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A VASCULAR PLANT CHECKLIST FOR TWO MOON PARK NEAR BILLINGS, MONTANA

ABSTRACT

We list the vascular-plant flora of Two Moon Park, an isolated tract of land located north of the Yellowstone River, east of Billings, Montana. This 61-ha Yellowstone County Park is a designated wildlife preserve. Over a two-year period, we identified and catalogued 114 vascular-plant species, belonging to 95 genera from 40 families. Voucher specimens and slide photographs of each plant in its natural habitat are located in the MSU-Billings herbarium.

Key words: Two Moon Park, vascular-plant flora, Yellowstone River, Montana

INTRODUCTION

Two Moon Park is the largest county park in Yellowstone County, Montana, and its development was a Billings Bicentennial project in the late 1970s. With the first road access to this area in 1961, the current park site and adjacent land became a land developer's dream and generated controversy for more than a decade. Besides frequent natural floods, threats to the Park included potential development of a gravel pit, golf course, motorcycle cross trail, and mobile home court. Through the persistent efforts of Billings environmentalists, concerned citizens, and Yellowstone County commissioners, the Park has been preserved as an ecological area. This has initiated recovery of the site to a natural state from damages caused by human intrusions.

Designated as a "watchable wildlife viewing area" in 1989 by Montana Fish, Wildlife and Parks, Two Moon Park has a varied vegetative cover with high taxonomic diversity. Until now, however, no systematic study of its vascular plant composition has been conducted. Such information is valuable to both the scientific and nonscientific communities in this region and elsewhere. Therefore, we identified and systematically listed species of vascular plants of this area. Whereas the broader scope of this study was to produce a complete written and pictorial catalogue of all flora of Two Moon Park, this paper is limited to a checklist of vascular-plant species including common and scientific names and family. We intend this effort to serve taxonomists, ecologists, environmentalists, and other interested persons.

STUDY AREA DESCRIPTION

Two Moon Park, located north of the Yellowstone River east of Billings, Montana, was formed when the Yellowstone River channel cut through 46 m (150 ft) of bedrock and then meandered in the opposite direction onto a broad flood plain, leaving a 61-ha

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(150-acre) isolated area (Fig. 1). Thus, steep cliffs border Two Moon Park on the north and west, and the Yellowstone River borders it on the south. These features isolated the area from extensive human intrusion until a road was built that accessed the site. The cliffs were formed from the Clagget and Judith River formations. Granite gravel deposits, originating from glaciation of

the Beartooth Mountains during the late ice ages, lie on top the cliffs; flooding of the ancient Yellowstone River deposited the outwash there. The thin soil mantle of Two Moon Park developed from recent alluvial deposits of silt, sand, and gravel (Meshnick *et al.* 1972) of which the oldest of these is estimated to be ≤ 200 years old.

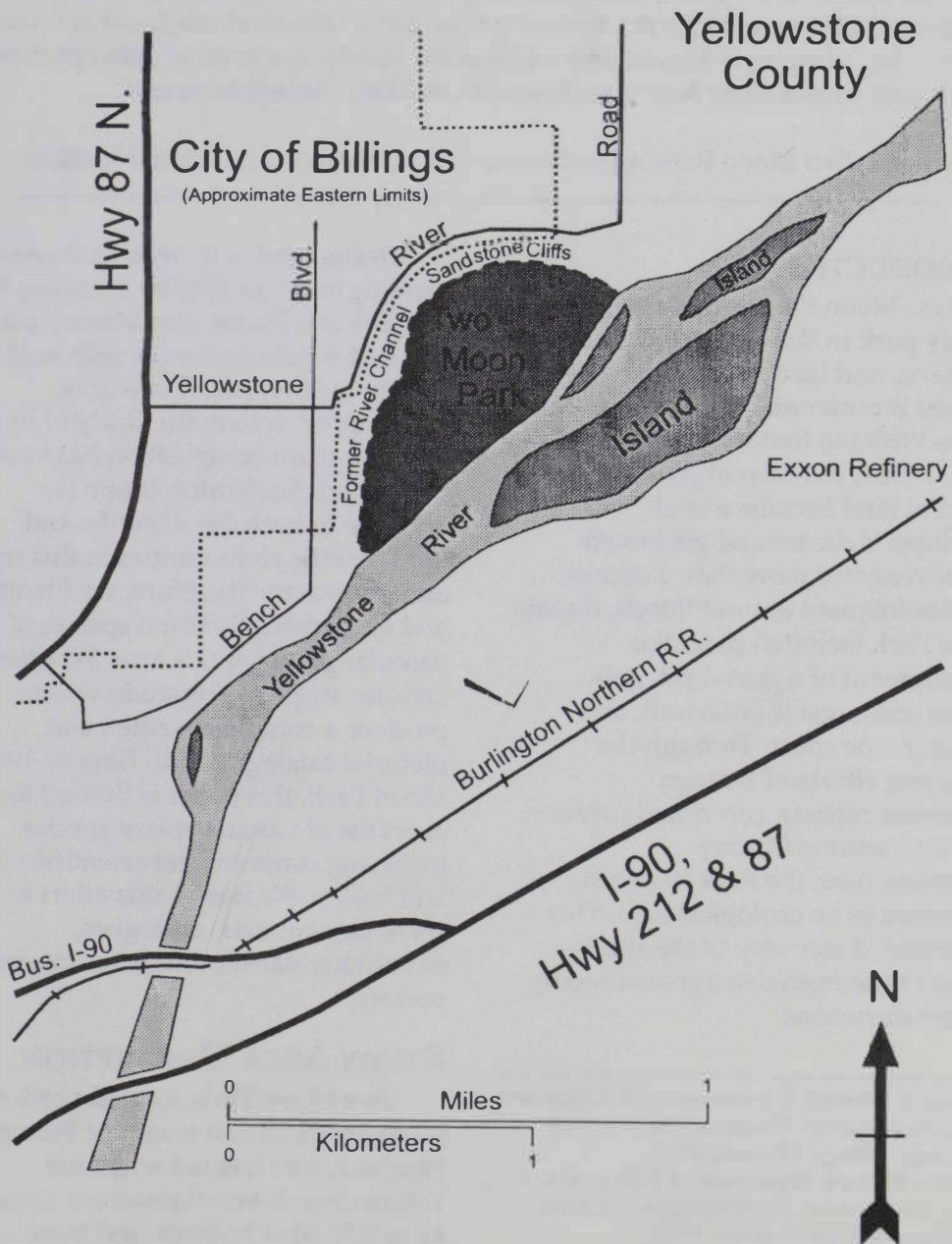


Figure 1. Billings area map showing the location of Two Moon Park and the Yellowstone River.

METHODS

Plant specimens were collected each week over a two-year period beginning in April 1998. Field notes included location, date, relative abundance, soil type, and special characteristics of each plant. Five specimens were collected for preparation for the herbarium and for identification using the keys relevant to flora of this region (Booth 1966, Cronquist 1981, Dorn 1984, 1992, Hahn 1977, Hitchcock and Cronquist 1973). All taxa were arranged alphabetically by family, genus, and species in a checklist. Current scientific names of all taxa were verified with The PLANTS database published on the Internet (USDA NRCS 1999).

Standard collection and herbarium procedures for vascular plants were used to collect, press, prepare, mount, and label specimens, which were mounted on acid-free herbarium paper and deposited in the MSU-Billings herbarium.

RESULTS AND DISCUSSION

We identified 114 species among 40 families and 95 genera of vascular plants (Appendix A). Six families were monocotyledonous (13 genera and 14 species), one family was non-flowering (one genus with a single species), and all other taxa were dicotyledonous. The largest Family was Asteraceae (22 genera and 31 species). The second largest was Brassicaceae with 11 genera and 12 species, the third largest Fabaceae with nine genera and 13 species, and the fourth was Poaceae with six genera and seven species. Seven families were represented with two genera, two families with three genera, and 27 families each had just one genus and a single species.

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Appendix A. Checklist of vascular plants of Two Moon Park, Yellowstone County, Montana.

Family	Scientific(botanical) name	Common Name
Aceraceae	<i>Acer negundo</i> L.	boxelder
Amaranthaceae	<i>Amaranthus retroflexus</i> L.	redroot amaranth
Apiaceae	<i>Carum carvi</i> L. <i>Conium maculatum</i> L.	caraway poison hemlock
Apocynaceae	<i>Apocynum</i> x <i>floribundum</i> Greene (pro sp.) (= <i>Apocynum medium</i> Greene)	dogbane
Asclepiadaceae	<i>Asclepias speciosa</i> Torr.	showy milkweed
Asteraceae	<i>Ambrosia psilostachya</i> DC. <i>Arctium minus</i> Bernh. <i>Artemisia absinthium</i> L. <i>Artemisia frigida</i> Willd. <i>Boltonia asteroides</i> (L.) L'Her. <i>Centaurea biebersteinii</i> DC. (= <i>Centaurea maculosa</i> auct. non Lam.) <i>Cichorium intybus</i> L. <i>Cirsium arvense</i> (L.) Scop. <i>Cirsium brevifolium</i> Nutt. <i>Cirsium canovirens</i> (Rydb.) Petrak <i>Cirsium vulgare</i> (Savi) Ten. <i>Conzya canadensis</i> (L.) Cronq. <i>Erigeron glabellus</i> Nutt. var. <i>pubescens</i> Hook. <i>Erigeron glabellus</i> Nutt. var. <i>glabellus</i> <i>Euthamia occidentalis</i> Nutt. (= <i>Solidago occidentalis</i> (Nutt.) Torr. & Gray) <i>Grindelia squarrosa</i> (Pursh) Dunal <i>Lactuca ludoviciana</i> (Nutt.) Riddell <i>Lactuca serriola</i> L. <i>Packera cana</i> (Hook.) W.A. Weber & A. Löve (= <i>Senecia canus</i> Hook.) <i>Pyrrocoma integrifolia</i> (Porter ex Gray) Greene (= <i>Haplopappus integrifolius</i> Porter ex Gray) <i>Ratibida columnifera</i> (Nutt.) Woot. & Standl. <i>Rudbeckia hirta</i> L. <i>Symphotrichum lanceolatum</i> (Willd.) Nesom ssp. <i>hesperium</i> (Gray) Nesom var. <i>hesperium</i> (= <i>Aster hesperius</i> Gray var. <i>laetevirens</i> (Greene) Cronq.) <i>Solidago canadensis</i> L. <i>Sonchus asper</i> (L.) Hill. <i>Sonchus oleraceus</i> L. <i>Tanacetum vulgare</i> L. <i>Taraxacum officinale</i> G.H. Weber ex Wiggers <i>Tonestus lyallii</i> (Gray) A. Nels. (= <i>Haplopappus lyallii</i> Gray) <i>Tragopogon dubius</i> Scop. <i>Xanthium strumarium</i> L.	cuman ragweed lesser burdock absinthium prairie sagewort white doll's daisy spotted knapweed chicory canadian thistle palouse thistle graygreen thistle bull thistle canadian horseweed streamside fleabane streamside fleabane western goldentop curlycup gumweed biennial lettuce prickly lettuce woolly groundsel manystem goldenweed upright prairie coneflower black-eyed susan white panicle aster canada goldenrod spiny sowthistle common sowthistle common tansy common dandeloin lyall's goldenweed yellow salsify rough cocklebur
Balsaminaceae	<i>Impatiens ecalcarata</i> Blank.	spurless touch-me-not
Boraginaceae	<i>Cynoglossum officinale</i> L.	gypsyflower or houndstongue
Brassicaceae	<i>Alyssum alyssoides</i> (L.) L. <i>Capsella bursa-pastoris</i> (L.) Medik. <i>Cardaria draba</i> (L.) Desv.	pale madwort shepherd's purse whitewort or hoary cress

Appendix A. continued.

Family	Scientific(botanical) name	Common Name
Brassicaceae (cont.)	<i>Descurainia pinnata</i> (Walt.) Britt.	western tansy mustard
	<i>Erysimum cheiranthoides</i> L.	wormseed wallflower
	<i>Lepidium densiflorum</i> Schrad.	common pepperweed
	<i>Lepidium perfoliatum</i> L.	clasping pepperweed
	<i>Rorippa sinuata</i> (Nutt.) A.S. Hitchc.	spreading yellowcress
	<i>Sinapsis arvensis</i> L.	charlock mustard
	(= <i>Brassica kaber</i> (DC.) L.C. Wheeler)	
	<i>Stanleya pinnata</i> (Pursh)Britt.	desert princeplume
	<i>Thelypodium sagittatum</i> (Nutt. ex Torr. & Gray) Endl.ex Walp.	arrow thelypodium
<i>Thlaspi arvense</i> L.	field pennycress	
Cactaceae	<i>Opuntia polyacantha</i> Haw.	plains pricklypear
Caprifoliaceae	<i>Lonicera involucrata</i> Banks ex Spreng.	twinberry honeysuckle
	<i>Symphoricarpos occidentalis</i> Hook.	western snowberry
	<i>Symphoricarpos oreophilus</i> Gray	mountain snowberry
Chenopodiaceae	<i>Endolepis dioica</i> (Nutt.) Standl. (= <i>Atriplex dioica</i> (Nutt.) J.F. Macbr.)	suckley's endolepis
Commelinaceae	<i>Tradescantia occidentalis</i> (Britt.) Smyth.	prairie spiderwort
Convolvulaceae	<i>Convolvulus arvensis</i> L.	field bindweed
Cornaceae	<i>Cornus sericea</i> L. ssp. <i>sericea</i> (= <i>Cornus stolonifera</i> Michx.)	redosier dogwood
Cyperaceae	<i>Carex foenea</i> Willd. var. <i>foenea</i> (= <i>Carex aenea</i> Fern.)	dryspike sedge
Elaeagnaceae	<i>Elaeagnus angustifolia</i> L.	russian olive
Equisetaceae	<i>Equisetum laevigatum</i> A. Braun	smooth horsetail
Euphorbiaceae	<i>Euphorbia esula</i> L.	leafy spurge
Fabaceae	<i>Astragalus americanus</i> (Hook.) M. E. Jones.	american milkvetch
	<i>Dalea candida</i> Michx. ex Willd. var. <i>candida</i> (= <i>Petalostemon candidus</i> Michx.)	white prairie clover
	<i>Glycyrrhiza lepidota</i> Pursh.	american licorice
	<i>Medicago lupulina</i> L.	black medic
	<i>Medicago sativa</i> L.	alfalfa
	<i>Melilotus alba</i> Medic.	white sweetclover
	<i>Melilotus officinalis</i> (L.) Lam.	yellow sweetclover
	<i>Robinia pseudoacacia</i> L.	black locust
	<i>Thermopsis montana</i> Nutt.	mountain goldenbanner
	<i>Thermopsis rhombifolia</i> (Nutt. ex Pursh) Nutt. ex Richards.	prairie thermopsis
	<i>Trifolium pratense</i> L.	red clover
	<i>Trifolium repens</i> L.	white clover
	<i>Vicia americana</i> Muhl. ex Willd.	american vetch
	Grossulariaceae	<i>Ribes aureum</i> Pursh.
Lamiaceae	<i>Lycopus uniflorus</i> Michx.	northern bugleweed
	<i>Nepeta cataria</i> L.	catnip
Lemnaceae	<i>Lemna minor</i> L.	common duck weed
Liliaceae	<i>Asparagus officinalis</i> L.	garden asparagus
	<i>Leucocrocinum montanum</i> Nutt. ex Gray	common starlily
	<i>Yucca glauca</i> Nutt.	soapweed yucca

Appendix A. continued.

Family	Scientific(botanical) name	Common Name
Malvaceae	<i>Malva neglecta</i> Wallr.	common mallow
Onagraceae	<i>Gaura mollis</i> James (= <i>Gaura parviflora</i> Dougl. ex Lehm.) <i>Oenothera villosa</i> Thunb. ssp. <i>strigosa</i> (Rydb.) W. Dietr. & Raven (= <i>Oenothera strigosa</i> (Rydb.)Mackenzie & Bush.)	velvetweed hairy evening primrose
Plantaginaceae	<i>Plantago major</i> L.	common plantain
Poaceae	<i>Agropyron cristatum</i> (L.) Gaertn. <i>Alopecurus arundinaceus</i> Poir. <i>Bromus anomalus</i> Rupr. ex Fourn. <i>Elymus elymoides</i> (Raf.) Swezey ssp. <i>elymoides</i> (= <i>Sitanion hystrix</i> (Nutt.) J.G. Sm.) <i>Elymus repens</i> (L.) Gould. (= <i>Agropyron repens</i> (L.) Beauv.) <i>Phalaris arundinacea</i> L. <i>Poa compressa</i> L.	crested wheatgrass creeping meadow foxtail nodding brome squirreltail quackgrass reed canarygrass canada bluegrass
Polygonaceae	<i>Polygonum douglasii</i> Greene ssp. <i>austiniiae</i> (Greene) E. Murr. (= <i>Polygonum austiniiae</i> Greene) <i>Polygonum hydropiper</i> L. <i>Polygonum lapathifolium</i> L. <i>Rumex crispus</i> L. <i>Rumex venosus</i> Pursh	austin knotweed marshpepper knotweed curlytop knotweed curly dock veiny dock
Primulaceae	<i>Lysimachia ciliata</i> L.	fringed loosestrife
Ranunculaceae	<i>Clematis ligusticifolia</i> Nutt. <i>Ranunculus acriformis</i> Gray.	western white clematis sharpleaf buttercup
Rosaceae	<i>Malus sylvestris</i> P. Mill. (= <i>Pyrus malus</i> L.) <i>Prunus virginiana</i> L. <i>Rosa nutkana</i> K. Presl	european crabapple chokecherry nootka rose
Rubiaceae	<i>Galium triflorum</i> Michx.	fragrant bedstraw
Salicaceae	<i>Populus deltoides</i> Bartr. ex Marsh. <i>Salix exigua</i> Nutt.	eastern cottonwood narrowleaf willow
Scrophulariaceae	<i>Verbascum thapsus</i> L.	common mullein
Solanaceae	<i>Solanum dulcamara</i> L.	climbing nightshade
Tamaricaceae	<i>Tamarix ramosissima</i> Ledeb.	saltcedar
Typhaceae	<i>Typha latifolia</i> L.	broadleaf cattail
Ulmaceae	<i>Ulmus pumila</i> L.	siberian elm
Verbenaceae	<i>Verbena bracteata</i> Lag. & Rodr.	bigbract verbena

The scientific and common names conform to those contained in the PLANTS database. published on the Internet; (<http://plants.usda.gov/plants>), accessed August 28, 2000.