

South Dakota State University
**Open PRAIRIE: Open Public Research Access Institutional
Repository and Information Exchange**

STEM Educational and Outreach Materials

5-2018

Road Ditch Flowers of Pine Ridge Reservation, South Dakota

Joanita M. Kant

South Dakota State University, Joanita.Kant@sdstate.edu

Follow this and additional works at: https://openprairie.sdstate.edu/stem_oer

 Part of the [Elementary Education Commons](#), and the [Indigenous Education Commons](#)

Recommended Citation

Kant, Joanita M., "Road Ditch Flowers of Pine Ridge Reservation, South Dakota" (2018). *STEM Educational and Outreach Materials*. 2.
https://openprairie.sdstate.edu/stem_oer/2

This Exercise is brought to you for free and open access by Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. It has been accepted for inclusion in STEM Educational and Outreach Materials by an authorized administrator of Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. For more information, please contact michael.biondo@sdstate.edu.

Road Ditch Flowers of Pine Ridge Reservation, South Dakota

by Joanita Kant

- Teacher's and Student's Handout –

Goal: Participants will become lifelong learners and critical thinkers about culturally relevant traditional Native plants, both inside and outside of a school setting, while considering their roles as conservationists.

Objectives: Participants will be able to identify Native plants or know where to access information to make identifications and find traditional uses through accessing the knowledge of tribal Elders, Internet sites, books, and visits to herbaria collections.

Aspects of these activities are suitable for Grade Levels: K-14

Technical terms:

herbarium: a place for a study collection of dried plant vouchers.

plant voucher: a dried and pressed plant specimen attached to a paper backing with a label for identification and collection information, as used in an herbarium.

DESCRIPTION OF ACTIVITY: HERE ARE SOME SUGGESTED ACTIVITIES LED BY TEACHERS IN SCHOOLS

- 1. PLAY A GAME TO SEE WHO KNOWS COMMON NAMES FOR SOME NATIVE PLANTS (#6 and #9).** Show the PowerPoint, "Road Ditch Flowers of Pine Ridge Reservation," and see if anyone knows the common names for the flowers in each slide, for example, "prickly poppy." The common names (and there may be many depending on your area) and the Latinized "scientific" names are given on the last slides, so that you can check your answers. Don't be concerned if you don't know many or any of them. You can become an expert in identifying these Native plants and encourage their protection. Involve an Elder in your activity. They often know a lot about Native plants such as how to identify them and traditional uses for the plant parts as medicines or foods.
- 2. MAKE NATIVE PLANT POSTERS FOR THE CLASSROOM (#1, #2, #3, #4, #5, #10, #11).** Print individual slides from the PowerPoint as 3 x 4 ft. posters to decorate the classroom. Add a label to include the Lakota, Dakota, or Nakota common name for the plant. Some Native American names for the plants are included in books and dictionaries, but you can also ask local Elders and other Native-speakers to help you with common names.
- 3. TAKE A FIELD TRIP (#6 AND #9).** Take a fieldtrip at a time when these plants are flowering in road ditches in your area. Various Native plants flower or produce fruit from about May through October. Take along a camera, a cell phone camera, a computer to check a photo of the plant for identification assistance, or a book with good photos of the plants with detailed descriptions and Native uses.

4. VISIT A RESERVATION MUSEUM THAT HAS PLANT VOUCHERS WITH LAKOTA, DAKOTA, OR NAKOTA NAMES (#1, #10, and #11). Contact the Director of the Buechel Lakota Memorial Museum at St. Francis and plan for a school visit. Ask the director if she will show you the historical plant vouchers in their collections made by Rev. Eugene Buechel. Plant vouchers are dried plants attached to paper backing with a label telling the name and where they were collected. Rev. Buechel was helping to revise a Lakota-English dictionary at the time that he collected Native plants, and he recorded the names of many plants in Lakota on Rosebud and Pineridge Reservations. There is a book about his life and the Lakota names for the plants that will be very helpful to you in your research.

5. ESTABLISH A HERBARIUM AT YOUR SCHOOL (#7). Establish an herbarium of dried plants that are and were important in Native American culture. There are many Internet sources for "how to start your own herbarium," such as the one listed in the links below. Be careful not to remove too many Native plants and their roots because it is important to leave many in place to reproduce even more of these wonderful plants at the places where you collect.

Plants that are collected for herbaria should be either blooming (in flower) or producing fruit or seeds at the time they are selected. If you cannot take a field trip for collecting, for whatever reason, collect plants in the school yard to get started and to familiarize yourself with the process of being conservationists, herbarium workers, and plant identifiers.

6. EXPLAIN HOW TO USE THE USDA PLANTS.GOV WEBPAGE (#12). A great resource is available on-line to help with plant identification for South Dakota, and it is USDA plants.gov. Go to the site and type in a common name for a Native plant, such as "chokecherry" at the box in the upper left-hand corner. Select the dropdown "common name" and "go." Some plants have many different "common names," and that is why some scientists provided Latinized names that meant a specific plant that was named for a specific person or persons. The site will then provide this group of Latinized names with some common names at the right for various kinds of chokecherry. Not all of the different kinds of chokecherry are native to South Dakota. The webpage will look like this:

Amur chokecherry	 (4)
PRVI Prunus virginiana L.	chokecherry  (12)
PRVID Prunus virginiana L. var. demissa (Nutt.) Torr.	western chokecherry  (3)
PRVIM Prunus virginiana L. var. melanocarpa (A. Nelson) Sarg.	black chokecherry  (2)
PRVIV Prunus virginiana L. var. virginiana	chokecherry

At the website, click on each of the blue links (Latinized names) to see if any of them grow in South Dakota. Clicking will bring up maps where that kind of chokecherry is Native to the

state. The first link shows that Native chokecherry grows in many areas, including South Dakota. There is more than one "variety" (var.) of chokecherry, however, as you can see by observing the second, third, and fourth links. To find which variety of chokecherry is Native to South Dakota, click the second, third, and fourth links, one at a time. When a map pops up on the screen for each click, you then look to see if South Dakota is one of the green states that has a specific Native plant variety (var.) of chokecherry. Use the back arrow at the upper left to return to the above menu so that you can check each of the four links on the site. You will find that only the third one, PRVIM, a Native variety of chokecherry as a Native plant in South Dakota, because it is within the green area on the map that appears when clicking the third choice (highlighted here in yellow) with a variety commonly known as black chokecherry. The areas of the map that are green indicate that a plant is Native (naturally growing there and not brought in from a different area).

This is a good site to help you to know if the Latinized name identification that you selected for your plant is correct. For the "black chokecherry" (another of many common names for the same plant) the United States Department of Agriculture (USDA) calls it PRVIM for short. In South Dakota, we mostly just call it "chokecherry." The Latinized scientific name is "Prunus virginiana" and the variety ("var.") is "melanocarpa." The letters such as "L.," "(A. Nelson)" and "Sarg." refer to persons involved in the naming of the plant (International Code of Botanical Nomenclature).

Chokecherries are in the *Rosaceae* family of plants, commonly called the rose family (#6 and #9).

Books and Web Links (For Teachers and Students):

Throughout this site, these resources are referred to by number (#).

1. Buechel, E., compiler (1970 and 1983). *A Dictionary of the Teton Dakota Sioux Language, Lakota-English: English-Lakota: With Considerations Given to Yankton and Santee; Oie wowapi: Wan Lakota-Ieska; Ieska-Lakota*, edited by Paul Manhart in cooperation with the Institute of Indian Studies, University of South Dakota, Vermillion. Red Cloud Indian School, Holy Rosary Mission, Pine Ridge, SD.
2. Gilmore, M. R. (1913). "Some Native Nebraska Plants with Their Uses by the Dakota." *Collections of the Nebraska State Historical Society*, 17: 358-370.
3. Gilmore, M. R. (1919). *Uses of Plants by the Indians of the Missouri River Region*, Thirty-Third Annual Report of the Bureau of American Ethnology to the Secretary of the Smithsonian Institute, 1911-1912. Government Printing Office, Washington, DC. < <http://www.swsbm.com/Ethnobotany/MissouriValley-Gilmore-1.pdf>>
4. Gilmore, M. R. (1977). *Uses of Plants by the Indians of the Missouri River Region*. University of Nebraska Press, Lincoln, NE.

5. Gilmore, M. R. (1991). *Uses of Plants by the Indians of the Missouri River Region*. Enlarged Edition. University of Nebraska Press, Lincoln, NE.
6. Johnson, J. R. and Larson, G. E. (2007). *Grassland Plants of South Dakota and the Northern Great Plains*. Research Bulletins of the South Dakota Agricultural Experiment Station (1887-2011), 569.
<https://openprairie.sdstate.edu/agexperimentsta_bulletins/569/>
7. Julie Anne Quigley Global Institute of Sustainability, (2018). "Creating a School Herbarium," Tempe, AZ: Arizona State University.
<<https://d3dqsm2futmewz.cloudfront.net/docs/.../Creating-a-School-Herbarium.pdf>>
8. Kant, J. M, Burckhard, S. R, and Meyers, R. T. (2016). STEaM Girls Activities: Flandreau Indian School, Flandreau, SD, 2016 (2016). *Civil and Environmental Engineering Faculty Publications*. 1. <https://openprairie.sdstate.edu/cvlee_pubs/1>
9. Larson, G. E. and Johnson, J. R. (1999). *Plants of the Black Hills and Bear Lodge Mountains*, (1999). Research Bulletins of the South Dakota Agricultural Experiment Station (1887-2011),735.
<https://openprairie.sdstate.edu/agexperimentsta_bulletins/735/>
10. Rogers, D. J. (1980a). *Lakota Names and Traditional Uses of Native Plants by Sicangu (Brule) People in the Rosebud Area, South Dakota: A Study Based on Father Eugene Buechel's Collection of Plants of Rosebud around 1920*. The Rosebud Educational Society, Inc., St. Francis, SD
11. Rogers, D. J. (1980b). *Edible, Medicinal, Useful, and Poisonous Wild Plants of the Northern Great Plains—South Dakota Region*. Little Sioux Press, St. Francis, SD.
12. United States Department of Agriculture, "Plants Database" interactive webpage.
<<https://plants.usda.gov/java/>>

ASSESSMENT:

STUDENTS, SELECT ONE OF THE FOLLOWING AND MAKE A CLASS PRESENTATION

1. Make conservation art and photos. Take photos of road ditch plants in bloom and bring the photos to class to show-and-tell if you have access to a cell phone with a camera. Bring drawings or paintings if you do not have access to a camera. Identifications can be made by comparing the plants to photos and descriptions in these books: #6 and #9 that are available free on-line. Taking photos and using plants as models for art are good ways to help protect traditional plants from too much harvesting. It is important that Native plants are protected so that they remain a resource for future generations.

3. Pick traditional Native fruits when they are producing fruits (such as chokecherry or wild plum), and bring them to class where an Elder can help everyone to make a traditional dish such as *wojapi* or *wasna*. It is important to know that the fruits on the plants you picked were not in an area where weed killers or other chemicals were applied as the plants were growing, because those plants and their fruits might make you feel sick. Also remember not to eat the seeds or center stones of wild fruits because they can cause upset stomach, too (# 8 for recipes and cautions).

4. Show the PowerPoint photos (click the link on Open Prairie) (#6 and #9) to an Elder and have him or her write the common names for each one in Lakota, Dakota, or Nakota for you. If they don't know how to spell the words, just write them as they sound to you. You can always change them or add a second spelling as you become more knowledgeable on your way to becoming a Native plant expert. Bring your information to class and present it. Compare your answers with #1, #10, and #11.

5. Get a blank notebook and use it like a diary to collect your Native plant knowledge for an entire year. A hardcover notebook is best because you may use it a lot outdoors. Pick a few flowers from Native plants and press them to dry in a heavy book that you no longer use such as a telephone book (they might stain the book pages). Put a note with the plant so that you know the date and exactly where you collected the plant. Draw a map of the place you collected the plant. Look up the name of the plant and add it to your note (#6 and #9, include page numbers). After a few days, when the blooms are dried out, use school glue to put the flowers in your field notebook, along with the label information. Include the Native name of the plant if you know it (#1, #10, and #11). Keep in mind that it is important to respect the existence of traditional Native plants and only pick a few so that the plants do not stop growing at that place where you picked the flowers.

6. Pick wild fruit as a family activity, but ask landowners for permission on private land. Ask adults and Elders when chokecherries and plums are ready to pick in your area. Get together a group of students and adults for a field trip to pick fruit. After picking fruit, meet at someone's house where adults and Elders can help make traditional foods such as *wojapi*, *wasna*, or juice (#8 for recipes). Freeze any leftovers and use them later. Report to your class what happened through a speech or a short, written report that includes some photos or your drawings or paintings of the event.

State Educational Standards (May 2015):

2-PS1-1 Plan and carry out an investigation to describe and classify different kinds of materials by their observable properties. (Patterns) (SEP: 3; DCI: PS1.A; CCC: Patterns)

2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats. (Systems) (SEP: 3; DCI: LSD4.D; CCC: Systems)

5-PS1-3 Make observations and measurements to identify materials based on their properties. (SEP: 3; DCI: PS1.A; CCC: Scale/Prop.)

5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. (SEP:8; DCI: ESS3.C; CCC: Systems)

MS-LS1-5 Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. (SEP: 6; DCI: LS1.B; CCC: Cause/Effect)

MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. (SEP: 4; DCI: LS2.A; CCC: Cause/Effect)

MS-LS2-5 Evaluate competing design solutions for maintaining biodiversity and ecosystem services.* (SEP: 7; DCI: LS2.C, LS4.D, ETS1.B ; CCC: Stability/Change, Technology)

MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.* (SEP: 6 ; DCI: ESS3.C; CCC: Cause/Effect, Technology)

MS-ESS3-4 Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems. (SEP: 7; DCI: ESS3.C; CCC: Cause/Effect, Technology, Nature Science/Consequence-Actions)

HS-LS2-6 Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms under stable conditions; however, moderate to extreme fluctuations in conditions may result in new ecosystems. (SEP: 7; DCI: LS2.C; CCC: Stability/Change)

HS-LS2-7 Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity. (SEP: 6; DCI: LS2.C, LS4.D, ETS1.B; CCC: Stability/Change)

HS-LS2-8 Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. (SEP: 7; DCI: LS2.D; CCC: Cause/Effect)

HS-LS4-4 Construct an explanation based on evidence for how natural selection leads to adaptation of populations. (SEP: 6; DCI: LS4.C ; CCC: Cause/Effect)

HS-LS4-5 Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species. (SEP: 7; DCI: LS4.C; CCC: Cause/Effect)

HS-LS4-6 Use a simulation to research and analyze possible solutions for the adverse impacts of human activity on biodiversity. (SEP: 5; DCI: LS4.C, LS4.D, ETS1.B; CCC: Cause/Effect)

HS-ESS3-6 Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity. (SEP: 5; DCI: ESS2.D, ESS3.D; CCC: Systems)

Acknowledgments:

This material is based on work supported by the National Science Foundation under Grant Number 1037708. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the National Science Foundation nor the educational institutions with which the author is or was affiliated.