



McInnis Canyons National Conservation Area - Junior Ranger Program

Use this printable guide to take notes while you're out exploring! Then, submit your answers online.

Instructions

Materials:

- Writing utensil
- Colored pens/pencils or crayons
- Phone/camera

To get a badge: The number of questions you will need to complete depends on how old you are. For anyone under 10 years old, that number is your age. For example, if you are 8 years old, you will need to answer 8 questions. If you are 10 or over, you must complete 10 questions total. There are 7 questions which can be completed anywhere within MCNCA. There are also suggested trails and recreation sites, which each have 3-4 questions specific to that location. You can decide which locations look best for you!

Since you might not have service in some of these locations, you can use this document to see all the questions and for taking notes. When you have your answers ready, you can enter them on the Google Form. You should plan to submit your answers in **one sitting** so that nothing gets lost!

Once you submit the form, you will receive a **certificate** by email. You can bring this certificate to the Public Lands Center visitor center in Montrose or the Delta Public Library to get a **badge**.

➔ **FILL THIS IN:** I am ____ years old, so I need to complete ____ questions.



Other Resources

Point your smartphone camera at these QR codes. A link will appear at the top of your screen



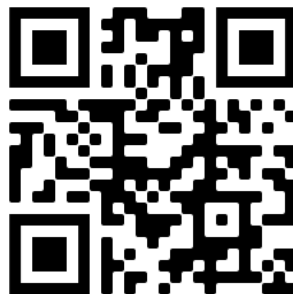
COTREX

This is a great tool to use for navigating the NCAs. This free state-run website and app takes data straight from land managers to give people the most accurate maps and information. The mobile app shows your location on a trail even without cell service, and you can download maps ahead of time for even more information. All suggested trails in this program will include links to trailheads/trail segments on COTREX (web).



Avenza

This is another navigation app that can be useful when you lose cell service. Download geo-referenced maps ahead of time to have an accurate navigational tool while you're out exploring. The app also lets you drop pins and take notes and photos.



iNaturalist

Use this website/app to learn more about the plants and animals you see and hear while you're out on the land. When you upload photos and audio files, an Artificial Intelligence (AI) system can suggest identifications based on what's visually similar and found in the area. Once you share your observations and identifications, other users can give feedback to either confirm your identification or suggest something else.

1. Create an account
2. Select the "Observe" camera icon, bottom middle
3. Search through your camera roll or take a photo right then

4. You can add more photos to an observation, but the first photo will be the one iNaturalist analyzes for recommendations
5. Click “what did you see?” to view recommended identifications.
6. When recommendations pop up, click the information icon on the right to view species information
7. If uploading from your phone, it should already have information about when and where the photo was taken. If you’re on your computer, try to add that information so that other users have key details to help with identification.
8. Click done in the upper right corner to share your observation!



Merlin

This app allows you to identify birds, although you’ll need to have cell service to get real-time identifications. First, you’ll need to set up an account and download a Bird Pack; the app will recommend packs based on your location, but the general North America pack should be sufficient. The app will walk you through a series of questions about the location and physical characteristics of the bird you saw. Once you have a list of possibilities, you can listen to audio clips of the birds’ calls to confirm what you saw!



Rock’d

If you’re curious about the geology around you, Rock’d is a great resource! The app shows geologic maps for your location. Click on the different colored sections to learn more about the age and type of rock in each formation and the environments that created them.

General Questions

These can be completed from anywhere inside the NCA.

1. Throughout McInnis Canyons NCA, you can see the Colorado River flowing. The river starts in Rocky Mountain National Park, and empties into the Gulf of California in northwestern Mexico. The river moves through a wide range of natural environments, from **high elevation forests** through western Colorado's **semi-arid plateaus** and canyons, to the very arid landscapes in the **lower basin and delta** where it empties. The river is a large part of why all the different landscapes look the way they do - from the distribution of animals to plant life along the river at the different elevations. **Draw what you see of the habitat around the river** in McInnis Canyons NCA, including animals and plants, then **imagine and sketch or describe what you think you would see** at the river's starting point (high elevation forests) and emptying point (the Gulf of California, near the border of California and Mexico). Hint: a good place to see the river is Rustler's loop, or any boat launch in the NCA.



General Questions

2. Birding is an activity very popular all over the world, but especially in western Colorado. People love to get outside and see what birds they can find. **Make a list of 3 or 4 birds you want to see** before you get started. As you go through your hike, stop frequently to **look up at the sky or listen intently for a bird call**. Did you spot the birds you wanted to? How did you spot them? Did you see them flying in the sky? Did you hear them first? Did you see a nest? Detail below the birds you wanted to find, and how you spotted the ones you did. Keep in mind, some birds are **migratory**, meaning they travel with the seasons. The birds you might find in April are different than those you would find in October. Another hint: birds like the mornings, and can look for shade in the heat of the day, so you may want to plan for an early start to your hike!
3. McInnis Canyons is home to Black Ridge Canyons Wilderness, a place as beautiful as it is isolated. As defined by Congress, **wilderness** is land that is untrammelled, undeveloped, natural, it provides an opportunity for solitude and unconfined recreation, and has other features. People are able to enjoy many different recreational activities, like horseback riding, river floating, and hiking, but wilderness areas are closed to all motorized activities and to biking. People usually go to wilderness areas to be alone and experience nature in a way special to them. **What does wilderness mean to you?**
4. Introduced to the U.S. in the mid-19th century, the **Tamarisk** tree has spread rapidly along the Colorado river. Tamarisk is an **invasive species**, meaning it is non-native to the area and does not leave room for native plants to grow, therefore harming the natural ecosystem. Now, we control Tamarisk using Tamarisk beetles that feed off the tree and help manage its spread. **Take a picture of Tamarisk** and submit it.



General Questions

5. The **Homestead Act of 1862** was meant to encourage settlement and U.S. expansion in the western lands of the United States. The U.S. government acquired land in the west by purchasing it from France and taking it from Mexico. When the U.S. was encouraging settlement of these lands, the Native Americans were displaced from their home. As part of the Homestead Act, the land was offered for free to Union veterans, and various others, with conditions attached. People could claim land from the U.S. government, but these were the rules: they had to live on the designated land, build a home, make improvements, and farm it for a minimum of five years. **If you were a settler** in the 1860s taking advantage of the Homestead Act, where would you choose to settle, how would you improve the land, and what would you farm?

6. **A National Historic Trail**, known as “**The Old Spanish Trail**,” passes through McInnis Canyons NCA. The trail got its start in late 1829, when Mexican trader Antonio Armijo led the first commercial caravan from Abiquiú, New Mexico to Los Angeles, California. He travelled through northern New Mexico, western Colorado, and southern Utah. Over the next twenty years, Mexican and U.S. traders continued to use routes close to the one he created. Along the way, they would often trade with Native American tribes. What is known today as “The Old Spanish Trail” is a combination of Native American footpaths, early trade and exploration routes, and horse and mule routes. Though it is called “The Old Spanish Trail,” it is really more of a network of trails that were used for trade and traveling between southern Utah, northern New Mexico, parts of California, and western Colorado. Imagine you are traveling the Old Spanish trail and have made it to western Colorado. Write a letter to a friend back home detailing what you see. How would you **describe the area to someone** who has never been there? What colors are the rocks and soil? What sounds do you hear? Use all five senses as you are able (sight, touch, smell, hearing, taste) to introduce your friend to the world around you.

General Questions

7. The **geology** of McInnis Canyons is part of what makes it famous. In fact, McInnis Canyons NCA has the highest concentration of natural rock arches in the state and the second most in the world, only second to Arches National Park. Erosion is what made the canyons you see around you and the arches in the NCA. **Erosion** is a process where natural forces like water, wind, and ice wear away rocks and soil. Draw or briefly describe what you think this area looked like before it began to erode.



What natural force(s) do you think made McInnis Canyons what they are today? What evidence of this kind of erosion do you see around you?

Site-Specific Questions

Some of these are recreation sites, where you can walk around and have a picnic. Others are trails that involve at least a little hiking. Each trail length is listed, though you may not need to hike the entire trail. Refer to the details provided under each bolded location.

Trail Thru Time

1.4 Miles Round-trip

1. The trail begins at the parking lot for a Dinosaur **quarry**. Notice the different types of rocks around you and think about the landscape over time. **Why do you think** these rocks are good for holding fossils? (hint: read the kiosk panels, they provide great information on why the quarry is located where it is!)
2. Not all rocks are the same! There are three different types: **sedimentary, metamorphic, and igneous**. **Sedimentary** rocks are formed from fragments of material, like mud and shells, and over time the sediment accumulates into layers and hardens. Limestone is an example of a sedimentary rock. **Metamorphic** rocks are formed under the Earth's surface from the metamorphosis (change) that occurs from the intense heat and pressure. These rocks have ribbon-like rippled layers and may have shiny crystals on their surface. An example of metamorphic rock is marble. **Igneous** rocks are formed when magma (molten rock deep within the earth) cools and hardens. When magma comes onto the surface, we call it lava. It cools very quickly, no crystals form and the rock looks shiny and glasslike. Examples of this rock type include basalt and obsidian. With this knowledge in mind, **what kind of rocks do you see?** How can you tell?
3. **Sketch the view** at the Rabbit Valley overlook. What formations and features do you see? Test your knowledge by labeling what you can on your sketch!
4. You may notice a dark brown or black coating on some of the rocks. This is called **desert varnish**, and it takes hundreds, even thousands, of years to form! It is composed of iron oxide and trace of manganese oxide and silica. Bacteria take manganese out of the environment, **oxidize** it, and cement it onto rock surfaces. In the process, clay and other particles also become cemented onto the rock. The color depends on how much manganese is in the environment. **Find some desert varnish**, and describe what it looks like – how dark is it? is the sun directly on it? Is it shiny, or not so much?

McDonald Creek

3.7 miles round-trip

1. McDonald Creek follows a stream bed that leads to the Colorado River. Along the way, there are at least four sites where you can see Native American petroglyphs and pictographs. A **petroglyph** is an image carved, incised or scratched into stone. A **pictograph** is a painting on stone, using natural pigments. The first panel appears within the first quarter mile of the trail on the left-hand side of the stream bed, about 15 feet up the



- side. There isn't signage at all the panels to help you identify them, so you should keep a sharp eye out! All panels can be seen from the trail, so please don't leave the trail to go looking for them. Help us protect our natural areas by bringing binoculars with you if you want a closer look! Please don't touch or carve on the rocks. Here is a good hint for finding petroglyphs: look at places that might provide shelter, like alcoves and cliff overhangs. Rock art sightings are one piece of evidence the **Ute** people and their ancestors lived here long before the arrival of **Euroamericans**. When you reach any rock art panel, take in the area around you. We don't know what the art signifies, but **what do you think it could mean?** Was it an important cultural symbol, or just someone passing the time one day? **Write out your best interpretation of the art.**
2. At the end of the trail you reach a railroad. Travel now looks very different than it used to! Now that you know this trail is in a place where the Utes lived many years ago, think about how they travelled before railroads. What about before horses were introduced by the Europeans? Though Utes don't live on this land anymore and currently live like any other American, they do hold these places as special to their culture and identity. Think about the differences of travel between today and then, and **respond to the following**: How do you get food for dinner? How do you think the Utes did it? How do you visit friends and family? How do you think the Utes did it? How do you get medicine when you are sick? What do you think the Utes did?
 3. Along the trail, the landscape changes multiple times from low shrubbery to tall grasses to big bushes and lush trees. **Each time you notice a change in the landscape around you, stop and take notes about what you observe.** Do this 2-3 times. Scientists will often have a sketch to accompany their notes, so also do a quick drawing of one or two of the plants you see. This will help you better understand the changes you will see later on in the trail. Some questions to think about as you take notes are: What do you hear? How do the plants change as you move away from the stream bed? What about closer to the river? Are the canyon walls close to you, or do they feel farther away? What does the soil look like?

Skinner Cabin Trail

1.8 Miles Round Trip

1. Skinner Cabin was restored in 2016, with help from **HistoriCorps** volunteers. The building needed some roofing and masonry updates. Skinner Cabin is an example of one of the earliest stone cabins in the area, built by **stonemason** John Skinner in the early 1900s. Looking at the cabin, **how do you think** the way it was built served to protect John Skinner from the harsh desert weather, including heat and intense rain at times? **How do you think** he built the cabin? **Why do you think** he chose this area?



2. This trail leading to the cabin meets standards set by the **Americans With Disabilities Act**, meaning it was built so that a person in a wheelchair or with knee or hip problems can enjoy it. **Why do you think** it is important for natural spaces to be accessible by everyone?
3. What **barriers** exist to people experiencing the outdoors on other trails you have been on?

Opal Hill Trail

2.8 mi. total: loop, 1.8 mi. + summit, 1 mi.; can opt to do summit only

1. Hike to the Opal Hill summit and **sketch what you see** from the northern or southern views (there are signs to tell you which way you are looking). Label what you can - types of plants, birds flying around, geologic features, anything!
2. Opal Hill is named after the type of rock, **opal**, that used to be easily found around the trail area. The opal found in this area is called common opal and opalized wood. Although the opal is not the colorful gemstone variety, the opal found here still has its own beauty. As you are hiking Opal Hill, you may notice there is not much opal around. This is because though there was once a lot of opal, most of it has been taken from the surface, and digging would be required to find more. However, **rockhounding** is illegal in the NCA in order to protect the sensitive resources. You can still keep an eye out for some opal, though, the rain is always turning up soil! While you are hiking, notice the other kinds of rocks around you, and find a rock along the trail that interests you (it does not have to be opal). **Describe the rock** in as much detail as you can. How big is it? Does it sparkle, or is it dull? What color is it? Is it sharp or smooth? Use your words to paint a picture - and please remember to leave the rock behind when you are done!
3. **Biological soil crust** is a collection of living organisms that work together to keep soil in place and hold onto extra moisture. **Cyanobacteria**, very small organisms that can use light from the sun to make energy (photosynthesis), create the beginning structure of biological soil crust. The bacteria create a small network of threads, called filaments, in the soil that hold everything together and form little towers or pinnacles. Cyanobacteria are dark colored, so as the towers grow they get dark on top. Next, other organisms like **lichen and moss** can start to grow on top of the **pinnacles**. All of these organisms working together help keep soil in place and prevent erosion. **Erosion** is when soil is carried away by wind or water. If too much soil is eroded away, plants cannot grow! The organisms that make up the crust also help the plants around them by making nutrients more available. **Find a patch of soil crust with moss and pour a little bit of water onto it.** What happens? (Moss like this picture is dried out and unhappy, so it might look like small black dots- this one is known as screw moss.)



Kokopelli Trails

Route lengths vary, plan a route ahead of time: https://copmoba.org/wp-content/uploads/2019/04/Kokopelli_Loops_trail-map.pdf

1. The Kokopelli's Trail is a 142-mile **multi-use** trail that begins in Western Colorado and ends in Utah. The trail was named in honor of **Kokopelli**, an important figure in many pueblo societies today. The trail was created by the Colorado Plateau Mountain Bike Trail Association (COPMOBA) in cooperation with the Bureau of Land Management and the United States Forest Service in 1989. Working with other organizations is essential for the Bureau of Land Management to get the work done that they need to. **Why do you think** it is important for the government to work with other groups in an area to get projects done?
2. Though the Kokopelli trail system is open to foot traffic, it is particularly popular with mountain bikers and is a famous destination for many. This is because of its length and variety in difficulty levels. **How many mountain bikers did you see on the trail?** What time of day were you out?
3. As you ride or walk through the Kokopelli trail system, think about how interwoven the trails are. If you look at a map (link above), you can see a lot of the trails overlap and are labeled by difficulty. **What do you think** makes a trail **easy, intermediate, or difficult**, and how did you plan your route?