

## VASCULAR PLANT SPECIES NEW TO HILLSDALE COUNTY, MICHIGAN

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### INTRODUCTION

The detailed distribution maps in *Michigan Flora* (Voss 1972, 1985) have not only been valuable as summaries of species range estimates within the state, but also have made apparent the presence of wide variation in our floristic knowledge of Michigan counties. For example, Washtenaw and Berrien counties possess three to five times as many species records as Branch and Kalkaska, even though the sizes of these counties are relatively equivalent. Although real species diversity differences among counties may account for a part of this variation, probably the vast proportion is attributable to sampling error resulting from collectors' neglect of certain areas. This error poses no significant problem in the case of, say, *Toxicodendron radicans* (L.) Kuntze, a species documented in all counties except Kalkaska. Since this species is known to be all too abundant throughout the state, *T. radicans* likely occurs in that county but simply has not been documented there. However, for species of sporadic occurrence, interpretation of gaps is more problematic if one is using a distribution map suspected to be incomplete. In the case of a threatened or endangered species, the problem of poorly surveyed areas becomes acute and could profoundly affect guidelines and policy decisions. For this reason there is a need for floristic surveys of undercollected Michigan counties.

### HILLSDALE COUNTY

Hillsdale County appears to be significantly undercollected. Voss (1972, 1985) documented only 314 species from this county in the gymnosperms, monocots, and non-sympetalous dicots. This is less than one third of the total for the heavily collected Washtenaw County (over 1000). A tally of the latitudinal tier of Michigan counties which includes Hillsdale illustrates the paucity of records from this county relative to the others (Fig. 1). Only Branch County possesses a lower number of species records. Some of the variation among counties is no doubt due to higher habitat diversity within lakeside counties (dunes, swales, mud flats, extensive marshes, and beaches in addition to inland habitats), resulting in higher species diversity relative to inland counties. However, most of the variation probably results from

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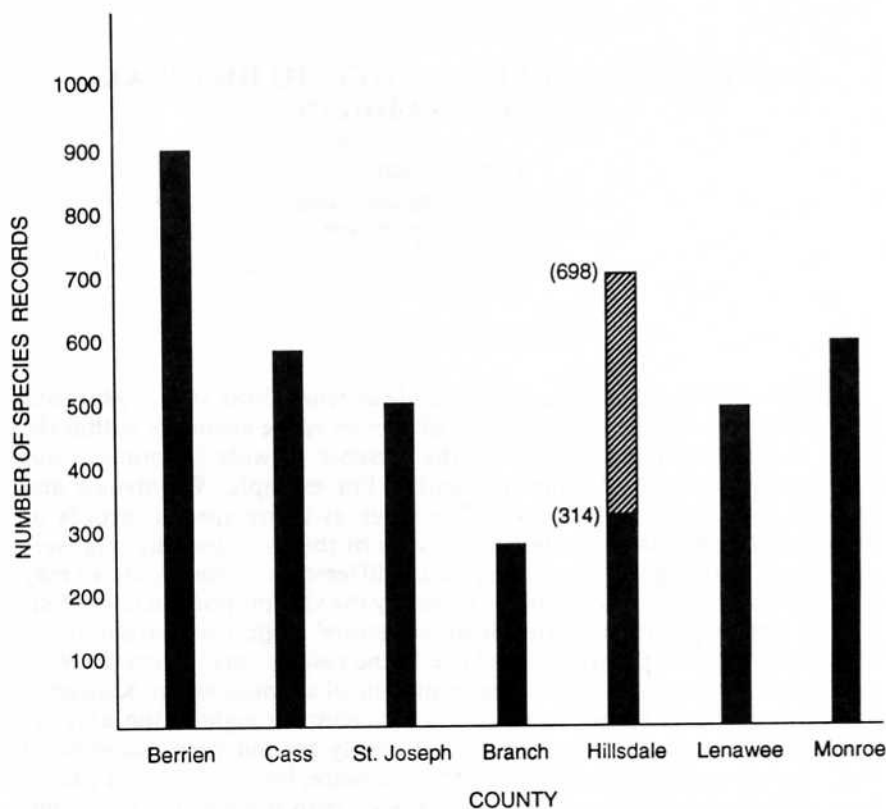


FIGURE 1. Total number of species records (Gymnospermae-Cornaceae, Englerian sequence) in each county along the southern border of Michigan (synthesized from records in Voss 1972, 1985). Counties are arranged in order from west to east. The striped bar indicates additional species records, nearly all of which result from collections made during this survey.

the lack of adequate surveying within Hillsdale and Branch. Therefore, I conducted a floristic survey of Hillsdale County to provide a more complete record of the vascular plants occurring in south-central Michigan.

Hillsdale County is located in extreme southern Michigan, slightly east of the midpoint between Lake Michigan and Lake Erie. The southwestern corner of the county is Michigan's most southerly point and borders Ohio and Indiana. The dominant physiographic feature is the Fort Wayne end moraine, traversing the county in a northeast-southwest direction. Two river systems flow from this moraine; one drains south to the Maumee River, the other northwest to Lake Michigan. Both primary rivers of these systems are named the St. Joseph River, although they do not meet (contrary to what some road maps suggest). On the west side of the county occur

two north-south-oriented and more or less interrupted chains of lakes, each about 15 km long. Hillsdale County soils are derived from glacial deposits generally comprised of sandy or gravelly outwash in the northwestern third of the county and till in the southeastern two-thirds (Farrand & Bell 1982). Kettle-kame topography, as well as acidic soils and wetlands are rare; rock outcrops are absent. Most of the original non-swampy forest has been converted to farmland (Veatch et al. 1928), especially in the county's eastern townships, although many forested patches still remain and old-field succession is common. Many of the lakeshores have been converted to residential areas and summer cottages. There are no federal lands or state parks. In fact, the only state- or county-owned area as large as six square miles is the Lost Nation State Game Area in the east-central part of the county.

#### METHODS

Field work was carried out from 1985 to 1990. All townships were surveyed. Collecting localities are too numerous to record here but are available upon request and at the University of Michigan Herbarium, where the first set of all vouchers is deposited; some noteworthy localities are discussed below. In general, the southern and western townships proved to be the most botanically diverse, primarily due to the lakes and intact floodplains there.

#### RESULTS

I made 1012 collections, categorized as follows: 1) 374 species included in *Michigan Flora* parts I and II (Voss 1972, 1985; Gymnospermae-Cornaceae, Englerian sequence) but not previously documented for Hillsdale County (Appendix); 2) 10 species new to the county which would otherwise be included in *Michigan Flora* parts I and II but are not, for reasons of dubious natural occurrence, prior undocumented status, or taxonomic opinion; 3) 37 species of ferns and fern-allies, 30 of which are new to the county (Appendix); 4) nearly 200 species belonging to the families Ericaceae-Compositae; since they will be included in *Michigan Flora Part III* (E.G. Voss, pers. comm.) they are not listed here. Two other collections made by Edward G. Voss, three by Anton A. Reznicek, and five by Allison W. Cusick (Appendix) fall into category (1) above. Records include one species new to Michigan (*Chorispora tenella*; see also Fritsch (1992) regarding *Scutellaria nervosa* Pursh, a sympetalous dicot from Hillsdale County new to Michigan), two species endangered in Michigan, three species threatened in Michigan, and 12 species of special concern in Michigan (Michigan Department of Natural Resources 1992; Appendix). In addition, it is likely that four species previously considered either threatened or of special concern in Michigan (*Carex sychnocephala*, *Panicum philadelphicum*, *Rumex maritimus*, and *Geum vernum*; Beaman et al. 1985) have been removed from the most recent listing of Michigan's endangered and threatened plants partly as a result of Hillsdale County collections made during the present survey.

## DISCUSSION

The new collections herein more than double the number of species known from Hillsdale County at the time of publication of parts I and II of *Michigan Flora*. Hillsdale County now possesses the second highest number of species records among the counties comprising the southernmost Michigan tier (Fig. 1). This confirms the suspicion that the low number of species records documented for Hillsdale prior to this study was to a large extent artifactual. There are several reasons some Michigan counties have been collected more than others, including 1) the presence of a university or college with a strong botanical curriculum in or near the county, 2) the presence of an interstate or other good roads affording easy travel for collectors, 3) the appeal of the county to collectors (e.g., does it include physiographic features potentially harboring botanically interesting communities and/or designated natural areas such as parks, wilderness areas, or other public lands?), and 4) the presence of one or several active amateur collectors studying the local county flora. Reasons 1, 2, and 4, and possibly to some extent 3, all contributed to the prior lack of species records for Hillsdale County.

## SELECTED LOCALITIES

Several localities possessing habitats unique within Hillsdale County or otherwise of interest are described below, along with a discussion of noteworthy collections found at each. New species records for Hillsdale County from these localities are indicated in the Appendix. Nomenclature follows that in the Appendix. Numbers within parentheses indicate the author's collection numbers.

- A. Swampy shore and adjacent beech-maple woods at Long Lake, T7S, R4W, 4.5 km NE of Reading—this area is the best example in Hillsdale County of an old growth beech forest and is one of the few preserved sites in Hillsdale County, having been established by the county and the Nature Conservancy. Plants seen from here and nowhere else within the county include *Epifagus virginiana* (L.) Barton (occasional), *Habenaria psycodes* (rare), *Liparis loeselii* (rare), and *Panax quinquefolius* (occasional).
- B. Tamarack fen, T7S, R2W, N end of Lost Nation State Game Area, 10 km SE of Hillsdale—This is the only known Hillsdale County locality for *Cypripedium candidum* Willd. (local; a threatened Michigan species), *Eleocharis pauciflora* (local), *Eriophorum angustifolium* (local), *Geum rivale* L. (600; local), and *Ptelea trifoliata* L. (745, rare on adjacent upland). *Gentianopsis procera* (Holm) Ma (838) and *Valeriana uliginosa* (Torrey & A. Gray) Rydb. are abundant at this site, and *Rhynchospora capillacea* is locally common.

- C. Closed bog and adjacent birch stand, T7S, R2W, 9 km SE of Hillsdale— This is the only occurrence in the county for *Andromeda glaucophylla* (1154), *Betula papyrifera*, *Carex oligosperma*, *Chamaedaphne calyculata* (L.) Moench (983), and *Nemopanthus mucronatus*. These primarily boreal species are rare in southern Michigan, their ranges extending southward only to northern Indiana in the central United States. The locality is also interesting in that two hybrid individuals of *Betula* were found, one between *B. papyrifera* and *B. alleghaniensis*, the other between *B. papyrifera* and *B. pumila* (*B. × sandbergii*). *Betula alleghaniensis* is frequent at the site, whereas *B. papyrifera* is occasional, although several moderately-sized dead trunks of *B. papyrifera* are still standing. *B. pumila* L. was not found, despite intensive searching. The idea that hybridization occurs more frequently in populations where one parent is common and the other rare (e.g., Arnold et al. 1993) seems to apply here, in both hybrid cases. Presumably, one or several plants of *B. pumila* exist or recently existed somewhere in the bog, accounting for the existence of the hybrid.
- D. Tamarack/red maple lowland with bog remnants, T8S, R4W, SW of Montgomery, near the western county line— *Eriophorum viridicarinatum* (Engelm.) Fern. (628) and *Triglochin maritimum* occur in the unshaded bog remnants; *Coptis trifolia* (L.) Salisb. (968) occurs at the border of the wetland in deep shade. These species range only as far south as northern Indiana and Ohio and *E. viridicarinatum* and *C. trifolia* were seen in this survey only once.
- E. Floodplain and adjacent rich woods on the St. Joseph River, T9S, R3W, 8 km SE of Camden— Much of the area is owned by a scouting camp based just south of the Michigan-Ohio border, and so appears to be adequately protected. This locality is the most intact stretch of floodplain forest in the county. Numerous species collected here were found nowhere else in the county, including *Aralia racemosa*, *Aristolochia serpentaria*, *Athyrium pycnocarpon*, *A. thelypteroides*, *Cercis canadensis*, *Diarrhena americana*, *Dryopteris goldiana*, *Fraxinus quadrangulata* Michaux (1050), *Gymnocladus dioicus*, *Hybanthus concolor*, *Juglans cinerea*, *Morus rubra*, *Scutellaria nervosa* (1141), and *Ulmus thomasii*. In addition, *Asimina triloba* (L.) Dunal (1047) and *Arisaema dracontium*, species rare in Hillsdale County, were found. *Diarrhena americana* is local in the central lowlands, but increases in abundance toward Missouri. At this site the population consisted of a single cluster of culms; since this species is rhizomatous, the number of individuals could not be ascertained. *Aristolochia serpentaria* was highly local at the edge of the floodplain forest. This species is confined to the southern two tiers of Michigan counties at the northern limit of its range. A thorough search of the floodplain is needed to determine the abundance of these and the other rarities occurring there. A flora of this species-rich area, including the Ohio extension of the floodplain, would be a significant contribution to the floras of both Michigan and Ohio.

- F. Rich woods with buckeye on high bank of Clark Fork Creek, T9S, R3W, 14 km SE of Camden—*Aesculus glabra* Willd. (377) is a dominant tree here. Also present is *Geum vernum* (occasional), *Senecio obovatus* Muhlenb. (367, locally common), and *Viburnum prunifolium* L. (368, occasional), the latter being infrequent in Michigan and confined to the southern tier of counties.
- G. Boggy shore and associated uplands in the Denton Lakes region, T7S, R4W, 5 km W of Reading—This is the only place I saw *Cornus canadensis* and *Drosera rotundifolia* L. (1032), reflecting the county's paucity of acidic wetlands. Other species found here and nowhere else in the county include *Fragaria vesca* (upland), *Galium labradoricum* (Wieg.) Wieg. (1038; bog), *Pyrola rotundifolia* L. (1122; upland), *P. elliptica* Nutt. (1046; upland), and *Vaccinium macrocarpon* Aiton (1036; bog). All these species were rare except for the *Vaccinium* which was frequent.
- H. Tamarack/red maple swamp and boggy shore of Little Bear Lake, T7S, R3W, 7 km SW of Hillsdale—*Rhamnus alnifolia* L'Hér. (342) and *Trientalis borealis* Raf. (346), both rarely seen in Hillsdale County, are present.
- I. Wet meadow and adjacent oak woods, R3W, T5S, 14 km E of Litchfield—The locality is noteworthy for the presence of *Arabis lyrata*, which is found locally on the black oak upland bordering the swamp. Other localities inland from the Great Lakes occur in Michigan, especially in the western part of the state, but are not isolated from the main range as is this one.
- J. Exposed mud flat and gravel at edge of drying pond, T5S, R2W, 2 km E of Moscow—*Carex sychnocephala* was locally abundant at the east end of this pond. This species ranges from Ontario and New York, westward to Saskatchewan and Montana, and southward to Iowa. It is very local throughout its range, especially eastward (Mackenzie 1935). This and three other species found here, *C. viridula* (locally abundant), *Eleocharis intermedia* (occasional), and *Fimbristylis autumnalis* (locally abundant) are characteristic of mucky shores where the water level is receding. Growing with *Fimbristylis* was *Panicum tuckermanii* (rare). *Rumex maritimus*, a species rare in Michigan, was occasional at the less muddy north end of the pond.
- K. Tamarack fen, T8S, R4W, near the St. Joseph River, 2.5 km N of Montgomery—This is the only recent Hillsdale County locality for *Cypripedium calceolus* L. (1005; occasional); *Cypripedium reginae* Walter is also present (local).

### CONCLUSION

Conservation efforts in Hillsdale County should focus on the habitats and species listed above. In this regard, considering that so much of the natural vegetation is disturbed or gone, it is suggested that more preserves be designated in Hillsdale County, particularly to protect the plants found

there that are of special concern or threatened in Michigan, but also to guarantee the opportunity to enjoy what is left of the county's natural heritage.

New species records from undercollected counties such as Hillsdale can provide insight into the nature of floristic differences within the state as well as contribute to databases that will allow larger-scale floristic analyses. Although the floristic knowledge of extreme southern Michigan has been improved as a result of this survey, Branch County, which is adjacent to and west of Hillsdale, is still poorly known. An extensive survey of Branch County would provide a more complete data set contributing to the characterization of species distributions and diversity in the southernmost part of the state.

#### ACKNOWLEDGMENTS

Thanks to E. G. Voss, who initially suggested work on the flora of Hillsdale County and who confirmed the identification of nearly all collections. Thanks also to W. H. Wagner for fern identifications, A. A. Reznicek for *Carex* identifications, W. H. W., M. Glaza, M. Perkins, and especially L. K. Fritsch for their help in the field, R. K. Rabeler and N. Gil-Ad for herbarium assistance, and C. T. Philbrick and E. G. V. for manuscript suggestions. Partial support for this project was provided by grants from the Hanes Fund.

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## APPENDIX: NEW HILLSDALE COUNTY RECORDS

Species from Gymnospermae to Cornaceae (Englerian sequence) new to Hillsdale County subsequent to publication of *Michigan Flora* (Voss 1972, 1985). A list of species of ferns and fern-allies collected is also included; \* = those mapped in Billington (1952) or Hagenah (1966) for Hillsdale County. Species in parentheses are not included in Voss (1972, 1985). Collection numbers after each species are those of the author unless otherwise indicated. Nomenclature and author citations follow Lellinger (1985) for the ferns and fern-allies, and Voss (1972, 1985) for all others except for the species not included there, in which case Gleason and Cronquist (1991) is followed. Species not bold-faced are known or probable introductions to Michigan, according to Voss (1972, 1985). **a** = new Michigan record; **b** = endangered in Michigan; **c** = threatened in Michigan; **d** = of special concern; **e** = other rare Michigan records (found in < 6 counties; most or all of these are exotics). Capital letters after collection numbers refer to localities listed in the text.

## PTERIDOPHYTES

## LYCOPODIACEAE

- Lycopodium clavatum* L., 661  
*L. digitatum* Dillen, 1024  
*L. lucidulum* Michaux, 495  
*L. obscurum* L., 662

## SELAGINELLACEAE

- Selaginella eclipses* Buck, 720; D

## EQUISETACEAE

- \**Equisetum arvense* L., 725  
*E. fluviatile* L., 995  
*E. hyemale* L., 13, 723, 727  
*E. laevigatum* A. Braun, 604; B  
*E. variegatum* Schleich. ex Fried.  
 Weber & Mohr, 1128

## ASPLENIACEAE

- Asplenium platyneuron* (L.) BSP., 72

## DENNSTAEDTIACEAE

- Pteridium aquilinum* (L.) Kuhn, 724

## DRYOPTERIDACEAE

- Dryopteris* ×*boottii* (Tuckerman) L.  
 Underw., 1121, 1232  
*D. carthusiana* (Villars) H.P. Fuchs,  
 380  
*D. clintoniana* (D.C. Eaton) Dowell,  
 672, 731, 1229, 889; A  
*D. cristata* (L.) A. Gray, 1032  
*D. goldiana* (Hook.) A. Gray, 1186; E  
*D. intermedia* (Muhlenb.) A. Gray,  
 1242  
*D. marginalis* (L.) A. Gray, 1107; F  
*D. ×triploidea* Wherry, 1223, 1230  
*D. ×uliginosa* Druce, 1231  
*Polystichum acrostichoides* (Michaux)  
 Schott, 525

## OPHIOGLOSSACEAE

- Botrychium dissectum* Sprengel, 71,  
 779, 984  
 \**B. virginianum* (L.) Sw., 1

## OSMUNDACEAE

- \**Osmunda cinnamomea* L., 624  
 \**O. regalis* L., 47

## SINOPTERIDACEAE

- Adiantum pedatum* L., 513

## THELYPTERIDACEAE

- Thelypteris hexagonoptera* (Michaux)  
 Weath., 381  
*T. noveboracensis* (L.) Nieuwl., 1131  
 \**T. palustris* Schott, 486

## WOODSIACEAE

- \**Athyrium filix-femina* (L.) Roth,  
 732, 865, 1079; K  
*A. pycnocarpon* (Sprengel) Tides-  
 trom, 1115; E  
*A. thelypteroides* (Michaux) Desv.,  
 1113; E  
*Cystopteris protrusa* (Weath.) Blas-  
 dell, 1112; E  
*C. tenuis* (Michaux) Desv., 494  
*Matteuccia struthiopteris* (L.)  
 Todaro, 1114; E  
 \**Onoclea sensibilis* L., 1118; E

## GYMNOSPERMS

## PINACEAE

- Pinus strobus* L., 665

## MONOCOTYLEDONS

## ALISMATACEAE

- Alisma plantago-aquatica* L., 44  
*Sagittaria latifolia* Willd., 12

## ARACEAE

- Acorus calamus* L., 1133  
*Arisaema dracontium* (L.) Schott,  
 1116, 1119; E  
*Peltandra virginica* (L.) Schott &  
 Endl., 734; A



## CYPERACEAE

- <sup>c</sup>*Carex aggregata* Mackenzie, 1068  
*C. alata* Torrey, 688  
*C. albursina* E. Sheldon, 975; E  
*C. aurea* Nutt., 207  
*C. bebbii* (L. Bailey) Fern., 625; D  
*C. buxbaumii* Wahlenb., 1016  
*C. careyana* Dewey, 956  
*C. conoidea* Willd., 1019  
*C. crinita* Lam., 408  
<sup>d</sup>*C. davisii* Schwein & Torrey, 1057  
*C. digitalis* Willd., (A. W. Cusick 25303)  
*C. flava* L., 365  
<sup>d</sup>*C. frankii* Kunth, 1104  
*C. gracilescens* Steudel, 357  
*C. granularis* Willd., 205  
*C. interior* L. Bailey, 621; D  
*C. intumescens* Rudge, 1208  
<sup>d</sup>*C. jamesii* Schwein, 378  
*C. laxiculmis* Schwein, 1021  
*C. leptalea* Wahlenb., 343; H  
<sup>d</sup>*C. lupuliformis* Dewey, 765  
*C. lurida* Wahlenb., 1045; E  
*C. muskingumensis* Schwein, (A. A. Reznicek 9244)  
*C. oligosperma* Michaux, 1155; C  
*C. pedunculata* Willd., 524  
*C. plantaginea* Lam., 977; E  
*C. prairea* Dewey, 356; H  
*C. prasina* Wahlenb., (A. A. Reznicek 8933)  
*C. rostrata* Stokes, 535, 1018  
*C. sartwellii* Dewey, 603; B  
*C. sprengelii* Sprengel, 942, 987  
*C. sterilis* Willd., 601, 999, 1004; B, K  
*C. stricta* Lam., 540, 1015  
*C. swanii* (Fern.) Mackenzie, 402  
*C. sychnocephala* Carey, 878; J  
*C. tenera* Dewey, 1069  
*C. tetanica* Schk., 605, 1008; B  
*C. tribuloides* Wahlenb., 51  
*C. viridula* Michaux, 882; J  
*C. vulpinoidea* Michaux, 639  
*Cladium mariscoides* (Muhlenb.) Torrey, 719; D  
*Cyperus diandrus* Torrey, 880; J  
*C. erythrorhizos* Muhlenb., 832  
*C. esculentus* L., 816  
*C. filliculmis* Vahl, 309  
<sup>d</sup>*C. flavescens* L., (A. W. Cusick 25834)  
*C. odoratus* L., 886; J  
*C. rivularis* Kunth, 121; H  
*C. strigosus* L., 836

- Eleocharis acicularis* (L.) Roemer & Schultes, 659, 786  
*E. elliptica* Kunth, 1058  
<sup>d</sup>*E. equisetoides* (Elliott) Torrey, 117  
*E. intermedia* Schultes, 876; J  
*E. obtusa* (Willd.) Schultes, 927; C  
*E. pauciflora* (Light.) Link, 609; B  
*E. quadrangulata* (Michaux) Roemer & Schultes, 43  
*E. rostellata* Torrey, 1145; G  
*E. smallii* Britton, 419  
*Eriophorum angustifolium* Honck., 677; B  
*E. virginicum* L., 1156; C  
*Fimbristylis autumnalis* (L.) Roemer & Schultes, 881; J  
*Rhynchospora capillacea* Torrey, 699; B  
*Scirpus cyperinus* (L.) Kunth, 28  
*S. pendulus* Muhlenb., (A. W. Cusick 26615)  
*S. subterminalis* Torrey, 1175  
*S. validus* Vahl, 611, 678; B

## GRAMINEAE

- Agropyron trachycaulum* (Link) Malte, 1142; K  
*Agrostis gigantea* Roth, 696  
*A. hyemalis* (Walter) BSP., 1235  
*A. perennans* (Walter) Tuckerman, 1207  
*Andropogon scoparius* Michaux, 11  
*Anthoxanthum odoratum* L., 589  
*Avena sativa* L., 311  
*Bromus ciliatus* L., 675; B  
*B. commutatus* Schrader, 385  
*B. japonicus* Murray, 717, 1052  
*Calamagrostis inexpansa* Gray, (A. W. Cusick 26608)  
*Cenchrus longispinus* (Hackel) Ferr 848  
*Cinna arundinacea* L., 918  
*Dactylis glomerata* L., 541  
*Danthonia spicata* (L.) Roemer & Schultes, 640  
<sup>c</sup>*Diarrhena americana* P. Beauv., 1181; E  
*Echinochloa muricata* (P. Beauv.) Fern., 1222  
*Eleusine indica* (L.) Gaertner, 742  
*Elymus riparius* Wieg., 113  
*E. villosus* Willd., 1163  
*Eragrostis hypnoides* (Lam.) BSP., (A. W. Cusick 25827)  
*E. cilianensis* (All.) Mosher, 323  
*E. pectinacea* (Michaux) Nees, 744, 1147

*E. spectabilis* (Pursh) Steudel, 1214

<sup>c</sup>*Festuca arundinacea* Schreber, 799, 1188

*F. octoflora* Walter, 1099

*F. rubra* L., 1074

*Glyceria septentrionalis* A. Hitchc., 613

*Hierochloë odorata* (L.) P. Beauv., 510; I

*Holcus lanatus* L., 218

*Leersia oryzoides* (L.) Sw., 750

*L. virginica* Willd., 757

*Leptoloma cognatum* (Schultes) Chase, 114

*Muhlenbergia glomerata* (Willd.) Trin., 493; I

*M. mexicana* (L.) Trin., 835

*Panicum capillare* L., 35

*P. depauperatum* Muhlenb., 1044

*P. dichotomiflorum* Michaux, 768, 808

*P. linearifolium* Britton, 1065

*P. tuckermanii* Fern. (see *P. philadelphicum* Trin.), 879; J

*Paspalum ciliatifolium* Michaux, 895

*Phragmites australis* (Cav.) Steudel, 32

*Poa alsodes* A. Gray, 991

*P. annua* L., 947

*P. compressa* L., 206

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## PUBLICATION OF INTEREST

THE RARE VASCULAR PLANTS OF THE ISLAND OF NEWFOUNDLAND / LES PLANTES VASCULAIRES RARES DE L'ÎLE DE TERRE-NEUVE. Andre Bouchard, Stuart Hay, Luc Brouillet, Martin Jean, and Isabelle Saucier. *Syllogeus* 65: 165 pp. 1991. Canadian Museum of Nature, Direct Mail Section, P.O. Box 3443, Station D, Ottawa, Ontario K1P 6P4, Canada. \$7.95 (Canadian): Canadian orders add \$3.00 shipping/handling + \$0.76 GST; orders sent outside of Canada add \$6.00 shipping/handling only. This is the 10th publication in a series of volumes, each detailing the rare plants of a province or territory, that have appeared at irregular intervals since 1977. For each of the 271 taxa that the authors determined to be rare in Newfoundland, the following information is given: scientific name, synonymy (if any), sources (herbaria and literature), North American range, Newfoundland range, other published distribution maps, habitat, "ecoregion" (occurrence according to Damman's division of the island into 9 ecoregions and 21 subregions), rarity status in Canada, and rarity status in Newfoundland. Dot maps are provided for each species as well as an extensive bibliography and list of excluded species (and reasons for their exclusion. The complete text of the detailed Introduction appears in both English and French, in this case as consecutive chapters [in early volumes, e.g. Ontario (*Syllogeus* 14), the entire text was bilingual, the two texts (one inverted) starting from opposite covers and meeting in the middle of the volume.]

While Newfoundland may be a bit far afield from the Great Lakes, this volume is brought forth to make our readers aware of this series on the rare plants of Canada. Other volumes (*Syllogeus* volume and date in parentheses) that have appeared are: Alberta (17, 1978; now out of print), British Columbia (59, 1985), Manitoba (27, 1980), New Brunswick (50, 1983), Nova Scotia (18, 1978), Ontario (14, 1977; now out of print), Prince Edward Island (67, 1991), Quebec (48, 1983; now out of print), Saskatchewan (20, 1979), Yukon Territory (28, 1981).

—Richard K. Rabeler