
GUADALUPE MOUNTAINS
National Park

Chapter 43

The cave impact monster: an environmental education skit for classrooms

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Introduction
Having recognized education as being essential to the protection of cave resources, the Lincoln National Forest, Guadalupe Ranger District, has developed a diverse educational program. Cave visitors receive this education through brochures and interaction with U.S.D.A. Forest Service cave specialists leading them on cave tours and volunteer projects. The long range education goal, however, is for the public (including children) to become aware of and grow to appreciate the intrinsic values and benefits derived from cave and karst resources.

To this end, the original "impact monster" skit was developed by Jim Bradley of the Eagle Cap District on the Wallowa Whitman National Forest in the 1970s. It has been used by rangers to convey minimum impact messages in an effort to improve visitor behavior. This skit has been adapted to a variety of geographic areas and management issues. The Guadalupe Ranger District has modified the skit to become the "cave impact monster." This will be used to increase the awareness and understanding of cave and karst resources with a target audience of elementary school children. Audience participation is a fundamental component of the skit.

Script: the cave impact monster

Characters:
A Sleepy Bat
A Curious Bat
Cave Cricket One
Cave Cricket Two
Sal the Salamander
Tall Stalagmite
Short Stalagmite
Stella Stalactite
Stanley Stalactite
Fragile Cave Flower
Mighty Microbe
Cave Ranger
Speleologist
New Caver
Cave Impact Monster

Narrator: [Introduce yourself.]
Did you know that caves are fragile? Today, we'd like to help you learn more about caves and how to protect them. We're going to do this with a special activity in which everyone gets to participate.

[Introduce other three Forest Service participants, briefly, by name only.]

Who knows what impact means? ["Change" is the word we are looking for.] A good example of an impact is a baseball being hit through a window. The window breaks from the impact, and unless it is fixed, there will be changes inside: dust can blow in, temperature can change, etc. One small change in a cave can also cause other things to change. Impacts bring changes, both good and bad. In caves, the biggest changes are often made by visitors. There are three basic types of impacts: temporary, long term, and permanent. During this skit, try to notice these different types of impacts.

Narrator: Today we will visit a special cave, one that hasn't seen many visitors.

Having recognized education as being essential to the protection of cave resources, the Lincoln National Forest, Guadalupe Ranger District, has developed a diverse educational program.

[If time allows have the group select names for the cave: Shall we choose a name for this special cave? Take a vote on the best of three suggestions. The cave name will go on a banner near the cave entrance. What do you think belongs in this cave? Audience makes suggestions and each is rewarded with roles for each part in the cast.]

Speaking roles [cards with lines are given to participants]**:**
Cave fauna:
A Sleepy Bat
A Curious Bat
Cave Cricket One
Cave Cricket Two
Sal the Salamander
Mighty Microbe
Speleothems:
Tall Stalagmite
Short Stalagmite
Stella Stalactite
Stanley Stalactite
Fragile Cave Flower
Cavers:
Cave Ranger
Speleologist
New Caver
Cave Impact Monster

Props [If time allows have members of the audience put prop in place and then sit down.]:
Pool
Cave Pearl Nest
Flagged Trail

[Speleothems and cave fauna are now assembled on stage.]

Narrator: Wait, we're missing some - thing! What else is characteristic of a cave? ["Darkness" is the word we are looking for.]

[Dim house lights when darkness is mentioned.]

Narrator: Tall Stalagmite, what can you tell us about yourself?

Tall Stalagmite: [Very confidently] I'm a VERY tall stalagmite, and I'm very old. Fast water dripping on top of me for thousands of years has helped me grow up tall. Listen as I grow.

Cue Card for Audience: [Repeat quickly] DRIP-SPLASH, DRIP-SPLASH.

Narrator: What about YOU, Short Stalagmite?

Short Stalagmite: I'm as old as my taller friend, but the drops on me were slowwww. If you listen carefully, you will hear how slow I grow.

Cue Card for Audience: [Repeat very slowly] DRIP…SPLASH, DRIP…SPLASH.

Short Stalagmite: You know we grow at different rates, but there is more you need to know; we are both afraid of impacts. Oily hands that touch us can stop our growing. Muddy hands leave stains. Dust stirred up by a hurrying caver will dull our shine so please don't rush or touch us, and we'll be just fine.

Narrator: And, who are the two of you?

Stella Stalactite: We're VERY beautiful stalactites, can't you tell!?

Stanley Stalactite: We grow from the ceiling. Crystals grow inside water drops stuck to the ceiling, before they drip to the floor. You can remember us because we have a "C" in our name and we hang from the ceiling.

Narrator: Stella, what are those unusual round speleothems below you?

Stella Stalactite: Why they're cave pearls, and my drips have helped them tumble and polish. Aren't they beautiful and round?

Narrator: And what's that delicate speleothem there? It looks like a flower!

Fragile Cave Flower: I am lovely, am I not? I'm a gypsum flower! I grow where the air dries the moist clay under me.

[The Cave Ranger, Speleologist, and New Caver all arrive at the cave entrance.]

Narrator: Look, everyone. We have visitors at the entrance to the cave.

[Introduce the three new characters.]

Cave Ranger: Are you both ready to go caving? New Caver, I'm glad you could come with us today. To safely enter a cave takes a minimum of three people. And even then, you should always let someone else know where you're going. Plus, I know you'll enjoy the trip today. Caves are such beautiful and interesting places to visit. Do we have the right equipment?

New Caver: I think I brought everything you asked me to, but let's check to make sure.

Cave Ranger: Helmets? [Point to helmet.]

Cue Card for Audience: Check.

Cave Ranger: We can't let our skin touch the formations or they won't grow any more. So does everyone have gloves? [Hold up gloves.]

Cue Card for Audience: Check.

Cave Ranger: Headlamps, extra lights, and batteries? [Hold up backup light source.]

Cue Card for Audience: Check.

Cave Ranger: Food and water? [Hold up water bottle.]

Cue Card for Audience: Check.

Cave Ranger: And if any of you need to go, you better do it now, outside the cave or you'll have to go in a bottle. [Hold up pee bottle.]

New Caver: Oh!

Speleologist: I have my field notebook for taking notes on what we find inside.

Cave Ranger: I have my trail marking tape to replace some of the old flagging tape, to help make a low impact trail that is easier to follow. When we found this cave, the first thing we did was to put in a well marked trail. That way, all of our impact is limited to a small area, and not spread all over the cave, or over very fragile formations.

New Caver: I think I'm dressed warmly enough. I know caves can be cool. I also checked my boots on a rock, like you asked me to. I wouldn't want to leave black boot marks in this cave. It's sure a good thing to go for the first time with someone who's been to a cave before, and who can give me such good advice.

Cave Ranger: Turn on your lights. Let's go! Now remember to move carefully and slowly.

[They turn on lights and enter the cave.]

Speleologist: Be sure to let your eyes adjust to the dark! Be careful where you step here—I see some crickets on the floor by these rocks.

Cricket One: Gee, I'm glad these guys are being so careful. My uncle got squished last week by some careless people—they didn't even look where they were stepping!

Cue Card for Audience: AWWW!

Cricket Two: Oh my, that's awful! Let's go see if we can find some yummy molds to eat.

[The crickets crawl off to eat, wiggling their antennae.]

Cave Ranger: This flagging tape is getting old and starting to crack. We'll replace it. It was good thinking to keep the trail this far away from those stalagmites so they don't turn brown from dust kicked up by people's feet.

Cue Card for Audience: [Applause] Yeah!!

New Caver: Look at those GORGEOUS long stalactites!

Speleologist: Be careful not to bump them with your helmets. Oh! By the way, there is a lovely nest of cave pearls here,

The original "impact monster" skit has been adapted to a variety of geographic areas and management issues.

too! This area hasn't been impacted at all. Everything looks clean.

[Speleologist stops and takes notes.]

New Caver: Look at this beautiful blue pool. Wow! There's a salamander here! He must like it here where it's nice and moist.

Sal the Salamander: I sure do!
I am Sal. Sal I am.
Sometimes I'm called slimy—it's true my skin is cool and wet.
I really hate it dry.
I like to hide beneath the rocks, when I'm feeling shy.
Other times, I'm King of the Pool.
And it's a nice little pool, it's clean, and it's neat.
The water is pure, and there's plenty to eat!

Speleologist: Look! There are some bats over there. Be extra quiet while we're near them and be sure not to shine your lights at them, since it would hurt their eyes.

[Bats are asleep. Bats make snoring noises.]

Cave Ranger: Good work with the trail, everybody. Shall we have lunch?

Cave Team: Yes! We're hungry!

Cave Ranger: Let's move over here away from the pool.

Speleologist: Yes, that's a good idea. We don't want to impact the animals living near or in the pool.

New Caver: Like the salamander?

Speleologist: Yes, and millions of animals that you can't see, like the tiny cave microbes.

New Caver: Microbes!?

[Cave Team looks toward the pool.]

Mighty Microbe: I'm a mighty microbe,
And yes, I'm mighty small.
I live here joined by millions more
In this cave, and that's not all.

We live deep down in cavern pools,
And some other places too.
And if you get to know us,
You'll find what we can do.

Scientists find us helpful
Solving problems people face.
Like fighting pollution, curing cancer,
Or understanding life in space.

Please don't wade in pools or sneeze and drool,
Tie back your hair, and please take care.
We're in the air and everywhere!

New Caver: Gee, I didn't know about cave microbes.

Speleologist: Microbes are very important to scientists. That's one reason we need to be extra careful in caves. We could be having an impact on creatures so small we can't even see them. Microbes are the reason we asked you to make sure all of your clothes and gear you wore into the cave was clean.

New Caver: I had wondered about that.

Speleologist: Bacteria from the surface can hitch a ride into the cave hidden in dirt or mud on cavers' clothing or gear. These surface bacteria can then kill all the microbes in a cave.

[Cave team moves over towards cave flower.]

Cave Ranger: Shall we sit down over here?

Fragile Cave Flower: Wait, I'm here!
I'm a fragile gypsum flower,
My curvy, shiny crystals,
Sparkle in your light.
Please don't stir up dust or crush me,
Or I'll be a sorry sight.

Cave Ranger: Oops! Excuse me. We'll move over here.

[The cave team moves over, away from the gypsum flower. They take out their large plastic bags to eat over.]

Speleologist: Be sure to eat your food over the bags. We don't want to upset the food balance for the animals that live here by spilling crumbs. The creatures in a cave are specially adapted to live on very limited food supplies.

[All eat quietly and carefully. The speleologist takes more notes.]

Narrator: Meanwhile, we have ANOTHER visitor at the cave entrance. It's the Cave Impact Monster!

[The Cave Impact Monster arrives, carrying his/her hand lantern and not wearing a helmet.]

Cave Impact Monster: [loud, excited voice] Wow! It was a long hike up here, but I'm sure excited to check out this cave I found last week! I couldn't go in then, because it was DARK, but I brought a GOOD light with me this time and LOTS of string to help me find my way out.

[Cave Impact Monster comes into the cave, unrolling string behind him/her.]

Cave Impact Monster: Hmm, looks like this is a trail. But I'm here to explore! It's got to be more interesting off of this trial.

[Cave Impact Monster leaves footprints on floor.]

Narrator: [Shakes head.] Look at all those footprints he's leaving everywhere.

Cue Card for Audience: Boo!

[Cave Impact Monster walks up to stalagmites. He touches them, leaving a hand print on each.]

Cave Impact Monster: Oooh, these are wet and smooth! The floor is sure slippery here!

[S/He slips and falls. While returning to his/her feet, his/her head knocks Stella Stalactite.]

Stella Stalactite: Ouch! [Stella drops to the floor, on her side.]

Stanley Stalactite: Oh, no!
Stella Stalactite hung from the wall,
Till a clumsy caver caused her to fall.
And all the hard work the Cave Team puts in,
Can't put Stella back together again.

Cue Card for Audience: AWWWW!

[Cave Impact Monster slips again, falling on the cave pearl nest, sending the pearls rolling.]

Cave Impact Monster: What are these, marbles? I can't seem to step anywhere without slipping! Maybe I better go back to the trail.

[S/He moves quickly, stirring up dust (flour).]

Cave Impact Monster: How did it get so dusty here all of a sudden? Oh, I see. [And he stomps to send up another cloud of dust.] Look how far these clouds of dust go. I'm a regular dust devil!

Fragile Cave Flower: I sure hope the dust s/he's kicking up doesn't make it over here, it'll ruin me!

Cave Impact Monster: This caving is hard work. I sure am hungry!

[Cave Impact Monster pulls out a package of crackers, and drops one along with pieces of the wrapper on the floor near pool. S/He takes out another cracker and eats, OBVIOUSLY spilling crumbs. The crickets move in on the crumbs.]

Cricket One: Can you believe all of this?

Cricket Two: [Burps] I won't have to eat again for quite a while!

Sleepy Bat: [Grumpy] What's all that noise? I don't feel like waking up yet! It isn't dark yet is it?

Audience participation is a fundamental component of the skit.

The long range education goal is for the public to become aware of and grow to appreciate the intrinsic values and benefits derived from cave and karst resources.

Curious Bat: It sure is noisy! It looks like we have a visitor to our cave—and a careless one too! Can't s/he see where s/he's going? Oh yeah, s/he doesn't have echo-location like we do. Poor human! What's that strange stuff s/he's eating? Doesn't smell like bugs.

Cricket One: Ohhhhh! My tummy hurts.

Cricket Two: I feel really sick! And we didn't eat very much of this stuff.

Cricket One: Let's go hide until things quiet down. [Groans]

[The two crickets move off to the side and lay down.]

Cave Impact Monster: What's that moving around up there?

[S/He shines his/her bright light toward the bats.]

Sleepy Bat: Ouch! What's that light—it's so bright it hurts my eyes!

[Sleepy Bat tries to hide his/her face in his wing. Curious Bat hands him/her a pair of sunglasses, after putting on a pair of his/her own.]

Curious Bat: Here, try these. I found these near the entrance the last time we had intruders.

Cave Impact Monster: [Shrieks] Yikes! Bats!

Sleepy Bat: It used to be so nice and quiet around here. If this keeps up, we'll have to find another cave to live in. Don't these humans realize how important we are to them, and that they should show us a little respect. After all, we eat insects, and pollinate some of their favorite fruits.

Curious Bat: [lamenting] We can't take any chances hibernating here. If we were interrupted again like today, we would die of starvation! It's going to be hard to find another cave as good as this one.

[The bats fly off to another part of the cave.]

Cue Card for Audience: AWWW!

Narrator: Poor bats.

Cave Impact Monster: [Panics] The bats are flying! I've got to get out of here!

[Cave Impact Monster turns around and runs toward the pool. S/He slips and falls into the pool with a big splash.]

Cue Card for Audience: Splash!

[Cave Impact Monster holds his/her ankle as if it's hurt, then limps off.]

Cave Impact Monster: [Shivers] I'm freezing! And my ankle hurts. I better go back to the entrance and build a fire to warm up.

[S/He moves toward the entrance.]

Sal the Salamander: There goes the neighborhood!
It WAS a nice little pool, till S/HE fell in
It WAS clean and neat, but NOW, it's all polluted,
By dirty caver feet….Poor microbes!

Mighty Microbe: That's it for me. [Microbe falls over dead.]

Cave Ranger: Did you hear that splash? I wonder what caused that?

New Caver: Yes, it DID sound like a splash. Maybe we better go and investigate.

[Meanwhile, at the entrance, Cave Impact Monster has started a big fire. Smoke begins to pour into the cave.]

Speleologist: Do you smell smoke?

[Cavers, speleothems, and cave life all begin coughing and gasping.]

Cave Ranger: Look at all of these footprints everywhere! And that stalactite is broken! How did this happen? This cave is going to need some serious restoration work.

[They move toward the entrance, still coughing.]

Speleologist: There's a fire! That's what's causing all of this smoke! Cave entrances are a bad place to build fires, because when air moves into the cave, the smoke goes into the cave, too, and it impacts everything inside.

[They turn toward Cave Impact Monster.]

Cave Ranger: What happened to you?

Cave Impact Monster: [frantically] I saw bats in the cave and got scared and ran away, but I slipped and fell in the pool. If I had hurt my ankle any worse, I'd have probably died in there. No one would have known I was here. I'm sooo cold. [Shivers.]

Cave Ranger: You shouldn't be afraid of bats. They're not only harmless, but extremely helpful. We'll help you get warm, but we have to put this fire out before it hurts the cave any more.

Cave Impact Monster: OK.

Cave Ranger: You should know better than to go caving alone. And you should know that caves on the Lincoln National Forest require a permit for permission to enter them. Do you have a permit?

Cave Impact Monster: No. There's so much more to going caving than I thought. Maybe I should have found someone more experienced in caving to go with me.

Speleologist: Yes, that would have been better for both you and the cave. Do you realize ALL of the IMPACT you had on this cave in the short time you were there?

Cave Impact Monster: Impact?

Narrator: [To audience] Let's name all of the impacts made during the Cave Impact Monster's visit.

[Narrator prompts audience to come up with impacts and bad caving practices.]

Cave Impact Monster: Gee, I didn't realize I was making so many impacts. Can any of these impacts be fixed?

Cave Ranger: Some of your impacts are permanent and can never be fixed. Those changes will last forever. But some of your footprints we can clean off. The bats MIGHT come back, and the pool may become cleaner, after a long time.

Cave Impact Monster: I'm sorry. Is there anything I can do?

Cave Ranger: Sure, you can help us with some of the clean up work—but it will take a lot of time!

End.

Narrator leads discussion:
Why should we care about caves?

1. Non-renewable
2. Habitat for creatures important to humans, bats, microbes, etc.
3. Scientific value of unique biology
4. Recreational value
5. Water source

What surface activities impact caves?

1. Dumping trash into cave
2. Disturbing area around entrance

How can each of us help protect caves?

1. Federal Cave Resources Protection Act of 1988
2. Follow safe caving practices
3. Use low impact caving techniques
4. Share what you learned today with others

Chapter 44

A Case Study in Applying Historical Research to the Educational Process: Exploring McKittrick and Discovering Our Heritage

DOUGLAS DINWIDDIE, Ph.D., is a professor of social science at New Mexico State University in Carlsbad where he has taught a wide variety of history, government, and anthropology courses for the past 12 years. He has recently overseen the design of a new degree program at the university, entitled "heritage interpretation," which will provide academic and hands-on training for persons working in the field of historic interpretation.
Other authors: CAROLYN OLSEN, Independent Educational Advisor, Carlsbad, New Mexico, and FROSTY BENNETT, Park Ranger, Educational Outreach Coordinator, Guadalupe Mountains National Park

The educational process—comments by Doug Dinwiddie
This study involves information about a tripartite process of professional guidance through a class experience, research of materials and facts, and producing an educational tool called a traveling trunk to be utilized by educators. Information will be provided about the process beginning at its infancy as an instructor guides the research student. The instructor will continue to provide guidance and critique the final product that is prepared using pertinent research facts.

To quote, "Traditionally, education has relied heavily on texts and lectures, questions and discussions. 'Words' are at the core of the experience. Object-based education focuses the learning experience more on artifacts and primary documents in a manner that taps children's diverse learning styles while stimulating interest and providing a deeper understanding of the subject."

We conclude that carefully prepared object-based education found in sources such as traveling trunks is a successful means of engaging young people and teaching a variety of subjects and skills.

Applying historical research to the educational process—comments by Frosty Bennett

The project we worked on is called, "Exploring McKittrick and Discovering Our Heritage." The goal is to develop a traveling trunk about Wallace Pratt and McKittrick Canyon. We already have a large number of students that visit the canyon yearly. The trunk will be gauged for fourth, fifth, and sixth graders. We will be introducing geology to cover the natural environment, as well as information on Wallace Pratt to cover history of the canyon. The park received a $3,000 grant from Parks as Classrooms. Area teachers will provide most of the work so the trunk can contain curriculum-based material.

Completed example trunks are available from Fort Davis National Historic Site, Everglades National Park, Yellowstone National Park, and a song bird trunk. Objects such as a soldier's hat in the Fort Davis trunk provide the student with a hands-on learning opportunity. Imagine how much more a student will remember about history after wearing a soldier's hat. Hands-on experiences are a better method of learning rather than just reading history from a book. The song bird trunk has entertaining puppets used to convey information about birds.

We in the National Park Service know there is a need to assist teachers by providing appropriate educational materials about our national treasures. Our national parks are excellent outdoor learn-

Traveling trunks going to a classroom provide opportunities for students to learn about resources, especially for the student that cannot visit the parks.

ing laboratories, and we need to provide materials and opportunities for students to have quality learning experiences.

Traveling trunks going to a classroom provide opportunities for students to learn about resources, especially for the student that cannot visit the parks. Some students are unable to attend because of physical disabilities and some school districts do not have funding for transportation costs. The bus expense from Carlsbad, New Mexico, to Guadalupe Mountains National Park is $137.50. Our goal with the traveling trunk is to take a small portion of the park to the classrooms. The trunk "McKittrick Canyon and a Man Called Pratt" will be sent to the school prior to the students visiting the park. Imagine how much more students will gain from their field trip experience because of their being introduced to information about Mr. Pratt and McKittrick Canyon.

The project I personally worked on for the "Heritage Interpretation Class" was to put together some "old time children's games." I use potato/gunny sacks for three-legged and other race games. I also have hoops and sticks from an old barrel. Children love playing these games whether they are at their school or at the Frijole Ranch in the park. In my school programs I tie in what is happening today, such as recycling. I encourage students to be creative. What someone might think is trash could be used to create an exciting new game or toy. An old bicycle tire could be used for the hoops and sticks game.

Our objective is to interest, stimulate, and excite students.

One problem we have is funding so we need your assistance in developing educational programs for students of all ages. If you have any suggestions or can assist by volunteering please feel free to contact the park.

McKittrick Canyon and a man named Pratt—comments by Carolyn Olson
What do we put in a traveling trunk that would interest, and entertain, and stimulate fourth, fifth, and sixth grade students?

First, we needed a theme—a brief statement that would establish boundaries for our trunk. This theme should indicate to us what we could or could not put in it. How big? How small? What do we include that would provide a hands-on experience and acquaint students with the beauty and wonder that is McKittrick Canyon?

Second, we needed a goal—what do we expect our project to accomplish?

Third, an objective—what are the specific results that we want the students to discover?

And, we needed a format—a unifying "thread" to weave all its contents together.

Also—a most important element—the objects we put in our trunk must either be indestructible or easily replaceable!

So, we start with our theme. The grant application's program title was "Guadalupe Mountains National Park Traveling Trunk" entitled "McKittrick Canyon and A Man Named Pratt." We have our theme.

Our trunk will contain the picture of Wallace Pratt, along with a brief story of his life and how he came to acquire the land in McKittrick Canyon, "the most beautiful spot in Texas." It is important for students to know about Wallace Pratt and his lasting legacy, his gift that became a national park. We could include the tape recording of his voice: the one we hear at the visitor center at the canyon's entrance.

Most usually, elementary school groups will be making the trip to the canyon in the fall, to see the magnificent colors. We would like the experience to be more than just a "field trip"—an opportunity to get out of school all day! Our goal is to acquaint the students with the confluence of diversity that is McKittrick Canyon.

Our objective is to interest, stimulate, and excite students so they will anticipate the hike, looking for "markers"

along the way. We could produce a video—one that would include these markers for the children to discover—along with other samples and examples in our trunk. This will be our thread.

Let's pack a map of the canyon and compasses in our trunk. Most field trip groups will be hiking the 2.3 miles to the Pratt cabin, eat their lunch, and return.

How about a picture or a model of Pratt's stone house and a description of how it was built in the 1930s? It was constructed entirely of wood and stone. The stone was brought from the base of the Capitan reef front outside the canyon. The stone slabs came from the rock beds and varied in thickness from a fraction of an inch up to six or eight inches. These rocks were already weathered out and lay, half-exposed, on the surface. They were hauled to the site from four miles away with an old half-ton pickup. Some out-of-work cowboys with their saddle horses and ropes dragged the stones up an inclined plane to build the roof as well as the walls. There is a one-piece stone picnic table in the yard of the cabin. One of Mr. Pratt's grandsons built a fire under it and the heat caused one of the corners to break off—another marker for our students.

Pratt said in an interview in 1974, "McKittrick Canyon cuts a marvelous transverse section squarely across the axis of the Capitan barrier reef. This cross section of a fossil barrier reef displays in its walls, the one thing that makes McKittrick Canyon so special." He was a geologist. He saw the importance of bringing other geologists to these Guadalupe Mountains to study the reef. "There are many other fossil reefs in the world, but few are as well displayed and accessible as in the Guadalupe Mountains." Illustrations of the reef would be helpful, along with the description of how the reef was formed. Fossil samples or models and magnifying lenses would be good teaching tools because the students probably would not be making the hike along the Permian reef trail.

What about the flora and fauna of the canyon? If the trip is made in the fall, students can spot the bigtooth maple by its vibrant red-orange colors. Pictures or possibly dried maple leaves could be included. The distinctive bark of the alligator juniper tree could be intriguing to students. The berries of this tree feed mule deer, black, bear, gray fox, as well as ringtail cats, quail, and jays. Students may not see any animals but will be able to spot the scat. And, of course, pictures of the Texas madrone should be included: the tree Pratt mistakenly identified as the manzanita.

The teacher might want to have a time to "look and listen" for the 40 plus species of birds that nest in the canyon. Pictures of these should be in our trunk as well as possible recordings of their songs. It will take a monumental effort on the teacher's part to entice the students to be quiet and listen while on the trail. How many birds can the students identify by their calls? And, how many can they recognize by sight? Ecology and conservation are two familiar subjects to elementary students. Let's introduce them to the peregrine falcon and the Mexican spotted owl, both on the endangered species list. Areas of the upper canyon are closed during the nesting season of one of the fastest birds on wing—the peregrine falcon.

Other pictures or posters may include the hog-nosed skunk, the javelina, and the mountain lion. There are also the red-spotted toad, the black-necked garter snake, the Chihuahuan spotted whiptail lizard. And let's not forget rattlesnakes and tarantulas!

As for flora, coloring pages can be packed in our trunk of the soaptree yucca, the New Mexico state flower, which grows in the canyon. There are the sotol and the desert spoon. How do they differ? How are they alike? Let's include the mescal, the main food source of the Mescalero Apaches who once called this area their home. The park abounds in burnt rock rings, evidence of their culture.

"There are many other fossil reefs in the world, but few are as well displayed and accessible as in the Guadalupe Mountains."
—Wallace Pratt

A disposable camera could be packed so students would have a "memento" of their adventure. Copies of these pictures may be added to our collection for others to see, giving credit to the student who took the picture.

Children crossing the bed of McKittrick Creek could make a "discovery" game. Instead of "Don't step in the water, don't step on the dry creek bed, you must not…," leaders should try, "Let's count the stones as we cross this dry creek bed," or "Isn't it great that the rangers have set these stones so we don't have to get our feet wet!"

And so, our trunk turns into a vehicle for an adventure! It is our hope that our trunk will help our "hunters" to walk happily down the trail, look eagerly for the markers, and learn to value McKittrick Canyon and a man named Pratt.

References

Adams, J. W. 1985. Tribute to Wallace E. Pratt (1885–1981). Permian carbonate-clastic sedimentology, Guadalupe Mountains. Publication number 85-24, pages vi–xii. SEPM, Permian Basin Section, Midland, Texas.

Adams, J. 1985. Tribute to Wallace E. Pratt (1885–1981). DBS. Annual Field Trip Guidebook. SEPM, Permian Basin Section, Midland, Texas.

Fabry, J. 1998. Guadalupe Mountains National Park: an administrative history. Southwest Cultural Resources Center, Santa Fe, New Mexico.

Griggs, W. C. 1974. Interview with Wallace Pratt. Texas Tech University.

Jones, H. 1968. Memorandum to Frank Melvin. Tucson, Arizona.

Pratt, W. 1970. Letter to Neal Guse, Superintendent, Carlsbad Caverns National Park. Carlsbad, New Mexico.

Salvador, A. 1982. Memorial. Wallace E. Pratt memorial volume. Volume 66, pages 1412–1416. American Association of Petroleum Geologists, Tulsa, Oklahoma.