VACCINIUM GERMPLASM COLLECTIONS

1980 - 1982

HORTICULTURAL CROPS RESEARCH SERIES NO. 60

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INTRODUCTION

This report is a continuation of the 1978 and 1979 work which was reported earlier (2). The background and rationale are the same. The collections during 1980-82 did cover a wider geographic area. It will be noted that species other than Vaccinium are listed among the accessions collected. These were collected where they appeared to have horticultural potential, but they are not included in the discussion or summary.

MATERIALS AND METHODS

The methods utilized are essentially the same as with the 1978 and 1979 report (2). However, in addition to the species designation authorities cited in that report, the description of Vaccinium sempervirens has been published by Raynor and Henderson (9) and the appropriate accessions are so designated.

RESULTS

Location NC 80-1 Jasper Co., S.C. County Road 22, about 60 m from County Road 115. The location consists of open longleaf pine savannah on the left side of the road and appears to be control-burned on a periodic basis. The location includes scattered Vaccinium materials including V. stamineum L. Collected January 30, 1980.

NC 80-1-1 V. myrsinites Lam. Colonial, to about 0.6 m, leaves elliptic, appear partially deciduous. Clonal.

NC 80-1-2 V. tenellum Ait. Colonial, 0.2 m tall. Clonal.

NC 80-1-3 V. corymbosum L. Young cutback plant growing by the roadside, 1 m tall, stems green. Clonal.

Location NC 80-2 Jasper Co., S.C. County Road 115, 3.8 km north of County Road 22. The location consists of pine flatwoods on the right and includes V. crassifolium Andr., V. myrsinites Lam., V. corymbosum L., V. tenellum Ait., V. myrsinites hybrids, and possible V. ashei Reade. Kalmia hirsuta Walter and Lyonia mariana (L.) D. Don are also abundant. Collected January 30, 1980:

NC 80-2-1 V. myrsinites hybrid. Plant about 1 m tall at present. Clonal.

NC 80-2-2 V. myrsinites hybrid. Plant 1.2 m tall. Clonal.

NC 80-2-3 through NC 80-2-6 V. myrsinites Lam. Selected for apparent leaf disease resistance. Clonal.

NC 80-2-7 V. corymbosum L. Young plant about 1.5 m tall, stems glabrous. Clonal.

NC 80-2-8 V. corymbosum L. Plant to about 2 m, stems glabrous. Clonal.

NC 80-2-9 poss. V. ashei Reade. Plant 1.3 m tall, suckering. Stems very pubescent. Clonal.

NC 80-2-10 V. myrsinites x corymbosum segregate. Narrowly upright growing, 2 m tall. Leaves partially evergreen. Clonal.

NC 80-2-11 V. myrsinites Lam. Selected for leaf disease resistance. Clonal.

NC 80-2-12 V. corymbosum L. Cutback plant, 1 m tall at present, stems glabrous, greenish. Clonal.

NC 80-2-13 V. tenellum hybrid or V. virgatum Ait. Plant 1 m tall. Clonal.

NC 80-2-14 V. myrsinites Lam. Plant 0.6 m tall. Clonal.

Location NC 80-3 Jasper Co., S.C. 1.4 km further up County Road 115 from Location 80-2. This is a relatively open upland site, but with a perched water table, with 8-10 yr planted Pinus elliottii Engelm. on the left. About 15 m from the road is a small bog. Vaccinium myrsinites is very abundant, V. crassifolium is scattered, over the higher areas, and V. corymbosum is common around the rim of the bog. Collected January 30, 1980.

NC 80-3-1 and NC 80-3-2 V. myrsinites Lam. Plants selected for disease resistance. Clonal.

NC 80-3-3 V. corymbosum L. Plant over 2 m tall, glabrous stems, appears free of stem canker. Plant growing by a stump at the edge of the bog.

Location NC 80-4 Jasper Co., S.C. County Road 58, 7.4 km south of S.C. 652. The site is made up of open pine savannah on the left side of the road. It has been logged recently and was burned several years ago. Collected January 30, 1980.

NC 80-4-1 V. myrsinites Lam. A relatively disease-resistant form. Clonal.

NC 80-4-2 V. corymbosum L. Plant about 1.5 m at present, stems glabrous. Fairly representative for the location. Clonal.

NC 80-4-3 V. myrsinites x corymbosum segregate. Plant 1.3 m tall with ovate, serrate leaves persisting. Clonal.

NC 80-4-4 V. myrsinites Lam. hybrid. Plant 1 m tall, somewhat stoloniferous, leaves deciduous. Clonal.

NC 80-4-5 V. myrsinites Lam. Plant about 0.3 m tall. Leaves atypically large for the species. Clonal.

Location NC 80-5 Jasper Co., S.C. County Road 58, 1.6 km above the lower end of the road at Road 22. This site is a pine savannah which slopes back from the road where the typical pocosin-type vegetation predominates. Collected January 30, 1980.

NC 80-5-1 and NC 80-5-2 V. myrsinites Lam. Both mature plants to 0.8 m tall. Growing at the edge of the pocosin vegetation about 55 m from the road. Clonal.

NC 80-5-3 V. tenellum Ait. Colonial, stems 0.2 m tall. Clonal.

Location NC 80-6 Jasper Co., S.C. County Road 58, 2.9 km north of location 80-5. This is a fairly upland location with open woodland along the left side of the road and includes one small colony of V. crassifolium. Collected January 30, 1980.

NC 80-6-1 Vaccinium hybrid. Plant over 2 m tall, with many widely suckering stems. Flower buds already swelling. Clonal.

NC 80-6-2 V. corymbosum L. Plant 2.5 m, stem pubescent, flower buds starting to swell. Clonal.

Location NC 80-7 Beaufort Co., S.C. County Road 198, on the north end of St. Helena Island, about 0.8 km down the road. The terrain is upland with scattered Vaccinium plants alongside the road. Collected January 31, 1980.

NC 80-7-1 Vaccinium hybrid. Plant about 0.3 m tall, stoloniferous, pubescent stems, flower buds swelling; completely deciduous. Clonal.

NC 80-7-2 prob. V. ashei Reade. Plant crown-forming, 2 m tall, pubescent stems. Clonal.

NC 80-7-3 prob. V. ashei Reade. Young plant, cutback, 0.3 m tall now, pubescent stems. Clonal.

NC 80-7-4 prob. V. ashei Reade. Plant about 1.5 m tall, stems pubescent. Clonal.

NC 80-7-5 prob. V. ashei Reade. Plant about 1.5 m tall; leaves stalked-glandular, obovate to spatulate, apically serrulate. Clonal.

NC 80-7-6 prob. V. ashei Reade. Plant about 2 m tall, stems glabrous; leaves completely deciduous. Clonal.

Location NC 80-8 Beaufort Co., S.C. Turn onto S.C. 116 off U.S. 21 at the Laurel Bay sign (across from the entrance to the Marine Air Station) and follow S.C. 116 to County Road 594. The site is on the roadside on the right around a small bay. Collected January 31, 1980.

NC 80-8-1 V. myrsinites Lam. Clone with fairly good leaf disease resistance, growing by the roadside. Clonal.

NC 80-8-2 prob. V. ashei Reade. Crown-forming plant, about 2 m tall, stems glabrous; leaves stalked-glandular; flower buds not swelling. Clonal.

NC 80-8-3 V. myrsinites Lam. hybrid. Stems 1.6-1.7 m tall, suckering widely, very erect growing; leaves sub-persistent, glandular, oblanceolate. Clonal.

NC 80-8-4 V. myrsinites Lam. variant. Leaves essentially deciduous, obovate, larger than usual. Clonal.

NC 80-8-5 V. myrsinites Lam. Fully-evergreen plant growing by the roadside. Clonal.

Location NC 80-9 Beaufort Co., S.C. Highway 170, 0.8 km north of U.S. 278 in the western edge of the county. The site is along the roadside at the edge of the woods, with scattered green-stemmed Vaccinium plants, most with the flower buds swelling.

NC 80-9-1 prob. V. corymbosum L. Plant 3 m tall, pubescent stems. Clonal.

NC 80-9-2 prob. V. corymbosum L. Pubescent stemmed plant, 2.5 m tall. Clonal.

NC 80-9-3 prob. V. corymbosum L. Very erect growing plant, over 4 m tall, pubescent stems. Clonal.

Location NC 80-10 Effingham Co., Ga. Coldbrook area on Ga.-Pacific property. The site consists of old overgrown fields, with mature Pinus taeda L. and mixed hardwoods. This is an old V. crassifolium Andr. location but could no longer be found and appears to have been shaded out. Collected January 31, 1980.

NC 80-10-1 V. corymbosum L. Plant crown-forming, over 2 m tall, pubescent stems. Clonal.

NC 80-10-2 low stoloniferous Vaccinium hybrid. Glabrous stems; leaves completely deciduous. Clonal.

Location NC 80-11 Hampton Co., S.C. Webb Wildlife Center. The site is on the back portion of the center, just above the river swamp, along the woods edge. Vaccinium arboreum Marsh and V. elliotti are most abundant along with occasional plants that appear to be stoloniferous V. ashei. Collected February 1, 1980.

NC 80-11-1 V. elliotti Chap. Plant 1.8 m tall. One of the plants showing the least flower bud swelling on this date. Clonal.

NC 80-11-2 V. elliotti Chap. Plant 2 m tall, very little flower bud swelling. Clonal.

NC 80-11-3 prob. V. ashei Reade. Plant 1.5 m tall, very pubescent stems, stoloniferous. Clonal.

NC 80-11-4 V. elliotti Chap. Very old plant to about 5 m tall, very upright growing from a small base. Clonal.

NC 80-11-5 V. arboreum Marsh representative clone. Clonal.

NC 80-11-6 prob. V. ashei Reade. Stoloniferous plant to 2 m tall, stems heavily pubescent.

NC 80-11-7 poss. V. ashei Reade or Vaccinium hybrid. Stoloniferous plant to 1 m tall.

Location NC 80-12 Hampton Co., S.C. Entrance to Webb Wildlife Center. The location is open longleaf pine savannah which is control-burned. Collected February 1, 1980.

NC 80-12-1 Gaylussacia frondosa (L.) T. & G. representative clone. Clonal.

NC 80-12-2 V. tenellum Ait. representative clone. Clonal.

NC 80-12-3 G. frondosa (L.) T. & G. representative clone. Clonal.

NC 80-12-4 V. stamineum L. representative clone, stoloniferous, pubescent stems. Clonal.

NC 80-12-5 V. tenellum hybrid or possibly V. virgatum Ait. Wide-ranging stoloniferous stems 0.4-0.6 m tall. Clonal.

Location NC 79-45 revisited (2). Colleton Co., S.C. Collected February 1, 1980.

NC 79-45-9 V. myrsinites Lam. essentially. A widely stoloniferous clone to about 0.4 m; almost completely deciduous. Clonal.

NC 79-45-10 V. corymbosum L. Representative clone growing in planted pines on the right side of the road, 2 m tall. Clonal.

Location NC 79-38 revisited (2) Montgomery Co., N.C. The new collections are from an old overgrown field area on the right side of the road. Collected February 22, 1980.

NC 79-38-4 V. corymbosum L. (diploid). Crown-forming, about 3 m tall, stems glabrous. Plant growing out of the top of an old longleaf pine stump. Dull black to subglaucous fruit. Clonal.

NC 79-38-5 V. corymbosum L. (diploid). Crown-forming, to 2 m tall, glabrous stems, subglaucous fruit. Clonal.

NC 79-38-6 V. tenellum x corymbosum - Halfhigh plants, somewhat stoloniferous, 1 m tall, stems pubescent. Clonal.

NC 79-38-7 V. tenellum x corymbosum BC to V. tenellum. Plant colonial to about 0.3 m tall. Pubescent stems. Clonal.

NC 79-38-8 V. corymbosum L. (diploid). Monostem plant (even after being cut back), to about 3 m tall. Vigorous stems, very lightly pubescent. Clonal.

NOTE: Also collected four samples of shrubby, stoloniferous Amelanchier sp. on this location.

Location NC 79-4 revisited (2) Moore Co., N.C. Collected February 22, 1980.

NC 79-4-5 V. tenellum Ait. (poss. introgressed with V. pallidum Ait.) Clone to 0.2 m tall, growing on top of the ridge above NC 79-4-1. Clonal.

NC 79-4-6 V. tenellum Ait. (poss. introgressed with V. pallidum Ait.) Clone to 0.3 m tall, growing in the same area as NC 79-4-3.

Location NC 79-13 revisited (2) Lexington Co., S.C. Collected February 28, 1980.

NC 79-13-9 and NC 79-13-10 V. tenellum Ait. representative clones growing in deep sand in an old field below the bluffs. Clonal.

NC 79-13-11 V. tenellum x pallidum (tetraploid) Colonial, to 0.4 m tall. Clone growing in deep sand about 80 ft above a stream gorge, below the bluff. Clonal.

NC 79-13-12 V. pallidum Ait. (tetraploid) Colony about 5 m across, stems 0.2-0.3 m tall. Across a woods road from 79-13-11. Clonal.

NC 79-13-13 V. pallidum Ait. (tetraploid) Clone growing along woods road, about 30 m downhill from a select clone of Prunus serotina var. alabamensis. Clonal.

NC 79-13-14 V. pallidum Ait. (tetraploid). Colonial plants 0.6 m tall, growing below a low bluff. Clonal.

NC 79-13-15 V. pallidum x corymbosum essentially. Crown-forming plant, 1.6 m tall growing on top of the bluff in the Leiophyllum zone and just below 79-13-1. Clonal*.

*NOTE: In greenhouse: leaves broadly elliptic with very sparse stalked glands on the underside; very mildew susceptible; tetraploid, based on breeding behavior.

Location NC 80-14 Aiken Co., S.C. Slopes below a sandstone bluff on the Mackintosh farm, outside Aiken. Collected February 28, 1980.

NC 80-14-1 V. corymbosum L. essentially. Plant 2.5 m tall, suckering from the base, dormant stems glabrous, young twigs pubescent, leaves serrate to serrulate, heavily glandular. Clonal.

Location NC 80-15 Darlington Co., S.C. Country Road 18, on the north side of Hartsville at Black Creek. The site is east of the Sonoco Products Co. Mill, on the south side of the road, about 0.4 km down the creek. Collected February 29, 1980.

NC 80-15-1 V. corymbosum L. variant. Young seedling about 1 m tall, chosen as a population representative. Clonal.

Location NC 79-17 revisited (2). Chesterfield Co., S.C. Collected February 29, 1980.

NC 79-17-8 V. pallidum x tenellum segregate. Colonial, to 0.2 m tall with lightly pubescent stems. Flower buds starting to swell. Clonal.

NC 79-17-9 V. pallidum Ait. Green glabrous stems to 0.2 m tall, fine twiggy growth. Flower buds starting to swell. Clonal.

NC 79-17-10 V. pallidum Ait. (poss. tetraploid). Very large old colony covering 300 square meters. Coarse stems 0.3-0.4 m tall, very heavily infested with stem canker. Clonal.

NC 79-17-11 V. crassifolium Andr. Colony growing on the lower northwest facing slope on the lower peak across from Sugar Loaf. Fairly serrate-leaved. Clonal.

Location NC 80-16 Chesterfield Co., S.C. County Road 21, 1.4 km off Road 29. The site includes a clay outcrop on both sides of the road with abundant V. crassifolium. Site identified on February 29, collections made November 25, 1980.

NC 80-16-1 V. crassifolium Andr. Cuttings from a colony with healthy foliage.

NC 80-16-2 V. crassifolium Andr. Coarser form, from the top of the knoll along the road. Leaves ovate-elliptic, distinctly serrate. Fruit with a slight glaucescence.

NC 80-16-3 V. crassifolium Andr. O.P. fruit from the colony on top of the knoll at the road, with slight glaucescence on much of it.

Location NC 80-17 Isle-of-Wight Co., Va. End of paper company road into the Zumi pine barrens, sandy flatwoods with a high water table. Except for the pine overstory, species on the site are very similar to southern New Jersey with Kalmia angustifolia var. caroliniana (Small) Fernald, Vaccinium corymbosum, Gaylussacia frondosa, Gaultheria procumbens L., and Lyonia mariana. Collected March 13, 1980.

NC 80-17-1 V. pallidum Ait. Plant to 0.2 m tall with green stems. Clonal.

NC 80-17-2 and NC 80-17-3 V. tenellum Ait. Plants 0.2 m tall. Clonal.

NC 80-17-4 through NC 80-17-10 V. corymbosum L. Representative clones from 0.8 to 2 m tall. Clonal.

NC 80-17-11 and NC 80-17-12 Gaultheria procumbens L. Plants with relatively disease resistant foliage. Clonal.

NC 80-17-13 Gaultheria procumbens L. Population collection of O.P. seed.

Location NC 80-18 Isle-of-Wight Co., Va. Above the Black Water River, near the end and back along a paper company road. The site includes upland sandy woods with small pocosin areas scattered throughout and an understory of mixed hardwoods and pines. Collected March 13, 1980.

NC 80-18-1 V. stamineum L. 2 m plant growing in a sandy area under mixed hardwoods. Many stems, base about 1 m across. Stems appear glabrous. Clonal.

NC 80-18-2 V. elliotti Chap. 2.5 m plant. Clonal.

NC 80-18-3 Vaccinium hybrid. 0.3 m tall, somewhat colonial. Clonal.

NC 80-18-4 V. elliotti Chap. 3 m plant growing in an upland area by the road. Clonal.

NC 8-18-5 and NC 80-18-6 Vaccinium hybrids. Upland, low growing to 0.3 m tall. Clonal.

NC 80-18-7 V. stamineum L. Very old plant, about 3 m tall, with many stems. Clonal.

NC 80-18-8 and NC 80-18-9 V. corymbosum L. Very old plants over 4 m tall, growing around the edge of a small moist area. Clonal.

Location NC 80-19 Suffolk Co., Va. 6.6 km beyond the gate at the end of SR 667 into the Union Camp pine plantation. The site is near the Black Water River about 1.1 km beyond the turnout to the river. Collected March 13, 1980.

NC 80-19-1 Vaccinium hybrid. Plant 0.4 m tall, growing in heavy shade under pines on the left side of the road. Clonal.

NC 80-19-2 V. pallidum Ait. Plant 0.2 m tall, growing in a sandy area on the right side of the road. Clonal.

NC 80-19-3 V. pallidum Ait. Plant 0.2 m tall, growing about 4 m above 8-19-2. Clonal.

NC 80-19-4 V. pallidum Ait. Clone with scattered stems to 0.4 m tall, growing by the roadside on the left. Clonal.

NC 80-19-5 Gaultheria procumbens L. Colony growing by the roadside on the left with V. crassifolium. Clonal.

NC 80-19-6 V. tenellum Ait. Clone with somewhat pubescent stems, less than 0.2 m tall. Clonal.

Location NC 80-20 Martin Co., N.C. State Road 1542, 1.9 km east of NC 171. Old savannah, on the left, now in planted pines. One V. crassifolium colony on the roadbank along with Gaylussacia, Leucothoe, Clethra, V. tenellum, and scattered V. corymbosum. Collected March 14, 1980.

NC 80-20-1 V. corymbosum L. Cutback plant, about 1 m tall now, collected as a representative plant for the location. Clonal.

NC 80-20-2 and NC 80-20-3 V. tenellum Ait. Clones to 0.3 tall. Clonal.

NC 80-20-4 and NC 80-20-5. V. corymbosum L. Clones 3.5 m tall, crown-forming, growing about 0.1 mi up the road from the V. crassifolium colony. Colony.

Location NC 80-21 Beaufort Co., N.C. Junction of NC 102 and U.S.17 on the right, along the roadside in the mowed area beside a pocosin. Vaccinium crassifolium is abundant in the mowed area, with occasional V. tenellum back in the woods, and the usual associated flora. Site identified March 14, 1980. No samples were collected.

Location NC 79-29 revisited (2). Beaufort Co., N.C. Collected March 14, 1980.

NC 79-29-5 Gaultheria procumbens L. O.P. fruit from the population by the road and in the power line right-of-way. Seed.

NC 79-29-6 Gaultheria procumbens L. relatively disease resistant clone from along the roadside. Clonal.

NC 79-29-7 Gaultheria procumbens L. relatively disease resistant clone from the power line right-of-way. Clonal.

NC 79-29-8 V. corymbosum L. or hybrid. 1.5 m tall, stems very pubescent, suckering a little, buds barely swollen. Clonal.

NC 79-29-9 V. corymbosum L. 4 m tall, stems pubescent, growing on an old rotten stump about 5 m in front of a shrub bog. Clonal.

NC 79-29-10 and NC 29-29-11 V. tenellum Ait. Two random representatives from the population. Clonal.

Location NC 80-22 Wake Co., N.C. Woods edge on the south border of Hillcrest Cemetary in Cary. The site is upland, just below the crest of the ridge with an overstory of hardwoods and Pinus echinata Miller. Collected May 14, 1980.

NC 80-22-1 V. corymbosum L. Old crown-forming plant over 4 m tall, from a very small base, pubescent, non-glaucous stems, leaves and fruit. Clonal and seed. 83

Location NC 80-23 Vance Co., N.C. Henderson Point Campground on Kerr Lake. Collected September 1, 1980.

NC 80-23-1 V. stamineum L. O.P. fruit from several glaucous, purplish-fruited plants in an old overgrown field under pines. Plants to about 1 m tall and somewhat stoloniferous, leaves appear non-glaucous. Seed.

NC 80-23-2 V. corymbosum L. (diploid) Mature plant over 2 m tall, growing on upland in an old overgrown field under pines. pubescent stems. Clonal.

NC 80-23-3 V. pallidum Ait. Fairly representative clone phenotypically, disease resistant. Clonal.

Also collected plants from two clones of F. virginiana Duchesne growing on dry roadbanks.

Location NC 80-24. Haywood Co., N.C. Trail from Black Balsam parking lot. Collected September 15, 1980.

NC 80-24-1 V. erythrocarpum Michx. O.P. fruit from a very productive 1.5 m plant with fair quality large deep mahogany fruit. Seed.

NC 80-24-2 V. erythrocarpum Michx. O.P. fruit from a 2 m plant, very productive, fairly small fruit of good quality. Seed.

Location NC 80-25 Buncombe Co., N.C. Lake Powhatan Campground. This site consists of dry upland woods with V. stamineum, pubescent diploid V. corymbosum, and occasional tetraploid V. corymbosum. Collected September 16, 1980.

NC 80-25-1 V. stamineum L. Population collection of O.P. fruit. Plants from 1-2 m tall and crown-forming to stoloniferous with green to purple fruit. Seed.

Location NC 80-26 Henderson Co., N.C. Ridge above Pisgah Inn on the Blue Ridge Parkway. Collected September 16, 1980.

NC 80-26-1 V. corymbosum L. Very old, crown-forming plant, to almost 3 m tall with medium-sized blue fruit with sub-acid flavor. Seed.

Location NC 80-27 Haywood Co., N.C. Entrance to Shining Rock Wilderness on U.S. 276. Collected September 16, 1980.

NC 80-27-1 V. pallidum Ait. Narrowly elliptic leaves. Clonal.

NC 80-27-2 V. pallidum Ait. Suckering plants to 1 m tall. Clonal.

NC 80-27-3 V. stamineum L. Glaucous-leaved plant with glabrous stems. Clonal.

Location NC 80-28 Transylvania Co., N.C. Dry upland roadside in Mt. Toxaway at the intersection of U.S. 64 and County Rd. 1155. Collected September 16, 1980.

NC 80-28-1 V. stamineum L. Select clone, about 1.5 m tall, stems pubescent. Very productive plant with large, purplish, sub-glaucous fruit of good quality. Seed. (Clonal collections in April 1981).

NC 80-28-2 V. stamineum L. Population collection of O.P. fruit. Seed.

Location NC 80-29 Jackson Co., N.C. Dry upland woods, 6.2 km west of the Jackson County line on U.S. 64. Collected September 16, 1980.

NC 80-29-1 V. stamineum L. Select clone, about 1 m tall, with large reddish-subglaucous fruit. Seed.

NC 80-29-2 V. stamineum L. Population collection of O.P. fruit. Seed.

Location NC 80-30 New Hanover Co., N.C. Carolina Beach State Park. The location includes a pocosin along the nature trail in the park, with abundant V. crassifolium, tall V. tenellum, G. frondosa, G. dumosa, and V. corymbosum in the more moist areas. Collected October 27, 1980.

NC 80-30-1 V. arboreum Marsh. O.P. fruit from several stoloniferous plants along the nature trail. Seed.

Location NC 80-31 Clay Co., Fla. Camp Blanding National Guard Reservation. The site is made up largely of a sand dune area with Quercus virginiana Miller, Pinus clausa Sarg. and associated species and occasional plants of V. darrowi Camp, and V. myrsinites. Collected November 7, 1980.

NC 80-31-1 V. darrowi Camp or hybrid. Somewhat stoloniferous plant about 1.8 m tall. Clonal.

NC 80-31-2 V. darrowi Camp. Plant of sub-glaucous phase to about 0.6 m tall with fairly healthy foliage. Clonal.

Location NC 80-32 Wakulla Co., Fla. Dry upland woods by the roadside near the Wakulla River on Hwy. 98, 6.9 km east of Road 365. The site includes V. arboreum and scattered 4 m V. stamineum. Collected November 7, 1980.

NC 80-32-1 V. arboreum Marsh. O.P. fruit from two clones about 3.5 - 4 m tall. Seed.

Location NC 80-33 Wakulla Co., Fla. Very dry sandy upland turkey oak woods on Hwy 98, just beyond the 98-319 split going west. The site includes scattered V. stamineum along the roadside (12.5 km west of loc. 80-32 on Hwy 98). Collected November 7, 1980.

NC 80-33-1 V. stamineum L. Plant about 1.8 m tall, foliage still green and fairly disease resistant, about 10 stems and doesn't appear to be stoloniferous. Clonal.

Location NC 80-34 Gulf Co., Fla. East of Ward's Ridge on Fla. 98 (going east from Port St. Joe), on the right side of the road under the power line right-of-way. Collected November 8, 1980.

NC 80-34-1 V. myrsinites Lam. Glaucous-leaved phase, to about 0.5 m. Clonal.

NC 80-34-2 Gaylussacia dumosa (Andrz.) T & G. Clonal.

NC 80-34-3 V. myrsinites Lam. Regrowth from crown after a fire. Clonal.

NC 80-34-4 Gaylussacia dumosa (Andrz.) T. & G. Clonal.

NC 80-34-5 V. corymbosum L. Crown-forming, 2.3 m tall with pubescent stems and entire leaves. Clonal.

NC 80-34-6 V. corymbosum L. Crown-forming, 1.6 m tall, pubescent stems, appears disease-resistant. Clonal.

Location NC 80-35 Gulf Co., Fla. 1 km east of location 80-34 on Fla. 98. Recently-logged area on the left side of the road. Collected November 8, 1980.

NC 80-35-1 V. myrsinites Lam. Subglaucous phase. Clonal.

Location NC 80-36 Lowndes Co., Ga. 1 km Northeast of Valdosta on Hwy 84. The site consists of a longleaf pine savannah on the left with scattered V. myrsinites, G. frondosa and a few V. corymbosum. Collected November 9, 1980.

NC 80-36-1 V. corymbosum L. Plant 2 m plus tall, crown-forming, pubescent stems. Clonal.

Location NC 80-37 Lowndes Co., Ga. About 1.6 km north of Naylor, at telephone box P-202. The site consists of open mature pine woodland with abundant V. myrsinites and scattered V. ashei. Collected November 9, 1980.

NC 80-37-1 prob. V. ashei Reade. Narrowly crown-forming plant to 5 m tall, leaves ovate-lanceolate, serrate; stems pubescent. Clonal.

Location NC 80-38 Wayne Co., Ga. 3.5 km Northeast of Screven on Hwy 82. The site includes open pine woodland on the right and a periodically-mowed power line right-of-way on the left. Both accessions were collected from the power line right-of-way. The site includes V. stamineum, V. elliotti, V. corymbosum and abundant Gaylussacia. The V. corymbosum and V. corymbosum hybrids are phenotypically similar to Jasper Co., S.C. collections. Collected November 9, 1980.

NC 80-38-1 V. corymbosum L. Cutback plant, presently 1.8 m tall, leaves entire, appear fairly persistent, elliptic-lanceolate with dull sheen, pubescent on the lower midvein, stems glabrous. (Possible introgressive segregate with V. myrsinites.) Clonal.

NC 80-38-2 V. myrsinites Lam. Typical for the species. Clonal.

Location NC 80-39. Horry Co., S.C. Small bay, along unpaved road to the left, off U.S. 701. 1.4 km north of Allsbrook. The location includes scattered V. corymbosum, both glabrous and pubescent forms, along with the usual Ericaceous bay associates. Collected November 24, 1980.

NC 80-39-1 V. corymbosum L. Apparent diploid; small plant; stems almost glabrous. Clonal.

NC 80-39-2 Gaylussacia frondosa (L.) T. & G. Plant to 0.9 m tall. Clonal.

Location NC 80-40 Horry Co., S.C. Hwy 917, 9.6 km east of Location NC 79-40. Longleaf pine woods on the right adjacent to a bay with an extensive Zenobia pulverulenta (Bartram) Pollard. population along the margin. Vaccinium crassifolium is abundant under the pines, along with V. tenellum. Site recently burned (probably 1979). Collected November 24, 1980.

NC 80-40-1 V. tenellum Ait. representative clone.

Location NC 79-40 revisited (2). Horry Co., S.C. Collected November 24, 1980.

NC 79-40-3 V. elliotti x corymbosum. Plant to 1.8 m, leaves entire, stems very pubescent, very few flower buds. Growing at woods edge by roadside. Clonal.

NC 79-40-4 V. corymbosum L. Apparent diploid. 1.5 m tall, leaves glabrous, glaucous below. Clonal.

Location NC 80-41 Horry Co., S.C. Unpaved road, off U.S. 501, just after turning toward Conway, off 591. Controlled burned longleaf pine savannah. V. crassifolium is abundant on the site, along with scattered plants of V. corymbosum. Collected November 24, 1980.

NC 80-41-1 and NC 80-41-2 V. corymbosum L. Apparent diploids, pubescent stems. Collected as representative for the site. Clonal.

Location NC 80-42 Georgetown Co., S.C. Hwy. S.C.26, 4.3 km off U.S. 701 The site is an old field overgrown with sickly Pinus taeda and P. serotina Michaux. It has close to 100% cover of V. crassifolium, scattered V. corymbosum and apparent V. tenellum x corymbosum hybrids. Collected November 24, 1980.

NC 80-42-1 and NC 80-42-2 V. tenellum x corymbosum. Representative hybrid clones.

Location NC 80-43 Georgetown Co., S.C. Hwy 521, 5.9 km east of Andrews. Roadside on the right and back into open woods on a gentle slope. The Vaccinium population consists of obvious plants of V. ashei, with one old plant (2.0 m) and numerous small, younger seedlings. All plants are suckering and many are kept low by mowing. Phenotypically the plants resemble the west Florida race of V. ashei and may be escapes from an old planting. Collected November 25, 1980.

NC 80-43-1 through NC 80-43-7 V. ashei Reade. Representative clones.

Location NC 80-44 Georgetown Co., S.C. Hwy. 521, 3.5 km west of NC 80-43 location. The location consists of an open Pinus palustris Miller area between the highway and planted Pinus taeda. Scattered plants of V. corymbosum occur on the site. Collected November 25, 1980.

NC 80-44-1 V. corymbosum L. Stems glabrous, about 1.8 m tall, leaves glabrous, entire. Clonal.

NC 80-44-2 V. corymbosum L. Young plant, about 1 m tall; leaves glabrous, entire. Clonal.

NC 80-44-3 V. corymbosum L. Apparent diploid. Plant about 1.2 m tall, stems pubescent, leaves entire, pubescent on lower veins, small obovate leaves. Clonal.

NC 80-44-4 V. tenellum Ait. Stoloniferous to 0.2 m tall. Clonal.

Location NC 80-45 Williamsburg Co., S.C. Savannah-pocosin, both sides of road, 4.8 km west of Greeleyville on Hwy 521. Vaccinium crassifolium occurs in scattered colonies on the site. Vaccinium tenellum is very abundant along with scattered V. corymbosum and a few V. tenellum x corymbosum hybrids. Collected November 25, 1980.

NC 80-45-1 V. tenellum x corymbosum segregate. Plant to about 0.5 m tall. Clonal.

NC 80-45-2 V. tenellum Ait. Representative for the site. Clonal.

NC 80-45-3 V. tenellum x corymbosum segregate. 0.5 m tall. Clonal.

NC 80-45-4 V. tenellum Ait. Representative clone.

NC 80-45-5 V. corymbosum L. representative clone of the glabrous forms at the location. Clonal.

Location NC 80-46 Sumter Co., S.C. Junction of U.S. 378 and County Rd. 35. Several Vaccinium plants growing along edge of ditch on the left. Collected November 25, 1980.

NC 80-46-1 V. ashei Reade. Young plant with pubescent stems and pubescent, heavily glandular, spatulate leaves; possibly on escape from an old planting. Clonal.

Location NC 80-47 Chesterfield Co., S.C. County Rd. 20, 0.6 km off U.S. 1 toward Society Hill. Very extensive V. crassifolium population in pocosin on the right. Also an excellent site for Leiophyllum buxifolium (Bergius) Ell. and Zenobia pulverulenta. No collections made.

Location NC 81-1 Sampson Co., N.C. Hwy 242, 8.6 km above Salemburg. The location is a roadside under a power line right-of-way. The upper area back of the right-of-way is an old field overgrown with pines. The area grades gradually to a more moist situation with typical Ericaceous shrub - Ilex glabra (L.) Gray flora under pines. The V. corymbosum population on the site consists of approximately 50% pubescent and 50% glabrous plants by count. There is a definite gradient with pubescent plants predominating on the drier areas of the site. Scattered V. stamineum, V. tenellum and occasional V. tenellum x corymbosum hybrids were also observed. Collected January 26, 1981.

NC 81-1-1 V. tenellum x corymbosum segregate. Plant suckering to 1.3 m tall. Clonal.

NC 81-1-2 V. corymbosum L. Young plant, essentially glabrous stems. Clonal.

NC 81-1-3 V. tenellum x corymbosum segregate. Suckering plant, about 1.6 m tall. Clonal.

Location NC 81-2 Bladen Co., N.C. Hwy 242, 7.8 km above Bladen Lakes State Forest Headquarters. Savannah on both sides of the road; scattered young pines and massive V. crassifolium colonies. Collected January 26, 1981.

NC 81-2-1 V. crassifolium Andr. Very large leaved-clone for eastern North Carolina. (This clone appears to have potential for overlapping in size with Lexington Co., S.C. forms). Clonal.

Location NC 81-3 Wake Co., N.C. Essentially, rim around a moist depression in the corner of Maynard Rd. and Walnut St. in Cary, N.C. at the high school. Mixed pines and hardwoods, with scattered V. corymbosum plants. Collected February 21, 1981.

NC 81-3-1 V. corymbosum L. Apparent diploid. Plant 3 m tall, glabrous stems; flower buds starting to swell. Clonal.

NC 81-3-2 V. corymbosum L. Apparent diploid. Very large old plant, 3 m tall, glabrous stems; flower buds swelling. Clonal.

Location NC 79-76 revisited (2) Montgomery Co., N.C. Collected May 6 and June 3, 1981.

NC 79-76-4 V. corymbosum L. Apparent diploid. Plant 1.8 m tall, pubescent stems and leaves, growing about 15 m off the Hwy. on the right and 6 m left of the unpaved road. Clonal.

NC 79-76-5 V. pallidum x corymbosum segregate. Plant 1.5 m tall. Plant about 3 m further off road than 79-76-4. Clonal.

NC 79-76-6 through NC 79-76-9 V. corymbosum L. Representative clones from the left side of the road. Clonal.

NC 79-76-10 V. corymbosum L. population collection of O.P. fruit (5 berries/plant) from all early-ripening clones along the service road on the left, color blue to black.

NC 79-76-11 V. corymbosum L. Plant to about 0.7 m tall, growing on the dry roadside on left side of the hwy., glabrous stems, blue fruit, 20% ripe on June 3, 1981. Clonal.

NC 79-76-12 V. pallidum Ait. Representative clone growing uphill from 79-76-11 on the same dry roadbank. Clonal and fruit.

Location NC 81-4 Pender Co., N.C. Spayd blueberry farm on U.S.421. Location consists of borders of drainage ditches on the farm. Collected three forms of apparent diploid, glaucous-leaved and -fruited V. corymbosum. Plants growing about 80 m beyond NCARS weather station. Collected May 12, 1981

NC 81-4-1 V. corymbosum L. Plant 2 m plus tall, fruit starting to ripen. Clonal.

NC 81-4-2 V. corymbosum L. Plant 1.5 m tall. Clonal.

NC 81-4-3 V. corymbosum L. Plant 1.8 m tall, fruit starting to ripen, fruit medium blue. Clonal.

Location NC 81-5 Stanly Co., N.C. Old Hwy 52 1.4 km west of New London. Power line right-of-way and fairly open predominantly hardwood forest. Vaccinium pallidum x tenellum derivatives are most common, with some apparent V. pallidum, scattered V. stamineum and fairly abundant G. frondosa.

NC 81-5-1 V. pallidum x tenellum derivative. Selected as a typical pallidoid derivative. Clonal.

NC 81-5-2 V. pallidum x tenellum derivative. Representative. Clonal.

NC 81-5-3 V. pallidum Ait. representative clone.

Location NC 81-6 Moore Co., N.C. Hwy 73, approx. 2.4 km west of West End. Left side of highway, across from a young peach orchard in the sandhills. The site has scattered longleaf pines. The soil has been removed down to clay on part of the site. Collected May 29, 1981.

NC 81-6-1 V. corymbosum L. Plant about 0.8 m tall, growing about 25 m off the road at the edge of a sandy bank. Low spreading plant, leaves elliptic-ovate, entire, sub-glaucous. Fruit glaucous blue, to 15 mm dia. Full crop this year, a few berries turning purplish today. Clonal

Location NC 79-60 revisited (2). Henderson Co., N.C. Collected September 14, 1981.

NC 79-60-10 V. corymbosum L. Population collection of late ripening O.P. fruit from plants growing on the roadcut above Pisgah Inn. Many plants heavily infected with red rings on the leaves, which appears to be red ringspot virus (no red rings observed on stems).

Location NC 81-7 Richmond Co., NC. Gibson's Pond 5.3 km west of Rd. 177 on U.S. 1 between Hoffmann and Rockingham. The specific site is a deep sand slope on the south side of the pond. Collected October 6, 1981.

NC 81-7-1 through NC 81-7-3 V. pallidum x tenellum derivatives. Plants 0.3 - 0.6 m tall. Clonal.

NC 81-7-4 through NC 81-7-5 V. pallidum Ait. Plants 0.3 - 0.4 m tall. Clonal.

The following accessions occurred about 30 m downhill from the first five.

NC 81-7-6 V. pallidum Ait. Clone to about 0.4 m tall. Clonal.

NC 81-7-7 V. pallidum x tenellum. Representative clone. Clonal.

The following accession was growing at the bottom of the slope at the edge of the swamp.

NC 81-7-8 V. tenellum Ait. Representative clone, very narrowly spatulate leaves. Clonal.

Location NC 81-8 Hoke Co., N.C. State Rd 1215 at Mountain Creek. The site consists of open longleaf pine woodland above a pocosin on the southeast side of the creek. Vaccinium crassifolium is growing in occasional colonies on the site along with scattered V. corymbosum and V. tenellum. Collected October 6, 1981

NC 81-8-1 V. corymbosum L. Crown-forming plant, 1.6 m tall. Stems pubescent, upland form, growing uphill from the V. crassifolium colonies. Clonal.

Location NC 81-9 Cumberland Co., N.C. Carvers Falls area. This is a good V. crassifolium location, especially on a small dome just before the second creek, when following the road. There is a sandstone bluff behind the dome. Collected October 6, 1981.

NC 81-9-1 V. arboreum Marsh. Popl. collection of O.P. fruit from plants growing in the dome area.

Location NC 81-10 Kershaw Co., S.C. Road into Dunn's Mountain and slopes of the mountain. The location includes abundant colonies of V. tenellum, fairly abundant V. arboreum, and scattered V. stamineum, V. elliotii, V. corymbosum, and V. elliotti x corymbosum and V. elliotti x tenellum hybrids. Collected August 29 and December 14, 1981

NC 81-10-1 V. elliotti x tenellum. Plant 1.5 m tall, widely stoloniferous, growing off the road leading to the mountain. Clonal.

NC 81-10-2 V. elliotti x tenellum (polyploid derivative). Plant 1.6 m tall, somewhat stoloniferous. Growing on the lower slopes of the mountain. Clonal.

NC 81-10-3 V. pallidum x tenellum. Colony 6 x 6 m across, stems to 0.5 m tall. Clonal.

NC 81-10-4 through NC 81-10-6 V. elliotti x corymbosum. Random plants growing along the road. Clonal.

NC 81-10-7 V. stamineum L. Population collection of O.P. fruit. Plants basically typical sandhills, S.C. ecotype, fruit ranging from white to red to purplish. Collected August 29, 1981 by W.B. Kirkman.

Location NC 81-11 Richland Co., S.C. Unpaved road approximately 3 km below the Kershaw County line. Turn left across from the corner of the Fort Jackson boundary. Sandstone and clay bluff area on the right side of the road with Cyrilla racemiflora L., Kalmia latifolia L., and Leiophyllum buxifolium. Vaccinium tenellum is very abundant along with occasional V. pallidum. This bluff area is near the crest of the ridge and has only limited seepage. Collected December 15, 1981.

NC 81-11-1 V. tenellum Ait. Stoloniferous to about 0.4 m, growing just below the bluff. Clonal.

NC 81-11-2 V. pallidum Ait. Stoloniferous, to about 0.4 m tall, leaves elliptic to elliptic-obovate, growing at the top of the bluff. Clonal.

Location NC 81-12 Richland Co., S.C. About 1.2 km east of the NC 81-11 location. The site is a steep eastern slope. It is fairly open with longleaf, loblolly, and Virginia pines, scattered V. tenellum and several Vaccinium hybrids. Collected December 15, 1981.

NC 81-12-1 V. elliotti hybrid. Phenotypically appears to be a V. elliotti x pallidum hybrid. Plant suckering, 1.5 m tall by 3 m wide, very narrowly elliptic leaves, pubescent stems. Clonal.

NC 81-12-2 V. tenellum hybrid. Stoloniferous to 0.6 m tall, very fine twiggy growth. Clonal.

Location NC 81-13 Aiken Co., S.C. County Rd. 779, at a sandstone outcrop just north of Interstate 20. The location includes the area from the outcrop down to a creek. Collected December 16, 1981.

NC 81-13-1 through NC 81-13-6 V. corymbosum L. Representative clones from the seepage slope above the creek. Clonal.

NC 81-13-7 and NC 81-13-8 V. corymbosum L. Introgressive segregates with V. tenellum. Clonal.

NC 81-13-9 and NC 81-13-10 Gaylussacia frondosa (L.) T. & G. Representative clones from the seepage slope. Clonal.

NC 81-13-11 and NC 81-13-12 V. tenellum Ait. Representative clones. Clonal.

NC 81-13-13 through NC 81-13-15 V. stamineum L. Representative clones. Clonal.

NC 81-13-16 V. tenellum x corymbosum segregate. Clone to 1 m tall, suckering to several meters across, growing at the upper edge of the sandstone outcrop. Clonal.

Location NC 81-14 Aiken Co., S.C. Ridges above the Savannah River along the fall line in North Augusta. Collected December 16, 1981.

NC 81-14-1 and NC 81-14-2 V. stamineum L. Representative heavily pubescent plants to about 2 m tall. Clonal.

Location NC 81-15 Lexington Co., S.C. (same location as B-51) (2). Collected small population sample of V. pallidum and one V. sempervirens Raynor and Henderson. Collected December 17, 1981.

NC 81-15-1 through NC 81-15-11 V. pallidum Ait. Random clones from lower areas of the slope. Clonal.

NC 81-15-12 V. sempervirens Raynor and Henderson. Fairly young clone from upland location. Clonal.

Location NC 81-16 Lexington Co., S.C. Loop road by Congaree Girl Scout Camp. The location includes both sides of the road, 0.8 km from the upper entrance onto S-32-624. Collected December 17, 1981.

NC 81-16-1 through NC 81-16-3 V. pallidum Ait. Population representatives. Clonal.

NC 81-16-4 V. sempervirens Raynor and Henderson. Colony 3 m by 5 m, growing in heavy shade across the creek on the left, at the edge of the swamp under Chamaecyparis thyoides (L.) BSP., Ilex coreaciae (Pursh.) Chap., and Lyonia lucida (Lam.) K. Koch. Clonal.

Location NC 81-17 Richmond Co., N.C. Woodland and old fields above Mark's Creek, just above the North Carolina line, on the left side of U.S. 1 (heading north). Collected December 17, 1981.

NC 81-17-1 V. pallidum Ait. Plant to 0.2 m tall, on top of the ridge above Mark's Creek. Clonal.

NC 81-17-2 and NC 81-17-3 V. elliotti hybrids. Plants about 1.2 m tall, growing in a dense stand of young pines and hardwoods in an old field above Mark's Creek. Clonal.

Location NC 81-18 Moore Co., N.C. Hillside pocosin and surrounding area on the edge of Southern Pines, on the frontage road by U.S. 1. Collected October 6, 1981.

NC 80-18-1 V. corymbosum x tenellum. Young plant to about 0.9 m tall. Clonal.

Location NC 82-1 Wake Co., N.C. Hwy 54 in Cary. 0.5 km west of Trinity Rd. Old field on the right side of the road, overgrown with pines. Collected March 16, 1982.

NC 82-1-1 V. corymbosum L. Diploid, plant 2 m tall, crown-forming. Upland clone growing at the edge of the pines. Clonal.

Location NC 79-58 revisited (2) Haywood Co., N.C. Collected June 7, 1982.

NC 79-58-10 V. corymbosum L. Very large old crown-forming plant, very erect plant habit, from a very narrow base, lanceolate leaves. Plant just finished blooming. Clonal.

NC 79-58-11 V. pallidum Ait. Fairly young plant 0.6 m tall. Clonal.

NC 79-58-12 V. pallidum Ait. Plant 2 m tall, about 3 m across, full bloom. Clonal.

NC 79-58-13 V. pallidum Ait. Floriferous plant, about 1 m tall, leaves quite glaucous, just past full bloom. Clonal.

NC 79-58-14 V. pallidum Ait. Fairly young plant, glaucous leaves. Clonal.

NC 79-58-15 V. pallidum Ait. Plant 2 m tall. Clonal.

Location NC 82-2 Sampson Co., S.C. Hwy 701 2.8 km above Garland. The site consists of flatwoods along a creek. Vaccinium elliotti is abundant on both sides of the road and V. arboreum is fairly common on the higher sandier areas of the site. Collected June 24, 1982.

NC 82-2-1 through NC 82-2-30. V. elliotti Chap. Population collection of clones from the site giving seedlings most resistant to stem blight. Clonal.

Location NC 82-3 Lexington Co., S.C. Hwy 6, 5.9 km west of U.S. 378 junction, at the Lake Murray Dam. The site is upland piedmont in what appears to be an old overgrown field (pines) on the right, just before the dam. Vaccinium elliotti is the main blueberry species and no other crown-forming species was found. A few scattered plants of V. arboreum, one V. tenellum hybrid, and one V. stamineum (pubescent, typical of upper piedmont taxa) were also observed. Dieback was observed on several branches on V. elliotti (appearance, the same as that on plants at the NC 82-2 location) and appears to be stem blight. Collected July 1, 1982.

NC 82-3-1 V. elliotti Chap. Plant 2.2 m tall, semi-upright, growing at the edge of an open area. One branch on the plant has dieback. Very light crop, fruit dark blue to dull black. Clonal.

NC 82-3-2 V. elliotti Chap. Very large old plant, 3.1 m tall, growing in open woodland, across from Lake Murray recreational area at the dam. Very little fruit now, shiny-black. Clonal.

NC 82-3-3 V. elliotti Chap. Old plant 2.2 m tall, being somewhat overgrown, in same general area as NC 82-3-2. Branchlets somewhat weeping. No fruit observed. Clonal.

NC 82-3-4 V. elliotti Chap. Plant 2.1 m tall, semi-upright to spreading. Fruit sparse, dark blue. Clonal.

Location NC 82-4 Newberry Co., S.C. 2.4 km down Mountain Rd. on the outskirts of the town of Little Mountain. The site is upland piedmont on both sides of the road largely in overgrown old fields (predominantly pines) on a slope. The two predominant Vaccinium species on the site are V. elliotti and V. pallidum with scattered V. stamineum (phenotypically similar to Lexington Co., sandhills plants), V. arboreum and a small representation of V. tenellum. A number of V. pallidum plants in the old field on the left appeared to be hybrids, based on plant stature. (Where Mountain Rd. crosses the slope of Little Mountain on the way to this site the roadbank has a large population of V. pallidum, which, in passing, appears very similar to foothills and upper piedmont locations.) The last two accessions were collected in an old field 0.3 km further down the road. Shoot dieback was again observed on V. elliotti and on at least one clone of V. pallidum. Samples of dieback from both species were collected for identification. Collected July 1, 1982.

NC 82-4-1 V. elliotti Chap. Spreading plant, appears somewhat stoloniferous, to 2 m tall; no fruit observed. Growing on the bank on the right side. Clonal.

NC 82-4-2 V. pallidum Ait. Colony about 16 m downhill from NC 82-4-1 on the bank (covers about 6 m along the bank). Stems to 0.5 m tall, fruit gone, some mildew on the leaves. Clonal.

NC 82-4-3 V. elliotti Chap. Plant on left side of road, 5 m off the road, at the edge of a clearing. Stems 2.5 m tall. Sparse black fruit; ring fungi on leaves. Clonal.

NC 82-4-4 V. pallidum hybrid (possibly V. pallidum x elliotti derivative). Plant 0.6 m tall, growing in an opening 3 m further off the road from NC 82-4-3. No fruit now, some mildew on the leaves. Clonal.

NC 82-4-5 V. elliotti Chap. Young plant to 1 m tall. Clonal.

NC 82-4-6 V. pallidum Ait. Narrow-leaved form, to about 0.3 m tall, medium blue fruit, very little left. Colony growing by the roadside on the left. Clonal.

NC 82-4-7 V. tenellum Ait. Stems to 0.3 m tall, plant typical for the species; no fruit this year. Clonal.

NC 82-4-8 V. elliotti Chap. Plant 2.2 m tall, upright. A little apparent stem blight. Clonal.

NC 82-4-9 V. elliotti Chap. Plant 2 m tall, spreading, probably rhizomatous. Clonal.

Location NC 82-5 Bibb Co., Ga. Walker property near Macon, along a ridge top in the eastern edge of the piedmont. Four V. elliotti selections collected. Collected July 26, 1982.

NC 82-5-1 V. elliotti Chap. Plant 2 m tall by 1.5 m across. Clonal.

NC 82-5-2 V. elliotti Chap. Plant 1.6 m tall by 1.3 m across. Clonal.

NC 82-5-3 V. elliotti Chap. Plant 2.6 m tall by 1.3 m across. Clonal.

NC 82-5-4 V. elliotti Chap. Plant 1.5 m tall by 1.3 m across. Clonal.

Location NC 82-6 Buncombe Co., N.C. Trail to Craggy Pinnacle in Craggy Gardens area along the Blue Ridge Parkway. The area is largely Rhododendron and Vaccinium bald area predominated by apparent V. pallidum and derivatives, with occasional V. corymbosum and V. erythrocarpum. There is apparent introgression between V. pallidum and V. corymbosum on this location (based on leaf morphology). Collected August 22, 1982.

NC 82-6-1 V. pallidum Ait. Population collection of fruit from plants 1.5 - 2.0 m tall. Seed.

NC 82-6-2 V. pallidum Ait. Small population collection of fruit from plants 0.5 - 1.0 m tall. Seed.

NC 82-6-3 V. pallidum Ait.(or possibly V. constablaei Gray). Plant a little over 2 m tall with elliptic glaucous leaves and good size glaucous fruit. Seed.

Location NC 82-7 Kershaw Co., S.C. County Rd. 36 at Five and 20 Creek. The location is in the floodplain on the south side of the creek, about 50 m off the road. Collected by W.B. Kirkman.

NC 82-7-1 V. elliotti Chap. Population collection. Clonal.

Location NC 82-8 Lee Co., N.C. County Rd. 1500, 0.6 km below Rd. 1466 Roadbank on the left, apparent old field overgrown with approximately 30 yr old Pinus taeda. Basically coastal plain location (Deep River Floodplain). Collected November 12, 1982.

NC 82-8-1 V. crassifolium Andr. Typical small-leaved clone on roadbank, under power line right-of-way. Clonal.

(NOTE: large population of V. crassifolium on site.)

NC 82-8-2 V. corymbosum L. Apparent diploid. Cutback plant, about 0.9 m tall, pubescent stems, representative for site. Clonal.

Location NC 82-9 Lee Co., N.C. Unpaved portion of County Rd. 1500. Flatwoods near the river. Mixed pines and hardwoods on the right, 5.9 km below Rd. 1466. Collected November 12, 1982.

NC 82-9-1 V. elliotti x corymbosum. Plant 2.2 m tall. Clonal.

Location NC 82-10 Lee Co., N.C. Dry rocky piedmont hilltop 5.8 km east of Hwy. 42 on County Rd. 1538. Open cutover woodland off the road, pines on the left, mixed hardwoods and pines on the right. Collected November 12, 1982.

NC 82-10-1 V. tenellum x pallidum colony on left. Stems about 0.2 m tall, bright fall color today. Clonal.

NC 82-10-2 V. pallidum Ait. Plant growing on roadbank on the left; stems 0.3 m tall. Clonal.

Location NC 82-11 Lee Co., N.C. Old field overgrown with pines on the right above Fall Creek, 7.5 km from Hwy 42 on County Rd. 1538. Collected November 12, 1982.

NC 82-11-1 Fragaria virginiana Duch. Male clone which demonstrated a prolonged blooming tendency when collected earlier. Clonal.

NC 82-11-2 V. tenellum hybrid. Fairly young plant 0.4 - 0.5 m tall. Clonal.

Location NC 82-12 Lee Co., N.C. 0.2 km down County Rd. 1540, off County Rd. 1538. Dry roadbank on the right. Collected November 12, 1982.

NC 82-12-1 prob. V. elliotti x corymbosum derivative. Fairly young plant to 1.8 m tall. Clonal.

Location NC 82-13 Buncombe Co., N.C. Same location as NC 79-34 (2). Area around Western, N.C. animal diagnostic lab. Most of the Vaccinium population was destroyed by construction of the horse arena. A collection was made from survivors of the population, largely in case erosion

or further construction completely wipe out the remaining members. Collected November 2, 1982. Clonal.

Location NC 82-14 Davidson Co., N.C. Slopes east of the Yadkin River (Tuckertown Reservoir) on Hwy. 49, below Asheboro. Dry rocky uplands on the right side of the road characterize the site. Collected November 2, 1982.

NC 82-14-1 V. pallidum Ait. Colony to 0.5 m tall, growing in the power line right-of-way and the edge of the woods on the side nearest the highway. Clonal.

Location NC 82-15 Saluda Co., S.C, Hwy. S.C. 391, 17.1 km above the Saluda Co. line, and just across the Little Saluda River bridge on Lake Murray. The site is an old field, fairly open, with 20-30 yr pines on the right side of the highway. The topsoil (where it has not eroded away) appears to be a silty or sandy loam over a clay subsoil. This site includes an extensive upland population of V. elliotti with plants of various ages. (Therefore regeneration of the species is continuing on the site.) Very little other Vaccinium observed except occasional V. arboreum and several plants of V. stamineum. One V. tenellum clone occurred about 60 ft above the waterline. (NOTE: Upland ridge on the left just before reaching the Little Saluda River bridge has an extensive Vaccinium population in mixed hardwood and pine woods. The population is made up of a mixture of V. arboreum and V. elliotti. No samples were collected.) Collected December 27, 1982.

NC 82-15-1 through NC 82-15-10 V. elliotti Chap. Representative clones. Clonal.

NC 82-15-11 V. tenellum Ait. Clonal.

NC 82-15-12 V. stamineum L. Representative clone, appears similar to sandhills S.C. ecotype morphologically. Clonal.

Location NC 82-16 Lexington Co., S.C. Same location as NC 78-14 (2). This location has been logged on a periodic basis, so there has been a fairly high and recurring degree of site disturbance over time. This collection was composed largely of crown-forming genotypes, including tetraploid V. corymbosum, apparent V. elliotti x corymbosum hybrids, and V. elliotti. One of the main purposes for sampling this site again was to look for further evidence of introgression from V. elliotti into tetraploid V. corymbosum in a natural population. Collected December 27, 1982.

NC 82-16-1 through NC 82-16-8 V. corymbosum L. Probable tetraploids, representative clones. Clonal.

NC 82-16-9 through NC 82-16-11 Apparent V. elliotti x corymbosum hybrids. Clonal.

NC 82-16-12 Probable V. corymbosum x elliotti. Select clone. Clonal.

NC 82-16-13 Probable V. elliotti x tenellum derivative. Clonal.

NC 82-16-14 V. elliotti Chap. Clonal.

Also recollected B-1 (upland, tetraploid, V. corymbosum L.) and B-49 (diploid, apparent V. elliotti x corymbosum hybrid) from this location.

DISCUSSION

The native V. ashei Reade phenotypes previously collected in southeastern South Carolina have been described (2) and the reasons for not assigning them to V. amoenum Ait. outlined. Additional locations for this species were sampled during 1980 in eastern and southeastern South Carolina. Accessions from Hampton (NC 80-11 loc.) and Sumter Counties (NC 80-46) do more closely resemble V. amoenum than any of the earlier collections. The Georgetown County accessions closely resemble West Florida V. ashei (5) and this population is probably derived from escapes from an old cultivated planting such as those made around the southeast during the earlier 1900's. When the Sumter County accession was collected it was assumed that it was also an escape. While this is still a possibility, observations on the plant in garden culture show it to be quite distinct from the West Florida phenotypes which made up the bulk of the early plantings. It bears no resemblance to more recent cultivar releases either. The possible presence of native V. ashei as far north as Sumter County, S.C., again raises questions as to just how far north the range of this species extends and also if the range is expanding. With an abundance of disturbed habitats available to vigorous adaptable species such as V. ashei, the last suggestion is a real possibility.

Tetraploid Vaccinium corymbosum L. accessions collected during the three years included in this report fairly well represent the range of variation found in this species in the two Carolinas (8). Some of the material, expecially from the NC 80-2 location in Jasper County, S.C., was somewhat atypical. The leaves on several of these accessions are very broadly ovate while other plants had leaves that are very narrowly elliptic-lanceolate.

One location, NC 82-16, along the fall line in the sandhills in Lexington County, S.C., had an unusually high percentage of apparent V. elliotti x corymbosum derivatives. The obvious hybrids from this combination appear to be largely diploid based on flower, branch, and leaf coarseness. The V. australe Small (5) phenotype of tetraploid V. corymbosum is also fairly common on this location, and plants showing evidence of introgression from V. elliotti have been previously collected there. These tetraploids are characterized by narrowly upright plants, with narrowly-elliptic to elliptic-lanceolate leaves which are terminally serrate or serrulate and leaf dimensions which usually fall within the range ascribed to V. caesariense Mack. (5).

The hybridization observed between V. myrsinites and V. corymbosum will be described in the V. myrsinites discussion. One accession collected in South Georgia (NC 79-38-1) appears to represent an introgressive segregate between these two species. Additional V. arkansanum Ashe (5) phenotype V. corymbosum was added to the collection, this time from South Georgia and Gulf Coast Florida locations. One anomolous tetraploid form collected from a dry slope in Aiken County, S.C. (NC 80-14-1) probably involves introgression from a number of species. While falling within V. corymbosum overall, in garden culture the serrate to serrulate leaf margins and abundant stalked glands on the underside of the glaucous leaves, make this clone appear to be closely related to V. ashei. Even the plant habit, erect but suckering from the crown, supports this observation.

Among the diploid V. corymbosum accessions are additional upland forms from Buncombe, Montgomery, Vance, and Wake counties in North Carolina. A new combination of characters was observed in accessions from the NC 79-38 location in Uwharrie National Forest during 1980. The accessions with

glabrous stems and leaves had dull black or only slightly subglaucous fruit rather than the light blue typical of this phenotype (5). Further examination of the population at the NC 78-5 location in Moore County, N.C., revealed the same association.

Only apparent diploid forms were observed at collection locations in the southern piedmont- Uwharrie area in North Carolina, while the adjacent sandhill region included a mixture of diploids and tetraploids around swamp and bog margins. This implies that diploids have some inherent adaptive advantage over tetraploids in the piedmont in this area. The reason for this apparent advantage is unknown, but cannot be completely related to moisture differences since both Uwharrie locations are underlain by hardpans with seepage areas and depressions. The NC 79-76 location even includes a permanent natural pond surrounded by a sphagnum bog in one depression.

A similar situation occurs in the mountains and foothills in western N.C., but here elevation appears to be a significant factor (5). In the foothills and lower mountains only diploid forms of V. corymbosum were collected. The location adjacent to the Asheville Airport (NC 82-13) is an example of this. At higher elevations all forms appear to be tetraploid (with possible occasional hexaploids) (2). However, at the Lake Powhatan Campground in Pisgah National Forest, at an intermediate elevation, a mixture of both diploids and tetraploids occurred, although diploids predominated.

One other point regarding V. corymbosum is worth noting. Cultivated tetraploid genotypes are naturalizing on upland sites in the vicinity of the Mountain Horticultural Crops Research Station at Fletcher, N.C. This has been occurring around field margins in commercial highbush blueberry regions for years, but was a little unexpected on uplands in the mountains, and could especially compound the current taxonomic confusion surrounding this

species in areas such as western North Carolina, where the V. australe phenotype of V. corymbosum is not indigenous.

Fruiting-size plants of Vaccinium elliotti Chap. are represented sparingly in the N.C. germplasm collection at the present time; therefore, an effort was made during the last three years to increase the number of accessions of this species. A special effort was extended to collect accessions from the northern extreme of the range in southeastern Virginia. In addition, populations were sampled at other coastal plain sites in both southeastern North and South Carolina. Several fall line collections were made in the sandhills of South Carolina. Collections from three counties in the eastern piedmont of South Carolina and one county in Georgia pointed out clearly that V. elliotti is the crown-forming blueberry species best adapted to dry uplands in the Carolinas.

Vaccinium elliotti should be invaluable as a parent in breeding blueberry cultivars for upland adaptation, and much more extensive germplasm collections need to be made, especially from inland locations in the piedmont of the southeast. In this regard the northernmost inland location for this species needs to be determined. Early bloom is one of the shortcomings of V. elliotti (7) from Florida to southeastern Virginia, and germplasm from the northernmost inland extent of the range would hopefully show lesser tendency toward this trait. However, it is recognized that with long-lived perennials such as Vaccinium, sexual reproduction on a yearly basis is not essential for success of the species; therefore, later bloom may not have evolved in V. elliotti where it occurs in cooler geographic areas. One additional feature of this species reinforces its potential in blueberry improvement. Initial screening (unpublished) indicates that it may possess the highest level of resistance to stem blight caused by Botryosphaeria

dothidea (Moug. ex Fr.) (es. and deNot.). This disease is rapidly becoming a serious limiting factor to blueberry production in the southeastern United States (4). Vaccinium elliotti also has ornamental potential. The plant form and fall foliage color are outstanding.

At most locations sampled, V. elliotti is definitely maintaining its integrity as a species, with only occasional hybrids observed. The incidence of hybridization appeared to be highly positively correlated with degree of site disturbance. Hybridization with V. corymbosum appeared to be most common, and the Lexington County, S.C., site where extensive hybridization appears to have occurred (NC 82-16) has been subject to logging at regular intervals. Several apparent V. elliotti x corymbosum hybrids were collected in Lee County, N.C., in the floodplain and along the terraces near the point where the Deep River and Haw River converge to form the Cape Fear. Although no V. elliotti has yet been collected in this area, the presence of hybrids indicates that it probably does or has existed nearby. If discovered, this could represent one of the northernmost inland locations for the species.

Hybridization between V. elliotti and V. tenellum, while not common at any locations sampled, was significant at the NC 81-10 site in Kershaw County, S.C. One accession at this site, NC 81-10-2, is a polyploid that appears to be derived from this combination. One other unexpected and heretofore unreported hybrid combination involved an accession from Richland County, S.C., NC 81-12-1, which is apparently derived from V. elliotti x pallidum. Approximately 0.5 m plants at the NC 82-4 location in Newberry County, S.C., could possibly also be derived from this combination.

Therefore, it appears that V. elliotti is capable of forming viable hybrids with any other diploid Vaccinium section Cyanococcus species with which it makes contact over a period of years, if a suitable habitat is

available for survival of the hybrid genotypes. It appears that this species is probably involved in the production of hybrid polyploids in nature, and that V. elliotti genes have also introgressed into tetraploid V. corymbosum in at least one population (NC 82-16).

Vaccinium myrsinites Lam. was found to be quite abundant in Jasper County, S.C., and fairly widespread in Beaufort County, S.C. It was found to be even more widespread in the Calfpen Bay area in Jasper County than V. crassifolium. It also occurred on a wider range of habitats than V. crassifolium, but generally was most abundant in areas where it might also be expected to be found. The 1980 collections included several clones of the subglaucous phase of the species from the Gulf Coast of Florida.

The most significant find of 1980 was an accession (NC 79-45-9) from upper Colleton County, S.C. (latitudinally north of Charleston, and more inland). This clone is essentially deciduous and examination of the flowers during 1982 in North Carolina indicates introgression with V. tenellum or V. virgatum. Overall this plant most closely resembles V. myrsinites and this opens speculation as to how far north this species extends into South Carolina, and, as with V. ashei, if the range is extending northward and perhaps westward at the present. Some essentially deciduous forms of V. myrsinites also occurred in Jasper County, but at the time they were observed, it was impossible to determine if this was due to genetic or pathogenic causes, therefore, they were not sampled. The majority of the V. myrsinites accessions collected are fully evergreen, and survived the winters of 1980-81 and 1981-82 as potted plants in Raleigh, N.C., when provided protection for the root system.

The number of V. myrsinites hybrids found in South Carolina was greater than expected, but probably results from the opening up of suitable habitats

from widespread controlled burning, clearing of agricultural lands and subsequent abandonment, and logging and reforestation practices. The fact that southeastern South Carolina is the northern extremity of the range of this species may cause more synchrony of bloom with other Vaccinium species than would be expected further south, opening up more possibilities for hybridization. The hybrids often resemble diminutive V. elliotti plants and except for the evergreen tendency of the leaves, could easily be confused with this species.

Additional accessions of the low stoloniferous upland species Vaccinium tenellum Ait. and Vaccinium pallidum Ait. were also collected during this period. The V. tenellum collections included material from the northern coastal plain extremity of its range in southeastern Virginia. The collection is still lacking germplasm from the northern inner piedmont (Rockingham County, N.C. area) (8) where the hardiest forms of this species should exist. Both diploid and polyploid forms of V. pallidum were collected. Darrow and Camp (6) reported that hybrids between these two species are quite common. We found this to be true, and accessions involving this combination were a significant part of the collections. One tetraploid hybrid between V. tenellum x pallidum, NC 79-13-11, was collected in Lexington County, S.C. Several hybrids from Richmond County, N.C. (NC 81-7 loc.), morphologically also appear to be tetraploid although the chromosomes have not been counted.

Occasional hybrid or introgressive accessions involving V. tenellum and V. corymbosum were collected from locations in the coastal plain and sandhills of North and South Carolina, and the southern piedmont of North Carolina. Phenotypically the majority of these hybrids appear to be diploid. One diploid hybrid between V. pallidum and V. corymbosum was collected in the Uwharrie area of North Carolina, while an accession from the sandhills in

South Carolina which on first inspection appeared to be a crown-forming tetraploid derivative of V. pallidum x corymbosum has leaves with occasional stalked glands and thus appears to involve V. tenellum as well. The apparent hybrid derivatives between V. tenellum, V. elliotti, and V. pallidum have already been described.

Collections of the large-fruited, drought resistant deerberry (Vaccinium stamineum L., Vaccinium section Polycodium) were also continued during the time frame of this report. The collections included accessions from southeastern Virginia, South Carolina sandhills ecotype collections from Aiken, Kershaw, and Saluda counties in South Carolina, densely pubescent forms along the Savannah River in South Carolina, panhandle Florida material, and southwestern North Carolina mountain accessions.

The most significant find was one accession, NC 80-28-1, from the vicinity of Toxaway, N.C., with large, excellent quality, glaucous purplish fruit. Overall, for the Carolina region, the South Carolina sandhills ecotype material (1) still appears most promising for development of improved cultivars of this species, but NC 80-28-1 could prove to be a valuable parent in combination with accessions of this ecotype.

Explorations for additional horticulturally superior forms of V. stamineum from western North Carolina, as well as other southeastern United States areas is probably of merit. This species can be successfully combined with certain true blueberry (section Cyanococcus) species (3) and this may prove to be another avenue for incorporation of upland adaptation and possibly even drought resistance into cultivated blueberries.

Vaccinium crassifolium Andr. (Vaccinium section Herpothamnus) was examined from the extremities of its known range during 1980. Its relative abundance at the reported southern end of its range indicates that it

probably extends into Georgia across from Jasper County, S.C., although no living populations are known at present. All locations sampled reinforce the positive correlation of a subsurface impervious layer or zone of compaction with the presence of this species, either the hardpan associated with Ericaceous pocosins in the coastal plain, subsurface clay layers in the eastern piedmont, or clay or sandstone in the sandhills. The accessions of creeping blueberry collected during 1981 in Lexington County, S.C., all fell within the morphological limits of Vaccinium sempervirens Raynor and Henderson.

SUMMARY

The information in this report illustrates that many if not most of the characteristics desired in future blueberry cultivars are present in the species indigenous to the southeastern region of the United States. The need for additional collection and taxonomic and phylogenetic study with a number of species, particularly V. ashei, V. elliotti, and V. myrsinites is especially inferred. One additional point that was quite obvious during the course of these collections was that despite the low level of interspecific hybridization usually observed, evolution is still occurring fairly rapidly in this group, and the impact or evolutionary consequences of the polyploid hybrids, especially those derived from diploid species, will merit in-depth study for many years to come.

One species, V. elliotti, deserves special mention since it is so potentially valuable in blueberry improvement for upland adaptation and disease resistance. Much more extensive collections of this species need to be made, especially in the piedmont of the southeast.

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