provide a morphological description of the species based on specimens at the FLAS herbarium collected from Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Virginia. Measurements with a range of values report the middle 95% of values with the range in parentheses (if different from the middle 95%; data available at **http://morphobank.org/permalink/?P5219**).

Vaccinium elliottii Chapm., Fl. South. U.S. 260. 1860. **Lectotype** (designated here): Florida. River swamps, 4–6 ft. high–Leaves deciduous–Berry small black, "*Vac. myrtilloides*, Ell. not of Mx.," *Chapman s.n.* (lectotype, NY02545998). Figure 1.

Twigs sparsely puberulent to densely puberulent-pilose, hairs to 0.5 mm long, rarely a few stipitate-glandular hairs present, leafy portion of stems to 1.4 mm wide, shriveled or wrinkled when dried, 2nd-year stems to 2.2 mm wide, minutely verrucose and +/– terete. Bud scales glabrous, to 1 mm wide, to 1.6 mm long, with a pronounced midrib, apex mucronate with a mucro to 0.8 mm long. Largest leaves (6)12–30(36) mm long, (3)4–14(16) mm wide, petiole to 1.1 mm long, blade dentate,

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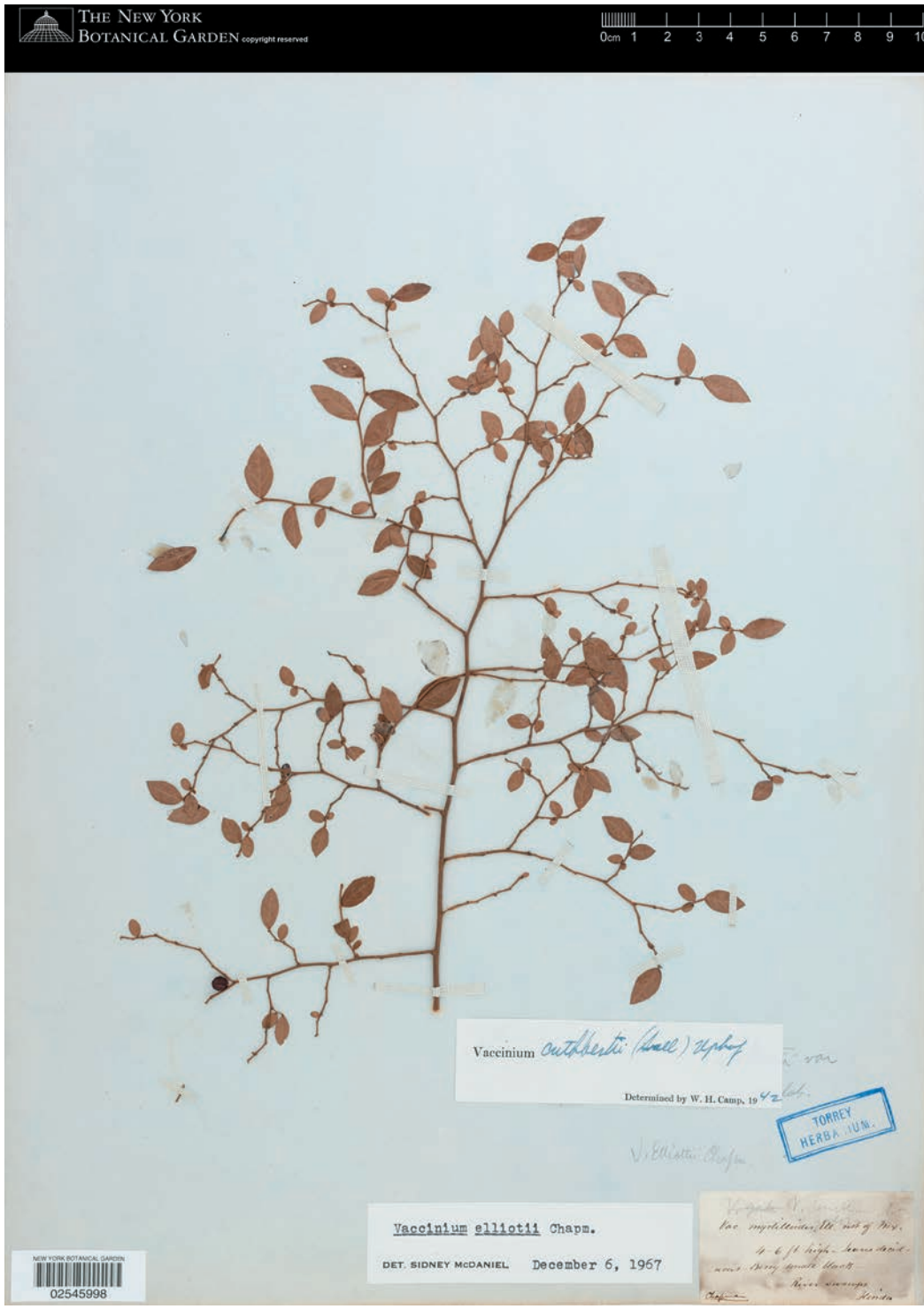

Figure 1. Lectotype of *Vaccinium elliottii* (NY02545998). Image courtesy of the C.V. Starr Virtual Herbarium (**http://sweetgum.nybg.org/science/vh/**).

crenulate, to entire (usually at least some blades toothed), the teeth to 0.2 mm long and sometimes tipped with a sessile discoid gland or stipitate subglobose gland, sessile glands to 0.1 mm wide, stipitate glands to 0.5 mm long with the glandular head <0.05 mm wide, sometimes with glands of intermediate morphology grading between the sessile and longer stipitate glands, major secondary veins to 8 on each side of the midrib, surfaces eglandular and not glaucous, abaxial surface slightly paler than to nearly concolorous with adaxial surface, adaxially glabrous except occasionally a tuft of trichomes at base of midrib or a few hairs along proximal half, abaxially short-pilose and more densely so on midrib or glabrous except for a few hairs at base of midrib, longest hairs to 0.7 mm long, midrib sometimes stipitate glandular proximally, rarely secondary veins stipitate glandular proximally, veins nearly concolorous with to slightly darker than blade surface. Flowers maturing before or with emerging leaves. Calyx lobes (0.7)1–1.9(2) mm long. Corolla (4)4.9–8.0(8.5) mm long, (1.9)2.3–4.0(4.2) mm wide, the style included. Fruit a berry, the body glabrous, 5–9 mm wide. Flowering Feb–Apr.

The name *Vaccinium elliottii* was published in 1860 by Chapman as part of his deciduous-leaved subgroup within the *Cyanococcus* group of *Vaccinium*. His description reads "Stem tall, slender, with spreading branches; leaves distichous, ovate-lanceolate, very acute, bristly serrulate from the obtuse or rounded base, pubescent on the veins; clusters sessile, 2–4-flowered; corolla reddish, cylindrical, short-pedicelled; calyx-teeth triangular; berry mostly solitary, small, globose, black. (V. myrtilloides, *Ell.*, not of *Michx.*)—River-swamps, Florida to South Carolina. March.—Shrub 4°–8° [feet] high; the branches smooth and mostly flexuous. Leaves ½"–¾" [inches] long." Camp (1945) purported that the type locality was probably South Carolina, presumably based on Elliott's (1816–1821) text, but typification should adhere to the context of Chapman's original description and the specimens he studied.

Chapman noted that Elliott had misapplied the name *Vaccinium myrtilloides* Michx., and thus Chapman named his plant after Elliott. With "much hesitation," Elliott (1821:500) had applied the name *V. myrtilloides* to material (presumably of *V. elliottii*) from Beck's Ferry near the Savannah River along the Georgia-South Carolina border. He described his plant as "a shrub found in our deep river swamps, 6–8 feet high, with branches slender, diffused. Leaves small, sessile, deciduous. Fruit axillary, solitary, black on peduncles about half an inch long." As currently understood, *V. myrtilloides* only reaches as far south as Illinois to North Carolina (Vander Kloet 2009; Kartesz 2024). No material of *V. elliottii* linked to Elliott's (1821) account of the species could be located (e.g. CHARL or PH).

Probable original material of Chapman's collection of *Vaccinium elliottii* is extant at NY, and it is here designated as the lectotype. The label appears to be in Chapman's handwriting (Chapman 1835–1851). One part of the label reads "Chapman" while the rest of the label is in a rather neater handwriting which reads "*Vac. myrtilloides,* Ell. not of Mx.[,] 4–6 ft. high–Leaves deciduous–Berry small black–River swamps[,] Florida." Most likely, the collection was made in the Florida panhandle where Chapman lived and worked (Hume 1943). The label details closely matching the protologue and the use of the name *V. myrtilloides* suggests the specimen was original material collected before the name *V. elliottii* had been coined or validly published. In a correspondence with Torrey titled "List of Florida plants contained in package[,] 329 species[,] No. 15" and dated 1851, Chapman listed a *V. myrtilloides* being sent to Torrey, which could refer to this proposed lectotype now at NY (Torrey's herbarium being incorporated into the NY herbarium; Fraser & Boom 2020). Based on the preceding evidence, we feel that the type designated here is indeed original material and does not constitute a neotype. If proven otherwise, a designation mistakenly called a lectotype can be corrected to a neotype (Turland et al. 2018: Art. 9.10). To aid in the application of the name *V. elliottii*, a detailed description of the type specimen is provided below:

Twigs puberulent, hairs to 0.2 mm long, leafy portion of stems 0.4–0.6 mm wide, shriveled or wrinkled, 2nd-year stems 0.7–0.8 mm wide, minutely verrucose and +/– terete. Bud scales glabrous, to 1.0 mm wide, to 1.3 mm long, with a pronounced midrib, apex spinulous with a spine to 0.15 mm

long. Leaves 3–16 mm long, 1.5–9 mm wide, petiole (0)0.5–1.2 mm long, blade serrulate, the teeth 0.1–0.2 mm long and sometimes tipped with a subglobose glandular head, secondary veins 2–5(7) per side, adaxially glabrous except occasionally a tuft of trichomes at the base of midrib or a few hairs along the proximal half of midrib, hairs to 0.2 mm long, abaxially glabrous except for a few hairs at base of midrib, midrib sometimes glandular-stipitate. One unattached berry, the body glabrous, 4 mm long, 5 mm wide, calyx lobes glabrous, 1–1.2 mm wide, 0.6–0.8 mm long.

A Chapman specimen at GA has the name *Vaccinium myrtifolium* Michx. in Chapman's handwriting, a name he placed under *V. crassifolium* Andrews (Chapman 1860). Thus, this specimen does not appear to be original material for Chapman's concept of *V. elliottii*. A specimen at USCH from the Coosa River in Georgia uses the name *V. elliottii*, and the label appears to be in Chapman's hand. This might suggest the name was already published when the label was made, but it is impossible to know this because the label lacks any date. Similarly, a Chapman specimen at FLAS collected from "River banks" in Florida uses the name *V. elliottii*. A specimen from the Mohr Herbarium at US also uses the name *V. elliottii* and bears the note "his type" but the specimen is merely of mostly naked stems with a few immature fruits and one branchlet with mostly fragmentary leaves. Finally, a specimen at MO is labeled as received in 1846, predating the protologue of *V. elliottii*. However, the original label only gives an identification of *Vaccinium* sp., and only in 1991 was it identified as *V. elliottii* by D.B. Ward. There is no indication Chapman considered it part of his concept of *V. elliottii*.

The use of the name *Vaccinium elliottii* in other treatments (McDaniel 1962; Ward 1974; Uttal 1987; Lyrene 1994, 1995; Vorsa 1996; Lyrene 2014; Fritsch et al. 2024) is consistent with the morphology of the lectotype. Based on our review of specimens of *V.* sect. *Cyanococcus*, we find that identification of *V. elliottii* is relatively straightforward, and, undoubtedly, it should be treated as a distinct species. Crowl et al. (2022) recovered *V. elliottii* as a well-supported clade including one sample each from Florida, Georgia, and North Carolina. Distinctive characters of *V. elliottii* are the deciduous leaves to 30(36) mm long and to 14(16) mm wide, the blade not glaucous, the abaxial surface only slightly paler than the adaxial surface, abaxially the veins nearly concolorous to or only slightly darker than the blade surface, usually with at least some blade margins serrulate, glands (sessile to stipitate, heads globose to discoid) confined to the marginal teeth and occasionally abaxially along the midrib, stigma included in the corolla (Lyrene 1994; Fritsch et al. 2024), and fruits 5–9 mm wide (Figure 2).

Camp (1945) also concluded that *Vaccinium elliottii* was one of the "more easily distinguished species" but thought that *V. elliottii* may hybridize with several species he recognized, i.e. *V. atrococcum* A. Heller, *V. caesariense* Mack, *V. darrowii* Camp, *V. tenellum* Aiton, and *V. vacillans* Kalm ex Torr. Ironically, Camp annotated the lectotype of *V. elliottii* as *V. cuthbertii* (Small) Uphof, a name he considered to be a hybrid involving *V. tenellum* (Camp 1945). McDaniel (1962) stated that hybridization was known in Mississippi between *V. elliottii* and two other species, *V. atrococcum* and *V. darrowii*. The lectotype of *V. elliottii* was annotated by McDaniel as *V. elliottii* in 1967. Curiously, McDaniel was apparently working on a taxonomic revision of *Vaccinium* in the southeastern United States, but so far such a treatment has never materialized. On 3 May 1973, McDaniel wrote to Daniel B. Ward (letter at FLAS) "on *Vaccinium* in the Gulf States [...] I have essentially examined all the material and have reached conclusions concerning all of the taxa. I will have my new paper ready for publication within two months." He further noted to Ward in his letter that the "separation of *Vaccinium amoenum* [Aiton] and *V. virgatum* [Aiton] is not practical in my experience." McDaniel had annotated numerous specimens of *Vaccinium* from several herbaria, and based on his annotations, accepted *V. elliottii* as a distinct species.

As far as is known, in the wild, *Vaccinium elliottii* is a diploid species. Crossing attempts between *V. elliottii* and other species of sect. *Cyanococcus* have occasionally been studied for applications to cultivated blueberry crops. Rowland and Levi (1994) successfully raised hybrid plants resulting from a cross between a diploid *V. darrowii* from Florida and a diploid *V. elliottii* from

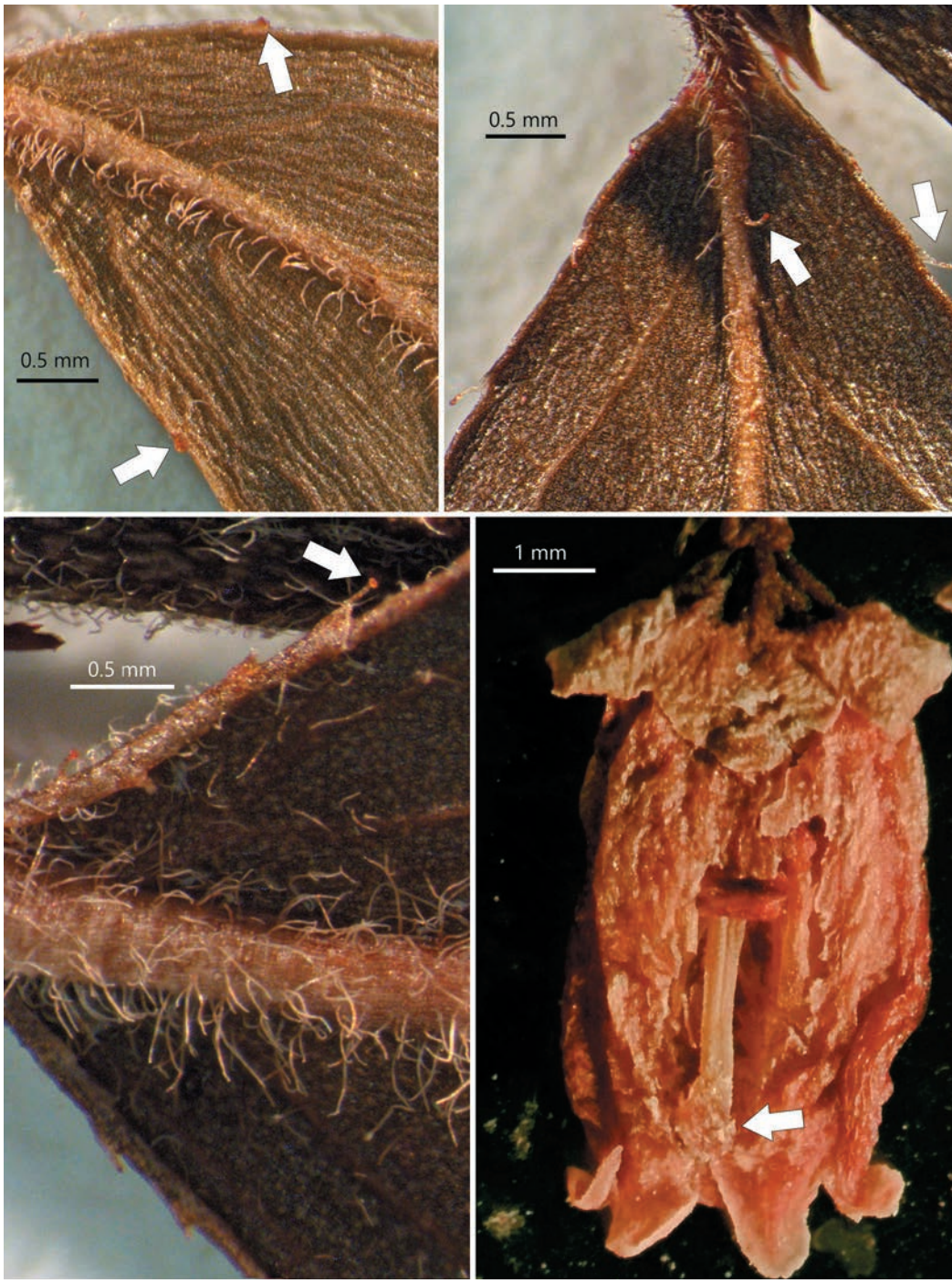

Figure 2. Glands of abaxial leaf blade surfaces and margins, and a flower, of *Vaccinium elliottii* (white arrows indicating glands or the stigma). Upper-left: subsessile marginal glands (*Martin 1067*, FLAS); upper-right: stipitate glands on the margin and midrib (*Whitten 4668*, FLAS); lower-left: stipitate glands along the margin only (*Sundell & Darwin 2416*, FLAS); lower-right: flower (*Tan 336*, FLAS), cut open to reveal the included stigma which reaches the base of the corolla lobes.

North Carolina. An experiment involving a colchicine-induced tetraploid of *V. elliottii* crossed with a tetraploid *V. corymbosum* showed successful seed set (Dweikat and Lyrene 1991). According to Lyrene (1995), hand-pollination of over 5,000 flowers of *V. ashei* (hexaploid) with pollen of *V. elliottii* (diploid) failed to produce a single viable seed. Similarly, crosses between tetraploid *V. corymbosum* cultivars (hybridized with other species and backcrossed) and diploid *V. elliottii* mostly failed (Lyrene and Munoz 1985).

SPECIMENS EXAMINED

ALABAMA. Bibb Co.: Talladega National Forest, 18 Jun 2015, *Stull 171* (FLAS); Talladega National Forest, 11 May 2016, *Whitten 4668* (FLAS). **Houston Co.:** Chattahoochee State Park, 3 Jun 1953, *Laessle s.n.* (FLAS). **Mobile Co.:** N of Salco, 5 Apr 1963, *Iltis, et al. 21340* (FLAS); N of Salco, 5 Apr 1963, *Iltis et. al. 21402* (FLAS). **Walker Co.:** State Highway 69, 9 Apr 1966, *Iltis & University of Wisconsin Plant Geography Field Trip 25096* (FLAS). **ARKANSAS. Ashley Co.:** Felsenthal Wildlife Refuge, 31 May 1981, *Sundell & Darwin 2416* (FLAS). **Putnam Co.:** between Eatonton and Milledgeville, 6 April 1947, *Cronquist 4249* (FLAS). **FLORIDA. Alachua Co.:** behind Creekside mall, 30 Apr 1982, *Judd 3115* (FLAS).; N Side of Ogden Pond, 31 Jan 1990, *Tan 336* (FLAS); San Felasco Hammock State Preserve, 17 Nov 1991, *Hallbourg 82* (FLAS). **Baker Co.:** E of Fl. 23, 2 May 1959, *Ward 1328* (FLAS); Osceola National Forest, 29 Mar 1977, *Martin 1008* (FLAS); Middle Prong of St. Marys River, 12 May 1977, *Martin 1067* (FLAS); **Clay Co.:** Jennings State Forest, 20 Apr 2007, *Haring & Hoffman 9* (FLAS). **Columbia Co.** under oaks at River Rise, 1 Feb 1941, *Murrill s.n.* (FLAS); moist woods below falls of Falling Creek, 29 Apr 1966, *Ward 5629* (FLAS); 5 mi. NW of Lake City, 29 Apr 1966, *Ward 5598* (FLAS); Ichetucknee Springs State Park, 7 Mar 1993, *Herring 1116* (FLAS); Deep Creek Conservation Area, 2 May 2000, *Abbott & Herring 13509* (FLAS). **Escambia Co.:** near Bluff Springs, 15 Apr 1949, *Hood 1916* (FLAS). **Gadsden Co.:** moist Woods Edge, 18 Apr 1930, *Kincaid & West s.n.* (FLAS); Quincy Little River floodplain, 8 Mar 1967, *McDaniel 8510* (FLAS). **Gilchrist Co.:** 0.5 mi. W of Hart Springs Park, 6 Sep 2003, *Judd 8051* (FLAS). **Hamilton Co.:** NE corner of county, 28 Apr 1962, *Will s.n.* (FLAS). **Holmes Co.:** E of Florida 81, 10 Mar 1967, *Chapman 0375* (FLAS); **Jefferson Co.:** Jones Mill Creek Tract, 30 Sep 2007, *Abbott 23306* (FLAS). **Lafayette Co.:** along Suwanee Road, 20 May 1941, *West & Arnold s.n.* (FLAS); S of Hatchbend Church, 18 Apr 1965, *Ward 4527* (FLAS); W of Branford, 12 Mar 2007, *Koch & Judd 97* (FLAS). **Leon Co.:** Ochlockonee River bridge, 12 Apr 1978, *Godfrey 76281* (FLAS); 0.5 mi. E of Capital Circle & Balkan Road, 25 Mar 2022, *Franck & Alexander 5629* (FLAS). **Levy Co.:** Manatee Springs State Park, 12 May 1996, *Gulledge & Richter 1* (FLAS); Manatee Springs State Park, 18 Feb 1997, *Gulledge 164* (FLAS). **Liberty Co.:** Apalachicola River, 24 Mar 1967, *McDaniel 8623* (FLAS); Apalachicola National Forest, 26 Apr 1999, *Hess et. al. 8485* (FLAS). **Okaloosa Co.:** pine woods, 4 Apr 1929, *Blackman & Enlow s.n.* (FLAS); Yellow River, 30 Jun 1966, *Beckner et. al. 1459* (FLAS); E of Milligan Creek, 9 Mar 1998, *Herring & Longleaf Pine Restoration Project team 1331* (FLAS). **Santa Rosa Co.:** W of Bagdad, 23 Aug 1957, *Ford 5388* (FLAS); Weaver Creek, 4 May 1977, *Perkins & Nelson 214* (FLAS). **Suwanee Co.:** W of Rocky Creek Tract, 13 Mar 2000, *Abbott & Herring 13348* (FLAS); W of White Springs, 14 Aug 2006, *Abbott 22191* (FLAS); Little River Wildlife Management Area, 4 Jun 2007, *Abbott 22614* (FLAS). **Taylor Co.:** Aucilla River, 15 Mar 1939, *Exploration Party 1939 s.n.* (FLAS); Hampton Springs, 12 May 1983, *Judd et. al. 3321* (FLAS). **Wakulla Co.:** Sopchoppy River, 19 Mar 1978, *Duncan 30484* (FLAS). **Walton Co.:** N of Red Bay, 18 Mar 1937, *Exploration Party 1937 s.n.* (FLAS); DeFuniak Springs, 2 Jun 1954, *West & Arnold s.n* (FLAS); along Road 218, 6 Mar 1967, *Chapman 0306* (FLAS); Little Alaqua Creeks, 7 Mar 1967, *Chapman 0310* (FLAS); Knox Hill, 22 Mar 1968, *Ward et. al. 6647* (FLAS); S of Alice Creek, 18 Apr 1969, *Ward 7172* (FLAS); SW of Bruce, 14 Mar 1971, *Davis 15789* (FLAS); SW of Bruce, 30 Apr 1971, *Davis 15791* (FLAS). **Washington Co.:** Highway 77, 22 Apr 2003, *Schrock s.n.* (FLAS). **GEORGIA. Charlton Co.:** S of Stokesville, 6 Apr 1941, *Duncan 3129* (FLAS). **Clarke Co.:** 0.5 mi. S of Athens, 21 Apr 1940, *Duncan 2074* (FLAS). **Morgan Co.:** Sand Hills, 1 Apr 1901, *Cuthbert s.n.* (FLAS); Augusta, 26 Mar 1904, *Cuthbert s.n.* (FLAS); Hollywood,

26 Mar 1904, *Cuthbert s.n.* (FLAS); Augusta, 2 Apr 1904, *Cuthbert s.n.* (FLAS); Hard Labor Creek State Park, 19 May 1968, *Jones 15453* (FLAS). **Oglethorpe Co.:** Buffalo Creek, 19 Mar 1942, *Duncan 4647* (FLAS). **LOUISIANA. Lincoln Parish.:** 3 mi. NW of Ruston, 23 Mar 1963, *Kral 16383* (FLAS). **Morehouse Parish.:** beside Williamson Creek, 28 Feb 1971, *Thomas 22473* (FLAS). **Washington Parish.:** 5 mi. West of Angie, 1 Mar 1979, *Darwin & Sundell 999* (FLAS); West bank of Pushepatapa Creek, 15 Jun 1983, *Thomas 84327* (FLAS). **St. Helena Parish.:** 1.5 mi. E of Greensburg, 7 Feb 1971, *Allen 428* (FLAS). **St. Tammany Parish.:** Delta Primate Center, 3 Apr 1981, *Bradburn 1461* (FLAS). **MISSISSIPPI. Forest Co.:** 7 mi. S of Hattiesburg, 14 Mar 1957, *Ray 7732* (FLAS). **Kemper Co.:** N of Daleville, 10 Jun 1969, *Jones 16018* (FLAS). **Lauderdale Co.:** Lost Gap, 15 May 1970, *Mcdaniel & Clark 13366* (FLAS). **Newton Co.:** 1.5 mi. E of Decatur, 2 May 2010, *Majure 4029* (FLAS). **Pike Co.:** Dixie Springs Lake, 21 Mar 1957, *Ray 7793* (FLAS). **Winston Co.:** 6 mi. E of Louisville, 16 Mar 1985, *Smith 1133* (FLAS). **NORTH CAROLINA. Hartford Co.:** Potecasi Creek, 30 May 1958, *Ahles & Duke 41550* (FLAS). **SOUTH CAROLINA. Georgetown Co.:** W of Georgetown, 22 May 1982, *Judd 3123* (FLAS); S side of Big Bull Creek, 10 Apr 1998, *Nelson & Long 19030* (FLAS). **Jasper Co.:** Mill Stone Landing, 20 Apr 2000, *Pittman 04200001* (FLAS). **VIRGINIA. Southampton Co.:** Near Cypress Bridge, 20 Jun 1940, *Smith & Hodgdon 1083* (FLAS).

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LITERATURE CITED

Camp, W.H. 1945. The North American blueberries with notes on other groups of Vacciniaceae. Brittonia 5:203–275.

Chapman, A.W. 1835–1851. Correspondence with John Torrey. LuEsther T. Mertz Library, New York Botanical Garden, Bronx, New York.

Chapman, A.W. 1860. Flora of the southern United States. Ivison, Phinney, & Co., New York, New York.

Crowl, A.A., P.W. Fritsch, G.P. Tiley, N.P. Lynch, T.G. Ranney, H. Ashrafi, and P.S. Manos. 2022. A first complete phylogenomic hypothesis for diploid blueberries (*Vaccinium* section *Cyanococcus*). Amer. J. Bot. 109:1596–1606.

Dweikat, I.M and P.M. Lyrene. 1991. Induced tetraploidy in a *Vaccinium elliottii* facilitates crossing with cultivated highbush blueberry. J. Amer. Soc. Hort. Sci. 116:1063–1066.

Elliott, S. 1816–1821. A sketch of the botany of South Carolina and Georgia. J.R. Schenck, Charleston, South Carolina.

Fraser, S.M. and B.M. Boom. 2020. John Torrey's botanical legacies: Archives, library, and herbarium collections. Mem. Torrey Bot. Soc. 29:5–38.

Fritsch, P.W., A.A. Crowl, H. Ashrafi, and P.S. Manos. 2024. Systematics and evolution of *Vaccinium* sect. *Cyanococcus* (Ericaceae): progress and prospects. Rhodora 124:301–332.

Hume, H.H. 1943. Botanical explorers of the southeastern United States. Florida Hist. Quart. 21:289–302.

Kartesz, J.T. 2024. North American Plant Atlas. Biota of North America Program (BONAP). (**http://www.bonap.org/napa.html**, 23 April 2024). Chapel Hill, North Carolina.

Kron, K.A., E.A. Powell, and J.L. Luteyn. 2002. Phylogenetic relationships within the blueberry tribe (Vaccinieae, Ericaceae) based on sequence data from *mat*K and nuclear ribosomal ITS regions, with comments on the placement of *Satyria*. Amer. J. Bot. 89:327–336.

Lyrene, P.M. 1994. Variation within and among blueberry taxa in flower size and shape. J. Amer. Soc. Hort. Sci. 119:1039–1042.

Lyrene, P.M. 1995. In defense of *Vaccinium elliottii*. The Palmetto 15:9–11.

Lyrene, P.M. 2014. The use of *Vaccinium elliottii* Chapm. in breeding highbush blueberry. Proceedings of the North American Blueberry Research and Extension Workers Conference, Paper Session I: Blueberry Breeding, Atlantic City, New Jersey.

Lyrene, P.M and Munoz, C.E. 1985. In vitro attempts to overcome the cross-incompatibility between *Vaccinium corymbosum* L. and *V. elliottii* Chapm. Theor. Appl. Genet. 69: 591–596.

McDaniel, S. 1962. A survey of the genus *Vaccinium* in Mississippi. M.S. thesis, Mississippi State University, Mississippi State, Mississippi.

Powell, E.A. and K.A. Kron. 2002. Hawaiian blueberries and their relatives—a phylogenetic analysis of *Vaccinium* sections *Macropelma*, *Myrtillus*, and *Hemimyrtillus* (Ericaceae). Syst. Bot. 27: 768–779.

Rowland, L.J and A. Levi. 1994. RAPD-based genetic linkage map of blueberry derived from a cross between diploid species (*Vaccinium darrowi* and *V. elliottii)*. Theor. Appl. Genet. 87: 863–868.

Turland N.J., J.H. Wiersema, F.R. Barrie, W. Greuter, D.L. Hawksworth, P.S. Herendeen, S. Knapp, W.-H. Kusber, D.-Z. Li, K. Marhold, T.W. May, J. McNeill, A.M. Monro, J. Prado, M.J. Price, and G.F. Smith (eds.). 2018. International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017. Regnum Vegetabile 159. Koeltz Botanical Books, Glashütten, Germany.

Uttal, L.J. 1987. The genus *Vaccinium* L.(Ericaceae) in Virginia. Castanea 52:231–255.

Vander Kloet, S.P. 2009. *Vaccinium*. *In*: Flora of North America Editorial Committee, eds., 1993+. Flora of North America North of Mexico 21+ vols. New York and Oxford. Vol. 8 pp. 515–530.

Vorsa, N. 1996. On a wing: The genetics and taxonomy of *Vaccinium* species from a pollination perspective. Acta Hort. 446:59-66.

Ward, D.B. 1974. Contributions to the flora of Florida: 6, *Vaccinium* (Ericaceae). Castanea 39:191–205.