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ZOOM in on america

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Bends of the Colorado River

In this issue: Horseshoe Bend & Dead Horse Point Zoom in on America

Horseshoe Bend near Page, Arizona

Horseshoe Bend is an amazing turn of the Colorado River located about four miles southwest of the Glen Canyon Dam in Page, Arizona and seven miles north of Mile Zero of the Grand Canyon. Nothing heralds it from the road. The landscape is rather flat so you might not realize that you are in fact at the top of a cliff whose steep walls fall 300 meters down to the banks of the Colorado River.

Most visitors to Horseshoe Bend arrive by car from U.S. Route 89. Visitors park their vehicles in a large, dusty parking area and walk along a short trail that takes them to a hole in the ground: a hole that reveals the most spectacular view of this u-shaped bend in the Colorado River. The view of the canyon and its 270-degree bend changes according to the time of day one visits and the direction of sun's rays.

Navajo Sandstone gives Glen Canyon its distinctive orange coloring. It is part of the largest sandstone layer in the United States, which is composed of sand dunes from the Jurassic age and stretches from Northern Arizona to Wyoming.

While the rock looks solid, it is not safe to walk to the edge of the cliff. The erosion process that has shaped this landscape through the ages continues. Pieces of rock still break off the cliff and tumble into the canyon below. Park

rangers who are one hand explain the dangers to those tourists who favor extreme impressions or would like to have a photo while standing on the very edge of the cliff.

Rivers meander because water flows through the steepest slope leading downward toward the sea. When the Colorado Plateau uplifted, the rivers that meandered across the ancient landscape were trapped in their beds. The only way for them to escape and seek a new route to the sea was to go through the rock. This is what happened at Horseshoe Bend, where the Colorado River cut through the layers of sandstone and eventually created a 270° horseshoe-shaped bend in the canyon. In the future, the waters of the Colorado River may create a different passage through the rocks.



Horseshoe Bend of the Colorado River southwest of Page, Arizona. Photos © Bozena Pilat

Dead Horse Point: Geologists' Paradise

Standing at Dead Horse Point, 32 miles southwest of Moab, Utah you find yourself face to face with 300 million years of earth's geological history. The absolute silence and stillness of the place bewilders you. The silence seems as deafening to your ears as the roar of dinosaurs who roamed this area millions of years ago might have been. Your eyes wander in amazement across the immeasurable vastness. You ask yourself if this is how the primeval world looked millions of years ago.

In fact the landscape does not look the same as it did millions of years ago. There have been many changes but they happened so long ago that humans were not present to witness them. Yet through the science of modern geology we are able to decipher ancient history through the shape and colors of the surrounding cliffs and hills. For a geologist, Dead Horse Point State Park, which neighbors Canyonlands National Park, is a paradise, the true "layer cake of time." By examining this layer cake, which is made up of layers of rock that were deposited over the course of hundreds of millions of years, we can tell the natural history of the region. The layers of rock were originally deposited by wind and as sediment in streams, rivers and seas. Gravity played a role in shaping the region's intricate canyons, as did wind, moisture, and the processes of freezing and melting.

For example, during the Permian-Pennsylvanian period 275 million years ago, shore dunes 300 to 400 deep were deposited by winds and flooding. Red sandstone and conglomerate as well as gray limestone are characteristic of this deposit. The Permian period, 250 million years ago,

left up to 250 feet of coastal-marine beach and off-shore sands and non-marine alluvial and floodplain. The Kayenta Sandstone formation of the Late Triassic period some 180 million years ago added a 150-300 foot layer of stream deposit. It is characterized by irregular bedding, grey buff, lavender and red sandstone and siltstone. Navajo Sandstone formation of the Jurassic period (175 million years ago) is a 300-400 feet thick layer of "petrified" dunes: light tan to buff colored, beehive shaped hills and vertical cliffs deposited by wind.



The wide panorama of the Colorado River and Canyonlands NP is seen from Dead Horse Point. Photos © Bozena Pilat

Scarcity of Water

Even though the Colorado River meanders 2,000 feet below Dead Horse Point State Park, the peninsula has no drinking water reservoirs. While rainstorms can be seen on the horizon from the park's observation point, it hardly ever rains in the park itself. Water, or rather the lack of, is the theme of a legend that explains how Dead Horse Point got its name.

The legend takes us back to a time when cowboys rounded up wild horses (mustangs) across the Colorado Plateau. They cowboys had a place where they herded the horses while they were away. This was a narrow neck of land overlooking a bend in the Colorado River. The entrance to this spot was only 30 yards wide. Cowboys used branches and brush to form a corral that prevented the horses from running away. One time the cowboys left the horses in the corral for too long, unattended. The animals died of thirst in spite of the fact that they were so close to the river. Because the cliff is so steep, they were not able to descend to the river. No one knows if this legend is true, but the picturesque point was named Dead Horse Point nonetheless.

Scarcity of water is not a legend, however. It is a fact. With only 10 inches precipitation a year, Dead Horse Point State Park is a desert-like environment. This strongly affects vegetation and animal life in the area. Plants have adapt-

ed to the environment in a number of ways. Some plants have smaller leaves to limit water loss through evaporation; others have a waxy coating on their leaves that serve the same purpose. Some plants have developed nocturnal cycle and others go through a dormant phase during dry spells. Trees are small too. They don't grow taller than 15 feet. Nevertheless, they live for hundreds of years.

Animals have similarly adjusted to the climate. They have developed adaptations to drought and heat. Most animals in the region are nocturnal; they spend the daytime hours in the shade or in underground burrows and leave their shelters during the night to hunt for food. Some of the animals have oversized ears which radiate heat away from their bodies and help them keep cooler. Some can even go without water for weeks.

Dead Horse Point State Park is managed by the Utah Division of Parks and Recreation. The park has several overlooks and a visitor center, two campsites, a picnic area, several walking trails and a bike route called Intrepid Trail which offers loops of varying levels of difficulty. Water for staff and visitors is trucked in from Moab, 32 miles away. The park is open year-round from 6 a.m. to 10 p.m.



Grand Canyon. Photo © Bozena Pilat

Canyonlands National Park

Canyonlands National Park is located at the heart of the Colorado Plateau, where the Colorado River and the Green River meet.

Canyonlands is the largest of Utah's five national parks. It is made up of three different regions: Island in the Sky in the north, the Maze in the west, and Needles in the east. These regions are separated by natural boundaries formed by the two rivers and their canyons.

The landscape of the Colorado Plateau is made up of mesas, canyons, buttes, arches, fins, and spires.

Ancestral Pueblo Indians inhabited these territories in the past. They grew corn, beans and squash, and they hunted deer and bighorn sheep. In the Needles one can see traces left by the Pueblo. They belonged to two cultures, the Fremont and the Anasazi. The Fremont lived in the region to the west and north of Canyonlands, and the Anasazi lived to the south and east. Canyonlands was the point where these two cultures met.

Many of their stone and mud dwellings are extremely well-preserved, and artifacts that remain tell much about their way of life. Tower Ruin is a dwelling built on a ledge in Horse Canyon. Among the ruins are etched petroglyphs

and painted pictographs on the cliff walls. The meaning of many of the pictures remains a mystery to researchers who study them. Around the year 1250 A.D., the Fremont and the Anasazi cultures were pushed out of the area two other Native American groups: the Utes and Navajos.

It is possible that Spanish settlers explored the area that is now Canyonlands National Park. The first documented visit to the area by a European, however, was made by a fur trapper, Denis Julien. Julien engraved his name on rocks in the canyons in 1836. In 1859, Captain John Macomb led an expedition aimed at locating the confluence of the Colorado and Green Rivers. Macomb was not impressed by what he saw and reported: "I cannot conceive of a more worthless and impracticable region than the one we now found ourselves in."

Following in Macomb's footsteps came Major John Wesley Powell's expedition and later on cowboys, miners and finally tourists, all of whom thought highly of this one of a kind place. In 1961, Utah Senator Frank Moss introduced legislation to establish Canyonlands National Park. His persistency paid off. In 1964, President Lyndon Johnson signed the law establishing Canyonlands National Park.



Canyonlands National Park. Photo © Bozena Pilat



*(top left): In Canyonlands, (top right): Horseshoe bend.
(bottom): View of Canyonlands from Dead Horse Point. Photos © Bozena Pilat*

Activity Page

EXERCISE 1 GRAMMAR AND READING

Read the text below. Some articles have been removed. Decide whether an article (a/an or the) is needed and put it back in the text.

Island in the Sky:

Views from ... (1) Island in ... (2) Sky reach from ... (3) depths of the Green and Colorado Rivers to ... (4) mountaintops and above. Across ... (5) canyon after ... (6) canyon they stretch to ... (7) horizon 100 miles distant. Island in the Sky - ... (8) broad mesa wedged between the Green and Colorado - is Canyonlands' observation tower. From it you see vistas of dimensions hard to comprehend. Closest to ... (9) mesa's edge is ... (10) White Rim, ... (11) nearly continuous sandstone bench 1,200 feet below the Island. Another 1,000 feet beneath White Rim are the rivers, shadowed by sheer canyon cliffs. Beyond them lie ... (12) Maze and the Needles.

Outside the park three mountain ranges break ... (13) land's flat-topped pattern. To ... (14) east rise the La Sals; to ... (15) south the Abajos; to ... (16) southwest the Henry's. Rain that skips Canyonlands' arid soil keeps ... (17) mountains mantled in forests of pine and fir. On the Island, ... (18) vegetation is more sparse. Fields of Indian ricegrass and other grasses and pinyon-juniper forests survive on fewer than 10 inches of rain ... (19) year. Coyotes, squirrels and ravens, hawks and smaller birds share these lands' food. Cattle and horses once grazed here; ... (20) abandoned water troughs and fences recall those bygone days.

(from the brochure of the National Park Service, U.S. Department of the Interior.)

EXERCISE 2 SPEAKING AND WRITING

Work in pairs. Choose one of the pictures. First describe it to your partner. Then listen to the description of their picture. In a discussion compare the places. If you were in charge of the park what activities and/or programs would you prepare for the visitors? Discuss with your partner what regulations should be introduced in any national/state park with regard to:

bicycling
camping
fires
fireworks
parking
pets
plants and animals
trails
vandalism
wastewater
quiet hours.

Now, working in pairs, write down Park Guidelines for the Visitors.



(left): Bryce NP, (right): Arches NP. Photos © Bozena Pilat

Win a Prize!
March 2014
CONTEST

In what state is Canyonlands NP?

Send the answer
(with your home address) to:
KrakowAIRC@state.gov

Deadline: April 15

Win a Prize!
The answer to
the February
contest was:

A dog race in Alaska

The winners are:
Kamila from Bilgoraj, Justyna
from Staszow and Natalia
from Jankowice.

CONGRATULATIONS!!!

The prizes will be sent to you
by mail.



Zoom is online at
www.usinfo.pl/zoom/

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At Dead Horse Point State Park. Photo © Bozena Pilat