

A FLORISTIC INVENTORY OF A SAND HILLS AREA NEAR SASKATOON, SASKATCHEWAN

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As the last glacial ice retreated across Saskatchewan some 17,000 to 10,000 years ago, a number of glacial lakes formed along the ice front.¹ Sandy deltas originated where water flowed into these lakes. After the lakes disappeared, wind action modified the deltas into dune fields such as the Dundurn Sand Hills which originated along the southern shore of glacial Lake Saskatchewan that existed in the Saskatoon area 14,000 to 11,000 years ago.

Most of the Dundurn Sand Hills have been stabilized by vegetation though small areas still exist where wind erosion and deposition are altering landforms, particularly under disturbed conditions such as those incurred under heavy grazing in times of drought. The complex

mosaic of plant communities in the Dundurn Sand Hills reflects the physiographic pattern resulting from present and past geomorphic processes. Four major physiographic areas are present⁴: (i) active complexes where erosion and deposition still occur, (ii) stabilized blowouts (Figure 1) that are saucer-shaped depressions showing evidence of recent erosion but no erosion at present, (iii) stabilized dunes (Figure 2) which show characteristic dune forms but no evidence of recent erosion, and (iv) dune depressions which are located in stabilized dunes and are distinguished from blowouts in that they show no evidence of recent erosion.

This report summarizes the results of a detailed floristic inventory (1986-1988)



Figure 1. Stabilized blowout covered with mats of *Creeping Juniper*. B. Pylypec.



Figure 2. Stabilized dunes covered with Needle-and-thread, Pasture Sage, Plains Wormwood, Western Snowberry and Chokecherry. B. Pylypec.

in the Biddulph Natural Area (E½ 12-34-6-W3), a 121 ha tract of land 25 km south of Saskatoon owned by the University of Saskatchewan. Habitats present include the four physiographic areas mentioned above and dominated by stabilized dunes, a treed woodland along a spring-fed creek (Figure 3), a marsh meadow in a seepage area at the edge of the dunes (Figure 4), a small beaver pond and several small areas previously cultivated but now partly covered with native vegetation.

Active complexes characterized by drifting sand and sparse vegetation with deep roots and extensive rhizomes are uncommon in the Dundurn Sand Hills, though earlier air photographs (from 1944, for example) reveal these areas were more extensive in the past. Characteristic species of these areas include Prairie Sunflower, Skeletonweed, Lance-leaved Psoralea, Sand Grass, Indian Rice Grass and Northern Wheatgrass.³⁴ In the stabilized blowouts many of these pioneer species are replaced by Needle-and-thread, June Grass, Sun-loving Sedge, Hairy Golden-aster, Plains Wormwood and Creeping Juniper.

Stabilized dunes constitute the largest area within the Biddulph Natural Area. Xeric species such as Needle-and-thread, Blue Grama, Pasture Sage, Low Sedge, Thread-leaved Sedge, Pricklypear and Purple Prairie-clover are dominant plants. More mesic sites such as slight depressions and north-facing slopes of the dunes are characterized by Chokecherry, Saskatoon, Western Snowberry, Silverberry and Star-flowered Solomon's Seal.

Dune depressions are dominated by Sun-loving Sedge and Western Snowberry. On some sites Plains Rough Fescue and Western Porcupine Grass, usually found in finer-textured soils, are abundant.

The woodland areas are dominated by Trembling Aspen on the upland sites with Balsam Poplar occurring in lower and moister sites. White Birch and River Birch are present along seepage areas often between the two poplar zones. The understory is characterized by species occurring in aspen parklands, e.g., Saskatoon, Chokecherry, Red-osier Dogwood, High Bush-cranberry, Swamp Red Currant, Smooth Wild Strawberry,



Figure 3. Aspen dominated woodland along spring-fed creek. Needle-and-thread, Western Snowberry and roses in foreground. B. Pylypec.

Cream-coloured Vetchling and Western Canada Violet. Species uncommon elsewhere in similar habitats but relatively abundant here include the Western Red Wood Lily, Small Yellow Lady's-slipper, Green-flowered Bog Orchid and Western Jewelweed.

Species from a wide variety of wetland habitats are present in the Biddulph Natural Area. The small beaver pond has open water species, e.g., Lesser Duckweed, Ivy-leaved Duckweed, surrounded by coarse emergents, e.g., Common Cattail, Common Reed Grass, Tall Manna Grass and Smooth Beggarticks. The creek is lined with species associated with running water and wet meadows, e.g., Brook Grass, Water Sedge, Marsh-marigold, Water-parsnip and Snakeroot. Shallow marsh species are present in the marsh meadow area, e.g., Spangletop, Reed Canary Grass, Silverweed, Mountain Sneezeweed, Beaked Willow and Basket Willow.

Several artificially disturbed areas are examples of secondary plant succession. A borrow pit excavated in 1967 for construction of Highway 219 is now covered with White and Yellow Sweet-clovers (in-

troduced), as well as the native pioneer species, Sand Grass. Areas previously cropped by R.C. Biddulph and then seeded to tame forages (Smooth Brome and Crested Wheatgrass) in 1954 and 1955 now also include native species such as Needle-and-thread, Northern Wheatgrass, Western Snowberry, Wood's Rose and Creeping Juniper.

A total of 267 species have been recorded in the Biddulph Natural Area. Voucher specimens have been placed in the W.P. Fraser Herbarium at the University of Saskatchewan.

The wide variety of plant communities represented in this relatively small area, ranging from sparse xeric vegetation on south-facing slopes to mesic woodlands and wetlands, makes this dune area good wildlife habitat. Often areas such as the Biddulph Natural Area are especially valuable since they are surrounded by intensively cultivated agricultural lands. Early man valued these sandy areas, and many of them have numerous interesting archaeological sites.^{2,5} Other sand dune areas are scattered throughout the province from the Lake Athabasca Dunes in the north with distinctive



Figure 4. Marsh meadow in seepage area. Sedges and Reed Canary Grass in foreground; willows, Balsam Poplar and Trembling Aspen in background. B. Pylypec.

endemic plants⁵ to the Great Sand Hills of the southwest. The vegetation of the Biddulph Natural Area resembles the Beaver Creek and Cranberry Flats sites located 10-15 km to the north.

Sand dune areas are exposed to increasingly greater use for consumptive and non-consumptive recreational purposes, cattle grazing and resource extraction, e.g., minerals, oil and gas. Heavy grazing by cattle has a dramatic effect on the plant species composition, leading to decreases in grasses such as Needle-and-thread and increases in Blue Grama, sedges and Prairie Selaginella. Activities such as trampling, all-terrain vehicle use (Figure 5) and grazing can quickly reduce these diverse environments to a simple surface of drifting sand.^{2,3} The preservation and careful management of these areas often regarded as wastelands by the general public needs to be recognized.

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Figure 5. Motocross cycling in Dundurn Sand Hills. J.T. Romo.

- ¹ CHRISTIANSEN, E.A. 1979. The Wisconsinan deglaciation of southern Saskatchewan and adjacent areas. *Can. J. Earth Sci.* 16: 913-938.
- ² EPP, H.T. and L. TOWNLEY-SMITH. 1980. The Great Sand Hills of Saskatchewan. Sask. Dept. of Environment, Regina. 156 pp.
- ³ HEATH, J.Y. 1981. The impact of recreational trampling and vehicular traffic on sandhill communities. M.Sc. thesis, University of Saskatchewan, Saskatoon. 174 pp.
- ⁴ HULETT, G.K., R.T. COUPLAND and R.L. DIX. 1966. The vegetation of dune sand areas within the grassland region of Saskatchewan. *Can. J. Bot.* 44: 1307-1331.
- ⁵ ROWE, J.S. and Z.M. ABOUGUENDIA. 1982. The Lake Athabasca Sand Dunes of Saskatchewan: A unique area. *The Musk-Ox* 30: 1-22.

CHECKLIST OF THE VASCULAR FLORA OF THE BIDDULPH NATURAL AREA

PTERIDOPHYTA - Ferns and fern allies

EQUISETACEAE - Horsetail family

- Equisetum arvense* L. - Common horsetail
Equisetum hyemale L. var. *affine* (Engelm.)
 A.A. Eaton - Common scouring-rush
Equisetum laevigatum A.Br. - Smooth
 scouring-rush

SELAGINELLACEAE - Spike-moss family

- Selaginella densa* Rydb. - Prairie selaginella

SPERMATOPHYTA - Seed-bearing plants

GYMNOSPERMAE - Conifers

CUPRESSACEAE - Cypress family

- Juniperus communis* L. - Low juniper
Juniperus horizontalis Moench - Creeping
 juniper

ANGIOSPERMAE - Flowering plants

MONOCOTYLEDONAE - Monocotyledons

TYPHACEAE - Cattail family

- Typha latifolia* L. - Common cattail

SPARGANIACEAE - Bur-reed family

- Sparganium* sp. - Bur-reed

ALISMACEAE - Water-plantain family

- Alisma plantago-aquatica* L. - Common
 water-plantain

POACEAE - Grass family

- Agropyron albicans* Scribn. & Smith -
 Awned northern wheatgrass
Agropyron dasystachyum (Hook.)
 Scribn. var. *dasystachyum* - North-
 ern wheatgrass

- Agropyron dasystachyum* (Hook.)
 Scribn. var. *riparium* (Scribn. &
 Smith) Bowden - Streambank wheat-
 grass

- Agropyron pectiniforme* Roem. &
 Schult. - Crested wheatgrass

- Agropyron repens* (L.) Beauv. - Quack
 grass

- Agropyron subsecundum* (Link)
 Hitchc. - Awned wheatgrass

- Agrostis exarata* Trin. - Spike redtop
Agrostis scabra Willd. - Rough hair
 grass

- Beckmannia syzigachne* (Steud.) Fern.
 - Slough grass

- Bouteloua gracilis* (HBK.) Lag. - Blue
 grama

- Bromus ciliatus* L. - Fringed brome
Bromus inermis Leyss. - Smooth brome

- Calamagrostis canadensis* (Michx.)
 Beauv. - Marsh reed grass

- Calamovilfa longifolia* (Hook.) Scribn.
 - Sand grass

- Catabrosa aquatica* (L.) Beauv. - Brook
 grass

- Elymus canadensis* L. - Canada wild rye
Festuca altaica Trin. ssp. *hallii* (Vasey)

- Harms - Plains rough fescue
Festuca ovina L. - Sheep Fescue

- Glyceria grandis* S. Wats. - Tall manna
 grass

- Glyceria striata* (Lam.) Hitchc. - Fowl
 manna grass

- Helictotrichon hookeri* (Scribn.) Henr.
 - Hooker's oat grass

- Hordeum jubatum* L. - Wild barley
Koeleria cristata (L.) Pers. - June grass

- Muhlenbergia richardsonis* (Trin.)
 Rydb. - Mat muhly

- Oryzopsis asperifolia* Michx. - White-
 grained mountain rice grass

- Oryzopsis hymenoides* (Roem. &
 Schult.) Ricker - Indian rice grass

Phalaris arundinacea L. - Reed canary grass

Phragmites communis Trin. - Common reed grass

Poa canbyi (Scribn.) Piper - Canby blue grass

Poa cusickii Vasey - Early blue grass

Poa interior Rydb. - Wood blue grass

Poa pratensis L. - Kentucky blue grass

Poa sandbergii Vasey - Sandberg's blue grass

Schizachne purpurascens (Torr.) Swallen - Purple oat grass

Schizachyrium scoparium (Michx.) Nash - Little bluestem

Scolochloa festucacea (Willd.) Link - Spangletop

Sporobolus cryptandrus (Torr.) A. Gray - Sand dropseed

Stipa comata Trin. & Rupr. - Needle-and-thread

Stipa curtisetata (A.S. Hitchc.) Barkworth - Western porcupine grass

Stipa viridula Trin. - Green needle grass

CYPERACEAE - Sedge family

Carex aquatilis Vahl. - Water sedge

Carex eleocharis Bailey - Low sedge

Carex filifolia Nutt. - Thread-leaved sedge

Carex hystericina Muhl. - Porcupine sedge

Carex obtusata Lilj. - Blunt sedge

Carex pensylvanica Lam. var. *digyna* Boeckl. - Sun-loving sedge

Carex rostrata Stokes - Beaked sedge

Carex sartwellii Dewey - Sartwell's sedge

Carex siccata Dewey - Hay sedge

Carex sprengei Dewey - Sprengel's sedge

Carex stipata Muhl. - Awl-fruited sedge

Scirpus microcarpus Pers. - Small-fruited bulrush

Scirpus validus Vahl - Great bulrush

LEMNACEAE - Duckweed family

Lemna minor L. - Lesser duckweed

Lemna trisulca L. - Ivy-leaved duckweed

JUNCACEAE - Rush family

Juncus balticus Willd. - Baltic rush

LILIACEAE - Lily family

Allium textile Nels. & Macbr. - Prairie onion

Asparagus officinalis L. - Asparagus

Disporum trachycarpum (S. Wats.) Benth. & Hook. - Fairybells

Lilium philadelphicum L. var. *andinum* (Nutt.) Ker. - Western red wood lily

Maianthemum canadense Desf. var. *interius* Fern. - Two-leaved Solomon's seal

Smilacina stellata (L.) Desf. - Star-flowered Solomon's seal

Smilax lasioneuron Hook. - Carrion-flower

IRIDACEAE - Iris family

Sisyrinchium montanum Greene - Common blue-eyed grass

ORCHIDACEAE - Orchid family

Cypripedium calceolus L. var. *parviflorum* (Salisb.) Fern. - Small yellow lady's-slipper

Platanthera hyperborea (L.) Lindl. - Green-flowered bog orchid

DICOTYLEDONAE - Dicotyledons

SALICACEAE - Willow family

Populus balsamifera L. - Balsam poplar
Populus tremuloides Michx. - Trembling aspen

Salix bebbiana Sarg. - Beaked willow
Salix exigua Nutt. ssp. *interior* (Rowlee)

Cronq. - Sandbar willow

Salix lutea Nutt. - Yellow willow

Salix petiolaris J.E. Smith - Basket willow

BETULACEAE - Birch family

Betula glandulifera (Regel) Butler - Swamp birch

Betula occidentalis Hook. - River birch

Betula papyrifera Marsh. - White birch

URTICACEAE - Nettle family

Urtica dioica L. var. *procera* (Muhl.) Wedd. - Stinging nettle

SANTALACEAE - Sandalwood family

Comandra umbellata (L.) Nutt. var. *palida* (DC.) M.E. Jones - Pale comandra

POLYGONACEAE - Buckwheat family

Polygonum amphibium L. var. *stipulaceum* (Coleman) Fern. - Water smartweed

Polygonum aviculare L. - Doorweed

Polygonum convolvulus L. - Wild buckwheat

Rumex occidentalis S. Wats. - Western dock

CHENOPODIACEAE - Goosefoot family

Axyris amaranthoides L. - Russian pigweed

Chenopodium album L. - Lamb's-quarters

Chenopodium pratericola Rydb. - Narrow-leaved goosefoot

Corispermum orientale Lam. var. *emarginatum* (Rydb.) Macbr. - Villose bugseed

- Salsola kali* L. var. *tenuifolia* Tausch. - Russian thistle
- NYCTAGINACEAE** - Four o'clock family
Mirabilis hirsuta (Pursh) MacM. var. *hirsuta* - Hairy umbrellawort
- CARYOPHYLLACEAE** - Pink family
Cerastium arvense L. - Field chickweed
Stellaria longifolia Muhl. - Long-leaved stitchwort
Stellaria longipes Goldie - Long-stalked stitchwort
- RANUNCULACEAE** - Crowfoot family
Actaea rubra (Ait.) Willd. forma *neglecta* (Gilman) Robins - White baneberry
Actaea rubra (Ait.) Willd. forma *rubra* - Red baneberry
Anemone canadensis L. - Canada anemone
Anemone patens L. var. *wolfgangiana* (Bess.) Koch - Crocus anemone
Anemone riparia Fern. - Tall anemone
Caltha palustris L. - Marsh-marigold
Ranunculus glaberimus Hook. - Shiny-leaved buttercup
Ranunculus macounii Britt. - Macoun's buttercup
Ranunculus scleratus L. - Celery-leaved buttercup
Thalictrum venulosum Trel. - Veiny meadow-rue
- BRASSICACEAE** - Mustard family
Arabis hirsuta (L.) Scop. var. *pycnocarpa* (Hopkins) Rollins - Hirsute rock cress
Arabis holboellii Hornem. var. *retrofracta* (Graham) Rydb. - Reflexed rock cress
Descurainia pinnata (Walt.) Britt. var. *brachycarpa* (Richards.) Fern. - Short-fruited tansy mustard
Descurainia sophia (L.) Webb. - Flixweed
Erysimum asperum (Nutt.) DC. - Western wallflower
Erysimum cheiranthoides L. - Wormseed mustard
Lepidium densiflorum Schrad. - Common pepper-grass
Lesquerella arenosa (Richards.) Rydb. - Sand bladderpod
Rorippa palustris (L.) Besser var. *fernaldiana* (Butters) Stuckey - Marsh yellow cress
Thlaspi arvense L. - Stinkweed
- SAXIFRAGACEAE** - Saxifrage family
Heuchera richardsonii R. Br. - Alumroot
Parnassia palustris L. var. *tenuis* Wahl. - Northern grass-of-parnassus

- GROSSULARIACEAE** - Currant family
Ribes hudsonianum Richards. - Northern black currant
Ribes oxycanthoides L. - Northern gooseberry
Ribes triste Pall. - Swamp red currant
- ROSACEAE** - Rose family
Amelanchier alnifolia Nutt. - Saskatoon
Crataegus chrysoarpa Ashe - Round-leaved hawthorn
Fragaria virginiana Dcne. ssp. *glauca* (S. Wats.) Staudt - Smooth wild strawberry
Geum aleppicum Jacq. - Yellow avens
Geum triflorum Pursh - Three-flowered avens
Potentilla anserina L. - Silverweed
Potentilla arguta Pursh - White cinquefoil
Potentilla norvegica L. ssp. *monspeliensis* (L.) Asch. & Graebn. - Rough cinquefoil
Potentilla pensylvanica L. var. *atrovirens* (Rydb.) T. Wolf - Prairie cinquefoil
Potentilla pensylvanica L. var. *pensylvanica* - Prairie cinquefoil
Potentilla rivalis Nutt. - Brook cinquefoil
Prunus pensylvanica L.f. - Pincherry
Prunus virginiana L. - Chokecherry
Rosa acicularis Lindl. - Prickly rose
 **Rosa arkansana* Porter - Low prairie rose
Rosa woodsii Lindl. var. *fendleri* (Crepin) Rydb. - Wood's rose
Rosa woodsii Lindl. var. *terrens* (Lunnell) Breitung - Wood's rose
Rosa woodsii Lindl. x *Rosa acicularis* Lindl. - "Hybrid" rose
Rubus idaeus L. var. *strigosus* (Michx.) Maxim - Wild red raspberry
Rubus pubescens Raf. - Dewberry
Spiraea alba Du Roi - Narrow-leaved meadowsweet
- FABACEAE** - Legume family
Astragalus adsurgens Hook. - Ascending purple milk-vetch
Astragalus agrestis Dougl. - Purple milk-vetch
Caragana arborescens Lam. - Common caragana
Glycyrrhiza lepidota (Nutt.) Pursh - Wild licorice
Lathyrus ochroleucus Hook. - Cream-coloured vetchling
Lathyrus venosus Muhl. - Wild peavine
Medicago sativa L. - Alfalfa
Melilotus alba Medic. - White sweet-clover
Melilotus officinalis (L.) Pall. - Yellow sweet-clover

Oxytropis campestris (L.) DC. var. -
gracilis - Late yellow locoweed
Oxytropis sericea Nutt. var. *spicata*
(Hook.) Barneby - Early yellow
locoweed
Petalostemon purpureum (Vent.)
Rydb. - Purple prairie-clover
Psoralea argophylla Pursh - Silverleaf
psoralea
Psoralea esculenta Pursh - Indian
breadroot
Psoralea lanceolata Pursh - Lance-
leaved psoralea
Thermopsis rhombifolia (Nutt.)
Richardson - Golden-bean
Vicia americana Muhl. var. *americana*
- American vetch
Vicia americana Muhl. var. *angustifolia*
Nees - Narrow-leaved vetch

LINACEAE - Flax family

Linum lewisii Pursh - Lewis wild flax
Linum rigidum Pursh - Large-flowered
yellow flax

BALSAMINACEAE - Touch-me-not family

Impatiens noli-tangere L. - Western
jewelweed

ANACARDIACEAE - Sumach family

Rhus radicans L. var. *rydbergii* (Small)
Rehder - Poison-ivy

ACERACEAE - Maple family

Acer negundo L. - Manitoba maple

RHAMNACEAE - Buckthorn family

Rhamnus alnifolia L'Her. - Alder-leaved
buckthorn

VIOLACEAE - Violet family

Viola adunca J.E. Smith - Early blue vio-
let
Viola nephrophylla Greene - Northern
bog violet
Viola nuttallii Pursh - Nuttall's yellow
violet
Viola rugulosa Greene - Western
Canada violet

OPUNTIACEAE - Cactus family

Coryphantha vivipara (Nutt.) Britt. &
Rose - Ball cactus
Opuntia fragilis (Nutt.) Haw. - Brittle-
prickly pear
Opuntia polyacantha Haw. - Prickly-
pear

ELAEOGNACEAE - Oleaster family

Elaeagnus commutata Bernh. - Silver-
berry
Shepherdia argentea Nutt. - Buffalo-
berry

OENOTHERACEAE - Evening-primrose
family

Epilobium ciliatum Raf. - Northern wil-
lowherb
Gaura coccinea Pursh - Scarlet gaura
Oenothera nuttallii Sweet - White eve-
ning-primrose
Oenothera serrulata Nutt. - Shrubby
evening-primrose

ARALIACEAE - Ginseng family

Aralia nudicaulis L. - Wild sarsaparilla

APIACEAE - Parsley family

Cicuta maculata L. var. *angustifolia*
Hook. - Water-hemlock
* *Cymopterus acaulis* (Pursh) Raf. - Plains
cymopterus
Osmorhiza longistylis (Torr.) DC. -
Smooth sweet cicely
Sanicula marilandica L. - Snakeroot
Sium suave Walt. - Water-parsnip
Zizia aptera (Gray) Fern. - Heart-leaved
alexanders

CORNACEAE - Dogwood family

Cornus canadensis L. - Bunchberry
Cornus sericea L. ssp. *stolonifera*
(Michx.) Fosberg - Red osier dog-
wood

PYROLACEAE - Wintergreen family

Pyrola asarifolia Michx. - Pink winter-
green

ERICACEAE - Heath family

Arctostaphylos uva-ursi (L.) Spreng. -
Bearberry

PRIMULACEAE - Primrose family

Androsace septentrionalis L. - Pygmy-
flower
Lysimachia ciliata L. - Fringed loose-
strife
Lysimachia thyrsoiflora L. - Tufted loose-
strife

OLEACEAE - Olive family

Fraxinus pennsylvanica Marsh. var.
subintegerrima (Vahl.) Fern. - Green
ash

APOCYNACEAE - Dogbane family

Apocynum androsaemifolium L. var.
incanum DC. - Spreading dogbane

ASCLEPIADACEAE - Milkweed family

Asclepias ovalifolia Dcne. - Dwarf
milkweed
Asclepias viridiflora Raf. var. *linearis* (A.
Gray) Fern. - Green milkweed
Asclepias viridiflora Raf. var. *oborata*
(Ell.) Torrey - Green milkweed

POLEMONIACEAE - Phlox family
Phlox hoodii Richardson - Moss phlox

BORAGINACEAE - Borage family
Hackelia deflexa (Wahlenb.) Opiz. var. *americana* (Gray) Fern. & I.M. Johnston - Nodding stickseed
Lappula redowskii (Hornem.) Greene - Western blue bur
Lithospermum incisum Lehm. - Narrow-leaved puccion

LAMIACEAE - Mint family
Mentha arvensis L. - Field mint
Monarda fistulosa L. - Wild bergamot
Scutellaria galericulata L. - Marsh skullcap
Stachys palustris L. var. *pilosa* (Nutt.) Fern. - Marsh hedge-nettle

SCROPHULARIACEAE - Figwort family
Penstemon gracilis Nutt. - Lilac-flowered beardtongue
Penstemon nitidus Dougl. - Smooth blue beardtongue
Veronica americana (Raf.) Schwein. - American speedwell
* *Veronica catenata* Pennell - Water speedwell
Veronica scutellata L. - Marsh speedwell

OROBANCHACEAE - Broom-rape family
Orobanche ludoviciana Nutt. - Louisiana broom-rape

PLANTAGINACEAE - Plantain family
Plantago major L. - Common plantain

RUBIACEAE - Madder family
Galium boreale L. - Northern bedstraw
* *Galium trifidum* L. - Small bedstraw
Galium triflorum Michx. - Sweet-scented bedstraw

CAPRIFOLIACEAE - Honeysuckle family
Linnaea borealis L. ssp. *americana* (Forbes) Hulten - Twinflower
Lonicera dioica L. var. *glaucescens* (Rydb.) Butters. - Twining honeysuckle
Symphoricarpos albus (L.) Blake - White snowberry
Symphoricarpos occidentalis Hook. - Western snowberry
Viburnum edule (Michx.) Raf. - Low bush-cranberry
Viburnum opulus L. ssp. *trilobum* Marsh. - High bush-cranberry

CAMPANULACEAE - Bluebell family
Campanula rotundifolia L. - Harebell

ASTERACEAE - Composite family
Achillea lanulosa Nutt. - Common yarrow
Agoseris glauca (Pursh) Raf. - False dandelion
Antennaria aprica Greene - Low everlasting
Artemisia biennis Willd. - Biennial wormwood
Artemisia campestris L. - Plains wormwood
Artemisia frigida Willd. - Pasture sage
Artemisia ludoviciana Nutt. var. *gnaphalodes* (Nutt.) T.&G. - Slender sage
Aster ericoides L. ssp. *pansus* (Blake) A.G. Jones - Many-flowered aster
Aster hesperius A. Gray - Willow aster
Aster laevis L. ssp. *geyeri* A. Gray - Smooth aster
Bidens cernua L. - Smooth beggarticks
Carduus nutans L. - Nodding thistle
Cirsium arvense (L.) Scop. - Canada thistle
Cirsium flodmanii (Rydb.) Arthur - Flodman's thistle
Crepis tectorum L. - Narrow-leaved hawk's-beard
Erigeron asper Nutt. - Rough fleabane
Erigeron caespitosus Nutt. - Tufted fleabane
Erigeron philadelphicus L. - Philadelphia fleabane
Gaillardia aristata Pursh - Great-flowered gaillardia
Grindelia squarrosa (Pursh) Dunal - Gumweed
Gutierrezia sarothrae (Pursh) Britt. & Rusby - Common broomweed
Helenium autumnale L. - Mountain sneezeweed
Helianthus laetiflorus Pers. var. *sub-rhomboides* (Rydb.) Fern. - Beautiful sunflower
Helianthus petiolaris Nutt. - Prairie sunflower
Heterotheca villosa (Pursh) Shinnery - Hairy golden-aster
Hieracium umbellatum L. - Canada hawkweed
Lactuca pulchella (Pursh) DC. - Blue lettuce
Liatriis punctata Hook. - Dotted blazingstar
Lygodesmia juncea (Pursh) D. Don - Skeletonweed
Petasites frigidus (L.) Fries var. *nivalis* (Greene) Cronq. - Vine-leaved colt's-foot
Petasites sagittatus (Pursh) A. Gray - Arrow-leaved colt's foot
Prenanthes racemosa Michx. - Glaucous white lettuce

Senecio canus Hook. - Silvery groundsel
Senecio integerrimus Nutt. var. *integerrimus* - Entire-leaved groundsel
Solidago canadensis L. var. *gilvocanescens* Rydb. - Canescent goldenrod
Solidago gigantea Ait. var. *serotina* (Ait.) Cronq. - Late goldenrod
Solidago missouriensis Nutt. - Low goldenrod
Solidago nemoralis Ait. var. *longipetiolata* (Mack. & Bush) - Showy goldenrod
Solidago spathulata DC. var. *neomexicana* (Rydb.) Cronq. - Mountain goldenrod

Sonchus arvensis L. - Perennial sow-histle
Taraxacum officinale Weber - Common dandelion
Townsendia exscapa (Rich.) Porter - Low townsendia
Tragopogon dubius Scop. - Yellow goat's-beard

*Voucher specimens in W.P. Fraser Herbarium collected by earlier investigators.

A SELECTED, ANNOTATED BIBLIOGRAPHY FOR SASKATCHEWAN BUTTERFLY WATCHERS

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The first part of this article (10 titles) is intended to help Saskatchewan butterfly watchers decide which identification guides will help them most to determine what butterflies they are seeing or catching. Most of these books also treat the ecology of each species, in varying detail. As with bird guides, the more butterfly books one has, the better the chance of identifying the more difficult species. The second part (five titles) deals with butterfly watching and biology in general. Prices are approximate and sometimes vary from store to store; all are available from the Blue Jay Bookshop.



Monarch

Gary Seib