PRACTICES OF PALEONTOLOGY
Activity Overview

BIG IDEA
Many specific steps and techniques are followed and used between asking permission and discovering a fossil to museum research and display. These steps make up the practices of paleontology.

OBJECTIVE
Students will explore the major steps in the practices of paleontology and learn about how this practice varies based on the different fossils on display at Museum of the Rockies.

BACKGROUND
In order to find fossils, you first need to know where to look. For example, if you want to find a Tyrannosaurus rex you will need to find rocks that were deposited at the time that T.rex lived. Geologists study the Earth and make detailed maps that show where different aged rocks are exposed at the Earth’s surface. By studying a geologic map, you may identify a promising location to look for a T. rex.

Before you can dig up a dinosaur, you next need to make sure you have permission to do so. Often you may need a special permit to excavate fossils.

Once you have obtained permission, you can then go out and look for fossils. This is called prospecting. When paleontologists are prospecting, they typically spend a lot of time hiking outdoors, searching the ground for pieces of fossils. If you’re prospecting, you may find a trail of fossil pieces leading you to something eroding out of a hillside – a discovery of a fossil. At this point, it may be difficult to determine what exactly is in the hill. It could be a fossil rib, or an entire skeleton. The only way to find out is to dig into the hill and begin excavating the fossil.

Paleontologists have to be very careful when they excavate a fossil, because they are often very fragile. Shovels, hammers, and picks may be used to remove rock but smaller brushes and chisels are used when working close to the fossil.
Once the fossils are exposed, they might be coated with glues or hardeners to help keep them together during the excavation. Before the specimens are removed from the ground, it is very important to record as much information as possible about how they are positioned in the rocks. This may help you to figure out how the fossil was preserved, or how the animal died. Paleontologists take detailed notes and photographs, measurements of depth and orientation, and draw maps of how the fossils are positioned in the ground.

Once all of this information is collected, it is time to carefully remove the fossils from the ground. To do this, paleontologists typically coat fossils in layers of burlap and plaster, creating a field jacket. A field jacket is similar to the cast a doctor might put around a broken arm; just as that cast is made to protect a broken bone, a field jacket is made to protect the fossil as it is transported from the field back to the museum. The size of a field jacket depends on what’s inside; sometimes a field jacket is very small and you can carry it out of the field in your hand; sometimes field jackets are so large and heavy that a helicopter is required to lift it and carry it to a truck for transport back to the museum.

Once back at the museum, the field jackets are opened and the remaining rock must be carefully removed from around the fossil. During preparation, scientists use picks and brushes to carefully remove the rock that has encased the fossil for millions of years. Sometimes, if the rock is very hard, they may need to use more powerful tools, such as an air scribe, which is like a small jack-hammer that chips away hard rock bit by bit. Preparators fit together any broken pieces of the fossil, so that it can be studied. Sometimes fossils can take weeks, months, or even years to prepare, depending on how fragmented they are and how hard the rock encasing them is.
Once the fossil is prepared, it goes into the museum’s fossil collections. The collections area is like a library, but instead of books, it contains fossils. Each specimen is assigned a number and entered into a computer database. This allows the museum to keep track of each fossil. The fossil is stored on a shelf or in a cabinet. Now that the fossil is cataloged, it can be available for research, education, or display in a museum exhibition.
The steps in the practices of paleontology can take different amounts of time for each specimen or project. Museum of the Rockies provides the following estimates on how long these steps took for four specimens on display. This data is only an estimate and should be used for educational purposes only.

<table>
<thead>
<tr>
<th>Step</th>
<th>Wankel T.rex MOR 555</th>
<th>Torosaurus MOR 1122</th>
<th>Yoshi’s Trike MOR 3027</th>
<th>Thescelosaurus MOR 979</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permission</td>
<td>3 weeks</td>
<td>1 day</td>
<td>5 weeks</td>
<td>5 weeks</td>
</tr>
<tr>
<td>Discovery</td>
<td>1 day</td>
<td>1 day</td>
<td>1 day</td>
<td>1 day</td>
</tr>
<tr>
<td>Excavation</td>
<td>14 days (1989) + 25 days (1990)</td>
<td>2 weeks +</td>
<td>2 weeks</td>
<td>6 weeks</td>
</tr>
<tr>
<td>Transportation</td>
<td>2 days</td>
<td>2 days</td>
<td>2 days</td>
<td>2 days</td>
</tr>
<tr>
<td>Preparation</td>
<td>2 years</td>
<td>4 weeks</td>
<td>6 months</td>
<td>3 years + (and counting!)</td>
</tr>
<tr>
<td>Display</td>
<td></td>
<td></td>
<td>9 months</td>
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**EXTENSIONS**

- Use the MOR Outreach Kit: Practices of Paleontology, to teach this process in more depth and facilitate a mock fossil preparation activity.
- Visit Museum of the Rockies on a field trip to see the real fossils described in this activity on display.
PRACTICES OF PALEONTOLOGY
Museum Instructions

MATERIALS
Student activity sheets, clipboards, pencils (Pens, crayons, and markers are not allowed in exhibit spaces)

LOCATION

ACTIVITY TIME
30 Minutes

INSTRUCTIONS

This activity can be used to explore the Dinosaurs Under the Big Sky exhibit to help students understand how the practices of science guide paleontologists in understanding dinosaurs and creating museum exhibitions.

Introduce the activity by asking students if anyone has thought about being a paleontologist for a career. We often think of paleontologists as scientists that study dinosaurs, but paleontologists can study any form of extinct life. Just like all scientists, paleontologists follow a series of steps, or scientific practices, to study fossils.

Tell the students that they will be exploring how paleontologists discover fossils and all the steps they follow to get a dinosaur on display, like those at Museum of the Rockies.

Before starting this activity, walk by the Viewing Lab and have students look at and identify the fossil jackets on display. This step in the practice of paleontology is best seen in this area of the Museum.

Sit students in the first hall, the Hall of Giants, near the “Muddy Grave” display. Tell the students that this display recreates how these dinosaur fossils were found.
PRACTICES OF PALEONTOLOGY
Museum Instructions (Cont.)

Read the practices of paleontology for the “Muddy Grave” (found in the Appendix) to your students. This specific story will help your students connect these practices with the display they see in front of them.

Using the activity sheet, instruct your students to draw or write the six basic steps in boxes provided. These steps are simplified from the full story the students read or listened to. Ask students to think about what could be described in more detail, or what is missing, from their pictures or descriptions, that they heard during the story.

Describe to your students that each fossil scientists find can take a different amount of time for each of these six simplified steps. Assign or distribute the descriptive sheets (available in the Appendix) estimating the practice of paleontology for four different dinosaur specimens on display at MOR. Have students find these specimens on display in the Dinosaur Halls and complete the table to describe this process for their specimen. If time allows, visit each of these displays as an entire group and have the students who studied the specimen share their findings. As a class, compare and contrast the specimens and debrief this activity by discussing why these four specimens were different. What factors affect the process of paleontology?

Conclude the lesson by emphasizing that like all fields of science, paleontology has a specific set of practices. Compare and contrast these practices to other areas of science that students have studied or are familiar with.
PRACTICES OF PALEONTOLOGY
Classroom Instructions

MATERIALS
MOR “Practices of Paleontology” PowerPoint slides (or printed images of these slides);

MOR Outreach Kit: Practices of Paleontology including example of field jacket, examples of a mold and cast, and sedimentary rock samples

ACTIVITY TIME
45 Minutes

INSTRUCTIONS
This activity can be used as a pre-lesson to a visit to Museum of the Rockies, where hundreds of real fossils are on display showcasing the practices of paleontology.

Introduce the activity by asking students if anyone has thought about becoming a professional paleontologist. We often think of paleontologists as scientists that study dinosaurs, but paleontologists can study any form of extinct life. Just like all scientists, paleontologists follow a series of steps, or scientific practices, to study fossils.

Tell the students that they will be exploring how paleontologists discover fossils and all the steps they follow to get a dinosaur on display, like those at Museum of the Rockies.

Read the practices of paleontology (found in the Background Information) to your students. Use the PowerPoint presentation to provide a visual demonstration of fossilization while describing these steps. Alternatively, have your students read this description (printable handout in the Appendix). If possible, use the resources in the outreach kit to show real examples of a field jacket, preparation tools, a mold and cast, and fossils and rocks.

Using the activity sheet, instruct your students to draw or write the six basic steps in boxes provided. These steps are simplified from the full story the students read or listened to. Ask students to think about what could be described in more detail, or what is missing, from their pictures/descriptions, that they heard during the story.
Describe to your students that each fossil scientists find can take a different amount of time for each of these six simplified steps. Assign or distribute the descriptive sheets (available in the Appendix) estimating the practice of paleontology for four different dinosaur specimens on display at MOR. Have students complete the table to describe this process for their specimen, then compare with another student. As a class, debrief this activity by discussing why these four specimens were different. What factors affect the process of paleontology?

Conclude the lesson by emphasizing that like all fields of science, paleontology has a specific set of practices. Compare and contrast these practices to other areas of science that students have studied or are familiar with.
**Practices of Paleontology**

Scientists, including paleontologists, follow specific steps to find fossils and prepare them for display or research. Recount the key details of the practices of paleontology. Draw or write the steps below.

<table>
<thead>
<tr>
<th>1: PERMISSION</th>
<th>2: DISCOVERY</th>
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</thead>
<tbody>
<tr>
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<table>
<thead>
<tr>
<th>3: EXCAVATION</th>
<th>4: TRANSPORTATION</th>
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<tr>
<td></td>
<td></td>
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<table>
<thead>
<tr>
<th>5: PREPARATION</th>
<th>6: DISPLAY</th>
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<td></td>
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</table>

Not every step is described here in detail. What do you think you could add to your pictures or descriptions above? What is missing?
Practices of Paleontology (Cont.)

All scientific studies take different amounts of time to complete. In paleontology, each fossil can take a different amount of time from permission and discovery to display.

With help from your teacher, chose one of MOR’s specimens to track through this process. Use the information provided to write down the number of days each step took, then calculate the percentage of time spent on each step.

Specimen Name: ____________________________________________

<table>
<thead>
<tr>
<th># OF DAYS</th>
<th>% OF TOTAL TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERMISSION</td>
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</tr>
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<td></td>
</tr>
<tr>
<td>DISPLAY</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>100%</td>
</tr>
</tbody>
</table>

Total number of days from permission to display:_____________________________________

What step took the most amount of time for your specimen? _________________________

Why do you think that step took the longest?

Share your work with another student who studied a different specimen.

What specimen did they study? ________________________________________________

What step took the longest?_____________________________________________________

Discuss with your partner why different steps in paleontology take different amounts of time for different specimens?
Scientists, including paleontologists, follow specific steps to find fossils and prepare them for display or research. Recount the key details of the practices of paleontology. Draw or write the steps below.

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<td>Answers will vary</td>
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Not every step is described here in detail. What do you think you could add to your pictures or descriptions above? What is missing?
All scientific studies take different amounts of time to complete. In paleontology, each fossil can a different amount of time from permission and discovery to display.

With help from your teacher, chose one of MOR’s specimens to track through this process. Use the information provided to write down the number of days each step took, then calculate the percentage of time spent on each step.

Specimen Name: __________________________

Total number of days from permission to display: __________________________

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<td></td>
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<tr>
<td>TOTAL</td>
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<td>100%</td>
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What step took the most amount of time for your specimen? __________________________

Why do you think that step took the longest?

*Answers will vary*

Share your work with another student who studied a different specimen. What specimen did they study?

*Answers will vary*

What step took the longest

*Answers will vary*
Activity 2
Practices of Paleontology

In order to find fossils, you first need to know where to look. For example, if you want to find a *Tyrannosaurus rex* you will need to find rocks that were deposited at the time that *T. rex* lived. Geologists study the Earth and make detailed maps that show where different aged rocks are exposed at the Earth’s surface. By studying a geologic map, you may identify a promising location to look for a *T. rex*. Before you can dig up a dinosaur, you next need to make sure you have permission to do so. Often you will need a special permit to excavate fossils. Once you have obtained permission, you can then go out and look for fossils. This is called prospecting. When paleontologists are prospecting, they typically spend a lot of time hiking outdoors, searching the ground for pieces of fossils. If you’re prospecting, you may find a trail of fossil pieces leading you to something eroding out of a hillside—a discovery of a fossil. At this point, it may be difficult to determine what exactly is in the hill. It could be a fossilized rib, or an entire skeleton. The only way to find out is to dig into the hill and begin excavating the fossil.

Paleontologists have to be very careful when they excavate a fossil, because they are often very fragile. Shovels, hammers, and picks may be used to remove rock but smaller brushes and chisels are used when working close to the fossil. Once the fossils are exposed, they might be coated with glues or hardeners to help keep them together during the excavation. Before the specimens are removed from the ground, it is very important to record as much information as possible about how they are positioned in the rocks. This may help you to figure out how the fossil was preserved, or how the animal died. Paleontologists take detailed notes and photographs, measurements of depth and orientation, and draw maps of how the fossils are positioned in the ground. Once all of this information is collected, it is time to carefully remove the fossils from the ground. To do this, paleontologists typically coat fossils in layers of burlap and plaster, called a field jacket. A field jacket is similar to the cast a doctor might put around a broken arm; just as that cast is made to protect a broken bone,
a field jacket is made to protect the fossil as it is transported from the field back to the museum. The size of a field jacket depends on what’s inside; sometimes a field jacket is very small and you can carry it out of the field in your hand; sometimes field jackets are so large and heavy that a helicopter is required to lift it and carry it to a truck for transport back to the museum.

Once back at the museum, the field jackets are opened and the remaining rock must be carefully removed from around the fossil. During preparation, scientists use picks and brushes to carefully remove the rock that has encased the fossil for millions of years. Sometimes, if the rock is very hard, they may need to use more powerful tools, such as an air scribe, which is like a small jackhammer that chips away hard rock bit by bit. Preparators fit together any broken pieces of the fossil, so that it can be studied. Sometimes fossils can take weeks, months, or even years to prepare, depending on how fragmented they are and how hard the rock encasing them is.

Once the fossil is prepared, it goes into the museum’s fossil collections. The collections area is like a library, but instead of books, it contains fossils. Each specimen is assigned a number and entered into a computer database. This allows the museum to keep track of each fossil. The fossil is stored on a shelf or in a cabinet. Now that the fossil is cataloged, it can be available for research, education, or display in a museum exhibition.
Activity 2
Practices of Paleontology
For the “Muddy Grave” display at Museum of the Rockies

The fossils you see in the “Muddy Grave” display at Museum of the Rockies are a type of sauropod called Diplodocus. These fossils are all from juveniles, or babies. This story describes how paleontologists found these fossils and how they ended up on display here at MOR.

In order to find fossils, you first need to know where to look. For example, the paleontologists that wanted to find the Diplodocus fossils you see here, needed to find rocks that were deposited at the time that Diplodocus lived. Geologists study the Earth and make detailed maps that show where different aged rocks are exposed at the Earth’s surface. MOR paleontologists studied a geologic map, and identified a promising location to look for a Diplodocus.

Before these paleontologists went out digging, they had to ask permission to do so. MOR paleontologists needed a special permit to excavate fossils. Once they had permission, they went out and looked for fossils. This is called prospecting. When paleontologists are prospecting, they typically spend a lot of time hiking outdoors, searching the ground for pieces of fossils. As these paleontologists were looking around, they found a trail of fossil pieces leading them to fossils eroding out of a hillside. They made a discovery. At this point, it was difficult to determine what exactly was there. In this case, it looked like many fossils all mixed up in what scientists call a bone bed. The only way they could find out what was there was to begin excavating the fossil.

Paleontologists were very careful when they excavated these fossils, because they are very fragile. They used shovels, hammers, and picks to remove rock but then had to use smaller brushes and chisels when they were working close to the fossil.

Before these fossils were removed from the ground, they recorded as much information as possible about how they are positioned in the rocks. You can see their drawings of these fossils from the field on the exhibit panel. These drawings helped them figure out how these dinosaurs died. Paleontologists took detailed notes and photographs, measurements of depth and orientation, and drew maps.
Activity 2
Practices of Paleontology (Cont.)
For the “Muddy Grave” display at Museum of the Rockies

of how the fossils are positioned in the ground. In this case, these drawings helped them put the fossils in this display the same way they found them in the field, so you can pretend to be a paleontologist today.

Once all of this information was collected, it was time to carefully remove the fossils from the ground. To do this, paleontologists coated the fossils in layers of burlap and plaster, called a field jacket. You may have seen a field jacket as you entered the hall in the Viewing Lab. A field jacket is similar to the cast a doctor might put around a broken arm; just as that cast is made to protect a broken bone, a field jacket is made to protect the fossil as it is transported from the field back to the museum. The size of a field jacket depends on what’s inside; sometimes a field jacket is very small and you can carry it out of the field in your hand; sometimes field jackets are so large and heavy that a helicopter is required to lift it and carry it to a truck for transport back to the museum.

Once back at the museum, the field jackets these dinosaurs fossils were in were opened and the remaining rock was carefully removed from around the fossil. You may have seen volunteer preparators doing this in the Viewing Lab. During preparation, scientists use picks and brushes to carefully remove the rock that has encased the fossil for millions of years. Sometimes, if the rock is very hard, they may need to use more powerful tools, such as an air scribe, which is like a small jack-hammer that chips away hard rock bit by bit. Preparators fit together any broken pieces of the fossil, so that it can be studied. Sometimes fossils can take weeks, months, or even years to prepare, depending on how fragmented they are and how hard the rock encasing them is.

Once these fossil were prepared, they were entered into the museum’s fossil collections. The collections area is like a library, but instead of books, it contains fossils. Each specimen is assigned a number and entered into a computer database. This allows the museum to keep track of each fossil.
After the fossils were cataloged, they were studied. Paleontologists researched how the baby Diplodocus leg bones were found, the type of rock they were found in, and other clues around the fossils to hypothesize how these baby dinosaurs died. What do you think happened to these dinosaurs?

The story of these Diplodocus dinosaurs was so interesting that the research on these fossils was published and the Museum recreated the dig site in this display. The other fossils in the Dinosaurs Under the Big Sky exhibit have similar stories. But not all fossils can be displayed. In the Museum’s basement, thousands of other fossils are held in collections and are studied by researchers to help us all understand how dinosaurs lived and died.
Activity 2
Practices of Paleontology: MOR 555

Wankel T. rex (Nation’s T. rex)
*Tyrannosaurus rex* MOR 555

Meaning of Name: Tyrant Lizard King
Location Found: Nelson Creek area of Fort Peck Lake, McCone County, Montana
Rock Formation: Hell Creek Formation

Year discovered: 1988
Year first displayed: 1990 in a temporary preparation lab at Museum of the Rockies

Permission
Museum of the Rockies had to obtain a permit from two federal agencies because the skeleton was located on Army Corps of Engineers land within the Charles M. Russell National Wildlife Refuge. The permit applications took three weeks to approve for each of the two years (1989 & 1990) that the fossil was excavated.

Discovery
With this fossil, the discovery happened first. Cathy Wankel found fragments of bones in 1988. She contacted Museum of the Rockies that visited the site, then asked permission to excavate.

Excavation
1989  MOR staff began excavation on September 9, 1989. Since there was limited time, the crew decided to cover the exposed bones with a winter field jacket made from plaster soaked burlap. The field jacket protected the exposed bone until the crew could return the following year. This first phase of the excavation process took 14 days.
Activity 2
Practices of Paleontology: MOR 555 (Cont.)

1990
MOR staff returned to continue excavation on June 4. It took 10 days to remove the rock on top of the fossil and another week to uncover the entire skeleton. Since most of the skeleton was articulated, the crew had to make several large field jackets with plaster soaked burlap. These large field jackets required multiple layers of plaster and burlap and were strengthened with large timbers. The largest field jacket containing the pelvis and left leg weighed almost 4 tons. The excavation was completed over a period of 25 days on July 1.

Transportation
On July 2, the field jackets were lifted with a large front-end loader and placed on a small flatbed truck where they were shuttled to a main road. It took four trips to get all of the field jackets to the main road. On July 3, it took 7 hours to transport all of the field jackets to the Museum of the Rockies.

Preparation
Preparation of the arm took approximately two weeks by one preparator. Preparation of the skeleton took approximately two years.

Display
It was originally displayed from 1990 to 1992 in a temporary viewing lab so the public could watch how the bones were being prepared. In September 2001, a bronze replica of the skeleton was installed in the front of the Museum of the Rockies. It was on display in its original death pose in the Hall of Horns and Teeth at the Museum of the Rockies from 2005 to 2014. It was taken off display in early 2014 for packing and crating and later shipped to the National Museum of Natural History in Washington, D.C. There are more than 25 replicas of the Wankel T. rex skeleton and skull exhibited in museums around the world. A replica skull is currently on display as part of a T. rex ontogenetic series in the Tyrant Kings exhibit at the Museum of the Rockies.

In April, 2014, the real Wankel T. rex specimen was transported to the Smithsonian National Museum of Natural History in Washington D.C.
Activity 2
Practices of Paleontology: MOR 1122

Torosaurus MOR 1122
Meaning of Name: Perforated Lizard
Location Found: Fergus County, Montana
Rock Formation: Hell Creek Formation

Year discovered: 2000
Year first displayed: 2001 in a temporary display at Museum of the Rockies

Permission
This fossil was found on private land. Paleontologists are required to get permission from a landowner before any work takes place, including prospecting, collecting, or excavation. Museum of the Rockies was granted permission in one day.

Discovery
This fossil was discovered by Merl & Gladys Busenbark in one day.

Excavation
The skull was partially collected before final excavation by MOR, which took two weeks. The skull was protected with a field jacket made from plaster soaked burlap. It was reinforced with lumber.
Activity 2
Practices of Paleontology: MOR 1122 (Cont.)

Transportation
A Montana National Guard Blackhawk helicopter lifted it out and placed it on the ground. Using a large truck, it was lifted onto a trailer, all in one day. It took a second day to transport the field jacket to the Museum of the Rockies.

Preparation
Preparation took four weeks to complete by a team.

Display
The specimen is on display in the Hall of Horns and Teeth at the Museum of the Rockies. A cast (replica of the underside of the frill) is also on display with the real specimen. A mold of the entire skull was made in 2004. Part of the skull was missing and was reconstructed before molding took place. Casting, mounting and painting the skull took three people two weeks in various stages.
Activity 2
Practices of Paleontology: MOR 3027

Yoshi’s Trike
Triceratops MOR 3027
Meaning of the Name: Three-Horned Face
Location Found: Garfield County, Montana, on lands administered by the Bureau of Land Management (BLM)
Rock Formation: Hell Creek Formation

Permission
In this case, the Museum of the Rockies had to obtain a permit from the Bureau of Land Management, a federal agency within the United States Department of Interior. It took five weeks to get a permit approved.

Discovery
The partial skull and skeleton was discovered by Dr. Yoshihiro Katsura in the badlands of eastern Montana in one day.

Excavation
Museum of the Rockies started excavating the skull in 2010. The process took two weeks. More staff were needed to excavate the skeleton, which took one month. The skull and skeleton were protected with numerous field jackets made from plaster soaked burlap. Larger field jackets were reinforced with lumber.
Activity 2  
Practices of Paleontology: MOR 3027 (Cont.)

Transportation  
Smaller field jackets were transported by a large, six-wheel ATV. The larger skeletal field jackets were transported by helicopter to a flatbed trailer. The specimen was then transported back to the Museum of the Rockies in one day.

Preparation  
It took about six months total time to finish the preparation by one staff member.

Display  
All of the bones from the partial skull and skeleton were molded and cast (replicated) in plastic. The missing parts of the skull and skeleton were sculpted by a scientific artist. The missing parts were then molded and cast. The replica bones were mounted on a steel structure and the skeleton was painted to show which bones were original (brown), and those that were sculpted (white). It took five people approximately 9 months to complete the process.
Activity 2
Practices of Paleontology: MOR 979

_Thescelosaurus MOR 979_
Meaning of the Name: Wonderful Lizard
Location Found: Makoshika State Park, Glendive, Montana
Rock formation: Hell Creek Formation

Year discovered: 1997
Year first displayed: 2005 (cast) at Museum of the Rockies

**Permission**
In this case, the Museum of the Rockies had to obtain a permit from the Montana Fish, Wildlife and Parks department prior to working in Makoshika State Park, which was processed over five weeks.

**Discovery**
The skeleton was discovered while prospecting the hills of Makoshika State Park. A crewmember noticed bone fragments coming out of a hill. The crew explored the hill by using rock hammers and located more bone. While taking a break that day, the Crew Chief noticed an interesting rock that had rolled away from the hill where the fragments were found. When he rolled the rock over, he realized he was holding a part of the Thescelosaurus skull! This was all in one day.
Activity 2
Practices of Paleontology: MOR 979 (Cont.)

Excavation
A crew of four from Museum of the Rockies took six weeks to excavate the skeleton. Heavy equipment such as jackhammers had to be used because of the unusually hard sandstone the skeleton was in. The skeleton was articulated and protected with a field jacket made from plaster soaked burlap. It was reinforced with lumber.

Transportation
The field jacket was airlifted from the site by helicopter and was flown to a nearby trailer in the park, which took one day. The specimen was then transported back to the Museum of the Rockies on a second day.

Preparation
Preparation of the skeleton was extremely difficult because of the hardness of the rock. Over a three-year period, four part-time fossil preparators worked with air scribes to remove the matrix, or rock surrounding the fossil. The skeleton is still encased in rock and preparation has not been completed. With new, more effective air tools and equipment, it would probably take an experienced full-time preparator more than a year to completely prepare the skeleton.

Display
Because of the size and weight of the specimen, the skeleton in the rock was molded, cast and painted for exhibition in the Dinosaurs Under the Big Sky exhibit.