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THE TYPE COLLECTION OF THE W. P. FRASER HERBARIUM (SASK) OF THE UNIVERSITY OF SASKATCHEWAN

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RESUMEN

La colección del herbario W. P. Fraser (SASK) de la Universidad de Saskatchewan se encuentra entre los 15 principales herbarios de Canadá. A la fecha, la colección del herbario contiene aproximadamente 164000 ejemplares, incluyendo líquenes, plantas no vasculares y plantas vasculares. Uno de los objetivos principales de esta institución está enfocado al desarrollo de las colecciones botánicas, inventarios florísticos, así como estudios de biodiversidad y taxonómico-sistemáticos con énfasis en la flora nativa de la provincia de Saskatchewan. En este artículo proporcionamos una lista detallada de los ejemplares tipo con el objeto de difundir el importante acervo botánico a la comunidad latinoamericana. Nuestra lista incluye nombres científicos, autoridades taxonómicas, así como las citas bibliográficas originales en las cuales se publicaron los nombres científicos, mismos que se encuentran en la biblioteca de SASK. Las imágenes digitales de los ejemplares tipo se encuentran disponibles en el herbario y en: http://www.usask.ca/agriculture/plantsci/herbarium/types.shtml.

La colección tipo de SASK incluye dos ejemplares tipos de líquenes y 45 ejemplares de tipos de plantas vasculares. Con la excepción de cuatro ejemplares tipo, el resto de la colección tipo de SASK corresponde a plantas nativas de Canadá. La lista de ejemplares tipo está organizada alfabéticamente por familia y género, y a su vez dividida en los principales grupos vegetales, tal como: líquenes, pteridofitas, y antofitas (gimnospermas y angiospermas).

El Herbario W. P. Fraser tiene dos objetivos primarios: 1) contribuir al conocimiento de la biodiversidad y plantas raras de la provincia de Saskatchewan y 2) proporcionar educación pública destinada al entendimiento tanto de la flora local como regional, patrones de rareza, extirpación y

extinción de especies vegetales, así como crear conciencia del papel primordial de las colecciones botánicas en educación y estudios de biodiversidad. La colección del herbario SASK contiene una gran diversidad de plantas representativas de Canadá. Aunque nos especializamos en flora de Saskatchewan, nuestra colección cuenta también con plantas representativas de las provincias de Alberta, Manitoba y Northwest Territories. Nuestro herbario está en vías de enriquecer la colección a nivel mundial y está en disposición de establecer intercambio de ejemplares de herbario con instituciones interesadas en obtener plantas de Canadá.

En los dos últimos años, el herbario SASK ha tenido varias modificaciones para modernizar la infraestructura con el objeto de implementar una colección digital, así como una base de datos para distribuir información botánica a distancia. Esta base de datos está basada en el programa Specify4. Asimismo, el sitio de Internet de SASK incluye información valiosa con respecto a la biodiversidad vegetal de Saskatchewan. En este sitio se encuentran disponibles listas florísticas de plantas nativas raras a nivel provincial y nacional. Nuestro sitio contiene además claves interactivas para la identificación de especies de las familias de plantas vasculares de Saskatchewan. Asimismo, nuestro sitio de Internet cuenta con detalladas claves para la identificación de las cactáceas de la provincia. Estas claves son muy útiles para los cursos de botánica que se imparten en nuestra institución.

Finalmente, a finales de 2003, nuestro sito de Internet lanzó el Herbario Virtual, cuyo objetivo es establecer puentes educativos a distancia entre la Universidad de Saskatchewan y el público que no tiene capacidad de asistir a la Universidad. En general, el Herbario Virtual hace que el material esté al alcance del mundo, y se espera que la colección entera se encuentre disponible en el Internet a finales de 2005.

Palabras Clave: Ejemplar tipo, colección tipo, Herbario W. P. Fraser, SASK, colecciones botánicas, sistemática, biodiversidad.

ABSTRACT

With nearly 164000 specimens, the W. P. Fraser Herbarium (SASK) ranks among the top 15 major herbaria in Canada. SASK is involved in the development of botanical collections, floristic inventories, taxonomic, systematic and biodiversity studies in Saskatchewan and specializes primarily in the province's native flora. In this paper an annotated list of the type specimens, scientific names, taxonomic authorities, protologue citations and collection data is provided. Digital images of the type specimens are available at: http://www.usask.ca/agriculture/plantsci/herbarium/types.shtml.

Key words: Type specimen, type collection, W. P. Fraser Herbarium, SASK, botanical collections, systematics, biodiversity.

INTRODUCTION

Herbaria throughout the world are a major source of biological information and catalogue a vast proportion (ca. 90%) of the earth's plant diversity. These institutions guard permanent records of

plants, which in many cases are no longer available in natural habitats, and provide an invaluable source of the past and current distribution of plant species. Type specimens, in turn, represent a basic permanent reference associated with biological entities. In general, type specimens are valuable because they provide a fundamental basis for systematic, taxonomic, floristic, and biodiversity studies.

In addition for making available the type collections hosted at the W. P. Fraser Herbarium (SASK) of the University of Saskatchewan (U of S), the goals of this paper are to: 1) provide a general overview of SASK, 2) create awareness via a written reference of the type collection represented at SASK, and 3) promote understanding and awareness of the importance of biological collections in systematic and biodiversity studies.

GENERAL INFORMATION ABOUT THE W. P. FRASER HERBARIUM

In 1925 William P. Fraser (after whom the herbarium has been named) became the first curator of SASK. He maintained his accumulated collections in the Biology Department until his death in 1943, six years after his retirement. In 1954, Robert T. Coupland became the second curator at SASK and rescued the Fraser collection after a decade of virtual neglect. The Fraser collection was then transferred to the Department of Plant Ecology in the College of Agriculture. In the 1960s the Fraser collections and Coupland's plant ecology collections became fully merged, and the institution was officially recognized as «The W. P. Fraser Herbarium of Vascular Plants» from which the acronym SASK was officially registered and recognized in the Index Herbariorum. In 1961, George W. Argus became curator, and in 1969 Vernon L. Harms took over the position and remained curator until his retirement in 1997. In July 2000, Hugo Cota-Sánchez became the curator of SASK, position which he holds up to the present time.

The mission of the W. P. Fraser Herbarium is twofold: 1) to contribute to the knowledge of biodiversity and rare plants in Saskatchewan and 2) to provide public education aimed at understanding local and regional flora, patterns of rarity, extirpation and extinction of species as well as creating awareness of the role of systematic collections in education. The herbarium collection at SASK hosts a wide diversity of plants representative from all over Canada. While specializing primarily in the flora of Saskatchewan, plants from Alberta, Manitoba and the Northwest Territories are also well represented. During the past two years, the herbarium has been making major changes to modernize its infrastructure by developing digital collections and utilizing software, such as Specify4. The SASK website includes a large amount of information regarding Saskatchewan plant biodiversity. In this site, a checklist of the provincially and nationally rare native plants is available, along with interactive keys for the cacti of Saskatchewan and supporting material for botany courses. Finally, in late 2003 the website launched the Virtual Herbarium. The online delivery of the Virtual Herbarium has been instrumental in building bridges and developing a shared vision for distance education between the U of S and general public who are unable to attend university.

In 2001, SASK continued its ranking as the 15th largest herbarium in Canada since 1990 based on total holdings (Holmgren *et al.*, 1990a, 1990b). During the last two years, the activities at SASK have increased, which is manifested in a substantial growth in the total holdings of vascular plants. In terms of total holdings, SASK is at present the 11th or 12th largest herbarium in Canada and is the 4th or 5th largest herbarium in Western Canada (UAC's current holdings remain unreported). In terms of vascular plant holdings, SASK ranks 10th or 11th in Canadian herbaria, and ranks 3rd or 4th in Western Canada (again, depending on UAC's unreported holdings).

The following is an annotated list of the type specimens available at SASK. The type collection includes two type specimens of lichens and 45 type specimens of vascular plants. With the exception of four type specimens, the remaining specimens of the type collection hosted in the institution represent Canadian plants. All entries in the list are arranged alphabetically and by major plants groups: lichens, pteridophytes, and angiosperms. For each type specimen, information is provided regarding the scientific name, followed by the taxonomic authority(ies), bibliographic reference where the taxon was originally described, country and province of origin of the specimen, collector(s) name(s) and number, date of collection, and type of the specimen. Digital pictures of the type specimens can be seen in the web page of the W. P. Fraser Herbarium (http://www.usask.ca/agriculture/plantsci/herbarium/types.shtml).

LICHENS

Hypocenomyce oligospora Timdal
Timdal E., *Mycotaxon*, 77: 446. 2001.
U.S.A.: Arizona. *T. H. Nash III 42735a*. March 14, 1999,
ISOTYPE.

Physcia solistella Essl.
Esslinger T. L. and R. S. Egan, *The Bryologist*, 99 (3): 334. 1996.
U.S.A: Texas. *T. L. Esslinger 12580*. December 31, 1992,
ISOTYPE.

PTERIDOPHYTA

Lycopodiaceae

Lycopodium complanatum L. var. *gartonis* B. Boivin
Boivin B., *Le Naturaliste Canadien*, 87: 39. 1960.
Canada: Saskatchewan. *B. Boivin & A. J. Breitung 6126*. June 21, 1949,
PARATYPE.

Lycopodium complanatum L. var. *gartonis* B. Boivin
Boivin B., *Le Naturaliste Canadien*, 87: 39. 1960.
Canada: Saskatchewan. *B. Boivin & T. Mosquin 11464*. August 20, 1955,
PARATYPE.

Pteridaceae

Pellaea gastonyi Windham
Windham M. D., *Contributions from the University of Michigan Herbarium*, 19: 37. 1993
Canada: Saskatchewan. *J. Polson & J. H. Hudson 3680B*. August 24,1978,
PARATYPE.

ANTHOPHYTA

Aceraceae

Acer negundo L. intermediate to forma *dorei* B. Boivin
Boivin B., *Le Naturaliste Canadien*, 93: 961. 1966.

Canada: Manitoba. *W. G. Dore & A. J. Breitung 10672*. June 10, 1950,
PARATYPE.

Asteraceae
Arnica snyderi Raup
Raup H. M., *Sargentia*, 6: 250, 1947.
Canada: Northwest Territories, District of Mackenzie.
H. M. Raup & J. H. Soper 9383. July 5, 1939,
ISOTYPE.

Arnica snyderi Raup
Raup H. M., *Sargentia*, 6: 250, 1947.
Canada: Northwest Territories, District of Mackenzie. *H. M. Raup & J. H. Soper 9731*. July 5, 1939,
PARATYPE.

Helianthus annuus L. forma *fallax* B. Boivin
Boivin B., *Le Naturaliste Canadien*, 87: 35. 1960.
Canada: Manitoba. *J. F. Alex 46*. September 1, 1952,
PARATYPE.

Helianthus couplandii B. Boivin
Boivin B., *Phytologia*, 23 (1): 72. 1972.
Canada: Manitoba. *B. Boivin 14027*. September 6, 1960,
PARATYPE.

Helianthus couplandii B. Boivin
Boivin B., *Phytologia*, 23 (1): 72. 1972.
Canada: Saskatchewan. *B. Boivin, F. L. Lefort & J. G. Vaillancourt 11632*. July 30, 1956,
PARATYPE.

Helianthus couplandii B. Boivin
Boivin B., *Phytologia*, 23 (1): 72. 1972.
Canada: Manitoba. *B. Boivin 14027*. September 6, 1960,
PARATYPE.

Helianthus couplandii B. Boivin
Boivin B., *Phytologia*, 23 (1): 72. 1972.
Canada: Alberta. *B. Boivin & J. F. Alex 9555*. June 29, 1952,
PARATYPE.

Helianthus couplandii B. Boivin
Boivin B., *Phytologia*, 23 (1): 72. 1972.
Canada: Alberta. *B. Boivin & J. F. Alex 9466*. June 24, 1952,
PARATYPE.

Helianthus nuttallii Torr. & Gray ssp. *canadensis* Long
Long R. W., *Brittonia*, 18 (1): 77-79. 1966.
Canada: Saskatchewan. *B. Boivin 8428*. August 1, 1951,
PARATYPE.

Helianthus nuttallii Torr. & Gray ssp. *canadensis* Long
Long R. W., *Brittonia*, 18 (1): 77-79. 1966.
Canada: Saskatchewan. *B. Boivin & J. M. Gillett 8863*. August 12, 1951,
PARATYPE.

Ratibida columnaris (Pursh) Raf. forma *denudata* B. Boivin
Boivin B., *Le Naturaliste Canadien*, 87: 46. 1960.
Canada: Saskatchewan. *B. Boivin & J. F. Alex 9886*. July 23, 1952,
ISOTYPE.

Brassicaceae
Arabis divaricarpa A. Nelson var. *hemicylindrica* B. Boivin
Boivin B., *American Midland Naturalist*, 54 (2): 510. 1955.

Canada: Saskatchewan. *B. Boivin & W. G. Dore 7679*. July 6, 1951,
PARATYPE.

Arabis divaricarpa A. Nelson var. *hemicylindrica* B. Boivin
Boivin B., *American Midland Naturalist*, 54 (2): 510. 1955.
Canada: Saskatchewan. *B. Boivin & J. F. Alex 9771*. July 11, 1952,
PARATYPE.

Lepidium densiflorum Schrader var. *macrocarpum* G. A. Mulligan
Mulligan G. A., *Madroño*, 16 (3): 86. 1961.
Canada: Alberta. *B. Boivin, J. M. Perron & A. Harper 12197*. June 23, 1958,
ISOTYPE.

Lepidium densiflorum Schrader var. *macrocarpum* G. A. Mulligan
Mulligan G. A., *Madroño*, 16 (3): 86. 1961.
Canada: Saskatchewan. *B. Boivin, G. F. Ledingham, A. C. Budd & J. M. Perron 12005*. June 11, 1958,
PARATYPE.

Caryophyllaceae
Lychnis pudica B. Boivin
Boivin B., *Le Naturaliste Canadien*, 93 (5): 643. 1966.
Canada: Saskatchewan. *B. Boivin, W. G. Dore & G. F. Ledingham 7492*. June 30, 1951,
ISOTYPE.

Lychnis pudica B. Boivin
Boivin B., *Le Naturaliste Canadien*, 93 (5): 643. 1966.
Canada: Saskatchewan. *B. Boivin, W. G. Dore & G. F. Ledingham 7492*. June 30, 1951,
ISOTYPE.

Lychnis pudica B. Boivin
Boivin B., *Le Naturaliste Canadien*, 93 (5): 643. 1966.
Canada: Saskatchewan. *B. Boivin & W. G. Dore 7773*. July 10, 1951,
PARATYPE.

Lychnis pudica B. Boivin
Boivin B., *Le Naturaliste Canadien*, 93 (5): 643. 1966.
Canada: Saskatchewan. *B. Boivin & W. G. Dore 7896*. July 15, 1951,
PARATYPE.

Lychnis X loveae B. Boivin
Boivin B., *Le Naturaliste Canadien*, 93 (5): 643. 1966.
Canada: Saskatchewan. *B. Boivin & W. G. Dore 7626*. July 1, 1951,
PARATYPE.

Lychnis X loveae B. Boivin
Boivin B., *Le Naturaliste Canadien*, 93 (5): 643. 1966.
Canada: Manitoba. *W. Krivda 2174*. August 30, 1959,
PARATYPE.

Stellaria atrata (J. W. Moore) B. Boivin var. *eciliata* B. Boivin
Boivin B., *Svensk Botanisk Tidskrift*, 47: 45. 1953.
Canada: Saskatchewan. *B. Boivin 6817*. August 6, 1949,
ISOTYPE.

Stellaria atrata (J. W. Moore) B. Boivin var. *eciliata* B. Boivin
Boivin B., *Svensk Botanisk Tidskrift*, 47: 46. 1953.
Canada: Saskatchewan. *A. J. Breitung 1754*. August 4, 1943,
PARATYPE.

Chenopodiaceae
Corispermum hookeri Mosyakin
Mosyakin S. L., *Novon*, 5 (4): 349. 1995.
Canada: Saskatchewan. *B. Boivin & G. F. Ledingham 14079*. September 11, 1960,
ISOTYPE.

Corispermum hookeri Mosyakin
Mosyakin S. L., *Novon*, 5 (4): 349. 1995.
Canada: Saskatchewan. *B. Boivin & G. F. Ledingham 14079*. September 11, 1960,
ISOTYPE.

Cyperaceae
Carex raymondii Calder
Calder J. A., *Rhodora*, 54 (646): 248. 1952.
Canada: Saskatchewan. *B. Boivin & A. J. Breitung 6261*. June 28, 1949,
PARATYPE.

Juncaceae
Juncus pervetus Fernald
Fernald M. L., *Rhodora*, 19 (217): 17. 1917.
U.S.A.: Massachusetts. *M. L. Fernald & F. K. Butters 183*. October 14, 1916,
PARATYPE.

Lamiaceae
Physostegia virginiana (L.) Bentham var. *ledinghamii* B. Boivin
[annotated as *Physostegia ledinghamii* sp. nov.]
Boivin B., *Le Naturaliste Canadien*, 93: 575. 1966.
Canada: Saskatchewan. *D. R. Robinson S-4608*. July 23, 1946,
PARATYPE.

Poaceae
Poa agassizensis B. Boivin & D. Löve
Boivin B. and D. Löve, *Le Naturaliste Canadien*, 87: 178. 1960.
Canada: Saskatchewan. *B. Boivin & J. F. Alex 9374*. June 18, 1952,
PARATYPE.

Poa agassizensis B. Boivin & D. Löve
Boivin B. and D. Löve, *Le Naturaliste Canadien*, 87: 176. 1960.
Canada: Manitoba. *B. Boivin, D. Löve & J. F. Alex 9167*. June 6, 1952,
ISOTYPE.

Poa agassizensis B. Boivin & D. Löve
Boivin B. and D. Löve, *Le Naturaliste Canadien*, 87: 177. 1960.
Canada: Manitoba. *B. Boivin & J. F. Alex 9299*. June 14, 1952,
PARATYPE.

Poa brintnellii Raup
Raup H. M., *Sargentia*, 6: 112. 1947.
Canada: Alberta. *H. M. Raup & J. H. Soper 9827*. August 16, 1939,
PARATYPE.

Poa brintnellii Raup
Raup H. M., *Sargentia*, 6: 112. 1947.
Canada: Alberta. *H. M. Raup & J. H. Soper 9830*. August 16, 1939,
ISOTYPE.

Rosaceae
Potentilla pensylvanica L. var. *arida* B. Boivin
Boivin B., *Phytologia*, 4 (1): 92. 1952.
Canada: Saskatchewan. *L. M. Russell & R. C. Russell S-4814*. July 18, 1948,
PARATYPE.

Potentilla pensylvanica L. var. *arida* B. Boivin
Boivin B., *Phytologia*, 4 (1): 92. 1952.
Canada: Saskatchewan. *A. C. Budd 44*. June 29, 1944,
PARATYPE.

Potentilla pensylvanica L. var. *arida* B. Boivin
Boivin B., *Phytologia*, 4 (1): 92. 1952.
Canada: Saskatchewan. *B. Boivin & W. G. Dore 7848*. July 14, 1951,
PARATYPE.

Salicaceae
Salix amelanchieroides L. Kelso
Kelso L., *Biological Leaflet. Washington*, DC 34: 9. 1946.
U.S.A.: Colorado. *L. Kelso & E. H. Kelso 5419*. August 3, 1946,
ISOTYPE.

Salix brachycarpa Nutt. var. *psammophila* Raup
Raup H. M., *Journal of the Arnold Arboretum*, 17: 230. 1936.
Canada: Saskatchewan. *H. M. Raup 6902*. August 20, 1935,
PARATYPE.

Salix reticulata L. ssp. *glabellicarpa* Argus
Argus G. W., *Canadian Journal of Botany*, 43 (9): 1021. 1965.
Canada: British Columbia. *J. A. Calder & R. L. Taylor 36347*. July 25-30, 1964,
ISOTYPE.

Saxifragaceae
Saxifraga codyana Zhmylev
Zhmylev P. Y., *Byulleten'-Moskovskogo-Obshchestva-Ispytatelei-Prirody-Otdel-Biologicheskii*, 97 (1): 95. 1992.
Canada: Yukon. *W. J. Cody 27166*. July 7, 1980,
ISOTYPE.

Saxifraga taylori Calder & Savile
Calder J. A. and D. B. O. Savile, *Brittonia*, 11: 248. 1959.
Canada: British Columbia. *J. A. Calder & R.L. Taylor 23511*. August 16-17, 1957,
ISOTYPE.

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