

## **A HISTORY OF BOTANICAL EXPLORATION IN SOUTH DAKOTA**

**Mark Gabel<sup>1\*</sup>, Dave Ode<sup>2</sup>, and Grace Kostel<sup>1</sup>**

<sup>1</sup>Herbarium

Black Hills State University

Spearsh, SD 57799

<sup>2</sup>South Dakota Department of Game, Fish and Parks

Pierre, SD 57501

\*Corresponding author: mark.gabel@bhsu.edu

### ABSTRACT

Botanical exploration in South Dakota has been occurring for over-two centuries. It is clear that American Indians in the area had an extensive knowledge about plant species and their uses. We used existing literature, herbarium specimens and electronic databases to document the history of botanical exploration in the state. The first scientific collections date to 1804 and were followed closely by additional voyages up the Missouri River. As the European-American increased in numbers, they also explored areas away from the Missouri River. Military expeditions frequently had a scientific officer charged with natural history observations and collections. The first expedition devoted to plant exploration in South Dakota was by Rydberg in 1892. The first statewide checklist of plant species was assembled by Saunders in 1899, and was followed three decades later by Over's checklist. It was not until 1976 that a true state-wide flora was authored by VanBruggen, introducing the modern age of plant exploration in South Dakota.

### Keywords

Black Hills, botany, Great Plains, plant collection, South Dakota

### INTRODUCTION

Any discussion of botanical exploration in South Dakota must begin with recognition that American Indians were experts at recognizing plant groups and accepted uses for those plants. Abel (1939) reported in a narrative of Tabeau's expedition to the upper Missouri that numerous native fruits and vegetables were used by American Indians in 1803-1805, but no known scientific collections of plants were made. When Lewis and Clark passed through South Dakota on their 1804-1806 adventure, they noted cultivated species including corn, beans, squash, watermelon, pumpkins, and tobacco (Ronda 1984). Traditional uses of plants by indigenous people have been better documented than on any other continent (Ford 1986). Uses by American Indians for plants in South Da

kota have been enumerated by Gilman (1914), Rogers (1979, 1980), Kindscher (1992), Moerman (1998), Standing By and McCormick (2000), Bucko and Marshall (2003) and Albers (2003). Rogers (1979, 1980) and Standing By and McCormick (2000) listed uses for about 300 species of native plants.

## METHODS

For this study we examined the existing literature on botanical exploration in South Dakota including the archives of the South Dakota Academy of Science (2015). We also used data bases for locating specimens collected by botanical explorers in South Dakota including those at MO, NY, RM, PH, US, PUL, and BHSC (acronyms follow *iers* (continuously updated)). *is work does not contain references to vegetation management, livestock grazing, agronomy, forestry or other applied disciplines of botany.*

## RESULTS

e trip of Meriwether Lewis and William Clark in 1804-1806 from St. Louis to the Pacific coast and back has been described by numerous authors (Ambrose 1996; McKelvey 1955; Moulton 2002). e journey is important to this study because it is the first known expedition that collected plant specimens for scientific purposes in South Dakota. Reveal et al. (1999) reported that of 232 known plant specimens at least 26 specimens were collected from within the current boundaries of South Dakota.

In March of 1811 Wilson Price Hunt departed St. Charles, Missouri, leading a party of fur trappers on an expedition that more or less retraced the route of Lewis and Clark. e Hunt Expedition was funded by J. J. Astor of the American Fur Company (McKelvey 1955). On the expedition were two English botanists, Thomas Nuttall and John Bradbury. Nuttall was working for Benjamin Barton (Professor at the University of Pennsylvania). Bradbury was funded by the Liverpool Philosophical Society. e botanists traveled to the Arikara villages (near the current city of Mobridge, SD) with Hunt, reaching that area on 12 June 1811. Nuttall continued to the Mandan villages (in present day North Dakota) by boat. Bradbury proceeded on foot to the same location.

Bradbury left the Hunt party on 17 July 1811 and returned to St. Louis by the 29<sup>th</sup> of July. Bradbury became ill with a fever about 10 days after his arrival in St. Louis (McKelvey 1955) and remained there until the 4<sup>th</sup> of December 1811 when he left for New Orleans. On this journey he was an observer of the New Madrid earthquakes (15 – 21 December 1811), including two major seismic events occurring on 16 December with earthquakes that have been estimated to have ranged from magnitude 7.2 to 8.1.

Nuttall's exact route is unknown since he apparently did not keep a journal. He returned to St. Louis in October of 1811 and learned of the potential of a war between England and the United States. He left straightaway for New Orleans and on to England, taking his plants with him.

Bradbury left New Orleans for New York on 20 January 1812. His plant collection was apparently shipped to England before he departed and arrived in Liverpool. Due to further delays, Bradbury was unable to leave for England until after the war of 1812.

Meanwhile, in England Frederick Pursh had obtained access to some of the plant specimens collected by the Lewis and Clark expedition, some of Nuttall's plants, and Bradbury's plants. Pursh (1813) published the results of his studies, negating the possibility of a botanical publication by Bradbury. Bradbury became most famous for a travelogue of his adventures in the New World published in 1817. Nuttall returned to the United States and published his own study of plants in 1818.

A publication that has caused some confusion is frequently referred to as "Fisher's Catalogue" that was published in 1813. It is more properly titled "Catalogue of New and Interesting Plants Collected in Upper Louisiana and Principally on the River Missouri." The document is primarily a list of plants with very few descriptions. Due to the scarcity of the "Catalogue", Greene (1889) reprinted the list and attributed the authorship to Nuttall (1813). The lack of descriptions has mostly limited its value for species names, but the list clearly predated Pursh's (1813) publication by several months.

Joseph Nicollet was a French citizen who was hired by the United States to explore and map the Mississippi River Valley. Nicollet (1843) made two expeditions, in 1838 and 1839, and hired at his own expense Karl Geyer, a German botanist, to collect plants. The first expedition included travels in far eastern South Dakota, including the Big Sioux River, Lake Preston, Lake Poinsett, Lake Traverse, and Big Stone Lake.

The second trip left St. Louis on 04 Apr 1839 and after a slow trip on the steamboat Antelope, arrived in Ft. Pierre on 12 Jun 1839 (roughly 18 miles per day). In a letter to W. J. Hooker, Geyer (1840) stated that they surveyed the Missouri "as high up as the Little Missouri and almost the whole of that immense country between the Missouri and the Mississippi." The plants from Geyer's collections were identified by Torrey (1843). The 1839 trip included the James River, Brown County and what is now Marshall, Day, and Roberts Counties of South Dakota.

Ferdinand V. Hayden was known primarily as a geologist from his work in western North America. He was also a physician and an enthusiastic naturalist (Hayden 1867, 1875). Hayden first came to what is now South Dakota during the summer of 1853. On that expedition, sponsored by James Hall of Albany, New York, Hayden collected fossils in the White River Badlands as well as plants. The following year Hayden, sponsored by Spencer F. Baird, Assistant Secretary of the Smithsonian Institution, travelled up the Missouri River and wintered at Ft. Pierre. From there he went on to explore the upper Missouri and the Yellowstone Rivers (Foster 1986). In 1856 and 1857 Hayden accompanied the L. G. K. Warren expeditions into Nebraska and the Dakotas. In 1859 Hayden travelled with the Captain W. F. Reynolds expedition, mapping the area between Ft. Pierre and the Yellowstone River. Plants from the upper Missouri were identified by Engelmann (1863). Hayden's plant collections are currently located in the U.S. National Herbarium, the Philadelphia Academy of Science, the New York

Botanical Garden and the Missouri Botanical Garden. The latter has the largest collection of Hayden's specimens, approximately 457 Hayden collections, with nearly 100 of those from South Dakota.

One of the most noted expeditions to South Dakota was that of G. A. Custer in 1874, which included about 1000 men and 115 wagons. The person serving as botanist and a correspondent for a St. Paul newspaper on that expedition was A. B. Donaldson, a former faculty member of the University of Minnesota (where he taught Rhetoric and English literature). Donaldson collected a limited number of specimens while in South Dakota, and sent them to John Coulter, a botanist at Hanover College (Shaner and Harby 2008). Coulter (1874) listed 74 plant species in a preliminary publication, but noted that about 80 species were collected. In a later publication Coulter (1875) published a slightly different list with the same number of species. Coulter moved to Wabash College in 1879 (Masson 1994) and apparently took the Donaldson collections with him. Later the New York Botanical Garden acquired the Wabash collection (Holden 1993). Of the 74 or 80 specimens collected by Donaldson, 42 are currently at the New York Botanical Garden. More recently, 11 specimens from Donaldson were located at the Purdue University Herbarium (Shaner and Harby 2008). Between 21 and 27 specimens collected by Donaldson are still apparently missing. It was noted that unidentified species from Coulter were sent to T.C. Porter (Philadelphia Academy of Science). The specimens have not been relocated, but currently only 42,000 specimens of 1.4 million in their collection have been databased. N.H. Winchell, a faculty member at the University of Minnesota, served as a geologist on the Custer expedition. In addition to producing the first geological map of the Black Hills, he listed species of trees and shrubs he observed (1875), but apparently made no collections.

In 1875 Walter P. Jenney and Henry Newton accompanied the Lt. Colonel Richard Dodge expedition of about 400 soldiers to the Black Hills. The Dodge expedition was charged with scientific observation, removing miners who had illegally trespassed into the Black Hills and to approach the American Indian tribes about purchasing the Black Hills. The Newton and Jenny report (1880) listed 175 species of plants from the Black Hills that were identified by Asa Gray at Harvard.

W. H. Forwood graduated from medical school in 1861 and was soon a field surgeon in the Civil War. In the period from 1879-1883 Forwood served as medical officer and naturalist for three expeditions commissioned by General Phillip Sheridan. He collected numerous specimens from the areas that became South Dakota, Wyoming and Montana. He was probably present, at least for a short time, at Fort Meade in 1887 because there are numerous collections from that post. Specimens collected by Forwood are present at Harvard, the New York Botanical Garden, and the Missouri Botanical Garden. Forwood later became Surgeon General.

Per Axel Rydberg was born in Sweden and immigrated to the United States in 1882. He received his B.S. from the University of Nebraska and the following year (1892) received a commission from the United States Department of Agriculture to explore the Black Hills. After completing his exploration of the Black

Hills, Rydberg went to New York to work on a Ph.D. at Columbia University. In the summer of 1897 Rydberg travelled to Montana and Wyoming to make plant collections in the first field program expedition of the New York Botanical Garden. He also made at least some collections in South Dakota on that trip. In 1899 he was employed as one of nine permanent staff members, and eventually became the first Curator at New York. Another collecting trip in 1926 brought him to South Dakota. Results from his work in South Dakota include the Flora of the Black Hills (1896) and the Flora of the Prairies and Plains of Central North America (1932, published posthumously). Rydberg had a very strong influence on botany in South Dakota.

DeAlton Saunders was a faculty member at what is now South Dakota State University and published the first checklist of plants of South Dakota (1899). The checklist included about 1100 species and was compiled from collections by Saunders in eastern South Dakota and Rydberg in the Black Hills.

Steven Sargent Visher grew up in Sanborn County, South Dakota, and was largely homeschooled. He obtained a B.S. in botany and an M.S. in geology from the University of Chicago, an A.M. in zoology from the University of South Dakota and a Ph.D. from the University of Chicago (Harris, 1968). He was said to be an avid naturalist and a quick study. While in South Dakota he conducted major studies in the Black Hills, Harding County and the Pine Ridge area. Many of his plant collections were identified by Aven Nelson at the University of Wyoming. Results of his work (1909, 1912a, 1912b, 1913a, 1913b, 1914) in South Dakota were published in various journals.

Herman E. Hayward is primarily known in South Dakota for his collections in the Black Hills in 1926 and 1927. During that time he collected about 1600 specimens which resulted in a publication on the flora of the Black Hills (1928). Hayward was associated with the Milwaukee Public Museum and his collections are housed at that institution.

W. H. Over was a person of diverse interests, publishing articles on fish, mammals, birds and especially archaeology. In 1923 he wrote a booklet on trees and shrubs of South Dakota. He is better known for his 1932 publication, a briefly annotated checklist of about 1769 species of the flora of South Dakota.

In 1931 A.C. McIntosh published his botanical survey of the Black Hills. The work includes sections on geology, soils, climate, paleobotany and ecology. These sections are followed by a checklist of the vascular plants with very brief comments about 1300 species.

Claude Barr published about 100 horticultural articles from the 1930s to the 1970s that showed a great deal of taxonomic insight. A bibliography and summary of his work can be found in Barr's 1983 book.

Two botanists who were prodigious collectors but did not publish extensively (Table 1) were F. L. Bennett of Black Hills State University and Charles A. Taylor Jr. of South Dakota State University. Bennett collected extensively from the 1920s to the 1940s, while Taylor collected primarily from 1949 into the 1990s.

## DISCUSSION

In the period from 1800 – 1976 approximately 85 publications dealing with botanical exploration in South Dakota were published (Table 1). Of those 36 or 42% were published in the *Proceedings of the South Dakota Academy of Science* (Figure 1). It should be noted that many of the earlier publications were more general works that included plants from within the boundaries of South Dakota and that the *Proceedings* were not published until 1916. The later works are of ten more confined to the state. Since 1916, 64% of the publications on botanical exploration in the state have appeared in the *Proceedings*.

General trends observed in this study include the change from the study of plant species using only alpha taxonomy (morphology, anatomy, ecology etc.) to systematics (cytotaxonomy, numerical taxonomy, isozymes, and molecular analyses as well as alpha taxonomy). Another trend is the decentralization of taxonomic knowledge. Earlier collectors usually sent their specimens to experts for identification. Today, nearly all collectors identify their own specimens with the possible exception of species new to the region or specimens in very difficult groups. Taxonomists today usually hold advanced degrees in botany whereas previously workers were generalists.

Another trend is that botanical resources are more widely distributed. There are more herbaria today, as well as labs that can be used for the systematic study of plant species. Over the recent decades prices for systematic study are generally lower and the techniques more efficient.

Travel to field sites in the modern era is much easier than it was anytime previously. Roads have improved, maps have improved and vehicles have improved. Better data are obvious on plant specimen labels. Early locality data on many specimens would often reveal only very general information such as “Dakota Territory.” The importance of better data slowly became apparent. Legal descriptions were eventually used to describe township, range and section numbers. In the 1990s legal descriptions were supplemented or replaced by latitude/longitude data easily obtained from global positioning system units.

Figure 2 shows the number of plant species listed in the statewide publications. The actual number of specimens present in the state has probably not decreased from the time of Over (1932) to the publication by Van Bruggen (1976). The delineation of species has undoubtedly changed. Rydberg was frequently characterized as a “splitter,” or a taxonomist who defined species very narrowly based upon small differences. More recently, most botanists have taken a broader view of species, partially due to better communication among botanists and broader access to specimens. Important changes have resulted from a greater standardization of taxa due to the partial completion of the *Flora of North America* (*Flora of North America* Editorial Committee 1993+). Finally, widespread distribution of plant data has been increasing due to the use of electronic databases, some of which include label data as well as images of specimens.

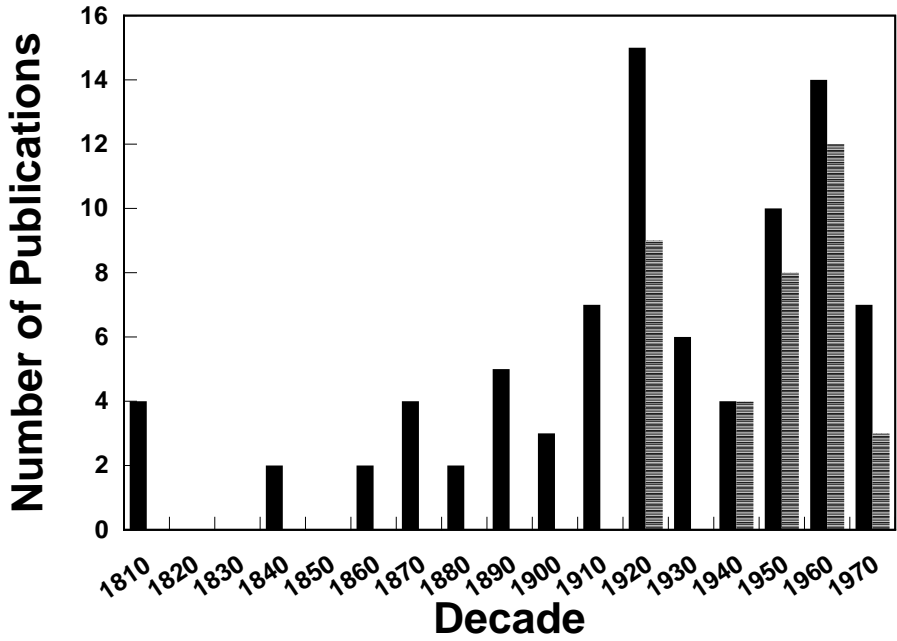


Figure 1. Number of publications by decade reporting on botanical exploration in South Dakota. Hatched bars are articles published in the Proceedings of the South Dakota Academy of Science.

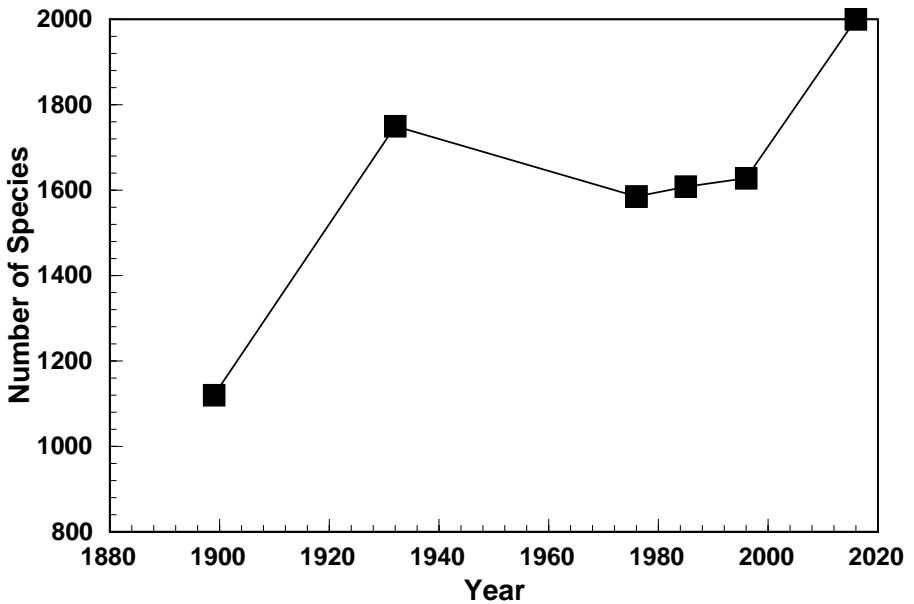


Figure 2. Number of species recorded in statewide checklists or floras of South Dakota. Saunders (1899) and Over (1932) were influenced by Rydberg's nomenclature. Floras by Van Bruggen (1976, 1985, and 1996) used a more modern terminology. The 2017 estimate is based on current work for an ongoing revision of the flora.

## ACKNOWLEDGEMENTS

The authors wish to thank Roberta Sago and Sara Freng at the Black Hills State University Library for assistance with numerous historical documents.

## LITERATURE CITED

- Abel, A.H. 1939. Tabeau's narrative of Loisel's expedition to the Upper Missouri. University of Oklahoma Press, Norman.
- Albers, P.C. 2003. The home of the bison: An ethnographic and ethnohistorical study of traditional cultural affiliations to Wind Cave National Park.
- Ambrose, S.E. 1996. *Undaunted Courage: Meriwether Lewis, Thomas Jefferson, and the opening of the American West*. Simon and Schuster, New York.
- Barr, Claude A. 1983. *Jewels of the plains: wild flowers of the Great Plains grasslands and hills*. University of Minnesota Press, Minneapolis.
- Bradbury, J. 1817. *Travels in the interior of America, in the years 1809, 1810, 1811; including a description of Upper Louisiana, together with the states of Ohio, Kentucky, Indiana, and Tennessee, with the Illinois and western territories, and containing remarks and observations useful to persons emigrating to those countries*. Sherwood, Neely and Jones, Liverpool.
- Bucko, R., and M. Marshall. 2003. Digital Archive: Fr. Eugene Buechel, S.J. Lakota Material Culture collection and associated notes. St. Francis Mission, St. Francis, SD." Coulter, J. M. 1874. List of plants collected in the Black Hills during the summer of 1874. *Botanical Bulletin* 1:4.
- Coulter, J.M. 1875. Botany, Appendix A. Pages 68-70 in W. Ludlow. Report of a reconnaissance of the Black Hills of Dakota made in the summer of 1874. Government Printing Office, Washington.
- Engelmann, G. 1863. Botany Pages 182-212 in F. V. Hayden. On the geology and natural history of the Upper Missouri. *Transactions of the American Philosophical Society* 12, New Series.
- Flora of North America Editorial Committee. 1993+. *The Flora of North America North of Mexico*. Oxford University Press, New York.
- Ford, R.I. 1986. *An ethnobiology source book: the use of plants and animals by American Indians*. Garland, New York.
- Foster, M. 1986. Ferdinand Vandeveer Hayden as naturalist. *Integrative and Comparative Biology*. 26:343-349.
- Geyer, Carl. 1840. Letter to W.J. Hooker, Royal Botanical Gardens, Kew, England.
- Gilmore, M.R. 1919. *Uses of plants by Indians of the Missouri River Region*. (Reprinted 1977). University of Nebraska Press, Lincoln.
- Green, E.L. 1889-1892. *Fraser's Catalogue*. *Pittonia* 2:114-119.
- Harris, C. D. 1968. Stephen Sargent Visher. *Journal of Geography* 67:378-379.
- Hayden, F.V. 1867. Remarks on the geographical distribution of plants in the West. *Proceedings of the American Philosophical Society* 10:315-320.
- Hayden, F.V. 1875. Catalogue of the collections in geology and natural history obtained by the expedition under command of Lieut. G.K. Warren, topographical engineer. Pages 107-125. in G.K. Warren. Preliminary report of explorations in Nebraska and Dakota in the years 1855-'56-'57. Government Printing Office, Washington, D.C.



- Hayward, H.E. 1928. Studies of plants in the Black Hills of South Dakota. *Botanical Gazette* 85:353-412.
- Holden, C. 1993. Custer's last botanical stand. *Science* 259:32.
- Kindscher, K. 1992. Medicinal wild plants of the prairie: An ethnobotanical guide. University Press, Lawrence, KS.
- Masson, V.J. 1994. Brief history of and collector's index to the Wabash College Herbarium (WAB), now deposited at the New York Botanical Garden (NY). *Brittonia* 46:211-224.
- McIntosh, A.C. 1931. A botanical survey of the Black Hills of South Dakota. *Black Hills Engineer* 19:159-276.
- McKelvey, S.D. 1955. Botanical exploration of the Trans-Mississippi West 1790-1850. Arnold Arboretum of Harvard University, Jamaica Plain, MA.
- Moerman, D.E. 1998. Native American ethnobotany. Timber Press, Portland, OR.
- Moulton, G.E. (ed). 2002. The definitive journals of Lewis and Clark (7 volumes). University of Nebraska Press, Lincoln, NE.
- Newton, H., and W.P. Jenney. 1880. Report on the geology and resources of the Black Hills of Dakota, with atlas. Government Printing Office, Washington, D.C.
- Nicollet, J.N. 1843. Report intended to illustrate a map of the hydrographical basin of the upper Mississippi River, made by J. N. Nicollet, while in employ under the Bureau of the Corps of Topographical Engineers. [UCS 26](#) 2<sup>nd</sup> Sess., Sen. Doc. 5: pt. 2, No. 237, 142 p. Map, Washington, DC.
- Nuttall, T. 1813. A Catalogue of new and interesting plants collected in Upper Louisiana, and principally on the River Missouri, North America. Fraser's Nursery, London.
- Nuttall, T. 1818. Genera of North American plants, and a catalogue of the species, to the year 1817. 2 vols. Printed for the author by D. Heartt, Philadelphia, PA.
- Over, W.H. 1923. Trees and shrubs of South Dakota. South Dakota Geological and Natural History Survey. University of South Dakota, Vermillion, SD. Series XXIII #2.
- Over, W.H. 1932. Flora of South Dakota: an illustrated check-list of flowering plants, shrubs and trees of South Dakota. University of South Dakota, Vermillion, SD.
- Pursh, F.T. 1813. *Flora Americae Septentrionalis*. 2 vols. White, Cochrane and Co., London.
- Reveal, J.L., G.E. Moulton, and A.E. Schuyler. 1999. The Lewis and Clark collections of vascular plants: names, types and comments. *Proceedings of the Academy of Natural Sciences of Philadelphia* 149:1-64.
- Rogers, D.J. 1979. Lakota names and traditional uses of native plants by Sicar (Brule) people in the Rosebud Area, South Dakota. Rosebud Educational Society, St. Francis, SD.
- Rogers, D.J. 1980. Edible, medicinal, useful and poisonous wild plants of the Northern Great Plains—South Dakota Region. Augustana College, Sioux Falls, SD.

- Ronda, J.P. 1984. Lewis and Clark among the Indians: 3. e Arikara interlude. University of Nebraska Press, Lincoln, NE.
- Rydberg, P.A. 1896. Flora of the Black Hills of South Dakota. Contributions from the U.S. National Herbarium 3:463-536.
- Rydberg, P.A. 1932. Flora of the prairies and plains of central North America. New York Botanical Garden, New York, NY.
- Sanders, D.A. 1899. Ferns and flowering plants of South Dakota. South Dakota Experiment Station Bulletin 64.
- Shaner, G., and N. Harby. 2008. Custer's last plants. Indiana Native Plant and Wildflower Society Journal, Spring p. 11.
- South Dakota Academy of Science. 2015. Proceedings archives at <http://www.sdaos.org/proceedings/>. [Cited 30 April 2015].
- Standing By, W.D. Sr., and M. McCormick. 2000. Lakota medicinal/culturally important plants: Standing Rock Sioux Reservation. Water Resources Department, Standing Rock Sioux Tribe, Fort Yates, ND.
- Sweetgum, B. [continuously updated]. Index Herbariorum: A global directory of public herbaria and associated stations. New York Botanical Garden's Virtual Herbarium Available at <http://sweetgum.nybg.org/> [Cited 18 April 2015].
- Torrey, J. 1843. Catalogue of plants collected by Mr. Charles Geyer, under the direction of Mr. I. (sic) N. Nicollet, during his exploration of the region between the Mississippi and Missouri Rivers. In: Nicollet, J.N. 1843. Report intended to illustrate a map of the hydrographical basin of the upper Mississippi River. U.S. Congress, 26<sup>th</sup> Session, Sen Doc 5:pt. 2, No. 237, Washington, D.C.
- Van Bruggen, T. 1976. Vascular plants of South Dakota (ed. 1). Iowa State University Press, Ames, IA.
- Van Bruggen, T. 1985. Vascular plants of South Dakota (ed. 2). Iowa State University Press, Ames, IA.
- Van Bruggen, T. 1996. Vascular plants of South Dakota (ed. 3). University of South Dakota, Vermilion, SD.
- Visher, S.S. 1909. Additions to the flora of the Black Hills, 1. *Torreyana* 9:186-188.
- Visher, S.S. 1912a. Additions to the flora of the Black Hills, 2. *Muhlenbergia* 8:135-137.
- Visher, S.S. 1912b. Plants of the Pine Ridge Reservation. *Bul. State Geol. and Biol. Survey, South Dakota* 5:84-108.
- Visher, S.S. 1913a. Additions to the flora of the Black Hills, 3. *Muhlenbergia* 9:33-39.
- Visher, S.S. 1913b. Additions to the flora of South Dakota, 1. *Muhlenbergia* 9:45-52.
- Visher, S.S. 1914. The biology of Harding County northwestern South Dakota. Report of the State Geologist for 1913-1914. State Publishing Company, Pierre, SD.
- Winchell, N.H. 1875. Appendix to the Geological Report: A: Botany. Pages 67-70 in W. Ludlow. Report of a reconnaissance of the Black Hills of Dakota, made in the summer of 1874. Government Printing Office, Washington, D.C.

**Table 1. A list of historical (1813-1976) publications of botanical exploration in South Dakota.**

<b>Date</b>	<b>Author/Explorer</b>	<b>Title</b>	<b>Journal/Publisher</b>	<b>Vol:Page</b>
1813	Nuttall, T.	Fraser's Catalogue of New and Interesting Plants	Fraser's Nursery, London	
1813	Pursh, F.T.	Flora Americae Septentrionalis	White, Cochrane and Co., London	
1817	Bradbury, J.	Travels in the Interior of America in the Years 1809, 1810 and 1811	Sherwood, Neely and Jones, Liverpool	
1818	Nuttall, T.	Genera of North American Plants, and a catalogue of the species to the year 1817.	D. Heartt, Philadelphia	
1843	Nicollet, J.N.	Report intended to illustrate a map of the hydrographical basin of the upper Mississippi River...	U.S. 26th Congress, 2nd Session Senate Document 5: pt. 2, No. 237, 142pp	
1843	Torrey, J.	Catalogue of plants collected by Mr. Charles Geyer	(Nicollet) U.S. 26th Congress, 2nd Session Senate Document 5: pt. 2	
1863	Englemann, G.	Botany	In: Ferdinand Vandever Hayden: On the Geology and Natural History of the Upper Missouri. In: Transactions of the American Philosophical Society.	12: 182-212
1867	Hayden, F.V.	Remarks on the geographical distribution of plants in the West	Proceedings of the American Philosophical Society	10:315-320
1874	Coulter, J.M.	List of plants collected in the Black Hills during the summer of 1874	Botanical Bulletin	1:4
1875	Coulter, J.M.	Botany (Appendix A)	(Ludlow) Report of a reconnaissance of the Black Hills made in the summer of 1874. Government Printing Office, Washington	
1875	Hayden, F.V.	Catalogue of the collections in geology and natural history obtained by the Expedition under command of Lieut. G.K. Warren, Topographical Engineer	Preliminary Report of Explorations in Nebraska and Dakota in the years 1855-'56-'57.	pp. 107-125
1875	Winchell, N.H.	Appendix to the Geological Report A: Botany	Report of a reconnaissance of the Black Hills of Dakota made in the summer of 1874	pp. 67-70
1880	Gray, A.	Botany of the Black Hills of Dakota	Report of the Geology and the Resources of the Black Hills of Dakota, Government Printing Office, Washington	pp. 531-537

1889-92	Greene, E.L.	Fraser's Catalogue of New and Interesting Plants	Pittonia	2:114-119
1895	Williams, T.A.	Native trees and shrubs	South Dakota Agricultural Experiment Station Bulletin	Bulletin 43
1896	Rydberg, P.A.	Flora of the Black Hills of South Dakota	Contributions of the U.S. National Herbarium	3:463-523
1897	Williams, T.A.	Grasses and forage plants of the Dakotas	U.S.D.A. Div. of Agrostology	Bulletin 6
1898	Bessey, C.E.	The southern maidenhair fern in the Black Hills of South Dakota	Botanical Gazette	26:211
1899	Saunders, D.A.	Ferns and flowering plants of South Dakota	South Dakota Agricultural Experiment Station Bulletin	Bulletin 64
1906	Reagan, A.B.	Notes on the flora of the Rosebud Indian Reservation, South Dakota	Trans. Kansas Acad. Sci	20:191-196
1908	Jones, S.R.	Preliminary report on the flora and fauna of the eastern part of the Rosebud Reservation, now known as Gregory County.	Bulletin South Dakota Geological Survey	4:123-142
1909	Visher, S.S.	Additions to the Flora of the Black Hills 1	Torreyia	9:186-188
1912	Visher, S.S.	Additions to the Flora of the Black Hills 2	Muhlenbergia	8:135-137
1912	Visher, S.S.	Plants of the Pine Ridge Reservation	Bull. State Geol. and Biol. Surv. South Dakota	5:84-108
1913	Visher, S.S.	Additions to the Flora of the Black Hills 3	Muhlenbergia	9:33-39
1913	Visher, S.S.	Additions to the Flora of South Dakota 1	Muhlenbergia	9:45-52
1914	Buttrick, P.L.	The probable origin of the forests of the Black Hills of South Dakota	Forest Quarterly	12:223-227
1914	Visher, S.S.	Plants of the South Dakota sand hills	American Botanist	19:91-94
1914	Visher, S.S.	The biology of Harding County northwestern South Dakota	Report of the State Geologist for 1913-1914	
1921	Ball, C.R.	Undescribed Willows of the Section Cordatae	Botanical Gazette	71:426-437
1921	Moore, J.W.	Plants new or rare in South Dakota, and species likely to be found within the northern boundary	Proceedings of the South Dakota Academy of Science	6:92
1923	Over, W.H.	Trees and shrubs of South Dakota	South Dakota Geological and Natural History Survey	Series XXIII #2

1923	Petry, E.J.	New Plants in South Dakota	Proceedings of the South Dakota Academy of Science	84:24
1924	Powers, W.H.	Natural History in the Missouri Valley	Proceedings of the South Dakota Academy of Science	9:16-23
1925-6	Stone, C.B.	Additions to the Flora of South Dakota	Proceedings of the South Dakota Academy of Science	10:25-27
1926	McIntosh, A.C.	Brief notes on the flora of Custer State Park	Bull. S.D. School of Mines	14:101-108
1926-7	Petry, E.J.	Additions to the South Dakota Flora	Proceedings of the South Dakota Academy of Science	10:25-27
1926-7	Powers, W.H.	Flora of the Upper Missouri Valley	Proceedings of the South Dakota Academy of Science	11:85-100
1927	McIntosh, A.C.	Some sources of the Black Hills flora	Black Hills Engineer	15:38-44
1928	Hayward, H.E.	Studies of plants in the Black Hills of South Dakota	Botanical Gazette	85:353-412
1928	McIntosh, A.C.	Additions to the Flora of the Black Hills of South Dakota	Black Hills Engineer	16:160-167
1929-30	Powers, W.H.	Supplement to the Flora of the Upper Missouri Valley, S.D.A.S., Proc. 11:85	Proceedings of the South Dakota Academy of Science	13:61-65
1929-30	Powers, W.H.	Further Notes on Grammas Nuttall	Proceedings of the South Dakota Academy of Science	13:102-107
1929-30	Powers, W.H.	Journal of J.N. Nicollet in 1838 as it Relates to the Present South Dakota	Proceedings of the South Dakota Academy of Science	13:115-139
1930	McIntosh, A.C.	Botanical features of the northern Black Hills	Black Hills Engineer	18:79-107
1931	McIntosh, A.C.	A botanical survey of the Black Hills of South Dakota	Black Hills Engineer	12:159-276
1932	Over, W.H.	Flora of South Dakota	University of South Dakota	
1932	Rydberg, P.A.	Flora of the prairies and plains of Central North America	New York Botanical Garden	
1934	Osterhout, G.E.	A new <i>Cirsium</i> from South Dakota	Torreyia	34:45
1939	Benke, H.C.	New Color Form in South Dakota Aster	American Midland Naturalist	22:212-213
1940	Bray, A.V., O. Biddulph and H.C. Eyster	Goldenrods of South Dakota	Proceedings of the South Dakota Academy of Science	20:124-127
1941	Edwards, J.K.	Poisonous Plants of South Dakota	Proceedings of the South Dakota Academy of Science	21:22-33
1942	Bennett, F.L.	A Statistical Study of Pines	Proceedings of the South Dakota Academy of Science	22:125-127

1946-7	Bennett, F.L.	A Black Hills Herbarium, Commentaries on the Check List	Proceedings of the South Dakota Academy of Science	26:63-65
1952	Salamun, P.J.	A Black Hills variety of <i>Osmorrhiza longistylis</i>	American Midland Naturalist	47:251-253
1952	Winter, J.M. and C.K. Winter	A key to the families of flowering plants and to the genera and species which are in bloom during the spring in Southeastern South Dakota	Proceedings of the South Dakota Academy of Science	31:41-102
1953	Lawton, E.	Mosses of the Black Hills	the Bryologist	56:116-121
1954	Taylor, C.A.	Use of Grain Characters in Identifying Love-Grasses	Proceedings of the South Dakota Academy of Science	33:158-165
1954	Taylor, C.A.	Some Plants Not Previously Reported from the Black Hills	Proceedings of the South Dakota Academy of Science	33:166-167
1956	Hartung, A.	A history of the botanical exploration of South Dakota	Proceedings of the South Dakota Academy of Science	35:111-115
1956	Tichy, J.J.	<i>Fumaria officinalis</i> L. Reported as New for South Dakota	Proceedings of the South Dakota Academy of Science	35:116-117
1959	Dugle, J.R.	<i>Geum laciniatum</i> Muir and <i>Potentilla recta</i> L., New to South Dakota	Proceedings of the South Dakota Academy of Science	38:72-73
1959	Van Bruggen, T. and J.M. Winter	Notes on the Flora of South Dakota	Proceedings of the South Dakota Academy of Science	38:79-82
1959	Lindstrom, L.	The Flora of the Badlands National Monument of South Dakota	Proceedings of the South Dakota Academy of Science	38:163-173
1960	Van Bruggen, T. and J.M. Winter	Notes on the Flora of South Dakota	Proceedings of the South Dakota Academy of Science	39:125-129
1960	Dugle, J.R.	A Check List of the Vascular Plants of Codington county, South Dakota	Proceedings of the South Dakota Academy of Science	39:130-143
1961	Van Bruggen, T.	An Ecologic and Taxonomic Study of a Sand Dune and Flood Plain Area Adjacent to the Missouri River	Proceedings of the South Dakota Academy of Science	40:132-141
1962	Kravig, M.L.	Independent Study of Legumes Collected in the Black Hills Between June 15, 1961 and July 1, 1961	Proceedings of the South Dakota Academy of Science	41:179-188
1962	Froiland, S.G.	A new genus <i>Salix</i> (willows) in the Black Hills of South Dakota	U.S. Department of Agriculture Technical Bulletin	#1269
1963	Parenti, R.L.	The Vascular Plants of Clay County, South Dakota	Proceedings of the South Dakota Academy of Science	42:108-123
1965	Martin, J.H.	The Marsh and Aquatic Monocotyledons of South Dakota	Proceedings of the South Dakota Academy of Science	44:180-184

1965	Van Bruggen, T.	the Cyperaceae of South Dakota	Proceedings of the South Dakota Academy of Science	44:185-198
1966	Ho man, G.R. and D.A. Wikum	Observation on Possible Ecotypes in <i>Fraxinus pennsylvanica</i>	Proceedings of the South Dakota Academy of Science	45:156-163
1966	Ho man, G.R. and D.J. Rogers	A Bibliography of Vegetation Studies in the State of South Dakota	Proceedings of the South Dakota Academy of Science	45:164-169
1968	Maze, J	Past hybridization between <i>Quercus macrocarpa</i> and <i>Quercus gambelii</i>	Brittonia	20:321-333
1969	Kravig, M.L.	Orchids of the Black Hills	Proceedings of the South Dakota Academy of Science	48:119-131
1969	Beck, W.W.	Ecotypic Variation in <i>Kochia scoparia</i> (L.) Schrader	Proceedings of the South Dakota Academy of Science	48:132-137
1969	Brooks, R.E.	Ferns of the Black Hills	Transactions of the Kansas Academy of Science	72:109-136
1969	Rogers, D.J.	Isolated stands of Lodgepole and Limber Pine in the Black Hills	Proceedings of the South Dakota Academy of Science	69:138-147
1971	Sisk, J.A.	Lillies of the Black Hills	Proceedings of the South Dakota Academy of Science	50:122-127
1971	ilenius, J.F.	Vascular plants of the Black Hills of South Dakota and adjacent Wyoming	USDA Forest Service Res. Paper	RM-71
1972	Rogers, D.J.	the Use of Land Survey Records in Determining Past Vegetation in Eastern South Dakota	Proceedings of the South Dakota Academy of Science	51:73-79
1973	Stevens, H.A.	Woody Plants of the North Central Plains	University Press of Kansas	
1974	Roberts, R.E.	the Vascular Vegetation of Northeastern Day County, South Dakota	Proceedings of the South Dakota Academy of Science	53:178-190
1975	Hong, Won Shic	Hepaticae of the Black Hills, South Dakota	the Bryologist	78:211-212
1976	Van Bruggen, T.	the vascular plants of South Dakota	Iowa State University Press	

