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Birds as Landscape Elements in Urban Parks: A Comparative Study on the Perception between Indonesian and Japanese People

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Abstract

Birds are both a landscape element and a common form of wildlife found in urban parks. Human's perceptions of their surrounding landscapes need to be understood in order to create better environments. This study aimed to determine and evaluate the aesthetic quality of landscapes regarding birds as landscape elements, and to compare the results between Indonesian and Japanese people. The data were analyzed using scenic beauty estimation, the Mann-Whitney U Test, and the Spearman Correlation. A total of 252 respondents evaluated landscape images and answered a questionnaire. The results showed that landscape images with birds were given lower scenic beauty scores from Japanese respondents than they were from Indonesian respondents. There were significant differences between Indonesian and Japanese respondents in four landscape images with birds and two landscape images with human-bird interactions. Besides this, there were different strengths in correlations between landscape images with and without birds and landscape images with and without human-bird interactions among Indonesian and Japanese respondents. In conclusion, the existence of birds as landscape elements in urban parks had an influence on the perceptions and preferences of Indonesian and Japanese respondents. However, there was a difference in how they appreciated birds as landscape elements.

Keywords: cross-cultural, landscape images, preference, scenic beauty estimation, urban wildlife

INTRODUCTION

Public awareness about comfortable, habitable, and sustainable environments has become an important aspect in urban development. Developing sustainable cities is not only about improving the abiotic and biotic aspects of urban life, but also improving social aspects of life such as citizens' satisfaction with, experiences of, and perceptions of their environmental quality. In various definitions of sustainable cities, quality of life issues are important in addition to environmental criteria. Features such as the "number of public green spaces" and "public parks" are often mentioned as important factors that make cities livable, pleasant, and attractive [1]. The President of The Trust for Public Land in America, Will Rogers, explained that great cities are known for their great parks, and one measure of any city's greatness is its ability to provide recreation, natural beauty, and signature open spaces for its citizens [2]. Urban parks are green open spaces in the urban landscape and are mostly dominated by vegetation and water; most parks are large, but there are also smaller parks such as "pocket parks". Usually, parks are locally defined by authorities and are generally reserved for public use [3]. Referring to many studies, urban parks provide various benefits for humans, such as health (both mental and physical) and well-being, social cohesion, tourism, recreation, and aesthetics [4-10].

Humans and landscapes are important components of landscape perception. Perception can guide humans' actions with respect to objects [11]. There are many factors that can affect human perception towards an object or landscape. The human component encompasses past experiences, knowledge, expectations, and the socio-cultural (individuals and groups), while the landscape component includes individual elements and landscapes as entities [12]. Studies of public perceptions of landscapes have been a multidisciplinary venture with contributions from both natural and social sciences [13]. Recent studies have stated that there are many variables that may affect human perception and preference such as individual understandings of visual quality, cultures, hobbies, knowledge backgrounds, experiences, living environments, social roles, classes, and economic incomes [14]. Other studies have found that factors that influenced human perception consisted of gender, age, the types of landscapes in which people lived in the past, the types of landscapes in which people live in the present, the present urbanization level, and experiences during the journeys to the landscapes [15].

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Landscape elements play an important role in human perceptions of a landscape. Findings from research in Sapporo, Japan revealed that flowers were the most preferred landscape element for street vegetation and were seen as not only contributing to the aesthetic quality of the landscape, but also had a positive influence on psychological well-being [16]. In research regarding visual and environmental quality perception and preference among people from three countries (China, France, and Portugal), images with wildflowers and wildlife scored quite favorably with French and Portuguese respondents [14]. Birds are a landscape element that can be found in urban parks. They are also a common form of wildlife in urban landscapes that use urban parks as their habitat. Parks can support birds' lives by providing a place for nesting, resting, breeding, playing, and more. Birds can be used as indicators of environmental quality because they can respond to environmental changes quickly, even when such changes cannot be observed or predicted by measuring a limited set of pre-selected physical or chemical parameters [17, 18].

Most studies on birds have focused on their diversity and community composition, their community structure from urban to natural habitats, their ecological function, their distribution and habitat in urban landscapes, and the conceptual framework for conservation in urban landscapes [19-26]. However, studies focusing on the human perception of birds as landscape elements across several countries are rarely done. People who live in urban areas usually have less time to experience and spend time in nature, so urban parks can be the one green open space that provides them with a place to contact nature in urban landscapes. Therefore, it is important to understand their perceptions of the surrounding landscape in order to create a better environment, especially in urban parks. Findings from this study can be used as basic information for planning, designing, and/or managing urban parks.

In this study, we attempted to determine human perceptions and evaluate the aesthetic quality of landscapes with birds as landscape elements in urban parks. We also compared the perception and aesthetics value of birds as landscape elements in urban parks between Indonesian and Japanese people. The general hypothesis of this study was that nationality has an influence on human perception. The specific hypotheses were as follows: first, existence of birds as landscape elements has an influence on human perceptions and evaluations of landscape aesthetics. Second, interaction between humans and birds has an influence on human perceptions and evaluations of landscape aesthetics.

METHODS

To determine human perceptions of birds as landscape elements, we used a questionnaire-based evaluation to address the following topics: frequency of park visit, purpose of park visit, motive of watch the birds, and attitudes toward birds. Besides this, we also used a photograph-based to evaluate the aesthetic qualities of landscapes with birds as landscape elements [27-31]. The responses to those questions are important for answering this research hypotheses, which was stated in the introduction.

Data Collection

The sampling method applied in this study was purposive sampling, with respondent groups consisting of Indonesian and Japanese people. The selected respondents have varied educational backgrounds. These types of respondents were selected because the purpose of this study was to determine the perceptions of general public park users. The total number of respondents was 252 (consisting of 135 Indonesians and 117 Japanese). In Japan, the data were obtained through a questionnaire survey, while Indonesian respondents were given an online questionnaire. The questionnaire was prepared using their native language to ensure equal understanding of questionnaire. The pre-survey was conducted between April and May 2015, while the survey was conducted between June and August 2015.

In this questionnaire, respondents were asked to complete two sections. In the first section, respondents were asked to evaluate 10 representative landscape images on a scale ranging from "strongly like and very high scenic beauty" (10) to "strongly dislike and very low scenic beauty" (1). There were 10 landscape images consisting of 7 original images and 3 modified images (Figure 1). The landscape images were taken on a clear day during the pre-survey in April 2015 in Chiba Park, Japan. Those landscape images were added to the questionnaire in a random order, between original and modified images. In the second section, respondents were queried about their personal information and perceptions toward birds as landscape elements. The questionnaire

survey method can provide an evaluation or assessment of landscape quality from public perspectives in more efficient and economical ways [27].

Data Analysis

The analysis method applied in this study consisted of three steps: 1) *Scenic Beauty Estimation* (SBE) [27]. SBE was applied to determine and evaluate the aesthetic quality of landscapes with birds as landscape elements, from human perceptions and preferences, between Indonesian and Japanese respondents. 2) *Mann-Whitney U Test*. The Mann-Whitney U Test was applied to test significant differences between Indonesian and Japanese respondents. 3) *Spearman Correlation*. The Spearman Correlation was applied to determine the strength and direction of the monotonic relationship between landscape images with and without birds and landscape images with and without human-bird interactions among Indonesian and Japanese respondents.

RESULT AND DISCUSSION

Characteristics of Respondents

A total of 252 respondents participated in this study, consisting of 135 Indonesians and 117 Japanese. Survey results (Figure 2) showed that among the Indonesian respondents, there were more females (69.63%) than males (30.37%); conversely, there were more males (60.68%) than females (39.32%) among the Japanese respondents. A majority of Indonesian respondents received university education in undergraduate (79.26%) and graduate levels (18.52%). Among the Japanese respondents, about 96.58% received university education at the undergraduate level and 3.24% received university education at the graduate level. A majority of Indonesian (92.59%) and Japanese (99.15%) respondents were between 18-25 years old.

In this study, there was a difference in factors that affect human perceptions and preferences for birds as landscape elements in urban parks. The Mann-Whitney U Test revealed that there were significant differences in perceptions and preferences between Indonesian and Japanese respondents. However, there were no significant differences in perceptions and preferences between male and female respondents from both countries. It can be concluded that in this study, nationality had an influence, while gender had no influence, on human perceptions and preferences for birds as landscape elements in urban parks. Results obtained correspond with previous research regarding factors that affect human perceptions and preferences, which shows that social context and cultural influences might affect the general perspectives of people [14].

Comparison of Perception and Preference for Birds as Landscape Elements between Indonesian and Japanese People

Survey results showed that the majority of Indonesian respondents (98.52%) and all Japanese respondents (100%) had ever visited park. A majority of Indonesian respondents visited a park less than once a month (50.37%) and spent one and a half hours or less there (53.33%). Among the Japanese respondents, about 45.30% visited a park once a month and 71.79% spent one and a half hours or less there.

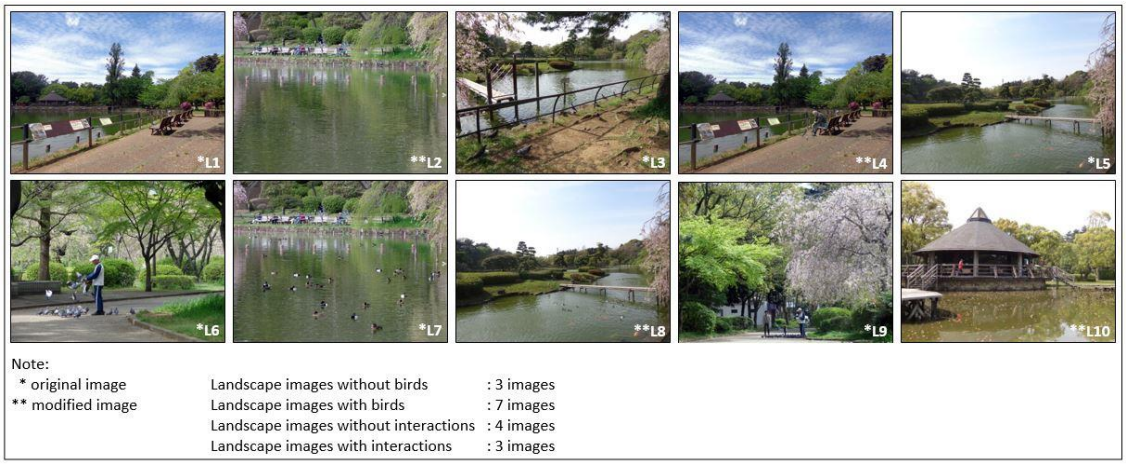

Figure 1. Landscape images without birds (L1, L2, L5), with birds (L3, L4, L6, L7, L8, L9, L10), without interactions (L3, L7, L8, L10), and with interactions (L4, L6, L9).

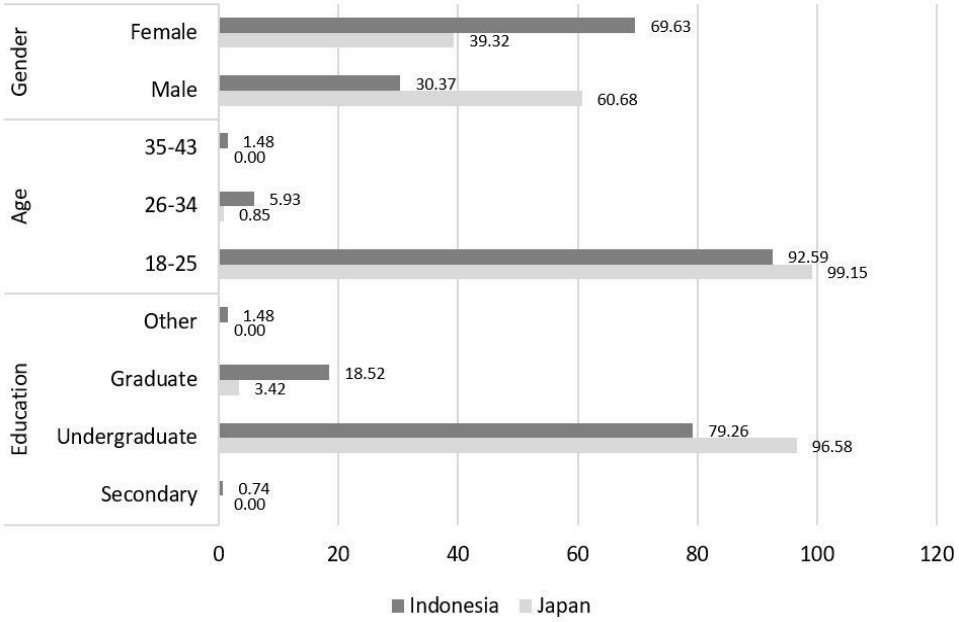

Figure 2. Respondents' characteristics.

These results indicated that Indonesian respondents were not using parks as frequently as Japanese respondents. These findings may be explained by the facts that the present parks in Indonesia are insufficient in number and highly unequal distribution [32-36]. In most Indonesian cities, barely any good-quality parks exist in neighborhoods. Due to various urban developments, the presence of high-quality parks – including well-planned and well-maintained – are barely found. This situation is different than in Japan, parks tended to be more equitably distributed, located close to the residence, and has a good quality. Earlier researches pointed out that in many Indonesian cities, the current situation of green open spaces is alarming [34]. Cities will continue to grow, and features such as the "green open spaces", "public parks", and "amounts of public green open spaces" will continue to be a vital part of urban areas. Providing parks for citizens is increasingly challenged by the limited amount of available park space in urban areas where land is very expensive [37].

The results revealed that 6.13% of Indonesian respondents and 3.24% of Japanese respondents visited a park for the purpose of bird watching. A majority of Indonesian respondents participated in bird watching to take photos or videos of birds (44.50%), about 33.51% to enjoy watching the birds themselves, and about 18.32% to improve their knowledge. Besides this, a majority of Japanese respondents participated in bird watching to enjoy watching the birds themselves (49.62%), about 23.31% to take photos or videos of birds, and about 10.53% to improve their knowledge. These results indicated that Indonesian respondents were more attracted to birds than those of Japanese respondents. People's motives to visit natural areas and the various activities they carry out reflect the demands people place on natural areas [1]. In this study, respondents' demands on bird watching activity were not so high, yet Indonesian respondents' demands were higher than Japanese respondents. These findings may be explained by the facts that the Indonesian public tended to be attracted to animals and the existence of animals is a major reason to revisit natural areas [38]. Consistent with the findings of previous research in Pekanbaru, Indonesia, the existence of birds can attract visitor to parks [39].

A majority of Indonesian respondents agreed that birds are interesting (94.07%), enjoyed having interactions with birds in parks (88.15%), and did not feel disturbed by their presence in parks (92.31%). Among the Japanese respondents, about 65.81% agreed that birds are interesting, 64.10% enjoyed having interactions with birds in parks, and 65.81% did not feel disturbed by their presence in parks. These percentages were much lower than those of Indonesian respondents. These results indicated that the Indonesian respondents expressed more interest in birds as landscape elements in parks than those of Japanese respondents. Results

obtained correspond with previous research in Bogor, Indonesia, the Indonesian public described birds as interesting elements of nature, and they showed interest in birds [40]. Earlier research in Pekanbaru, Indonesia also revealed that the Indonesian public tended to like green open spaces in which there are birds. Respondents mentioned that the existence of birds in parks can help to relieve stress and make them feel closer to nature [39]. Meanwhile, findings from research in Japan revealed that Japanese people's experiences with many animals in nature is decreasing, especially among younger generations. In 2002 and 2012, birds were ranked highest as "the most often seen" wildlife among the Japanese public (university students). Respondents often saw crows and sparrows in urban areas. In contrasts, birds were not chosen as "the most favorite wildlife", and their popularity decreased in 2012, when mammals were chosen as the most popular wildlife [41].

The results revealed that in evaluating scenic beauty (Figure 3), Japanese respondents tended to give lower scenic beauty scores for five landscape images with birds (L3=40.14, L4=33.40, L6=-9.29, L7=26.69, and L9=35.35) than Indonesian respondents (L3=85.77, L4=37.69, L6=88.86, L7=71.17, and L9=95.17). Besides this, Japanese respondents also tended to give lower scenic beauty scores for all landscape images with human-bird interactions (L4=33.40, L6=-9.29, and L9=35.35) than Indonesian respondents (L4=37.69, L6=88.86, L7=71.17, and L9=95.17). These results indicated that in this study, there were differences in perceptions and preferences between Indonesian and Japanese respondents. Japanese respondents had less aesthetic appreciation for landscape images that featured birds as landscape elements, especially with human-bird interactions, than those of Indonesian respondents. Results obtained correspond with previous research in Japan, the Japanese people's experiences with many animals in nature is decreasing, especially among younger generations. Moreover, birds were not so popular than other animals among younger generations [41]. Furthermore, Japanese respondents had less aesthetic appreciation for landscape images with human-bird interactions than Indonesian respondents. These findings may be explained by the facts that there are regulations against feeding birds in parks in Japan. This situation is different than in Indonesia, parks are mostly do not have regulations against feeding birds.

However, it has long been known that the Japanese culture has a high appreciation for nature, live in amicable intimacy with nature, and it was often reflected in their daily life [41, 42]. Furthermore, there is a close relation between an aesthetic appreciation of nature and the religion in Japan. Despite the love and appreciation for nature, the Japanese have tried to control and dominate nature in various ways. Equal notice is being given to the environmental degradation caused by the Japanese at home as well as abroad [44, 45].

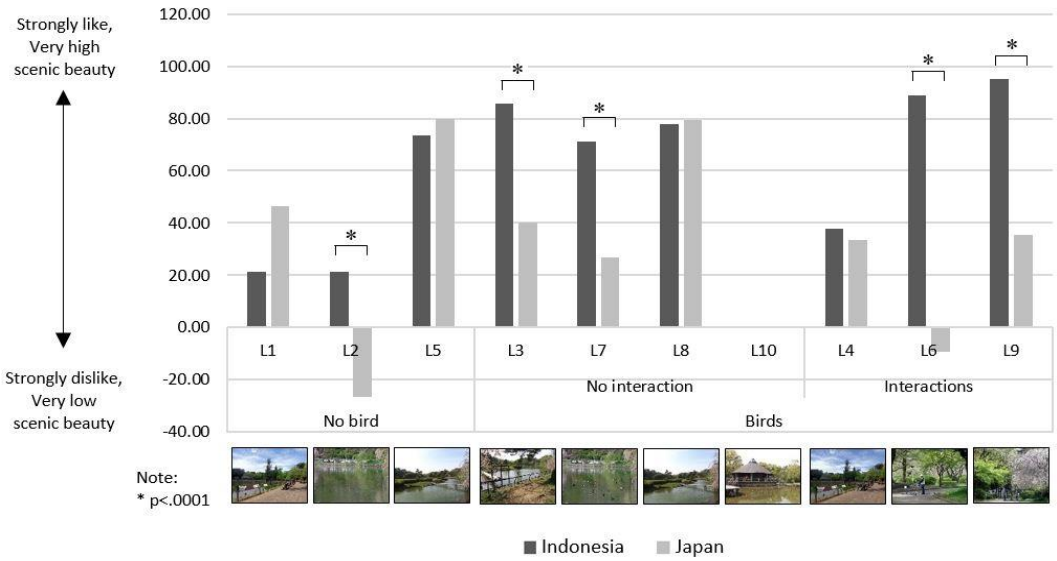

Figure 3. SBE value of landscape images without birds, with birds, without human-bird interactions, and with human-bird interactions.

Table 1. Mann-Whitney U Test of landscape images between two countries

Landscape Images	Without Birds			With Birds						
				Without Interactions				With Interactions		
	L1	L2	L5	L3	L7	L8	L10	L4	L6	L9
Std Err Dif	8.9688	9.0720	8.9678	9.0602	9.0771	8.9707	9.0958	9.0259	9.0971	9.0628
Mann-Whitney U	0.1680	0.0000*	0.8323	0.0000*	0.0000*	0.0848	0.0609	0.1480	0.0000*	0.0000*

Note: *p<.0001, also tested using the Steel-Dwass Test

In studies regarding Japanese perceptions of wildlife, the Japanese public expressed less ethical or ecological concern for nature and wildlife. Among the Japanese public, having a primary interest in, strong appreciation, affection, and emotional attachments for individual animals such as pets or large wild animals were quite common. The Japanese public described their preferences for nature as a "love of artificial and symbolic nature". They preferred to have contact with nature from a "controlled and safe distance". In other words, the Japanese appreciation for nature was very limited and idealized [46]. In contrast, findings from a study in Bogor, Indonesia revealed that the Indonesian public showed no preferences for individual animals such as specific bird species [47].

The Mann-Whitney U Test (Table 1) revealed that there were significant differences in perceptions and preferences for five landscape images (L2, L3, L6, L7, and L9) between Indonesian and Japanese respondents. Landscape image two (L2) was a modified version of landscape image seven (L7), which featured birds. Landscape image three (L3) and seven (L7) were original images that featured birds without human-bird interactions. Besides this, landscape image six (L6) and nine (L9) were original images that featured birds with human-bird interactions. It can be concluded that in this study, of the ten landscape images, only one image without birds and four images that featured birds with and without human-bird interactions as landscape elements in parks showed significant differences between Indonesian and Japanese respondents.

The Spearman Correlation (Figure 4) revealed that there were moderate-to-very strong correlations between landscape images with (L3, L4, L6, L7, L8, L9, and L10) and without birds (L1, L2, and L5) among Indonesian respondents. The highest correlation between landscape images with and without birds (p=0.8494) was detected between landscape images four and one (L4-L1). Landscape image four (L4) was a modified version, featuring birds, of landscape image one (L1). Besides this, there were also weak-to-strong correlations between landscape images with (L4, L6, and L9) and without human-bird interactions (L3, L7, L8, and L10) among Indonesian respondents (Figure 5). The highest correlation between landscape images with and without human-bird interactions (p=0.6495) was detected between landscape images seven and four (L7-L4). Landscape image four (L4) was a modified image that featured human-bird interactions. Meanwhile, landscape image seven (L7) was an original image that featured birds, but without human-bird interactions. It can be concluded that in this study, the existence of birds as landscape elements and human-bird interactions in urban parks have an influence on and correlate positively with the perceptions and preferences of Indonesian respondents.

In contrast, The Spearman Correlation (Figure 4) revealed that there were moderate-to-very weak correlations between landscape images with (L3, L4, L6, L7, L8, L9, and L10) and without birds (L1, L2, and L5) among Japanese respondents. The lowest correlation between landscape images with and without birds (p=-0.2382) was detected between landscape images six and five (L6-L5). Landscape image five (L5) was an original image without birds, and landscape image six (L6) was an original image that featured human-bird interactions. Besides this, there were also weak-to-very weak correlations between landscape images with (L4, L6, and L9) and without human-bird interactions (L3, L7, L8, and L10) among Japanese respondents. The lowest correlation between landscape images with and without human-bird interactions (p=-0.1216) was detected between landscape images eight and four (L8-L4). Landscape image four (L4) was a modified image that featured human-bird interactions, and landscape image eight (L8) was a modified image that featured birds, but without human-bird interactions. It can be concluded that in this study, the existence of birds as landscape elements and human-bird interactions in urban parks did not have much influence on the perceptions and preferences of Japanese respondents, and some could even correlate negatively with the perceptions and preferences.

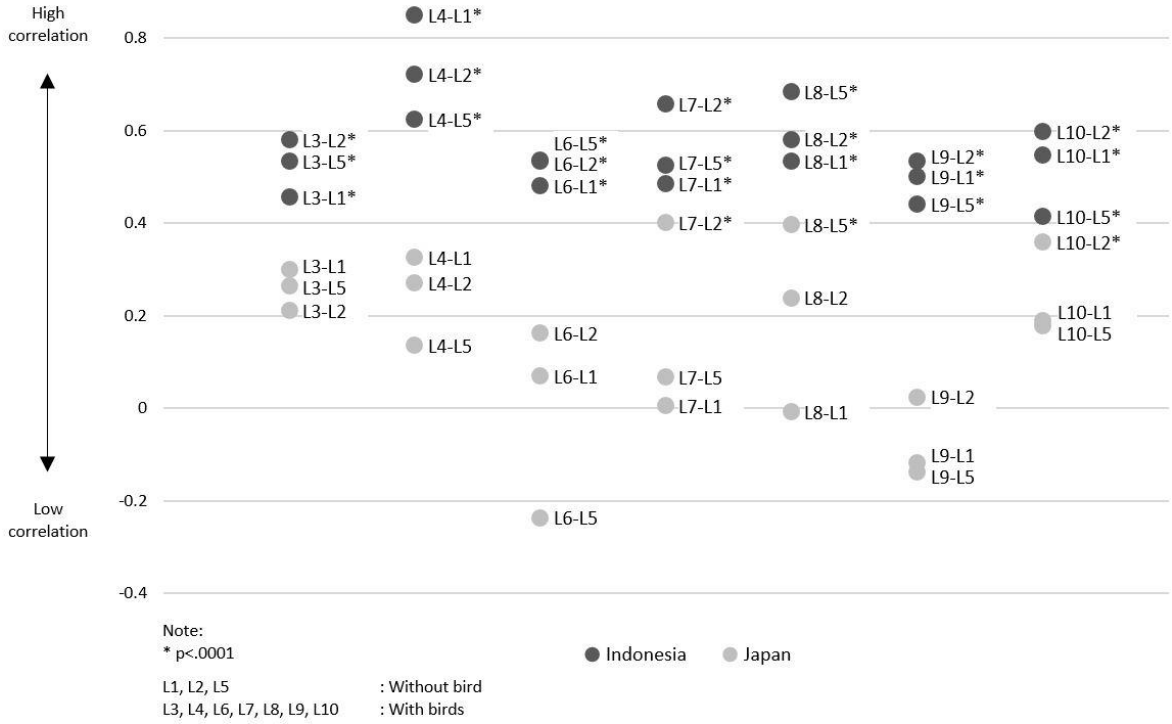

Figure 4. Spearman correlation of landscape images with and without birds among two countries.

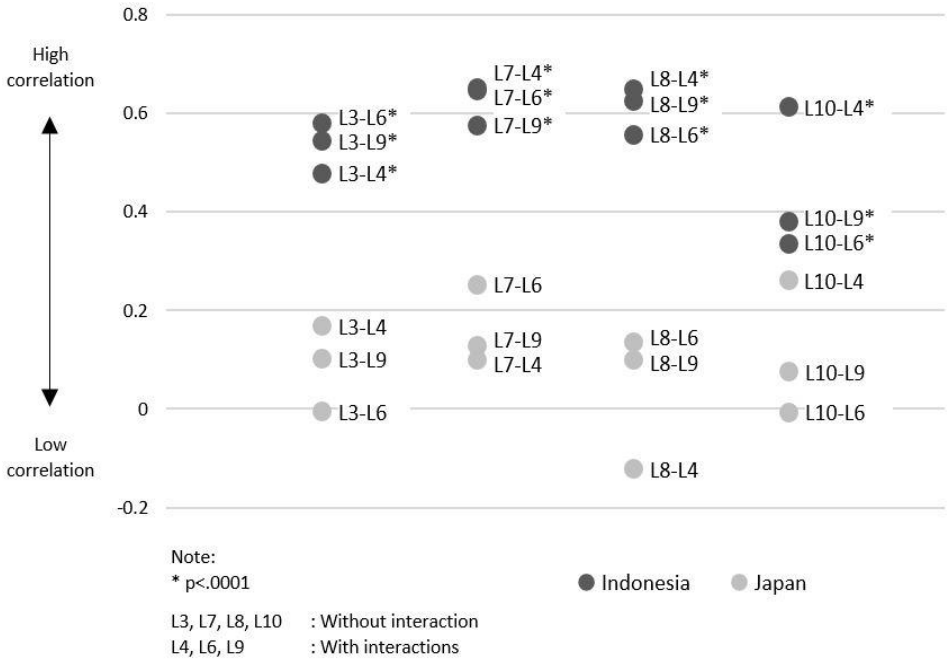

Figure 5. Spearman correlation of landscape images with and without human-bird interactions among two countries.

Studies regarding people's responses towards natural landscapes among university students of Japan and Indonesia showed that the concept of novelty and familiarity could affect the preferences of the Indonesian public (university students). Moreover, they liked "unusual" and "never-before-seen landscapes" in their country. In contrast, the Japanese public (university students) liked "familiar landscapes" [48]. Other findings also revealed that even though the Japanese public showed an interest in wildlife, they preferred to enjoy direct experiential contact with nature from a safe distance. In addition, they did not show a high primary concern for the interrelationships between wildlife species and environments as a system [46].

Limitations

The total number of landscape images (10) and respondents (252) in this study were limited. It would be better if the total number of landscape images and respondents were bigger, especially for statistical analysis. The selected landscape images in this study were located only in Japan, because we hardly found ideal urban parks featuring wild birds in Indonesia. Although the hypotheses were answered, this might weaken the conclusions for each country. In this study, factors that influenced respondents' perceptions and preferences were not investigated deeply apart from nationality and gender. Other factors such as age, occupation, education, living environment, and park visiting patterns would be useful for understanding the perceptions and preferences more deeply. Thus, related research is strongly recommended.

CONCLUSION

In this study, a majority of respondents agreed that birds are interesting and did not feel disturbed by their presence in parks. There were significant differences in the responses of Indonesian and Japanese respondents to four landscape images that featured birds and two landscape images that featured human-bird interactions. In evaluating scenic beauty, Japanese respondents tended to give less aesthetic appreciation for five of the six landscape images featuring birds than Indonesian respondents. It was evident that in this study, nationality had an influence on human perceptions and preferences. Besides this, there were moderate-to-very strong correlations (landscape images with and without birds) and weak-to-strong correlations (landscape images with and without human-bird interactions) among Indonesian respondents. Conversely, there were moderate-to-very weak correlations (landscape images with and without bird) and weak-to-very weak correlations (landscape images with and without human-bird interactions) among Japanese respondents. It was evident that in this study, the existence of birds as landscape elements and human-bird interactions in urban parks have an influence on the perceptions and preferences of people from both Indonesia and Japan. However, there was a difference in how respondents from the countries appreciated birds as landscape elements. These findings are useful for understanding human perceptions and preferences for birds as landscape elements in urban parks. This research is particularly useful for landscape architects in planning, designing, and/or managing urban parks.

RECOMMENDATION

The findings from this study provide a basic information for understanding urban parks issues related to birds as landscape elements from people's perspective. It is clear that in this study, the existence of birds as landscape elements in urban parks have an influence on the perceptions and preferences of Indonesian and Japanese people. Therefore, urban parks authorities should be sensitive enough to meet people's needs and provide high quality landscapes in urban areas.

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