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SPATIO-TEMPORAL ANALYSIS OF CEMETERY IN GOMBE AND ITS ENVIRONS

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Abstract

The study examined the distribution of cemeteries in Gombe urban area with special reference to space and time. Survey research was adopted, both qualitative and quantitative data collection was used to describe the spatio-temporal condition of cemeteries in the study area. Global Positioning System (GPS) was used in taking coordinates points of cemeteries. In-depth interview was conducted with the neighborhood to ascertain the true status of the cemeteries. Narrative techniques were used in explaining the result of the study. The results showed that, there are about 15 cemeteries in Gombe urban area and its surroundings, out of which only five are active (still in use) while the remaining ten (10) have been filled up. The results also revealed that, out of 15 cemeteries in the study area 13 belong to the Muslims community and two belong to the Christians. Majority of the cemeteries (66 %) are fenced with integrated material culture like gates, grave makers, and internal layout. The impact of cemeteries to the neighborhood include store house for rare species of plants, it is a place of deposing dead bodies and a place of memorial while on the other hand it increase insecurity, land devaluation and psychological discomfort. The study recommends that there is need for more effort from government and community in maintaining the cemeteries in the study area.

Keywords: Analysis, Cemetery, Environs, Spatio, Temporal

Introduction

Landscape is part of the earth surface that can be viewed at one time from one place. It consists of geographical features that mark or are characteristic of a particular area (Sitwell and Bilash, 2016). A natural landscape is made up of a collection of landforms, such as mountains, hills, plains and plateaus. Lakes, streams, soils (such as sand or clay) and natural vegetation are other features of natural landscapes (Sitwell and Bilash, 2016). A landscape that people have modified is called a cultural landscape. The people and plants they grow, the animals they rear, the building they raise among others make up the cultural landscape. They can be vast as cattle

ranches, cemetery landscapes, urban landscape, Playgrounds etc. Since 1992, the United Nations recognized significant interaction between people and the natural landscape as official cultural landscapes (Tanaka, 2017). It is not generally recognized that significant fraction of the diversity of plants and small animals of the earth reside in human-influenced landscapes, frequently referred to as cultural landscapes that represent a fundamental storehouse of the natural and cultural capital of the earth (Marcomini, 2012 and Huirong *et al.*, 2016). Cemeteries contribute to these storehouses and therefore deserve increased attention, understanding and preservation.

Cemeteries are deliberately created and highly organized cultural landscapes (Neckel *et al.*, 2016). It is a land designated by a community, congregation, organization or family for the internment, entombment and memorialization of the dead. Beginning from time immemorial, traditional churchyard and family burial ground within houses/compounds were replaced by a large landscape called cemetery. Cemeteries serve both functional and emotional purposes. They provide for disposal of corpses and far more important, provide a place where the living can communicate with the dead and they are thus both sacred and profane (Neckel *et al.*, 2016). Disposing of the dead bodies have been a necessary and great concern to public service for as long as humans have lived on the earth (Reza and Alfa, 2012). Burial is intertwined with spaces that human occupy and cemeteries have through history provided open space to urban and some rural residents across the world (Bannet and Davies, 2015; Neckel *et al.*, 2016). Both developed and developing countries are living a disturbing period because of growing population, rapid urbanization and environmental degradation in their urban and also rural areas. As such, new approaches and terms in the field of daily life, which will be the solution to environmental issues are getting priority in the agenda of planners, managers and designers of cities and towns (Bannet and Davies, 2015). Cemetery as an inevitable form of land use in urban setting, ought to be planned managed, designed and maintained with ecological approaches in order to protect the environment and create livable spaces.

Cemeteries have religious, symbolic, philosophical and aesthetic meanings and the study of it is gaining importance and relevance as ecological reserve areas or potential green areas for branches of science dealing with urban planning or ecology (Reza and Alfa, 2012 and Neckel *et al.*, 2016). Cemeteries, which were formerly located out of the towns and cities, have, in the course of The study area is linked to other regions by roads like Gombe Bui – Maiduguri road,

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time and urban expansion, remained within urban centers in many parts of the world and are becoming entangled with inhabited areas (Reza and Alfa, 2012 and Marcomini, 2012). Traditionally, ecological research conducted at the ecosystem and landscape levels has paid little attention to areas or system subjected to human disturbance like cemeteries (Barrett, and Gray. 2001; Zychowski and Bryndal, 2015). Reza and Alfa (2012) observed that, by the late 20th century many cemeteries were running out of space for new burials. This, is in turn, limited to resources available for management, but it is also mean that some cemeteries had a declining number of users, particularly mourners and the recent bereaved. Therefore many cemeteries have experienced neglect and decline and some have closed (Garry and Terry, 2001). This study aim to examine the distribution of cemeteries in Gombe urban area with special reference to space and time.

Study Area

Gombe and its surrounding environs comprise the Gombe town, some part of Akko, Yamaltu Deba and Kwami LGAs. The study area is located in the Sudan savannah region of the country at the North-East of river Benue and East of Yankari Game Reserve bordering with Adamawa, Bauchi, Borno and Yobe states covering a total area of 20,256.5sq/km. The approximate altitude of Gombe ranges from 400-500m above mean sea level. Topography is mainly mountainous, undulating and hilly to the Southeast and open plains in the central Northeast, west and northwest (Abbas, 2012). Gombe urban area is located approximately in the center of Gombe State which lies between latitudes 10⁰⁰1' and 10⁰ 20'N and on longitudes 11⁰1' and 11⁰19'E (Gombe Master Plan, 2003). Gombe urban area is bounded by Kwami Local Government Area in the North and almost surrounded by Akko Local Government Area in the South East and South West, Yamaltu Deba to the East (figures 1). Gombe to Bauchi road, Gombe – Yola road, Gombe – Patiskum road and

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Gombe – Dukku road. Gombe urban area is divided into different residential quarters which include, GRA, Federal Low Cost, Arawa, State Low Cost, Kumbiya-kumbiya, Pantami, Jekadafari, Tudun Wada, Madaki, Dawaki, Bolari, Yalanguruza, Shamaki etc (

Abbas 2012) and the surrounding environs includes; Tumfure, Wuro Juli, Wuro Biriji, Riyal, Hammadu Kafi, Bypass, Dubai Quarters Bomala, Galdimari, Taura Babba, Liji among others. It has a total projected population of 391,869 people as of 2019.

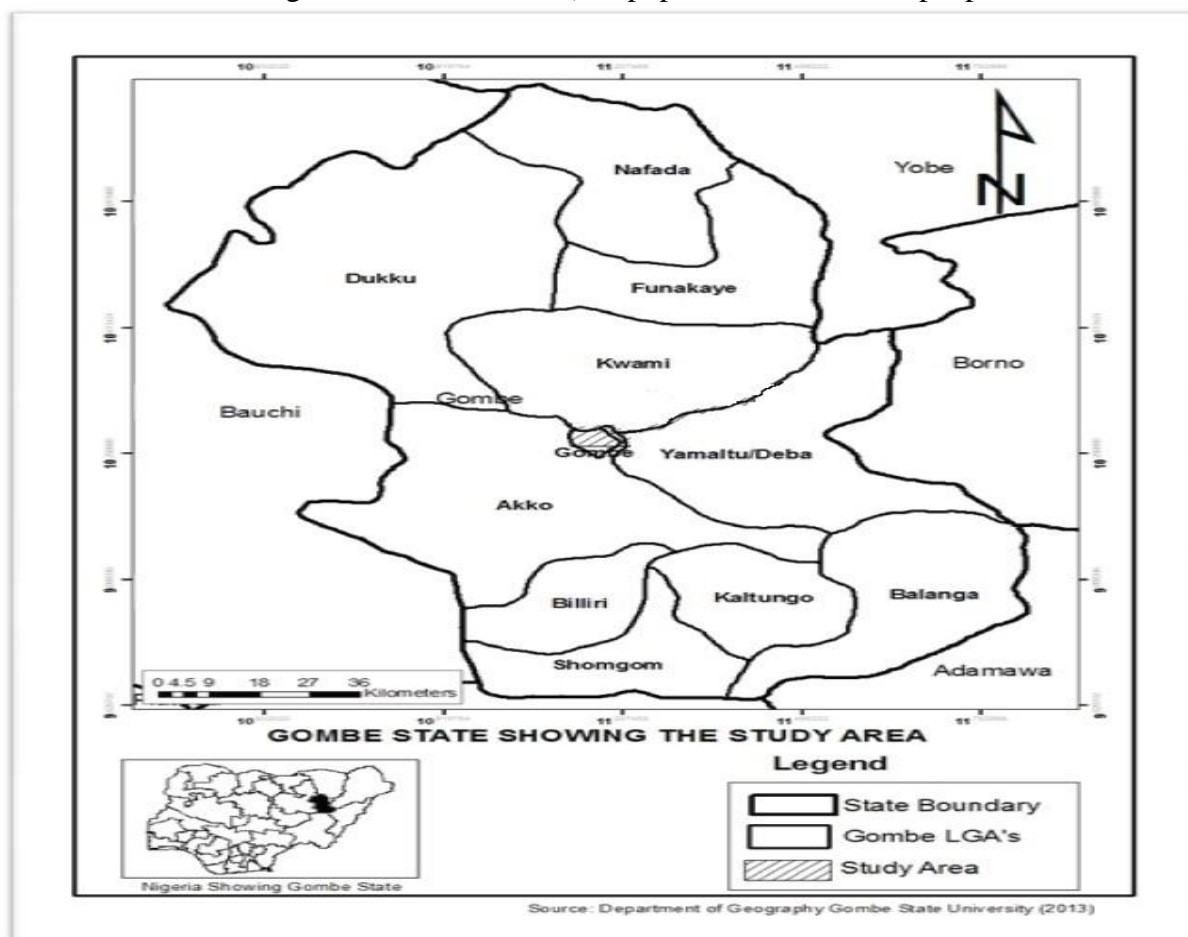


Figure 1: Map of Gombe state showing study area

Source: GIS and Remote Sensing Unit, Department of Geography, Gombe State University (2019)

Materials and Methods

There are two types of data for this study; qualitative and quantitative data. Survey of cemetery landscapes, date of establishment, number of graveyard and cemeteries, size and coordinates as well as distribution of places of burials and their distance apart are all quantitative data. The impact of cemetery to the neighborhood, environmental condition recorder, digital camera, and writing materials. The Global Positioning System (GPS) has been used to establish the coordinates of places of burial activities (churchyard, graveyards and cemeteries). It

of cemeteries, the role of government, communities and individual in maintenance of cemeteries among others are qualitative data and can be sourced primarily. To reach out the cemeteries location in Gombe town snowballing technique was employed, due to unavailable data about all the cemeteries in Gombe. The instruments for data collection include; Global Positioning System (GPS) helps in identifying the actual location of those places with the use of true Northing and Easting read from a Universal Time Mercator (UTM) for transformation into GIS software i.e. Arc GIS 12.0 and SPSS software. The

spatial data of the cemetery was imported into ArcGIS 12.0 software interface. As such, all shape files holding the relevant data layers were then spatially overlaid to create a thematic map of polygon feature classes. Thus, the X and Y values spontaneously

Results and Discussion

Gombe urban area, the headquarter of Gombe State and Gombe local government as well, has eleven wards which are made up of Dawaki, Herwa Gana, Jekadafari, Kumbiya, Kumbiya, Ajiya, Shamaki, Pantami, Bolari East and Bolari West, Nasarawo and Tudun Wada. According to the findings, there are areas or communities (Unguwanni) that have surrounded Gombe town and those communities are under different Local Governments and they are the one that accommodate dead bodies from Gombe town. In fact, all the three cemeteries inside Gombe urban area are inactive, therefore all burial activities are taken place outside the town. For example, Tumfure, Wuro Juli, Yerima Quarters and Galdimari cemeteries are all located within Akko local government. Other cemeteries at the peri-urban include Nasarawo I and II, and Liji (Table 1) and Figure 1. The results showed that, there are about 15 cemeteries in Gombe and its environs, out of which only five are active (still in use) while the remaining ten (10) have been filled up. The results also discovered that, out of 15 cemeteries in the study area 13 belong to Muslims community and two belong to Christians (Table 1). Majority of the cemeteries are fenced with integrated material culture like gates, grave makers, and internal layout. These findings are in harmony with Inuwa, (2019) who reported similar result in Kano metropolis were 98% of the cemeteries belongs to Muslims community, 2% belongs to Christians, 55% are fenced with walled and gated 45% are not. The study discovered that all the four cemeteries within the town are filled up with graves hence are regarded as inactive. The study discovered that, there are two Muslims and two Christian inactive cemeteries in

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displayed the location of each cemetery landscape in space, along with road network and wards units, as reflected in their attribute table. The result was displayed in map, table and expressed in Narrative form.

Gombe urban centre; Bayan Asibiti (Jekadafari) cemetery and Manawachi (Hurmin Da'u) cemetery. Those located at the peripheral and outside urban center left unfilled. The Muslims and Christian cemeteries are adjacent to each other.

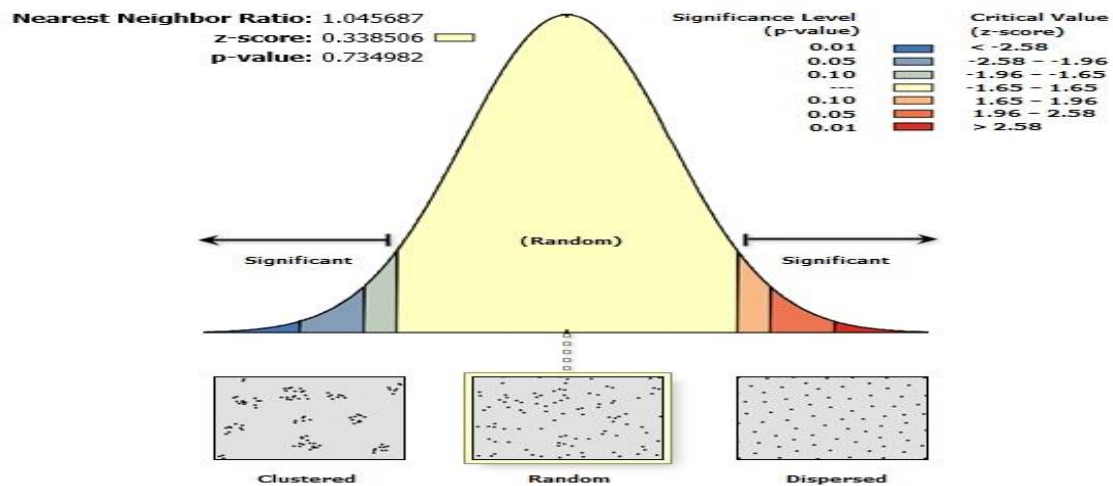
Spatial distribution and pattern of cemeteries in the study area

One of the methods used to determine the pattern of distribution of a particular phenomenon is by nearest neighborhood analysis (NNA) techniques which this research adopted. It identifies the proximity or otherwise of cemeteries to the residents of the study area. Based on the result in Figure 2 and with reference to Table 1, it can be deduced that, the pattern of cemeteries in Gombe and its Environs are randomly distributed as shown by NNI result that is 1.04 and the Z-score is 0.34. Thus, since the result is 1, it can be concluded that cemeteries are randomly distributed in the study area. This result is nearly in harmony to what is obtainable in Kano metropolis where Inuwa (2019) reported the NNI as less than 1 (0.830) and Z-score of -3.841 which indicates the pattern of cemeteries distribution in Kano metropolis is more of random than cluster. However, the results indicates that urban Gombe depends on Periphery for burial because all the identified three cemeteries in the town are filled up. Three local governments houses the remains from Gombe urban centre which includes Akko LGA with six cemeteries, Yamaltu Deba LGA have two cemeteries and Kwami LGA have three cemeteries respectively Table 1. Figure 3 shows the spatial pattern of cemeteries in the study area. From the map one can deduce that cemeteries are

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established close to each other for example behind specialist hospital Gombe, there are two cemeteries located in one place (Muslim and Christian cemetery) with an interval of 12 foot. Likewise along Bajoga road there are three cemeteries located close to each other

(two Muslims and one Christian cemeteries) with an interval of 50 meters. Another example is Galdimari and Yerima quarters with an interval of 2 km, as well as Wuro Juli and Wuro Biriji area are in proximity to each other with an interval of 4km



Given the z-score of 0.338505611677, the pattern of distribution does not appear different from random.

Figure 2: Nearest Neighborhood Analysis Result

Table 1: Nearest Neighborhood Analysis Standard Value Table

S/N	Standard Value(If R=)	Result Interpretation
1	2.15	Perfect Dispersed
2	1.5	More dispersed than random
3	1.0	Random
4	0.5	More cluster than random
5	0.0	Perfect cluster

Source: Adopted from Oluoche, 2015

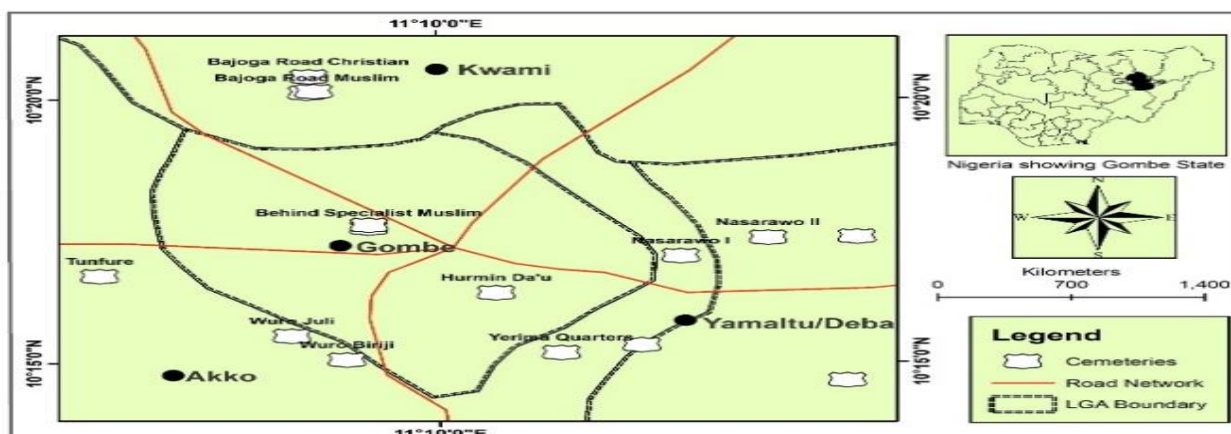


Figure 3: Spatial Distribution of Cemeteries in Gombe and Its Environs
Source: Fieldwork 2020.

Cemetery Condition in Gombe

Public cemeteries in Gombe urban and its surroundings are in deplorable, despicable and nauseating conditions, underscoring a total lack of respect for both the living and the dead in the state capital. A detailed investigation on the state of cemeteries in the study area, undertaken by the research showed that Local Government authorities have done little to maintain cemeteries, despite importance of burial grounds to the community. Investigation showed that the public section of the cemetery has been contending with congestion with little or no more spaces for burial of new corpses in many cemeteries. The research discovered that, almost all the cemeteries with the



Plate 1. Nasarawo II Cemetery (Occupied by weeds and shrubs)

exception of Hurmin Da'u and Hanyar Kalshingi cemeteries, all the rest were overtaken by shrubs, herbs and weeds with graves collapsing. The story is different at these two (Hurmin Da'u and Hanyar Kalshingi) section of the cemetery, where some workers have been deployed to make the environment to look good. In Yerima quarters, Galdimari, Wuro Juli Nasarawo I and II among others were occupied by weeds and bushes which covered most of the grave sites, while some of the graves have collapsed, due to lack of care and maintenance (plate 1). It has been noticed that graves were placed too close to each other, owing to the inadequacy of space.

Similarly, the story is not different behind Specialist hospital cemetery for both Muslims and Christian's burial grounds which are also occupied by trees, grasses and shrub. Following a recent rehabilitation of the cemeteries by Gombe Local Government council. A fence with gate and security guard room has been built at the cemeteries to provide security (plate 2). In fact, in the past, it seemed like it had been much neglected until recently when the council came to it rescue in 2014. Intruders have started occupying space within the cemeteries more especially the Christian portion. The findings also discovered that, at a point, the cemetery was a hideout for criminals, owing to neglect, apart from the

fact that people were dumping refuse and defecating at the cemeteries.



Plate 2: Behind Specialist Hospital Cemetery.
Source: Fieldwork 2020.

According to some respondents, fencing of the cemetery had helped to remove fear among people living close to the facility. Furthermore, they applauded the council for improving the cemetery and uplifting the standard of things therein. The cemetery as an open space where family members usually pay a visit to mourn their relatives who passed away. People at close vicinity of cemetery remain indoors immediately at sunset. The area appears quiet and lonely creating psychological disturbances thereby affecting social interaction. People dislike renting or buying houses close to cemetery area, which affect land value. Collectively,

the fearful scenario and distasteful feeling create cemetery

Landscapes characterized by emotional visitation for prayers and remembrance.

Characteristics of Cemeteries in Gombe

During the field survey and the interviews conducted with the respondents, it has been observed that, there are different characteristics of urban and peri-urban cemeteries in Gombe. Almost all the urban cemeteries are inactive and are smaller in size compared to the outside town cemeteries, this result is contrary to what is obtainable in Kano. In a study conducted by Inuwa, (2019)

Table 2: Main Parameters of Cemeteries in Gombe Urban Area

Location of Cemetery	Name	Religion	Status (Active/Inactive)	Fenced status	Ownership
Inside Town	Hurmin Da'u	Muslims	Filled up but under Re-used	Fenced	Individual contribution
	Hurmin Da'u	Christian	Filled Up	Fenced	Individual contribution
	Behind Specialist Hospital	Muslims	Filled Up	Fenced	Government
	Behind Specialist Hospital	Christian	Filled Up	Fenced	Government
Peripheral	Wuro Juli	Muslims	Filled Up	Not Fenced	Community
	Wuro Biriji	Muslims	Filled Up	Fenced	Community
	Yerima Quarters	Muslims	Filled Up	Not Fenced	Community
	Galdimari	Muslims	Filled Up	Not Fenced	Community
	Nasarawo I	Muslims	Active	Not Fenced	Community
	Nasarawo II	Muslims	Active	Not Fenced	Community
Outside Town	Hanyar Bajoga I	Muslims	Active	Fenced	Government
	Hanyar Bajoga II	Muslims	Inactive	Fenced	Government
	Hanyar Bajoga III	Christian	Active	Fenced	Government
	Tumfure	Muslims	Active	Partially Fenced	Community
	Hanyar Kalshingi	Muslims	Active	Fenced	Religious organization

Source: Fieldwork, 2020.

discovered that, most of the urban cemeteries are larger and can accommodate large number of burials compare to peri-urban cemeteries. Out of the 15 cemeteries discovered in the study area, seven belong to community, five belong to government, one belong to religious organization and two belongs to individual (Table 2).

The study discovered that Bajoga road cemetery and that of Kalshingi road have facilities like gateman room, GEEPEE tank for water storage, hoe, diggers, shovels, and buckets in the cemeteries, which are used in burial activities. It was also discovered that only Bajoga road Muslim cemetery has internal layout such as access road and drainages as well as parking space and is the largest in the study area.

The impact of Cemeteries to the Neighborhood

There are two types of impact for cemeteries to the neighborhood that is negative and positive. The positive includes; modification of micro-climate, store house of rare species of plants and animals, it is a place of deposing dead bodies and a place of memorial while on the other hand it increases insecurity, land devaluation and psychological discomfort, ground water contamination, change of neighborhood structure that generate land use conflicts especially with residential areas, it also led to loss of initial landscapes, loss of agricultural land among others. These findings are in concomitant with Kingsley, (2013) in Rivers, Olajide et al (2013), Rodrigues and Pucheco (2003), in their separate studies found that cemeteries have both negative and positive impacts as stated above.

Conclusion

The present position of cemetery confirm the serious population increase, urbanization and more pressure on land. Cemeteries are located far away from human settlements due to spiritual, psychological and emotional reasons but necessity has changed the entire arrangement. Only poor and less privileges are accommodated at close vicinity of

cemetery as the rich occupy better locations such as GRAs.

Recommendations

- i. There is need for urgent action from government and community or wealthy individuals to provide fences in fenceless cemeteries to avoid encroachment from land developers.
- ii. There is need for environmental sanitation within the cemeteries because out of 15 cemeteries visited only three are in good condition, grasses, herbs and shrubs occupied the rest.

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