

## A review of English papers on psychological evaluation of landscape from 2009 to 2013

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This paper reviews interesting studies on landscape evaluation in terms of psychological tests referred in Landscape and Urban Planning, Landscape Research, J. of Environmental Psychology, Environment and Behavior, J. of Environmental Management and some other scientific journal from 2009 to 2013. Until 2005, I reviewed various experiments of landscape evaluation in the papers of Review Articles (Aoki 1999, Aoki 2006, and Aoki 2007). During recent 5 years, more works were published compared to the decade of last report. So I tried to summaries them according to the key subjects of the former papers, i.e. (1) clarifications of landscape phenomena, (2) respondents' attributes, (3) landscape appreciation, (4) sampling of landscapes and presentation, and (5) predictive models of psychological response and applications in physical planning.

### (1) Clarifications of landscape phenomena (Table1)

The first proposal of the explanation of the landscape appreciation was proposed by J. Appleton (1975). The detail mechanisms of the appreciations were not explained because of the complicated reaction system of human brain (Thiel 1997). This hard situation was discussed by the advanced brain system endowed to human being (Bourassa 1991). We already got the tool to measure the activities in the brain, but the clarification of the landscape phenomena will take more time because of the complicity of the landscape appreciation (Aoki 2008).

In recent 5 years, the childhood and adolescence to feel at home was examined (Adevi and Grahn 2012).

### (2) Respondents' attributes (Table 2, 3)

Two kinds of attributes e.g. identities of human group and personality were reported.

For the former, mountain tribe Sherpa (Beza 2010) and Nigeria children (Falk and Balling 2010) were investigated.

For the latter, the attribute of tourists was increased and sibling was newly investigated (Howley et al. 2012).

The meaning of sampling through internet was yet under consideration.

### (3) Landscape appreciation (Table 4)

Preference has popularly used in recent years. Willingness to pay became popular in this field. SD method was yet used in the appreciation.

Other appraisals, e.g. feeling at home (Adevi and Grahn 2012), familiarity (Dobbe 2013) and photo location (Sugimoto 2013) were used.

### (4) Landscape sampling and presentation (Table 5, 6)

In the landscape sampled, new ideas; transportation (Bernasconi et al. 2009), Mt Everest (Beza 2010), fire prone (Islas and Vergara 2012), seasonal change (Eroglu et al. 2012) were tried.

As for the presentation method, on-site visits was increasing and use of GPS (Sugimoto 2013) became popular by the development of mobile phone.

### (5) Predictive model and planning (Table 7, 8)

As for the predictive model, biodiversity (Jungels et al. 2013) and flow of stream (Pflueger et al. 2010) were tried.

Proposal for planning were offered in terms of mapping (Ribeiro et al 2013, Schirpke et al. 2013).

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Keywords: landscape appreciation, English papers, 200-2013, review

## Comparison of Races in Terms of Images of Landscapes in Fiji Using Image Sketches

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### Methods

This research was intended to clarify the difference in imaging of forests between Fijian and Indian residents based on the SKETCH SURVEY. We administered the sketch survey to Fijian residents during our stay in the Republic of Fiji from August to December, 2013. The survey was carried out through interviews, and 158 respondents gave their answers. In the survey, the respondents were asked to describe forests in keywords, sentences or sketches. 1) Firstly, the respondents entered several keywords related to FORESTS in Fiji based on their own idea. 2) Secondly, they described the image of FORESTS in sentences consisting of about 100 words. 3) Lastly, they drew simple sketches of the image of FORESTS. In the process of analysis, the number of elements depicted in the sketches was counted in order to review their imaging of forests. Furthermore, the space structures of the sketches drawn by the respondents were divided into four categories in total: the near view, intermediate view and distant view based on the distance between the landscapes and the drawers, and the downward view depicted from high view points. For analysis of the differences in the races, Mann Whitney U test was used.

### Considerations and Research results

1,504 elements were sampled from the sketches drawn by all the 158 respondents, and that is to say 9.5 elements were sampled from one sketch on an average. These 1,504 elements were classified into 73 categories. When the appearance rate of the elements in the 158 respondents sketches was calculated, the appearance rate of mountains was highest (82%), followed by trees (69%), the sun (63%), palm trees(58%), houses (51%), oceans (47%), rivers (44%), woods (42%), birds (35%), villages (34%) and clouds (32%). In many of their sketches, not only nature elements such as mountains, trees and the sun but also familiar elements such as palm trees, houses and oceans were depicted. In some of the Fijian residents sketches, palm trees extending in the tropical zone with a background of mountains were depicted. Furthermore, houses, villages and other elements were simultaneously depicted in the natural landscapes, and it seems that nature is closely linked to their daily lives. Concerning space structures of the sketches, the rate of the distant view was highest (59%), followed by the downward view (18%), near view (13%) and intermediate view (8%).

Regarding the differences in the percentage of the answers between the races, 76% of Fijian respondents and 54% of Indian respondents associated forests with nature, and here a significant difference was found ( $p < .05$ ). Furthermore, 24% of Fijians and 44% of Indians associated forests with farming villages, and here a significant difference was also found ( $p < .05$ ). It may be possible that Fijians regard forests as a factor of nature, while on the other hand Indians consider forests as a factor of not only nature but also farming villages.

Differences between the races were checked in each of the 73 categories, and significant differences were detected with only six categories of them. The categories in which significant differences in the percentage of the answers between the races were detected were palm trees (50%, 74%), the sun with expression (19%, 34%), grass fields (34%, 12%), sugar canes (7%, 20%), plains (1% of Fijians, 10% of Indians) and hotels (0%, 8%). The analysis of the depictions in the sketches showed that Fijians tend to depict nature-related objects elaborately and Indians tend to depict plants and other similar objects more elaborately than Fijians.

Concerning space structures of the sketches, 55% of Fijians and 68% of Indians drew distant-view sketches, and there was a tendency that both races preferred the distant view. In some of the sketches, there was a range of mountains from which waterfalls and rivers flew into the sea, and in some of the sketches trees, tropical palm trees and artifacts such as houses and villages were depicted.

Keywords: Image Sketches, Landscape, Comparison of Races, Republic of Fiji

## A Comparative Study on Landscape Cognition Between Japanese who have been in New Zealand(NZ) and who have not been to NZ

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### Introduction

NZ is almost same size and has same climate, temperate zone and subtropical zone, with Japan. Though a lot of Japanese have immigrated to or lived on long term in NZ, few Japanese knows NZ well because the long distance between both countries might be bottleneck for flow of people. Thus, the objective of this study is to clarify differences of landscape recognition of Japanese who have been in NZ and Japanese who have never been to NZ.

### Methods

69 landscape photos taken in both countries (35photos from Japan, 34photos from NZ) were categorized to the group of coast, waterfall, river, forest, wetland, mountain, and lake. Respondents were asked to select three photos each for characteristic landscape image of NZ and Japan. Then, they were asked to write down the three keywords each about the landscape image of both countries. Respondents were the group of 25 Japanese people who have been in NZ (NJG), the group of 42 Japanese people who have never been to NZ (JPG), and the group of 12 New Zealander people (NZG).

### Result

Firstly, the most selected photo as the characteristic landscape image of Japan among all groups was the photo of Mt.Fuji with Ashinoko lake and shrine gate (NJG76.0%, JPG74.0%, NZG50.0%). Also, second top photo was Mt.Fuji's one. The different result was shown on third top photo. NJG chose the photo of Mt.Fuji with forest (32.0%), JPG chose the photo of creek (28.7%), NZG chose the photo of waterfall with autumn leaves (16.7%), and the photo of forest with lingering snow (16.7%).The creek's photo selected by JPG was recognized as Japanese landscape though taken in NZ.

For the characteristic landscape image of NZ, there was not the photo selected intensively such as Mt. Fuji one. However, the most selected photo was common among all groups. That was the photo of lighthouse on cape surrounded by ocean (NJG36.0%, JPG40.5%, NZG16.7%). As Second top photo, NJG chose the lake on volcano with volcanic steam (24.0%). JPG selected the solid magma in volcanic crater (23.8%) and the lake (23.8%). These two photos might be chosen as the characteristic landscape image of NZ because those are unfamiliar sceneries in Japan. In NZG, it was hard to find out the characteristic scenery because the groups of selected photos were decentral.

For keywords about the landscape image (KLI), noun showing plants and landscape, noun showing animals, noun showing color, adjective indicating impression, and proper noun were answered. As KLI of NZ, FOREST, MOUNTAIN or HILL was answered 29.6% as total. And GREEN, DYNAMIC or BROAD was answered 22.2 % for each in NJG. People would have the image of landscape that broad and dynamic mountain and hill are spread in NZ. On the other hand, JPG answered BROAD(35.0%), MEADOW and GRASSLAND(27.5%), SKY(25.0%), WILD(25.0%) as KLI. Though it also shows broad image, JPG would have the image of broad glass land instead of mountain or hill.

It revealed the difference of landscape cognition between NJG and JPG. There was not obvious difference on the photo selecting exercise. However, JPG recognized the photo taken at NZ as Japanese landscape photo. For KLI, JPG indicated broad glass land, and NJG shown the landscape consisted of broad forest and mountain.

Keywords: Japan, New Zealand, Landscape Cognition, Landscape

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## Analysis of Scenery Transition and Residents' Opinion in Dalai Lake Nature Reserve

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### Introduction

Grassland scenery has been diminishing in Inner Mongolia in People's Republic of China. It is said that increase in farmland and desertification of grasslands are the cause of diminishing grasslands. This is a serious issue for the Mongolians who make a living from pasturing. In this research, Dalai Lake Nature Reserve, which is located in the Hulunbuir Grasslands has been selected as a study subject. The objective is to clarify the transition of the scenery in the nature reserve by extracting scenery factors in relation to usual lives of the residents in the area.

### Study Methods

An opinion research was conducted between the end of December, 2013 and the middle of January, 2014. The survey subjects were the residents who are nomadic in the grasslands of Dalai Lake Nature Reserve. Interviews were conducted and 409 responses were obtained. In this research, demographics of the respondents and the composition factors of grassland scenery in Dalai Lake Nature Reserve were confirmed. The composition factors of grassland scenery were studied in three different time frames: 10 years ago, present, and future vision (for example, 10 years later). For this research of scenery composition factors, 25 factors had been obtained from the initial literature research, and typical factors had been pre-selected among those for multiple choice questions. Multiple answers were accepted for this question, and an open answer section was also provided. Responses to the grasslands management which local residents would expect were also obtained. A chi-square test was applied to statistical analysis.

### Results

Scenery factors of Dalai Lake Nature Reserve obtained from literature research included; 1) natural scenery such as lake, river, swamp, wild animals, and wild vegetation, 2) cultural landscape like Mongolian gels, and 3) factors which developed along with economic development, including electricity, mining and building.

The demographics of respondents showed that residents within the nature reserve counted 236; therefore, the number of the effective responses has been determined as 236. The average age of the respondents was 41.1 years old. These respondents include 170 Mongolians (72%), the Hans (23%), and the Evenk (5%). The following factors are the ones that all effective respondents selected as typical scenery composition factors of 10 years ago: wild animals, wild vegetation, grasslands, and river, whereas 99% selected lake, sandy soil, and livestock. Only 1% selected railroad, ger camp, signboard, tourism facilities, and camping car. Next, the following factors are the ones that all effective respondents selected as current factors: village, railroad, sandy soil, and livestock, while 232(98%) selected roads and electric lines. Following these, 229(97%) selected mining field. The factor mentioned by the least respondents was wild animal with 54 respondents (23%). Lastly, in the question of future scenery composition factors, the following ones are those that all respondents selected: wild vegetation, grasslands, livestock, and river. Road was selected by 233 respondents (98%), and lake by 227 (96%). A small number of respondents selected mining field (41 respondents, 17%) and electric wire (50 respondents, 21%). Comparing the scenery composition factors of 10 years ago and those of current, natural scenery factors decreased from 93% to 60%. On the other hand, future natural scenery factors counted 87%.

In terms of grasslands management which residents would expect, major responses were as following: 1) maintain status-quo (103 respondents, 44%), unplanned succession (79 respondents, 34%), and reinforce management (51 respondents, 22%).

### Conclusion

This study clarified the scenery which residents in the nature reserve area have in mind and specified it in three different time frames: 10 years ago, present, and future vision (approximately 10 years later). Grasslands management which residents would expect has been also captured.

Keywords: Dalai Lake Nature Reserve, Scenery Transition, Resident, Scenery factors, Opinion, Grasslands

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Dalai Lake Reserve

## Research on Comparison of Races in Terms of Evaluation of Natural Landscapes in the Republic of Fiji

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### Methods

1) after collecting Natural landscape photos of Japan and Fiji national countries, Fiji 33 photos and Japan 39 photos of WATERFALL, FOREST, SEASHORE, RIVER, FARMLAND, SWAMP, MOUNTAIN, and LAKE were selected from each country, which sum up to a total of 72 photos, 2) these photos were categorized in groups by 141 citizens and each group was labeled with a name, 3) the same students evaluated these photos according to preference (5-scale) and exoticism (3-scale), and 4) they were asked to select three photos which they believe to represent the unique characteristics of the Fiji, so that landscape that exhibit the unique characteristics of each ethnic can be extracted. I stayed in Fiji August-December 2013. And A research was run among the Fiji residents during stay. I used a investigation by interview. Then answers were collected from 141 respondents. Cluster analysis (Ward's method, squared Euclidean distance, 3) was applied for the analysis of photo categories, and Mann-Whitney U Test was applied for the analysis between ethnic groups.

### Considerations and Research results

Firstly, the difference in classification of the pictures of SWANP was observed between the two races. Fijians classified SWANP and FOREST into different groups, and they included SWANP in the category of RIVER. On the other hand, some Indians included SWANP in the category of FOREST and some included SWANP in the group of RIVER.

Secondly, regarding classification of LAKE, both Fijians and Indians classified LAKE into the same group as SEASHORE. In Fiji, where the percentage of water area in the land is extremely low, there is a possibility that LAKE are not recognized as such. Regarding classification of SEASHORE, both races divide BEACHE into two broad categories: landscapes of sandy BEACHE where there are only a few rocks and trees, and rocky BEACHE where rocks and reefs are common.

In the analysis of preference, significant differences were detected with the six pictures. Five of the six pictures were landscapes of Fiji, and one of them was a landscape of Japan. Furthermore, in the analysis of exoticism, significant differences were seen with the four pictures. Three of the four pictures were landscapes of Fiji, and one of them was a landscape of Japan. Concerning preference of the pictures of the landscapes of Fiji, the value of Fijians is 4.06 higher than that of Indians. Regarding selection of the pictures typical of Fiji, there was a variance between Fijian and Indian residents. Fijians selected the pictures of FARMLAND (21 %), MOUNTAIN (17 %) and SEASHORE (17 %), while on the other hand Indians chose the pictures of SEASHORE (44 %), RIVER (14 %) and SWANP (12 %). The reason for Fijians' choice may be that they think fields of taro, which is the staple food in Fiji, and mountains extending into villages as traditional landscapes of Fiji. On the other hand, the reason for Indians' selection may be that they associate landscapes of BEACHE with a scattering of resort spots in Fiji.

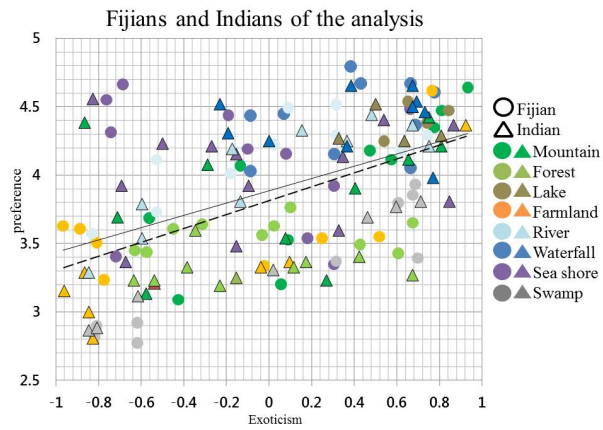
Fijians' preference was in the order of WATERFALL (4.43), LAKE (4.41), RIVER (4.14) and SEASHORE (4.09), and Indians' preference was in the order of WATERFALL (4.41), LAKE (4.33), SEASHORE (4.08) and RIVER (4.02). That is to say, both races preferred the pictures of waterfront landscapes. Particularly, the pictures of SEASHORE may be considered as familiar landscapes of Fiji. Most of the pictures of WATERFALL and LAKE were from Japan, and they are unfamiliar sights in Fiji and considered as exotic landscapes (the pictures of Japanese landscapes). However, the pictures of SWANP were not very much preferred compared to other pictures of waterfronts. There was not much big difference in preference between Fijians and Indians excluding the six pictures with which significant differences were detected. However, there was a difference in that Fijians preferred traditional landscapes whereas Indians preferred landscapes of seashores.

Keywords: Landscape evaluation, Republic of Fiji, Fijians, Indians, Comparison

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## Study on natural amenities in off-limits area: imagination of virtual activities received from landscape

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### Introduction

In urban areas, there is little space that has been kept natural although it is now recognized that natural elements such as green space, water features or wildlife habitat, etc. increase the value of an environment. However, human influences on natural habitats interfere with restoring natural spaces to their original condition.

It is difficult to maintain such green space and limit its availability to people. In fact, it is often the case that areas with a high level of undisturbed natural habitats are off-limits areas.

For example, storm-water reservoirs for flood control in urban areas are off-limits, concrete-covered, fenced-in spaces. However, a variety of wild fauna and flora manage to make their habitats in some reservoirs. In other words, reservoirs are an example of artificial yet informal urban green spaces, where spontaneous wild vegetation grows. However, clearly reservoirs were not planned as natural spaces.

Although these spaces are off limits, people can enjoy a view of natural growth from the wall of the reservoirs. On the other hand, due to the physical boundary, people cannot get in touch with natural elements due to perceptual constraints.

Viewing such restricted areas has a beneficial effect as a solution for symbiosis with nature because human development and natural preservation are opposed to each other.

This study clarifies people's impressions of the spontaneous and wild vegetation in reservoirs. Moreover, this study considers the affordance research for environment afford provision of behavior to perceiver as seen in the case of flying stone. Flying stone is a concrete block put into a river bed. This paper presents a new way for people to virtually take part in nature-friendly activities. This study explains how imaginary contact with nature by viewing spontaneous vegetation in off-limits, informal urban green space creates satisfaction.

### Methods

#### Research Questionnaire 1

In a Tokyo suburb, 108 reservoirs were selected for this study. We surveyed shapes, size, location, and surrounding environment and explored possibilities of whether the space was a beautiful landscape and from what perspective.

We conducted an awareness survey regarding environment and landscape with 88 residents living around three reservoirs. Correlative relationship was applied to analyze the relationship between question items.

#### Research Questionnaire 2

Another study was conducted in Kyoto with 175 university students who responded to questions about the image of flying stones on the Kamogawa River. Responses were given as free descriptions. A text mining approach was applied to analyze symbolic representations for water-friendly activities.

### Results and Considerations

The results show that most of the reservoirs were concaved and had good views of open space. Therefore, reservoirs have a high potentiality to be urban green space, where people can view spontaneous natural habitats. Reservoirs are artificially made. The results also showed vegetation succession has possibilities for creating transient esthetic appraisal. However, questionnaire results showed that residents who lived around reservoirs feel that the naturally occurring vegetation is not beautiful.

The results of affordance research were as follows. Flying stones provide an image of physical behavior. for getting across a river or playing in the water. The image is a trigger for the imagination of virtual water-friendly activities. Symbolic representation of environmental signatures is a device that affords imaginary familiarity with environmental elements.

Keeping a view of nature in off-limit green spaces leads to an imaginary sense of familiarity with nature.

Symbiosis with nature increases the value of an environment in urban. Image of nature-friendly activities have a commonality of body. Therefore, symbolic representations for nature-friendly activities have a functional role as a landscape appraisal standard.

Keywords: off-limits area, amenity of nature, symbol of water-familiar, affordance

The questionnaire was consisted with two main part, survey about figure of the coastal mindscape and individual backgrou

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In this study, the image of coastal landscape as the mindscape were compared between Japanese university students and Russian university students by the questionnaire survey.

The questionnaire survey were conducted to 24 university students of Irkutsk city as Russian university students and 73 university students in Sapporo city as Japanese university students.

Furthermore, 12 Russian students who studied in the university in Sapporo city were added as Russian students in Japan.

The questionnaire was consisted with two main part, survey about figure of the coastal mindscape and individual background of respondents. As a result, the sandy beach and sea were the major component of mindscape. Because most respondents enjoyed sea bathing as recreational use, it was guessed that the viewpoint from the beach were dominated and inland area, like coastal dune, was not described.

On the other hand, Russian university students described more emotional words as beautiful, calm, bright, etc. in addition to major components.

There was no difference in a drawn composition type, but Russian university students described more natural components, mainly coastal plants, than Japanese. About the shore protection, the Russian student did not image in particular it at all.

Keywords: mindsape, coastal landscape, figure, drawing method, Japan, Russia

## Landscape Appreciation on Green Passages with Waterway in Edogawa Ward, Tokyo

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### Introduction

Edogawa Ward equipped itself with the first water nature park in Japan in 1974, and sterilized purified water has been utilized in this park. By 1996, water nature parks with natural water had been also established with considerations for ecosystem. The focus of this study is inhabitation of living creatures and human usage in relation to differences between purified water and natural water. The objective of this study was determined to clarify the following three points at two green passages in Edogawa Ward: 1) impressions among the users, 2) behavior of users, and 3) inhabitation of living creatures. Comparing the aquatic life, more variety of living creatures was identified in natural water, and fewer in purified water.

### Study Methods

First, an opinion survey about impressions of green passages was conducted among the green passage users. A survey questionnaire was directly handed out to 288 users on the 24th and the 28th of July and the 4th of August, 2013. The following four items were tested in this study: 1) if they like it, 2) if they feel good, 3) if the water is clean, and 4) if there are many living creatures. Following this questionnaire, a behavioral study was executed in order to compare the results of the opinion survey and the actual usage of green passages. This behavioral study was administered between 10:00 and 14:00 on the 25th and the 31st of July, 2013. The subjects of this research were fish, crustacean, reptiles (turtles), and amphibians (frogs). This research was conducted between 9:00 and 17:00 on the 17th, the 18th, and the 31st of July, 2013. The research area of the green passage was segmented into 27 sections.

### Results

The impression survey concluded that over 98% of the users had favorable impressions of both green passages from the results of two questions: *if they like it* and *if they feel good*. As for the question *if there are many living creatures*, 74.5% responded *very many* or *many* in the green passage with many natural water streams. Although the difference is small, relatively smaller figure of 65.6% responded *very many* or *many* in the one with purified water streams.

The behavioral study result showed that the most popular usage among the eight categories was *playing with water* with over 25% of usage. The result was same with both green passages. Similar tendencies were detected with both passages with other activities which followed the most popular *playing with water*: *resting*, *walking*, and *exercising*, in order of popularity.

The inhabitation research confirmed 14 kinds of aquatic habitat on the green passage with natural water, and nine kinds on the one with purified water. Among the confirmed aquatic habitat, reptiles and amphibians such as the Chinese three-keeled pond turtles, Mississippi common sliders, and Japanese toads were observed on the green passage with natural water; however, they were not found on the green passage with purified water. In addition, the average number of creatures per 100 meters counted 14.7 on the green passage with natural water, but the figure on the green passage with purified water counted only 7.0. More than double the difference was detected between the two.

### Considerations

Based on the research results of the two green passages, the difference in the inhabitation situation has been clarified. However, there were no significant differences detected in users impressions of the scenery and in their behavior. From these results, it can be inferred that the differences in aquatic habitat on the green passage does not have a significant influence on users impressions with the scenery or on their behavior. Futures researches on other factors such as vegetation and surrounding environment of a green passage, including grass and woods, shall further clarify favorability of sceneries and user behaviors.

Keywords: Edogawa ward, green passage, appreciation, impression, usage, creature

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