

SALIX (SALICACEAE) DISTRIBUTION MAPS AND A SYNOPSIS OF THEIR CLASSIFICATION IN NORTH AMERICA, NORTH OF MEXICO

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Abstract. This paper includes a synopsis of the classification of North American *Salix*, distribution maps outlining their general range in North America north of Mexico, and two new combinations: *Salix columbiana* and *S. famelica*.

Keywords: *Salix*, distribution maps, classification, new combinations.

Information on the distribution of species is useful for an understanding of their history and taxonomy. Detailed distribution maps, in which individual occurrences are indicated by a symbol, are particularly useful in specimen identification, the recognition of range extensions, and understanding a taxon's geography. Maps of *Salix* on a North American or worldwide scale in such detail are available for only a few species. There are, however, some exceptions, most notably the North American maps of the tree willows (Little, 1971, 1976) and the amphiatlantic and circumpolar species (Hultén, 1958, 1971). Some taxonomic revisions of *Salix* include detailed maps (Argus, 1965, 1986b; Argus and McJannet, 1992; Dorn, 1975, 1995, 1998, 2000); but floristic treatments, if they include maps at all, are generally for only a particular region: for example, Alaska (Hultén, 1968; Argus, 1973), Alberta (Argus, 1983),

Arizona (Argus, 1995), British Columbia (Brayshaw, 1996), California (Argus, 1997), Greenland (Bay, 1992; Fredskild, 1996), Illinois (Jones and Fuller, 1955), Michigan (Voss, 1985), Minnesota (W. Smith, pers. comm.), Missouri (Steyermark, 1963), Montana (Dorn, 1970), Ohio (Braun, 1961), Ontario (Soper and Heimburger, 1982), Pennsylvania (Argus, 2000), Texas (Turner et al., 2003), Utah (Albee et al., 1988), Wisconsin (Argus, 1964), and Yukon (Cody, 1996). Sometimes floras and monographs include maps of larger regions, such as the southeastern United States (Argus, 1986a), the Great Plains (McGregor and Barkley, 1986), and the continental Northwest Territories (Porsild and Cody, 1980). Detailed maps of the North American distribution of most species of *Salix* are unavailable.

When I began to prepare the treatment of *Salix* for the *Flora of North America*, the for-

I thank the curators and collections managers of the following herbaria for loans of specimens: A, AB, ACAD, ALA, ALTA, APCR, APSC, ARIZ, ASC, ASU, AUA, BALT, BAYLU, BKL, BLOM, BYU, CAN, CAS, CFR, CITA, CLEMS, CM, COLO, DAO, DHL, DOV, DUKE, DS, DWC, EIU, EKY, F, FCC, FLAS, FSU, FUGR, FWM, GA, GEO, GH, HPC, IA, ID, ISC, JEPS, K, KANU, KE, KNK, KY, LE, LL, LSU, LSUS, LTU, LYN, MARY, MASS, MEM, MICH, MIN, MISS, MO, MOAR, MT, MTJB, MTMG, MUHW, MUR, NA, NCSC, NCU, NFLD, NLU, NO, NY, NYS, O, OKL, OKLA, OSU, P, PAC, PH, POM, QFA, QFBE, QK, QUE, RCAM, RENO, RM, RSA, S, SASK, SDC, SFS, SMU, SRSC, TENN, TEX, TR, TRT, UAC, UARK, UBC, UC, UCA, UNA, UNB, UNCC, UNM, US, USF, UTC, VA, VDB, VPI, VSC, WA, WAT, WCUH, WILLI, WIN, WIS, WKU, WS, WTS, WTU, WVA, and WVV (my apologies for herbaria that may have been omitted). I am indebted to the many collectors who sent specimens for identification, and to those who made field studies possible, including Scott Bailey, Benjamin Ballard, Alan Batten, Bruce Bennett, Marcel Blondeau, Richard Brainerd, Luc Brouillet, Steve Brunsfeld, Walter Buechler, Page Burt, William Cody, Dominique Collet, Mary Beth Cook, Ranessa Cooper, John DeLapp, Nathalie Djan-Chekar, Jennifer Doubt, David Dreesen, Michael Duffy, Sylvia Edlund, Michelle Garneau, Stephen Glenn, Sherel Goodrich, Joyce Gould, Carl-Eric Granfelt, Arthur Haines, Richard Halse, Vernon Harms, Stuart Hay, Sylvia Haultain, Anne Johnson, John Kartesz, Irina Kadis, Robert Kaul, Bernard Kovalchik, Danna Lytjen, Ruth Newell, Deborah Metsger, Gavin Miller, Nancy Moore, David Murray, Michael Oldham, Nick Otting, Serge Payette, Carolyn Parker, Thomas Rawinski, Peter Scott, Alexander Sennikov, Alexei Skvortsov, Welby Smith, Heather Stewart, Scott Sundberg, Steve Talbot, Kevin Timoney, Les Viereck, Sally Weeks, Stan Welsh, Harold Werner, Margriet Wetherwax, George Wooten, George Yatskiyevich, Alexey Zinovjev, and Peter Zika. I particularly thank Cheryl McJannet, who computer mapped many specimens; Eric Argus, John Argus, Mary Argus, Walter Chunys, and David White for field assistance; David Boufford for his many suggestions and careful editing; and Gustavo Romero for encouragement.

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mat of the *Flora* was to include maps to show the range of each taxon as a shaded area with disjunct outliers indicated by dots. Although the maps were small (ca. 33 mm square), they conveyed considerable geographical information. Such maps were included in the volumes of the *Flora of North America* published between 1993 and 2003, but by 2002 it was evident that the cost in terms of time for the authors to prepare the shaded range maps was severely hindering production of the volumes. It was therefore decided to map distributions using a single dot for each state, province, or territory in which the taxon occurred. The years 2002 and 2003 were transitional; among the volumes published in 2002, volume 26 followed the original format but volume 23

adopted the new style, whereas in 2003 volume 4 included families with both the old- and new-style maps. Because the maps of *Salix* had been prepared well before the decision was made to change the format, they were in the original format showing the shaded range. Because that style of map no longer was published in the *Flora*, it was suggested by David Boufford, the taxon editor for the Salicaceae, that the maps be published separately. His suggestion led to the present paper. This paper is not a review of the phytogeography of North American *Salix* but simply a presentation of distribution maps, along with a synopsis of the genus, to supplement the forthcoming treatment in volume 7 of the *Flora of North America*.

METHODS

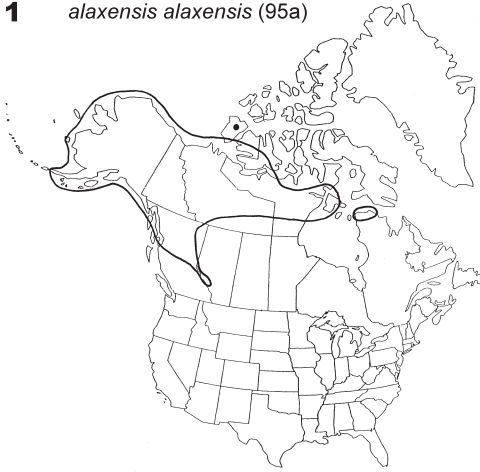
The maps are based on thousands of verified specimens deposited in herbaria across the full breadth of North America (see acknowledgments). Particular attention was given to the verification of specimens that documented disjunct or peripheral localities. Distribution data were recorded by hand, and latitude and longitude added as necessary. Preliminary maps were plotted by hand or computer. Some of these maps eventually appeared in taxonomic treatments (Argus, 1965, 1969, 1986b), others appeared in floristic treatments: Wisconsin (Argus, 1964), Alaska and Yukon (Argus, 1973), Alberta (Argus, 1983), southeastern United States (Argus, 1986a), southwestern United States (only Arizona completed, Argus, 1995), California (Argus, 1997), Canadian Arctic Archipelago (Argus et al., 1999 and ongoing), British Columbia (data provided for Brayshaw, 1996), northern Quebec-Labrador (G. W. Argus, unpubl. manuscript), and Pennsylvania (Argus, 2000). Unpublished preliminary maps, based on specimens identified for flora projects (including Iowa, Nebraska, New Mexico, and Oregon) were used in the preparation of the present paper. Computerized

databases and atlases for the Intermountain Flora (sciweb.nybg.org/science2/hcol/inf/), Colorado (cumuseum.colorado.edu/research/botany/databases/), Oklahoma (www.coordinate-solutions.com/ovpd/), Utah (www.rs.usu.edu/Geography-Department/UTgeog/utatlas/), Washington (www.washington.edu/burkemuseum/collections/herbarium/), and Wyoming (www.rmh/uwyo.edu/) were used as sources of specimen geographical data. All publications that were used or consulted in preparing the maps are cited in the bibliography. The range of each taxon is shown by a solid line enclosing the area(s) occupied by a taxon, on the basis of geographic information derived from specimens deposited in herbaria. Disjunct occurrences consisting of clusters of several collections were drawn as areas; individual disjunct occurrences are indicated by single dots. The ranges of introduced taxa are mapped as a single dot for each state, province, or territory in which they occur.

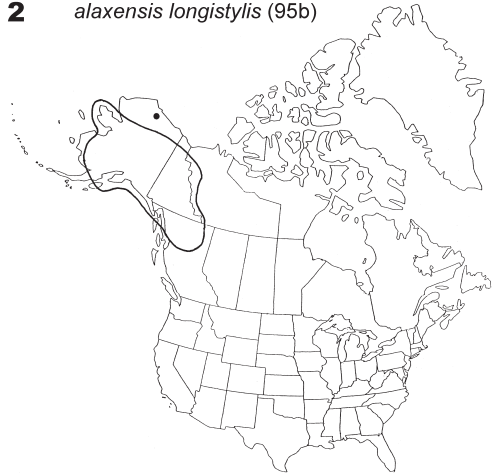
The maps are arranged in alphabetical order by taxon. The number following each taxon name is the number used in the Synopsis.

FIGURES 1–21. Taxa, including common, named hybrids (*× pendulina*, *× rubens*, *× sepulcralis*, and *× smithiana*), are in alphabetical order. The number following each species name is the taxonomic sequence in *Flora of North America*, Vol. 7. Introduced taxa are in bold italics.

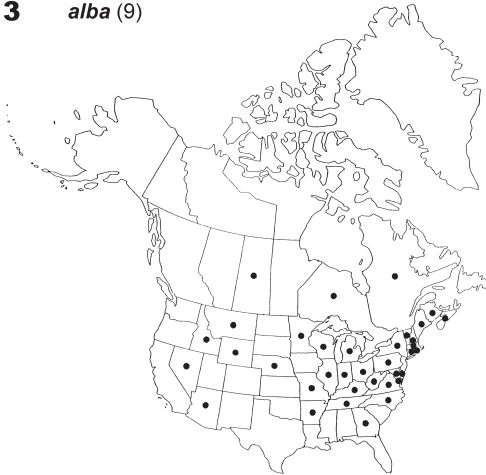
1 *alaxensis alaxensis* (95a)



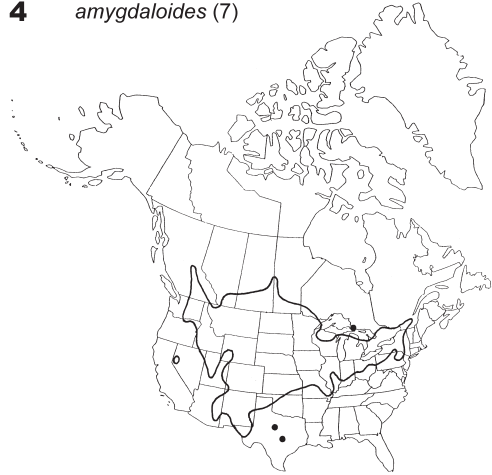
2 *alaxensis longistylis* (95b)



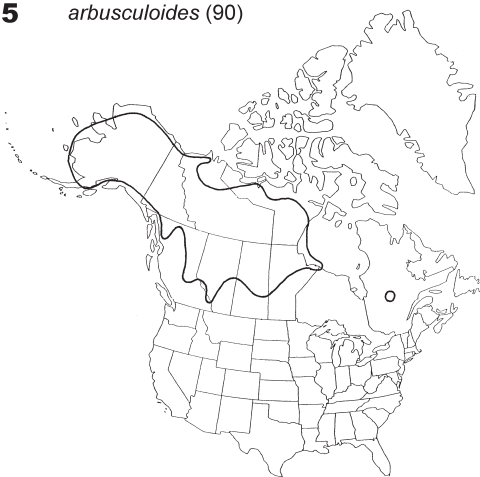
3 *alba* (9)



4 *amygdaloides* (7)



5 *arbusculoides* (90)



6 *arctica* (40)

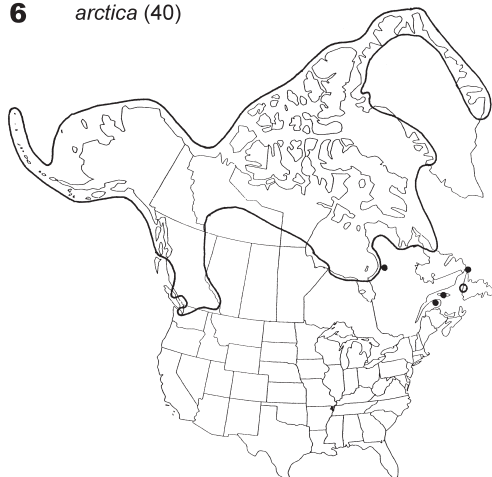
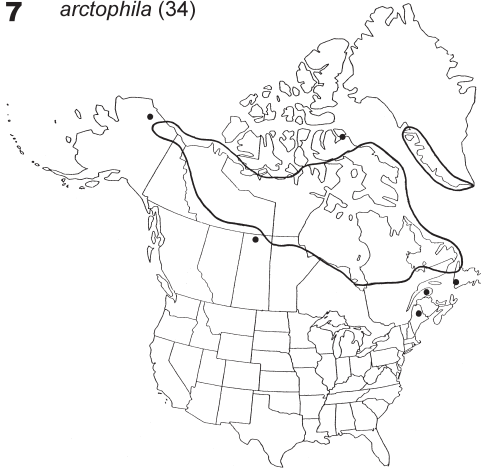
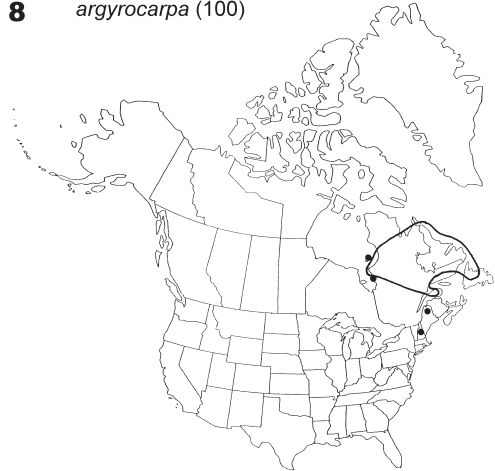


FIGURE 1.

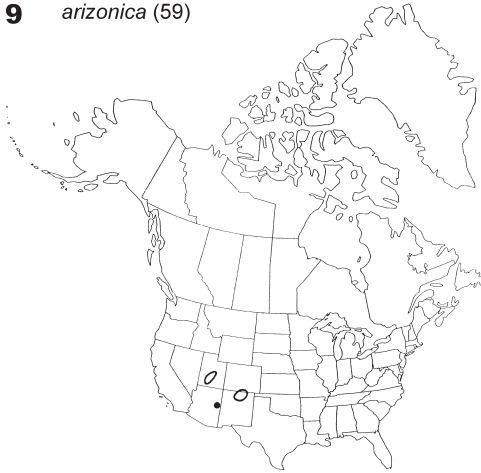
7 *arctophila* (34)



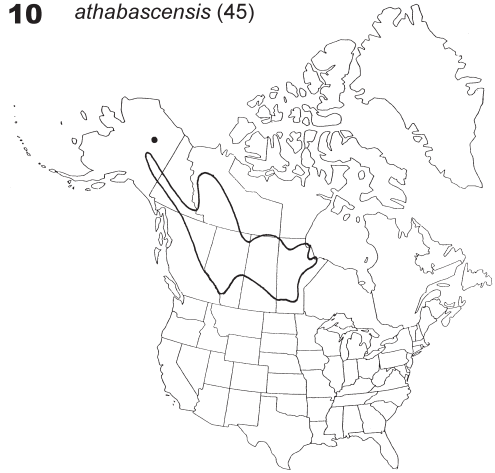
8 *argyrocarpa* (100)



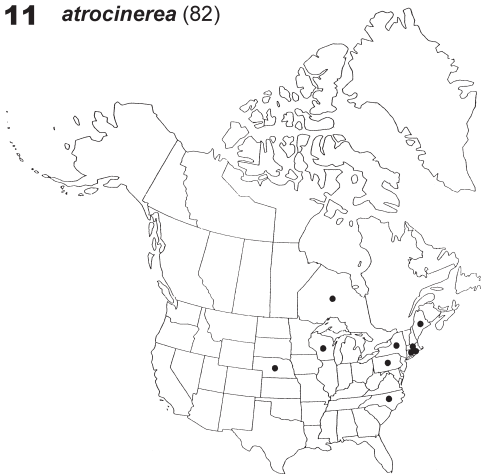
9 *arizonica* (59)



10 *athabascensis* (45)



11 *atrocinerea* (82)



12 *aurita* (83)

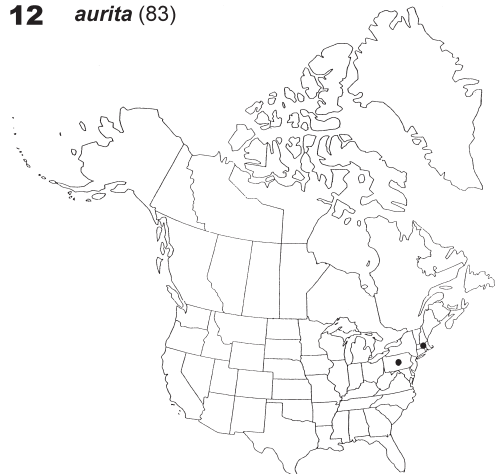
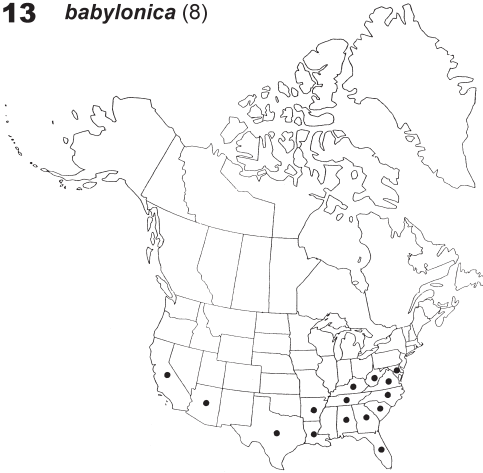
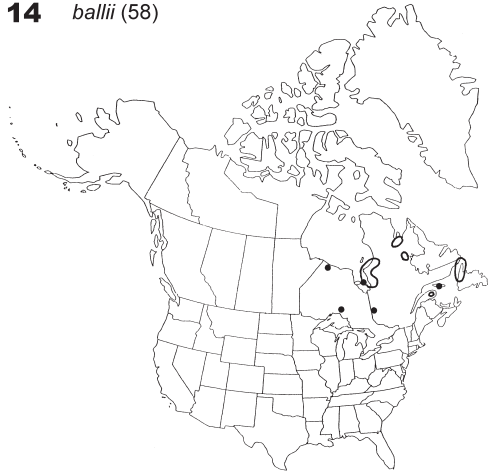


FIGURE 2.

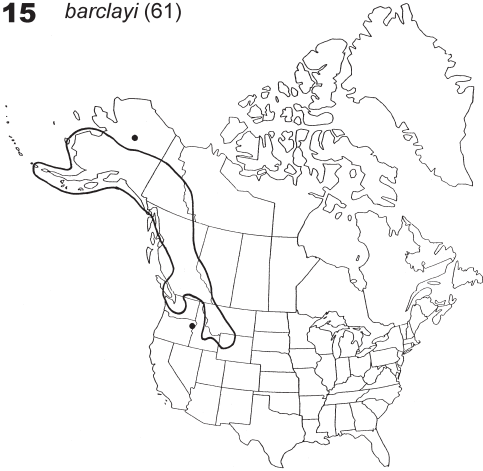
13 *babylonica* (8)



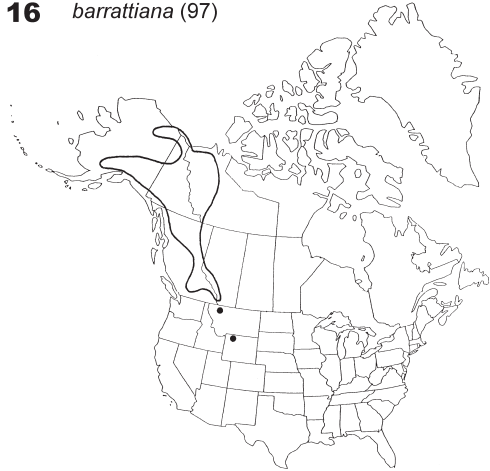
14 *ballii* (58)



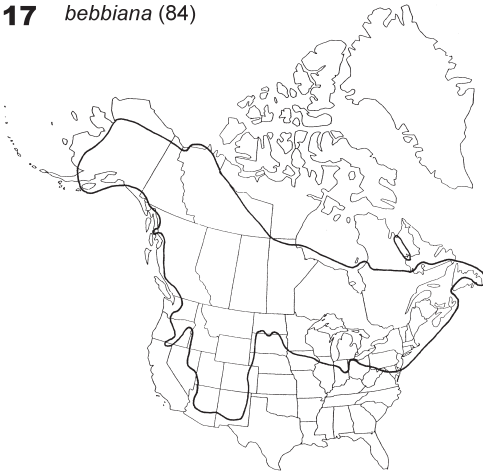
15 *barclayi* (61)



16 *barrattiana* (97)



17 *bebbiana* (84)



18 *bonplandiana* (2)

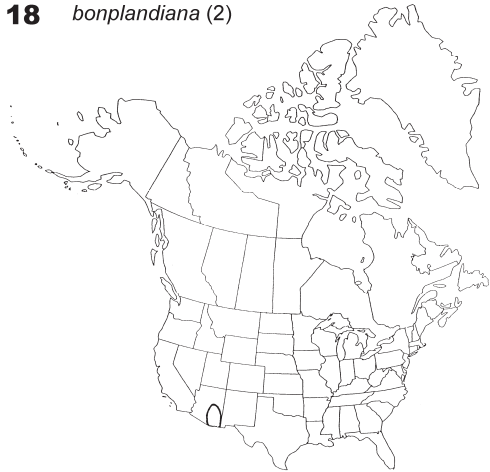
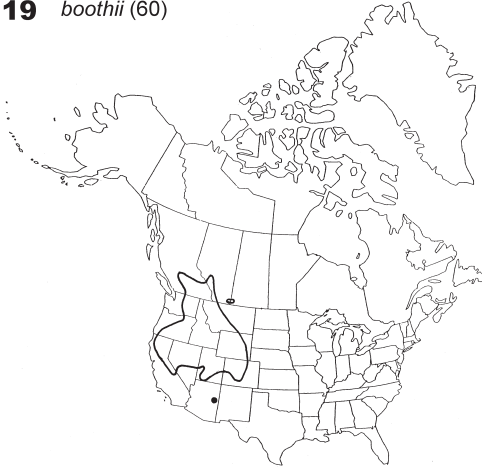
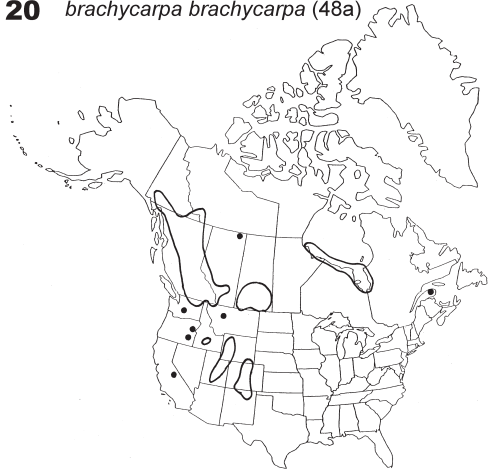


FIGURE 3.

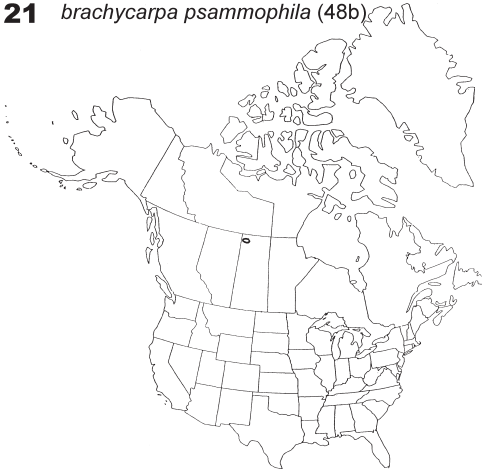
19 *boothii* (60)



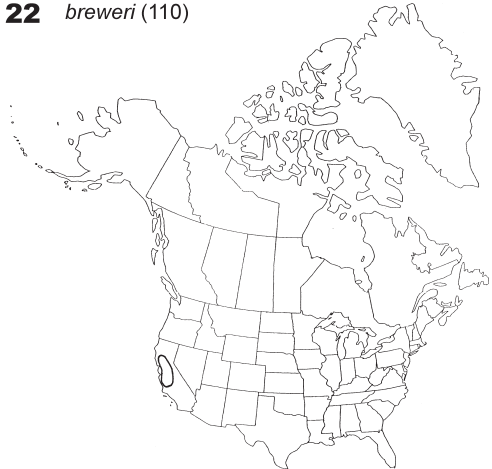
20 *brachycarpa brachycarpa* (48a)



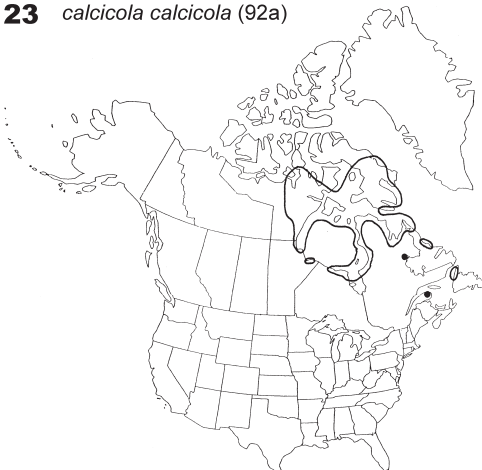
21 *brachycarpa psammophila* (48b)



22 *breweri* (110)



23 *calcicola calcicola* (92a)



24 *calcicola glandulosior* (92b)

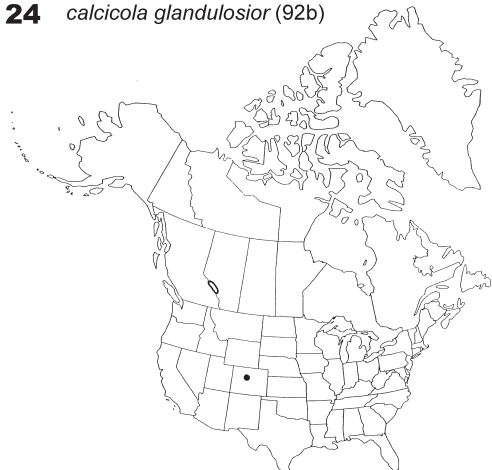
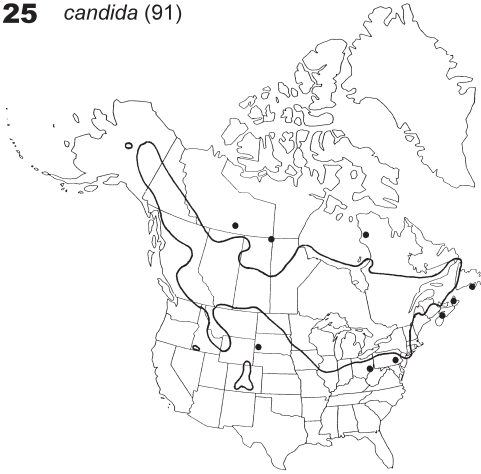
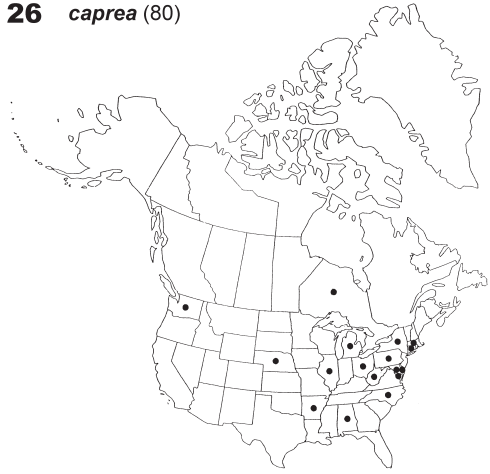


FIGURE 4.

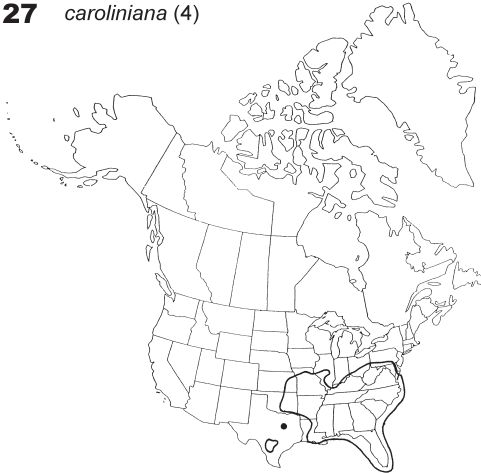
25 *candida* (91)



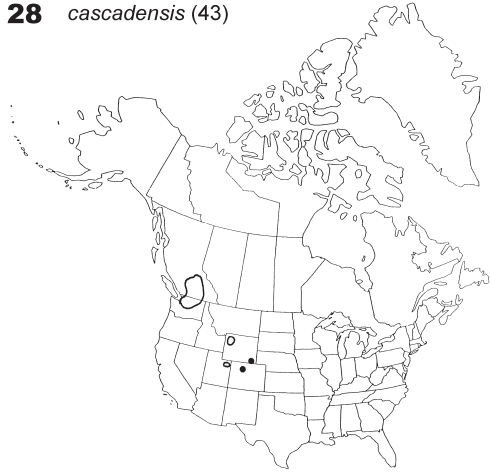
26 *caprea* (80)



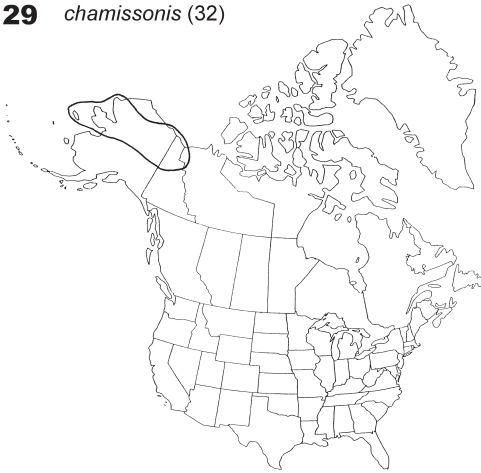
27 *caroliniana* (4)



28 *cascadensis* (43)



29 *chamissonis* (32)



30 *chlorolepis* (46)

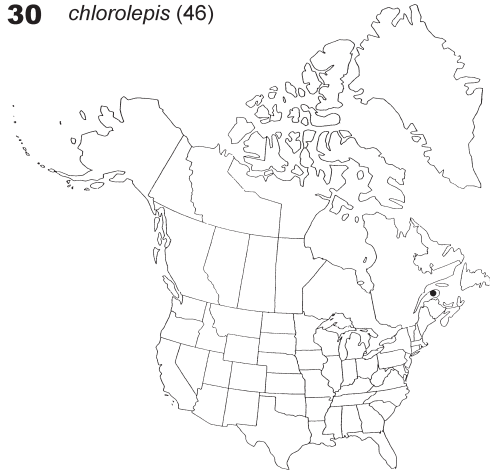
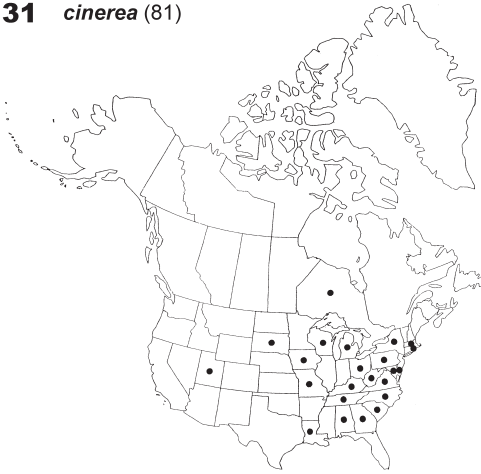
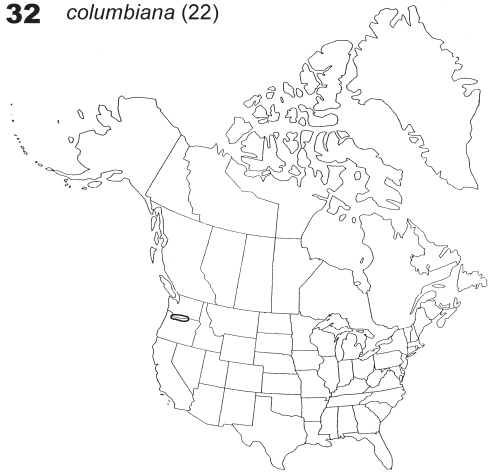


FIGURE 5.

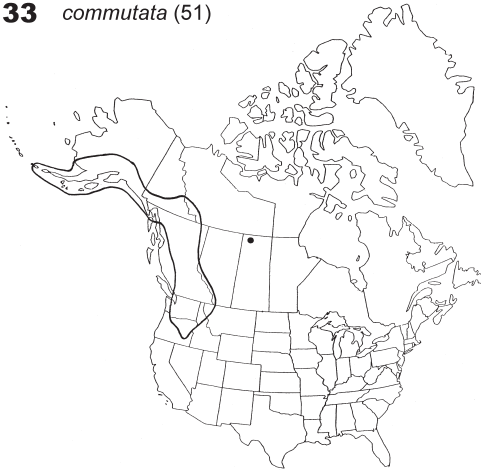
31 *cinerea* (81)



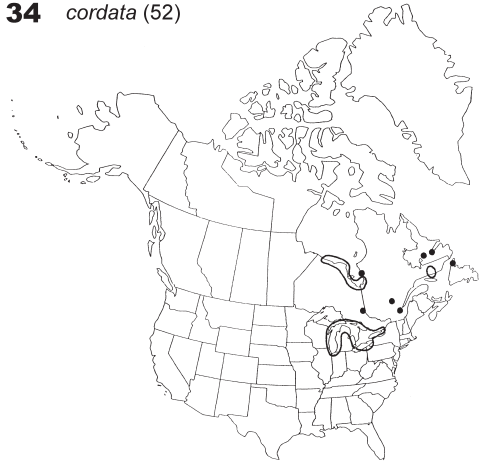
32 *columbiana* (22)



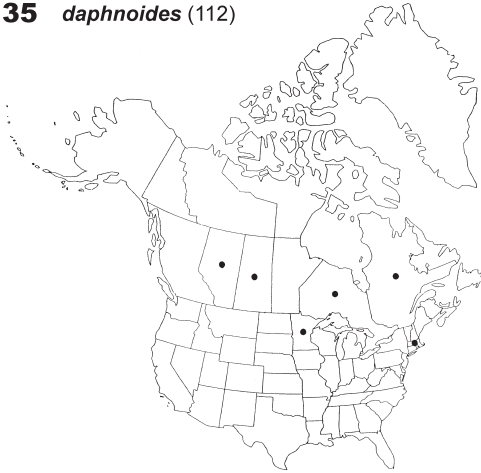
33 *commutata* (51)



34 *cordata* (52)



35 *daphnoides* (112)



36 *delnortensis* (111)

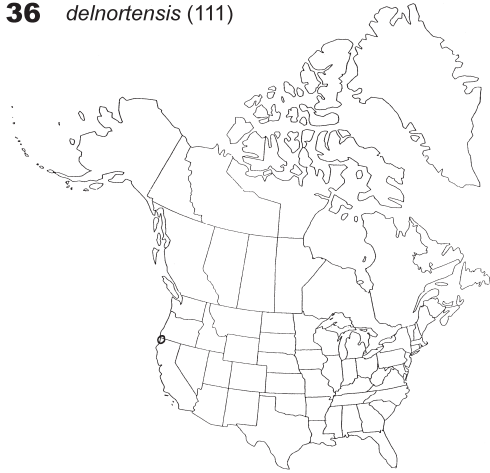
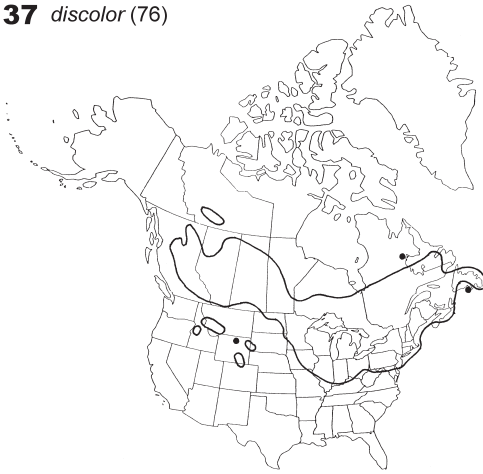
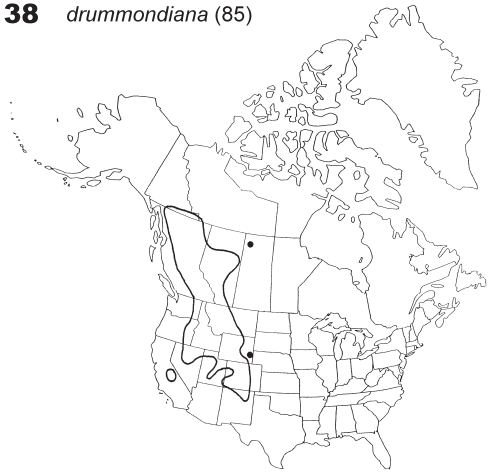


FIGURE 6.

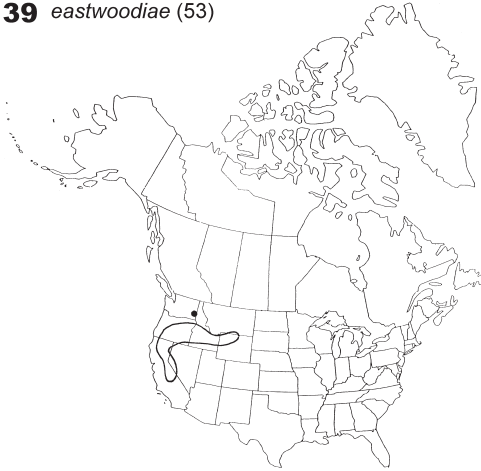
37 *discolor* (76)



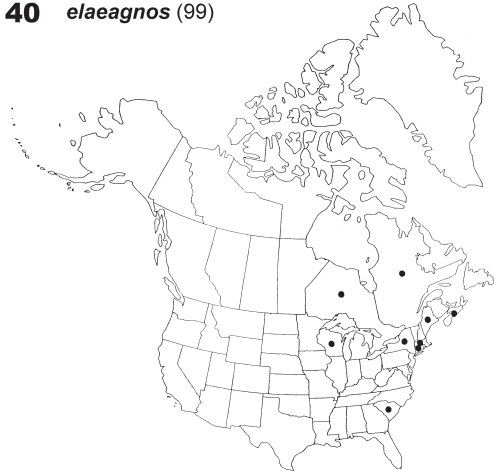
38 *drummondiana* (85)



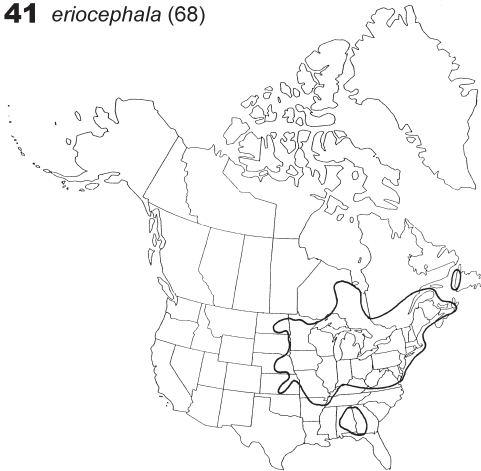
39 *eastwoodiae* (53)



40 *elaeagnos* (99)



41 *eriocephala* (68)



42 *exigua exigua* (18a)

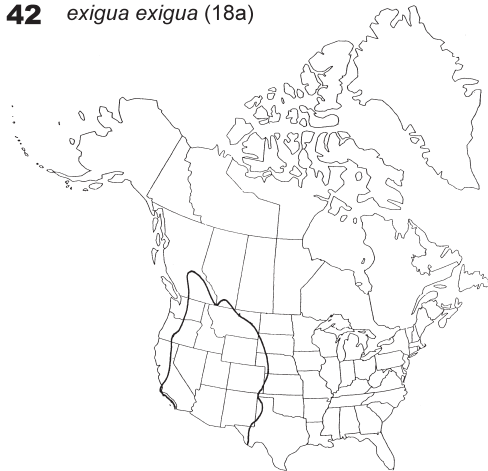
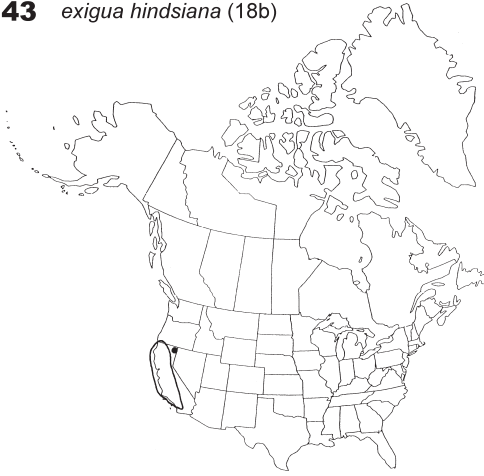
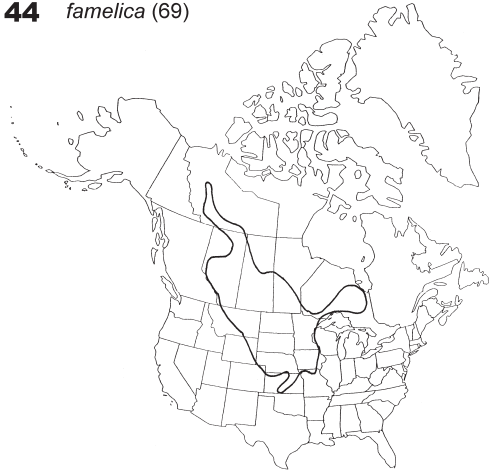


FIGURE 7.

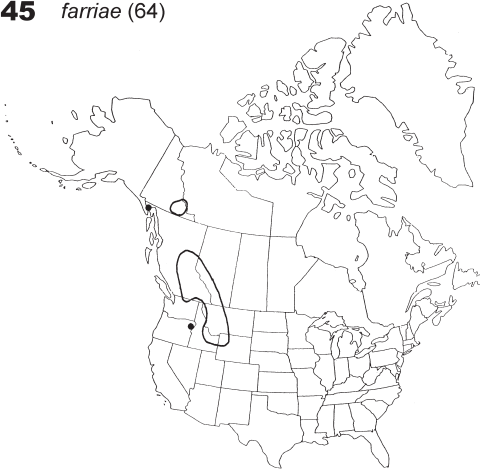
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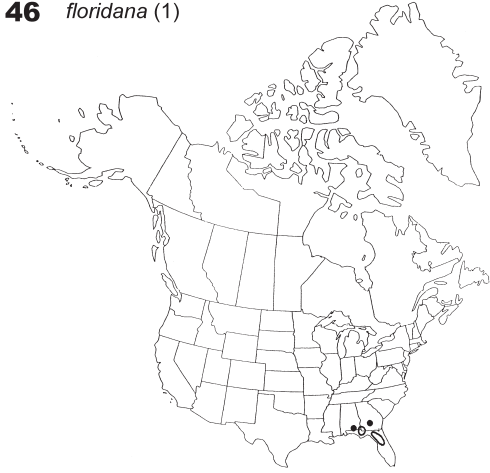
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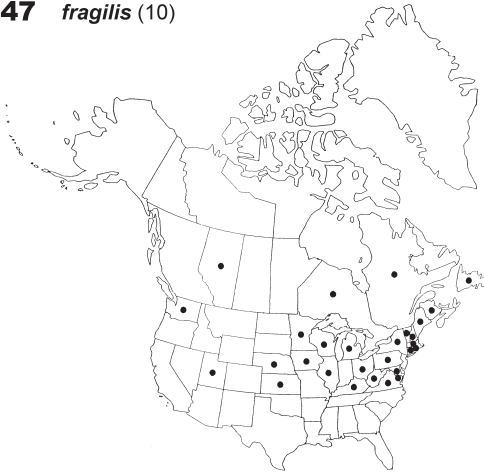
45 *farriae* (64)



46 *floridana* (1)



47 *fragilis* (10)



48 *fuscescens* (33)

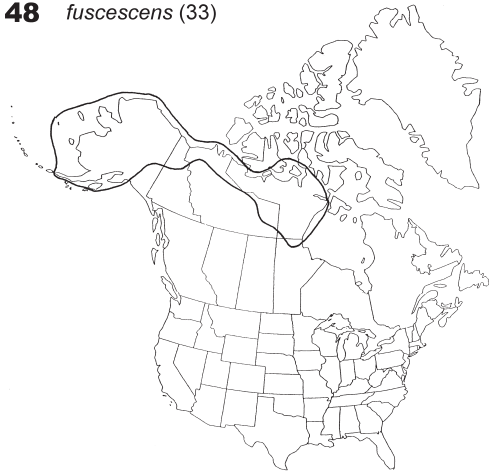
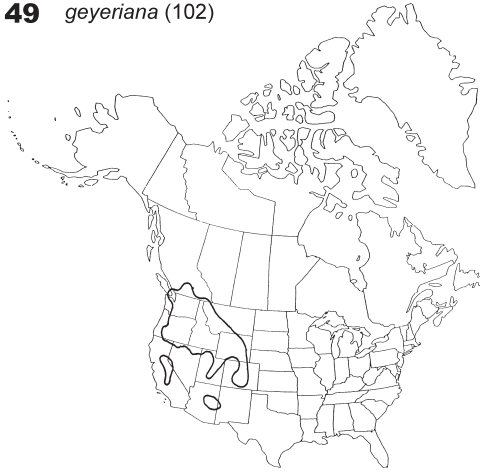
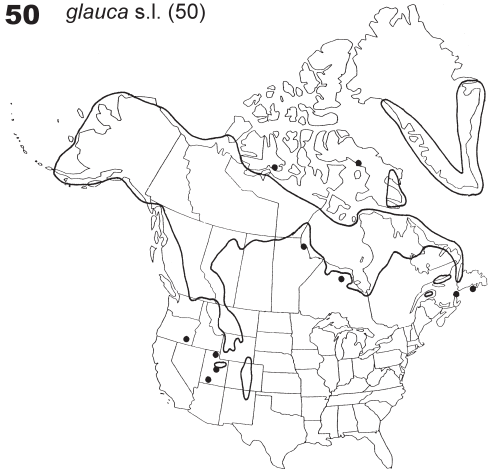


FIGURE 8.

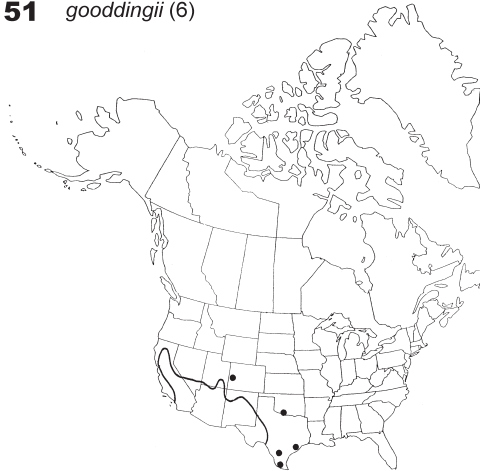
49 *geyeriana* (102)



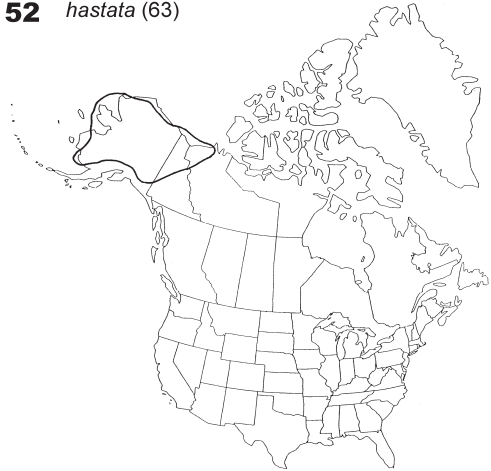
50 *glauca* s.l. (50)



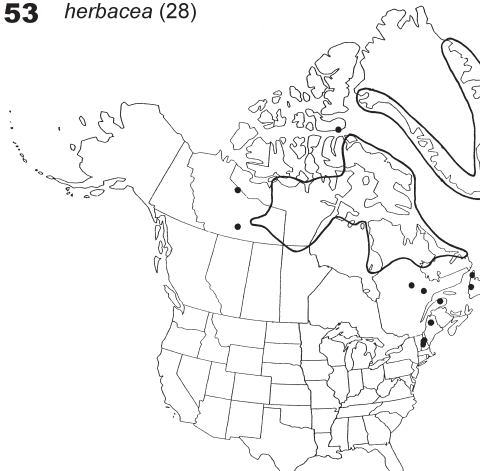
51 *goodingii* (6)



52 *hastata* (63)



53 *herbacea* (28)



54 *hookeriana* (77)

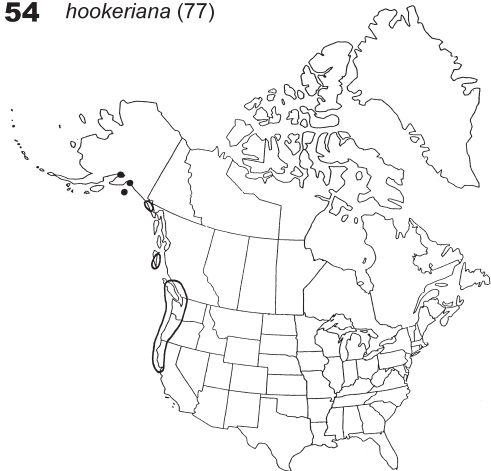
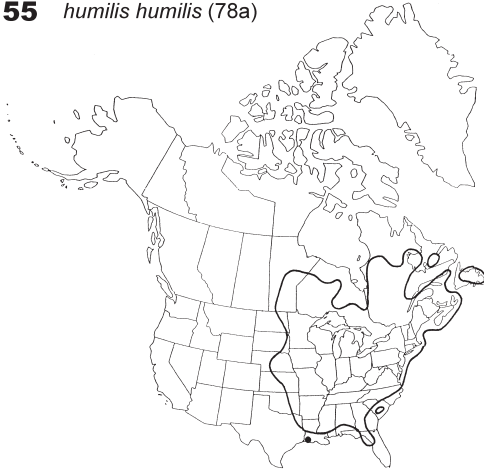
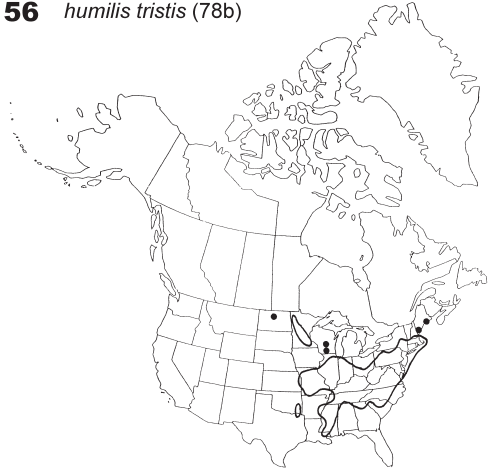


FIGURE 9.

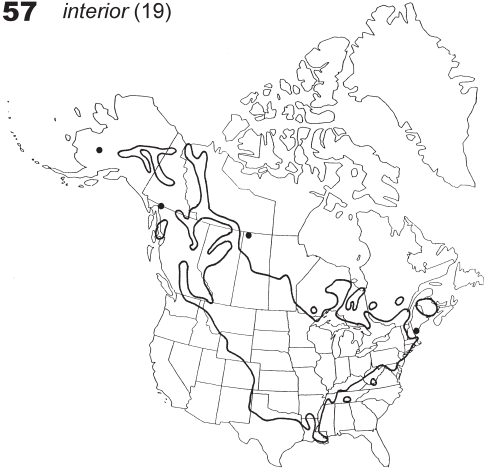
55 *humilis humilis* (78a)



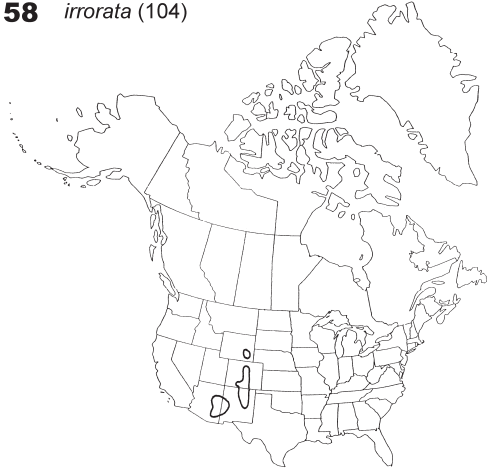
56 *humilis tristis* (78b)



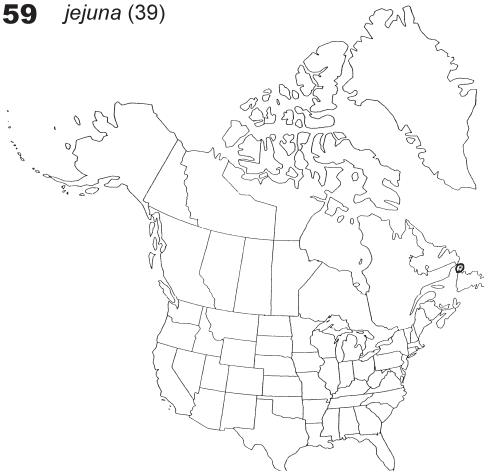
57 *interior* (19)



58 *irrorata* (104)



59 *jejuna* (39)



60 *jepsonii* (109)

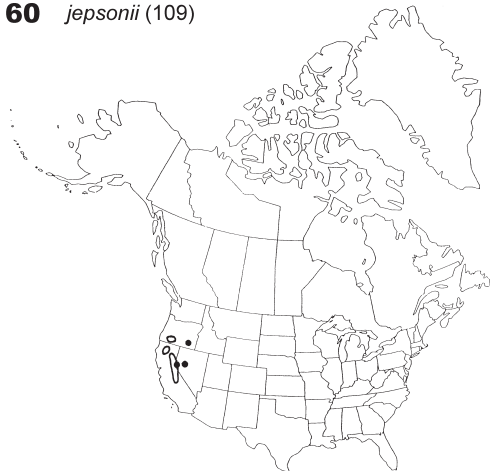
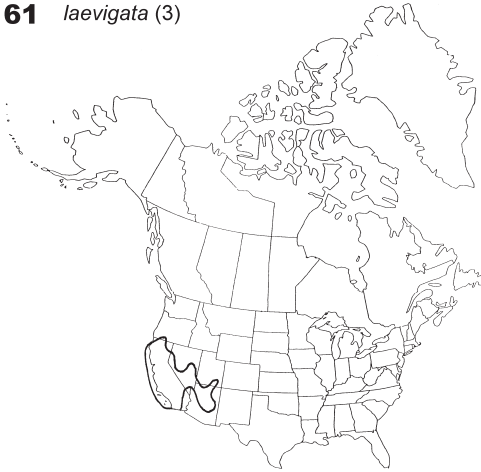
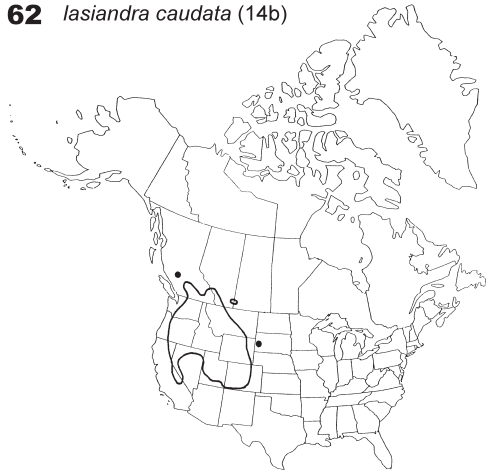


FIGURE 10.

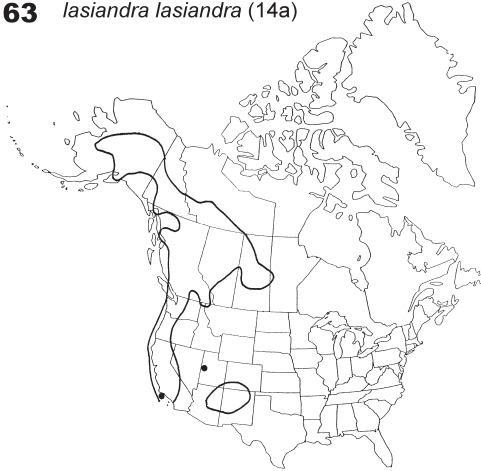
61 *laevigata* (3)



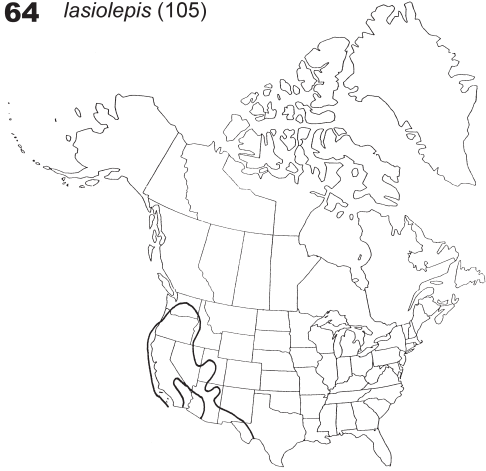
62 *lasiandra caudata* (14b)



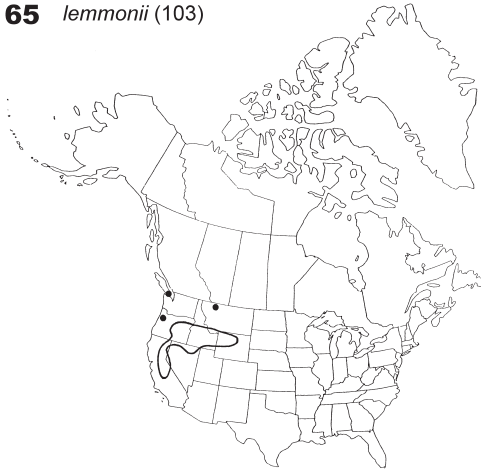
63 *lasiandra lasiandra* (14a)



64 *lasiolepis* (105)



65 *lemmonii* (103)



66 *ligulifolia* (71)

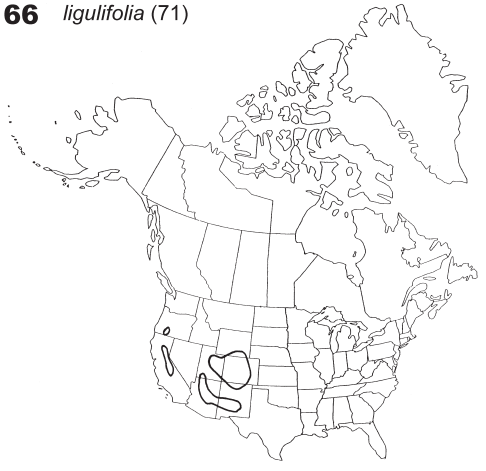
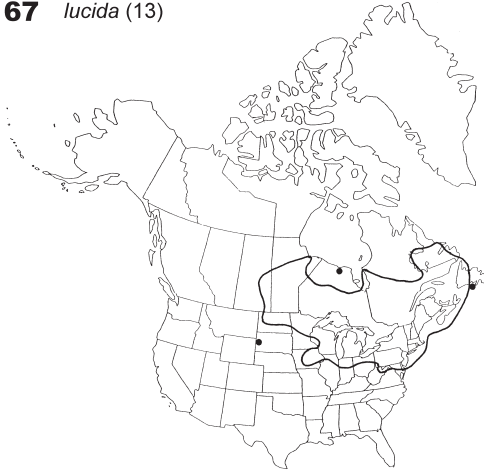
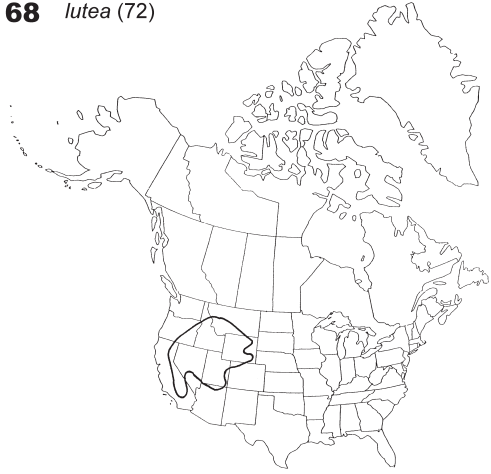


FIGURE 11.

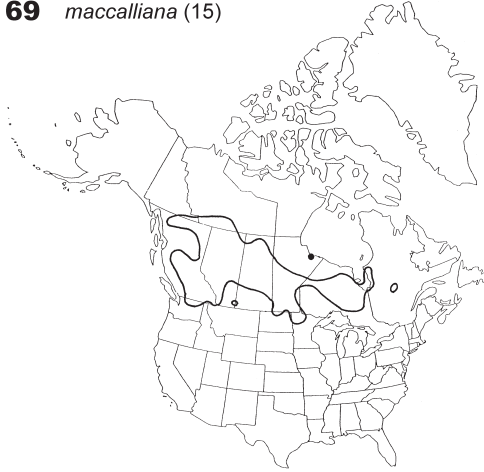
67 *lucida* (13)



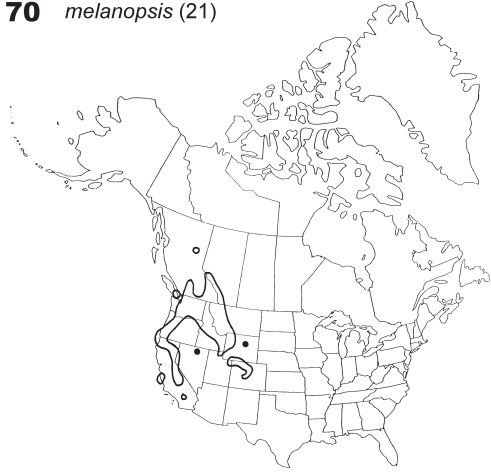
68 *lutea* (72)



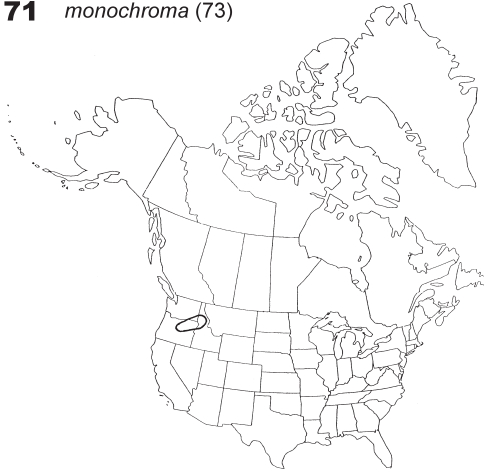
69 *maccalliana* (15)



70 *melanopsis* (21)



71 *monochroma* (73)



72 *monticola* (66)

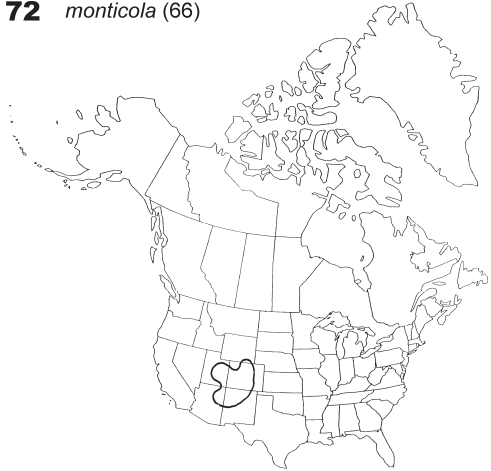
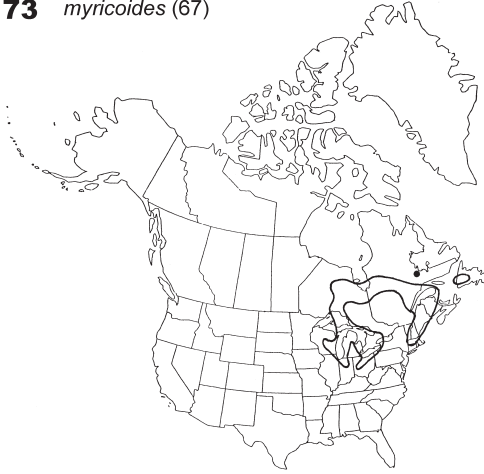
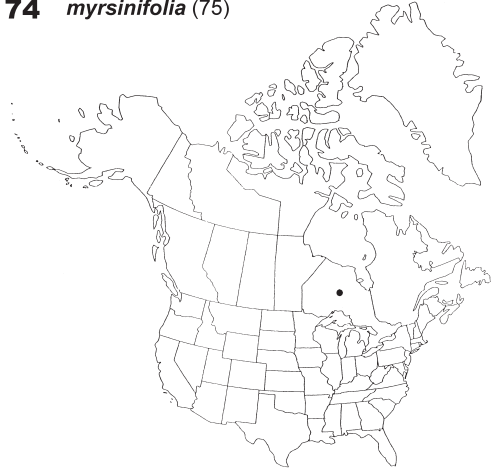


FIGURE 12.

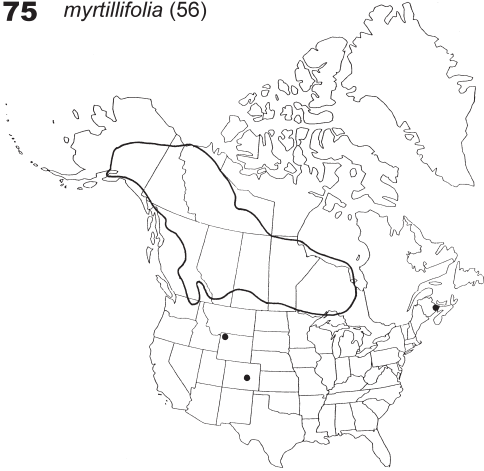
73 *myricoides* (67)



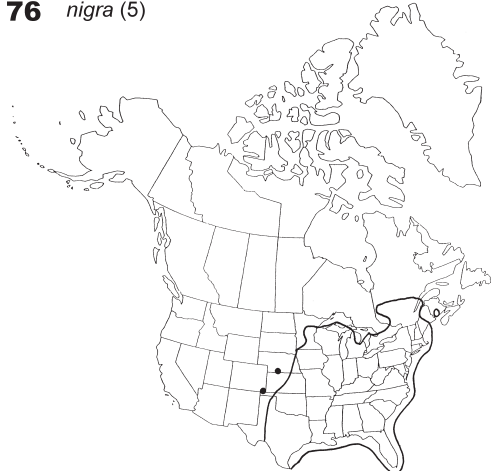
74 *myrsinifolia* (75)



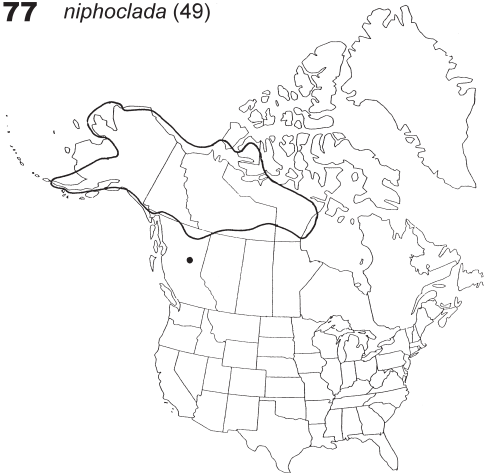
75 *myrtillifolia* (56)



76 *nigra* (5)



77 *niphochlada* (49)



78 *nivalis* (26)

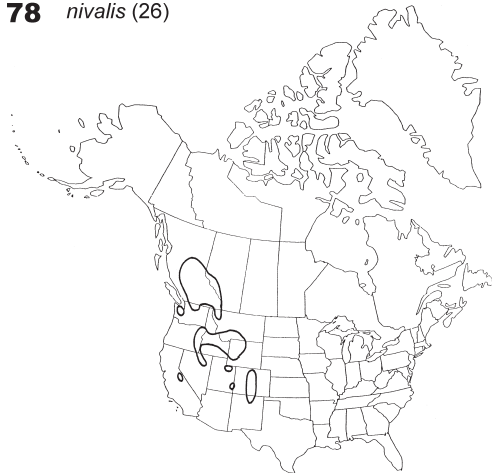
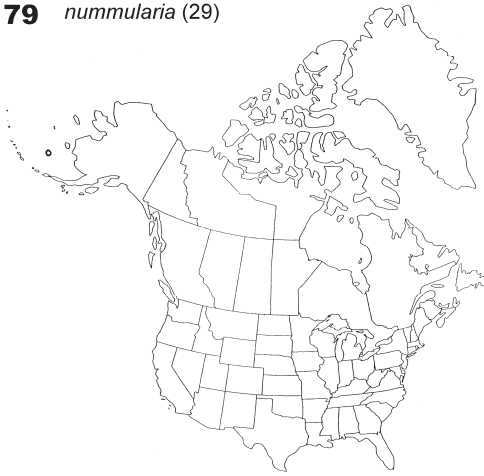
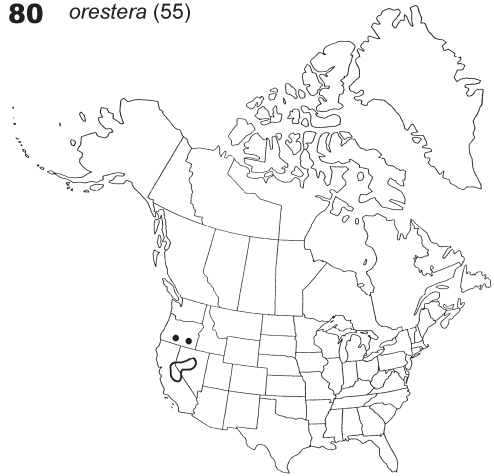


FIGURE 13.

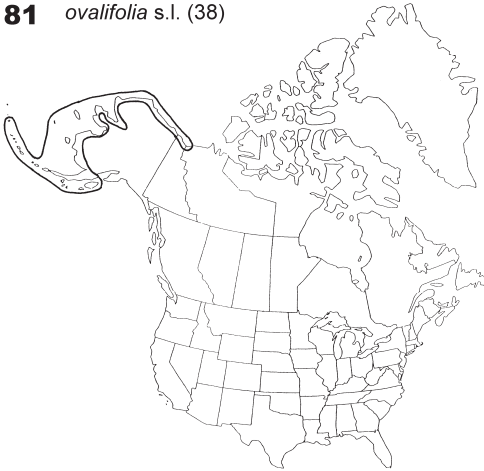
79 *nummularia* (29)



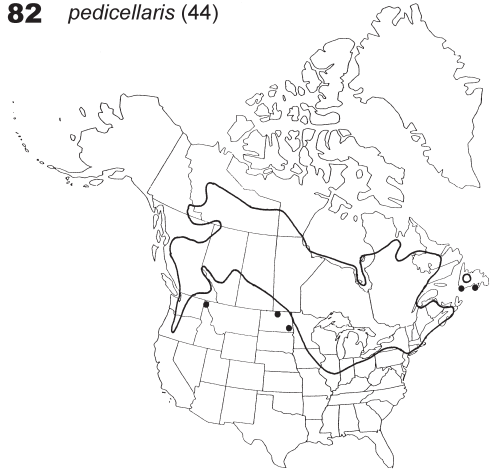
80 *orestera* (55)



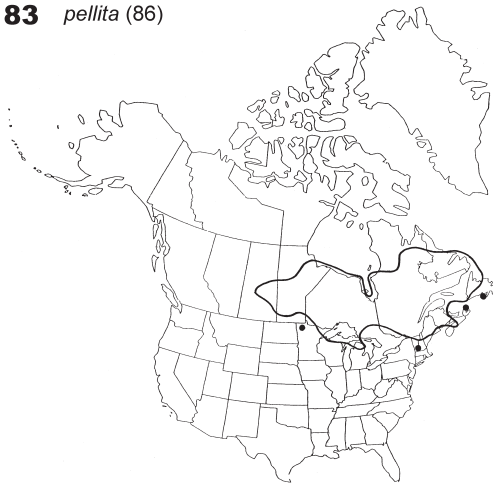
81 *ovalifolia* s.l. (38)



82 *pedicellaris* (44)



83 *pellita* (86)



84 *x pendulina* (8x10)

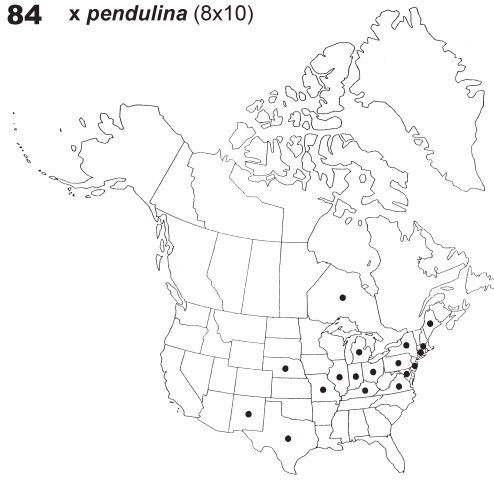
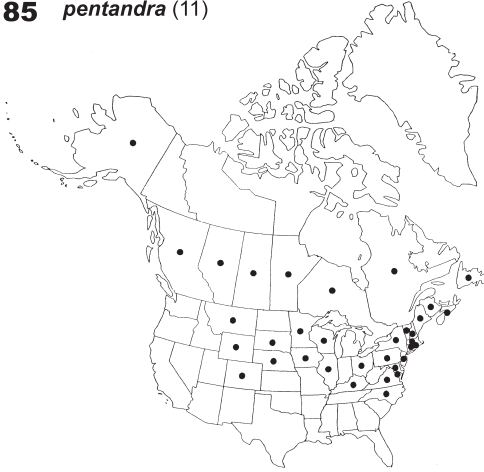
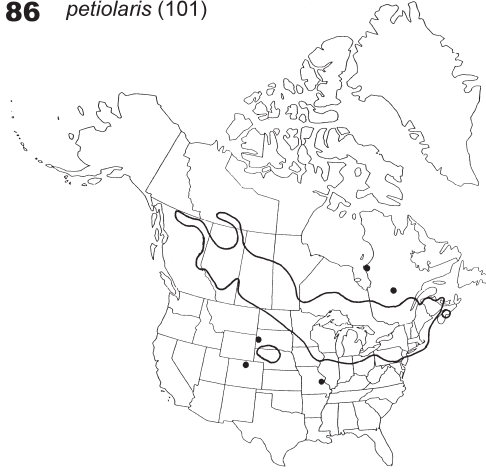


FIGURE 14.

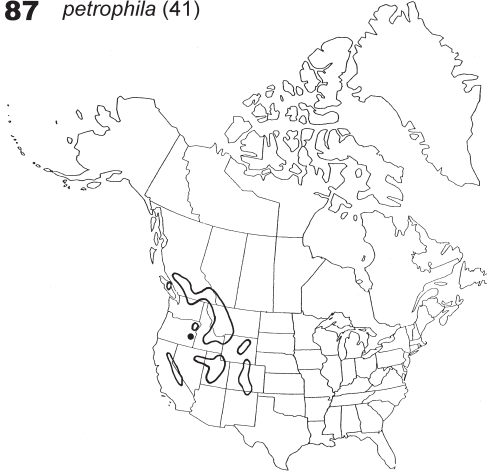
85 *pentandra* (11)



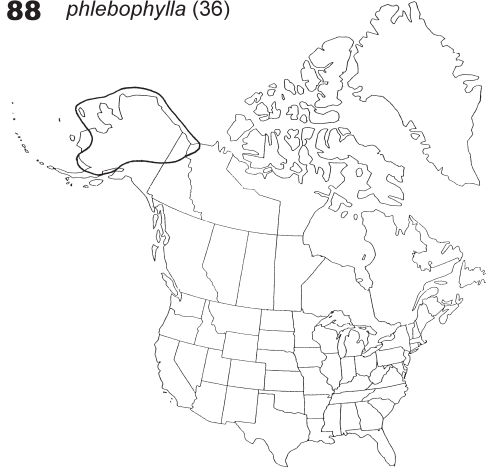
86 *petiolaris* (101)



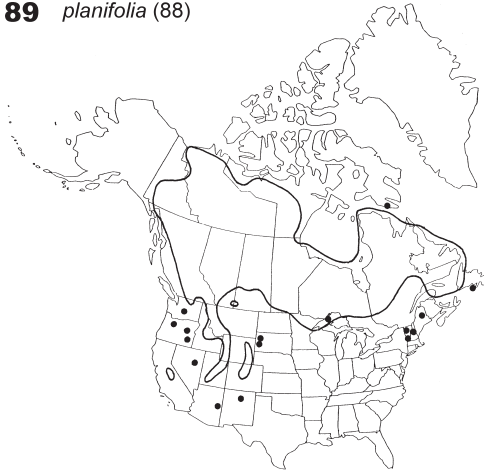
87 *petrophila* (41)



88 *phlebophylla* (36)



89 *planifolia* (88)



90 *polaris* (30)

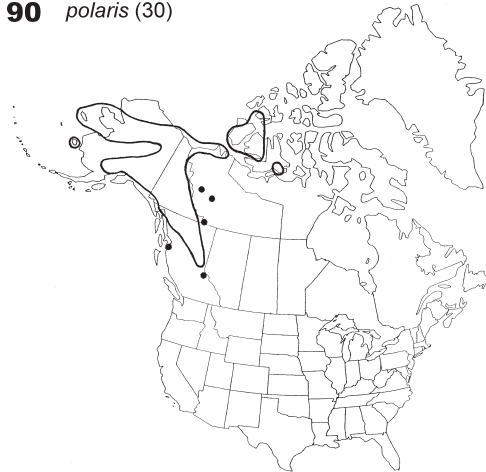
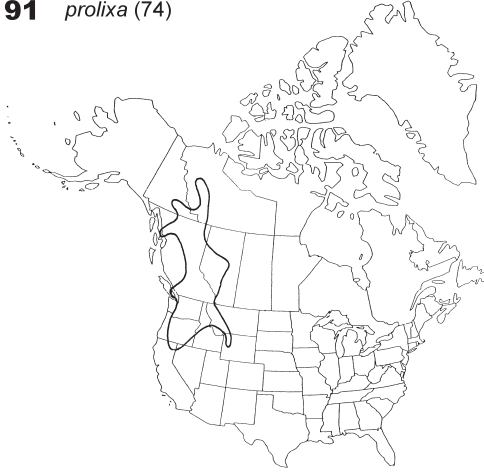
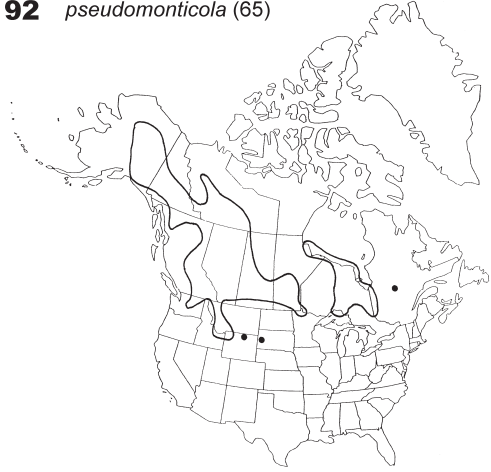


FIGURE 15.

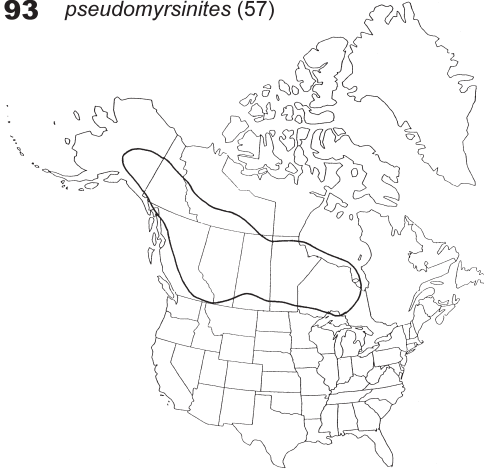
91 *prolixa* (74)



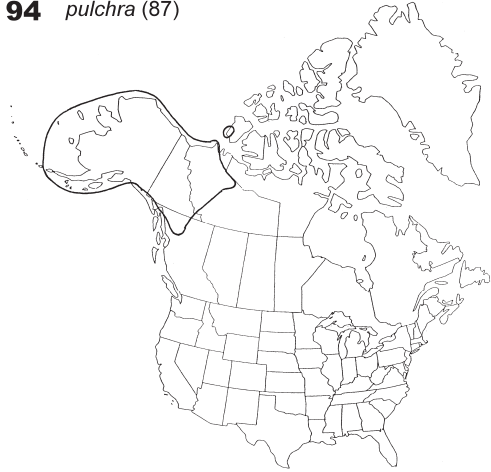
92 *pseudomonticola* (65)



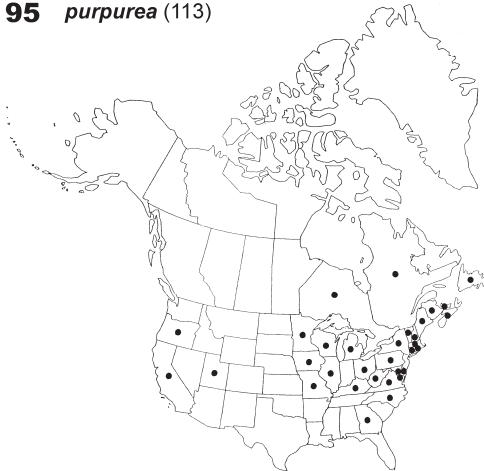
93 *pseudomyrsinites* (57)



94 *pulchra* (87)



95 *purpurea* (113)



96 *pyrifolia* (62)

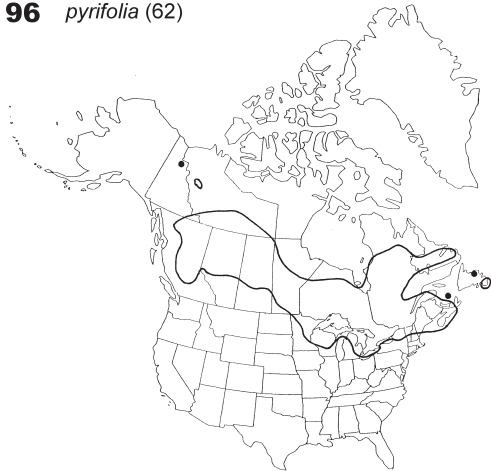
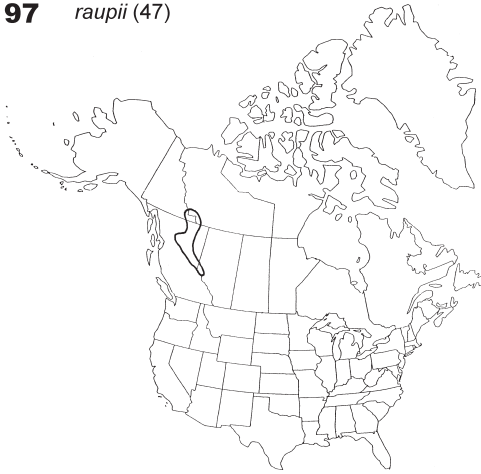
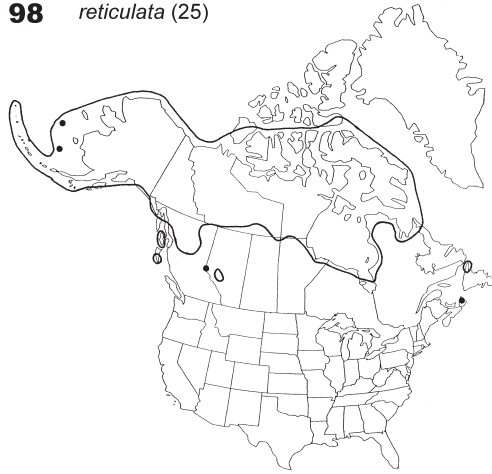


FIGURE 16.

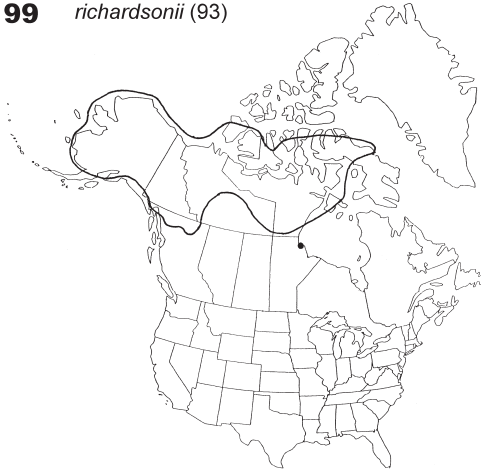
97 *raupii* (47)



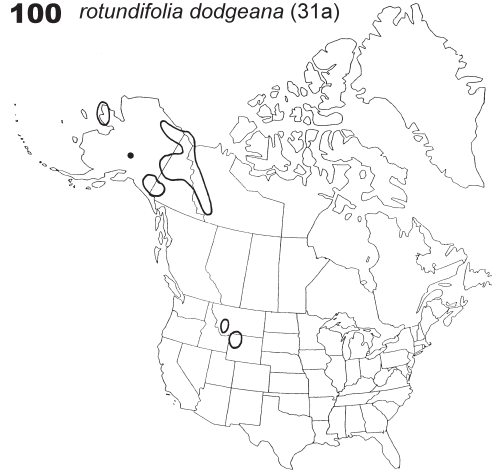
98 *reticulata* (25)



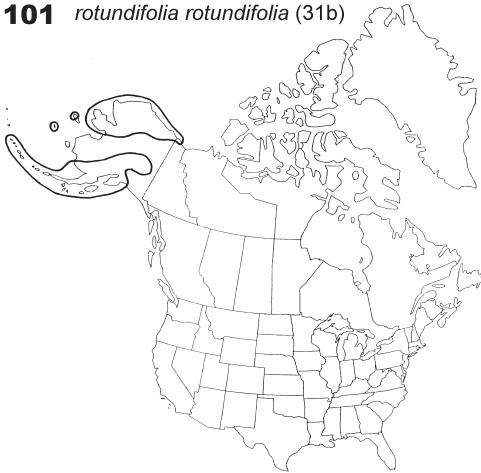
99 *richardsonii* (93)



100 *rotundifolia dodgiana* (31a)



101 *rotundifolia rotundifolia* (31b)



102 *x rubens* (9x10)

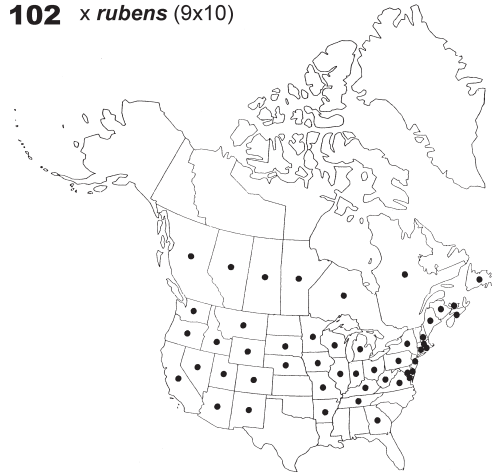
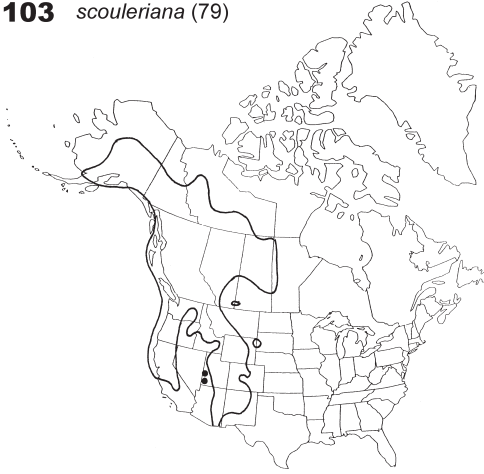
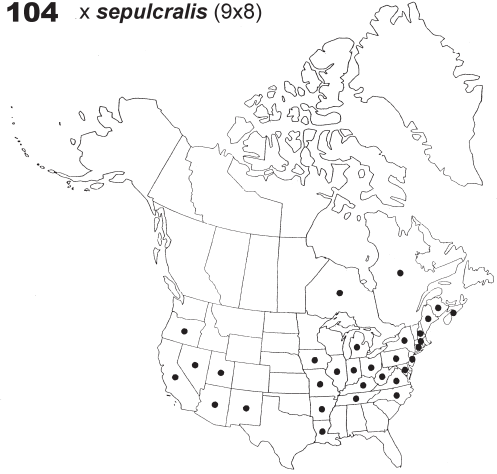


FIGURE 17.

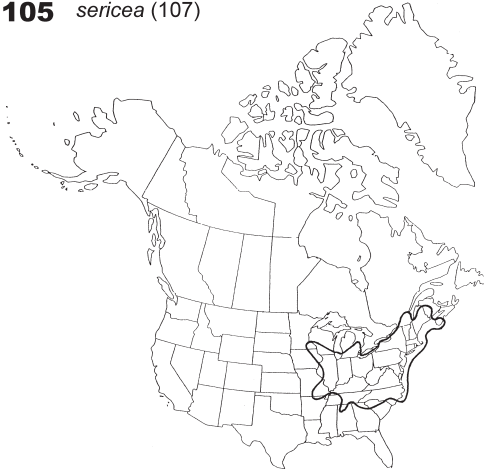
103 *scouleriana* (79)



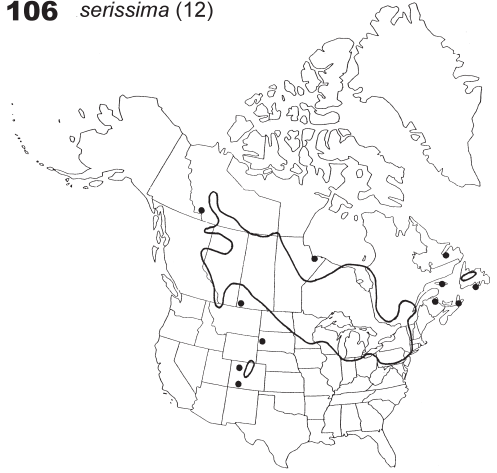
104 *x sepulcralis* (9x8)



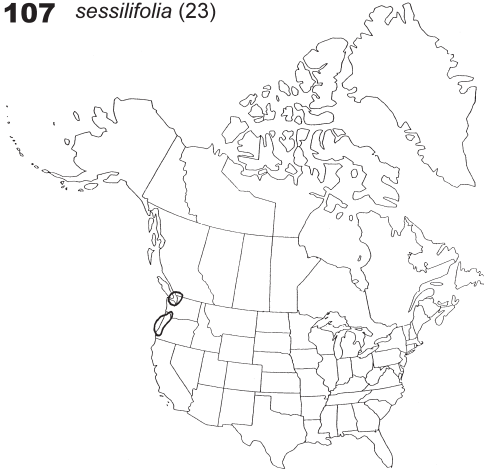
105 *sericea* (107)



106 *serissima* (12)



107 *sessilifolia* (23)



108 *setchelliana* (27)

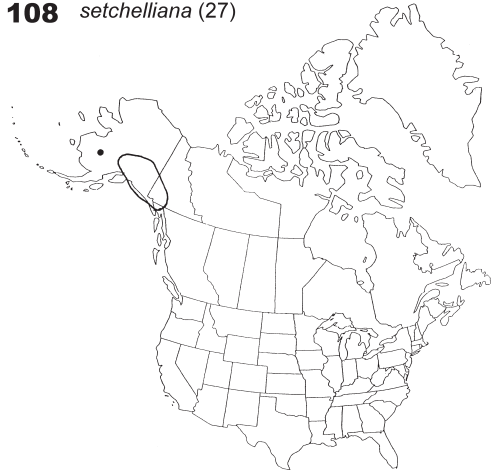
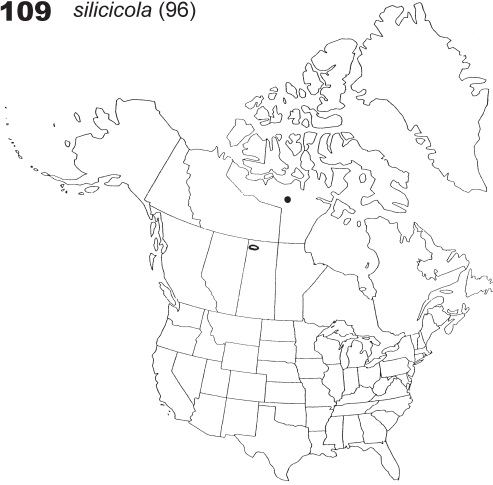
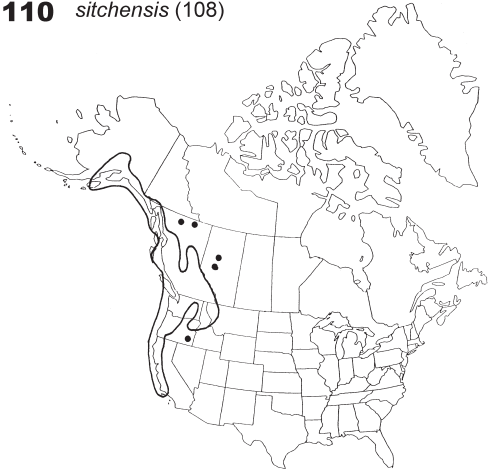


FIGURE 18.

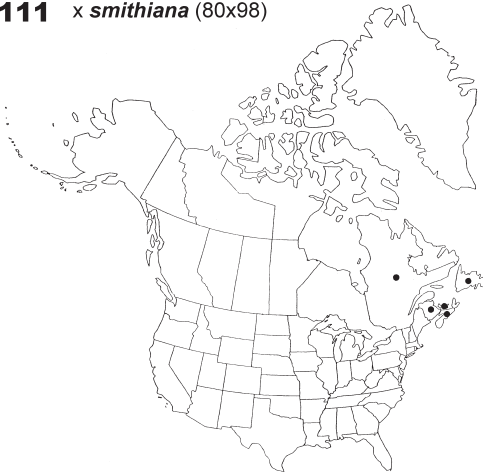
109 *silicicola* (96)



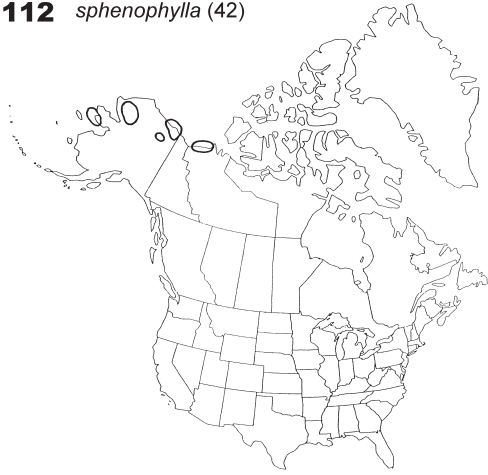
110 *sitchensis* (108)



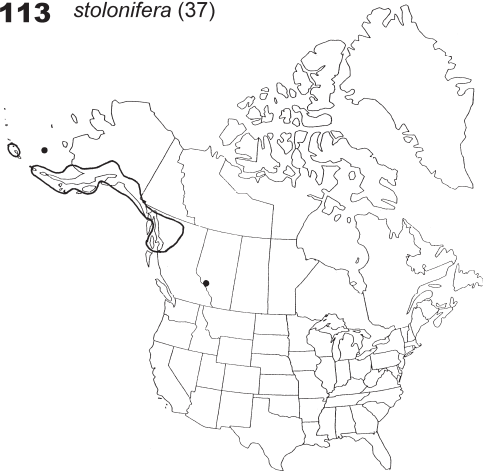
111 x *smithiana* (80x98)



112 *sphenophylla* (42)



113 *stolonifera* (37)



114 *taxifolia* (17)

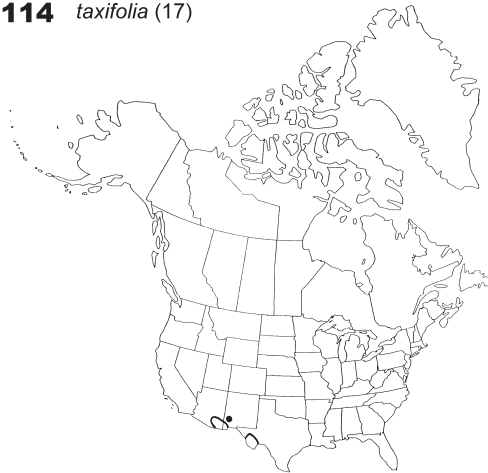
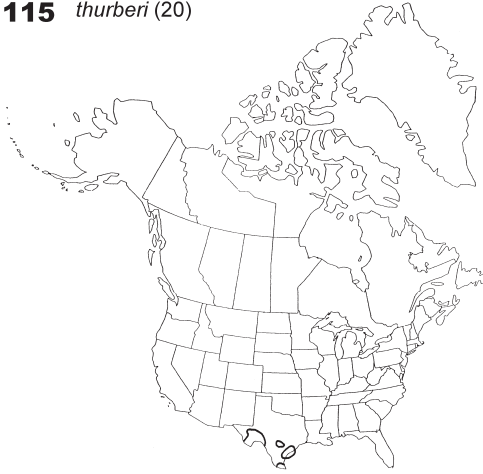
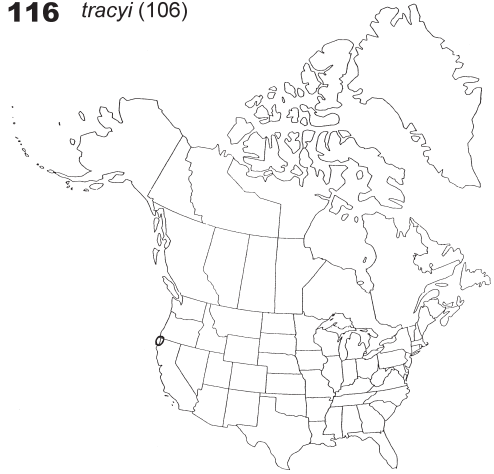


FIGURE 19.

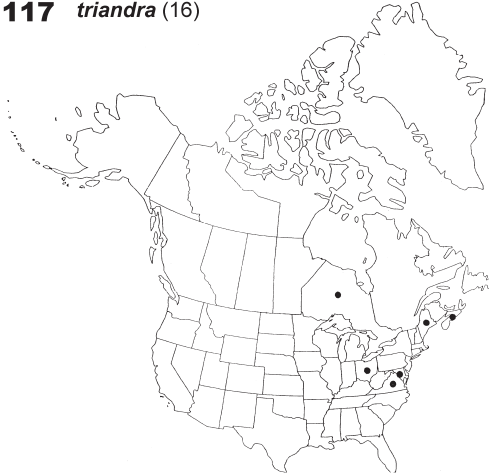
115 *thurberi* (20)



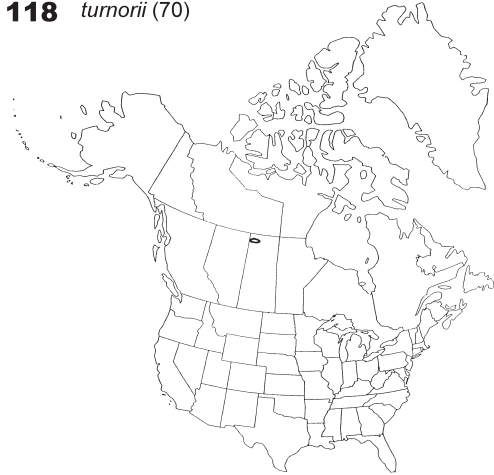
116 *tracyi* (106)



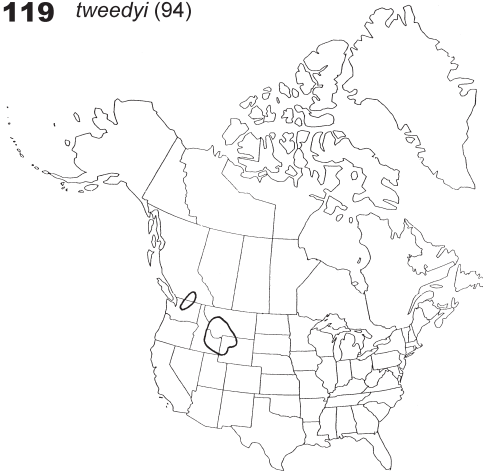
117 *triandra* (16)



118 *tumorii* (70)



119 *tweedyi* (94)



120 *tyrrellii* (89)

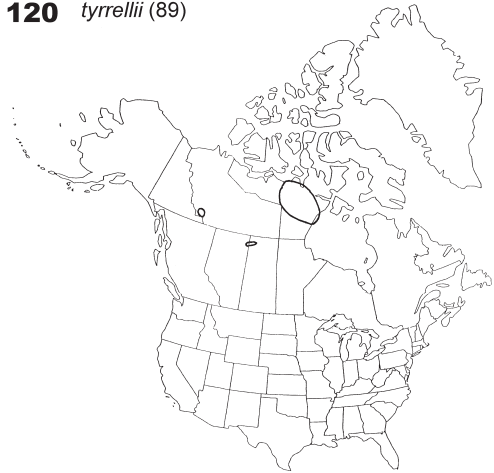
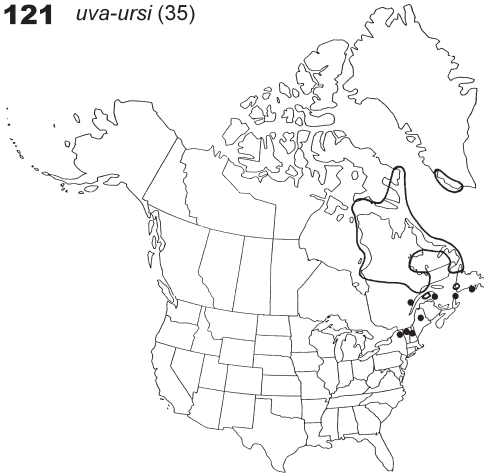
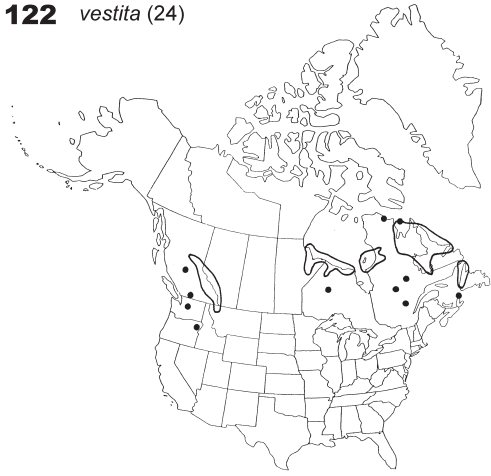


FIGURE 20.

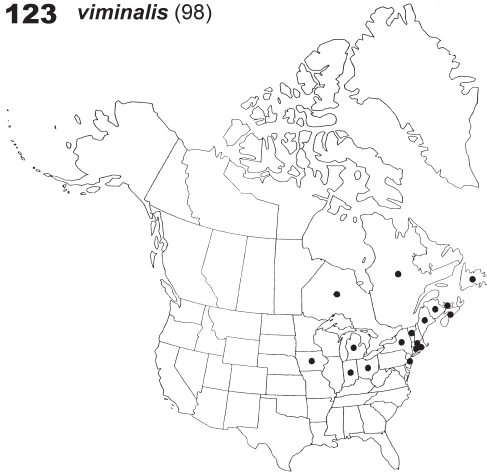
121 *uva-ursi* (35)



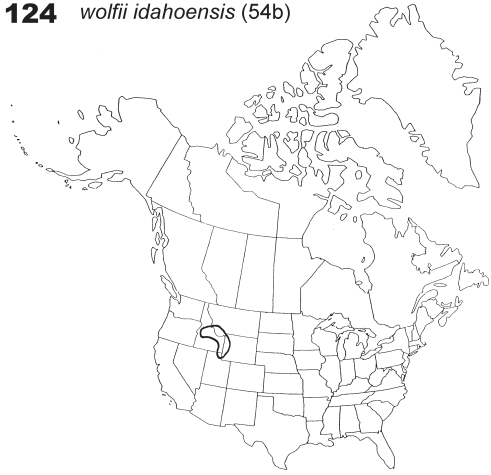
122 *vestita* (24)



123 *viminalis* (98)



124 *wolfii idahoensis* (54b)



125 *wolfii wolfii* (54a)

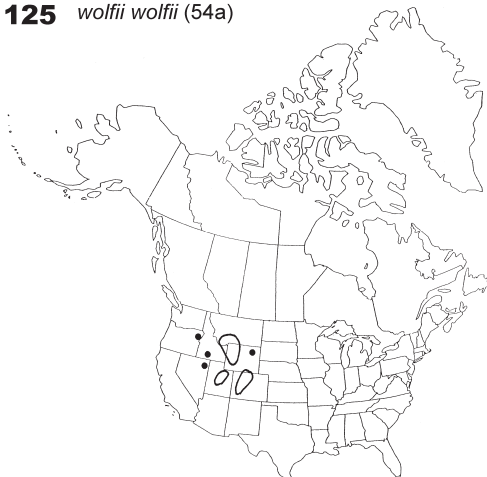


FIGURE 21.

SYNOPSIS OF THE CLASSIFICATION OF *SALIX* IN NORTH AMERICA, NORTH OF MEXICO

All native taxa are numbered as they will be in the forthcoming *Flora of North America* treatment (G. W. Argus, unpubl. manuscript). Commonly introduced cultivated or naturalized taxa are included and numbered. Hybrids are not included except for a few commonly naturalized hybrids that are often mistaken for natives; they are unnumbered. Native taxa are in italics; introduced taxa are in bold italics.

2. *Salix* Linnaeus, Sp. Pl. 2: 1015. 1753.

2a. *Salix* subgen. *Protitea* Kimura, Bot. Mag. (Tokyo) 42: 290. 1928.

2a1. *Salix* sect. *Floridanae* Dorn, Canad. J. Bot. 54: 2775. 1976.

1. *Salix floridana* Chapman, Fl. South. U.S., 430. 1860.

2a2. *Salix* sect. *Humboldtianae* Andersson in A. P. de Candolle and A. L. P. P. de Candolle, Prodr. 16(2): 199. 1868.

2. *Salix bonplandiana* Kunth in A. von Humboldt et al., Nov. Gen. Sp. 2[quarto ed.]: 24, plates 101, 102. 1817.

3. *Salix laevigata* Bebb, Amer. Naturalist 8: 202. 1874

4. *Salix caroliniana* Michaux, Fl. Amer. Bor.-Amer. 2: 226. 1803.

5. *Salix nigra* Marshall, Arbust. Amer., 139. 1785.

6. *Salix gooddingii* C. R. Ball, Bot. Gaz. 40: 376, plate 12, figs. 1, 2. 1905.

7. *Salix amygdaloides* Andersson, Öfvers. Förh. Kongl. Svenska Vetensk.-Akad. 15: 114. 1858.

2b. *Salix* subgen. *Salix*

2b1. *Salix* sect. *Subalbae* G. Koidzumi, Bot. Mag. (Tokyo) 27: 88. 1913.

8. *Salix babylonica* Linnaeus, Sp. Pl. 2: 1017. 1753.

Salix × *pendulina* Wenderoth, Schriften Ges. Beford. Gesamnten Naturwiss. Marburg 2: 235. 1831. (*S. babylonica* × *S. fragilis*)

2b2. *Salix* sect. *Salix*

9. *Salix alba* Linnaeus, Sp. Pl. 2: 1021. 1753.

Salix × *sepulcralis* Simonk, Oesterr. Bot. Z. 40: 424. 1890. (*S. alba* × *S. babylonica*)

Salix × *rubens* Schrank, Baier. Fl. 1: 226. 1789. (*S. alba* × *S. fragilis*)

10. *Salix fragilis* Linnaeus, Sp. Pl. 2: 1017. 1753.

2b3. *Salix* sect. *Salicaster* Dumortier, Fl. Belg., 14. 1827.

11. *Salix pentandra* Linnaeus, Sp. Pl. 2: 1016. 1753.

12. *Salix serissima* (L. H. Bailey) Fernald, Rhodora 6: 6. 1903.

13. *Salix lucida* Muhlenberg, Ges. Naturf. Freunde Berlin Neue Schriften 4: 239. 1803.

14. *Salix lasiandra* Benthams, Pl. Hartw., 335. 1857.

14a. *Salix lasiandra* var. *lasiandra*

14b. *Salix lasiandra* var. *caudata* (Nuttall) Sudworth, Bull. Torrey Bot. Club 20: 43. 1893.

2b4. *Salix* sect. *Maccallianae* Argus, Publ. Bot. (Ottawa) 2: 38. 1973.

15. *Salix maccalliana* Rowlee, Bull. Torrey Bot. Club 34: 158. 1907.

2b5. *Salix* sect. *Triandrae* Dumortier, Bijdr. Natuurk. Wetensch. 1: 58. 1826.

16. *Salix triandra* Linnaeus, Sp. Pl. 2: 1016. 1753.

2c. *Salix* subgen. *Longifoliae* (Andersson) Argus, Syst. Bot. Monogr. 52: 57. 1997.

- 2c1. *Salix* sect. *Longifoliae* (Andersson) Andersson in A. P. de Candolle and A. L. P. P. de Candolle, Prodr. 16(2): 214. 1868.
17. *Salix taxifolia* Kunth in A. von Humboldt et al., Nov. Gen. Sp. 2[quarto ed.]: 22. 1817.
18. *Salix exigua* Nuttall, N. Amer. Sylv. 1: 75. 1842.
- 18a. *Salix exigua* var. *exigua*
- 18b. *Salix exigua* var. *hindsiana* (Bentham) Dorn, Brittonia 50: 203. 1998.
19. *Salix interior* Rowlee, Bull. Torrey Bot. Club 27: 253. 1900.
20. *Salix thurberi* Rowlee, Bull. Torrey Bot. Club 27: 252. 1900.
21. *Salix melanopsis* Nuttall, N. Amer. Sylva 1: 78, plate 21. 1842.
22. *Salix columbiana* (Dorn) Argus comb. nov. Basionym: *Salix exigua* Nuttall var. *columbiana* Dorn, Brittonia 50: 204. 1998.
23. *Salix sessilifolia* Nuttall, N. Amer. Sylva 1: 68. 1842.
- 2d. *Salix* subgen. *Chamaetia* (Dumortier) Nasarov, Flora URSS 5: 31. 1936.
- 2d1. *Salix* sect. *Chamaetia* Dumortier, Verh. Gesl. Wilgen, 15. 1825.
24. *Salix vestita* Pursh, Fl. Amer. Sept. 2: 610. 1813.
25. *Salix reticulata* Linnaeus, Sp. Pl. 2: 1018. 1753.
26. *Salix nivalis* Hooker, Fl. Bor.-Amer. 2: 152. 1838.
- 2d2. *Salix* sect. *Setchellianae* Argus, Syst. Bot. Monogr. 52: 62. 1997
27. *Salix setchelliana* C. R. Ball, Univ. Calif. Publ. Bot. 17: 410, plate 72. 1934.
- 2d3. *Salix* sect. *Herbella* Seringe, Exempl. Desséchés Révis. Ined. Gen. *Salix* 14th page [no pagination]. 1824.
28. *Salix herbacea* Linnaeus, Sp. Pl. 2: 1018. 1753.
29. *Salix nummularia* Andersson in A. P. de Candolle and A. L. P. de Candolle, Prodr. 16(2) : 298. 1868.
30. *Salix polaris* Wahlenberg, Fl. Lapp. 261, plate 13, fig. 1. 1812.
31. *Salix rotundifolia* Trautvetter, Nouv. Mém. Soc. Imp. Naturalistes Moscou 2: 304, plate 11. 1832.
- 31a. *Salix rotundifolia* var. *dodgeana* (Rydberg) E. Murray, Kalmia 13: 30. 1983.
- 31b. *Salix rotundifolia* var. *rotundifolia*
- 2d4. *Salix* sect. *Myrtosalix* A. Kerner, Verh. K.-K. Zool.-Bot. Ges. Wien 10: 203. 1860.
32. *Salix chamissonis* Andersson in A. P. de Candolle and A. L. P. P. de Candolle, Prodr. 16(2): 290. 1868.
33. *Salix fuscescens* Andersson, Öfvers. Kongl. Vetensk.-Akad. Förh. 6(1): 97. 1867.
34. *Salix arctophila* Cockerell ex A. Heller. Cat. N. Amer. Pl. ed. 3, 89. 1910.
35. *Salix uva-ursi* Pursh, Fl. Amer. Sept. 2: 610. 1813.
36. *Salix phlebophylla* Andersson in A. P. de Candolle and A. L. P. P. de Candolle, Prodr. 16(2): 290. 1868.
- 2d5. *Salix* sect. *Ovalifoliae* (Rydberg) C. K. Schneider in C. S. Sargent, Pl. Wilson. 3: 140. 1916.
37. *Salix stolonifera* Coville, Proc. Wash. Acad. Sci. 3: 333, plate 41, fig. 1: 333. 1901.
38. *Salix ovalifolia* Trautvetter, Nouv. Mém. Soc. Imp. Naturalistes Moscou 2: 306. 1832.
- 38a. *Salix ovalifolia* var. *ovalifolia*
- 38b. *Salix ovalifolia* var. *cyclophylla* (Rydberg) C. R. Ball, Proc. Natl. Acad. Sci. U.S.A. 21: 184. 1935.
- 38c. *Salix ovalifolia* var. *arctolitoralis* (Hultén) Argus, Canad. J. Bot. 47: 795. 1969.
- 38d. *Salix ovalifolia* var. *glacialis* (Andersson) Argus, Canad. J. Bot. 47: 798. 1969.
39. *Salix jejuna* Fernald, Rhodora 28: 177. 1926.

- 2d6. *Salix* sect. *Diplodictyae* C. K. Schneider in C. S. Sargent, Pl. Wilson. 3: 136. 1916.
40. *Salix arctica* Pallas, Fl. Ross. 1(2): 86. 1788.
41. *Salix petrophila* Rydberg, Bull. New York Bot. Gard. 1: 268. 1899.
42. *Salix sphenophylla* A. K. Skvortsov, Sched. Herb. Fl. URSS 16: 62. 1966.
43. *Salix cascadiensis* Cockerell, Muhlenbergia 3: 9. 1907.
- 2d6. *Salix* sect. *Myrtilloides* (Borrer) Andersson in A. P. de Candolle and A. L. P. P. de Candolle, Prodr. 16(2): 229. 1868.
44. *Salix pedicellaris* Pursh, Fl. Amer. Sept. 2: 611. 1813.
45. *Salix athabascensis* Raup, Rhodora 32: 111, plate 202. 1930.
46. *Salix chlorolepis* Fernald, Rhodora 7: 186. 1905.
47. *Salix raupii* Argus, Canad. J. Bot. 52: 1303, plate 1. 1974.
- 2d7. *Salix* sect. *Glaucæ* (Fries) Andersson in A. P. de Candolle and A. L. P. P. de Candolle, Prodr. 16(2): 273. 1868.
48. *Salix brachycarpa* Nuttall, N. Amer. Sylva 1: 69. 1842.
- 48a. *Salix brachycarpa* var. *brachycarpa*
- 48b. *Salix brachycarpa* var. *psammophila* Raup, J. Arnold Arbor. 17: 230, plate 191. 1936.
49. *Salix niphoclada* Rydberg, Bull. New York Bot. Gard. 1: 272. 1899.
50. *Salix glauca* Linnaeus, Sp. Pl. 2: 1019. 1753.
- 50a. *Salix glauca* var. *stipulata* Floderus in C. M.A. Lindman, Sv. Fanerogamfl., 205. 1926.
- 50b. *Salix glauca* var. *acutifolia* (Hooker) C. K. Schneider, Bot. Gaz. 66: 327. 1918.
- 50c. *Salix glauca* var. *villosa* Andersson, Proc. Amer. Acad. Arts 4: 68. 1858.
- 50d. *Salix glauca* var. *callicarpæa* (Trautvetter) Argus, Syst. Bot. Monogr. 52: 70. 1997.
- 2e. *Salix* subg. *Vetrix* (Dumortier) Dumortier, Bull. Soc. Roy. Bot. Belgique 1: 141. 1862.
- 2e1. *Salix* sect. *Hastatae* (Fries) A. Kerner, Verh. K.-K. Zool.-Bot. Ges. Wien 10: 241. 1860.
51. *Salix commutata* Bebb, Bot. Gaz. 13: 110. 1888.
52. *Salix cordata* Michaux, Fl. Bor.-Amer. 2: 225. 1803.
53. *Salix eastwoodiae* Cockerell ex A. Heller, Cat. N. Amer. Pl. ed. 3, 89. 1910.
54. *Salix wolfii* Bebb in T. J. Rothrock, Rep. U.S. Geogr. Surv., Wheeler, 214. 1878.
- 54a. *Salix wolfii* var. *wolfii*
- 54b. *Salix wolfii* var. *idahoensis* C. R. Ball, Bot. Gaz. 40: 378. 1905.
55. *Salix orestera* C. K. Schneider, J. Arnold Arbor. 1: 164. 1920.
56. *Salix myrtillofolia* Andersson, Öfvers. Förh. Kongl. Svenska Vetensk.-Akad. 15: 132. 1858.
57. *Salix pseudomyrsinites* Andersson, Öfvers. Förh. Kongl. Svenska Vetensk.-Akad. 15: 129. 1858.
58. *Salix ballii* Dorn, Canad. J. Bot. 53: 1501. 1975.
59. *Salix arizonica* Dorn, Canad. J. Bot. 53: 1499. 1975.
60. *Salix boothii* Dorn, Canad. J. Bot. 53: 1505. 1975.
61. *Salix barclayi* Andersson, Öfvers. Förh. Kongl. Svenska Vetensk.-Akad. 15: 125. 1858.
62. *Salix pyrifolia* Andersson, Öfvers. Kongl. Vetensk.-Akad. Förh. 6(1): 162. 1867.
63. *Salix hastata* Linnaeus, Sp. Pl. 2: 1017. 1753.
64. *Salix farriæ* C. R. Ball, Contr. U.S. Natl. Herb. 22: 321. 1921.
65. *Salix pseudomonticola* C. R. Ball, Contr. U. S. Natl. Herb. 22: 321. 1921.
66. *Salix monticola* Bebb in J. M. Coulter, Man. Bot. Rocky Mt., 336. 1885.
67. *Salix myricoides* Muhlenberg, Ges. Naturf. Freunde Berlin Neue Schriften 4: 235. 1803.

- 2e2. *Salix* sect. *Cordatae* Barratt ex Hooker, Fl. Bor.-Amer. 2: 149. 1838.
68. *Salix eriocephala* Michaux, Fl. Bor.-Amer. 2: 225. 1803.
69. *Salix famelica* (C. R. Ball) Argus *comb. nov.* Basionym: *Salix lutea* Nuttall var. *famelica* C. R. Ball, Bot. Gaz. 71: 426. 1921.
70. *Salix turnorii* Raup, J. Arnold Arbor. 17: 234, plate 193. 1936.
71. *Salix ligulifolia* (C. R. Ball) C. R. Ball ex C. K. Schneider, J. Arnold Arbor. 2: 188. 1922.
72. *Salix lutea* Nuttall, N. Amer. Sylva 1: 63, plate 19. 1842.
73. *Salix monochroma* C. R. Ball, Bot. Gaz. 71: 431, fig. 1. 1921.
74. *Salix prolixa* Andersson, Öfvers. Kongl. Vetensk.-Akad. Förh. 6(1): 94. 1867.
- 2e3 *Salix* sect. *Nigricantes* A. Kerner, Verh. Zool.-Bot. Ges. Vereins Wien 10: 235. 1860.
75. *Salix myrsinifolia* Salisbury, Prodr. Stirp. Chap. Allerton 394. 1796.
- 2e4. *Salix* sect. *Cinerella* Seringe, Exempl. Desséchés Révis. Ined. Gen. *Salix*, 2nd page [no pagination]. 1824.
76. *Salix discolor* Muhlenberg, Ges. Naturf. Freunde Berlin Neue Schriften 4: 234. 1803.
77. *Salix hookeriana* Barratt ex Hooker, Fl. Bor.-Amer. 2: 145, plate 180. 1838.
78. *Salix humilis* Marshall, Arbust. Amer., 140. 1785.
- 78a. *Salix humilis* var. *humilis*
- 78b. *Salix humilis* var. *tristis* (Aiton) Griggs, Proc. Ohio Acad. Sci. 4: 301. 1905.
79. *Salix scouleriana* Barratt ex Hooker, Fl. Bor.-Amer. 2: 145. 1838.
80. *Salix caprea* Linnaeus, Sp. Pl. 2: 1020. 1753.
- Salix* × *smithiana* Willdenow, Enum. Pl., 1008. 1809. (*S. caprea* × *S. viminalis*)
81. *Salix cinerea* Linnaeus, Sp. Pl. 2: 1021. 1753.
82. *Salix atrocinerea* Brotero, Fl. Lusit. 1: 31. 1804.
83. *Salix aurita* Linnaeus, Sp. Pl. 2: 1019. 1753.
- 2e5. *Salix* sect. *Fulvae* Barratt, Salic. Amer., Sect. VII. (no pagination) 1840.
84. *Salix bebbiana* Sargent, Gard. & Forest 8: 463. 1895.
- 2e6. *Salix* sect. *Phylicifoliae* (Fries) Andersson in A. P. de Candolle and A. L. P. P. de Candolle, Prodr. 16(2): 240. 1868.
85. *Salix drummondiana* Barratt ex Hooker, Fl. Bor.-Amer. 2: 144. 1838.
86. *Salix pellita* (Andersson) Bebb, Bot. Gaz. 16: 106. 1891.
87. *Salix pulchra* Chamisso, Linnaea 6: 543. 1831.
88. *Salix planifolia* Pursh, Fl. Amer. Sept. 2: 611. 1813.
89. *Salix tyrrellii* Raup, J. Arnold Arbor. 17: 231, plate 192. 1936.
- 2e7. *Salix* sect. *Arbuscella* Seringe, Exempl. Desséchés Révis. Ined. Gen. 15th page [no pagination]. 1824.
90. *Salix arbusculoides* Andersson, Öfvers. Kongl. Vetensk.-Akad. Förh. 6(1): 147. 1867.
- 2e8. *Salix* sect. *Candidae* C. K. Schneider, Ill. Handb. Laubholzk. 1: 46. 1904.
91. *Salix candida* Flügge ex Willdenow, Sp. Pl. 4: 708. 1806.
- 2e9. *Salix* sect. *Lanatae* (Andersson) Koehne, Deut. Dendrol. 1: 87, 93. 1893.
92. *Salix calcicola* Fernald & Wiegand, Rhodora 13: 251. 1911.
- 92a. *Salix calcicola* var. *calcicola*
- 92b. *Salix calcicola* var. *glandulosior* B. Boivin, Naturaliste Canad. 75: 221. 1948.
93. *Salix richardsonii* Hooker, Fl. Bor.-Amer. 2: 147, plate 182. 1838.
94. *Salix tweedyi* (Bebb ex Rose) C. R. Ball, Bot. Gaz. 40: 377. 1905.

- 2e10. *Salix* sect. *Villosae* (Andersson) Rouy, Fl. France 12: 200. 1910.
95. *Salix alaxensis* (Andersson) Coville, Proc. Wash. Acad. Sci. 2: 280. 1900.
95a. *Salix alaxensis* var. *alaxensis*
95b. *Salix alaxensis* (Andersson) Coville var. *longistylis* (Rydberg) C. K. Schneider, J. Arnold Arbor. 1: 225. 1919.
96. *Salix silicicola* Raup, J. Arnold Arbor. 17: 236, plate 194. 1936.
97. *Salix barrattiana* Hooker, Fl. Bor.-Amer. 2: 146, plate 181. 1838.
- 2e11. *Salix* sect. *Viminella* Seringe, Exempl. Desséchés Révis. Ined. Gen. 10th page [no pagination]. 1824.
98. *Salix viminalis* Linnaeus, Sp. Pl. 2: 1021. 1753.
- 2e12. *Salix* sect. *Canae* A. Kerner, Verh. K.K. Zool.-Bot. Ges. Wien 10: 222. 1860.
99. *Salix elaeagnos* Scopoli, Fl. Carniol. ed. 2, 2: 257. 1772.
- 2e13. *Salix* sect. *Argyrocarpae* Fernald, Rhodora 48: 44. 1946
100. *Salix argyrocarpa* Andersson, Öfvers. Kongl. Vetensk.-Akad. Förh. 6(1): 107. 1867.
- 2e14. *Salix* sect. *Geyerianae* Argus, Syst. Bot. Monogr. 52: 85. 1997.
101. *Salix petiolaris* Smith, Trans. Linn. Soc. London 6: 122. 1802.
102. *Salix geyeriana* Andersson, Öfvers. Förh. Kongl. Svenska Vetensk.-Akad. 15: 122. 1858.
103. *Salix lemmonii* Bebb, Willows Calif., 88. 1879.
- 2e15. *Salix* sect. *Mexicanae* C. K. Schneider, J. Arnold Arbor. 3: 71. 1921.
104. *Salix irrorata* Andersson, Öfvers. Förh. Kongl. Svenska Vetensk.-Akad. 15: 117. 1858.
105. *Salix lasiolepis* Benthams, Pl. Hartw., 335. 1857.
106. *Salix tracyi* C. R. Ball, Univ. Calif. Publ. Bot. 17: 403, plates 69, 70. 1934.
- 2e16. *Salix* sect. *Griseae* (Borrer) Barratt ex Hooker, Fl. Bor.-Amer. 2: 148. 1838.
107. *Salix sericea* Marshall, Arbust Amer., 140. 1785.
- 2e17. *Salix* sect. *Sitchenses* (Bebb) C. K. Schneider, J. Arnold Arbor. 1: 91. 1919.
108. *Salix sitchensis* Sanson ex Bongard, Mém. Acad. Imp. Sci. St.-Pétersbourg, Sér. 6, Sci. Math. 2: 162. 1833.
109. *Salix jepsonii* C. K. Schneider, J. Arnold Arbor. 1: 89. 1919.
110. *Salix breweri* Bebb, Willows Calif., 88. 1879.
111. *Salix delnortensis* C. K. Schneider, J. Arnold Arbor. 1: 96. 1919.
- 2e18. *Salix* sect. *Daphnella* Seringe, Exempl. Desséchés Révis. Ined. Gen. *Salix* 10th page [no pagination]. 1824.
112. *Salix daphnoides* Villars, Prosp. Hist. Pl. Dauphine, 51. 1779.
- 2e19. *Salix* sect. *Helix* Dumortier, Verh. Gesl. Wilgen, 15. 1825.
113. *Salix purpurea* Linnaeus, Sp. Pl. 2: 1017. 1753.

PHYTOGEOGRAPHY

Although the purpose of this publication is not to provide a phytogeographic analysis of the *Salix* flora, tabulations of certain groups of species such as endemics and those in recognized geographical provinces (adapted from Takhtajan, 1986, in Brouillet and Wetstone, 1993) are given.

GEOGRAPHICAL DISTRIBUTION OF NATIVE SPECIES OF *SALIX* IN THE FLORA OF NORTH AMERICA

The numbering of regions, provinces, and subprovinces follows Brouillet and Whetstone (1993: 135).

1. CIRCUMPOLAR REGION

1a. Arctic Province

Salix alaxensis
var. *alaxensis*
Salix arbusculoides
Salix arctica
Salix arctophila
Salix barclayi
Salix barrattiana
Salix bebbiana
Salix calcicola
var. *calcicola*
Salix chamissonis
Salix fuscescens
Salix glauca
var. *callicarpaea*
Salix glauca
var. *stipulata*
Salix hastata
Salix herbacea
Salix interior
Salix myrtillofolia
Salix niphoclada
Salix nummularia
Salix ovalifolia
Salix phlebophylla
Salix planifolia
Salix polaris
Salix pseudomonticola
Salix pulchra
Salix reticulata
Salix richardsonii
Salix rotundifolia
var. *dodgeana*
Salix rotundifolia
var. *rotundifolia*
Salix sphenophylla
Salix tyrrellii
Salix uva-ursi
Salix vestita

1b. Canadian Province

Salix alaxensis
var. *alaxensis*
Salix alaxensis
var. *longistylis*
Salix arbusculoides
Salix arctica
Salix arctophila
Salix argyrocarpa
Salix athabascensis
Salix ballii
Salix barclayi
Salix barrattiana
Salix bebbiana
Salix brachycarpa
var. *brachycarpa*
Salix brachycarpa
var. *psammophila*
Salix calcicola
var. *calcicola*
Salix candida
Salix chamissonis
Salix chlorolepis
Salix cordata
Salix commutata
Salix discolor
Salix drummondiana
Salix eriocephala
Salix famelica
Salix farriae
Salix fuscescens
Salix glauca
var. *acutifolia*
Salix glauca
var. *callicarpaea*
Salix glauca
var. *villosa*
Salix hastata
Salix herbacea
Salix humilis
var. *humilis*

Salix interior
Salix jejuna
Salix lasiandra
var. *lasiandra*
Salix maccalliana
Salix myricoides
Salix myrtillofolia
Salix nigra
Salix niphoclada
Salix pedicellaris
Salix pellita
Salix petiolaris
Salix phlebophylla
Salix planifolia
Salix polaris
Salix proluxa
Salix pseudomonticola
Salix pseudomyrsinites
Salix pulchra
Salix pyrifolia
Salix raupii
Salix reticulata
Salix richardsonii
Salix rotundifolia
var. *dodgeana*
Salix rotundifolia
var. *rotundifolia*
Salix scouleriana
Salix sericea
Salix serissima
Salix setchelliana
Salix silicicola
Salix sitchensis
Salix stolonifera
Salix turnorii
Salix tyrrellii
Salix uva-ursi
Salix vestita

3. NORTH AMERICAN ATLANTIC REGION

**3a. Appalachian
Province**

Salix amygdaloides
Salix argyrocarpa
Salix bebbiana
Salix candida
Salix caroliniana
Salix cordata
Salix discolor
Salix eriocephala
Salix famelica
Salix herbacea
Salix humilis
 var. *humilis*
Salix humilis
 var. *tristis*
Salix interior
Salix lucida
Salix maccalliana
Salix myricoides
Salix nigra
Salix pedicellaris
Salix pellita
Salix petiolaris
Salix pseudomonticola
Salix pyrifolia
Salix sericea
Salix serissima
Salix thurberi
Salix uva-ursi

**3b. Atlantic and Gulf
Coastal Plain Province**

Salix bebbiana
Salix candida
Salix caroliniana
Salix discolor
Salix eriocephala
Salix floridana
Salix humilis
 var. *humilis*
Salix humilis
 var. *tristis*
Salix interior
Salix lucida
Salix nigra
Salix pedicellaris
Salix petiolaris
Salix pseudomonticola
Salix sericea
Salix thurberi

**3c. North American
Prairie Province**

Salix amygdaloides
Salix bebbiana
Salix brachycarpa
 var. *brachycarpa*
Salix candida
Salix caroliniana
Salix discolor
Salix drummondiana
Salix eastwoodiae
Salix eriocephala
Salix famelica
Salix exigua
 var. *exigua*
Salix gooddingii
Salix humilis
 var. *humilis*
Salix humilis
 var. *tristis*
Salix interior
Salix lasiandra
 var. *caudata*
Salix lucida
Salix lutea
Salix maccalliana
Salix myrtilifolia
Salix nigra
Salix pedicellaris
Salix pellita
Salix petiolaris
Salix planifolia
Salix pseudomonticola
Salix pseudomyrsinites
Salix scouleriana
Salix serissima
Salix wolfii
 var. *wolfii*

4a. Vancouverian Province

Salix alaxensis
 var. *alaxensis*
Salix alaxensis
 var. *longistylis*
Salix barclayi
Salix bebbiana
Salix boothii
Salix cascadenis
Salix commutata
Salix eastwoodiae
Salix columbiana
Salix exigua
 var. *exigua*
Salix exigua
 var. *hindsiana*
Salix geyeriana
Salix glauca var. *acutifolia*
Salix glauca var. *villosa*
Salix hookeriana
Salix jepsonii
Salix laevigata
Salix lasiandra
 var. *caudata*
Salix lasiandra
 var. *lasiandra*
Salix lasiolepis
Salix tracyi
Salix lemmonii
Salix ligulifolia
Salix lutea
Salix melanopsis
Salix nivalis
Salix orestera
Salix pedicellaris
Salix petrophila
Salix planifolia
Salix proluxa
Salix pulchra
Salix reticulata
Salix rotundifolia
 var. *dodgeana*
Salix rotundifolia
 var. *rotundifolia*
Salix scouleriana
Salix sessilifolia
Salix setchelliana
Salix sitchensis
Salix stolonifera

4. ROCKY MOUNTAIN REGION

4b. Rocky Mountain Province

Salix alaxensis
 var. *alaxensis*
Salix alaxensis
 var. *longistylis*
Salix amygdaloides
Salix arbusculoides
Salix arctica
Salix athabascensis
Salix barclayi
Salix barrattiana
Salix bebbiana
Salix boothii
Salix brachycarpa
 var. *brachycarpa*
Salix calcicola
 var. *glandulosior*
Salix candida
Salix cascadenis
Salix commutata
Salix discolor
Salix drummondiana
Salix eastwoodiae
Salix exigua
 var. *exigua*
Salix farriae
Salix geyeriana
Salix glauca
 var. *acutifolia*
Salix glauca
 var. *villosa*
Salix interior
Salix irrorata
Salix lasiandra
 var. *caudata*
Salix lasiandra
 var. *lasiandra*
Salix lasiolepis
Salix lemmonii
Salix ligulifolia
Salix maccalliana
Salix melanopsis
Salix monochroma
Salix monticola
Salix myrtilifolia
Salix niphoclada
Salix nivalis
Salix pedicellaris
Salix petiolaris
Salix petrophila
Salix planifolia
Salix polaris
Salix proluxa
Salix pseudomyrsinites
Salix pulchra
Salix pyrifolia
Salix raupii
Salix reticulata
Salix rotundifolia
 var. *dodgeana*
Salix scouleriana
Salix serissima
Salix sitchensis
Salix stolonifera
Salix tweedyi
Salix vestita
Salix wolfii
 var. *wolfii*
Salix wolfii
 var. *idahoensis*

9. MADREAN REGION

9a. Great Basin Province

Salix amygdaloides
Salix arizonica
Salix bebbiana
Salix boothii
Salix brachycarpa
 var. *brachycarpa*
Salix drummondiana
Salix eastwoodiae
Salix geyeriana
Salix glauca
 var. *villosa*
Salix jepsonii
Salix laevigata
Salix lasiandra
 var. *caudata*
Salix lasiandra
 var. *lasiandra*
Salix lemmonii
Salix ligulifolia
Salix melanopsis
Salix monticola
Salix nivalis
Salix orestera
Salix planifolia
Salix prolixa
Salix scouleriana
Salix sitchensis
Salix wolfii
 var. *wolfii*
Salix wolfii
 var. *idahoensis*

9b. Californian Province

Salix boothii
Salix breweri
Salix delnortensis
Salix eastwoodiae
Salix exigua
 var. *hindsiana*
Salix geyeriana
Salix gooddingii
Salix hookeriana
Salix laevigata
Salix lasiandra
 var. *lasiandra*
Salix lasiolepis
Salix lemmonii
Salix ligulifolia
Salix lutea
Salix orestera
Salix scouleriana
Salix sitchensis

9c. Sonoran Province**9c.1. Mojavean Subprovince**

Salix exigua
 var. *exigua*
Salix gooddingii
Salix lasiolepis

9c.2. Sonoran Subprovince

Salix arizonica
Salix bebbiana
Salix bonplandiana
Salix exigua
 var. *exigua*
Salix geyeriana
Salix gooddingii
Salix irrorata
Salix laevigata
Salix lasiolepis
Salix ligulifolia
Salix scouleriana
Salix taxifolia

9c.3. Chihuahuan Subprovince

Salix arizonica
Salix bebbiana
Salix exigua
 var. *exigua*
Salix geyeriana
Salix gooddingii
Salix irrorata
Salix lasiolepis
Salix ligulifolia
Salix scouleriana
Salix taxifolia
Salix thurberi

9c.4. Tamaulipan Subprovince

Salix gooddingii
Salix lasiolepis
Salix nigra
Salix thurberi

ENDEMIC

Taxa endemic to FNA area

<i>Salix arbusculoides</i>	<i>Salix exigua</i>	<i>Salix monticola</i>
<i>Salix arctophila</i>	var. <i>hindsiana</i>	<i>Salix myricoides</i>
<i>Salix argyrocarpa</i>	<i>Salix farriar</i>	<i>Salix myrtilifolia</i>
<i>Salix arizonica</i>	<i>Salix floridana</i>	<i>Salix niphoclada</i>
<i>Salix ballii</i>	<i>Salix geyeriana</i>	<i>Salix nivalis</i>
<i>Salix barclayi</i>	<i>Salix glauca</i>	<i>Salix orestera</i>
<i>Salix barrattiana</i>	var. <i>acutifolia</i>	<i>Salix pedicellaris</i>
<i>Salix boothii</i>	<i>Salix glauca</i>	<i>Salix pellita</i>
<i>Salix brachycarpa</i>	var. <i>callicarpaea</i>	<i>Salix petiolaris</i>
var. <i>brachycarpa</i>	<i>Salix glauca</i>	<i>Salix petrophila</i>
<i>Salix brachycarpa</i>	var. <i>villosa</i>	<i>Salix planifolia</i>
var. <i>psammophila</i>	<i>Salix hookeriana</i>	<i>Salix proluxa</i>
<i>Salix breweri</i>	<i>Salix humilis</i>	<i>Salix pseudomonticola</i>
<i>Salix calcicola</i>	var. <i>humilis</i>	<i>Salix pseudomyrsinites</i>
var. <i>calcicola</i>	<i>Salix humilis</i>	<i>Salix pyrifolia</i>
<i>Salix calcicola</i>	var. <i>tristis</i>	<i>Salix raupii</i>
var. <i>glandulosior</i>	<i>Salix interior</i>	<i>Salix sericea</i>
<i>Salix candida</i>	<i>Salix jejuna</i>	<i>Salix serissima</i>
<i>Salix cascadenis</i>	<i>Salix jepsonii</i>	<i>Salix sessilifolia</i>
<i>Salix chlorolepis</i>	<i>Salix lasiandra</i>	<i>Salix setchelliana</i>
<i>Salix commutata</i>	var. <i>caudata</i>	<i>Salix silicicola</i>
<i>Salix cordata</i>	<i>Salix lasiandra</i>	<i>Salix sitchensis</i>
<i>Salix delnortensis</i>	var. <i>lasiandra</i>	<i>Salix stolonifera</i>
<i>Salix discolor</i>	<i>Salix tracyi</i>	<i>Salix turnorii</i>
<i>Salix drummondiana</i>	<i>Salix lemmonii</i>	<i>Salix tweedyi</i>
<i>Salix eastwoodiae</i>	<i>Salix ligulifolia</i>	<i>Salix tyrrellii</i>
<i>Salix eriocephala</i>	<i>Salix lucida</i>	<i>Salix uva-ursi</i>
<i>Salix famelica</i>	<i>Salix lutea</i>	<i>Salix wolfii</i>
<i>Salix columbiana</i>	<i>Salix maccalliana</i>	var. <i>wolfii</i>
	<i>Salix melanopsis</i>	<i>Salix wolfii</i>
	<i>Salix monochroma</i>	var. <i>idahoensis</i>

NARROW ENDEMIC

(Very limited distribution or small population size)

<i>Salix brachycarpa</i>	<i>Salix chlorolepis</i> (QK)	<i>Salix jejuna</i> (NF)
var. <i>psammophila</i> (SK)	<i>Salix delnortensis</i> (OR, CA)	<i>Salix tracyi</i> (CA, OR)
<i>Salix breweri</i> (CA)	<i>Salix columbiana</i> (OR, WA)	<i>Salix turnorii</i> (SK)
<i>Salix calcicola</i>	<i>Salix floridana</i> (AL, FL, GA)	
var. <i>glandulosior</i> (AB, CA)		

LITERATURE CITED

- ALBEE, B. J., L. M. SHULTZ, AND S. GOODRICH. 1988. *Atlas of the Vascular Plants of Utah*. Utah Museum of Natural History, Salt Lake City. [*Salix*, pp. 552–557.]
- ARGUS, G. W. 1964. Preliminary reports on the flora of Wisconsin. No. 51. Salicaceae, The genus *Salix*—willows. Wis. Acad. Sci. Arts & Letters 53: 217–272.
- . 1965. The taxonomy of the *Salix glauca* L. complex in North America. Contr. Gray Herb. 196: 1–142.
- . 1969. New combinations in the *Salix* of Alaska and Yukon. Canad. J. Bot. 47: 795–801.
- . 1973. The genus *Salix* in Alaska and the Yukon. Canad. Natl. Mus. Nat. Sci. Publ. Bot. 2. 279 pp.
- . 1983. *Salix*. Pages 198–214 in E. H. MOSS, *Flora of Alberta*. 2nd ed. revised by J. G. PACKER. Univ. of Toronto Press, Toronto.
- . 1986a. The genus *Salix* (Salicaceae) in the Southeastern United States. Syst. Bot. Monogr. 9. 170 pp.
- . 1986b. Studies in the *Salix lucida* Muhl. and *S. reticulata* L. complexes in North America. Canad. J. Bot. 64: 541–551.
- . 1995. Vascular plants of Arizona, Salicaceae (Willow Family), Pt. 2. *Salix* L. Willow. J. Ariz.-Nev. Acad. Science 1: 39–62.
- . 1997. Notes on the taxonomy and distribution of California *Salix*. Madroño 44: 115–136.
- . 2000. *Salix*. Pages 645–654 in A. F. RHOADS AND T. A. BLOCK, *The Plants of Pennsylvania*. University of Pennsylvania Press, Philadelphia.
- ARGUS, G. W., AND C. L. MCJANNET. 1992. A taxonomic reconsideration of *Salix taxifolia sensu lato* (Salicaceae). Brittonia 44: 461–474.
- ARGUS, G. W., C. L. MCJANNET, AND M. J. DALLWITZ. 1999. Salicaceae of the Canadian Arctic Archipelago: Descriptions, illustrations, identification, and information retrieval. Version: 29 March 1999. <http://biodiversity.uno.edu/delta/>.
- BAY, C. 1992. A phytogeographical study of vascular plants of north Greenland. Medd. om Gronl. 36.
- BRAUN, E. L. 1961. *The Woody Plants of Ohio*. Ohio University Press, Columbus.
- BRAYSHAW, T. C. 1996. *Catkin-Bearing Plants of British Columbia*. Royal British Columbia Museum, Victoria. British Columbia, Canada
- BROUILLET, L., AND R. D. WHETSTONE. 1993. Introduction: Climate and physiography. Pages 15–46 in FLORA OF NORTH AMERICA EDITORIAL COMMITTEE, *Flora of North America, North of Mexico*. Vol. 1. Oxford University Press, New York and Oxford.
- CODY, W. 1996. *Flora of the Yukon Territory*. NRC Research Press, Ottawa.
- DORN, R. D. 1970. The willows of Montana. Herbarium, Department of Botany and Microbiology, Montana State Univ., Bozeman.
- . 1975. A systematic study of *Salix* section *Cordatae* in North America. Canad. J. Bot. 53: 1491–1522.
- . 1995. A taxonomic study of *Salix* section *Cordatae* subsection *Luteae* (Salicaceae). Brittonia 47: 160–174.
- . 1998. A taxonomic study of *Salix* section *Longifoliae* (Salicaceae) Brittonia 50: 193–210.
- . 2000. A taxonomic study of *Salix* sections *Mexicanae* and *Viminella* subsection *Sitchenses* (Salicaceae) in North America. Brittonia 52: 1–19.
- FREDSKILD, B. 1996. A phytogeographical study of the vascular plants of West Greenland (62°20'–74°00'N). Meddelelser om Gronland, Bioscience 45: 1–379.
- HULTÉN, E. 1958. The ampho-Atlantic plants and their phytogeographical connections. Kongl. Svenska Vetenskapsakad. Handl. 7: 1–340.
- . 1968. *Flora of Alaska and Neighboring Territories*. Stanford University Press, Stanford, Calif.
- . 1971. The circumpolar plants. II. Kongl. Svenska Vetenskapsakad. Handl. 13: 1–463.
- JONES, G. N., AND G. D. FULLER. 1955. *Vascular Plants of Illinois*. Urbana: Univ. of Ill. Press.
- LITTLE, E. L., JR. 1971. *Conifers and Important Hardwoods*. Vol. 1 of *Atlas of United States Trees*. U. S. Dept. Agric. Misc. Publ. 1146.
- . 1976. *Minor Western Hardwoods*. Vol. 3 of *Atlas of United States Trees*. U. S. Dept. Agric. Misc. Publ. 1314.
- MCGREGOR, R. L., AND T. M. BARKLEY. 1986. *Atlas of the Flora of the Great Plains*. University of Iowa Press, Ames.
- PORSILD, A. E., AND W. CODY. 1980. *Vascular Plants of Continental Northwest Territories, Canada*. National Museum of Natural Sciences, Ottawa.
- SOPER, J. H., AND M. L. HEIMBURGER. 1982. *Shrubs of Ontario*. Royal Ontario Museum, Toronto.
- STEYERMARK, J. A. 1963. *Flora of Missouri*. Iowa State University Press, Ames.
- TURNER, B. L., H. NICHOLS, G. DENNY, AND O. DORON. 2003. *Atlas of the Vascular Plants of Texas*. Sida Botanical Miscellany 24, Vol. 1: 1–648.
- VOSS, E. G. 1985. *Michigan Flora*. Part 2. Cranbrook Inst. of Sci. Bull. 59 and Univ. of Mich. Herb., Ann Arbor.