

The checklist of the flora of Pembina Gorge, Cavalier County, North Dakota

Shipunov, Alexey & Perry, Ryan

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Abstract

North Dakota is greatly under-researched for the plant diversity. This situation may be improved with a thorough research of “biodiversity hotspots” like Lake Pembina Gorge region (Cavalier county). During the 2014 summer, we collected there plant samples, determined them and now present the checklist.

North Dakota is among a few North American regions which have not been researched in full for plant diversity. Before 2011, only 55% of state territory was covered with botanical research. From 2011, we are surveying “botanical white spots” using 30 x 30 miles virtual grid. Every plant was photographed, geo-referenced (with precise GPS coordinates) and collected for the herbarium of Minot State University (now officially registered and internationally recognized as “MISU”). However, in North Dakota we also have the different type of locations, unresearched “hot spots” where plant diversity is dramatically higher than in surrounding areas. One of them is the Pembina Gorge Area. The Pembina Gorge region lies north to south along the landform known in Canada as the “Manitoba Escarpment” and in the United States as the “Pembina Escarpment” (Willenbring, 1971). The region begins in North Dakota and extends north of the Manitoba-North Dakota border (Marshall, 1989). The area of study consists of the natural, uncultivated areas, much of which is open to the public. The Pembina Gorge has never been the focus of a floristic study. We made three collection trips, and prepared 198 plant samples deposited now in MISU herbarium. These herbarium specimens along with plant photographs made in natural environment will complement our existing records from 2012 and altogether will be the source of the comprehensive plant list for the Pembina Gorge region of North Dakota.

Vascular plants

I. Adoxaceae

- 1(1). *Viburnum lentago* L.
Jul, Jun
- 2(2). *Viburnum opulus* L.
Jun
- 3(3). *Viburnum rafinesqueanum* Schult.
Jul, Jun

II. Alismataceae

- 1(4). *Alisma subcordatum* Raf.
Aug, Jul

III. Amaranthaceae

- 1(5). *Chenopodium fremontii* S. Watson
Aug

- 2(6). *Chenopodium leptophyllum* (Moq.) Nutt.
ex S. Watson
Jul

- 3(7). *Chenopodium simplex* (Torr.) Raf.
Jul

IV. Anacardiaceae

- 1(8). *Rhus glabra* L.
Jul

V. Apocynaceae

- 1(9). *Apocynum androsaemifolium* L.
Jul
- 2(10). *Asclepias ovalifolia* Decne.
Jul

3(11). *Asclepias speciosa* Torr.
Jul

4(12). *Asclepias syriaca* L.
Jul

VI. Araceae

1(13). *Lemna trisulca* L.
Jun

VII. Araliaceae

1(14). *Aralia nudicaulis* L.
Jul, Jun

VIII. Aristolochiaceae

1(15). *Asarum canadense* L.
Jun

IX. Asparagaceae

1(16). *Maianthemum canadense* Desf.
Jun

2(17). *Maianthemum stellatum* (L.) Link
Jun

X. Balsaminaceae

1(18). *Impatiens capensis* Meerb.
Jul

XI. Betulaceae

1(19). *Corylus americana* Walter
Jul

2(20). *Corylus cornuta* Marsh.
Jul

3(21). *Ostrya virginiana* (Mill.) K. Koch
Jul

XII. Boraginaceae

1(22). *Hackelia virginiana* (L.) I.M. Johnst.
Jul

2(23). *Lithospermum canescens* (Michx.) Lehm.
Jun

XIII. Campanulaceae

1(24). *Campanula rotundifolia* L.
Jul

XIV. Cannabaceae

1(25). *Humulus lupulus* L.
Jul

XV. Caprifoliaceae

1(26). *Lonicera dioica* L.
Jun

2(27). *Symphoricarpos occidentalis* Hook.
Jul

XVI. Caryophyllaceae

1(28). *Cerastium arvense* L.
Jun

2(29). *Moehringia lateriflora* (L.) Fenzl
Jun

3(30). *Stellaria longipes* Goldie
Jul, Jun

4(31). *Stellaria media* (L.) Vill.
Jul

XVII. Compositae

1(32). *Achillea millefolium* L.
Jul

2(33). *Ambrosia artemisiifolia* L.
Aug

3(34). *Antennaria parvifolia* Nutt.
Jun

4(35). *Artemisia ludoviciana* Nutt.
Aug

5(36). *Bidens cernua* L.
Aug

6(37). *Bidens frondosa* L.
Aug, Jul

7(38). *Crepis tectorum* L.
Jul

8(39). *Cyclachaena xanthifolia* (Nutt.) Fresen.
Aug

9(40). *Doellingeria umbellata* (Mill.) Nees
Aug

10(41). *Erigeron glabellus* Nutt.
Jun

11(42). *Erigeron philadelphicus* L.
Jul

12(43). *Eutrochium maculatum* (L.) E.E. Lamont
Aug

13(44). *Helianthus nuttallii* Torr. & A. Gray
Aug

14(45). *Helianthus strumosus* L.
Jul

15(46). *Hieracium umbellatum* L.
Aug

16(47). *Lactuca biennis* (Moench) Fernald
Aug

17(48). *Lactuca serriola* L.
Jul

18(49). *Lactuca tatarica* (L.) C.A. Mey.
Aug

19(50). *Liatris ligulistylis* (A. Nelson) K. Schum.
Aug

20(51). *Oligoneuron rigidum* (L.) Small
Aug

21(52). *Prenanthes alba* L.
Aug

22(53). *Rudbeckia hirta* L.
Jul

23(54). *Senecio congestus* (R. Br.) DC.
Jul

- 24(55). *Solidago canadensis* L.
Aug, Jul
- 25(56). *Symphytotrichum boreale* (Torr. & A. Gray)
Á. Löve & D. Löve
Jul
- 26(57). *Symphytotrichum ciliolatum* (Lindl.) Á.
Löve & D. Löve
Aug, Jul
- 27(58). *Symphytotrichum ericoides* (L.) G.L.
Nesom
Aug
- 28(59). *Symphytotrichum laeve* (L.) Á. Löve & D.
Löve
Aug, Jul
- 29(60). *Symphytotrichum lanceolatum* (Willd.) G.L.
Nesom
Aug
- 30(61). *Tanacetum vulgare* L.
Aug, Jul
- 31(62). *Taraxacum officinale* F.H. Wigg.
Jul
- 32(63). *Tripleurospermum perforatum* (Mérat) M.
Lainz
Aug, Jul
- 33(64). *Xanthium strumarium* L.
Jul

XVIII. Convolvulaceae

- 1(65). *Calystegia sepium* (L.) R. Br.
Jul

XIX. Cornaceae

- 1(66). *Cornus racemosa* Lam.
Jul
- 2(67). *Cornus sericea* L.
Jun

XX. Cruciferae

- 1(68). *Arabis hirsuta* (L.) Scop.
Jun
- 2(69). *Brassica napus* L.
Jul
- 3(70). *Descurainia sophia* (L.) Webb ex Prantl
Jun
- 4(71). *Erysimum cheiranthoides* L.
Jul
- 5(72). *Rorippa palustris* (L.) Besser
Jul
- 6(73). *Thlaspi arvense* L.
Jun

XXI. Cyperaceae

- 1(74). *Carex assiniboimensis* W. Boott
Jul

- 2(75). *Carex atherodes* Spreng.
Jul
- 3(76). *Carex brevior* (Dewey) Mack.
Jul
- 4(77). *Carex pellita* Muhl. ex Willd.
Jul
- 5(78). *Carex pensylvanica* Lam.
Jun
- 6(79). *Carex sartwellii* Dewey
Jul
- 7(80). *Carex siccata* Dewey
Jul
- 8(81). *Carex stipata* Muhl. ex Willd.
Jul
- 9(82). *Carex stricta* Lam.
Jul
- 10(83). *Carex sychnocephala* Carey
Jul
- 11(84). *Eleocharis palustris* (L.) Roem. & Schult.
Jul, Jun
- 12(85). *Scirpus microcarpus* J. Presl & C. Presl
Jul
- 13(86). *Scirpus pallidus* (Britton) Fernald
Aug, Jul

XXII. Elaeagnaceae

- 1(87). *Shepherdia canadensis* (L.) Nutt.
Jul

XXIII. Equisetaceae

- 1(88). *Equisetum arvense* L.
Jul

XXIV. Fagaceae

- 1(89). *Quercus macrocarpa* Michx.
Jul

XXV. Geraniaceae

- 1(90). *Geranium carolinianum* L.
Jul

XXVI. Gramineae

- 1(91). *Alopecurus aequalis* Sobol.
Aug
- 2(92). *Andropogon gerardii* Vitman
Aug, Jul
- 3(93). *Beckmannia syzigachne* (Steud.) Fernald
Aug, Jul
- 4(94). *Bromus ciliatus* L.
Aug, Jul
- 5(95). *Bromus inermis* Leyss.
Jul
- 6(96). *Dichanthelium leibergii* (Vasey) Freckmann
Jul
- 7(97). *Echinochloa crus-galli* (L.) P. Beauv.
Aug, Jul

- 8(98). *Elymus canadensis* L.
Aug, Jul
- 9(99). *Elymus caninus* (L.) L.
Aug
- 10(100). *Elymus repens* (L.) Gould
Jul
- 11(101). *Eragrostis cilianensis* (All.) Vign. ex
Janchen
Jul
- 12(102). *Eragrostis pectinacea* (Michx.) Nees ex
Steud.
Jul
- 13(103). *Glyceria grandis* S. Watson
Aug, Jul
- 14(104). *Muhlenbergia glomerata* (Willd.) Trin.
Jul
- 15(105). *Muhlenbergia richardsonis* (Trin.) Rydb.
Jul
- 16(106). *Oryzopsis asperifolia* Michx.
Jun
- 17(107). *Panicum virgatum* L.
Jul
- 18(108). *Poa compressa* L.
Jun
- 19(109). *Poa palustris* L.
Jul
- 20(110). *Setaria pumila* (Poir.) Roem. & Schult.
Aug
- 21(111). *Setaria viridis* (L.) P. Beauv.
Jul
- 22(112). *Spartina pectinata* Bosc ex Link
Aug

XXVII. Iridaceae

- 1(113). *Iris germanica* L.
Jun
- 2(114). *Sisyrinchium montanum* Greene
Jun

XXVIII. Juncaceae

- 1(115). *Juncus bufonius* L.
Jul
- 2(116). *Juncus nodosus* L.
Jul

XXIX. Labiatae

- 1(117). *Agastache foeniculum* (Pursh) Kuntze
Jul
- 2(118). *Dracocephalum parviflorum* Nutt.
Jul
- 3(119). *Galeopsis tetrahit* L.
Jul
- 4(120). *Mentha arvensis* L.
Aug, Jul
- 5(121). *Scutellaria galericulata* L.
Aug

- 6(122). *Scutellaria lateriflora* L.
Jul
- 7(123). *Stachys palustris* L.
Aug, Jul

XXX. Leguminosae

- 1(124). *Amorpha canescens* Pursh
Jul
- 2(125). *Amphicarpaea bracteata* (L.) Fernald
Aug
- 3(126). *Astragalus agrestis* Douglas ex G. Don
Jul, Jun
- 4(127). *Astragalus bisulcatus* (Hook.) A. Gray
Jun
- 5(128). *Astragalus canadensis* L.
Jul
- 6(129). *Caragana arborescens* Lam.
Jul
- 7(130). *Lathyrus ochroleucus* Hook.
Jun
- 8(131). *Lathyrus palustris* L.
Jul
- 9(132). *Lathyrus venosus* Muhl. ex Willd.
Jul, Jun
- 10(133). *Lotus unifoliolatus* (Hook.) Benth.
Jul
- 11(134). *Trifolium hybridum* L.
Jul
- 12(135). *Trifolium repens* L.
Jul
- 13(136). *Vicia americana* Muhl. ex Willd.
Jul

XXXI. Liliaceae

- 1(137). *Lilium philadelphicum* L.
Jul

XXXII. Malvaceae

- 1(138). *Tilia americana* L.
Jul

XXXIII. Melanthiaceae

- 1(139). *Trillium cernuum* L.
Jun

XXXIV. Oleaceae

- 1(140). *Syringa vulgaris* L.
Jun

XXXV. Onagraceae

- 1(141). *Epilobium ciliatum* Raf.
Aug, Jul
- 2(142). *Oenothera biennis* L.
Aug, Jul

XXXVI. Orchidaceae

- 1(143). *Cypripedium parviflorum* Salisb.
Jun

XXXVII. Oxalidaceae

- 1(144). *Oxalis stricta* L.
Jul

XXXVIII. Papaveraceae

- 1(145). *Corydalis aurea* Willd.
Jun

XXXIX. Plantaginaceae

- 1(146). *Hippuris vulgaris* L.
Jul
2(147). *Linaria vulgaris* Mill.
Jul
3(148). *Penstemon gracilis* Nutt.
Jul
4(149). *Veronica peregrina* L.
Jun

XL. Polemoniaceae

- 1(150). *Collomia linearis* Nutt.
Jul

XLI. Polygonaceae

- 1(151). *Polygonum achoreum* S.F. Blake
Jul
2(152). *Polygonum amphibium* L.
Aug
3(153). *Polygonum aviculare* L.
Jul
4(154). *Polygonum convolvulus* L.
Jul
5(155). *Polygonum lapathifolium* L.
Jul
6(156). *Polygonum pensylvanicum* L.
Jul
7(157). *Polygonum persicaria* L.
Jul
8(158). *Rumex longifolius* DC.
Aug, Jul
9(159). *Rumex maritimus* L.
Jul
10(160). *Rumex stenophyllus* Ledeb.
Aug, Jul

XLII. Primulaceae

- 1(161). *Lysimachia ciliata* L.
Jul
2(162). *Lysimachia hybrida* Michx.
Jul

XLIII. Ranunculaceae

- 1(163). *Actaea rubra* (Aiton) Willd.
Jun
2(164). *Anemone canadensis* L.
Jul, Jun

- 3(165). *Anemone virginiana* L.
Jul
4(166). *Caltha palustris* L.
Jun
5(167). *Ranunculus abortivus* L.
Jun
6(168). *Ranunculus cymbalaria* Pursh
Jul
7(169). *Ranunculus glaberrimus* Hook.
Jun
8(170). *Ranunculus pensylvanicus* L. f.
Jul
9(171). *Ranunculus sceleratus* L.
Jul
10(172). *Thalictrum dasycarpum* Fisch. & Avé-Lall.
Jul
11(173). *Thalictrum dioicum* L.
Jun
12(174). *Thalictrum venulosum* Trel.
Jun

XLIV. Rosaceae

- 1(175). *Amelanchier alnifolia* (Nutt.) Nutt. ex M.
Roem.
Jul
2(176). *Fragaria virginiana* Duchesne
Jun
3(177). *Geum aleppicum* Jacq.
Jul
4(178). *Potentilla arguta* Pursh
Jul
5(179). *Potentilla gracilis* Douglas ex Hook.
Jul
6(180). *Potentilla rivalis* Nutt.
Jul
7(181). *Prunus americana* Marsh.
Jun
8(182). *Prunus virginiana* L.
Jun
9(183). *Rosa acicularis* Lindl.
Jun
10(184). *Rosa arkansana* Porter
Aug, Jul
11(185). *Rosa blanda* Aiton
Jul
12(186). *Rubus idaeus* L.
Jun
13(187). *Spiraea alba* Du Roi
Jul

XLV. Rubiaceae

- 1(188). *Galium boreale* L.
Jul
2(189). *Galium labradoricum* (Wiegand) Wiegand
Jul

3(190). *Galium trifidum* L.
Jul

4(191). *Galium triflorum* Michx.
Jul

XLVI. Salicaceae

1(192). *Populus balsamifera* L.
Jul

2(193). *Salix bebbiana* Sarg.
Jun

3(194). *Salix eriocephala* Michx.
Jun

4(195). *Salix exigua* Nutt.
Jul

5(196). *Salix petiolaris* Sm.
Jul

XLVII. Santalaceae

1(197). *Comandra umbellata* (L.) Nutt.
Aug, Jun

XLVIII. Smilacaceae

1(198). *Smilax herbacea* L.
Jul, Jun

XLIX. Typhaceae

1(199). *Sparganium eurycarpum* Engelm.
Jul

2(200). *Typha angustifolia* L.
Aug, Jul

L. Umbelliferae

1(201). *Carum carvi* L.
Jul, Jun

2(202). *Heracleum maximum* Bartram
Jul

3(203). *Osmorhiza longistylis* (Torr.) DC.
Jul

4(204). *Sanicula marilandica* L.
Jul

5(205). *Sium suave* Walter
Jul

6(206). *Zizia aptera* (A. Gray) Fernald
Jun

LI. Urticaceae

1(207). *Laportea canadensis* (L.) Weddell
Jul

LII. Violaceae

1(208). *Viola pubescens* Aiton
Jun

LIII. Vitaceae

1(209). *Parthenocissus vitacea* (Knerr) Hitchc.
Jul