

# Bitterroot Adaptations and Salish Traditions

## Fast Facts

Curriculum Area: Science, Art, History, and Culture  
Grade Level: Grade 4

## Stage 1 Desired Results

### Established Goals

#### Essential Understandings Regarding Montana Indians

**Essential Understanding 1:** There is great diversity among the twelve sovereign tribes of Montana in their languages, cultures, histories, and governments. Each tribe has a distinct and unique cultural heritage that contributes to modern Montana.

**Essential Understanding 3:** The ideologies of Native traditional beliefs and spirituality persist into modern-day life as tribal cultures, traditions, and languages are still practiced by many American Indian people and are incorporated into how tribes govern and manage their affairs. Additionally, each tribe has its own oral histories, which are as valid as written histories. These histories predate the “discovery” of North America.

#### Montana Science Content Standards

4-LS1 From Molecules to Organisms: Structures and Processes		
Students who demonstrate understanding can:		
<b>4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</b> [Clarification Statement: Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin. <b>**Each structure has specific functions within its associated system.</b> ] [Assessment Boundary: Assessment is limited to macroscopic structures within plant and animal systems.]		
The performance expectations above were developed using the following elements from the NRC document <i>A Framework for K–12 Science Education</i> :		
<b>Science and Engineering Practices</b> <b><u>Engaging in Argument from Evidence</u></b> Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). Construct an argument with evidence, data, and/or a model. (4-LS1-1)	<b>Disciplinary Core Ideas</b> <b><u>LS1.A: Structure and Function</u></b> Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. (4-LS1-1)	<b>Crosscutting Concepts</b> <b><u>Systems and System Models</u></b> A system can be described in terms of its components and their interactions. (4-LS1-1)
<i>Connections to other DCIs in this grade-level:</i> N/A		
<i>Articulation of DCIs across grade-levels:</i> <b>1.LS1.A</b> (4-LS1-1); <b>3.LS3.B</b> (4-LS1-1); <b>MS.LS1.A</b> (4-LS1-1)		
<i>ELA and Mathematics Standards Connections:</i>		
<i>ELA/Literacy –</i>		
<b>W.4.1.a–d</b> Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (4-LS1-1)		
<i>Mathematics –</i>		
<b>4.G.3</b> Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry. (4-LS1-1)		

3-LS4 Biological Evolution: Unity and Diversity		
<p>Students who demonstrate understanding can:</p> <p><b>3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. [Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]</b></p>		
<p>The performance expectations above were developed using the following elements from the NRC document <i>A Framework for K–12 Science Education</i>:</p>		
<p><b>Science and Engineering Practices</b>  <u>Engaging in Argument from Evidence</u>  Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed worlds.  Construct an argument with evidence. (3-LS4-3)</p>	<p><b>Disciplinary Core Ideas</b>  <u>LS4.C: Adaptation</u>  For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)</p>	<p><b>Crosscutting Concepts</b>  <u>Cause and Effect</u>  Cause and effect relationships are routinely identified and used to explain change. (3-LS4-3)</p> <p>-----</p> <p><b>Connections to Engineering, Technology, and Applications of Science</b></p> <p><b>Interdependence of Science, Engineering, and Technology</b>  Knowledge of relevant scientific concepts and research findings is important in engineering. (3-LS4-3)</p>
<p><i>Connections to other DCIs in second grade:</i> <b>3.ESS2.D</b> (3-LS4-3)</p>		
<p><i>Articulation of DCIs across grade-bands:</i> <b>K.ESS3.A</b> (3-LS4-3); <b>2.LS2.A</b> (3-LS4-3); <b>2.LS4.D</b> (3-LS4-3); <b>MS.LS2.A</b> (3-LS4-3); <b>MS.LS4.B</b> (3-LS4-3); <b>MS.LS4.C</b> (3-LS4-3); <b>MS.ESS1.C</b> (3-LS4-3)</p>		
<p><i>ELA and Mathematics Standards Connections:</i></p> <p><i>ELA/Literacy –</i></p> <p><b>RI.3.1</b> Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS4-3)</p> <p><b>RI.3.2</b> Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS4-3)</p> <p><b>RI.3.3</b> Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS4-3)</p> <p><b>W.3.1.a–d</b> Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-LS4-3)</p> <p><b>W.3.2.a–d</b> Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS4-3)</p> <p><b>SL.3.4</b> Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.  Plan and deliver an informative/explanatory presentation on a topic that: organizes ideas around major points of information, follows a logical sequence, includes supporting details, uses clear and specific vocabulary, and provides a strong conclusion. (3-LS4-3)</p> <p><i>Mathematics –</i></p> <p><b>MP.2</b> Reason abstractly and quantitatively. (3-LS4-3)</p> <p><b>MP.4</b> Model with mathematics.(3-LS4-3)</p> <p><b>3.MD.3</b> Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. (3-LS4-3)</p>		

## Understandings

- Careful observation can be used as a vital scientific tool to study plant adaptation.
- The Bitterroot’s unique adaptations for survival.
- The Salish people’s comprehensive knowledge of the Bitterroot.
- Why the Salish revered the bitterroot and its properties.

- The importance of respect for Salish knowledge of native plants.
- Plants are essential to our human survival.

## Driving Questions

- How do some Salish people study plants?
- How do some scientists study plants?
- How would you find out more about the Bitterroot?
- How do plants adapt to the environment they live in?
- How does understanding plants help you today?
- Why do you think Indians honored certain plants?
- How does knowledge about plants affect your life in your community?

## Students will learn...

- observation is a legitimate tool of scientific inquiry.
- an adaptation is a process helping a plant meet its needs in its environment.
- how to make logical deductions based on written evidence and understanding of plants.
- how to grow plants from cuttings and roots.
- the background and unusual story about the bitterroot.

*Basic plant structure and function are concepts needed to engage students successfully in this lesson.*

## Stage 2 Learning Plan

### Included in this Lesson

- Bitterroot Background Knowledge Building
- Reading Activity: Read Journal Entries and Bitterroot Origin Story
- Writing Activity: Creating and Using a Journal
- Science Activity: Tracking Bitterroot Growing Season
- Science Activity Extension: Growing Plants from Cuttings
- Viewing Activity: The Story of the Bitterroot
- Writing Activity: Letters to local Tribes or Ask a Professional

### Resources Needed

The Story of the Bitterroot is an eight-part series all accessible via YouTube

Part 1: [Legend of the Bitterroot](#)

Part 2: ["Corps of Discovery"](#)

Part 3: [Botany](#)

Part 4: [The State Flower](#)

Part 5: [When We Were Children](#)

Part 6: [Mr. Bitterroot](#)

Part 7: [The Gathering](#)

Part 8: [The Future](#)

**From *the Story of The Bitterroot*, The Salish-Pend d'Oreille Culture Committee asks materials involving Coyote stories only be used during the winter months, specifically when there is snow on the ground. Also, teachers are encouraged to let students know that out of respect for tribal culture they should not go out and collect the bitterroot plants unless they are with a tribal member. Other foods, such as rose hips or wild mint, could be gathered as examples of traditional foods as they remain abundant.**

## Scientific Background Knowledge Building: Bitterroot

**Salish name:** Spetlum, Speł' m

**Crow:** Basauxaw

**Scientific Name:** *Lewisia rediviva*

**Description:** Bitterroot is in the family Purslane (*Portulacaceae*) and the State Flower of Montana. The family Portulacaceae are flowering plants, with about 500 species of herbs and small shrubs, in North and South America, primarily along the Pacific coast. They often have fleshy leaves and sometimes form rosettes at the base of the plant or are arranged in growth patterns resembling a rose. Bitterroot is a succulent plant, native to western North America. The flowers remain open for two-three days and are pollinated by Montana's native bees (Howard, 1993).

The flowering stalk produces a singular mostly pink, or sometimes white, flower up to about four cm in length situated on a very short stem. There are between 10-19 petals, each 2-2.5cm long, with six-eight sepals behind them. Sepals are in fact leaves, but often resemble the petals in likeness. Additionally, the flowers open with the morning sun and close again at night. (*Anderson and Roderick, 2000*) growing close to the ground to minimize exposure to wind.

The main stem merges into the long tuberous root structure. The plant can be cultivated in rock gardens; however, the Salish and Blackfeet request it not be cultivated without express permission from their Elders or Culture Committee nor may it be collected on American Indian land without a Native person present. Bitterroot is a geophyte, meaning a perennial plant that propagates from a bud growing under the soil, like a tuber, bulb, corm, or rhizome.

**Edibility:** The starchy root is edible in spring, however, it becomes bitter-tasting by summer, hence its English name. However, the Crow name is *Basauxawa* meaning, "lots of veins" or "bushy limbs" describing the roots, "as they go here and there and everywhere" (*Snell 10*). Bitterroot is considered a brain food in both Native and English understanding, as it promotes clarity and improves memory (*Snell 10*). Bitterroot is a culturally significant plant for several Native American tribes in the West, including Flathead, Kootenai, Nez Perce, Paiute, Shoshoni, and others. Traditionally, the roots were gathered, dried for storage, and used for food or trade. The root is bitter, so it was cooked and often mixed with meat or berries (Kratz, 2021). Bitterroot is versatile because once the roots are peeled, cleaned, and laid out to dry, they will reconstitute at any point in time. Dried bitterroot was essential to have in the winter as a source of starch and carbohydrates. (Bear Don't Walk, 2019)

This connects to **Essential Understanding #3:** The ideologies of Native traditional beliefs and spirituality persist into modern-day life as tribal cultures, traditions, and languages are still practiced by many American Indian people and are incorporated into how tribes govern and manage their affairs. Additionally, each tribe has its own oral histories, which are as valid as written histories. These histories predate the "discovery" of North America.

**Wildlife Value:** Though humans both historically and currently consume bitterroot and the plant is of great cultural significance, the Gray-crowned rosy finch (*Leucosticte tephrocotis*) utilizes the plant as well. This finch, native to Montana and a species of concern, forages for its seeds. ("Gray-crowned Rosy-Finch", 2021). Deer mice and other rodents also consume the leaves and seeds (Howard, 1993).

**Distribution:** Bitterroot is found in most of western and southern Montana, British Columbia to Alberta south to California, Arizona, and Colorado (*Lesica 2012*). This perennial plant, meaning it comes back year after year, is found between 60-10,000 meters in elevation, in open woodlands and sagebrush shrublands with pine, oak, or juniper in many soil types such as shale, sand, clay, granite, serpentine, or talus (*Anderson and Roderick,*

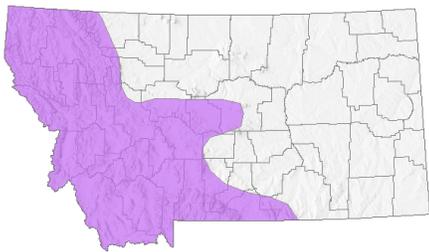
2000). It prefers full sun, sandy, well-drained soil and does not compete well with other plants nearby (Bitterroot 2021).



*Lewisia rediviva* range map. USDA PLANTS Database.

**Status:** Across North America, bitterroot is common and widespread within its range. In Montana, it is common, widespread, and abundant within its range (see images) and is *not* considered vulnerable. However, in certain parts, it is thought to be quite rare and/or suspected to be declining. Bitterroot has what is known as intermediate ecological tolerance, meaning it is capable of enduring some disturbance and is stable in its native community, but does not thrive with some natural or human disturbance.

It is presumed fire would top-kill the plant when it is actively growing; however, fires occurring during their dormant phase would not harm this geophyte because the carbohydrates stored in the root would adequately survive a fire. Unfortunately, repeated spring fires would probably kill the plant (Howard, 1993).



*Lewisia rediviva* Montana range map. Montana Field Guide.

**Reproduction:** Bitterroot reproduces naturally by seed or can be cultivated by root cuttings. However, starting bitterroot by a root cutting means digging up the root of a wild individual ultimately killing the parent plant. This not only offends the traditional and cultural methods of sustainable harvesting, but this method is incredibly difficult to cultivate. Therefore, students can learn about starting new plants from root or leaf cuttings in the classroom, and without offending Montana’s native peoples, by using different and easier succulent varieties.

Succulents are plants which store water in thick, fleshy leaves, due to the soil or arid conditions in which they survive. The term succulent comes from the Latin for “juice” or “sap” due to their ability to store water in their leaves or stems. Some native Montana examples you might recognize are Plains Prickly Pear (*Opuntia polyacantha*), Missouri Foxtail Cactus (*Coryphantha missouriensis*), Simpson’s Hedgehog Cactus (*Pediocactus simpsonii*), and Spinystar Cactus (*Coryphantha vivipara*) (Lesica 2012). Other native examples of succulents which aren’t cacti are stonecrops in the *Crassulacaceae* family or springbeauty (*Claytonia lanceolata*) in the *Portulacaceae* family. Interestingly, all cacti are succulents, but not all succulents are cacti. Sedums, stonecrops, pothos, or other succulents are great examples of plant varieties which can be cultivated and grown in the classroom both easily and without damaging native parent plants, such as bitterroot.

**Connection to Standards:** The bitterroot is hardy to Montana’s harsh climate, thriving in windswept arid plains, yet important to Montana’s Native people for millennia both as food and culture (Essential

Understanding 1). It not only depends on native bees to pollinate (**HS-LS4-2**, ) but its many adaptations (**1-LS1-1**, **4-LS1-1**, **3-LS4-3**, **MS-LS4-6**, **HS-LS4-2**, **HS-LS4-4** ) allow it to survive fire, wind, extreme heat, extreme cold, overharvesting by humans (**HS-LS4-6**), and depredation from birds and rodents (**5-LS2-1**, **MS-LS2-3**). Using the bitterroot as a teaching tool for botany, ethnobotany, wildlife biology, geology, and social science exposes students to all of these Montana Science Content Standards as multidisciplinary and from kindergarten to high school. Using an alternative plant, like pothos or sedum, to model the bitterroot’s biology for propagation adheres to the respectful wishes of Montana’s many tribes and their sovereignty (Essential Understandings 3 and 7).

Suggested readings for building student cultural background knowledge:

***The Origin of Bitterroot: A Salish Story*** from [Student Reading, Unit 1 People and Glacier National Park](#) (page 29).

**Native Plants Teacher Background Information** from [Glacier National Park Work House Curriculum - Unit 4: Native Plants Our Medicine... Our Food](#) (page 61)

[Native American students plant bitterroot flowers at Fort Missoula](#)

[Salish Youth Plant Bitterroot](#)

Suggested readings on laws and ethics when collecting native plants in Montana:

[Montana law for wildcrafting \(collecting native plants\) off the reservation](#)

[Montana Wildflowers and Ethical Harvesting](#)

Suggested reading on the botany of bitterroot:

[USDA Plant Database - Bitterroot](#)

[Montana Plant Life - Bitterroot](#)



*Image 1: Photo of the Bitterroot flower. 2020. Photo credit Naomi Alhadeff.*

## Reading Activity: Read Journal Entries and Bitterroot Origin Story

Students read the following journal entries and articles. This could be a group activity or perhaps set up as a jigsaw activity in which students are assigned passages they read as a small group or independently first. The students then come back as a whole class and share what the passage they read was about with the other groups.

### Observations by a Helena teacher of bitterroot growing by her home

Below are journal entries written by a Helena, Montana teacher. She details her observations of bitterroot she found around her home.

*The Origin of Bitterroot: A Salish Story* from [Student Reading, Unit 1 People and Glacier National Park](#) (page 29).

**Native Plants Teacher Background Information** from [Glacier National Park Work House Curriculum - Unit 4: Native Plants Our Medicine... Our Food](#) (page 61)

### Observations of a Helena Teacher about Bitterroots Growing by her Home

June, 2002 We are starting to build our new house on Lincoln Road. I'm there helping when I realize there are beautiful pink flowers blooming close to the ground. The day is hot, about 90 degrees and it's very dry. The soil is sandy and I recognize sage brush and some clumps of wild grass. I go get my plant field guide to wildflowers and I'm almost sure the pink flower is the Bitterroot. They are such a beautiful contrast to the dirt and dull color of the sage brush. That evening the flowers fold up into almost a bud shape. They bloom for only about a week and then all signs of them are gone.

June, 2003 Today I was walking to the edge of our lawn where the fields were still wild and I started watching for any sign of the Bitterroots I had seen last year. After a few days I noticed some little clumps of "plump" needle-like leaves that came out from a central point like petals. They suddenly appeared where there had been no sign of them. I watched for about a week and the leaves die and in their place are pink cone-shaped buds. They bloom again for about a week and then everything disappears.

June, 2004 I am anxiously looking to see if the Bitterroots appear again. They are such pleasant splashes of color in the dry field. I keep watch and in about 2 weeks, the plump needlelike leaves appear from nowhere. It's a good thing they are all over the hillside because I can never remember exactly where to look. This year, however, I'm doing my Montana History unit right now and I want to show the kids a Bitterroot. So, I dig up a clump of leaves and plant it in a pot I have, keeping it outside until it blooms. Sadly, the leaves disappeared, no blooms appeared, and the plant dies.

June, 2005 I am approaching the Bitterroot season sadly this year because I want so badly to show my students, but I couldn't get the plant to live. I still watch and, in a week, or two the plump needle-like leaves appear. Then they die and the buds appear. They blossom and, in a week, everything is over. So, I take a picture of one of them to show my students.

In late June I decided to transplant some plants and I went to a pile of pots, grabbing the top one. Strangely, the pot underneath has dirt and a plant growing in it. I assume it's a weed and wonder how it could grow under another pot with no sun getting to it and no water except the snow from winter. Somehow it doesn't look like any weed I've ever seen. I leave it by the shed and continue my transplanting. A few days later I realize that pot was the one I had the Bitterroot in. The plant had come back to life after a year of neglect. I planted it in my garden and it bloomed that year although it bloomed in late June instead of early June like the rest.

June, 2006 This yearly Spring watch for the Bitterroot is becoming a pleasant anticipation. I'm excitedly watching the field. A few days later, the clump of green leaves appear—a few at first, then many. Still no

flower buds have appeared. A week later, the buds are up and some are blooming. I head outside to take some pictures. They are so close to the ground; the sage brush almost hides them. At least I now have pictures to show my students. About a week later, the blooms are dried up and blown away. No sign that the plants were ever there.

May, 2007 The Bitterroot came early to the field this year—we did have a wetter spring. First the clump of leaves appears, then they disappear, the buds come and bloom.

July, 2007 The Bitterroot in my garden still has leaves but it hasn't bloomed. By the end of July, the leaves have disappeared and buds are blooming. This is the latest I've ever seen this one bloom.

## Writing Activity: Creating and Using a Journal

After reading the previous journal entries and articles, have students create a journal out of four-six sheets of lined paper and one sheet of construction paper, folded for a front and back cover. Staple down the center.

Lead discussion of key terms in understanding all plants.

- What do we know about plants?
- What are the three main parts of a plant? Leaves, stem, roots
- What four things do plants need to live? air, water, nutrients, sunlight
- What are adaptations? Can you find it in the glossary of a science book?

**Adaptation:** a body part or behavior that helps an organism meet its needs in its environment. For our purposes, it is a part of a plant (or process) that helps meet its needs in its environment.

Discuss adaptations of other plants, like prickly-pear cactus, pine tree, huckleberry as examples. Students then write in their journals at least one part of a plant showing an adaptation.

- Cactus: shallow roots, fleshy leaves full of water, etc.
- Pine Tree: needle shaped leaves, non-deciduous
- Huckleberry: appealing to animals to spread seeds
- What other plants in Montana seemingly have adaptations?

Have students share some of the information they recorded and give other students the chance to revise if necessary.

Lead a discussion, using photos of the Bitterroot, and brainstorm what adaptations the Bitterroot may possess? Have students create the blank chart (below) in their journal and write down their own educated guesses and reasoning for Bitterroot adaptations.

## Science Activity: Tracking Bitterroot Growing Season

Have students find long-term patterns by recording when the Bitterroot sprouts, blooms, and when harvest occurs.

## Science Activity Extension: Growing Plants from Cuttings

Students attempt growing different plants in the classroom to determine which plants can be grown from only a root or cutting. Examples of plants grown from roots or cuttings: Pothos, willow, or most succulents. See examples below.



## Bitterroot Plant Parts and Their Adaptations – Student Version

<b>Plant Parts</b>	<b>Plant Needs</b>	<b>Adaptation to the Environment</b>	<b>How do you know?</b>

Based on the previous readings, have students continue adding to the chart in their journals and answer accompanying questions.

How did your assumptions compare to the Helena teacher’s observations about Bitterroot?

How could removing the Bitterroot’s root result in the plant not growing back?

What are at least two things you learned from this unit?

Bitterroot Plant Parts and Their Adaptations – Answers

<b>Plant Parts</b>	<b>Plant Needs</b>	<b>Adaptation to the Environment</b>	<b>How do you know?</b>
Roots	water, nutrients	Tap root to maintain energy in a dry environment	Plant will grow again with only a piece of root
Leaves	Water	Narrow, slender, needle-like minimizes evaporation	Test leaves that peak out in spring
Flowers	Reproduction	Seeds in center in hard, thick shells	Shells protect tender seeds

## Viewing Activity: The Story of the Bitterroot

Have students list new facts they learned about Bitterroot in their journal, consider stopping the video for students to take notes. Lead a discussion about the Salish Bitterroot story and the role the plant plays in their traditions. The accompanying questions, from the Teacher's Guide, follow each section and link. Discuss why people, especially non-native people, practice attempting to grow Bitterroot.

### The Story of The Bitterroot YouTube links, Directed by Steve Slocomb, and Discussion Questions

#### **Section One:** [Legend of the Bitterroot](#)

A heartfelt look at a most unusual plant and its relationship to Native American culture as well as American western history. The bitterroot forms the lynchpin of the Salish Indian culture. Part 1, "In the Beginning", tells the legend of how it came to be, along with elders' stories of gathering the plant when they were young. This section includes interviews with spiritual leaders from the Confederated Salish and Kootenai Tribes of Montana, including Johnny Arlee, Louie Adams, and Stephen Small Salmon.

- According to the Salish how did the bitterroot come to be? (The creator provided it to save the starving people.)
- Who only can say the first bitterroot prayer? (It has to be a woman. Women traditionally were gatherers of the natural foods.)
- Why were prayers said before the first harvest of the bitterroots? (To thank the creator for providing a bountiful harvest.)
- What is the traditional tool used to dig the bitterroot? (A digging stick or petzah is used.)
- What are Coyote stories? Why are they only told in the winter? (They are tales from long ago when animals and humans could speak to each other. The Coyote is a supernatural creature, a trickster, and a helper-guide to humans. They are told in winter during hibernation since some animals would be unhappy to hear unflattering stories about themselves. These animals would bring bad luck to the story teller in that case. Bear and snake are two examples.)
- Where did the Salishan peoples live 200 years ago? (They lived throughout the Northwest, from Montana all the way to the Pacific Ocean.)
- Why might the people have been starving during some years? (Conditions like rain and temperature vary year to year affecting the quantity of natural foods and animals available.)
- Do all McDonald's serve the same tasting food? Do natural foods vary in their taste depending on the area they are found? Why? (Modern fast food is prepared under controlled conditions that ensure its consistency across the United States. Natural foods flavors vary according to the mineral content of the soil.)
- What were the different roles in gathering food for men and women? (Women were traditionally the gathers of natural foods, while men were the hunters.)

#### **Section Two:** ["Corps of Discovery"](#)

Part 2 tells the story of the arrival of the Lewis and Clark expedition in the Rocky Mountains, and how Meriwether Lewis acted as an amateur botanist on the journey. The Salish people fed the bitterroot plant to the men of the expeditions, which Lewis found to be utterly bitter and distasteful. Lewis saved a pressed bitterroot plant on the journey, and the scientific name of the plant was ultimately named after him: *Lewisia rediviva*.

- Who was the first white man to describe the bitterroot? (Meriwether Lewis)

- Why were the native plants, including edible ones, unfamiliar to explorers? (They didn't grow in the eastern part of the country where the explorers came from.)
- Who helped many of the early white explorers travel in the western United States? (The Native Americans who were familiar with the area. They had knowledge of things such as trails, mountain passes, hunting grounds, etc.)
- How is the Native American perspective of the Lewis and Clark expedition different from what is often portrayed? (The dominant Euro-centric perspective is that the Native peoples were discovered by the Corps of Discovery. The Native perspective is that it was a chance encounter that eventually led to the destruction of much of their way of life.)
- What was the importance of the bitterroot to the Salish when Lewis and Clark passed through? (The bitterroot was an important part of their diet and had great cultural significance.)
- When the bitterroot was given its names, Latin and colloquial, it already had had a Salish name. What were they? (*Lewisian rediva*, rock rose or bitterroot, **spetlum**)

### **Section Three: [Botany](#)**

Part 3 examines the amazing botanical properties of the plant.

- Describe the kinds of habitats in which the Bitterroot can be found. (Mostly arid well-drained sites)
- Is the bitterroot a cactus? (No, although it does resemble one.)
- When do the roots contain the most nutrients? (When the plant is in the leaf stage.)

### **Section Four: [The State Flower](#)**

Part 4 explains how the plant became the Montana state flower.

- Why is Columbus Day (also known as Indigenous People's Day) viewed differently by Native Americans and non-natives? (Columbus Day celebrates the so-called discovery of the Americas, though people had been living here for millennia. To the Native American it represents the beginning of drastic changes in their way of life.)
- What were some dramatic changes occurring at the turn of the 19th century? (Technology was becoming the driving force of the economy with electricity being the prime factor in this transition.)

### **Section Five: [When We Were Children](#)**

Part 5 recounts stories from Salish Indian elders about their journeys to the Bitterroot Mountains to dig for bitterroot. The plant was a staple of the Salish diet and medicine. This is also a heartfelt elegy for what has been lost in Native culture and custom, as private, white landowners refused to allow traditional Salish people to dig for bitterroot in the Missoula and Bitterroot valleys. Testimonials by Oshanee Kenmille, Louie Adams, and Johnny Arlee.

- What kinds of people moved onto the Indian lands in the 19th century? (fur trappers, prospectors, then homesteaders)?
- Why were the Bitterroot Salish moved up to a reservation? (To group them together with the Kootenai and Pend d'Oreille tribes so the government could more easily control them, and to open up lands for the homesteaders.)
- How do you think the name Flathead was derived? (A common misconception at the time was that Salish infants had their skulls deformed to produce a flattened brow. Though this was practiced in some Native cultures, like the Mayan culture in Central America, it was never done by the Salish.)

- What were the boarding schools? What was their purpose? (They were schools that removed Native American children from their parents and culture and prohibited the children from speaking their native languages. Their purpose was to assimilate the children into the Anglo culture. For more information see the lesson [Federal Indian Policy – American Indian Boarding Schools](#).)
- Name a Salish elder from the video? (Sophie Moise, Johnny Arlee, Oshanee Kenmille, Louie Adams, Steven Small Salmon)
- How long is the bitterroot digging season? (Only a few weeks.)
- How were the bitterroots preserved? (They were dried in the sun.)
- What are some of the ways to prepare bitterroots? (Boiled with deer broth, service berries, or huckleberries.)
- What is the importance of the native foods? (They provided sustenance and were a gift from the creator which were received with thanks.)

### **Section Six Mr. Bitterroot**

Part 6 tells the story of "Mr. Bitterroot", Henry Grant. Born of homesteaders in 1908, Henry became enchanted with the cultural history and wondrous properties of the bitterroot plant. He dedicated much of his later life to cultivating and preserving the plant, which was rapidly disappearing as the Bitterroot valley became developed. This is Henry's story.

- What kinds of color variations does the bitterroot exhibit? (from all white to deep purple)
- Why is the bitterroot getting harder to find? (The land is being covered with houses, farms, ranches, and stores.)
- Why do you think tribal members travel to Hamilton during Bitterroot Days to speak at the museum? (They want the local people to know they used to live in the area and it still has deep cultural significance to them.)

### **Section Seven: The Gathering**

Part 7 takes the viewer on a traditional Salish bitterroot dig, where we learn about the intimate spiritual and cultural connection of the plant to the Salish people of Montana.

- Why do tribes like the Salish and others continue to gather bitterroots even though they don't rely upon traditional ways of obtaining most of their foods? (It represents an important part of their cultural tradition.)
- Why are prayers said before they start to dig the bitterroots? (To thank the Creator for providing the bitterroot to eat and for the upcoming harvest of the other edible plants gathered during the summer.)
- Why are the roots peeled right away? (That is when they peel the easiest.)

### **Section Eight: The Future**

Part 8, the final chapter, talks about the future of the bitterroot. The plant still lives in the wild, but its range has been greatly diminished over time, mostly because of development of the valleys. It's more difficult to find the plant in the wild. But many people, including the Salish people and others, are working to ensure the bitterroot will survive and thrive for all future generations.

- Why is the bitterroot getting harder to find? (Areas are getting covered over with housing developments, shopping malls, parking lots, etc.)
- Why are some people trying to save the bitterroot? (They believe it is a valuable part of our ecosystem.)

- Why do tribal elders resist the cultivation of the bitterroot? (They feel it is a path to creating a monoculture of plants that live devoid of any connection to the natural world or their culture.)
- How might people of different cultures come to better understand one another? (By learning more about each other's' beliefs and the understanding that we all are "people.")

## Writing Activity: Letters to local Tribes or Ask a Professional

Students write a letter to the tribe(s) nearest them and find out what, if any, cultural importance the Bitterroot has to their people and its future. Include reasons it is important to preserve the Bitterroot for Montanans, specifically including the Salish Indians, what the Bitterroot needs to survive, their opinion about the possible extinction of the Bitterroot, and support for this reasoning. To find this and listen to audio sounds of Salish language words at [www.montanatribes.org](http://www.montanatribes.org).

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