

Geotourism Resources for Sustainable Development and Recreation: Plateau State Case Study.

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ABSTRACT

Geotourism (an aspect of ecotourism) deals with the identification, study, and development of the Earth's geologically-based physical resources and features in an environmentally and culturally sustainable manner in order to provide recreation, relaxation, education, and employment. Virtually every state in Nigeria has several potential sites. Sites in Plateau State include the Kurra and Assop waterfalls, the Pidong crater lake, the Wase phonolite-trachyte plug, the SWAN spring water plant, the Sura (Panyam) volcanic line, Younger Granite ring dykes, complexes and hills, and the relatively little known Kahwang and Yembe river falls with their excellent exposures of polygonal columnar basalts extending for several kilometers. These columnar basalts, located about 50km and 15km south of Jos, are comparable to the world-famous Giant Causeway exposures in Ireland.

(Keywords: geotourism, ecotourism, sustainability, cultural resources, recreation, education)

INTRODUCTION

It is necessary to use our natural resources and selflessly create wealth that would positively transform and enhance the life of people and save society from many socio-economic problems. Before the wealth of nations can be utilized, they must be known, searched for, found, extracted or produced and, if necessary, upgraded. A branch of geology, called environmental geology, is concerned with many of these issues, including the concept of sustainable development, an issue relevant to wealth creation and its judicious use. Hence, another area of human endeavor outside mining where understanding and applying how geology and the Earth's natural resources endowment can be un-earthed/un-buried and used in the service

of society, especially in all the 36 states of Nigeria and Abuja, is geotourism.

Visits can be arranged to areas or features of geological or mining origin which have tourism appeal based on their aesthetic, cultural, superstitious, and curiosity value. Geotourism is an aspect of ecotourism, also known as ecological tourism. It appeals to ecologically and socially conscious people and focuses on learning new ways of living on Earth by travelling to destinations where the flora, fauna, cultural heritage, and natural scenery are the primary attractions.

Responsible ecotourism minimizes the negative aspects of conventional tourism and enhances the cultural integrity of local people. Therefore, in addition to evaluating environmental and cultural factors, an integral part of eco-/geo-tourism is to promote recycling, energy efficiency, water conservation, and sustainable local businesses. The infrastructure facilities in these areas should be developed or upgraded and working with geoscientists, the nature and origin of each site could be explained in non-technical language in a way that would interest tourists who are usually very inquisitive. Many of such sites may have alternative traditional or superstitious explanations. Most Nigerian geotourism sites discussed below are found in Plateau State (Ogezi, 2008).

GEOGRAPHY

Plateau State is one of Nigeria's foremost tourists' destinations and is located beautifully in the center of the country in the Middle-Belt Zone. It lies between latitude 8°24' and 10°04' north and longitude 8°32' and 10°38' east (Figure 1). The northern part of the State is mostly rocky and the area contains within its boundaries chains of hills and many captivating rock formations and

outcrops. This picturesque landscape ranges from bare rocks and artificial hillocks derived from mining activities and deep gorges formed from years of tin mining on the Jos Plateau. Plateau State covers an area of about 26,899 square km and a population of about 2,959,588. The major ethnic groups are Berom, Angas, Mwaghavul, Taroh, Geomai, Tal, Fier, Afizere, Miango, Youm Bogghom, Rukuba, Piapung, Kwalla, Montol, Jukun, Challa, Ron-Kulere, Pyem, Miship, Mupum, and Buji. The State was carved out of Benue-Plateau State on February 3, 1976. Its slogan or motto is "Home of Peace and Tourism" (PlateauStateGov.org.).

Plateau State has the most striking physical features in Nigeria with the high lands rising from 1,200 meters above sea level at the low lands to a peak of 1,829 meters above sea level. The Shere Hills range is perhaps the most rugged of the Jos Plateau ranges. The name "Plateau State" was derived from the State's spectacular geographical landscape, a delight to every tourist.

Though situated in the tropical zone, Plateau State has a near temperate climate with an approximate mean high temperature of 22°C and mean minimum low temperature of 18°C. The mean annual rainfall varies from 131.75 cm in the southern part to 146 cm on the Plateau, and highest rainfall is usually recorded in the months of July and August. The weather is always cold

between the months of December and February as a result of the Charlatan winds. Even though the temperatures appear highest between March and April, Plateau weather remains the coldest and this weather condition accounts for the concentration of expatriates in the State compared to other States. Plateau State is especially popular for its many tourist attractions.

In general, many tourist destinations in Africa consist of locations with beautiful landscapes and/or a rich and diverse wildlife or those with peculiar cultural heritage. Locations include the rich and diverse wildlife in Kenya; the impressive 1708 metre-wide Victoria Falls in Zimbabwe; the pyramids and monuments of Egypt; the beaches and the Table Mountains of Cape Town, South Africa; and the beaches and slave trading posts of Zanzibar.

In Nigeria, important tourist locations include the Yankari Game Reserve in Bauchi State, the Obudu and Tinapa Resorts in Cross River State, and the Argungu Fishing Festival in Kebbi State. Many other sites exist. The aim of this contribution is to document some examples of some currently known and potential sites in Nigeria, with particular reference to locations in Plateau State, assess their tourism, training, research and job creation potential and recommend strategies for their sustainable development.

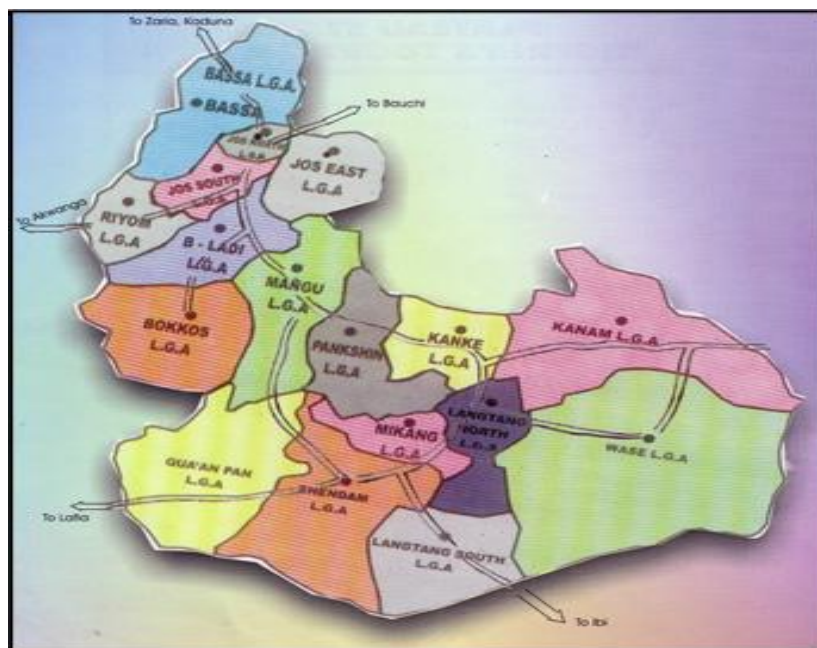


Figure 1: Map of Plateau State showing the Position of the 17 Local Government Area Councils.

MATERIALS AND METHODS

Locations and elevations in the study areas were measured with a global positioning system (GPS). The orientation of rock samples and rivers was carried out using a compass and clinometers. Rock samples were obtained with the aid of a geological hammer. Water samples were obtained and stored to avoid contamination. Photographs were taken using a Canon power shot A570 IS digital camera.

DISCUSSIONS

Wase Trachyte-Phonolite Plug

The Wase Trachyte-Phonolite Plug, situated about 216km south-east of Jos, is located near Wase Town between the town and Langtang, also hosts a game reserve. The gigantic inselberg rock formation stands at about 350metres above the surrounding sedimentary flat plain (Figure 2). It is alleged to be one of only five of its type in the world.

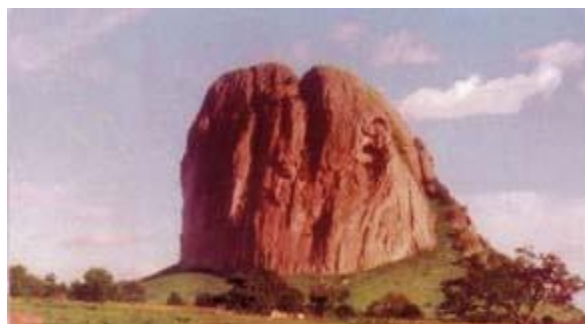


Figure 2: The Wase Trachyte-Phonolite Plug.

The rock inselberg is an important breeding ground for the rosy pelican birds of Africa. Another rock formation site which is an important bird sanctuary in Plateau State and Nigeria is found at the A.P. Leventis Ornithological Research Institute (APLORI), Laminga, a research and training arm of the Department of Zoology, University of Jos, which carries out research into the conservation and study of birds as well as uplifting the living standard of its host community through sustainable community development projects (Anon, 2009). It has a large collection of reportedly more than 167 bird species made up of indigenous and exotic birds that migrate all-year round from Europe to Africa and Plateau State, is

the Amurum Bird Sanctuary in an approximately 300 hectare forest with granite inselbergs near Laminga, about 15km NE of Jos City in Jos East LGA off the road to Shere Hills.

The relationship between the University of Jos and the Laminga community began in 2001 when the community kindly gave its 300 hectare patch of community forest around granite exposures free of charge to the University of Jos for research into the conservation of several species of birds found in the forest, particularly with the discovery of two rare birds: the Jos Plateau Indigo bird (*Vidua maryae*) and the Roch Fire Finch (*Lagonoshita sungunodorsalu*) (Anon, 2009).

Kurra and Assop Water Falls

Kurra Falls, the home of Plateau State's first hydroelectric power station, is located some 77 kilometers south-east of Jos. This area is well known for its breathtaking scenery. It has pleasant climate suitable for people who cherish beauty and pleasant environments. With its several beautiful island rocks or inselbergs, hills and lakes, the whole area is ideal for boating, camping, and rock climbing, as well as fishing along streams and the lakes (Figure 3).



Figure 3: Kurra Water Fall.

The Assop Water Falls is located some 62 kilometers along the Jos- Akwanga road, at Hawan Kibo, at the foot of the steep climb or escarpment to the 1300m plus Jos Plateau. Assop Falls is another of nature's several tourism gifts to Plateau State inhabitants and visitors. It is located in a picturesque environment; the water fall has provided an ideal spot for the shooting of

popular television soap operas and advertisements. It is an ideal spot for picnicking, rock climbing and even swimming. The peaceful environment provides an ideal atmosphere for one to relax while in awe of nature's wonder (Figure 4).



Figure 4: Assop Water Fall.

Surra Volcanic Line

Tourists flock to the picturesque scenes and hills on the Panyam-Shendam road. Many tourists have been known to take a detour to admire the scenery on this road as the hills are nothing short of spectacular. Mountain hikers enjoy the challenges posed by this scenery. A number of the hills are located on the steep descent or escarpment from the Jos Plateau to the “lowland” part of Plateau State.

A number of conically-shaped hills are members of the basaltic hills that comprise the so-called Sura (or Panyam) Volcanic Line, which is made up of about six hills aligned in a north-south direction (Figure 5). The origin of this volcanic line is due to deep-seated geotectonic forces that acted deep in the Earth's crust and upper mantle.

Luham Rock

The Luham Rock is located in Tunkus, the capital of Mikang Local Government Area. “Luham” in the language of the local tribe of Montol means “house of water”, or simply put, a source of water (Figure 6). The story behind this rock is that back in the dark ages, when people had to protect themselves, the local people had to take cover in rocks and mountains.



Figure 5: Surra Volcanic Line.

The Montol people were fortunate to have discovered this mountain that not only offered them protection, but it also provided them with the most important source of sustenance, water.



Figure 6: Luham Rock.

Riyom Rock

Located about 25 kilometers from Jos, west along the Jos-Akwanga road, is one of nature's most spectacular rock formations - the Riyom Rock, so called because it is located in Riyom Town. Nature had apparently carved out the geographical shape or boundaries of Plateau State in the rock long before the State was even created. Riyom is also known for many other spectacular rock outcrops formations. The natural, in-situ outcrop most probably was formed as a result of onion-skin weathering or exfoliation along several sets of cooling joints formed during and after the intrusion of the granitic rock.



Figure 7: Riyom Rock.



Figure 9: Kerang Volcanic Hill.

Kwi Conical Hill and Kerang Volcanic Hill

Kwi Conical, The Kwi Conical Hill, in Riyom LGA is one of several picturesque conically-shaped, laterite-topped hills, which occur in several places near the Jos Airport and surrounding areas (Figure 8). It is one of Plateau State's great sights of hills in a rolling virtually flat, un-vegetated area. The hill is a very inviting sight to daredevil climbers who would love the challenge of heights. On top of this hill is an almost flat land.



Figure 8: Kwi Conical Hill.

Kerang Volcanic hills sites. This rock was created by volcanic activities millions of years ago. No one has any idea how long ago the volcano was active. This is a great sight for anyone interested in the study of volcanology because geologists are unsure if the volcano is still active (Figure 9).

Shere Hills

The Shere Hills are a range of undulating hills and rock formations with the highest point at 1,829 meters above sea level (Figure 10). These combine together to provide a challenge to mountaineers or rock climbers inviting them to dare the terrain. Located within the area is the Mountain School of Citizenship and Leadership Training Center (Man O' War Bay), a military-type adventure and training for National Youth Service Corps (NYSC) and clubs. It is also very popular with picnickers. Shere Hills is only about 10 kilometers from the heart of Jos. It was host to the First All African Scouts Jamboree in 1976.



Figure 10: Shere Hill.

Pankshin Hilltop

The Hilltop, Pankshin is located on the highest point in Plateau State. The hill presents tourists with a great view of the entire Pankshin Town and even the small villages around Pankshin (Figure 11).



Figure 11: The Pankshin Hilltop.

On a clear day, one can see for several kilometres from this hilltop point. Pankshin Town apparently clings to the sides of the mountain, a part of the world-famous Mesozoic tin-bearing Younger Granites of the Jos Plateau. This picture of Pankshin Township was taken from one of its highest points, the Hilltop Hotel. Pictures really downplay the beauty of this highland town, which is about the coldest major town in Plateau State and is neatly tucked away under some of Plateau States highest land areas.

The Pudong (“Pidong”) Crater Lake

The Pudong (“Pidong”) Crater Lake was created by a volcanic activity and is located in Ampang West in Mangu Local Government Area. This crater lake is a place of great significance to the people that live around it (Figure 12).



Figure 12: The Pudong Crater Lake.

There are great stories and legendary folktales verbally handed down through generations about the crater and its significance to the residents of Ampang, Kerang, and Bonpe villages. The water in this crater has never been known to dry up at any time regardless of how much drought the region has been through. Though the crater’s depth has never been measured or determined, it is apparently connected to a groundwater source which is also the source of the fresh spring water supply that produces the spring waters of Nigeria (SWAN) brand of bottled mineral/table water favored in many Nigerian homes.

Gahwang and Yembe Fall Columnar Basalts

The Gahwang Columnar Basalts are a rock formation composed of polygonal basalt columns of various sizes and shapes, but in general, most are five- or six-sided, arranged in a very unique fashion as if it were done by an expert mason (Figure 13).



Figure 13: The Gahwang Columnar Basalts.

It is allegedly one of only two known in the world, the second being the Giant Causeway, located on the County Antrim coast in Northern Ireland, United Kingdom. The Giant Causeway consists of thousands of columns of rock, mostly irregular six-sided hexagons. The columns reach a maximum height of about 6 metres and a diameter of about 50cm. The Causeway runs for about 5km along the coast and was formed by the cooling and contraction of a lava flow millions of years ago.

The Yembe fall, Nkiendonwro is located about 14 kilometers from Kent Academy, Miango through Ta`agbe. The fall is between 8-10 metres and flows on a basalt that have contact with the Pan African Granites. The basalts are columnar but

not well formed like those at Kahwang (Figure 14).



Figure 14: The Yembe Fall Columnar Basalts.

CONCLUSION

It is necessary to sustainably use our natural resources and selflessly utilize them in a way that would positively transform and enhance the life of people and save society from selfishness unsustainable resource depletion. Before the wealth of nations can be utilized, they must be known, searched for, found, extracted or produced and, if necessary, upgraded.

To facilitate public interest in geotourism, geoscientists, government agencies, communities, and other stakeholders must collaborate to sensitize the public, develop, and preserve these national patrimony/heritage sites for teaching, training, research, sustainable development, job creation, environmental conservation, and exploration of alternatives to traditional exploitation/uses (e.g. hydropower, bird migration/observation).

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