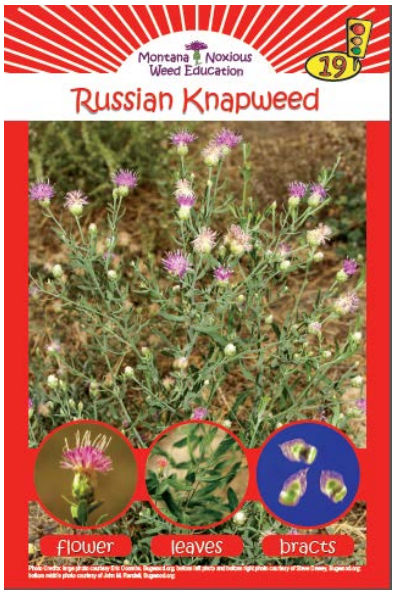
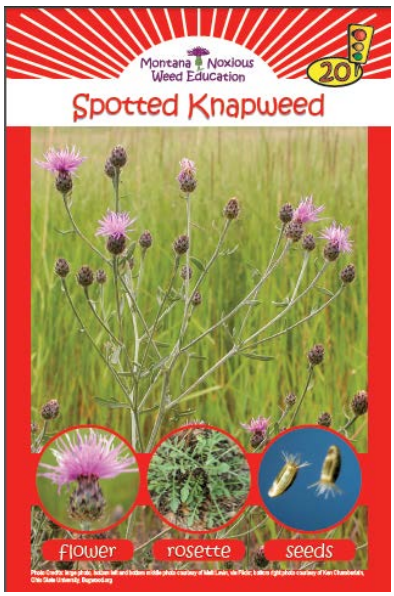
Montana Noxious Weed Education

Lesson Title: Human Interaction and Noxious Weeds

Grades: 5-8
Duration of Lesson: 2- 50 minute classes
1 – 30 minute summary





Brief: Students will understand human's role in spreading and stopping the spread of noxious weeds by observing their potential spread through travel in Montana.

This lesson can be followed by the lesson *Allelopathy and Invasion* for science based inquiry

Materials:

Activity cards found in Appendices 2 (cut them out prior to teaching lesson)
One printed highway map of Montana (Appendix 1 A)
One printed or screen view of Appendix 1 A
Montana Noxious Weed Education Folder
Russian, Diffuse, and Spotted Knapweed cards (part of card set in the folder)
Montana Noxious Weed Education Poster
Example of Knapweed plant if available (please watch out for seed scatter, handle carefully)

Key Terms
Noxious weeds, allelopathy, achene, bract, herbicide, inhabit, lancelolate, pappus, rhizome, annual, biennial, perennial, inhabit, medicinal, lateral, pinnate, biological control agents, rosette, taproot, sticky, and transport.

MONTANA COMMON CORE STANDARDS: NGSS – Science Grade 4 4-ESS3-2, Grade 5 ESS3.C
MONTANA SOCIAL STUDIES STANDARDS: Content Standard 3

Students will know:	Students will be able to:
Weed seeds are transported by human interactions, often due to seed adaptations. Humans have to potential to widely distribute noxious weeds	understand the potential impact of human interaction in noxious weed spread
Performance / Observations	
Performance Task(s):	Other Evidence:
Recognize potential of human travel to cause of weed spread. Geographically identify several Montana transportation routes	Students will recognize ways they could help stop the spread of noxious weed seeds

Introduction
Noxious weeds are spread by many means, and human are one of those means. In most cases the transportation occurs when seeds or plant parts are carried from one area to another. Many seeds have adaptations which make them easier to spread, such as sticky surfaces, pappus to aid in transportation, and flower heads which generate thousands of seeds per plant. In this lesson students will investigate the potential spread of noxious weeds following a large group gathering. This lesson can be adapted to be used with any of the 32 noxious weeds in the Montana Noxious Weed Education packet.

Learning / Inquiry Activities:
Show students the Montana Noxious Weed Education packet, cards, and poster. Let them know that you will be talking about Knapweed today, cards #19, #20, and #21. After showing the photo on the front, read and discuss the information on the back of the card. Show seeds if you have them available. Ask students if they recognize the plant and if they have ever had seeds from Knapweed stick to them.

Step 1: Give each student one of the student activity cards from Appendix 2

Step 2: Show the picture of the white bison below, and then read the story below:

BIG MEDICINE (1933-1959)

White bison are extremely rare, historically appearing only once in every five million births. To many Indian peoples such animals are sacred and represent great spiritual power. Consequently, the May 3, 1933, birth of a white buffalo calf on the National Bison Range on Montana's Flathead Indian Reservation was greeted with celebration and wonder. The birth was a crowning achievement of the Confederated Salish and Kootenai Tribes' efforts to recover a population of bison for their reservation. Named in recognition of the sacred power attributed to white bison, "Big Medicine" held great significance for the people of Montana, both Native American and non-Indian. For this reason, in the early 1950s the Montana Historical Society made arrangements to ensure that, upon his death, Big Medicine would be moved to the state's museum and permanently preserved for future generations. Because he had some pigmentation - blue eyes, tan hooves, and a brown topknot - Big Medicine was a white buffalo rather than a pure albino. At his prime, he weighed 1,900 pounds, stood six feet high at the hump, and measured twelve feet%, 20from the tip of his nose to the end of his tail. Although his fame spread worldwide, Big Medicine spent his entire life on the National Bison Range where he received special care that enabled him to live much longer than bison normally do. As a result, however, when he died in 1959 his hide was in poor condition, and in many places, almost hairless. Consequently, his advanced age will forever be reflected in the worn appearance of the mount.

Photo courtesy of Montana State Government: http://mhs.mt.gov/museum/permex.asp

Another photo of Big Medicine can be seen at: http://www.flickr.com/photos/tc57/6925567203/

A rare gem indeed is the white bison, and the sighting of one is very likely to have people from all across the nation coming to have a look. If they came to see such a rare sight such as this today, what might they accidentally take home with them? You are now going to play out a scenario where you have been a part of a group who came to the National Bison Range on Montana's Flathead reservation to investigate the site where Big Medicine lived. You will be tracking your movement throughout Montana, as will your classmates. You will map your travels and find out just how many miles your group traveled, and in which directions.

Beginning the quest:

Step 1: Ask students to find the following location on Google maps, this is very close to where the famous white bison "Big Medicine" roamed from 1933-1959.

Tower 2 Road
Charlo, MT

Step 2: Ask students to find the shortest route from the town they have been assigned on their student card to the site above using Google maps or MapQuest. Ask them to record the number of miles from their town to the address above and to get ready to retrace their route onto a map of Montana.

Step 3: Students will trace their route with a pencil from the Charlo address to their town on the map of Montana.

Step 4: Once they have the route correctly identified ask them to retrace it on the Montana map with a colored marker.

Step 5: Ask each student to call out how many miles they traveled, with every student recording each other's miles. Now each student should add up all of the miles that students calculated. After checking the answer write the total miles on the Montana map.

Step 6: With the finished map on display, show the students the photo below of an area near Charlo, and then read the story below:

NRCS, July 2010, Spotted Knapweed near Charlo, MT

When people travel across any land that has noxious weeds present the potential to spread them is very real. This photo was taken near Charlo, MT, near where "Big Medicine" lived. As you can see the area is infested with Spotted Knapweed. Weed seed from Spotted Knapweed and other noxious weeds is very easy to transport on clothing, shoes, gear, and vehicles.

Look at your completed map, how much of Montana was potentially exposed to noxious weeds from your group's investigation of the area where "Big Medicine" roamed? How many miles?

Show students Appendix 1 B, this map shows how much of Montana would have been potentially infested if all student cards had been used from just this one activity!

Questions for class:

1. Did the travels of your group have the potential to spread noxious weed seed across Montana?

2. Could the seeds distributed on your routes start new infestations along the way?

3. Could the seeds you carried back start new infestation in your home town?

4. What impact would the spread of noxious weeds have on your particular activity as shown on your card? Consider the vocabulary terms and information on the cards to better understand the impact, and for more information on how noxious weeds affect us review the *Why Should I Care* bulletin in your packet and visit: http://montana.plant-life.org/page_weeds.htm).

After finishing the activity discuss the following weed control with students, you can help stop the spread of noxious weeds by following a few simple steps:

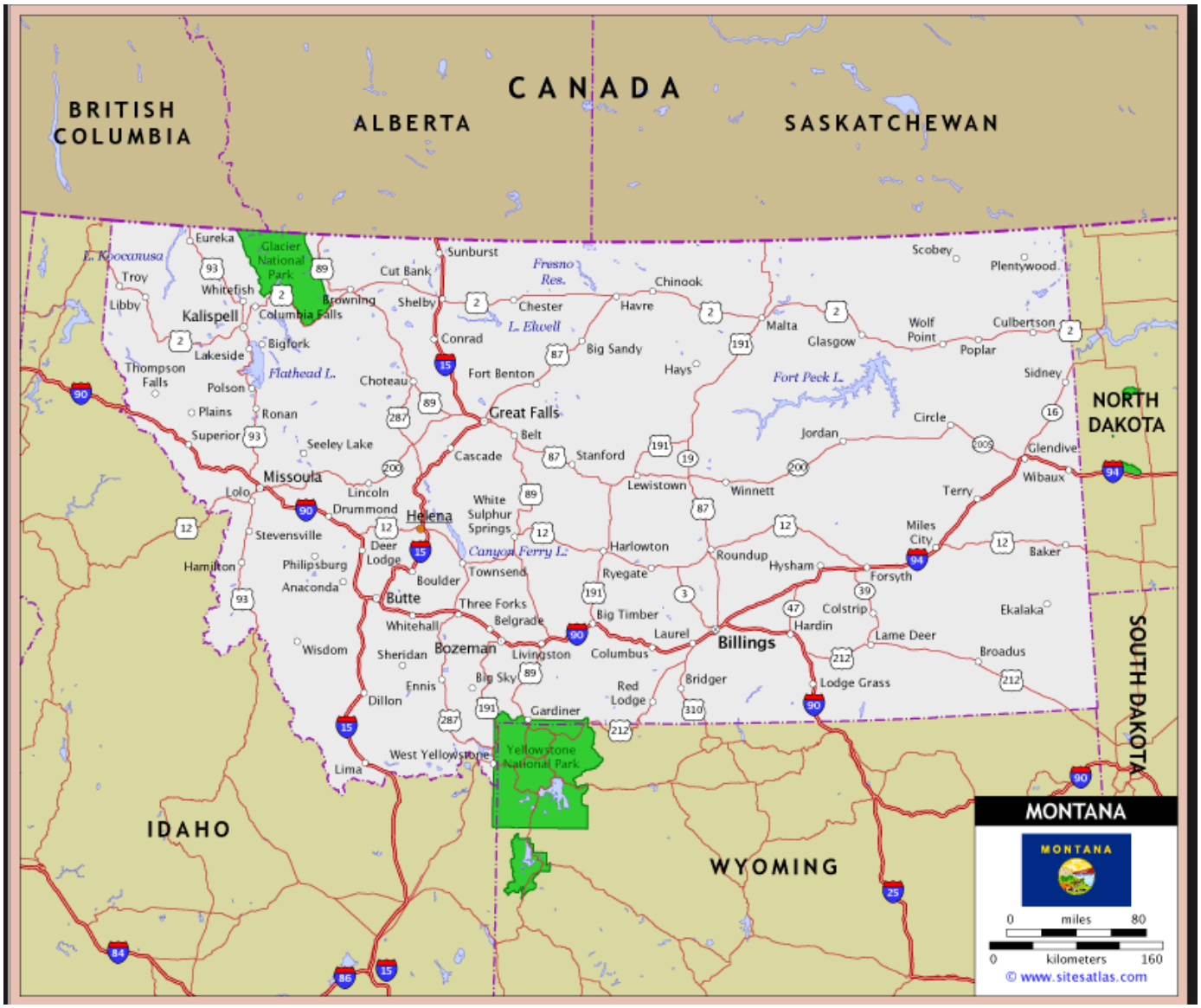
Check your shoes, shoelaces, clothing, tires, and any gear you had along for weed seeds and plant parts: Throw the weed seeds and plant parts away in a trash receptacle. Do not throw them on the ground as they can start new infestations. Check your home area often for weeds which may have been carried in, it is much easier to stop them when there are only a few!

Contact your local Weed District Coordinator http://www.mtweed.org/ for more information on noxious weeds.

Lesson Extension: Read about other noxious weed seed characteristics, can you find other noxious weeds and come up with scenarios on how groups of people might be unknowingly assisting in the spread of noxious weeds? Reflect on the aquatic noxious weeds.

Thank you for being part of the solution to noxious weed control in Montana!

Appendix 1 A



Google Maps

http://agr.mt.gov/agr/Programs/AgClassroom/

Appendix 1 B

Map of potential spread of noxious weeds from mapping portion of lesson, lesson routes noted in pink, blue, and purple.

Google Maps

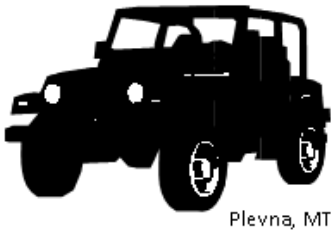
Photographer

Billings, MT

Mountain Biker

Red Lodge, MT

Four wheel drive enthusiast



Plevna, MT

Rancher

Lima MT

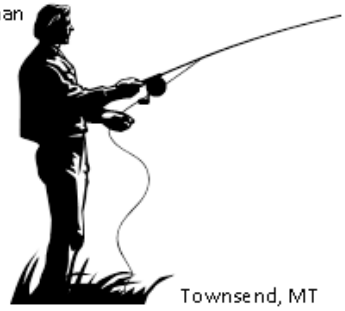
Miner

Butte, MT

Picnicer

Darby, MT

Fisherman



Townsend, MT

Hiker

West Yellowstone, MT

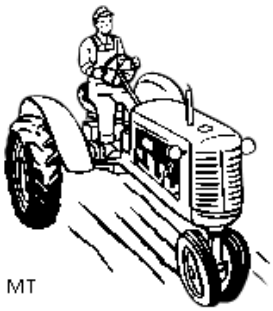
Surveyor

Lodge Grass, MT

Rockhound

Rexford, MT

Farmer



Sunburst, MT

Woodcutter

Judith Gap MT

Four wheeler rider

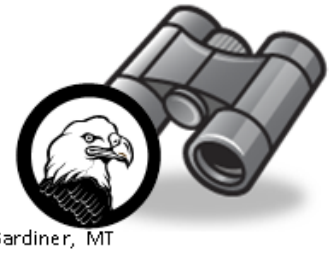
Plentywood, MT

Nature Artist

Circle, MT

Horseback rider

Sidney, MT

Birdwatcher  Gardiner, MT	Runner  Choteau, MT	Dog walker  Opheim, MT
Ranger/field staff  East Glacier, MT	Dirt bike rider  Lame Deer, MT	Mountain climber  Hays, MT
Boater  Broadus, MT	Camper  Troy, MT	Berry picker  Thompson Falls, MT
Sections left blank for additional activities		