

Where To Look?

Luck plays a part in finding fossils, but research and hard work play a larger role. The team decided where to look for dinosaur fossils by combining information from three sources: geographic maps, geologic maps and scientific reports.

A geographic map shows cities, villages, roads, trails and surface features (dry river beds, sandy areas, cliffs, mountains) as well as areas of exposed rock not covered by dirt, sand or grass.

The team used this kind of map to plan campsites and vehicle routes.

A geologic map shows the age and type of rock on the surface. The team used geologic maps to locate rocks that formed during the dinosaur era. Geologists have mapped the age of each distinct rock layer and have assigned a different color and letter to each layer. For example, Cretaceous rocks (145-65 million years old) are shown on a geologic map in different shades of green and are marked with the letter "K."

The key on the geologic map gives more information about the type of rock in each area. For instance, it indicates where the rocks were formed. Marine rocks were formed on the ocean floor. Terrestrial rocks were formed on land. Volcanic (or "igneous") rocks were formed under the earth or by volcanoes. The team was interested in terrestrial rocks because those are the ones that contain fossils of animals that lived on land. Dinosaurs and other land animals are never found in volcanic rocks and are rarely found in marine rocks.

To look for Cretaceous rocks, the team located the Cretaceous (green) areas on the map and checked the key to make sure the rocks in these areas were terrestrial.

Scientific reports describe scientific discoveries.

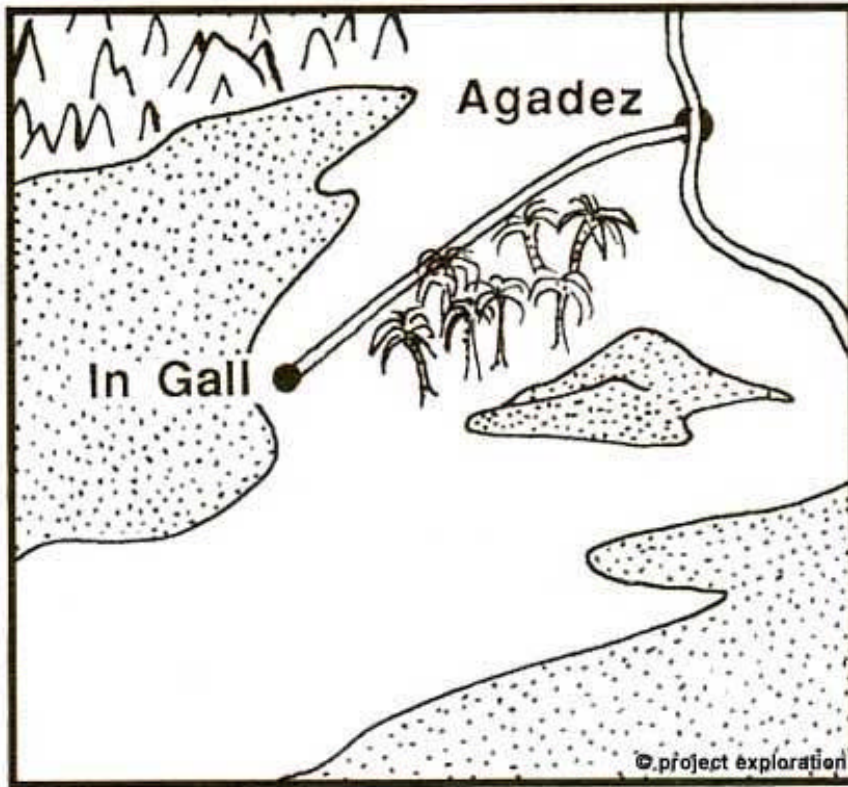
Before the team departed, they went to a library and found all the reports that described Niger, its geology and its fossils.

DIRECTIONS:

You are a paleontologist and want to discover new Cretaceous dinosaurs in the Sahara Desert in Niger. First you go to the library and look up all the scientific reports about the area. You find one geology report that includes photos of pieces of large fossil bone that look like they might belong to a dinosaur. This sounds interesting, but there's no map showing exactly where the fossil fragments were found. All it says is that the fossils were sighted somewhere near an oasis called "InGall."

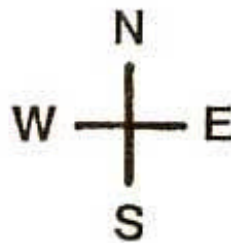
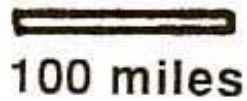
You return to the library and study maps of the area. You find a geographic map and a geologic map. Now you have the information you need to decide the best area to look for fossils.

MAP 1: The Geographic Map



MAP 1: The Geographic Map Key

Map Key

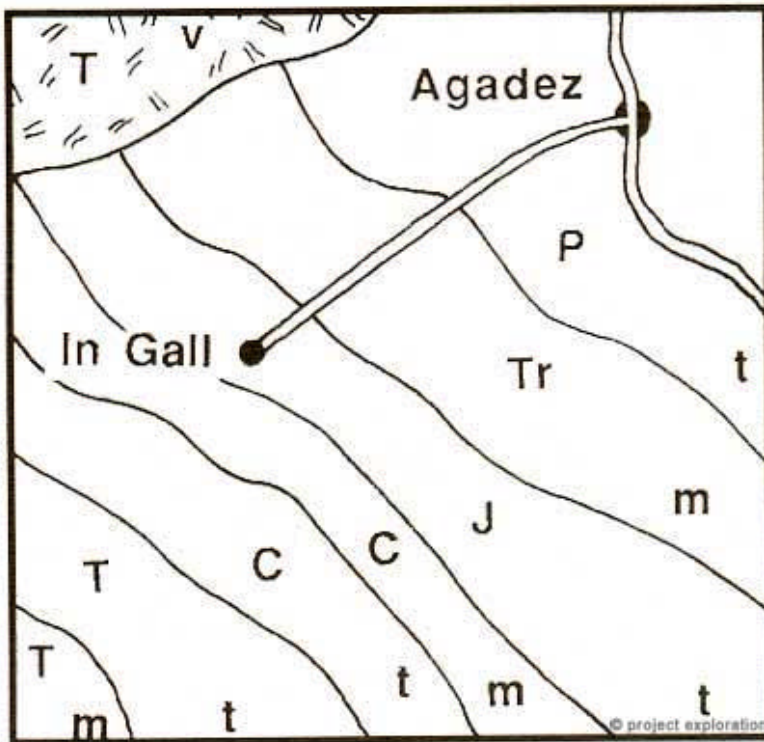


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MAP 2: The Geologic Map



MAP 2: The Geologic Map Key

Map Key

	<i>Rock age</i>
T	Tertiary rocks (mammal era)
C	Cretaceous rocks
J	Jurassic rocks
Tr	Triassic rocks
P	Paleozoic rocks (pre-dinosaur)
	<i>Rock type</i>
t	terrestrial
m	marine
v	volcanic

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Where To Look? Questions:

1. Can the town of InGall be reached by truck? What town do you need to pass through along the way?
2. Begin to make scientific notes. What is the area surrounding InGall like? Where is the rock covered by sand or trees? (Hint: Describe your answer using compass directions. For instance, "North of InGall there are....., Use the compass below the maps to help you.)
3. Determine the ages and types of rocks. Locate the age symbols (T, J, K) and the rock type symbols (t, m, v) in the map key. Would it be possible to find Triassic-age dinosaurs in this area? Why or why not?
4. You need to know where to search for Cretaceous dinosaurs. Where are the Cretaceous age rocks? Are any of these formed on land? Are any of these exposed? (HINT: look at the geologic map and then the geographic map to find areas that are exposed/not covered by sand dunes)
5. you were camping in InGall, where would you take your team to search for new Cretaceous dinosaurs? (You must give a direction from InGall using the compass and a distance from InGall. Use the distance bar under the map).

WHERE TO LOOK? ANSWER KEY

1. Can the town of InGall be reached by truck? What town do you need to pass through along the way?

Yes. Agadez

2. Begin to make scientific notes. What is the area surrounding InGall like? Where is the rock covered by sand or trees? (Hint: Describe your answer using compass directions. For instance, "North of InGall there are", Use the compass below the maps to help you.)

A sand dune covers the ground north, west and south of InGall. A road enters InGall from the northeast.

3. Determine the ages and types of rocks. Locate the age symbols (T, J, K) and the rock type symbols (t, m, v) in the map key. Would it be possible to find Triassic-age dinosaurs in this area? Why or why not?

No. There are Triassic rocks, but they are marine rocks (formed in the ocean). There are no terrestrial rocks (formed on land).

4. You need to know where to search for Cretaceous dinosaurs. Where are the Cretaceous age rocks? Are any of these formed on land? Are any of these exposed? (HINT: look at the geologic map and then the geographic map to find areas that are exposed/not covered by sand dunes)

Yes, yes, yes

5. If you were camping in InGall, where would you take your team to search for new Cretaceous dinosaurs? (You must give a direction from InGall using the compass and a distance from InGall. Use the distance bar under the map).

Due south about 100 miles because this would put us in an area of terrestrial Cretaceous rocks that are not covered by sand dunes.