

**Russell Cave
National Monument**

**National Park Service
U.S Department of the Interior
Russell Cave National Monument**



**Adventures at
Russell Cave**

**Junior Ranger Activity Book
4th Grade & Up**

Hello, Junior Ranger!

Welcome to Russell Cave National Monument

People began using the cave after the last Ice Age had ended. Over thousands of years, occupants left behind artifacts, which helped to tell the story of their habitation and culture. By visiting the park and completing the activities in this book, you will be able to:

Explore

the magnificent cultural and natural resources of Russell Cave.

Learn

about the extensive history of the cave and its prehistoric inhabitants.

Protect

our beautiful environment so everyone can experience what you have experienced for many years to come.



Become a Junior Ranger by completing the recommended number of activities shown below:

4th & 5th grade: **7** pages 6th & 7th grade: **8** pages 8th grade+: **9** pages

Answers are found in the museum, park brochure, and along the boardwalk. If you get stuck, ask a Ranger for help.

When you are done, return to the Visitor Center to have a Ranger check your answers. Then, take the Jr. Ranger oath and receive your own badge!

We hope you will have fun while learning all about Russell Cave!

Hello Junior Ranger! My name is Artie and I love artifacts! If you find an artifact, make sure to leave it alone or else that artifact will lose its history!

Leave No Trace &

Leave Artifacts in Place

Since the materials for tools and clothing were hard to come by, prehistoric Native Americans were not wasteful people. They even reused and repurposed broken stone points until they became too small. **Identify what can or cannot be recycled and reused by connecting them to the appropriate bin.**

Bonus: Can you find what is in this picture that doesn't belong in either bin?



These tools, weapons, and pieces of clothing used by the people of the past are called **artifacts**. These items are outdated to us now but it is important to keep them where they are to preserve their history and the stories that they hold.

Removing artifacts from their original location will remove their context to that time period.



Look at the picture above and write down what you see people are doing.



Now look **carefully** at this picture, can you say the same here?



Hey there Junior Ranger! I'm Doug, and just like Artie, I also love artifacts. I took this one out of the Hernando de Soto answer box, do you want it? Circle your answer:



























- Accept artifact from Doug.
- Ask Doug to put it back.

The Story of . . .

Use the information below to answer the questions in the next page, then match the tools with the correct letter in the key.

 Hernando de Soto	 Bow and arrow	 James Doran	 Thomas Russell	 Russell Cave National Park
 Tennessee Valley Authority	 Feathers Fish Bones River Cane	 The Smithsonian Institute	 Nuts Seeds Berries Roots Deer Small Game	 Ferdinand Magellan
 Russell Cave State Park	 Blow Gun	 National Park Service	 Hides Plants Spears	 Russell Cave National Monument
 Paleo Archaic Woodland Mississippian	 National Geographic Society	 Pre-early Early Mid Present	 Cave	 Shells Copper Mica
 Atlatl	 Mounds	 Christopher Columbus		

Symbol Key

 =A	 =B	 =C	 =D	 =E	 =F	
 =G	 =H	 =I	 =J	 =K	 =L	 =M
 =N	 =O	 =P	 =Q	 =R	 =S	 =T
 =U	 =V	 =W	 =X	 =Y	 =Z	

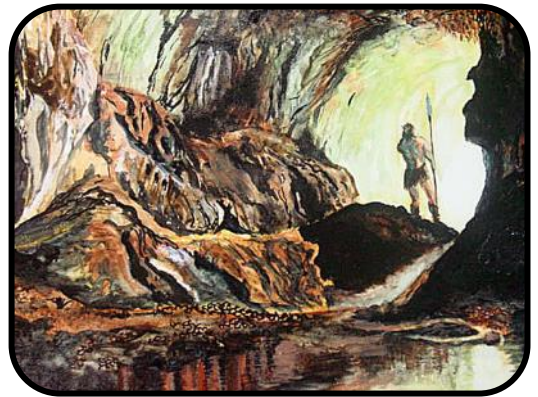
... Russell Cave

The Russell Cave timeline dates back all the way to around 10,000 BCE. Find the solutions to these questions from the answer boxes on the previous page to uncover the story of Russell Cave. Then, unscramble the correct letters on this page to learn what archeologists call the pieces of the past that they find through digging.

What are the names of four time periods that were represented in the archeological findings of Russell Cave?

What kinds of things did hunters and gatherers collect and then consume?

What is the name of the tool used to throw spears at a greater distance?



What kinds of formations were created during the Mississippian period for burial or ceremonial reasons?

What kinds of items would be traded from the Great Lakes to the Gulf Coast?

Who led one of the first groups of Spanish conquistadors throughout the Southeastern US?

Which land owner was the park named after?

Which group helped fund the excavations and published the findings in a magazine?

What was the official designation of the park made by John F. Kennedy in 1961?



Unscramble the letters in the boxes to reveal a very important word in archeology.



Wow! It must be so cool inside the cave! Let's go inside and explore!

Circle your answer:

- No Doug, it's dangerous to go inside.
- Yeah, let's go inside the cave!

It's A-maze-ing!

Caves can often make great shelters, but they can also be **dangerous** and **hard to navigate**. Russell Cave is one such place, with approximately **11.4 miles** of explored tunnels. **To protect the cave and hibernating bats, and to ensure the safety of you and other visitors, going inside the cave system or the shelter is no longer allowed.**

Imagine that you are a prehistoric visitor exploring the cave and have found your way to the center of the cave system but can't remember how you came in. **Solve the maze and find as many exits as you can while avoiding the many hazards inside the cave.**

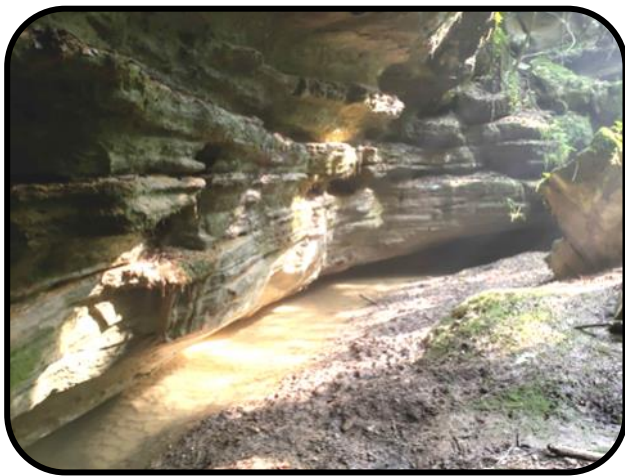


The Science of Sinkholes

Did you know, Russell Cave and the sinkhole along the boardwalk were once completely **hidden beneath** limestone domes?



Sinkholes form underground when dirt and rocks are washed away by flowing water and there is nothing underneath to support the ground above. Russell Cave's entrance that we see today was formed by thousands of years of soil being eroded by rainwater from above and flowing water from below. It is important that this flow of water is not blocked by any foreign objects such as trash. Shown below are pictures of water flowing underneath the rocks (left) and the sinkhole itself seen from the overlook (right).



Many different types of wildlife live at Russell Cave. Some are better at hiding than others. Can you find all the animals shown on the left in the picture below?

Scissor Grinder Cicada



Timber Rattlesnake



Piliated Woodpecker



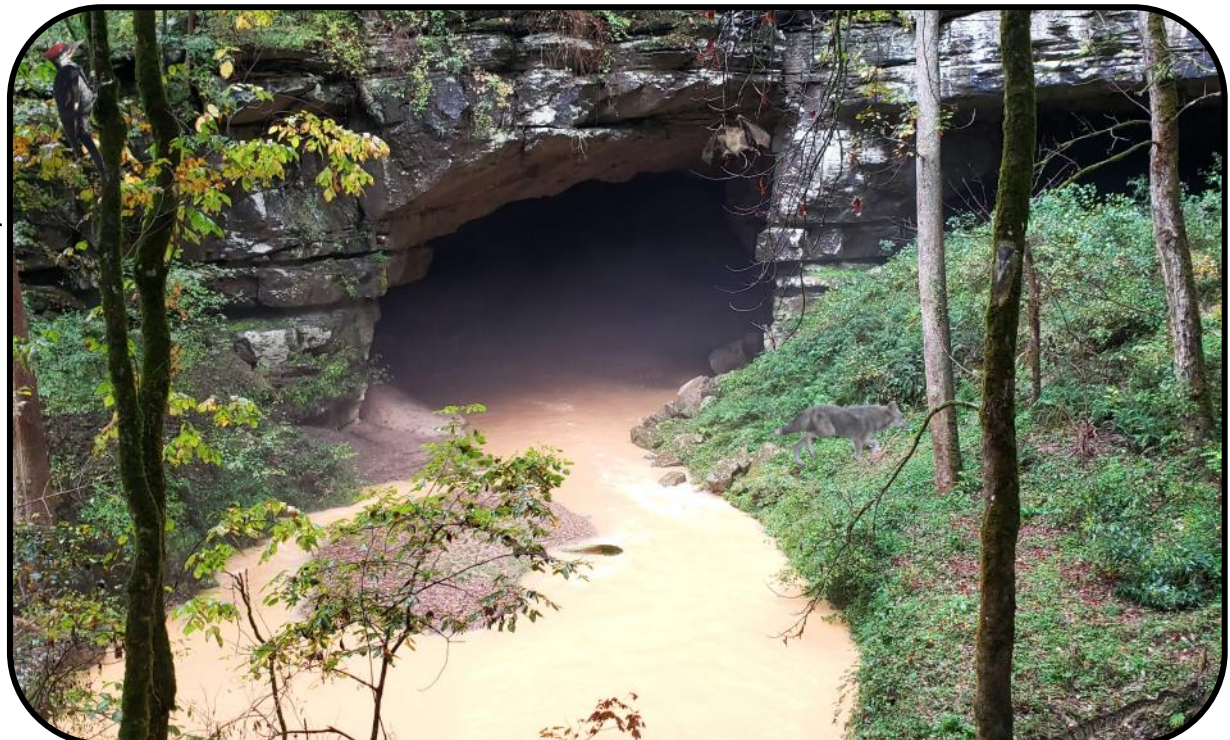
Gray Bat



Bronze Frog Tadpole



Coyote



Bat Caper



While visiting the park, you might catch a glimpse of many of its elusive inhabitants. Like many other **caves**, Russell Cave is home to many different living things. One special **mammal** you may find in the area is the bat. Bats are an essential part of the **ecosystem**, playing an important role in keeping the insect population in check. The bats that live in and around Russell Cave are **insectivores**, preying primarily on insects. A single bat can eat up to 1,200 mosquito-sized insects every hour! Being **nocturnal**, these flying mammals use **echolocation** to hunt their small flying meals at night. Not all

Did you know, Russell Cave is home to 8 different species of bats? They are the Tri Colored, Big Brown, Little Brown, Gray, Eastern Red, Northern Long-eared, Evening, and Rafinesque's Big-eared.

bats hang out in caves, though. The **Eastern Red Bat** prefers to perch in tree foliage, while other species may roost under bridges. Bats that spend most of their time in caves are facing

many challenges. Humans walking through caves can have devastating effects to the **habitat** without even realizing it. In addition, we can even spread a **fungus** from one cave to another on our shoes. This fungus causes the bats to get very sick. This illness is called **White-Nose Syndrome** (WNS) and is hurting bat populations all over the world. The disease disrupts bat **hibernation** cycles, keeping them awake when there are no bugs to eat. We can help



Eastern Red Bat

bats by learning more about them and staying out of the caves they occupy. If you see a bat, **it is very important to never touch it, bats can carry rabies and a bat bite can infect you with rabies.**



Big Brown Bat



Tri-colored Bat

Bat Caper Crossword

Bats are so cool! Don't you just want hold one in your hands? Circle your answer:

- No Doug, It's dangerous to touch a bat.
- Yeah! I would love to hold a bat!



Use the bolded key words from the previous page and the clues below to solve the crossword puzzle.

Down:

1. A "sleep-like" state that minimized activity used by some animals to conserve energy
2. A class of warm-blooded animal that has hair, produces milk, and gives birth to live young
3. A disease that is killing bats worldwide
4. Animals that eat only, or mostly, insects
5. Animals that are mainly active at night
7. A natural home or environment for any animal

Across:

6. Cavities that form underground when rock and dirt is washed away by water
8. A life form that is not a plant, animal, or bacteria
9. A technique used by bats, dolphins, and some other mammals to "see" by bouncing sound off of objects
10. A species of bat that likes to perch in tree foliage
11. A community of living and non-living things interacting with their environment

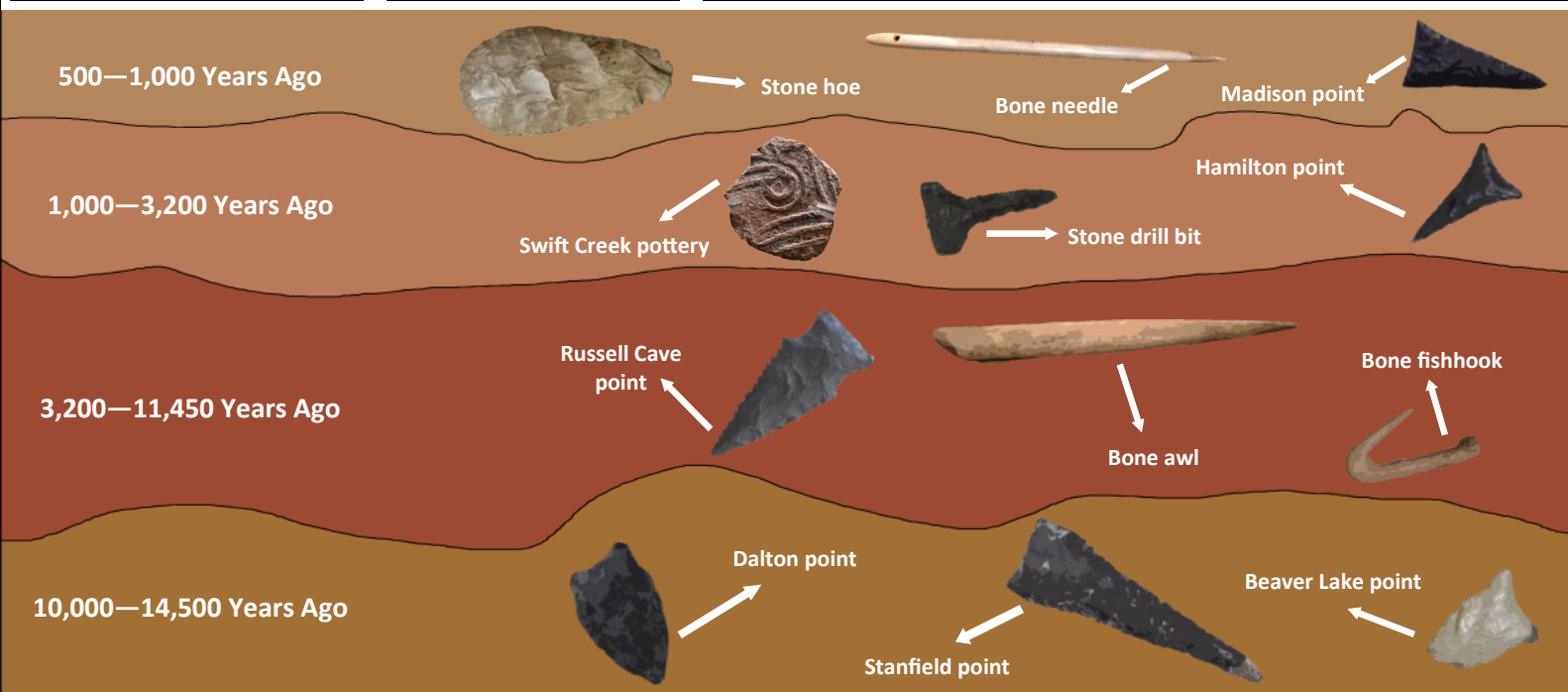


Sorting Through the Layers

When archeologists **excavate**, or dig into the ground searching for artifacts, they notice that the soils are separated into different layers called **stratigraphy**. Based on the **Law of Superposition**, which states that the oldest layer is at the base, archeologists are able to determine which artifacts are older based on the depth of where they are found. At Russell Cave, archeologists unearthed over 100,000 artifacts from 4 distinct cultural periods. **From oldest to youngest, these periods are Paleo, Archaic, Woodland, and Mississippian.**

Can you match the stratigraphy to the corresponding cultural period? Write down the time periods and the artifacts that are in each layer to the correct cultural period.

Cultural Periods:	Time Periods:	Artifacts Found:
Woodland		
Paleo		
Mississippian		
Archaic		



Stone artifacts are usually the most common type of artifact archeologists would find at a prehistoric archeological site since many artifacts, such as textiles, are made of organic materials and do not preserve well overtime. **Can you name some materials that might not survive in the ground for thousands of years?**

Archeology Decoding Game

Match each number to the corresponding letter shown in the Letter Key and write them below each number to reveal the archeology terms.

5 24 3 1 22 1 20 5

To dig in an archeological site and record the findings.

23 15 15 4 12 1 14 4

Ranges 1,000—3,200 years ago. During this time people lived in small villages, made pottery, started farming, built mounds, and hunted using the bow and arrow.

1 18 20 9 6 1 3 20

Any object made, modified, or used by people in the past.

19 21 16 5 18 16 15 19 9 20 9 15 14

A law used by archeologists that states younger layers of soil are found on top of older layers of soil.

16 1 12 5 15

Ranges 10,000—14,500 years ago. The first inhabitants of Russell Cave arrived during this period. People hunted Ice Age mammals, fished, and foraged berries and nuts.

19 20 18 1 20 9 7 18 1 16 8 25

The study of how layers of earth are deposited and overlapped over time creating many different layers.

1 18 3 8 1 9 3

Ranges 3,200—11,450 years ago. People in this time period used the atlatl to hunt. They relied more on plants, seeds, and nuts for food because the larger Ice Age mammals were extinct.

13 9 19 19 9 19 19 9 16 16 9 1 14

Ranges 500—1,000 years ago. During this time people lived in small towns, built larger mounds, traded items, farmed corn extensively, and performed spiritual rituals.

Letter Key

1 = A	2 = B	3 = C	4 = D	5 = E	6 = F	7 = G	8 = H	9 = I	10 = J	11 = K	12 = L	13 = M
14 = N	15 = O	16 = P	17 = Q	18 = R	19 = S	20 = T	21 = U	22 = V	23 = W	24 = X	25 = Y	26 = Z

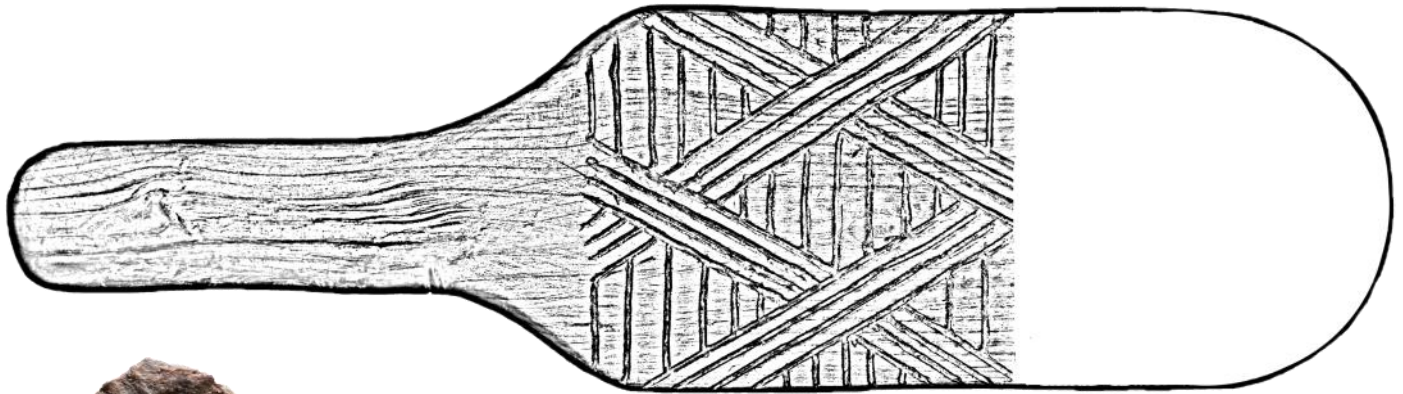
The Art of Pottery

Did you know, the Woodland people would slap their pottery with the paddle shown below to imprint their pattern instead of carving them by hand?

At Russell Cave, archeologists believe that people started creating and using pottery in the Woodland period, around 1,000 to 3,200 years ago. The Woodland people used their pottery for storing grains, nuts, seeds, and fruits, as well as cooking and boiling water.



The Woodland people would stamp their pottery with intricate patterns using a special tool shown below. This special tool allowed them to recreate the patterns without having to carve them over and over again. **Continue the pattern on the wooden paddle shown below.**

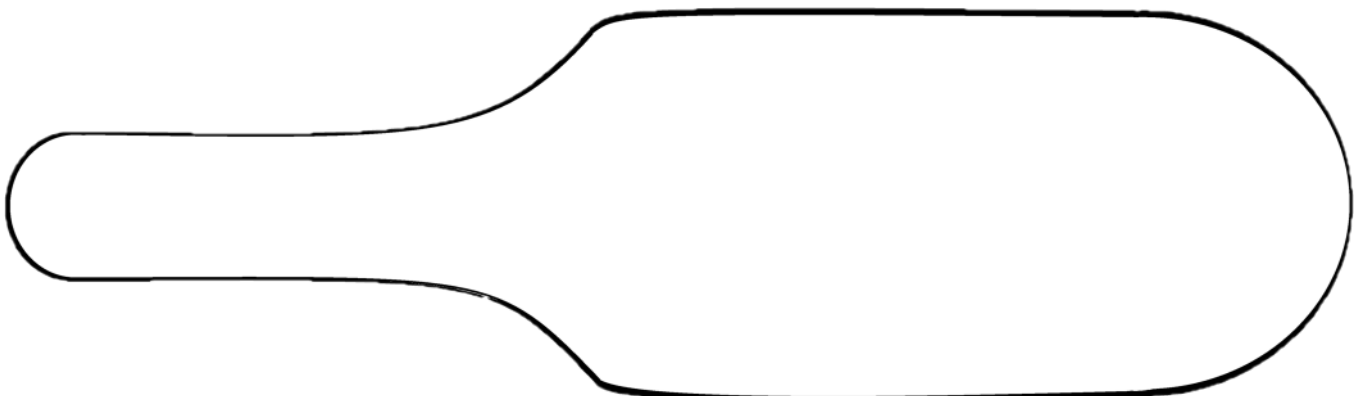


This is a piece of Swift Creek pottery, first discovered in Swift Lake, Georgia. Archeologists date the piece back to around 100 C.E. to 750 C.E. in the Woodland Period.



Similarly, this piece of Napier pottery also belonging to the Woodland period, was first seen at the Napier site, near Macon, Georgia. Archeologists date this piece to around 600 C.E. to 900 C.E.

Now it's your turn! Draw your own pottery pattern on the paddle shown below. It can be anything you want!



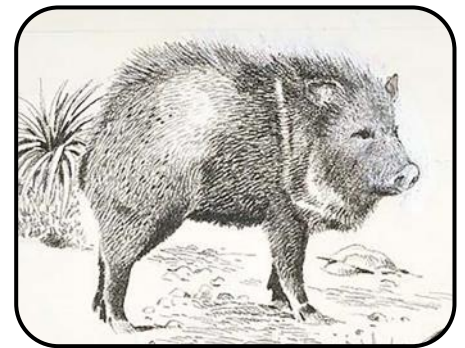
Prehistoric Engineers

The invention and usage of tools play an important role in the history of mankind all over the world. At Russell Cave, Paleo hunters used spears tipped with stone points to hunt massive mammals such as the mastodon and woolly mammoth. As time passed, new tools and weapons began to appear. **Read about the inventions below and ask a Ranger to show you how each of these tools and weapons are used.**



Known as the **atlatl**, this hunting technology was used 3,200 to 11,450 years ago in the Archaic period. At this time, large mammals such as the mammoth and mastodon were extinct. The Archaic people needed something better than regular spears to hunt the smaller and more agile animals such as peccary, bear, and deer. **This simple invention tripled the spear's distance and speed, making it more efficient.**

Peccary (now extinct)



Fire starting has been a part of human history for at least 1 million years. **At Russell Cave, evidence of people using fire can be found on the cave's ceiling and walls.** With the invention of the **bow drill (left)**, fire starting became much easier. The invention of the **pump drill (right)** further improved fire starting techniques by making the movement less strenuous. In addition, the pump drill was also used for drilling holes into objects such as animal hide and wood.



First used by the Woodland people, 1,000 to 3,200 years ago, the **bow and arrow significantly extended the range of the projectiles as well increased their speed and power.**

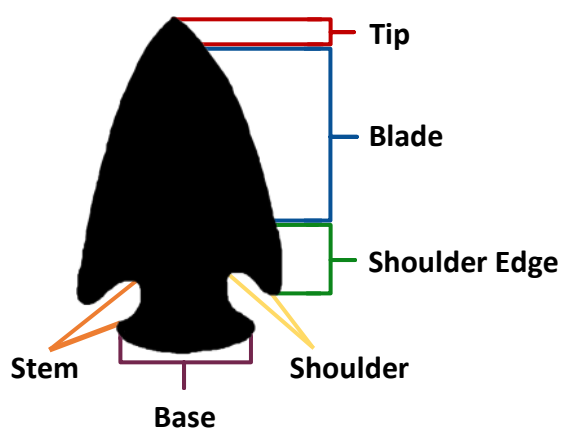
Look at those stone points! I bet there's plenty of them in the ground, let's start digging for them!
Circle your answer:

- Yeah! Let's dig for stone points!
- No Doug, we should preserve the park instead.

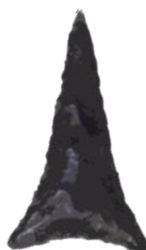
Talk and Identify . . .

Archeologists study the various stone points made throughout time in order to gain a better understanding of the lifestyle led by people that had lived before them.

The size, shape, and design of a stone point all depend on whether it was used as a spear or an arrow, where it was created, as well as the time period that it was created in. To classify these stone points, archeologists take a closer look at their 6 characteristics. Shown on the left is the break down of the 6 characteristics and on the right are examples of various styles of stone points.



LeCroy Point
10,500—9,800
years ago



Hamilton Point
3,100—2,300
years ago



Dalton Point
12,500—10,500
Years ago



Russell Cave Point
11,000—9,500
years ago

Now that you've learned about the importance of these pointy artifacts as well as their various designs, it's your turn to create your own! **Design your own stone point and draw what you would use it for.**

A large, empty rectangular box with rounded corners, intended for a student to draw their own stone point and describe its use.

... Like an Expert

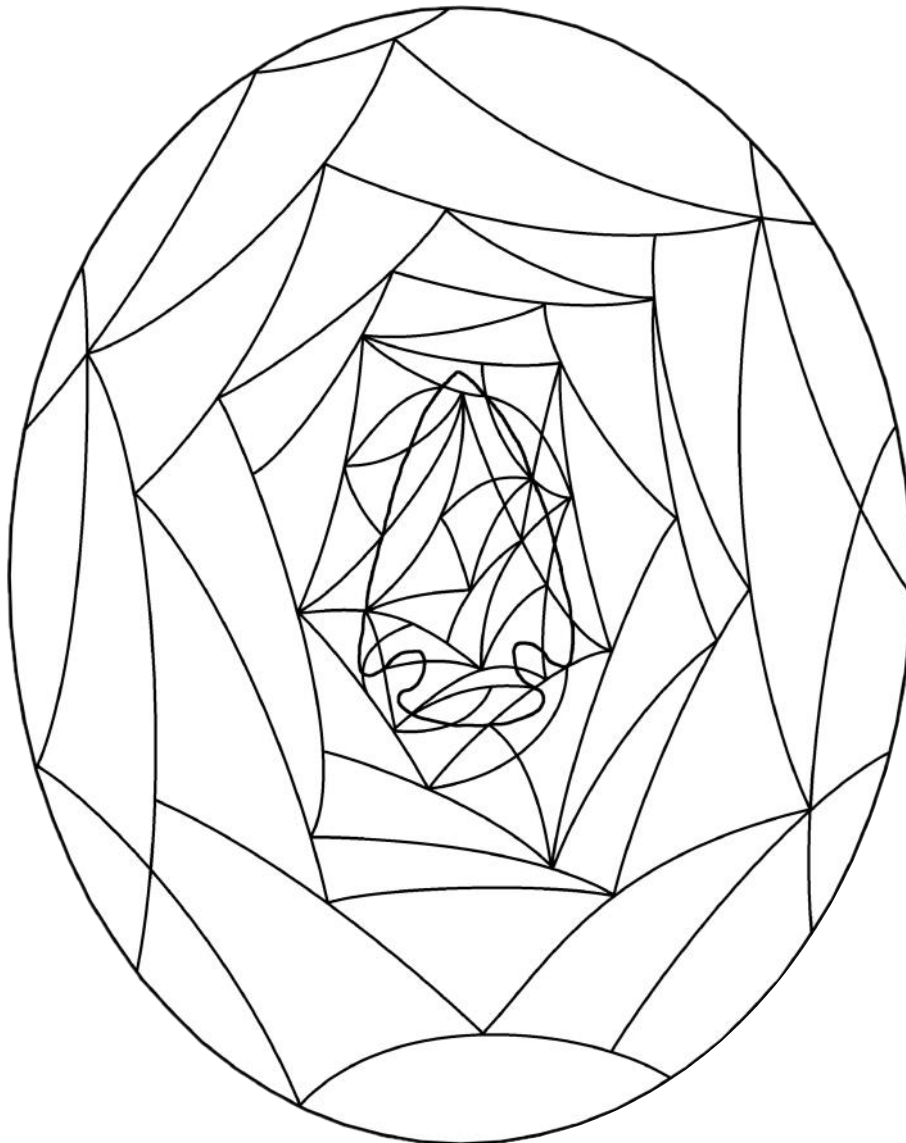


Stone points are typically made from a special type of rock called flint, or chert. Flint is special because of its glass-like features. **When broken up, these shards can be as sharp as razorblades.** The natives would carefully chip away at a large piece of flint using a variety of tools such as bones, antlers, or hammerstones until they were satisfied with the shape and size. This process is called **flintknapping**. Mastering this skill would take many months, even years. You can become a novice flintknapper right now by doing the activity below.

Did you know that the oldest stone tools were found **3.3 million** years ago in Africa



Starting with the outer layer, color in the pieces that you want to break off and slowly work your way toward the center where you will end up with a stone point. Be very careful, you don't want to break your stone point by coloring too much!



Animals at Russell Cave



Hey look! There's a raccoon over there, let's get closer and play with the raccoon! Circle your answer:

- Yeah! Let's go play with the raccoon!
- No Doug, we have to respect the wildlife and keep our distance.

A variety of wildlife has called Russell Cave home long before people inhabited it, and many still call it home today. It is very important to be respectful of the wildlife for your own safety as well as theirs. We may not always see the wildlife, but they often leave behind footprints and other evidence that they are here.

Unscramble the letters to reveal the owner of each footprint.

vebare

cobbat

eedr

ykture

carycep

oorccan

tarbib

lerrquis

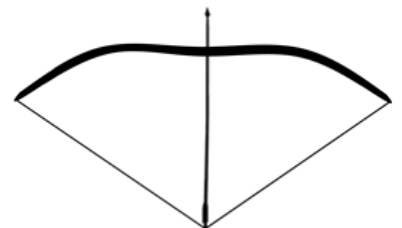


Spear

Blowgun

Atlatl

Bow and arrow



The natives used various weapons to hunt these animals. They would use their meat for food, hide for clothing, and bones and antlers for tools. Which of the weapons above would you use to hunt these animals? **Connect the weapons to the footprints above. You can connect more than 1 weapon to a footprint.**

Did you know that Russell Cave National Monument has a stone point named after it? The Russell Cave Point was used during the Archaic period and has only been found in this region of the United States.



A Day in the Life

of a Prehistoric Native

While you are exploring the monument, think about your life and compare it to the life of a kid or someone your age that had lived at Russell Cave 10,000 years ago.

Read the brochure, ask a Ranger, or visit the museum to learn the answers for the questions below.

Prehistoric Native

Where did they sleep: _____

How did they get their food: _____

How did they get their clothes: _____

What kind of pets did they have: _____

What did they do for fun: _____

You

Where do you sleep: _____

How do you get your food: _____

How do you get your clothes: _____

What kind of pets do you have: _____

What do you do for fun: _____

Does your life share any similarities with the prehistoric native? _____

Something to Ponder

Now nearing the end of your adventure at Russell Cave, help Doug answer Artie's questions below using what you've learned from completing previous Junior Ranger exercises or talking to a Park Ranger.



Why is it important to keep the environment clean and free of trash?



What can you do to help keep the environment clean and free of trash?



What types of artifacts will future archeologists find thousands of years from now?



Would you be able to hunt for your own food and make your own clothes?



What is your favorite prehistoric tool or weapon from the park?



Junior Ranger Pledge

As a Russell Cave Junior Ranger, I promise to:

Explore

the magnificent cultural and natural resources of many other national parks;

Learn

about the history of every park I visit; and

Protect

our beautiful national parks so everyone can experience what I have experienced for many years to come.

Congratulation! As an official Junior Ranger, help others explore, learn, and protect all national parks by sharing what you've learned on your adventures!



Sign or print your name

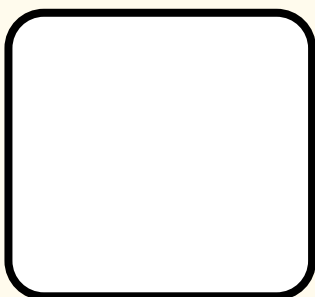
Russell Cave Junior Ranger

Certificate of Achievement

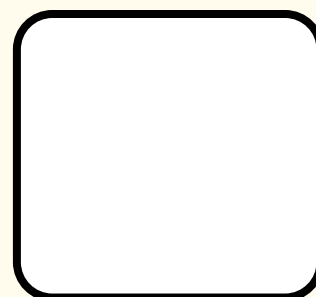


Has successfully completed the requirements to be an official
Junior Ranger of Russell Cave

Park Ranger



Jr. Ranger Cancellation Stamp



Park Cancellation Stamp

