A PRELIMINARY BOTANICAL SURVEY OF THE BIG MUDDY VALLEY IN SOUTHERN SASKATCHEWAN, 1968

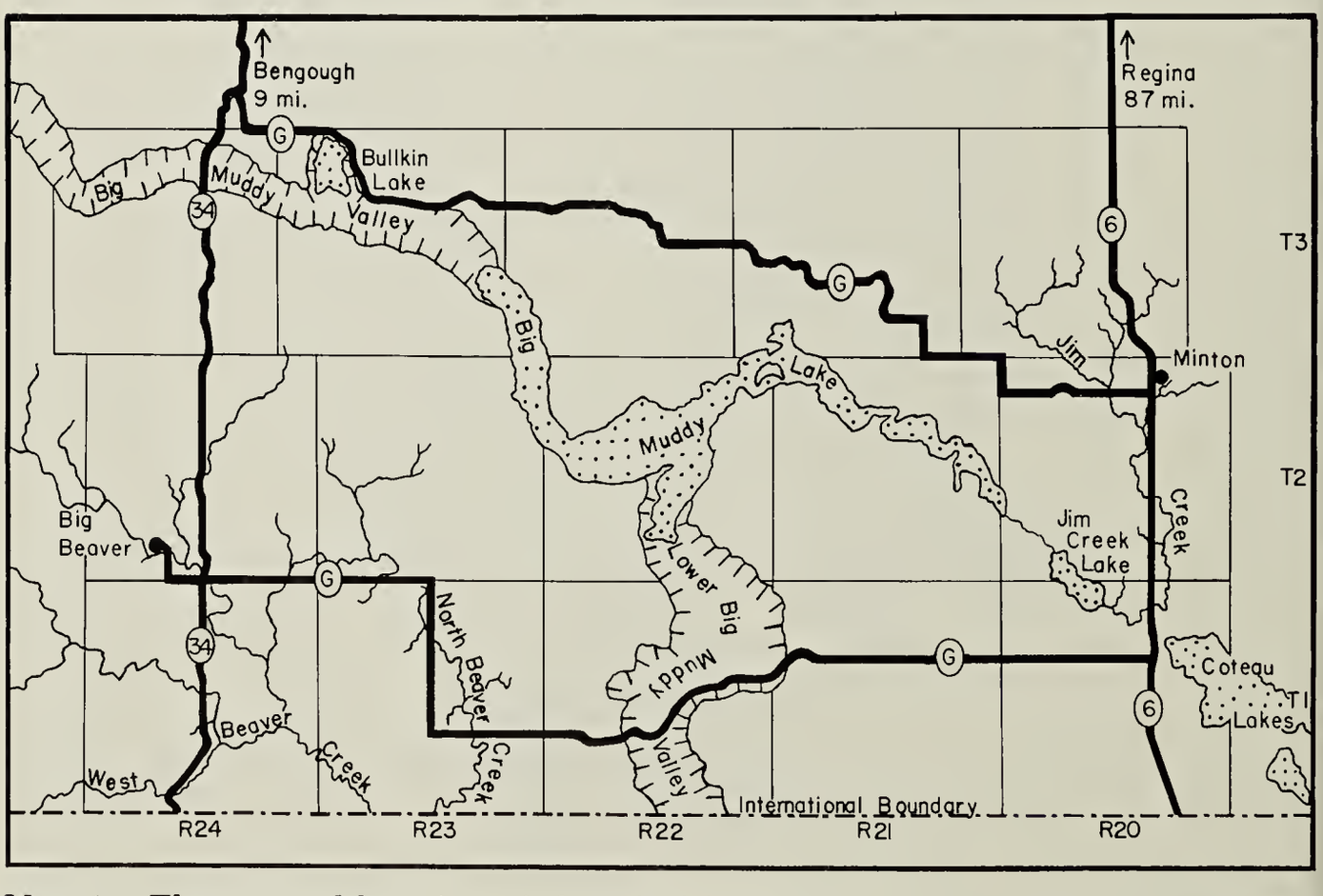
by **Helen Morrison, Regina**

Introduction

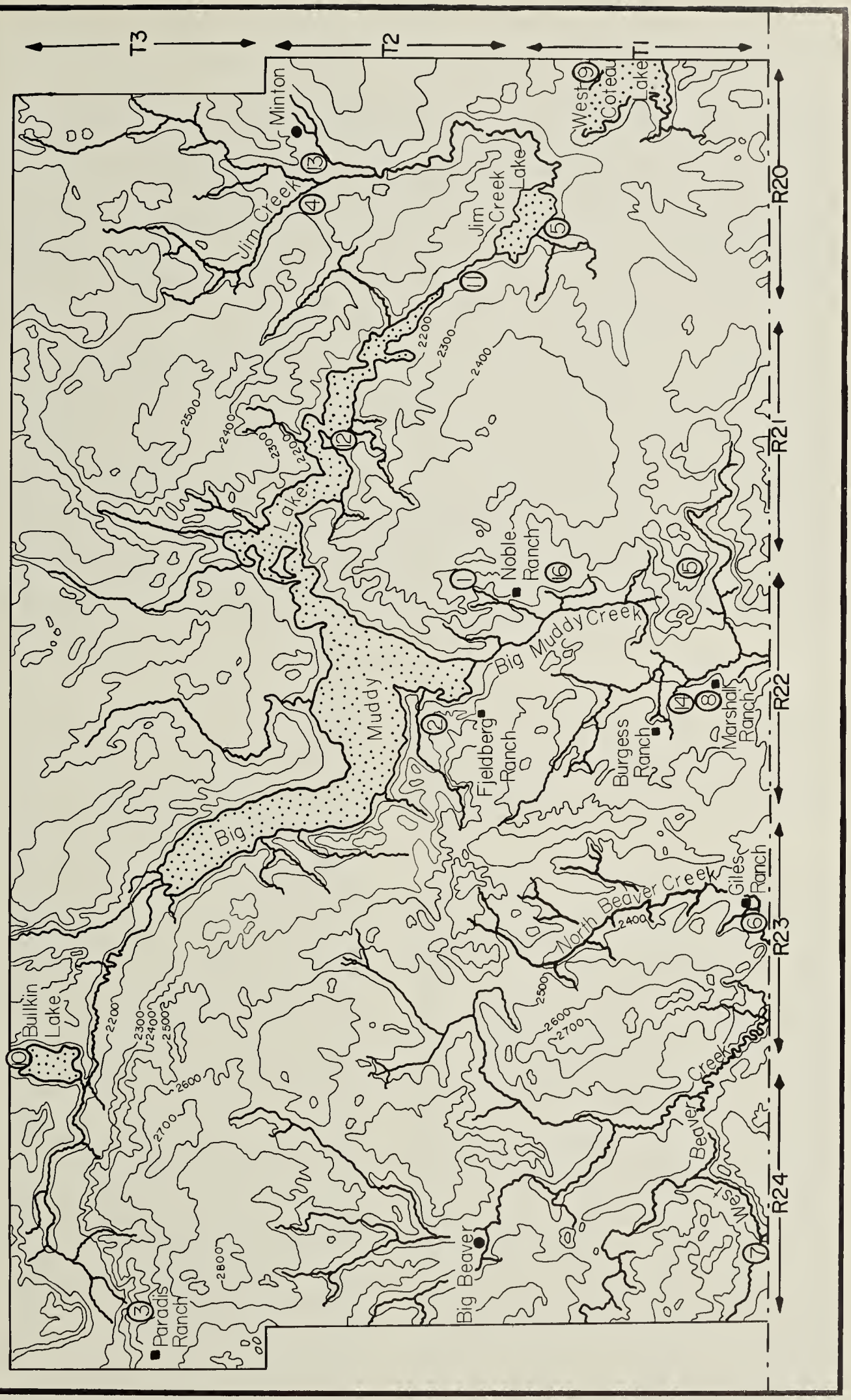
The Big Muddy Valley is located in south central Saskatchewan, approximately 100 miles south and slightly west of Regina. The valley begins south of the town of Harptree in Township 4, Range 26, West of the 2nd Meridian, where Twelve Mile Lake Valley and Lake of the Rivers Valley meet, and extends southeast to Big Muddy Lake. South from the lake, a branch of the valley, often referred to as the lower Big Muddy Valley, continues south across the International Boundary to join the Missouri Valley. With its steep walls of exposed bedrock and interesting rock outcrop formations, the Big Muddy Valley is a sharp contrast to the undulating prairie through which it cuts.

To the best of my knowledge, no intensive study of the flora of the Big Muddy Valley has previously been made. The herbarium of the Saskatchewan Museum of Natural History in Regina contains a number of specimens collected in the Big Muddy Valley by William Shevkenek (1937, 1938, and 1939). Some collections were also made in this area for the Museum by O. C. Furniss (1949), L. T. Carmichael (1949), and Dr. G. F. Ledingham (1950). The herbarium at the University of Saskatchewan, Regina Campus, has specimens collected from the Big Muddy Valley in recent years by Mr. and Mrs. D. Wade and by Dr. G. F. Ledingham.

Under the guidance of Dr. G. F. Ledingham, I chose part of the Big Muddy region as a study area (Map 1). From May to October, 1968, this study area was visited at about two-week intervals, weather permitting. Sixteen collection sites in various habitats in the area were designated



Map 1. The general location of the Big Muddy study area, its main roads and general geographical features.



Map 2. Topographical features of the Big Muddy study area and the location of the main collection sites. Contour interval is 100 feet.

and visited regularly (Map 2). Collections were made in other areas when time allowed. During this period, 336 species were collected. The list of species which follows is by no means a complete list of vascular plants for the area, but it is a preliminary list to which additions can be made in the future. As this was the first botanical work of this nature that I have attempted, there is no doubt that some species were overlooked in the field. The pattern of precipitation during the months of the study is another factor which probably influenced the number of species found. Because the months from May to July were exceptionally dry, it is possible that many perennials did not flower. The total precipitation recorded at Minton for these three months was 2.94 inches. In August and September, the recorded precipitation at Minton was 7.23 inches and 1.16 inches respectively*. It was not unusual to see early-flowering species such as the Crocus *(Anemone patens* var. *wolfgangiana)* and Three-flowered Avens *(Geum triflorum)* blooming in late September. Perhaps these plants were in a state of dormancy earlier due to insufficient moisture.

Study Area

A. Description

The area chosen for study, Townships 1-3, Ranges 20-24, West of 2nd Meridian, consists of 540 square miles including the eastern end of the main Big Muddy Valley, Big Muddy Lake, and the lower Big Muddy Valley. This area, located mainly between No. 6 and No. 34 highways, is crossed by two grid roads, one north and one south of Big Muddy Lake, making the area easily accessible by car (Map 1).

The study area lies completely within the semi-arid brown soil zone. According to Soil Map of Saskatchewan, Map 7, Soil Survey Report No. 10, the valley is characterized by badlands with eroding clay soils (Figure 1), while the surrounding uplands, fo the most part, are covered by Haver hill Association loam, rated poorly a a grain producer, with some areas o Haverhill Association clay loam. Th floor of the main Big Muddy Valle and the flat extending from the ea end of Big Muddy Lake to We Coteau Lake are classified as heav alkali soils. Although most sloughs i the area are alkaline, there are man fresh springs which run throughou the year.

The present drainage system in th valley had no part in the valley formation. Creeks and runoffs lead t Big Muddy Lake from north, wes and south. In the east, Jim Creek wa dammed in 1952 to form Jim Cree Lake. West Coteau Lake is extremel alkaline, and, like Big Muddy Lake contained very little water in 196 until the heavy rains in August. Th north and west forks of Beaver Cree have their sources southwest of Bi Muddy Lake but flow south across th International Boundary to the Mis souri River System. Bullkin Lake northwest of Big Muddy, also lie within the study area.

A variety of habitats were found i this region — alkaline flats, marsh creeks and springs, eroding clay bad lands with rock outcrops, undulatin and rolling prairie uplands, mois wooded coulees and depressions, an disturbed areas. By designating collec tion localities in the different habitat and visiting them regularly, I attempt ed to collect as many species as pos sible. Sites 1 to 3 were located in th badlands, sites 4 to 8 were marsh areas near creeks and springs, sites to 13 were on extremely alkaline soil site 14 was a rock outcrop, site 1 covered various wooded derpression and site 16 was grazed natural pas ture land. Specimens from disturbe areas were collected mainly fro roadsides throughout the entire stud area.

B. Geology

The Big Muddy Valley was forme approximately 15,000 years ago du ing the retreat of the final ice shee

* Monthly Record of Meteorological Observations in Canada, Regina Weather Office.

ig. 1. Big Coulee on the Noble ranch in the lower valley showing eroding ay slopes characteristic of the badlands.

om southern Saskatchewan. As the e retreated in a northeast direction, eltwater from the glacier front cut is channel in the bedrock and later andoned it. The valley has since quired a level floor of alluvium, car- ed down by runoff water in wet years. ow the valley averages 250 feet in pth, although south of Big Muddy ake, the depth reaches 500 feet Houldsworth, 1941). Slumping and eathering have made the steep slopes ore gentle until today many are assy, but bare strata can be seen in any places along the length of the alley.

The lowest of the bedrock strata en in the part of the Big Muddy alley located in the study area is the hitemud formation, seen to the eatest extent where No. 34 highway osses the valley. Here an uplift has curred, causing a thickness of 50 et to become visible. Two miles east the west end of Big Muddy Lake, is stratum dips below the present ke level, and it is not visible in the wer Big Muddy Valley. A white nd light grey sandy clay zone forms the lower part of this formation, while the upper zone is of white, grey, pale mauve, and black carbonaceous clay containing silt beds (Parizek, 1964).

The Upper Ravenscrag formation, which may be as thick as 500 feet, rests on the Whitemud formation as the Lower Ravenscrag is generally missing in this area. It contains many coal seams. The lower part of this zone, the Grey Facies, is made up of feldspathic sand, often cross-bedded, and grey, greenish-grey, and yellow sandy clay beds while the upper Buff Facies are composed of yellowish-brown fine-grained sand, silt, shale, and clay (Parizek, 1964). The exposures in the lower Big Muddy Valley also exhibit the Willowbunch clay meander.

The vast quantities of clays and sands of these formations were laid down long before glaciation by river systems which brought the material from highlands in the west, after the expulsion of the seas from western Canada.

C. Fauna

During trips in the field, I saw various faunal species. I will attempt at this time to give an account only of the vertebrate animals I observed while in the study area.

Pronghorns, generally in small groups, were a common sight in the lower Big Muddy Valley and north of Big Muddy Lake. W. Noble, whose ranch is in the lower valley, reported that large herds of Pronghorns often feed with his cattle during winters when the snow is deep. Coyotes were noted on many occasions throughout the study area. The Mule Deer is also common in this part of the province. Smaller mammals seen included Nuttall's Cottontail, White-tailed Jack Rabbit, Red Fox, Richardson's Ground Squirrel, Thirteen-lined Ground Squirrel, and the Striped Skunk. On one field trip to the area Big Brown Bats were collected from crevices in rocks on the south shore of Big Muddy Lake (by Gary Anweiler for U. of S., Regina Campus, September, 1968).

An outstanding feature of the bird population of the Big Muddy area is the numerous species of hawks found there. Those species present are the Ferruginous Hawk, Sharp-shinned Hawk, Cooper's Hawk, Marsh Hawk, Red-tailed Hawk, Swainson's Hawk, Pigeon Hawk, and Sparrow Hawk; the Prairie Falcon also nests in the valley. (Bernie Haysom, personal communication). Two Golden Eagle nests were located in the survey area.

Several kinds of snakes appear to be common in the lower valley including the Plains Garter Snake and Bull Snake. The Smooth Green Snake is present in the area also (collected by Dr. D. Secoy of U. of S., Regina Campus, September, 1968 Cf. *Blue Jay*, 26:p. 203). An Eastern Yellow-bellied Racer was killed by T. Marshall on his ranch in the lower Big Muddy in September, 1968.

D. Flora of Big Muddy Valley

The grasses found in this region are characteristic of the Mixed Prairie. Little Bluestem *(Andropogan scoparius)*, Blue Grama Grass *(Bouteloua gracilis)*, Spear Grass *(Stipa viridula)*, and June Grass *(Koeleria cristata)* were very plentiful. The extensive growth in pastures of species such as Prairie Selaginella *(Selaginella densa)*, Pasture Sage *(Artemisia frigida)*, Broomweed *(Gutierrezia sarothrae)*, Prickly Pear Cactus *(Opuntia polyacantha)*, and Cushion Cactus *(Mamillaria vivipara)* indicated the problem of overgrazing faced by ranchers. The Lands Branch of Saskatchewan Department of Agriculture indicates that, depending on land management procedures, in this part of the province from 20 to 30 acres of native pasture is required per head of cattle, and, to replenish pastures, 40% of the grasses should be allowed to go to seed annually.

The dominant grass on alkaline flats in this region was Alkali Grass *(Distichlis stricta)*. Various members of the family Chenopodiaceae were prevalent also, including Greasewood *(Sarcobatus vermiculatus)*, Western Sea-blite *(Suaeda depressa)*, and Samphire *(Salicornia rubra)*. Small-leaved Everlasting *(Antennaria parvifolia* Nutt.) was common in alkaline areas also.

Various species of sedges *(Carex spp.)*, bulrushes *(Scirpus spp.)*, and rushes *(Juncus spp.)* were associated with creeks and springs in the Big Muddy area (Figure 2). Seaside Arrow-grass *(Triglochin maritima)*, Seaside Buttercup *(Ranunculus cymbalaria)*, and Salt-meadow Grass *(Puccinellia nuttalliana)* were very abundant in these areas, and Willow *(Salix spp.)* were found occasionally around sloughs.

Vegetation cover is relatively scant in the "badlands". Many of the steep slopes were bare, while the more gentle slopes had some cover (Figure 3). Creeping Juniper *(Juniperus horizontalis)* and Low Juniper *(J. communis)* formed large mats over the clay slopes, preventing further downward erosion (Figure 3 and 4). Rabbit bush *(Chrysothamnus nauseosus)* and Shrubby Cinquefoil *(Potentilla fruticosa)* were widespread here. Ye

ig. 2. Jim Creek, one mile west of Minton, looking north from the grid road, owing thick growth of *Scirpus*, *Carex* and *Juncus*.

ig. 3. Badlands south of Big Muddy Lake (top right) showing steep non-egetated slopes and less steep vegetated slopes.

Fig. 4. Wooded depression on the northeast side of Big Coulee on the Nobl ranch. Trees are mostly Green Ash, Manitoba Maple and American Elm.

Fig. 5. Sandstone rock outcrops at Marshall ranch (site 14).

w Umbrellaplant *(Eriogonum avum)*, Branched Eriogonum *(E. ulticeps)* and Spatulate Bladderpod *Lesquerella alpina* var. *spathulata)* emed to prefer dry clay banks. Evening-star *(Mentzelia decapetala)* was und on one occasion only.

In the "badlands", the moist depressions were filled with Aspen *(Populus remuloides)*, American Elm *(Ulmus mericana)*, Green Ash *(Fraxinus nnsylvanica subintegerrima)*, under hich were Saskatoon *(Amelanchier nifolia)*, Chokecherry *(Prunus virniana* var. *melanocarpa)*, Pin Cherry *Prunus pennsylvanica)*, and Wood's ose *(Rosa woodsii)*, (Figure 4). uffaloberry *(Shepherdia argentea)* as very common in coulees and roughout the "badlands".

Three species unusual for southern askatchewan were collected from ck outcrops. Purple Cliff Brake *Pellaea glabella)*, reported south of e Missouri River in North Dakota Stevens (1950), at Lake Athasca and in the Flin Flon area by reitung (1957), and in Manitoba by oggan (1957), was collected from ndstone rock outcrops at the Marall Ranch in the lower Big Muddy alley (Figure 5) and near West eaver Creek. This suggests that it as moved up the northern tributaries of the Missouri River. It was reviously collected in the Big Muddy B. Boivin in July, 1954 (Duplicate Fraser Herbarium). Oregon Woodsia *(Woodsia oregana)* has been reorted in the Rocky Mountains, Cyress Hills, Drumheller, and Lake thabasca regions of Alberta by Moss 959); Breitung (1957) reported it Cypress Hills, Denare Beach and ake Athabasca in Saskatchewan; and tevens (1950) recorded it for North akota. This was also collected on the andstone outcrop at Marshall's anch, but it was previously collected ear Bullkin Lake by B. Boivin. inear-leaved Umbrellawort *(Miralis linearis)* was collected in the me locality and is not commonly und north of the International oundary.

The list which follows catalogues all the species collected in the Big Muddy Valley area. The scientific names are according to Scoggan (1957). Specimens have been added to the herbarium at University of Saskatchewan, Regina Campus, and duplicates are in the Fraser Herbarium, University of Saskatchewan, Saskatoon.

SPECIES LIST

EQUISETACEAE

Equisetum arvense L., *Equisetum laevigatum* A. Br.

SELAGINELLACEAE

Selaginella densa Rydb.

POLYPODIACEAE

Cystopteris fragilis (L.) Bernh., *Pellaea glabella* Mett., *Woodsia oregana* D.C. Eat.

PINACEAE

Juniperus communis L., *Juniperus horizontalis* Moench.

TYPHACEAE

Typha latifolia L.

SPARGANIACEAE

Sparganium multipedunculatum (Morong) Rydb.

JUNCAGINACEAE

Triglochin maritima L., *Triglochin palustris* L.

ALISMATACEAE

Alisma subcordatum Raf., *Alisma triviale* Pursh, *Sagittaria cuneata* Sheldon

GRAMINEAE

FESTUCEAE

Bromus porteri (Coult.) Nash, *Bromus inermis* Leyss., *Distichlis stricta* (Torr.) Rydb., *Glyceria grandis* Wats., *Poa arida* Vasey, *Poa canbyi* (Scribn.) Piper, *Poa compressa* L., *Poa cusickii* Vasey, *Poa palustris* L., *Poa pratensis* L., *Poa secunda* Presl, *Puccinellia nuttalliana* (Schult.) Hitchc.

HORDEAE

Agropyron cristatum (L.) Gaertn., *Agropyron repens* (L.) Beauv., *Agropyron smithii* Rydb., *Agropyron spicatum* (Pursh) Scribn. & Smith, *Agropyron trachycaulum* (Link) Malte, *Agropyron trachycaulum* (Link) Malte var. *glaucum* (P. & M.) Malte, *Agropyron trachycaulum* (Link) Malte var. *novae-angliae* (Scribn.) Fern., *Agro-*

pyron trachycaulum (Link) Malte var. *unilaterale* (Cassidy) Malte, *Elymus canadensis* L., *Elymus virginicus* L., *Hordeum jubatum* L., *Hordeum jubatum* L. var. *caespitosum* (Scribn.) Hitchc.

AVENEAE

Avena fatua L., *Koeleria cristata* (L.) Pers.

AGROSTIDEAE

Agrostis scabra Willd., *Calamagrostis inexpansa* A. Gray, *Calamagrostis montanensis* Scribn., *Calamovilfa longifolia* (Hook.) Scribn., *Muhlenbergia cuspidata* (Nutt.) Rydb., *Muhlenbergia racemosa* (Michx.) BSP., *Stipa comata* Trin. & Rupr., *Stipa viridula* Trin.

CHLORIDEAE

Beckmannia syzigachne (Steud.) Fern., *Bouteloua gracilis* (HBK.) Lag,. *Spartina gracilis* Trin.

ANDROPOGONEAE

Andropogon scoparius Michx.

PANICEAE

Echinochloa pungens (Poir.) Rydb. var *wiegandii* Fassett, *Setaria viridis* (L.) Beauv.

CYPERACEAE

Carex atherodes Spreng., *Carex backii* Boott, *Carex brevior* (Dew.) Mack., *Carex stenophylla* Wahl. var. *enervis* (Mey.) Kukenth., *Carex filifolia* Nutt., *Carex lanuginosa* Michx., *Carex parryana* Dew., *Carex praegracilis* Boott, *Carex rossii* Boott, *Carex sprengelii* Dew., *Carex xerantica* Bailey, *Eleocharis palustris* (L.) R. & S., *Scirpus acutus* Muhl., *Scirpus americanus* Pers., *Scirpus nevadensis* Wats., *Scirpus paludosus* Nels., *Scirpus validus* Vahl.

LEMNACEAE

Lemna minor L. (no specimen taken)

JUNCACEAE

Juncus balticus Willd. var. *littoralis* Engelm., *Juncus bufonius* L.

LILIACEAE

Allium textile Nels. & Macbr., *Disporum trachycarpum* (Wats.) B.&H., *Lilium philadelphicum* L. var. *andinum* (Nutt.) Ker, *Smilacina stellata* (L.) Desf., *Smilax herbacea* L. var *lasioneura* (Hook.) A. DC., *Zigadenus gramineus* Rydb.

SALICACEAE

Populus deltoides Marsh. var. *occidentalis* Rydb., x *Populus dutillyi* Lepage = *P. balsamifera* x *P. tremuloides*, *Populus tremuloides* Michx., *Salix amygdaloides* Anderss., *Salix bebbiana* Sarg., *Salix interior* Rowlee, *Salix petiolaris* Smith.

ULMACEAE

Ulmus americana L.

CANNABINACEAE

Humulus lupulus L.

URTICACEAE

Parietaria pensylvanica Muhl. *Urtica dioica* L. var. *procera* Wedd. (no specimen taken).

SANTALACEAE

Comandra pallida A. DC.

POLYGONACEAE

Eriogonum flavum Nutt., *Eriogonum multiceps* Nees, *Polygonum aviculare* L., *Polygonum coccineum* Muhl., *Polygonum convolvulus* L., *Polygonum lapathifolium* L. var. *salicifolium* Sibth., *Polygonum ramosissimum* Michx., *Rumex fennicus* Murb., *Rumex maritimus* L. var. *fueginus* (Phil.) Dusen., *Rumex mexicanus* Meisn. *Rumex occidentalis* Wats.

CHENOPODIACEAE

Atriplex argentea Nutt., *Atriplex nuttallii* Wats., *Atriplex patula* L. *Atriplex patula* L. var. *hastata* (L.) Gray, *Axyris amaranthoides* L., *Chenopodium album* L., *Chenopodium fremontii* Wats., *Chenopodium hybridum* L. var. *gigantospermum* (Aellen) Rouleau, *Chenopodium leptophyllum* Nutt. *Chenopodium strictum* Roth, *Endolepis suckleyi* Torr., *Eurotia lanata* (Pursh) Moq., *Kochia scoparia* (L.) Schrad. *Salicornia rubra* Nels., *Salsola kali* L. var. *tenuifolia* Tausch, *Sarcobatus vermiculatus* (Hook.) Torr., *Suaeda depressa* (Pursh) Wats.

AMARANTHACEAE

Amaranthus retroflexus L.

NYCTAGINACEAE

Mirabilis linearis (Pursh) Heimerl.

CARYOPHYLLACEAE

Cerastium arvense L., *Gypsophila aniculata* L., *Spergularia marina* L.) Griseb. var. *leiosperma* (Kindb.) urke, *Stellaria crassifolia* Ehrh., *tellaria longipes* Goldie.

RANUNCULACEAE

Anemone canadensis L., *Anemone atens* L. var. *wolfgangiana* (Bess.) och, *Clematis ligusticifolia* Nutt., *anunculus cymbalaria* Pursh, *Ranulus glaberrimus* Hook. var. *ellipticus* reene, *Ranunculus macounii* Britt., *anunculus sceleratus* L., *Ranunculus rcinatus* Sibth. var. *subrigidus* Drew) Benson.

PAPAVERACEAE

Corydalis aurea Willd.

CAPPARIDACEAE

Cleome serrulata Pursh.

CRUCIFERAE

Arabis divaricarpa, Nels., *Arabis lboellii* Hornem. var. *retrofracta* Graham) Rydb., *Armoracia lapathiolia* Gilib., *Brassica* kaber (DC) L. . Wheeler, *Capsella bursa-pastoris* L.) Medic., *Conringia orientalis* (L.) umort., *Descurainia pinnata* (Walt.) ritt. var. *brachycarpa* (Richards.) ern., *Descurainia richardsonii* Sweet) O. E. Schulz, *Descurainia phia* (L.) Webb, *Draba memorosa* ., *Erysimum asperum* (Nutt.) DC., *rysimum cheiranthoides* L., *Erysium conspicuum* (Wats.) MacM., *Hesperis matronalis* L., *Lepidium densiorum* Schrad., *Lesquerella alpina* Nutt.) Wats. var. *spathulata* (Rydb.) ayson, *Lesquerella ludoviciana* Nutt.) Wats., *Sisymbrium altissium L.*, *Thlaspi arvense* L.

SAXIFRAGACEAE

Ribes americanum Mill., *Ribes reum* Pursh, *Ribes oxyacanthoides*

ROSACEAE

Amelanchier alnifolia Nutt., *Chaaerhodos erecta* (L.) Bunge ssp. *uttallii* (Pickering) Hult., *Crataegus rotundifolia* Moench, *Geum aleppicum* Jacq. var. *strictum* (Ait.) Fern, *Geum triflorum* Pursh, *Potentilla anserina* L., *Potentilla arguta* Pursh, *Potentilla concinna* Richardson, *Potentilla fruiticosa* L., *Potentilla gracilis* Dougl., *Potentilla pensylvanica* L., *Potentilla pensylvanica* var. *bipinnatifida* (Dougl.) T. & G., *Potentilla plattensis* Nutt., *Prunus pensylvanica* L.f., *Prunus virginiana* L. var. *melanocarpa* (Nels.) Sarg., *Rosa arkansana* Porter, *Rosa woodsii* Lindl.

LEGUMINOSAE

Astragalus bisulcatus (Hook.) Gray, *Astragalus canadensis* L., *Astragalus flexuosus* Dougl., *Astragalus goniatus* Nutt., *Astragalus pectinatus* Dougl., *Astragalus striatus* Nutt., *Astragalus tenellus* Pursh, *Astragalus triphyllus* Pursh, *Caragana arborescens* Lam., *Glycyrrhiza lepidota* (Nutt.) Pursh, *Lotus purshianus* (Benth.) Clements & Clements, *Medicago falcata* L., *Medicago sativa* L., *Melilotus alba* Desr., *Melilotus officinalis* (L.) Lam., *Oxytropis sericea* Nutt. var. *spicata* (Hook.) Barneby, *Petalostemum candidum* (Willd.) Michx., *Petalostemum purpureum* (Vent.) Rydb., *Psoralea argophylla* Pursh, *Psoralea esculenta* Pursh, *Thermopsis rhombifolia* (Nutt.) Richards., *Vicia americana* var. *angustifolia* Nees.

LINACEAE

Linum lewisii Pursh, *Linum rigidum* Pursh.

POLYGALACEAE

Polygala alba Nutt.

EUPHORBIACEAE

Euphorbia glyptosperma Engelm.

ANACARDIACEAE

Rhus radicans L. var. *rydbergii* (Small) Rehd. (no specimen taken), *Rhus trilobata* Nutt.

ACERACEAE

Accr negundo L.

MALVACEAE

Sphaeralcea coccinea (Pursh) Rydb.

VIOLACEAE

Viola adunca Sm., *Viola nuttallii* Pursh, *Viola rugulosa* Greene.

LOASACEAE

Mentzelia decapetala (Pursh) Urban & Gilg.

CACTACEAE

Mamillaria vivipara (Nutt.) Haw., *Opuntia fragilis* (Nutt.) Haw., *Opuntia polyacantha* Haw.

ELAEAGNACEAE

Elaeagnus commutata Bernh., *Shepherdia argentea* Nutt., *Shepherdia canadensis* (L.) Nutt.

ONAGRACEAE

Epilobium glandulosum Lehm., *Epilobium leptophyllum* Raf., *Gaura coccinea* Pursh, *Oenothera biennis* L. var. *canescens* Torr. & Gray, *Oenothera caespitosa* Nutt.

HALORAGACEAE

Myriophyllum exalbescens Fern.

HIPPURIDACEAE

Hippuris vulgaris L.

UMBELLIFERAE

Cicuta douglasii (DC.) Coult. & Rose, *Lomatium foeniculaceum* (Nutt.) Coult. & Rose, *Musineon divaricatum* (Pursh) Nutt., *Sanicula marilandica* L., *Sium suave* Walt., *Zizia aptera* (Gray) Fern.

CORNACEAE

Cornus stolonifera Michx.

PYROLACEAE

Pyrola secunda L.

PRIMULACEAE

Androsace occidentalis Pursh, *Androsace septentrionalis* L., *Dodecatheon radicatum* Greene, *Steironema ciliatum* (L.) Raf.

OLEACEAE

Fraxinus pennsylvanica Marsh. var. *subintegerrima* (Vahl) Fern.

GENTIANACEAE

Gentiana affinis Griseb., *Gentiana amarella* L.

ASCLEPIADACEAE

Asclepias speciosa Torr.

CONVOLVULACEAE

Convolvulus arvensis L.

POLEMONIACEAE

Collomia linearis Nutt., *Phlox alyssifolia* Greene, *Phlox hoodii* Richards.

BORAGINACEAE

Cryptantha bradburiana Pays*, *Hackelia americana* (Gray) Fer*, *Heliotropium curassavicum* L. v*, *obovatum* DC., *Lappula echinata* Gili*, *Lappula redowskii* (Hornem.) Gree* var. *occidentalis* (Wats.) Rydb., *Lith* *spermum incisum* Lehm., *Merten* *lanceolata* (Pursh) DC.

LABIATAE

Agastache foeniculum (Purs* Ktze., *Lycopus asper* Greene, *Ment* *arvensis* L. var. *villosa* (Benth* Stewart, *Monarda fistulosa* L., *St* *chys palustris* L. var. *pilosa* (Nutt* Fern.

SOLANACEAE

Solanum triflorum Nutt.

SCROPHULARIACEAE

Castilleja sessiliflora Pursh, *Orth* *carpus luteus* Nutt., *Penstemon al* *dus* Nutt., *Penstemon nitidus* Doug*

PLANTAGINACEAE

Plantago elongata Pursh, *Planta* *eriopoda* Torr., *Plantago major* *Plantago purshii* R. & S.

RUBIACEAE

Galium septentrionale R. & S.

CAPRIFOLIACEAE

Symphoricarpos albus (L.) Blak* *Symphoricarpos occidentalis* Hook.

CAMPANULACEAE

Campanula rotundifolia L.

COMPOSITAE

Achillea lanulosa Nutt., *Agoser* *cuspidata* (Pursh) Raf., *Agoser* *glauca* (Nutt.) Greene, *Ambrosia art* *misiifolia* L. var. *elatior* (L.) Descou* tils, *Antennaria aprica* Greene, *Ante* *naria neglecta* Greene, *Antennar* *parvifolia* Nutt., *Arctium min* (Hill) Bernh., *Artemisia cana* Purs* *Artemisia caudata* Michx. var. *calve* Lunell, *Artemisia frigida* Willd., *Art* *misia glauca* Pall., *Artemisia long* *folia* Nutt., *Artemisia ludovicia* Nutt. var. *gnaphalodes* (Nutt.) T. G., *Aster brachyactis* Blake, *Ast* *canescens* Pursh, *Aster chilensis* Ne* ssp. *adscendens* (Lindl.) Cronq., *Ast*

lcatus Lindl., *Aster hesperius* Gray, *ster laevis* L. var. *geyeri* Gray, *Aster nsus* (Blake) Cronq., *Aster pauci-orus* Nutt., *Bidens cernua* L., *Chry-psis villosa* (Pursh) Nutt., *Chryso-amnus nauseosus* (Pall.) Britt., *Cir-um arvense* (L.) Scop., *Cirsium odmanii* (Rydb.) Arthur, *Cirsium ndulatum* (Nutt.) Spreng., *Crepis ncinata* (James) T. & G., *Crepis ncinata* (James) T. & G. subsp. *auca* (Nutt.) Babcock & Stebbins, *chinacea angustifolia* DC., *Erigeron sper* Nutt., *Erigeron caespitosus* utt., *Gaillardia aristata* Pursh, *Grin-elia squarrosa* (Pursh) Dunal var. *asiperennis* Lunell, *Gutierrezia saro-rae* (Pursh) Britt. & Rusby, *Haplo-appus lanceolatus* (Hook.) T. & G., *aplopappus spinulosus* (Pursh) DC., *elianthus annuus* L., *Helianthus etiflorus* Pers. var. *subrhomboideus* Rydb.) Fern., *Helianthus nuttallii* T. G., *Hymenopappus filifolius* Hook., *ymenoxys richardsonii* (Hook.) Cock-ell, *Iva axillaris* Pursh, *Iva xanthi-lia* Nutt., *Lactuca pulchella* (Pursh) C., *Lactuca scariola* L., *Liatris ligu-stylis* (Nels.) K. Schum., *Liatris unctate* Hook., *Lygodesmia juncea* Pursh) D. Don., *Ratibida columni-ra* (Nutt.) Woot. & Standl., *Senecio nus* Hook., *Senecio integerrimus* utt., *Solidago canadensis* L. var. *lvocanescens* Rydb., *Solidago gigan-a Ait. var. serotina* (Kuntze) Cronq., *lidago missouriensis* Nutt., *Solidago ollis* Bartl., *Solidago rigida* L., *Son-us arvensis* L., *Sonchus arvensis* L. ar. *glabrescens* Guenth., Grab., Vimm., *Sonchus asper* (L.) Hill, *anacetum vulgare* L., *Taraxacum rythrospermum* Andrz., *Taraxacum fficinale* Weber, *Tragopogon dubius* cop., *Townsendia exscapa* (Rich-rds.) Porter, *Xanthium strumarium* .

ummary

This paper lists 336 species of vas-lar plants in 61 different families und in 1968 in the Big Muddy gion. Some species were common nd abundant while others appeared be rare but in this preliminary study no attempt was made to evaluate relative abundance. It is hoped that much more information about the plants of this interesting area will be obtained. Voucher specimens for this study have been placed in the University herbaria in both Saskatoon and Regina. The collection in Regina will be kept as a separate unit for several years so that interested botanists can examine species reported in this paper and so that additions to the flora of the area may be easily made.

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